

INDUSTRY BROCHURE

Installation Products

E-mobility industry - USA



Installation Products Division
for e-mobility industry:

- Wire and cable management
- Cable protection systems
- Connectivity and grounding

ABB Installation Products Division, formerly Thomas & Betts, has a long legacy of innovation and quality products. From connectors that support electrical wiring on Earth to cable ties that help put machines in space, we work every day to design and produce solutions for a safer, smarter and more reliable flow of electricity. Wherever electricity is used, our products connect and protect from source to socket.

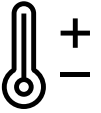
Leading the future

to zero emission mobility

Emission-free public transportation, such as electric buses and light rail, improve local air quality and reduce noise pollution. Transitioning to an electric vehicle fleet, however, can present new challenges, especially regarding choosing the right infrastructure to support the fleet's operational needs. ABB can help you address these challenges with smart technologies that are quickly deployable and help to support in continuous operations.



GROUNDING & BONDING



EXTREME TEMPERATURE



SAFETY



CONTINUOUS OPERATION



EFFICIENCY



CORROSIVE & HARSH ENV.

ABB Installation Products Division

Solutions for e-mobility

From original design and manufacturing excellence to world-class service, the ABB Installation Products division meets the demands of rapidly changing industries with value-added solutions. That's why we are one of the world's largest providers of electrical components.

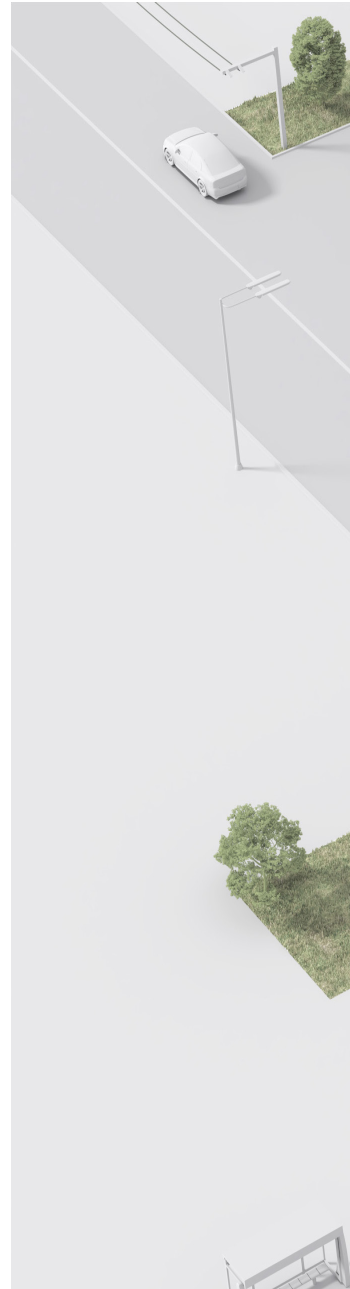
Our pioneer brands in cable protection, wire cable management, connectivity and grounding offer you state-of-the-art materials and the latest technologies for e-mobility, fleet bus charging and powering light rail.

Blackburn® ***Carlton®*** ***Color-Keyed®***

Harnessflex
SPECIALIST CONDUIT SYSTEMS

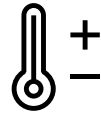
Ocal® ***PMA*** ***Sta-Kon®*** ***Ty-Rap®***

T&B® Fittings ***T&B Liquidtight Systems®***





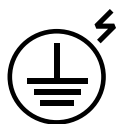
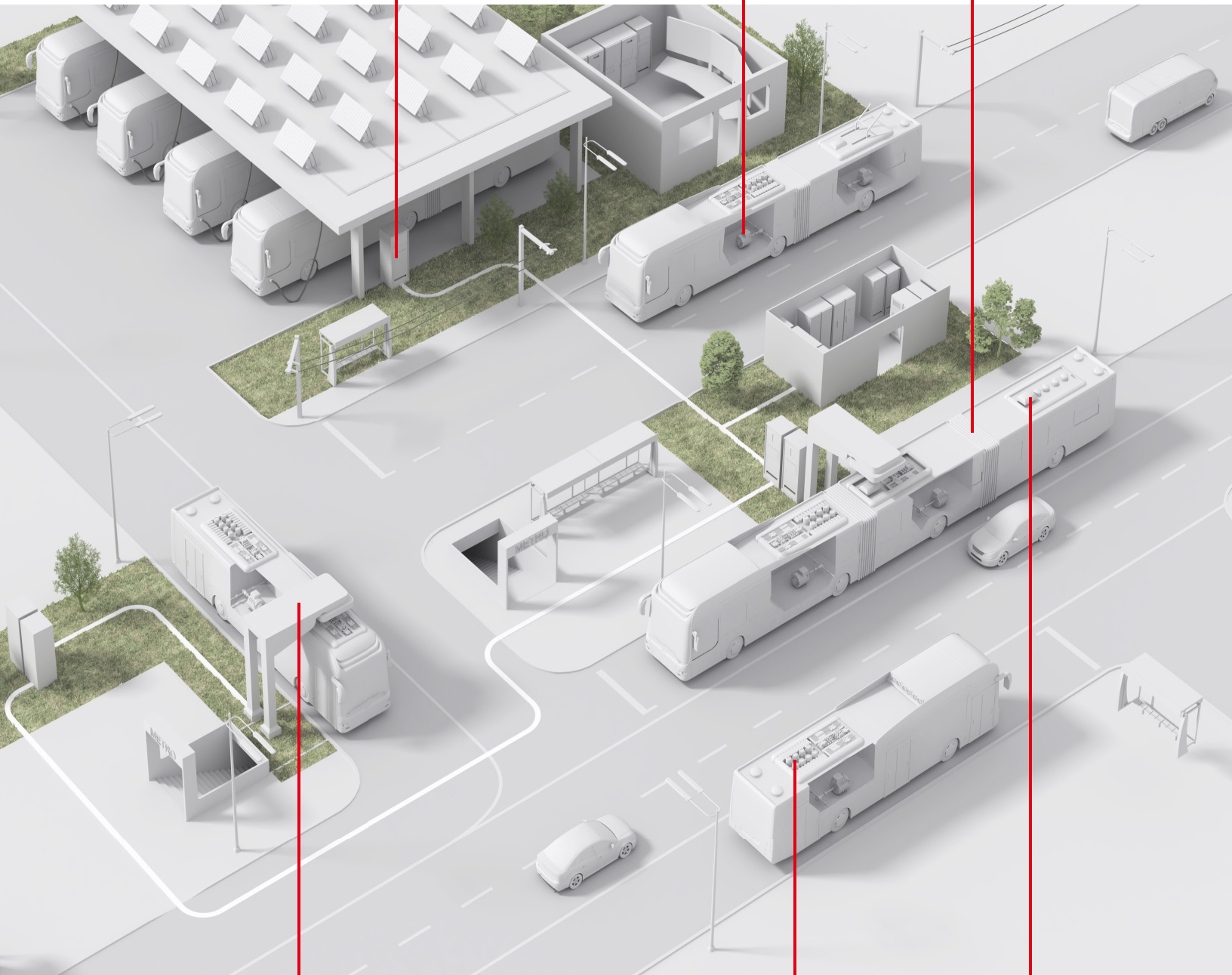
Safety



**Extreme temperature
protection**



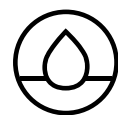
**Continuous
operation**



**Grounding &
bonding**



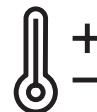
Efficiency



**Corrosive and harsh
environment protection**

Product selection guide for e-mobility

Product selection guide



Product description	Grounding & bonding	Extreme temperature protection
Blackburn® connectors		
Mechanical connectors	•	–
E-Z-Ground™ compression, mechanical and exothermic grounding systems	•	–
Carlon® nonmetallic PVC elbows		
Elbow for concrete pads 'Stub-Ups', PVC conduit repair system	–	–
Color-Keyed® compression system		
Compression lugs and splices	•	–
Ergonomic compression tools	–	–
Harnessflex® conduit systems		
EVO™ (Electric Vehicle Orange) conduit	–	•
Ocal® conduits and fittings		
Ocal-Blue® Double-coat conduit bodies	–	–
PMA® conduits and fittings		
PMA® XVCSF multilayer conduit	–	•
PMA® PHT PMAFlex Pro conduit	–	•
PMA® Fire barrier adapter	–	•
PMA® VAML conduit	–	•
PMA® PMAFIX IP66 fittings	–	–
PMA® XPCS multilayer conduit	–	–
PMA® BFH-0 system support	–	–
PMA® DIVISIBLE system	–	–
PMA® PMAFIX Pro fittings	–	–
Sta-Kon® wire terminals		
Crimped wire termination systems	–	–
Ergonomic compression tools	–	–
Shield-Kon® grounding connectors	•	–
Ferrules and installation tools kit	–	–
T&B® Fittings: conduits and fittings		
T&B® Hub	•	–
Blackjack® grounding bushings for threaded or threadless rigid conduit or IMC	•	–
BlueKote® conduit bodies	–	–
Ranger® and Black Beauty® cord and cable fittings	–	–
T&B Liquidtight Systems® conduits and fittings		
Steel, stainless steel, and aluminum liquidtight fittings	–	•
Liquidtight flexible metal conduit	–	•
Revolver® liquidtight grounding fittings and bonding locknuts	•	–
Ty-Rap® high performance cable ties		
Heat stabilized, polyamide 6.6 cable ties	–	•
Impact + UV resistance + heat stabilized, polyamide 6.6 cable ties	–	•
Flame retardant, EN 45545-2 certified, polyamide 6.6	–	–
UV-resistant - EN 45545-2 certified, polyamide 6.6	–	–
High UV resistant, extreme outdoor, polyamide 12	–	–



Safety	Continuous operation & sustainability	Efficiency	Corrosive & harsh environment protection
•	–	•	–
•	–	•	–
–	–	•	–
–	•	•	–
–	•	–	–
•	–	–	•
–	•	–	•
•	•	–	•
•	•	–	•
•	–	–	–
•	•	–	–
–	•	–	–
–	•	–	–
–	–	•	–
–	–	–	•
•	–	–	–
•	–	–	–
–	–	–	–
–	–	•	–
–	•	–	–
–	–	•	–
–	•	–	•
–	–	–	•
–	•	–	–
–	–	–	•
–	–	–	–
•	–	–	–
•	–	–	–
–	–	–	•

Blackburn®

Carlon®

Color-Keyed®

Harnessflex
SPECIALIST CONDUIT SYSTEMS

Ocal®

PMA

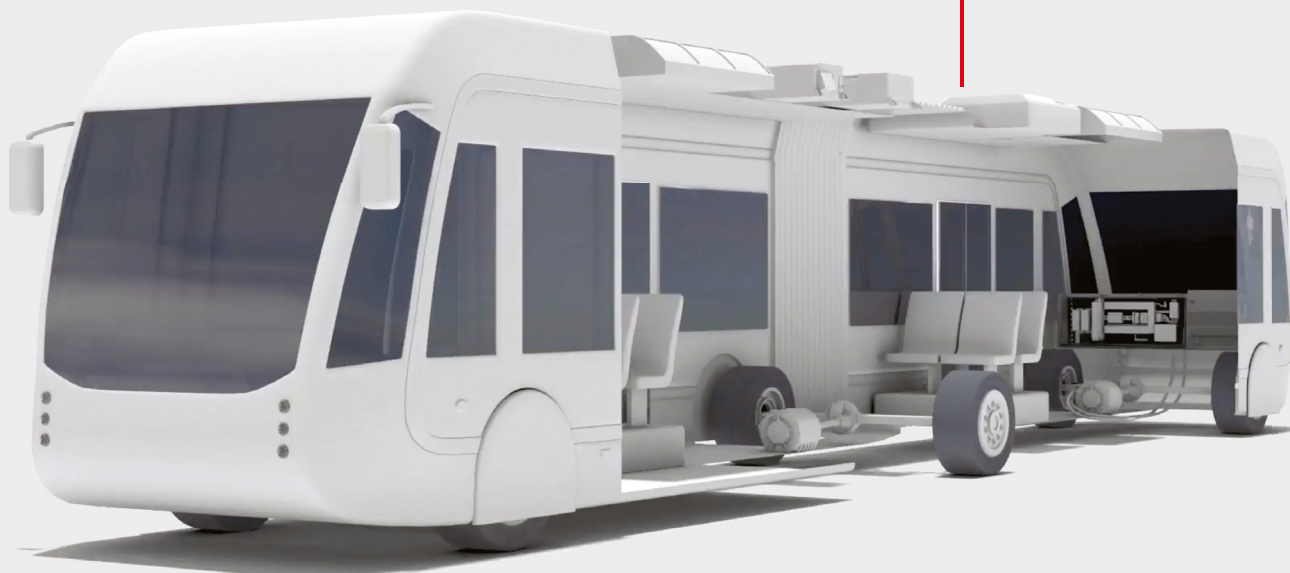
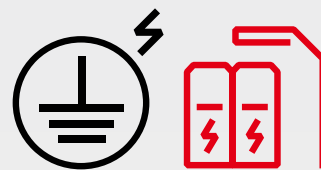
Sta-Kon®

T&B® Fittings

T&B Liquidtight Systems®

Ty-Rap®

Grounding & bonding



Color-Keyed® compression system

Compression lugs and splices

Color-Keyed®



Reliable installations
through compression
connections

The **Color-Keyed®** compression system ensures a proper crimp onto the conductor by matching the right connector to the right tool and die, using a color-coding system that was developed and introduced to the industry by ABB Thomas & Betts.

When using the Color-Keyed® compression system with our Blackburn® line of compression connectors, the installer can count on a reliable, high-quality connection.

- **Stranded Wire Termination:** The precision hardened steel dies used by the Color-Keyed® system exert tremendous, controlled pressure on the connector and form the strands and connector into a solid mass.
- **Verifiable and Inspectable:** A die code embossed onto the Color-Keyed® connector during compression makes it easy for inspectors to compare the finished crimp with the die table to verify correct termination.
- **Shure-Stake® Crimp Mechanism:** The Shure-Stake crimp mechanism eliminates guesswork and produces proper terminations every time.

CATALOG



Approvals:



Blackburn® connectors

Mechanical connectors

Blackburn®

Providing a robust and reliable connection

CATALOG



Approvals:



Blackburn® cast, forged or formed mechanical connections, produced in economical copper and dual-rated aluminum, provide a large variety of UL® and CSA® certified solutions for your electrical interface needs.

- **Rugged Split Bolts:** By design, our Blackburn split bolts create a stronger and more resilient installation in both aluminum and copper options.



EZGround™ system

Compression grounding connectors

Blackburn®

A safe alternative to exothermic welding products with less SKUs

CATALOG

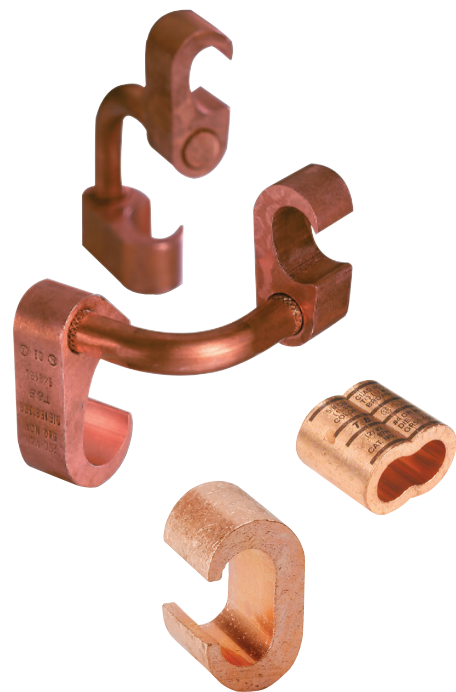


Approvals:



EZGround™ compression grounding connectors are designed for direct burial and offer a safe, efficient alternative to exothermic welding products.

- These **range-taking** products will reduce the number of connectors and dies needed for your installation.
- **Meets all applicable standards:** (IEEE 837, UL® 467, CSA 22.2). Connectors are prefilled with oxide inhibitor and sealed.



Revolver liquidtight grounding

Externally grounded fitting

T&B Liquidtight Systems®

Rotating in a full circle for convenient installing

The **Revolver** liquidtight grounding fitting is our latest breakthrough in convenience to save time and money on the job while delivering a quality connection.



CATALOG



Approvals:



- **The grounding lug** of the new Revolver® connector can be rotated in a full circle for convenient positioning that doesn't change when you tighten it. Plus, it's available for the first time in aluminum.

- It's the **newest innovation** in ABB's versatile line of liquidtight connectors: fittings you can count on for liquid-tight and dust-tight connections, because our products are designed for your needs.

Blackjack®

Grounding bushings

T&B® Fittings

No need to thread the bushing on the conduit. Simply put in place

Secure grip forms lasting bond

The Blackjack bushing's cone-point mounting screw bites securely into both threaded and non-threaded rigid conduits. The Blackjack bushing's nylon locking patch is designed to prevent the screw from loosening due to vibration.

Innovative design makes installation

quicker, easier: The Blackjack grounding bushing does not need to be threaded onto a conduit. It is simply placed in position on either a threaded or non-threaded rigid or IMC conduit, with the grounding lug in perfect position to accept the grounding wire – even in tight installations.



CATALOG



Approvals:



- **Grounding and bonding:** Lug is integral to the body for peace of mind that your bond and ground are good.
- **Ease of installation:** No need to thread the bushing on the conduit. Simply put it in place.
- **Stainless steel** hardware vs. galvanized screws for corrosion resistance.
- The **insulator** is dipped like a donut. **Round edges** produce an easy glide which helps to reduce the risk of skinning the wires.

T&B Hub

Grounded hub

T&B® Fittings

Unique sealing ring and groove design for optimum performance

CATALOG



Approvals:



The innovative engineering of the **T&B Hub** provides optimum performance when connecting rigid conduit to an enclosure:

- **Captive sealing ring** won't buckle or slip during installation and provides a complete **360° seal** – even when conduit isn't perpendicular to the enclosure.
- **Hexagonal / splined** body and locknut enable fast and easy installation.



- **Locknut with peripheral slots** and a hexagonal / angled spline spaced every 30° enables easy application of torque with wrench or hammer and screwdriver. Threaded holes enable grounding connections.
- **Insulated throat** molded from 221°F (+105°C) rated thermoplastic, UL94V0 flammability rated.
- **Sharper** and deeper teeth provide a more penetrating bite for improved bonding to the enclosure.
- **Precision machined tapered threads** help ensure a watertight union.

Sta-Kon® Wire terminals

Shield-Kon® grounding connectors

Sta-Kon®

Terminate shielded cable in seconds without heat or power

CATALOG



Approvals:



Sta-Kon® Shield-Kon® grounding connectors provide a crimping technique for shield termination on shielded cables, with proven reliability that has led to a specification for the aeronautical and space technology industry and for military applications (MIL-F-21608).

Two solutions:

- The one-piece Shield-Kon® connector is wrapped around the shield during the crimping process.
- The two-piece Shield-Kon® connector consists of two sleeves, between which the shielded braid and the drain wire are compressed.



- **One- and two-piece** coaxial connectors for grounding
- **Save time** and can help reduce assembly costs
- **Safe monitoring** and simple operation
- **Low profile** and compact

Extreme temperature protection



T&B Liquidtight Systems® Metallic liquidtight fittings

T&B Liquidtight Systems®

Steel, stainless steel,
and aluminum liquidtight
fittings designed for
extreme temperatures



The **T&B Liquidtight Systems®** portfolio provides one of the widest and most complete range of liquidtight flexible metallic conduit solutions for wide and extreme temperature applications, from -76°F to +302°F.

Careful **material selection** and **testing** is key to providing a reliable cable protection system that meets the highest performance under extreme temperature conditions. Typically, wide and extreme temperature solutions in the market have only been focused on the conduits.

- **Solutions for extreme temperatures**
With T&B Liquidtight Systems fittings, all component parts, including liquidtight fittings and seal gaskets, are designed and tested at extreme temperatures to ensure reliable performance over the life of the installation.
- **T&B product lines:**
 - Types LTTU, LTTE, LTXE, LT6XE
 - Series 5300-HT high temperature
 - Series 5260 and 5260-HT versions
 - Series H1 and H9
 - Series WMG

CATALOG



Approvals:



T&B Liquidtight Systems®

Liquidtight flexible metal conduit

T&B Liquidtight Systems®



All component parts are tested for wide and extreme temperatures

High heat and extreme cold can attack and destroy unprotected connections in outdoor installations. **T&B Liquidtight wide temperature range** conduit and fittings remain flexible and sealed in temperatures as extreme as -76°F to +302°F.

- **Conduit:**
 - LTTU Wide Temp, UL Listed
 - LTTE Wide Temp, CE certification
 - LTXE Extreme Temp, CE certification
 - LT6XE Extreme Temp, SST
- **Fittings:**
 - Series 5300 Steel
 - Series 5300-HT High Temperature
 - Series 5300SST6HT Stainless Steel High Temperature

SEE MORE

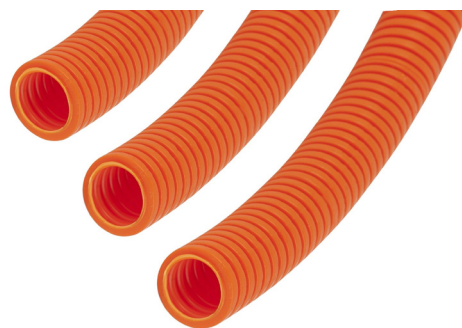
Approvals:



Harnessflex® conduit systems

EVO™ (Electric Vehicle Orange) conduit

Harnessflex
SPECIALIST CONDUIT SYSTEMS



Flame retardant conduit for extreme EV temperatures

Harnessflex EVO™ (Electric Vehicle Orange) conduit is flexible nylon (PA6) conduit suitable for electric vehicle applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and high fatigue life.

- **Excellent** high and low temperature properties
- **High** level of flame retardancy
- **High** flexibility and fatigue life
- **Very high** abrasion, impact and shock resistance
- Temperature range: -40°F to 248°F (-40°C to +120°C)
- Temperature range short-term: 302°F (+150°C)
- UV Resistance: Medium
- **IP40 - IP68:** (2 bar 30 mins) depending on fittings
- **Available colors:** Orange (RAL2003)
- Self extinguishing, low smoke toxicity and halogen free
- Available in slit variants

SEE MORE

Approvals:



PMA® XVCSF multilayer conduit

Flexible, heavy-duty

PMA



SEE MORE



Approvals:



High compression and impact strengths at low temperature and humidity

The **XVCSF multilayer conduit** for external applications is suitable for Rail static external applications, including under carriage, bogie, etc. This flexible conduit provides high compression and impact strength at low temperatures and low humidity, EN 45545-2 HL2 (R22 & R23).

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

Applications: Static external applications on railway vehicles:

- **On bogies and undercarriage:** Excellent resistance to impact at low temperatures
- **Outer layer:** specially formulated polyamide 6
- **Inner layer:** specially modified polyamide 6
- **Good flexibility**
- **High** compression and impact strengths at low temperature and low humidity
- **Temperature range:** -58°F to 221°F (-50°C to +105°C) continuous, 320°F (+160°C) short-term
- **All PMA products** are CE, REACH and RoHS compliant



PMA® PHT PMAFlex Pro conduit

Highly flexible, medium / heavy-duty

PMA

For dynamic applications in high and very low temperatures down to -58°F

SEE MORE



Approvals:



The **PHT PMAFlex Pro conduit** is suitable for applications at high or very low temperatures and dynamic applications. Performs well at low temperatures, with a specially formulated polyamide elastomer, it offers excellent flexibility and high compression strength. With an enhanced temperature range compared to standard polyamides, it provides high resistance to ultra violet rays and weathering.

Compatible with: PMAFIX Pro, PMAFIX, PMA Smart Line, especially the metal fitting type MPNK.

- **High-grade**, specially formulated polyamide elastomer characteristics
- **High resistance** to ultra violet rays and atmospheric corrosion
- **Excellent** flexibility and high compression strength
- **Extremely good** impact resistance at very low temperatures
- **Enhanced** temperature range compared to standard polyamides
- **Free** from halogens and cadmium
- **Temperature range:** -58°F to 275°F (-50°C to +135°C) continuous, 356°F (+180°C) short-term
- **All PMA products** are CE, REACH and RoHS compliant

Ty-Rap® high performance cable ties

Heat stabilized

Ty-Rap®

Heat stabilized for applications up to 221°F



Ty-Rap® heat stabilized, polyamide 6.6, high performance cable ties for applications up to 221°F.

- **Material - Molding:** Polyamide 6.6
- **Material - Locking barb:** 316 grade stainless steel
- **Temperature range:** -76°F to 221°F (+60°C to +105°C)
- **Min. Installation Temp.:** -22°F (-30°C)
- **Color:** Natural (may have a greenish tint)
- **Flammability rating:** UL 94 V-2
- **Other properties:** Halogen free, silicone free
- **Tooling:** ERG-50, ERG-120

CATALOG

Approvals:



Ty-Rap® high performance cable ties

Impact & UV resistance + heat stabilized

Ty-Rap®

For outdoor applications that require resistance to high temperatures up to 221°F



Ty-Rap® heat stabilized, polyamide 6.6, high performance cable ties for outdoor applications that also require a resistance to high temperature 221°F.

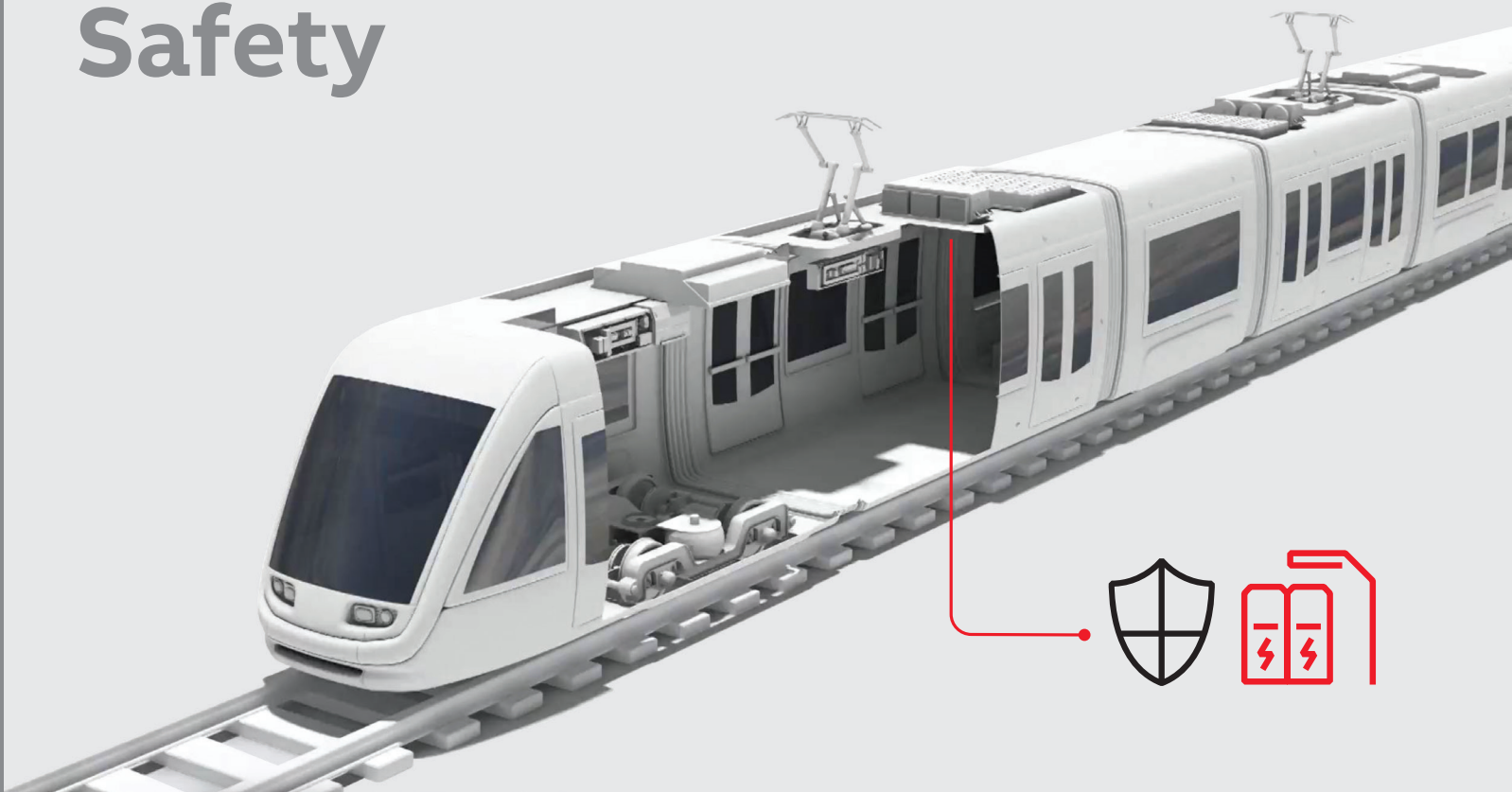
- **Material - Molding:** Polyamide 6.6
- **Material - Locking barb:** 316 grade stainless steel
- **Temperature range:** -76°F to 221°F (+60°C to +105°C)
- **Min. Installation Temp.:** -40°C (-40°F)
- **Color:** Black
- **Flammability rating:** UL 94 V-2
- **Other properties:** UV-resistant, heat stabilized, halogen free, silicone free
- **Tooling:** ERG-50, ERG-120

CATALOG

Approvals:



Safety

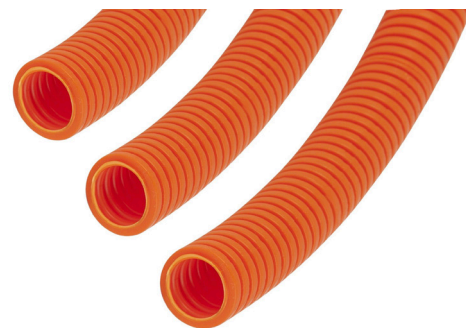


Harnessflex® conduit systems EVO™ (Electric Vehicle Orange) conduit

Harnessflex
SPECIALIST CONDUIT SYSTEMS

Low smoke, low toxicity,
flame retardant conduit
for EV harnesses

Harnessflex EVO™ (Electric Vehicle Orange) conduit is a flexible nylon (PA6) conduit suitable for electric vehicle applications. It is able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and high fatigue life.



- **High** flexibility & fatigue life
- **Very high** abrasion, impact and shock resistance
- Temperature range: -40°F to 248°F (-40°C to +120°C)
- Temperature range short-term: 302°F (+150°C)
- UV Resistance: Medium
- **IP40 - IP68:** (2 bar 30 mins) depending on fittings
- **Available colors:** Orange (RAL2003)
- Self extinguishing, low smoke toxicity and halogen free
- Available in slit variants

SEE MORE

Approvals:



Blackburn® connectors

Mechanical connectors

Blackburn®

Providing a robust and reliable connection

CATALOG



Approvals:



Blackburn® connectors are cast, forged or formed mechanical connections, produced in economical copper and dual-rated aluminum, provide unequalled variety with a large variety of UL® and CSA® certified solutions for your electrical interface needs.

- **Rugged Split Bolts:** By design, our Blackburn split bolts are among the toughest in the industry to create a stronger and more resilient installation in both aluminum and copper options.



EZGround™ system

Compression grounding connectors

Blackburn®

A code-approved alternative to welded ground grid connections

CATALOG



Approvals:

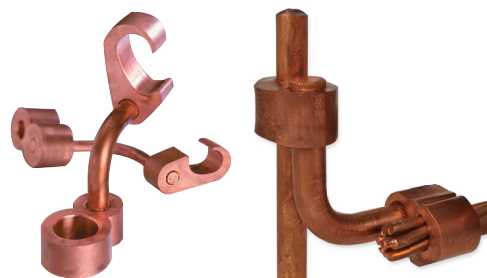


EZGround™ connectors provide reliable installations through compression connections:

- The ABB method, utilizing compression tools with matching dies, forms the connector and conductor into a solid, homogeneous mass to provide an optimum electrical bond between connector and conductor.
- The **dies** are designed to produce a circumferential, hex-shaped compression rather than a simple indent.
- The **circumferential compression** creates a large area of high-pressure contact between cable and connector which, in turn, ensures high conductivity, low resistance and high pull-out values.

Meets all applicable specifications

- ABB's grid and ground rod connectors satisfy the requirements of NEC® Article 250 for connecting to the grounding electrode system. They also meet the requirements of UL® Std. 467, UL Std. 486, CSA Std. C22.2 No. 41 and CSA Std. C22.2 No. 65 being acceptable as grounding and bonding equipment suitable for direct burial.
- Grid and ground rod connectors also satisfy the recommended practice for the selection of grounding connector joints described in the IEEE 837 standard for qualifying permanent connections used in substation grounding.



Sta-Kon® wire terminals

Crimped wire termination systems

Sta-Kon®

More copper and a wider funnel for a premium connection with less work

CATALOG



Approvals:



Sta-Kon® wire termination provides connection and control for wire termination and insulation.

- **Metal insulation** grip sleeve is included on all-nylon terminal for strain relief
- **Long barrel** selectively annealed
- **UL® listed** E9809 unless otherwise specified
- **Deep** internal serrations
- **Funneled** terminal barrel entry
- Sta-Kon® **long barrel** design



• **Shielded Wire Terminations:**

Sta-Kon® one-piece solderless, wrap-around shield connectors terminate shielded cable in seconds with uniform precision while preventing cable damage that may be caused by soldering.

Sta-Kon® compression tools

Ergonomic compression tools

Sta-Kon®

Create a reliable and consistent crimp with the Shure-Stake™ crimp mechanism

CATALOG



Approvals:



Sta-Kon® ergonomic compression tools providing quality tooling with the Shure Stake® crimp mechanism.

- ABB manual tools with the exclusive **Shure Stake®** mechanism take the guesswork out of making compression connections.
- The Shure Stake® mechanism provides a **full cycle compression** stroke every time. Once the stroke has started, the tool will not release the connector until the proper amount of force has been applied. This is assurance of a fully compressed connection.



- ABB compression tools develop uniform, controlled pressure to each connector within their size range. ABB offers electric and battery-powered hydraulic pumps with a Shure Stake feature that helps ensure a full cycle compression.

PMA® fire-barrier solutions

Fire barrier adapter

PMA



Fire safety in trains for up to 30 minutes according to EN 45545-3

SEE MORE

Approvals:



The unique **PMA® fire barrier adapters** allow termination of a cable protection system to a fire wall. The adapter uses intumescent material to seal all cavities in the event of a fire and can be attached directly to the fire wall. It ensures that cables and wires can be fed through the fire barrier while retaining an E30 rating and above according to EN 45545-3.

These adapters can be adapted to any wall structure (E30) in accordance with EN 45545-3. The intumescent material is fixed within the adapter to block the transport of fire, heat and fumes.

In the event of a fire, the intumescent material ensures that two areas remain separated from each other for at least 30 minutes (E30) in accordance with EN 45545-3. The material is expanding to fill the cavities between the cables within the adapter. Intumescent materials (typically sodium silicate or graphite) swell as a result of heat exposure to many times their original volume.

The PMA adapters use this material effectively to seal cavities preventing heat, fire and gases from passing through.

PMA® VAML conduit

Flexible, medium-grade

PMA



For fire safety applications in the passenger zone of rail vehicles

SEE MORE

Approvals:



PMA® VAML conduit 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. This conduit is made from specially formulated polyamide 6, providing the highest fire safety specification with outstanding self-extinguishing characteristics.

Compatible with: PMAFIX Pro, PMAFIX fittings, PMAGRIP flange and PMA accessories.

- **Good** flexibility
- **Good** impact resistance
- **Very good** compression strength
- **Minimal** development of smoke and gases
- **Free** from halogens
- **Temperature range:** -40°F to 221°F (-40°C to +105°C), short-term to 320°F (+160°C)
- **Conforms to:** EN 45545 HL3 (R22 & R23), NFPA 130
- **Weathering resistance:** Very good UV resistance and weathering characteristics, particularly in black
- **All PMA products** are CE, REACH and RoHS compliant

Ty-Rap® high performance cable ties for railways

Flame retardant - EN 45545-2 certified

Ty-Rap®



Flame retardant,
UL 94 V-0 from -4°F
to 149°F

SEE MORE

Approvals:



Ty-Rap® flame retardant, polyamide 6.6, ERG 50, ERG 120 are ideal for use in locations where low flammability and low smoke are needed in the mass transportation industry. The cable tie also meets the flammability rating UL 94 V-0.

- **Molding material:** Polyamide 6.6
- **Locking barb material:** 316 grade stainless steel
- **Temperature range:** -4°F to 149°F (-20°C to +65°C)
- **Color:** White
- **Flammability rating:** UL 94 V-0
- **Other properties:** Halogen free, silicon free
- **Test results:**
 - NFF 16-101: I3F2
 - EN 45545-2: HL3 for R22 and R23 requirement
- **Tooling:** ERG-50, ERG-120

Ty-Rap® high performance cable ties for railways

UV-resistant - EN 45545-2 certified

Ty-Rap®



UV-resistant,
UL 94 V-2 from -76°F
to 221°F

SEE MORE

Approvals:



Ty-Rap® Railway certified UV-resistant and flame retardant cable ties are suitable for the railway or the light rail industry. The tie is tested according to the NFF 16-101 standard.

- **Molding material:** Polyamide 6.6
- **Locking barb material:** 316 grade stainless steel
- **Temperature range:** -76°F to 221°F (-60°C to +105°C)
- **Color:** Black
- **Flammability rating:** UL 94 V-2
- **Other properties:** UV-resistant, halogen free, silicon free
- **Test results:**
 - NFF 16-101: I3F2
 - EN 45545-2: HL2 for R22 and R23 requirement
- **Tooling:** ERG-50, ERG-120

Continuous operation



Ocal-Blue® Double-coat conduit bodies

Ocal®

Easy access for pulling,
splicing, mounting
and maintenance



With **Ocal-Blue®** double-coat conduit bodies, you can connect sections of conduit – with or without 90° bends – and provide easy access for wire pulling, making splices in branch conductors and for maintenance and future system changes. Conduit bodies can also serve as mounting outlets for wiring devices and lighting fixtures.

- **Type 4X Form 8** (1/2"-2") conduit bodies have injection-molded PVC-coated cover with integral O-ring seal
- **Flat surface molded** on conduit body seals with molded flange on cover on 2 1/2"-4" Form 8 and all Form 7

- **Available** in Form 7 and Form 8 ferrous as well as Mark 9 and Form 7 aluminum
- All Ocal-Blue® conduit bodies offer **double corrosion protection** – both bodies and covers are coated inside and out with a nominal .002" (2 mil) blue urethane, then exterior coated with a nominal .040" (40 mil) PVC
- **PVC coating** in your choice of blue, gray or white with custom colors available
- All threaded hubs fitted with **pressure-sealing sleeves**
- Conduit bodies ship complete with covers and encapsulated stainless steel screws
- Covers also sold separately for replacement or retrofit purposes

CATALOG



Approvals:



Color-Keyed® compression systems

Compression lugs and splices

Color-Keyed®

Designed to meet the most stringent UL & IEC Class A testing requirement

SEE MORE



Approvals:



The **Color-Keyed®** method of installing compression connectors on power cables is designed to provide a high degree of reliability in electrical wiring. Ensuring a proper crimp onto the conductor by matching the right connector to the right tool and die, using a color-coding system.

Designed to meet the most stringent UL & IEC Class A testing requirements, Color-Keyed® lugs are made of 99.9% pure, oxygen-free copper. The color coded crimping system assures the right die is used with the right lug resulting in an accurate, reliable crimp.



- Color-Keyed® **dies** are designed to produce a circumferential, hex- or diamond-shaped compression rather than a simple indent, resulting in assured high conductivity, exceeding IEC 61238-1 and UL standards.
- **Circumferential compression** creates large area of high pressure contact between cable and connector which in turn results in low resistance and high pull-out values.
- **Verifiable and inspectable:** During compression, a die code embossed onto the Color-Keyed connector makes it easy for inspectors to compare the finished crimp with the die table to verify correct termination.

Color-Keyed® compression tools

Ergonomic compression tools

Color-Keyed®

A high-quality crimp connection at a low installed cost

CATALOG



Approvals:



The **Color-Keyed®** compression system ensures a proper crimp onto the conductor by matching the right connector to the right tool and die, using a color-coding system that was developed and introduced to the industry by Thomas & Betts, acquired by ABB in 2012.



- When using the Color-Keyed® **compression system** with our Blackburn® line of compression connectors, the installer can count on a reliable, high-quality connection.

Ranger® and Black Beauty Cord and cable fittings

T&B Fittings

Reduce your inventory and save time with one connector that can do the work of two

CATALOG

Approvals:



The **Ranger Series** Steel Liquidtight Connector takes twice the cable range of most ordinary strain-relief connectors. T&B's Ranger Connectors enable you to reduce your inventory and save time with one connector that can do the work of two. The sturdy nylon material adds corrosion-resistance to your installation. ABB's cord and cable fittings provide high performance, easier installation and a broad product range.

- **Superior Performance:** Our compact Ranger cord connectors, available in steel, stainless steel, aluminum and non-metallic styles, provide twice the cable range with superior strain relief and a gland that restricts cable bending. Reduced overall size, fits into tighter spaces.
- **Liquidtight:** Our cord connector design utilizes a neoprene bushing that produces liquidtight installations.
- **Non-Metallic:** Black Beauty cord connectors, with tool-free installation, include a segmented chuck for high mechanical pullout performance and liquid-tight neoprene bushings.

PMA® PMAFIX IP66 Fittings Strain relief fittings

PMA

IP66, polyamide thread strain relief fitting for flexible non-metallic conduit

SEE MORE

Approvals:



PMA® PMAFIX IP66 (BVNDZ-M)
Strain relief fittings provide IP66, polyamide thread strain relief for flexible non-metallic conduit. They offer very good UV resistance and weathering characteristics, particularly in black.

- **Compatible with:** PMAFLEX Pro conduits, PMAFLEX Multilayer conduits, PMAFLEX conduits, PMA Smart Line Conduits
- **Very high** impact resistance
- **Vibration-proof** connection to PMA conduits
- **Easy installation:** simple push fit assembly

- **Integrated strain relief** optimally holds and seals cables
- **If several conductors** are used with the connector multiple sealing inserts should be considered
- **Very good** chemical properties
- **Fits both** conduit profiles - fine (T) and coarse (G)
- **IP66** (EN/IEC 60529), IP68 (up to 5 bar at the cable)
- **Conforms to:** EN 45545-2 HL3 (R22 & R23), NFPA 130, UL 94 (V0)
- **All PMA products** are CE, REACH and RoHS compliant



PMA® XPCS multilayer conduit

Very flexible, heavy-duty

PMA

Flexible, weather resistant multilayer conduit suitable for use in external rail rolling stock applications

SEE MORE

Approvals:



The **XPCS multilayer conduit** with green inner layer is suitable for use in all external rail rolling stock applications, including inter-carriage jumper cables, installations on the roof, undercarriage and bogies. It achieves an HL2 classification according to requirement set R22 and R23 of EN45545-2, and complies with NFPA 130. This very flexible conduit also provides excellent mechanical characteristics under extreme climate conditions.

Compatible with: PMAFIX Pro, PMAFIX fittings, PMA accessories, PMAGRIP flange

Applications: Static and dynamic external applications on railway vehicles:

- **On the roof** - PA12 outer layer has excellent UV resistance characteristics
- **On inter-carriage connections** - Excellent resistance to fatigue when exposed to continuous bending
- **On bogies and undercarriage** - Excellent resistance to impact at low temperatures
- **High-grade**, specially formulated PA12/PA6
- **High fire safety specification**
- **Temperature range:** -58°F to 203°F (-50°C to +95°C) continuous, 302°F (+150°C) short-term
- **All PMA products** are CE, REACH and RoHS compliant

PMA® DIVISIBLE System

BFH-0 System support

PMA

One-piece system support, with safety lid

SEE MORE

Approvals:

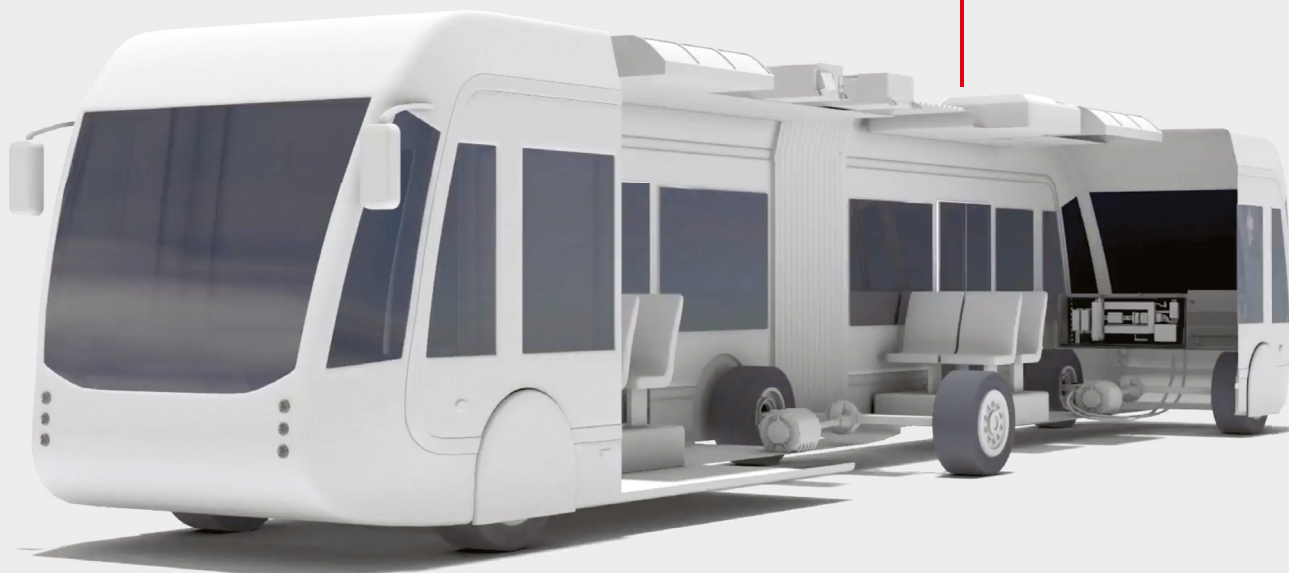


- **One-piece** construction
- **Very high** impact resistance
- **Optimal** axial strain relief due to integrated rib
- **Suitable** for overhead installations due to safety lid
- **High** retention forces
- **Quick mounting** due to single hole fixing
- **Very good** chemical properties
- Fits both conduit profiles - fine (T) and coarse (G)
- Fits to PMACLIP - BFHS - Rail for system support



- **Material:** High-grade, specially formulated polyamide 6
- **Compatible with:**
 - PMAFLEX Pro Conduits
 - PMAFLEX Multilayer Conduits
 - PMAFLEX Conduits
 - PMA Smart Line Conduits
- **Environmental properties:** Free from halogens and cadmium
- **PMA products** are CE, REACH and RoHS compliant

Efficiency



Sta-Kon® wire terminals

Ferrules and installation tools kit

Sta-Kon®

Eight different sizes of ferrules plus strip and crimp tools – in one convenient kit

Help ensure reliable electrical connections when terminating conductors in screw clamp terminal blocks. This handy kit gives you a total of 3,400 high-quality **Sta-Kon® insulated ferrules**, along with the rugged strip and crimp tools to install them.

- Provides **UL® listed** crimps on a wide range of bare and insulated Sta-Kon® ferrules (see reverse)
- **Will crimp** any ABB ferrules within 0.14–10.00 mm²/26–8 AWG range without changing dies
- **Compact** design for easy access to wires in confined spaces

- **Ergonomic** design helps reduce operator strain and fatigue
- **Full-cycle** Shure-Stake® crimp mechanism ensures a consistent, reliable crimp when used according to instructions
- Features **ratchet-release** mechanism for clearing obstructions
- **Non-slip** handle features hole for attachment of safety strap
- **Range-taking** design does not require a user to identify the proper die or nest to use, minimizing the risk of mistakes or improper crimps.



SEE MORE



Approvals:



Color-Keyed® compression system

Compression lugs and splices

Color-Keyed®

Installation in all weather conditions, with fewer components in half the amount of time

SEE MORE



Approvals:



The **Color-Keyed®** method of installing compression connectors on power cables is designed to provide a high degree of reliability in electrical wiring. This helps ensure a proper crimp onto the conductor by matching the right connector to the right tool and die, using a color-coding system.

Designed to meet the most stringent UL & IEC Class A testing requirements, Color-Keyed® lugs are made of 99.9% pure, oxygen-free copper. The color coded crimping system assures the right die is used with the right lug resulting in an accurate, reliable crimp.



- Color-Keyed® **dies** are designed to produce a circumferential, hex- or diamond-shaped compression rather than a simple indent resulting in assured high conductivity, exceeding IEC 61238-1 and UL standards.
- **Circumferential compression** creates large area of high pressure contact between cable and connector which in turn results in low resistance and high pull-out values.
- When using the Color-Keyed **compression system** with our Blackburn® line of compression connectors, the installer can count on a reliable, high-quality connection.

Blackburn®

Mechanical connectors

Blackburn®

Reusable connectors.
No special installation tools required

CATALOG



Approvals:



Blackburn® mechanical connections come in cast, forged or formed, and are produced in economical copper and dual-rated aluminum, provide unequaled variety with a large variety of U.L. and C.S.A. certified solutions for your electrical interface needs.

- **Broad Range** – No special tooling required. The range of options for electrical connections using Blackburn® mechanical connectors is vast. These products require no special tools to install and can also be reused.



- **Save Labor** – Pre-insulated Blackburn Multi-Tap connectors provide an economical and labor-saving option in wire management applications.

EZGround™ system

Compression grounding connectors

Blackburn®

Installation in all weather conditions, with fewer components in half of the time

CATALOG

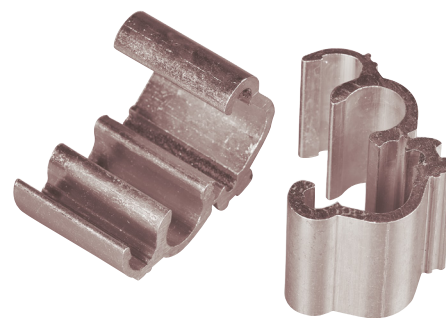


Approvals:



EZ-Ground™ compression connectors represent a low cost, code-approved alternative to welded ground grid connections.

- **EZ-Ground connectors** can be safely installed in half the time, with fewer components, and in all weather conditions. The range-taking capability of each E-Z-Ground series connector translates to fewer parts needed to complete the ground grid.



- **EZ-Ground compression connectors** are installed using an easily inspectable die embossment on the connector indicating that the proper tool has been used and successful crimp has been made.
- **EZ-Ground** carries the “ABB Method” mark of approval and represents the connection of choice for faster, simpler and safer ground grid system installations.

Blackjack®

Grounding bushings

T&B® Fittings

Less SKU numbers, easy to install, full application coverage

CATALOG



Approvals:



The **Blackjack®** grounding bushing is designed for threaded and non-threaded conduits, and the ground lugs are designed to handle an extended range. The number of parts in inventory is reduced by up to two-thirds without losing any application coverage.

- **Innovative design improves performance:** The Blackjack® bushing provides superior ground continuity. The design of the Blackjack bushing has an integral, cast-on grounding lug for better ground continuity. This means that the Blackjack bushing stands up to intense loads.



- **SKU reduction:** With Blackjack® grounding bushings, a single SKU can be used with threaded conduit, threadless conduit, 302°F (+150°C) copper wire and aluminum wire. Others require a different SKU for each type, requiring up to 150 different catalog numbers vs. only 21 catalog numbers with Blackjack grounding bushings.
- **Ease of installation:** No need to thread the bushing on the conduit, simply put in place.

PMA® DIVISIBLE System

One-piece divisible system

PMA

Divisible conduits for repairs, retrofit and pre-loomed applications



SEE MORE



Approvals:



The **PMA® DIVISIBLE System** is the ideal solution for repairs, retrofit and pre-loomed applications. Main characteristics of these new products are: divisible, one-piece design, simple, fast, for retrofit and pre-loomed applications, modern and functional design, excellent price/performance ratio.

- **Connectors** - One-piece, divisible, straight
- **Conduits** - Divisible conduit types made of modified PA6 and polypropylene. (On request all PMA conduits are available as slit version).
- **Modes of protection** - PACOF, PPCOF conduits and IP40 systems sealing performance. BLNO-M divisible fitting achieves IP54 together with standard closed conduits.
- **Installation** - Simple push-in installation without de-installation of complete loom.
- **All PMA products** are CE, REACH and RoHS compliant

Carlon® elbow for concrete pads 'stub-ups'

PVC conduit repair system

Carlon®

Quickly and easily repair broken PVC conduits



CATALOG



Approvals:



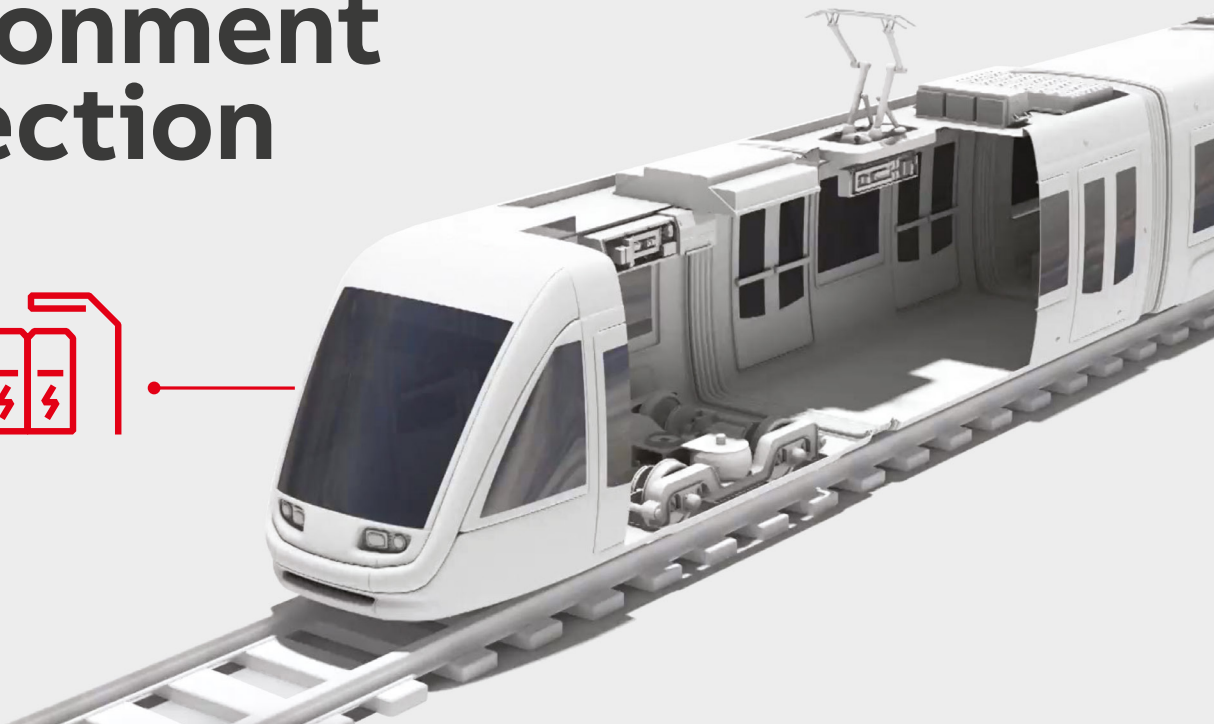
The revolutionary **Carlon®** PVC conduit repair system significantly reduces the time and money associated with repairing broken PVC conduit "stub-ups" in concrete slabs.

The system is a line of couplings, adapters, reamers and plugs designed to allow contractors to quickly and easily repair broken PVC conduit without having to chip away and repour concrete, while still maintaining the inside diameter of the conduit. Simply cut off the broken conduit, ream the I.D. of the conduit and insert a coupling or adapter. It's that easy.

- **cULus** Listed
- **PVC repair fittings** are listed in accordance with the NEC® and Section 352.6
- **Non-metallic couplings**, adapters and plugs won't rust or corrode
- **Available** in sizes 1/2" through 2"
- **Saves time** and money
- **Maintains** inside diameter of conduit
- **Metallic reamers** for extra strength, durability and longer life
- **Quickly and easily** repair broken PVC conduits

NEC and National Electrical Code are registered trademarks of the National Fire Protection Association, Inc.

Corrosive & harsh environment protection



Ranger® and Black Beauty Cord and cable fittings

T&B® Fittings



Reduce your inventory and save time with one connector that can do the work of two

The **Ranger® Series** Steel Liquidtight Connector takes twice the cable range of most ordinary strain-relief connectors. T&B's Ranger Connectors enable you to reduce your inventory and save time with one connector that can do the work of two. The sturdy nylon material adds corrosion-resistance to your installation. ABB cord and cable fittings provide high performance, easier installation and a broad product range.

- **Superior Performance:** Our compact Ranger cord connectors, available in steel, stainless, aluminum and non-metallic styles, provide twice the cable range with superior strain relief and a gland that restricts cable bending. Reduced overall size, fits into tighter spaces.
- **Liquidtight:** Our cord connector design utilizes a neoprene bushing that produces liquidtight installations
- **Non-Metallic:** Black Beauty cord connectors, with tool-free installation, include a segmented chuck for high mechanical pullout performance and liquidtight neoprene bushings.

CATALOG

Approvals:



T&B Liquidtight Systems®

Liquidtight flexible metal conduit

T&B Liquidtight Systems®

Liquidtight, flexible metallic conduit for stainless steel corrosive environment applications

SEE MORE



Approvals:



The **T&B Liquidtight Systems®** portfolio provides one of the widest ranges of liquid-tight flexible metal conduit solutions for stainless steel corrosive environment applications. Material selection and rigorous testing are the key factors to these highly engineered and superior temperature performance.

System components

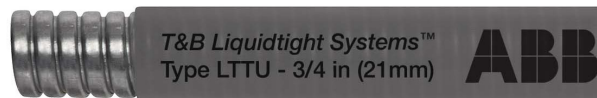
Stainless steel installations require system solutions considering critical application parameters such as material specifications, temperature ratings, ingress ratings, trade sizes and approvals.

Materials

T&B Liquidtight Systems stainless steel solutions are primarily designed of ANSI 316 and 316L stainless steel. These materials provide the high protection capabilities for industrial environments and can greatly extend installation life.

Corrosion protection system components

Flexible metallic conduits, fittings, seal gaskets, locknuts, supports, wire mesh grips and hole plugs.



Ocal-Blue®

Double-coat conduit bodies

Ocal®

Coated bodies and covers, both inside and out

SEE MORE



Approvals:



With **Ocal-Blue®** Double-Coat Conduit Bodies, you can connect sections of conduit – with or without 90° bends – and provide easy access for wire pulling, making splices in branch conductors as well as for maintenance and future system changes. Conduit bodies can also serve as mounting outlets for wiring devices and lighting fixtures.

- **Type 4X Form 8** (1/2"-2") conduit bodies have injection-molded PVC-coated cover with integral O-ring seal
- **Flat surface molded** on conduit body seals with molded flange on cover on 2 1/2"-4" Form 8 and all Form 7

- **Available** in Form 7 and Form 8 ferrous as well as Mark 9 and Form 7 aluminum
- All Ocal-Blue conduit bodies offer **double corrosion protection** – both bodies and covers coated inside and out with a nominal .002" (2 mil) blue urethane, then exterior coated with a nominal .040" (40 mil) PVC
- **PVC coating** in your choice of blue, gray or white with custom colors available
- All threaded hubs fitted with **pressure-sealing sleeves**
- Conduit bodies ship complete with covers and encapsulated stainless steel screws
- Covers also sold separately for replacement or retrofit purposes



PMA® PMAFIX® Pro fittings

Next generation cable protection

PMA

High thread and system connection strength

SEE MORE

Approvals:



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 IP69K even in applications where there is long term continuous movement. PMAFIX Pro is manufactured by using multiple component injection molding process.

- **High assembly reliability:** the fitting only locks when the sealing element is fully inserted
- **IP68 and IP69K** static and dynamic
- **Simple** 'push-in' installation



- **Material:** Fittings made from specially modified polyamide 6. Threads made from nickel-plated brass or polyamide 6.
- **Sealings** made from cross linked polyester elastomer
- **Highest** international quality standards
- **Maximum** assembly and operating safety
- **Recommended** for PMAFLEX heavy duty conduits
- **Self-extinguishing**
- **Environmental properties:** Halogen free
- **Temperature range:** -58°F to 221°F (-50°C to +105°C), short-term to 320°F (+160°C)
- **PMA products** are CE, REACH and RoHS compliant

Harnessflex® conduit systems

EVO™ (Electric Vehicle Orange) conduit

Harnessflex
SPECIALIST CONDUIT SYSTEMS

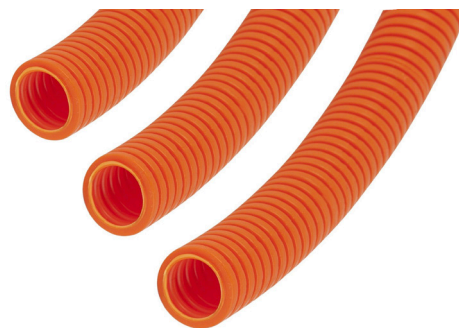
Low smoke, low toxicity, flame retardant conduit for EV harnesses

SEE MORE

Approvals:



Harnessflex EVO™ (Electric Vehicle Orange) conduit is flexible nylon (PA6) conduit suitable for electric vehicle applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and high fatigue life.



- **High** flexibility & fatigue life
- **Very high** abrasion, impact and shock resistance
- Temperature range: -40°F to 248°F (-40°C to +120°C)
- Temperature range short-term: 302°F (+150°C)
- UV Resistance: Medium
- **IP40 - IP68:** (2 bar 30 mins) depending on fittings
- **Available colors:** Orange (RAL2003)
- Self extinguishing, low smoke toxicity and halogen free
- Available in slit variants

Ty-Rap® high performance cable ties

Heat stabilized + UV resistant

Ty-Rap®



For outdoor applications that require resistance to high temperatures 221°F

Ty-Rap® Heat stabilized, polyamide 6.6, high performance cable ties for applications up to 221°F.

- **Material - Molding:** Polyamide 6.6
- **Material - Locking barb:** 316 grade stainless steel
- **Temperature range:** -76°F to 221°F (-60°C to +105°C)
- **Min. Installation Temp.:** -40°F (-40°C)
- **Color:** Black
- **Flammability rating:** UL 94 V-2
- **Other properties:** UV-resistant, heat stabilized, halogen free, silicone free
- **Tooling:** ERG-50, ERG-120

CATALOG

Approvals:



E49405

Ty-Rap® high performance cable ties

Polyamide 12 cable ties

High UV-resistance - Extreme outdoor

Ty-Rap®



Remains flexible in cold and dry environments: -40°F to +185°F

- **Polyamide 12** UV-resistant
- **Remains flexible** in cold and dry environments
- **Agers better** and has a better chemical resistance than Polyamide 6.6
- **Material - Molding:** Polyamide 12
- **Material - Locking barb:** 316 grade stainless steel
- **Temperature range:** -40°F to 185°F (-40°C to +85°C)
- **Color:** Black
- **Flammability rating:** UL 94 V-2
- **Other properties:** UV-resistant, halogen free, silicone free
- **Tooling:** ERG-50, ERG-120

CATALOG

Approvals:



E49405

Ty-Rap® Polyamide 12 cable ties provide a high UV-resistance, suitable for outdoor applications that also require a resistance to cold and dry temperatures: -40°F to +40°F.

Leading the future to zero emission
mobility with smart, reliable and
emission-free electric vehicle
charging solutions.





—
US

ABB Installation Products Inc.

electrification.us.abb.com