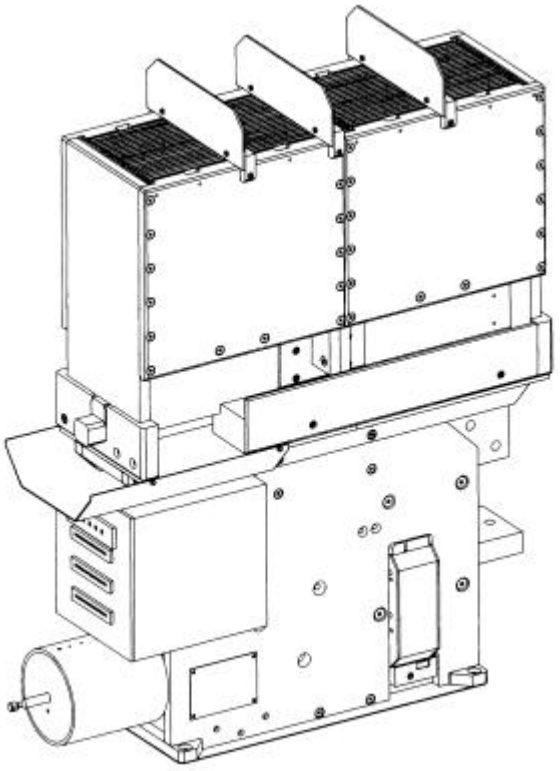


USER`S GUIDE
High Speed DC Circuit Breaker
TYPE GERAPID 2607…8007

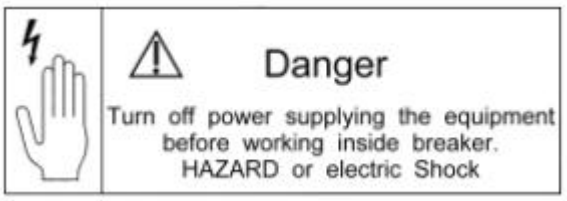
User's Guide
High Speed DC Circuit Breaker
Type Gerapid 2607...8007
Arc Chute 1X2, 1X4, 2X2, 2X3, 2X4

Table of Contens **Page**

1.	**General**	3
1.1	Warnings	3
1.2	Technical Data	4
1.3	Short Description	6
1.4	Structure and Components	6
2.	**Installation and Operation**	7
2.1	Transportation	7
2.2	Installation	7
2.3	Setting the Overload Release	7
2.4	Operation	8
3.	**Inspection and Maintenance**	8
3.1	General	8
	Tables Inspection and Maintenance	9
3.2	General Visual and Functional Check	10
3.3	Inspecting the Arc Chute	10
3.4	Checking the Condition of Contacts, Arc Probes and Protective Walls	10
3.5	Checking the Chute and the Probe Screwed Connections for tightness	11
3.6	Checking the Latch Mechanism and Drive	12
3.7	Changing the Protective Wall	12
3.8	Changing the Arc Chute	12
3.9	Changing the Arc Contacts and Probes	12
4.	**Circuit Diagrams**	13
5.	**Dimensional Drawings**	26
6.	**Eliminating Operating Troubles** (Error Detection)	37

1. General

1.1 Warnings



During operation, electrical equipment carries dangerous voltages. In addition, circuit breakers can emit hot, ionized gases when switching high currents, especially short circuit currents.

Installing, commissioning, maintaining, changing or refitting this equipment must be carried out only by qualified and suitably trained specialist personnel and under strict observation of applicable safety regulations.

During their operation, circuit breakers must be equipped with appropriately fitted covers, e.g. in suitable enclosures or panel boards. Safety distances must be observed. Certain work must only be carried out by suitably trained service personnel.

Non-compliance with these warnings may result in death, and/or severe physical damage and extensive damage to equipment.

Prior to carrying out maintenance, inspection or checks, the circuit breaker must be open, the both terminals must be grounded, the circuit breaker must be switched off and the control plug removed.

During operation, i.e. when the circuit breaker is closed, manual activation is not permissible. Manual activation must only be used for maintenance purposes.

The circuit breaker is equipped with quickly moving parts. There is a high risk of injury. Do not touch the circuit breaker while it is being switched ON or OFF.

The control circuits are equipped with capacitors which may by charged with dangerous voltages. Work on this section must be carried out carefully.

1.2 Technical Data

Breaker type		**Gerapid 2607**					**Gerapid 4207**				
Arc chute type		1x2	1x4	2x2	2x3	2x4	1x2	1x4	2x2	2x3	2x4
Rated service current (I_{Ne})	A	2.600					4.200				
Rated voltage (U_{Ne})	V	1.000	2.000	2.000	3.000	3.600	1.000	2.000	2.000	3.000	3.600
Short circuit breaking capacity (I_{cc} max.) [1]	kA	244	120	4)	4)	52	244	120	4)	4)	52
Peak of the short-circuit current (I_{ss}) acc. to EN 50123-2	kA	100	50	100	50	40	100	50	100	50	40
Rated short-circuit current (I_{Nss}) [2] acc. to EN 50123-2	kA	70	30	71	35	28	70	30	71	35	28
Rated short.circuit current (I_{cs}) aacc. to IEC 942-2	kA	80	40	65	40	40	80	40	65	40	40
Switching transient	kV	2	4	4	5,6	7	2	4	4	5,6	7
Rated track time constant (T_{Nc})	kA/ms	31,5	31,5	31,5	31,5	31,5	34,5	31,5	31,5	31,5	31,5
Short time current 120 min.	A	3.150					5.000				
2 min.	A	5.200					8.500				
20 sec.	A	7.800					12.600				
Rated insulation voltage(U_{Nm})	V	1.200	2.300	2.300	3.000	4.000	1.200	2.300	2.300	3.000	4.000
Rated impulse withstand voltage (U_{Ni}) 1,2/50 µs, gem.prEN 50124-1:1997	kV	12	18	18	30	30	12	18	18	30	30
Mechanical endurance	0ps.	20.000 [3]					20.000 [3]				
Total weight approx. ca.	kg	120	120	160	160	160	120	120	160	160	160

[1] max. value acc. to customer specifications
[2] Higher values on request (it depends on different conditions)
[3] With regular maintenance up to 100.000 ops.
[4] Test only by customer order

Table 1a: Technical Data, Type Gerapid 2607, 4207

Breaker type		**Gerapid 6007**					**Gerapid 8007**				
Arc chute type		1x2	1x4	2x2	2x3	2x4	1x2		2x2	2x3	
Rated service current (I_{Ne})	A	6.000					8.000				
Rated voltage (U_{Ne})	V	1.000	2.000	2.000	3.000	3.600	1.000		2.000	3.000	
Short circuit breaking capacity (I_{cc} max.) [1]	kA	200	4)	4)	4)	4)	240		4)	4)	
Peak of the short-circuit current (I_{ss}) acc. to EN 50123-2	kA	70	50	80	50	4)	71		4)	4)	
Rated short-circuit current (I_{Nss}) [2] acc. to EN 50123-2	kA	50	35	56	35	4)	50		4)	4)	
Rated short.circuit current (I_{cs}) aacc. to IEC 942-2	kA	80	40	65	40	4)	80		65	4)	
Switching transient	kV	2	4	4	5,6	7	2		4	5,6	
Rated track time constant (T_{Nc})	kA/ms	31,5	31,5	31,5	31,5	31,5	34,5		31,5	31,5	
Short time current 120 min.	A	3.150					5.000				
2 min.	A	5.200					8.500				
20 sec.	A	7.800					12.600				
Rated insulation voltage(U_{Nm})	V	1.200	2.300	2.300	3.000	4.000	1.200		2.300	3.000	
Rated impulse withstand voltage (U_{Ni}) 1,2/50 µs, gem.prEN 50124-1:1997	kV	12	18	18	30	30	12		18	30	
Mechanical endurance	0ps.	20.000 [3]					20.000 [3]				
Total weight approx. ca.	kg	120	120	160	160	160	120		160	160	

[1] max. value acc. to customer specifications
[2] Higher values on request (it depends on different conditions)
[3] With regular maintenance up to 100.000 ops.
[4] Test only by customer order

Table 1b: Technical Data, Type Gerapid 6007, 8007

Auxiliary current connector	1x12-pole 3x15-pole	AC 400V, 20A AC 250V, 8A
Activating magnet	Rated voltage Uc Operating range Power consumption Gerapid 2607…6007 Power consumption Gerapid 8007 Minimal command signal time min.interval between two ON-operations	AC 48V…230V and DC 48V…220V 0.8...1.1 Uc 1750W 2600W 100ms approx. 8s without C ; approx. 14s with C
Internal power supply for Gerapid 2607…8007	Input: Voltage range Output: Voltage range Current	DC 33...75V DC 24V (+/-5%) 6A permanent
	or	
	Input: Voltage range Output: Voltage range Current	DC 50...150V DC 24V (+/-5%) 6A permanent
	or	
	Input: Voltage range Output: Voltage range Current	AC 115...290V, DC 125...353V DC 24V (+/-5%) 3A permanent, 5A/100ms
External power supply	with plug and socket unit	DC 24V (+/-5%)
Aux. contact HS 1…HS 10, ks- und arc chute- indication	Rated operational voltage Ue/AC Rated operational current Ie/AC-15 Rated operational current Ie/AC-12 (Ith) Rated operational voltage Ue/DC Rated operational current Ie/DC-13 Contact duty (min. value)	230V 1A 10A 110V 0,5A DC 10V/2 mA
a-trip (Shunt trip)	Rated voltage Uc Operating range: OFF Power consumption	24V 21.6V…26.4V approx. 100W
r-release (Zero voltage release)	Rated voltage Uc Operating range: OFF Operating range: ON Power consumption	24V < 3V 24V (+/-10%) approx. 11W
ed-trip	Energie source: Capacity Charging voltage Switching interval	2000µF 300V max. 1/min.

Table 2a: Technical Data of auxiliary circuits

Components		***Technical datas of control circuits*** *Us / In*
SU-Control	*ON-push-button -S1*	*DC 24V / approx. 10mA*
a-trip	*push-button-S2*	*DC 24V / approx. 4A*
r-release	*push-button -S2 (-X2 :6 / :7)*	*DC 24V / approx. 10mA*
	push-button -S2 (-X2 :8 / :9)	*DC 24V / approx. 450mA*
ed-trip *(R = 4Ohm)*	*push-button -S3*	*DC 300V / 750A / 3ms*
ed-trip with capacity unit	*Connection "Firing signal" (-X2 :10 / :11)*	*DC 6V…24V / approx.20mA*

Table 2b: Control Circuits (Directional values to rate the components)

1.3 Short Deskription

Gerapid high-speed DC circuit breakers are single-pole circuit breakers designed for use in railway propulsion-power distribution systems with operating currents up to 8000A and operating voltages up to 3600V DC. They have a very high interruption capacity combined with a current limiting characteristic.

Closing of the circuit breaker is performed through a high-power activation magnet. During inspections, opening and closing may be carried out by means of a hand lever, which can be mounted onto the armature of the activation magnet.
Overload tripping is achieved directly via a short circuit trip or, depending on the rate of current rise, by an external current-rise release with an internal capacitor trip (ed - trip available as an accessory).
Indirect remote tripping can be achieved by means of a shunt trip (a-trip) or a zero voltage release (r-release).
The arc chute works on the basis of a highly sophisticated asbestos-free arc splitting principle.
A wide variety of accessories and spares is available for maintenance, repair, or possible extension.

1.4 Structure and Components

Type Gerapid high speed DC circuit breakers have a compact and enclosed construction. They are IP 00 protected. All parts are mounted on thick-walled, non-breakable and fireproof insulation panels, whose large covers protect the breaker's mechanism from damage. Transparent plastic side covers are available as an accessory to protect metal connecting elements on the panel.

Gerapid breakers are equipped with a two-stage contact system. The main contacts are coated with a silver composite material, the arcing contacts are made from copper and can be easily replaced. The flexible contact is linked to the connection by means of very tight braids.

An attachment set is used to mount the various arc splitting systems for different operating voltages to the breakers. The arc chutes consist of a highly durable, arc-proof material, into which the arc plates have been integrated. The arc plates split the arc into partial arcs and increase the arcing voltage by multiplying the anode and cathode voltage drop. Because of their high heat capacity, the plates and arc chute walls absorb a large amount of the arc's energy.

The overload trip design uses a release magnet with twin magnets, optimizing the twin magnetic field principle. This technology ensures an equally fast tripping in both current directions. The magnetic system does not require an auxiliary voltage. The system consists of the holding circuit, the flexible armature and the tripping circuit. The holding magnet and the tripping magnet are both excited by main current.
Until the static overload release's response threshold has been reached, the flexible armature is held in position by the holding circuit's magnetic field and the counter spring. If the main current exceeds the set static response threshold, the tripping circuit's power takes over and pulls the flexible armature down suddenly. During this operation, the armature trips the release lever. The main latch and contacts are opened immediately. The response threshold can be easily adjusted by turning the adjustment nut with a SW6 hexagon wrench. In combination with the transparent side cover accessory, a fixed mounted insulated knob is available (accessory).

To detect high short circuit currents early and to record leakage currents in long peripheral sections (for railway equipment), whose final values are lower than the highest operating currents, protective relays for monitoring a current increase should be installed. If a fault occurs, a release signal can be passed on to the capacitor release, which causes the breaker to open rapidly (opening delay <3ms). This tripping mechanism can be ordered as an accessory for the breaker. (Alternatively, or additionally, it is possible to activate a shunt trip or a zero voltage release.)

The breaker can be equipped with either a shunt trip or a zero voltage release. The a- trip can be used for remote actuation. The r- release can be used for remote actuation and, in combination with an optional electronic trip unit incorporated into the breaker, for voltage control. Both trips work on a voltage level of 24V. A voltage transformer, which is integrated into the device, adapts to other voltage levels by transferring the energy required by the breaker mechanism (except for the drive). The release mechanism is tripped by potential free contacts at 24V level. The a- trip is designed for short time action and is always connected through an auxiliary contact. This ensures that the a- trip is only energized during the time until the breaker is opened. The r- release's winding is designed for continuous operation. In case of a voltage drop, the release mechanism opens the breaker. It is therefore possible to use the release in combination with the electronic trip unit for voltage monitoring , i.e. for motor switches, where an unintended re-start of machines after a temporary voltage breakdown is to be prevented. Due to their operational mode, zero voltage releases are self-monitoring devices, i.e. when the breaker is tripped upon a break of the pilot wire (EMERGENCY-OFF principle).

The activation magnet is mounted at the front of the breaker and is equipped with a grounded casing. The drive includes a self-interrupt control circuit (SU-control). This circuit enables a short activation with a minimum command duration of approximately 300ms, causes the voltage applied to the magnet to be switched off after approximately 400ms and prevents, during continuous operation, repeated activation (anti-pumping) due to an existing short circuit. In addition, the switch-in mechanism is electrically blocked for approximately 10s after activation. This prevents premature activation following a short circuit.

The breaker is equipped with up to ten isolated form C auxiliary contacts (1 NO/NC each). The auxiliary contacts are activated by the movable main contact. They are wired to 15-pin control plugs. As an accessory the circuit breaker can be equipped with auxiliary switches for indication of short circuit tripping and for the presence of the arc chute.

2. Installation and Operation

2.1 Transportation

The circuit breaker must always be transported to the installation site properly and fully packed. The packaging protects the device against damage and dust; it should only be removed prior to installation. If the packaging is damaged, the breaker and the arc chute must be inspected for damage. Ensure that all packaging materials have been carefully removed prior to breaker installation.

2.2 Installation

The breakers, as delivered, are IP00 protected. They must be installed in a dry, preferably dust-free room. They must not be subjected to strong vibrations. The lower and upper connections must be connected directly to the main cables and busbars.

The breaker must only be used in an upright operation position with the arc chute in place and fully secured. After installation, both the arc chute and special threaded joints must be checked for tightness.

The safety distances as shown in the dimensional drawings must be maintained to grounded or insulated parts. Suitable measures must be taken to protect personnel from arcs.

Strong, external magnetic fields, caused by improperly located supply conductors or stray fields from other devices, can lead to a shift of the trip setting thresholds. This may result in premature tripping, or no tripping at al, during low-level short circuit current events. This has to be accounted for when installing and operating the device with shielding added if appropriate.

The control wires must be connected as shown in the schematic circuit diagram **[Fig.8]**.
The protective grounding wire must be connected at the marked contact.

2.3 Setting the Overload Release

The adjustment of the static overload release **[Fig.1]** within a specific adjustment range is made by turning the regulating screw. This procedure requires an SW6 hexagon wrench. The adjustment must only be carried out after the breaker has been disconnected from the main circuit and has been grounded. Turning the adjustment screw clockwise decreased the trip threshold, turning the screw counter-clockwise increased the tripping threshold.
Adjustment is performed by aligning both the arrow and the marking line to one line.

2.4 Operation

Maximum operating voltage and current ratings are as shown on the breaker nameplate.

During continuous operation, it must be loaded with its rated operating current at maximum. Load currents in excess of breaker nameplate rating are allowable for brief periods. Refer to the short time currents listed in **Table 1a/1b**. Do not exceed the rated operating voltage shown on the breaker nameplate.

The drive and auxiliary trips function within the specified control voltage range. The auxiliary trips must be loaded with the values listed in **Table 2a** at maximum.

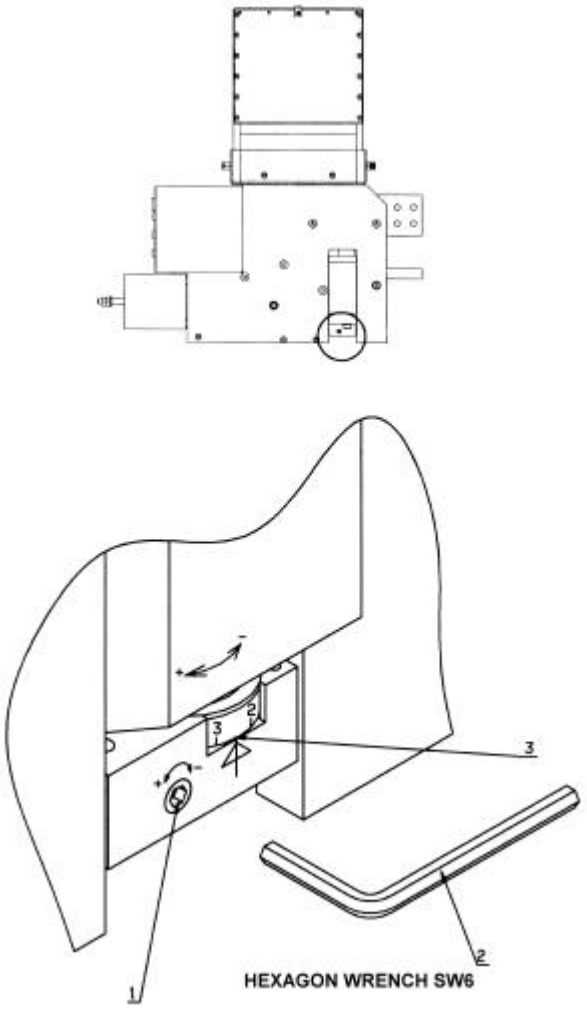
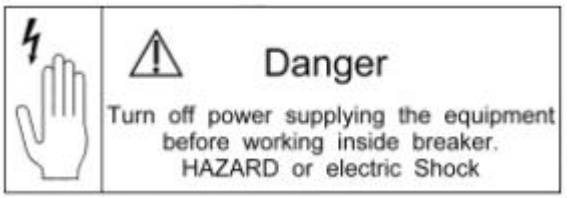


Fig.1 Setting the overload release

3. Inspection and Maintenance



Prior to carrying out maintenance, inspection or checks on the circuit breaker, the breaker must be open, the connections on both sides must be grounded, the circuit breaker must be switched off and the control plugs removed.
Non-compliance with these warnings can result in death, severe physical damage and extensive damage to equipment.
Metric tools are needed for all screws.

3.1 General

Regular inspection and maintenance must be carried out to ensure the proper functioning of the breaker and in order to achieve a long working life. The intervals at which inspections must be carried out may be determined by evaluating the breaker's duty cycle. **Table 3a** provides an overview of checks to be carried out and lists the appropriate inspection intervals. **Table 3b** provides indicators for maintenance work. In order to check the latch mechanism, the breaker can be opened and closed with a hand lever. **Fig. 2** shows the correct use of the lever.

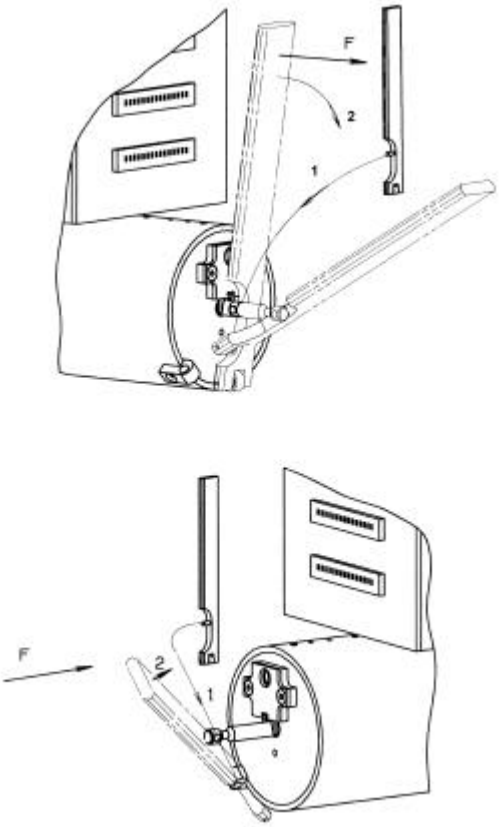


Fig. 2 Manual ON/OFF.

Type of inspection	Intervals of inspection	Work to be carried out
General visual and functional check	Recommended: every 6 months **At least once a year**	Remove dirt, check drive and trips for correct operations
Checks: -Contacts -Arc probes -Protective walls -Arc chute (LBK)	After high short circuit openings (>25kA) or frequent operations with overload- and/or rated current **At least once a year**	Check for wear and deposits
Check breaker and tripping mechanism. To be carried out by trained specialist.	After 5000 mech. operations **At least once every 4 years**	Check proper operation, setting values and flexible braid
Check arc probes and arc chute screw connections	After each job carried out in the contacts probe or arc chute **At least once every 6 months**	Check for tight fitting

Table 3a: Inspections required

Work to be carried out	required
Changing arc-chute (LBK) Adjustment of latch mechanism Exchange parts	As required by the results of the inspection
Replaces of: -Pre-arcing contacts (wear contacts) -Arc probes -Protective walls	As required by the results of the inspection, or to be done latest after 100 overload operations or 300 loadbreak operations at rated current

Table 3b: Maintenance required

3.2 General Visual and Functional Check

Disconnect breaker from main circuit, make sure it is not live, earth on both sides and pull out control plugs.

Check breaker for presence of dirt, and, if applicable, remove all dirt with a dry cloth.

Switch the breaker ON and OFF several times. The contacts must close after the ON command, the contacts must open following the OFF command via the shunt trip and the undervoltage release.
The breaker mechanism must not appear sluggish nor must ON/OFF be unduly delayed. No particularly high signs of abrasion (rough chips) should be seen anywhere.

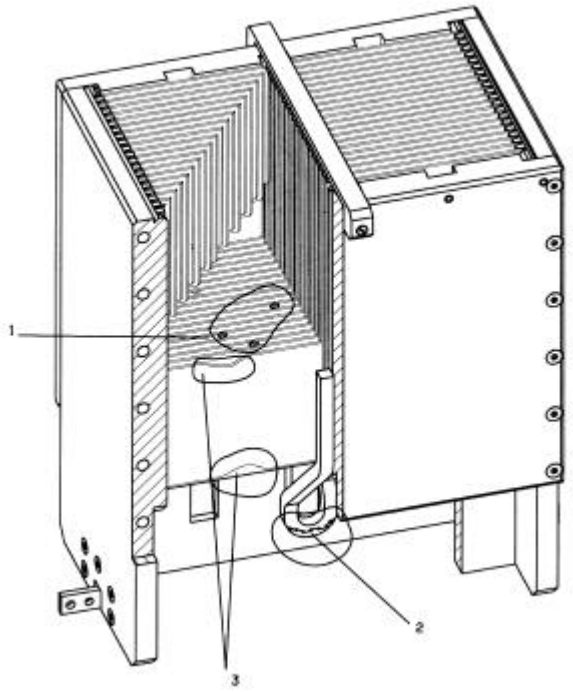


Fig.3 Inspecting the Arc Chute

3.3 Inspecting the Arc Chute

Disconnect breaker from main circuit, make sure it is not live, ground on both sides and pull out control plug.

[Fig.6] Loosen the clamping screws **5** and **8** with an SW 5 hexagon wrench and lift the arch chute **1** off the breaker.

[Fig.3] Check the chute's interior, as far as possible, for deposits and check the general condition of the insulation material and the arc horns for wear.
During this inspection check whether there are many copper pearls on the chute's plates **1**(that could partially link the plates), whether the arc horns' cross section **2** is heavily reduced, whether the splitting plates **3** are heavily burned and whether the chute's internal insulation is heavily damaged.

[Fig.6] Replace arc chute **1** on the breaker and secure with bolts **5** and **8** and toothed disks **6** and **9** using a torque of 10 Nm.

3.4 Checking the Condition of Contacts, Arc Probes and Protective Walls

Disconnect breaker from main circuit, make sure it is not live, ground on both sides and pull out control plugs
[Fig.6] Loosen the clamping screws **5** and **8** with an SW 5 hexagon wrench and lift the arc chute **1** off the breaker.

[Fig.4] The arc contacts should not be burned below 1/3 of the total cross section in any place. Pay particular attention to the area around probe bend **3** and pre-arcing contact **2**. Wear on pre-arcing contact **1** should amount to no more than 2mm; the limiting value is 3mm! If it is burned down more, it must be replaced. The main contacts **4** should not show any particular signs of material erosion, since, in the case of ordinary short circuits or overload and operating current deactivation, the arc is ignited between the pre-arcing contacts. Ignition can take place on the main contacts only with excessively worn and old pre-arcing contacts or very high short circuit currents. The wear should not exceed an area of 1mm. The material erosion rate on the protective walls **5** must not exceed 1mm in any place.

[Fig.6] Replace arc chute **1** onto the breaker and secure with bolts **5** and **8** and toothed disks **6** and **9** using a torque of 10 Nm.

Check both the arc chute and the arc probe screwed connections after installation.

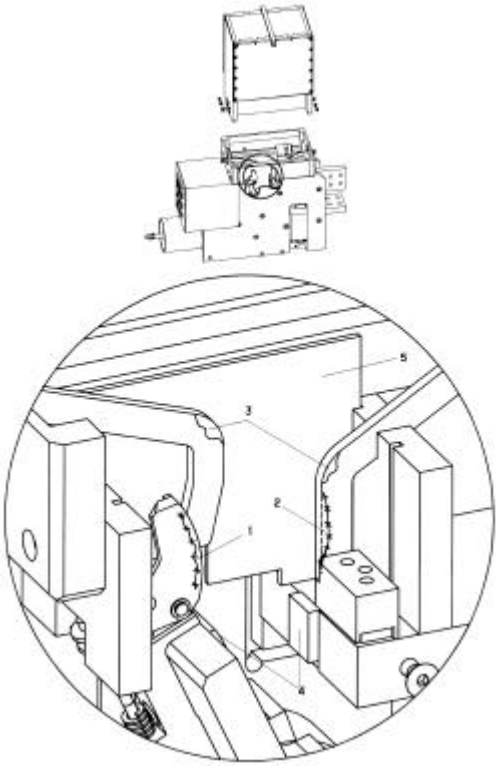


Fig.4 Checking the Contacts and the Protective Walls

3.5 Checking the chute and the probe screwed connections for tightness

Disconnect breaker from main circuit, make sure it is not live, ground on both sides and pull out control plugs.

[Fig.5] Tighten arc chute and arc probe screw connections with a torque of 10 Nm. Ensure that the screws are in good condition, that there is no damage to the thread or the tool insertion point and that the surface is free from rust. If this is not the case, they must be replaced.
Every screw connection must be secured by means of a safety element-lock washer DIN 6796. This check must be carried out prior to commissioning and after every maintenance

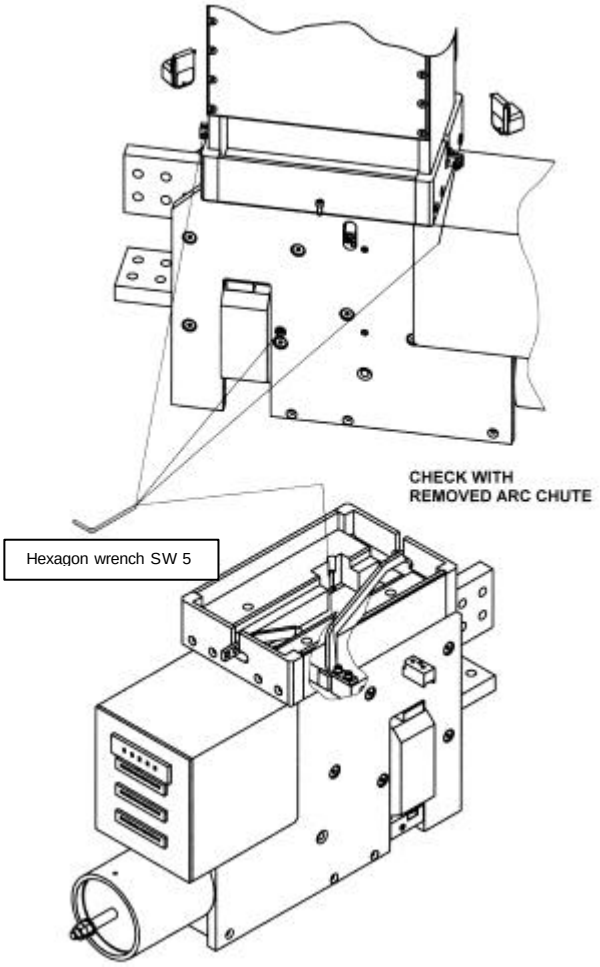


Fig.5 Checking Chute and Probe Screwed Connections

3.6 Checking the Latch Mechanism and Drive

A thorough check of the latch mechanism and the current path should only be carried out by service engineers or technicians trained and qualified by GE Industrial Systems

3.7 Changing the Protective Wall

Disconnect breaker from main circuit, make sure it is not live, ground on both sides and pull out control plug.

[Fig.6]Loosen the clamping screws **5** and **8** with an SW5 hexagon wrench and lift the arc chute **1** off the breaker.

[Fig.7] Carefully pull out the old protective walls **5** and insert new ones.

[Fig.6] Replace arc chute **1** onto the breaker and secure with bolts **5** and **8** and toothed disks **6** and **9** using a torque of 10 Nm.

Check both the chute and the probe screwed connections after installation.

3.8 Changing the Arc Chute

Disconnect breaker from main circuit, make sure it is not live, ground on both sides and pull out control plug.

[Fig.6] Loosen the clamping screws **5** and **8** with an SW5 hexagon wrench and lift the arc chute **1** off the breaker.

Put the new arc chute **1** onto the breaker and secure with bolts **5** and **8** and toothed disks **6** and **9** using a torque of 10 Nm.

Check both the arc chute and the arc probe screwed connections after installation.

3.9 Changing the Arc Contacts and Arc Probes

See technical information “High Speed DC Circuit Breaker Type Gerapid, *Hints + Instructions*”.

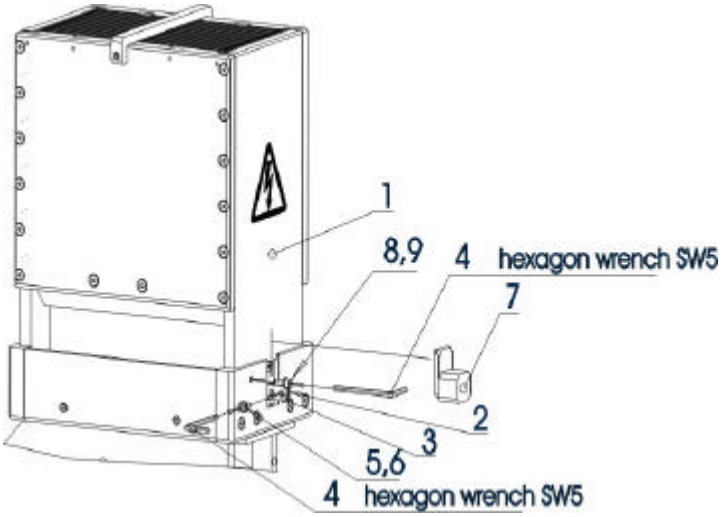


Fig.6 Installing the Arc Chute

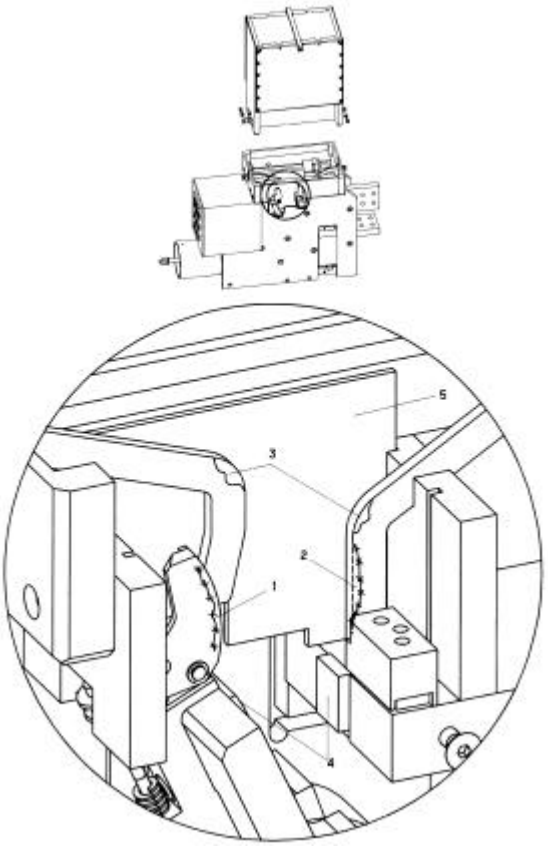
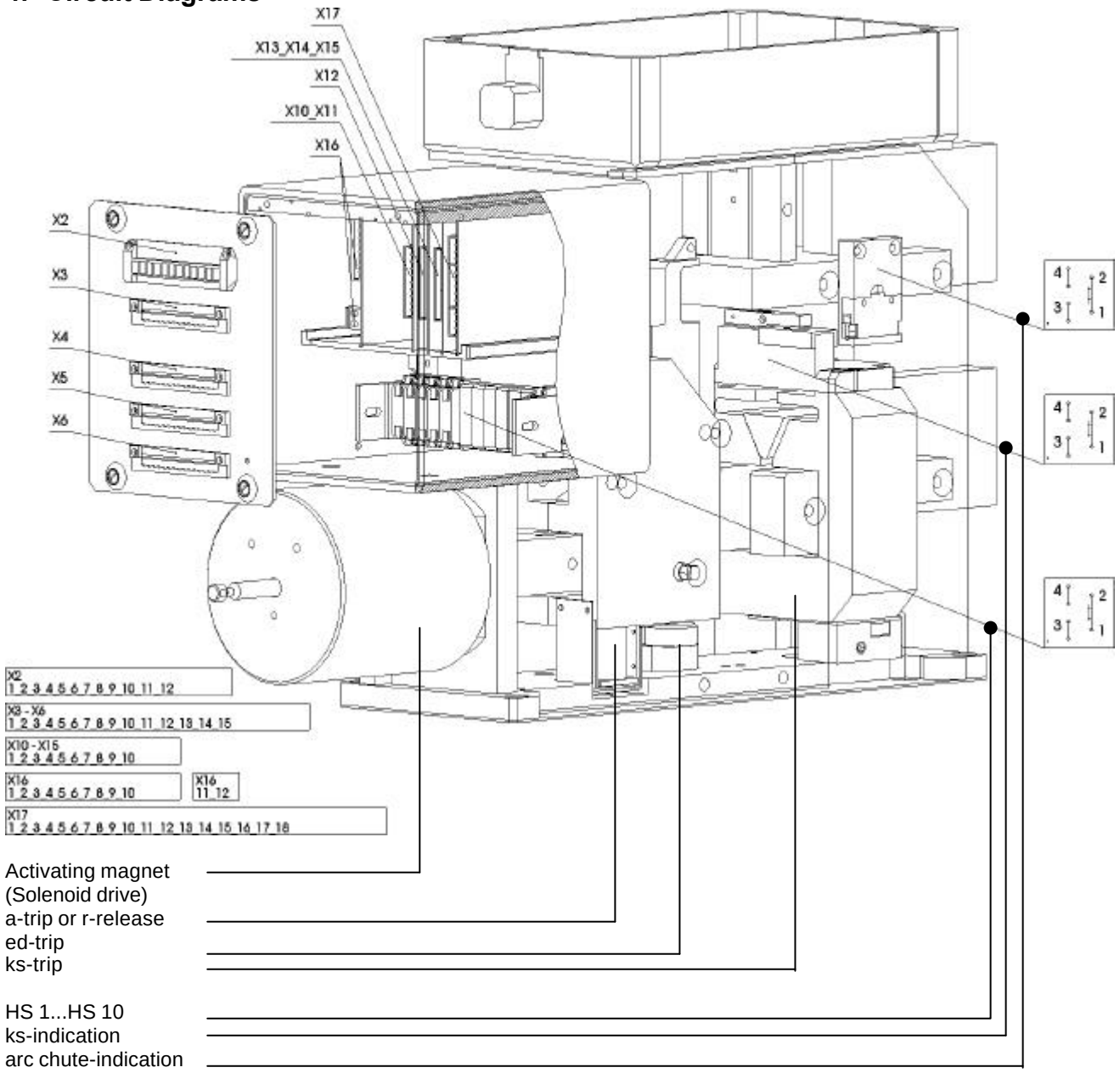


Fig.7 Changing the Protective Wall

4. Circuit Diagrams

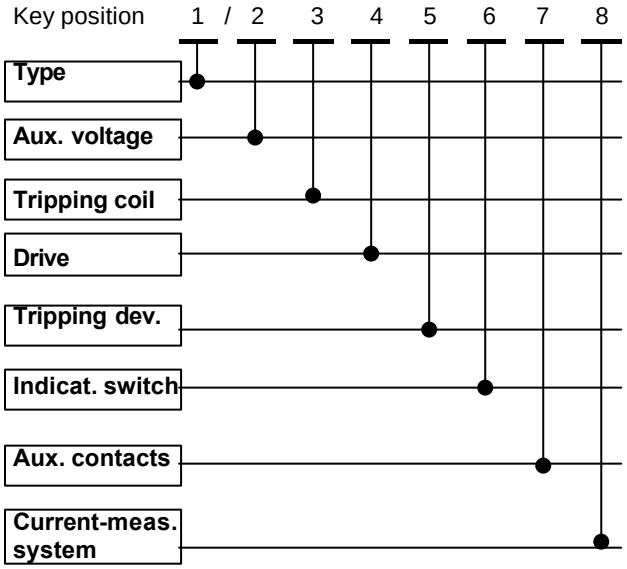


Description	Designation
X2	1.Connector: Auxiliary- and control circuits
X3	2.Connector: Auxiliary- and control circuits
X4	3.Connector: Auxiliary contacts HS1...HS5
X5	4.Connector: Auxiliary contacts HS6...HS10
X6	5.Connector: Current measure system SEL
X10	Control board: Power supply unit
X11	Control board: Voltage supply DC 24V external
X12	Control board: Self interrupt control (SU)
X13	Control board: Shunt trip (a-trip)
X14, X15	Control board: Undervoltage trip (r-release) (X15: r-release mod.)
X16	Control board: ed charge- and trip component
X17	Control board: Current measure system SEL

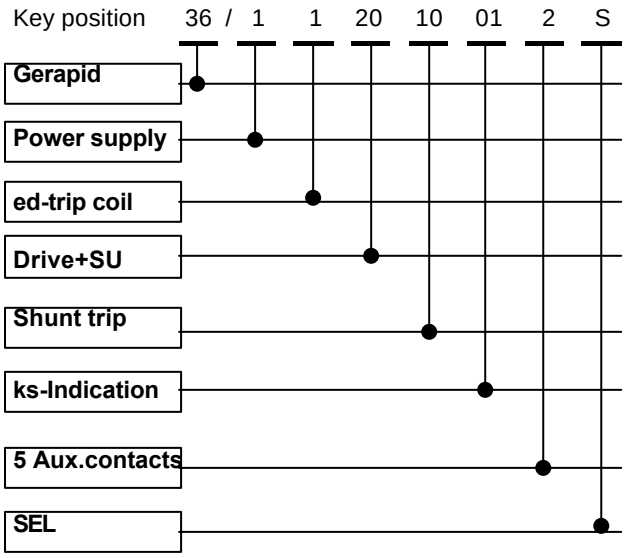
Fig. 8 Connecting plug allocation

Basic Connections Definitions

The power circuits are not shown in the wiring diagrams due to clarity. The control circuit is presented as a typical circuit diagram and is a combination of numbered basic diagrams for drives, trips and indicators. The number of the complete diagram can be derived by using the key numbers of the basic plan.



Example: complete diagram No.



Key position

Key position	Key number	Designation
Type		
1	36	Gerapid
Auxiliary voltage		
2	1	AC/DC Converter
	2	DC 24V external supply
Tripping coil		
3	0	Without ed-trip coil
	1	With ed-trip coil
	2	With ed-trip coil and internal capacitor unit
Drive		
4	20	Solenoid drive with Self cut-off control
Tripping device		
5	00	Without trip
	10	With shunt trip
	20	With undervoltage release
Indication device		
6	00	Without indication
	01	ks-indication
	02	Arc chute indication
	03	ks+arc chute indication
Auxiliary contacts		
7	1	3 auxiliary switches
	2	5 auxiliary switches
	3	10 auxiliary switches
Current-measurement system		
8	S	With SEL

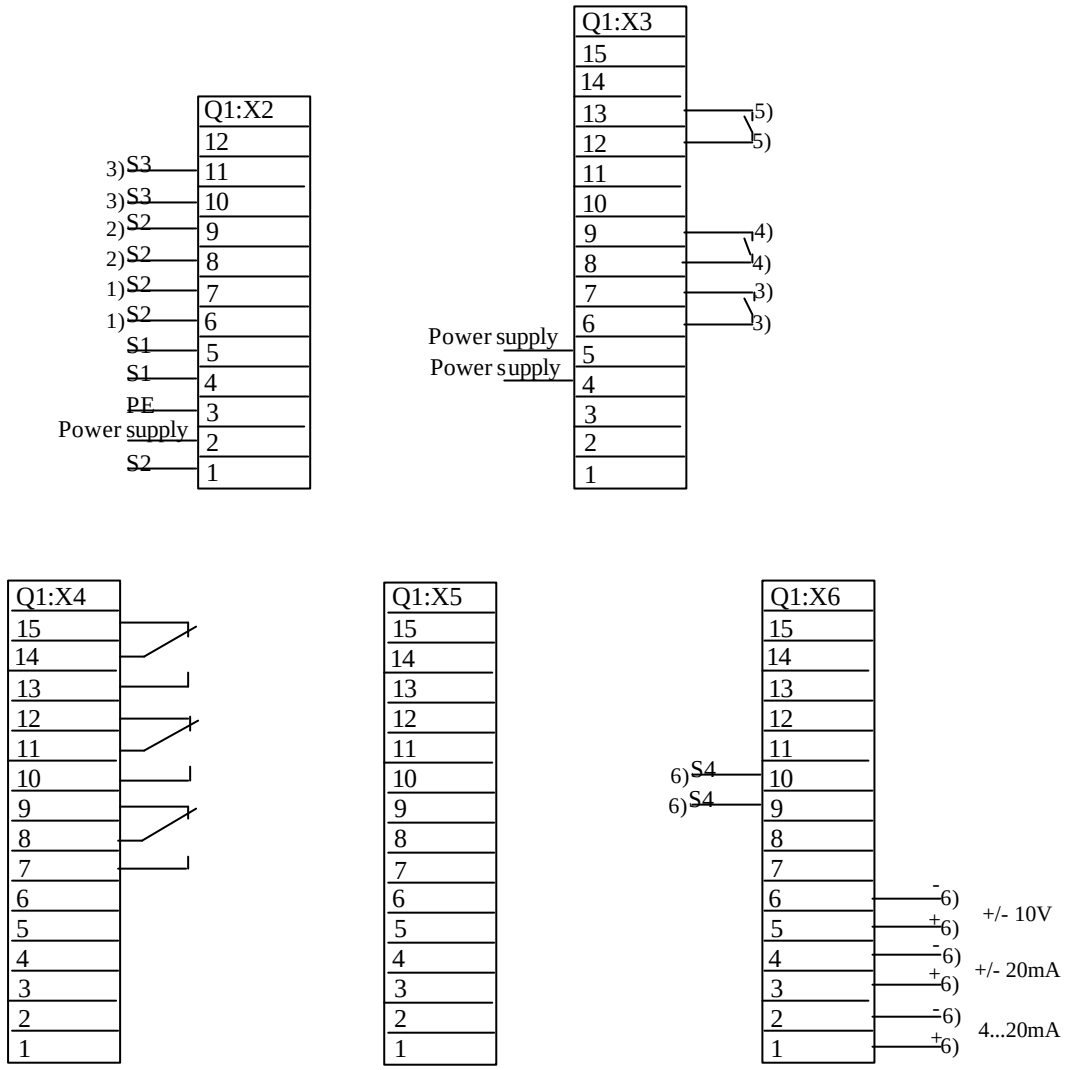
Indication of components

Q1 **Circuit breaker**
S1 **Push button „ON“**
S2 **Push button „OFF“"**

Cut off control unit:
K1 **Closing relay**
K2 **Closing block relay**

Shunt trip, undervoltage trip:
K1 **Closing STOP relay**
HS11 **Auxiliary contact**

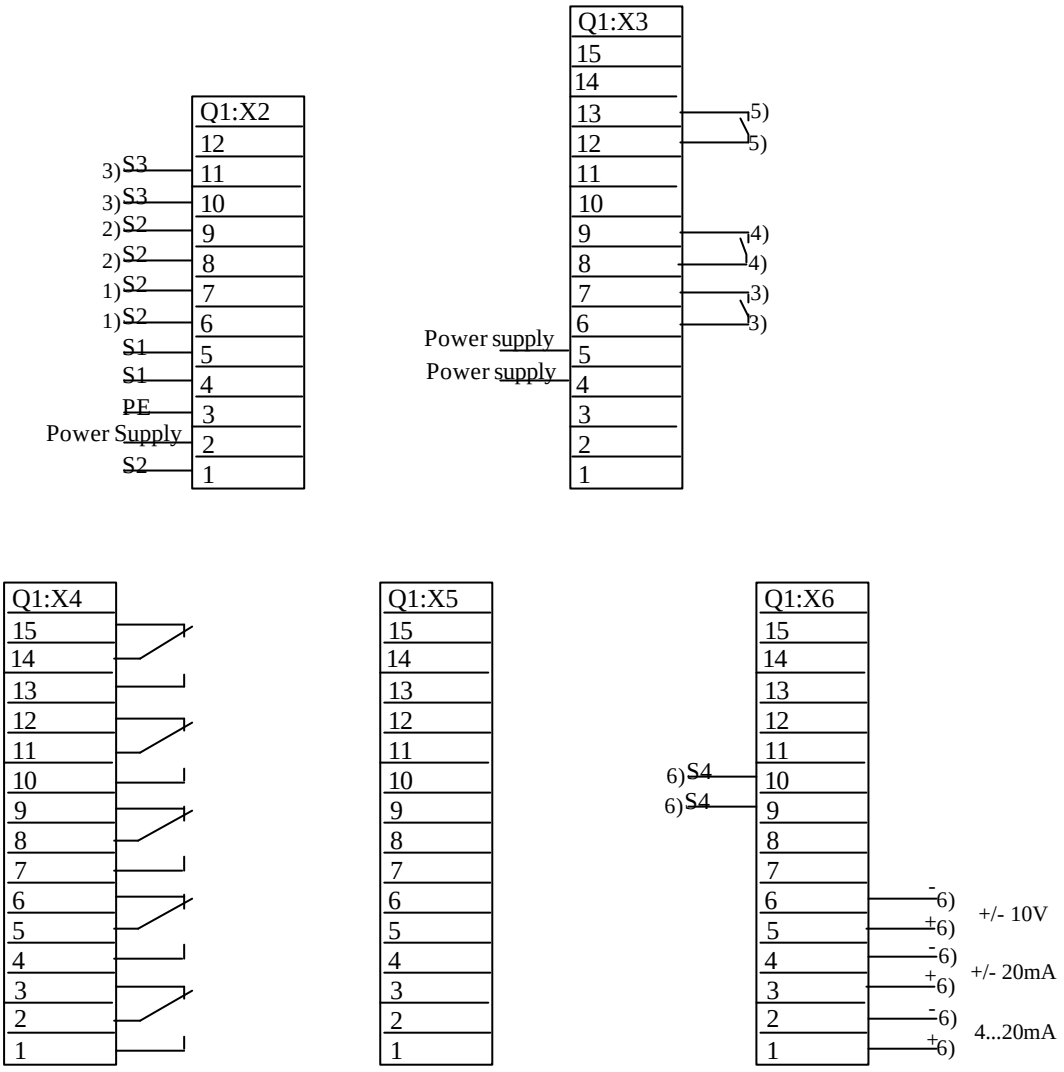
ed-trip with internal capacitor unit:
K1 **Voltage monitoring relay**



Position of auxiliary switches is shown in the Off position of main-contacts

1) with shunt trip
2) with undervoltage release
3) with ed trip
4) with ks tripping indicator switch
5) with arc chute mounted indicator switch
6) with current measurement unit (polarity of the output signal shown by current flow from top to bottom connection of the breaker)

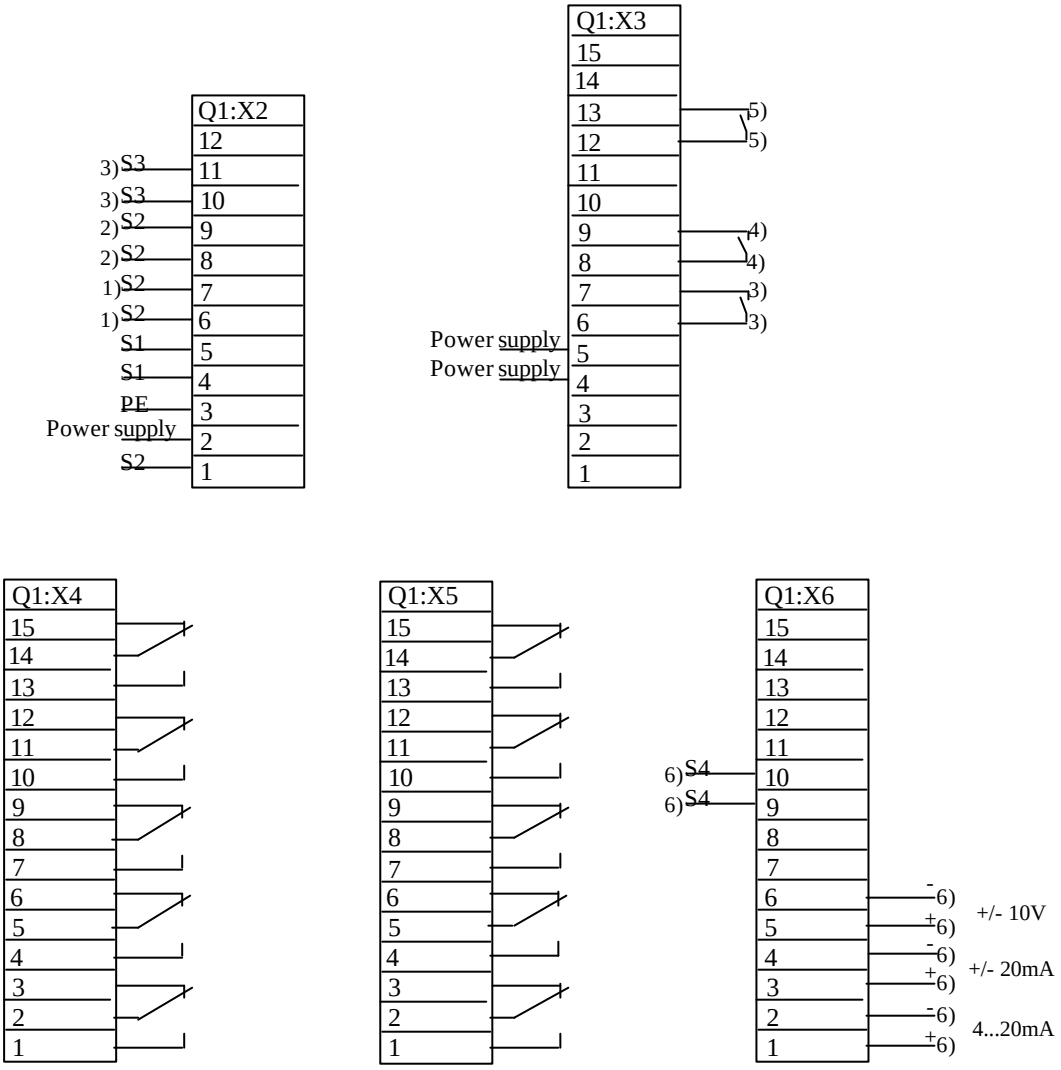
Fig. 9 Connecting plug termination (Indicating switches, 3 auxiliary switches)



Position of auxiliary switches is shown in the Off position of main-contacts

1) with shunt trip
2) with undervoltage release
3) with ed trip
4) with ks tripping indicator switch
5) with arc chute mounted indicator switch
6) with current measurement unit (polarity of the output signal shown by current flow from top to bottom connection of the breaker)

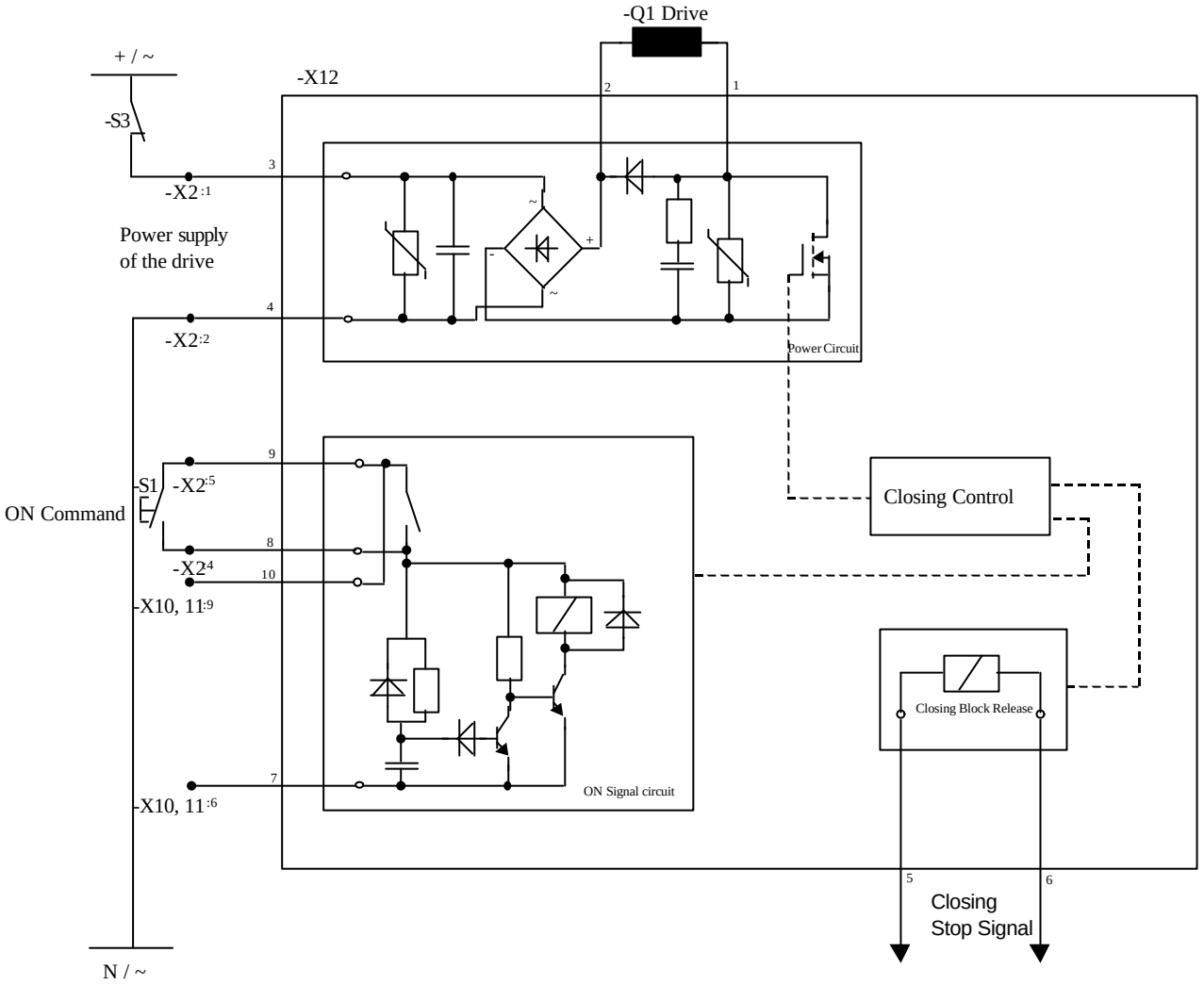
Fig. 10 Connecting plug termination (Indicating switches, 5 auxiliary switches)



Position of auxiliary switches is shown in the off position of main-contacts

1) with shunt trip
2) with undervoltage release
3) with ed trip
4) with ks tripping indicator switch
5) with arc camber mounted indicator switch
6) with current measurement unit (polarity of the output signal shown by current flow from top to bottom connection of the breaker)

Fig. 11 Connecting plug termination (Indicating switches, 10 auxiliary switches)



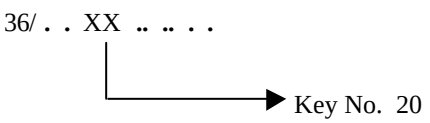
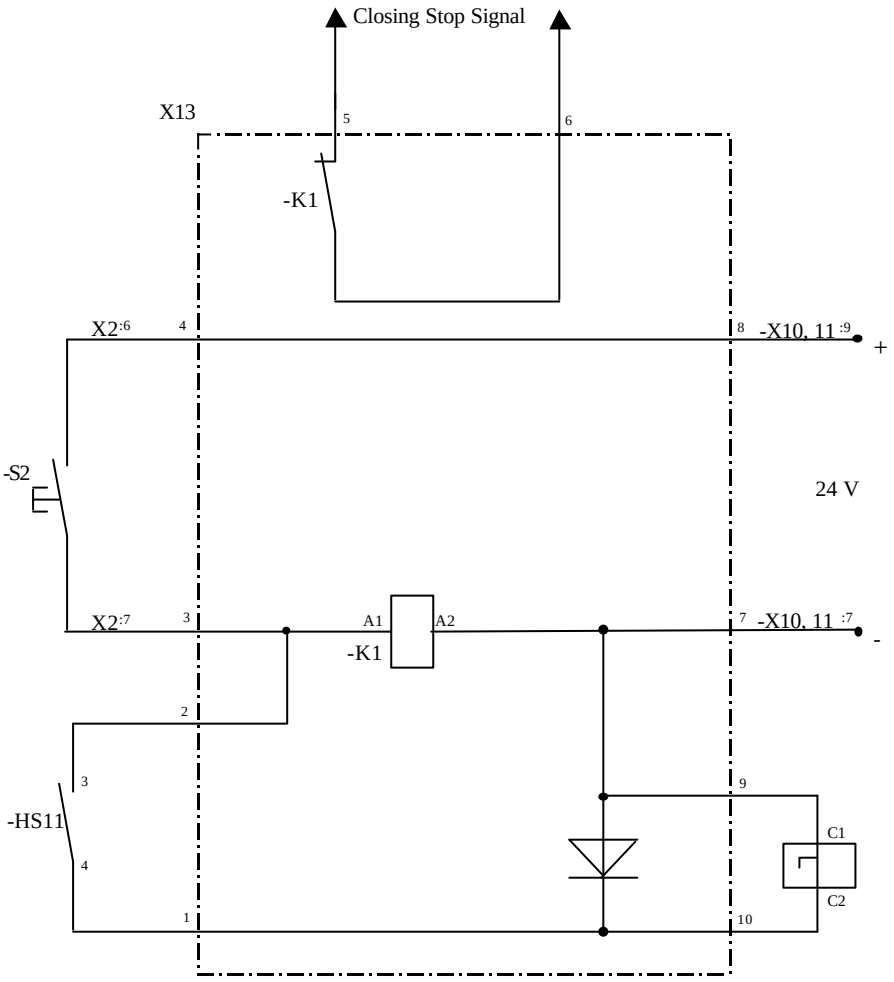


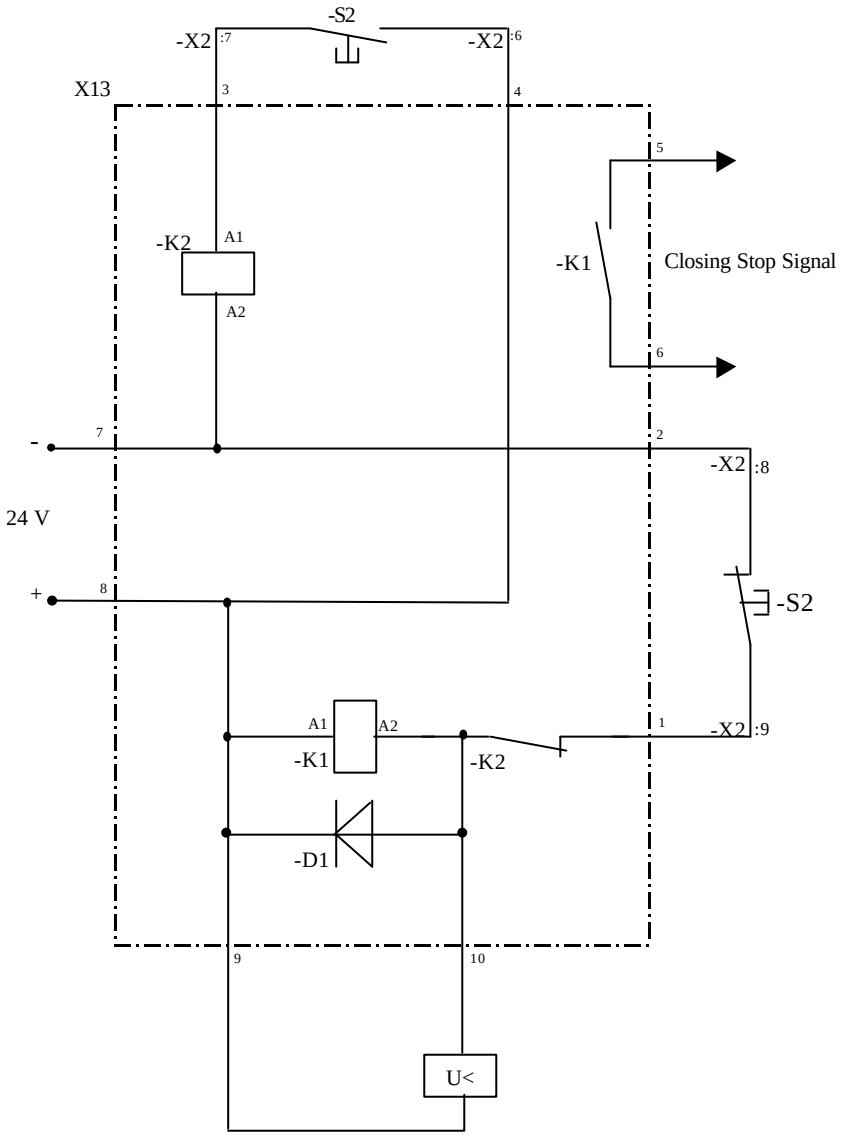
Fig. 12 Activating magnet with SU control-circuit



36/ . . .. XX .. . .

Key No. 00 Without auxiliary trip
Key No. 10 with shunt trip

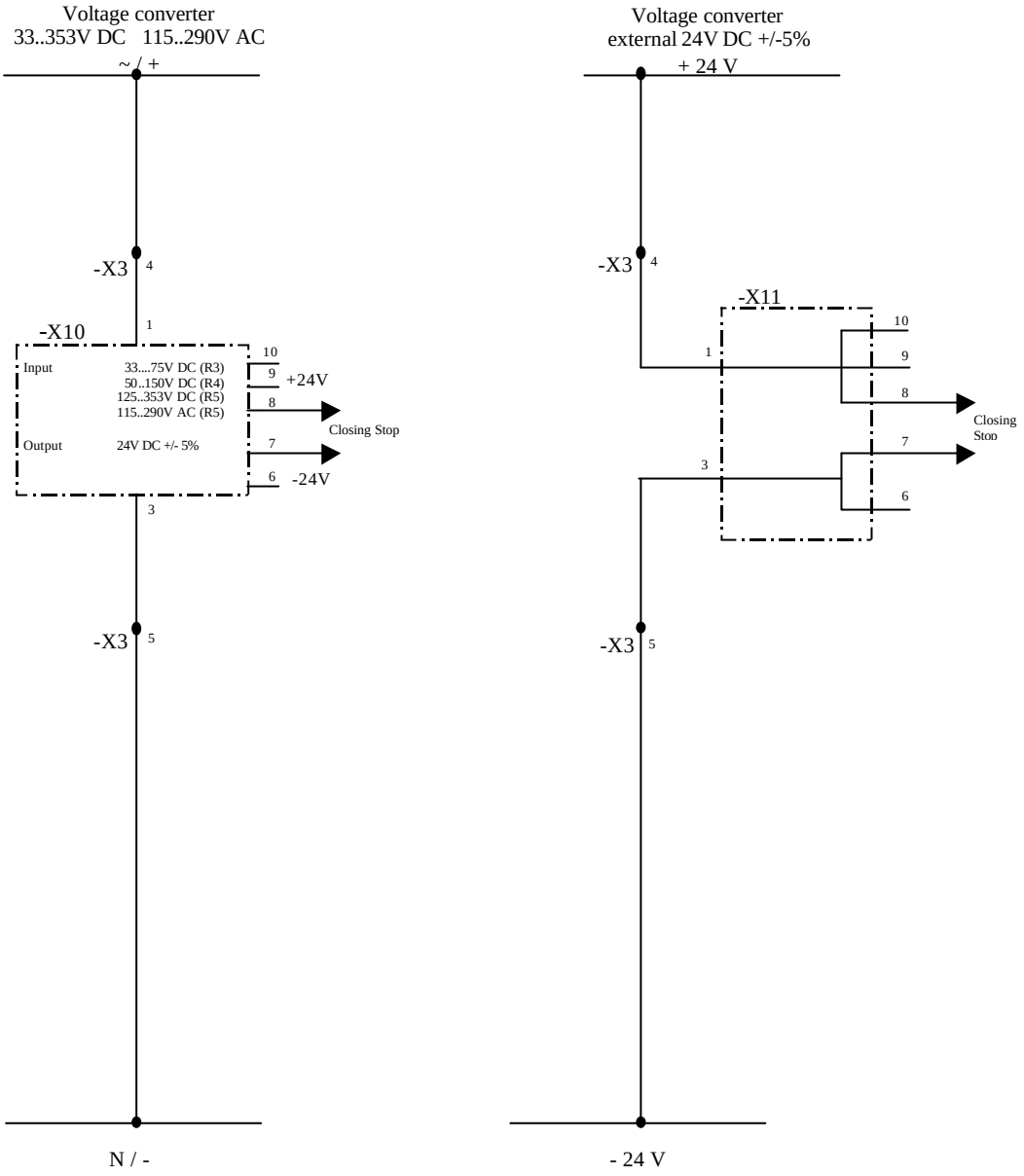
Fig. 13 a-trip (Shunt trip)



36/ . . .. XX .. . .

Key No. 20 with zero voltage release

Fig. 14 r-release (Zero voltage release)



36/ X . .. .

Key No. 1 Voltage converter 33..75V DC; 50..150V DC; 125..353V DC; 115..290V AC
Key No. 2 Voltage converter external 24V +/- 5%

Fig. 15 Power supply unit internal (AC/DC) and external (DC 24V +/- 5%)

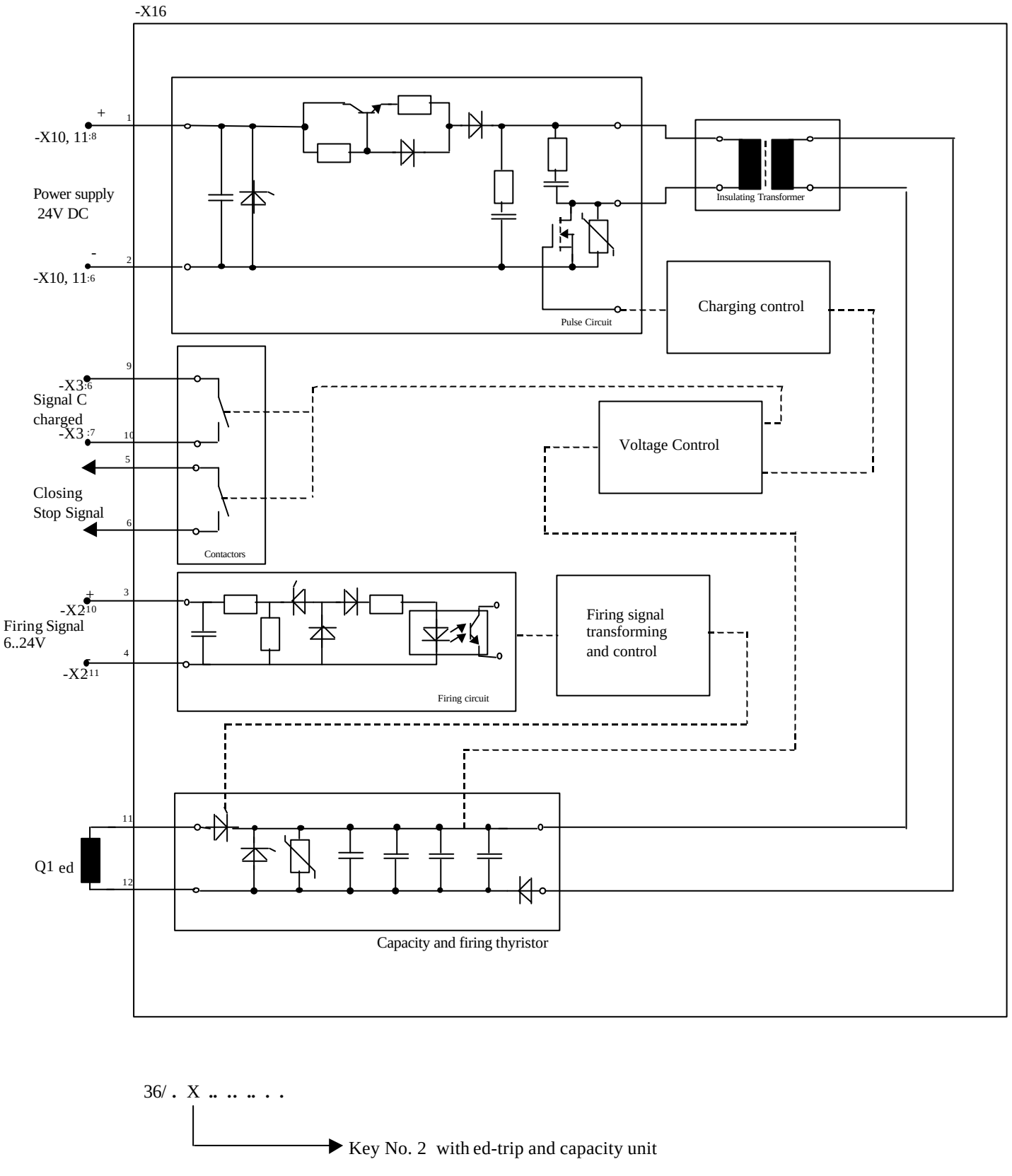
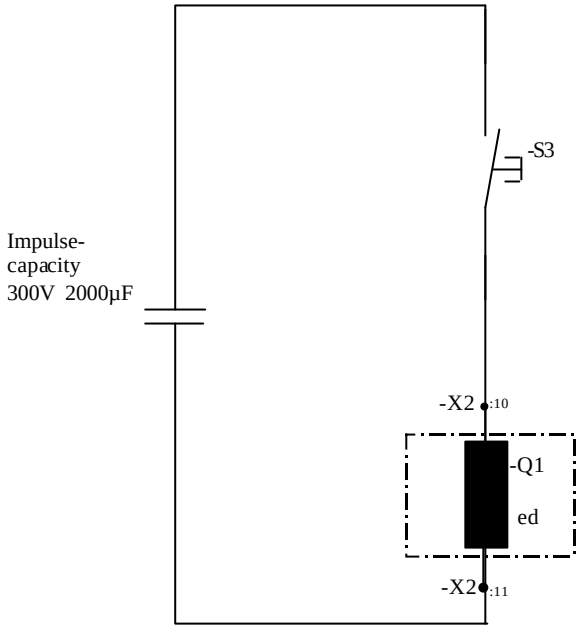


Fig. 16 ed-trip (electrodynamic-trip) with capacitor unit



36/ . X .. ..

Key No. 0 without ed-trip
Key No. 1 with simple ed-trip

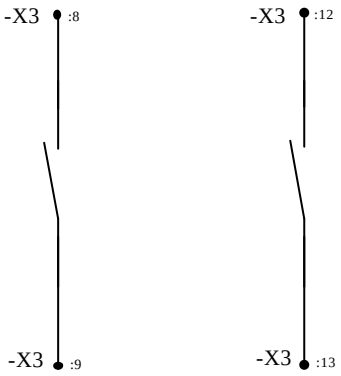
Fig. 17 ed-trip (electrodynamic-trip)

36/ . . .. .. xx . .

Key No. 00 **without indication**
Key No. 01 **with ks-indication**

36/ . . .. .. xx . .

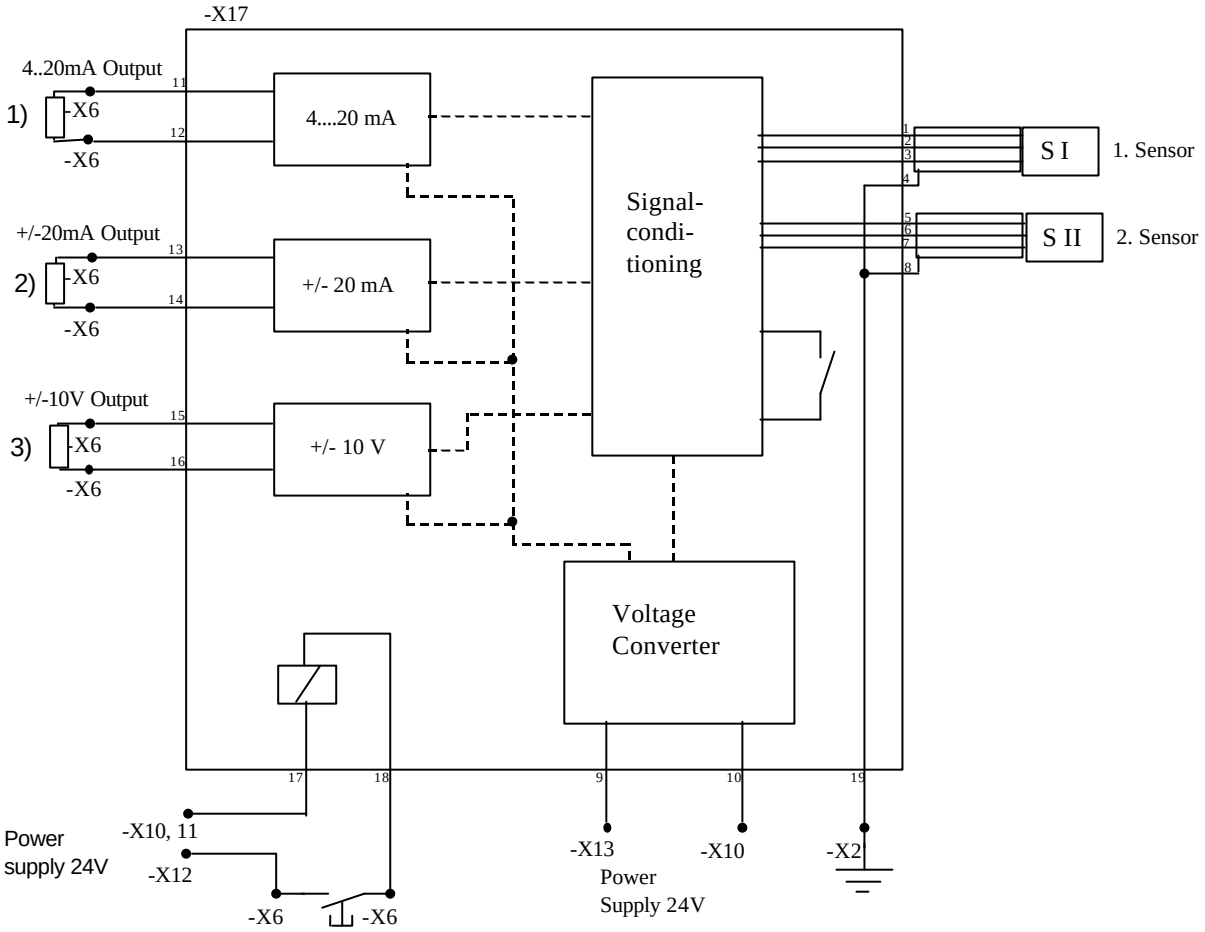
Key No. 02 **with arc chute-indication**



36/ . . .. .. xx . .

Key No. 03 **with ks- und arc chute- indication**

Fig. 18 ks- und arc chute- indication



1) max. 500 W
2) max. 500 W
3) min. 300 kW

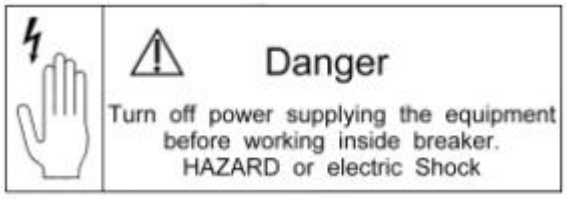
36/. X

Key No. „S“ with SEL

Fig. 19 Current measurement system type SEL 06-1...12-4

5. Dimensional drawings

Warnings



During operation all metallic parts of the breaker except housing and driving magnet may carry dangerous voltages. Insulation covers available as accessories.

For installation of the breaker into cubicles top and side openings are to provide in order to reduce internal pressure rise in case of clearing short circuit.

All openings respectively free areas on the top of the cubical shall be not less than 50%.

Type Gerapid	Arc chute	Main-Connection	additional isolation action	Deflector	Safety distances / Insulated plates				Safety distances / Earthed plates			
				E	A	B	C	D	A	B	C	D
2607 / 4207	1x2	*all*		10	700	150	150	120	1000	300	300	300
	1x3	*all*		1)	1)	1)	1)	1)	-	-	-	-
	1x4	*all*		150	700	150	150	120	1350	450	450	200
	2x2	*all*		80	1000	300	300	300	1350	450	450	300
	2x3	*all*		80	1000	180	180	180	-	-	-	-
	2x4	*W / W*	*Plate*	150	1000	180	180	180	-	-	-	-
	2x4	*W / W*	*Sidewalls*	150	1000	180	180	180	-	-	-	-
	2x4	*SEL / W*	*Pan*	150	1000	180	180	180	-	-	-	-
6007	1x2	*S / S Heat sink*		10	1000	300	300	180	-	-	-	-
	1x3	*1)*	*1)*	1)	1)	1)	1)	1)	-	-	-	-
	1x4	*S / S Heat sink*		150	1000	300	300	180	-	-	-	-
	2x2	*S / S Heat sink*		80	1000	180	180	180	-	-	-	-
	2x3	*S / S Heat sink*		80	1000	180	180	180	-	-	-	-
	2x4	*1)*	*1)*	1)	1)	1)	1)	1)	-	-	-	-
8007	1x2	*S / S Heat sink*		10	1000	300	300	180	-	-	-	-
	1x3	*1)*	*1)*	1)	1)	1)	1)	1)	-	-	-	-
	1x4	*1)*	*1)*	1)	1)	1)	1)	1)	-	-	-	-
2)	2x2	*S / S Heat sink*		80	1000	180	180	180	-	-	-	-
2)	2x3	*S / S Heat sink*		80	1000	180	180	300	-	-	-	-
	2x4	*1)*	*1)*	1)	1)	1)	1)	1)	-	-	-	-

[1] will be checked by customers order [2] acc. IEC 947-2 / ks-setting <12 kA **W**…Connection horizontal **S**...Connection vertical **SEL**...Current measurement system type SEL

Legend for dimensional drawings

K .....Heat sink (for Gerapid 6007)
L .....All openings respectively free areas on the top of the cubical shall be not less than 50%
M .....Solenoid drive
P .....Diameter 9 mm, Countersunk screw M8
S .....Control box
Z .....Connector

Table 4: **Safety distances** (acc. to IEC 60 947-2 and EN 50 123-2)
and legend in according to the dimensional drawings Fig. 20-23 (Dimensions in mm)

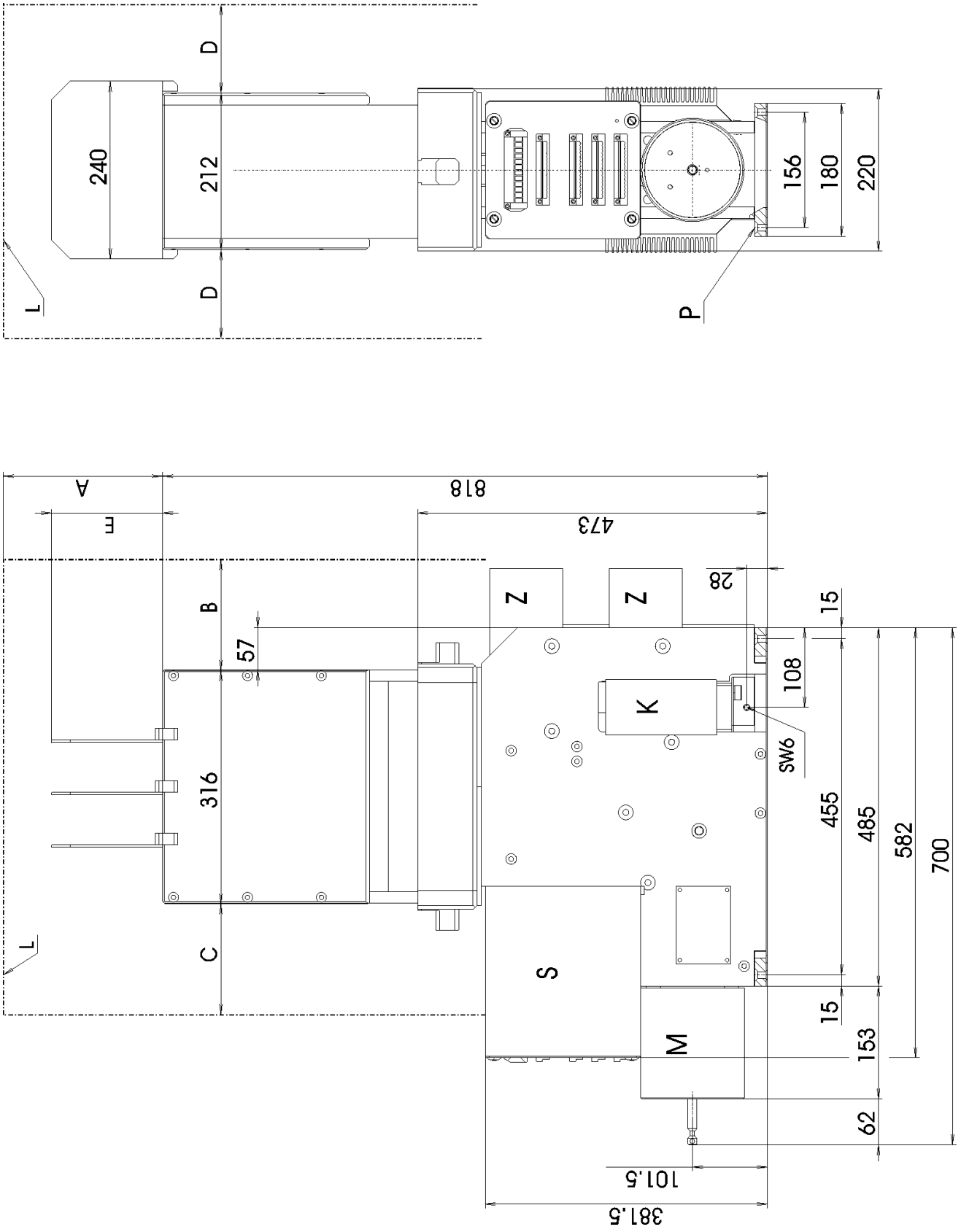


Fig. 20 Gerapid 2607- 6007, arc chute 1X (Dimensions in mm)
Pay attention to warnings page 26! Legend and safety distances see page 27

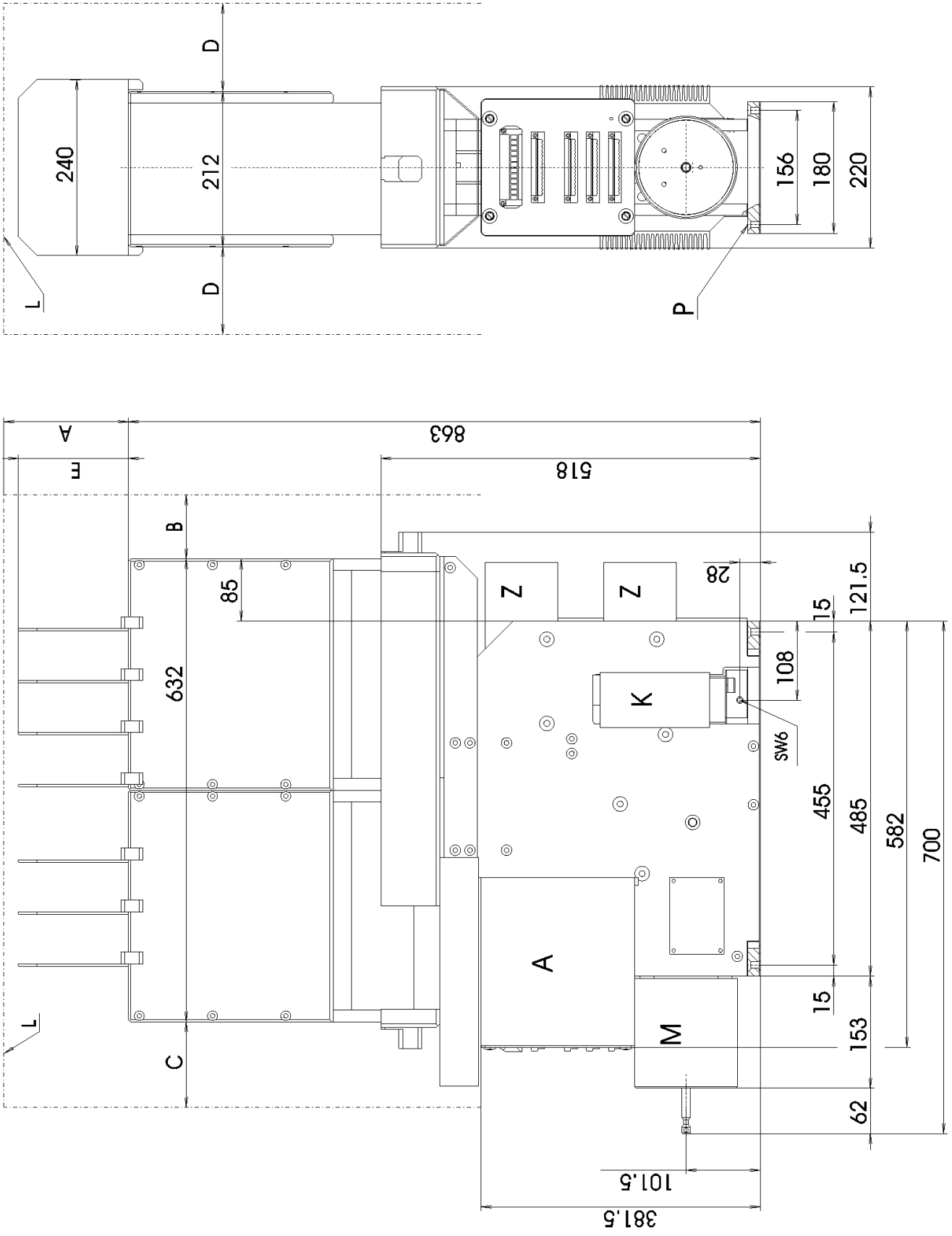


Fig. 21 Gerapid 2607- 6007, arc chute 2X (Dimensions in mm)
Pay attention to warnings page 26! Legend and safety distances see page 27

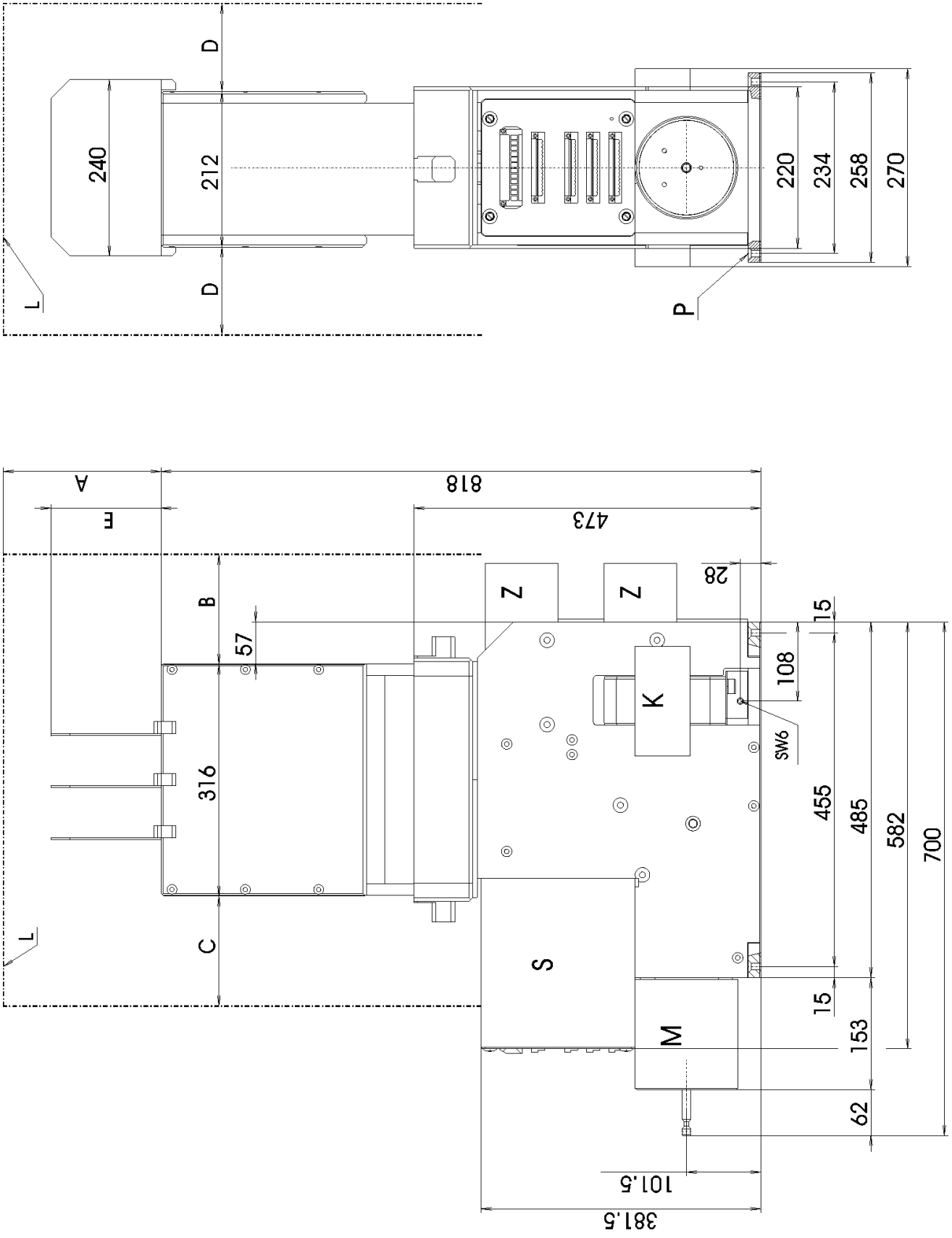


Fig. 22 Gerapid 8007, arc chute 1X (Dimensions in mm)
Pay attention to warnings page 26! Legend and safety distances see page 27

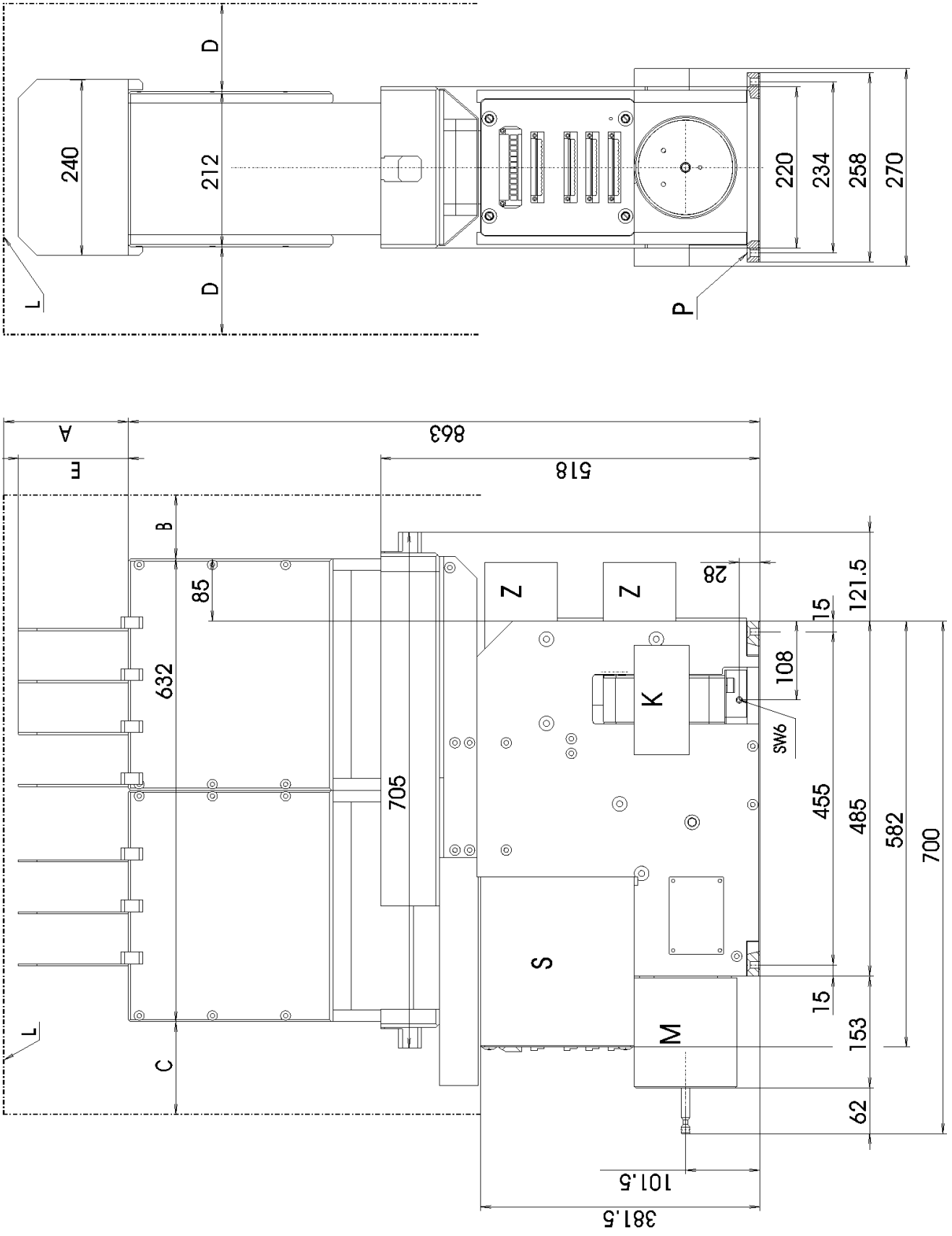


Fig. 23 Gerapid 8007, arc chute 2X (Dimensions in mm)
Pay attention to warnings page 26! Legend and safety distances see page 27

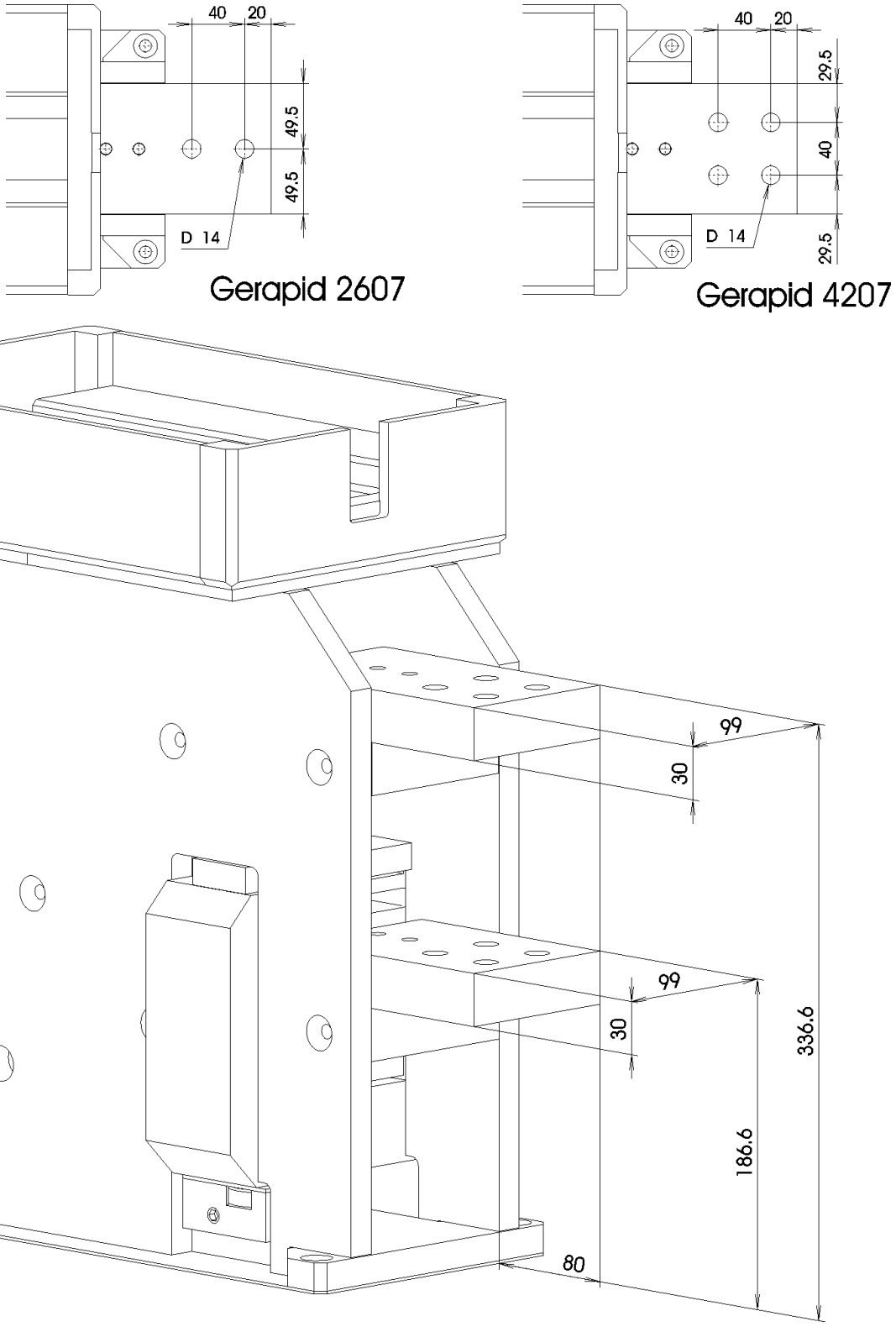


Fig. 24 Gerapid 2607 / 4207 connections horizontal (Dimensions in mm)
It's able to combine connections horizontal and vertical, dimensions are corresponding.

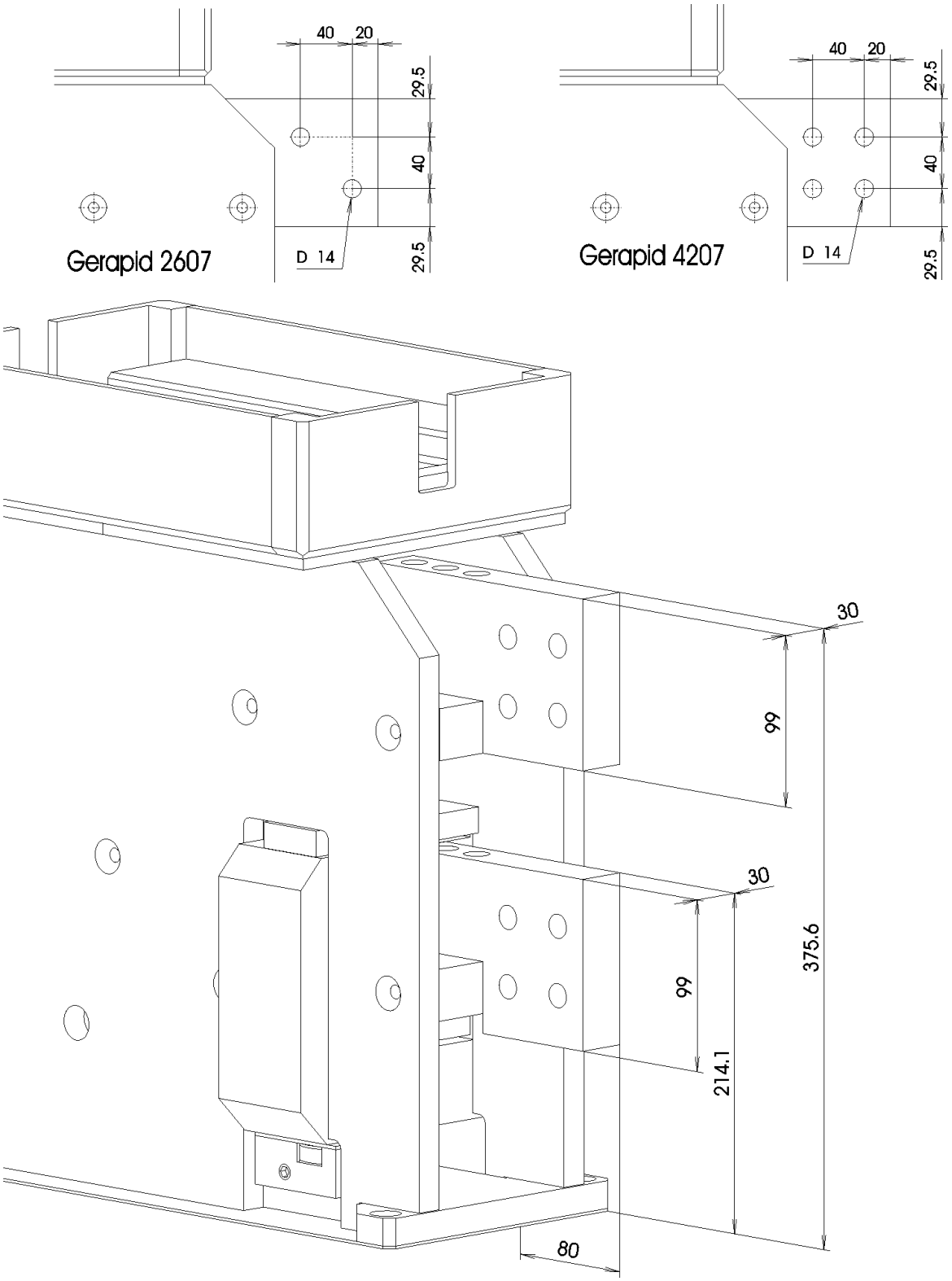


Fig. 25 Gerapid 2607 / 4207 connections vertical (Dimensions in mm)
It's able to combine connections horizontal and vertical, dimensions are corresponding.

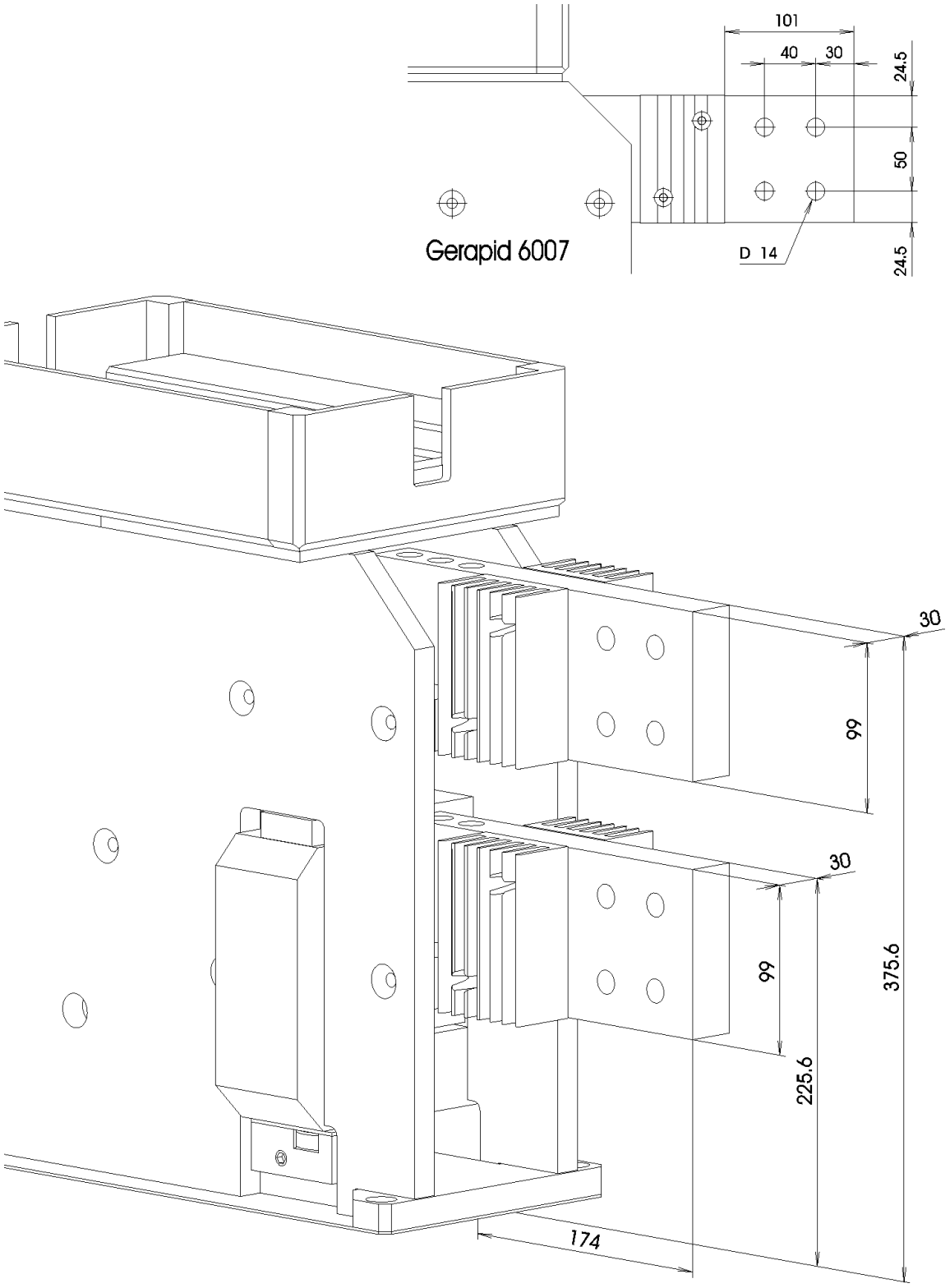


Fig. 26 Gerapid 6007, connections vertical only (Dimensions in mm)

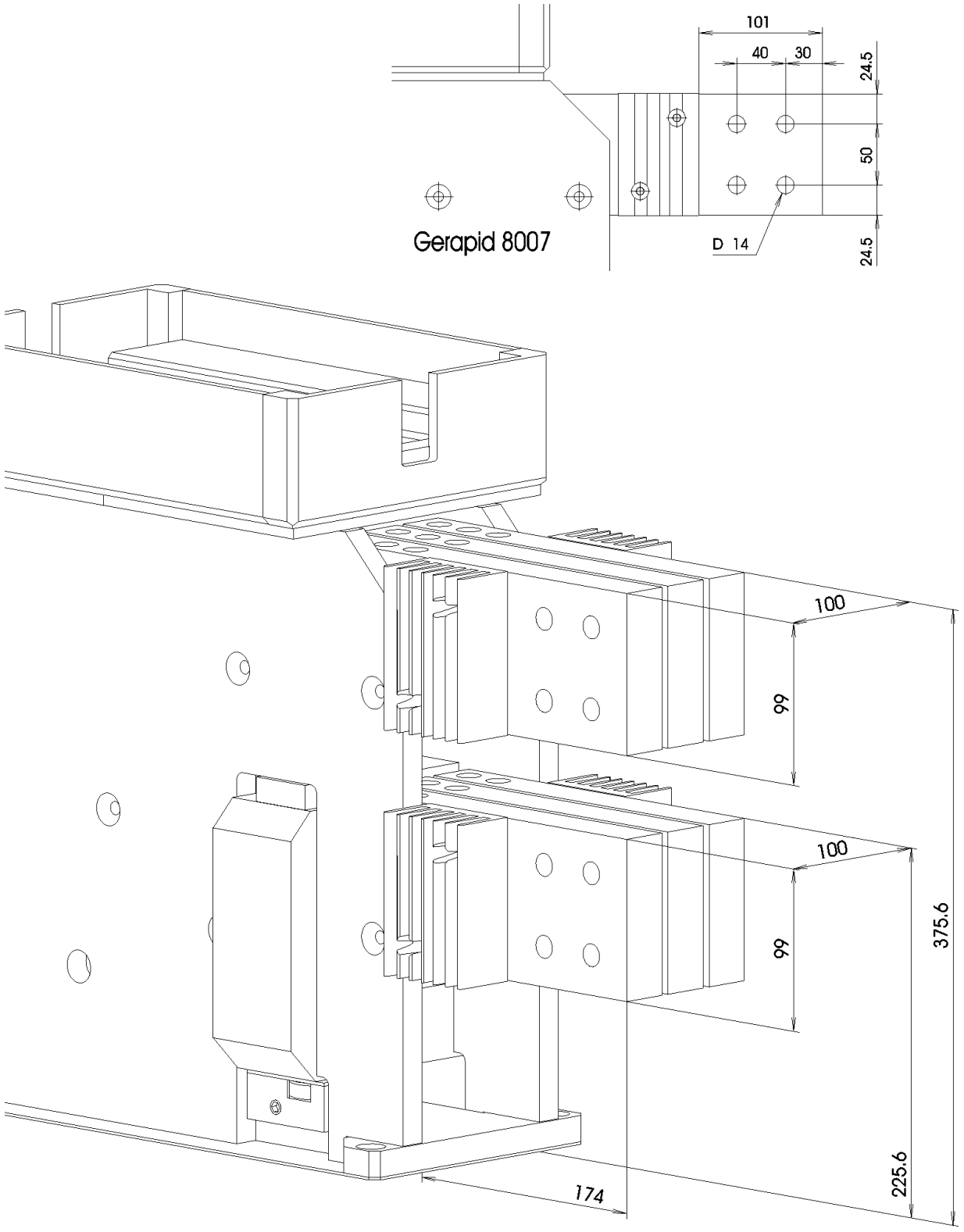


Fig. 27 Gerapid 8007, connections vertical only (Dimensions in mm)

Forced tripping device

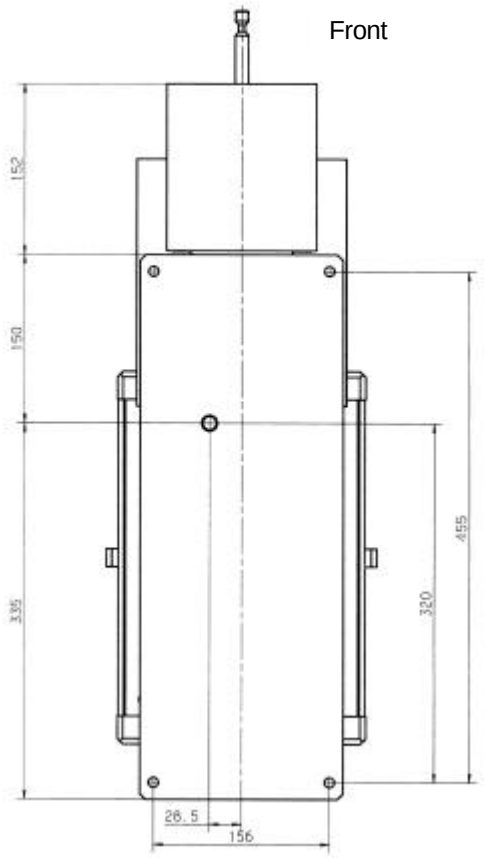


Fig. 28 Bottom view

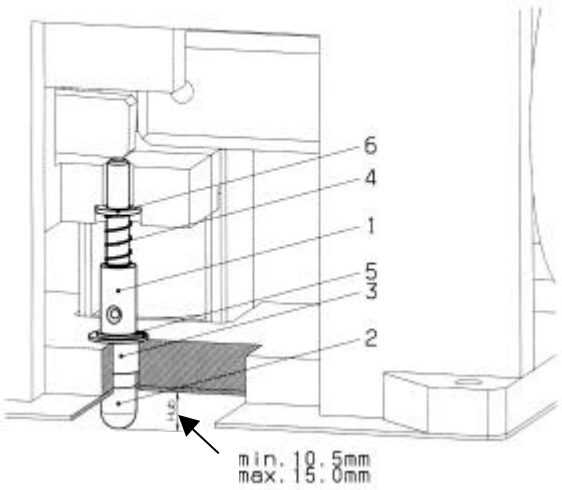


Fig. 29 Length of stroke

6. Eliminating Operating Troubles (Error detection)

SWITCHING ON NOT POSSIBLE

„Activating magnet doesn't work electrical but (after making sure it's not alive!) works mechanical with the hand lever."

- Control voltage Us not available or to low?
  Check, if voltage delivered by the power supply is not available or to low
  (measure points :4/:5)
- Voltage loss to large at the coil of the activating magnet?
  Measure or calculate control voltage Uc of the magnet.
- Control cable interrupted or not correct connected ?
- If control voltage o.k. change circuit board.
- Note the polarity of the power supply.
  Check measure points :1/:2 at plug X2 and measure points :4/:5 at plug X3.
- Check if error in customized auxiliary control circuit.
- Activating magnet faulty? (Change it).

„Activating magnet works electrical“

- If available, check r-release
  - Control voltage available?
  - Feeding and connection o.k.?
  - r-release coil faulty?
- Check, if positive tripping is wrong adjusted.
- Faulty mechanic? (Call service department)

Switching off the breaker not possible

„a-release don't release“

- Control voltage available ?
- Control plug o.k.?
- Control cables o.k.?
- a-release faulty? (change it)
- Auxiliary switch HS 11 wrong adjusted?
- Faulty mechanic ? (call service department)

„r-release don't release“

- Faulty mechanic ? (call service department)

„ed-trip unit don't release“

- Capacitors circuitboard faulty? (change it)

- Interface of line measuring device faulty?

Faulty circuitboards

- Change the complete circuit board

GE Power Controls GmbH & Co. KG
Berliner Platz 2-6
D-24534 Neumünster
Germany
Phone: ++49 4321-201-0
Fax : ++49 4321-201-444
http://www.skjd.cn