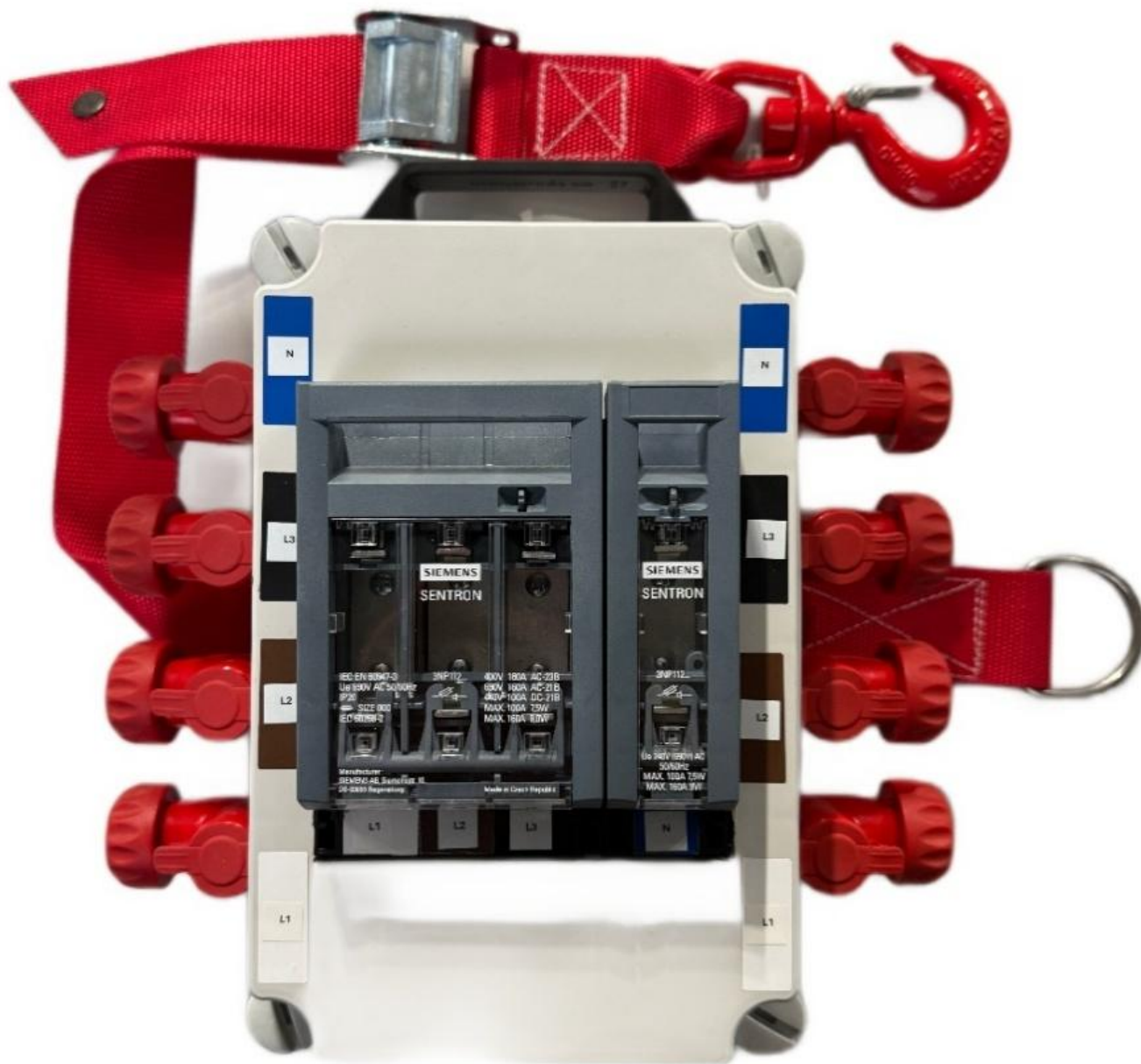


OPERATING INSTRUCTIONS

PRB B3H+N Switchgear for three-phase + N, Portable Shunt, 160 A



1. INTENDED USE

The portable shunt is a single-pole device intended for shunt fragments of electrical circuits to remove them for the purposes of replacement or repair, while maintaining the continuity of current flow on overhead lines up to 690 V.

Portable shunt devices can safely shunt parts of circuits for bare overhead lines, isolated or mixed. The ideal tool for removing connections which cannot be removed load.

2. REQUIREMENTS

The requirements for the portable shunt devices have been developed based on the following standards.

- *EN 61439-1:2011* „Low-voltage switchgear and controlgear assemblies. – Part 1: General rules”
- *EN 61439-4:2013* „Low-voltage switchgear and controlgear assemblies – Part 4: Particular requirements for assemblies for construction sites”
- *EN 60900:2018-10* „Live working – Hand tools for use up to 1 000 V a.c. and 1 500 V d.c.”

3. SHUNT USAGE CONDITIONS

The shunt device **D112.0909** may only be used by persons authorised by the operator of the electrical devices, under conditions specified in the instructions for live working approved by the operator.

4. DESIGN OF THE SHUNT DEVICE

The main components of the switchgear are a three-pole SENTRON fuse disconnecter, type 3NP1123-1CA20, and a single-pole SENTRON fuse disconnecter, type 3NP1121-1CA20, manufactured by SIEMENS. The disconnecter is housed in a thermosetting enclosure. A polyamide tape strap with adjustable length is attached to the enclosure, allowing the disconnecter to be mounted on a utility pole. As standard, it is supplied with SILICOUL 1.1 kV D112.2017 connecting cables (4 pcs) with a length of 3.5 m and D112.2014 connecting cables (4 pcs) with a length of 1.5 m, connected to the disconnecter terminals. The disconnecter allows bypassing sections of load circuits with currents of up to 160 A.

4.1 Inlet and outlet sockets

The shunt has one 160A inlet socket and one 160A outlet socket. Insert the copper wire tip of a connection to the socket (fig. 1a) and tighten the socket knob (fig. 1b). Due to the special socket design the cable tip can be inserted only in one specific position.

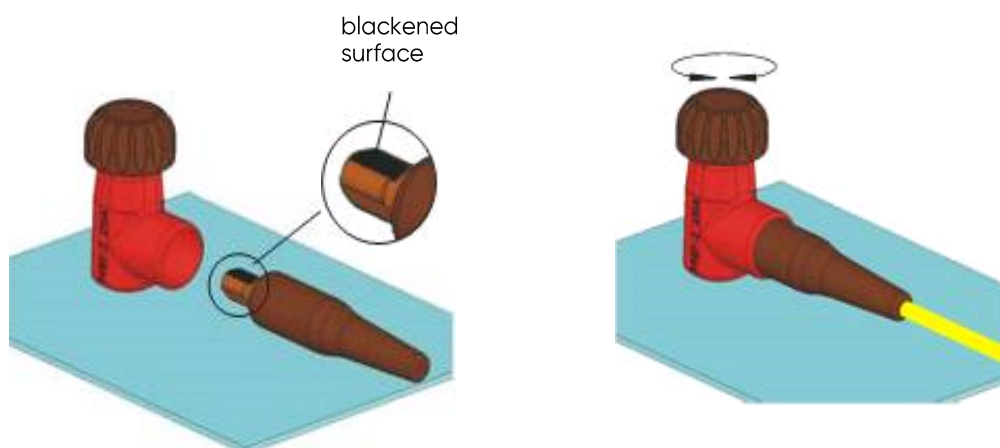


Fig. 1a and 1b Connecting a wire to a socket

4.2 Connecting cables

Connecting cable **D112.2017** – a 25 mm² cable terminated with an insulation-piercing clamp enabling its installation on the insulated line conductor.

Connecting cable **D112.2014** – a 25 mm² cable terminated with a cable clamp enabling its installation on the uninsulated line conductor.

<i>product code</i>	<i>type of cable</i>	<i>range</i>	<i>rated current</i>	<i>cross-section</i>	<i>length</i>
D112.2017	insulation-piercing clamp enabling	16÷240 mm ²	200 A	25 mm ²	3,5 m
D112.2014	cable clamp enabling	16÷240 mm ²	200 A	25 mm ²	1,5 m



D112.2017



D112.2014

4.3 Technical parameters

Rated operational current	160 A
Rated operational voltage	690 V AC
Insulation rated voltage	690 V AC
Rated impulse withstand current	8 kV
Maximum fuse link	160 A
Size of fuse link	NH 000
Weight	5,6 kg
Ambient temperature	-25 °C to 55 °C
Mechanical strength	2 000 cycles
Casing	5100667P
Outer dimensions	(255x155x130) mm

5. SETTING UP THE SHUNT DEVICE

Each time before use inspect the device visually and check the following:

- the technical condition of the shunt, whether the elements are installed securely, are complete and operational
- the condition of the insulation of connection cables – the external fibrous sheath,
- the technical condition of the inlet and outlet connection sockets.
- the technical condition of the connection cables clamps.
- condition of the band tape (abrasions, fraying),
- condition of the band mounting brackets.

Any parts which show excessive wear (deformations, overheat marks) or damage (cracks) must be replaced with new ones.

If the external sheath of the connection wire (the fibrous layer) is destroyed or if the insulation goes off in the location where terminals are connected, it must be replaced!

6. . BYPASSING A LOADED CIRCUIT

- mount the device stably on the pole,
- open the cover of the fuse switch,
- insert an appropriate NH-000 fuse link selected according to the following criteria:
 - when shunting a circuit fragment with protective elements, the rated current of the fuse link must be at least equal to the largest protection current shunted.
 - the activation current of the fuse link must at least be equal to the switch-off (start-up) current of the shunted protection,
 - when shunt a circuit fragment without protective elements, plug in a NH-000 size jumper into the switch cover.
- select the appropriate place for connecting the clamps of the shunt device to the shunted circuit,
- clean the places where the bypass switch terminals are connected to the circuit (mainly applies to bare wires)
- connect cables with appropriate clamps to the inlet and outlet sockets of the shunt device,
- install clamps that shunt a part of the circuit on previously prepared connection points
- check the correct connection of the cables to the shunted part of the circuit,
- check if the fuse link or jumper is correctly plugged in,

- check the correct installation of the device
- switch on the fuse disconnecter,
- check if the circuit is shunted correctly (test the current with a clamp ammeter or check the presence of voltage with voltmeter on both sides of the fuse link of switch).

Note: if there is no load on the shunt device and there is no voltage on one of the poles of the fuse link of the fuse switch, do not disconnect, connect or unscrew any parts of the shunted circuit.

The effectiveness of the bypass should be checked during work, and in particular before each operation of switching on or disconnecting the elements of the bypassed circuit.

7. DISCONNECTING THE SHUNT DEVICE

- check the current flow in the shunted circuit fragment
 - turn off the fuse switch,
 - take out the jumper or the fuse link from the cover of the switch,
- disconnect the shunting cables from the circuit

Warning! Connecting and disconnecting connection cables in the shunted circuit may be performed only with the switch cover open

8. STORAGE AND TRANSPORT

Store the shunt device in dry rooms, away from any heat sources. Do not store in chemically aggressive atmospheres. Keep away from direct sunlight. Secure the inlet and outlet sockets with protective caps (fig.3)

The casing, the wires and insulating elements of the sockets and clamps should be wiped with a dry cloth or cleaned with petroleum ether. Cleaning with petroleum ether should be performed outdoors or in well ventilated areas after the elements have achieved the ambient temperature. To clean and maintain the conductive parts of the sockets, clamps and the switch use a technical-grade water repellent oil which improves conductivity.

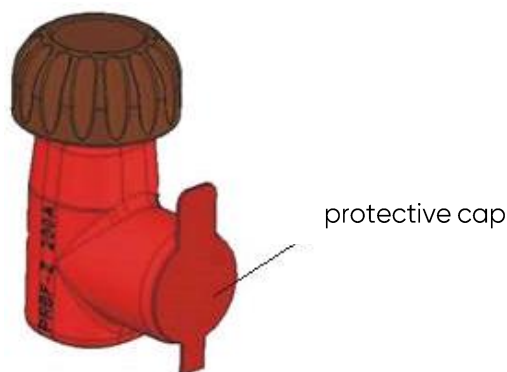


Fig.3 securing a socket with a cap

The cables must be transported in their case and protected against mechanical damage. The cable tips must be protected with B113.0330 caps.

9. PERIODIC TEST

The shunting disconnecter is subject to periodic inspections. Section 5 contains the manufacturer's recommendations regarding periodic checks of the technical condition of the shunt. These recommendations constitute the minimum requirements and, depending on the operating conditions and intensity of equipment use, may be modified by the user.

10. DISPOSAL

The device is made of materials suitable for recycling.

This appliance is marked as compliant with European Directive 2002/96/EC (WEEE) on waste electrical and electronic equipment.

By ensuring this device is disposed of correctly, you can help prevent potential negative consequences to the environment and human health.

The symbol on the device or in the documentation accompanying it means that the device must not be treated as household waste. They should be taken to a special point for the disposal and recycling of electrical and electronic devices.

When disposing of the device, please make it unusable by cutting off the power cable.

Dispose of the device in accordance with local waste disposal regulations by taking it to a special collection point, do not leave the device unattended, even for several days, as it may pose a threat to people.