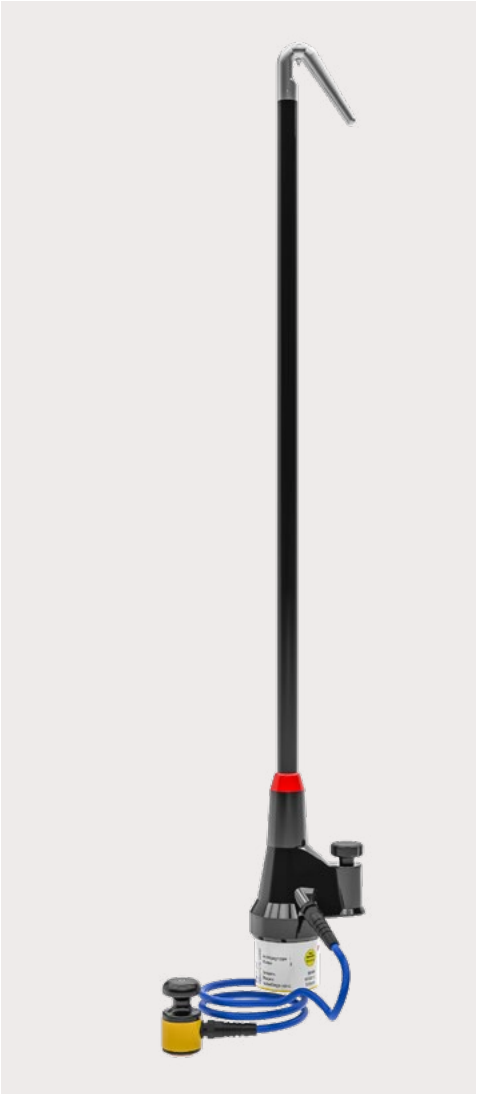
PFISTERER

Safety equipment

Railway



www.pfisterer.com

Nowhere is the reliability of work equipment more important.

Setting the standard in safety.

When carrying out work on electrical systems, ensuring people's safety and preventing damage to equipment and system components are top priorities. Although safety rules and processes have not yet been standardised around the world, users know that safe working can only be guaranteed when several factors come together:

- Consistent observance of rules and instructions
- Rigorous and continuously updated training of personnel
- Mutual trust when working on electrical systems
- Use of reliable tools and work equipment

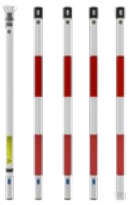
PFISTERER represents decades of experience in developing safety equipment with a practical focus. We know how users think and work. Our highly skilled development, production and test lab teams put this knowledge into practice, every day. The result is reliable safety equipment with a focus on our customers' requirements.

Contents

This product catalogue contains a representative selection of the most popular products from our range. You will find further variants in our online catalogue, which you can access conveniently via the red QR codes. We also offer additional versions and custom applications on request.

catalogue.pfisterer.com/en/safety-equipment/

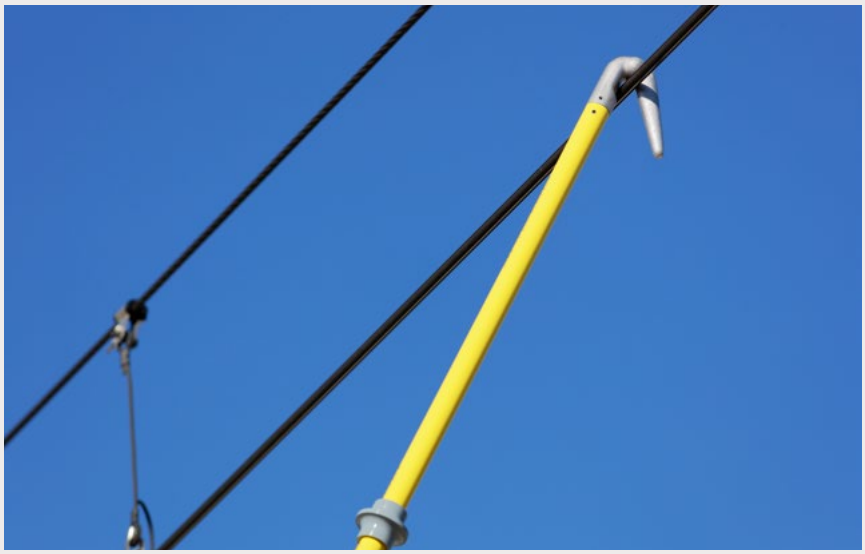

PFISTERER

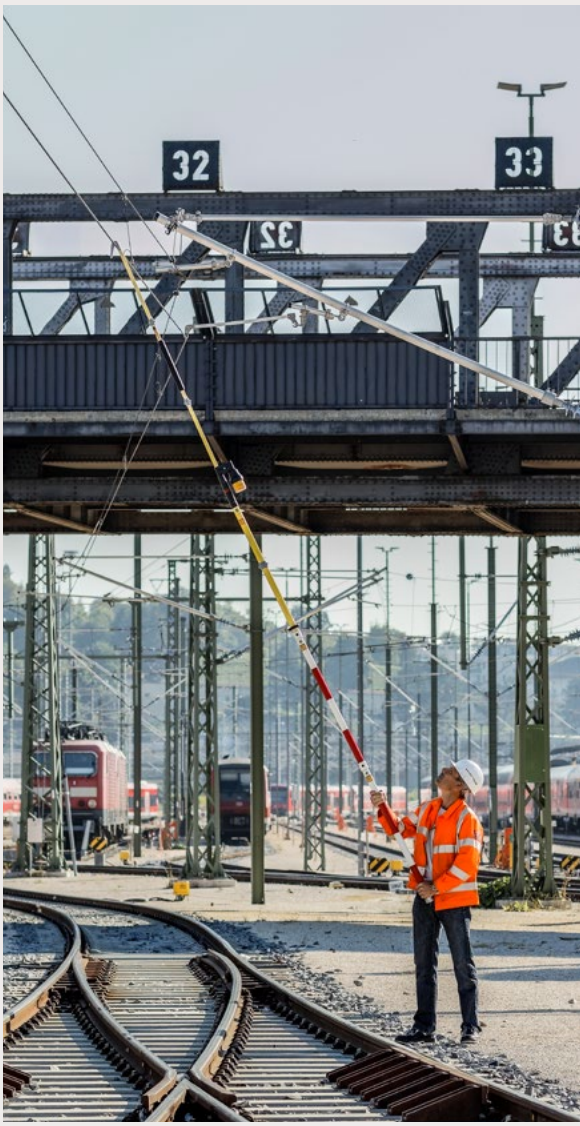



PFISTERER

1 Voltage detection – simple, safe, reliable

Is the operating voltage present or not present? To answer this question unambiguously, reliable voltage detectors with clear signalling are required. They are the crucial factor in preventing accidents and protecting people and property. PFISTERER knows what matters, and combines 100 percent safety with maximum cost-effectiveness.





Quality and durability

PFISTERER voltage detectors represent quality and durability – for more than 50 years. The KP-Test 5 series are well engineered products that have been tried and tested in practice. Each device undergoes 100% factory functional testing.

Dual devices

The detection range of KP-Test 5 voltage detectors is adapted to each customer's specific requirements. As well as devices for a specific rated voltage or rated voltage range, dual versions of the voltage detectors are also available. They are switchable to detect two different rated voltage ranges.

Double certainty

A clear indication of the test result is essential to prevent accidents. That is why PFISTERER uses the proven dual visible and audible signalling system.

Active switch-on

The active switch-on of our voltage detectors is an essential safety feature from PFISTERER. We are certain: only by actively switching on your device and receiving direct feedback from it can you be sure that it is working properly.

1

KP-Test 5R

Voltage detector for catenary line

The KP-Test 5R capacitive voltage detector is used on catenary lines of electric railways. The two-part design facilitates transportation and handling at the place of use. The hook electrode with contact pin allows the detector to easily hook onto and make electrical contact with catenary lines or contact wires. As a result, the voltage detector meets the special requirements for use on railway catenary lines.

- Rated voltage / rated frequency: **15 kV / 16.7 Hz** and **25 kV / 50 Hz**
- Designed in accordance with **DIN VDE 0681, part 6** (15 kV / 16.7 Hz)

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Hook-type contact electrode with contact pin
- For single-phase networks
- Two-part design with simple plug-in system

KP-Test 5R 15 kV / 16.7 Hz

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Transportation length L_T (mm)	B3 bag included	Article no.
15	16.7	4795	2460	–	on request
15	16.7	4795	2460	•	on request

KP-Test 5R 25 kV / 50 Hz

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Transportation length L_T (mm)	B3 bag included	Article no.
25	50	4795	2460	–	930 300 001 / 00021
25	50	4795	2460	•	930 300 001 / 00020

Versions with different languages or with a different signal mode are available on request – please also consult our online catalogue.

Voltage detector for catenary line

The KP-Test 5R capacitive voltage detector is used on catenary lines of electric railways. The five-part version, with a transportation length of 1.10 metres, is suitable for transporting in a car. The simple plug-in system facilitates handling at the place of use. The hook electrode with contact pin allows the detector to easily hook onto and make electrical contact with catenary lines or contact wires. As a result, the voltage detector meets the special requirements for use on catenary lines.

- Rated voltage / rated frequency: **15 kV / 16.7 Hz** and **25 kV / 50 Hz**
- Designed in accordance with **DIN VDE 0681, part 6** (15 kV / 16.7 Hz)

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Hook-type contact electrode with contact pin
- For single-phase networks
- Five-part design for transporting in a car

KP-Test 5R 15 kV / 16.7 Hz

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Transportation length L_T (mm)	B1 bag included	Article no.
15	16.7	4795	1100	–	on request
15	16.7	4795	1100	•	on request

KP-Test 5R 25 kV / 50 Hz

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Transportation length L_T (mm)	B1 bag included	Article no.
25	50	4795	1100	–	930 300 601 / 00028
25	50	4795	1100	•	930 300 601 / 00025

Versions with different languages or with a different signal mode are available on request – please also consult our online catalogue.

1 KP-Test 5H

Voltage detector for power supply lines

The KP-Test 5H capacitive voltage detector for railway systems is specially designed for use on power supply and feeder lines of single-phase railway networks. It detects voltages with a rated frequency of 16.7 Hz. The device also detects 50 Hz voltages. This eliminates detection errors in the vicinity of other high voltage lines.

- Rated voltage / rated frequency: **66-132 kV / 16.7 Hz & 50 Hz**
- Designed and type-tested in accordance with **IEC 61243-1**
- Immersion depth: **A_i = 898 mm**

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Available as "separate device" without insulating pole or "complete device" with insulating pole
- 50 Hz detection
- Three-part design with simple plug-in system

KP-Test 5H

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Transportation length L_T (mm)	Insulating length L_i (mm)	Suitable carrying bag	Article no.
110	16.7 & 50	3700	1855	1802	B2	930 250 001 / 00455
66 - 132	16.7 & 50	3700	1855	1802	B2	930 250 001 / 00449

Versions with different rated voltages, rated voltage ranges, frequencies and languages can be found in our online catalogue or are available on request.

KP-Test 5D dual

Distance voltage detector for overhead lines

The KP-Test 5D dual is a distance voltage detector for use with high voltage overhead lines with a nominal voltage of 110 kV. With the same rated voltage, the device is switchable so it can be used in networks with frequencies of 16.7 Hz and 50 Hz.

When placed on the earthed protective fitting (corona ring), it indicates whether operating voltage is present or not.
A proportional audible warning signal indicates at an early stage that the device is approaching a live conductor.

- Rated voltage / rated frequency: **110 kV / 16.7 Hz** and **110 kV / 50 Hz**
- Designed in accordance with **DIN VDE V 0682-417**

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Proportional audible warning signal
- Self-test at switch-on
- Can be used in rain and snow

KP-Test 5D dual

Level I		Level II						
Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Transportation length L_T (mm)	Insulating length L_i (mm)	Including carrying bag	Article no.
110	16.7	110	50	980	980	520	—	930 470 501 / 00022
110	16.7	110	50	980	980	520	C1	930 470 501 / 00019

Versions with different rated voltages, rated voltage ranges, frequencies and languages can be found in our online catalogue or are available on request.

1 KP-Test 5

Voltage detector for power lines

The KP-Test 5 capacitive voltage detector is used on railway power lines. The hook electrode makes the detector easy to hook onto the conductor. With its attachment eyelet, the voltage detector can be attached to a belt carabiner when climbing the mast. As a result, the voltage detector meets the special requirements for use on railway power lines.

- Rated voltage / rated frequency: **15 kV / 16.7 Hz**
- Designed and type-tested in accordance with **IEC 61243-1**

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Detachable hook electrode for railway power lines
- Practical attachment eyelet

KP-Test 5

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Immersion depth A_i (mm)	Suitable carrying bag	Article no.
15	16.7	1810	910	A2	on request

Voltage detector for switchgear

The KP-Test 5 capacitive voltage detector is used on 15 kV / 16.7 Hz railway switchgear. This version is equipped with a detachable fork electrode.

- Rated voltage / rated frequency: **15 kV / 16.7 Hz**
- Designed and type-tested in accordance with **IEC 61243-1**

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Detachable fork electrode included

KP-Test 5

Rated voltage U_N (kV)	Rated frequency f_N (Hz)	Overall length L_G (mm)	Immersion depth A_i (mm)	Suitable carrying bag	Article no.
15	16.7	1270	603	A1	930 190 001 / 00813

1 KP-Test 5R DC

Voltage detector for catenary line

The KP-Test 5R DC is a two-pole voltage detector for use on contact line systems of DC railways. The hook electrode simply hooks onto catenary lines or contact wires, while the handy magnetic contact forms a simple earthing connection via the rail.

- Rated voltages: between **500** and **4000 V DC**

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Induced AC voltage signal detection
- Magnetic contact for the rail included
- Voltage testing possible even with a high proportion of leakage current on disconnected contact wires
- Cable length 6.5 meter

KP-Test 5R DC

Rated voltage DC U_N (V)	Transportation length L_T (mm)	Number of insulating poles included	Suitable bag	Article no.
1500	2450	2	B3	930 350 001 / 00186
1500	1111	4	B1	930 350 001 / 00260
1500	1111	–	B1	930 350 001 / 00280
3000	2450	2	B3	930 350 001 / 00281
3000	1111	4	B1	930 350 001 / 00283
3000	1111	–	B1	930 350 001 / 00282
650 - 750	2450	2	B3	930 350 001 / 00184
650 - 750	1111	4	B1	930 350 001 / 00231
650 - 750	1111	–	B1	930 350 001 / 00233

Versions with different rated voltages, rated voltage ranges, frequencies and languages can be found in our online catalogue or are available on request.

Insulating poles for KP-Test 5R DC and 5R DC dual

Three-part version. Overall length approx. 5000 mm:

Insulating pole lower part
620 780 001

Insulating pole upper part
624 780 001

Insulating pole lower part
623 930 001

KP-Test 5R DC dual

Voltage detector for catenary line

The KP-Test 5R DC dual is a two-pole voltage detector for use on contact line systems of DC railways. It is switchable between two rated voltages, but otherwise identical to the KP-Test 5R DC. The hook electrode simply hooks onto catenary lines or contact wires, while the handy magnetic contact forms a simple earthing connection via the rail.

- Rated voltages: between **500** and **4000 V DC**

Technical description

- Two switchable rated voltages
- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Induced AC voltage signal detection
- Magnetic contact for the rail included
- Voltage testing possible even with a high proportion of leakage current on disconnected contact wires
- Cable length 6.5 meter

KP-Test 5R DC dual

Rated voltage DC U_N (V) Level I	Rated voltage DC U_N (V) Level II	Transportation length L_T (mm)	Number of insulating poles included	Suitable bag	Article no.
600	1200	1111	—	B1	on request
600	1200	2450	2	B3	on request
600	1200	1111	4	B1	on request
750	1500	1111	—	B1	on request
750	1500	2450	2	B3	on request
750	1500	1111	4	B1	on request

Versions with different rated voltages, rated voltage ranges, frequencies and languages can be found in our online catalogue or are available on request.

Insulating poles for KP-Test 5R DC and 5R DC dual
Five-part version. Overall length approx. 4880 mm:

Insulating pole extension 1
623 929 001

Insulating pole extension 2
623 929 100

Insulating pole upper part
624 780 002

1 KP-Test 5 DC

Voltage detector for DC switchgear

The KP-Test 5 DC is a two-pole voltage detector for use on switchgear of DC railways and on railway systems with a third rail.

- Voltage ranges between **850** and **4000 V DC**

Technical description

- Double signalling
- Integrated audible signal
- Extremely bright LEDs
- Maximum resistance to interference fields
- Self-test at switch-on
- Can be used in rain and snow
- Induced AC voltage signal detection

KP-Test 5 DC

Rated voltage DC U_N (V)	Overall length L_G (mm)	Transportation length L_T (mm)	Suitable carrying bag	Article no.
1200	815	1000	A1	930 370 001 / 00061
850 - 4000 1 kV 16.7 Hz AC	815	1000	A1	930 370 001 / 00063

Versions with different rated voltages, rated voltage ranges, frequencies and languages can be found in our online catalogue or are available on request.

1

Storage bags

Storage cases for voltage detectors / phase comparators type K3/4

For secure transportation and dust-free storage of voltage detectors and phase comparators.

- Hard case made of impact-resistant plastic with foam insert
- Aluminium edge protection

Width (mm)	Height (mm)	Depth (mm)	Weight (g)	Type	Article no.
900	110	260	3470	K3	900 073 007
1250	100	260	4630	K4	900 073 008

Storage bags – type A

These storage bags are suitable for the secure transportation and dust-free storage of voltage detectors and insulating poles.

- Storage bag made of hard-wearing imitation leather
- Easy to close with zip
- Carrying strap

Length (mm)	Height (mm)	Type	Article no.
500	260	A4	364 887 005
730	260	A1	364 887 002
1000	260	A3	364 887 004
1240	260	A2	364 887 003

Storage bags – type B

These storage bags are suitable for the secure transportation and dust-free storage of voltage detectors and insulating poles.

- Storage bag made of hard-wearing imitation leather
- Easy to close with quick-release buckles
- Two shoulder straps
- Possibility to attach the magnetic contact and cable for KP-Test 5R DC

Length (mm)	Height (mm)	Type	Article no.
1260	300	B1	364 888 001
1600	300	B5	364 888 005
2100	300	B2	364 888 002
2600	300	B3	364 888 003
3200	300	B4	364 888 004

Wall holders

Flexible wall holder

Wall holders for holding and space-saving storage of voltage detectors, phase comparators and insulating poles.

- Holder made of impact-resistant plastic
- Retaining strap made of hard-wearing rubber
- Mount on guide rail 360 330 102 or directly on a wall

Pole diameter (mm)	Article no.
20 - 30	360 330 100
30 - 40	350 330 101

Guide rail for flexible wall holders

Aluminium guide rail for flexible wall holders 360 330 100 and 360 330 101

Length (mm)	Article no.
900	360 330 102

Fastening clips

Fastening clips for holding and space-saving storage of voltage detectors, phase comparators and insulating poles

Pole diameter (mm)	Article no.
21 - 24	360 330 110
25 - 29	360 330 111
29 - 33	360 330 112
34 - 38	360 330 113
39 - 43	360 330 114

Quiver

Quiver as support for pole diameters up to 38 mm

	Article no.
	360 330 115

1 Other accessories

Potential equalisation cable

The potential equalisation cable establishes the same electrical potential between two rails. This prevents disturbances in the transmission of data for signalling systems that could occur while testing for the absence of voltage with a two-pole voltage detector.

- Magnetic contact on both ends
- Insulated high voltage cable, 1.5 m

	Article no.
	935 300 001

Storage cabinets for voltage detectors and earthing devices

This storage cabinet is specially designed for storing voltage detectors, earthing and short-circuiting devices, and earthing poles. It protects the stored equipment from adverse environmental conditions and use by unauthorised persons or theft.

Maximum storage volume:
- 2 voltage detectors for overhead lines with storage bag
- 2 telescopic earthing poles
- 2 railway earthing devices (set)

The storage cabinet is designed to be fixed to a wall or mast.

Material:
- Sheet steel, galvanised and painted

Width (mm)	Depth (mm)	Height (mm)	Weight (kg)	Article no.
320	464	3000	80	364 807 001*


PFISTERER
DB

1

Maintenance inspection

System operators are responsible for the safety of people and equipment, as well as the proper condition of work equipment used.
To prevent hazards arising due to faulty equipment, health and safety legislation prescribes regular inspections.

Proven safety with PFISTERER
Maintenance inspections for voltage detectors in accordance with IEC 61243 are mandatory in Germany under DGUV V3 (accident prevention regulations for electrical installations and equipment). The regulations state that voltage detectors must undergo a maintenance inspection with specified test sequences after a maximum period of six years.

All-inclusive package
PFISTERER has been successfully carrying out these maintenance inspections in its own testing facilities for many years.

PFISTERER services offered
- Maintenance inspection
- Maintenance inspection plus repair
- Maintenance inspection of third-party equipment*

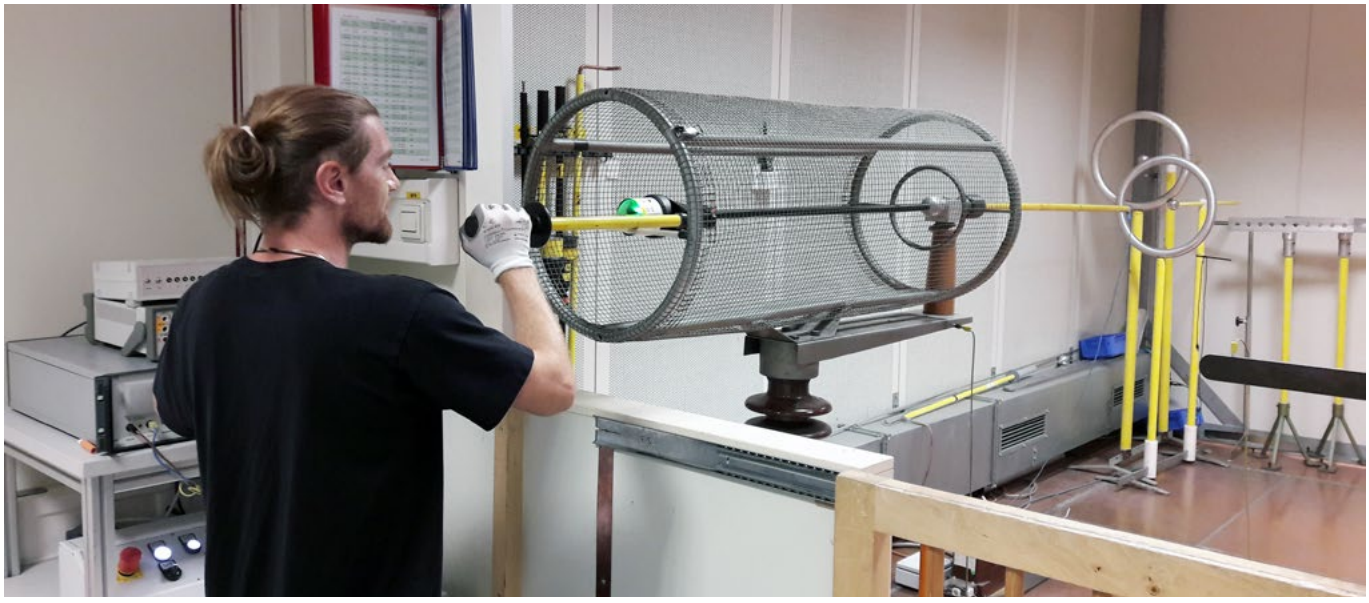
* Without repair and overhaul

Some of the test components
- Visual and dimensional check
- Testing of the self-test device
- Leakage current test
- Protection against bridging and spark resistance
- Measurement and documentation of the threshold voltage

Detailed information about the services we offer is available on request in our "maintenance inspection" price list.

Contact for maintenance inspections
Phone: +49 7323 83 634
+49 7323 83 815
Email: service-whp@pfisterer.com

PFISTERER Kontaktsysteme GmbH
Maintenance inspection department
Bahnhofstrasse 30
89547 Gerstetten-Gussenstadt
Germany



Test protocol	PFISTERER
for in-service test	Kontaktsysteme GmbH Rosenstrasse 44 73650 Winterbach

Order number: 104001792	**Customer ref:** 4201278957-K4-V40	**Date:** 17.07.2017
Manufacturer: PFISTERER		
Type: KP-Test II USE 365 431-026	**Variant:**	**Year of manufacturing:** 1998
Voltage / frequency range: 3-6 / 10-15 / 25-30 kV 50 Hz	**Serial number:** 60562	
note:		

Executed tests:	**Test result** OK
►Visual and dimensional check	
- Device complete	Ja
- No Mechanical damage	Ja
- Labeling complete and readable	Ja
- Red ring available	Ja
- Instruction manual available	Ja
- General condition of device well	Ja
► Check self-testing procedure	Ja
► Leackage current test (dry condition) 1 min. nominal value: < 200µA	3,4µA
► Bridging test (flashover and breakdown)	Ja
► Spark-over test	Ja

► Measurement of operating voltage

For concerned voltage detector with nominal voltage of: **3-6 / 10-15 / 25-30 kV 50 Hz**

operating voltage “Ut” has been measured: **0,65 / 2,12 / 4,35 kV**

According to DIN VDE 0681 part 4 chapter 4.19.5. Comply also test requirement according to EN 61243-1 chapter 6.2.1.

► Perceptibility of display	- Optically	Ja
	- Acoustically	

In-service test has been passed according to IEC 61243-1:2003.

This is to certify that the necessary measures have been respected for quality assurance. The device meets the requirements of o.a. Standards or specifications.	**Certified by:** Mathias Schmid **Date:** 17.07.2017

In-service test passed successfully:	**Ja**
Next in-service test at the latest:	**2023**

Example of an inspection report

2 Best protection in the event of a fault

Earthing and short-circuiting are essential when working on electrical systems and overhead lines. In the event of a fault, components that have been inadvertently re-energised are short-circuited, preventing a dangerous contact voltage for people and equipment. In addition to earthing and short-circuiting devices for medium and high voltage levels, PFISTERER also offers special earthing devices for special applications.

Compliant with IEC 61230

Portable equipment for earthing or earthing and short-circuiting means equipment, devices and components used manually and without forced guidance brought up to and connected to the connection points of parts of electrical systems for the purpose of earthing and short-circuiting. This comprises earthing and short-circuiting devices and equipment including line and earthing clamps as well as earthing poles.

PFISTERER earthing and short-circuiting devices are designed and manufactured in accordance with IEC 61230 to meet individual customer requirements. Specially developed IT-assisted production processes enable short delivery times – even for special variants.

For a one-time load only

Earthing and short-circuiting devices are an essential component for working according to the five safety rules. To ensure reliable protection in the event of a fault, earthing and short-circuiting devices must be individually matched to the intended application.

Normally, earthing and short-circuiting devices are not energised. Once earthing and short-circuiting devices, including their fixing points, have been subjected to a short-circuit current, they must not be used again.

Earthing and short-circuiting set for catenary lines (telescopic)

This earthing and short-circuiting set is designed for use on catenary lines with a contact wire height between 4.8 m and 6.25 m. The two-part telescopic earthing pole can be steplessly adjusted to the required working height. Depending on the version, the earthing cable enables non-obstructive (12 m length) or obstructive earthing (8.5 m length).

The variant for non-obstructive earthing and short-circuiting is additionally equipped with a suspension hook and marker flags. The R50 rail base earthing clamp allows the passage of rail vehicles that do not require electric traction power.

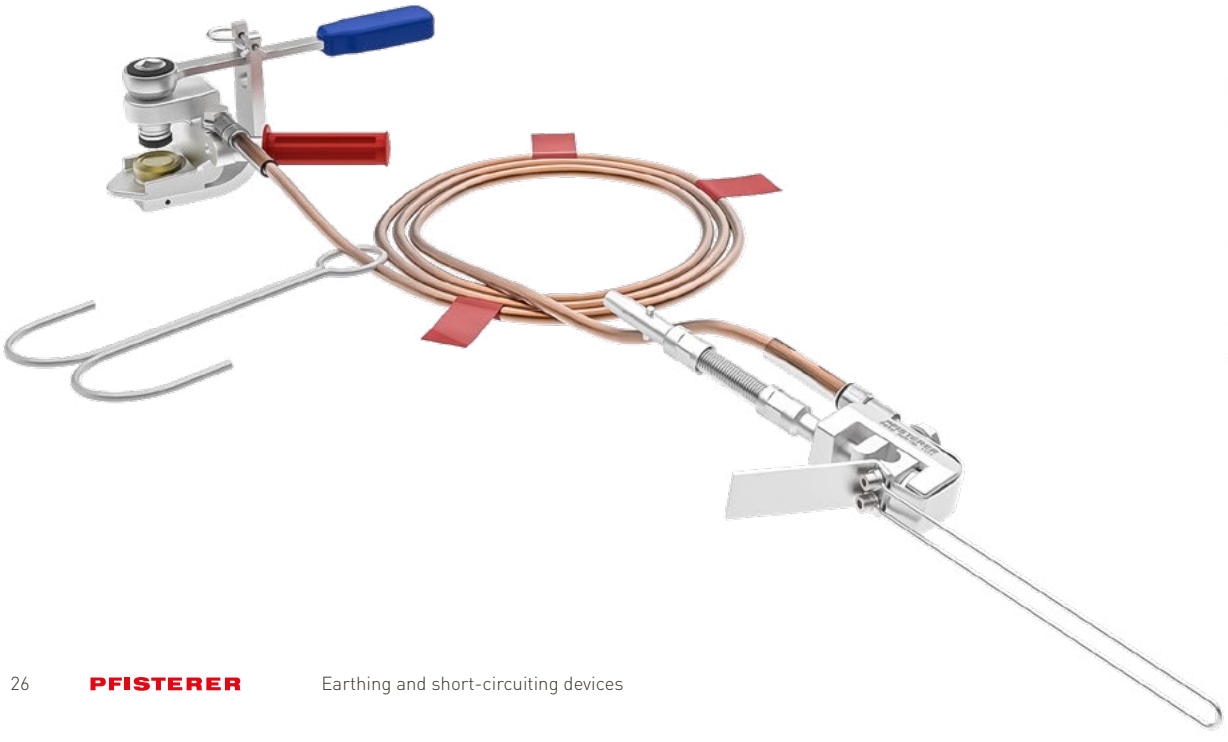
- Short-circuit strength I_k = 36.5 kA / 0.12 s
- Length of earthing and short-circuiting cable: 12 m (non-obstructive) or 8.5 m (obstructive)

Technical description:

- 1 telescopic earthing pole with 2 sections, transportation length 2.6 m, overall length 5 m
- 1 earthing and short-circuiting device comprising:
  - 1 earthing and short-circuiting cable 50 mm²
  - 1 contact wire earthing clamp, P51D
  - 1 rail base earthing clamp, R50
  - 1 suspension hook and marker flags (only non-obstructive)

Earthing and short-circuiting devices for catenary lines

Length of earthing and short-circuiting cable (m)	Incl. telescopic earthing pole	Incl. suspension hook	Non-obstructive	Article no.
8.5	•	–	–	364 845 001*
8.5	–	–	–	364 845 006
12	•	•	•	364 845 002**
12	–	•	•	364 845 005***



Earthing and short-circuiting set for catenary lines (plug-in)

This earthing and short-circuiting set for use on railway catenary lines is designed for mobile use. The short transportation length of the five-part, plug-in earthing pole makes it easy to transport in cars and service vehicles. Depending on the version of the earthing cable, earthing can be done without obstructing the track (12 m length) or obstructively (8.5 m length).

The variant for non-obstructive earthing and short-circuiting is additionally equipped with a suspension hook and marker flags. The R50 rail base earthing clamp allows the passage of rail vehicles that do not require electric traction power. The earthing pole and the ratchet of the rail base earthing clamp can be detached to secure the work site.

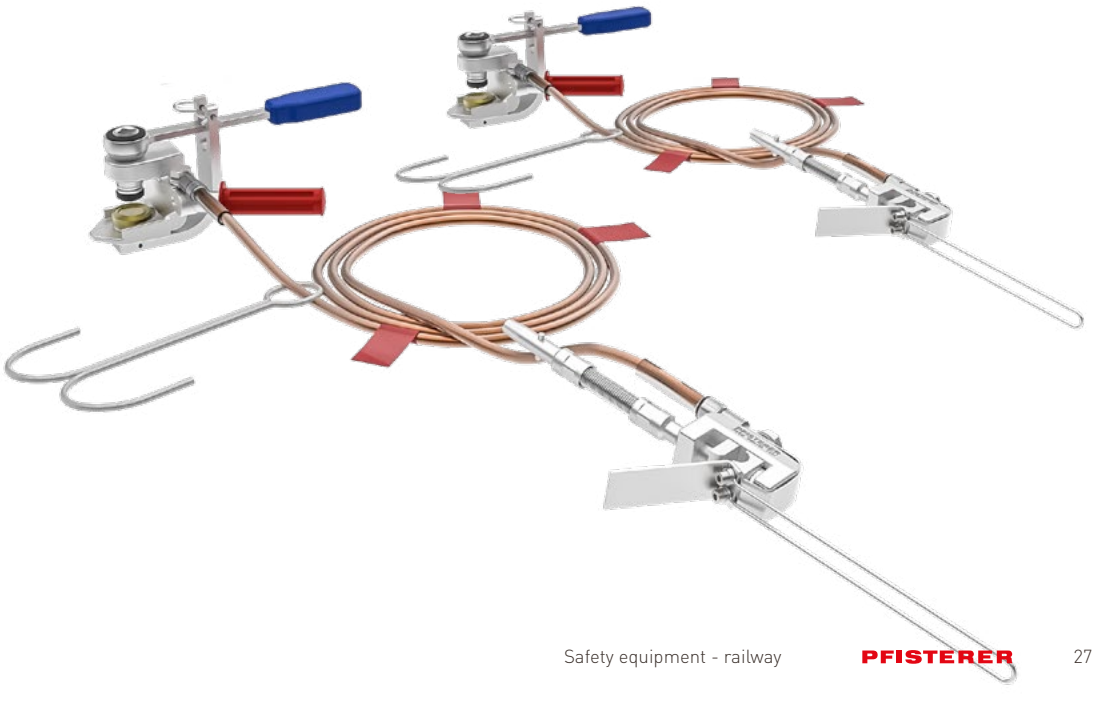
- Short-circuit strength I_k = 36.5 kA / 0.12 s
- Length of earthing and short-circuiting cable:
  12 m (non-obstructive) or 8.5 m (obstructive)

Technical description:

- 1 plug-in earthing pole with 5 sections, transportation length 1.1 m
- 1 storage bag for earthing pole
- 2 earthing and short-circuiting devices, each comprising:
  - 1 earthing and short-circuiting cable 50 mm²
  - 1 contact wire earthing clamp, P51D
  - 1 rail base earthing clamp, R50
  - 1 suspension hook and marker flags (only non-obstructive)
  - 1 storage bag

Earthing and short-circuiting devices for catenary lines (car version)

Length of earthing and short-circuiting cable (m)	Incl. suspension hook	Non-obstructive	Article no.
8.5	–	–	364 766 001*
12	•	•	364 766 004



Earthing and short-circuiting set for power lines

This earthing and short-circuiting set is designed for use on railway power lines. The two-part telescopic earthing pole can be steplessly adjusted to the required working height.

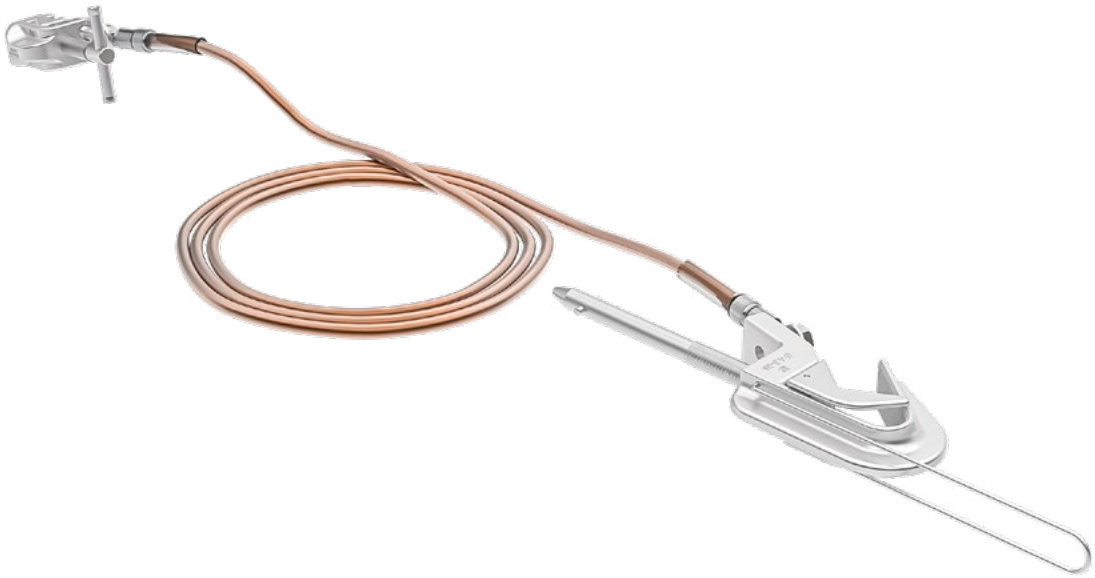
- Short-circuit strength I_k = 36.5 kA / 0.12 s

Technical description:

- 1 telescopic earthing pole with 2 sections, transportation length 1.8 m, overall length 3.5 m
- 1 earthing and short-circuiting device comprising:
  - 1 earthing and short-circuiting cable 50 mm², length 4 m
  - 1 contact wire earthing terminal, P50D, with feeler loop
  - 1 earthing clamp, U2

Earthing and short-circuiting devices for railway power lines

Length of earthing and short-circuiting cable (m)	Article no.
4	363 571 571*



Earthing and short-circuiting set for transformers

This railway earthing and short-circuiting set is designed for use on pole-mounted transformers for overhead lines. The two-part telescopic earthing pole can be steplessly adjusted to the required working height.

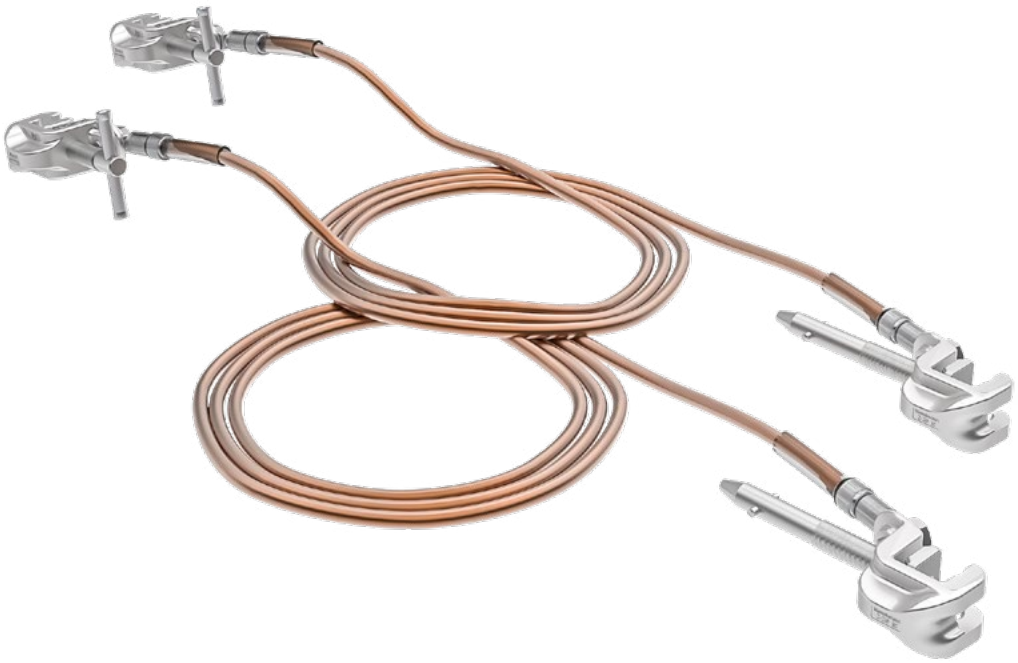
- Short-circuit strength I_k = 36.5 kA / 0.12 s

Technical description:

- 1 telescopic earthing pole with 2 sections, transportation length 1.8 m, overall length 3.5 m
- 2 earthing and short-circuiting devices, each comprising:
  - 1 earthing and short-circuiting cable 50 mm², length 4 m
  - 1 line clamp P4D
  - 1 earthing clamp U2

Earthing devices for transformers

Length of earthing and short-circuiting cable (m)	Article no.
4	364 844 001*



2 Earthing and short-circuiting devices

Earthing and short-circuiting devices for construction machines

This railway earthing device is designed for the protective earthing of construction machinery. The R50 rail base earthing clamp allows the unobstructed passage of rail vehicles.

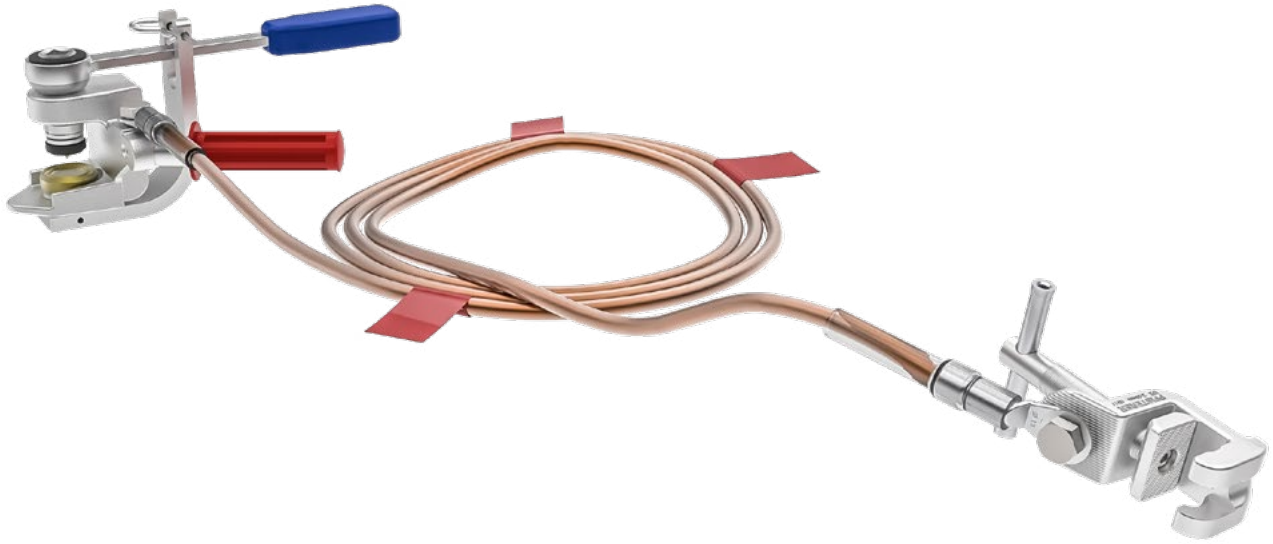
- Short-circuit strength I_k = 36.5 kA / 0.12 s

Technical description:

- 1 earthing and short-circuiting device comprising:
  - 1 earthing and short-circuiting cable 50 mm², length 12 m
  - 1 earthing clamp, U2
  - 1 rail base earthing clamp, R50

Earthing devices for construction machines

Length of earthing and short-circuiting cable (m)	Article no.
12	364 843 001*



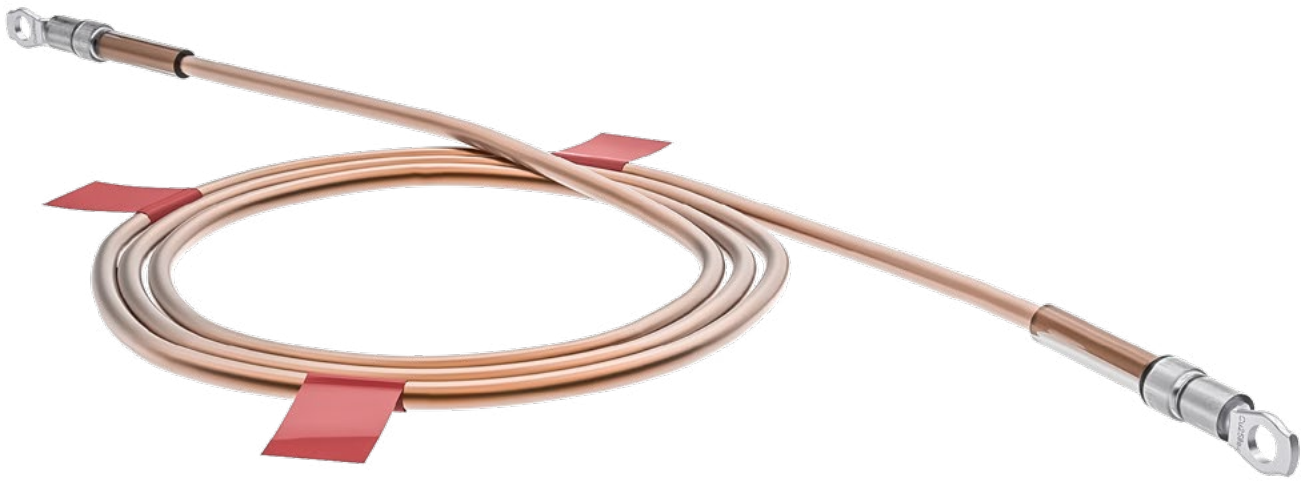
Single-pole earthing and short-circuiting cable

Earthing and short-circuiting cable with compression cable lugs fitted at both ends, 30° angled lug with 13 mm hole for M12 terminal bolts. Bending protection is provided where the cable enters the lug.

- Short-circuit strength I_k = 36.5 kA / 0.12 s

Single-pole earthing and short-circuiting cables

Length of earthing and short-circuiting cable (m)	Non-obstructive	Article no.
8.5	–	362 138 138*
12	•	362 138 529**
13	–	362 138 004



2

Rail earthing & earthing clamps

PFISTERER offers a comprehensive range of earthing clamps for earthing and short-circuiting devices. Different versions of these earthing clamps are designed for various earthing connection variants outdoors and in indoor installations.

Technical description

- Clamping ranges 2 - 30 mm available
- Short circuit current-carrying capacity up to 29.6 kA / 1 s
- Compact and robust design
- Easy to use
- Connect to earthing and short-circuiting device with M12 bolt

Rail base earthing clamp R50

Rail base earthing clamp with annular cutting edge to cut through layers of dirt and oxidation, for all rail base widths.

Rail type	Max. short-circuit current I_k 1 s (kA)	Weight (g)	Article no.
	40 (I_k 0.12 s)	2130	363 322 005*

Earthing magnet R51

Earthing magnet for use on tramway rails.

Rail type	Max. short-circuit current I_k 1 s (kA)	Weight (g)	Article no.
	13.8	5000	364 901 001

Earthing clamps

Type	Max. cable cross-section (mm²)	Ø (mm)	Ø (mm)	Ø (mm)	Ø (mm)	(mm)	Max. short-circuit current I_k 0.5 s (kA)	I_k 1 s (kA)	Clamping range (mm)	Clamping width (mm)	Weight (g)	Article no.
	120	20	—	15	5 - 20	2 - 20	33.5	23.7	2 - 20	38	720	360 414 001
U1 Earthing clamp with screw handle for use at various earthing connection points												
	150	25	—	15	5 - 20	2 - 20	42.0	29.6	2 - 20	38	754	361 346 001*
U2 Earthing clamp with screw handle for use at various earthing connection points. Suitable for higher short-circuit currents												
	120	20	—	15	5 - 20	2 - 20	33.5	23.7	2 - 20	38	806	364 704 004
U3 Earthing clamp with handle for use at various earthing connection points												
	150	25	—	15	5 - 20	2 - 20	42.0	29.6	2 - 20	38	836	364 704 003
U4 Earthing clamp with handle for use at various earthing connection points												
	150	25 - 30	—	20	5 - 25	2 - 25	42.0	29.6	2 - 25	50	902	364 714 002
U5 Earthing clamp with handle for use at various earthing connection points												

2

Line clamps & contact wire clamps

PFISTERER offers a comprehensive range of line clamps for earthing and short-circuiting devices. Depending on the version, these line clamps are designed for connection to overhead lines or in switchgear.

Technical description

- Clamping ranges 2 - 85 mm available
- Short circuit current-carrying capacity up to 29.6 kA / 1 s
- Reliable contact between clamp and conductor
- Compact and robust design
- Easy to use
- Compatible earthing poles available for all versions
- Connect to earthing and short-circuiting device with M12 bolt

Line clamps

Type	Max. cable cross-section (mm²)	 Ø (mm)	 Ø (mm)	 Ø (mm)	 Ø (mm)	 (mm)	Max. short-circuit current I_k 0.5 s (kA)	Max. short-circuit current I_k 1 s (kA)	Clamping range (mm)	Clamping width (mm)	Weight (g)	Article no.
	120	20	5 - 20	15	5 - 20	2 - 20	33.5	23.7	2 - 20	38	754	360 330 002
P3D Universal line clamp for various line connection points												
	150	25	5 - 20	15	5 - 20	2 - 20	42.0	29.6	2 - 20	38	782	360 332 001*
P4D Universal line clamp for various line connection points												
	150	25/30	5 - 25	20	5 - 25	2 - 20	42.0	29.6	2 - 25	50	850	360 333 002
P5D Line clamp with very high short-circuit strength for versatile use												

Contact wire clamps

Type	Max. cable cross-section (mm²)	Ø (mm)	Ø (mm)	Ø (mm)	Ø (mm)	(mm)	Max. short-circuit current I_k 0.5 s (kA)	Max. short-circuit current I_k 1 s (kA)	Clamping range (mm)	Clamping width (mm)	Weight (g)	Article no.
	150	–	–	–	4.5 - 35	–	42.0	29.6	4.5 - 35	34	815	363 418 003*
P50D Contact wire earthing clamp with twist-proof earthing cable connection. Fine grooves on frame and thrust block ensure a firm mechanical grip and reliable electrical contact on corroded conductor cables.												
	50	–	–	–	Ri 80 - 150	–	14.0	36.6 (I_K 0.12 s)	–	30	1070	361 499 001**
P51D Contact wire earthing clamp with flexible spindle for use on grooved, circular and shaped conductors												
	50	–	–	–	Ri 80 - 150	–	14.0	36.6 (I_K 0.12 s)	–	30	942	361 499 499
P52D Contact wire earthing clamp with rigid spindle for use on grooved, circular and shaped conductors												
	50	–	–	–	Ri 80 - 150	–	14.0	36.6 (I_K 0.12 s)	–	30	1970	362 947 947
P53D Contact wire earthing clamp for use on twin contact wires												

2

Bags and wall holders

Storage bag for earthing and short-circuiting devices

These storage bags are suitable for the secure transportation and dust-free storage of earthing and short-circuiting devices.

- Hard-wearing imitation leather
- Quick-release buckles
- Two shoulder straps

Length (mm)	Height (mm)	Article no.
400	300	364 785 005
520	350	364 785 001

Wall holder type 1

For storage of earthing and short-circuiting devices as well as 2 earthing or operating poles (diameter 33 mm) in substations

Width (mm)	Height (mm)	Article no.
360	40	360 877 001

Wall holder type 2

For storage of multi-pole earthing and short-circuiting devices in substations

Width (mm)	Height (mm)	Article no.
560	250	360 878 001

Wall holder type 3

For storage of single-pole or multi-pole earthing and short-circuiting devices in substations

Width (mm)	Height (mm)	Article no.
130	100	616 157 157

Suspension hook

For non-obstructive suspension of the earthing cable

	Customer-specific identifier	Article no.
	DB Ebgw 01.11	360 453 453

3 Working at a safe distance

Operating poles and earthing poles are safety tools. Earthing poles are insulating poles that are used manually. They serve to connect line clamps of earthing and short-circuiting devices to isolated parts of power systems. Operating poles are insulating poles that are used manually for operating and testing live parts.

Protection against electrical hazards

Insulating poles have to reliably protect the user when performing switching, testing, or earthing and short-circuiting tasks. Besides the pole material, its length is important as it ensures a sufficient distance between the user and the system part. For reliable protection, among other things, the minimum insulating length of an earthing or operating pole must be selected according to the rated voltage of the system.

Individual for every application

Operating and earthing poles from PFISTERER are manufactured and tested in accordance with the relevant standards. As well as the standard portfolio, PFISTERER offers a modular system that allows every customer to configure their pole individually in line with their applications and requirements.

Marking the work site

Earthing poles for railway networks are used to connect railway earthing devices. To do this, contact wire earthing clamps are brought up to the contact wire. These earthing poles are designed with red marking stripes on a white background. This provides optimal marking of the work site.

3 Earthing poles

Telescopic earthing poles, two-part

Continuously adjustable telescopic earthing pole in two-part design for use on pole-mounted transformers, railway overhead lines and railway power lines. The roller locking device allows easy fixing of a line clamp. The red-and-white signal design ensures clear marking of the work site during use.

Technical description

- Earthing pole made of glass-fibre reinforced polyester tube
- Continuously adjustable
- Operating head with locking function (roller or bayonet)
- Red-and-white signal design to safeguard the work site

Earthing poles (telescopic), two-part

Pole length extended L_G (mm)	Length range (m)	Transportation length L_T (mm)	Weight (kg)	Locking	Customer-specific identifier	Article no.
3500	1.8 - 3.5	1870	3.8	Roller locking device	DB Ebgw 01.17	362 744 001*
5000	2.6 - 5.0	2662	5.8	Al operating head	DB Ebgw 01.12	362 744 744**

Earthing poles (telescopic), three-part

Continuously adjustable telescopic earthing pole in three-part design for use on railway networks. The roller locking device allows easy fixing of a line clamp. The red-and-white signal design ensures clear marking of the work site during use.

Technical description

- Earthing pole made of glass-fibre reinforced polyester tube
- Continuously adjustable
- Operating head with sliding function
- Red-and-white signal design to safeguard the work site

Earthing poles (telescopic), three-part

Pole length extended L_G (mm)	Length range (m)	Transportation length L_T (mm)	Weight (kg)	Customer-specific identifier	Article no.
4500	1.5 - 4.5	1500	4.9	—	362 745 004
5080	2.0 - 5.0	2000	5.2	—	362 745 745
7000	3.2 - 7.0	3200	7.4	—	362 745 002

3 Earthing poles

Earthing poles (plug-in), five-part

Plug-in earthing pole in five-part design for use on railway networks. Its short transportation length makes it easy to transport in cars and service vehicles. Line clamps can be easily fixed to the earthing pole by means of a roller locking device. The red-and-white signal design ensures clear marking of the work site during use.

Technical description

- Earthing pole made of glass-fibre reinforced polyester tube in white colour
- Operating head with locking function (roller locking device)
- Red markings to safeguard the work site

Earthing poles (plug-in), five-part

Pole length assembled L_G (mm)	Length range (m)	Transportation length L_T (mm)	Weight (kg)	Customer-specific identifier	Article no.
4892	4.9	1100	6.3	DB Ebgw 01.22-1	364 784 003*

3 Operating pole sets 30 kV

The operating pole can be used as a switching pole or insulating pole to switch disconnectors or to insert insulating protective shutters. It is suitable for use in systems with rated voltages up to 30 kV. The 30 kV operating pole set can be individually configured from a total of nine individual elements, according to requirements.

Technical description

- Max. overall length of the operating pole: 5.02 m
- Max. length of individual element / transportation length: 1 m
- Suitable for indoor and outdoor use
- Can be used in rain and snow
- Insulating poles made of glass-fibre reinforced polyester tube in white colour
- Storage bag with pole compartments

Available individual parts

- Handle
- Insulating pole with hand protection disc and red ring
- Max. 3 extension elements
- Switching poles (two variants)
- Operating heads
  - Roller locking device
  - Bayonet locking device
  - Universal head

Operating pole sets 30 kV

Max. overall length L_G (mm)	Handle	Insulating pole	Number of extensions	Operating head roller lock	Operating head bayonet lock	Switching head 900 mm	Switching head 500 mm	Universal head	Article no.
2320	•	•		•		•			364 172 008 / 00041
2320	•	•		•		•	•	•	364 172 008 / 00042
2750	•	•	1		•				364 172 008 / 00043
3220	•	•	1	•		•			364 172 008 / 00044
3220	•	•	1	•		•	•	•	364 172 008 / 00017
4120	•	•	2	•		•			364 172 008 / 00045
4120	•	•	2	•		•	•	•	364 172 008 / 00046
5020	•	•	3	•		•			364 172 008 / 00047
5020	•	•	3	•		•	•	•	364 172 008 / 00020

Operating poles

The telescopic insulating operating pole with branch saw is used for removing branches on or in the vicinity of live parts up to 36 kV.

Technical description

- Working height from 2.9 - 8.9 m
- Insulating poles of 1 m, 1.5 m or 2 m
- Safe insulation against live parts
- Robust branch saw with durable saw teeth
- Can be used in rain and snow

Operating poles

Overall length L_G (mm)	Overall length telescopic pole approx. (mm)	Insulating length L_i (mm)	Transportation length L_T (mm)	Article no.
4900	2800	1500	1500	364 172 006 / 00068
6496	4300	1500	1845	364 172 006 / 00072
7996	5800	1500	2345	364 172 006 / 00076
9496	7300	1500	2845	364 172 006 / 00080

Versions with different transportation/overall lengths and insulating pole lengths of 1.0 m and 2.0 m can be found in our online catalogue or are available on request.

3 Bags and wall holders

Storage bags – type E

These storage bags are suitable for the secure transportation and dust-free storage of insulating poles.

- Hard-wearing imitation leather
- Velcro closure
- Shoulder strap

Length (mm)	Height (mm)	Type	Article no.
2200	180	E1	364 171 001
1200	180	E3	364 171 003
1800	180	E4	364 171 004
3100	180	E5	364 171 005
3700	180	E6	364 171 006

Storage bag – type F

These storage bags are suitable for the secure transportation and dust-free storage of up to five insulating poles.

- Hard-wearing imitation leather
- Velcro closure
- Shoulder strap

Length (mm)	Height (mm)	Type	Article no.
1140	650	F1	364 786 001

Wall holders

- Suitable for earthing poles and operating poles

For pole diameter (mm)	Width (mm)	Height (mm)	Depth (mm)	Article no.
24	30	515	130	364 007 002
33	30	515	140	364 007 003
40 - 45	30	515	150	364 007 004

Flexible wall holders

Wall holders for holding and space-saving storage of voltage detectors, phase comparators and insulating poles.

- Holder made of impact-resistant plastic
- Retaining strap made of hard-wearing rubber
- Mount on guide rail 360 330 102 or directly on a wall

Pole diameter (mm)	Article no.
20 - 30	360 330 100
30 - 40	350 330 101

Guide rail for flexible wall holders

Aluminium guide rail for flexible wall holders 360 330 100 and 360 330 101

Length (mm)	Article no.
900	360 330 102

Fastening clips

Fastening clips for holding and space-saving storage of voltage detectors, phase comparators and insulating poles

Pole diameter (mm)	Article no.
21 - 24	360 330 110
25 - 29	360 330 111
29 - 33	360 330 112
34 - 38	360 330 113
39 - 43	360 330 114

Quiver

Quiver as support for pole diameters up to 38 mm

	Article no.
	360 330 115

PFISTERER

PFISTERER Holding AG

Rosenstrasse 44
73650 Winterbach
Germany
Phone: +49 7181 7005 0
Fax: +49 7181 7005 565
info@pfisterer.com
www.pfisterer.com

Contact for safety equipment

Maintenance inspection

Phone: +49 7323 83 634
Phone: +49 7323 83 815
Email: service-whp@pfisterer.com

PFISTERER Kontaktsysteme GmbH
Maintenance inspection department
Bahnhofstrasse 30
89547 Gerstetten-Gussenstadt
Germany

ETS Engineering & Technical Sales Service

Phone: +49 7323 83 808
Email: T-TS-COMPONENTS@pfisterer.com

In 1921 Karl Pfisterer founded his factory for special electrical products in Stuttgart with the aim of improving the world of power transmission. The PFISTERER Group has pursued this goal of quality and technological leadership for more than 100 years. Today, PFISTERER is one of the world's leading specialists and system suppliers for energy infrastructure – with a complete range of cable fittings, overhead line technology and components along the entire transmission chain from power generation to consumption.
With state-of-the-art manufacturing processes and 1,200 employees at 18 international locations, PFISTERER not only connects the power grids of today and tomorrow, but also makes an important contribution to a sustainable and secure energy supply.