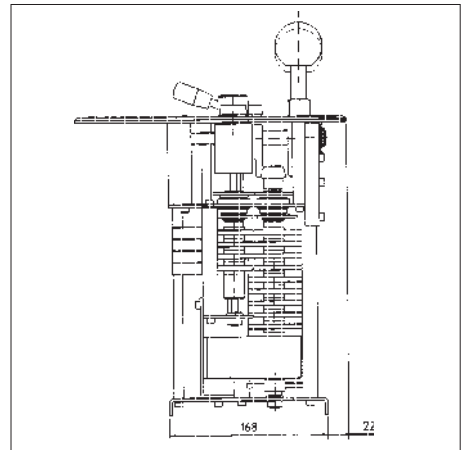
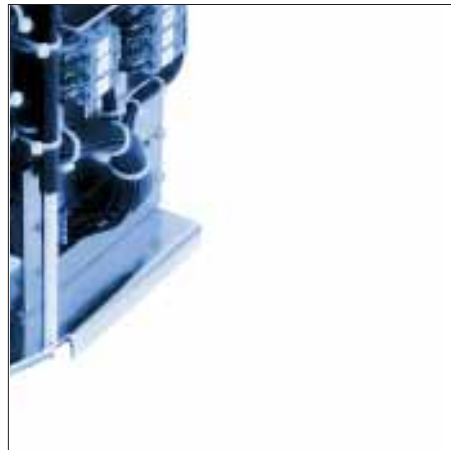
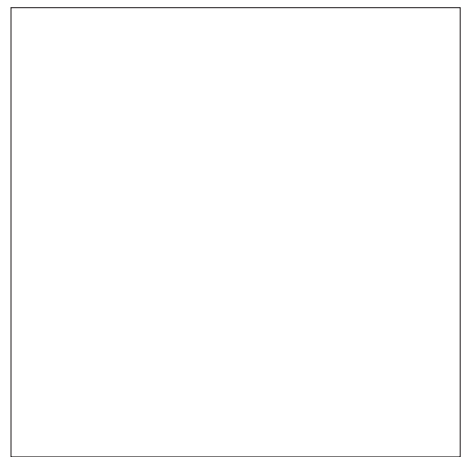


**Rail Transportation
Technology
Switching and
Connecting Technology**



**Operating Manual
Instructions**

**Master Controller
S335 BTM**

Art.-Nr.: 1721. 0806 228

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1. General / Safety Instructions

The electrical equipment described here comprises parts of power installations for special applications which are designed and tested following the generally accepted engineering practice. Electrical equipment in general may cause serious injury or material damage in case of inadequate use, improper handling, insufficient service/maintenance and inadmissible tampering. As a consequence it is of utmost importance to observe these instructions.

In case of any problems or open questions, the necessary verification must be obtained, indicating the equipment type and production serial number. Installation, operation and maintenance: It is indispensable that qualified personnel, trained and authorized for

this task, carry out the planning and execution of mechanical and electrical installations, transport, erection and commissioning as well as maintenance and repair. This refers both to the observance of the general regulations for installation and safety relevant for work on power installations (e.g. DIN, VDE), and to the correct use of adequate tools and to the application of personal protective gear, if applicable. All electrical equipment must be protected from humidity and dust during installation, commissioning and storage.

In case of doubt, it is recommended to request the assistance and services of SCHALTBAU AG for installation, commissioning and servicing tasks.

2. Description

2.1. Technical Data

Operating voltage:	110 V DC max.
Insulation group:	to VDE 0115 Group D
Test voltage:	Control switch - housing 2.5 kV AC
Ambient temperature:	-25°C...70°C
Protection:	IP 00
Weight:	Approx. 12.5 kg
Switching elements:	15 pcs. S800a Snap action switches 1 pc. S800c Snap action switch

2.2. Application

The application was developed for the installation of the master control for trams.

The safety instructions of point 1. above are to be strictly adhered to. Install the master control-

2.3. Installation

ler into driver's console so that it is protected from contamination. Fix the master controller to the driver's desk by means of M4 (DIN 74 Am4) sunk screws using the six bore-holes at the edge of the front panel; the screws must not be subjected to any mechanical stress. Dimensions of the unit are shown in Fig. 2 below which also illustrates the mounting cut-out. To avoid stress on the bearing parts in

the upper range of the unit please use appropriate means (supporting sheaths or additional fixing in the bottom sheath area) to prevent the unit from swinging up. The master controller was ready wired at the factory and only needs to be connected to the plug-in coupler under idle condition.

2.4. Design

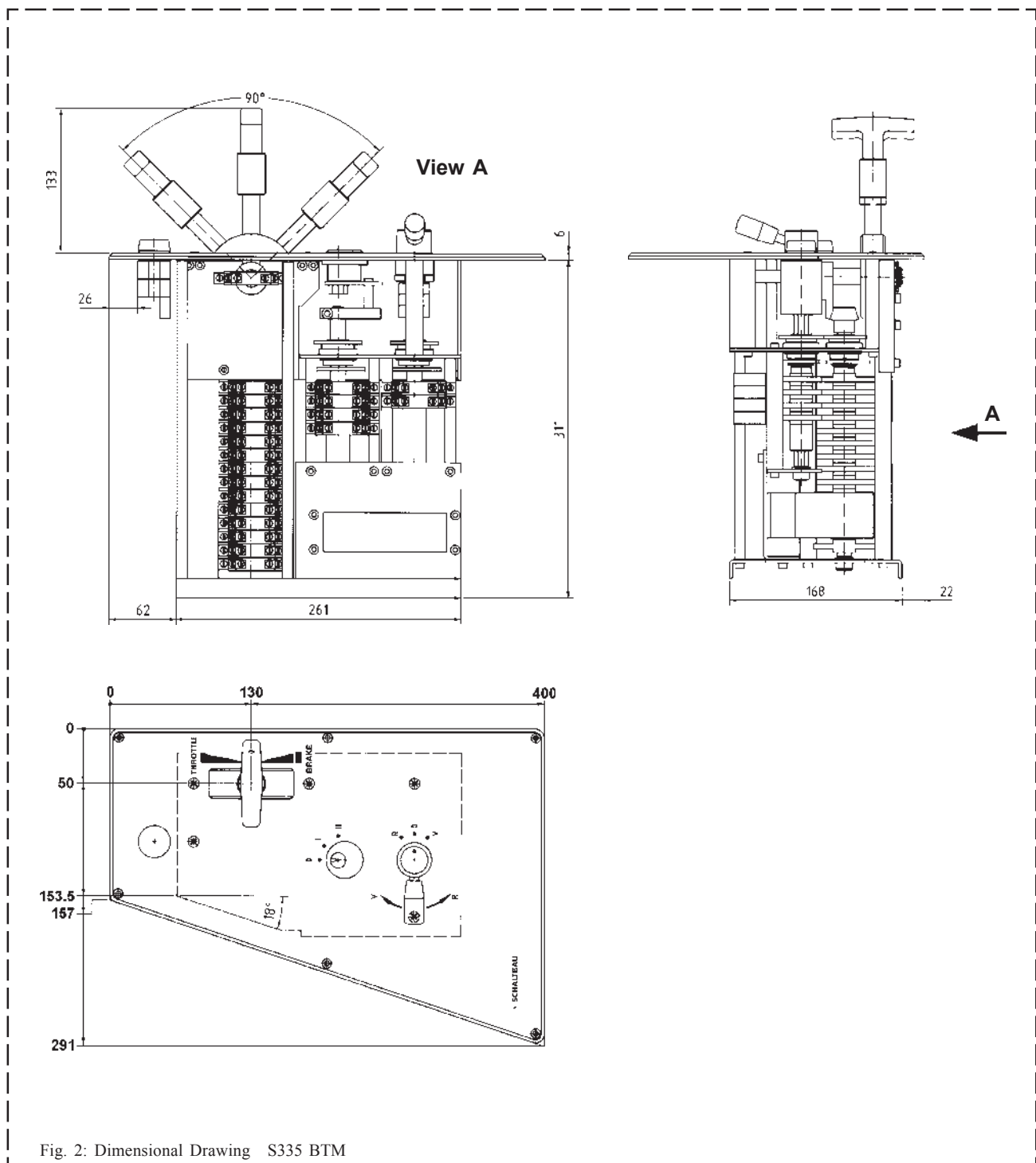


Fig. 2: Dimensional Drawing S335 BTM

The controller/brake handle (1), a lock

switch (2) and a directional selector (3) were arranged on the front panel (4) of the unit optically appealing and in an ergonomic way. These three operating elements are an integral part of a mechanical interlock system. One push button (5) were installed for the open functions, e.g. „Putting out of operation“ or „Emergency Call“.

All switching contacts (6) were wired (at the factory) to the terminal plug (7) allowing the equipment is ready for use as a vehicle components after assembly and mounting of the connector.

2.5. Operating

When locked (lock switch (2) in „0“ position), neither the controller/brake handle nor the selector switch can be confirmed.

To start operation, move the lock switch from „0“ position into „I“ or „II“ position. „II“ position is a notched position. The switching mechanism moves the now released switch back into „I“ position. The direction selector switch (2) is mechanically unlocked. The controller/brake handle remains mechanically blocked until a direction is selected. The three switching steps „V“, „0“ and „R“ are notched positions. Direction can be changed only when the controller/brake handle is in zero position. The switching steps of the controller/brake handle are in conformity with the „VÖV“ specifications 6.325.1. For the user it is easy to feel the notch position that marks the drive and brake ranges in F1 and B1. The emergency brake position B3 is reached by overcoming a resistance in B2 applying a force of about 30 N. Regardless of the handle position, the Dead Man's device (8) is being actuated by pressing the ball-shaped handle by approx. 6 mm. The push-buttons are not included in the mechanical locking system.

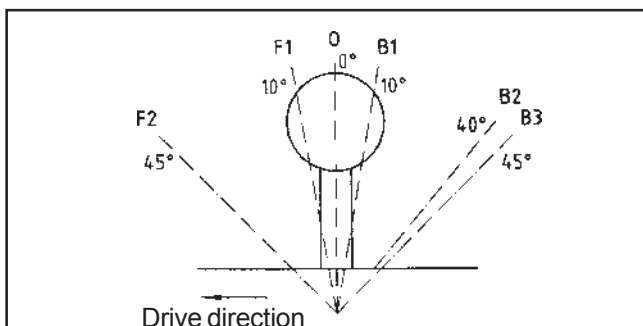
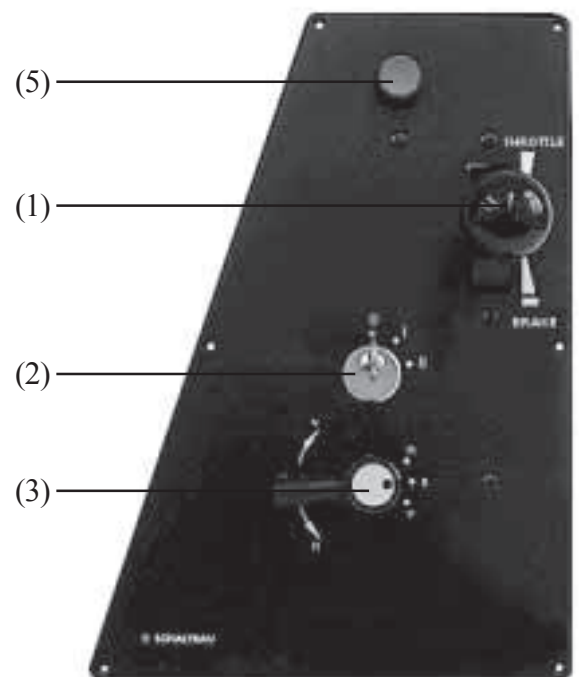
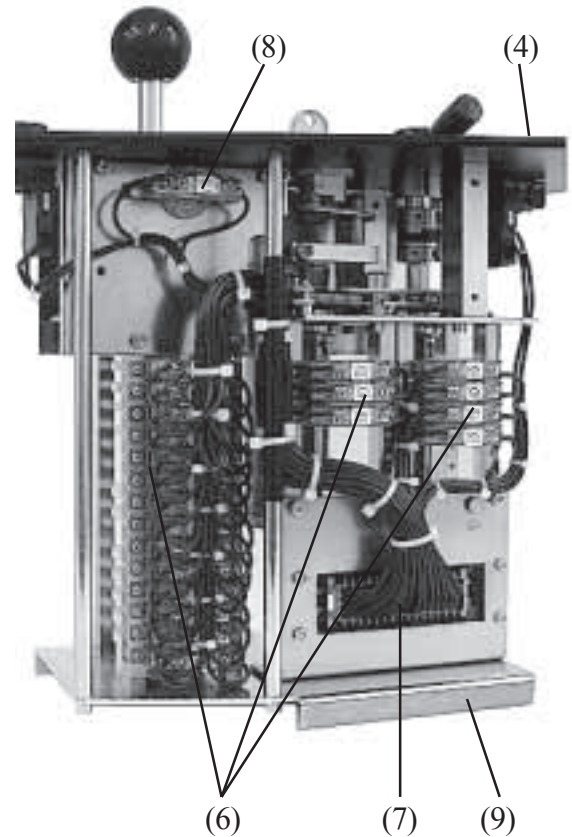


Fig. 3: Master/brake controller positions

2.6 Switching Diagram / Procedure

The three controller drums (6) are fitted with S800 snap action switches. These elements each have one NO contact (terminals 3 and 4) and one positive opening operation NC contact (terminals 1 and 2).

In the equipment the NC contact of the switching element is being used and taken as an NO con-

tact by an inverse contour of the cam disk.

Guide rails prevent wrong mounting of the switching elements and ensure correct switching sequence also after change of the individually replaceable contacts.

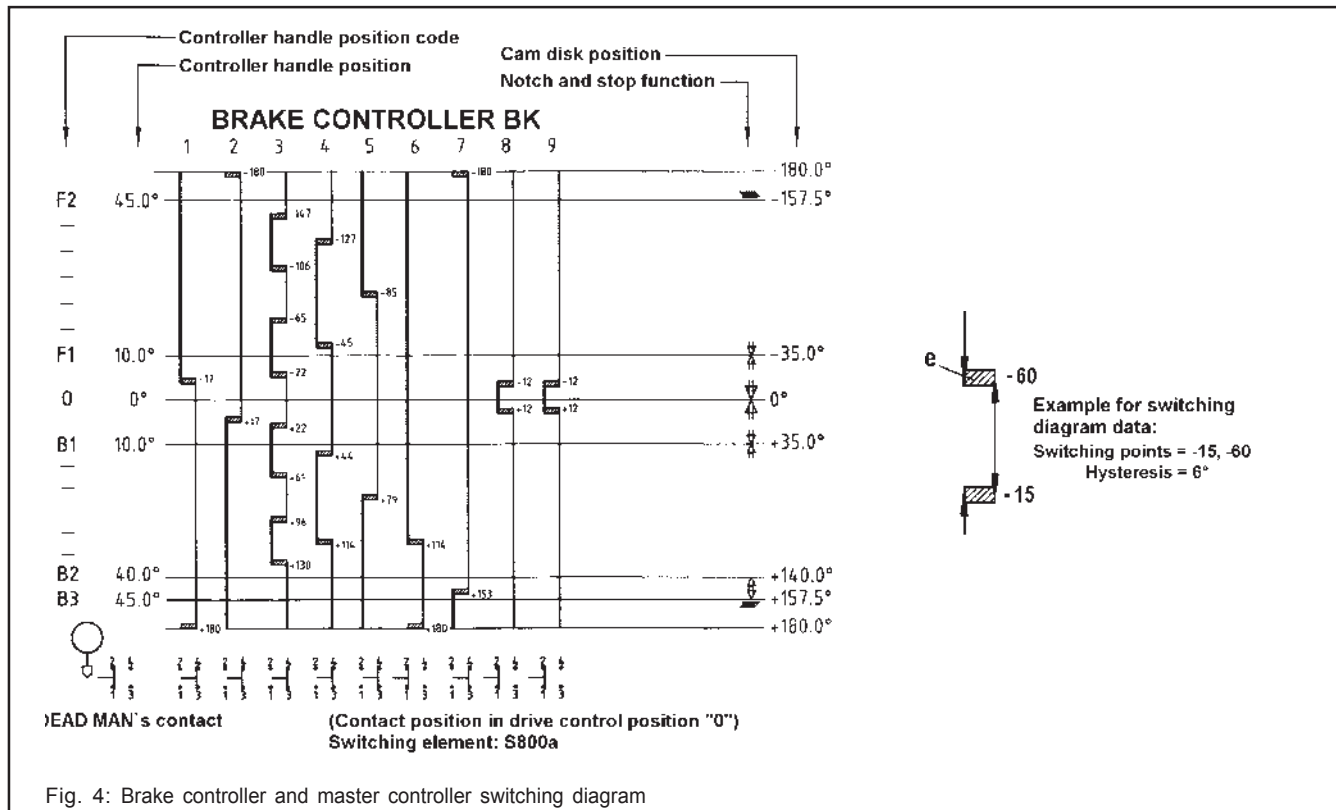


Fig. 4: Brake controller and master controller switching diagram

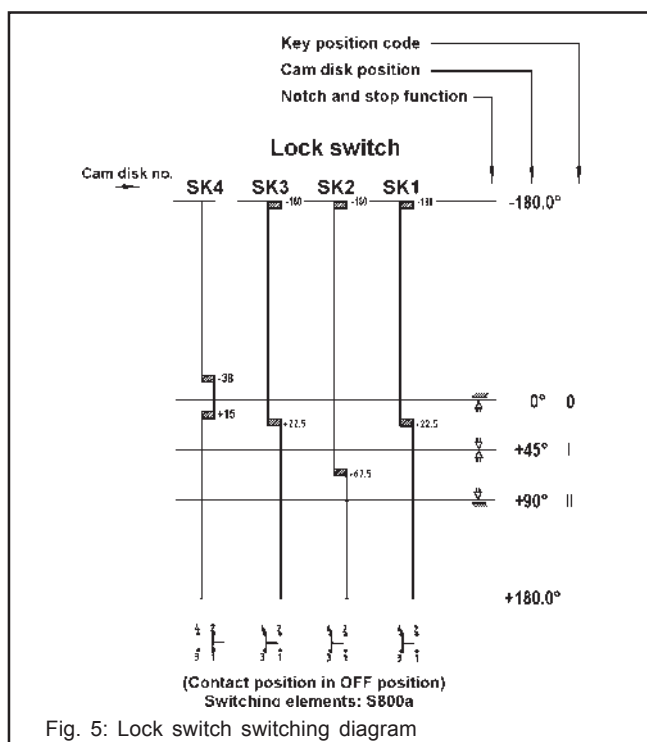


Fig. 5: Lock switch switching diagram

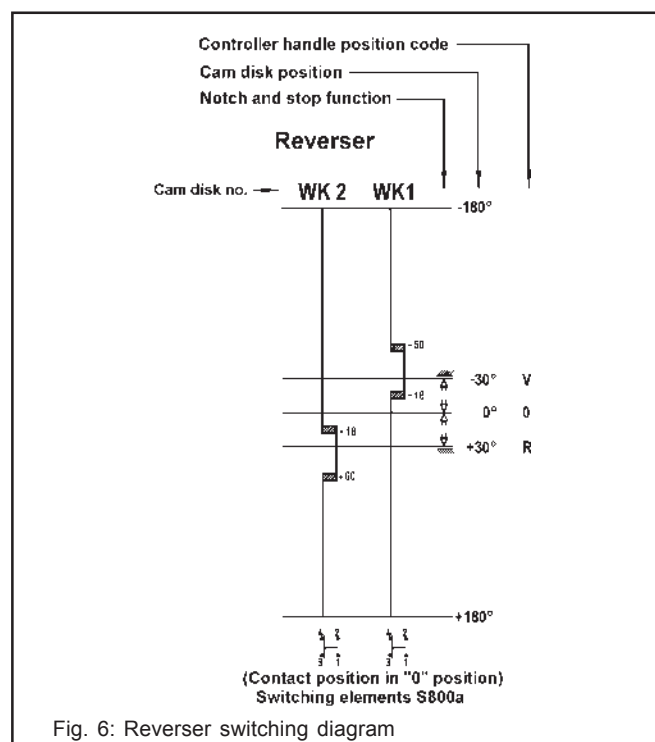


Fig. 6: Reverser switching diagram

3. Maintenance Instructions

As already emphasized in chapter 1 above, expert knowledge is absolutely necessary. Before starting any work on such equipment, particularly before opening covers of normally live parts, make sure that the circuits have been correctly isolated. This applies to main power circuits as well as to all auxiliary circuits!

General safety rules:

- Isolate circuits
- Prevent circuits from being remade
- Check isolated state
- Cordon off or cover all normally live parts in the vicinity.

Do not unmate the connector or disassemble the unit before having observed these general

rules. The maintenance necessary for the S335 BTM master controller is low, however the condition of the unit depends on environmental influences as well as on appropriate handling. General recommendations after every year of operation or after 1 million operations:

- Clean all parts by means of dry compressed air.
- Inspect all mechanical connections, springs and notching disks.
- Inspect snap action elements.
- Lubricate bearings with special oil, ref. no. 4919 0258 469.
- Grease toothed and cam disks with non-freeze grease, ref. no. 4931 0305 612.

4. Spare part list

<i>Manually operable S 335 BTM</i>			
<i>Item no.</i>	<i>Spare part No.</i>	<i>Designation</i>	<i>Quantity per unit</i>
01	6200.0549 210	Push-button DM 22, knob black	01
02	6200.0549 221	Support with 1 NO contact	02
03	5974.0278 985	Special cylinder lock	01
04	5819.0297 737	T-Handle	01
05	3721.0785 552	Adapter	01
06	2721.0782 633	Reverser selector shaft	01
07	2721.0782 644	Lock selector shaft	01
08	2721.0782 655	Master/brake controller selector shaft	01
09	2731.0281 629	Coupling tube	01
11	3721.0782 666	Cover plate	01
12	3721.0282 473	Notch spring	02
13	3720.0282 962	Notch spring	01
14	3721.0282 462	Notch spring	01
15	3721.0282 780	Revolving spring	01
16	3721.0283 841	Notch disk	01
17	3721.0283 863	Lock/notch disk	01
18	3721.0283 885	Lock/notch disk	01
19	3721.0284 639	Notch disk, big	01
20	3721.0283 829	Lock disk	01
21	2721.0283 987	Notch lever	01
22	2721.0283 954	Notch lever	01
23	2721.0283 910	Notch lever	01
24	2720.0131 320	Notch lever	02
25	3720.0328 502	Axle	02
26	2720.0328 375	Notching roll	02
27	1520.0270 550	Snap action switch S800C	01
28	1520.0270 732	Snap action switch S800A	21

Electrical Components and Systems for Railway and Industrial Applications

Connectors	<ul style="list-style-type: none"> • Industry-standard connectors • Special connectors for communication technology (MIL-connectors) • Connectors for railway technology including UIC connectors • Special connectors per customer requirements
Switchgear	<ul style="list-style-type: none"> • Single and multipole DC contactors • High-voltage AC/DC contactors • Contactors for battery powered vehicles and power supplies • Contactors for railway applications • Special devices per customer requirements
Switching Elements	<ul style="list-style-type: none"> • Snap-action switches with direct opening action • Snap-action switches with self-cleaning contacts • Switching elements with high breaking capacity • Control and safety switches • DC emergency break switches • Special switches per customer requirements
Control and Signal Devices	<ul style="list-style-type: none"> • Master controllers and reversers for railway applications • Toggle switches • Hand-operated and foot switches for railway applications (Dead Man's Device) • Emergency brake handle
Systems and Components for Railway Technology	<ul style="list-style-type: none"> • Power supply plants for passenger coaches • Battery chargers for locomotives and restaurant cars • High-voltage equipment for single and multi-voltage operation • Heaters • Projecting performance for passenger coaches • Projecting performance for diesel MUs • Electrical drives with magnetic drive technology • Special devices per customer requirements