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USA PRODUCT CATALOG

# **PMA Flexible cable protection systems**

For applications with high requirements

**PMA**



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**PMA cable protection products from ABB can be used in an extremely wide range of applications. The list is virtually endless, including rail vehicles and infrastructure, industrial machines, electrical systems on ships, solar and wind energy generation installations, telecommunications, construction and medical equipment. Wherever cables are installed and exposed to mechanical stresses and environmental hazards. Today and tomorrow we guarantee best quality regarding products, technical support, service and delivery.**

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# Introduction

## A swiss manufacturer with a global presence

There is no better reference than satisfied customers. PMA cable protection provides customized specific solutions for customers worldwide.

ABB's PMA manufacturing site is located in Uster (Switzerland), close to Zurich. The majority of what we produce for the world market is made at this location. Also our research and development department is located here.

ABB is focused on providing solutions that address the critical issues in every area of operations, allowing customers to focus on plant sustainability, cost, quality, flexibility, safety and regulatory challenges.

Thanks of our large network of professional partners in all of the major industrialised countries around the globe, we are able to guarantee best quality regarding products, technical support, service and fast delivery.







#### Setting new standards and trends

Customer needs are a top priority at ABB, and we work every day to ensure all our customer requirements are met in our products. We offer cable protection solutions and services that are tailored to meet requirements in every type of application. Our range extends from basic items right up to the most demanding high-tech products. We can develop system solutions and special products that are designed to meet specific customer requirements. Our intensive research and development activities, which include the field of new materials, are a major reason why PMA products from ABB continues to set new standards and trends in the cable protection marketplace. These efforts together with excellent quality and service have helped us build up an outstanding reputation with leading corporations around the world.

#### From pioneer to market leader

ABB has been developing, producing, and selling top-quality PMA cable protection systems since 1975. Our high-quality Swiss products have rapidly earned us an excellent reputation worldwide and established us as the market leader. Our range of more than 6,500 products gives customers the protection they need in railway, mechanical engineering, and shipbuilding applications worldwide. PMA products are also the solution of choice in automation, building installations and other projects where power and data cables require dependable protection.

#### Unique benefits of PMA products from ABB

Service to the customer is what motivates us. In addition to series production, PMA can build fittings and conduits to meet individual requirements as a special service to our customers.

- A safe, reliable system that is easy to install
- Vibration-proof connections
- System connection strength
- Ingress protection conforming to recognized test methods
- High impact strength even at low temperatures
- High compression strength (peak load)
- Long-term reversed-bending resistance
- Good chemical resistance
- Fire protection (flammability and smoke generation)
- Good weather resistance
- Long wearing
- ...and much more

## Introduction

### Areas of applications



#### Mechanical engineering

A considerable number of PMA cable protection systems are used in mechanical engineering. A few examples illustrate how varied the range of mechanical engineering applications is. You will find our products in machine tools, packaging machines, printing machines, as well as heating, ventilation, conveyer, and filling systems. PMA products also make a vital contribution to the smooth operation of high voltage and emergency power systems, can production machinery and woodworking machines, etc. PMA cable protection solutions safeguard cables, wires and data links against heat, cold, tensile stress, pressure stress, and other external influences in the important mechanical engineering industry.

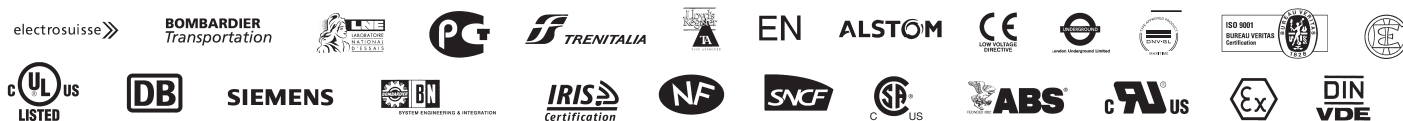
#### Rail vehicles/Rail infrastructure

PMA products from ABB have proven their dependability in railway construction projects around the world. This is the reason why large corporations including Siemens, Alstom, Bombardier, PESA, CSR/CNR, Deutsche Bahn, and SNCF have chosen us as supplier over a period of many years. Our special railway engineering product line provides protection and safety on signalling systems, couplings, trucks, and gangways, as well as roof, and underfloor equipment.

The range of applications is very extensive. PMA products contribute to the safe operation of trams, locomotives, freight cars, high-speed trains, and even roller coasters.

#### Worldwide recognitions

All PMA products are rigorously tried and tested to meet the demands of industry worldwide.





**Automation/Robotics**

In the field of automation, there is a need for products that can withstand the stress of motion-intensive applications. Solutions developed by ABB for the automation industry fully meet these requirements. Special conduit designs, supports and abrasion protection sleeves provide optimal protection along the entire length of all moving elements, enabling engineers to achieve a massive reduction in torsional forces. There is good reason why leading robotics manufacturers rely on ABB technology.

**Countless applications**

PMA cable protection products from ABB can be used in an extremely wide range of applications. The list is virtually endless and includes industries such as telecommunications, construction equipment and medical equipment. Wherever there is a need for cable protection, the PMA product portfolio provides safe, dependable, forward-looking solutions or will develop them specially for you to meet your individual needs.

## PMA conduits

### Conduit guide

| Products            |                                                                                     |                                             |         | PMAFLEX Pro |     |     | PMAFLEX |     |     |     |      |     |         |
|---------------------|-------------------------------------------------------------------------------------|---------------------------------------------|---------|-------------|-----|-----|---------|-----|-----|-----|------|-----|---------|
|                     |                                                                                     |                                             |         | PHT         | POH | PSX | CYL     | ESD | PCL | PCS | PCSL | PEL | PLS/PIH |
| Application areas   |                                                                                     |                                             |         |             |     |     |         |     |     |     |      |     |         |
| Machine building    |    | General applications                        | static  |             |     |     | ●       |     | ●   |     |      |     |         |
|                     |                                                                                     |                                             | dynamic | ●           |     |     | ●       |     | ●   |     | ●    |     |         |
|                     |                                                                                     | Heavy loads                                 | static  |             |     |     |         |     |     |     |      |     |         |
|                     |                                                                                     |                                             | dynamic |             |     |     |         |     |     | ●   |      |     |         |
|                     |                                                                                     | Outdoor applications                        | static  |             |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     |                                             | dynamic |             |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     | Antistatic requirements                     | static  |             |     |     |         | ●   |     |     |      |     |         |
|                     |                                                                                     |                                             | dynamic |             |     |     |         | ●   |     |     |      |     |         |
| Traction vehicles   |    | Outdoor applications with sunlight exposure | static  |             |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     |                                             | dynamic |             |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     | Outdoor applications                        | static  | ●           |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     |                                             | dynamic | ●           |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     | Indoor applications                         | static  |             | ●   |     |         |     |     |     |      |     |         |
| Rail infrastructure |   | Outdoor applications with sunlight exposure | static  |             |     |     |         |     |     | ●   | ●    |     |         |
|                     |                                                                                     | Indoor and tunnel applications              | static  |             | ●   |     |         |     |     |     |      |     |         |
| Automation/Robotics |  | Moving systems                              | dynamic | ●           |     |     | ●       |     | ●   | ●   | ●    |     | ●       |
|                     |                                                                                     | Systems with extreme movements              | dynamic |             |     |     |         |     |     |     |      |     | ●       |
|                     |                                                                                     | Moving systems with antistatic requirements | dynamic |             |     |     |         | ●   |     |     |      |     |         |
| Ship + Off-shore    |  | Outdoor general applications                | static  |             |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     |                                             | dynamic | ●           |     |     |         |     |     | ●   | ●    |     | ●       |
|                     |                                                                                     | Indoor applications                         | static  |             |     |     | ●       |     | ●   | ●   | ●    |     | ●       |
|                     |                                                                                     |                                             | dynamic |             |     |     | ●       |     | ●   | ●   | ●    |     | ●       |
|                     |                                                                                     | Passenger area                              | static  |             | ●   |     | ●       |     | ●   |     |      |     |         |
| Energy              |  | Outdoor applications with sunlight exposure | static  |             |     |     |         |     |     | ●   | ●    |     |         |
|                     |                                                                                     | Indoor applications                         | static  |             | ●   |     | ●       |     | ●   |     |      | ●   |         |
|                     |                                                                                     | Exposed to radiation                        | static  |             |     | ●   |         |     |     |     |      |     |         |
| Food & Beverage     |  | General applications                        | static  |             |     |     |         |     |     |     |      |     |         |
|                     |                                                                                     |                                             | dynamic |             |     |     |         |     |     |     |      |     |         |
| Others              |  | Vehicle building                            | static  | ●           |     |     |         |     |     |     |      |     |         |
|                     |                                                                                     | Telecommunications                          | indoor  |             |     |     |         | ●   |     | ●   |      | ●   |         |
|                     |  | Building constructions                      | indoor  |             | ●   |     |         |     |     |     |      |     |         |
|                     |                                                                                     |                                             | outdoor |             |     |     |         |     |     |     | ●    |     |         |
|                     |  | Ex hazardous areas (ATEX, IECEx)            | static  |             |     |     |         | ●   |     |     |      |     |         |
|                     |  | High temperature applications               | static  | ●           |     | ●   |         |     |     |     |      |     |         |
|                     |                                                                                     |                                             |         |             |     |     |         |     |     |     |      |     |         |
| Page no.            |                                                                                     |                                             |         | 15          | 15  | 16  | 17      | 17  | 18  | 19  | 19   | 20  | 20      |



6 Please see catalogue EX-System  
7 Please see catalogue Automation Products

- recommended

- recommended
- suitable (application details to be considered)
- recommended (products in stock for US)
- suitable (application details to be considered) (products in stock for US)

\*\* See PMA Automation brochure

## PMA conduits

### Conduit guide

| Products                                                |                                                                   |                                  |                                                              | PMAFLEX Pro |     |      | PMAFLEX |     |     |     |      |     |         |
|---------------------------------------------------------|-------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------|-------------|-----|------|---------|-----|-----|-----|------|-----|---------|
|                                                         |                                                                   |                                  |                                                              | PHT         | POH | PSX  | CYL     | ESD | PCL | PCS | PCSL | PEL | PIS/PIH |
| Material properties                                     | Ductility                                                         |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         | Reversed bending resistance                                       |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         | Compression resistance                                            |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         | Low temperature performance                                       |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         | High temperature performance                                      |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         | Resistance to weathering                                          |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         | Approvals                                                         |                                  | Bi-National Recognition File UL1696 & CSA C22.2 No. 227.3-05 |             |     |      |         |     |     |     |      |     |         |
| CSA C22.2 No. 227.3-05                                  |                                                                   |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
| Bi-National Listing File UL1660 & CSA C22.2 No. 227.2.1 |                                                                   |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
| Free from halogens, REACH + RoHS compliant              |                                                                   |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
| Non flame propagating EN61386                           |                                                                   |                                  |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | EN 45545-2                       |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | NFPA 130 (ASTM E162 – ASTM E662) |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | BSS 7239/SMP 800-C ASTM E1354    |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | PN-K 2511                        |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | GOST 12.1.044-89                 |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | DNV (Type approved)              |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | Lloyd's Register (Type approved) |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | Bureau Veritas (Type approved)   |                                                              |             |     |      |         |     |     |     |      |     |         |
| Hazardous                                               |                                                                   | ATEX                             |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | IECEX                            |                                                              |             |     |      |         |     |     |     |      |     |         |
| Food & Beverage                                         |                                                                   | NSF                              |                                                              |             |     |      |         |     |     |     |      |     |         |
|                                                         |                                                                   | Ecolab                           |                                                              |             |     |      |         |     |     |     |      |     |         |
| Temperature range                                       | Continuous operating temperature (acc. to DO 9.21-4510)           |                                  | Min. (-)                                                     | -50         | -25 | -100 | -40     | -40 | -50 | -50 | -50  | -50 | -50     |
|                                                         |                                                                   |                                  | Max. (+)                                                     | 135         | 95  | 170  | 105     | 90  | 105 | 95  | 95   | 60  | 95      |
|                                                         | Short term max. operating temperature 168h (acc. to DO 9.21-4360) |                                  | (+)                                                          | 180         | 120 | 200  | 160     | 150 | 160 | 150 | 150  | -   | 150     |
| Sizes                                                   | Nominal width min.                                                |                                  |                                                              | 07          | 10  | 10   | 07      | 07  | 07  | 07  | 07   | 10  | 07      |
|                                                         | Nominal width max.                                                |                                  |                                                              | 48          | 48  | 48   | 125     | 95  | 125 | 95  | 48   | 48  | 125     |
|                                                         | Metric size min.                                                  |                                  |                                                              | 10          | 12  | 12   | 10      | 10  | 10  | 10  | 10   | 12  | 10      |
|                                                         | Metric size max.                                                  |                                  |                                                              | 50          | 50  | 50   | 146     | 106 | 146 | 106 | 50   | 50  | 146     |
| Page no.                                                |                                                                   |                                  |                                                              | 15          | 15  | 16   | 17      | 17  | 18  | 19  | 19   | 20  | 20      |



**Key**

- correct
- \* See PMA Ex-System brochure
- \*\* See PMA Automation brochure

# PMA conduits

## Overview

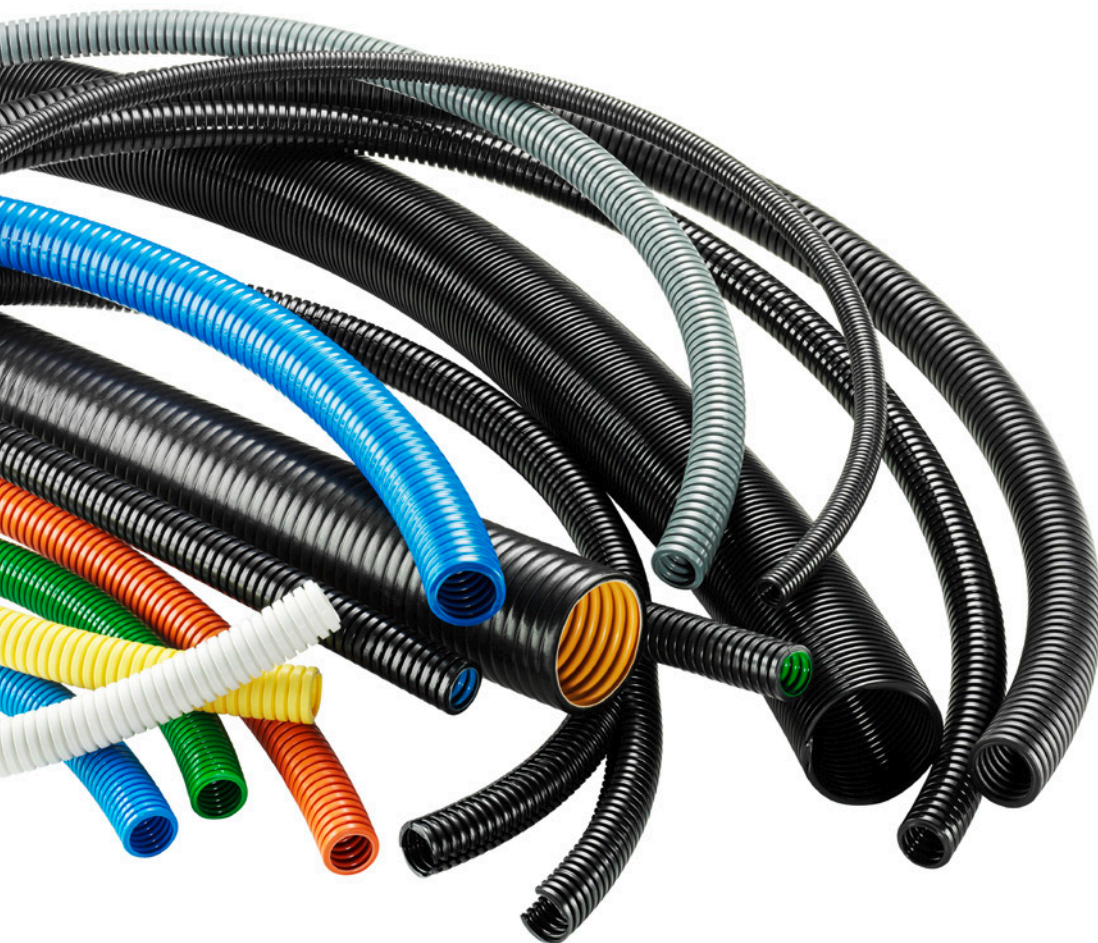
Conduits to protect cables. We offer many different conduit types for diverse applications with various technical requirements.

The product groups:

- PMAFLEX Pro
- PMAFLEX
- PMAFLEX Plus
- PMAFLEX Multilayer
- PMA Divisible System
- PMA Smart Line
- PMA overbraided
- PMA overextruded

Conduit sizes range from 6mm to 125mm Ø, from lightweight to heavyweight, and from pliable to highly flexible. PMA also offers slit and divisible conduits. Standard colours are black and grey.

Many conduits are specially approved, e.g. CSA, UL Recognition, DNV, Lloyds, Bureau Veritas etc. All conduits are REACH and RoHS compliant.





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## PMA CONDUITS

PMA offers a large range of very different mono- and multilayer conduit types which fulfill high technical demands to protect humans and cables.

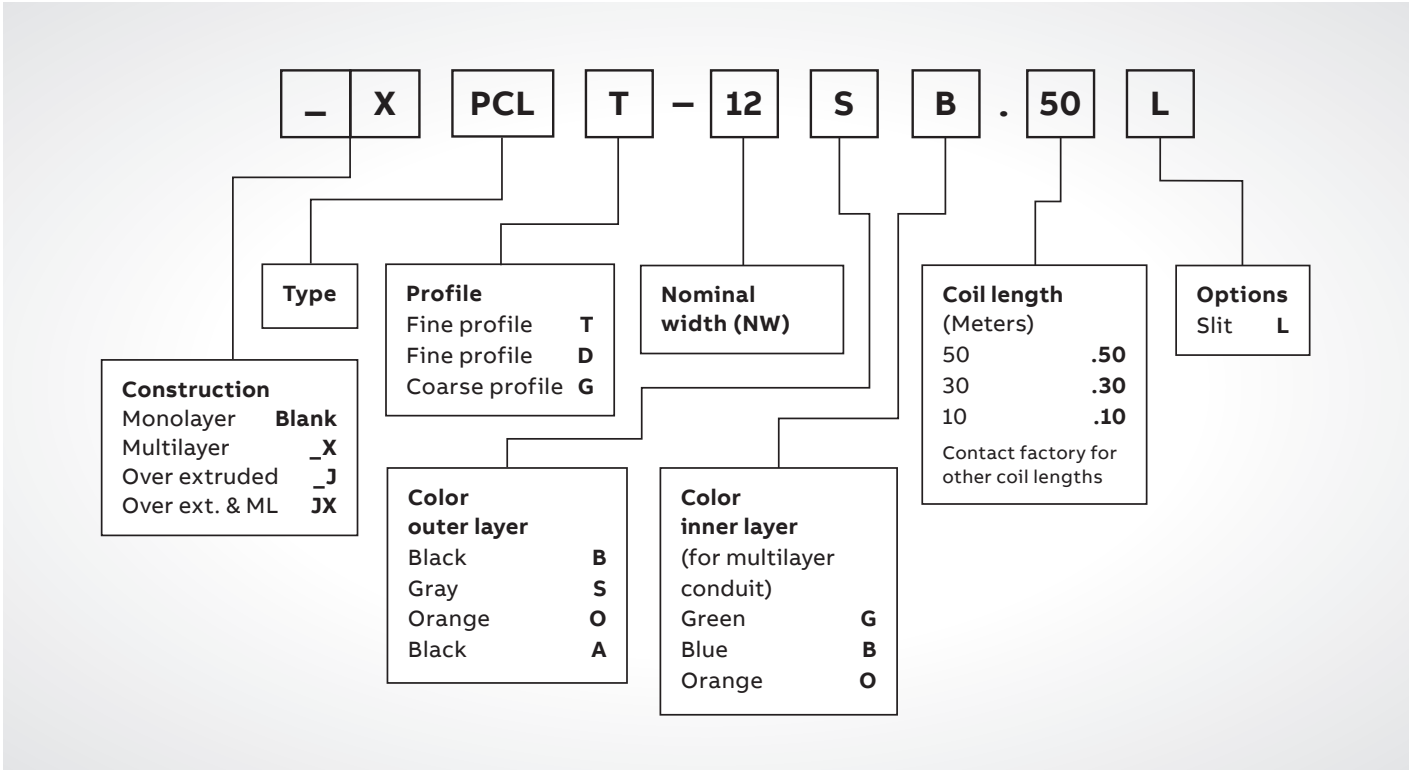




## PMA conduits

### Part number codes

For part number explanation only, not to be used as a configuration tool.  
Part Numbers printed in **RED** are priority stock items in the US Distribution Center.



#### Radius

**Stat. radius** = Lowest recommended bending radius for static (fixed) installation.

**Dyn. radius** = Lowest recommended bending radius for dynamic (flexible) installation.

#### Profile

**Fine profile T**  
Tight bending radius.

**Coarse profile G**  
High pull-out strength.

## PMAFLEX Pro

### Type PHT & POH conduit

#### Type PHT - Highly flexible, medium/heavy-duty

|                                                                                   | Order no.<br>(black)                                                                               | Conduit size |        |       | Inside Ø                           |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------|--------|-------|------------------------------------|--------|-------------------|------------------------------|-----------|
|                                                                                   |                                                                                                    | NW           | Metric | Inch  | (mm)                               | (inch) |                   |                              |           |
|  | PHTT-07B.50                                                                                        | 07           | 10     | 1/4   | 6.2                                | 0.244  | 10.0              | 15/40                        | 50        |
|                                                                                   | PHTT-10B.50                                                                                        | 10           | 12     | 5/16  | 9.6                                | 0.378  | 13.0              | 20/55                        | 50        |
|                                                                                   | PHTT-12B.50                                                                                        | 12           | 16     | 3/8   | 12.0                               | 0.472  | 15.8              | 30/65                        | 50        |
|                                                                                   | PHTT-17B.50                                                                                        | 17           | 20     | 1/2   | 16.2                               | 0.638  | 21.2              | 40/70                        | 50        |
|                                                                                   | PHTT-23B.50                                                                                        | 23           | 25     | 3/4   | 22.6                               | 0.890  | 28.5              | 45/95                        | 50        |
|                                                                                   | PHTG-17B.50                                                                                        | 17           | 20     | 1/2   | 15.2                               | 0.598  | 21.2              | 40/75                        | 50        |
|                                                                                   | PHTG-23B.50                                                                                        | 23           | 25     | 3/4   | 22.0                               | 0.866  | 28.5              | 45/100                       | 50        |
|                                                                                   | PHTG-29B.50                                                                                        | 29           | 32     | 1     | 27.7                               | 1.091  | 34.5              | 55/120                       | 50        |
|                                                                                   | PHTG-36B.30                                                                                        | 36           | 40     | 1-1/4 | 35.8                               | 1.409  | 42.5              | 60/180                       | 30        |
|                                                                                   | PHTG-48B.30                                                                                        | 48           | 50     | 1-1/2 | 46.8                               | 1.843  | 54.5              | 70/200                       | 30        |
| <b>PHT Index</b>                                                                  |                                                                                                    |              |        |       |                                    |        |                   |                              |           |
| min.                                                                              | max.                                                                                               |              |        |       |                                    |        |                   |                              |           |
| Ductility                                                                         | For applications at high and very low temperatures / dynamic applications                          |              |        |       |                                    |        |                   |                              |           |
| Fatigue reversed bending                                                          | Specially formulated polyamide elastomer. Both excellent flexibility and high compression strength |              |        |       |                                    |        |                   |                              |           |
| Compression resistance (PHTT-17B)                                                 | Enhanced temperature range compared to standard polyamides                                         |              |        |       |                                    |        |                   |                              |           |
| Compression resistance (PHTG-17B)                                                 | High resistance to ultra violet rays and weathering                                                |              |        |       |                                    |        |                   |                              |           |
| Low temperature performance                                                       |                                                                                                    |              |        |       |                                    |        |                   |                              |           |
| Weathering resistance                                                             |                                                                                                    |              |        |       |                                    |        |                   |                              |           |
| <b>Materials</b>                                                                  |                                                                                                    |              |        |       | <b>Temperature range</b>           |        |                   | <b>Colour</b>                |           |
| Specially formulated polyamide elastomer                                          |                                                                                                    |              |        |       | -50°C to +135°C                    |        |                   | Black                        |           |
| <b>Certification</b>                                                              |                                                                                                    |              |        |       | Short-term to: +180°C              |        |                   | <b>UV Resistance</b>         |           |
| Free from halogens, REACH compliant and RoHS compliant                            |                                                                                                    |              |        |       | <b>Impact resistance</b>           |        |                   | High                         |           |
|                                                                                   |                                                                                                    |              |        |       | Extremely good at low temperatures |        |                   |                              |           |

#### Type POH - Very flexible, medium-duty

|                                                                                     | Order no.<br>(black)                                                                                                                                                             | Order no.<br>(grey) | Conduit size |        |                               | Inside Ø |        | Outside Ø<br>(mm)    | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|--------|-------------------------------|----------|--------|----------------------|-------------------------|-----------|
|                                                                                     |                                                                                                                                                                                  |                     | NW           | Metric | Inch                          | (mm)     | (inch) |                      |                         |           |
|  | POHT-10B.50                                                                                                                                                                      | POHT-10S.50         | 10           | 12     | 5/16                          | 9.2      | 0.362  | 13.0                 | 13.0                    | 50        |
|                                                                                     | POHT-12B.50                                                                                                                                                                      | POHT-12S.50         | 12           | 16     | 3/8                           | 11.8     | 0.465  | 15.8                 | 15.8                    | 50        |
|                                                                                     | POHG-17B.50                                                                                                                                                                      | POHG-17S.50         | 17           | 20     | 1/2                           | 15.7     | 0.618  | 21.2                 | 21.2                    | 50        |
|                                                                                     | POHG-23B.50                                                                                                                                                                      | POHG-23S.50         | 23           | 25     | 3/4                           | 22.0     | 0.866  | 28.5                 | 28.5                    | 50        |
|                                                                                     | POHG-29B.50                                                                                                                                                                      | POHG-29S.50         | 29           | 32     | 1                             | 27.4     | 1.079  | 34.4                 | 34.4                    | 50        |
|                                                                                     | POHG-36B.30                                                                                                                                                                      | POHG-36S.30         | 36           | 40     | 1-1/4                         | 35.8     | 1.409  | 42.4                 | 42.4                    | 30        |
|                                                                                     | POHG-48B.30                                                                                                                                                                      | POHG-48S.30         | 48           | 50     | 1-1/2                         | 46.8     | 1.843  | 54.4                 | 54.5                    | 30        |
|                                                                                     | For highest fire and passenger safety requirements<br>Excellent fire safety characteristics acc. to BS 6853 1a (interior)<br>Good ductility and reversed bending characteristics |                     |              |        |                               |          |        |                      |                         |           |
| <b>POH Index</b>                                                                    |                                                                                                                                                                                  |                     |              |        |                               |          |        |                      |                         |           |
| min.                                                                                |                                                                                                                                                                                  | max.                |              |        |                               |          |        |                      |                         |           |
| Ductility                                                                           |                                                                                                                                                                                  |                     |              |        |                               |          |        |                      |                         |           |
| Fatigue reversed bending                                                            |                                                                                                                                                                                  |                     |              |        |                               |          |        |                      |                         |           |
| Compression resistance                                                              |                                                                                                                                                                                  |                     |              |        |                               |          |        |                      |                         |           |
| Low temperature performance                                                         |                                                                                                                                                                                  |                     |              |        |                               |          |        |                      |                         |           |
| Weathering resistance                                                               |                                                                                                                                                                                  |                     |              |        |                               |          |        |                      |                         |           |
| <b>Materials</b>                                                                    |                                                                                                                                                                                  |                     |              |        | <b>Temperature range</b>      |          |        | <b>Colour</b>        |                         |           |
| Specially modified polypropylene                                                    |                                                                                                                                                                                  |                     |              |        | -25°C to +95°C                |          |        | Black/Grey           |                         |           |
| <b>Certification</b>                                                                |                                                                                                                                                                                  |                     |              |        | Short-term to: +120°C         |          |        |                      |                         |           |
| Free from halogens, REACH compliant                                                 |                                                                                                                                                                                  |                     |              |        | <b>Fire performance</b>       |          |        | <b>UV Resistance</b> |                         |           |
| and RoHS compliant                                                                  |                                                                                                                                                                                  |                     |              |        | acc. to BS 6853 1a (interior) |          |        | -                    |                         |           |

# PMAFLEX Pro

## Type PSX conduit

Type PSX - Flexible, light-duty

|                                                                                   | Order no.<br>(black) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|----------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                   |                      | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
|  | PSXT-10B.50          | 10           | 12     | 5/16  | 9.8      | 0.386  | 13.0              | 20                      | 50        |
|                                                                                   | PSXT-12B.50          | 12           | 16     | 3/8   | 12.2     | 0.476  | 15.8              | 30                      | 50        |
|                                                                                   | PSXT-17B.50          | 17           | 20     | 1/2   | 16.2     | 0.638  | 21.2              | 35                      | 50        |
|                                                                                   | PSXG-23B.50          | 23           | 25     | 3/4   | 22.3     | 0.878  | 28.5              | 45                      | 50        |
|                                                                                   | PSXG-29B.50          | 29           | 32     | 1     | 28.0     | 1.102  | 34.5              | 55                      | 50        |
|                                                                                   | PSXG-36B.30          | 36           | 40     | 1-1/4 | 36.5     | 1.437  | 42.5              | 60                      | 30        |
|                                                                                   | PSXG-48B.30          | 48           | 50     | 1-1/2 | 47.5     | 1.870  | 54.5              | 70                      | 30        |

For applications with highest fire safety performance requirements / with extreme temperature conditions / exposed to radiation.  
Chemical resistance: To oils, fats, acids, alcohols and hot water (good resistance to hydrolysis)  
Excellent high and low temperature properties  
High radiation resistance  
Very good ductility

| PSX Index                   |             |
|-----------------------------|-------------|
| min.                        | max.        |
| Ductility                   | <div></div> |
| Fatigue reversed bending    | <div></div> |
| Compression resistance      | <div></div> |
| Low temperature performance | <div></div> |
| Weathering resistance       | <div></div> |

| Materials                                                 |
|-----------------------------------------------------------|
| Specially modified polyetherimide                         |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range              |
|--------------------------------|
| -100°C to +170°C               |
| Short-term to: +200°C          |
| Fire performance               |
| Low smoke density and toxicity |

| Colour        |
|---------------|
| Black         |
| UV Resistance |
| –             |



# PMAFLEX

## Type CYL & ESD conduit

### Type CYL - Very flexible, medium-duty conduit

|                                                                                                                                                                                                                                                                          | Order no.<br>(black) | Order no.<br>(grey) | Conduit size                                              |        |       | Inside Ø                  |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|-----------------------------------------------------------|--------|-------|---------------------------|--------|-------------------|-------------------------|-----------|
|                                                                                                                                                                                                                                                                          |                      |                     | NW                                                        | Metric | Inch  | (mm)                      | (inch) |                   |                         |           |
|                                                                                                                                                                                         | CYLT-07B.50          | CYLT-07S.50         | 07                                                        | 10     | 1/4   | 6.2                       | 0.244  | 10.0              | 15                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLT-10B.50          | CYLT-10S.50         | 10                                                        | 12     | 5/16  | 9.6                       | 0.378  | 13.0              | 20                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLT-12B.50          | CYLT-12S.50         | 12                                                        | 16     | 3/8   | 12.0                      | 0.472  | 15.8              | 30                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLT-17B.50          | CYLT-17S.50         | 17                                                        | 20     | 1/2   | 16.2                      | 0.638  | 21.2              | 40                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLT-23B.50          | CYLT-23S.50         | 23                                                        | 25     | 3/4   | 22.6                      | 0.890  | 28.5              | 45                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLT-29B.50          | CYLT-29S.50         | 29                                                        | 32     | 1     | 29.0                      | 1.142  | 34.5              | 55                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLT-36B.30          | CYLT-36S.30         | 36                                                        | 40     | 1-1/4 | 36.5                      | 1.437  | 42.5              | 60                      | 30        |
|                                                                                                                                                                                                                                                                          | CYLT-48B.30          | CYLT-48S.30         | 48                                                        | 50     | 1-1/2 | 47.5                      | 1.870  | 54.5              | 70                      | 30        |
|                                                                                                                                                                                                                                                                          | CYLG-23B.50          | CYLG-23S.50         | 23                                                        | 25     | 3/4   | 21.9                      | 0.862  | 28.5              | 45                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLG-29B.50          | CYLG-29S.50         | 29                                                        | 32     | 1     | 27.6                      | 1.087  | 34.5              | 55                      | 50        |
|                                                                                                                                                                                                                                                                          | CYLG-36B.30          | CYLG-36S.30         | 36                                                        | 40     | 1-1/4 | 36.0                      | 1.417  | 42.5              | 60                      | 30        |
|                                                                                                                                                                                                                                                                          | CYLG-48B.30          | CYLG-48S.30         | 48                                                        | 50     | 1-1/2 | 47.0                      | 1.850  | 54.5              | 70                      | 30        |
|                                                                                                                                                                                                                                                                          | CYLG-56B.30          | CYLG-56S.30         | 56                                                        | 68     | 2     | 56.3                      | 2.217  | 67.2              | 120                     | 30        |
|                                                                                                                                                                                                                                                                          | CYLG-70B.10          | CYLG-70S.10         | 70                                                        | 80     | 2-1/2 | 68.0                      | 2.677  | 80.0              | 160                     | 10        |
|                                                                                                                                                                                                                                                                          | CYLG-95B.10          | CYLG-95S.10         | 95                                                        | 106    | 4     | 91.9                      | 3.618  | 106.0             | 210                     | 10        |
|                                                                                                                                                                                                                                                                          | CYLG-125B.06         | CYLG-125S.06        | 125                                                       | 146    | 5     | 126.5                     | 4.980  | 146.5             | 450                     | 06        |
| For machine building and installation industries / static and slightly dynamic applications<br>Very good ductility and good reversed bending characteristics<br>Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity |                      |                     |                                                           |        |       |                           |        |                   |                         |           |
|                                                                                                                                                                                                                                                                          |                      |                     | <b>Materials</b>                                          |        |       | <b>Temperature range</b>  |        |                   | <b>Colour</b>           |           |
|                                                                                                                                                                                                                                                                          |                      |                     | Specially formulated polyamide 6                          |        |       | -40°C to +105°C           |        |                   | Black/Grey              |           |
|                                                                                                                                                                                                                                                                          |                      |                     | <b>Certification</b>                                      |        |       | Short-term to: +160°C     |        |                   | <b>UV Resistance</b>    |           |
|                                                                                                                                                                                                                                                                          |                      |                     | Free from halogens, REACH compliant<br>and RoHS compliant |        |       | <b>Self extinguishing</b> |        |                   | acc. to UL 94 V2        |           |
|                                                                                                                                                                                                                                                                          |                      |                     |                                                           |        |       |                           |        |                   | -                       |           |

|                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Approvals</b>                                                                                                                                                    |
|   |
| <b>CYL Index</b>                                                                                                                                                    |
| min. Ductility                                                                                                                                                      |
| Fatigue reversed bending                                                                                                                                            |
| Compression resistance                                                                                                                                              |
| Low temperature performance                                                                                                                                         |
| Weathering resistance                                                                                                                                               |

### Type ESD - Very flexible, medium-duty conduit

|                                                                                     | Order no.<br>(black)                                                                                                                                                                                                                 | Conduit size |        |       | Inside Ø                                                  |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m)            |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|-------|-----------------------------------------------------------|--------|-------------------|------------------------------|----------------------|
|                                                                                     |                                                                                                                                                                                                                                      | NW           | Metric | Inch  | (mm)                                                      | (inch) |                   |                              |                      |
|  | ESDT-07B.50                                                                                                                                                                                                                          | 07           | 10     | 1/4   | 6.2                                                       | 0.244  | 10.0              | 15/40                        | 50                   |
|                                                                                     | ESDT-10B.50                                                                                                                                                                                                                          | 10           | 12     | 5/16  | 9.6                                                       | 0.378  | 13.0              | 20/50                        | 50                   |
|                                                                                     | ESDT-12B.50                                                                                                                                                                                                                          | 12           | 16     | 3/8   | 12.0                                                      | 0.472  | 15.8              | 30/70                        | 50                   |
|                                                                                     | ESDT-17B.50                                                                                                                                                                                                                          | 17           | 20     | 1/2   | 16.4                                                      | 0.646  | 21.1              | 40/75                        | 50                   |
|                                                                                     | ESDT-23B.50                                                                                                                                                                                                                          | 23           | 25     | 3/4   | 22.6                                                      | 0.890  | 28.4              | 45/90                        | 50                   |
|                                                                                     | ESDT-29B.50                                                                                                                                                                                                                          | 29           | 32     | 1     | 29.0                                                      | 1.142  | 34.3              | 55/110                       | 50                   |
|                                                                                     | ESDT-36B.30                                                                                                                                                                                                                          | 36           | 40     | 1-1/4 | 36.5                                                      | 1.437  | 42.5              | 60/160                       | 30                   |
|                                                                                     | ESDT-48B.30                                                                                                                                                                                                                          | 48           | 50     | 1-1/2 | 47.5                                                      | 1.870  | 54.5              | 70/200                       | 30                   |
|                                                                                     | ESDG-56B.30                                                                                                                                                                                                                          | 56           | 68     | 2     | 56.5                                                      | 2.224  | 67.0              | 110/250                      | 30                   |
|                                                                                     | ESDG-70B.10                                                                                                                                                                                                                          | 70           | 80     | 2-1/2 | 67.5                                                      | 2.657  | 80.0              | 150/330                      | 10                   |
| ESDG-95B.10                                                                         | 95                                                                                                                                                                                                                                   | 106          | 4      | 91.5  | 3.602                                                     | 106.0  | 170/440           | 10                           |                      |
| <b>ESD Index</b>                                                                    |                                                                                                                                                                                                                                      |              |        |       |                                                           |        |                   |                              |                      |
| <b>min.</b>                                                                         | <b>max.</b>                                                                                                                                                                                                                          |              |        |       |                                                           |        |                   |                              |                      |
| Ductility                                                                           | For dynamic applications in robotics and automation where electrostatic charge and uncontrolled discharge need to be avoided<br>Prevents electrostatic charging. For indoor and outdoor use (very good cold temperature performance) |              |        |       |                                                           |        |                   |                              |                      |
| Fatigue reversed bending                                                            | <b>Materials</b>                                                                                                                                                                                                                     |              |        |       | <b>Temperature range</b>                                  |        |                   |                              | <b>Colour</b>        |
| Compression resistance                                                              | Specially modified polyamide 12                                                                                                                                                                                                      |              |        |       | -40°C to +90°C                                            |        |                   |                              | Black                |
| Low temperature performance                                                         | <b>Certification</b>                                                                                                                                                                                                                 |              |        |       | Short-term to: +150°C                                     |        |                   |                              | <b>UV Resistance</b> |
| Weathering resistance                                                               | Free from halogens, REACH compliant<br>and RoHS compliant                                                                                                                                                                            |              |        |       | <b>Fatigue resistance</b><br>Excellent fatigue resistance |        |                   |                              |                      |
|                                                                                     |                                                                                                                                                                                                                                      |              |        |       |                                                           |        |                   |                              | Excellent            |

|                             |
|-----------------------------|
| <b>ESD Index</b>            |
| min. Ductility              |
| Fatigue reversed bending    |
| Compression resistance      |
| Low temperature performance |
| Weathering resistance       |

## PMAFLEX

### Type PCL conduit

Type PCL - Very flexible, medium-duty

|                                                                                                                                                                                                                                                                                                                                 | Order no.<br>(black) | Order no.<br>(grey) | Conduit size                                              |        |       | Inside Ø                 |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm)   | PU<br>(m) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|-----------------------------------------------------------|--------|-------|--------------------------|--------|-------------------|---------------------------|-----------|
|                                                                                                                                                                                                                                                                                                                                 |                      |                     | NW                                                        | Metric | Inch  | (mm)                     | (inch) |                   |                           |           |
|                                                                                                                                                                                                                                                | PCLT-07B.50          | PCLT-07S.50         | 07                                                        | 10     | 1/4   | 6.2                      | 0.244  | 10.0              | 15                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-10B.50          | PCLT-10S.50         | 10                                                        | 12     | 5/16  | 9.6                      | 0.378  | 13.0              | 20                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-12B.50          | PCLT-12S.50         | 12                                                        | 16     | 3/8   | 12.0                     | 0.472  | 15.8              | 30                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-17B.50          | PCLT-17S.50         | 17                                                        | 20     | 1/2   | 16.2                     | 0.638  | 21.2              | 40                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-23B.50          | PCLT-23S.50         | 23                                                        | 25     | 3/4   | 22.6                     | 0.890  | 28.5              | 45                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-29B.50          | PCLT-29S.50         | 29                                                        | 32     | 1     | 29.0                     | 1.142  | 34.5              | 55                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-36B.30          | PCLT-36S.50         | 36                                                        | 40     | 1-1/4 | 36.5                     | 1.437  | 42.5              | 60                        | 30        |
|                                                                                                                                                                                                                                                                                                                                 | PCLT-48B.30          | PCLT-48S.50         | 48                                                        | 50     | 1-1/2 | 47.5                     | 1.870  | 54.5              | 70                        | 30        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-17B.50          | PCLG-17S.50         | 17                                                        | 20     | 1/2   | 15.3                     | 0.602  | 21.2              | 40                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-23B.50          | PCLG-23S.50         | 23                                                        | 25     | 3/4   | 21.9                     | 0.862  | 28.5              | 45                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-29B.50          | PCLG-29S.50         | 29                                                        | 32     | 1     | 27.6                     | 1.087  | 34.5              | 55                        | 50        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-36B.30          | PCLG-36S.30         | 36                                                        | 40     | 1-1/4 | 36.0                     | 1.417  | 42.5              | 60                        | 30        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-48B.30          | PCLG-48S.30         | 48                                                        | 50     | 1-1/2 | 47.0                     | 1.850  | 54.5              | 70                        | 30        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-56B.30          | PCLG-56S.30         | 56                                                        | 68     | 2     | 56.3                     | 2.217  | 67.2              | 130                       | 30        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-70B.10          | PCLG-70S.10         | 70                                                        | 80     | 2-1/2 | 67.5                     | 2.650  | 80.0              | 160                       | 10        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-95B.10          | PCLG-95S.10         | 95                                                        | 106    | 4     | 91.5                     | 3.602  | 106.0             | 210                       | 10        |
|                                                                                                                                                                                                                                                                                                                                 | PCLG-125B.6          | PCLG-125S.6         | 125                                                       | 146    | 5     | 126.5                    | 4.980  | 146.5             | 450                       | 6         |
| For machine building, installation and vehicle building industries / static and slightly dynamic applications<br>Very good ductility and good reversed bending characteristics. Very good long-term properties<br>Very good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity |                      |                     |                                                           |        |       |                          |        |                   |                           |           |
|                                                                                                                                                                                                                                                                                                                                 |                      |                     | <b>Materials</b>                                          |        |       | <b>Temperature range</b> |        |                   | <b>Colour</b>             |           |
|                                                                                                                                                                                                                                                                                                                                 |                      |                     | Specially formulated polyamide 6                          |        |       | -50°C to +105°C          |        |                   | Black/Grey                |           |
|                                                                                                                                                                                                                                                                                                                                 |                      |                     | <b>Certification</b>                                      |        |       | Short-term to: +160°C    |        |                   | <b>Self extinguishing</b> |           |
|                                                                                                                                                                                                                                                                                                                                 |                      |                     | Free from halogens, REACH compliant<br>and RoHS compliant |        |       | acc. to UL 94 V2         |        |                   | <b>UV Resistance</b>      |           |
|                                                                                                                                                                                                                                                                                                                                 |                      |                     |                                                           |        |       |                          |        |                   | -                         |           |

#### Approvals



#### PCL Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

# PMAFLEX

## Type PCS & PCSL conduit

### Type PCS - Very flexible, heavy-duty conduit

|                                                                                   | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|------------------------------|-----------|
|                                                                                   |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                              |           |
|  | PCST-07B.100         | PCST-07S.50         | 07           | 10     | 1/4   | 6.0      | 0.236  | 10.0              | 15/40                        | 100       |
|                                                                                   | PCST-10B.50          | PCST-10S.50         | 10           | 12     | 5/16  | 9.2      | 0.362  | 13.0              | 20/50                        | 50        |
|                                                                                   | PCST-12B.50          | PCST-12S.50         | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.8              | 25/70                        | 50        |
|                                                                                   | PCST-17B.50          | PCST-17S.50         | 17           | 20     | 1/2   | 16.0     | 0.630  | 21.2              | 35/80                        | 50        |
|                                                                                   | PCSG-17B.50          | PCSG-17S.50         | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 35/85                        | 50        |
|                                                                                   | PCSG-23B.50          | PCSG-23S.50         | 23           | 25     | 3/4   | 21.5     | 0.846  | 28.5              | 40/110                       | 50        |
|                                                                                   | PCSG-29B.50          | PCSG-29S.50         | 29           | 32     | 1     | 27.7     | 1.091  | 34.4              | 50/130                       | 50        |
|                                                                                   | PCSG-36B.30          | PCSG-36S.30         | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 60/180                       | 30        |
|                                                                                   | PCSG-48B.30          | PCSG-48S.30         | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 70/220                       | 30        |
|                                                                                   | PCSG-56B.30          | PCSG-56S.30         | 56           | 68     | 2     | 56.1     | 2.209  | 67.2              | 130/280                      | 30        |
|                                                                                   | PCSG-70B.10          | PCSG-70S.10         | 70           | 80     | 2-1/2 | 66.5     | 2.618  | 80.0              | 170/360                      | 10        |
|                                                                                   | PCSG-95B.10          | PCSG-95S.10         | 95           | 106    | 4     | 91.0     | 3.583  | 106.0             | 250/470                      | 10        |

For dynamic outside applications in railway vehicles / outdoor applications with highest requirements to UV and weathering resistance

Extensive railway approvals. Very good ductility and good reversed bending characteristics

Very good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Highest reversed bending resistance

Excellent resistance to ultra violet rays and weathering

EN45545-2 HL2 (R22 +R23)

#### PCS Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

#### Materials

Specially modified polyamide 12

#### Certification

Free from halogens, REACH compliant

and RoHS compliant

#### Temperature range

-50°C to +95°C

Short-term to: +150°C

#### Fatigue resistance

Excellent fatigue resistance

#### Colour

Black/Grey

#### UV Resistance

Excellent

### Type PCSL - Highly flexible, medium-duty conduit

|                                                                                     | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|------------------------------|-----------|
|                                                                                     |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                              |           |
|  | PCSLT-07B.50         | PCSLT-07S.50        | 07           | 10     | 1/4   | 6.2      | 0.244  | 10.0              | 15/40                        | 50        |
|                                                                                     | PCSLT-10B.50         | PCSLT-10S.50        | 10           | 12     | 5/16  | 9.6      | 0.378  | 13.0              | 20/50                        | 50        |
|                                                                                     | PCSLT-12B.50         | PCSLT-12S.50        | 12           | 16     | 3/8   | 11.9     | 0.469  | 15.8              | 25/65                        | 50        |
|                                                                                     | PCSLT-17B.50         | PCSLT-17S.50        | 17           | 20     | 1/2   | 16.4     | 0.646  | 21.1              | 30/65                        | 50        |
|                                                                                     | PCSLG-17B.50         | PCSLG-17S.50        | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.1              | 30/80                        | 50        |
|                                                                                     | PCSLG-23B.50         | PCSLG-23S.50        | 23           | 25     | 3/4   | 21.7     | 0.854  | 28.4              | 40/100                       | 50        |
|                                                                                     | PCSLG-29B.50         | PCSLG-29S.50        | 29           | 32     | 1     | 27.4     | 1.079  | 34.3              | 50/120                       | 50        |
|                                                                                     | PCSLG-36B.30         | PCSLG-36S.30        | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.3              | 60/180                       | 30        |
|                                                                                     | PCSLG-48B.30         | PCSLG-48S.30        | 48           | 50     | 1-1/2 | 46.7     | 1.839  | 54.2              | 70/200                       | 30        |

For dynamic outside applications in railway vehicles / outdoor applications with highest requirements to UV and weathering resistance

Extensive railway approvals. Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

Excellent reversed bending resistance

Excellent resistance to ultra violet rays and weathering

EN45545-2 HL2 (R22 +R23)

#### PCSL Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

#### Materials

Specially modified polyamide 12

#### Certification

Free from halogens, REACH compliant

and RoHS compliant

#### Temperature range

-50°C to +95°C

Short-term to: +150°C

#### Fatigue resistance

Excellent fatigue resistance

#### Colour

Black

#### UV Resistance

Excellent



## PMAFLEX

### Type PEL & PIS/PIH conduit

#### Type PEL - Highly flexible, light-duty, soft

|                                                                                                                                                                 | Order no.<br>(grey) | Order no.<br>(grey, slit) | Conduit size                        |        |       | Inside Ø                 |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------|-------------------------------------|--------|-------|--------------------------|--------|-------------------|-------------------------|-----------|
|                                                                                                                                                                 |                     |                           | NW                                  | Metric | Inch  | (mm)                     | (inch) |                   |                         |           |
|                                                                                | PELT-10S.50         | PELT-10SL.50              | 10                                  | 12     | 5/16  | 9.7                      | 0.382  | 12.7              | 20                      | 50        |
|                                                                                                                                                                 | PELT-12S.50         | PELT-12SL.50              | 12                                  | 16     | 3/8   | 11.5                     | 0.453  | 15.5              | 30                      | 50        |
|                                                                                                                                                                 | PELT-17S.50         | PELT-17SL.50              | 17                                  | 20     | 1/2   | 16.0                     | 0.630  | 20.9              | 35                      | 50        |
|                                                                                                                                                                 | PELT-23S.50         | PELT-23SL.50              | 23                                  | 25     | 3/4   | 22.5                     | 0.886  | 27.5              | 40                      | 50        |
|                                                                                                                                                                 | PELT-29S.30         | PELT-29SL.30              | 29                                  | 32     | 1     | 28.5                     | 1.122  | 33.8              | 50                      | 30        |
|                                                                                                                                                                 | PELT-36S.30         | PELT-36SL.30              | 36                                  | 40     | 1-1/4 | 34.0                     | 1.339  | 41.6              | 60                      | 30        |
|                                                                                                                                                                 | PELT-48S.30         | PELT-48SL.30              | 48                                  | 50     | 1-1/2 | 47.0                     | 1.850  | 53.2              | 70                      | 30        |
| For electrical cabinets and appliance construction<br>Very good ductility<br>Suitable for small bending radii<br>Good resistance against strong acids and bases |                     |                           |                                     |        |       |                          |        |                   |                         |           |
| <b>PEL Index</b>                                                                                                                                                |                     |                           | <b>Materials</b>                    |        |       | <b>Temperature range</b> |        |                   | <b>Colour</b>           |           |
| min.                                                                                                                                                            |                     | max.                      | Specially modified polyethylene     |        |       | -50°C to +60°C           |        |                   | Grey                    |           |
| Ductility                                                                                                                                                       |                     |                           | <b>Certification</b>                |        |       |                          |        |                   | <b>UV Resistance</b>    |           |
| Fatigue reversed bending                                                                                                                                        |                     |                           | Free from halogens, REACH compliant |        |       |                          |        |                   |                         |           |
| Compression resistance                                                                                                                                          |                     |                           | and RoHS compliant                  |        |       |                          |        |                   | -                       |           |
| Low temperature performance                                                                                                                                     |                     |                           |                                     |        |       |                          |        |                   |                         |           |
| Weathering resistance                                                                                                                                           |                     |                           |                                     |        |       |                          |        |                   |                         |           |

#### Type PIS/PIH - Highly flexible, medium- and heavy-duty

|                                                                                                                                                                                                                                                                                                                                                             | Order no.<br>(black) | Order no.<br>(grey) | Conduit size                        |        |        | Inside Ø (mm)                     |        | Outside Ø<br>(mm) | Stat./dyn.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------------------|--------|--------|-----------------------------------|--------|-------------------|------------------------------|-----------|
|                                                                                                                                                                                                                                                                                                                                                             |                      |                     | NW                                  | Metric | (Inch) | (mm)                              | (inch) |                   |                              |           |
|                                                                                                                                                                                                                                                                          | PIST-07B.50          | PIST-07S.50         | 07                                  | 10     | 1/4    | 6.2                               | 0.244  | 10.0              | 15/40                        | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-10B.50          | PIST-10S.50         | 10                                  | 12     | 5/16   | 9.6                               | 0.378  | 13.0              | 20/50                        | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-12B.50          | PIST-12S.50         | 12                                  | 16     | 3/8    | 11.9                              | 0.469  | 15.8              | 25/65                        | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-17B.50          | PIST-17S.50         | 17                                  | 20     | 1/2    | 16.4                              | 0.646  | 21.1              | 30/65                        | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-23B.50          | PIST-23S.50         | 23                                  | 25     | 3/4    | 22.6                              | 0.890  | 28.4              | 35/90                        | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-29B.50          | PIST-29S.50         | 29                                  | 32     | 1      | 29.0                              | 1.142  | 34.3              | 45/110                       | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-36B.30          | PIST-36S.30         | 36                                  | 40     | 1-1/4  | 36.5                              | 1.437  | 42.5              | 60/165                       | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PIST-48B.30          | PIST-48S.30         | 48                                  | 50     | 1-1/2  | 47.5                              | 1.870  | 54.5              | 70/180                       | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PISG-17B.50          | PISG-17S.50         | 17                                  | 20     | 1/2    | 15.2                              | 0.598  | 21.1              | 30/80                        | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PISG-23B.50          | PISG-23S.50         | 23                                  | 25     | 3/4    | 21.7                              | 0.854  | 28.4              | 40/100                       | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PISG-29B.50          | PISG-29S.50         | 29                                  | 32     | 1      | 27.9                              | 1.098  | 34.7              | 50/120                       | 50        |
|                                                                                                                                                                                                                                                                                                                                                             | PISG-36B.30          | PISG-36S.30         | 36                                  | 40     | 1-1/4  | 35.8                              | 1.409  | 42.3              | 60/180                       | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PISG-48B.30          | PISG-48S.30         | 48                                  | 50     | 1-1/2  | 46.7                              | 1.839  | 54.2              | 70/200                       | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PIHG-56B.30          | PIHG-56S.30         | 56                                  | 68     | 2      | 56.3                              | 2.217  | 67.2              | 110/270                      | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PIHG-70B.30          | PIHG-70S.30         | 70                                  | 80     | 2-1/2  | 67.2                              | 2.646  | 79.6              | 150/350                      | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PIHG-95B.30          | PIHG-95S.30         | 95                                  | 106    | 4      | 91.3                              | 3.594  | 106.0             | 170/450                      | 30        |
|                                                                                                                                                                                                                                                                                                                                                             | PIHG-125B.20         | PIHG-125S.20        | 125                                 | 146    | 5      | 126.5                             | 4.980  | 146.5             | 350/480                      | 20        |
| For robotics and automation applications. UL 94 V0. Excellent UV resistance and weathering characteristics<br>PIS: Medium-wall (Nominal width 07 to 48) / PIH: Heavy-wall (Nominal width 56 to 125)<br>Very good reversed bending characteristics. Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity |                      |                     |                                     |        |        |                                   |        |                   |                              |           |
| <b>Approvals</b>                                                                                                                                                                                                                                                                                                                                            |                      |                     | <b>Materials</b>                    |        |        | <b>Temperature range</b>          |        |                   | <b>Colour</b>                |           |
|                                                                                                                                                                                                                                                                          |                      |                     | Specially modified polyamide 12     |        |        | -50°C to +95°C                    |        |                   | Black/Grey                   |           |
| <b>PIS/PIH Index</b>                                                                                                                                                                                                                                                                                                                                        |                      |                     | <b>Certification</b>                |        |        | Short-term to: +150°C             |        |                   | <b>UV Resistance</b>         |           |
| min.                                                                                                                                                                                                                                                                                                                                                        |                      | max.                | Free from halogens, REACH compliant |        |        | <b>Weathering characteristics</b> |        |                   |                              |           |
| Ductility                                                                                                                                                                                                                                                                                                                                                   |                      |                     | and RoHS compliant                  |        |        | Excellent                         |        |                   | Excellent                    |           |
| Fatigue reversed bending                                                                                                                                                                                                                                                                                                                                    |                      |                     |                                     |        |        |                                   |        |                   |                              |           |
| Compression resistance                                                                                                                                                                                                                                                                                                                                      |                      |                     |                                     |        |        |                                   |        |                   |                              |           |
| Low temperature performance                                                                                                                                                                                                                                                                                                                                 |                      |                     |                                     |        |        |                                   |        |                   |                              |           |
| Weathering resistance                                                                                                                                                                                                                                                                                                                                       |                      |                     |                                     |        |        |                                   |        |                   |                              |           |

# PMAFLEX

## Type POS & PUE conduit

### Type POS - Highly flexible, medium-duty

|                                                                                                                                                                                                                                                    | Order no.<br>(black) | Conduit size |        |       | Inside Ø                                   |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|--------|-------|--------------------------------------------|--------|-------------------|------------------------------|-----------|
|                                                                                                                                                                                                                                                    |                      | NW           | Metric | Inch  | (mm)                                       | (inch) |                   |                              |           |
|                                                                                                                                                                   | POST-10B.50          | 10           | 12     | 5/16  | 9.6                                        | 0.378  | 13                | 20/50                        | 50        |
|                                                                                                                                                                                                                                                    | POST-12B.50          | 12           | 16     | 3/8   | 11.9                                       | 0.469  | 15.8              | 30/70                        | 50        |
|                                                                                                                                                                                                                                                    | POST-17B.50          | 17           | 20     | 1/2   | 16.2                                       | 0.638  | 21.2              | 35/75                        | 50        |
|                                                                                                                                                                                                                                                    | POST-23B.50          | 23           | 25     | 3/4   | 22.6                                       | 0.890  | 28.5              | 40/100                       | 50        |
|                                                                                                                                                                                                                                                    | POST-29B.50          | 29           | 32     | 1     | 29                                         | 1.142  | 34.5              | 50/120                       | 50        |
|                                                                                                                                                                                                                                                    | POST-36B.30          | 36           | 40     | 1-1/4 | 36.5                                       | 1.437  | 42.5              | 60/180                       | 30        |
|                                                                                                                                                                                                                                                    | POST-48B.30          | 48           | 50     | 1-1/2 | 47.5                                       | 1.870  | 54.5              | 70/195                       | 30        |
|                                                                                                                                                                                                                                                    | POSG-29B.50          | 29           | 32     | 1     | 27.6                                       | 1.087  | 34.5              | 50/120                       | 50        |
|                                                                                                                                                                                                                                                    | POSG-36B.30          | 36           | 40     | 1-1/4 | 36                                         | 1.417  | 42.5              | 60/180                       | 30        |
|                                                                                                                                                                                                                                                    | POSG-48B.30          | 48           | 50     | 1-1/2 | 47                                         | 1.850  | 54.5              | 70/195                       | 30        |
|                                                                                                                                                                                                                                                    | POSG-70B.30          | 70           | 80     | 2-1/2 | 67.2                                       | 2.646  | 79.6              | 150/350                      | 30        |
|                                                                                                                                                                                                                                                    | POSG-95B.30          | 95           | 106    | 4     | 91.3                                       | 3.594  | 106               | 170/450                      | 30        |
| <b>POS Index</b><br>min. Ductility max.<br>Fatigue reversed bending<br>Compression resistance<br>Low temperature performance<br>Weathering resistance                                                                                              |                      |              |        |       |                                            |        |                   |                              |           |
| For automation as well as for machine building and industrial installations, especially where continuous movements occur<br>Excellent reversed bending performance and flexibility<br>Good impact resistance. Good resistance against strong acids |                      |              |        |       |                                            |        |                   |                              |           |
| <b>Materials</b><br>Specially modified polypropylene                                                                                                                                                                                               |                      |              |        |       | <b>Temperature range</b><br>-25°C to +95°C |        |                   | <b>Colour</b><br>Black       |           |
| <b>Certification</b><br>Free from halogens, REACH compliant and RoHS compliant                                                                                                                                                                     |                      |              |        |       | Short-term to: +130°C                      |        |                   | <b>UV Resistance</b><br>-    |           |
|                                                                                                                                                                                                                                                    |                      |              |        |       | <b>Fatigue resistance</b><br>-             |        |                   | -                            |           |

### Type PUE - Highly flexible, medium-duty

|                                                                                                                                                                               | Order no.<br>(black) | Conduit size |        |       | Inside Ø                                   |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|--------|-------|--------------------------------------------|--------|-------------------|------------------------------|-----------|
|                                                                                                                                                                               |                      | NW           | Metric | Inch  | (mm)                                       | (inch) |                   |                              |           |
|                                                                                            | PUET-23B.50          | 23           | 25     | 3/4   | 22.4                                       | 0.882  | 28.5              | 35/70                        | 50        |
|                                                                                                                                                                               | PUET-29B.30          | 29           | 32     | 1     | 28.8                                       | 1.134  | 34.5              | 40/90                        | 30        |
|                                                                                                                                                                               | PUET-36B.30          | 36           | 40     | 1-1/4 | 35.8                                       | 1.409  | 42.4              | 50/120                       | 30        |
|                                                                                                                                                                               | PUET-48B.21          | 48           | 50     | 1-1/2 | 48.6                                       | 1.913  | 54.5              | 60/130                       | 21        |
|                                                                                                                                                                               | PUEG-56B.30          | 56           | 68     | 2     | 56.3                                       | 2.217  | 67.2              | 90/170                       | 30        |
|                                                                                                                                                                               | PUEG-70B.30          | 70           | 80     | 2-1/2 | 68.2                                       | 2.685  | 80.5              | 100/220                      | 30        |
| <b>PUE Index</b><br>min. Ductility max.<br>Fatigue reversed bending<br>Compression resistance<br>Low temperature performance<br>Weathering resistance                         |                      |              |        |       |                                            |        |                   |                              |           |
| For robotic applications with multi-axial movements<br>Specially suitable for tight bending-radii<br>Highest reversed bending resistance<br>Excellent chafing characteristics |                      |              |        |       |                                            |        |                   |                              |           |
| <b>Materials</b><br>Specially formulated polyurethane                                                                                                                         |                      |              |        |       | <b>Temperature range</b><br>-60°C to +50°C |        |                   | <b>Colour</b><br>Black       |           |
| <b>Certification</b><br>Free from halogens, REACH compliant and RoHS compliant                                                                                                |                      |              |        |       | <b>Fatigue resistance</b><br>-             |        |                   | <b>UV Resistance</b><br>-    |           |
|                                                                                                                                                                               |                      |              |        |       |                                            |        |                   |                              |           |

## PMAFLEX

### Type PVD & VAM conduit

#### Type PVD - Pliable, medium-duty

|                                                                                   | Order no.<br>(transparent) | Conduit size |        |      | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|----------------------------|--------------|--------|------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                   |                            | NW           | Metric | Inch | (mm)     | (inch) |                   |                         |           |
|  | PVDT-10P.50                | 10           | 12     | 5/16 | 9.5      | 0.374  | 12.6              | 20                      | 50        |
|                                                                                   | PVDT-12P.50                | 12           | 16     | 3/8  | 11.8     | 0.465  | 15.5              | 30                      | 50        |
|                                                                                   | PVDT-17P.50                | 17           | 20     | 1/2  | 16.0     | 0.630  | 20.8              | 40                      | 50        |
|                                                                                   | PVDT-23P.50                | 23           | 25     | 3/4  | 22.6     | 0.890  | 28.0              | 45                      | 50        |
|                                                                                   | PVDT-29P.50                | 29           | 32     | 1    | 29.0     | 1.142  | 34.1              | 50                      | 50        |

For long-term high temperature requirements in machine building applications  
Excellent chemical resistance also at high temperatures  
Very good abrasion resistance  
High stiffness

#### PVD Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Specially formulated PVDF                                 |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                      | Colour        |
|----------------------------------------|---------------|
| -60°C to +150°C                        | Transparent   |
| Fire performance                       | UV Resistance |
| Self-extinguishing / free from cadmium | Excellent     |

#### Type VAM - Flexible, heavy-duty

|                                                                                     | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                     |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
|  | VAMT-10B.50          | VAMT-10S.50         | 10           | 12     | 5/16  | 9.2      | 0.362  | 13.0              | 25                      | 50        |
|                                                                                     | VAMT-12B.50          | VAMT-12S.50         | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.8              | 30                      | 50        |
|                                                                                     | VAMG-17B.50          | VAMG-17S.50         | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 40                      | 50        |
|                                                                                     | VAMG-23B.50          | VAMG-23S.50         | 23           | 25     | 3/4   | 22.0     | 0.866  | 28.5              | 50                      | 50        |
|                                                                                     | VAMG-29B.50          | VAMG-29S.50         | 29           | 32     | 1     | 27.7     | 1.091  | 34.4              | 60                      | 50        |
|                                                                                     | VAMG-36B.30          | VAMG-36S.30         | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 70                      | 30        |
|                                                                                     | VAMG-48B.30          | VAMG-48S.30         | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 80                      | 30        |

For high fire and passenger safety requirements in interior applications such as passenger areas or public buildings  
HL3 acc. to EN 45545-2  
NFPA 130 compliant  
High impact and compression strength  
High stiffness

#### VAM Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Specially formulated polyamide 6                          |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                                               | Colour        |
|-----------------------------------------------------------------|---------------|
| -40°C to +105°C                                                 | Black/Grey    |
| Fire performance                                                | UV Resistance |
| Short-term to: +160°C<br>Minimal development of smoke and gases | -             |



# PMAFLEX

## Type VAML & VCS conduit

### Type VAML - Flexible, medium-duty

|                                                                                   | Order no.<br>(black) | Order no.<br>(grey)    | Conduit size                        |        |       | Inside Ø                               |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|----------------------|------------------------|-------------------------------------|--------|-------|----------------------------------------|--------|-------------------|-------------------------|-----------|
|                                                                                   |                      |                        | NW                                  | Metric | Inch  | (mm)                                   | (inch) |                   |                         |           |
|  | VAMLT-10B.50         | VAMLT-10S.50           | 10                                  | 12     | 5/16  | 9.6                                    | 0.378  | 13.0              | 20                      | 50        |
|                                                                                   | VAMLT-12B.50         | VAMLT-12S.50           | 12                                  | 16     | 3/8   | 12.0                                   | 0.472  | 15.8              | 30                      | 50        |
|                                                                                   | VAMLG-17B.50         | VAMLG-17S.50           | 17                                  | 20     | 1/2   | 15.3                                   | 0.602  | 21.2              | 40                      | 50        |
|                                                                                   | VAMLG-23B.50         | VAMLG-23S.50           | 23                                  | 25     | 3/4   | 22.6                                   | 0.890  | 28.5              | 45                      | 50        |
|                                                                                   | VAMLG-29B.50         | VAMLG-29S.50           | 29                                  | 32     | 1     | 27.6                                   | 1.087  | 34.5              | 55                      | 50        |
|                                                                                   | VAMLG-36B.30         | VAMLG-36S.30           | 36                                  | 40     | 1-1/4 | 36.0                                   | 1.417  | 42.5              | 65                      | 30        |
|                                                                                   | VAMLG-48B.30         | VAMLG-48S.30           | 48                                  | 50     | 1-1/2 | 47.0                                   | 1.850  | 54.5              | 75                      | 30        |
|                                                                                   | VAMLG-56B.30         | VAMLG-56S.30           | 56                                  | 68     | 2     | 56.3                                   | 2.217  | 67.2              | 140                     | 30        |
|                                                                                   | VAMLG-70B.10         | VAMLG-70S.10           | 70                                  | 80     | 2-1/2 | 67.5                                   | 2.657  | 80.0              | 160                     | 10        |
|                                                                                   | VAMLG-95B.10         | VAMLG-95S.10           | 95                                  | 106    | 4     | 91.5                                   | 3.602  | 106.0             | 210                     | 10        |
|                                                                                   | VAMLG-125B.6         | VAMLG-125S.6           | 125                                 | 146    | 5     | 126.0                                  | 4.961  | 146.5             | 450                     | 6         |
|                                                                                   | <b>VAML Index</b>    |                        |                                     |        |       |                                        |        |                   |                         |           |
| min.                                                                              |                      | max.                   |                                     |        |       |                                        |        |                   |                         |           |
| Ductility                                                                         |                      | <div><div></div></div> |                                     |        |       |                                        |        |                   |                         |           |
| Fatigue reversed bending                                                          |                      | <div><div></div></div> |                                     |        |       |                                        |        |                   |                         |           |
| Compression resistance                                                            |                      | <div><div></div></div> |                                     |        |       |                                        |        |                   |                         |           |
| Low temperature performance                                                       |                      | <div><div></div></div> |                                     |        |       |                                        |        |                   |                         |           |
| Weathering resistance                                                             |                      | <div><div></div></div> |                                     |        |       |                                        |        |                   |                         |           |
|                                                                                   |                      |                        | <b>Materials</b>                    |        |       | <b>Temperature range</b>               |        |                   | <b>Colour</b>           |           |
|                                                                                   |                      |                        | Specially formulated polyamide 6    |        |       | -40°C to +105°C                        |        |                   | Black/Grey              |           |
|                                                                                   |                      |                        | <b>Certification</b>                |        |       | Short-term to: +160°C                  |        |                   |                         |           |
|                                                                                   |                      |                        | Free from halogens, REACH compliant |        |       | <b>Fire performance</b>                |        |                   | <b>UV Resistance</b>    |           |
|                                                                                   |                      |                        | and RoHS compliant                  |        |       | Minimal development of smoke and gases |        |                   | -                       |           |

### Type VCS - Flexible, heavy-duty

|                                                                                                                                                                                             | Order no.<br>(black) | Order no.<br>(grey) | Conduit size                        |        |       | Inside Ø                  |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------------------|--------|-------|---------------------------|--------|-------------------|-------------------------|-----------|
|                                                                                                                                                                                             |                      |                     | NW                                  | Metric | Inch  | (mm)                      | (inch) |                   |                         |           |
|                                                                                                          | VCST-07B.100         | VCST-07S.100        | 07                                  | 10     | 1/4   | 6.0                       | 0.236  | 10.0              | 20                      | 100       |
|                                                                                                                                                                                             | VCST-10B.50          | VCST-10S.50         | 10                                  | 12     | 5/16  | 9.2                       | 0.362  | 13.0              | 25                      | 50        |
|                                                                                                                                                                                             | VCST-12B.50          | VCST-12S.50         | 12                                  | 16     | 3/8   | 11.8                      | 0.465  | 15.8              | 30                      | 50        |
|                                                                                                                                                                                             | VCST-17B.50          | VCST-17S.50         | 17                                  | 20     | 1/2   | 16.0                      | 0.630  | 21.2              | 40                      | 50        |
|                                                                                                                                                                                             | VCSG-17B.50          | VCSG-17S.50         | 17                                  | 20     | 1/2   | 15.2                      | 0.598  | 21.2              | 40                      | 50        |
|                                                                                                                                                                                             | VCSG-23B.50          | VCSG-23S.50         | 23                                  | 25     | 3/4   | 22.0                      | 0.866  | 28.5              | 50                      | 50        |
|                                                                                                                                                                                             | VCSG-29B.50          | VCSG-29S.50         | 29                                  | 32     | 1     | 27.7                      | 1.091  | 34.4              | 60                      | 50        |
|                                                                                                                                                                                             | VCSG-36B.30          | VCSG-36S.30         | 36                                  | 40     | 1-1/4 | 35.8                      | 1.409  | 42.4              | 70                      | 30        |
|                                                                                                                                                                                             | VCSG-48B.30          | VCSG-48S.30         | 48                                  | 50     | 1-1/2 | 46.8                      | 1.843  | 54.4              | 80                      | 30        |
|                                                                                                                                                                                             | VCSG-56B.30          | VCSG-56S.30         | 56                                  | 68     | 2     | 56.1                      | 2.209  | 67.2              | 150                     | 30        |
|                                                                                                                                                                                             | VCSG-70B.10          | VCSG-70S.10         | 70                                  | 80     | 2-1/2 | 66.5                      | 2.618  | 80.0              | 200                     | 10        |
|                                                                                                                                                                                             | VCSG-95B.10          | VCSG-95S.10         | 95                                  | 106    | 4     | 91.0                      | 3.583  | 106.0             | 300                     | 10        |
| For static external installations<br>High compression and impact strengths at low temperatures and low humidity<br>Good ductility. Very good resistance to ultra violet rays and weathering |                      |                     |                                     |        |       |                           |        |                   |                         |           |
| <b>VCS Index</b>                                                                                                                                                                            |                      |                     |                                     |        |       |                           |        |                   |                         |           |
| min.                                                                                                                                                                                        | max.                 |                     |                                     |        |       |                           |        |                   |                         |           |
| Ductility                                                                                                                                                                                   |                      |                     |                                     |        |       |                           |        |                   |                         |           |
| Fatigue reversed bending                                                                                                                                                                    |                      |                     |                                     |        |       |                           |        |                   |                         |           |
| Compression resistance                                                                                                                                                                      |                      |                     |                                     |        |       |                           |        |                   |                         |           |
| Low temperature performance                                                                                                                                                                 |                      |                     |                                     |        |       |                           |        |                   |                         |           |
| Weathering resistance                                                                                                                                                                       |                      |                     |                                     |        |       |                           |        |                   |                         |           |
|                                                                                                                                                                                             |                      |                     | <b>Materials</b>                    |        |       | <b>Temperature range</b>  |        |                   | <b>Colour</b>           |           |
|                                                                                                                                                                                             |                      |                     | Specially formulated polyamide 6    |        |       | -50°C to +105°C           |        |                   | Black/Grey              |           |
|                                                                                                                                                                                             |                      |                     | <b>Certification</b>                |        |       | Short-term to: +160°C     |        |                   |                         |           |
|                                                                                                                                                                                             |                      |                     | Free from halogens, REACH compliant |        |       | <b>Fatigue resistance</b> |        |                   | <b>UV Resistance</b>    |           |
|                                                                                                                                                                                             |                      |                     | and RoHS compliant                  |        |       | -                         |        |                   | Very good               |           |

## PMAFLEX

### Type VOH & PLR conduit

Type VOH - Pliable, very heavy-duty

|     | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|     |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
| VOH | VOHD-07B.50          | VOHD-07S.50         | 07           | 10     | 1/4   | 5.8      | 0.228  | 10.0              | 30                      | 50        |
|     | VOHD-10B.50          | VOHD-10S.50         | 10           | 12     | 5/16  | 9.0      | 0.354  | 13.0              | 35                      | 50        |
|     | VOHD-12B.50          | VOHD-12S.50         | 12           | 16     | 3/8   | 11.6     | 0.457  | 15.8              | 40                      | 50        |
|     | VOHG-17B.50          | VOHG-17S.50         | 17           | 20     | 1/2   | 14.5     | 0.571  | 21.0              | 60                      | 50        |
|     | VOHG-23B.50          | VOHG-23S.50         | 23           | 25     | 3/4   | 21.1     | 0.831  | 28.5              | 70                      | 50        |
|     | VOHG-29B.50          | VOHG-29S.50         | 29           | 32     | 1     | 26.6     | 1.047  | 34.5              | 80                      | 50        |
|     | VOHG-36B.30          | VOHG-36S.30         | 36           | 40     | 1-1/4 | 35.0     | 1.378  | 42.5              | 90                      | 30        |
|     | VOHG-48B.30          | VOHG-48S.30         | 48           | 50     | 1-1/2 | 46.5     | 1.831  | 54.5              | 100                     | 30        |
|     | VOHG-56B.10          | VOHG-56S.10         | 56           | 68     | 2     | 55.5     | 2.185  | 67.2              | 135                     | 10        |
|     | VOHG-70B.10          | VOHG-70S.10         | 70           | 80     | 2-1/2 | 67.0     | 2.638  | 80.0              | 200                     | 10        |
|     | VOHG-95B.10          | VOHG-95S.10         | 95           | 106    | 4     | 90.5     | 3.563  | 106.0             | 300                     | 10        |
|     | VOHG-125B.6          | VOHG-125S.6         | 125          | 146    | 5     | 126.0    | 4.961  | 146.5             | 480                     | 6         |

#### VOH Index

min. max.

Ductility

Fatigue reversed bending

Compression resistance

Low temperature performance

Weathering resistance

For applications in heavy machine and plant construction

High compression resistance

Highest degree of mechanical protection

Very good UV and weathering resistance

Good fire safety characteristics

#### Materials

Specially modified polyamide 6

#### Certification

Free from halogens, REACH compliant

and RoHS compliant

#### Temperature range

-40°C to +105°C

Short-term to: +160°C

#### Fire performance

Good

#### Colour

Black/Grey

#### UV Resistance

Very good

Type PLR - flexible, medium-wall

|     | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       |         | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----|----------------------|---------------------|--------------|--------|-------|---------|----------|--------|-------------------|-------------------------|-----------|
|     |                      |                     | NW           | Metric | Inch  | Profile | (mm)     | (inch) |                   |                         |           |
| PLR | PLRT-07B.50          | PLRT-07S.50         | 07           | 10     | 1/4   | T       | 6.2      | 0.244  | 10.0              | 15                      | 50        |
|     | PLRT-10B.50          | PLRT-10S.50         | 10           | 12     | 5/16  | T       | 9.6      | 0.378  | 13.0              | 20                      | 50        |
|     | PLRT-12B.50          | PLRT-12S.50         | 12           | 16     | 3/8   | T       | 12.0     | 0.472  | 15.8              | 30                      | 50        |
|     | PLRG-17B.50          | PLRG-17S.50         | 17           | 20     | 1/2   | G       | 15.8     | 0.622  | 21.2              | 40                      | 50        |
|     | PLRG-23B.50          | PLRG-23S.50         | 23           | 25     | 3/4   | G       | 21.9     | 0.862  | 28.5              | 45                      | 50        |
|     | PLRG-29B.50          | PLRG-29S.50         | 29           | 32     | 1     | G       | 27.6     | 1.087  | 34.5              | 55                      | 50        |
|     | PLRG-36B.30          | PLRG-36S.30         | 36           | 40     | 1-1/4 | G       | 36.0     | 1.417  | 42.5              | 60                      | 30        |
|     | PLRG-48B.30          | PLRG-48S.30         | 48           | 50     | 1-1/2 | G       | 47.0     | 1.850  | 54.5              | 70                      | 30        |

#### PLR Index

min. max.

Ductility

Fatigue reversed bending

Compression resistance

Low temperature performance

Weathering resistance

In light rail rolling stock applications e.g. Tram, Metro, Monorail

HL2 acc. to EN 45545-2

Good pressure resistance

Very good fire safety characteristics

#### Materials

Specially modified polyamide 6

#### Certification

Free from halogens, REACH compliant

and RoHS compliant

#### Temperature range

-40°C to +105°C

Short-term to: +160°C

#### Fire performance

Self-extinguishing / Very good

#### Colour

Black/Grey

#### UV Resistance

-

## PMAFLEX Multilayer

### Type XPCL & XSOL conduit

#### Type XPCL - Highly flexible, medium-duty

|                                                                                   | Order no.<br>(black/blue) | Order no.<br>(grey/blue) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|---------------------------|--------------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                   |                           |                          | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
|  | XPCLT-10BB.50             | XPCLT-10SB.50            | 10           | 12     | 5/16  | 9.6      | 0.378  | 13.0              | 20                      | 50        |
|                                                                                   | XPCLT-12BB.50             | XPCLT-12SB.50            | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.6              | 30                      | 50        |
|                                                                                   | XPCLT-17BB.50             | XPCLT-17SB.50            | 17           | 20     | 1/2   | 16.6     | 0.654  | 21.0              | 40                      | 50        |
|                                                                                   | XPCLG-17BB.50             | XPCLG-17SB.50            | 17           | 20     | 1/2   | 15.6     | 0.614  | 20.9              | 40                      | 50        |
|                                                                                   | XPCLG-23BB.50             | XPCLG-23SB.50            | 23           | 25     | 3/4   | 21.9     | 0.862  | 28.5              | 45                      | 50        |
|                                                                                   | XPCLG-29BB.50             | XPCLG-29SB.50            | 29           | 32     | 1     | 27.6     | 1.087  | 34.5              | 55                      | 50        |
|                                                                                   | XPCLG-36BB.30             | XPCLG-36SB.30            | 36           | 40     | 1-1/4 | 36.0     | 1.417  | 42.5              | 60                      | 30        |
|                                                                                   | XPCLG-48BB.30             | XPCLG-48SB.30            | 48           | 50     | 1-1/2 | 47.0     | 1.850  | 54.5              | 70                      | 30        |

For machine building and equipment with high requirements

Allows easy cable insertion due to low friction inner layer

Very good ductility and good reversed bending characteristics

Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

#### XPCL Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Outer layer: Specially formulated polyamide 6             |
| Intermediate layer: Specially bonding compound            |
| Inner layer: Specially modified polyethylene              |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range     | Colour        |
|-----------------------|---------------|
| -50°C to +105°C       | Black/Blue    |
| Short-term to: +160°C | Grey/Blue     |
| Fire performance      | UV Resistance |
| Self-extinguishing    | -             |

#### Type XSOL - Highly flexible, medium-duty

|                                                                                     | Order no.<br>(black/green) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------|----------------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                     |                            | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
|  | XSOLT-10BG.50              | 10           | 12     | 5/16  | 9.6      | 0.378  | 13.0              | 25                      | 50        |
|                                                                                     | XSOLT-12BG.50              | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.6              | 30                      | 50        |
|                                                                                     | XSOLG-17BG.50              | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.0              | 40                      | 50        |
|                                                                                     | XSOLG-23BG.50              | 23           | 25     | 3/4   | 22.0     | 0.866  | 28.5              | 50                      | 50        |
|                                                                                     | XSOLG-29BG.50              | 29           | 32     | 1     | 27.5     | 1.083  | 34.4              | 60                      | 50        |
|                                                                                     | XSOLG-36BG.30              | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 70                      | 30        |
|                                                                                     | XSOLG-48BG.30              | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 80                      | 30        |

All-purpose, especially in long-term external applications, e.g. energy technology

Very good resistance to UV and weathering

Very high ductility and reversed bending resistance

Very good mechanical strength

High impact resistance even under extreme conditions, such as low temperatures and low humidity

#### Approvals



#### XSOL Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Outer layer: Specially formulated polyamide 12            |
| Intermediate layer: Specially bonding compound            |
| Inner layer: Specially modified polyamide 6               |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                                      | Colour        |
|--------------------------------------------------------|---------------|
| -50°C to +95°C                                         | Black/Green   |
| Short-term to: +150°C                                  |               |
| Fire performance                                       | UV Resistance |
| Good fire safety characteristics<br>Self-extinguishing | Very good     |

## PMAFLEX Multilayer

### Type XVCS1H & XVCS2H conduit

#### Type XVCS1H - Flexible, heavy-duty

|                                                                                   | Order no.<br>(black/green) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|----------------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                   |                            | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
|  | XVCS1H-10BG.50             | 10           | 12     | 5/16  | 9.2      | 0.362  | 13.0              | 25                      | 50        |
|                                                                                   | XVCS1H-12BG.50             | 12           | 16     | 3/8   | 11.7     | 0.461  | 15.5              | 30                      | 50        |
|                                                                                   | XVCS1H-17BG.50             | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.0              | 40                      | 50        |
|                                                                                   | XVCS1H-23BG.50             | 23           | 25     | 3/4   | 21.7     | 0.854  | 28.4              | 50                      | 50        |
|                                                                                   | XVCS1H-29BG.50             | 29           | 32     | 1     | 27.5     | 1.083  | 34.3              | 60                      | 50        |
|                                                                                   | XVCS1H-36BG.30             | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.2              | 70                      | 30        |
|                                                                                   | XVCS1H-48BG.30             | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.3              | 80                      | 30        |

For track side applications and other exterior static applications

Easy layouting through: High conduit ductility and formability / Low friction inner layer facilitates cable insertion

Excellent impact characteristics at low temperatures

#### XVCS1H Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Outer layer: Specially formulated polyamide 6             |
| Intermediate layer: Specially bonding compound            |
| Inner layer: Specially modified polyolefin                |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                | Colour        |
|----------------------------------|---------------|
| -50°C to +90°C                   | Black/Green   |
| Short-term to: +120°C            |               |
| Atmospheric corrosion resistance | UV Resistance |
| Very good                        | Very good     |

#### Type XVCS2H - Flexible, heavy-duty

|                                                                                     | Order no.<br>(black/green) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------|----------------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-----------|
|                                                                                     |                            | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |           |
|  | XVCS2H-10BG.50             | 10           | 12     | 5/16  | 9.2      | 0.362  | 13.0              | 20                      | 50        |
|                                                                                     | XVCS2H-12BG.50             | 12           | 16     | 3/8   | 11.7     | 0.461  | 15.5              | 25                      | 50        |
|                                                                                     | XVCS2H-17BG.50             | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.0              | 35                      | 50        |
|                                                                                     | XVCS2H-23BG.50             | 23           | 25     | 3/4   | 22.0     | 0.866  | 28.4              | 40                      | 50        |
|                                                                                     | XVCS2H-29BG.50             | 29           | 32     | 1     | 27.7     | 1.091  | 34.3              | 50                      | 50        |
|                                                                                     | XVCS2H-36BG.30             | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.2              | 60                      | 30        |
|                                                                                     | XVCS2H-48BG.30             | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.3              | 70                      | 30        |

For track side applications and other exterior static applications with high UV exposure

Easy layouting through: High conduit ductility and formability / Low friction inner layer facilitates cable insertion

Excellent impact characteristics at low temperatures

#### XVCS2H Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Outer layer: Specially formulated polyamide 12            |
| Intermediate layer: Specially bonding compound            |
| Inner layer: Specially modified polyolefin                |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                | Colour        |
|----------------------------------|---------------|
| -50°C to +90°C                   | Black/Green   |
| Short-term to: +120°C            |               |
| Atmospheric corrosion resistance | UV Resistance |
| Excellent                        | Excellent     |



## PMAFLEX Multilayer

### Type XVCSF & XPCS conduit

#### Type XVCSF - Flexible, heavy-duty

|                                                                                   | Order no.<br>(black/blue) | Profile<br>(T/G) | Conduit size |        |       | rec. fitting<br>thread size |         | Inside<br>Ø |        | Outside<br>Ø<br>(mm) | Stat.<br>radius<br>(mm) | Weight<br>(kg/100m) | PU<br>(m) |
|-----------------------------------------------------------------------------------|---------------------------|------------------|--------------|--------|-------|-----------------------------|---------|-------------|--------|----------------------|-------------------------|---------------------|-----------|
|                                                                                   |                           |                  | NW           | Metric | Inch  | PG                          | Metric  | (mm)        | (inch) |                      |                         |                     |           |
|  | XVCSFT-10BB.50            | T                | 10           | 12     | 5/16  | 9                           | M12x1.5 | 9.6         | 0.378  | 12.8                 | 20                      | 3.1                 | 50        |
|                                                                                   | XVCSFT-12BB.50            | T                | 12           | 16     | 3/8   | 11                          | M16x1.5 | 11.9        | 0.469  | 15.6                 | 25                      | 4.2                 | 50        |
|                                                                                   | XVCSFG-17BB.50            | G                | 17           | 20     | 1/2   | 16                          | M20x1.5 | 15.6        | 0.614  | 21.0                 | 35                      | 7.5                 | 50        |
|                                                                                   | XVCSFG-23BB.50            | G                | 23           | 25     | 3/4   | 21                          | M25x1.5 | 21.6        | 0.850  | 28.4                 | 45                      | 12.0                | 50        |
|                                                                                   | XVCSFG-29BB.50            | G                | 29           | 32     | 1     | 29                          | M32x1.5 | 27.5        | 1.083  | 34.5                 | 55                      | 15.0                | 50        |
|                                                                                   | XVCSFG-36BB.30            | G                | 36           | 40     | 1-1/4 | 36                          | M40x1.5 | 35.7        | 1.406  | 42.4                 | 65                      | 19.0                | 30        |
|                                                                                   | XVCSFG-48BB.30            | G                | 48           | 50     | 1-1/2 | 48                          | M50x1.5 | 46.8        | 1.843  | 54.2                 | 85                      | 25.0                | 30        |

Multilayer conduit for external rail applications

Rail static external applications such as under carriage, bogie, etc.

High compression and impact strengths at low temperature and low humidity

Good flexibility and very good UV resistance and weathering characteristics

Compatible with PMAFIX Pro, PMAFIX, PMA Smart Line and accessories

EN 45545-2 HL2 (R22 & R23)

#### XVCSF Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                     |
|-----------------------------------------------|
| Outer layer: Specially formulated polyamide 6 |
| Inner layer: Specially modified polyamide 6   |

| Certification                  |
|--------------------------------|
| Free from halogens and cadmium |
| RoHS and REACH compliant       |

| Temperature range     |
|-----------------------|
| -50°C to +105°C       |
| Short-term to: +160°C |

| Fire performance   | UV Resistance |
|--------------------|---------------|
| Self-extinguishing | Very good     |

#### Type XPCS - Very flexible, heavy-duty

|                                                                                     | Order no.<br>(black/green) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | Dyn.<br>radius<br>(mm) | PU<br>(m) |
|-------------------------------------------------------------------------------------|----------------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|------------------------|-----------|
|                                                                                     |                            | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |                        |           |
|  | XPCST-10BG.50              | 10           | 12     | 5/16  | 9.2      | 0.362  | 13.0              | 20                      | 50                     | 50        |
|                                                                                     | XPCST-12BG.50              | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.8              | 25                      | 70                     | 50        |
|                                                                                     | XPCSG-17BG.50              | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 35                      | 85                     | 50        |
|                                                                                     | XPCSG-23BG.50              | 23           | 25     | 3/4   | 21.5     | 0.846  | 28.5              | 40                      | 110                    | 50        |
|                                                                                     | XPCSG-29BG.50              | 29           | 32     | 1     | 27.7     | 1.091  | 34.4              | 50                      | 130                    | 50        |
|                                                                                     | XPCSG-36BG.30              | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 60                      | 180                    | 30        |
|                                                                                     | XPCSG-48BG.30              | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 70                      | 220                    | 30        |
|                                                                                     | XPCSG-56BG.30              | 56           | 68     | 2     | 56.7     | 2.232  | 67.5              | 110                     | 270                    | 30        |
|                                                                                     | XPCSG-70BG.30              | 70           | 80     | 2-1/2 | 67.5     | 2.657  | 79.0              | 130                     | 320                    | 30        |

For dynamic outside applications in railway vehicles

For outdoor applications with highest requirements to UV and weathering resistance

Extensive railway approvals

Good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity

HL2 acc. to EN 45545-2

NFPA 130 compliant

#### XPCS Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                      |
|------------------------------------------------|
| Outer layer: Specially formulated polyamide 12 |
| Inner layer: Specially formulated polyamide 6  |

| Certification                       |
|-------------------------------------|
| Free from halogens, REACH compliant |
| and RoHS compliant                  |

| Temperature range     |
|-----------------------|
| -40°C to +95°C        |
| Short-term to: +150°C |

| Fire performance   | UV Resistance |
|--------------------|---------------|
| Self-extinguishing | Excellent     |

PMAFLEX Multilayer  
Type XPCSF conduit

Type XPCSF - Very flexible, heavy-duty

|                                                                                   | Order no.<br>(black/orange) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | Dyn.<br>radius<br>(mm) | PU<br>(m) |
|-----------------------------------------------------------------------------------|-----------------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|------------------------|-----------|
|                                                                                   |                             | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |                        |           |
|  | XPCSFT-07BO.100             | 07           | 10     | 1/4   | 0.6      | 0.236  | 10.0              | 15                      | 40                     | 100       |
|                                                                                   | XPCSFT-10BO.50              | 10           | 12     | 5/16  | 9.2      | 0.362  | 13.0              | 20                      | 50                     | 50        |
|                                                                                   | XPCSFT-12BO.50              | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.8              | 25                      | 70                     | 50        |
|                                                                                   | XPCSFG-17BO.50              | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 35                      | 85                     | 50        |
|                                                                                   | XPCSFG-23BO.50              | 23           | 25     | 3/4   | 21.5     | 0.846  | 28.5              | 40                      | 110                    | 50        |
|                                                                                   | XPCSFG-29BO.50              | 29           | 32     | 1     | 27.5     | 1.083  | 34.4              | 50                      | 130                    | 50        |
|                                                                                   | XPCSFG-36BO.30              | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 60                      | 180                    | 30        |
|                                                                                   | XPCSFG-48BO.30              | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 70                      | 220                    | 30        |

For dynamic outside applications in railway vehicles  
For outdoor applications with highest requirements to UV and weathering resistance  
Extensive railway approvals  
Excellent flexibility  
Very good mechanical characteristics even under extreme conditions, such as low temperatures and low humidity  
HL3 acc. to EN 45545-2

| XPCSF Index                 |      | Materials                                                                                        | Temperature range                       | Colour        |
|-----------------------------|------|--------------------------------------------------------------------------------------------------|-----------------------------------------|---------------|
| min.                        | max. | Outer layer: Specially formulated polyamide 12<br>Inner layer: Specially formulated polyamide 12 | -40°C to +95°C<br>Short-term to: +150°C | Black/Orange  |
| Ductility                   |      |                                                                                                  |                                         |               |
| Fatigue reversed bending    |      | Certification                                                                                    | Fire performance                        | UV Resistance |
| Compression resistance      |      |                                                                                                  |                                         |               |
| Low temperature performance |      | Free from halogens, REACH compliant<br>and RoHS compliant                                        | Self-extinguishing                      | Excellent     |
| Weathering resistance       |      |                                                                                                  |                                         |               |

## PMA overextruded conduits

### Type JFBD & JXPCSF conduit

#### Type JFBD - Flexible, medium-duty

|      | Order no.      | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | Dyn.<br>radius<br>(mm) | PU<br>(mm) |
|------|----------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|------------------------|------------|
|      |                | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |                        |            |
| JFBD | JFBDT-12C01.50 | 12           | 16     | 3/8   | 11.8     | 0.465  | 16.0              | 70                      | 100                    | 50         |
|      | JFBDG-17C01.50 | 17           | 20     | 1/2   | 15.6     | 0.614  | 21.6              | 85                      | 125                    | 50         |
|      | JFBDG-23C01.50 | 23           | 25     | 3/4   | 21.7     | 0.854  | 28.8              | 110                     | 160                    | 50         |
|      | JFBDG-29C01.50 | 29           | 32     | 1     | 27.4     | 1.079  | 34.7              | 140                     | 200                    | 50         |
|      | JFBDG-36C01.30 | 32           | 40     | 1-1/4 | 35.8     | 1.409  | 42.7              | 200                     | 260                    | 30         |
|      | JFBDG-48C01.30 | 48           | 50     | 1-1/2 | 46.7     | 1.839  | 54.6              | 230                     | 300                    | 30         |



#### Approvals



Smooth easy to clean out layer  
High reversed bending stresses  
Excellent flexibility in combination with high strength  
High resistance to chemicals and cleaning agents  
For indoor food zone – non contact  
Outer layer made from FDA compliant material  
Corrosion free

#### JFBD Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                                     |
|-------------------------------------------------------------------------------|
| Conduit: made from high-grade, specially formulated polyamide 12              |
| Overextrusion: made from modified polyamide elastomer                         |
| Certification                                                                 |
| FDA 21 CFR / EU 10/2011 compliant outer layer material;<br>ECOLAB certificate |

| Colour                           |
|----------------------------------|
| Corrugated conduit: blue         |
| Overextrusion: blue, translucent |
| UV Resistance                    |
| -                                |

#### Type JXPCSF - Highly flexible, heavy-duty

|        | Order no.<br>(black/orange) | Profile<br>(T/G) | Conduit size |        |       | d1 d2 d3 |        |      |      | Stat.<br>radius<br>(mm) | Dyn.<br>radius<br>(mm) | Weight<br>(kg/100m) | PU<br>(m) |
|--------|-----------------------------|------------------|--------------|--------|-------|----------|--------|------|------|-------------------------|------------------------|---------------------|-----------|
|        |                             |                  | NW           | Metric | Inch  | (mm)     | (inch) | (mm) | (mm) |                         |                        |                     |           |
| JXPCSF | JXPCSFT-12BO.50             | T                | 12           | 16     | 3/8   | 11.8     | 0.465  | 15.8 | 16   | 70                      | 100                    | 4.9                 | 50        |
|        | JXPCSFG-17BO.50             | G                | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2 | 21.6 | 85                      | 125                    | 8.6                 | 50        |
|        | JXPCSFG-23BO.50             | G                | 23           | 25     | 3/4   | 21.5     | 0.846  | 28.5 | 28.8 | 110                     | 160                    | 13.5                | 50        |
|        | JXPCSFG-29BO.50             | G                | 29           | 32     | 1     | 27.7     | 1.091  | 34.4 | 34.8 | 140                     | 200                    | 16.7                | 50        |
|        | JXPCSFG-36BO.30             | G                | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.8 | 42.8 | 200                     | 260                    | 21.6                | 30        |
|        | JXPCSFG-48BO.30             | G                | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4 | 54.8 | 230                     | 300                    | 29.4                | 30        |



Over-extruded conduit for rail applications designed specifically to prevent the accumulation of ice under extreme climate conditions  
For dynamic or static external applications in railway vehicles - on the roof, between carriages and on bogies  
Excellent flexibility. Smooth outer layer prevents accumulation of ice  
Easy cleaning and high resistance to chemicals and cleaning agents. Compatible with PMAFIX Pro and accessories  
EN 45545-2 HL3 (R22 & R23)

#### JXPCSF Index

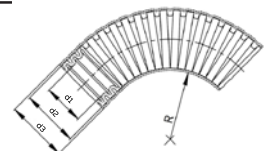
| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                              |
|--------------------------------------------------------|
| Multi layer conduit: specially formulated polyamide 12 |
| Overextrusion: specially formulated polyamide 12       |
| Certification                                          |
| Free from halogens and cadmium                         |
| RoHS and REACH compliant                               |

| Temperature range     |
|-----------------------|
| -50°C to +95°C        |
| Short-term to: +150°C |

| Fire performance   |
|--------------------|
| Self-extinguishing |

| Colour        |
|---------------|
| Black/Orange  |
| UV Resistance |
| Excellent     |



PMA overextruded conduits

Type JLLPA conduit

Type JLLPA - Flexible, heavy-duty

|                                                                                   | Order no.<br>(black) | Conduit size |        |       | d1   |        | d2   | d3   | Stat.<br>radius | Weight    | PU  |
|-----------------------------------------------------------------------------------|----------------------|--------------|--------|-------|------|--------|------|------|-----------------|-----------|-----|
|                                                                                   |                      | NW           | Metric | Inch  | (mm) | (inch) | (mm) | (mm) | (mm)            | (kg/100m) | (m) |
|  | JLLPA-12A.50         | 12           | 16     | 3/8   | 12.1 | 0.476  | 15.6 | 15.8 | 40              | 4.5       | 50  |
|                                                                                   | JLLPAG-17A.50        | 17           | 20     | 1/2   | 15.8 | 0.622  | 21.1 | 21.2 | 55              | 7.4       | 50  |
|                                                                                   | JLLPAG-23A.50        | 23           | 25     | 3/4   | 21.9 | 0.862  | 28.4 | 28.5 | 75              | 11.4      | 50  |
|                                                                                   | JLLPAG-29A.50        | 29           | 32     | 1     | 27.8 | 1.094  | 34.5 | 34.7 | 90              | 15.4      | 50  |
|                                                                                   | JLLPAG-36A.30        | 36           | 40     | 1-1/4 | 36.1 | 1.421  | 42.4 | 42.6 | 110             | 18.6      | 30  |
|                                                                                   | JLLPAG-48A.30        | 48           | 50     | 1-1/2 | 46.9 | 1.846  | 54.5 | 54.6 | 140             | 27.4      | 30  |

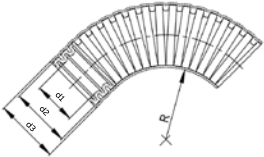
Flexible, smooth over-extruded conduit for applications with cleaning requirements  
For static applications in machine building, installation and construction industries  
For general applications with cleaning requirements  
Smooth outer layer for easy cleaning, good resistance to chemicals and cleaning agents. Corrosion free  
Flexibility in combination with high strength. Compatible with PMAFIX Pro  
UL Recognition according to UL 1696 (file E80294)

JLLPA Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                             |
|-------------------------------------------------------|
| Conduit: High-grade, specially formulated polyamide 6 |
| Overextrusion: modified polyamide 6                   |
| Certification                                         |
| Free from halogens and cadmium                        |
| RoHS and REACH compliant                              |

| Temperature range     | Colour        |
|-----------------------|---------------|
| -18°C to +105°C       | Black         |
| Short-term to: +160°C |               |
| Fire performance      | UV Resistance |
| Self-extinguishing    | Very good     |





## PMAFLEX Plus

### Type CUS & PUS conduit

#### Type CUS - Very flexible, medium-duty

|     | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m/ft) |
|-----|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|--------------|
|     |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |              |
| CUS | CUSG-17B.31          | CUSG-17S.31         | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 40                      | 31/100       |
|     | CUSG-23B.31          | CUSG-23S.31         | 23           | 25     | 3/4   | 21.9     | 0.862  | 28.5              | 45                      | 31/100       |
|     | CUSG-29B.31          | CUSG-29S.31         | 29           | 32     | 1     | 27.6     | 1.087  | 34.5              | 55                      | 31/100       |
|     | CUSG-36B.31          | CUSG-36S.31         | 36           | 40     | 1-1/4 | 36.0     | 1.417  | 42.5              | 60                      | 31/100       |
|     | CUSG-48B.31          | CUSG-48S.31         | 48           | 50     | 1-1/2 | 47.0     | 1.850  | 54.5              | 70                      | 31/100       |



For machine building and installation industries  
For electrical installations, especially in the US market  
Inexpensive solution for requirements acc. to UL 1660 (UL Listing)  
Good ductility and reversed bending characteristics

Very good mechanical properties even under extreme conditions, such as low temperatures and low humidity

#### Approvals



#### CUS Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Specially modified polyamide 6                            |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                    | Colour        |
|--------------------------------------|---------------|
| -40°C to +105°C                      | Black/Grey    |
| Fire protection                      | UV Resistance |
| Self-extinguishing, acc. to UL 94 V2 | -             |

#### Type PUS - Very flexible, heavy-duty

|     | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>(m/ft) |
|-----|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|------------------------------|--------------|
|     |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                              |              |
| PUS | PUSG-17B.31          | PUSG-17S.31         | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 35/85                        | 31/100       |
|     | PUSG-23B.31          | PUSG-23S.31         | 23           | 25     | 3/4   | 22.0     | 0.866  | 28.5              | 40/110                       | 31/100       |
|     | PUSG-29B.31          | PUSG-29S.31         | 29           | 32     | 1     | 27.7     | 1.091  | 34.4              | 50/130                       | 31/100       |
|     | PUSG-36B.31          | PUSG-36S.31         | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 60/180                       | 31/100       |
|     | PUSG-48B.31          | PUSG-48S.31         | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 70/220                       | 31/100       |



For long-term external applications with approval acc. to UL 1660 (UL Listing)  
For dynamic applications  
Very good reversed bending resistance  
Very good mechanical strength at low temperatures  
Excellent resistance to ultra violet rays and weathering  
cULus listed

#### Approvals



#### PUS Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

| Materials                                                 |
|-----------------------------------------------------------|
| Specially modified polyamide 12                           |
| Certification                                             |
| Free from halogens, REACH compliant<br>and RoHS compliant |

| Temperature range                    | Colour        |
|--------------------------------------|---------------|
| -50°C to +95°C                       | Black/Grey    |
| Fire protection                      | UV Resistance |
| Self-extinguishing, acc. to UL 94 V2 | Excellent     |

# PMAFLEX Plus

## Type VUS conduit

Type VUS - Flexible, heavy-duty

|                                                                                   | Order no.<br>(black) | Order no.<br>(grey) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m/ft) |
|-----------------------------------------------------------------------------------|----------------------|---------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|--------------|
|                                                                                   |                      |                     | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |              |
|  | VUSG-17B.31          | VUSG-17S.31         | 17           | 20     | 1/2   | 15.2     | 0.598  | 21.2              | 40                      | 31/100       |
|                                                                                   | VUSG-23B.31          | VUSG-23S.31         | 23           | 25     | 3/4   | 22.0     | 0.866  | 28.5              | 50                      | 31/100       |
|                                                                                   | VUSG-29B.31          | VUSG-29S.31         | 29           | 32     | 1     | 27.7     | 1.091  | 34.4              | 60                      | 31/100       |
|                                                                                   | VUSG-36B.31          | VUSG-36S.31         | 36           | 40     | 1-1/4 | 35.8     | 1.409  | 42.4              | 70                      | 31/100       |
|                                                                                   | VUSG-48B.31          | VUSG-48S.31         | 48           | 50     | 1-1/2 | 46.8     | 1.843  | 54.4              | 80                      | 31/100       |

For static exterior installations with approval acc. to UL 1660 (UL Listing)  
For applications requiring high compression resistance  
Good ductility  
High mechanical strength even under extreme conditions, such as low temperatures and low humidity  
Very good resistance to ultra violet rays and weathering

Approvals



VUS Index

| min.                        | max.        |
|-----------------------------|-------------|
| Ductility                   |             |
| <div></div>                 | <div></div> |
| Fatigue reversed bending    |             |
| <div></div>                 | <div></div> |
| Compression resistance      |             |
| <div></div>                 | <div></div> |
| Low temperature performance |             |
| <div></div>                 | <div></div> |
| Weathering resistance       |             |
| <div></div>                 | <div></div> |

| Materials                                                 | Temperature range     | Colour        |
|-----------------------------------------------------------|-----------------------|---------------|
| Specially modified polyamide 6                            | -50°C to +105°C       | Black/Grey    |
| Certification                                             | Fire performance      | UV Resistance |
| Free from halogens, REACH compliant<br>and RoHS compliant | Short-term to: +160°C | Very good     |

## PMA Divisible System

### Type PACOF & PPCOF conduit

#### Type PACOF - Flexible, divisible

|                                                                                                                                                                                                                                                                                   | Order no.<br>(black) | Conduit size |        |       | Inside Ø |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m)   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------|--------|-------|----------|--------|-------------------|-------------------------|-------------|
|                                                                                                                                                                                                                                                                                   |                      | NW           | Metric | Inch  | (mm)     | (inch) |                   |                         |             |
|                                                                                                                                                                                                  | PACOF-07B.50         | 07           | 10     | 1/4   | 5.6      | 0.220  | 10.0              | 30                      | 50          |
|                                                                                                                                                                                                                                                                                   | PACOF-10B.50         | 10           | 12     | 5/16  | 8.5      | 0.335  | 12.8              | 33                      | 50          |
|                                                                                                                                                                                                                                                                                   | PACOF-12B.50         | 12           | 16     | 3/8   | 11.0     | 0.433  | 15.6              | 35                      | 50          |
|                                                                                                                                                                                                                                                                                   | PACOF-17B.50         | 17           | 20     | 1/2   | 15.5     | 0.610  | 21.1              | 45                      | 50          |
|                                                                                                                                                                                                                                                                                   | PACOF-23B.50         | 23           | 25     | 3/4   | 22.1     | 0.870  | 28.4              | 70                      | 50          |
|                                                                                                                                                                                                                                                                                   | PACOF-29B.50         | 29           | 32     | 1     | 27.2     | 1.071  | 34.5              | 120                     | 50          |
|                                                                                                                                                                                                                                                                                   | PACOF-36B.30         | 36           | 40     | 1-1/4 | 32.0     | 1.260  | 42.4              | 145                     | 30          |
|                                                                                                                                                                                                                                                                                   | PACOF-48B.30         | 48           | 50     | 1-1/2 | 43.9     | 1.728  | 54.1              | 150                     | 30          |
|                                                                                                                                                                                                                                                                                   | PACOF-70B.10         | 70           | 80     | 2-1/2 | 62.0     | 2.441  | 79.0              | 190                     | 10          |
| HL3 according to EN45545-2<br>NFPA 130 compliant<br>For machine building and plant construction<br>For trouble-free retrofitting and applicable for repairs<br>Can be opened and closed again in longitudinal direction any time<br>Good ductility<br>Good compression resistance |                      |              |        |       |          |        |                   |                         |             |
| <b>PACOF Index</b>                                                                                                                                                                                                                                                                |                      |              |        |       |          |        |                   |                         | <b>max.</b> |
| min.                                                                                                                                                                                                                                                                              |                      |              |        |       |          |        |                   |                         |             |
| Ductility                                                                                                                                                                                                                                                                         |                      |              |        |       |          |        |                   |                         |             |
| Fatigue reversed bending                                                                                                                                                                                                                                                          |                      |              |        |       |          |        |                   |                         |             |
| Compression resistance                                                                                                                                                                                                                                                            |                      |              |        |       |          |        |                   |                         |             |
| Low temperature performance                                                                                                                                                                                                                                                       |                      |              |        |       |          |        |                   |                         |             |
| Weathering resistance                                                                                                                                                                                                                                                             |                      |              |        |       |          |        |                   |                         |             |
|                                                                                                                                                                                                                                                                                   |                      |              |        |       |          |        |                   |                         |             |
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## PMA Smart Line

### Type LLPO & LLPA conduit

#### Type LLPO - Very flexible, light-duty

|                                                                                   | Order no.<br>(black) | Order no.<br>(grey) | Conduit size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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|                                                                                   | LLPO-10A.50          | LLPO-10S.50         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                   | LLPO-12A.50          | LLPO-12S.50         | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                   | LLPO-17A.50          | LLPO-17S.50         | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                   | LLPO-23A.50          | LLPO-23S.50         | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                   | LLPO-29A.50          | LLPO-29S.50         | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                   | LLPO-36A.30          | LLPO-36S.30         | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                   | LLPO-48A.30          | LLPO-48S.30         | 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| <b>LLPO Index</b>                                                                 |                      |                     | For machine building and installation<br>Excellent reversed bending characteristics<br>Very good resistance against acids and hydrolysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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                                                                                                                                                                                                                                                                                                                                                                                                 |        |       |         |          |        |                   |                         |           |
| Ductility                                                                         |                      |                     | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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|        |       |         |          |        |                   |                         |           |

#### Type LLPA - Very flexible, medium-duty

|                                                                                     | Order no.<br>(black)                                                                                                | Order no.<br>(grey) | Conduit size                        |        |       |         | Inside Ø                  |        | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>(m)            |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------|--------|-------|---------|---------------------------|--------|-------------------|-------------------------|----------------------|
|                                                                                     |                                                                                                                     |                     | NW                                  | Metric | Inch  | Profile | (mm)                      | (inch) |                   |                         |                      |
|  | LLPA-07A.50                                                                                                         | LLPA-07S.50         | 07                                  | 10     | 1/4   | T       | 6.2                       | 0.244  | 10.0              | 15                      | 50                   |
|                                                                                     | LLPA-10A.50                                                                                                         | LLPA-10S.50         | 10                                  | 12     | 5/16  | T       | 9.6                       | 0.378  | 13.0              | 20                      | 50                   |
|                                                                                     | LLPA-12A.50                                                                                                         | LLPA-12S.50         | 12                                  | 16     | 3/8   | T       | 12.0                      | 0.472  | 15.8              | 30                      | 50                   |
|                                                                                     | LLPA-17A.50                                                                                                         | LLPA-17S.50         | 17                                  | 20     | 1/2   | T       | 16.2                      | 0.638  | 21.2              | 40                      | 50                   |
|                                                                                     | LLPA-23A.50                                                                                                         | LLPA-23S.50         | 23                                  | 25     | 3/4   | T       | 22.6                      | 0.890  | 28.5              | 45                      | 50                   |
|                                                                                     | LLPA-29A.50                                                                                                         | LLPA-29S.50         | 29                                  | 32     | 1     | T       | 29.0                      | 1.142  | 34.5              | 55                      | 50                   |
|                                                                                     | LLPA-36A.30                                                                                                         | LLPA-36S.30         | 36                                  | 40     | 1-1/4 | T       | 36.5                      | 1.437  | 42.5              | 60                      | 30                   |
|                                                                                     | LLPA-48A.30                                                                                                         | LLPA-48S.30         | 48                                  | 50     | 1-1/2 | T       | 47.5                      | 1.870  | 54.5              | 70                      | 30                   |
|  | LLPAG-17A.50                                                                                                        | LLPAG-17S.50        | 17                                  | 20     | 1/2   | G       | 15.8                      | 0.622  | 21.2              | 40                      | 50                   |
|                                                                                     | LLPAG-23A.50                                                                                                        | LLPAG-23S.50        | 23                                  | 25     | 3/4   | G       | 21.9                      | 0.862  | 28.5              | 45                      | 50                   |
|                                                                                     | LLPAG-29A.50                                                                                                        | LLPAG-29S.50        | 29                                  | 32     | 1     | G       | 27.6                      | 1.087  | 34.5              | 55                      | 50                   |
|                                                                                     | LLPAG-36A.30                                                                                                        | LLPAG-36S.30        | 36                                  | 40     | 1-1/4 | G       | 36.0                      | 1.417  | 42.5              | 60                      | 30                   |
|                                                                                     | LLPAG-48A.30                                                                                                        | LLPAG-48S.30        | 48                                  | 50     | 1-1/2 | G       | 47.0                      | 1.850  | 54.5              | 70                      | 30                   |
|                                                                                     | LLPAG-56A.30                                                                                                        | LLPAG-56S.30        | 56                                  | 68     | 2     | G       | 56.3                      | 2.217  | 67.2              | 120                     | 30                   |
|                                                                                     | LLPAG-70A.10                                                                                                        | LLPAG-70S.10        | 70                                  | 80     | 2-1/2 | G       | 68.0                      | 2.677  | 80.0              | 160                     | 10                   |
|                                                                                     | LLPAG-95A.10                                                                                                        | LLPAG-95S.10        | 95                                  | 106    | 4     | G       | 91.9                      | 3.618  | 106.0             | 210                     | 10                   |
|                                                                                     | LLPAG-125A.06                                                                                                       | LLPAG-125S.06       | 125                                 | 146    | 5     | G       | 126.5                     | 4.980  | 146.5             | 450                     | 06                   |
|                                                                                     | For machine building, installation and construction industries<br>Good ductility<br>Good mechanical characteristics |                     |                                     |        |       |         |                           |        |                   |                         |                      |
| <b>LLPA Index</b>                                                                   |                                                                                                                     |                     | <b>Materials</b>                    |        |       |         | <b>Temperature range</b>  |        |                   |                         | <b>Colour</b>        |
| min. Ductility                                                                      |                                                                                                                     |                     | Specially modified polyamide 6      |        |       |         | -40°C to +105°C           |        |                   |                         | Black/Grey           |
| Fatigue reversed bending                                                            |                                                                                                                     |                     | <b>Certification</b>                |        |       |         | Short-term to: +160°C     |        |                   |                         | <b>UV Resistance</b> |
| Compression resistance                                                              |                                                                                                                     |                     | Free from halogens, REACH compliant |        |       |         | <b>Self extinguishing</b> |        |                   |                         |                      |
| Low temperature performance                                                         |                                                                                                                     |                     | and RoHS compliant                  |        |       |         | acc. to UL 94 V2          |        |                   |                         |                      |
| Weathering resistance                                                               |                                                                                                                     |                     |                                     |        |       |         |                           |        |                   |                         | -                    |

#### Approvals





**Type LLPF - Very flexible, medium-duty**

|                                                                                   | Order no.<br>(black)                                           | Order no.<br>(grey) | Conduit size                        |        |      |                       | Inside Ø |        | Outside Ø<br>(mm)  | Stat.<br>radius<br>(mm) | PU<br>(m) |    |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------|-------------------------------------|--------|------|-----------------------|----------|--------|--------------------|-------------------------|-----------|----|
|                                                                                   |                                                                |                     | NW                                  | Metric | Inch | Profile               | (mm)     | (inch) |                    |                         |           |    |
|  | LLPF                                                           | LLPF-07A.50         | LLPF-07S.50                         | 7      | 10   | 1/4                   | T        | 6.2    | 0.244              | 10.0                    | 15        | 50 |
|                                                                                   |                                                                | LLPF-10A.50         | LLPF-10S.50                         | 10     | 12   | 5/16                  | T        | 9.6    | 0.378              | 13.0                    | 20        | 50 |
|                                                                                   |                                                                | LLPF-12A.50         | LLPF-12S.50                         | 12     | 16   | 3/8                   | T        | 12.0   | 0.472              | 15.8                    | 30        | 50 |
|                                                                                   |                                                                | LLPF-17A.50         | LLPF-17S.50                         | 17     | 20   | 1/2                   | T        | 16.2   | 0.638              | 21.2                    | 40        | 50 |
|                                                                                   |                                                                | LLPF-23A.50         | LLPF-23S.50                         | 23     | 25   | 3/4                   | T        | 22.6   | 0.890              | 28.5                    | 45        | 50 |
|                                                                                   |                                                                | LLPF-29A.50         | LLPF-29S.50                         | 29     | 32   | 1                     | T        | 29.0   | 1.142              | 34.5                    | 55        | 50 |
|                                                                                   |                                                                | LLPFG-17A.50        | LLPFG-17S.50                        | 17     | 20   | 1/2                   | G        | 15.8   | 0.622              | 21.2                    | 40        | 50 |
|                                                                                   |                                                                | LLPFG-23A.50        | LLPFG-23S.50                        | 23     | 25   | 3/4                   | G        | 21.9   | 0.862              | 28.5                    | 45        | 50 |
|                                                                                   |                                                                | LLPFG-29A.50        | LLPFG-29S.50                        | 29     | 32   | 1                     | G        | 27.6   | 1.087              | 34.5                    | 55        | 50 |
|                                                                                   |                                                                | LLPFG-36A.30        | LLPFG-36S.30                        | 36     | 40   | 1-1/4                 | G        | 36.0   | 1.417              | 42.5                    | 60        | 30 |
|                                                                                   |                                                                | LLPFG-48A.30        | LLPFG-48S.30                        | 48     | 50   | 1-1/2                 | G        | 47.0   | 1.850              | 54.5                    | 70        | 30 |
|                                                                                   | For machine building, installation and construction industries |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
|                                                                                   | For applications with high fire safety requirements            |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
| UL 94 V0                                                                          |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
| Good pressure resistance                                                          |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
| Very good fire safety characteristics                                             |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
|                                                                                   |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
| LLPF Index                                                                        |                                                                |                     | Materials                           |        |      | Temperature range     |          |        | Colour             |                         |           |    |
| min.                                                                              |                                                                |                     | Specially modified polyamide 6      |        |      | -40°C to +105°C       |          |        | Black/Grey         |                         |           |    |
| max.                                                                              |                                                                |                     | Certification                       |        |      | Short-term to: +160°C |          |        | UV Resistance      |                         |           |    |
| Ductility                                                                         |                                                                |                     | Free from halogens, REACH compliant |        |      | Fire protection       |          |        | Self-extinguishing |                         |           |    |
| Fatigue reversed bending                                                          |                                                                |                     | and RoHS compliant                  |        |      |                       |          |        |                    |                         |           |    |
| Compression resistance                                                            |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
| Low temperature performance                                                       |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |
| Weathering resistance                                                             |                                                                |                     |                                     |        |      |                       |          |        |                    |                         |           |    |

PMA overbraided conduits

PMA stainless steel overbraiding for conduits

PMA stainless steel overbraiding for conduits

| Order no.<br>(black)                                                                                                              | Conduit size |        | For<br>conduit<br>profile | Fits<br>to metal<br>connector | Braid spec<br>(mm) | d1 Ø<br>(mm) | d2 Ø<br>(mm) | Weight net<br>without<br>conduit |  | PU<br>(m) |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------|--------|---------------------------|-------------------------------|--------------------|--------------|--------------|----------------------------------|--|-----------|
|                                                                                                                                   | NW           | Metric |                           |                               |                    |              |              | (kg/100 m)                       |  |           |
| xxxT-12x/S.50                                                                                                                     | 12           | 16     | T                         | MONK-M162                     | 24 x 8 x 0.30      | *            | 17.5         | 11.9                             |  | 50        |
| xxxT-17x/S.50                                                                                                                     | 17           | 20     | T                         | MONK-M207                     | 32 x 7 x 0.30      | *            | 23.0         | 13.8                             |  | 50        |
| xxxG-17x/S.50                                                                                                                     | 17           | 20     | G                         | MONK-M207                     | 32 x 7 x 0.30      | *            | 23.0         | 13.8                             |  | 50        |
| xxxG-23x/S.50                                                                                                                     | 23           | 25     | G                         | MONK-M253                     | 36 x 8 x 0.30      | *            | 31.0         | 17.8                             |  | 50        |
| xxxG-29x/S.50                                                                                                                     | 29           | 32     | G                         | MONK-M329                     | 36 x 10 x 0.30     | *            | 36.0         | 22.2                             |  | 50        |
| xxxG-36x/S.30                                                                                                                     | 36           | 40     | G                         | MONK-M406                     | 36 x 12 x 0.30     | *            | 44.5         | 26.7                             |  | 30        |
| xxxG-48x/S.30                                                                                                                     | 48           | 50     | G                         | MONK-M508                     | 36 x 14 x 0.30     | *            | 58.5         | 30.7                             |  | 30        |
| Our customer service or your local distribution partner will be pleased to help you concerning product availability and lead time |              |        |                           |                               |                    |              |              |                                  |  |           |
| Application: in machine and railway construction; for high mechanical loads; in areas with hot swarf and flying sparks            |              |        |                           |                               |                    |              |              |                                  |  |           |
| Characteristics: increased mechanical conduit protection; extremely high abrasion resistance                                      |              |        |                           |                               |                    |              |              |                                  |  |           |
| Coverage: > 90%                                                                                                                   |              |        |                           |                               |                    |              |              |                                  |  |           |
| Suitable for PMAFLEX, PMA Smart Line; Special metal fittings (MONK)                                                               |              |        |                           |                               |                    |              |              |                                  |  |           |
| Materials                                                                                                                         |              |        |                           |                               | Temperature range  |              |              | Colour                           |  |           |
| Braid made with stainless steel AISI                                                                                              |              |        |                           |                               | -70°C to +1000°C   |              |              | Metal                            |  |           |
| Certification                                                                                                                     |              |        |                           |                               | Fire performance   |              |              | UV Resistance                    |  |           |
| RoHS compliant                                                                                                                    |              |        |                           |                               | -                  |              |              | -                                |  |           |









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# PMAFIX Pro

## Introduction

Next generation cable protection. The extremely successful and technically proven PMAFIX System has been developed further to create the PMAFIX Pro product range.

The new generation fittings are the product of experience gained over many years in the most varied application areas. The PMAFIX Pro has two components, an outer body and an inner sealing element. The sealing element functions both as a seal and as a locking mechanism providing all ingress protection grades up to IP68 and IP69 even in applications where there is long term continuous movement. PMAFIX Pro is manufactured by using multiple component injection moulding process.

### Key features

- Meets all ingress protection categories up to and including IP68 and IP69 also when the conduit connection is continually in motion
- Manufactured with newest 2-component injection moulding technology
- Fulfills highest international quality and standard requirements
- Intelligent safety locking mechanism
- Allows simple “push-in” installation of conduits
- Due to the integrated conduit supports conduit remains centralised with little deformation even when bent sharply directly at the fitting









## PMAFIX Pro

### General technical details

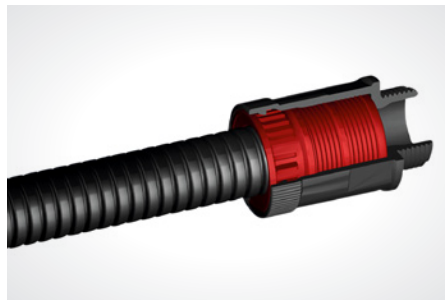
—  
01 patent  
—  
02 Up to 100 bar

#### Material

- Fittings made from specially modified polyamide 6
- Threads made from nickel-plated brass or polyamide 6
- Sealings made from cross linked polyester elastomer
- Self-extinguishing
- Free from halogens, REACH + RoHS compliant
- Temperature range: -50°C to +105°C, short-term to +160°C

#### Characteristics

- Highest assembly reliability – the fitting only locks when the sealing element is fully inserted
- Highest operational safety assured through visual and acoustic correct assembly controls
- Excellent resistance to ultra violet rays and weathering
- Highest impact resistance through fully closed design
- Highest conduit pull out strength
- Vibration-proof connection to PMA conduits
- Fits conduit profiles – fine (T) and coarse (G)
- To avoid accidental opening, disassembling only possible with a screwdriver



—  
01



—  
02

### IP68 + IP69

#### Static + dynamic

- Highest sealing through fully closed system also in highest dynamic applications
- Extra long ribbed sealing areas (cross linked material)
- 360° locking and sealing element shields against high pressure water jets (up to 100 bar)
- Content of delivery: Locking and sealing element and thread seal for male threads (O-Ring and/or flat gasket)

electrosuisse»

BOMBARDIER  
Transportation



EN

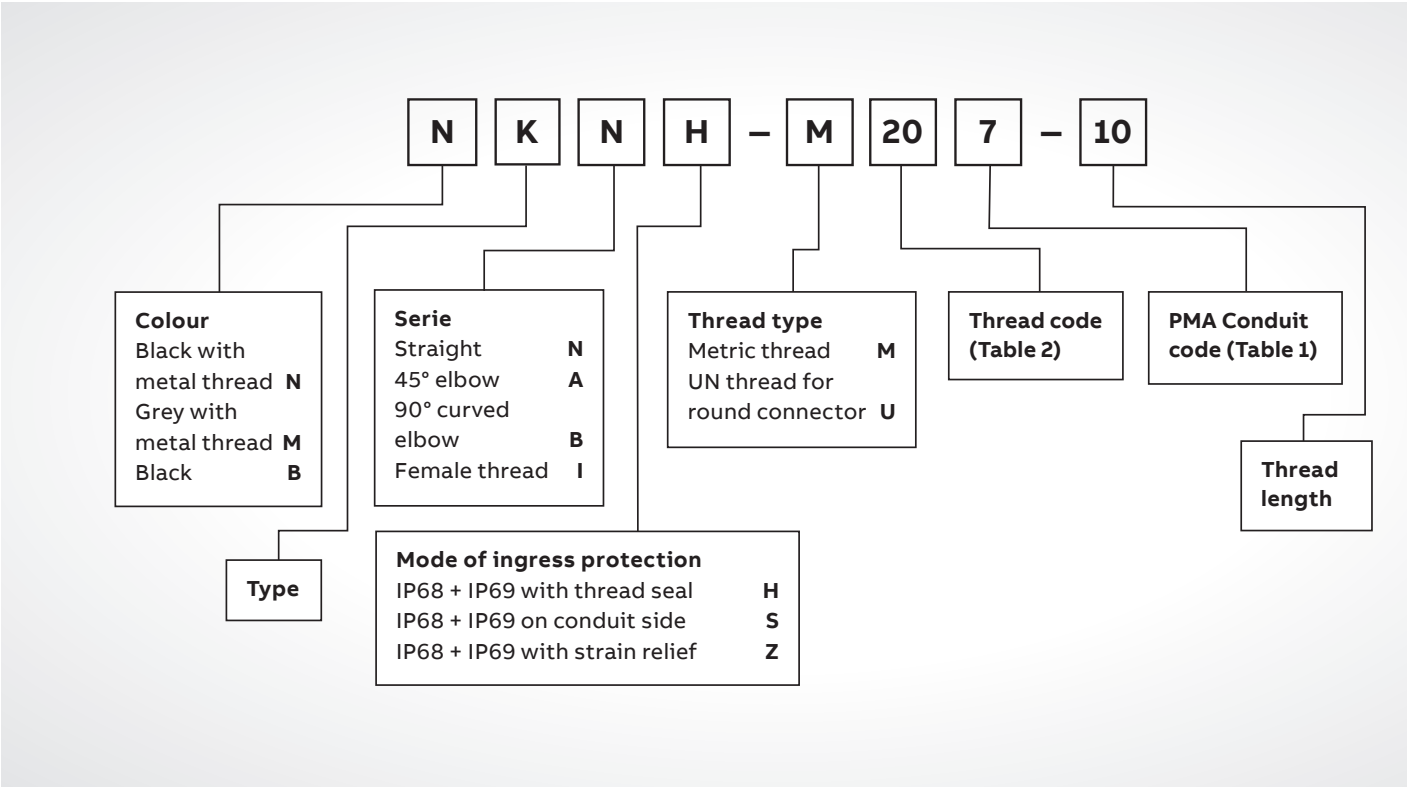
ALSTOM



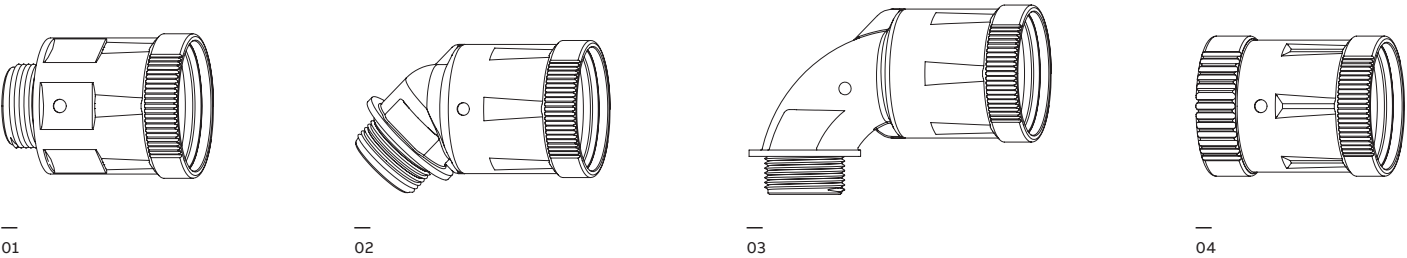
PMAFIX Pro

Part number codes

For part number explanation only, not to be used as a configuration tool.  
Part Numbers printed in **RED** are priority stock items in the US Distribution Center.



Connector series IP68 + IP69



- 01 Straight (N)
- 02 45° elbow (A)
- 03 90° curved elbow (B)
- 04 Female thread (I)

PMAFIX Pro

Size codes, installation

Table 1: Conduit codes

| Nominal width | Metric size | PMA code |
|---------------|-------------|----------|
| 10            | 12          | 0        |
| 12            | 16          | 2        |
| 17            | 20          | 7        |
| 23            | 25          | 3        |
| 29            | 32          | 9        |
| 36            | 40          | 6        |
| 48            | 50          | 8        |

Table 2: Thread codes

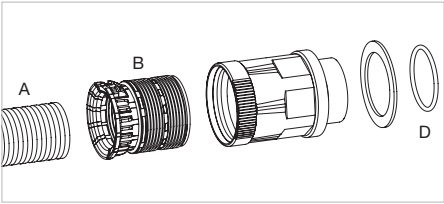
| Thread Metric | PMA code |
|---------------|----------|
| M12x1.5       | M12      |
| M16x1.5       | M16      |
| M20x1.5       | M20      |
| M25x1.5       | M25      |
| M32x1.5       | M32      |
| M40x1.5       | M40      |
| M50x1.5       | M50      |
| M63x1.5       | M63      |

| Thread UN      | PMA code |
|----------------|----------|
| 7/8–20 UNEF    | U21      |
| 1–20 UNEF      | U24      |
| 1 1/16–18 UNEF | U29      |
| 1 7/16–18 UNEF | U35      |
| 1 3/4–18 UNS   | U43      |
| 2–18 UNS       | U50      |
| 2 1/4–16 UN    | U56      |

Additional code for female thread connectors

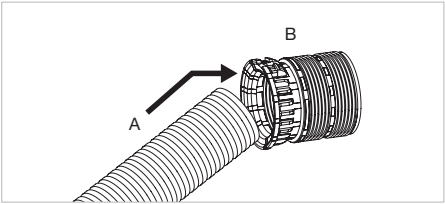
| Type                            | PMA code |
|---------------------------------|----------|
| With O-ring groove (MIL C 5015) | G        |

Installation IP68 + IP69



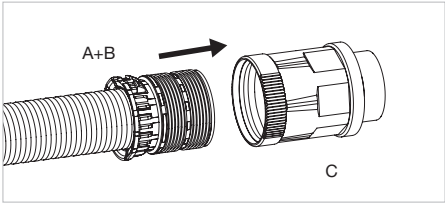
01

A = Corrugated conduit  
B = Sealing and locking element  
C = Fitting body  
D = Thread seal (O-ring or flat gasket\*)



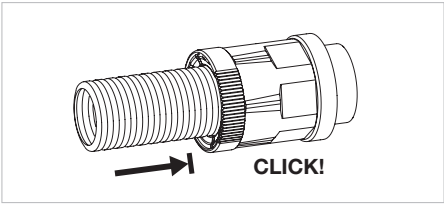
02

Place corrugated conduit (A) at a slight angle against the sealing element (B), then push right into the end.



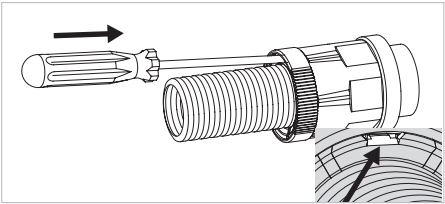
03

Push the conduit and sealing element (A+B) together into the outer body of the fitting (C). Water or a lubricating agent can help facilitate the push-in process.



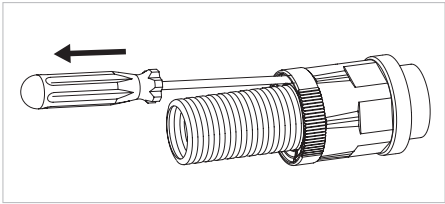
04

The locking mechanism engages when the sealing element is pushed in fully.



05

To disengage the locking mechanism introduce a size 1 screwdriver parallel to the conduit into the opening shown in the detail drawing.



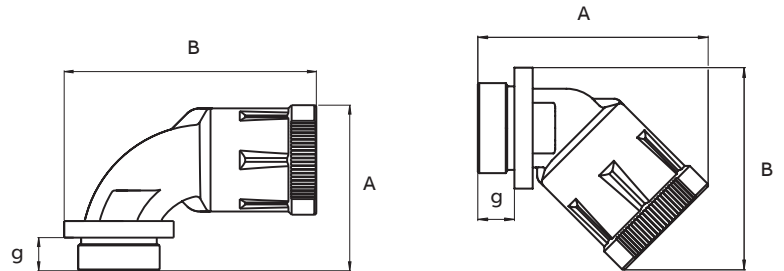
06

Pull the conduit and screwdriver out of the fitting together keeping the screwdriver parallel to the conduit.

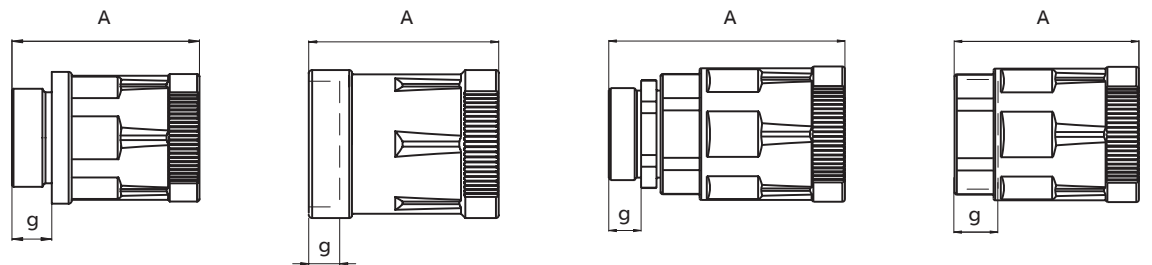


## PMAFIX Pro

### Connectors metric, metal thread



g = Thread length  
A x B = External dimensions



g = Thread length  
A = Overall length

#### Type KNH - Connector straight, metric metal thread

|                                                                                     | Order no. black<br>IP68 + IP69 | Order no. grey<br>IP68 + IP69 | Thread<br>metric | Fits to conduit size |        | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------------|-------------------------------|------------------|----------------------|--------|--------------------------|---------------------------|
|                                                                                     |                                |                               |                  | NW                   | Metric |                          |                           |
|  | NKNH-M120-10                   | MKNH-M120-10                  | M12 x 1.5        | 10                   | 12     | 10.0                     | 45.0                      |
|                                                                                     | NKNH-M160-10                   | MKNH-M160-10                  | M16 x 1.5        | 10                   | 12     | 10.0                     | 45.0                      |
|                                                                                     | NKNH-M162-10                   | MKNH-M162-10                  | M16 x 1.5        | 12                   | 16     | 10.0                     | 50.5                      |
|                                                                                     | NKNH-M202-10                   | MKNH-M202-10                  | M20 x 1.5        | 12                   | 16     | 10.0                     | 50.5                      |
|                                                                                     | NKNH-M207-10                   | MKNH-M207-10                  | M20 x 1.5        | 17                   | 20     | 10.0                     | 56.0                      |
|                                                                                     | NKNH-M257-11                   | MKNH-M257-11                  | M25 x 1.5        | 17                   | 20     | 11.0                     | 57.0                      |
|                                                                                     | NKNH-M253-11                   | MKNH-M253-11                  | M25 x 1.5        | 23                   | 25     | 11.0                     | 59.5                      |
|                                                                                     | NKNH-M323-13                   | MKNH-M323-13                  | M32 x 1.5        | 23                   | 25     | 13.0                     | 61.5                      |
|                                                                                     | NKNH-M329-13                   | MKNH-M329-13                  | M32 x 1.5        | 29                   | 32     | 13.0                     | 67.0                      |
|                                                                                     | NKNH-M409-13                   | MKNH-M409-13                  | M40 x 1.5        | 29                   | 32     | 13.0                     | 68.5                      |
|                                                                                     | NKNH-M406-13                   | MKNH-M406-13                  | M40 x 1.5        | 36                   | 40     | 13.0                     | 74.0                      |
|                                                                                     | NKNH-M506-14                   | MKNH-M506-14                  | M50 x 1.5        | 36                   | 40     | 14.0                     | 75.0                      |
|                                                                                     | NKNH-M508-14                   | MKNH-M508-14                  | M50 x 1.5        | 48                   | 50     | 14.0                     | 81.0                      |
|                                                                                     | NKNH-M638-14                   | MKNH-M638-14                  | M63 x 1.5        | 48                   | 50     | 14.0                     | 81.0                      |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

## Connectors metric, metal thread

### Type KNZ

Type KNZ - Connector straight with strain relief, metric metal thread



|                                                                                     | Order no.<br>IP68 + IP69<br>Compl., black | Order no.<br>fitting * | Order no.<br>insert | Thread<br>metric | Fits to<br>conduit size |        | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|-------------------------------------------|------------------------|---------------------|------------------|-------------------------|--------|---------------------------|--------------------------|---------------------------|
|                                                                                     |                                           |                        |                     |                  | NW                      | Metric |                           |                          |                           |
|    | NKNZ-M120/P1                              | NKNZ-M120R/P           | EK 150p7            | M12 x 1.5        | 10                      | 12     | 4.0–6.5                   | 5.0                      | 53.5                      |
|                                                                                     | NKNZ-M120/P2                              |                        | EK 150p8            | M12 x 1.5        | 10                      | 12     | 5.0–8.0                   | 5.0                      | 53.5                      |
|                                                                                     | NKNZ-M120/P3                              |                        | EK 150p9            | M12 x 1.5        | 10                      | 12     | 6.5–9.5                   | 5.0                      | 53.5                      |
|                                                                                     | NKNZ-M160/P1                              | NKNZ-M160R/P           | E 150p7             | M16 x 1.5        | 10                      | 12     | 4.0–6.5                   | 6.0                      | 54.5                      |
|                                                                                     | NKNZ-M160/P2                              |                        | E 150p8             | M16 x 1.5        | 10                      | 12     | 5.0–8.0                   | 6.0                      | 54.5                      |
|                                                                                     | NKNZ-M160/P3                              |                        | E 150p9             | M16 x 1.5        | 10                      | 12     | 6.5–9.5                   | 6.0                      | 54.5                      |
|                                                                                     | NKNZ-M202/P1                              | NKNZ-M202R/P           | E 152p7             | M20 x 1.5        | 12                      | 16     | 4.0–6.5                   | 6.5                      | 60.5                      |
|                                                                                     | NKNZ-M202/P3                              |                        | E 152p9             | M20 x 1.5        | 12                      | 16     | 6.5–9.5                   | 6.5                      | 60.5                      |
|                                                                                     | NKNZ-M202/P4                              |                        | E 152p11            | M20 x 1.5        | 12                      | 16     | 7.0–10.5                  | 6.5                      | 60.5                      |
|                                                                                     | NKNZ-M207/P3                              | NKNZ-M207R/P           | E 152p9             | M20 x 1.5        | 17                      | 20     | 6.5–9.5                   | 6.5                      | 66.5                      |
|                                                                                     | NKNZ-M207/P4                              |                        | E 152p11            | M20 x 1.5        | 17                      | 20     | 7.0–10.5                  | 6.5                      | 66.5                      |
|                                                                                     | NKNZ-M207/P5                              |                        | E 152p13            | M20 x 1.5        | 17                      | 20     | 9.0–13.0                  | 6.5                      | 66.5                      |
|                                                                                     | NKNZ-M257/P4                              | NKNZ-M257R/P           | E 153p11            | M25 x 1.5        | 17                      | 20     | 7.0–10.5                  | 7.5                      | 67.5                      |
|                                                                                     | NKNZ-M257/P5                              |                        | E 153p13            | M25 x 1.5        | 17                      | 20     | 9.0–13.0                  | 7.5                      | 67.5                      |
|                                                                                     | NKNZ-M257/P6                              |                        | E 153p16            | M25 x 1.5        | 17                      | 20     | 11.5–15.5                 | 7.5                      | 67.5                      |
|                                                                                     | NKNZ-M253/P5                              | NKNZ-M253R/P           | EK 154p13           | M25 x 1.5        | 23                      | 25     | 9.0–13.0                  | 7.5                      | 75.0                      |
|                                                                                     | NKNZ-M253/P6                              | NKNZ-M253R1/P          | EK 154p16           | M25 x 1.5        | 23                      | 25     | 11.5–15.5                 | 7.5                      | 75.0                      |
|                                                                                     | NKNZ-M323/P2                              | NKNZ-M323R/P           | E 154p13            | M32 x 1.5        | 23                      | 25     | 9.0–13.0                  | 8.0                      | 76.0                      |
|                                                                                     | NKNZ-M323/P4                              |                        | E 154p18            | M32 x 1.5        | 23                      | 25     | 14.0–18.0                 | 8.0                      | 76.0                      |
|                                                                                     | NKNZ-M323/P5                              | NKNZ-M323R1/P          | E 154p20            | M32 x 1.5        | 23                      | 25     | 17.0–20.5                 | 8.0                      | 76.0                      |
|  | NKNZ-M329/P2                              | NKNZ-M329R/P           | EK 155p18           | M32 x 1.5        | 29                      | 32     | 14.0–18.0                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M329/P3                              |                        | EK 155p20           | M32 x 1.5        | 29                      | 32     | 17.0–20.5                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M329/P4                              |                        | EK 155p25           | M32 x 1.5        | 29                      | 32     | 20.0–25.0                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M409/P1                              | NKNZ-M409R/P           | E 155p16            | M40 x 1.5        | 29                      | 32     | 11.5–15.5                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M409/P2                              |                        | E 155p18            | M40 x 1.5        | 29                      | 32     | 14.0–18.0                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M409/P3                              |                        | E 155p20            | M40 x 1.5        | 29                      | 32     | 17.0–20.5                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M409/P4                              |                        | E 155p25            | M40 x 1.5        | 29                      | 32     | 20.0–25.0                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M409/P5                              |                        | E 155p28            | M40 x 1.5        | 29                      | 32     | 24.0–28.0                 | 8.0                      | 83.0                      |
|                                                                                     | NKNZ-M406/P1                              | NKNZ-M406R/P           | E 156p25HF          | M40 x 1.5        | 36                      | 40     | 20.0–25.0                 | 9.0                      | 87.5                      |
|                                                                                     | NKNZ-M406/P2                              |                        | EK 156p28           | M40 x 1.5        | 36                      | 40     | 24.0–28.0                 | 9.0                      | 87.5                      |
|                                                                                     | NKNZ-M506/P1                              | NKNZ-M506R/P           | E 156p32            | M50 x 1.5        | 36                      | 40     | 27.0–32.0                 | 10.0                     | 90.0                      |
|                                                                                     | NKNZ-M506/P3                              |                        | E 156p36            | M50 x 1.5        | 36                      | 40     | 32.0–36.0                 | 10.0                     | 90.0                      |
|                                                                                     | NKNZ-M508/P2                              | NKNZ-M508R/P           | E 157p36HF          | M50 x 1.5        | 48                      | 50     | 32.0–36.0                 | 10.0                     | 100.0                     |
|                                                                                     | NKNZ-M508/P3                              |                        | E 157p40HF          | M50 x 1.5        | 48                      | 50     | 36.0–40.0                 | 10.0                     | 100.0                     |
|                                                                                     | NKNZ-M638/P1                              | NKNZ-M638R/P           | E 158pm1x35         | M63 x 1.5        | 48                      | 50     | 32.0–35.0                 | 10.0                     | 100.0                     |
|                                                                                     | NKNZ-M638/P2                              |                        | E 158p44            | M63 x 1.5        | 48                      | 50     | 39.0–44.0                 | 10.0                     | 100.0                     |

#### Approvals



\* without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: –40°C to +135°C

**Note:** For several conductors multiple sealing inserts MDE are available. R/P version of fitting has to be used in combination with multiple sealing inserts

## Connectors metric, metal thread

### Type KNZ

Type KNZ - Connector straight with strain relief, metric long metal thread



|                                                                                                  | Order no.<br>IP68 + IP69<br>Compl., black | Order no.<br>fitting* | Order no.<br>insert | Thread<br>metric | Fits to<br>conduit size |        | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|--------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------|---------------------|------------------|-------------------------|--------|---------------------------|--------------------------|---------------------------|
|                                                                                                  |                                           |                       |                     |                  | NW                      | Metric |                           |                          |                           |
| <br>KNZ, patent | NKNZ-M160/P1-L                            | NKNZ-M160R/P-L        | E 150p7             | M16 x 1.5        | 10                      | 16     | 4.0–6.5                   | 15.0                     | 63.5                      |
|                                                                                                  | NKNZ-M160/P2-L                            |                       | E 150p8             | M16 x 1.5        | 10                      | 16     | 5.0–8.0                   | 15.0                     | 63.5                      |
|                                                                                                  | NKNZ-M160/P3-L                            |                       | E 150p9             | M16 x 1.5        | 10                      | 16     | 6.5–9.5                   | 15.0                     | 63.5                      |
|                                                                                                  | NKNZ-M202/P1-L                            | NKNZ-M202R/P-L        | E 152p7             | M20 x 1.5        | 12                      | 20     | 4.0–6.5                   | 15.0                     | 69.0                      |
|                                                                                                  | NKNZ-M202/P3-L                            |                       | E 152p9             | M20 x 1.5        | 12                      | 20     | 6.5–9.5                   | 15.0                     | 69.0                      |
|                                                                                                  | NKNZ-M202/P4-L                            |                       | E 152p11            | M20 x 1.5        | 12                      | 20     | 7.0–10.5                  | 15.0                     | 69.0                      |
|                                                                                                  | NKNZ-M207/P3-L                            | NKNZ-M207R/P-L        | E 152p9             | M20 x 1.5        | 17                      | 20     | 6.5–9.5                   | 15.0                     | 75.0                      |
|                                                                                                  | NKNZ-M207/P4-L                            |                       | E 152p11            | M20 x 1.5        | 17                      | 20     | 7.0–10.5                  | 15.0                     | 75.0                      |
|                                                                                                  | NKNZ-M207/P5-L                            |                       | E 152p13            | M20 x 1.5        | 17                      | 20     | 9.0–13.0                  | 15.0                     | 75.0                      |
|                                                                                                  | NKNZ-M257/P5-L                            | NKNZ-M257R/P-L        | E 153p13            | M25 x 1.5        | 17                      | 25     | 9.0–13.0                  | 15.0                     | 75.0                      |
|                                                                                                  | NKNZ-M257/P6-L                            |                       | E 153p16            | M25 x 1.5        | 17                      | 25     | 11.5–15.5                 | 15.0                     | 75.0                      |
|                                                                                                  | NKNZ-M323/P2-L                            | NKNZ-M323R/P-L        | E 154p13            | M32 x 1.5        | 23                      | 32     | 9.0–13.0                  | 15.0                     | 83.0                      |
|                                                                                                  | NKNZ-M323/P4-L                            |                       | E 154p18            | M32 x 1.5        | 23                      | 32     | 14.0–18.0                 | 15.0                     | 83.0                      |
|                                                                                                  | NKNZ-M323/P5-L                            | NKNZ-M323R1/P-L       | E 154p20            | M32 x 1.5        | 23                      | 32     | 17.0–20.5                 | 15.0                     | 83.0                      |
|                                                                                                  | NKNZ-M329/P2-L                            | NKNZ-M329R/P-L        | EK 155p18           | M32 x 1.5        | 29                      | 32     | 14.0–18.0                 | 15.0                     | 90.0                      |
|                                                                                                  | NKNZ-M329/P3-L                            |                       | EK 155p20           | M32 x 1.5        | 29                      | 40     | 17.0–20.5                 | 15.0                     | 90.0                      |
|                                                                                                  | NKNZ-M409/P3-L                            | NKNZ-M409R/P-L        | E 155p20            | M40 x 1.5        | 29                      | 40     | 17.0–20.5                 | 15.0                     | 90.0                      |
|                                                                                                  | NKNZ-M409/P4-L                            |                       | E 155p25            | M40 x 1.5        | 29                      | 40     | 20.0–25.0                 | 15.0                     | 90.0                      |
|                                                                                                  | NKNZ-M409/P5-L                            |                       | E 155p28            | M40 x 1.5        | 29                      | 50     | 24.0–28.0                 | 15.0                     | 90.0                      |
|                                                                                                  | NKNZ-M506/P1-L                            | NKNZ-M506R/P-L        | E 156p32            | M50 x 1.5        | 36                      | 50     | 27.0–32.0                 | 15.0                     | 95.0                      |
|                                                                                                  | NKNZ-M506/P3-L                            |                       | E 156p36            | M50 x 1.5        | 36                      | 50     | 32.0–36.0                 | 15.0                     | 95.0                      |
|                                                                                                  | NKNZ-M508/P2-L                            | NKNZ-M508R/P-L        | E 157p36HF          | M50 x 1.5        | 48                      | 50     | 32.0–36.0                 | 15.0                     | 105.0                     |
|                                                                                                  | NKNZ-M508/P3-L                            |                       | E 157p40HF          | M50 x 1.5        | 48                      | 50     | 36.0–40.0                 | 15.0                     | 105.0                     |
|                                                                                                  | NKNZ-M638/P1-L                            | NKNZ-M638R/P-L        | E 158pm1x35         | M63 x 1.5        | 48                      | 63     | 32.0–35.0                 | 15.0                     | 105.0                     |
|                                                                                                  | NKNZ-M638/P2-L                            |                       | E 158p44            | M63 x 1.5        | 48                      | 63     | 39.0–44.0                 | 15.0                     | 105.0                     |

\* without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: –40°C to +135°C

**Note:** For several conductors multiple sealing inserts MDE are available. R/P version of fitting has to be used in combination with multiple sealing inserts

#### Approvals



## Connectors metric, metal thread

### Type KAH & KBH

#### Type KAH - Connector 45° elbow, metric metal thread

|                                                                                                  | Order no. black<br>IP68 + IP69 | Order no. grey<br>IP68 + IP69 | Thread<br>metric | Fits to conduit size |        | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|--------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------|------------------|----------------------|--------|--------------------------|--------------------------------|
|                                                                                                  |                                |                               |                  | NW                   | Metric |                          |                                |
| KAH, patent<br> | NKAH-M120-10                   | MKAH-M120-10                  | M12 x 1.5        | 10                   | 12     | 10.0                     | 55.5 x 43.0                    |
|                                                                                                  | NKAH-M160-10                   | MKAH-M160-10                  | M16 x 1.5        | 10                   | 12     | 10.0                     | 55.5 x 45.0                    |
|                                                                                                  | NKAH-M162-10                   | MKAH-M162-10                  | M16 x 1.5        | 12                   | 16     | 10.0                     | 62.5 x 50.0                    |
|                                                                                                  | NKAH-M202-10                   | MKAH-M202-10                  | M20 x 1.5        | 12                   | 16     | 10.0                     | 62.5 x 52.0                    |
|                                                                                                  | NKAH-M207-10                   | MKAH-M207-10                  | M20 x 1.5        | 17                   | 20     | 10.0                     | 71.0 x 59.5                    |
|                                                                                                  | NKAH-M257-11                   | MKAH-M257-11                  | M25 x 1.5        | 17                   | 20     | 11.0                     | 72.0 x 62.5                    |
|                                                                                                  | NKAH-M253-11                   | MKAH-M253-11                  | M25 x 1.5        | 23                   | 25     | 11.0                     | 80.0 x 68.0                    |
|                                                                                                  | NKAH-M323-13                   | MKAH-M323-13                  | M32 x 1.5        | 23                   | 25     | 13.0                     | 82.0 x 72.0                    |
|                                                                                                  | NKAH-M329-13                   | MKAH-M329-13                  | M32 x 1.5        | 29                   | 32     | 13.0                     | 93.0 x 79.5                    |
|                                                                                                  | NKAH-M409-13                   | MKAH-M409-13                  | M40 x 1.5        | 29                   | 32     | 13.0                     | 94.5 x 85.5                    |
|                                                                                                  | NKAH-M406-13                   | MKAH-M406-13                  | M40 x 1.5        | 36                   | 40     | 13.0                     | 105.5 x 93.5                   |
|                                                                                                  | NKAH-M506-14                   | MKAH-M506-14                  | M50 x 1.5        | 36                   | 40     | 14.0                     | 106.5 x 98.5                   |
|                                                                                                  | NKAH-M508-14                   | MKAH-M508-14                  | M50 x 1.5        | 48                   | 50     | 14.0                     | 120.0 x 111.0                  |
|                                                                                                  | NKAH-M638-14                   | MKAH-M638-14                  | M63 x 1.5        | 48                   | 50     | 14.0                     | 120.0 x 114.0                  |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

#### Type KBH - Connector 90° curved elbow, metric metal thread

|                                                                                                    | Order no. black<br>IP68 + IP69 | Order no. grey<br>IP68 + IP69 | Thread<br>metric | Fits to conduit size |        | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|----------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------|------------------|----------------------|--------|--------------------------|--------------------------------|
|                                                                                                    |                                |                               |                  | NW                   | Metric |                          |                                |
| KBH, patent<br> | NKBH-M120-10                   | MKBH-M120-10                  | M12 x 1.5        | 10                   | 12     | 10.0                     | 44.0 x 62.5                    |
|                                                                                                    | NKBH-M160-10                   | MKBH-M160-10                  | M16 x 1.5        | 10                   | 12     | 10.0                     | 44.0 x 64.5                    |
|                                                                                                    | NKBH-M162-10                   | MKBH-M162-10                  | M16 x 1.5        | 12                   | 16     | 10.0                     | 47.5 x 72.0                    |
|                                                                                                    | NKBH-M202-10                   | MKBH-M202-10                  | M20 x 1.5        | 12                   | 16     | 10.0                     | 47.5 x 74.0                    |
|                                                                                                    | NKBH-M207-10                   | MKBH-M207-10                  | M20 x 1.5        | 17                   | 20     | 10.0                     | 53.0 x 81.0                    |
|                                                                                                    | NKBH-M257-11                   | MKBH-M257-11                  | M25 x 1.5        | 17                   | 20     | 11.0                     | 54.0 x 84.0                    |
|                                                                                                    | NKBH-M253-11                   | MKBH-M253-11                  | M25 x 1.5        | 23                   | 25     | 11.0                     | 63.0 x 92.0                    |
|                                                                                                    | NKBH-M323-13                   | MKBH-M323-13                  | M32 x 1.5        | 23                   | 25     | 13.0                     | 65.0 x 96.0                    |
|                                                                                                    | NKBH-M329-13                   | MKBH-M329-13                  | M32 x 1.5        | 29                   | 32     | 13.0                     | 75.0 x 108.0                   |
|                                                                                                    | NKBH-M409-13                   | MKBH-M409-13                  | M40 x 1.5        | 29                   | 32     | 13.0                     | 76.5 x 114.0                   |
|                                                                                                    | NKBH-M406-13                   | MKBH-M406-13                  | M40 x 1.5        | 36                   | 40     | 13.0                     | 87.5 x 126.0                   |
|                                                                                                    | NKBH-M506-14                   | MKBH-M506-14                  | M50 x 1.5        | 36                   | 40     | 14.0                     | 88.5 x 131.0                   |
|                                                                                                    | NKBH-M508-14                   | MKBH-M508-14                  | M50 x 1.5        | 48                   | 50     | 14.0                     | 101.0 x 145.5                  |
|                                                                                                    | NKBH-M638-14                   | MKBH-M638-14                  | M63 x 1.5        | 48                   | 50     | 14.0                     | 101.0 x 148.5                  |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength  
Smooth elbow allows easy threading of wires and cables



## Connectors, female polyamide UNEF thread

### Type KIHG

Type KIHG - Connector straight, UN female thread for MIL-C5015

|                                                                                                   | Order no. black<br>IP68 + IP69 | Thread<br>UN    | Shell size<br>MIL | Fits to conduit size |        | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|---------------------------------------------------------------------------------------------------|--------------------------------|-----------------|-------------------|----------------------|--------|--------------------------|---------------------------|
|                                                                                                   |                                |                 |                   | NW                   | Metric |                          |                           |
| KIHG, patent<br> | BKIHG-U212                     | 7/8"-20 UNEF    | 16                | 12                   | 16     | 9.0                      | 47.0                      |
|                                                                                                   | BKIHG-U217                     | 7/8"-20 UNEF    | 16                | 17                   | 20     | 9.0                      | 52.5                      |
|                                                                                                   | BKIHG-U242                     | 1"-20 UNEF      | 18                | 12                   | 16     | 9.0                      | 47.0                      |
|                                                                                                   | BKIHG-U247                     | 1"-20 UNEF      | 18                | 17                   | 20     | 9.0                      | 52.5                      |
|                                                                                                   | BKIHG-U243                     | 1"-20 UNEF      | 18                | 23                   | 23     | 9.0                      | 55.5                      |
|                                                                                                   | BKIHG-U292                     | 1 1/16"-18 UNEF | 20                | 12                   | 16     | 9.0                      | 50.5                      |
|                                                                                                   | BKIHG-U297                     | 1 1/16"-18 UNEF | 20                | 17                   | 20     | 9.0                      | 52.5                      |
|                                                                                                   | BKIHG-U293                     | 1 3/16"-18 UNEF | 20                | 23                   | 25     | 9.0                      | 55.5                      |
|                                                                                                   | BKIHG-U299                     | 1 3/16"-18 UNEF | 20                | 29                   | 32     | 9.0                      | 61.0                      |
|                                                                                                   | BKIHG-U357                     | 1 7/16"-18 UNEF | 24                | 17                   | 20     | 9.0                      | 58.0                      |
|                                                                                                   | BKIHG-U353                     | 1 7/16"-18 UNEF | 24                | 23                   | 25     | 9.0                      | 55.5                      |
|                                                                                                   | BKIHG-U359                     | 1 7/16"-18 UNEF | 24                | 29                   | 32     | 9.0                      | 61.0                      |
|                                                                                                   | BKIHG-U433                     | 1 3/4"-18 UNS   | 32                | 23                   | 25     | 10.0                     | 62.5                      |
|                                                                                                   | BKIHG-U439                     | 1 3/4"-18 UNS   | 32                | 29                   | 32     | 10.0                     | 62.0                      |
|                                                                                                   | BKIHG-U503                     | 2"-18 UNS       | 36                | 23                   | 25     | 10.0                     | 67.0                      |
|                                                                                                   | BKIHG-U509                     | 2"-18 UNS       | 36                | 29                   | 32     | 10.0                     | 67.5                      |
|                                                                                                   | BKIHG-U506                     | 2"-18 UNS       | 36                | 36                   | 40     | 10.0                     | 67.0                      |
|                                                                                                   | BKIHG-U508                     | 2"-18 UNS       | 36                | 48                   | 50     | 10.0                     | 73.5                      |
|                                                                                                   | BKIHG-U566                     | 2 1/4"-16 UN    | 40                | 36                   | 40     | 10.0                     | 72.0                      |
|                                                                                                   | BKIHG-U568                     | 2 1/4"-16 UN    | 40                | 48                   | 50     | 10.0                     | 73.5                      |
| Approvals                                                                                         |                                |                 |                   |                      |        |                          |                           |
|                |                                |                 |                   |                      |        |                          |                           |

For applications in railway vehicles and heavy machine construction  
Suitable for MIL connector, series C5015

## Connectors metric, female metal thread

Type KIS

Type KIS - Connector straight, metric metal female thread

|                                                                                                          | Order no. black<br>IP68 + IP69 | Thread<br>metric | Fits to conduit size |        | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|----------------------------------------------------------------------------------------------------------|--------------------------------|------------------|----------------------|--------|--------------------------|---------------------------|
|                                                                                                          |                                |                  | NW                   | Metric |                          |                           |
| <div>KIS, patent</div>  | NKIS-M162                      | M16 x 1.5        | 12                   | 16     | 9.0                      | 49.0                      |
|                                                                                                          | NKIS-M207                      | M20 x 1.5        | 17                   | 20     | 10.5                     | 56.0                      |
|                                                                                                          | NKIS-M253                      | M25 x 1.5        | 23                   | 25     | 10.5                     | 58.5                      |
|                                                                                                          | NKIS-M329                      | M32 x 1.5        | 29                   | 32     | 11.0                     | 65.5                      |
|                                                                                                          | NKIS-M406                      | M40 x 1.5        | 36                   | 40     | 13.5                     | 72.0                      |
|                                                                                                          | NKIS-M508                      | M50 x 1.5        | 48                   | 50     | 15.0                     | 83.0                      |
|                                                                                                          | NKIS-M638                      | M63 x 1.5        | 48                   | 50     | 17.5                     | 84.0                      |
|                                                                                                          |                                |                  |                      |        |                          |                           |

### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength  
No seal on female thread side

## Connectors nylon straight fitting

### Type JKNH & JKBH

#### Type JKNH - Connector two-piece, straight, IP69, metric thread

|  | Order no.<br>blue | Thread<br>size<br>metric | Fits to conduit size |       | Dimensions |              |             |                |            |     | Weight<br>kg/100 pcs | Packing<br>unit/pcs |
|-----------------------------------------------------------------------------------|-------------------|--------------------------|----------------------|-------|------------|--------------|-------------|----------------|------------|-----|----------------------|---------------------|
|                                                                                   |                   |                          | NW                   | Inch  | g<br>(mm)  | Ø ID<br>(mm) | Ø D<br>(mm) | L max.<br>(mm) | sw<br>(mm) |     |                      |                     |
|                                                                                   |                   |                          |                      |       |            |              |             |                |            |     |                      |                     |
|                                                                                   |                   |                          |                      |       |            |              |             |                |            |     |                      |                     |
| JKNH                                                                              | JKNH-M162         | M16 x 1.5                | 12                   | 3/8   | 11.0       | 11.0         | 28.5        | 47.5           | 25         | 0.8 | 10                   |                     |
|                                                                                   | JKNH-M202         | M20 x 1.5                | 12                   | 3/8   | 12.5       | 11.0         | 28.5        | 47.5           | 25         | 0.9 | 10                   |                     |
|                                                                                   | JKNH-M207         | M20 x 1.5                | 17                   | 1/2   | 14.5       | 11.0         | 35.0        | 53.5           | 32         | 1.4 | 10                   |                     |
|                                                                                   | JKNH-M257         | M25 x 1.5                | 17                   | 1/2   | 16.5       | 12.0         | 35.0        | 54.5           | 32         | 1.5 | 10                   |                     |
|                                                                                   | JKNH-M253         | M25 x 1.5                | 23                   | 3/4   | 19.0       | 12.0         | 42.0        | 57.0           | 38         | 1.7 | 10                   |                     |
|                                                                                   | JKNH-M323         | M32 x 1.5                | 23                   | 3/4   | 23.0       | 15.0         | 43.0        | 60.5           | 38         | 2.0 | 10                   |                     |
|                                                                                   | JKNH-M329         | M32 x 1.5                | 29                   | 1     | 26.0       | 15.0         | 51.5        | 65.5           | 46         | 3.2 | 10                   |                     |
|                                                                                   | JKNH-M409         | M40 x 1.5                | 29                   | 1     | 29.0       | 19.0         | 51.5        | 69.5           | 46         | 3.7 | 10                   |                     |
| Approvals                                                                         | JKNH-M406         | M40 x 1.5                | 36                   | 1-1/4 | 32.0       | 19.0         | 65.0        | 75.0           | 60         | 5.9 | 10                   |                     |
|  | JKNH-M506         | M50 x 1.5                | 36                   | 1-1/4 | 37.5       | 19.0         | 65.0        | 75.0           | 60         | 6.2 | 10                   |                     |
|  | JKNH-M508         | M50 x 1.5                | 48                   | 1-1/2 | 42.0       | 19.0         | 75.0        | 81.0           | 70         | 7.5 | 10                   |                     |
|                                                                                   | JKNH-M638         | M63 x 1.5                | 48                   | 1-1/2 | 48.5       | 19.0         | 75.0        | 81.0           | 70         | 7.8 | 10                   |                     |

#### Approvals



Very high impact resistance - easy push-in assembly  
Corrosion-free  
Excellent conduit pull-out strength  
IP69 system protection for indoor splash zone areas

#### Type JKBH - 90° curved elbow, IP69, metric thread

|                                                                                     | Order no.<br>blue | Thread<br>size<br>metric | Fits to<br>conduit<br>size NW | Dimensions |      |      |      |      |       |       |      |      | Weight<br>kg/100 pcs | Packing<br>unit/pcs |
|-------------------------------------------------------------------------------------|-------------------|--------------------------|-------------------------------|------------|------|------|------|------|-------|-------|------|------|----------------------|---------------------|
|                                                                                     |                   |                          |                               | g          | d1   | d2   | d3   | SW   | A     | B     | R    |      |                      |                     |
|                                                                                     |                   |                          |                               | (mm)       | (mm) | (mm) | (mm) | (mm) | (mm)  | (mm)  | (mm) |      |                      |                     |
|  | JKBH-M162         | M16 x 1.5                | 12                            | 11         | 8.0  | 28.5 | 24.0 | 15.0 | 44.5  | 72.0  | 28.0 | 1.5  | 10                   |                     |
|                                                                                     | JKBH-M202         | M20 x 1.5                | 12                            | 11         | 11.8 | 28.5 | 28.0 | 15.0 | 44.5  | 74.0  | 28.0 | 1.3  | 10                   |                     |
|                                                                                     | JKBH-M207         | M20 x 1.5                | 17                            | 11         | 11.5 | 35.0 | 29.0 | 20.0 | 50.0  | 81.0  | 29.5 | 2.5  | 10                   |                     |
|                                                                                     | JKBH-M257         | M25 x 1.5                | 17                            | 12         | 16.5 | 35.0 | 35.0 | 20.0 | 51.0  | 84.0  | 29.5 | 2.2  | 10                   |                     |
|                                                                                     | JKBH-M253         | M25 x 1.5                | 23                            | 12         | 16.0 | 43.0 | 35.0 | 26.0 | 59.5  | 92.0  | 35.0 | 3.9  | 10                   |                     |
|                                                                                     | JKBH-M323         | M32 x 1.5                | 23                            | 15         | 22.5 | 43.0 | 40.0 | 26.0 | 63.0  | 94.5  | 35.0 | 3.2  | 10                   |                     |
|                                                                                     | JKBH-M329         | M32 x 1.5                | 29                            | 15         | 23.0 | 51.5 | 43.0 | 33.0 | 73.0  | 108.0 | 41.5 | 6.8  | 10                   |                     |
|                                                                                     | JKBH-M409         | M40 x 1.5                | 29                            | 19         | 28.5 | 51.5 | 51.0 | 33.0 | 77.0  | 112.0 | 41.5 | 6.0  | 10                   |                     |
|                                                                                     | JKBH-M406         | M40 x 1.5                | 36                            | 19         | 29.5 | 60.5 | 55.0 | 41.0 | 87.5  | 126.0 | 49.0 | 11.0 | 10                   |                     |
|                                                                                     | JKBH-M506         | M50 x 1.5                | 36                            | 19         | 37.0 | 60.5 | 59.0 | 41.0 | 87.5  | 128.0 | 49.0 | 9.0  | 10                   |                     |
|                                                                                     | JKBH-M508         | M50 x 1.5                | 48                            | 19         | 38.5 | 73.0 | 69.0 | 46.0 | 100.5 | 145.5 | 55.5 | 18.0 | 10                   |                     |
|                                                                                     | JKBH-M638         | M63 x 1.5                | 48                            | 19         | 48.0 | 73.0 | 75.0 | 55.0 | 100.5 | 148.5 | 55.5 | 14.0 | 10                   |                     |

Approvals







#### Approvals



Very high impact resistance - easy push-in assembly  
Corrosion-free  
Excellent conduit pull-out strength  
IP69 system protection for indoor splash zone areas

# PMAFIX IP66, IP68 (IP69)

## General technical details

PMAFIX connectors. The designation PMAFIX describes a very large range of connectors for PMA conduits with the patented PMA safety clip system.

Connectors are available for degrees of ingress protection IP66 and IP68 according to IEC 60529. IP66 connectors are fitted with a pre-installed universal safety clip which ensures a quick “push-in” installation. IP68 connectors for increased requirements will be delivered with a special conduit seal cap. The new PMAFIX IP68GT fittings combine simplest push-in assembly with highest sealing performance. It is also possible to upgrade to IP69 by retrofitting water impact protection.

### Material

- Fittings made from specially formulated polyamide 6
- Threads made from nickel-plated brass or polyamide 6
- Self-extinguishing
- Free from halogens, REACH + RoHS compliant
- Very good chemical properties
- Temperature range: –40°C to +105°C, short-term to +160°C
- 

### Characteristics

- Excellent conduit pull-out strength
- High impact resistance
- Vibration-proof connection to PMA corrugated conduits
- Fits conduit profiles – fine (T) and coarse (G)
- To avoid accidental opening, disassembly is only possible with a screwdriver



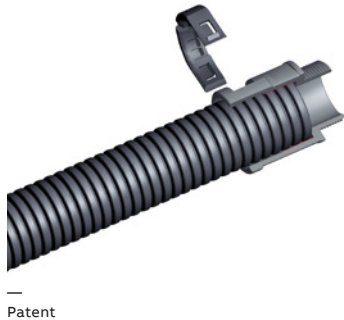




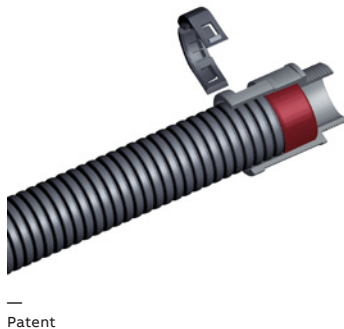


## PMAFIX

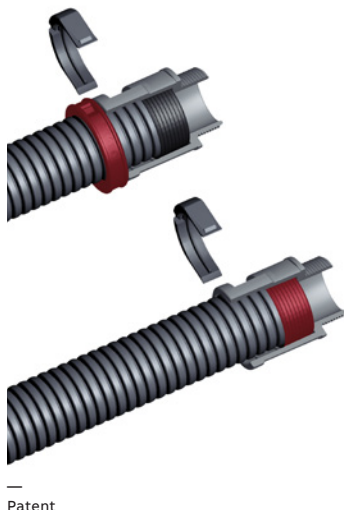
### General technical details



—  
Patent



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Patent



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Patent

#### IP66

##### IP66 static

##### IP54 dynamic

- One piece fitting
- Conical sealing method
- Easy “push-in” installation
- Pre-installed safety clip AFN2
- Content of delivery: Connector with pre-installed safety clip

#### IP68GT

##### IP68, IP69 static

##### IP67, IP69 dynamic

- The single piece PMAFIX IP68GT fitting with integrated sealing cap and pre-installed locking clip
- Simple push-in assembly (as with the proven PMAFIX IP66 system)
- The extra long sealing cap guarantees the highest level of ingress protection
- Identical approvals as for the PMAFIX IP68 system component version
- Fast modification of specification drawings through simple addition of ,GT‘ to the existing order number (e.g. BVNV-M257 → BVNV-M257GT)
- Additional water protection ring WPS for IP69 ingress protection in conjunction with the IP68 system to be applied right after the IP68 connector onto the conduit
- Content of delivery: Connector with integrated sealing cap, pre-installed safety clip and thread seal for male thread (O-ring and/or flat gasket)

#### IP68

##### IP68, IP69 static

##### IP67, IP69 dynamic

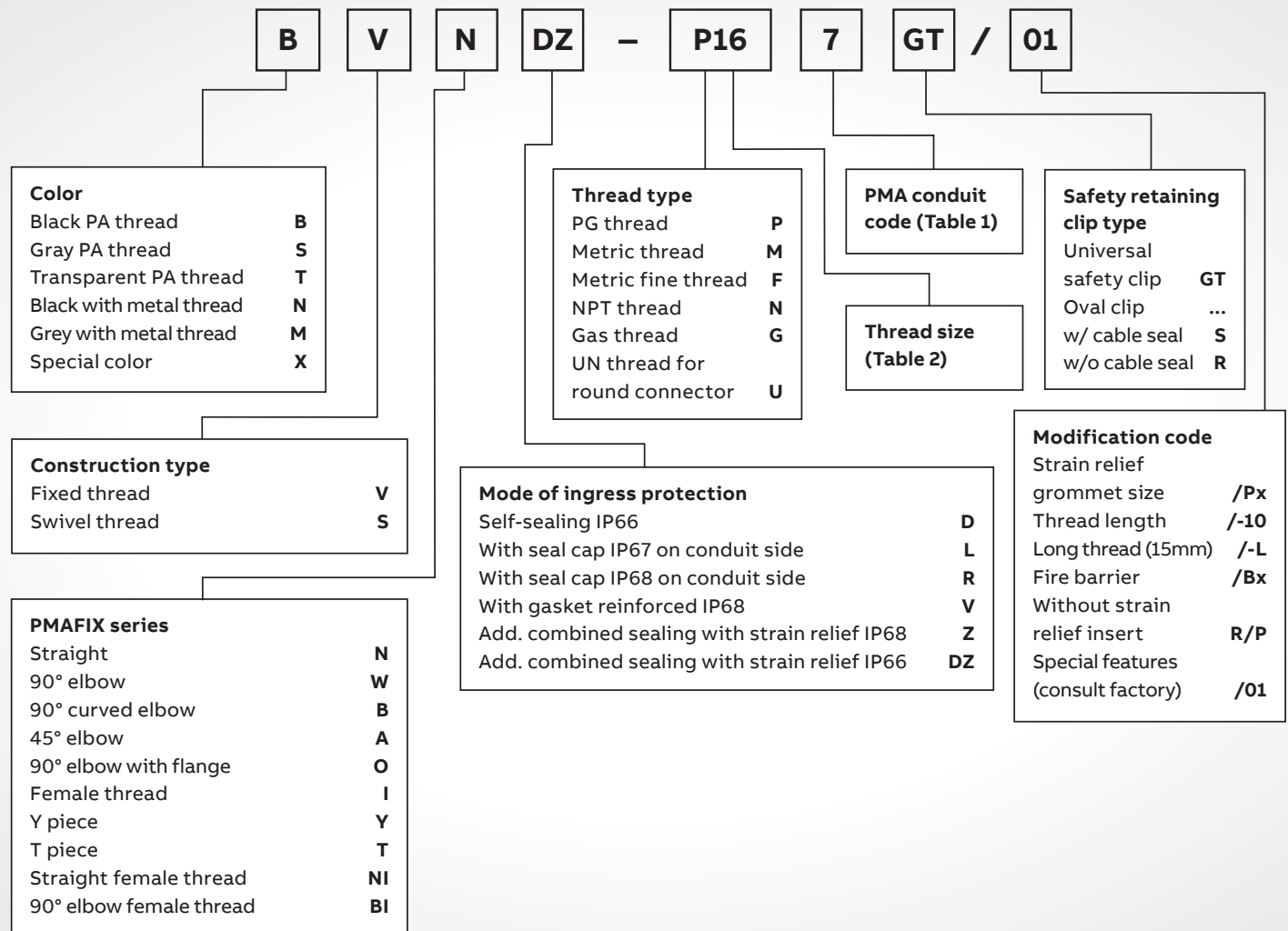
- High sealing through additional seal cap
- For highest dynamic applications
- Additional water protection ring WPS for IP69 ingress protection in conjunction with the IP68 system to be applied right after the IP68 connector onto the conduit
- Content of delivery: Connector with sealing cap, safety clip and thread seal for male thread (O-ring and/or flat gasket)

## PMAFIX connectors

### Part number codes

For part number explanation only, not to be used as a configuration tool.

Part Numbers printed in **RED** are priority stock items in the US Distribution Center.



### Connector series

01 Serie N

02 Serie W

03 Serie B

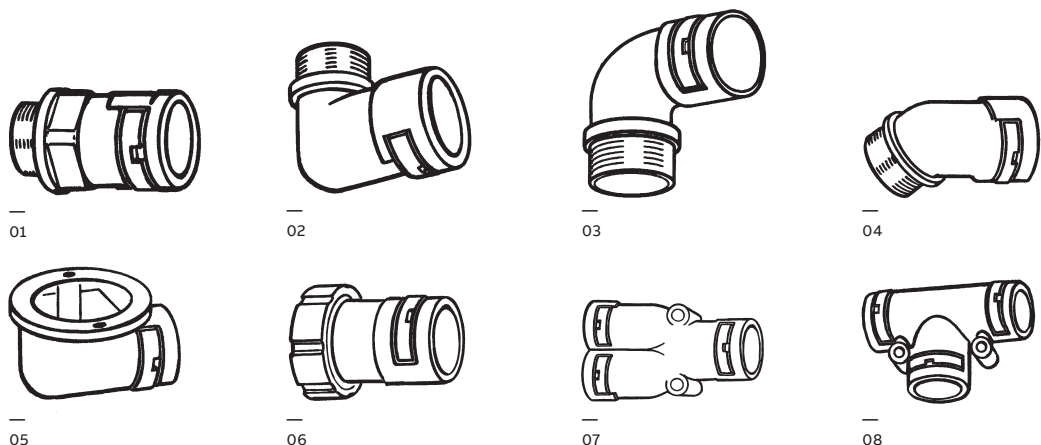
04 Serie A

05 Serie O

06 Serie I

07 Serie Y

08 Serie T



## Size codes

### Additional code for female thread connectors

| Type                            | PMA code |
|---------------------------------|----------|
| AMP                             | A        |
| Souriau (ex Burndy) UTG 6       | B        |
| With O-ring groove (MIL C 5015) | G        |
| Souriau UTO/UTS                 | S        |

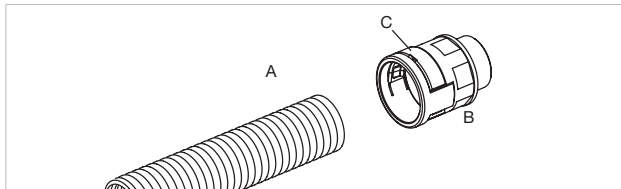
[illegible]



## PMAFIX

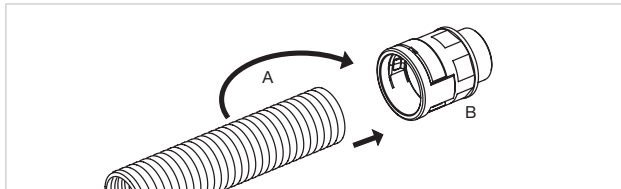
### Installation

#### Installation IP66



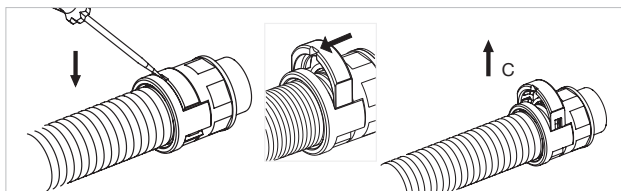
01

A = Conduit  
B = Fitting  
C = Universal safety clip



02

Push in the conduit (A) with a slight twist until the stop.

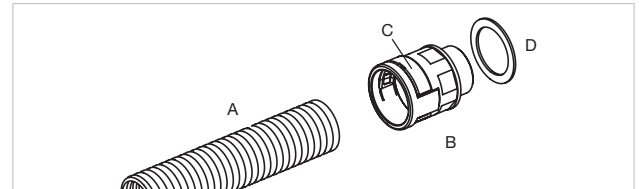


03

To re-open use a screwdriver.  
The screwdriver slot in the oval clip (C) should be on the conduit side.

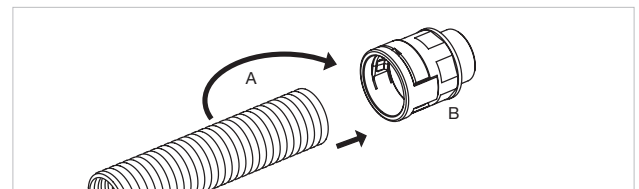
Locking clip pre-installed in all IP66 connectors.

#### Installation IP68GT



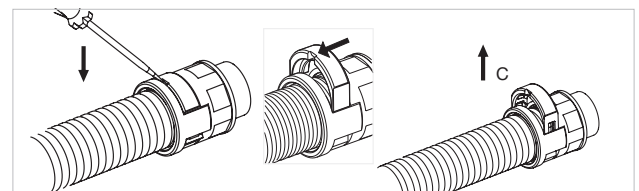
01

A = Conduit  
B = Fitting with integrated sealing cap  
C = Universal safety clip  
D = Thread seal (either O-ring or flat gasket\*, not both)



02

Push in the conduit (A) right into the end of the fitting (B) with a slight twist. Additional insertion resistance will be felt when the end of the fitting has been reached.



03

To re-open use a screwdriver.  
The screwdriver slot in the oval clip (C) should be on the conduit side.

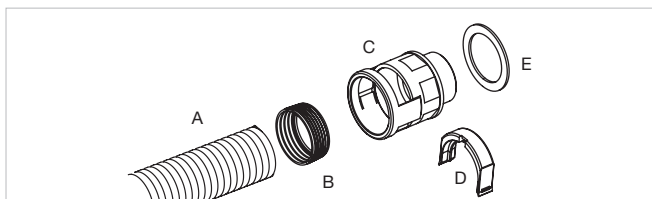
Pre-installed sealing cap and locking clip in all IP68GT connectors.

\* Ensure to follow O-ring manufacturers guidelines when using O-rings for sealing purposes.

## PMAFIX

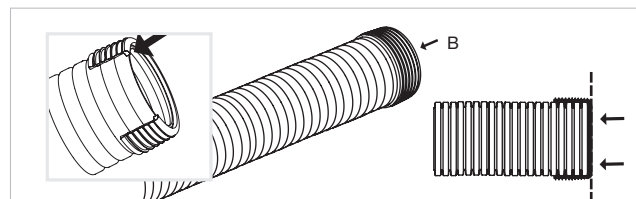
### Installation

#### Installation IP68 (IP69)



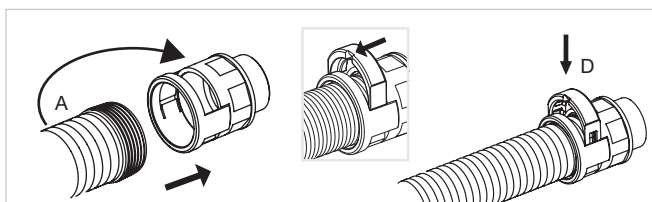
01

A = Conduit  
B = Sealing cap  
C = Fitting  
D = Oval clip  
E = Thread seal (O-ring or flat seal\*)



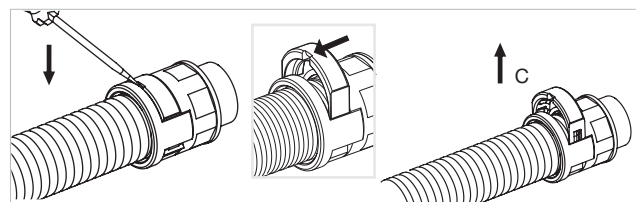
02

Push sealing cap (B) completely onto the conduit in order to achieve IP68.



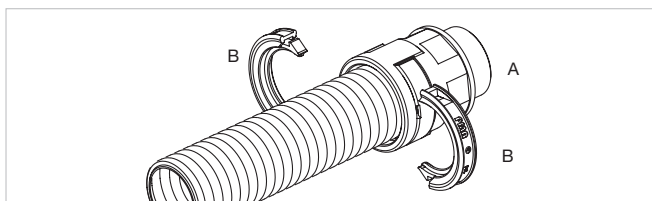
03

Push in the conduit (A) with a slight twist until the stop. Insert oval clip (D) in the locking element window and click into place. Screwdriver slot in the oval clip should be on conduit side.



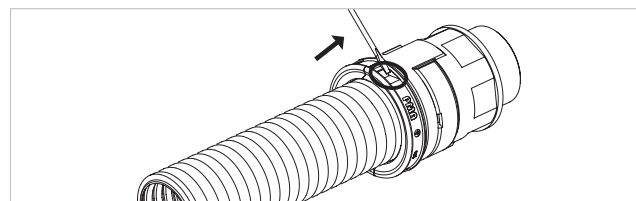
04

To re-open use a screwdriver.



05

For IP69:  
Based on IP68 System  
A = Conduit with IP68 fitting  
B = WPS half shells



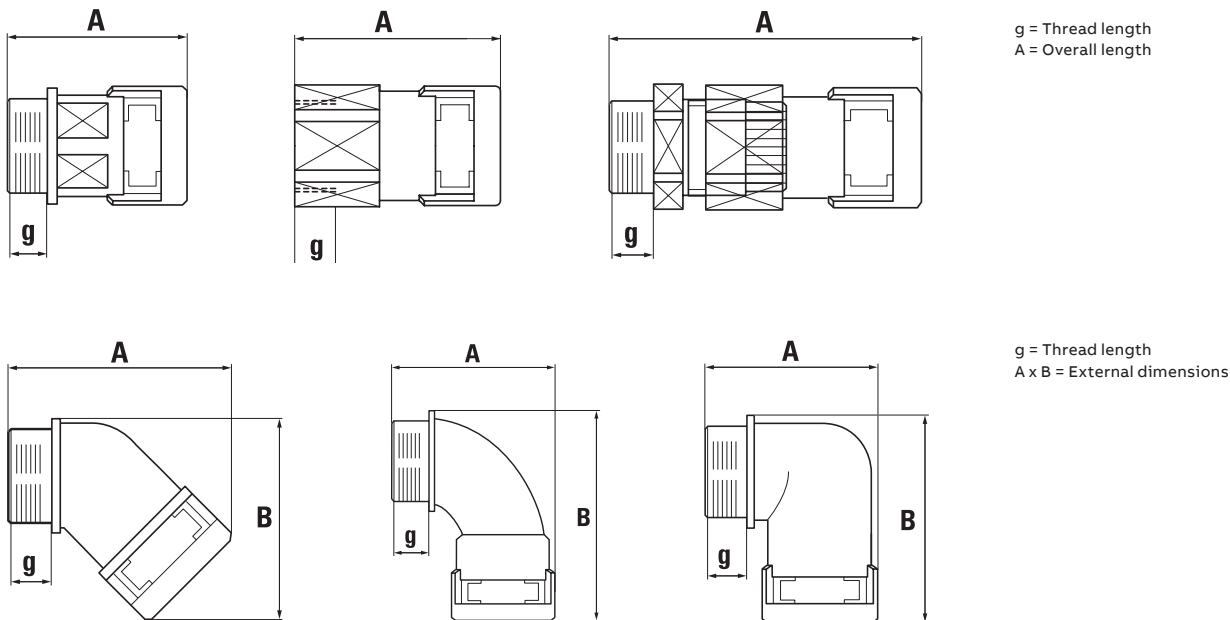
06

To re-open use a screwdriver.

\* For safety reasons, oval clip will not fit if seal cap is not fully installed.

Ensure to follow O-ring manufacturers guidelines when using O-rings for sealing purposes.

## Fitting dimensions



## PMAFIX

### Connectors metric, polyamide thread

#### Type VN - Connector straight, metric thread

|  | Order no.<br>IP66 ① | Order no.<br>IP68* ① | Fits to conduit size |        |       | Thread<br>metric | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|--|---------------------|----------------------|----------------------|--------|-------|------------------|--------------------------|---------------------------|
|  |                     |                      | NW                   | Metric | Inch  |                  |                          |                           |
|  | BVND-M12MGT         | BVNV-M12M            | 07                   | 10     | 1/4   | M12 x 1.5        | 11.0                     | 34.5                      |
|  | <b>BVND-M120GT</b>  | <b>BVNV-M120</b>     | 10                   | 12     | 5/16  | M12 x 1.5        | 11.0                     | 36.5                      |
|  | BVND-M160GT         | BVNV-M160            | 10                   | 12     | 5/16  | M16 x 1.5        | 11.0                     | 36.5                      |
|  | <b>BVND-M162GT</b>  | <b>BVNV-M162</b>     | 12                   | 16     | 3/8   | M16 x 1.5        | 11.0                     | 39.5                      |
|  | BVND-M200GT         | BVNV-M200            | 10                   | 12     | 5/16  | M20 x 1.5        | 11.0                     | 36.5                      |
|  | BVND-M202GT         | BVNV-M202            | 12                   | 16     | 3/8   | M20 x 1.5        | 11.0                     | 39.5                      |
|  | <b>BVND-M207GT</b>  | <b>BVNV-M207</b>     | 17                   | 20     | 1/2   | M20 x 1.5        | 11.0                     | 47.5                      |
|  | BVND-M203GT         | BVNV-M203            | 23                   | 25     | 3/4   | M20 x 1.5        | 11.0                     | 51.0                      |
|  | BVND-M257GT         | BVNV-M257            | 17                   | 20     | 1/2   | M25 x 1.5        | 12.0                     | 48.5                      |
|  | <b>BVND-M253GT</b>  | <b>BVNV-M253</b>     | 23                   | 25     | 3/4   | M25 x 1.5        | 12.0                     | 52.0                      |
|  | BVND-M323GT         | BVNV-M323            | 23                   | 25     | 3/4   | M32 x 1.5        | 15.0                     | 55.5                      |
|  | <b>BVND-M329GT</b>  | <b>BVNV-M329</b>     | 29                   | 32     | 1     | M32 x 1.5        | 15.0                     | 56.0                      |
|  | BVND-M409GT         | BVNV-M409            | 29                   | 32     | 1     | M40 x 1.5        | 19.0                     | 60.0                      |
|  | <b>BVND-M406GT</b>  | <b>BVNV-M406</b>     | 36                   | 40     | 1-1/4 | M40 x 1.5        | 19.0                     | 72.5                      |
|  | BVND-M506GT         | BVNV-M506            | 36                   | 40     | 1-1/4 | M50 x 1.5        | 19.0                     | 72.0                      |
|  | <b>BVND-M508GT</b>  | <b>BVNV-M508</b>     | 48                   | 50     | 1-1/2 | M50 x 1.5        | 19.0                     | 72.5                      |
|  | <b>BVND-M638GT</b>  | <b>BVNV-M638</b>     | 48                   | 50     | 1-1/2 | M63 x 1.5        | 19.0                     | 72.0                      |

For cable protection systems in a wide range of applications

① Please replace "B" for black with  
"S" for grey in front of the order no.

## Connectors metric, polyamide thread

### Type VNDZ/VNZ & VA

#### Type VNDZ/VNZ - Connector straight with strain relief, metric thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>metric | Fits to conduit size |        |       | Terminal<br>range | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|------------------|----------------------|--------|-------|-------------------|--------------------------|---------------------------|
|                                                                                   |                     |                     |                  | NW                   | Metric | Inch  |                   |                          |                           |
|  | BVNDZ-M160GT        | –                   | M16 x 1.5        | 10                   | 12     | 5/16  | 5.0–10.0          | 8.0                      | 62.0                      |
|                                                                                   | BVNDZ-M162GT        | BVNZ-M162S          | M16 x 1.5        | 12                   | 16     | 3/8   | 5.0–10.0          | 8.0                      | 62.0                      |
|                                                                                   | BVNDZ-M207GT        | BVNZ-M207S          | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0–14.0         | 8.0                      | 72.0                      |
|                                                                                   | BVNDZ-M253GT        | BVNZ-M253S          | M25 x 1.5        | 23                   | 25     | 3/4   | 13.0–18.0         | 8.0                      | 81.0                      |
|                                                                                   | BVNDZ-M329GT        | BVNZ-M329S          | M32 x 1.5        | 29                   | 32     | 1     | 18.0–25.0         | 10.0                     | 85.0                      |
|                                                                                   | BVNDZ-M406GT        | BVNZ-M406S          | M40 x 1.5        | 36                   | 40     | 1-1/4 | 22.0–32.0         | 10.0                     | 108.5                     |
|                                                                                   | BVNDZ-M508GT        | BVNZ-M508S          | M50 x 1.5        | 48                   | 50     | 1-1/2 | 30.0–38.0         | 12.0                     | 119.5                     |
|                                                                                   | BVNDZ-M638GT        | BVNZ-M638S          | M63 x 1.5        | 48                   | 50     | 1-1/2 | 34.0–44.0         | 12.0                     | 119.5                     |

For machine and plant construction

For separation of damp and dry areas

Integrated strain relief optimally holds and seals cables

If several conductors are used with the connector multiple sealing inserts should be considered

**Note:** For several conductors multiple sealing inserts MDE are available

#### Type VA - Connector 45° elbow, metric thread

|                                                                                     | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|---------------------|---------------------|------------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                     |                     |                     |                  | NW                   | Metric | Inch  |                          |                           |
|  | BVAD-M120GT         | –                   | M12 x 1.5        | 10                   | 12     | 5/16  | 11.0                     | 43.5 x 37.0               |
|                                                                                     | BVAD-M160GT         | BVAV-M160           | M16 x 1.5        | 10                   | 12     | 5/16  | 11.0                     | 43.5 x 38.0               |
|                                                                                     | BVAD-M162GT         | BVAV-M162           | M16 x 1.5        | 12                   | 16     | 3/8   | 11.0                     | 48.0 x 40.0               |
|                                                                                     | BVAD-M202GT         | BVAV-M202           | M20 x 1.5        | 12                   | 16     | 3/8   | 11.0                     | 48.0 x 41.5               |
|                                                                                     | BVAD-M207GT         | BVAV-M207           | M20 x 1.5        | 17                   | 20     | 1/2   | 11.0                     | 55.5 x 51.5               |
|                                                                                     | BVAD-M253GT         | BVAV-M253           | M25 x 1.5        | 23                   | 25     | 3/4   | 12.0                     | 65.0 x 58.5               |
|                                                                                     | BVAD-M329GT         | BVAV-M329           | M32 x 1.5        | 29                   | 32     | 1     | 15.0                     | 73.5 x 66.5               |
|                                                                                     | BVAD-M406GT         | BVAV-M406           | M40 x 1.5        | 36                   | 40     | 1-1/4 | 19.0                     | 92.5 x 85.5               |
|                                                                                     | BVAD-M506GT         | BVAV-M506           | M50 x 1.5        | 36                   | 40     | 1-1/4 | 19.0                     | 92.5 x 89.5               |
|                                                                                     | BVAD-M508GT         | BVAV-M508           | M50 x 1.5        | 48                   | 50     | 1-1/2 | 19.0                     | 100.0 x 96.0              |
|                                                                                     | BVAD-M638GT         | BVAV-M638           | M63 x 1.5        | 48                   | 50     | 1-1/2 | 19.0                     | 100.0 x 104.0             |

#### Approvals



① Please replace "B" for black with  
"S" for grey in front of the order no.



## Connectors metric, polyamide thread

### Type VB & VW

#### Type VB - Connector 90° curved elbow, metric thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|------------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                     |                     |                  | NW                   | Metric | Inch  |                          |                                |
|  | <b>BVBD-M207GT</b>  | BVBV-M207           | M20 x 1.5        | 17                   | 20     | 1/2   | 11.0                     | 47.5 x 73.0                    |
|                                                                                   | <b>BVBD-M257GT</b>  | BVBV-M257           | M25 x 1.5        | 17                   | 20     | 1/2   | 12.0                     | 48.5 x 76.0                    |
|                                                                                   | <b>BVBD-M253GT</b>  | BVBV-M253           | M25 x 1.5        | 23                   | 25     | 3/4   | 12.0                     | 57.5 x 83.0                    |
|                                                                                   | <b>BVBD-M323GT</b>  | BVBV-M323           | M32 x 1.5        | 23                   | 25     | 3/4   | 15.0                     | 61.0 x 87.5                    |
|                                                                                   | <b>BVBD-M329GT</b>  | BVBV-M329           | M32 x 1.5        | 29                   | 32     | 1     | 15.0                     | 70.5 x 93.0                    |
|                                                                                   | <b>BVBD-M409GT</b>  | BVBV-M409           | M40 x 1.5        | 29                   | 32     | 1     | 19.0                     | 74.5 x 98.5                    |
|                                                                                   | <b>BVBD-M406GT</b>  | BVBV-M406           | M40 x 1.5        | 36                   | 40     | 1-1/4 | 19.0                     | 85.0 x 121.0                   |
|                                                                                   | <b>BVBD-M506GT</b>  | BVBV-M506           | M50 x 1.5        | 36                   | 40     | 1-1/4 | 19.0                     | 85.0 x 125.0                   |
|                                                                                   | <b>BVBD-M508GT</b>  | BVBV-M508           | M50 x 1.5        | 48                   | 50     | 1-1/2 | 19.0                     | 98.5 x 130.0                   |
|                                                                                   | <b>BVBD-M638GT</b>  | BVBV-M638           | M63 x 1.5        | 48                   | 50     | 1-1/2 | 19.0                     | 98.5 x 138.0                   |
|                                                                                   |                     |                     |                  |                      |        |       |                          |                                |
|                                                                                   |                     |                     |                  |                      |        |       |                          |                                |

#### Approvals



For cable protection systems in a wide range of applications

Smooth elbow allows easy threading of wires and cables

**Note:** For smaller conduit sizes NW 10 to NW 12 appropriate standard elbows of type VW are also available

#### Type VW - Connector 90° elbow, metric thread

|                                                                                     | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-------------------------------------------------------------------------------------|---------------------|---------------------|------------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                     |                     |                     |                  | NW                   | Metric | Inch  |                          |                                |
|  | <b>BVWD-M12MGT</b>  | BVWV-M12M           | M12 x 1.5        | 07                   | 10     | 1/4   | 11.0                     | 32.0 x 35.0                    |
|                                                                                     | <b>BVWD-M120GT</b>  | BVWV-M120           | M12 x 1.5        | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 39.5                    |
|                                                                                     | <b>BVWD-M160GT</b>  | BVWV-M160           | M16 x 1.5        | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 40.5                    |
|                                                                                     | <b>BVWD-M200GT</b>  | –                   | M20 x 1.5        | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 42.5                    |
|                                                                                     | <b>BVWD-M162GT</b>  | BVWV-M162           | M16 x 1.5        | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 46.0                    |
|                                                                                     | <b>BVWD-M202GT</b>  | BVWV-M202           | M20 x 1.5        | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 47.5                    |
|                                                                                     | <b>BVWD-M207GT</b>  | BVWV-M207           | M20 x 1.5        | 17                   | 20     | 1/2   | 11.0                     | 43.5 x 58.5                    |
|                                                                                     | <b>BVWD-M253GT</b>  | BVWV-M253           | M25 x 1.5        | 23                   | 25     | 3/4   | 12.0                     | 54.0 x 65.0                    |
|                                                                                     | <b>BVWD-M329GT</b>  | BVWV-M329           | M32 x 1.5        | 29                   | 32     | 1     | 15.0                     | 64.5 x 73.0                    |
|                                                                                     | <b>BVWD-M406GT</b>  | BVWV-M406           | M40 x 1.5        | 36                   | 40     | 1-1/4 | 19.0                     | 78.0 x 96.0                    |
|                                                                                     | <b>BVWD-M508GT</b>  | BVWV-M508           | M50 x 1.5        | 48                   | 50     | 1-1/2 | 19.0                     | 91.5 x 106.0                   |
|                                                                                     |                     |                     |                  |                      |        |       |                          |                                |

#### Approvals



For cable protection systems in a wide range of applications

**Note:** For sizes NW 17 to NW 48 curved elbows of type VB are also available

① Please replace "B" for black with  
"S" for grey in front of the order no.

## Connectors metric, metal thread

### Type VNV

Type VNV - Connector straight, metric metal thread



|     | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----|--------------------------|-------------------------|------------------|----------------------|--------|-------|--------------------------|---------------------------|
|     |                          |                         |                  | NW                   | Metric | Inch  |                          |                           |
| VNV | NVNV-M120-10             | MVNV-M120-10            | M12 x 1.5        | 10                   | 12     | 5/16  | 10.0                     | 40.0                      |
|     | NVNV-M120-5              | MVNV-M120-5             | M12 x 1.5        | 10                   | 12     | 5/16  | 5.0                      | 35.0                      |
|     | NVNV-M160-10             | MVNV-M160-10            | M16 x 1.5        | 10                   | 12     | 5/16  | 10.0                     | 40.0                      |
|     | NVNV-M160-5              | MVNV-M160-5             | M16 x 1.5        | 10                   | 12     | 5/16  | 5.0                      | 35.0                      |
|     | NVNV-M162-10             | MVNV-M162-10            | M16 x 1.5        | 12                   | 16     | 3/8   | 10.0                     | 43.0                      |
|     | NVNV-M162-5              | MVNV-M162-5             | M16 x 1.5        | 12                   | 16     | 3/8   | 5.0                      | 38.0                      |
|     | NVNV-M202-10             | MVNV-M202-10            | M20 x 1.5        | 12                   | 16     | 3/8   | 10.0                     | 43.0                      |
|     | NVNV-M202-6              | MVNV-M202-6             | M20 x 1.5        | 12                   | 16     | 3/8   | 6.0                      | 39.0                      |
|     | NVNV-M207-10             | MVNV-M207-10            | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 51.0                      |
|     | NVNV-M207-6              | MVNV-M207-6             | M20 x 1.5        | 17                   | 20     | 1/2   | 6.0                      | 47.0                      |
|     | NVNV-M257-11             | MVNV-M257-11            | M25 x 1.5        | 17                   | 20     | 1/2   | 11.0                     | 52.0                      |
|     | NVNV-M257-7              | MVNV-M257-7             | M25 x 1.5        | 17                   | 20     | 1/2   | 7.0                      | 48.0                      |
|     | NVNV-M253-11             | MVNV-M253-11            | M25 x 1.5        | 23                   | 25     | 3/4   | 11.0                     | 54.0                      |
|     | NVNV-M253-7              | MVNV-M253-7             | M25 x 1.5        | 23                   | 25     | 3/4   | 7.0                      | 50.0                      |
|     | NVNV-M323-13             | MVNV-M323-13            | M32 x 1.5        | 23                   | 25     | 3/4   | 13.0                     | 56.0                      |
|     | NVNV-M323-8              | MVNV-M323-8             | M32 x 1.5        | 23                   | 25     | 3/4   | 8.0                      | 51.0                      |
|     | NVNV-M329-13             | MVNV-M329-13            | M32 x 1.5        | 29                   | 32     | 1     | 13.0                     | 57.3                      |
|     | NVNV-M329-8              | MVNV-M329-8             | M32 x 1.5        | 29                   | 32     | 1     | 8.0                      | 52.3                      |
|     | NVNV-M409-13             | MVNV-M409-13            | M40 x 1.5        | 29                   | 32     | 1     | 13.0                     | 57.3                      |
|     | NVNV-M409-8              | MVNV-M409-8             | M40 x 1.5        | 29                   | 32     | 1     | 8.0                      | 52.3                      |
|     | NVNV-M406-13             | MVNV-M406-13            | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 71.4                      |
|     | NVNV-M406-8              | MVNV-M406-8             | M40 x 1.5        | 36                   | 40     | 1-1/4 | 8.0                      | 66.4                      |
|     | NVNV-M506-14             | MVNV-M506-14            | M50 x 1.5        | 36                   | 40     | 1-1/4 | 14.0                     | 72.4                      |
|     | NVNV-M506-9              | MVNV-M506-9             | M50 x 1.5        | 36                   | 40     | 1-1/4 | 9.0                      | 67.4                      |
|     | NVNV-M508-14             | MVNV-M508-14            | M50 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 72.4                      |
|     | NVNV-M508-9              | MVNV-M508-9             | M50 x 1.5        | 48                   | 50     | 1-1/2 | 9.0                      | 67.4                      |
|     | NVNV-M638-14             | MVNV-M638-14            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 72.4                      |
|     | NVNV-M638-10             | MVNV-M638-10            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 10.0                     | 68.4                      |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

Connectors NPT, metal thread

Type VNV

Type VNV - Connector straight, metric metal thread

|                                                                                   | Order no.<br>IP68, black | Thread<br>NPT | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|---------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                          |               | NW                   | Metric | Inch  |                          |                           |
|  | NVNV-N022                | 1/2"          | 12                   | 16     | 3/8   | 15.4                     | 48.1                      |
|                                                                                   | NVNV-N027                | 1/2"          | 17                   | 20     | 1/2   | 15.4                     | 56.4                      |
|                                                                                   | NVNV-N043                | 3/4"          | 23                   | 25     | 3/4   | 15.7                     | 58.7                      |
|                                                                                   | NVNV-N069                | 1"            | 29                   | 32     | 1     | 19.6                     | 63.9                      |
|                                                                                   | NVNV-N076                | 1 1/4"        | 36                   | 40     | 1-1/4 | 20.2                     | 78.6                      |
|                                                                                   | NVNV-N088                | 1 1/2"        | 48                   | 50     | 1-1/2 | 20.6                     | 79.0                      |
|                                                                                   | NVNV-N098                | 2"            | 48                   | 50     | 1-1/2 | 21.4                     | 79.8                      |
|                                                                                   |                          |               |                      |        |       |                          |                           |

Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

## Connectors with strain relief, metric, metal thread

### Type VNZ

Type VNZ - Connector straight with strain relief, metric metal thread



|                                                                                   | Order no. IP68<br>Compl., black | Order no.<br>fitting* | Order no.<br>insert | Thread<br>metric | Fits to<br>conduit size |        |       | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------------------|-----------------------|---------------------|------------------|-------------------------|--------|-------|---------------------------|--------------------------|---------------------------|
|                                                                                   |                                 |                       |                     |                  | NW                      | Metric | Inch  |                           |                          |                           |
| VNZ                                                                               | NVNZ-M120S/P1                   | NVNZ-M120R/P          | EK 150p7            | M12 x 1.5        | 10                      | 12     | 5/16  | 4.0–6.5                   | 5.0                      | 48.5                      |
|                                                                                   | NVNZ-M120S/P2                   |                       | EK 150p8            | M12 x 1.5        | 10                      | 12     | 5/16  | 5.0–8.0                   | 5.0                      | 48.5                      |
|                                                                                   | NVNZ-M120S/P3                   |                       | EK 150p9            | M12 x 1.5        | 10                      | 12     | 5/16  | 6.5–9.5                   | 5.0                      | 48.5                      |
|  | NVNZ-M160S/P1                   | NVNZ-M160R/P          | E 150p7             | M16 x 1.5        | 10                      | 12     | 5/16  | 4.0–6.5                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-M160S/P2                   |                       | E 150p8             | M16 x 1.5        | 10                      | 12     | 5/16  | 5.0–8.0                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-M160S/P3                   |                       | E 150p9             | M16 x 1.5        | 10                      | 12     | 5/16  | 6.5–9.5                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-M202S/P1                   | NVNZ-M202R/P          | E 152p7             | M20 x 1.5        | 12                      | 16     | 5/16  | 4.0–6.5                   | 6.0                      | 54.0                      |
|                                                                                   | NVNZ-M202S/P3                   |                       | E 152p9             | M20 x 1.5        | 12                      | 16     | 5/16  | 6.5–9.5                   | 6.0                      | 54.0                      |
|                                                                                   | NVNZ-M202S/P4                   |                       | E 152p11            | M20 x 1.5        | 12                      | 16     | 5/16  | 7.0–10.5                  | 6.0                      | 54.0                      |
|                                                                                   | NVNZ-M207S/P3                   | NVNZ-M207R/P          | E 152p9             | M20 x 1.5        | 17                      | 20     | 1/2   | 6.5–9.5                   | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M207S/P4                   |                       | E 152p11            | M20 x 1.5        | 17                      | 20     | 1/2   | 7.0–10.5                  | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M207S/P5                   |                       | E 152p13            | M20 x 1.5        | 17                      | 20     | 1/2   | 9.0–13.0                  | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M253S/P5                   | NVNZ-M253R/P          | EK 154p13           | M25 x 1.5        | 23                      | 25     | 3/4   | 9.0–13.0                  | 7.5                      | 72.5                      |
|                                                                                   | NVNZ-M253S/P6                   |                       | EK 154p16           | M25 x 1.5        | 23                      | 25     | 3/4   | 11.5–15.5                 | 7.5                      | 72.5                      |
|                                                                                   | NVNZ-M257S/P4                   | NVNZ-M257R/P          | E 153p11            | M25 x 1.5        | 17                      | 20     | 1/2   | 7.0–10.5                  | 7.5                      | 61.5                      |
|                                                                                   | NVNZ-M257S/P5                   |                       | E 153p13            | M25 x 1.5        | 17                      | 20     | 1/2   | 9.0–13.0                  | 7.5                      | 61.5                      |
|                                                                                   | NVNZ-M257S/P6                   |                       | E 153p16            | M25 x 1.5        | 17                      | 20     | 1/2   | 11.5–15.5                 | 7.5                      | 61.5                      |
|                                                                                   | NVNZ-M323S/P4                   | NVNZ-M323R/P          | E 154p18            | M32 x 1.5        | 23                      | 25     | 3/4   | 14.0–18.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M323S/P5                   | NVNZ-M323R1/P         | E 154p20            | M32 x 1.5        | 23                      | 25     | 3/4   | 17.0–20.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M329S/P2                   | NVNZ-M329R/P          | EK 155p18           | M32 x 1.5        | 29                      | 32     | 1     | 14.0–18.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M329S/P3                   |                       | EK 155p20           | M32 x 1.5        | 29                      | 32     | 1     | 17.0–20.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M329S/P4                   |                       | EK 155p25           | M32 x 1.5        | 29                      | 32     | 1     | 20.0–25.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M406S/P1                   | NVNZ-M406R/P          | E 156p25HF          | M40 x 1.5        | 36                      | 40     | 1-1/4 | 20.0–25.0                 | 9.0                      | 87.0                      |
|                                                                                   | NVNZ-M406S/P2                   |                       | EK 156p28           | M40 x 1.5        | 36                      | 40     | 1-1/4 | 24.0–28.0                 | 9.0                      | 87.0                      |
|                                                                                   | NVNZ-M409S/P1                   | NVNZ-M409R/P          | E 155p16            | M40 x 1.5        | 29                      | 32     | 1     | 11.5–15.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/P2                   |                       | E 155p18            | M40 x 1.5        | 29                      | 32     | 1     | 14.0–18.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/P3                   |                       | E 155p20            | M40 x 1.5        | 29                      | 32     | 1     | 17.0–20.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/P4                   |                       | E 155p25            | M40 x 1.5        | 29                      | 32     | 1     | 20.0–25.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/P5                   |                       | E 155p28            | M40 x 1.5        | 29                      | 32     | 1     | 24.0–28.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M506S/P1                   | NVNZ-M506R/P          | E 156p32            | M50 x 1.5        | 36                      | 40     | 1-1/4 | 27.0–32.0                 | 9.0                      | 89.5                      |
|                                                                                   | NVNZ-M506S/P3                   |                       | E 156p36            | M50 x 1.5        | 36                      | 40     | 1-1/4 | 32.0–36.0                 | 9.0                      | 89.5                      |
|                                                                                   | NVNZ-M508S/P2                   | NVNZ-M508R/P          | E 157p36HF          | M50 x 1.5        | 48                      | 50     | 1-1/2 | 32.0–36.0                 | 9.0                      | 92.0                      |
|                                                                                   | NVNZ-M508S/P3                   |                       | E 157p40HF          | M50 x 1.5        | 48                      | 50     | 1-1/2 | 36.0–40.0                 | 9.0                      | 92.0                      |
|                                                                                   | NVNZ-M638S/P1                   | NVNZ-M638R/P          | E 158pm1x35         | M63 x 1.5        | 48                      | 50     | 1-1/2 | 32.0–35.0                 | 10.0                     | 90.5                      |
|                                                                                   | NVNZ-M638S/P2                   |                       | E 158p44            | M63 x 1.5        | 48                      | 50     | 1-1/2 | 39.0–44.0                 | 10.0                     | 90.5                      |

\*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C

**Note:** For several conductors multiple sealing inserts MDE are available. R/P version of fitting has to be used in combination with multiple sealing inserts



## Fire barrier connectors with strain relief, metric, metal thread

### Type VNZ

Type VNZ - Fire barrier connector straight with strain relief, metric metal thread



|                                                                                   | Order no. IP68<br>Compl., black | Thread<br>metric | Fits to<br>conduit size |        |       | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------------------|------------------|-------------------------|--------|-------|---------------------------|--------------------------|---------------------------|
|                                                                                   |                                 |                  | NW                      | Metric | Inch  |                           |                          |                           |
|  | NVNZ-M120S/B1                   | M12 x 1.5        | 10                      | 12     | 5/16  | 4.0–6.5                   | 5.0                      | 48.5                      |
|                                                                                   | NVNZ-M120S/B2                   | M12 x 1.5        | 10                      | 12     | 5/16  | 5.0–8.0                   | 5.0                      | 48.5                      |
|                                                                                   | NVNZ-M120S/B3                   | M12 x 1.5        | 10                      | 12     | 5/16  | 6.5–9.5                   | 5.0                      | 48.5                      |
|                                                                                   | NVNZ-M160S/B1                   | M16 x 1.5        | 10                      | 12     | 5/16  | 4.0–6.5                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-M160S/B2                   | M16 x 1.5        | 10                      | 12     | 5/16  | 5.0–8.0                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-M160S/B3                   | M16 x 1.5        | 10                      | 12     | 5/16  | 6.5–9.5                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-M202S/B1                   | M20 x 1.5        | 12                      | 16     | 3/8   | 4.0–6.5                   | 6.0                      | 54.0                      |
|                                                                                   | NVNZ-M202S/B3                   | M20 x 1.5        | 12                      | 16     | 3/8   | 6.5–9.5                   | 6.0                      | 54.0                      |
|                                                                                   | NVNZ-M202S/B4                   | M20 x 1.5        | 12                      | 16     | 3/8   | 7.0–10.5                  | 6.0                      | 54.0                      |
|                                                                                   | NVNZ-M207S/B1                   | M20 x 1.5        | 17                      | 20     | 1/2   | 4.0–6.5                   | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M207S/B2                   | M20 x 1.5        | 17                      | 20     | 1/2   | 5.0–8.0                   | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M207S/B3                   | M20 x 1.5        | 17                      | 20     | 1/2   | 6.5–9.5                   | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M207S/B4                   | M20 x 1.5        | 17                      | 20     | 1/2   | 7.0–10.5                  | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M207S/B5                   | M20 x 1.5        | 17                      | 20     | 1/2   | 9.0–13.0                  | 6.5                      | 60.0                      |
|                                                                                   | NVNZ-M253S/B5                   | M25 x 1.5        | 23                      | 25     | 3/4   | 9.0–13.0                  | 7.5                      | 72.5                      |
|                                                                                   | NVNZ-M253S/B6                   | M25 x 1.5        | 23                      | 25     | 3/4   | 11.5–15.5                 | 7.5                      | 72.5                      |
|                                                                                   | NVNZ-M257S/B4                   | M25 x 1.5        | 17                      | 20     | 1/2   | 7.0–10.0                  | 7.5                      | 61.5                      |
|                                                                                   | NVNZ-M257S/B5                   | M25 x 1.5        | 17                      | 20     | 1/2   | 9.0–13.0                  | 7.5                      | 61.5                      |
|                                                                                   | NVNZ-M257S/B6                   | M25 x 1.5        | 17                      | 20     | 1/2   | 11.5–15.5                 | 7.5                      | 61.5                      |
|                                                                                   | NVNZ-M323S/B4                   | M32 x 1.5        | 23                      | 25     | 3/4   | 14.0–18.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M323S/B5                   | M32 x 1.5        | 23                      | 25     | 3/4   | 17.0–20.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M329S/B2                   | M32 x 1.5        | 29                      | 32     | 1     | 14.0–18.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M329S/B3                   | M32 x 1.5        | 29                      | 32     | 1     | 17.0–20.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M329S/B4                   | M32 x 1.5        | 29                      | 32     | 1     | 20.0–25.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M406S/B1                   | M40 x 1.5        | 36                      | 40     | 1-1/4 | 20.0–25.0                 | 9.0                      | 87.0                      |
|                                                                                   | NVNZ-M406S/B2                   | M40 x 1.5        | 36                      | 40     | 1-1/4 | 24.0–28.0                 | 9.0                      | 87.0                      |
|                                                                                   | NVNZ-M409S/B1                   | M40 x 1.5        | 29                      | 32     | 1     | 11.5–15.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/B2                   | M40 x 1.5        | 29                      | 32     | 1     | 14.0–18.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/B3                   | M40 x 1.5        | 29                      | 32     | 1     | 17.0–20.5                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/B4                   | M40 x 1.5        | 29                      | 32     | 1     | 20.0–25.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M409S/B5                   | M40 x 1.5        | 29                      | 32     | 1     | 24.0–28.0                 | 8.0                      | 73.0                      |
|                                                                                   | NVNZ-M506S/B1                   | M50 x 1.5        | 36                      | 40     | 1-1/4 | 27.0–32.0                 | 9.0                      | 89.5                      |
|                                                                                   | NVNZ-M506S/B3                   | M50 x 1.5        | 36                      | 40     | 1-1/4 | 32.0–36.0                 | 9.0                      | 89.5                      |
|                                                                                   | NVNZ-M508S/B2                   | M50 x 1.5        | 48                      | 50     | 1-1/2 | 32.0–36.0                 | 9.0                      | 92.0                      |
|                                                                                   | NVNZ-M508S/B3                   | M50 x 1.5        | 48                      | 50     | 1-1/2 | 36.0–40.0                 | 9.0                      | 92.0                      |
|                                                                                   | NVNZ-M638S/B1                   | M63 x 1.5        | 48                      | 50     | 1-1/2 | 32.0–35.0                 | 10.0                     | 90.5                      |
|                                                                                   | NVNZ-M638S/B2                   | M63 x 1.5        | 48                      | 50     | 1-1/2 | 39.0–44.0                 | 10.0                     | 90.5                      |

\*without insert

Fire barrier function, according to standard EN45545-2/-3

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from T80S

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C

**Note:** For several conductors multiple sealing inserts MDE are available.

R/P version of fitting has to be used in combination with multiple sealing inserts

## Connectors with strain relief, metric, long metal thread

### Type VNZ

Type VNZ - Connector straight with strain relief, metric long metal thread



|                                                                                   | Order no. IP68<br>Compl., black | Order no.<br>fitting* | Order no.<br>insert | Thread<br>metric | Fits to<br>conduit size |        |       | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------------------|-----------------------|---------------------|------------------|-------------------------|--------|-------|---------------------------|--------------------------|---------------------------|
|                                                                                   |                                 |                       |                     |                  | NW                      | Metric | Inch  |                           |                          |                           |
|  | NVNZ-M120S/P1-L                 | NVNZ-M120R/P-L        | EK 150p7            | M12 x 1.5        | 10                      | 12     | 5/16  | 4.0–6.5                   | 15.0                     | 66.5                      |
|                                                                                   | NVNZ-M120S/P3-L                 |                       |                     | M12 x 1.5        | 10                      | 12     | 5/16  | 6.5–9.5                   | 15.0                     | 66.5                      |
|                                                                                   | NVNZ-M160S/P1-L                 | NVNZ-M160R/P-L        | E 150p7             | M16 x 1.5        | 10                      | 12     | 5/16  | 4.0–6.5                   | 15.0                     | 58.5                      |
|                                                                                   | NVNZ-M160S/P2-L                 |                       | E 150p8             | M16 x 1.5        | 10                      | 12     | 5/16  | 5.0–8.0                   | 15.0                     | 58.5                      |
|                                                                                   | NVNZ-M160S/P3-L                 |                       | E 150p9             | M16 x 1.5        | 10                      | 12     | 5/16  | 6.5–9.5                   | 15.0                     | 58.5                      |
|                                                                                   | NVNZ-M202S/P1-L                 | NVNZ-M202R/P-L        | E 152p7             | M20 x 1.5        | 12                      | 16     | 3/8   | 4.0–6.5                   | 15.0                     | 62.5                      |
|                                                                                   | NVNZ-M202S/P3-L                 |                       | E 152p9             | M20 x 1.5        | 12                      | 16     | 3/8   | 6.5–9.5                   | 15.0                     | 62.5                      |
|                                                                                   | NVNZ-M202S/P4-L                 |                       | E 152p11            | M20 x 1.5        | 12                      | 16     | 3/8   | 7.0–10.5                  | 15.0                     | 62.5                      |
|                                                                                   | NVNZ-M207S/P3-L                 | NVNZ-M207R/P-L        | E 152p9             | M20 x 1.5        | 17                      | 20     | 1/2   | 6.5–9.5                   | 15.0                     | 68.5                      |
|                                                                                   | NVNZ-M207S/P4-L                 |                       | E 152p11            | M20 x 1.5        | 17                      | 20     | 1/2   | 7.0–10.5                  | 15.0                     | 68.5                      |
|                                                                                   | NVNZ-M207S/P5-L                 |                       | E 152p13            | M20 x 1.5        | 17                      | 20     | 1/2   | 9.0–13.0                  | 15.0                     | 68.5                      |
|                                                                                   | NVNZ-M257S/P5-L                 | NVNZ-M257R/P-L        | E 153p13            | M25 x 1.5        | 17                      | 20     | 1/2   | 9.0–13.0                  | 15.0                     | 69.0                      |
|                                                                                   | NVNZ-M257S/P6-L                 |                       | E 153p16            | M25 x 1.5        | 17                      | 20     | 1/2   | 11.5–15.5                 | 15.0                     | 69.0                      |
|                                                                                   | NVNZ-M323S/P4-L                 | NVNZ-M323R/P-L        | E 154p18            | M32 x 1.5        | 23                      | 25     | 3/4   | 14.0–18.0                 | 15.0                     | 80.0                      |
|                                                                                   | NVNZ-M323S/P5-L                 | NVNZ-M323R1/P-L       | E 154p20            | M32 x 1.5        | 23                      | 25     | 3/4   | 17.0–20.5                 | 15.0                     | 80.0                      |
|                                                                                   | NVNZ-M329S/P2-L                 | NVNZ-M329R/P-L        | E 155p18            | M32 x 1.5        | 29                      | 32     | 1     | 14.0–18.0                 | 15.0                     | 91.0                      |
|                                                                                   | NVNZ-M329S/P3-L                 |                       | E 155p20            | M32 x 1.5        | 29                      | 32     | 1     | 17.0–20.5                 | 15.0                     | 91.0                      |
|                                                                                   | NVNZ-M409S/P3-L                 | NVNZ-M409R/P-L        | E 155p20            | M40 x 1.5        | 29                      | 32     | 1     | 17.0–20.5                 | 15.0                     | 80.0                      |
|                                                                                   | NVNZ-M409S/P4-L                 |                       | E 155p25            | M40 x 1.5        | 29                      | 32     | 1     | 20.0–25.0                 | 15.0                     | 80.0                      |
|                                                                                   | NVNZ-M409S/P5-L                 |                       | E 155p28            | M40 x 1.5        | 29                      | 32     | 1     | 24.0–28.0                 | 15.0                     | 80.0                      |
|                                                                                   | NVNZ-M506S/P1-L                 | NVNZ-M506R/P-L        | E 156p32            | M50 x 1.5        | 36                      | 40     | 1-1/4 | 27.0–32.0                 | 15.0                     | 94.5                      |
|                                                                                   | NVNZ-M506S/P3-L                 |                       | E 156p36            | M50 x 1.5        | 36                      | 40     | 1-1/4 | 32.0–36.0                 | 15.0                     | 94.5                      |
|                                                                                   | NVNZ-M508S/P2-L                 | NVNZ-M508R/P-L        | E 157p36HF          | M50 x 1.5        | 48                      | 50     | 1-1/2 | 32.0–36.0                 | 15.0                     | 97.0                      |
|                                                                                   | NVNZ-M508S/P3-L                 |                       | E 157p40HF          | M50 x 1.5        | 48                      | 50     | 1-1/2 | 36.0–40.0                 | 15.0                     | 97.0                      |
|                                                                                   | NVNZ-M638S/P1-L                 | NVNZ-M638R/P-L        | E 158pm1X35         | M63 x 1.5        | 48                      | 50     | 1-1/2 | 32.0–35.0                 | 15.0                     | 95.5                      |
|                                                                                   | NVNZ-M638S/P2-L                 |                       | E 158p44            | M63 x 1.5        | 48                      | 50     | 1-1/2 | 39.0–44.0                 | 15.0                     | 95.5                      |

\*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: -40°C to +135°C

**Note:** For several conductors multiple sealing inserts MDE are available

R/P version of fitting has to be used in combination with multiple sealing inserts

## Connectors metric, metal thread

### Type VAV

Type VAV - Connector 45° elbow, metric metal thread

|                                                                                   | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------|------------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                          |                         |                  | NW                   | Metric | Inch  |                          |                                |
|  | NVAV-M120-10             | MVAV-M120-10            | M12 x 1.5        | 10                   | 12     | 5/16  | 10.0                     | 48.5 x 37.0                    |
|                                                                                   | NVAV-M120-5              | MVAV-M120-5             | M12 x 1.5        | 10                   | 12     | 5/16  | 5.0                      | 43.5 x 37.0                    |
|                                                                                   | NVAV-M162-10             | MVAV-M162-10            | M16 x 1.5        | 12                   | 16     | 3/8   | 10.0                     | 53.0 x 40.5                    |
|                                                                                   | NVAV-M162-5              | MVAV-M162-5             | M16 x 1.5        | 12                   | 16     | 3/8   | 5.0                      | 48.0 x 40.5                    |
|                                                                                   | NVAV-M207-10             | MVAV-M207-10            | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 60.5 x 51.5                    |
|                                                                                   | NVAV-M207-6              | MVAV-M207-6             | M20 x 1.5        | 17                   | 20     | 1/2   | 6.0                      | 56.5 x 51.5                    |
|                                                                                   | NVAV-M253-11             | MVAV-M253-11            | M25 x 1.5        | 23                   | 25     | 3/4   | 11.0                     | 70.0 x 60.5                    |
|                                                                                   | NVAV-M253-7              | MVAV-M253-7             | M25 x 1.5        | 23                   | 25     | 3/4   | 7.0                      | 66.0 x 60.5                    |
|                                                                                   | NVAV-M329-13             | MVAV-M329-13            | M32 x 1.5        | 29                   | 32     | 1     | 13.0                     | 77.0 x 68.0                    |
|                                                                                   | NVAV-M329-8              | MVAV-M329-8             | M32 x 1.5        | 29                   | 32     | 1     | 8.0                      | 72.0 x 68.0                    |
|                                                                                   | NVAV-M406-13             | MVAV-M406-13            | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 94.0 x 87.5                    |
|                                                                                   | NVAV-M406-8              | MVAV-M406-8             | M40 x 1.5        | 36                   | 40     | 1-1/4 | 8.0                      | 89.0 x 87.5                    |
|                                                                                   | NVAV-M508-14             | MVAV-M508-14            | M50 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 102.0 x 101.0                  |
|                                                                                   | NVAV-M508-9              | MVAV-M508-9             | M50 x 1.5        | 48                   | 50     | 1-1/2 | 9.0                      | 97.0 x 101.0                   |
|                                                                                   | NVAV-M638-14             | MVAV-M638-14            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 102.0 x 104.0                  |
|                                                                                   | NVAV-M638-10             | MVAV-M638-10            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 10.0                     | 98.0 x 104.0                   |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

## Connectors metric, metal thread

### Type VBV

Type VBV - Connector 90° curved elbow, metric metal thread

|                                                                                   | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------|------------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                          |                         |                  | NW                   | Metric | Inch  |                          |                                |
|  | NVBV-M207-10             | MVBV-M207-10            | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 51.0 x 73.0                    |
|                                                                                   | NVBV-M207-6              | MVBV-M207-6             | M20 x 1.5        | 17                   | 20     | 1/2   | 6.0                      | 47.0 x 73.0                    |
|                                                                                   | NVBV-M257-11             | MVBV-M257-11            | M25 x 1.5        | 17                   | 20     | 1/2   | 11.0                     | 52.0 x 76.0                    |
|                                                                                   | NVBV-M257-7              | MVBV-M257-7             | M25 x 1.5        | 17                   | 20     | 1/2   | 7.0                      | 48.0 x 76.0                    |
|                                                                                   | NVBV-M253-11             | MVBV-M253-11            | M25 x 1.5        | 23                   | 25     | 3/4   | 11.0                     | 62.5 x 85.0                    |
|                                                                                   | NVBV-M253-7              | MVBV-M253-7             | M25 x 1.5        | 23                   | 25     | 3/4   | 7.0                      | 58.5 x 85.0                    |
|                                                                                   | NVBV-M323-13             | MVBV-M323-13            | M32 x 1.5        | 23                   | 25     | 3/4   | 13.0                     | 64.5 x 89.0                    |
|                                                                                   | NVBV-M323-8              | MVBV-M323-8             | M32 x 1.5        | 23                   | 25     | 3/4   | 8.0                      | 59.5 x 89.0                    |
|                                                                                   | NVBV-M329-13             | MVBV-M329-13            | M32 x 1.5        | 29                   | 32     | 1     | 13.0                     | 74.0 x 94.5                    |
|                                                                                   | NVBV-M329-8              | MVBV-M329-8             | M32 x 1.5        | 29                   | 32     | 1     | 8.0                      | 69.0 x 94.5                    |
|                                                                                   | NVBV-M409-13             | MVBV-M409-13            | M40 x 1.5        | 29                   | 32     | 1     | 13.0                     | 75.5 x 100.5                   |
|                                                                                   | NVBV-M409-8              | MVBV-M409-8             | M40 x 1.5        | 29                   | 32     | 1     | 8.0                      | 70.5 x 100.5                   |
|                                                                                   | NVBV-M406-13             | MVBV-M406-13            | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 86.5 x 123.0                   |
|                                                                                   | NVBV-M406-8              | MVBV-M406-8             | M40 x 1.5        | 36                   | 40     | 1-1/4 | 8.0                      | 81.5 x 123.0                   |
|                                                                                   | NVBV-M506-14             | MVBV-M506-14            | M50 x 1.5        | 36                   | 40     | 1-1/4 | 14.0                     | 87.5 x 130.0                   |
|                                                                                   | NVBV-M506-9              | MVBV-M506-9             | M50 x 1.5        | 36                   | 40     | 1-1/4 | 9.0                      | 82.5 x 130.0                   |
|                                                                                   | NVBV-M508-14             | MVBV-M508-14            | M50 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 100.5 x 135.0                  |
|                                                                                   | NVBV-M508-9              | MVBV-M508-9             | M50 x 1.5        | 48                   | 50     | 1-1/2 | 9.0                      | 95.5 x 135.0                   |
|                                                                                   | NVBV-M638-10             | MVBV-M638-10            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 100.5 x 138.0                  |
|                                                                                   | NVBV-M638-14             | MVBV-M638-14            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 10.0                     | 96.5 x 138.0                   |

#### Approvals



For applications in railway vehicles and heavy machine construction

High thread and system connection strength

Smooth elbow allows easy threading of wires and cables

**Note:** Appropriate standard elbows of type VW are available for smaller conduit sizes NW 10 to NW 12



## Connectors metric, metal thread

### Type VWV

Type VWV - Connector 90° elbow, metric metal thread

|                                                                                   | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------|------------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                          |                         |                  | NW                   | Metric | Inch  |                          |                                |
|  | NVWV-M120-10             | MVWV-M120-10            | M12 x 1.5        | 10                   | 12     | 5/16  | 10.0                     | 37.5 x 39.5                    |
|                                                                                   | NVWV-M120-5              | MVWV-M120-5             | M12 x 1.5        | 10                   | 12     | 5/16  | 5.0                      | 32.5 x 39.5                    |
|                                                                                   | NVWV-M160-10             | MVWV-M160-10            | M16 x 1.5        | 10                   | 12     | 5/16  | 10.0                     | 37.5 x 41.5                    |
|                                                                                   | NVWV-M160-5              | MVWV-M160-5             | M16 x 1.5        | 10                   | 12     | 5/16  | 5.0                      | 32.5 x 41.5                    |
|                                                                                   | NVWV-M162-10             | MVWV-M162-10            | M16 x 1.5        | 12                   | 16     | 3/8   | 10.0                     | 42.0 x 46.5                    |
|                                                                                   | NVWV-M162-5              | MVWV-M162-5             | M16 x 1.5        | 12                   | 16     | 3/8   | 5.0                      | 37.0 x 46.5                    |
|                                                                                   | NVWV-M202-10             | MVWV-M202-10            | M20 x 1.5        | 12                   | 16     | 3/8   | 10.0                     | 42.0 x 49.0                    |
|                                                                                   | NVWV-M202-6              | MVWV-M202-6             | M20 x 1.5        | 12                   | 16     | 3/8   | 6.0                      | 38.0 x 49.0                    |
|                                                                                   | NVWV-M207-10             | MVWV-M207-10            | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 47.0 x 58.5                    |
|                                                                                   | NVWV-M207-6              | MVWV-M207-6             | M20 x 1.5        | 17                   | 20     | 1/2   | 6.0                      | 43.0 x 58.5                    |
|                                                                                   | NVWV-M253-11             | MVWV-M253-11            | M25 x 1.5        | 23                   | 25     | 3/4   | 11.0                     | 59.0 x 67.0                    |
|                                                                                   | NVWV-M253-7              | MVWV-M253-7             | M25 x 1.5        | 23                   | 25     | 3/4   | 7.0                      | 55.0 x 67.0                    |
|                                                                                   | NVWV-M329-13             | MVWV-M329-13            | M32 x 1.5        | 29                   | 32     | 1     | 13.0                     | 68.0 x 74.5                    |
|                                                                                   | NVWV-M329-8              | MVWV-M329-8             | M32 x 1.5        | 29                   | 32     | 1     | 8.0                      | 63.0 x 74.5                    |
|                                                                                   | NVWV-M406-13             | MVWV-M406-13            | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 80.5 x 98.0                    |
|                                                                                   | NVWV-M406-8              | MVWV-M406-8             | M40 x 1.5        | 36                   | 40     | 1-1/4 | 8.0                      | 75.5 x 98.0                    |
|                                                                                   | NVWV-M508-14             | MVWV-M508-14            | M50 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 95.5 x 111.0                   |
|                                                                                   | NVWV-M508-9              | MVWV-M508-9             | M50 x 1.5        | 48                   | 50     | 1-1/2 | 9.0                      | 90.5 x 111.0                   |
|                                                                                   | NVWV-M638-14             | MVWV-M638-14            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 94.5 x 114.0                   |
|                                                                                   | NVWV-M638-10             | MVWV-M638-10            | M63 x 1.5        | 48                   | 50     | 1-1/2 | 10.0                     | 90.5 x 114.0                   |

#### Approvals



For applications in railway vehicles and heavy machine construction

High thread and system connection strength

**Note:** Curved elbows of type VB are also available for sizes NW 17 to NW 48

## Connectors with strain relief, metric, metal thread

### Type VWZ

Type VWZ - Connector 90° elbow with strain relief, metric metal thread



|                                                                                   | Order no. IP68<br>Compl., black | Order no.<br>fitting* | Order no.<br>insert | Thread<br>metric | Fits to<br>conduit size |        |      | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------------------|-----------------------|---------------------|------------------|-------------------------|--------|------|---------------------------|--------------------------|---------------------------|
|                                                                                   |                                 |                       |                     |                  | NW                      | Metric | Inch |                           |                          |                           |
|  | NVWZ-M160S/P1                   | NVWZ-M160R/P          | E 150p7             | M16 x 1.5        | 10                      | 12     | 5/16 | 4.0–6.5                   | 8.0                      | 65.0                      |
|                                                                                   | NVWZ-M160S/P2                   | –                     | E 150p8             | M16 x 1.5        | 10                      | 12     | 5/16 | 5.0–8.0                   | 8.0                      | 65.0                      |
|                                                                                   | NVWZ-M160S/P3                   | –                     | E 150p9             | M16 x 1.5        | 10                      | 12     | 5/16 | 6.5–9.5                   | 8.0                      | 65.0                      |
|                                                                                   | NVWZ-M202S/P1                   | NVWZ-M202R/P          | E 127p7             | M20 x 1.5        | 12                      | 16     | 3/8  | 4.0–6.5                   | 8.0                      | 74.5                      |
|                                                                                   | NVWZ-M202S/P3                   | –                     | E 152p7             | M20 x 1.5        | 12                      | 16     | 3/8  | 6.5–9.5                   | 8.0                      | 74.5                      |
|                                                                                   | NVWZ-M202S/P4                   | –                     | E 152p11            | M20 x 1.5        | 12                      | 16     | 3/8  | 7.0–10.5                  | 8.0                      | 74.5                      |
|                                                                                   | NVWZ-M207S/P1                   | NVWZ-M207R/P          | E 152p7             | M20 x 1.5        | 17                      | 20     | 1/2  | 4.0–6.5                   | 8.0                      | 81.0                      |
|                                                                                   | NVWZ-M207S/P3                   | –                     | E 152p9             | M20 x 1.5        | 17                      | 20     | 1/2  | 6.5–9.5                   | 8.0                      | 81.0                      |
|                                                                                   | NVWZ-M207S/P4                   | –                     | E 152p11            | M20 x 1.5        | 17                      | 20     | 1/2  | 7.0–10.5                  | 8.0                      | 81.0                      |
|                                                                                   | NVWZ-M207S/P5                   | –                     | E 152p13            | M20 x 1.5        | 17                      | 20     | 1/2  | 9.0–13.0                  | 8.0                      | 81.0                      |
|                                                                                   | NVWZ-M257S/P5                   | NVWZ-M257R/P          | E 153p13            | M25 x 1.5        | 17                      | 20     | 1/2  | 9.0–13.0                  | 8.0                      | 84.0                      |
|                                                                                   | NVWZ-M257S/P6                   | –                     | E 153p16            | M25 x 1.5        | 17                      | 20     | 1/2  | 11.5–15.5                 | 8.0                      | 84.0                      |

\*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Straight connector: Specially formulated polyamide 6

90° elbow: Zinc diecast

Female thread and locknut: Nickel-plated brass

Pflitsch sealing insert: TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: –40°C to +135°C

## Connectors PG, polyamide thread

### Type VN

Type VN - Connector straight, PG thread

VN



**UL**  
US

| Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>PG | Fits to<br>conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|---------------------|---------------------|--------------|-------------------------|--------|-------|--------------------------|--------------------------------|
|                     |                     |              | NW                      | Metric | Inch  |                          |                                |
| BVND-P07MGT-11      | BVNV-P07M           | 07           | 07                      | 10     | 1/4   | 11.0                     | 34.5                           |
| BVND-P07MGT-8       | –                   | 07           | 07                      | 10     | 1/4   | 8.0                      | 31.5                           |
| BVND-P070GT-11      | BVNV-P070           | 07           | 10                      | 12     | 5/16  | 11.0                     | 36.5                           |
| BVND-P070GT-8       | –                   | 07           | 10                      | 12     | 5/16  | 8.0                      | 33.5                           |
| BVND-P072GT-11      | BVNV-P072           | 07           | 12                      | 16     | 3/8   | 11.0                     | 39.0                           |
| BVND-P072GT-8       | –                   | 07           | 12                      | 16     | 3/8   | 8.0                      | 36.0                           |
| BVND-P09MGT-11      | BVNV-P09M           | 09           | 07                      | 10     | 1/4   | 11.0                     | 34.5                           |
| BVND-P09MGT-8       | –                   | 09           | 07                      | 10     | 1/4   | 8.0                      | 31.5                           |
| BVND-P090GT-11      | BVNV-P090           | 09           | 10                      | 12     | 5/16  | 11.0                     | 36.5                           |
| BVND-P090GT-8       | –                   | 09           | 10                      | 12     | 5/16  | 8.0                      | 33.5                           |
| BVND-P092GT-11      | BVNV-P092           | 09           | 12                      | 16     | 3/8   | 11.0                     | 39.0                           |
| BVND-P092GT-8       | –                   | 09           | 12                      | 16     | 3/8   | 8.0                      | 36.0                           |
| BVND-P097GT-11      | BVNV-P097           | 09           | 17                      | 20     | 1/2   | 11.0                     | 47.5                           |
| BVND-P097GT-8       | –                   | 09           | 17                      | 20     | 1/2   | 8.0                      | 44.5                           |
| BVND-P11MGT-11      | BVNV-P11M           | 11           | 07                      | 10     | 1/4   | 11.0                     | 34.5                           |
| BVND-P11MGT-8       | –                   | 11           | 07                      | 10     | 1/4   | 8.0                      | 31.5                           |
| BVND-P110GT-11      | BVNV-P110           | 11           | 10                      | 12     | 5/16  | 11.0                     | 36.5                           |
| BVND-P110GT-8       | –                   | 11           | 10                      | 12     | 5/16  | 8.0                      | 33.5                           |
| BVND-P112GT-11      | BVNV-P112           | 11           | 12                      | 16     | 3/8   | 11.0                     | 39.0                           |
| BVND-P112GT-8       | –                   | 11           | 12                      | 16     | 3/8   | 8.0                      | 36.0                           |
| BVND-P117GT-11      | BVNV-P117           | 11           | 17                      | 20     | 1/2   | 11.0                     | 47.5                           |
| BVND-P117GT-8       | –                   | 11           | 17                      | 20     | 1/2   | 8.0                      | 44.5                           |
| BVND-P13MGT-11      | BVNV-P13M           | 13.5         | 07                      | 10     | 1/4   | 11.0                     | 34.5                           |
| BVND-P13MGT-8       | –                   | 13.5         | 07                      | 10     | 1/4   | 8.0                      | 31.5                           |
| BVND-P130GT-11      | BVNV-P130           | 13.5         | 10                      | 12     | 5/16  | 11.0                     | 36.5                           |
| BVND-P130GT-8       | –                   | 13.5         | 10                      | 12     | 5/16  | 8.0                      | 33.5                           |
| BVND-P132GT-11      | BVNV-P132           | 13.5         | 12                      | 16     | 3/8   | 11.0                     | 39.0                           |
| BVND-P132GT-8       | –                   | 13.5         | 12                      | 16     | 3/8   | 8.0                      | 36.0                           |
| BVND-P137GT-11      | BVNV-P137           | 13.5         | 17                      | 20     | 1/2   | 11.0                     | 47.5                           |
| BVND-P137GT-8       | –                   | 13.5         | 17                      | 20     | 1/2   | 8.0                      | 44.5                           |
| BVND-P160GT-11      | –                   | 16           | 10                      | 12     | 5/16  | 11.0                     | 36.5                           |
| BVND-P160GT-8       | –                   | 16           | 10                      | 12     | 5/16  | 8.0                      | 33.5                           |
| BVND-P162GT-11      | BVNV-P162           | 16           | 12                      | 16     | 3/8   | 11.0                     | 39.0                           |
| BVND-P163GT-11      | BVNV-P163           | 16           | 23                      | 25     | 3/4   | 11.0                     | 51.0                           |
| BVND-P163GT-8       | –                   | 16           | 23                      | 25     | 3/4   | 8.0                      | 48.0                           |
| BVND-P167GT-11      | BVNV-P167           | 16           | 17                      | 20     | 1/2   | 11.0                     | 47.5                           |
| BVND-P167GT-8       | –                   | 16           | 17                      | 20     | 1/2   | 8.0                      | 44.5                           |
| BVND-P213GT         | BVNV-P213           | 21           | 23                      | 25     | 3/4   | 12.0                     | 52.0                           |
| BVND-P296GT         | BVNV-P296           | 29           | 36                      | 40     | 1-1/4 | 12.0                     | 67.5                           |
| BVND-P299GT         | BVNV-P299           | 29           | 29                      | 32     | 1     | 12.0                     | 53.0                           |
| BVND-P366GT         | BVNV-P366           | 36           | 36                      | 40     | 1-1/4 | 13.0                     | 66.0                           |
| BVND-P368GT         | BVNV-P368           | 36           | 48                      | 50     | 1-1/2 | 13.0                     | 68.5                           |
| BVND-P428GT         | BVNV-P428           | 42           | 48                      | 50     | 1-1/2 | 13.0                     | 68.5                           |
| BVND-P488GT         | BVNV-P488           | 48           | 48                      | 50     | 1-1/2 | 13.0                     | 66.5                           |

#### Approvals



① Please replace "B" for black with "S" for grey in front of the order no.

For cable protection systems in a wide range of applications

## Connectors PG, polyamide thread

### Type VNDZ/VNZ & VA

#### Type VNDZ/VNZ - Connector straight with strain relief, PG thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>PG | Fits to conduit size |        |       | Terminal<br>range | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|--------------|----------------------|--------|-------|-------------------|--------------------------|---------------------------|
|                                                                                   |                     |                     |              | NW                   | Metric | Inch  |                   |                          |                           |
|  | BVNDZ-P090GT        | BVNZ-P090S          | 09           | 10                   | 12     | 5/16  | 4.0–8.0           | 7.5                      | 56.0                      |
|                                                                                   | BVNDZ-P112GT        | BVNZ-P112S          | 11           | 12                   | 16     | 3/8   | 5.0–10.0          | 8.0                      | 60.5                      |
|                                                                                   | BVNDZ-P132GT        | BVNZ-P132S          | 13.5         | 12                   | 16     | 3/8   | 6.0–12.0          | 9.0                      | 62.0                      |
|                                                                                   | BVNDZ-P137GT        | BVNZ-P137S          | 13.5         | 17                   | 20     | 1/2   | 6.0–12.0          | 9.0                      | 69.0                      |
|                                                                                   | BVNDZ-P167GT        | BVNZ-P167S          | 16           | 17                   | 20     | 1/2   | 10.0–14.0         | 10.0                     | 72.0                      |
|                                                                                   | BVNDZ-P163GT        | BVNZ-P163S          | 16           | 23                   | 25     | 3/4   | 10.0–14.0         | 10.0                     | 79.0                      |
|                                                                                   | BVNDZ-P213GT        | BVNZ-P213S          | 21           | 23                   | 25     | 3/4   | 13.0–18.0         | 11.0                     | 82.0                      |
|                                                                                   | BVNDZ-P299GT        | BVNZ-P299S          | 29           | 29                   | 32     | 1     | 18.0–25.0         | 11.0                     | 85.0                      |
|                                                                                   | BVNDZ-P366GT        | BVNZ-P366S          | 36           | 36                   | 40     | 1-1/4 | 22.0–32.0         | 13.0                     | 112.0                     |
|                                                                                   | BVNDZ-P488GT        | BVNZ-P488S          | 48           | 48                   | 50     | 1-1/2 | 34.0–44.0         | 14.0                     | 112.0                     |

For machine and plant construction

For separation of damp and dry areas

Integrated strain relief optimally holds and seals cables

If several conductors are used with the connector multiple sealing inserts should be considered

**Note:** For several conductors multiple sealing inserts MDE are available

#### Type VA - Connector 45° elbow, PG thread

|                                                                                     | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|---------------------|---------------------|--------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                     |                     |                     |              | NW                   | Metric | Inch  |                          |                           |
|  | BVAD-P090GT         | BVAV-P090           | 09           | 10                   | 12     | 5/16  | 11.0                     | 43.5 x 37.0               |
|                                                                                     | BVAD-P112GT         | BVAV-P112           | 11           | 12                   | 16     | 3/8   | 11.0                     | 48.0 x 40.0               |
|                                                                                     | BVAD-P132GT         | BVAV-P132           | 13.5         | 12                   | 16     | 3/8   | 11.0                     | 48.0 x 41.5               |
|                                                                                     | BVAD-P137GT         | BVAV-P137           | 13.5         | 17                   | 20     | 1/2   | 11.0                     | 55.5 x 51.5               |
|                                                                                     | BVAD-P167GT         | BVAV-P167           | 16           | 17                   | 20     | 1/2   | 11.0                     | 55.5 x 51.5               |
|                                                                                     | BVAD-P213GT         | BVAV-P213           | 21           | 23                   | 25     | 3/4   | 11.0                     | 63.0 x 58.0               |
|                                                                                     | BVAD-P299GT         | BVAV-P299           | 29           | 29                   | 32     | 1     | 12.0                     | 69.0 x 66.0               |
|                                                                                     | BVAD-P366GT         | BVAV-P366           | 36           | 36                   | 40     | 1-1/4 | 13.0                     | 86.0 x 86.0               |
|                                                                                     | BVAD-P488GT         | BVAV-P488           | 48           | 48                   | 50     | 1-1/2 | 13.0                     | 94.0 x 100.0              |

#### Approvals



For cable protection systems in a wide range of applications

① Please replace "B" for black with  
"S" for grey in front of the order no.

Connectors PG, polyamide thread

Type VB

Type VB - Connector 90° curved elbow, PG thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|--------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                     |                     |              | NW                   | Metric | Inch  |                          |                                |
|  | BVBD-P167GT         | BVBV-P167           | 16           | 17                   | 20     | 1/2   | 11.0                     | 47.5 x 73.0                    |
|                                                                                   | BVBD-P213GT         | BVBV-P213           | 21           | 23                   | 25     | 3/4   | 12.0                     | 57.5 x 85.0                    |
|                                                                                   | BVBD-P299GT         | BVBV-P299           | 29           | 29                   | 32     | 1     | 12.0                     | 67.5 x 96.0                    |
|                                                                                   | BVBD-P366GT         | BVBV-P366           | 36           | 36                   | 40     | 1-1/4 | 13.0                     | 79.0 x 123.0                   |
|                                                                                   | BVBD-P488GT         | BVBV-P488           | 48           | 48                   | 50     | 1-1/2 | 13.0                     | 92.5 x 135.0                   |

Approvals



For cable protection systems in a wide range of applications  
Smooth elbow allows easy threading of wires and cables  
**Note:** For smaller conduit sizes NW 07 to NW 12 appropriate standard elbows of type VW are also available

① Please replace “B” for black with  
“S” for grey in front of the order no.



## Connectors PG, polyamide thread

### Type VW

Type VW - Connector 90° elbow, PG thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|--------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                     |                     |              | NW                   | Metric | Inch  |                          |                                |
|  | BVWD-P07MGT-11      | BVWV-P07M           | 07           | 07                   | 10     | 1/4   | 11.0                     | 32.0 x 35.0                    |
|                                                                                   | BVWD-P07MGT-8       | –                   | 07           | 07                   | 10     | 1/4   | 8.0                      | 29.0 x 35.0                    |
|                                                                                   | BVWD-P070GT-11      | BVWV-P070           | 07           | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 39.5                    |
|                                                                                   | BVWD-P070GT-8       | –                   | 07           | 10                   | 12     | 5/16  | 8.0                      | 31.0 x 39.5                    |
|                                                                                   | BVWD-P072GT-11      | BVWV-P072           | 07           | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 44.5                    |
|                                                                                   | BVWD-P072GT-8       | –                   | 07           | 12                   | 16     | 3/8   | 8.0                      | 35.5 x 44.5                    |
|                                                                                   | BVWD-P09MGT-11      | BVWV-P09M           | 09           | 07                   | 10     | 1/4   | 11.0                     | 32.0 x 36.5                    |
|                                                                                   | BVWD-P09MGT-8       | –                   | 09           | 07                   | 10     | 1/4   | 8.0                      | 29.0 x 36.5                    |
|                                                                                   | BVWD-P090GT-11      | BVWV-P090           | 09           | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 39.5                    |
|                                                                                   | BVWD-P090GT-8       | –                   | 09           | 10                   | 12     | 5/16  | 8.0                      | 31.0 x 39.5                    |
|                                                                                   | BVWD-P092GT-11      | BVWV-P092           | 09           | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 44.5                    |
|                                                                                   | BVWD-P092GT-8       | –                   | 09           | 12                   | 16     | 3/8   | 8.0                      | 35.5 x 44.5                    |
|                                                                                   | BVWD-P11MGT-11      | BVWV-P11M           | 11           | 07                   | 10     | 1/4   | 11.0                     | 32.0 x 38.0                    |
|                                                                                   | BVWD-P11MGT-8       | –                   | 11           | 07                   | 10     | 1/4   | 8.0                      | 29.0 x 38.0                    |
|                                                                                   | BVWD-P110GT-11      | BVWV-P110           | 11           | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 41.0                    |
|                                                                                   | BVWD-P110GT-8       | –                   | 11           | 10                   | 12     | 5/16  | 8.0                      | 31.0 x 41.0                    |
|                                                                                   | BVWD-P112GT-11      | BVWV-P112           | 11           | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 46.0                    |
|                                                                                   | BVWD-P112GT-8       | –                   | 11           | 12                   | 16     | 3/8   | 8.0                      | 35.5 x 46.0                    |
|                                                                                   | BVWD-P13MGT-11      | BVWV-P13M           | 13.5         | 07                   | 10     | 1/4   | 11.0                     | 32.0 x 39.5                    |
|                                                                                   | BVWD-P13MGT-8       | –                   | 13.5         | 07                   | 10     | 1/4   | 8.0                      | 29.0 x 39.5                    |
|                                                                                   | BVWD-P130GT-11      | BVWV-P130           | 13.5         | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 42.5                    |
|                                                                                   | BVWD-P130GT-8       | –                   | 13.5         | 10                   | 12     | 5/16  | 8.0                      | 31.0 x 42.5                    |
|                                                                                   | BVWD-P132GT-11      | BVWV-P132           | 13.5         | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 47.5                    |
|                                                                                   | BVWD-P132GT-8       | –                   | 13.5         | 12                   | 16     | 3/8   | 8.0                      | 35.5 x 47.5                    |
|                                                                                   | BVWD-P137GT-11      | BVWV-P137           | 13.5         | 17                   | 20     | 1/2   | 11.0                     | 43.5 x 58.5                    |
|                                                                                   | BVWD-P137GT-8       | –                   | 13.5         | 17                   | 20     | 1/2   | 8.0                      | 40.5 x 58.5                    |
|                                                                                   | BVWD-P167GT-11      | BVWV-P167           | 16           | 17                   | 20     | 1/2   | 11.0                     | 43.5 x 58.5                    |
|                                                                                   | BVWD-P167GT-8       | –                   | 16           | 17                   | 20     | 1/2   | 8.0                      | 40.5 x 58.5                    |
|                                                                                   | BVWD-P213GT         | BVWV-P213           | 21           | 23                   | 25     | 3/4   | 12.0                     | 54.0 x 67.0                    |
|                                                                                   | BVWD-P299GT         | BVWV-P299           | 29           | 29                   | 32     | 1     | 12.0                     | 61.5 x 74.5                    |
|                                                                                   | BVWD-P366GT         | BVWV-P366           | 36           | 36                   | 40     | 1-1/4 | 13.0                     | 72.0 x 98.0                    |
|                                                                                   | BVWD-P488GT         | BVWV-P488           | 48           | 48                   | 50     | 1-1/2 | 13.0                     | 85.5 x 111.0                   |

For cable protection systems in a wide range of applications

**Note:** For sizes NW 17 to NW 48 curved elbows of type VB are also available

#### Approvals



① Please replace "B" for black with "S" for grey in front of the order no.

Connectors PG, metal thread

Type VNV

Type VNV - Connector straight, PG metal thread

|                                                                                   | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------|--------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                          |                         |              | NW                   | Metric | Inch  |                          |                           |
|  | NVNV-P090                | MVNV-P090               | 09           | 10                   | 12     | 5/16  | 12.0                     | 42.0                      |
|                                                                                   | NVNV-P112                | MVNV-P112               | 11           | 12                   | 16     | 3/8   | 12.0                     | 45.0                      |
|                                                                                   | NVNV-P137                | MVNV-P137               | 13.5         | 17                   | 20     | 1/2   | 13.0                     | 54.0                      |
|                                                                                   | NVNV-P167                | MVNV-P167               | 16           | 17                   | 20     | 1/2   | 13.0                     | 54.0                      |
|                                                                                   | NVNV-P213                | MVNV-P213               | 21           | 23                   | 25     | 3/4   | 14.0                     | 57.0                      |
|                                                                                   | NVNV-P293                | MVNV-P293               | 29           | 23                   | 25     | 3/4   | 14.0                     | 57.0                      |
|                                                                                   | NVNV-P299                | MVNV-P299               | 29           | 29                   | 32     | 1     | 14.0                     | 58.5                      |
|                                                                                   | NVNV-P366                | MVNV-P366               | 36           | 36                   | 40     | 1-1/4 | 17.0                     | 75.5                      |
|                                                                                   | NVNV-P488                | MVNV-P488               | 48           | 48                   | 50     | 1-1/2 | 17.0                     | 75.5                      |

Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

## Connectors PG, with strain relief, metal thread

### Type VNZ

Type VNZ - Connector straight with strain relief, PG metal thread



|                                                                                   | Order no. IP68<br>Compl., black | Order no.<br>fitting* | Order no.<br>insert | Thread<br>PG | Fits to conduit size |        |       | Terminal<br>range<br>(mm) | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------------------|-----------------------|---------------------|--------------|----------------------|--------|-------|---------------------------|--------------------------|---------------------------|
|                                                                                   |                                 |                       |                     |              | NW                   | Metric | Inch  |                           |                          |                           |
|  | NVNZ-P090S/P1                   | NVNZ-P090R/P          | E 150p7             | 09           | 10                   | 12     | 5/16  | 4.0–6.5                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-P090S/P3                   | –                     | E 150p9             | 09           | 10                   | 12     | 5/16  | 6.5–9.5                   | 6.0                      | 49.5                      |
|                                                                                   | NVNZ-P110S/P1                   | NVNZ-P110R/P          | E 151p7             | 11           | 10                   | 12     | 5/16  | 4.0–6.5                   | 6.0                      | 52.0                      |
|                                                                                   | NVNZ-P110S/P3                   | –                     | E 151p9             | 11           | 10                   | 12     | 5/16  | 6.5–9.5                   | 6.0                      | 52.0                      |
|                                                                                   | NVNZ-P112S/P1                   | NVNZ-P112R/P          | E 151p7             | 11           | 12                   | 16     | 3/8   | 4.0–6.5                   | 6.0                      | 53.5                      |
|                                                                                   | NVNZ-P112S/P3                   | –                     | E 151p9             | 11           | 12                   | 16     | 3/8   | 6.5–9.5                   | 6.0                      | 53.5                      |
|                                                                                   | NVNZ-P112S/P4                   | –                     | E 151p11            | 11           | 12                   | 16     | 3/8   | 7.0–10.5                  | 6.0                      | 53.5                      |
|                                                                                   | NVNZ-P160S/P1                   | NVNZ-P160R/P          | E 152p11            | 16           | 10                   | 12     | 5/16  | 4.0–6.5                   | 6.5                      | 52.5                      |
|                                                                                   | NVNZ-P167S/P3                   | NVNZ-P167R/P          | E 153p9             | 16           | 17                   | 20     | 1/2   | 6.5–9.5                   | 6.5                      | 61.0                      |
|                                                                                   | NVNZ-P167S/P4                   | –                     | E 153p11            | 16           | 17                   | 20     | 1/2   | 7.0–10.5                  | 6.5                      | 61.0                      |
|                                                                                   | NVNZ-P167S/P5                   | –                     | E 153p13            | 16           | 17                   | 20     | 1/2   | 9.0–13.0                  | 6.5                      | 61.0                      |
|                                                                                   | NVNZ-P167S/P6                   | –                     | E 153p16            | 16           | 17                   | 20     | 1/2   | 11.5–15.5                 | 6.5                      | 61.0                      |
|                                                                                   | NVNZ-P213S/P1                   | NVNZ-P213R/P          | E 154p11            | 21           | 23                   | 25     | 3/4   | 7.0–10.5                  | 7.0                      | 72.0                      |
|                                                                                   | NVNZ-P213S/P4                   | –                     | E 154p18            | 21           | 23                   | 25     | 3/4   | 14.0–18.0                 | 7.0                      | 72.0                      |
|                                                                                   | NVNZ-P213S/P5                   | NVNZ-P213R1/P         | E 154p20            | 21           | 23                   | 25     | 3/4   | 17.0–20.5                 | 7.0                      | 72.0                      |
|                                                                                   | NVNZ-P299S/P3                   | NVNZ-P299R/P          | E 155p20            | 29           | 29                   | 32     | 1     | 17.0–20.5                 | 8.0                      | 73.5                      |
|                                                                                   | NVNZ-P299S/P4                   | –                     | E 155p25            | 29           | 29                   | 32     | 1     | 20.0–25.0                 | 8.0                      | 73.5                      |
|                                                                                   | NVNZ-P299S/P5                   | –                     | E 155p28            | 29           | 29                   | 32     | 1     | 24.0–28.0                 | 8.0                      | 73.5                      |
|                                                                                   | NVNZ-P366S/P1                   | NVNZ-P366R/P          | E 156p32            | 36           | 36                   | 40     | 1-1/4 | 27.0–32.0                 | 9.0                      | 88.0                      |
|                                                                                   | NVNZ-P366S/P2                   | –                     | E 156p34            | 36           | 36                   | 40     | 1-1/4 | 29.0–34.0                 | 9.0                      | 88.0                      |
|                                                                                   | NVNZ-P366S/P3                   | –                     | E 156p36            | 36           | 36                   | 40     | 1-1/4 | 32.0–36.0                 | 9.0                      | 88.0                      |
|                                                                                   | NVNZ-P488S/P1                   | NVNZ-P488R/P          | E 158pm 1x35        | 48           | 48                   | 50     | 1-1/2 | 32.0–35.0                 | 10.0                     | 90.5                      |
|                                                                                   | NVNZ-P488S/P2                   | –                     | E 158p44            | 48           | 48                   | 50     | 1-1/2 | 39.0–44.0                 | 10.0                     | 90.5                      |

\*without insert

For applications in railway vehicles and heavy machine construction

For the separation of damp and dry areas

Sealing inserts are made from TPE-V

With integrated strain relief and optimal ingress protection at the cable (up to IP68/10 bar)

High thread and system connection strength

Temperature range sealing insert Pflitsch: –40°C to +135°C

**Note:** For several conductors multiple sealing inserts MDE are available

R/P version of fitting has to be used in combination with multiple sealing inserts

## Connectors PG, metal thread

### Type VAV & VBV

#### Type VAV - Connector 45° elbow, PG metal thread

|                                                                                   | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------|--------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                          |                         |              | NW                   | Metric | Inch  |                          |                                |
|  | NVAV-P090                | MVAV-P090               | 09           | 10                   | 12     | 5/16  | 12.0                     | 50.5 x 37.0                    |
|                                                                                   | NVAV-P112                | MVAV-P112               | 11           | 12                   | 16     | 3/8   | 12.0                     | 55.0 x 40.5                    |
|                                                                                   | NVAV-P137                | MVAV-P137               | 13.5         | 17                   | 20     | 1/2   | 13.0                     | 63.5 x 50.0                    |
|                                                                                   | NVAV-P167                | MVAV-P167               | 16           | 17                   | 20     | 1/2   | 13.0                     | 63.5 x 50.0                    |
|                                                                                   | NVAV-P213                | MVAV-P213               | 21           | 23                   | 25     | 3/4   | 14.0                     | 73.0 x 60.5                    |
|                                                                                   | NVAV-P299                | MVAV-P299               | 29           | 29                   | 32     | 1     | 14.0                     | 78.0 x 68.0                    |
|                                                                                   | NVAV-P366                | MVAV-P366               | 36           | 36                   | 40     | 1-1/4 | 17.0                     | 98.0 x 87.5                    |
|                                                                                   | NVAV-P488                | MVAV-P488               | 48           | 48                   | 50     | 1-1/2 | 17.0                     | 105.0 x 101.0                  |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

#### Type VBV - Connector 90° curved elbow, PG metal thread

|                                                                                     | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------|-------------------------|--------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                     |                          |                         |              | NW                   | Metric | Inch  |                          |                                |
|  | NVBV-P167                | MVBV-P167               | 16           | 17                   | 20     | 1/2   | 13.0                     | 54.0 x 73.0                    |
|                                                                                     | NVBV-P213                | MVBV-P213               | 21           | 23                   | 25     | 3/4   | 14.0                     | 65.5 x 85.0                    |
|                                                                                     | NVBV-P299                | MVBV-P299               | 29           | 29                   | 32     | 1     | 14.0                     | 75.0 x 96.0                    |
|                                                                                     | NVBV-P366                | MVBV-P366               | 36           | 36                   | 40     | 1-1/4 | 17.0                     | 90.5 x 123.0                   |
|                                                                                     | NVBV-P488                | MVBV-P488               | 48           | 48                   | 50     | 1-1/2 | 17.0                     | 103.5 x 135.0                  |

#### Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength

Smooth elbow allows easy threading of wires and cables

**Note:** For smaller conduit sizes NW 10 to NW 12 appropriate standard elbows of type VW are also available

Connectors PG, metal thread

Type VWV

Type VWV - Connector 90° elbow, PG metal thread

|                                                                                   | Order no.<br>IP68, black | Order no.<br>IP68, grey | Thread<br>PG | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------|--------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                          |                         |              | NW                   | Metric | Inch  |                          |                                |
|  | NVWV-P090                | MVWV-P090               | 09           | 10                   | 12     | 5/16  | 12.0                     | 39.5 x 39.5                    |
|                                                                                   | NVWV-P112                | MVWV-P112               | 11           | 12                   | 16     | 3/8   | 12.0                     | 45.5 x 45.0                    |
|                                                                                   | NVWV-P137                | MVWV-P137               | 13.5         | 17                   | 20     | 1/2   | 13.0                     | 50.0 x 58.5                    |
|                                                                                   | NVWV-P167                | MVWV-P167               | 16           | 17                   | 20     | 1/2   | 13.0                     | 50.0 x 58.5                    |
|                                                                                   | NVWV-P213                | MVWV-P213               | 21           | 23                   | 25     | 3/4   | 14.0                     | 62.0 x 67.0                    |
|                                                                                   | NVWV-P299                | MVWV-P299               | 29           | 29                   | 32     | 1     | 14.0                     | 69.0 x 74.5                    |
|                                                                                   | NVWV-P366                | MVWV-P366               | 36           | 36                   | 40     | 1-1/4 | 17.0                     | 83.5 x 98.0                    |
|                                                                                   | NVWV-P488                | MVWV-P488               | 48           | 48                   | 50     | 1-1/2 | 17.0                     | 96.5 x 111.0                   |

Approvals



For applications in railway vehicles and heavy machine construction  
High thread and system connection strength  
**Note:** Curved elbows of type VB are also available for sizes NW 17 to NW 48



## Connectors GAS, polyamide thread

### Type VN & VW

#### Type VN - Connector straight, GAS thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>GAS | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|---------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                     |                     |               | NW                   | Metric | Inch  |                          |                           |
|  | BVND-G00MGT         | BVNV-G00M           | ¼"            | 07                   | 10     | 1/4   | 11.0                     | 34.5                      |
|                                                                                   | BVND-G000GT         | BVNV-G000           | ¼"            | 10                   | 12     | 5/16  | 11.0                     | 36.5                      |
|                                                                                   | BVND-G010GT         | BVNV-G010           | ⅜"            | 10                   | 12     | 5/16  | 11.0                     | 36.5                      |
|                                                                                   | BVND-G012GT         | BVNV-G012           | ⅜"            | 12                   | 16     | 3/8   | 11.0                     | 39.0                      |
|                                                                                   | BVND-G022GT         | BVNV-G022           | ½"            | 12                   | 16     | 3/8   | 13.0                     | 41.0                      |
|                                                                                   | BVND-G027GT         | BVNV-G027           | ½"            | 17                   | 20     | 1/2   | 13.0                     | 49.5                      |
|                                                                                   | BVND-G043GT         | BVNV-G043           | ¾"            | 23                   | 25     | 3/4   | 14.0                     | 54.0                      |
|                                                                                   | BVND-G069GT         | BVNV-G069           | 1"            | 29                   | 32     | 1     | 15.0                     | 56.0                      |
|                                                                                   | BVND-G076GT         | BVNV-G076           | 1¼"           | 36                   | 40     | 1-1/4 | 18.0                     | 71.0                      |
|                                                                                   | BVND-G088GT         | BVNV-G088           | 1½"           | 48                   | 50     | 1-1/2 | 18.0                     | 71.5                      |
|                                                                                   | BVND-G098GT         | BVNV-G098           | 2"            | 48                   | 50     | 1-1/2 | 18.0                     | 71.5                      |

For cable protection systems in a wide range of applications

#### Type VW - Connector 90° elbow, GAS thread

|                                                                                     | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>GAS | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-------------------------------------------------------------------------------------|---------------------|---------------------|---------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                     |                     |                     |               | NW                   | Metric | Inch  |                          |                                |
|  | BVWD-G00MGT         | BVWV-G00M           | ¼"            | 07                   | 10     | 1/4   | 11.0                     | 32.0 x 36.5                    |
|                                                                                     | BVWD-G000GT         | BVWV-G000           | ¼"            | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 39.5                    |
|                                                                                     | BVWD-G010GT         | BVWV-G010           | ⅜"            | 10                   | 12     | 5/16  | 11.0                     | 34.0 x 40.5                    |
|                                                                                     | BVWD-G012GT         | BVWV-G012           | ⅜"            | 12                   | 16     | 3/8   | 11.0                     | 38.5 x 46.0                    |
|                                                                                     | BVWD-G022GT         | BVWV-G022           | ½"            | 12                   | 16     | 3/8   | 13.0                     | 40.5 x 47.5                    |
|                                                                                     | BVWD-G027GT         | BVWV-G027           | ½"            | 17                   | 20     | 1/2   | 13.0                     | 45.5 x 58.5                    |
|                                                                                     | BVWD-G043GT         | BVWV-G043           | ¾"            | 23                   | 25     | 3/4   | 14.0                     | 56.0 x 66.5                    |
|                                                                                     | BVWD-G069GT         | BVWV-G069           | 1"            | 29                   | 32     | 1     | 15.0                     | 64.5 x 73.5                    |
|                                                                                     | BVWD-G076GT         | BVWV-G076           | 1¼"           | 36                   | 40     | 1-1/4 | 18.0                     | 77.0 x 96.0                    |
|                                                                                     | BVWD-G088GT         | BVWV-G088           | 1½"           | 48                   | 50     | 1-1/2 | 18.0                     | 90.5 x 106.0                   |
|                                                                                     | BVWD-G098GT         | BVWV-G098           | 2"            | 48                   | 50     | 1-1/2 | 18.0                     | 90.5 x 111.0                   |

For cable protection systems in a wide range of applications

① Please replace "B" for black with  
"S" for grey in front of the order no.

## Connectors NPT, polyamide thread

### Type VN & VA

#### Type VN - Connector straight, NPT thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>NPT | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|---------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                     |                     |               | NW                   | Metric | Inch  |                          |                           |
|  | <b>BVND-N022GT</b>  | BVNV-N022           | ½"            | 12                   | 16     | 3/8   | 13.0                     | 41.5                      |
|                                                                                   | <b>BVND-N027GT</b>  | <b>BVNV-N027</b>    | ½"            | 17                   | 20     | 1/2   | 13.0                     | 49.5                      |
|                                                                                   | <b>BVND-N043GT</b>  | <b>BVNV-N043</b>    | ¾"            | 23                   | 25     | 3/4   | 14.0                     | 54.0                      |
|                                                                                   | <b>BVND-N069GT</b>  | <b>BVNV-N069</b>    | 1"            | 29                   | 32     | 1     | 15.0                     | 56.0                      |
|                                                                                   | <b>BVND-N076GT</b>  | BVNV-N076           | 1¼"           | 36                   | 40     | 1-1/4 | 18.0                     | 71.0                      |
|                                                                                   | <b>BVND-N088GT</b>  | BVNV-N088           | 1½"           | 48                   | 50     | 1-1/2 | 18.0                     | 71.5                      |
|                                                                                   | BVND-N098GT         | BVNV-N098           | 2"            | 48                   | 50     | 1-1/2 | 18.0                     | 71.5                      |

#### Approvals



For cable protection systems in a wide range of applications

#### Type VA - Connector 45° elbow, NPT thread

|                                                                                     | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>NPT | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-------------------------------------------------------------------------------------|---------------------|---------------------|---------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                     |                     |                     |               | NW                   | Metric | Inch  |                          |                                |
|  | BVAD-N022GT         | BVAV-N022           | ½"            | 12                   | 16     | 3/8   | 13.0                     | 50.0 x 41.5                    |
|                                                                                     | BVAD-N027GT         | <b>BVAV-N027</b>    | ½"            | 17                   | 20     | 1/2   | 13.0                     | 57.5 x 51.5                    |
|                                                                                     | BVAD-N043GT         | <b>BVAV-N043</b>    | ¾"            | 23                   | 25     | 3/4   | 14.0                     | 67.0 x 60.0                    |
|                                                                                     | BVAD-N069GT         | <b>BVAV-N069</b>    | 1"            | 29                   | 32     | 1     | 15.0                     | 73.5 x 67.0                    |
|                                                                                     | BVAD-N076GT         | BVAV-N076           | 1¼"           | 36                   | 40     | 1-1/4 | 18.0                     | 91.5 x 85.5                    |
|                                                                                     | BVAD-N088GT         | BVAV-N088           | 1½"           | 48                   | 50     | 1-1/2 | 18.0                     | 99.0 x 96.0                    |
|                                                                                     | -                   | BVAV-N098           | 2"            | 48                   | 50     | 1-1/2 | 18.0                     | 99.0 x 101.0                   |

#### Approvals



For cable protection systems in a wide range of applications

① Please replace "B" for black with  
"S" for grey in front of the order no.

## Connectors NPT, polyamide thread

### Type VW

Type VW - Connector 90° elbow, NPT thread

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Thread<br>NPT | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|---------------------|---------------------|---------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                     |                     |               | NW                   | Metric | Inch  |                          |                                |
|  | <b>BVWD-N022GT</b>  | BVWV-N022           | ½"            | 12                   | 16     | 3/8   | 13.0                     | 40.5 x 47.5                    |
|                                                                                   | <b>BVWD-N027GT</b>  | <b>BVWV-N027</b>    | ½"            | 17                   | 20     | 1/2   | 13.0                     | 45.5 x 58.5                    |
|                                                                                   | <b>BVWD-N043GT</b>  | <b>BVWV-N043</b>    | ¾"            | 23                   | 25     | 3/4   | 14.0                     | 56.0 x 66.5                    |
|                                                                                   | <b>BVWD-N069GT</b>  | <b>BVWV-N069</b>    | 1"            | 29                   | 32     | 1     | 15.0                     | 64.5 x 73.5                    |
|                                                                                   | <b>BVWD-N076GT</b>  | BVWV-N076           | 1¼"           | 36                   | 40     | 1-1/4 | 18.0                     | 77.0 x 96.0                    |
|                                                                                   | <b>BVWD-N088GT</b>  | BVWV-N088           | 1½"           | 48                   | 50     | 1-1/2 | 18.0                     | 90.5 x 106.0                   |
|                                                                                   | <b>BVWD-N098GT</b>  | BVWV-N098           | 2"            | 48                   | 50     | 1-1/2 | 18.0                     | 90.5 x 111.0                   |

#### Approvals



For applications in railway vehicles and heavy machine construction  
 High thread and system connection strength  
**Note:** Curved elbows of type VB are also available for sizes NW 17 to NW 48

① Please replace "B" for black with  
 "S" for grey in front of the order no.

## Swivel connectors, metric/PG/NPT metal thread

### Type SBV & SWV/SBV

#### Type SBV - Swivel connector 90° curved elbow, metric/PG metal thread

|                                                                                   | Order no.<br>IP68, black | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|------------------|----------------------|--------|-------|--------------------------|--------------------------------|
|                                                                                   |                          |                  | NW                   | Metric | Inch  |                          |                                |
|  | NSBV-M207-10             | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 62.5 x 74.5                    |
|                                                                                   | NSBV-M253-11             | M25 x 1.5        | 23                   | 25     | 3/4   | 11.0                     | 73.0 x 87.5                    |
|                                                                                   | NSBV-M329-13             | M32 x 1.5        | 29                   | 32     | 1     | 13.0                     | 86.5 x 98.0                    |
|                                                                                   | NSBV-M406-13             | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 98.5 x 127.5                   |
|                                                                                   | NSBV-M409-13             | M40 x 1.5        | 29                   | 32     | 1     | 13.0                     | 86.5 x 98.0                    |
|                                                                                   | NSBV-M508-14             | M50 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 113.5 x 139.0                  |
|                                                                                   | NSBV-M638-14             | M63 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 110.0 x 139.0                  |

#### Approvals



| Order no.<br>IP68, black | Thread<br>PG | NW | Fits to conduit size |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|--------------------------|--------------|----|----------------------|-------|--------------------------|--------------------------------|
|                          |              |    | Metric               | Inch  |                          |                                |
| NSBV-P167-6.5            | 16           | 17 | 20                   | 1/2   | 6.5                      | 58.0 x 74.5                    |
| NSBV-P213-7              | 21           | 23 | 25                   | 3/4   | 7.0                      | 69.0 x 87.5                    |
| NSBV-P299-8              | 29           | 29 | 32                   | 1     | 8.0                      | 80.0 x 98.0                    |
| NSBV-P366-9              | 36           | 36 | 40                   | 1-1/4 | 9.0                      | 91.5 x 127.5                   |
| NSBV-P488-10             | 48           | 48 | 50                   | 1-1/2 | 10.0                     | 106.0 x 139.0                  |

For applications with high technical requirements mainly in machine building

Suitable for occasional rotation

Thread and integrated swivel adapter made from nickel-plated brass

High thread and system connection strength

Smooth elbow allows easy threading of wires and cables

#### Type SWV/SBV - Swivel connector 90° curved elbow, NPT metal thread

|                                                                                     | Order no.<br>IP68, black | Thread<br>NPT | NW | Fits to conduit size |       | Thread<br>length<br>(mm) | External<br>dimensions<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------|---------------|----|----------------------|-------|--------------------------|--------------------------------|
|                                                                                     |                          |               |    | Metric               | Inch  |                          |                                |
|  | NSWV-N022/01             | 1/2"          | 12 | 16                   | 3/8   | 15.4                     | 57.0 x 48.5                    |
|                                                                                     | NSBV-N027/01             | 1/2"          | 17 | 20                   | 1/2   | 15.4                     | 66.5 x 74.5                    |
|                                                                                     | NSBV-N043/01             | 3/4"          | 23 | 25                   | 3/4   | 15.7                     | 77.5 x 87.5                    |
|                                                                                     | NSBV-N069/01             | 1"            | 29 | 32                   | 1     | 19.6                     | 92.0 x 98.0                    |
|                                                                                     | NSBV-N076/01             | 1 1/4"        | 36 | 40                   | 1-1/4 | 20.2                     | 104.5 x 125.5                  |
|                                                                                     | NSBV-N088/01             | 1 1/2"        | 48 | 50                   | 1-1/2 | 20.6                     | 118.5 x 138.5                  |
|                                                                                     | NSBV-N098/01             | 2"            | 48 | 50                   | 1-1/2 | 21.4                     | 119.5 x 138.5                  |

#### Approvals



For applications with high technical requirements mainly in heavy machine building and rail applications

Suitable for occasional rotation

Thread and integrated swivel adapter made from colourless anodized aluminium

High thread and system connection strength

Smooth elbow allows easy threading of wires and cables

## Swivel connectors, metric/NPT metal thread

### Type SNV

Type SNV - Swivel connector, straight, IP68 metric metal thread

|                                                                                   | Order no.<br>IP68, black | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|------------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                          |                  | NW                   | Metric | Inch  |                          |                           |
|  | NSNV-M120-10             | M12 x 1.5        | 10                   | 12     | 5/16  | 10.0                     | 50.5                      |
|                                                                                   | NSNV-M162-10             | M16 x 1.5        | 12                   | 16     | 3/8   | 10.0                     | 53.5                      |
|                                                                                   | NSNV-M207-10             | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 62.5                      |
|                                                                                   | NSNV-M253-11             | M25 x 1.5        | 23                   | 25     | 3/4   | 11.0                     | 67.5                      |
|                                                                                   | NSNV-M329-13             | M32 x 1.5        | 29                   | 32     | 1     | 13.0                     | 72.0                      |
|                                                                                   | NSNV-M329-7              | M32 x 1.5        | 29                   | 32     | 1     | 7.0                      | 66.0                      |
|                                                                                   | NSNV-M406-13             | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 85.5                      |
|                                                                                   | NSNV-M406-7              | M40 x 1.5        | 36                   | 40     | 1-1/4 | 7.0                      | 79.5                      |
|                                                                                   | NSNV-M409-13             | M40 x 1.5        | 29                   | 32     | 1     | 13.0                     | 72.0                      |
|                                                                                   | NSNV-M508-14             | M50 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 87.5                      |
|                                                                                   | NSNV-M638-14             | M63 x 1.5        | 48                   | 50     | 1-1/2 | 14.0                     | 84.0                      |

#### Approvals



For applications in railway vehicles and heavy machine construction  
 Specially formulated polyamide 6  
 Thread and integrated swivel adapter made from nickel-plated brass  
 Very high impact resistance. High thread and system connection strength. Suitable for occasional rotation  
 Easy introduction of wires and cables  
 Vibration-proof connection to PMAFLEX conduits  
 Very good chemical properties  
 Free from halogens and cadmium  
 Fits both conduit profiles – fine (T) and coarse (G)  
 IP68, IP69

Type SNV - Swivel connector, straight, NPT metal thread

|                                                                                     | Order no.<br>IP68, black | Thread<br>NPT | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------|---------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                     |                          |               | NW                   | Metric | Inch  |                          |                           |
|  | NSNV-N022/01             | 1/2"          | 12                   | 16     | 3/8   | 15.4                     | 58.0                      |
|                                                                                     | NSNV-N027/01             | 1/2"          | 17                   | 20     | 1/2   | 15.4                     | 66.5                      |
|                                                                                     | NSNV-N043/01             | 3/4"          | 23                   | 25     | 3/4   | 15.7                     | 72.0                      |
|                                                                                     | NSNV-N069/01             | 1"            | 29                   | 32     | 1     | 19.6                     | 77.5                      |
|                                                                                     | NSNV-N076/01             | 1 1/4"        | 36                   | 40     | 1-1/4 | 20.2                     | 91.5                      |
|                                                                                     | NSNV-N088/01             | 1 1/2"        | 48                   | 50     | 1-1/2 | 20.6                     | 92.0                      |
|                                                                                     | NSNV-N098/01             | 2"            | 48                   | 50     | 1-1/2 | 21.4                     | 93.0                      |

#### Approvals



For applications with high technical requirements mainly in machine building  
 Specially formulated polyamide 6  
 Thread and integrated swivel adapter made from colourless anodized aluminium  
 Very high impact resistance. High thread and system connection strength. Suitable for occasional rotation  
 Easy introduction of wires and cables  
 Vibration-proof connection to PMAFLEX conduits  
 Very good chemical properties  
 Free from halogens and cadmium  
 Fits both conduit profiles – fine (T) and coarse (G)  
 IP68, IP69



## Swivel connectors with female NPT metal thread

### Type SNIV & SBIV

Type SNIV - Swivel connector straight, female NPT metal thread, IP68

|                                                                                   | Order no.<br>black | Thread |    | Fits to conduit size |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|--------|----|----------------------|-------|--------------------------|---------------------------|
|                                                                                   |                    | NPT    | NW | Metric               | Inch  |                          |                           |
|  | NSNIV-N022/01      | ½"     | 12 | 16                   | 3/8   | 13.6                     | 59.0                      |
|                                                                                   | NSNIV-N027/01      | ½"     | 17 | 20                   | 1/2   | 13.6                     | 67.0                      |
|                                                                                   | NSNIV-N043/01      | ¾"     | 23 | 25                   | 3/4   | 14.1                     | 72.5                      |
|                                                                                   | NSNIV-N069/01      | 1"     | 29 | 32                   | 1     | 16.8                     | 76.5                      |
|                                                                                   | NSNIV-N076/01      | 1¼"    | 36 | 40                   | 1-1/4 | 17.3                     | 91.5                      |
|                                                                                   | NSNIV-N088/01      | 1½"    | 48 | 50                   | 1-1/2 | 17.3                     | 93.5                      |
|                                                                                   | NSNIV-N098/01      | 2"     | 48 | 50                   | 1-1/2 | 17.8                     | 93.0                      |

#### Approvals



For applications with high technical requirements mainly in machine building

Type SBIV - 360° Swivel connector, 90° curved elbow, IP68, female NPT metal thread

|                                                                                     | Order no.<br>IP68, black ④ | Thread |    | Fits to conduit size |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|----------------------------|--------|----|----------------------|-------|--------------------------|---------------------------|
|                                                                                     |                            | NPT    | NW | Metric               | Inch  |                          |                           |
|  | NSBIV-N022/01              | ½"     | 12 | 16                   | 3/8   | 13.6                     | 48.5 x 46.5               |
|                                                                                     | NSBIV-N027/01              | ½"     | 17 | 20                   | 1/2   | 13.6                     | 67.0 x 74.5               |
|                                                                                     | NSBIV-N043/01              | ¾"     | 23 | 25                   | 3/4   | 14.1                     | 78.0 x 87.5               |
|                                                                                     | NSBIV-N069/01              | 1"     | 29 | 32                   | 1     | 16.8                     | 91.0 x 98.0               |
|                                                                                     | NSBIV-N076/01              | 1¼"    | 36 | 40                   | 1-1/4 | 17.3                     | 104.5 x 125.5             |
|                                                                                     | NSBIV-N088/01              | 1½"    | 48 | 50                   | 1-1/2 | 17.3                     | 119.5 x 138.5             |
|                                                                                     | NSBIV-N098/01              | 2"     | 48 | 50                   | 1-1/2 | 17.8                     | 119.0 x 138.5             |

#### Approvals



Technical requirements mainly in heavy machine building and rail applications  
 Suitable for occasional rotation  
 Specially formulated polyamide 6  
 Thread and integrated swivel adapter made from colourless anodized aluminium  
 Very high impact resistance  
 High thread and system connection strength  
 Suitable for occasional rotation  
 Easy introduction of wires and cables  
 Vibration-proof connection to PMAFLEX conduits  
 Very good chemical properties  
 Free from halogens and cadmium  
 Fits both conduit profiles – fine (T) and coarse (G)  
 IP68, IP69

## Flanges, connectors with female, metric thread

### Type VO & VI

#### Type VO - Flange 90°

|    | Order no.<br>IP66 ① | Order no.<br>IP68 ① | Fits to conduit size |        |       | Width x Length x Depth<br>(mm) | Screw<br>sizes |
|----|---------------------|---------------------|----------------------|--------|-------|--------------------------------|----------------|
|    |                     |                     | NW                   | Metric | Inch  |                                |                |
| VO | BVOD-P167GT         | BVOV-P167           | 17                   | 20     | 1/2   | 46.0 x 66.0 x 35.5             | 2 x M5         |
|    | BVOD-P213GT         | BVOV-P213           | 23                   | 25     | 3/4   | 65.5 x 70.0 x 43.0             | 2 x M6         |
|    | BVOD-P299GT         | BVOV-P299           | 29                   | 32     | 1     | 67.0 x 78.0 x 49.5             | 4 x M6         |
|    | BVOD-P366GT         | BVOV-P366           | 36                   | 40     | 1-1/4 | 85.0 x 102.0 x 65.5            | 4 x M6         |
|    | BVOD-P488GT         | BVOV-P488           | 48                   | 50     | 1-1/2 | 86.0 x 119.0 x 77.5            | 4 x M6         |



For cable protection systems in a wide range of applications  
 Flange seal FGO4 made from EPDM, flange seal FGO4/01 made from NBR  
 Temperature range with FGO4: -40°C to +105°C  
 Temperature range with FGO4/01: -25°C to +70°C

#### Type VI - Connector straight, female metric thread

|    | Order no.<br>IP66, black | Order no.<br>IP68, black | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|----|--------------------------|--------------------------|------------------|----------------------|--------|-------|--------------------------|---------------------------|
|    |                          |                          |                  | NW                   | Metric | Inch  |                          |                           |
| VI | BVID-M12MGT              | –                        | M12 x 1.5        | 07                   | 10     | 1/4   | 8.0                      | 32.0                      |
|    | BVID-M160GT              | BVIR-M160                | M16 x 1.5        | 10                   | 12     | 5/16  | 8.0                      | 33.5                      |
|    | BVID-M162GT              | BVIR-M162                | M16 x 1.5        | 12                   | 16     | 3/8   | 8.0                      | 36.5                      |
|    | –                        | BVIR-M202                | M20 x 1.5        | 12                   | 16     | 3/8   | 8.0                      | 36.5                      |
|    | BVID-M207GT              | BVIR-M207                | M20 x 1.5        | 17                   | 20     | 1/2   | 8.0                      | 44.5                      |
|    | BVID-M253GT              | BVIR-M253                | M25 x 1.5        | 23                   | 25     | 3/4   | 8.0                      | 48.5                      |
|    | –                        | BVIR-M257                | M25 x 1.5        | 17                   | 20     | 1/2   | 8.0                      | 44.5                      |
|    | BVID-M329GT              | BVIR-M329                | M32 x 1.5        | 29                   | 32     | 1     | 10.0                     | 51.5                      |
|    | BVID-M406GT              | BVIR-M406                | M40 x 1.5        | 36                   | 40     | 1-1/4 | 10.0                     | 65.5                      |
|    | BVID-M508GT              | BVIR-M508                | M50 x 1.5        | 48                   | 50     | 1-1/2 | 10.0                     | 65.5                      |
|    | BVID-M638GT              | BVIR-M638                | M63 x 1.5        | 48                   | 50     | 1-1/2 | 10.0                     | 65.5                      |
|    | cULus                    |                          |                  |                      |        |       |                          |                           |

#### Approvals



For cable protection systems in a wide range of applications  
 VID: IP66 static/IP54 dynamic, conduit side  
 VIR: IP68 static/IP67 dynamic, conduit side  
 No seal on female thread side

① Please replace "B" for black with  
 "S" for grey in front of the order no.

## Connectors with female, metric metal thread

### Type VIR

Type VIR - Connector straight, female metric metal thread

|                                                                                   | Order no.<br>IP68, black | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|------------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                          |                  | NW                   | Metric | Inch  |                          |                           |
|  | NVIR-M120                | M12 x 1.5        | 10                   | 12     | 5/16  | 7.5                      | 35.0                      |
|                                                                                   | NVIR-M160                | M16 x 1.5        | 10                   | 12     | 5/16  | 9.0                      | 40.5                      |
|                                                                                   | NVIR-M162                | M16 x 1.5        | 12                   | 16     | 3/8   | 9.0                      | 42.0                      |
|                                                                                   | NVIR-M207                | M20 x 1.5        | 17                   | 20     | 1/2   | 10.0                     | 50.0                      |
|                                                                                   | NVIR-M253                | M25 x 1.5        | 23                   | 25     | 3/4   | 10.0                     | 56.0                      |
|                                                                                   | NVIR-M329                | M32 x 1.5        | 29                   | 32     | 1     | 11.0                     | 55.5                      |
|                                                                                   | NVIR-M406                | M40 x 1.5        | 36                   | 40     | 1-1/4 | 13.0                     | 71.0                      |
|                                                                                   | NVIR-M508                | M50 x 1.5        | 48                   | 50     | 1-1/2 | 15.0                     | 75.0                      |
|                                                                                   | NVIR-M638                | M63 x 1.5        | 48                   | 50     | 1-1/2 | 17.5                     | 76.0                      |

#### Approvals



For applications in railway vehicles and heavy machine construction  
 High thread and system connection strengths  
 VIR: IP68 static/IP67 dynamic, conduit side  
 No seal on female thread side

## Connector straight, PG female thread

### Type FIL/VIR & VIZR

#### Type FIL/VIR - Connector straight, female PG thread

|                                                                                   | Order no.<br>IP67, black | Order no.<br>IP68, black | Thread<br>PG | Fits to conduit size |                | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|--------------------------|--------------|----------------------|----------------|--------------------------|---------------------------|
|                                                                                   |                          |                          |              | NW                   | Metric<br>Inch |                          |                           |
|  | BFIL-P07M                | –                        | 07           | 07                   | 10 1/4         | 8.0                      | 29.0                      |
|                                                                                   | BFIL-P070                | –                        | 07           | 10                   | 12 5/16        | 8.0                      | 34.5                      |
|                                                                                   | –                        | BVIR-P070                | 07           | 10                   | 12 5/16        | 8.0                      | 33.5                      |
|                                                                                   | BFIL-P090                | –                        | 09           | 10                   | 12 5/16        | 8.0                      | 32.5                      |
|                                                                                   | –                        | BVIR-P090                | 09           | 10                   | 12 5/16        | 8.0                      | 33.5                      |
|                                                                                   | BFIL-P112                | –                        | 11           | 12                   | 16 3/8         | 8.0                      | 32.5                      |
|                                                                                   | –                        | BVIR-P112                | 11           | 12                   | 16 3/8         | 8.0                      | 36.5                      |
|                                                                                   | BFIL-P117                | –                        | 11           | 17                   | 20 1/2         | 8.0                      | 35.0                      |
|                                                                                   | BFIL-P132                | –                        | 13.5         | 12                   | 16 3/8         | 8.0                      | 32.5                      |
|                                                                                   | BFIL-P137                | –                        | 13.5         | 17                   | 20 1/2         | 8.0                      | 33.5                      |
|                                                                                   | BFIL-P160                | –                        | 16           | 10                   | 12 5/16        | 7.0                      | 37.0                      |
|                                                                                   | BFIL-P167                | –                        | 16           | 17                   | 20 1/2         | 8.0                      | 33.5                      |
|                                                                                   | –                        | BVIR-P167                | 16           | 17                   | 20 1/2         | 8.0                      | 44.5                      |
|                                                                                   | BFIL-P217                | –                        | 21           | 17                   | 20 1/2         | 10.5                     | 35.5                      |
|                                                                                   | BFIL-P213                | –                        | 21           | 23                   | 25 3/4         | 8.0                      | 39.0                      |
|                                                                                   | BFIL-P293                | –                        | 29           | 23                   | 25 3/4         | 9.0                      | 42.0                      |
|                                                                                   | BFIL-P299                | –                        | 29           | 29                   | 32 1           | 9.0                      | 43.0                      |
|                                                                                   | BFIL-P369                | –                        | 36           | 29                   | 32 1           | 16.0                     | 52.0                      |
|                                                                                   | BFIL-P366                | –                        | 36           | 36                   | 25 1-1/4       | 13.0                     | 64.0                      |
|                                                                                   | BFIL-P488                | –                        | 48           | 48                   | 50 1-1/4       | 13.0                     | 65.0                      |

For cable protection systems in a wide range of applications

VIR: IP68 static/IP67 dynamic, conduit side

FIL: IP67 static/IP65 dynamic, conduit side

No seal on female thread side

#### Type VIZR - Connector straight, female PG metal thread

|                                                                                     | Order no.<br>IP68, black | Thread<br>PG | Fits to conduit size |                | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------|--------------|----------------------|----------------|--------------------------|---------------------------|
|                                                                                     |                          |              | NW                   | Metric<br>Inch |                          |                           |
|  | NVIZR-P07M               | 07           | 07                   | 10 1/4         | 6.0                      | 35.0                      |
|                                                                                     | NVIZR-P090               | 09           | 10                   | 12 5/16        | 9.0                      | 38.5                      |
|                                                                                     | NVIZR-P110               | 11           | 10                   | 12 5/16        | 9.0                      | 41.0                      |
|                                                                                     | NVIZR-P112               | 11           | 12                   | 16 3/8         | 9.0                      | 42.0                      |
|                                                                                     | NVIZR-P137               | 13.5         | 17                   | 20 1/2         | 8.0                      | 46.5                      |
|                                                                                     | NVIZR-P167               | 16           | 17                   | 20 1/2         | 9.5                      | 48.0                      |
|                                                                                     | NVIZR-P213               | 21           | 23                   | 25 3/4         | 10.0                     | 58.0                      |
|                                                                                     | NVIZR-P299               | 29           | 29                   | 32 1           | 12.5                     | 57.0                      |
|                                                                                     | NVIZR-P366               | 36           | 36                   | 40 1-1/4       | 13.0                     | 76.0                      |
|                                                                                     | NVIZR-P488               | 48           | 48                   | 50 1-1/2       | 14.0                     | 75.0                      |

For applications in railway vehicles and heavy machine construction

High thread and system connection strengths

VIZR: IP68 static/IP67 dynamic, conduit side

No seal on female thread side

## Connectors with female UNEF thread

### Type VI

#### Type VI - Connector straight, UNEF female thread for AMP connectors

|                                                                                   | Order no.<br>IP66, black | Order no.<br>IP68, black | Thread<br>UNEF | Fits to conduit size |        |      | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|--------------------------|----------------|----------------------|--------|------|--------------------------|---------------------------|
|                                                                                   |                          |                          |                | NW                   | Metric | Inch |                          |                           |
|  | BVIDA-U15MGT             | BVIRA-U15M               | 5/8"-24        | 07                   | 10     | 1/4  | 8.0                      | 31.5                      |
|                                                                                   | BVIDA-U150GT             | BVIRA-U150               | 5/8"-24        | 10                   | 12     | 5/16 | 8.0                      | 33.5                      |
|                                                                                   | BVIDA-U152GT             | BVIRA-U152               | 5/8"-24        | 12                   | 16     | 3/8  | 8.0                      | 36.5                      |
|                                                                                   | BVIDA-U180GT             | BVIRA-U180               | 3/4"-20        | 10                   | 12     | 5/16 | 8.0                      | 33.5                      |
|                                                                                   | BVIDA-U182GT             | BVIRA-U182               | 3/4"-20        | 12                   | 16     | 3/8  | 8.0                      | 36.5                      |
|                                                                                   | BVIDA-U187GT             | BVIRA-U187               | 3/4"-20        | 17                   | 20     | 1/2  | 8.0                      | 44.5                      |
|                                                                                   | BVIDA-U232GT             | BVIRA-U232               | 1 5/16"-20     | 12                   | 16     | 3/8  | 8.0                      | 38.5                      |
|                                                                                   | BVIDA-U237GT             | BVIRA-U237               | 1 5/16"-20     | 17                   | 20     | 1/2  | 8.0                      | 46.5                      |
|                                                                                   | BVIDA-U233GT             | BVIRA-U233               | 1 5/16"-20     | 23                   | 25     | 3/4  | 8.0                      | 48.5                      |
|                                                                                   | BVIDA-U347GT             | BVIRA-U347               | 1 3/8"-18      | 17                   | 20     | 1/2  | 8.0                      | 46.5                      |
|                                                                                   | BVIDA-U343GT             | BVIRA-U343               | 1 3/8"-18      | 23                   | 25     | 3/4  | 8.0                      | 48.5                      |
|                                                                                   | BVIDA-U402GT             | BVIRA-U402               | 1 5/8"-18      | 12                   | 16     | 3/8  | 7.0                      | 55.5                      |
|                                                                                   | BVIDA-U407GT             | BVIRA-U407               | 1 5/8"-18      | 17                   | 20     | 1/2  | 7.0                      | 61.5                      |
|                                                                                   | BVIDA-U403GT             | BVIRA-U403               | 1 5/8"-18      | 23                   | 25     | 3/4  | 7.0                      | 60.5                      |

For cable protection systems in a wide range of applications

Suitable for the AMP connector serie CPC

VIDA: IP66 static/IP54 dynamic, conduit side. VIRA: IP68 static/IP67 dynamic, conduit side

No seal on female thread side

#### Type VI - Connector straight, UNEF female thread for Souriau connectors

|                                                                                     | Order no.<br>IP66, black | Order no.<br>IP68, black | Thread<br>UNEF | Fits to conduit size |      | Shell size<br>UTG-6 | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------|----------------|----------------------|------|---------------------|--------------------------|---------------------------|
|                                                                                     |                          |                          |                | NW                   | Inch |                     |                          |                           |
|  | BVIDB-U162GT             | BVIRB-U162               | 1 1/16"-24     | 12                   | 3/8  | 12-8                | 4.0                      | 43.5                      |
|                                                                                     | BVIDB-U202GT             | BVIRB-U202               | 1 3/16"-20     | 12                   | 3/8  | 14-12               | 4.5                      | 44.0                      |
|                                                                                     | BVIDB-U232GT             | BVIRB-U232               | 1 5/16"-20     | 12                   | 3/8  | 16-19               | 4.5                      | 49.0                      |
|                                                                                     | BVIDB-U237GT             | BVIRB-U237               | 1 5/16"-20     | 17                   | 1/2  | 16-19               | 4.5                      | 52.0                      |
|                                                                                     | BVIDB-U267GT             | BVIRB-U267               | 1 1/16"-18     | 17                   | 1/2  | 18-23               | 4.5                      | 52.0                      |
|                                                                                     | BVIDB-U297GT             | BVIRB-U297               | 1 3/16"-18     | 17                   | 1/2  | 20-28               | 6.5                      | 55.5                      |
|                                                                                     | BVIDB-U293GT             | BVIRB-U293               | 1 3/16"-18     | 23                   | 3/4  | 20-28               | 6.5                      | 52.0                      |
|                                                                                     | BVIDB-U323GT             | BVIRB-U323               | 1 5/16"-18     | 23                   | 3/4  | 22-35               | 6.5                      | 52.0                      |
|                                                                                     | BVIDB-U357GT             | BVIRB-U357               | 1 7/16"-18     | 17                   | 1/2  | 24-48               | 6.5                      | 58.5                      |
|                                                                                     | BVIDB-U353GT             | BVIRB-U353               | 1 7/16"-18     | 23                   | 3/4  | 24-48               | 6.5                      | 54.0                      |
|                                                                                     | BVIDB-U359GT             | BVIRB-U359               | 1 7/16"-18     | 29                   | 1    | 24-48               | 6.5                      | 50.5                      |

For cable protection systems in a wide range of applications

Suitable for the Souriau connector series UTG-6/ITT Cannon Trident

VIDB: IP66 static/IP54 dynamic, conduit side. VIRB: IP68 static/IP67 dynamic, conduit side

No seal on female thread side

|  | Order no.<br>IP68, black | Thread<br>UNEF | Fits to conduit size |      | Shell size<br>UTG-6 | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|--|--------------------------|----------------|----------------------|------|---------------------|--------------------------|---------------------------|
|  |                          |                | NW                   | Inch |                     |                          |                           |
|  | BVIRS-U162               | 1 1/16"-24     | 12                   | 3/8  | 12                  | 9.4                      | 47.5                      |
|  | BVIRS-U202               | 1 3/16"-20     | 12                   | 3/8  | 14                  | 9.4                      | 47.5                      |
|  | BVIRS-U237               | 1 5/16"-20     | 17                   | 1/2  | 16                  | 10.0                     | 56.0                      |
|  | BVIRS-U267               | 1 1/16"-18     | 17                   | 1/2  | 18                  | 9.2                      | 55.5                      |
|  | BVIRS-U293               | 1 3/16"-18     | 23                   | 3/4  | 20                  | 9.8                      | 56.0                      |
|  | BVIRS-U323               | 1 5/16"-18     | 23                   | 3/4  | 22                  | 9.8                      | 56.0                      |
|  | BVIRS-U359               | 1 7/16"-18     | 29                   | 1    | 24                  | 9.7                      | 55.5                      |

For cable protection systems in a wide range of applications

Suitable for the Souriau connector series UTO and UTS

VIRS: IP68 static/IP67 dynamic, conduit side. No seal on female thread side



## Connectors with female UN thread

### Type VI

Type VI - Connector straight, UN female thread for MIL-C5015

|                                                                                   | Order no.<br>IP66, black | Order no.<br>IP68, black | Thread<br>UN    | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------|--------------------------|-----------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                          |                          |                 | NW                   | Metric | Inch  |                          |                           |
|  | –                        | BVIVG-U152*              | 5/8"–24 UNEF    | 12                   | 16     | 3/8   | 8.0                      | 36.5                      |
|                                                                                   | –                        | BVIVG-U187*              | 3/4"–20 UNEF    | 17                   | 20     | 1/2   | 9.0                      | 46.5                      |
|                                                                                   | –                        | BVIVG-U210*              | 7/8"–20 UNEF    | 10                   | 07     | 5/16  | 9.0                      | 37.0                      |
|                                                                                   | BVIDG-U212GT             | BVIVG-U212*              | 7/8"–20 UNEF    | 12                   | 16     | 3/8   | 9.0                      | 38.5                      |
|                                                                                   | BVIDG-U217GT             | BVIVG-U217*              | 7/8"–20 UNEF    | 17                   | 20     | 1/2   | 9.0                      | 46.5                      |
|                                                                                   | BVIDG-U242GT             | BVIVG-U242*              | 1"–20 UNEF      | 12                   | 16     | 3/8   | 9.0                      | 40.5                      |
|                                                                                   | –                        | BVIVG-U243*              | 1"–20 UNEF      | 23                   | 25     | 3/4   | 9.0                      | 55.0                      |
|                                                                                   | BVIDG-U247GT             | BVIVG-U247*              | 1"–20 UNEF      | 17                   | 20     | 1/2   | 9.0                      | 47.5                      |
|                                                                                   | –                        | BVIVG-U292*              | 1 1/16"–18 UNEF | 12                   | 16     | 3/8   | 9.0                      | 40.5                      |
|                                                                                   | BVIDG-U293GT             | BVIVG-U293*              | 1 1/16"–18 UNEF | 23                   | 25     | 3/4   | 9.0                      | 55.0                      |
|                                                                                   | BVIDG-U297GT             | BVIVG-U297*              | 1 1/16"–18 UNEF | 17                   | 20     | 1/2   | 9.0                      | 47.5                      |
|                                                                                   | –                        | BVIVG-U299*              | 1 3/16"–18 UNEF | 29                   | 32     | 1     | 9.0                      | 47.0                      |
|                                                                                   | –                        | BVIVG-U349*              | 1 3/8"–18 UNEF  | 29                   | 32     | 1     | 9.0                      | 52.0                      |
|                                                                                   | –                        | BVIVG-U352*              | 1 7/16"–18 UNEF | 12                   | 16     | 3/8   | 9.0                      | 39.0                      |
|                                                                                   | BVIDG-U353GT             | BVIVG-U353*              | 1 7/16"–18 UNEF | 23                   | 25     | 3/4   | 9.0                      | 52.0                      |
|                                                                                   | –                        | BVIVG-U356*              | 1 7/16"–18 UNEF | 36                   | 40     | 1-1/4 | 9.0                      | 63.0                      |
|                                                                                   | BVIDG-U357GT             | BVIVG-U357*              | 1 7/16"–18 UNEF | 17                   | 20     | 1/2   | 9.0                      | 46.5                      |
|                                                                                   | BVIDG-U359GT             | BVIVG-U359*              | 1 7/16"–18 UNEF | 29                   | 29     | 1     | 9.0                      | 52.0                      |
|                                                                                   | BVIDG-U433GT             | BVIVG-U433*              | 1 3/4"–18 UNS   | 23                   | 25     | 3/4   | 10.0                     | 52.0                      |
|                                                                                   | BVIDG-U436GT             | BVIVG-U436*              | 1 3/4"–18 UNS   | 36                   | 40     | 1-1/4 | 10.0                     | 62.5                      |
|                                                                                   | –                        | BVIVG-U437*              | 1 3/4"–18 UNS   | 17                   | 20     | 1/2   | 10.0                     | 46.5                      |
|                                                                                   | BVIDG-U439GT             | BVIVG-U439*              | 1 3/4"–18 UNS   | 29                   | 32     | 1     | 10.0                     | 51.5                      |
|                                                                                   | –                        | BVIVG-U503*              | 2"–18 UNS       | 23                   | 25     | 3/4   | 10.0                     | 51.5                      |
|                                                                                   | BVIDG-U506GT             | BVIVG-U506*              | 2"–18 UNS       | 36                   | 40     | 1-1/4 | 10.0                     | 62.5                      |
|                                                                                   | –                        | BVIVG-U508*              | 2"–18 UNS       | 48                   | 50     | 1-1/2 | 10.0                     | 64.5                      |
|                                                                                   | BVIDG-U509GT             | BVIVG-U509*              | 2"–18 UNS       | 29                   | 32     | 1     | 10.0                     | 55.0                      |
|                                                                                   | –                        | BVIVG-U563*              | 2 1/4"–16 UN    | 23                   | 25     | 3/4   | 10.0                     | 51.0                      |
|                                                                                   | BVIDG-U566GT             | BVIVG-U566*              | 2 1/4"–16 UN    | 36                   | 40     | 1-1/4 | 10.0                     | 62.0                      |
|                                                                                   | –                        | BVIVG-U568*              | 2 1/4"–16 UN    | 48                   | 50     | 1-1/2 | 10.0                     | 64.0                      |
|                                                                                   | BVIDG-U569GT             | BVIVG-U569*              | 2 1/4"–16 UN    | 29                   | 32     | 1     | 10.0                     | 51.0                      |
|                                                                                   | –                        | BVIVG-U628*              | 2 1/2"–16 UN    | 48                   | 50     | 1-1/2 | 10.0                     | 64.0                      |

#### Approvals



For applications in machine, vehicle and traction building industries

Suitable for MIL connector series C5015

VIDG: IP66 static/IP54 dynamic, conduit- and thread side

VIVG: IP68 static/IP67 dynamic, conduit- and thread side

No seal on female thread side

\* UL Recognition according to UL 1619

## Y, T pieces, conduit adapters

### Type VY & VT

#### Type VY - Y piece

|                                                                                   | Order no.<br>IP66 ① | Order no.<br>IP68 ① | 1 x conduit size |        |       | 2 x conduit size |        |       |
|-----------------------------------------------------------------------------------|---------------------|---------------------|------------------|--------|-------|------------------|--------|-------|
|                                                                                   |                     |                     | NW               | Metric | Inch  | NW               | Metric | Inch  |
|  | BVYD-100707GT       | BVYR-100707         | 10               | 12     | 5/16  | 07               | 10     | 1/4   |
|                                                                                   | BVYD-121010GT       | BVYR-121010         | 12               | 16     | 3/8   | 10               | 12     | 5/16  |
|                                                                                   | BVYD-171212GT       | BVYR-171212         | 17               | 20     | 1/2   | 12               | 16     | 3/8   |
|                                                                                   | BVYD-231717GT       | BVYR-231717         | 23               | 25     | 3/4   | 17               | 20     | 1/2   |
|                                                                                   | BVYD-292323GT       | BVYR-292323         | 29               | 32     | 1     | 23               | 25     | 3/4   |
|                                                                                   | BVYD-362929GT       | BVYR-362929         | 36               | 40     | 1-1/4 | 29               | 32     | 1     |
|                                                                                   | BVYD-483636GT       | BVYR-483636         | 48               | 50     | 1-1/2 | 36               | 40     | 1-1/4 |

#### Approvals



Sizes can be adapted with AV conduit adapters to fit smaller conduit dimensions

#### Type VT - T piece

|                                                                                     | Order no.<br>IP66 ① | Order no.<br>IP68 ① | 3 x conduit size |        |       |
|-------------------------------------------------------------------------------------|---------------------|---------------------|------------------|--------|-------|
|                                                                                     |                     |                     | NW               | Metric | Inch  |
|  | BVTD-101010GT       | BVTR-101010         | 10               | 12     | 5/16  |
|                                                                                     | BVTD-121212GT       | BVTR-121212         | 12               | 16     | 3/8   |
|                                                                                     | BVTD-171717GT       | BVTR-171717         | 17               | 20     | 1/2   |
|                                                                                     | BVTD-232323GT       | BVTR-232323         | 23               | 25     | 3/4   |
|                                                                                     | BVTD-292929GT       | BVTR-292929         | 29               | 32     | 1     |
|                                                                                     | BVTD-363636GT       | BVTR-363636         | 36               | 40     | 1-1/4 |
|                                                                                     | BVTD-484848GT       | BVTR-484848         | 48               | 50     | 1-1/2 |

#### Approvals



Sizes can be adapted with AV conduit adapters to fit smaller conduit dimensions

① Please replace "B" for black with "S" for grey in front of the order no.

## Y, T pieces, conduit adapters

### Type AV

#### Type AV - Conduit adapter

|                                                                                         | Order no.<br>IP66, black | Order no.<br>IP68, black | Fits to fitting for |        |       | Fits to fitting size |        |       | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------------|--------------------------|--------------------------|---------------------|--------|-------|----------------------|--------|-------|---------------------------|
|                                                                                         |                          |                          | NW                  | Metric | Inch  | NW                   | Metric | Inch  |                           |
| AV<br> | –                        | BAVR-10/07               | 10                  | 12     | 5/16  | 07                   | 10     | 1/4   | 43.0                      |
|                                                                                         | BAVD-12/10GT             | BAVR-12/10               | 12                  | 16     | 3/8   | 10                   | 12     | 5/16  | 46.0                      |
|                                                                                         | BAVD-17/10GT             | BAVR-17/10               | 17                  | 20     | 1/2   | 10                   | 12     | 5/16  | 53.0                      |
|                                                                                         | BAVD-17/12GT             | BAVR-17/12               | 17                  | 20     | 1/2   | 12                   | 16     | 3/8   | 54.0                      |
|                                                                                         | BAVD-23/10GT             | BAVR-23/10               | 23                  | 25     | 3/4   | 10                   | 12     | 5/16  | 54.0                      |
|                                                                                         | BAVD-23/12GT             | BAVR-23/12               | 23                  | 25     | 3/4   | 12                   | 16     | 3/8   | 53.0                      |
|                                                                                         | BAVD-23/17GT             | BAVR-23/17               | 23                  | 25     | 3/4   | 17                   | 20     | 1/2   | 62.0                      |
|                                                                                         | BAVD-29/10GT             | BAVR-29/10               | 29                  | 32     | 1     | 10                   | 12     | 5/16  | 56.5                      |
|                                                                                         | BAVD-29/12GT             | BAVR-29/12               | 29                  | 32     | 1     | 12                   | 16     | 3/8   | 55.0                      |
|                                                                                         | BAVD-29/17GT             | BAVR-29/17               | 29                  | 32     | 1     | 17                   | 20     | 1/2   | 61.0                      |
|                                                                                         | BAVD-29/23GT             | BAVR-29/23               | 29                  | 32     | 1     | 23                   | 25     | 3/4   | 64.0                      |
|                                                                                         | BAVD-36/29GT             | BAVR-36/29               | 36                  | 40     | 1-1/4 | 29                   | 32     | 1     | 81.0                      |
|                                                                                         | BAVD-48/36GT             | BAVR-48/36               | 48                  | 50     | 1-1/4 | 36                   | 40     | 1-1/4 | 88.5                      |

Allows conduit size reduction of PMA connectors, particularly of T and Y pieces

#### Approvals



## Connections, connection splices, metric, PG

### Type VNR-REM & VSG

#### Type VNR-REM - Connection to solid metal tube, metric/PG

|                                                                                   | Order no. IP66 without clamp ① | Order no. IP68 with clamp ① | Fits to conduit size |        |       | Steel tube metric | Inside Ø (mm) | Overall length (mm) |
|-----------------------------------------------------------------------------------|--------------------------------|-----------------------------|----------------------|--------|-------|-------------------|---------------|---------------------|
|                                                                                   |                                |                             | NW                   | Metric | Inch  |                   |               |                     |
|  | BVNR-REM162                    | BVNR-REM162-24              | 12                   | 16     | 3/8   | M16               | 16.0          | 54.0                |
|                                                                                   | BVNR-REM187                    | BVNR-REM187-28              | 17                   | 20     | 1/2   | M18               | 18.5          | 65.0                |
|                                                                                   | BVNR-REM207                    | BVNR-REM207-28              | 17                   | 20     | 1/2   | M20               | 20.0          | 65.0                |
|                                                                                   | BVNR-REM253                    | BVNR-REM253-32              | 23                   | 25     | 3/4   | M25               | 26.0          | 71.0                |
|                                                                                   | BVNR-REM329                    | BVNR-REM329-44              | 29                   | 32     | 1     | M32               | 32.0          | 71.0                |
|                                                                                   | BVNR-REM406                    | BVNR-REM406-50              | 36                   | 40     | 1-1/4 | M40               | 40.0          | 90.0                |
|                                                                                   | BVNR-REM508                    | BVNR-REM508-65              | 48                   | 50     | 1-1/2 | M50               | 50.0          | 90.0                |
|                                                                                   | Order no. IP66 without clamp ① | Order no. IP68 with clamp ① | Fits to conduit size |        |       | Steel tube PG     | Inside Ø (mm) | Overall length (mm) |
|                                                                                   |                                |                             | NW                   | Metric | Inch  |                   |               |                     |
|                                                                                   | BVNR-RE12                      | BVNR-RE12-24                | 12                   | 16     | 3/8   | PG11              | 18.5          | 56.0                |
|                                                                                   | BVNR-RE1317                    | BVNR-RE1317-28              | 17                   | 20     | 1/2   | PG13              | 20.4          | 65.0                |
|                                                                                   | BVNR-RE17                      | BVNR-RE17-28                | 17                   | 20     | 1/2   | PG16              | 22.5          | 65.0                |
|                                                                                   | BVNR-RE23                      | BVNR-RE23-32                | 23                   | 25     | 3/4   | PG21              | 28.5          | 71.0                |
|                                                                                   | BVNR-RE29                      | BVNR-RE29-44                | 29                   | 32     | 1     | PG29              | 37.0          | 71.0                |
|                                                                                   | BVNR-RE36                      | BVNR-RE36-50                | 36                   | 40     | 1-1/4 | PG36              | 47.0          | 84.0                |
|                                                                                   | BVNR-RE48                      | BVNR-RE48-65                | 48                   | 50     | 1-1/2 | PG48              | 59.3          | 90.0                |

Quick connection of solid metal tubes with flexible PMA conduits

Jubilee clip made of galvanised bright steel

Available with or without jubilee clip

IP68 on corrugated conduit side, on tube side up to IP68 with sealant

#### Type VSG - Connection splice for flexible conduits

|                                                                                     | Order no. IP66 ① | Order no. IP68 ① | Fits to conduit size |        |       | Inside Ø (mm) | Overall length (mm) |
|-------------------------------------------------------------------------------------|------------------|------------------|----------------------|--------|-------|---------------|---------------------|
|                                                                                     |                  |                  | NW                   | Metric | Inch  |               |                     |
|  | BVSGD-1212GT     | BVSGR-1212       | 12                   | 16     | 3/8   | 23.5          | 66.0                |
|                                                                                     | BVSGD-1717GT     | BVSGR-1717       | 17                   | 20     | 1/2   | 29.5          | 87.0                |
|                                                                                     | BVSGD-2323GT     | BVSGR-2323       | 23                   | 25     | 3/4   | 37.0          | 103.0               |
|                                                                                     | BVSGD-2929GT     | BVSGR-2929       | 29                   | 32     | 1     | 44.0          | 100.0               |
|                                                                                     | BVSGD-3636GT     | BVSGR-3636       | 36                   | 40     | 1-1/4 | 53.5          | 130.0               |
|                                                                                     | BVSGD-4848GT     | BVSGR-4848       | 48                   | 50     | 1-1/2 | 66.0          | 133.0               |

#### Approvals



Designed for optimal connection of PMA conduits

① Please replace "B" for black with "S" for grey in front of the order no.

## PMA FIXPlus fittings with metric threads

### Type UNV-M-UL & UAV-M-UL

#### Type UNV-M-UL - Connector straight, metric thread

|                                                                                   | Order no.<br>black | Order no.<br>grey | Thread<br>metric | Fits to conduit size |       | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|-------------------|------------------|----------------------|-------|--------------------------|----------------------|---------------------------|
|                                                                                   |                    |                   |                  | NW                   | Inch  |                          |                      |                           |
|  | BUNV-M207-UL       | SUNV-M207-UL      | M20 x 1.5        | 17                   | 1/2   | 11.0                     | 29.5                 | 47.5                      |
|                                                                                   | BUNV-M257-UL       | SUNV-M257-UL      | M25 x 1.5        | 17                   | 1/2   | 12.0                     | 32.0                 | 48.5                      |
|                                                                                   | BUNV-M253-UL       | SUNV-M253-UL      | M25 x 1.5        | 23                   | 3/4   | 12.0                     | 37.0                 | 52.0                      |
|                                                                                   | BUNV-M323-UL       | SUNV-M323-UL      | M32 x 1.5        | 23                   | 3/4   | 15.0                     | 43.0                 | 55.5                      |
|                                                                                   | BUNV-M329-UL       | SUNV-M329-UL      | M32 x 1.5        | 29                   | 1     | 15.0                     | 44.0                 | 56.0                      |
|                                                                                   | BUNV-M409-UL       | SUNV-M409-UL      | M40 x 1.5        | 29                   | 1     | 19.0                     | 49.0                 | 60.0                      |
|                                                                                   | BUNV-M406-UL       | SUNV-M406-UL      | M40 x 1.5        | 36                   | 1-1/4 | 19.0                     | 55.0                 | 72.5                      |
|                                                                                   | BUNV-M506-UL       | SUNV-M506-UL      | M50 x 1.5        | 36                   | 1-1/4 | 19.0                     | 59.0                 | 72.0                      |
|                                                                                   | BUNV-M508-UL       | SUNV-M508-UL      | M50 x 1.5        | 48                   | 1-1/2 | 19.0                     | 69.0                 | 72.5                      |
|                                                                                   | BUNV-M638-UL       | SUNV-M638-UL      | M63 x 1.5        | 48                   | 1-1/2 | 19.0                     | 75.0                 | 72.0                      |

#### Approvals



Extremely high impact resistance  
 Vibration-resistant connection to PMA FLEXPlus conduits  
 Easy installation  
 High conduit pull-out strength  
 Very good chemical properties  
 Free from halogens and cadmium  
 Fits conduit profile coarse (G)  
 Lock nut delivered with the fitting

#### Type UAV-M-UL - Connector 45° elbow, metric thread

|                                                                                     | Order no.<br>black | Order no.<br>grey | Thread<br>metric | Fits to conduit size |       | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) | Overall<br>height<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------|-------------------|------------------|----------------------|-------|--------------------------|----------------------|---------------------------|---------------------------|
|                                                                                     |                    |                   |                  | NW                   | Inch  |                          |                      |                           |                           |
|  | BUAV-M207-UL       | SUAV-M207-UL      | M20 x 1.5        | 17                   | 1/2   | 11.0                     | 29.5                 | 55.5                      | 51.5                      |
|                                                                                     | BUAV-M253-UL       | SUAV-M253-UL      | M25 x 1.5        | 23                   | 3/4   | 12.0                     | 37.0                 | 65.0                      | 58.5                      |
|                                                                                     | BUAV-M329-UL       | SUAV-M329-UL      | M32 x 1.5        | 29                   | 1     | 15.0                     | 44.0                 | 73.5                      | 66.5                      |
|                                                                                     | BUAV-M406-UL       | SUAV-M406-UL      | M40 x 1.5        | 36                   | 1-1/4 | 19.0                     | 53.5                 | 92.5                      | 85.5                      |
|                                                                                     | BUAV-M506-UL       | SUAV-M506-UL      | M50 x 1.5        | 36                   | 1-1/4 | 19.0                     | 53.5                 | 92.5                      | 89.5                      |
|                                                                                     | BUAV-M508-UL       | SUAV-M508-UL      | M50 x 1.5        | 48                   | 1-1/2 | 19.0                     | 66.0                 | 100.0                     | 96.0                      |
|                                                                                     | BUAV-M638-UL       | SUAV-M638-UL      | M63 x 1.5        | 48                   | 1-1/2 | 19.0                     | 66.0                 | 100.0                     | 104.0                     |

#### Approvals



Extremely high impact resistance  
 Vibration-resistant connection to PMA FLEXPlus conduits  
 Easy installation  
 High conduit pull-out strength  
 Very good chemical properties  
 Free from halogens and cadmium  
 Fits conduit profile coarse (G)  
 Lock nut delivered with the fitting



PMA FIXPLus fittings with metric threads

Type UWV-M-UL

Type UWV-M-UL - Connector 90° elbow, metric thread

|                                                                                   | Order no.<br>black | Order no.<br>grey | Thread<br>metric | Fits to<br>conduit size |       | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) | Overall<br>height<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|-------------------|------------------|-------------------------|-------|--------------------------|----------------------|---------------------------|---------------------------|
|                                                                                   |                    |                   |                  | NW                      | Inch  |                          |                      |                           |                           |
|  | BUWV-M207-UL       | SUWV-M207-UL      | M20 x 1.5        | 17                      | 1/2   | 11.0                     | 29.5                 | 58.5                      | 43.5                      |
|                                                                                   | BUWV-M253-UL       | SUWV-M253-UL      | M25 x 1.5        | 23                      | 3/4   | 12.0                     | 37.0                 | 65.0                      | 54.0                      |
|                                                                                   | BUWV-M329-UL       | SUWV-M329-UL      | M32 x 1.5        | 29                      | 1     | 15.0                     | 44.0                 | 73.0                      | 64.5                      |
|                                                                                   | BUWV-M406-UL       | SUWV-M406-UL      | M40 x 1.5        | 36                      | 1-1/4 | 19.0                     | 53.5                 | 69.0                      | 78.0                      |
|                                                                                   | BUWV-M508-UL       | SUWV-M508-UL      | M50 x 1.5        | 48                      | 1-1/2 | 19.0                     | 66.0                 | 106.0                     | 91.5                      |

Approvals



- Extremely high impact resistance
- Vibration-resistant connection to PMA FLEXPLus conduits
- Easy installation
- High conduit pull-out strength
- Very good chemical properties
- Free from halogens and cadmium
- Fits conduit profile coarse (G)
- Lock nut delivered with the fitting

## PMA FIXPlus fittings with NPT threads

### Type UNV-N-UL & UAV-N-UL

#### Type UNV-N-UL - Connector straight, NPT thread

|                                                                                   | Order no.<br>black | Order no.<br>grey | Thread<br>size<br>NPT | Fits to<br>conduit size |       | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|-------------------|-----------------------|-------------------------|-------|--------------------------|----------------------|---------------------------|
|                                                                                   |                    |                   |                       | NW                      | Inch  |                          |                      |                           |
|  | BUNV-N027-UL       | SUNV-N027-UL      | ½"                    | 17                      | 1/2   | 13.0                     | 29.5                 | 49.5                      |
|                                                                                   | BUNV-N043-UL       | SUNV-N043-UL      | ¾"                    | 23                      | 3/4   | 14.0                     | 37.0                 | 54.0                      |
|                                                                                   | BUNV-N069-UL       | SUNV-N069-UL      | 1"                    | 29                      | 1     | 15.0                     | 44.0                 | 56.0                      |
|                                                                                   | BUNV-N076-UL       | SUNV-N076-UL      | 1¼"                   | 36                      | 1-1/4 | 18.0                     | 55.0                 | 71.0                      |
|                                                                                   | BUNV-N088-UL       | SUNV-N088-UL      | 1½"                   | 48                      | 1-1/2 | 18.0                     | 69.0                 | 71.5                      |
|                                                                                   | BUNV-N098-UL       | SUNV-N098-UL      | 2"                    | 48                      | 1-1/2 | 18.0                     | 69.0                 | 71.5                      |

#### Approvals



Extremely high impact resistance  
Vibration-resistant connection to PMA FLEXPlus conduits  
Easy installation  
High conduit pull-out strength  
Very good chemical properties  
Free from halogens and cadmium  
Fits conduit profile coarse (G)  
Lock nuts available on request

#### Type UAV-N-UL - Connector 45° elbow, NPT thread

|                                                                                     | Order no.<br>black | Order no.<br>grey | Thread<br>size<br>NPT | Fits to<br>conduit size |       | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) | Overall<br>height<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------|-------------------|-----------------------|-------------------------|-------|--------------------------|----------------------|---------------------------|---------------------------|
|                                                                                     |                    |                   |                       | NW                      | Inch  |                          |                      |                           |                           |
|  | BUAV-N027-UL       | SUAV-N027-UL      | ½"                    | 17                      | 1/2   | 13.0                     | 29.5                 | 57.5                      | 51.5                      |
|                                                                                     | BUAV-N043-UL       | SUAV-N043-UL      | ¾"                    | 23                      | 3/4   | 14.0                     | 37.0                 | 67.0                      | 60.0                      |
|                                                                                     | BUAV-N069-UL       | SUAV-N069-UL      | 1"                    | 29                      | 1     | 15.0                     | 44.0                 | 73.5                      | 67.0                      |
|                                                                                     | BUAV-N076-UL       | SUAV-N076-UL      | 1¼"                   | 36                      | 1-1/4 | 18.0                     | 53.5                 | 91.5                      | 85.5                      |
|                                                                                     | BUAV-N088-UL       | SUAV-N088-UL      | 1½"                   | 36                      | 1-1/4 | 18.0                     | 66.0                 | 99.0                      | 96.0                      |
|                                                                                     | BUAV-N098-UL       | SUAV-N097-UL      | 2"                    | 48                      | 1-1/2 | 18.0                     | 66.0                 | 99.0                      | 101.0                     |

#### Approvals



Extremely high impact resistance  
Vibration-resistant connection to PMA FLEXPlus conduits  
Easy installation  
High conduit pull-out strength  
Very good chemical properties  
Free from halogens and cadmium  
Fits conduit profile coarse (G)  
Lock nuts available on request

PMA FIXPLus fittings with NPT threads

Type UWV-M-UL

Type UWV-M-UL - Connector 90° elbow, NPT thread

|                                                                                   | Order no.<br>black | Order no.<br>grey | Thread<br>size<br>NPT | Fits to conduit size |       | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) | Overall<br>height<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|-------------------|-----------------------|----------------------|-------|--------------------------|----------------------|---------------------------|---------------------------|
|                                                                                   |                    |                   |                       | NW                   | Inch  |                          |                      |                           |                           |
|  | BUWV-N027-UL       | SUWV-N027-UL      | ½"                    | 17                   | 1/2   | 13.0                     | 29.5                 | 58.5                      | 45.5                      |
|                                                                                   | BUWV-N043-UL       | SUWV-N043-UL      | ¾"                    | 23                   | 3/4   | 14.0                     | 37.0                 | 66.5                      | 56.0                      |
|                                                                                   | BUWV-N069-UL       | SUWV-N069-UL      | 1"                    | 29                   | 1     | 15.0                     | 44.0                 | 73.5                      | 64.5                      |
|                                                                                   | BUWV-N076-UL       | SUWV-N076-UL      | 1¼"                   | 36                   | 1-1/4 | 18.0                     | 53.5                 | 96.0                      | 77.0                      |
|                                                                                   | BUWV-N088-UL       | SUWV-N088-UL      | 1½"                   | 48                   | 1-1/2 | 18.0                     | 66.0                 | 106.0                     | 90.5                      |
|                                                                                   | BUWV-N098-UL       | SUWV-N098-UL      | 2"                    | 48                   | 1-1/2 | 18.0                     | 66.0                 | 111.0                     | 90.5                      |

Approvals



- Extremely high impact resistance
- Vibration-resistant connection to PMA FLEXPLus conduits
- Easy installation
- High conduit pull-out strength
- Very good chemical properties
- Free from halogens and cadmium
- Fits conduit profile coarse (G)
- Lock nuts available on request





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# Special connectors

## Introduction

Meet the demands of our customers. We are always looking for ways to offer our best services.

In addition to the broad ranges of connectors offered within the PMAFIX Pro, PMAFIX and Smartline product lines, PMA offers further application specific connector solutions such as the MPNK-M series for high temperatures applications, JENQ-M series for Food and Beverage applications and the MONK-M to terminate an overbraided conduit.







## Metal connectors, metric

### Type MPNK & MONK

#### Type MPNK - Metal connector for PMA conduits, metric thread

|                                                                                   | Order no.<br>metal | Thread<br>metric | Fits to<br>conduit size<br>NW | Fits to<br>conduit<br>size profile | Inside<br>Ø min.<br>(mm) | Thread<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|------------------|-------------------------------|------------------------------------|--------------------------|--------------------------|
|  | MPNK-M160          | M16 x 1.5        | 10                            | T                                  | 12.0                     | 12.0                     |
|                                                                                   | MPNK-M162          | M16 x 1.5        | 12                            | T                                  | 12.0                     | 12.0                     |
|                                                                                   | MPNK-M207          | M20 x 1.5        | 17                            | T                                  | 15.8                     | 14.0                     |
|                                                                                   | MPNK-M253          | M25 x 1.5        | 23                            | G                                  | 19.0                     | 15.0                     |
|                                                                                   | MPNK-M329          | M32 x 1.5        | 29                            | G                                  | 26.5                     | 18.0                     |

For high temperature applications  
 Suitable for high mechanical loads  
 Nickel-plated brass  
 Seals made from silicon  
 Easy introduction of wires and cables  
 Vibration-proof connection to PMAFLEX conduits  
 Very good chemical properties  
 IP68

#### Type MONK - Metal connector for overbraided conduits, metric thread

|                                                                                     | Order no.<br>metal | Thread<br>metric | Fits to<br>conduit size<br>NW | Fits to<br>conduit<br>profile | Inside<br>Ø min.<br>(mm) | Thread<br>length<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------|------------------|-------------------------------|-------------------------------|--------------------------|--------------------------|
|  | MONK-M162          | M16 x 1.5        | 12                            | T                             | 12.0                     | 12.0                     |
|                                                                                     | MONK-M207          | M20 x 1.5        | 17                            | T                             | 16.0                     | 14.0                     |
|                                                                                     | MONK-M253          | M25 x 1.5        | 23                            | G                             | 19.0                     | 15.0                     |
|                                                                                     | MONK-M329          | M32 x 1.5        | 29                            | G                             | 26.5                     | 18.0                     |
|                                                                                     | MONK-M406          | M40 x 1.5        | 36                            | G                             | 35.0                     | 15.0                     |
|                                                                                     | MONK-M508          | M50 x 1.5        | 48                            | G                             | 45.0                     | 16.0                     |

For termination of overbraided conduits  
 For high temperature applications and applications in areas with hot metal shavings and flying sparks  
 Nickel-plated brass  
 Seals made from silicon

## Stainless steel liquid tight fitting

### Type JENQ

Type JENQ - for overextruded conduit, IP69

|                                                                                   | Order no.    | Thread<br>size metric | Fits to<br>conduit<br>size NW | Thread<br>length<br>(mm) | Inside<br>Ø min.<br>(mm) | Ø D<br>(mm) | Wrench<br>size<br>(mm) | sw   |
|-----------------------------------------------------------------------------------|--------------|-----------------------|-------------------------------|--------------------------|--------------------------|-------------|------------------------|------|
|  | JENQ-M162-10 | M16 x 1.5             | 12                            | 10.0                     | 9.2                      | 31.9        | 35.9                   | 30.0 |
|                                                                                   | JENQ-M207-10 | M20 x 1.5             | 17                            | 10.0                     | 13.0                     | 35.0        | 36.9                   | 32.0 |
|                                                                                   | JENQ-M253-11 | M25 x 1.5             | 23                            | 11.0                     | 18.3                     | 44.5        | 41.6                   | 40.0 |
|                                                                                   | JENQ-M329-13 | M32 x 1.5             | 29                            | 13.0                     | 24.0                     | 55.5        | 48.7                   | 50.0 |
|                                                                                   | JENQ-M406-13 | M40 x 1.5             | 36                            | 13.0                     | 32.4                     | 61.5        | 51.2                   | 57.0 |
|                                                                                   | JENQ-M506-14 | M50 x 1.5             | 48                            | 14.0                     | 42.3                     | 78.0        | 57.4                   | 74.0 |

#### Approvals



IP 69 rating  
 For termination of overextruded conduits  
 For high hygienic requirements  
 Suitable for food & beverage industry  
 Unique single piece design Stainless Steel 316L material  
 Seals made from FDA compliant material  
 Easy cleaning  
 High thread and system connection strengths  
 High resistance to chemicals and cleaning agents  
 Easy assembly

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# Accessories

## Introduction

For flexible and application friendly solutions. PMA offers a vast array of practical accessories in order to complete the PMA cable protection system.

We offer lock nuts produced from polyamide or metal, thread reducers and enlargers, conduit adapters, swivel adapters as well as different mounting clips for conduits. All this practical products will help to create the PMA line for our customers even more flexible and application friendly.





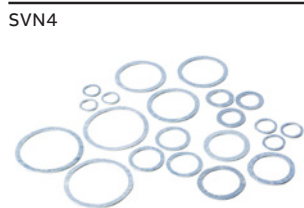




## Flat gaskets, metric, PG, NPT, GAS

### Type SVN4

Type SVN4 - Flat thread gasket, metric/NPT/PG/GAS



|      | Order no.   | Fits to thread<br>metric | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Thickness<br>(mm) |
|------|-------------|--------------------------|------------------|-------------------|-------------------|
| SVN4 | SVN4-M12    | M12 x 1.5                | 12.0             | 20.0              | 1.5               |
|      | SVN4-M12/02 | M12 x 1.5                | 12.0             | 23.0              | 1.5               |
|      | SVN4-M16    | M16 x 1.5                | 16.0             | 22.0              | 1.5               |
|      | SVN4-M16/02 | M16 x 1.5                | 16.0             | 25.0              | 1.5               |
|      | SVN4-M20    | M20 x 1.5                | 20.0             | 27.0              | 1.5               |
|      | SVN4-M20/02 | M20 x 1.5                | 20.0             | 33.0              | 1.5               |
|      | SVN4-M25    | M25 x 1.5                | 25.0             | 35.0              | 1.5               |
|      | SVN4-M25/01 | M25 x 1.5                | 25.0             | 31.0              | 1.5               |
|      | SVN4-M25/02 | M25 x 1.5                | 25.0             | 39.0              | 1.5               |
|      | SVN4-M32    | M32 x 1.5                | 32.0             | 43.0              | 1.5               |
|      | SVN4-M32/02 | M32 x 1.5                | 32.0             | 49.0              | 1.5               |
|      | SVN4-M40    | M40 x 1.5                | 40.0             | 55.0              | 1.5               |
|      | SVN4-M40/01 | M40 x 1.5                | 40.0             | 51.0              | 1.5               |
|      | SVN4-M40/02 | M40 x 1.5                | 40.0             | 64.0              | 1.5               |
|      | SVN4-M50    | M50 x 1.5                | 50.0             | 69.0              | 1.5               |
|      | SVN4-M50/01 | M50 x 1.5                | 50.0             | 59.0              | 1.5               |
|      | SVN4-M50/02 | M50 x 1.5                | 50.0             | 74.0              | 1.5               |
|      | SVN4-M63    | M63 x 1.5                | 63.0             | 75.0              | 1.5               |

| Order no. | Fits to thread<br>PG | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Thickness<br>(mm) |
|-----------|----------------------|------------------|-------------------|-------------------|
| SVN4-07   | 07                   | 12.5             | 16.5              | 1.5               |
| SVN4-09   | 07                   | 15.2             | 20.0              | 1.5               |
| SVN4-11   | 11                   | 18.6             | 24.0              | 1.5               |
| SVN4-13   | 13.5                 | 20.4             | 31.0              | 1.5               |
| SVN4-16   | 16                   | 22.5             | 31.0              | 1.5               |
| SVN4-21   | 21                   | 28.3             | 37.0              | 1.5               |
| SVN4-29   | 29                   | 37.0             | 48.0              | 1.5               |
| SVN4-36   | 36                   | 47.0             | 57.0              | 1.5               |
| SVN4-42   | 42                   | 54.0             | 60.0              | 1.5               |
| SVN4-48   | 48                   | 59.3             | 69.0              | 1.5               |

| Order no.   | Fits to thread<br>PG | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Thickness<br>(mm) |
|-------------|----------------------|------------------|-------------------|-------------------|
| SVN4-N02/01 | ½"                   | 28.0             | 21.6              | 1.5               |
| SVN4-N04/01 | ¾"                   | 36.0             | 27.0              | 1.5               |
| SVN4-N06/01 | 1"                   | 46.0             | 33.7              | 1.5               |
| SVN4-N07/01 | 1¼"                  | 55.0             | 42.5              | 1.5               |
| SVN4-N08/01 | 1 ½"                 | 70.0             | 48.6              | 1.5               |
| SVN4-N09/01 | 2"                   | 70.0             | 60.7              | 1.5               |

| Order no. | Fits to thread<br>GAS | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Thickness<br>(mm) |
|-----------|-----------------------|------------------|-------------------|-------------------|
| SVN4-G00  | ¼"                    | 13.2             | 20.0              | 1.5               |
| SVN4-G01  | ⅜"                    | 16.7             | 22.0              | 1.5               |
| SVN4-G02  | ½"                    | 21.0             | 28.0              | 1.5               |
| SVN4-G04  | ¾"                    | 26.5             | 34.0              | 1.5               |
| SVN4-G06  | 1"                    | 33.3             | 42.0              | 1.5               |
| SVN4-G07  | 1¼"                   | 41.9             | 53.0              | 1.5               |
| SVN4-G08  | 1½"                   | 47.8             | 62.0              | 1.5               |
| SVN4-G09  | 2"                    | 59.6             | 69.0              | 1.5               |

For sealing of polyamide or metal threads of PMA fittings. For ingress protection at the thread up to IP68

For solid sealing of uneven rough contact areas around the thread hole or when no constructive measures for O-Rings are provided

NBR reinforced with aramide fibres (asbestos-free). Temperature range: -50°C to +200°C, short-term to +350°C

**Note:** Depending on flange sizes flat thread gaskets can have different widths. Please indicate fitting for which gasket is needed for replacement orders

## Locking clips, water impact protection

### Type AFN2, OVN2 & WPS

#### Type AFN2 - Universal safety clip

|                                                                                           | Order no.<br>dark grey | Fits to conduit size |       |         | Width<br>(mm) | Length<br>(mm) | Thickness<br>(mm) |
|-------------------------------------------------------------------------------------------|------------------------|----------------------|-------|---------|---------------|----------------|-------------------|
|                                                                                           |                        | NW                   | Inch  | Profile |               |                |                   |
| AFN2<br> | AFN2-07GT.LOSE         | 07                   | 1/4   | G + T   | 14.0          | 14.0           | 7.0               |
|                                                                                           | AFN2-10GT.LOSE         | 10                   | 5/16  | G + T   | 17.5          | 17.0           | 8.0               |
|                                                                                           | AFN2-12GT.LOSE         | 12                   | 3/8   | G + T   | 20.5          | 20.0           | 7.3               |
|                                                                                           | AFN2-17GT.LOSE         | 17                   | 1/2   | G + T   | 26.5          | 22.0           | 8.0               |
|                                                                                           | AFN2-23GT.LOSE         | 23                   | 3/4   | G + T   | 34.0          | 27.5           | 11.8              |
|                                                                                           | AFN2-29GT.LOSE         | 29                   | 1     | G + T   | 40.5          | 32.0           | 11.8              |
|                                                                                           | AFN2-36GT.LOSE         | 36                   | 1-1/4 | G + T   | 50.0          | 39.0           | 9.5               |
|                                                                                           | AFN2-48GT.LOSE         | 48                   | 1-1/2 | G + T   | 62.0          | 47.0           | 9.5               |

Pre-installed in PMA connectors IP66 and IP68GT  
Allows simple push-in assembly of PMA conduits

#### Type OVN2 - Oval clip

|                                                                                             | Order no.<br>dark grey | Fits to conduit size |       |         | Width<br>(mm) | Length<br>(mm) | Thickness<br>(mm) |
|---------------------------------------------------------------------------------------------|------------------------|----------------------|-------|---------|---------------|----------------|-------------------|
|                                                                                             |                        | NW                   | Inch  | Profile |               |                |                   |
| OVN2<br> | OVN2-07.100            | 07                   | 1/4   | G + T   | 14.0          | 14.0           | 6.0               |
|                                                                                             | OVN2-10.50             | 10                   | 5/16  | G + T   | 17.5          | 17.0           | 7.0               |
|                                                                                             | OVN2-12.50             | 12                   | 3/8   | G + T   | 21.0          | 19.0           | 6.0               |
|                                                                                             | OVN2-17.50             | 17                   | 1/2   | G + T   | 26.5          | 22.5           | 7.0               |
|                                                                                             | OVN2-23.30             | 23                   | 3/4   | G + T   | 34.0          | 27.5           | 10.5              |
|                                                                                             | OVN2-29.20             | 29                   | 1     | G + T   | 40.5          | 32.0           | 10.5              |
|                                                                                             | OVN2-36.40             | 36                   | 1-1/4 | G + T   | 49.5          | 39.0           | 8.5               |
|                                                                                             | OVN2-48.20             | 48                   | 1-1/2 | G + T   | 62.0          | 47.0           | 8.5               |

Provides reliable fixation of PMA conduits within PMA IP68 fittings

#### Type WPS - Water impact protection

|                                                                                            | Order no.<br>black | Fits to conduit size |         | Outside Ø<br>(mm) | Thickness<br>(mm) |
|--------------------------------------------------------------------------------------------|--------------------|----------------------|---------|-------------------|-------------------|
|                                                                                            |                    | NW                   | Profile |                   |                   |
| WPS<br> | WPS-NW10           | 10                   | G + T   | 22.0              | 8.0               |
|                                                                                            | WPS-NW12           | 12                   | G + T   | 26.0              | 8.0               |
|                                                                                            | WPS-NW17           | 17                   | G + T   | 33.0              | 8.0               |
|                                                                                            | WPS-NW23           | 23                   | G + T   | 40.0              | 9.0               |
|                                                                                            | WPS-NW29           | 29                   | G + T   | 47.0              | 9.5               |
|                                                                                            | WPS-NW36           | 36                   | G + T   | 59.0              | 10.0              |
|                                                                                            | WPS-NW48           | 48                   | G + T   | 71.0              | 10.0              |

Increased protection of PMAFIX fittings against water jet impact – increased protection up to IP69

For increased ingress protection requirements regarding high pressure/steam jet cleaning

Based on PMAFIX IP68 system

Two-piece water impact protection with click cap

Retrofit installation possible

## Sealing caps

### Type NVN3, NFN3 & NR

#### Type NVN3 - Sealing cap, reinforced

|                                                                                   | Order no.   | Fits to conduit size |        |       | Length (mm) |
|-----------------------------------------------------------------------------------|-------------|----------------------|--------|-------|-------------|
|                                                                                   |             | NW                   | Metric | Inch  |             |
|  | NVN3-07.100 | 07                   | 10     | 1/4   | 9.0         |
|                                                                                   | NVN3-09.50  | 10                   | 12     | 5/16  | 9.0         |
|                                                                                   | NVN3-11.50  | 12                   | 16     | 3/8   | 12.0        |
|                                                                                   | NVN3-16.50  | 17                   | 23     | 1/2   | 16.5        |
|                                                                                   | NVN3-21.30  | 23                   | 25     | 3/4   | 13.0        |
|                                                                                   | NVN3-29.20  | 29                   | 32     | 1     | 14.0        |
|                                                                                   | NVN3-36.20  | 36                   | 40     | 1-1/4 | 17.5        |
|                                                                                   | NVN3-48.10  | 48                   | 50     | 1-1/2 | 17.5        |

In connection with PMAFIX connectors („V” series) and PMA corrugated conduits

For ingress protection IP68 static/IP67 dynamic

Specially modified polyesterelastomer

Free from halogens and cadmium

Fits both conduit profiles: fine (T) and coarse (G)

Temperature range: -40°C to +105°C

#### Type NFN3 - Sealing cap

|                                                                                     | Order no. | NW | Fits to conduit size |         | Length (mm) |
|-------------------------------------------------------------------------------------|-----------|----|----------------------|---------|-------------|
|                                                                                     |           |    | Inch                 | Profile |             |
|  | NFN3-07   | 07 | 1/4                  | 10      | 9.0         |
|                                                                                     | NFN3-09   | 10 | 5/16                 | 12      | 9.0         |
|                                                                                     | NFN3-11   | 12 | 3/8                  | 16      | 9.0         |
|                                                                                     | NFN3-16   | 17 | 1/2                  | 23      | 9.0         |
|                                                                                     | NFN3-21   | 23 | 3/4                  | 25      | 9.0         |
|                                                                                     | NFN3-29   | 29 | 1                    | 32      | 9.0         |
|                                                                                     | NFN3-36   | 36 | 1-1/4                | 40      | 11.0        |
|                                                                                     | NFN3-48   | 48 | 1-1/2                | 50      | 11.0        |

In connection with PMAFIX connectors („F” series) and PMA corrugated conduits

For ingress protection IP67 static/IP65 dynamic

Specially modified polyesterelastomer

Free from halogens and cadmium

Fits conduit profiles: fine (T) and coarse (G)

Temperature range: -40°C to +105°C

#### Type KNH2 - PMAFIX Pro sealing and locking element

|                                                                                     | Order no. | Fits to conduit size |        |       | Outside Ø (mm) | Overall length (mm) |
|-------------------------------------------------------------------------------------|-----------|----------------------|--------|-------|----------------|---------------------|
|                                                                                     |           | NW                   | Metric | Inch  |                |                     |
|  | KNH2-NW10 | 10                   | 12     | 5/16  | 22.0           | 28.0                |
|                                                                                     | KNH2-NW12 | 12                   | 16     | 3/8   | 25.5           | 33.5                |
|                                                                                     | KNH2-NW17 | 17                   | 20     | 1/2   | 31.5           | 38.5                |
|                                                                                     | KNH2-NW23 | 23                   | 25     | 3/4   | 38.5           | 41.0                |
|                                                                                     | KNH2-NW29 | 29                   | 32     | 1     | 46.5           | 46.5                |
|                                                                                     | KNH2-NW36 | 36                   | 40     | 1-1/4 | 55.5           | 50.5                |
|                                                                                     | KNH2-NW48 | 48                   | 50     | 1-1/2 | 68.0           | 56.5                |

For use in connection with PMAFIX PRO connectors PMA corrugated conduits for ingress protection IP68 and IP69 static and dynamic

Specially modified PA6/Polyester-elastomer

Free from halogens and cadmium

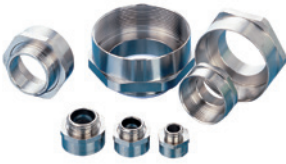
Fits conduit profiles: fine (T) and coarse (G)

Temperature range: -40°C to +105°C

## Enlargers, reducers, metric and PG

### Type ME, MR & NR

#### Type ME - Enlarger, brass, metric thread

|                                                                                   | Order no. | Thread outside |             | Thread inside |             | Wrench size (mm) | Inside Ø (mm) | Overall length (mm) |
|-----------------------------------------------------------------------------------|-----------|----------------|-------------|---------------|-------------|------------------|---------------|---------------------|
|                                                                                   |           | Metric         | Length (mm) | Metric        | Length (mm) |                  |               |                     |
|  | M12M16M   | M12 x 1.5      | 5.0         | M16 x 1.5     | 7.0         | 18               | 8.0           | 16.0                |
|                                                                                   | M16M20M   | M16 x 1.5      | 5.0         | M20 x 1.5     | 7.5         | 22               | 12.0          | 16.5                |
|                                                                                   | M20M25M   | M20 x 1.5      | 6.0         | M25 x 1.5     | 8.0         | 27               | 15.0          | 18.5                |
|                                                                                   | M25M32M   | M25 x 1.5      | 7.0         | M32 x 1.5     | 9.0         | 34               | 21.0          | 20.5                |
|                                                                                   | M32M40M   | M32 x 1.5      | 8.0         | M40 x 1.5     | 10          | 42               | 26.0          | 23.5                |
|                                                                                   | M40M50M   | M40 x 1.5      | 8.0         | M50 x 1.5     | 13          | 52               | 34.0          | 30.0                |
|                                                                                   | M50M63M   | M50 x 1.5      | 9.0         | M63 x 1.5     | 16          | 65               | 44.0          | 32.5                |

For enlargement of an existing thread  
 Nickel-plated brass  
 Hexagonal form  
 Temperature range: -60°C to +200°C

#### Type MR - Reducer, brass, metric thread

|                                                                                     | Order no. standard | Order no. hexagonal | Thread outside metric | Thread inside metric |
|-------------------------------------------------------------------------------------|--------------------|---------------------|-----------------------|----------------------|
|  | M16M12M            | M16M12M/6           | M16 x 1.5             | M12 x 1.5            |
|                                                                                     | M20M12M            | M20M12M/6           | M20 x 1.5             | M12 x 1.5            |
|                                                                                     | M20M16M            | M20M16M/6           | M20 x 1.5             | M16 x 1.5            |
|                                                                                     | M25M16M            | M25M16M/6           | M25 x 1.5             | M16 x 1.5            |
|                                                                                     | M25M20M            | M25M20M/6           | M25 x 1.5             | M20 x 1.5            |
|                                                                                     | M32M20M            | M32M20M/6           | M32 x 1.5             | M20 x 1.5            |
|                                                                                     | M32M25M            | M32M25M/6           | M32 x 1.5             | M25 x 1.5            |
|                                                                                     | M40M25M            | M40M25M/6           | M40 x 1.5             | M25 x 1.5            |
|                                                                                     | M40M32M            | M40M32M/6           | M40 x 1.5             | M32 x 1.5            |
|                                                                                     | M50M32M            | M50M32M/6           | M50 x 1.5             | M32 x 1.5            |
|                                                                                     | M50M40M            | M50M40M/6           | M50 x 1.5             | M40 x 1.5            |
|                                                                                     | M63M40M            | M63M40M/6           | M63 x 1.5             | M40 x 1.5            |
|                                                                                     | M63M50M            | M63M50M/6           | M63 x 1.5             | M50 x 1.5            |

Reduction of threaded or clearance holes to smaller thread sizes  
 Nickel-plated brass  
 Temperature range: -60°C to +200°C  
 Round form without O-ring, XXXX/6 hexagonal form with O-ring

#### Type NR - Reducer, PG

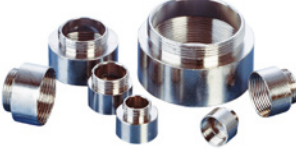
|                                                                                     | Order no. | Thread outside PG | Thread inside PG | Length (mm) | Inside Ø (mm) | Outside Ø (mm) |
|-------------------------------------------------------------------------------------|-----------|-------------------|------------------|-------------|---------------|----------------|
|  | 1109N     | 11                | 09               | 22.5        | 10.5          | 24.5           |
|                                                                                     | 1309N     | 13.5              | 09               | 15.0        | 10.0          | 26.0           |
|                                                                                     | 1311N     | 13.5              | 11               | 24.0        | 11.5          | 26.0           |
|                                                                                     | 1609N     | 16                | 09               | 16.0        | 10.0          | 29.0           |
|                                                                                     | 1611N     | 16                | 11               | 16.0        | 11.5          | 29.0           |
|                                                                                     | 1613N     | 16                | 13.5             | 27.0        | 13.5          | 29.0           |
|                                                                                     | 2113N     | 21                | 13.5             | 16.0        | 13.5          | 35.5           |
|                                                                                     | 2116N     | 21                | 16               | 16.0        | 15.5          | 35.5           |
|                                                                                     | 2921N     | 29                | 21               | 17.0        | 22.0          | 43.0           |
|                                                                                     | 3629N     | 36                | 29               | 24.0        | 30.5          | 54.0           |

Reduction of threaded or clearance holes to smaller PG thread sizes  
 High-grade, glass fibre reinforced Polyamid 6  
 Temperature range: -30°C to +100°C

## Enlargers, reducers, PG

### Type ME & MR

#### Type ME - Enlarger, brass, PG thread

|                                                                                   | Order no.<br>metal, standard | Thread outside |                | Thread inside |                | Outside Ø<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|------------------------------|----------------|----------------|---------------|----------------|-------------------|---------------------------|
|                                                                                   |                              | PG             | Length<br>(mm) | PG            | Length<br>(mm) |                   |                           |
|  | 0709M                        | 07             | 5.0            | 09            | 07             | 17.0              | 15.0                      |
|                                                                                   | 0911M                        | 09             | 6.0            | 11            | 07             | 20.0              | 16.5                      |
|                                                                                   | 0913M                        | 09             | 6.0            | 13            | 7.5            | 22.0              | 17.5                      |
|                                                                                   | 1113M                        | 11             | 6.0            | 13            | 08             | 22.0              | 17.5                      |
|                                                                                   | 1116M                        | 11             | 6.5            | 16            | 8.5            | 24.0              | 19.0                      |
|                                                                                   | 1121M                        | 11             | 6.5            | 21            | 10             | 30.0              | 21.0                      |
|                                                                                   | 1316M                        | 13.5           | 6.5            | 16            | 7.5            | 24.0              | 19.0                      |
|                                                                                   | 1321M                        | 13.5           | 6.5            | 21            | 8.5            | 30.0              | 21.0                      |
|                                                                                   | 1621M                        | 16             | 6.5            | 21            | 8.5            | 30.0              | 21.0                      |
|                                                                                   | 1629M                        | 16             | 6.5            | 29            | 11             | 39.0              | 22.5                      |
|                                                                                   | 2129M                        | 21             | 7.0            | 29            | 11.5           | 39.0              | 23.0                      |
|                                                                                   | 2936M                        | 29             | 8.0            | 36            | 12             | 50.0              | 27.5                      |
|                                                                                   | 4248M                        | 42             | 10.0           | 48            | 17             | 64.0              | 33.0                      |

For enlargement of an existing thread  
Nickel-plated brass  
Temperature range: -60°C to +200°C

#### Type MR - Reducer, brass, PG thread

|                                                                                     | Order no.<br>metal, standard | Thread outside |                | Thread inside<br>PG | Outside Ø<br>(mm) | Overall length<br>(mm) |
|-------------------------------------------------------------------------------------|------------------------------|----------------|----------------|---------------------|-------------------|------------------------|
|                                                                                     |                              | PG             | Length<br>(mm) |                     |                   |                        |
|  | 0907M                        | 09             | 6.0            | 07                  | 17.0              | 8.5                    |
|                                                                                     | 1107M                        | 11             | 6.0            | 07                  | 20.0              | 8.5                    |
|                                                                                     | 1109M                        | 11             | 6.0            | 09                  | 20.0              | 8.5                    |
|                                                                                     | 1307M                        | 13.5           | 6.5            | 07                  | 22.0              | 9.0                    |
|                                                                                     | 1309M                        | 13.5           | 6.5            | 09                  | 22.0              | 9.0                    |
|                                                                                     | 1311M                        | 13.5           | 6.5            | 11                  | 22.0              | 9.0                    |
|                                                                                     | 1607M                        | 16             | 6.5            | 07                  | 24.0              | 9.5                    |
|                                                                                     | 1609M                        | 16             | 6.5            | 09                  | 24.0              | 9.5                    |
|                                                                                     | 1611M                        | 16             | 6.5            | 11                  | 24.0              | 9.5                    |
|                                                                                     | 1613M                        | 16             | 6.5            | 13.5                | 24.0              | 9.5                    |
|                                                                                     | 2111M                        | 21             | 7.0            | 11                  | 30.0              | 10.0                   |
|                                                                                     | 2113M                        | 21             | 7.0            | 13.5                | 30.0              | 10.0                   |
|                                                                                     | 2116M                        | 21             | 7.0            | 16                  | 30.0              | 10.0                   |
|                                                                                     | 2916M                        | 29             | 8.0            | 16                  | 39.0              | 11.5                   |
|                                                                                     | 2921M                        | 29             | 8.0            | 21                  | 39.0              | 11.5                   |
|                                                                                     | 3621M                        | 36             | 9.0            | 21                  | 50.0              | 12.5                   |
|                                                                                     | 3629M                        | 36             | 9.0            | 29                  | 50.0              | 12.5                   |
|                                                                                     | 4229M                        | 42             | 10             | 29                  | 57.0              | 14.0                   |
|                                                                                     | 4236M                        | 42             | 10             | 36                  | 57.0              | 14.0                   |
|                                                                                     | 4836M                        | 48             | 10             | 36                  | 64.0              | 14.0                   |
|                                                                                     | 4842M                        | 48             | 10             | 42                  | 64.0              | 14.0                   |

Reduction of threaded or clearance holes to smaller thread sizes  
Nickel-plated brass  
Temperature range: -60°C to +200°C



## Plug screws, metric, PG

### Type 514

#### Type 514 - Plug screw, metric/PG thread

|  | Order no.<br>grey | Fits to thread<br>metric | Outside Ø<br>(mm) | Height<br>(mm) | Thread length<br>(mm) |
|-----------------------------------------------------------------------------------|-------------------|--------------------------|-------------------|----------------|-----------------------|
|                                                                                   | 514-M12           | M12 x 1.5                | 15.0              | 10.0           | 6.0                   |
|                                                                                   | 514-M16           | M16 x 1.5                | 20.0              | 10.5           | 6.0                   |
|                                                                                   | 514-M20           | M20 x 1.5                | 24.0              | 10.5           | 6.0                   |
|                                                                                   | 514-M25           | M25 x 1.5                | 30.0              | 13.0           | 8.0                   |
|                                                                                   | 514-M32           | M32 x 1.5                | 37.0              | 13.5           | 8.0                   |
|                                                                                   | 514-M40           | M40 x 1.5                | 46.0              | 14.0           | 8.0                   |
|                                                                                   | 514-M50           | M50 x 1.5                | 56.0              | 16.5           | 10.0                  |
|                                                                                   | 514-M63           | M63 x 1.5                | 70.0              | 17.0           | 12.0                  |
|                                                                                   |                   |                          |                   |                |                       |
|                                                                                   | Order no.<br>grey | Fits to thread<br>PG     | Outside Ø<br>(mm) | Height<br>(mm) | Thread length<br>(mm) |
|                                                                                   | 514-07            | 07                       | 15.0              | 10.0           | 6.0                   |
|                                                                                   | 514-09            | 09                       | 19.0              | 10.0           | 6.0                   |
|                                                                                   | 514-11            | 11                       | 22.0              | 10.0           | 6.0                   |
|                                                                                   | 514-13            | 13.5                     | 25.0              | 10.0           | 6.0                   |
|                                                                                   | 514-16            | 16                       | 27.0              | 10.0           | 6.0                   |
|                                                                                   | 514-21            | 21                       | 33.0              | 12.5           | 8.0                   |
|                                                                                   | 514-29            | 29                       | 44.5              | 13.0           | 8.0                   |
|                                                                                   | 514-36            | 36                       | 55.5              | 15.0           | 10.0                  |
|                                                                                   | 514-48            | 48                       | 69.5              | 17.0           | 12.0                  |

For closing off unused threaded holes

Polyamide 6 glass fibre reinforced

Free from halogens and cadmium

IP54

Temperature range: -30°C to +100°C

Lock nuts, metric, PG

Type MN

Type MN - Hexagonal lock nut, polyamide, metric/PG thread

|                                                                                                 | Order no.<br>black | Order no.<br>grey | Fits to thread<br>metric | Wrench size<br>(mm) | Height<br>(mm) |
|-------------------------------------------------------------------------------------------------|--------------------|-------------------|--------------------------|---------------------|----------------|
| <div>MN</div>  | BMN-M12            | GMN-M12           | M12 x 1.5                | 17                  | 5.0            |
|                                                                                                 | BMN-M16            | GMN-M16           | M16 x 1.5                | 22                  | 5.0            |
|                                                                                                 | BMN-M20            | GMN-M20           | M20 x 1.5                | 26                  | 5.6            |
|                                                                                                 | BMN-M25            | GMN-M25           | M25 x 1.5                | 32                  | 6.0            |
|                                                                                                 | BMN-M32            | GMN-M32           | M32 x 1.5                | 41                  | 7.0            |
|                                                                                                 | BMN-M40            | GMN-M40           | M40 x 1.5                | 50                  | 7.0            |
|                                                                                                 | BMN-M50            | GMN-M50           | M50 x 1.5                | 60                  | 8.0            |
|                                                                                                 | BMN-M63            | GMN-M63           | M63 x 1.5                | 75                  | 8.0            |
|                                                                                                 | Order no.<br>black | Order no.<br>grey | Fits to thread<br>PG     | Wrench size<br>(mm) | Height<br>(mm) |
|                                                                                                 | BMN-07             | GMN-07            | 07                       | 19                  | 5.0            |
|                                                                                                 | BMN-09             | GMN-09            | 09                       | 22                  | 5.0            |
|                                                                                                 | BMN-11             | GMN-11            | 11                       | 24                  | 5.0            |
|                                                                                                 | BMN-13             | GMN-13            | 13.5                     | 27                  | 6.0            |
|                                                                                                 | BMN-16             | GMN-16            | 16                       | 30                  | 6.0            |
|                                                                                                 | BMN-21             | GMN-21            | 21                       | 36                  | 7.0            |
|                                                                                                 | BMN-29             | GMN-29            | 29                       | 46                  | 7.0            |
|                                                                                                 | BMN-36             | GMN-36            | 36                       | 60                  | 8.0            |
|                                                                                                 | BMN-48             | GMN-48            | 48                       | 70                  | 8.0            |

Glass fibre reinforced Polyamid 6

High tightening torques

Lock nuts, metric, PG

Type MM

Type MM - Hexagonal lock nut, brass, metric/PG thread

|                                                                                                 | Order no. | Fits to thread<br>metric | Wrench size<br>(mm) | Height<br>(mm) |
|-------------------------------------------------------------------------------------------------|-----------|--------------------------|---------------------|----------------|
|                                                                                                 |           |                          |                     |                |
| <div>MM</div>  | GMM-M12   | M12 x 1.5                | 15                  | 2.8            |
|                                                                                                 | GMM-M16   | M16 x 1.5                | 19                  | 2.8            |
|                                                                                                 | GMM-M20   | M20 x 1.5                | 24                  | 3.0            |
|                                                                                                 | GMM-M25   | M25 x 1.5                | 30                  | 3.5            |
|                                                                                                 | GMM-M32   | M32 x 1.5                | 36                  | 4.0            |
|                                                                                                 | GMM-M40   | M40 x 1.5                | 46                  | 4.5            |
|                                                                                                 | GMM-M50   | M50 x 1.5                | 60                  | 5.0            |
|                                                                                                 | GMM-M63   | M63 x 1.5                | 70                  | 5.5            |
|                                                                                                 |           |                          |                     |                |
|                                                                                                 | Order no. | Fits to thread<br>PG     | Wrench size<br>(mm) | Height<br>(mm) |
|                                                                                                 | GMM-07    | 07                       | 15                  | 2.8            |
|                                                                                                 | GMM-09    | 09                       | 18                  | 2.8            |
|                                                                                                 | GMM-11    | 11                       | 21                  | 3.0            |
|                                                                                                 | GMM-13    | 13.5                     | 23                  | 3.0            |
|                                                                                                 | GMM-16    | 16                       | 26                  | 3.0            |
|                                                                                                 | GMM-21    | 21                       | 32                  | 3.5            |
|                                                                                                 | GMM-29    | 29                       | 41                  | 4.0            |
|                                                                                                 | GMM-36    | 36                       | 51                  | 5.0            |
|                                                                                                 | GMM-42    | 42                       | 60                  | 5.0            |
|                                                                                                 | GMM-48    | 48                       | 64                  | 5.5            |

Nickel-plated brass  
Maximum possible torque  
Safe system connection

## System supports, half-shells

### Type VH & GN

#### Type VH - System support

|                                                                                   | Order no.<br>support ① | Order no.<br>clip ① | Order no.<br>complete ① | Fits to conduit size |        | Width x Height<br>x Depth<br>(mm) | Fixing<br>screws |
|-----------------------------------------------------------------------------------|------------------------|---------------------|-------------------------|----------------------|--------|-----------------------------------|------------------|
|                                                                                   |                        |                     |                         | NW                   | Metric |                                   |                  |
|  | BVH-17-010             | BVH-17-020          | BVH-17-000              | 17                   | 20     | 35 x 36 x 36                      | 6 x M5           |
|                                                                                   | BVH-23-010             | BVH-23-020          | BVH-23-000              | 23                   | 25     | 35 x 44 x 36                      | 6 x M5           |
|                                                                                   | BVH-29-010             | BVH-29-020          | BVH-29-000              | 29                   | 32     | 46 x 52 x 40                      | 6 x M5           |
|                                                                                   | BVH-36-010             | BVH-36-020          | BVH-36-000              | 36                   | 40     | 53 x 58 x 60                      | 6 x M5           |
|                                                                                   | BVH-48-010             | BVH-48-020          | BVH-48-000              | 48                   | 50     | 66 x 72 x 60                      | 6 x M5           |

For applications in machine building and installation  
 Optimal axial strain relief due to integrated rib  
 Variable fixation possible due to six holes, safe against turning  
 With safety lid suitable for overhead installation  
 High retention forces  
 PA 6

#### Type GN - Half shell

|                                                                                     | Order no.<br>fine profile,<br>black | Order no.<br>coarse profile,<br>black | Fits to conduit size |        | Outside Ø<br>(mm) | Width<br>(mm) |
|-------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------|----------------------|--------|-------------------|---------------|
|                                                                                     |                                     |                                       | NW                   | Metric |                   |               |
|  | BGN-S12T                            | –                                     | 12                   | 16     | 26.5              | 34.0          |
|                                                                                     | BGN-S17T                            | BGN-S17G                              | 17                   | 20     | 32.0              | 34.0          |
|                                                                                     | BGN-S23T                            | BGN-S23G                              | 23                   | 25     | 39.5              | 34.0          |
|                                                                                     | BGN-S29T                            | BGN-S29G                              | 29                   | 32     | 47.0              | 34.0          |
|                                                                                     | BGN-S36T                            | –                                     | 36                   | 40     | 55.0              | 36.5          |
|                                                                                     | –                                   | BGN-S36G                              | 36                   | 40     | 55.0              | 34.0          |
|                                                                                     | BGN-S48T                            | –                                     | 48                   | 50     | 66.5              | 36.5          |
|                                                                                     | –                                   | BGN-S48G                              | 48                   | 50     | 66.5              | 34.0          |
|                                                                                     | –                                   | BGN-S70G                              | 70                   | 80     | 93.5              | 38.0          |
|                                                                                     |                                     |                                       |                      |        |                   |               |

For conduit fixation in conjunction with beam systems, particularly in traction and machine applications  
 Fixes conduit against axial movements  
 Allows radial turning of conduit  
 Especially suitable for dynamic applications due to rounded edges  
 PA 6

① Please replace "B" for black with "S"  
 for grey in front of the order no.

## System supports, rails for system supports

### Type FH-0 & FHS

#### Type FH-0 - System support, one-piece

|                                                                                   | Order no.<br>black | Order no.<br>grey | Fits to conduit size |        |       | Width x Height x Depth<br>(mm) | Fixing<br>screws |
|-----------------------------------------------------------------------------------|--------------------|-------------------|----------------------|--------|-------|--------------------------------|------------------|
|                                                                                   |                    |                   | NW                   | Metric | Inch  |                                |                  |
|  | BFH-07-0           | SFH-07-0          | 07                   | 10     | 1/4   | 17.0 x 21.5 x 20.0             | 1 x M4           |
|                                                                                   | BFH-10-0           | SFH-10-0          | 10                   | 12     | 5/16  | 20.5 x 24.5 x 20.0             | 1 x M5           |
|                                                                                   | BFH-12-0           | SFH-12-0          | 12                   | 16     | 3/8   | 24.0 x 27.0 x 20.0             | 1 x M5           |
|                                                                                   | BFH-17-0           | SFH-17-0          | 17                   | 20     | 1/2   | 30.0 x 34.0 x 20.0             | 1 x M6           |
|                                                                                   | BFH-23-0           | SFH-23-0          | 23                   | 25     | 3/4   | 38.5 x 42.0 x 20.0             | 1 x M6           |
|                                                                                   | BFH-29-0           | SFH-29-0          | 29                   | 32     | 1     | 45.5 x 48.0 x 20.0             | 1 x M6           |
|                                                                                   | BFH-36-0           | SFH-36-0          | 36                   | 40     | 1-1/4 | 55.5 x 56.0 x 20.0             | 1 x M6           |
|                                                                                   | BFH-48-0           | SFH-48-0          | 48                   | 50     | 1-1/2 | 67.5 x 68.0 x 20.0             | 1 x M6           |

For applications in machine building and installation  
 Optimal axial strain relief due to integrated rib  
 Suitable for overhead installations due to safety lid  
 High retention forces  
 Quick mounting due to single hole fixing  
 Fits to rail for system support FHS  
 PA 6

#### Type FHS - Rail for system support

|                                                                                     | Order no.<br>black                               | Order no.<br>grey | Fits to system supports      | Length x Height x Depth<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------------------------------------|-------------------|------------------------------|---------------------------------|
|                                                                                     |                                                  |                   |                              |                                 |
|  | BFHS-00                                          | SFHS-00           | FH-NW-0                      | 275.0 x 15.5 x 25.0             |
|                                                                                     | Additional position supports or distance spacers |                   |                              |                                 |
|                                                                                     | BFHS-PH                                          | SFHS-PH           | Position support with screws |                                 |
|                                                                                     | BFHS-PH1                                         | SFHS-PH1          | Distance spacers             |                                 |

For flexible assembly of one-piece system supports and/or fixation of various conduit sizes  
 Glass fibre reinforced polyamide 6  
 Extremely robust construction  
 High stiffness  
 Positioning and distance spacers available  
 Glass fibre reinforced PA6



## Tube clamps

### Type GL & GH

#### Type GL - Tube clamp, one-piece

|    | Order no.<br>black | Order no.<br>grey | Fits to conduit size |        |      | Width<br>(mm) | Fixing<br>screws |
|----|--------------------|-------------------|----------------------|--------|------|---------------|------------------|
|    |                    |                   | NW                   | Metric | Inch |               |                  |
| GL | BGL-07             | SGL-07            | 07                   | 10     | 1/4  | 25.0          | 1 x M4           |
|    | BGL-10             | SGL-10            | 10                   | 12     | 5/16 | 27.0          | 1 x M4           |
|    | BGL-12             | SGL-12            | 12                   | 16     | 3/8  | 31.0          | 1 x M4           |
|    | BGL-17             | SGL-17            | 17                   | 20     | 1/2  | 39.5          | 1 x M5           |
|    | BGL-23             | SGL-23            | 23                   | 25     | 3/4  | 49.0          | 1 x M5           |
|    | BGL-29             | SGL-29            | 29                   | 32     | 1    | 57.0          | 1 x M6           |



Used in general machine and installation applications  
 Integrated rib provides axial strain relief  
 Allows turning of the conduit, thus avoiding torsion stresses  
 Pre-fixation on the conduit possible  
 PA 6

#### Type GH - Tube clamp, one-piece

|    | Order no.<br>black | Order no.<br>grey | Thread outside |        |       | Width<br>(mm) | Fixing<br>screws |
|----|--------------------|-------------------|----------------|--------|-------|---------------|------------------|
|    |                    |                   | NW             | Metric | Inch  |               |                  |
| GH | BGH-23             | SGH-23            | 23             | 25     | 3/4   | 16.0          | 2 x M5           |
|    | BGH-29             | SGH-29            | 29             | 32     | 1     | 19.0          | 2 x M6           |
|    | BGH-36             | SGH-36            | 36             | 40     | 1-1/4 | 24.0          | 2 x M6           |
|    | BGH-48             | SGH-48            | 48             | 50     | 1-1/2 | 24.0          | 2 x M6           |
|    | BGH-56             | SGH-56            | 56             | 68     | 2     | 26.0          | 2 x M8           |
|    | BGH-70             | SGH-70            | 70             | 80     | 2-1/2 | 30.0          | 2 x M8           |
|    | BGH-95             | SGH-95            | 95             | 106    | 4     | 30.0          | 2 x M8           |



Used in general machine and installation applications  
 Integrated rib provides axial strain relief  
 Allows turning of the conduit, thus avoiding torsion stresses  
 Pre-fixation on the conduit possible  
 Allows solid fixation with 2 screws  
 PA 6

## Tube clamps

### Type SGB & SGS

#### Type SGB - Tube clamp

|                                                                                   | Order no.<br>black | Fits to conduit size |        |       | Width<br>(mm) | Fixing<br>screws |
|-----------------------------------------------------------------------------------|--------------------|----------------------|--------|-------|---------------|------------------|
|                                                                                   |                    | NW                   | Metric | Inch  |               |                  |
|  | SGB-07             | 07                   | 10     | 1/4   | 13.0          | 1 x M4           |
|                                                                                   | SGB-09             | 10                   | 12     | 5/16  | 13.0          | 1 x M4           |
|                                                                                   | SGB-11             | 12                   | 16     | 3/8   | 13.0          | 1 x M4           |
|                                                                                   | SGB-16             | 17                   | 20     | 1/2   | 16.0          | 1 x M5           |
|                                                                                   | SGB-21             | 23                   | 25     | 3/4   | 16.0          | 1 x M5           |
|                                                                                   | SGB-29             | 29                   | 32     | 1     | 19.0          | 1 x M6           |
|                                                                                   | SGB-36             | 36                   | 40     | 1-1/4 | 19.0          | 1 x M6           |
|                                                                                   | SGB-48             | 48                   | 50     | 1-1/2 | 19.0          | 1 x M6           |

For fixation of static conduits  
 Galvanized steel  
 Elastomer profile (EPDM) free from halogens  
 Smooth connection to PMA conduits  
 Good resistance to ozone and ageing  
 Temperature range: -40°C to +120°C

#### Type SGS - Tube clamp

|                                                                                     | Order no.<br>black | Fits to conduit size |        |       | Width x Height x Depth<br>(mm) | Fixing<br>screws |
|-------------------------------------------------------------------------------------|--------------------|----------------------|--------|-------|--------------------------------|------------------|
|                                                                                     |                    | NW                   | Metric | Inch  |                                |                  |
|  | SGS-36             | 36                   | 40     | 1-1/4 | 80.0 x 48.0 x 19.0             | 2 x M6           |
|                                                                                     | SGS-48             | 48                   | 50     | 1-1/2 | 94.0 x 58.0 x 19.0             | 2 x M6           |
|                                                                                     | SGS-56             | 56                   | 68     | 2     | 118.0 x 72.0 x 24.0            | 2 x M8           |
|                                                                                     | SGS-70             | 70                   | 80     | 2-1/2 | 130.0 x 85.0 x 24.0            | 2 x M8           |
|                                                                                     | SGS-95             | 95                   | 106    | 4     | 156.0 x 110.0 x 24.0           | 2 x M8           |
|                                                                                     | SGS-125            | 125                  | 146    | 5     | 200.0 x 152.0 x 24.0           | 2 x M8           |

For fixation of static conduits  
 Galvanized steel  
 Elastomer profile (EPDM) free from halogens  
 Smooth connection to PMA conduits  
 Good resistance to ozone and ageing  
 Temperature range: -40°C to +120°C  
 Galvanized steel/EPDM

## System supports

### Type GPS, GP & BGP-3x48

#### Type GPS - System support, one-piece, stackable

|                                                                                   | Order no.   | Fits to conduit size |        |       |        | Width<br>(mm) | Height<br>(mm) | Depth<br>(mm) |
|-----------------------------------------------------------------------------------|-------------|----------------------|--------|-------|--------|---------------|----------------|---------------|
|                                                                                   |             | NW                   | Metric | Inch  | DIN-NW |               |                |               |
|  | BGPS-12/01* | 12                   | 16     | 3/8   | 2      | 70.0          | 51.0           | 30.0          |
|                                                                                   | BGPS-17     | 17                   | 20     | 1/2   | 2      | 70.0          | 51.0           | 30.0          |
|                                                                                   | BGPS-23     | 23                   | 25     | 3/4   | 2      | 70.0          | 51.0           | 30.0          |
|                                                                                   | BGPS-29     | 29                   | 32     | 1     | 3      | 85.0          | 65.0           | 30.0          |
|                                                                                   | BGPS-36     | 36                   | 40     | 1-1/4 | 3      | 85.0          | 65.0           | 30.0          |
|                                                                                   | BGPS-48     | 48                   | 50     | 1-1/2 | 4      | 115.0         | 92.5           | 30.0          |
|                                                                                   | BGPS-56     | 56                   | 68     | 2     | 4      | 115.0         | 92.5           | 30.0          |

\*This size will be delivered with a half-shell insert

In railway vehicle construction, heavy machine building industry and other applications with increased mechanical requirements

Heavy design, high retention forces. Applicable with standard metal C rails

Clasp for easy pre-mounting and final assembly. Especially suitable for dyn. applic. due to rounded edges

The following nominal widths can be combined for stacking: NW 12 with NW 17 + 23, NW 17 with NW 23,

NW 29 with NW 36, NW 48 with NW 56

Content of delivery: System support and 2 screws for securing of the lid (optional); without mounting accessories

PA 6

#### Type GP - System support, stackable

|                                                                                     | Order no. ① | Thread outside |        |       | Width<br>(mm) | Height<br>(mm) | Depth<br>(mm) |
|-------------------------------------------------------------------------------------|-------------|----------------|--------|-------|---------------|----------------|---------------|
|                                                                                     |             | NW             | Metric | Inch  |               |                |               |
|  | BGP-12/01*  | 12             | 16     | 3/8   | 48.0          | 66.0           | 36.0          |
|                                                                                     | BGP-17      | 17             | 20     | 1/2   | 48.0          | 66.0           | 36.0          |
|                                                                                     | BGP-23      | 23             | 25     | 3/4   | 48.0          | 66.0           | 36.0          |
|                                                                                     | BGP-29      | 29             | 32     | 1     | 62.0          | 66.0           | 36.0          |
|                                                                                     | BGP-36      | 36             | 40     | 1-1/4 | 62.0          | 66.0           | 36.0          |
|                                                                                     | BGP-48      | 48             | 50     | 1-1/2 | 76.0          | 66.0           | 36.0          |
|                                                                                     | BGP-56G     | 56             | 68     | 2     | 87.0          | 78.0           | 36.0          |

\*This size will be delivered with a half-shell insert

In railway vehicle construction, heavy machine building industry and other applications with increased mechanical requirements

Variable stacking possibilities, due to the "Block"-system a high rigidity is guaranteed

Fixes conduit against axial movements. Allows radial turning of conduit

Especially suitable for dyn. applic. due to rounded edges. Variety of support possibilities

Content of delivery: System support with assembling screws; without mounting accessories

PA 6

#### Type BGP-3 x 48- Multiple system support

|     | Order no.  | Thread outside |        |       |         | Width<br>(mm) | Height<br>(mm) | Length<br>(mm) |
|-----|------------|----------------|--------|-------|---------|---------------|----------------|----------------|
|     |            | NW             | Metric | Inch  | Profile |               |                |                |
| BGP | BGP-3 x 48 | 48             | 50     | 1-1/2 | G and T | 30.0          | 84.0           | 214.0          |



In railway vehicle construction, heavy machine building industry and other applications with increased mechanical requirements

Multiple system support for 3 x NW48 max. conduits

Axial fixation of conduit. Conduit rotation possible (avoids torsion)

Especially suitable for dynamic applications due to rounded edges

PA 6

① Please replace "B" for black with "S" for grey in front of the order no.

## Conduit terminations

### Type RKS & CT

#### Type RKS - Conduit terminal sleeve

|                                                                                   | Order no.<br>black | Fits to conduit size |        |       | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|----------------------|--------|-------|------------------|-------------------|----------------|
|                                                                                   |                    | NW                   | Metric | Inch  |                  |                   |                |
|  | RKS-07             | 07                   | 10     | 1/4   | 4.5              | 12.5              | 16.0           |
|                                                                                   | RKS-10             | 10                   | 12     | 5/16  | 8.0              | 15.5              | 16.0           |
|                                                                                   | RKS-12             | 12                   | 16     | 3/8   | 10.0             | 19.0              | 20.0           |
|                                                                                   | RKS-17             | 17                   | 20     | 1/2   | 13.0             | 24.0              | 21.0           |
|                                                                                   | RKS-23             | 23                   | 25     | 3/4   | 20.0             | 32.0              | 22.0           |
|                                                                                   | RKS-29             | 29                   | 32     | 1     | 25.0             | 38.0              | 22.0           |
|                                                                                   | RKS-36             | 36                   | 40     | 1-1/4 | 33.0             | 46.0              | 25.0           |
|                                                                                   | RKS-48             | 48                   | 50     | 1-1/2 | 45.0             | 58.0              | 25.0           |
|                                                                                   | RKS-56             | 56                   | 68     | 2     | 54.0             | 71.0              | 28.0           |

For clean conduit end termination where no fitting is required  
PA 6

#### Type CT - Conduit termination

|                                                                                     | Order no.<br>black | Fits to conduit size |        |       | Clamping<br>range<br>(mm) | Length<br>(mm) | Height<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------|----------------------|--------|-------|---------------------------|----------------|----------------|
|                                                                                     |                    | NW                   | Metric | Inch  |                           |                |                |
|  | BCT-10             | 10                   | 12     | 5/16  | 4-8                       | 28.0           | 13.0           |
|                                                                                     | BCT-12             | 12                   | 16     | 3/8   | 5-9                       | 35.0           | 16.0           |
|                                                                                     | BCT-17             | 17                   | 20     | 1/2   | 7-14                      | 42.0           | 21.0           |
|                                                                                     | BCT-23             | 23                   | 25     | 3/4   | 14-22                     | 51.0           | 28.0           |
|                                                                                     | BCT-29             | 29                   | 32     | 1     | 16-22                     | 53.0           | 34.0           |
|                                                                                     | BCT-36             | 36                   | 40     | 1-1/4 | 16-29                     | 55.0           | 42.0           |

For sealing of cables and wires at the exit from PMA corrugated conduits  
Avoids ingress of dirt and liquids  
Can be fixed additionally with cable ties  
Neoprene rubber  
Temperature range: -30°C to +120°C

## Abrasion protection sleeves, tools

### Type SS/SV & EWZ

#### Type SS/SV - Abrasion protection sleeve

|                                                                                   | Order no. | Fits to conduit size |        |       | Outside Ø<br>(mm) | Length<br>(mm) |
|-----------------------------------------------------------------------------------|-----------|----------------------|--------|-------|-------------------|----------------|
|                                                                                   |           | NW                   | Metric | Inch  |                   |                |
|  | BSS-17    | 17                   | 20     | 1/2   | 42.0              | 22.0           |
|                                                                                   | BSS-23    | 23                   | 25     | 3/4   | 49.0              | 26.0           |
|                                                                                   | BSS-29    | 29                   | 32     | 1     | 55.0              | 26.0           |
|                                                                                   | BSS-36    | 36                   | 40     | 1-1/4 | 63.0              | 30.0           |
|                                                                                   | BSS-48    | 48                   | 50     | 1-1/2 | 75.0              | 30.0           |
|                                                                                   | BSS-56G   | 56                   | 68     | 2     | 90.0              | 33.0           |
|                                                                                   | BSV-70G   | 70                   | 80     | 2-1/2 | 108.0             | 60.0           |

Abrasion protection for corrugated conduits in positions exposed to chafing  
Increases the life time of moving conduits  
PA 6

#### Type EWZ - Draw-in tool

|     | Order no.<br>black with hole | Order no.<br>black with handle | Fits to conduit size |      | Width x Length x Depth<br>(mm) |
|-----|------------------------------|--------------------------------|----------------------|------|--------------------------------|
|     |                              |                                | NW                   | Inch |                                |
| EWZ | EWZ-02                       | EWZ-03                         | 7.5–34               | –    | 117.7 x 45.2 x 71.9            |



Suitable for drawing in cables or wires into PMA Divisible System conduits or other slit conduits  
Designed in a handy shape and equipped with a practical hand grip for wedging or with hole for direct holding of the wires  
Polyamide 6.6  
Colour: black



## Tools

### Type PMACUT

#### Type PMACUT - Cutting tool for conduits, NW 07–48

|        | Order no.<br>Cutting tool | Order no.<br>Spare blade | Cutting<br>range | For conduit size |           |
|--------|---------------------------|--------------------------|------------------|------------------|-----------|
|        |                           |                          |                  | NW               | Inch      |
| PMACUT | PMACUT-38                 | FP-38                    | 0–38             | 07–29            | 1/4–1     |
|        | PMACUT-52                 | FP-52                    | 0–52             | 23–48            | 3/4–1 1/2 |



Can be used to cut all PMA conduits  
Enables a precise and straight cut around the corrugation  
Metal  
Colour: Red

#### Type PMACUT - Cutting tool for conduits, NW 56–125

|        | Order no.<br>black | Fits to conduit size |        |       | Length x Width x Depth<br>(mm) |
|--------|--------------------|----------------------|--------|-------|--------------------------------|
|        |                    | NW                   | Metric | Inch  |                                |
| PMACUT | PMACUT-NW56        | 56                   | 68     | 2     | 337 x 101 x 15                 |
|        | PMACUT-NW70        | 70                   | 80     | 2-1/2 | 350 x 110 x 15                 |
|        | PMACUT-NW95        | 95                   | 106    | 4     | 400 x 142 x 20                 |
|        | PMACUT-NW125       | 125                  | 146    | 5     | 443 x 182 x 20                 |

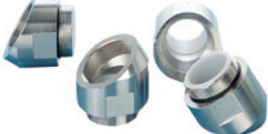


Can be used to cut all PMA conduits with large nominal widths  
Enables a precise and straight cut at the top of the corrugation  
High level of safety through retractable blade  
Aluminium

## Elbow adapters, metric

### Type MAVI & MAVIK

#### Type MAVI - Special 45° elbow adapter, metric thread

|                                                                                   | Order no.   | Thread metric |           | Thread length outside (mm) | Outside Ø (mm) | Overall length (mm) |
|-----------------------------------------------------------------------------------|-------------|---------------|-----------|----------------------------|----------------|---------------------|
|                                                                                   |             | Inside        | Outside   |                            |                |                     |
|  | MAVI-M20/01 | M20 x 1.5     | M20 x 1.5 | 10.0                       | 35.0           | 45.0                |
|                                                                                   | MAVI-M25/01 | M25 x 1.5     | M25 x 1.5 | 11.0                       | 39.0           | 51.0                |
|                                                                                   | MAVI-M32/01 | M32 x 1.5     | M32 x 1.5 | 13.0                       | 46.0           | 54.0                |
|                                                                                   | MAVI-M40/01 | M40 x 1.5     | M40 x 1.5 | 13.0                       | 55.0           | 62.0                |
|                                                                                   | MAVI-M50/01 | M50 x 1.5     | M50 x 1.5 | 14.0                       | 65.0           | 75.0                |
|                                                                                   | MAVI-M63/01 | M63 x 1.5     | M63 x 1.5 | 14.0                       | 80.0           | 84.0                |

Where a certain cable outlet angle is required

In connection with PMA connectors, especially connectors with strain relief VNZ

Enables different mounting positions: With a lock nut behind a clearance hole / In threaded holes (lock nut on MAVI side for positioning) / With SCA spin-coupler

Nickel-plated aluminium (other materials e.g. stainless steel or nickel-plated brass available on request)

High thread and system connection strength

IP68 static/IP67 dynamic

Temperature range: -60°C to +105°C

#### Type MAVIK - Positioning 45° elbow adapter, metric thread

|                                                                                     | Order no.    | Thread metric |           | Thread length outside (mm) | Outside Ø (mm) | Overall length (mm) |
|-------------------------------------------------------------------------------------|--------------|---------------|-----------|----------------------------|----------------|---------------------|
|                                                                                     |              | Inside        | Outside   |                            |                |                     |
|  | MAVIK-M20/01 | M20 x 1.5     | M20 x 1.5 | 10.0                       | 35.0           | 52.0                |
|                                                                                     | MAVIK-M25/01 | M25 x 1.5     | M25 x 1.5 | 11.0                       | 39.0           | 58.0                |
|                                                                                     | MAVIK-M32/01 | M32 x 1.5     | M32 x 1.5 | 13.0                       | 46.0           | 61.0                |
|                                                                                     | MAVIK-M40/01 | M40 x 1.5     | M40 x 1.5 | 13.0                       | 55.0           | 69.5                |
|                                                                                     | MAVIK-M50/01 | M50 x 1.5     | M50 x 1.5 | 14.0                       | 65.0           | 83.0                |
|                                                                                     | MAVIK-M63/01 | M63 x 1.5     | M63 x 1.5 | 14.0                       | 80.0           | 92.0                |

Where a certain cable outlet angle is required

In connection with PMA connectors, especially connectors with strain relief VNZ

The counter nut allows accurate positioning of the outlet direction in threaded holes

Adapter made from nickel-plated aluminium (other materials e.g. stainless steel or nickel-plated brass available on request), counter nut made from nickel-plated brass

High thread and system connection strength

IP68 static/IP67 dynamic

Temperature range: -60°C to +105°C

## Swivel and positioning adapters, metric, PG

### Type SWA & SCA

#### Type SWA - Swivel adapter with special sealing, metric/PG metal thread

|                                                                                   | Order no.  | Thread metric | Thread length (mm) | Outside Ø (mm) | Overall length (mm) |
|-----------------------------------------------------------------------------------|------------|---------------|--------------------|----------------|---------------------|
|  | SWA-M16-10 | M16 x 1.5     | 10.0               | 23.0           | 37.5                |
|                                                                                   | SWA-M20-10 | M20 x 1.5     | 10.0               | 27.0           | 38.5                |
|                                                                                   | SWA-M25-11 | M25 x 1.5     | 11.0               | 32.0           | 41.0                |
|                                                                                   | SWA-M32-13 | M32 x 1.5     | 13.0               | 45.0           | 46.5                |
|                                                                                   | SWA-M40-13 | M40 x 1.5     | 13.0               | 55.0           | 47.5                |
|                                                                                   | SWA-M50-14 | M50 x 1.5     | 14.0               | 59.0           | 49.5                |
|                                                                                   | SWA-M63-14 | M63 x 1.5     | 14.0               | 75.0           | 52.0                |
|                                                                                   | Order no.  | Thread PG     | Thread length (mm) | Outside Ø (mm) | Overall length (mm) |
|                                                                                   | SWA-P09    | 09            | 15.0               | 23.0           | 44.5                |
|                                                                                   | SWA-P11    | 11            | 15.0               | 27.0           | 45.5                |
|                                                                                   | SWA-P16    | 16            | 15.0               | 32.0           | 48.0                |
|                                                                                   | SWA-P21    | 21            | 15.0               | 40.0           | 51.0                |
|                                                                                   | SWA-P29    | 29            | 15.0               | 50.0           | 52.0                |
|                                                                                   | SWA-P36    | 36            | 15.0               | 59.0           | 55.0                |
|                                                                                   | SWA-P48    | 48            | 15.0               | 70.0           | 55.0                |

Allow PMA connectors to swivel freely in applications where such movement is occasionally necessary

In connection with PMA connectors with metal thread

Nickel-plated brass with thread edge protection

IP68 and IP69

Temperature range: -40°C to +105°C

#### Type SCA - Positioning adapter, metric/PG metal thread

|                                                                                     | Order no.  | Thread metric | Thread length (mm) | Outside Ø (mm) | Overall length (mm) |
|-------------------------------------------------------------------------------------|------------|---------------|--------------------|----------------|---------------------|
|  | SCA-M16-10 | M16 x 1.5     | 10.0               | 22.0           | 32.0                |
|                                                                                     | SCA-M20-10 | M20 x 1.5     | 10.0               | 26.0           | 33.0                |
|                                                                                     | SCA-M25-11 | M25 x 1.5     | 11.0               | 32.0           | 35.0                |
|                                                                                     | SCA-M32-13 | M32 x 1.5     | 13.0               | 39.0           | 39.5                |
|                                                                                     | SCA-M40-13 | M40 x 1.5     | 13.0               | 50.0           | 41.0                |
|                                                                                     | SCA-M50-14 | M50 x 1.5     | 14.0               | 59.0           | 43.5                |
|                                                                                     | SCA-M63-14 | M63 x 1.5     | 14.0               | 75.0           | 45.5                |
|                                                                                     | Order no.  | Thread PG     | Thread length (mm) | Outside Ø (mm) | Overall length (mm) |
|                                                                                     | SCA-P09    | 09            | 12.0               | 22.0           | 35.0                |
|                                                                                     | SCA-P11    | 11            | 12.0               | 26.0           | 36.0                |
|                                                                                     | SCA-P16    | 16            | 13.0               | 29.0           | 38.0                |
|                                                                                     | SCA-P21    | 21            | 14.0               | 39.0           | 41.0                |
|                                                                                     | SCA-P29    | 29            | 14.0               | 44.0           | 42.5                |
|                                                                                     | SCA-P36    | 36            | 17.0               | 59.0           | 49.0                |
|                                                                                     | SCA-P48    | 48            | 17.0               | 69.0           | 50.5                |

Allows easy positioning of elbow connectors with metal thread

In connection with PMA connectors with metal thread (Metric: Metal long thread)

Nickel-plated brass

High fastening torque with thread edge protection

P68 and IP69

Temperature range: -40°C to +105°C

# PMA JUMBO sizes

## General technical details

Larger sizes for big solutions. When you need conduits with larger sizes for your cable protection, we provide you with a comprehensive selection of large size conduits including connectors and flanges.

—  
\* All conduits are  
REACH and RoHS  
compliant

The PMA JUMBO product line includes a range of large size cable protection products. Seven different conduit types using a variety of raw materials to provide optimal performance in various applications and compatible fittings.

- PMA JUMBO conduits polyamide and polyurethane conduits in the large nominal width sizes NW56, 70, 95, 125 (PA6 conduits – PCL, CYL, VCS, VOH) (PA12 conduits – PIS, PCS) (PU conduits – PUE)
- PMAGRIP flange and threaded fittings plus accessories BGG (straight), BGO (90°) flange fittings achieve a sealing rating of IP50 and IP65 with a conduit sealing ring BGGV (straight), BGOV (90°) flange fittings achieve a sealing rating of IP68

### Material

- Conduits made from specially formulated PA6, PA12 and PU
- Fittings made from specially formulated polyamide 6
- Self-extinguishing
- Free from halogens, REACH + RoHS compliant\*
- Very good chemical properties
- Temperature range:  
PA6 –40°C to +105°C, short-term to +160°C  
PA12 –40°C to +95°C, short-term to +150°C  
PU –60°C to +50°C

### Characteristics

- Excellent conduit pull-out strength
- High impact resistance
- All PMA Jumbo conduits have a coarse (G) profile
- The conduit types PIS and VCS are UL recognized in jumbo sizes for use with the flange type fittings.









## Conduits, large sizes

### Type PMAFLEX JUMBO conduits

#### Type PMAFLEX JUMBO conduits



|               | Order no.<br>black | Order no.<br>grey | Conduit size |        |       | Inside Ø |        | Outside<br>Ø (mm) | Stat./Dyn.<br>radius<br>(mm) | PU<br>meter |
|---------------|--------------------|-------------------|--------------|--------|-------|----------|--------|-------------------|------------------------------|-------------|
|               |                    |                   | NW           | Metric | Inch  | (mm)     | (inch) |                   |                              |             |
| c<br>UL<br>us | CYLG-56B.30*       | CYLG-56S.30*      | 56           | 68     | 2     | 56.7     | 2.232  | 67.4              | 120/-                        | 30          |
|               | CYLG-70B.10*       | CYLG-70S.10*      | 70           | 80     | 2-1/2 | 67.5     | 2.657  | 79.7              | 140/-                        | 10          |
|               | CYLG-95B.10*       | CYLG-95S.10*      | 95           | 106    | 4     | 91.6     | 3.606  | 106.2             | 190/-                        | 10          |
|               | PCLG-56B.30        | PCLG-56S.30       | 56           | 68     | 2     | 56.3     | 2.217  | 67.2              | 130/-                        | 30          |
|               | PCLG-70B.10        | PCLG-70S.10       | 70           | 80     | 2-1/2 | 67.5     | 2.657  | 80.0              | 160/-                        | 10          |
|               | PCLG-95B.10        | PCLG-95S.10       | 95           | 106    | 4     | 91.5     | 3.602  | 106.0             | 210/-                        | 10          |
|               | PCLG-125B.6        | PCLG-125S.6       | 125          | 146    | 5     | 126.5    | 4.980  | 146.5             | 450/-                        | 6           |
|               | PIHG-56B.30        | PIHG-56S.30       | 56           | 68     | 2     | 56.3     | 2.217  | 67.2              | 110/270                      | 30          |
|               | PIHG-70B.30        | PIHG-70S.30       | 70           | 80     | 2-1/2 | 67.2     | 2.646  | 79.6              | 150/350                      | 30          |
|               | PIHG-95B.30        | PIHG-95S.30       | 95           | 106    | 4     | 91.3     | 3.594  | 106.0             | 170/450                      | 30          |
|               | PIHG-125B.20       | PIHG-125S.20      | 125          | 146    | 5     | 126.5    | 4.980  | 146.5             | 350/480                      | 20          |
|               | VCSG-56B.30        | VCSG-56S.30       | 56           | 68     | 2     | 56.1     | 2.209  | 67.2              | 150/-                        | 30          |
|               | VCSG-70B.10        | VCSG-70S.10       | 70           | 80     | 2-1/2 | 66.5     | 2.618  | 80.0              | 200/-                        | 10          |
|               | VCSG-95B.10        | VCSG-95S.10       | 95           | 106    | 4     | 91.0     | 3.583  | 106.0             | 300/-                        | 10          |
| c<br>UL<br>us | LLPAG-56A.30       | LLPAG-56S.30      | 56           | 68     | 2     | 56.3     | 2.217  | 67.2              | 120/-                        | 30          |
|               | LLPAG-70A.10       | LLPAG-70S.10      | 70           | 80     | 2-1/2 | 68.0     | 2.677  | 80.0              | 160/-                        | 10          |
|               | LLPAG-95A.10       | LLPAG-95S.10      | 95           | 106    | 4     | 91.9     | 3.618  | 106.0             | 210/-                        | 10          |
|               | LLPAG-125A.6       | LLPAG-125S.6      | 125          | 146    | 5     | 126.5    | 4.980  | 146.5             | 450/-                        | 6           |
|               | VOHG-56B.10        | VOHG-56S.10       | 56           | 68     | 2     | 55.5     | 2.185  | 67.2              | 135/-                        | 10          |
|               | VOHG-70B.10        | VOHG-70S.10       | 70           | 80     | 2-1/2 | 67.0     | 2.638  | 80.0              | 200/-                        | 10          |
|               | VOHG-95B.10        | VOHG-95S.10       | 95           | 106    | 4     | 90.5     | 3.563  | 106.0             | 300/-                        | 10          |
|               | VOHG-125B.6        | VOHG-125S.6       | 125          | 146    | 5     | 126.0    | 4.961  | 146.5             | 480/-                        | 6           |
|               | XPCSG-56BG.30      | -                 | 56           | 68     | 2     | 56.7     | 2.232  | 67.5              | 110/270                      | 30          |
|               | XPCSG-70BG.10      | -                 | 70           | 80     | 2-1/2 | 67.5     | 2.657  | 79.0              | 130/320                      | 10          |
|               | XPCSG-95BG.10      | -                 | 95           | 106    | 4     | 91.6     | 3.606  | 106.0             | 170/430                      | 10          |
|               | PCSG-56B.30        | PCSG-56S.30       | 56           | 68     | 2     | 56.1     | 2.209  | 67.2              | 130/280                      | 30          |
|               | PCSG-70B.10        | PCSG-70S.10       | 70           | 80     | 2-1/2 | 66.5     | 2.618  | 80.0              | 170/360                      | 10          |
|               | PCSG-95B.10        | PCSG-95S.10       | 95           | 106    | 4     | 91.0     | 3.583  | 106               | 250/470                      | 10          |
| c<br>UL<br>us | PUEG-56B.30        | -                 | 56           | 68     | 2     | 56.3     | 2.217  | 67.2              | 90/170                       | 30          |
|               | PUEG-70B.30        | -                 | 70           | 80     | 2-1/2 | 68.2     | 2.685  | 80.5              | 100/220                      | 30          |

#### Approvals



\* Not approved to UL 1696 / CSA C22.2 No. 227.3-05 (UL file E 80294)  
For further conduits and other sizes see conduit guide

## PMAGRIP flange connectors

### Type GG & GO

#### Type GG - Flange straight

|    | Order no.<br>black | Order no.<br>grey | Fits to conduit size |        |       | Width<br>(mm) | Height<br>(mm) | Depth<br>(mm) |
|----|--------------------|-------------------|----------------------|--------|-------|---------------|----------------|---------------|
|    |                    |                   | NW                   | Metric | Inch  |               |                |               |
| GG | BGG-56             | SGG-56            | 56                   | 68     | 2     | 82.0          | 97.0           | 42.0          |
|    | BGG-70             | SGG-70            | 70                   | 80     | 2-1/2 | 97.0          | 114.0          | 48.0          |
|    | BGG-95             | SGG-95            | 95                   | 106    | 4     | 126.0         | 146.0          | 53.0          |
|    | BGG-125            | SGG-125           | 125                  | 146    | 5     | –             | 194.0          | 79.0          |



#### Approvals



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)  
 Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications  
 Flange seal FGO4/01 made from NBR, optional for indoor applications with special chemical requirements  
 Temperature range with FGO4: –40°C to +105°C  
 Temperature range with FGO4/01: –25°C to +70°C  
 Content of delivery: Flange part, fixation clamps (incl. 2 screws), flange seal (FGO4 or FGO4/01), conduit seal ring (optional for IP65)

#### Type GO - Flange 90° elbow

|    | Order no.<br>black | Order no.<br>grey | Fits to conduit size |        |       | Width<br>(mm) | Height<br>(mm) | Depth<br>(mm) |
|----|--------------------|-------------------|----------------------|--------|-------|---------------|----------------|---------------|
|    |                    |                   | NW                   | Metric | Inch  |               |                |               |
| GO | BGO-56             | SGO-56            | 56                   | 68     | 2     | 82.0          | 97.0           | 101.0         |
|    | BGO-70             | SGO-70            | 70                   | 80     | 2-1/2 | 97.0          | 114.0          | 115.0         |
|    | BGO-95             | SGO-95            | 95                   | 106    | 4     | 126.0         | 146.0          | 149.0         |



#### Approvals



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)  
 Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications  
 Flange seal FGO4/01 made from NBR, optional for indoor applications with special chemical requirements  
 Temperature range with FGO4: –40°C to +105°C  
 Temperature range with FGO4/01: –25°C to +70°C  
 Content of delivery: Flange part, fixation clamps (incl. 2 screws), flange seal (FGO4 or FGO4/01), conduit seal ring (optional for IP65)

## PMAGRIP flange connectors

### Type GGV & GOV

#### Type GGV - Flange straight

|     | Order no.<br>black, IP68 | Fits to conduit size |        |       | Width<br>(mm) | Height<br>(mm) | Depth<br>(mm) |
|-----|--------------------------|----------------------|--------|-------|---------------|----------------|---------------|
|     |                          | NW                   | Metric | Inch  |               |                |               |
| GGV | BGGV-56                  | 56                   | 68     | 2     | 82.0          | 97.0           | 42.0          |
|     | BGGV-70                  | 70                   | 80     | 2-1/2 | 97.0          | 114.0          | 48.0          |
|     | BGGV-95                  | 95                   | 106    | 4     | 126.0         | 146.0          | 53.0          |



#### Approvals



In railway vehicle construction as well as in a wide range of industrial applications with high sealing and safety requirements

Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications

Flange seal FGO4/01 made from NBR on request, optional for indoor applications with special chemical requirements

Ingress protection: IP68, IP69 with conduit sealing NVN3

Temperature range with FGO4: -40°C to +105°C

Temperature range with FGO4/01: -25°C to +70°C

If the application temperature is above 70°C we recommend to use an additional internal conduit support sleeve (BES)

Content of delivery: Flange part, fixation clamps (incl. 2 screws), conduit seal (NVN3), flange seal (FGO4 or FGO4/01)

#### Type GOV - Flange 90° elbow

|     | Order no.<br>black, IP68 | Fits to conduit size |        |       | Width<br>(mm) | Height<br>(mm) | Depth<br>(mm) |
|-----|--------------------------|----------------------|--------|-------|---------------|----------------|---------------|
|     |                          | NW                   | Metric | Inch  |               |                |               |
| GOV | BGOV-56                  | 56                   | 68     | 2     | 82.0          | 97.0           | 101.0         |
|     | BGOV-70                  | 70                   | 80     | 2-1/2 | 97.0          | 114.0          | 115.0         |
|     | BGOV-95                  | 95                   | 106    | 4     | 126.0         | 146.0          | 149.0         |



#### Approvals



In railway vehicle construction as well as in a wide range of industrial applications with high sealing and safety requirements

Flange seal FGO4 made from EPDM, standard for indoor and outdoor applications

Flange seal FGO4/01 made from NBR on request, optional for indoor applications with special chemical requirements

Ingress protection: IP68, IP69 with conduit sealing NVN3

Temperature range with FGO4: -40°C to +105°C

Temperature range with FGO4/01: -25°C to +70°C

If the application temperature is above 70°C we rec. to use an additional internal conduit support sleeve (BES)

Content of delivery: Flange part, fixation clamps (incl. 2 screws), conduit seal (NVN3), flange seal (FGO4 or FGO4/01)

PMAGRIP threaded connectors

Type GG & GI

Type GG - Connector straight with locking clamps, metric/PG thread

|    | Order no.<br>black | Order no.<br>grey | Thread    | Fits to conduit size |        |      | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) |
|----|--------------------|-------------------|-----------|----------------------|--------|------|--------------------------|----------------------|---------------------------|
|    |                    |                   |           | NW                   | Metric | Inch |                          |                      |                           |
| GG | BGG-M6356          | SGG-M6356         | M63 x 1.5 | 56                   | 68     | 2    | 18.0                     | 98.0                 | 57.5                      |
|    | BGG-P3656          | SGG-P3656         | PG 36     | 56                   | 68     | 2    | 18.0                     | 98.0                 | 57.3                      |



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)  
Content of delivery: Threaded part, fixation clamps (incl. 2 screws), conduit seal ring (optional for IP65)

Type GI - Connector straight with locking clamps, metric female thread

|    | Order no.<br>black | Order no.<br>grey | Thread    | Fits to conduit size |        |      | Thread<br>length<br>(mm) | Outside<br>Ø<br>(mm) | Overall<br>length<br>(mm) |
|----|--------------------|-------------------|-----------|----------------------|--------|------|--------------------------|----------------------|---------------------------|
|    |                    |                   |           | NW                   | Metric | Inch |                          |                      |                           |
| GI | BGI-M7556          | SGI-M7556         | M75 x 1.5 | 56                   | 68     | 2    | 15.0                     | 98.0                 | 53.3                      |



Ingress protection: IP50 without conduit seal ring (IP65 with conduit seal ring)  
Content of delivery: Threaded part, fixation clamps (incl. 2 screws), conduit seal ring (optional for IP65)

## Tube clamps, conduit seal rings, large size accessories

### Type GH & SGS

#### Type GH - Tube clamp, one-piece

|                                                                                   | Order no.<br>black | Order no.<br>grey | Fits to conduit size |        |       | Width<br>(mm) | Fixing<br>screw |
|-----------------------------------------------------------------------------------|--------------------|-------------------|----------------------|--------|-------|---------------|-----------------|
|                                                                                   |                    |                   | NW                   | Metric | Inch  |               |                 |
|  | BGH-56             | SGH-56            | 56                   | 68     | 2     | 26.0          | 2 x M8          |
|                                                                                   | BGH-70             | SGH-70            | 70                   | 80     | 2-1/2 | 30.0          | 2 x M8          |
|                                                                                   | BGH-95             | SGH-95            | 95                   | 106    | 4     | 30.0          | 2 x M8          |

For general machine and installation applications  
 Integrated rib provides axial strain relief  
 Allows turning of the conduit thus avoiding torsion stresses  
 Pre-fixation on the conduit possible  
 Allows solid fixation with 2 screws  
 For other sizes of BGH tube clamps please see page 112  
 PA 6

#### Type SGS - Tube clamp

|                                                                                     | Order no. | Fits to conduit size |        |       | Width x Height x Depth<br>(mm) | Fixing<br>screw |
|-------------------------------------------------------------------------------------|-----------|----------------------|--------|-------|--------------------------------|-----------------|
|                                                                                     |           | NW                   | Metric | Inch  |                                |                 |
|  | SGS-36    | 36                   | 40     | 1-1/4 | 80.0 x 48.0 x 19.0             | 2 x M6          |
|                                                                                     | SGS-48    | 48                   | 50     | 1-1/2 | 94.0 x 58.0 x 19.0             | 2 x M6          |
|                                                                                     | SGS-56    | 56                   | 68     | 2     | 118.0 x 72.0 x 24.0            | 2 x M8          |
|                                                                                     | SGS-70    | 70                   | 80     | 2-1/2 | 130.0 x 85.0 x 24.0            | 2 x M8          |
|                                                                                     | SGS-95    | 95                   | 106    | 4     | 156.0 x 110.0 x 24.0           | 2 x M8          |
|                                                                                     | SGS-125   | 125                  | 146    | 5     | 200.0 x 152.0 x 24.0           | 2 x M8          |

For fixation of static conduits  
 Galvanized steel  
 Elastomer profile (EPDM) free from halogens  
 Smooth connection to PMA conduits  
 Good resistance to ozone and ageing  
 Temperature range: -40°C to +120°C



# Tube clamps, conduit seal rings, large size accessories

## Type SGO3

Type SGO3 - Conduit seal ring

|                                                                                                   | Order no. | Fits to conduit size |        |       | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Thickness<br>(mm) |
|---------------------------------------------------------------------------------------------------|-----------|----------------------|--------|-------|------------------|-------------------|-------------------|
|                                                                                                   |           | NW                   | Metric | Inch  |                  |                   |                   |
| <div>SGO3</div>  | SGO3-56   | 56                   | 68     | 2     | 49.5             | 61.0              | 1.5               |
|                                                                                                   | SGO3-70   | 70                   | 80     | 2-1/2 | 61.5             | 74.0              | 1.5               |
|                                                                                                   | SGO3-95   | 95                   | 106    | 4     | 86.0             | 102.0             | 1.5               |
|                                                                                                   | SGO3-125  | 125                  | 146    | 5     | 122.0            | 142.0             | 2.0               |

Used at the conduit end for sealing between the PMAGRIP flanges GG/GO/GI and PMA JUMBO conduits  
Nitrile rubber NBR  
Temperature range: -40°C to +105°C

# PMA Divisible System

## General technical details

One-piece Divisible System. The ideal solution for repairs, retrofit and pre-loomed applications. Equally all PMA conduits are compatible.

PMA offers a divisible system based upon PMA standard nominal widths.

This allows free combination of the PACOF and PPCOF divisible conduits with PMAFIX Pro, PMAFIX and PMA Smart Line fittings. Using the PMA Divisible System Fittings repairs can be easily made to existing installations without disconnecting cables. Equally all PMA conduits – also slit – are compatible with the fittings of the divisible system.

### Material

- Conduits made from spec. formulated PA 6 and Polypropylene
- Fittings made from specially formulated polyamide 6
- Colour: Black
- Free from halogens, REACH + RoHS compliant
- Temperature range:  
Conduits: -40°C to +160°C  
Connectors: -40°C to min. +105°C

### Characteristics

- Fast installation
- Conduit can be installed in fitting prior to closing the fitting
- High impact resistance
- High conduit pull-out strength
- Fits conduit profiles – fine (T) and coarse (G)







## Conduits

### Type PACOF & PPCOF

#### Type PACOF - Flexible, divisible

|                                                                                   | Order no.<br>black | Fits to conduit size |        |       | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>meter |
|-----------------------------------------------------------------------------------|--------------------|----------------------|--------|-------|------------------|-------------------|-------------------------|-------------|
|                                                                                   |                    | NW                   | Metric | Inch  |                  |                   |                         |             |
|  | PACOF-07B.50       | 07                   | 10     | 1/4   | 5.6              | 10.0              | 30                      | 50          |
|                                                                                   | PACOF-10B.50       | 10                   | 12     | 5/16  | 8.5              | 12.8              | 33                      | 50          |
|                                                                                   | PACOF-12B.50       | 12                   | 16     | 3/8   | 11.0             | 15.6              | 35                      | 50          |
|                                                                                   | PACOF-17B.50       | 17                   | 20     | 1/2   | 15.5             | 21.1              | 45                      | 50          |
|                                                                                   | PACOF-23B.50       | 23                   | 25     | 3/4   | 22.1             | 28.4              | 70                      | 50          |
|                                                                                   | PACOF-29B.50       | 29                   | 32     | 1     | 27.2             | 34.5              | 120                     | 50          |
|                                                                                   | PACOF-36B.30       | 36                   | 40     | 1-1/4 | 32.0             | 42.4              | 145                     | 30          |
|                                                                                   | PACOF-48B.30       | 48                   | 50     | 1-1/2 | 43.9             | 54.1              | 150                     | 30          |
|                                                                                   | PACOF-70B.10       | 70                   | 80     | 2-1/2 | 62.0             | 79.0              | 190                     | 10          |

#### PACOF Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

For machine building and plant construction  
 For trouble-free retrofitting and applicable for repairs  
 Specially modified polyamide 6  
 Can be opened and closed again in longitudinal direction any time  
 Good ductility  
 Good compression resistance  
 Free from halogens, REACH + RoHS compliant  
 Temperature range: -40°C to +105°C, short-term to +160°C  
 IP50

|                                                                                     | Order no.<br>black | Fits to conduit size |        |       | Inside Ø<br>(mm) | Outside Ø<br>(mm) | Stat.<br>radius<br>(mm) | PU<br>meter |
|-------------------------------------------------------------------------------------|--------------------|----------------------|--------|-------|------------------|-------------------|-------------------------|-------------|
|                                                                                     |                    | NW                   | Metric | Inch  |                  |                   |                         |             |
|  | PPCOF-07B.50       | 07                   | 10     | 1/4   | 5.6              | 10.0              | 25                      | 50          |
|                                                                                     | PPCOF-10B.50       | 10                   | 12     | 5/16  | 8.5              | 12.8              | 28                      | 50          |
|                                                                                     | PPCOF-12B.50       | 12                   | 16     | 3/8   | 11.0             | 15.6              | 35                      | 50          |
|                                                                                     | PPCOF-17B.50       | 17                   | 20     | 1/2   | 15.1             | 21.1              | 45                      | 50          |
|                                                                                     | PPCOF-23B.50       | 23                   | 25     | 3/4   | 22.1             | 28.4              | 60                      | 50          |
|                                                                                     | PPCOF-29B.50       | 29                   | 32     | 1     | 26.6             | 34.5              | 100                     | 50          |
|                                                                                     | PPCOF-36B.30       | 36                   | 40     | 1-1/4 | 31.8             | 42.4              | 120                     | 30          |
|                                                                                     | PPCOF-48B.30       | 48                   | 50     | 1-1/2 | 43.9             | 54.1              | 140                     | 30          |
|                                                                                     | PPCOF-70B.10       | 70                   | 80     | 2-1/2 | 60.5             | 78.0              | 200                     | 10          |

#### PPCOF Index

| min.                        | max. |
|-----------------------------|------|
| Ductility                   |      |
| Fatigue reversed bending    |      |
| Compression resistance      |      |
| Low temperature performance |      |
| Weathering resistance       |      |

For machine building and plant construction  
 For trouble-free retrofitting and applicable for repairs  
 Specially modified polypropylene PP  
 Can be opened and closed again in longitudinal direction any time  
 Good reversed bending resistance  
 Temperature range: -20°C to +105°C, short-term to +150°C  
 IP50



## Connectors, lock nuts

### Type LNO & LN

#### Type LNO - Divisible connector straight, one-piece, metric thread

|                                                                                   | Order no.<br>black | Thread<br>metric | Fits to conduit size |        |       | Thread<br>length<br>(mm) | Overall<br>length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|------------------|----------------------|--------|-------|--------------------------|---------------------------|
|                                                                                   |                    |                  | NW                   | Metric | Inch  |                          |                           |
|  | BLNO-M160          | M16 x 1.5        | 10                   | 12     | 5/16  | 13.0                     | 37.5                      |
|                                                                                   | BLNO-M162          | M16 x 1.5        | 12                   | 16     | 3/8   | 13.0                     | 39.5                      |
|                                                                                   | BLNO-M202          | M20 x 1.5        | 12                   | 16     | 3/8   | 13.0                     | 39.5                      |
|                                                                                   | BLNO-M207          | M20 x 1.5        | 17                   | 20     | 1/2   | 13.0                     | 43.5                      |
|                                                                                   | BLNO-M257          | M25 x 1.5        | 17                   | 20     | 1/2   | 14.0                     | 44.5                      |
|                                                                                   | BLNO-M253          | M25 x 1.5        | 23                   | 25     | 3/4   | 14.0                     | 52.5                      |
|                                                                                   | BLNO-M323          | M32 x 1.5        | 23                   | 25     | 3/4   | 17.0                     | 56.0                      |
|                                                                                   | BLNO-M329          | M32 x 1.5        | 29                   | 32     | 1     | 17.0                     | 61.0                      |
|                                                                                   | BLNO-M409          | M40 x 1.5        | 29                   | 32     | 1     | 21.0                     | 65.0                      |
|                                                                                   | BLNO-M406          | M40 x 1.5        | 36                   | 40     | 1-1/4 | 22.0                     | 74.5                      |
|                                                                                   | BLNO-M508          | M50 x 1.5        | 48                   | 50     | 1-1/2 | 22.0                     | 80.5                      |

Divisible connector straight, one-piece, metric thread

Compatible with PMA standard, slit and divisible conduits with standard nominal widths

In industries, plant construction, machine building as well as in house and electrical installations

For retrofit installation or repair

IP54

Special: Push-in installation of conduit into pre-installed fitting also possible

#### Type LN - Divisible lock nut, metric thread

|                                                                                     | Order no.<br>black | Thread<br>metric | Fits with divisible connector |           | Wrench<br>size<br>(mm) | Width<br>(mm) |
|-------------------------------------------------------------------------------------|--------------------|------------------|-------------------------------|-----------|------------------------|---------------|
|                                                                                     |                    |                  | BLNO-M160                     | BLNO-M162 |                        |               |
|  | BLN-M16            | M16 x 1.5        | BLNO-M160                     | BLNO-M162 | 22.0                   | 8.0           |
|                                                                                     | BLN-M20            | M20 x 1.5        | BLNO-M202                     | BLNO-M207 | 26.0                   | 8.0           |
|                                                                                     | BLN-M25            | M25 x 1.5        | BLNO-M257                     | BLNO-M253 | 32.0                   | 9.0           |
|                                                                                     | BLN-M32            | M32 x 1.5        | BLNO-M323                     | BLNO-M329 | 41.0                   | 12.0          |
|                                                                                     | BLN-M40            | M40 x 1.5        | BLNO-M409                     | BLNO-M406 | 50.0                   | 15.0          |
|                                                                                     | BLN-M50            | M50 x 1.5        | BLNO-M508                     |           | 60.0                   | 15.0          |

Compatible with divisible PMA connectors, type BLNO

For retrofit installation or repair

Temperature range: -40°C to +100°C, short-term: +130°C



T, Y pieces, connection splice

Type LTO & LYO

Type LTO - Divisible T piece, one-piece

|                                                                                   | Order no.<br>black, IP40 | 3x conduit sizes |        |      |
|-----------------------------------------------------------------------------------|--------------------------|------------------|--------|------|
|                                                                                   |                          | NW               | Metric | Inch |
|  | BLTO-070707              | 07               | 10     | 1/4  |
|                                                                                   | BLTO-101010              | 10               | 12     | 5/16 |
|                                                                                   | BLTO-121212              | 12               | 16     | 3/8  |
|                                                                                   | BLTO-171717              | 17               | 20     | 1/2  |
|                                                                                   | BLTO-232323              | 23               | 25     | 3/4  |
|                                                                                   | BLTO-292929              | 29               | 32     | 1    |

Compatible with PMA standard, slit and divisible conduits with standard nominal widths  
In industries, plant construction, machine building as well as in house and electrical installations  
For retrofit installation or repair  
IP40  
Conduit can be installed in fitting prior to closing the fitting

Type LYO - Divisible Y piece, one-piece

|                                                                                     | Order no.<br>black, IP40 | 1x conduit size |        |      | 2x conduit sizes |        |      |
|-------------------------------------------------------------------------------------|--------------------------|-----------------|--------|------|------------------|--------|------|
|                                                                                     |                          | NW              | Metric | Inch | NW               | Metric | Inch |
|  | BLYO-100707              | 10              | 12     | 5/16 | 07               | 10     | 1/4  |
|                                                                                     | BLYO-121010              | 12              | 16     | 3/8  | 10               | 12     | 5/16 |
|                                                                                     | BLYO-171212              | 17              | 20     | 1/2  | 12               | 16     | 3/8  |
|                                                                                     | BLYO-231717              | 23              | 25     | 3/4  | 17               | 20     | 1/2  |
|                                                                                     | BLYO-292917              | 17              | 20     | 1/2  | 29               | 32     | 1    |
|                                                                                     |                          |                 |        |      |                  |        |      |

Compatible with PMA standard, slit and divisible conduits with standard nominal widths  
In industries, plant construction, machine building as well as in house and electrical installations  
For retrofit installation or repair  
IP40  
Conduit can be installed in fitting prior to closing the fitting

T, Y pieces, connection splice  
Type LSGO

Type LSGO - One-piece, divisible

|      | Order no.<br>black, IP40 | Fits to conduit size |      | Overall length<br>(mm) | Outer Ø<br>(mm) |
|------|--------------------------|----------------------|------|------------------------|-----------------|
|      |                          | NW                   | Inch |                        |                 |
| LSGO | BLSGO-101010             | 10                   | 5/16 | 36                     | 16              |
|      | BLSGO-121212             | 12                   | 3/8  | 36                     | 21              |
|      | BLSGO-171717             | 17                   | 1/2  | 38                     | 26              |
|      | BLSGO-232323             | 23                   | 3/4  | 39                     | 33              |



Compatible with PMA standard, slit and divisible conduits with standard nominal widths  
In industries, plant construction, machine building as well as in house and electrical installations  
For retrofit installation or repair  
Polyamide (Nylon) 66  
IP40 rated

# PMAJACK Plastic and metal braids

## General technical details

Bundling and abrasion protection. Polyamide, polyester and steel braids – an alternative way to bundle and protect electrical cables.

Plastic braids manufactured from polyester and polyamide filaments – the other alternative solution for protecting and bundling cables.

This PMA cable protection system provides simple bundling and abrasion protection for cables and wires.

Various braid types to fulfill different requirements complimented by a range of braid terminations for simple and clean assembly.

### Material

- Braids made from polyamide 6.6 or polyester
- Terminations made from PA 6, aluminium or brass
- Free from halogens, REACH + RoHS compliant

### Characteristics

- Flammability of braids:  
polyamide 6.6 UL 94 V2,  
polyester UL 94 V0
- Braid design: Following DIN 65 164 part 1+2
- EN 45545-2 HL3









## Plastic braided hoses

### Type F.66 & C.66

#### Type F.66 - Braided hose

|                                                                                           | Order no.<br>black | Order no.<br>grey | NW | Fits to<br>termination | Weight<br>nom. per<br>100 m<br>(kg) | Operative<br>range<br>min. Ø<br>(mm) | Operative<br>range<br>max. Ø<br>(mm) |
|-------------------------------------------------------------------------------------------|--------------------|-------------------|----|------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| F.66<br> | F.66.04SW          | F.66.04GR         | 4  | –                      | 0.4                                 | 3.0                                  | 7.0                                  |
|                                                                                           | F.66.06SW          | F.66.06GR         | 6  | SRER-06                | 0.6                                 | 5.0                                  | 8.0                                  |
|                                                                                           | F.66.08SW          | F.66.08GR         | 8  | SRER-06                | 0.8                                 | 7.0                                  | 10.0                                 |
|                                                                                           | F.66.10SW          | F.66.10GR         | 10 | SRER-06                | 1.0                                 | 9.0                                  | 13.0                                 |
|                                                                                           | F.66.12SW          | F.66.12GR         | 12 | SRER-06                | 1.4                                 | 11.0                                 | 16.0                                 |
|                                                                                           | F.66.16SW          | F.66.16GR         | 16 | SRER-16                | 1.7                                 | 15.0                                 | 21.0                                 |
|                                                                                           | F.66.20SW          | F.66.20GR         | 20 | SRER-16                | 2.0                                 | 20.0                                 | 26.0                                 |
|                                                                                           | F.66.25SW          | F.66.25GR         | 25 | SRER-21/SRER-29        | 2.4                                 | 24.0                                 | 31.0                                 |
|                                                                                           | F.66.30SW          | F.66.30GR         | 30 | SRER-21/SRER-29        | 3.5                                 | 28.0                                 | 38.0                                 |
|                                                                                           | F.66.40SW          | F.66.40GR         | 40 | SRER-29                | 4.2                                 | 38.0                                 | 49.0                                 |
|                                                                                           | F.66.50SW          | F.66.50GR         | 50 | SREV-40/SRER-50        | 5.1                                 | 48.0                                 | 65.0                                 |
|                                                                                           | F.66.70SW          | F.66.70GR         | 70 | SREV-40/SRER-50        | 4.9                                 | 48.0                                 | 85.0                                 |

Monofile Ø: 0.28mm for increased abrasion properties

Coverage: > 90%

Polyamide 6.6

Specifications: DIN 5510 (S4/SR2/ST2), UL-File E 125 619, EN45545-2 HL3

Temperature range: –55°C to +135°C, short-term to +160°C

#### Type C.66 - Braided hose

|                                                                                             | Order no.<br>black | Order no.<br>grey | NW | Fits to<br>termination | Weight<br>nom. per<br>100 m<br>(kg) | Operative<br>range<br>min. Ø<br>(mm) | Operative<br>range<br>max. Ø<br>(mm) |
|---------------------------------------------------------------------------------------------|--------------------|-------------------|----|------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| C.66<br> | C.66.10SW          | C.66.10GR         | 10 | SRER-06                | 0.7                                 | 8.0                                  | 14.0                                 |
|                                                                                             | C.66.12SW          | C.66.12GR         | 12 | SRER-06/SRER-16        | 0.9                                 | 9.0                                  | 18.0                                 |
|                                                                                             | C.66.16SW          | C.66.16GR         | 16 | SRER-06/SRER-16        | 1.2                                 | 11.0                                 | 22.0                                 |
|                                                                                             | C.66.20SW          | C.66.20GR         | 20 | SRER-16/SRER-21        | 1.4                                 | 14.0                                 | 26.0                                 |
|                                                                                             | C.66.25SW          | C.66.25GR         | 25 | SRER-16/SRER-21        | 1.4                                 | 18.0                                 | 28.0                                 |
|                                                                                             | C.66.30SW          | C.66.30GR         | 30 | SRER-21/SRER-29        | 2.5                                 | 25.0                                 | 43.0                                 |
|                                                                                             | C.66.40SW          | C.66.40GR         | 40 | SRER-29                | 2.5                                 | 30.0                                 | 52.0                                 |
|                                                                                             | C.66.45SW          | –                 | 45 | SREV-40/SRER-50        | 4.0                                 | 40.0                                 | 73.0                                 |

Monofile Ø: 0.28mm for increased abrasion properties

Coverage: > 75%

Polyamide 6.6

Specifications: DIN 5510 (S4/SR2/ST2), EN45545-2 HL3

Temperature range: –55°C to +135°C, short-term to +160°C



## Plastic braided hoses

### Type L.66 & F.PX

#### Type L.66 - Braided hose

|                                                                                   | Order no.<br>black | Order no.<br>grey | NW | Fits to<br>termination | Weight<br>nom. per<br>100 m<br>(kg) | Operative<br>range<br>min. Ø<br>(mm) | Operative<br>range<br>max. Ø<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|-------------------|----|------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| L.66                                                                              | L.66.04SW          | L.66.04GR         | 04 | –                      | 0.4                                 | 4.0                                  | 5.0                                  |
|  | L.66.08SW          | L.66.08GR         | 08 | SRER-06                | 0.5                                 | 5.0                                  | 10.0                                 |
|                                                                                   | L.66.10SW          | L.66.10GR         | 10 | SRER-06                | 0.8                                 | 7.0                                  | 13.0                                 |
|                                                                                   | L.66.16SW          | L.66.16GR         | 16 | SRER-16                | 0.9                                 | 11.0                                 | 20.0                                 |
|                                                                                   | L.66.20SW          | L.66.20GR         | 20 | SRER-16                | 1.4                                 | 17.0                                 | 33.0                                 |
|                                                                                   | L.66.25SW          | L.66.25GR         | 25 | SRER-21/SRER-29        | 1.5                                 | 21.0                                 | 34.0                                 |
|                                                                                   | L.66.30SW          | L.66.30GR         | 30 | SRER-21/SRER-29        | 1.8                                 | 25.0                                 | 45.0                                 |
|                                                                                   | L.66.40SW          | L.66.40GR         | 40 | SRER-29                | 1.9                                 | 31.0                                 | 55.0                                 |
|                                                                                   | L.66.50SW          | L.66.50GR         | 50 | SREV-40/SRER-50        | 3.2                                 | 58.0                                 | 70.0                                 |

Monofile Ø: 0.25mm

Coverage: > 65%

Polyamide 6.6

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I3/F2), EN45545-2 HL3

Temperature range: –55°C to +135°C, short-term to +160°C

#### Type F.PX - Braided hose

|                                                                                     | Order no.<br>grey | NW | Fits to<br>termination | Weight<br>nom. per<br>100 m<br>(kg) | Operative<br>range<br>min. Ø<br>(mm) | Operative<br>range<br>max. Ø<br>(mm) |
|-------------------------------------------------------------------------------------|-------------------|----|------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| F.PX                                                                                | F.PX.04GR         | 04 | –                      | 0.3                                 | 3.0                                  | 7.0                                  |
|  | F.PX.06GR         | 06 | SRER-06                | 0.5                                 | 5.0                                  | 8.0                                  |
|                                                                                     | F.PX.08GR         | 08 | SRER-06                | 0.7                                 | 7.0                                  | 10.0                                 |
|                                                                                     | F.PX.10GR         | 10 | SRER-06                | 0.8                                 | 9.0                                  | 13.0                                 |
|                                                                                     | F.PX.12GR         | 12 | SRER-06                | 1.1                                 | 11.0                                 | 16.0                                 |
|                                                                                     | F.PX.16GR         | 16 | SRER-16                | 1.3                                 | 15.0                                 | 21.0                                 |
|                                                                                     | F.PX.20GR         | 20 | SRER-16/SRER-21        | 1.5                                 | 20.0                                 | 26.0                                 |
|                                                                                     | F.PX.25GR         | 25 | SRER-16/SRER-21        | 2.0                                 | 24.0                                 | 31.0                                 |
|                                                                                     | F.PX.30GR         | 30 | SRER-21/SRER-29        | 2.9                                 | 28.0                                 | 38.0                                 |
|                                                                                     | F.PX.40GR         | 40 | SREV-40                | 3.1                                 | 38.0                                 | 49.0                                 |

Monofile Ø: 0.28mm for increased abrasion properties

Coverage: > 90%

Polyester

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I3/F2), EN45545-2 HL3

Temperature range: –50°C to +120°C, short-term to +150°C

## Plastic braided hoses

### Type L.PX & G.PX

#### Type L.PX - Braided hose

|                                                                                   | Order no.<br>black | Order no.<br>grey | NW | Fits to<br>termination | Weight nom.<br>per 100m<br>(kg) | Operative range<br>min. Ø<br>(mm) | Operative<br>range max. Ø<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|-------------------|----|------------------------|---------------------------------|-----------------------------------|-----------------------------------|
| L.PX                                                                              | L.PX.04SW          | L.PX.04GR         | 04 | –                      | 0.4                             | 3.0                               | 8.0                               |
|  | L.PX.08SW          | L.PX.08GR         | 08 | SRER-06                | 0.5                             | 5.0                               | 10.0                              |
|                                                                                   | L.PX.10SW          | L.PX.10GR         | 10 | SRER-06                | 0.7                             | 7.0                               | 14.0                              |
|                                                                                   | L.PX.16SW          | L.PX.16GR         | 16 | SRER-16                | 0.8                             | 11.0                              | 20.0                              |
|                                                                                   | L.PX.20SW          | L.PX.20GR         | 20 | SRER-16                | 1.2                             | 19.0                              | 28.0                              |
|                                                                                   | L.PX.25SW          | L.PX.25GR         | 25 | SRER-21/SRER-29        | 1.4                             | 21.0                              | 34.0                              |
|                                                                                   | L.PX.30SW          | L.PX.30GR         | 30 | SRER-21/SRER-29        | 1.7                             | 25.0                              | 40.0                              |
|                                                                                   | L.PX.40SW          | L.PX.40GR         | 40 | SRER-29                | 1.7                             | 31.0                              | 55.0                              |
|                                                                                   | L.PX.50SW          | L.PX.50GR         | 50 | SREV-40/SRER-50        | 2.7                             | 40.0                              | 68.0                              |

Monofile Ø: 0.22mm. Coverage: > 65%. Polyester

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I1/F2), EN45545-2 HL3. Temperature range: –50°C to +120°C, short-term to +150°C

#### Type G.PX - Braided hose

|                                                                                     | Order no.<br>black | NW | Packing unit<br>PU/m | Weight<br>nom. per<br>100m (kg) | Recommended range |                |
|-------------------------------------------------------------------------------------|--------------------|----|----------------------|---------------------------------|-------------------|----------------|
|                                                                                     |                    |    |                      |                                 | min. Ø<br>(mm)    | max. Ø<br>(mm) |
| G.PX                                                                                | G.PX.05SW          | 05 | 25                   | 1.6                             | 4.5               | 5.5            |
|  | G.PX.08SW          | 08 | 25                   | 2.0                             | 7.0               | 9.0            |
|                                                                                     | G.PX.10SW          | 10 | 25                   | 2.3                             | 9.0               | 11.0           |
|                                                                                     | G.PX.13SW          | 13 | 25                   | 2.5                             | 11.5              | 13.0           |
|                                                                                     | G.PX.16SW          | 16 | 25                   | 3.4                             | 14.5              | 17.5           |
|                                                                                     | G.PX.19SW          | 19 | 25                   | 3.8                             | 17.0              | 21.0           |
|                                                                                     | G.PX.25SW          | 25 | 25                   | 4.8                             | 22.5              | 27.5           |
|                                                                                     | G.PX.29SW          | 29 | 25                   | 5.3                             | 26.0              | 32.0           |
|                                                                                     | G.PX.32SW          | 32 | 25                   | 6.1                             | 29.0              | 35.0           |
|                                                                                     | G.PX.38SW          | 38 | 25                   | 8.3                             | 34.0              | 42.0           |
|                                                                                     | G.PX.50SW          | 50 | 25                   | 8.7                             | 45.0              | 55.0           |

Open, self winding construction. For retrofit installation. Overlapping: 90° (+40°/–25°). Polyester

Specifications: DIN 5510 (S4/SR2/ST2), NF F 16-101/102 (I3/F2), EN45545-2 HL3. Temperature range: –55°C to +150°C

#### Type B.PX - Braided hose

|                                                                                     | Order no.<br>black | NW | Construction<br>numb. x Ø mm | Packing<br>unit<br>PU/m | Weight<br>nom. per<br>100m (kg) | Recommended range |                |
|-------------------------------------------------------------------------------------|--------------------|----|------------------------------|-------------------------|---------------------------------|-------------------|----------------|
|                                                                                     |                    |    |                              |                         |                                 | min. Ø<br>(mm)    | max. Ø<br>(mm) |
| B.PX                                                                                | B.PX.12SW          | 12 | 96 x 0.20                    | 100                     | 0.5                             | 6.0               | 18.0           |
|  | B.PX.15SW          | 15 | 144 x 0.20                   | 100                     | 0.7                             | 10.0              | 28.0           |
|                                                                                     | B.PX.30SW          | 30 | 192 x 0.20                   | 100                     | 0.9                             | 20.0              | 42.0           |

Coverage: > 50%. Excellent abrasion properties. Lightweight structure. High flexibility. Excellent flame-retardant properties. Polyester

Specifications: EN 45545-2 HL3 (R22 & R23). UL94 V0. Temperature range: –50°C to +120°C continuous, +150°C short-term

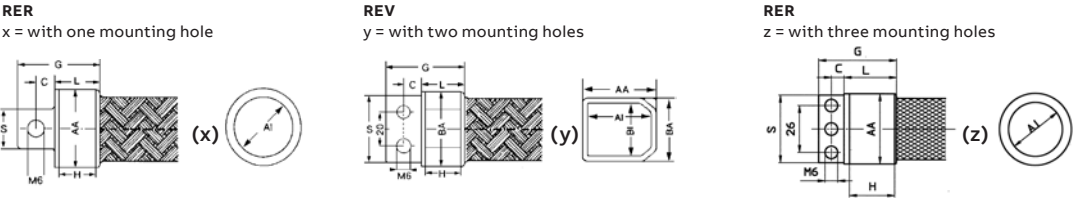
Braid terminations, connectors

Type RER/REV

Type RER/REV - Braid termination

|                                                                                   | Order no.   | NW | AI   | AA   | BI   | BA   | H    | L    | G    | S    | C    |
|-----------------------------------------------------------------------------------|-------------|----|------|------|------|------|------|------|------|------|------|
|                                                                                   | grey        |    | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) | (mm) |
|  | RER/REV     |    |      |      |      |      |      |      |      |      |      |
|                                                                                   | SRER-06 (x) | 06 | 6.5  | 13   | –    | –    | 13   | 21   | 33   | 13   | 6    |
|                                                                                   | SRER-16 (x) | 16 | 16   | 24   | –    | –    | 15   | 25   | 39   | 15   | 7    |
|                                                                                   | SRER-21 (x) | 21 | 22   | 32   | –    | –    | 20   | 29   | 43   | 15   | 7    |
|                                                                                   | SRER-29 (z) | 29 | 30   | 40   | –    | –    | 18   | 29   | 43   | 39   | 7    |
|                                                                                   | SRER-50 (z) | 50 | 50   | 61   | –    | –    | 18   | 29   | 43   | 50   | 7    |
|                                                                                   | SREV-40 (y) | 40 | 47   | 58   | 34   | 44   | 20   | 24   | 44   | 38   | 10   |

For termination and fixation of plastic braided hoses  
Suitable for: F.66, C.66, L.66, F.PX, L.PX braids  
Polyamide 6  
For exact braid and termination fitting configuration please refer to PMAJACK data sheets



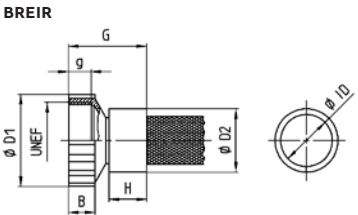
Braid terminations, connectors

Type BREIR & MREIR

Type BREIR - Connector for plastic braids, female thread

|                                                                                   | Order no.<br>black | NW | Thread<br>size<br>UNEF | Fits to PMAJACK |              |              | Ø<br>ID<br>(mm) | Ø<br>D1<br>(mm) | B<br>(mm) | G<br>(mm) | g<br>(mm) | H<br>(mm) | Ø<br>D2<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------|----|------------------------|-----------------|--------------|--------------|-----------------|-----------------|-----------|-----------|-----------|-----------|-----------------|
|                                                                                   |                    |    |                        |                 |              |              |                 |                 |           |           |           |           |                 |
|                                                                                   |                    |    |                        | F.66            | C.66<br>F.PX | L.66<br>L.PX |                 |                 |           |           |           |           |                 |
|  | BREIR-U2916        | 16 | 1 3/16-18              | 12-20           | 12-25        | 16-25        | 36.2            | 20.5            | 10.5      | 36.5      | 9         | 15        | 25              |
|                                                                                   | BREIR-U3516        | 16 | 1 7/16-18              | 12-20           | 12-25        | 16-25        | 42.5            | 20.5            | 11.5      | 37.5      | 9         | 15        | 25              |

For round connectors  
Suitable for: F.66, C.66, L.66, F.PX, L.PX braids  
Polyamide 6

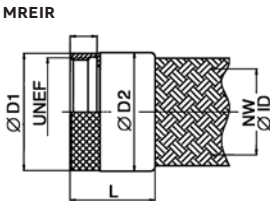


Type MREIR - Connector for plastic braids, female thread

|       | Order no.<br>grey | NW | Thread<br>size | Fits to PMAJACK |       |       | g<br>(mm) | Ø    | Ø    | L<br>(mm) | Ø    |
|-------|-------------------|----|----------------|-----------------|-------|-------|-----------|------|------|-----------|------|
|       |                   |    | UNEF           | F.66            | C.66  | F.PX  |           | D1   | D2   |           | ID   |
|       |                   |    |                |                 |       |       |           | (mm) | (mm) |           | (mm) |
| MREIR | MREIR-U3529       | 29 | 1 7/16-18      | 25-40           | 30+40 | 25-40 | 29        | 40.0 | 40.5 | 37.5      | 30.0 |



For round connectors  
Suitable for: F.66, C.66, L.66, F.PX, L.PX braids  
Black anodized aluminium



## Stainless steel braids, tools

### Type F.304, PMA-Tie-tool & HSG

#### Type F.304 - Stainless steel braided hose

|                                                                                            | Order no. | Braid specification | Fits to conduit size NW | Operative range min. Ø (mm) | Operative range max. Ø (mm) |
|--------------------------------------------------------------------------------------------|-----------|---------------------|-------------------------|-----------------------------|-----------------------------|
| F.304<br> | F.304.10  | 24 x 7 x 0.3        | 10                      | 10.0                        | 18.0                        |
|                                                                                            | F.304.12  | 24 x 8 x 0.3        | 12                      | 10.0                        | 24.0                        |
|                                                                                            | F.304.17  | 24 x 12 x 0.3       | 17                      | 15.0                        | 28.0                        |
|                                                                                            | F.304.23  | 36 x 9 x 0.3        | 23                      | 21.0                        | 34.0                        |
|                                                                                            | F.304.29  | 36 x 11 x 0.3       | 29                      | 25.0                        | 40.0                        |
|                                                                                            | F.304.36  | 36 x 9 x 0.4        | 36                      | 32.0                        | 47.0                        |
|                                                                                            | F.304.48  | 48 x 10 x 0.4       | 48                      | 55.0                        | 80.0                        |

Surface coverage: >90%

Temperature range: -70°C to +1000°C

#### Type PMA-Tie-tool - Clamping tool for metal cable ties

|                                                                                                     | Order no.    | For PMA-Tie-tool width (mm) |
|-----------------------------------------------------------------------------------------------------|--------------|-----------------------------|
| PMA-Tie-tool<br> | PMA-Tie-tool | 6.35                        |

Handtool, self locking for speedy application

Allows easy strapping of metal cable ties "Band-It"

For long lasting fixation without deformation

Stainless steel

Colour: Black

#### Type HSG - Hot cutting tool

|                                                                                            | Order no. | Order no. Spare cutting tape |
|--------------------------------------------------------------------------------------------|-----------|------------------------------|
| HSG<br> | HSG-00    | HSG-00-SB                    |

For quick and easy cutting of plastic braidings

Smallest hot cutting tool for permanent use

With fixed edge (working area 30mm)

Voltage: 230 V-50 Hz (115 V-60 Hz)

Performance: 40W

Length of the connecting lead: 2m



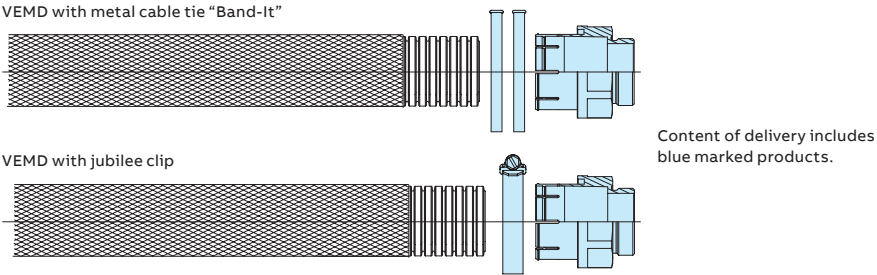
Connectors, adapters

Type VEMD

Type VEMD - Connector for overbraided conduits, metric/PG metal thread

|                                                                                   | Order no.<br>with jubilee clip | Thread<br>metric | Fits to conduit size |        | Outside Ø x Length<br>(mm) |
|-----------------------------------------------------------------------------------|--------------------------------|------------------|----------------------|--------|----------------------------|
|                                                                                   |                                |                  | NW                   | Metric |                            |
|  | MVEMD-M406/01                  | 40 x 1.5         | 36                   | 40     | 55.0 x 59.0                |
|                                                                                   | MVEMD-M508/01                  | 40 x 1.5         | 48                   | 50     | 65.0 x 62.0                |
|                                                                                   | MVEMD-M6356/01                 | 63 x 1.5         | 56                   | 68     | 80.0 x 72.0                |
|                                                                                   |                                |                  |                      |        |                            |
|                                                                                   | Order no.<br>with jubilee clip | Thread<br>PG     | Fits to conduit size |        | Outside Ø x Length<br>(mm) |
|                                                                                   |                                |                  | NW                   | Metric |                            |
|                                                                                   | MVEMD-P4856/01                 | 48               | 56                   | 68     | 80.0 x 72.0                |

Nickel-plated aluminium  
IP66 up to IP68 on request



Connectors, adapters

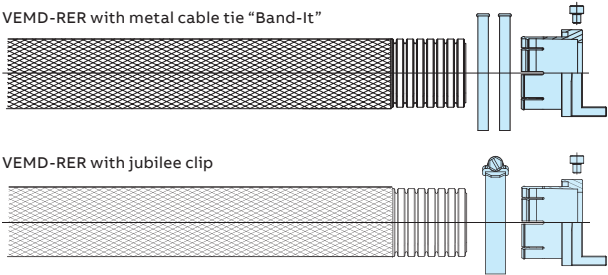
Type VEMD-RER

Type VEMD-RER - Adapter for overbraided conduits

|          | Order no.<br>with Band-It* | Order no.<br>with jubilee clip | Fits to conduit size |        | Width x Height x Length<br>(mm) |
|----------|----------------------------|--------------------------------|----------------------|--------|---------------------------------|
|          |                            |                                | NW                   | Metric |                                 |
| VEMD-RER | MVEMD-RER6                 | MVEMD-RER6/01                  | 36                   | 40     | 54.0 x 54.0 x 53.0              |
|          | MVEMD-RER8                 | –                              | 48                   | 50     | 66.0 x 66.0 x 53.0              |



\*Metal cable tie  
Nickel-plated aluminium  
IP66 on conduit side



Content of delivery includes  
blue marked products.

# Technical annex

## Introduction

Conforms with standards. Intensive research and testing is the reason PMA continues to set new standards and trends in cable protection.

PMA products conform to worldwide standards and regulations.

As a pioneer in the field of cable protection, we have always given high priority to our own testing facilities, and we have consciously introduced stringent in-house standards. This approach has enabled PMA to exercise a significant influence on the development of international standards. Standards committees with responsibility for cable systems regularly ask our company to provide advice or participate as an active member.

### **High quality product from A–Z**

From basic items to high-tech products, all of our products meet the most stringent quality requirements.

Some of the outstanding are:

- Resistance to temperature, weathering, UV radiation and chemical agents
- High system pull-out resistance
- Excellent fire protection characteristics (flammability, smoke density and toxicity)
- Excellent system ingress protection up to IP68 and IP69
- Extremely long service life
- Conformance to all major international product standards

## Technical annex

### Testing methods according to IEC EN 61386 and PMA internal procedures

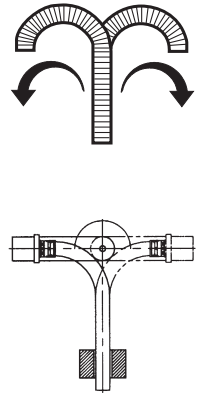
PMA DO is a PMA  
in-house test

#### IEC EN 61386

##### PMA DO 9.21-4425

###### Resistance to fatigue when exposed to continuous bending

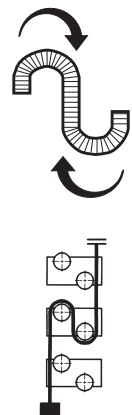
Both standards describe tests designed to evaluate conduit resistance to fatigue when exposed to continuous cycles of repetitive bending. The test procedure involves bending back and forth around a central pivotal point. Although the test procedure is the same for both standards there are differences in the test parameters and the classification of results. For a “pliable” classification according to IEC EN 61386-22 a conduit must withstand 3 cycles at the minimum declared operating temperature. For a “flexible” classification according to IEC EN 61386-23 a conduit must withstand 5000 cycles at the minimum declared operating temperature. PMA DO 9.21-4425 tests the conduit at 23°C and 50% r.h. but the test is not limited to a fixed number of cycles. It continues until the first signs of damage occur in order to find the actual performance limit.



##### PMA DO 9.21-4420

###### Resistance to fatigue when exposed to continuous bending

This PMA internal standard describes a demanding test for conduit fatigue when exposed to continuous repetitive bending. The conduit is fixed at the top of the apparatus, it passes over and under two pulley wheels. A weight is suspended at the bottom end simulating the weight of cables within the conduit. The pulley wheels move up and down continuously bending the conduit twice through 180° over its entire length. The test is performed at 23°C and 50% r.h. and continues until the first signs of damage occur.



## Technical annex

### Testing methods according to IEC EN01386 and PMA internal procedures

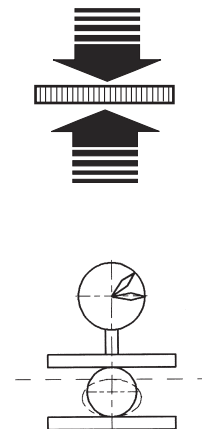
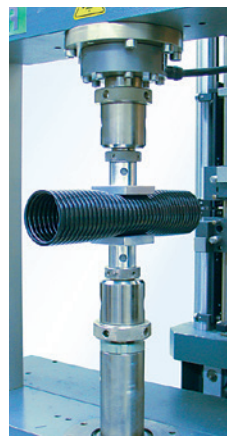
PMA DO is a PMA in-house test.

#### IEC EN 61386

##### PMA DO 9.21-4320

#### Compression strength

Both standards describe a test designed to evaluate conduit resistance to compression forces. Excessive deformation of a conduit under compression could potentially cause damage to cables being protected within it. The force required to compress the conduit between two square plates to a specific % of its original diameter is measured. Relaxation over time and recovery after removal of the force are evaluated. The tests are performed at 23°C and 50% r.h. IEC EN 61386 uses two 50mm x 50mm plates and allows 25% deformation. PMA DO 9.21-4320 records results with 50mm x 50mm and 100mm x 100mm test plates and allows 20% deformation.

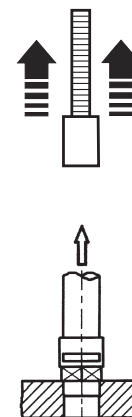
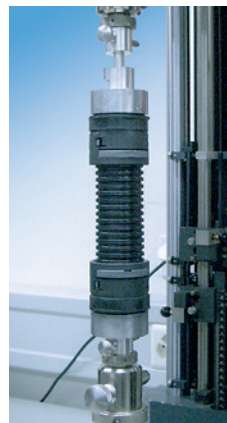


#### IEC EN 61386

##### PMA DO 9.21-4610

#### System security – pull-out strength

Both standards are designed to test the security of the connection between conduit and fitting. Two fittings with a piece of conduit between them are pulled apart with steadily increasing force. Extension of the conduit is recorded graphically against the force applied. The force required to pull the conduit out of the fitting is determined. The tests are performed at 23°C and 50% r.h.

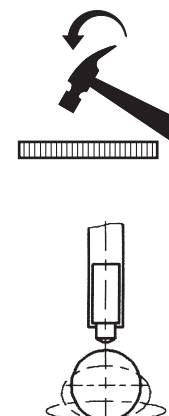


#### IEC EN 61386

##### PMA DO 9.21-4330

#### Resistance to impact

These standards describe tests to evaluate the resistance of conduits to high energy impacts. They can be performed on conduits at various temperatures. Weights of different mass are dropped from an adjustable height directly onto a conduit sample which has been conditioned at the specified temperature. The energy of impact can be calculated as mass x gravity x height. The geometry of the object falling onto the conduit is regulated. No breaks, cracks or excessive permanent deformation should be visible after the test.





## Technical annex

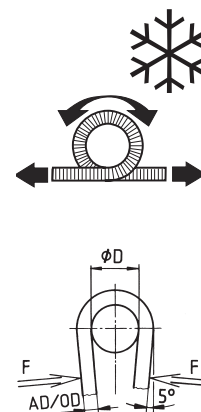
### Testing methods according to IEC EN01386 and PMA internal procedures

PMA DO is a PMA in-house test.

#### PMA DO 9.21-4380

##### Flexibility at low temperature

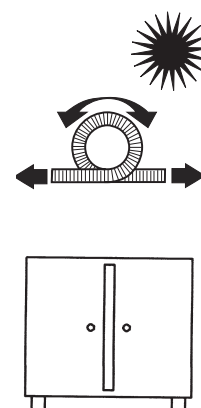
This standard describes a test procedure to evaluate the flexibility of conduits at low temperatures. The conduit under test is placed in a climatic chamber at the lowest specified operating temperature for four hours. It is then removed and immediately bent around a mandrel of diameter related to the outside diameter (OD) of the conduit. Four classifications are achievable based upon the smallest achievable bending radius without damage.



#### PMA DO 9.21-4360

##### Resistance to thermal ageing

This standard describes a procedure designed to evaluate the thermal stability of a conduit and its resistance to thermal ageing. The conduit is exposed to a temperature significantly above the maximum recommended continuous operating temperature for 168 hours, 160°C (PA6) or 150°C (PA12). The Flexibility at Low Temperature procedure DO 9.21-4380 is performed both before and after the thermal ageing procedure. The results are compared to detect any change in material characteristics.

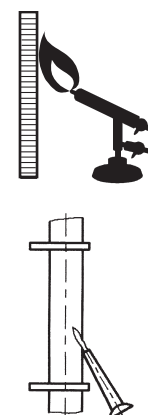
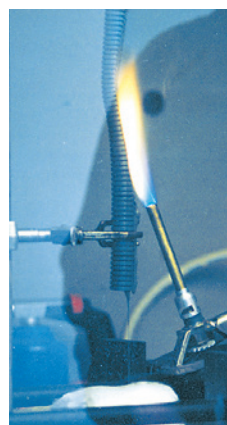


#### PMA DO 9.21-4430

#### IEC EN 61386

##### Flammability tests

PMA DO 9.21-4430 evaluates flammability characteristics using a defined flame from a standard burner. The time before ignition, fire propagation behaviour and extinguishing time after removal of the heat source are all factors in evaluating the flammability of conduits for a Self-Extinguishing Classification IEC 61386 uses the EN 60695-2-10 Glow wire test procedure to evaluate the flame Propagation behavior of conduits allocating the classifications. Non-flame propagating or flame propagating.



Technical annex

Ingress protections according to IEC 60529

Ingress protection (IP) according to IEC 60529

**Ingress protection (IP)**  
A standard to classify product performance regarding ingress protection.

**Different number – different protection!**  
For example, products classified as IPx8 are not automatically protected against jet water! Immersion tests for classifications IPx7 and IPx8 differ from the tests for protection against jet water for IPx6, IPx5, or IPx4.

**Therefore PMA cable protection systems are tested regarding different sealing requirements.**

PMA Products

|                                                                                     |      |                                                          | PMAFIX Pro | PMAFIX IP68+ WPS | PMAFIX IP68/ IP68GT | PMAFIX IP66 | PMA Smart Line |
|-------------------------------------------------------------------------------------|------|----------------------------------------------------------|------------|------------------|---------------------|-------------|----------------|
|  | IPx4 | Splash water from all directions                         | ●          | ●                | ●                   | ●           | ●              |
|  | IPx5 | Jet water at any angle                                   | ●          | ●                | ●                   | ●           | ●              |
|  | IPx6 | Powerful jet water from any angle                        | ●          | ●                | ●                   | ●           | ●              |
|  | IPx7 | Submersion (1m, 30 min.)                                 | ●          | ●                | ●                   | –           | –              |
|  | IPx8 | Submersion at time and pressure >IPx7                    | ●          | ●                | ●                   | –           | –              |
|  | IPx9 | High pressure (up to 100 bar, 80°C) water from any angle | ●          | ● *              | ● *                 | ● *         | ● *            |

\* IEC 60529 can be fulfilled without WPS (Water impact protection ring). PMA recommends the use of the WPS ring for trouble free practical applications



PMA products offer complete protection!



Tested to 100 bar

## Technical annex

### Ingress protections according to IEC 60529

#### Dust

##### Protection against contact and penetration of foreign objects

Degree of protection  
(contact/foreign bodies)

|  |   |                                                                |
|--|---|----------------------------------------------------------------|
|  | 0 | No protection                                                  |
|  | 1 | Objects greater than 50mm Ø, accidental touch by hands         |
|  | 2 | Objects greater than 12.5mm Ø, accidental touch by fingers     |
|  | 3 | Objects greater than 2.5mm Ø, e.g. tools/wires                 |
|  | 4 | Objects greater than 1mm Ø, e.g. tools/wires                   |
|  | 5 | Protected against dust - limited ingress (no harmful deposits) |
|  | 6 | Totally protected against dust (dust-tight)                    |



#### Water

##### Protection against fluids

Degree of protection (water)

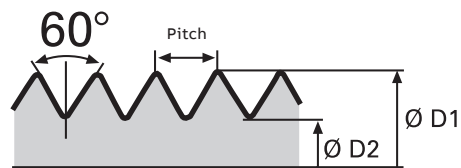
|  |   |                                                                                                                         |
|--|---|-------------------------------------------------------------------------------------------------------------------------|
|  | 0 | No protection                                                                                                           |
|  | 1 | Protected against vertically falling drops of water                                                                     |
|  | 2 | Protected against direct sprays of water 15° from vertical                                                              |
|  | 3 | Protected against sprays of water to 60° from vertical                                                                  |
|  | 4 | Protected against water sprayed from all directions - limited ingress permitted                                         |
|  | 5 | Protected against low pressure jets of water from all directions - limited ingress permitted                            |
|  | 6 | Protected against strong pressure jets of water, heavy seas - limited ingress permitted                                 |
|  | 7 | Protection against the effects of immersion between 15cm - 1m                                                           |
|  | 8 | Protection against long periods of immersion under a quoted pressure, e.g. 2 bar at 24 hours                            |
|  | 9 | IP69 Automotive standard DIN40050 and signifies resistance to high pressure jets of water (up to 80 bar) from any angle |

## Technical annex

### Table of thread dimensions

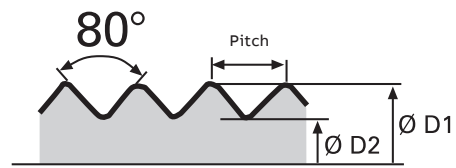
Metric fine thread - EN 60423

| Metric | Pitch<br>(mm) | Ø D1<br>(mm) | Ø D2<br>(mm) | Hole<br>-0/+0.3<br>(mm) |
|--------|---------------|--------------|--------------|-------------------------|
| 12     | 1.5           | 12           | 10.16        | 12.0                    |
| 16     | 1.5           | 16           | 14.16        | 16.0                    |
| 20     | 1.5           | 20           | 18.16        | 20.0                    |
| 25     | 1.5           | 25           | 23.16        | 25.0                    |
| 32     | 1.5           | 32           | 30.16        | 32.0                    |
| 40     | 1.5           | 40           | 38.16        | 40.0                    |
| 50     | 1.5           | 50           | 48.16        | 50.0                    |
| 63     | 1.5           | 63           | 61.16        | 63.0                    |



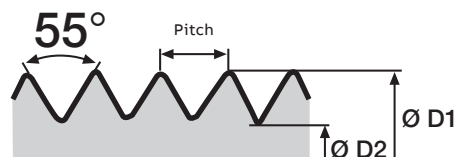
PG thread - DIN 40430

| PG | Pitch<br>(mm) | Ø D1<br>(mm) | Ø D2<br>(mm) | Hole<br>(mm) |
|----|---------------|--------------|--------------|--------------|
| 07 | 1.270         | 12.5         | 11.28        | 12.7         |
| 09 | 1.411         | 15.2         | 13.86        | 15.4         |
| 11 | 1.411         | 18.6         | 17.26        | 18.8         |
| 13 | 1.411         | 20.4         | 19.06        | 20.7         |
| 16 | 1.411         | 22.5         | 21.16        | 22.8         |
| 21 | 1.588         | 28.3         | 26.78        | 28.6         |
| 29 | 1.588         | 37.0         | 35.48        | 37.4         |
| 36 | 1.588         | 47.0         | 45.48        | 47.5         |
| 48 | 1.588         | 59.3         | 57.78        | 59.8         |



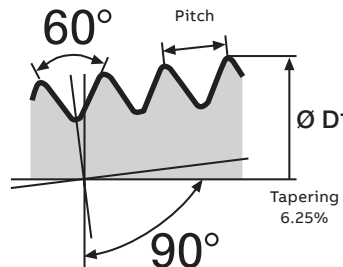
GAS pipe thread - DIN 259 Bl. 3, ISO 228/1

| GAS | Pitch<br>(mm) | Ø D1<br>(mm) | Ø D2<br>(mm) | Hole<br>(mm) |
|-----|---------------|--------------|--------------|--------------|
| ¼"  | 1.337         | 13.157       | 11.445       | 13.4         |
| ⅜"  | 1.337         | 16.662       | 14.950       | 17.0         |
| ½"  | 1.814         | 20.955       | 18.631       | 21.3         |
| ¾"  | 1.814         | 26.441       | 24.117       | 26.8         |
| 1"  | 2.309         | 33.249       | 30.291       | 33.7         |
| 1¼" | 2.309         | 41.910       | 38.952       | 42.4         |
| 1½" | 2.309         | 47.803       | 44.845       | 48.3         |
| 2"  | 2.309         | 59.614       | 56.656       | 60.2         |



American standard taper pipe thread - ANSI/ASME B 1.20

| NPT | Pitch<br>(mm) | Ø D1<br>(mm) | Hole D2<br>(mm) |
|-----|---------------|--------------|-----------------|
| ¼"  | 1.411         | 13.716       | 13.9            |
| ⅜"  | 1.411         | 17.145       | 17.4            |
| ½"  | 1.814         | 21.336       | 21.6            |
| ¾"  | 1.814         | 26.670       | 26.9            |
| 1"  | 2.209         | 33.401       | 33.7            |
| 1¼" | 2.209         | 42.164       | 42.4            |
| 1½" | 2.209         | 48.260       | 48.5            |
| 2"  | 2.209         | 60.325       | 60.6            |



## Technical annex

### Comparison table

#### Conduit

| Nominal width<br>NW |        |                       |
|---------------------|--------|-----------------------|
| Standard            | Metric | Inside Ø nom.<br>(mm) |
| 07                  | 10     | 6.2                   |
| 10                  | 12     | 9.6                   |
| 10                  | 12     | 9.6                   |
| 12                  | 16     | 12.0                  |
| 12                  | 16     | 12.0                  |
| 17                  | 20     | 16.2                  |
| 17                  | 20     | 16.2                  |
| 23                  | 25     | 22.6                  |
| 23                  | 25     | 22.6                  |
| 29                  | 32     | 29.0                  |
| 29                  | 32     | 29.0                  |
| 36                  | 40     | 36.5                  |
| 36                  | 40     | 36.5                  |
| 48                  | 50     | 47.5                  |
| 48                  | 50     | 47.5                  |

#### Connector metric

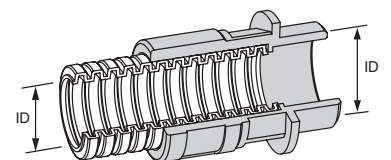
| Inside diameter<br>mm (nom.) ID |                 |                     |
|---------------------------------|-----------------|---------------------|
| Thread size                     | Metal<br>thread | Polyamide<br>thread |
| M12                             | –               | 8.0                 |
| M12                             | 5.7             | 8.0                 |
| M16                             | 9.6             | 11.0                |
| M16                             | 9.7             | 11.0                |
| M20                             | 13.5            | 13.0                |
| M20                             | 13.5            | 14.6                |
| M25                             | 18.3            | 19.0                |
| M25                             | 18.4            | 19.0                |
| M32                             | 24.2            | 24.0                |
| M32                             | 25.4            | 26.0                |
| M40                             | 31.4            | 32.0                |
| M40                             | 32.6            | 32.0                |
| M50                             | 39.5            | 39.0                |
| M50                             | 41.5            | 42.0                |
| M63                             | 51.4            | 53.0                |

#### Conduit

| Nominal width<br>NW |        |                       |
|---------------------|--------|-----------------------|
| Standard            | Metric | Inside Ø nom.<br>(mm) |
| 07                  | 10     | 6.2                   |
| 10                  | 12     | 9.6                   |
| 12                  | 16     | 12.0                  |
| –                   | –      | –                     |
| 17                  | 20     | 16.2                  |
| 23                  | 25     | 22.6                  |
| 29                  | 32     | 29.0                  |
| 36                  | 40     | 36.5                  |
| –                   | –      | –                     |
| 48                  | 50     | 47.5                  |

#### Connector PG

| Inside diameter<br>mm (nom.) ID |                 |                     |
|---------------------------------|-----------------|---------------------|
| Thread size                     | Metal<br>thread | Polyamide<br>thread |
| PG07                            | –               | 8.0                 |
| PG09                            | 9.5             | 10.0                |
| PG11                            | 12.5            | 13.0                |
| PG13.5                          | 14.5            | 14.5                |
| PG16                            | 16.5            | 17.5                |
| PG21                            | 22.0            | 22.5                |
| PG29                            | 30.0            | 30.5                |
| PG36                            | 40.0            | 37.5                |
| PG42                            | –               | 46.0                |
| PG48                            | 49.5            | 50.0                |



Inside diameter threads to inside diameter conduits.



Technical annex

Tightening torques

Recommended tightening torques for PMA fittings - For threaded bore holes and with lock nuts

| Thread | Metal*<br>[Nm] | Polyamide**<br>[Nm] |
|--------|----------------|---------------------|
| M12    | 4.0            | 1.5                 |
| M16    | 4.0            | 3.0                 |
| M20    | 6.0            | 4.0                 |
| M25    | 8.0            | 6.0                 |
| M32    | 10.0           | 8.0                 |
| M40    | 15.0           | 9.0                 |
| M50    | 15.0           | 10.0                |
| M63    | 15.0           | 10.0                |

\* Thread combination: Metal + metal  
\*\* Thread combination: Metal + polyamide or polyamide + polyamide

| Thread | Metal*<br>[Nm] | Polyamide<br>[Nm] |
|--------|----------------|-------------------|
| PG07   | 3.5            | 1.5               |
| PG09   | 4.0            | 1.5               |
| PG11   | 6.0            | 2.0               |
| PG13.5 | 6.0            | 2.5               |
| PG16   | 7.0            | 4.0               |
| PG21   | 8.0            | 5.0               |
| PG29   | 10.0           | 9.0               |
| PG36   | 15.0           | 15.0              |
| PG48   | 15.0           | 15.0              |

Strain relief fittings - According to EN 50262

| Thread | Metal<br>NVNZ-Mxxxx<br>NKNZ-Mxxxx<br>[Nm] EN | Metal<br>NVNZ-Mxxxx/P<br>NKNZ-Mxxxx/P<br>[Nm] | Polyamide<br>S/BVNZ-Mxxxx<br>[Nm] EN |
|--------|----------------------------------------------|-----------------------------------------------|--------------------------------------|
| M12    | 5.0                                          | 6.0                                           | 0.9                                  |
| M16    | 5.0                                          | 8.0                                           | 3.0                                  |
| M20    | 7.5                                          | 10.0                                          | 4.0                                  |
| M25    | 10.0                                         | 10.0                                          | 7.5                                  |
| M32    | 15.0                                         | 15.0                                          | 10.0                                 |
| M40    | 20.0                                         | 20.0                                          | 10.0                                 |
| M50    | 20.0                                         | 20.0                                          | 10.0                                 |
| M63    | 20.0                                         | 20.0                                          | 10.0                                 |

**Note:** These values were gauged at standard climate (23°C/50% relative humidity)

According to DIN VDE 0619

| Thread | Metal<br>NVNZ-Pxxxx<br>[Nm] | Metal<br>NVNZ-Pxxxx/P<br>[Nm] | Polyamide<br>S/BVNZ-Pxxxx<br>[Nm] |
|--------|-----------------------------|-------------------------------|-----------------------------------|
| PG07   | 6.25                        | 6.0                           | 2.5                               |
| PG09   | 6.25                        | 8.0                           | 3.75                              |
| PG11   | 6.25                        | 10.0                          | 3.75                              |
| PG13.5 | 6.25                        | 10.0                          | 3.75                              |
| PG16   | 7.5                         | 10.0                          | 5.0                               |
| PG21   | 10.0                        | 15.0                          | 7.5                               |
| PG29   | 10.0                        | 20.0                          | 7.5                               |
| PG36   | 10.0                        | 30.0                          | 7.5                               |
| PG48   | 10.0                        | 40.0                          | 7.5                               |

## Technical annex

### Applications engineering information

#### Fill factor, relevant guidelines

The question of conduit capacity or fill factor arises in the use of cable protection systems. This describes the extent to which a conduit can or should be filled with cables and/or conductors based on the available cross-sectional area.

In all cases, PMA recommends that a conduit **capacity of 70%** not be exceeded. (Application-specific procedures and standards must also be considered.)

This ensures that operation is not unnecessarily impaired by increased friction between the individual conductors in dynamically moving systems. In addition, subsequent installation of additional conductors and/or cables is also possible if necessary.

#### Wiring installation: fixation

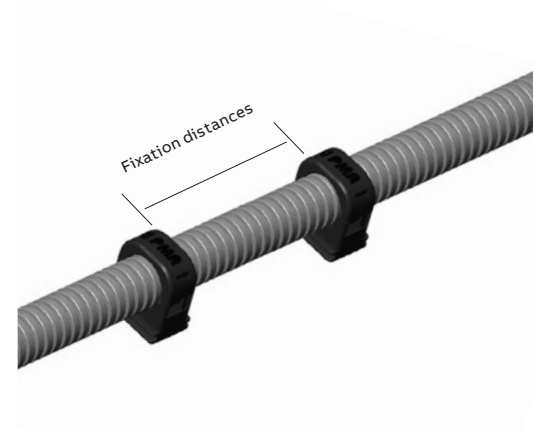
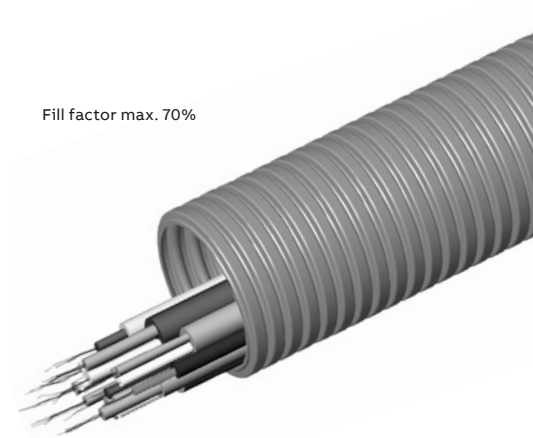
PMA AG recommends that cable protection systems be fastened with a spacing of **300mm to 500mm** between supports. This spacing can be varied depending on the application and location. This recommendation applies for all available dimensions. For larger diameters, the increased load due to the cables and conductors in the conduit is accounted for by adherence to the support spacing. PMA supplies suitable system supports for various strength requirements and applications.

European standard **EN 50343:2003-5.15** "Railway applications – Rolling stock – Rules for installation of cabling" specifies the following spacing between supports for fastening conductors:

**Horizontal wiring: 300mm**

**Vertical wiring: 500mm**

(Application specific guidelines and standards should also be considered.)



## Technical annex

### Chemical resistance

Chemical resistance comparison table

| Resistance against      | Chemical formula | PA6, Polyamide 6<br>PA6.6, Polyamide 6.6 | PA12, Polyamide 12<br>PA11, Polyamide 11 | PP, Polypropylene<br>PE, Polyethylene | TPU | PFA<br>PVDF |
|-------------------------|------------------|------------------------------------------|------------------------------------------|---------------------------------------|-----|-------------|
| Acetic acid (10%)       | C2H4O2           | 1                                        | 2                                        | 3                                     | 0   | 3           |
| Acetone                 | C3H6O            | 3                                        | 3                                        | 3                                     | 0   | 3           |
| Ammonia (30%)           | NH3              | 3                                        | 3                                        | 3                                     | 0   | 3           |
| Benzine                 | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |
| Brake fluid             | –                | 3                                        | 3                                        | 3                                     | 0   | 3           |
| Caustic soda            | NaOH             | 3                                        | 3                                        | 3                                     | 1   | 3           |
| Ethyl alcohol (40%)     | C2H6O            | 3                                        | 3                                        | 3                                     | 1   | 3           |
| Glycol                  | C2H6O2           | 3                                        | 3                                        | 3                                     | 0   | 3           |
| Hydrochloric acid (10%) | HCL              | 0                                        | 1                                        | 3                                     | 0   | 3           |
| Methanol                | CH4O             | 2                                        | 3                                        | 3                                     | 1   | 3           |
| Methyl ethyl ketone     | C4H8O            | 3                                        | 3                                        | 3                                     | 0   | 3           |
| Nitric acid (10%)       | HNO3             | 0                                        | 0                                        | 2                                     | 0   | 3           |
| Ozone                   | O3               | 2                                        | 2                                        | 2                                     | 1   | 3           |
| Paint thinner           | –                | 3                                        | 3                                        | 1                                     | 0   | 3           |
| Perchlorethylene        | C2Cl4            | 2                                        | 2                                        | 2                                     | 0   | 3           |
| Paraffin                | –                | 3                                        | 3                                        | 1                                     | 0   | 3           |
| Phosphoric acid (10%)   | H3O4P            | 1                                        | 2                                        | 3                                     | 0   | 3           |
| Sea water               | –                | 3                                        | 3                                        | 3                                     | 2   | 3           |
| Soap solution           | –                | 3                                        | 3                                        | 3                                     | 2   | 3           |
| Sodium chloride         | NaCl             | 3                                        | 3                                        | 3                                     | 3   | 3           |
| Sulphuric acid (10%)    | H2SO4            | 1                                        | 2                                        | 3                                     | 0   | 3           |
| Toluene                 | C7H8             | 3                                        | 3                                        | 1                                     | 0   | 3           |
| Trichlorethylene        | C2HCl3           | 1                                        | 2                                        | 0                                     | 0   | 3           |
| Turpentine              | –                | 3                                        | 3                                        | 0                                     | 0   | 3           |
| Urine                   | –                | 3                                        | 3                                        | 3                                     | 3   | 3           |

| Resistance against oils and greases | Chemical formula | PA6, Polyamide 6<br>PA6.6, Polyamide 6.6 | PA12, Polyamide 12<br>PA11, Polyamide 11 | PP, Polypropylene<br>PE, Polyethylene | TPU | PFA<br>PVDF |
|-------------------------------------|------------------|------------------------------------------|------------------------------------------|---------------------------------------|-----|-------------|
| Cutting oils*                       | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |
| Diesel oil                          | –                | 3                                        | 3                                        | 2                                     | 2   | 3           |
| ASTM Oil Nr. 3                      | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |
| Fuel oil                            | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |
| Hydraulic oils*                     | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |
| Mineral oils                        | –                | 3                                        | 3                                        | 2                                     | 3   | 3           |
| Spark-erosion liquids               | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |
| Skydrol                             | –                | 1                                        | 2                                        | 2                                     | 0   | 3           |
| Transformer oils*                   | –                | 3                                        | 3                                        | 2                                     | 1   | 3           |

\*Synthetic additives can affect the oil resistance of plastics. Please contact PMA for further information

#### Key:

3 = Excellent resistance/suitable for permanent contact  
 2 = Resistant/suitable for occasional contact  
 1 = Relatively resistant/suitable for short-term contact  
 0 = Not recommended

#### Important

The chemical resistance of plastic products is also dependant on factors such as temperature, amount of time exposed to chemicals (e.g. occasional contact or immersed) as well as the concentration of the specific chemicals. The stated chemical resistances are valid for a temperature of 20°C. The chemical resistance table above serves only as a guide for the use of polyamide products in conjunction with the listed chemicals. Each specific application should be controlled for suitability by the end-user.

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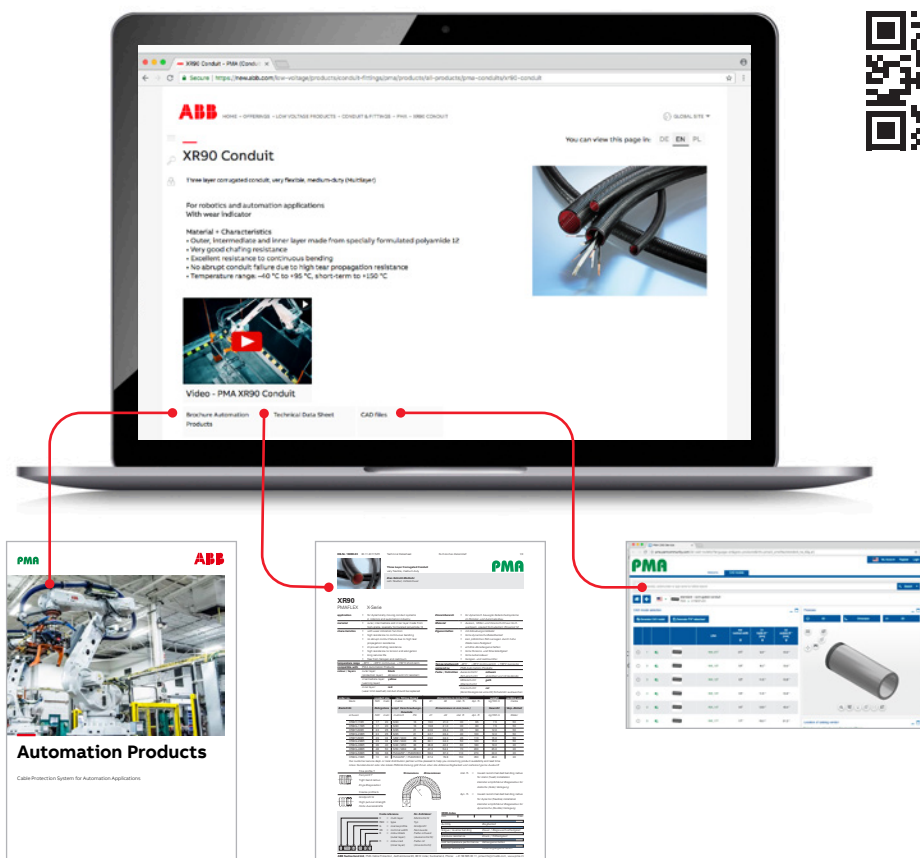
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