

DISTRIBUTION SOLUTIONS SERVICE

MNS switchgear

Spare parts improving switchgear availability



Our support journey is built on services protecting customer investments and the journey has four steps: maintain, modernize, assess and manage.

Start-up and maintenance services ensure operational efficiency and rapid response.

Specifically spare parts, and related workshop and on-site services support customers in keeping assets available and reliable.

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1. Introduction

1.1 MNS spare parts

ABB offers a wide list of spare parts for your switchgear addressing important requirements of the future. ABB has a wide experience in low-voltage switchgear, which also allow us to provide you with a detailed list of recommended spare parts based on the lifecycle of your switchgear.

Holding key spares that are easily replaceable on site reduces the MTTR (Mean Time to Repair) and allows the equipment to be put in operation with minimal downtime.

Attempting repair of equipment that has failed may seem to have low product cost however it increases the overall cost and loss of revenue significantly.

1.2 Facts

There are periodic and unforeseen events occurring due to different reasons like wrong handling or external impacts that may damage the switchgear. To ensure uptime of the customer's processes, the availability of proper spare parts for your product is an important element of every operational planning. Therefore ABB offers recommended spare part lists which precisely fit your switchgear during the different lifecycle phases:

- Installation and commissioning (I&C)
- 2 years of operation
- 5 years of operation
- 10 years of operation.

1.3 Recommended spare parts for the installation and commissioning of the switchgear

During the installation and commissioning process of a switchgear, there are unexpected situations that can cause delays in the start-up plan if you do not have the proper spare parts available in stock. ABB provides a recommended list of spare parts including the most frequently replaced components for:

- Fast availability during commissioning activities
- Fast substitution or repair possibilities
- Avoiding start-up delays due to most common components possible unexpected failures
- Minimum stock holdings for your switchgear.



1.4 Recommended spare parts for 2, 5 and 10 years of operation of the switchgear

Operating a power grid or powering a process needs reliable equipment, which is given by ABB switchgear. During the lifecycle of your switchgear, once it is in operation, it is important to keep all components updated and at their best performance to avoid failures or unwanted downtime. For this reason, ABB provides a recommended list of spare parts including the most common items for maintenance activities and frequently replaced components based on the lifecycle of the switchgear for:

- Stock availability on site according to switchgear lifecycle status
- Faster response for maintenance activities and possible repairs if required
- Systematic approach for preventive care strategy on site
- Enhancing performance and uptime of the switchgear.

1.5 Benefits

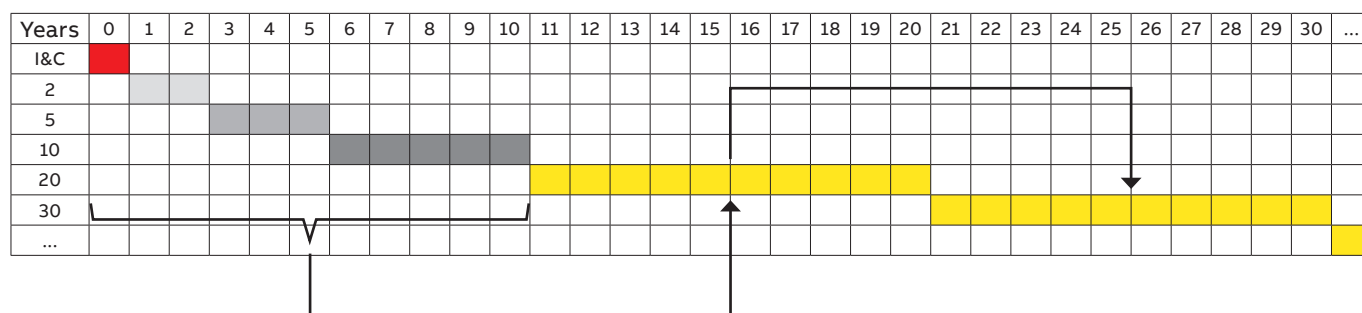
- Complete list of recommended spare parts for a proper stock at site
- Proper stock holdings for I&C and maintenance activities
- Fast recovery from failure
- Fast mobilization in case of urgency as dedicated spare parts are available in customer's stock
- Original ABB parts
- ABB warranty on the spares.

1.6 Operational progression

ABB is a reliable partner supporting the spare parts optimization ensuring the right setup at the customer warehouse.

Their procurement shall start at I&C stage and progressively integrated step by step with the additional required ones for the next 2, 5 and 10 years. The stock shall then be used for the next decades and refilled as consumed.

Preventive maintenance activities shall also use the same spare parts and provide a consistent feedback with respect to the specific quantity needs due to the site operational and environmental conditions.



1.7 How to get them

Customers can get the ABB spare parts through the following channels:

- On demand to ABB representatives
- Using the e-commerce tools in those countries where already live
- Managed by ABB by activating a Power Care customer support agreement

1.8 Spare parts classification

L1: parts that can be replaced directly by customers by following equipment user manual instructions or better after having attended a L1 training (introduction training for equipment operators).

L2: parts that can be replaced directly by customers by following equipment user manual instructions or better after having attended a L2 training (advanced training for equipment maintainers and site operators).

L3: parts that can be delivered when associated to a qualified ABB maintenance or repairing activity only. These parts require dedicated tools and deep specific competence to be replaced.

| ABB Power Care | Entry level | Level 1 | Level 2 | Level 3 |
|---|--|---|--|---------------------------------------|
| Skills Development Services | Product Training List | Product Training | Application Training | Coaching Services |
| Emergency Maintenance Services | Single Point of Contact | Technical Support with agreed response time | Call-out Support with agreed response time | Spare Parts Assessment and Management |
| Diagnosis and Condition Assessment Services | Documentation of Installed Base and Preliminary Survey | Asset Condition and Risk Assessment | Asset Monitoring | Remote Asset Monitoring |
| Self-Maintenance Services | Installed Base Life Cycle Status Report | Manuals and Instructions On-line | On-line Support for Self-maintenance | File Storage |
| Delivered Maintenance Services | Periodic Technical Assessment | Protection and Control Engineering Services | Switching Apparatus Engineering Services | Full Switchgear Engineering Services |

2. Recommended spare parts

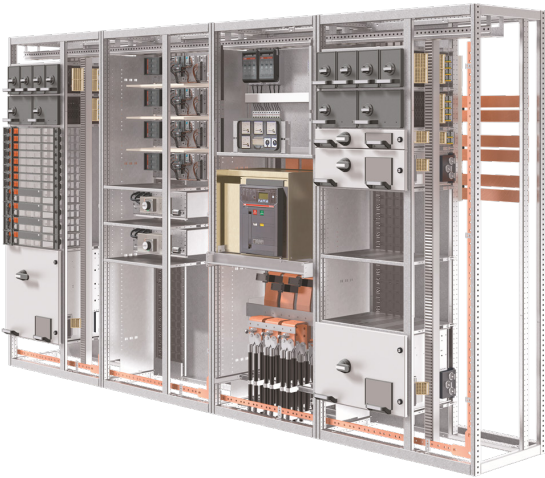
| | Code | Description | I&C | 2 years | 5 years | 10 years |
|---|---|---|-----|---------|---------|----------|
| WITHDRAWABLE MODULES AND AIR CBs ASSEMBLIES | Made to order | Service for preparation of withdrawable module list specific to project | • | • | • | • |
| | Ask ABB | Withdrawable module per type. 10% of total quantity is recommended | • | • | • | • |
| | Made to order | Air circuit breaker assembly with all accessories specific to project installed | • | • | • | • |
| | Ask ABB | Service for preparation of ACB assembly list specific to project. | • | • | • | • |
| ELECTRICAL EQUIPMENT | Ask ABB | Shunt opening coil for ACB | • | • | • | • |
| | Ask ABB | Shunt closing coil for ACB | • | • | • | • |
| | Ask ABB | Protection release for ACB | • | • | • | • |
| | Ask ABB | Switchboard protection relays | • | • | • | • |
| | Ask ABB | Fuses | • | • | • | • |
| | Ask ABB | Voltage transformers | • | • | • | • |
| | Ask ABB | Current transformers | • | • | • | • |
| | Ask ABB | Miniature circuit breakers | • | • | • | • |
| | Ask ABB | Metering equipment (voltmeter, ammeter, energy analyzer) | • | • | • | • |
| | Ask ABB | Fieldbus communication equipment | • | • | • | • |
| | Ask ABB | Network switches | • | • | • | • |
| | Ask ABB | LED indicators | • | • | • | • |
| | Ask ABB | Project specific electrical equipment | • | • | • | • |
| | * Minimum quantity recommended: 10% of total equipment. Depending on operational conditions, quantity may be re-considered. | | | | | |
| CONSUMABLES & TOOLS | 1TGB000172R1000 | Contact grease, Klüberlectric KR44-102Topas NB 52 (1 kg tin) | • | • | • | • |
| | 1TGB000172R0008 | Contact grease, Klüberlectric KR44-102Topas NB 52 (7 g tube) | • | • | • | • |
| | Ask ABB | Liquid high-pressure lubricants Molycote Omnigloss (300 ml tin) | • | • | • | • |
| | HANL200008P0010 | Withdrawable module handle for 8E/4 and 8E/2 | • | • | • | • |
| | 1TSA030009P0061 | Withdrawable module handle for ≥ 4E | • | • | • | • |
| | HANL200056P0001 | Name plate carrier | • | • | • | • |
| | Ask ABB | Cable Bellows | • | • | • | • |
| | Ask ABB | Paintspray, Shade RAL 7035* | • | • | • | • |
| | Ask ABB | ACB lifting trolley | • | • | • | • |
| TESTING EQUIPMENT AND SPARE COVERS | Made to order | Withdrawable module testing cable 20 Pin (8E/4 or 8E/2) | • | | | |
| | Made to order | Withdrawable module testing cable 20 Pin (> 6E) | • | | | |
| | Made to order | Mobile testing station for withdrawable modules (project specific) | • | | | |
| | Made to order | Spare covers of various sizes. Two per type is recommended | • | • | • | • |

3. Low-voltage modules and accesories

3.1 Withdrawable modules

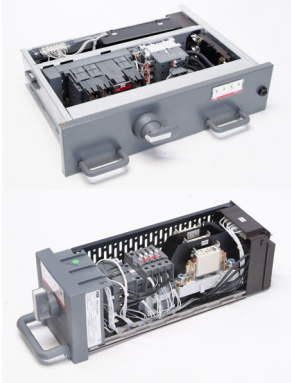
Holding spare modules per module type allow the fastest return from a failure with rapid replacement of a complete module.

After the replacement, the failed module can be repaired at convenience.



3.1.1 Withdrawable modules

| Ordering code | Description |
|--------------------------|--|
| Made to order Ask ABB | Withdrawable module per type. 10% of total quantity is recommended. Service for preparation of withdrawable module list specific to project |



3.2 Air circuit breaker assemblies

Air circuit breakers supply a complete switchboard, a large load or a another switchboard. Thus a failure of air circuit breaker can have vast effects on the process. It is strongly recommended to keep air circuit breaker assemblies which have installed specific accessories to the switchboard. Having the accessories of the ACB installed dramatically reduces the recovery from failure.

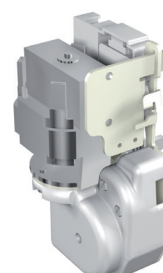


3.2.1 Air circuit breaker (assemblies)

| Ordering code | Description |
|--------------------------|---|
| Made to order Ask ABB | Air circuit breaker assembly with all accessories specific to project installed. Service for preparation of ACB assembly list specific to project. |

3.3 Electrical equipment

Equipment used for control and protection can have issues due to incorrect workmanship, environmental conditions and aging. Keeping key equipment as a spare during commissioning allows recovery from such events.



3.3.1 Electrical equipment (recommended)

| Ordering code | Description |
|---------------|--|
| Ask ABB | Shut opening coil for ACB |
| Ask ABB | Shunt closing coil for ACB |
| Ask ABB | Protection release for ACB |
| Ask ABB | Switchboard protection relays |
| Ask ABB | Fuses |
| Ask ABB | Voltage transformers |
| Ask ABB | Current transformers |
| Ask ABB | Miniature circuit breakers |
| Ask ABB | Metering equipment (voltmeter, ammeter, energy analyser) |
| Ask ABB | Fieldbus communication equipment |
| Ask ABB | Network switches |
| Ask ABB | LED indicators |
| Ask ABB | Project specific electrical equipment |

* Minimum quantity recommended: 10% of total equipment. Depending on operational conditions, quantity may be re-considered.

3.4 Consumables and tools

Tools and consumables that will be in use during the operation will support the maintenance activities as well as operations.

3.4.1 Consumables and tools

| Ordering code | Description |
|-----------------|---|
| 1TGB000172R1000 | Contact grease Klüberlectric KR44-102 Topas NB52 (1kg tin) |
| 1TGB000172R0008 | Contact grease, Klüberlectric KR44-102Topas NB 52 (7 g tube) |
| Ask ABB | Liquid high-pressure lubricants Molycote Omnigloss (300 ml tin) |
| HANL200008P0010 | Withdrawable module handle for 8E/4 and 8E/2 |
| 1TSA030009P0061 | Withdrawable module handle for $\geq 4E$ |
| HANL200056P0001 | Name plate carrier |
| Ask ABB | Cable Bellows |
| Ask ABB | Paintspray, Shade RAL 7035* |
| Ask ABB | ACB lifting trolley |

*Check switchgear color before ordering.

3.5 Testing equipment and spare covers

For withdrawable switchgear, testing and verifying the operation could be needed as part of an overall maintenance strategy. Testing cables allow verification of the modules on a bench, allow complete visibility of the equipment.

For large installations, testing stations can be tailor made. Whether fixed or mobile, the testing station will have the standard control schemes and can be designed to have current injection and insulation resistance testing capabilities. Dramatically reducing troubleshooting.

Spare covers are often overlooked accessories. They are used to cover the empty spaces due to equipment being removed for maintenance or modification. They provide protection of personnel while the equipment is not present.

3.5.1 Testing cable

| Ordering code | Description |
|---------------|---|
| Made to order | Withdrawable module testing cable 20 pin (8E/4 or 8E/2) |
| Made to order | Withdrawable module testing cable 20 pin ($> 6E$) |

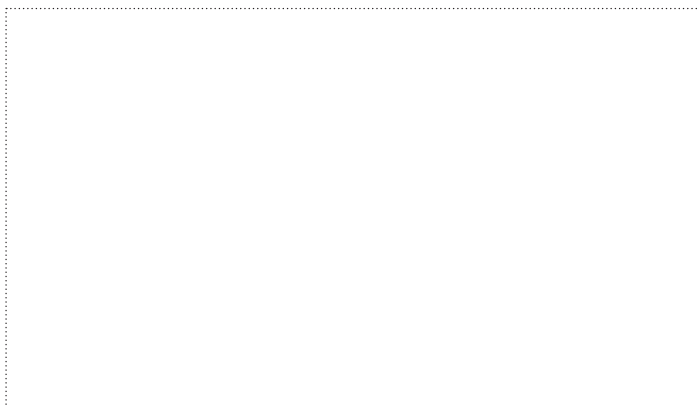
3.5.2 Testing station

| Ordering code | Description |
|---------------|--|
| Made to order | Mobile testing station for withdrawable modules (project specific - consult ABB) |

3.5.3 Spare covers

| Ordering code | Description |
|---------------|---|
| Made to order | Spare covers of various sizes. Two per type is recommended. |

For more information please contact:



Your Service sales contact:

www.abb.com/contacts

More Service information:

<http://new.abb.com/medium-voltage/service>

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