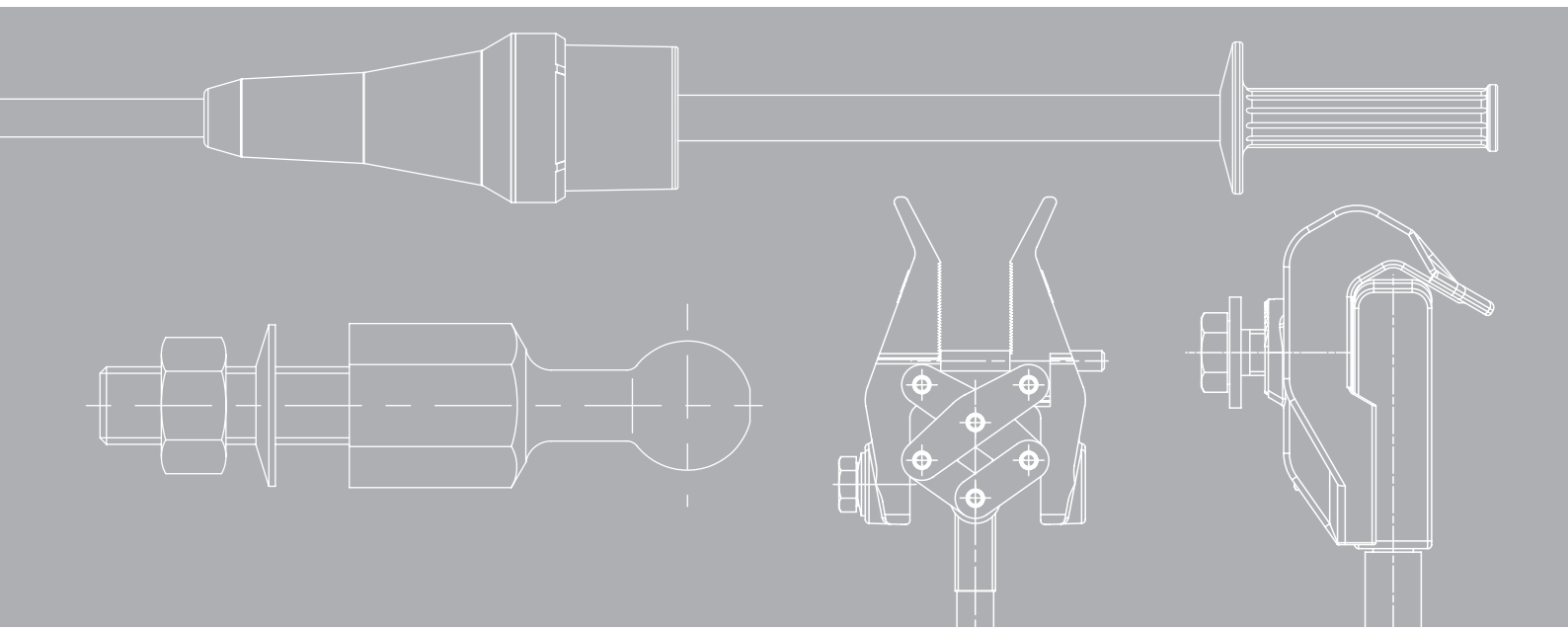
PFISTERER



EDITION 2011/2012

SAFETY EQUIPMENT

Product catalogue

THE POWER CONNECTION

CABLE SYSTEMS | COMPONENTS | OVERHEAD LINES | RAILWAY CATENARY SYSTEMS

The Standard in Matters of Safety. PFISTERER.

When work is to be carried out on electrical installations, the safety of personnel, materials and system components must be given the highest priority. Although the safety measures and processes in different parts of the world are still not standardized, all operators are agreed on one point - safe working can only be ensured if a number of conditions are met:

- Regulations and instructions are followed meticulously and consistently
- Personnel have had solid training, and are continuously re-trained
- Mutual reliance when carrying out work on electrical installations
- Use of reliable tools and work equipment

In no Other Field of Application is the Quality of Tools and Work Equipment so Important.

It is here that, for decades, PFISTERER products have constantly been setting new standards. Our product range includes solutions that are tailored exactly to each specific requirement, and based on five safety rules recognised around the world:

- Isolate
- Reclosing lockout to prevent restarting
- Verify absence of voltage
- Earthing and short-circuiting measures
- Cover or safeguard any adjacent live parts

Backed up by decades of experience in developing safety equipment, and with our practical know-how, we know exactly how operators think and work. So no one knows all the requirements better than we do. Our highly-qualified staff applies this know-how in their development work, in the laboratory and in production. And the result is: uniquely reliable safety equipment.

Our core competence is in securing the absence of voltage and the earthing and short-circuiting of system components. Our product range includes:

- Capacitive voltage detectors for power systems above 1 kV AC
- Double-pole voltage detectors for power systems between 500 V and 4.000 V DC
- Voltage detector types adapted to almost all existing railway systems
- Phase comparators and voltage-difference detecting devices for three-phase applications
- Voltage detecting systems for gas-insulated load switching equipment and switchgear
- Earthing and short-circuiting devices in all useful types and variations for high short-circuit loads
- Earth clamps, line clamps and connection elements for all common applications
- Insulating poles as earthing or operating poles

Every PFISTERER safety product is matched exactly to the corresponding customer requirement. Special IT assisted logistics processes have been developed for the earthing and short-circuiting devices. This means short delivery times, even for special variants.

This product catalogue shows a representative selection of the most popular items in our product range.

We can supply additional types and add-ons on request.

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Voltage Detectors

One of the most important operations when working on electrical switchgear is to check that voltage is absent, and this requires voltage detectors that meet the highest quality and reliability requirements. PFISTERER voltage detectors meet these requirements without exception.
The **KP-Test 5** Series voltage detectors provide an exceptional combination of user comfort and safety in one device. The optimum LED layout, integrated audible signals and innovative self-test features form the basic elements of all equipment types. Thanks to our long years of experience, we are able to develop and supply voltage detectors that work reliably even in critical situations in the field.
KP-Test 5 Series voltage detectors can be supplied as capacitive single-pole voltage detectors for a.c. voltages from 1 to 420 kV, or resistive double pole voltage detectors from 500 to 4,000 V, in various types.

Equipment types:
The possible operating conditions should be taken into consideration when selecting a suitable voltage detector. Voltage detectors with a contact electrode extension have universal application, as they allow reliable indications even in difficult electrical field conditions.

KP-Test 5:
- For medium voltage applications with contact electrode extension
- Nominal voltages from 1 to 36 kV, Type S

KP-Test 5 dual:
- For medium voltage applications with contact electrode extension and nominal voltage range selector
- Nominal voltages from 3 to 36 kV, Type S

KP-Test 5L:
- Mainly for use on medium voltage overhead lines
- Nominal voltages from 3 to 36 kV, Type L

KP-Test 5L dual:
- Mainly for use on medium voltage overhead lines with nominal voltage range selector
- Nominal voltages from 3 to 36 kV, Type L

KP-Test 5H:
- For high voltage applications with contact electrode extension
- Nominal voltages from 30 to 420 kV, Type S

KP-Test 5HL:
- For use on high voltage overhead lines
- Nominal voltages from 30 to 420 kV, Type L

KP-Test 5R:
- For use on the catenary systems of a.c. voltage railways
- Nominal voltages 15 kV 16.7 Hz and 25 kV 50 Hz

KP-Test 5R DC:
- For use on the catenary systems of d.c. voltage railways
- Nominal voltages from 500 to 4,000 V d.c.

KP-Test 5R DC dual:
- For use on the catenary systems of d.c. voltage railways, with nominal voltage range selector
- Nominal voltages from 500 to 4,000 V d.c.

KP-Test 5 DC:
- For use on the catenary systems of d.c. voltage systems and railways with a third rail
- Nominal voltages from 500 to 4,000 V d.c.

Voltage Detectors KP-Test 5

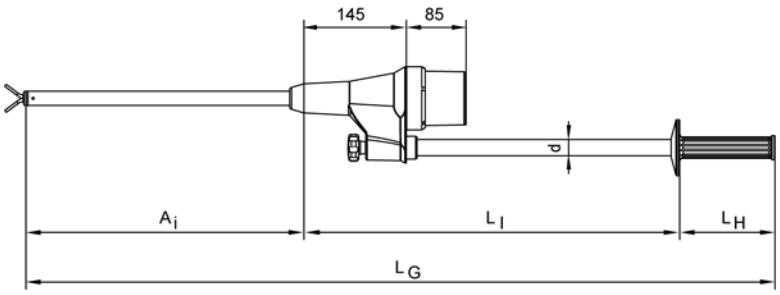
The **KP-Test 5** capacitive voltage detector can be used for indoor and outdoor medium voltage applications. It indicates the presence of operating voltage when brought into contact with the conductor. The **KP-Test 5** voltage detector is distinguished by its high level of user-friendliness and user safety.

Technical description:

- Integrated audible signal for reliable voltage tests, even in a noisy environment
- Can be used in rain and snow
- Extremely bright LEDs in clear layout to prevent confusion
- Maximum resistance to interference fields through use of a high-quality contact electrode extension
- Extensive self-test at switch-on, which even checks the contact electrode extension
- Removable contact electrode top piece included as forked electrode
- Nominal frequency 50 Hz, optional 60 Hz
- Length of insulating element when assembled 520 mm
- Diameter of insulating element when assembled 24 mm

The **KP-Test 5** is designed and type-tested to Standard IEC 61243-1.

Other versionss with deviating nominal voltages, nominal voltage ranges, frequencies and languages are available on request.



No.	Version	Nominal voltage U_n (kV)	Total length L_G (mm)	Insertion depth A_i (mm)	Length of handle L_H (mm)	suitable bag
930 100 003	0020	3	887	220	135	A1
930 100 005	0020	5	887	220	135	A1
930 100 010	0020	10	887	220	135	A1
930 110 005	0020	5 - 6	1060	393	135	A1
930 110 010	0020	10 - 12	1060	393	135	A1
930 110 013	0020	13	1060	393	135	A1
930 110 020	0020	20	1060	393	135	A1
930 120 003	0020	3 - 10	1270	603	135	A3
930 120 005	0020	5 - 10	1270	603	135	A3
930 120 010	0020	10 - 20	1270	603	135	A3
930 140 010	0020	10 - 30	1730	910	288	A2
930 140 020	0020	20 - 36	1730	910	288	A2

Voltage Detectors KP-Test 5 dual

The **KP-Test 5 dual** capacitive voltage detector is similar in design to the **KP-Test 5**. This voltage detector can also be switched between two nominal voltage ranges. This allows a larger system range to be covered without increasing interference field susceptibility.

Technical description:

- Integrated audible signal for reliable voltage tests even in a noisy environment
- Can be used in rain or snow
- Extremely bright LEDs in clear layout to prevent confusion
- Maximum resistance to interference fields through the use of a high-quality contact electrode extension
- Extensive self-test functions at switch-on, which even check the contact electrode extension
- Removable contact electrode headpiece included as forked electrode
- Switching between two voltage ranges by means of a buttons
- Nominal frequency 50 Hz, optional 60 Hz

The **KP-Test 5 dual** meets IEC Norm IEC 61243-1.

Other types with deviating nominal voltages, ranges of nominal voltage, frequencies and languages are available on request.

No.	Version	Nominal voltage level I	Nominal voltage level II	Total length	Insertion depth	suitable bag
		U_n (kV)	U_n (kV)	L_G (mm)	A_i (mm)	
930 190 501	0001	5 - 12	13 - 36	1730	910	A2
930 190 501	0029	10 - 20	20 - 36	1730	910	A2

Voltage Detectors KP-Test 5L

The **KP-Test 5L** capacitive voltage detector is intended mainly for use on medium voltage overhead lines. It indicates the presence of operating voltage when brought into contact with the conductor. The **KP-Test 5L** voltage detector is distinguished by its compact design and maximum user safety.

Technical description:
- Class L as defined in IEC 61243-1
- Can be used in rain and snow
- Integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Extensive self-test functions at switch-on
- Available separately for use with existing insulating poles
- Available complete with suitable insulating poles in any overall length or carrying length
- Nominal frequency 50 Hz, optional 60 Hz
- Overall device length without insulating poles 345 mm

The **KP-Test 5L** is designed and type-tested to Standard IEC 61243-1.

Suitable insulating poles:
- 973 501 001 with L_o = 725 mm
- 624 760 001 with L_o = 1485 mm

Other versions with deviating nominal voltages, ranges of nominal voltage, frequencies and languages are available on request.

No.	Version	Nominal voltage U_n (kV)	suitable bag	suitable case
930 210 001	0051	3.3 - 11	A4	K1
930 210 001	0029	6.6 - 33	A4	K1
930 210 001	0002	11 - 33	A4	K1
930 210 001	0009	12 - 24	A4	K1

Voltage Detectors KP-Test 5L dual

The **KP-Test 5L dual** capacitive voltage detector is similar in design to the **KP-Test 5L**. This voltage detector can also be switched between two nominal voltage ranges. This allows a larger system range to be covered without increasing the interference field susceptibility.

Technical description:
- Class L as defined in IEC 61243-1
- Can be used in rain and snow
- Switching between two voltage ranges using a push-button switch
- Integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Extensive self-test functions at switch-on
- Available separately for use with existing insulating poles
- Available complete with suitable insulating poles in any overall length or carrying length
- Nominal frequency 50 Hz, optional 60 Hz
- Overall device length without insulating poles 345 mm

The **KP-Test 5L dual** meets Standard IEC 61243-1.

Suitable insulating poles:
- 973 501 001 with L_o = 725 mm
- 624 760 001 with L_o = 1485 mm

Other versions with deviating nominal voltages, ranges of nominal voltage, frequencies and languages are available on request.

No.	Version	Nominal voltage level I U_n (kV)	Nominal voltage level II U_n (kV)	suitable bag	suitable case
930 210 501	0006	3 - 10	11 - 36	A4	K1

Voltage Detectors KP-Test 5H

The **KP-Test 5H** capacitive voltage detector has universal high voltage application for nominal voltages from 30 to 420 kV. It indicates the presence of operating voltage when brought into contact with the conductor. The **KP-Test 5H** voltage detector is distinguished by its high level of user-friendliness and user safety.

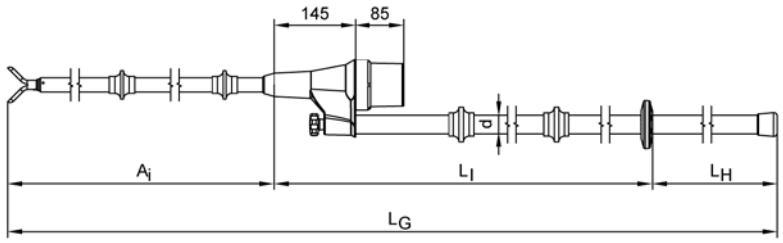
Technical description:

- Available for different ranges of nominal voltages from 30 to 420 kV
- Can be used in rain and snow
- Particularly loud, integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Maximum resistance to interference fields through the use of a high-quality contact electrode extension
- Extensive self-test functions at switch-on
- Available separately for use with existing insulating poles
- Available complete with suitable insulating poles in any overall length or carrying length
- Insertion depth A_i = 898 mm
- Nominal frequency 50 Hz, optional 60 Hz

The **KP-Test 5H** is constructed and type-tested to Standard IEC 61243-1.

The **KP-Test 5H** Series voltage detector is also available with a carrying case on request.

Other versions with deviating nominal voltages, ranges of nominal voltage, frequencies and languages are available on request.



No.	Version	Nominal voltage	Insulating length	Total length	Transporting length	Number of insulating poles	suitable bag
		U_n (kV)	L_I (mm)	L_G (mm)	L_T (mm)		
930 250 001	0136	33 - 66 kV / 50 Hz	975	2478	1485	1	B5
930 250 001	0167	66 - 132 kV / 50 Hz	1802	3700	1855	2	B2
930 250 001	0048	110 kV / 50 Hz	1802	3700	1855	2	B2
930 250 001	0008	110 - 220 kV / 50 Hz	3220	5118	2050	3	B2
930 250 001	0078	220 - 420 kV / 50 Hz	3850	5748	2050	3	B2
930 250 001	0038	400 kV / 50 Hz	3850	5748	2050	3	B2

Voltage Detectors KP-Test 5HL

The **KP-Test 5HL** capacitive voltage detector can be used on high-voltage overhead lines with nominal voltages from 30 to 420 kV. It indicates the presence of operating voltage when brought into contact with the conductor. The **KP-Test 5HL** voltage detector provides particularly easy handling, while ensuring maximum user safety.

Technical description:

- Class L as defined in IEC 61243-1
- Available for various ranges of nominal voltage from 30 to 420 kV
- Can be used in rain and snow
- Particularly loud, integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Extensive self-test functions at switch-on
- Connection for insulating poles with universal adapter
- Eye ring for attaching the voltage detector, for example with a snap hook
- Available separately for use with existing insulating poles
- Available complete with suitable insulating poles in any overall length or carrying length
- Nominal frequency 50 Hz, optional 60 Hz

The **KP-Test 5HL** is constructed and type-tested to Standard IEC 61243-1.

Suitable adapters:

- C2B, 935 101 002
- C2C, 935 101 003
- C2D, 935 101 004
- C2F, 935 101 005

Other versions with deviating nominal voltages, ranges of nominal voltage, frequencies and languages are available on request.

No.	Version	Nominal voltage U_n (kV)	Nominal frequency f_N (Hz)	Diameter of hook electrode d (mm)	suitable case
930 200 002	0034	66 - 132	50	70	K2

Voltage Detectors for Railway Systems

Electric railway systems around the world are operated with different voltage systems. PFISTERER can supply voltage detectors for all common voltage systems.

- 15 kV at 16.7 Hz
- 25 kV at 50 Hz
- 1500 V DC
- 3000 V DC
- Voltage supply for trolley lines
- Voltage supply for urban rail systems with third rail

Depending on type, our voltage detectors are suitable for use on railway catenaries and power lines as well as on switchgear.

Voltage Detectors KP-Test 5R 25 kV for Catenaries

The **KP-Test 5R 25 kV 50 Hz** capacitive voltage detector designed for use on railway catenaries. It indicates the presence of operating voltage when brought into contact with the conductor.

Technical Description:
- Bright LEDs for clear recognition
- Particularly loud, integrated audible signal
- Extensive self-test functions at switch-on
- Contact electrode in hook form with contact pin for optimum contact with the catenary
- For single-phase networks

Versions in other languages or with other signal mode are available on request.

No.	Version	Total length	Transporting length	suitable bag	Carrying bag included
		L_G (mm)	L_T (mm)		
930 300 001	0007	4795	2460	B3	-

Voltage Detectors KP-Test 5R 25 kV for Catenaries, Separable

The **KP-Test 5R 25 kV 50 Hz** capacitive voltage detector designed for use on railway catenaries. It indicates the presence of operating voltage when brought into contact with the conductor.

For transport in service vehicles the voltage detector can be dismantled into five separate components.

Technical Description:

- Bright LEDs for clear recognition
- Particularly loud, integrated audible signal
- Extensive self-test functions at switch-on
- Separable contact electrode in hook form with point-contact for optimum contact with the catenary
- For single-phase networks

Versions in other languages or with other signal mode are available on request.

No.	Version	Total length	Transporting length	suitable bag	Carrying bag included
		L_G (mm)	L_T (mm)		
930 300 601	0009	4785	1100	B1	-

Voltage Detectors KP-Test 5R DC

The **KP-Test 5R DC** double-pole voltage detector is designed for use on the catenary systems of DC voltage railways. It indicates the presence of operating voltage when brought into contact with the conductor. With its extensive, integrated self-tests, the **KP-Test 5R DC** voltage detector ensures maximum user safety.

Technical description:

- Double-pole type for the catenary systems of DC voltage railways with nominal voltages between 500 and 4,000 V DC
- Second pole designed with practical magnetic connection to rail
- Hook-type contact electrode with high-quality contact pin for optimum contact
- Self-test at switch-on also checks the connecting cable
- Can be used in rain and snow
- Integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Induced AC voltage signal detection
- Voltage testing possible even with a high proportion of leakage current on disconnected contact wires
- Available separately without insulating pole
- Available separately without insulating pole, but with additional adapters
- Available complete with three-piece insulating pole (poles **RP1** and **UP**; total length about 5,000 mm), or five-piece insulating pole (poles **RP2**, **RP3**, **RP4** and **UP**; total length about 4,880 mm)
- Available with convenient carrying case

Other versions with deviating nominal voltages, ranges of nominal voltage and languages are available on request.

No.	Version	Nominal Voltage DC	Transporting length	Number of insulating poles	suitable bag
		U_n (V)	L_T (mm)		
930 350 001	0097	650 - 750	2450	2	B3
930 350 001	0085	1500	2450	2	B3
930 350 001	0077	3000	2450	2	B3 (incl.)

Voltage Detectors KP-Test 5R DC dual

The **KP-Test 5R DC dual** double-pole voltage detector is similar in design to the **KP-Test 5R DC**. In addition, this voltage detector can be switched between two nominal voltage ranges in two steps. This allows a larger system range to be covered even when there is a high proportion of leakage current.

The KP-Test 5R DC dual has two selectable voltage steps.
Step 1:
- Selected by briefly pressing the On button
- LED indicator: 1 x green

Step 2:
- Selected by pressing and holding the On button
- LED indicator: 2 x green

Deliberate voltage level selection at switch-on and the related self-test ensure that the **KP-Test 5R DC dual** displays safe, clear indications.

Technical description:
- Double-pole type for the catenary systems of DC voltage railways with nominal voltages between 500 and 4,000 V DC
- Second pole designed for practical magnetic connection to rail
- Voltage range selectable
- Hook-type contact electrode with high-quality contact pin for optimum contact
- Self-test at switch-on also checks the connecting cable
- Can be used in rain and snow
- Integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Induced AC voltage signal detection
- Voltage testing possible even with a high proportion of leakage current on disconnected contact wires
- Available separately without insulating pole
- Available separately without insulating pole, but with additional adapter
- Available complete with three-piece insulating pole (poles **RP1** and **UP**; total length about 5,000 mm), or five-piece insulating pole (poles **RP2**, **RP3**, **RP4** and **UP**; total length about 4,880 mm)
- Available with convenient carrying case

Other versions with deviating nominal voltages, ranges of nominal voltage and languages are available on request.

No.	Version	Nominal voltage DC Level I	Nominal voltage DC Level II	Transporting length	Number of insulating poles	suitable bag
		U_n (V)	U_n (V)	L_T (mm)		
930 350 501	0007	600	1200	1111	-	B1
930 350 501	0008	600	1200	2450	2	B3
930 350 501	0009	600	1200	1111	4	B1
930 350 501	0010	750	1,500	1111	-	B1
930 350 501	0011	750	1,500	2450	2	B3
930 350 501	0012	750	1,500	1111	4	B1

Voltage Detectors KP-Test 5 DC

The **KP-Test 5 DC** double-pole voltage detector is suitable for use on the switchgear of DC voltage railways as well as railway systems with a third rail. It indicates the presence of operating voltage when brought into contact with the conductor. With its extensive, integrated self-tests, the **KP-Test 5 DC** voltage detector ensures maximum user safety. It also provides maximum ease of operation.

Technical description:

- Double-pole type for use on the switchgear of DC railways as well as on railways with a third rail and nominal voltages between 500 and 4,000 V DC
- Self-test at switch-on also checks the connecting cable
- Can be used in rain and snow
- Integrated audible signal for reliable voltage tests even in a noisy environment
- Extremely bright LEDs in clear layout to prevent confusion
- Induced AC voltage signals detected

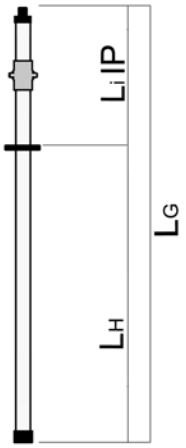
Other versions with deviating nominal voltages, ranges of nominal voltage and languages are available on request.

No.	Version	Nominal voltage	Total length	Transporting length	Cable length	suitable bag
		U_N	L_G (mm)	L_T (mm)	(mm)	
930 370 001	0020	750 V DC	815	572	1000	A1

Insulating Poles for Voltage Detectors

These insulating poles can be used with all KP-Test 5 Series voltage detectors. This allows voltage detectors to be optimized for particular applications on the system.

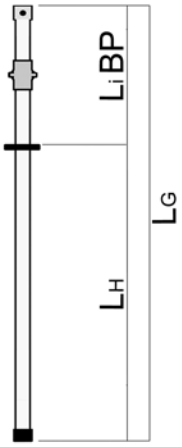
Technical description:
- Yellow varnished FRP tubes with optimum leakage values
- Hex connection for KP-Test 5 Series voltage detectors



Insulating Poles for Voltage Detectors, Type IP

One-piece insulating pole with end cap, hand guard and hex connection for KP-Test 5 Series voltage detectors.

No.	Total length	Insulating length	Length of handle	Diameter of insulating element
	L_G (mm)	L_i IP (mm)	L_H (mm)	d (mm)
973 500 001	572	-	135	24
973 501 001	725	-	285	24
624 760 001	1485	830	605	33



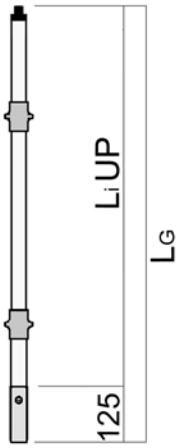
Insulating Pole Lower Parts for Voltage Detectors, Type BP

Insulating pole base part with end cap, hand guard and plug-in connection for insulating pole upper or intermediate parts, for multi-piece insulating poles.

No.	Total length	Insulating length	Length of handle	Diameter of insulating element
	L_G (mm)	L_i BP (mm)	L_H (mm)	d (mm)
624 333 502	1225	225	1000	43
624 333 504	1500	500	1000	43
624 334 501	1855	855	1000	43
624 334 502	2010	1010	1000	43

Insulating Pole Upper Parts for Voltage Detectors, Type UP

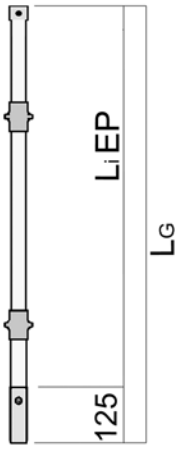
Insulating pole upper part for multi-piece insulating poles. With hex connection for KP-Test 5 Series voltage detectors.



No.	Total length	Insulating length	Diameter of insulating element
	L_G (mm)	L_i UP (mm)	d (mm)
624 780 002	977	802	33
624 780 001	2050	1875	33

Insulating Pole Intermediate Parts for Voltage Detectors, Type EP

Insulating pole intermediate part for multi-piece insulating poles. Plugs in between insulating pole upper part and base part.



No.	Total length	Insulating length	Diameter of insulating element
	L_G (mm)	L_i EP (mm)	d (mm)
624 336 501	1100	975	43
624 336 002	3130	3005	43

Insulating Pole Extensions for Voltage Detectors

This insulating pole extension makes it simple to extend the PFISTERER insulating poles of voltage detectors. The insulating pole extension is screwed onto the existing insulating pole. This does not reduce the minimum insulation length.

These insulation pole extensions can be used for:
- KP-Test 5
- KP-Test 5 dual
- KP-Test 5L
- KP-Test 5L dual

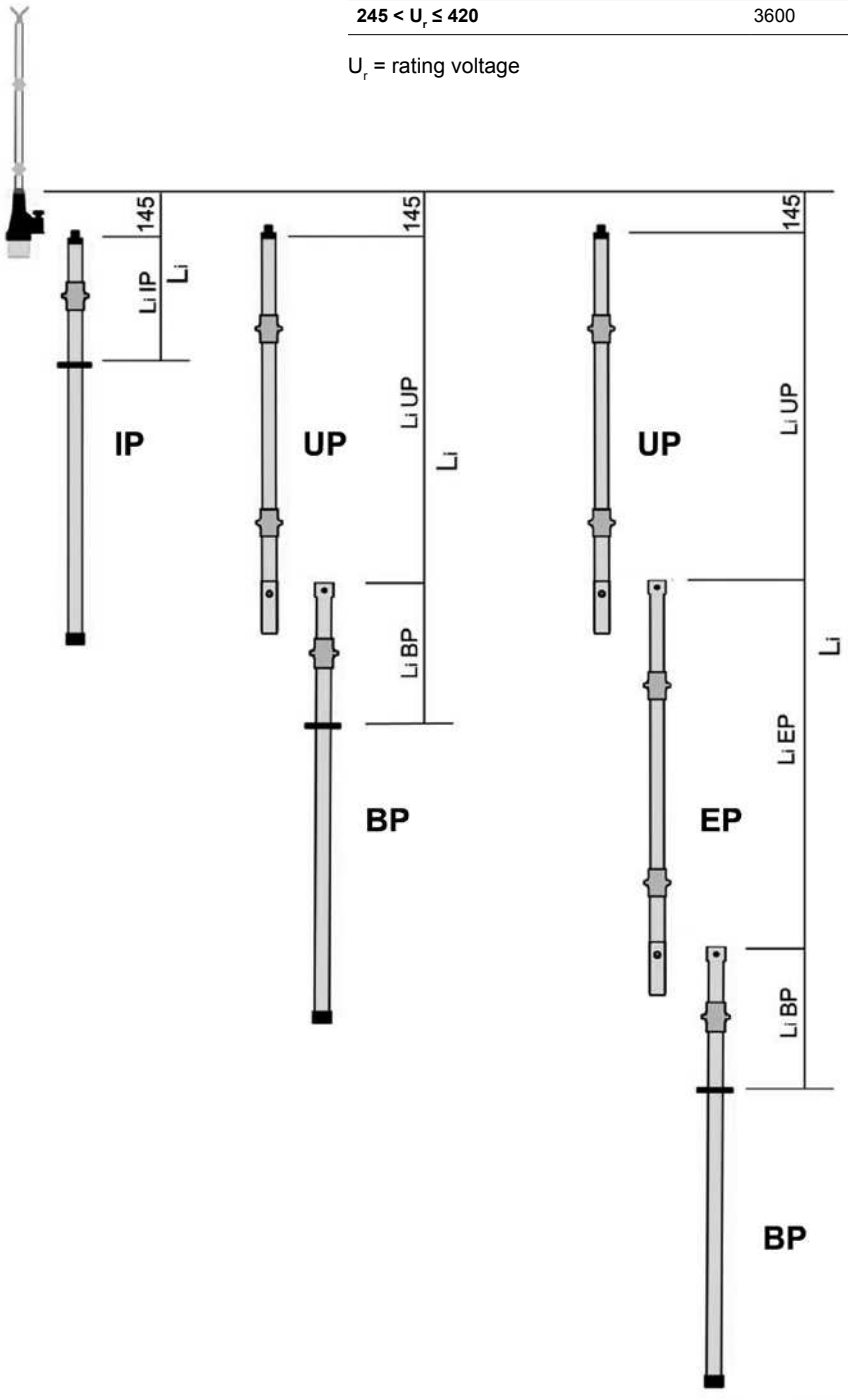
No.	Total length	Diameter of insulating element
	L_G (mm)	d (mm)
620 518 002	560	24
620 518 001	1060	24
620 518 003	2060	24

Insulating Poles for Voltage Detectors KP-Test 5 and 5H

Minimum length of insulating elements L_i by standard EN 61243-1

U_r (kV)	L_i (mm)
1 < U_r ≤ 36	520
36 < U_r ≤ 72,5	830
72,5 < U_r ≤ 123	1300
123 < U_r ≤ 170	1700
170 < U_r ≤ 245	2300
245 < U_r ≤ 420	3600

U_r = rating voltage

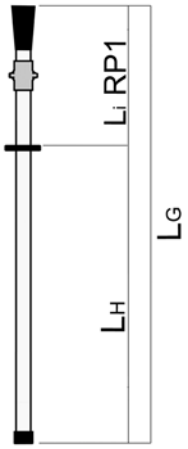


Insulating Poles for Railway Voltage Detectors

These insulating poles can be used with all voltage detectors of the KP-Test 5R series. This allows optimum configuration of the voltage detectors for the respective application.

Technical description:
- Hex connection for KP-Test 5 Series voltage detectors
- Yellow or white varnished FRP tubes with optimum leakage values

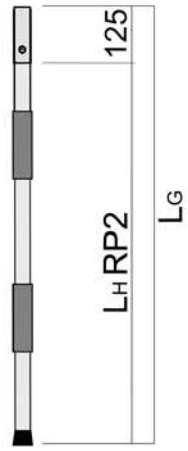
Insulating Pole Base Parts for Three-part Voltage Detectors, Type RP1



Insulating pole base part with end cap, hand guard and plug-in connection for insulating pole upper parts UP.

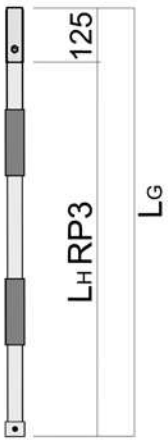
No.	Total length	Insulating length	Length of handle	Diameter of insulating element
	L_G (mm)	L_i RP1 (mm)	L_H (mm)	d (mm)
620 780 002	1950	480	1465	33
620 780 001	2450	480	1965	33

Insulating Pole Base Parts for Five-part Voltage Detectors, Type RP2



Insulating pole base part with end cap, hand guard and plug-in connection for insulating pole intermediate parts RP3.

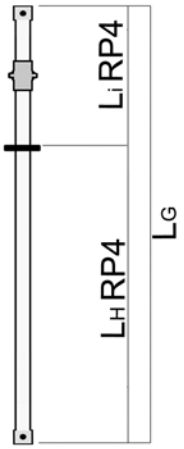
No.	Total length	Length of handle	Diameter of insulating element
	L_G (mm)	L_H RP2 (mm)	d (mm)
623 930 001	1080	955	43



Insulating Pole Intermediate Parts for Five-part Voltage Detectors, Type RP3

Insulating intermediate part with plug-in connection for insulating pole intermediate parts RP4.

No.	Total length	Length of handle	Diameter of insulating element
	L_G (mm)	L_H RP3 (mm)	d (mm)
623 929 001	1080	955	43



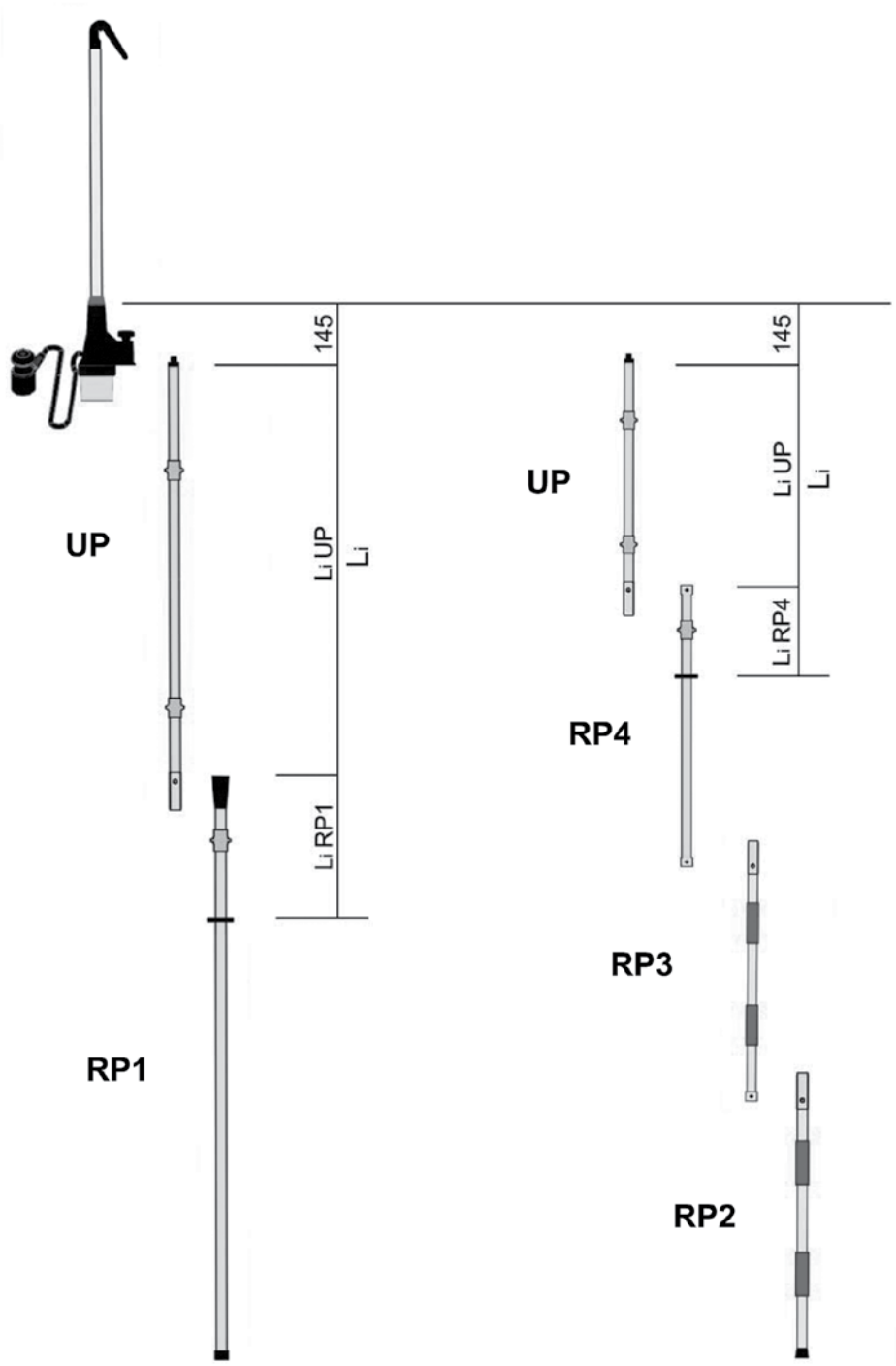
Insulating Pole Intermediate Parts for Five-part Voltage Detectors, Type RP4

Insulating base part with plug-in connection for insulating pole upper parts UP.

No.	Total length	Insulating length	Length of handle	Diameter of insulating element
	L_G (mm)	L_i RP4 (mm)	L_H RP4 (mm)	d (mm)
623 929 100	1010	65	945	43

Insulating Poles for Voltage Detectors KP-Test 5R DC and KP-Test 5R DC dual

Minimum length of insulating elements L_i



Prüfprotokoll

zur Wiederholungsprüfung

für Spannungsprüfer

COMPONENTS

PFISTERER Kontaktsysteme GmbH
Bahnhofstraße 30
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Prüfung durchgeführt von:
Mathias Schmid
Auftragsnummer: VRE 17551

Gussenstadt, 07.07.2010

Der Spannungsprüfer

KP-Test II 365 111-005

Seriennummer M13230

hat die Wiederholungsprüfung gemäß IEC 61243-1:2003 bestanden.

Für die Nennspannung **20 kV 50 Hz** dieses Spannungsprüfers wurde folgende Ansprechspannung U_i im Reusenaufbau gemessen:

3,99 kV

Pfisterer Kontaktsysteme GmbH

Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig.

PFISTERER Kontaktsysteme GmbH | Rosenstr. 44 | 73650 Winterbach
Sitz der Gesellschaft: Winterbach | Registergericht: Stuttgart HRB 731167 | Ust-IdNr.: DE266411537
Geschäftsführer: Dr. Thomas Klein, Ulrich Bragg, Dr. Konstantin Kurfass

In-Service Tests for Voltage Detectors

Depending on national regulations in the country concerned, in-service tests are required for phase comparators with nominal voltages above 1 kV. In Germany, these are obligatory under the „Electrical installations and equipment“ (BGV A3) accident prevention regulations. Voltage detectors must then, within a maximum period of six years, be submitted to another in-service test and specified checks. The appendix of Standard IEC 61243-1 gives a description of these tests.

PFISTERER have been successfully carrying out these in-service tests in their own testing facility for many years. The voltage detectors are tested according to the specifications, and immediately adjusted or repaired if necessary. Whenever extensive repairs are necessary, we give a cost quotation.

When the tests are completed, the results are documented in detail.

To request an In-service test, please contact your local sales representative.

Customers in Germany are requested to use the following mailing address:

PFISTERER Kontaktsysteme GmbH
Bereich Wiederholungsprüfung
Bahnhofstraße 30
89547 Gerstetten - Gussenstadt
Germany

No.	Version	Remark
200 000 200	0009	KP-Test II
200 000 200	0099	KP-Test III
200 000 200	0077	KP-GLI
200 000 200	0083	KP-Test II Railway
200 000 200	0075	KP-Test II USE
200 000 200	0280	KP-Test 5

Single-Pole Phase Comparators

Phase comparators for medium voltage are used to check phase coincidence in three-phase networks. Single-pole phase comparators of type SPPC have the same construction as PFISTERER voltage detectors. This ensures a high level of both safety and reliability.

With the single-pole phase comparator SPPC, phase comparison is achieved by making contact with both conductors one after the other.

Technical description:

- Available for nominal voltages and nominal voltage ranges from 3 to 36 kV
- Can be used with a rated frequency of 50 Hz
- For reliable phase comparison, a rated frequency between 49.9 and 50.1 Hz is required, with a maximum frequency drift of 10 mHz/s
- Self-test feature
- Automatic switch-off
- Green, red and yellow LED display
- Removable contact electrode top piece, as forked electrode

The single-pole phase comparator Type SPPC is designed to meet international Standard IEC 61481.

Single-Pole Phase Comparator SPPC

The **single-pole phase comparator SPPC** is available for various nominal voltages and voltage ranges. Depending on type, the phase comparator can also be used in rain or snow.

No.	Nominal voltage	Total length	Insertion depth	Diameter of insulating element	Suitable for use in rain and snow
	U_n (kV)	L_G (mm)	A_i (mm)	d (mm)	
364 788 001	6 - 12	1440	575	24	-
364 825 001	6 - 12	1440	575	24	■
364 825 002	6 - 12	1640	775	24	■
364 788 004	10	1040	349	24	-
364 788 002	12 - 24	1640	775	24	-
364 825 003	12 - 24	1640	775	24	■
364 788 003	24 - 36	1640	775	24	-
364 825 004	24 - 36	1640	775	24	■

Single-Pole Phase Comparator SPPC, Switchable

The **single-pole phase comparator SPPC** is available for various nominal voltages and voltage ranges. Depending on type, the phase comparator can also be used in rain or snow. This phase comparator can also be switched between three nominal voltage ranges using the voltage range switching ring. This allows a larger system range to be covered without increasing interference field susceptibility.

No.	Nominal voltage level I	Nominal voltage level II	Nominal voltage level III	Total length	Insertion depth	Diameter of insulating element	Suitable for use in rain and snow
	U_n (kV)	U_n (kV)	U_n (kV)	L_G (mm)	A_i (mm)	d (mm)	
364 750 001	6 - 12	12 - 24	24 - 36	1640	775	24	■
364 830 001	6 - 12	12 - 24	24 - 36	1640	775	24	-

Deltameter 5

The Deltameter 5 is a measuring device for indicating the voltage difference between two phases.

When inter-connecting different medium voltage systems, protective devices may be actuated as a result of incorrect phase and voltage levels, although phase relationship tests with IEC 61481 phase comparators have indicated „phase coincidence“. In cases like these, the Deltameter 5 can be used to supplement the phase relationship tests with phase comparators. The Deltameter 5 indicates the quantitative voltage difference between two phases on a four-digit segment display with a resolution of 10 V. The Deltameter 5 thus provides a highly precise decision-making tool for imminent switching operations.

Technical description:

- Double pole type with two insulating poles and two convenient handles
- For use on 3-phase systems with a nominal frequency of 50 Hz and nominal voltage between 1 and 13 kV
- Can be used in rain or snow
- 7-segment 4-digit LED display, digit height 14 mm
- 10 V resolution
- ±5 % accuracy on a measured value of +30 V
- Connecting cable length 1000 mm
- Artificial leather case included

No.	Nominal voltage U_n (kV)	Total length L_G (mm)	Insertion depth A_i (mm)
930 450 001	1 - 13	1190	520

Prüfprotokoll

zur Wiederholungsprüfung

für Phasenvergleicher

COMPONENTS

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Prüfung durchgeführt von:
Mathias Schmid
Auftragsnummer: VRE 19562

Gussenstadt, 07.07.2010

Der Phasenvergleicher

SPPC 390 930-001 0046

Seriennummer 84838

hat die Wiederholungsprüfung gemäß IEC 61481:2001 bestanden.

Für die Nennspannung **10 kV 50Hz** dieses Phasenvergleichers wurde folgende Ansprechspannung U_i im Reusenaufbau gemessen:

2,34 kV

Pfisterer Kontaktsysteme GmbH

Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig.

PFISTERER Kontaktsysteme GmbH | Rosenstr. 44 | 73650 Winterbach
Sitz der Gesellschaft: Winterbach | Registergericht: Stuttgart HRB 731157 | Ust-IdNr.: DE266411037
Geschäftsführer: Dr. Thomas Klein, Ulrich Brieg, Dr. Konstantin Kurfiss

In-Service Tests for Phase Comparators

Depending on national regulations in the country concerned, in-service tests are required for phase comparators with nominal voltages above 1 kV. In Germany, these are obligatory under the „Electrical installations and equipment“ (BGV A3) accident prevention regulations. Voltage detectors must then, within a maximum period of six years, be submitted to another in-service test and specified checks. The appendix of Standard IEC 61481 gives a description of these tests.

PFISTERER have been successfully carrying out these in-service tests in their own testing facility for many years. The voltage detectors are tested according to the specifications, and immediately adjusted or repaired if necessary. Whenever extensive repairs are necessary, we give a cost quotation.

When the tests are completed, the results are documented in detail.

To request an In-service test, please contact your local sales representative.

Customers in Germany are requested to use the following mailing address:

PFISTERER Kontaktsysteme GmbH
Bereich Wiederholungsprüfung
Bahnhofstraße 30
89547 Gerstetten - Gussenstadt
Germany

No.	Version	Remark
200 000 200	0101	Double-pole phase comparator
200 000 200	0082	Phase comparator SPPC - single range
200 000 200	0098	Phase comparator SPPC - multi-range

Operating Poles

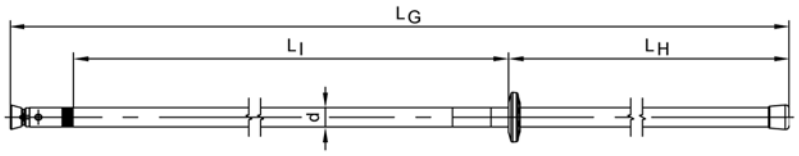
The operating poles are hand-held insulated poles for operating and testing live components. They consist of insulating part, hand protecting shield, handle and receiving head for eg. the manipulation of insulating guard plates.

Insulating Poles

These insulating poles are suitable for use on installations with nominal voltages up to 110 kV.

Technical description:

- Receiving head with roller locking device
- With switching head 614 495 495 useable as switching pole
- Suitable for indoor and outdoor installations, but not in rain or snow
- Red ring as visible limit of penetration depth
- Limiting disk as hand guard
- Insulating poles made of yellow fibre-glass reinforced polyester tubing



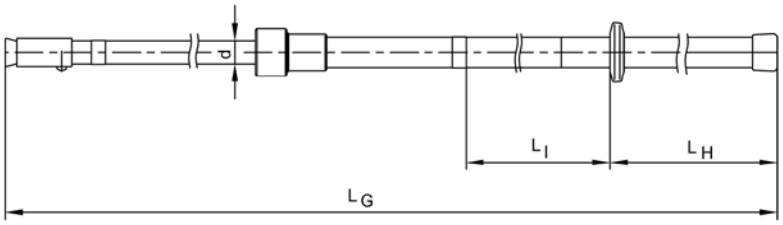
No.	Nominal voltage	Total length	Length of insulating element	Length of handle	Diameter of insulating element
	U_n (kV)	L_G (mm)	L_I (mm)	L_H (mm)	d (mm)
363 810 810	30	1038	525	450	33
363 810 811	30	1538	525	605	33
363 810 812	30	2038	525	705	33
363 810 816	110	2038	1300	685	33
363 815 818	110	3038	1300	800	43

Insulating Poles, Telescopic Type

These insulating poles are suitable for use on installations with nominal voltages up to 110 kV.

Technical description:

- Continuous telescoping adjustment from 2 m to 3.2 m
- Receiving head with roller locking device
- With switching head 614 495 495 useable as switching pole
- Suitable for indoor and outdoor installations, but not in rain or snow
- Red ring as visible limit of penetration depth
- Limiting disk as hand guard
- Insulating pole made of yellow fibre-glass reinforced polyester tubing



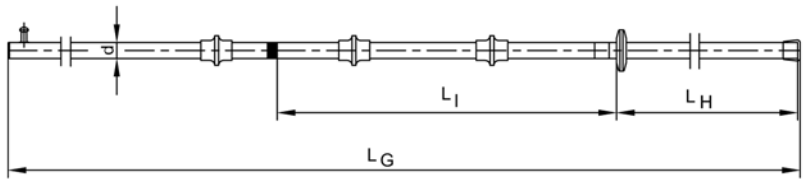
No.	Nominal voltage	Total length	Length of insulating element	Length of handle	Transporting length	Diameter of insulating element
	U_n (kV)	L_G (mm)	L_I (mm)	L_H (mm)	L_T (mm)	d (mm)
362 808 808	30	3200	525	915	1965	43

Switching Poles

These switching poles are suitable for use on installations with nominal voltages up to 110 kV.

Technical description:

- Suitable for indoor and outdoor installations
- Plastic actuating bolt and hand guard
- End cap made of non-slip rubber
- Switching pole made of yellow fibreglass reinforced polyester tubing



No.	Nominal voltage	Total length	Length of insulating element	Length of handle	Diameter of insulating element	Suitable for use in rain and snow
	U_n (kV)	L_G (mm)	L_I (mm)	L_H (mm)	d (mm)	
364 035 004	30	1008	525	400	33	-
364 827 006	30	1008	525	400	33	■
364 035 005	30	1508	525	530	33	-
364 827 001	30	1508	525	470	33	■
364 035 035	30	2008	525	635	33	-
364 827 002	30	2008	525	470	33	■
364 035 036	30	2508	525	750	33	-
364 035 037	30	3008	525	750	33	-
364 827 003	60	2508	900	850	33	■
364 035 042	110	2008	1300	635	33	-
364 035 043	110	2508	1300	750	33	-
364 827 004	110	3008	1300	950	33	■
364 035 008	110	3508	1300	750	33	-
364 827 007	110	4008	1300	1400	33	■
364 827 008	110	5008	1300	1400	33	■

Fuse-Tongs, 20° Angled

These fuse tongs are suitable for replacing high-voltage fuses in switchgear.

Technical description:
- Rapid adjustment using the double-threaded spindle
- Tilted clamp jaws
- Mechanical overload coupling prevents the tongs head from fracture.
- May not be used in rain or snow.

The fuse tongs are designed in accordance with DIN VDE 0681 Parts 1 und 3.

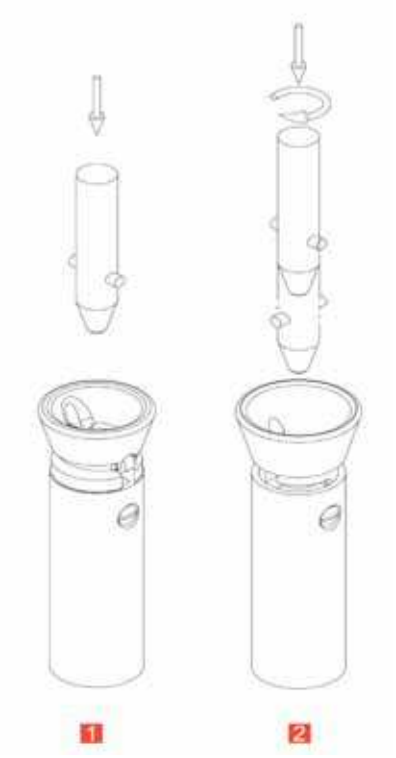
No.	Nominal voltage	Total length	Length of insulating element	Length of handle	Diameter of insulating element
	U_n (kV)	L_G (mm)	L_I (mm)	L_H (mm)	d (mm)
363 280 002	30	1251	525	460	33

Earthing Poles

The earthing pole is a manually operated insulating pole used to apply the line connection clamps of earthing and short-circuiting devices to parts of high-voltage equipment for the purpose of earthing and short-circuiting. It consists of insulating part, black ring, handle and receiving head for the attachment of a line connection clamp.The length of the insulating part must be at least 500 mm

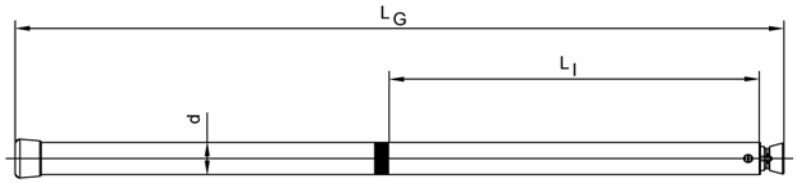
Technical description:

- Receiving head for manipulation of line connection clamps with spindle and cross-pin
- Receiving head is available with roller locking device 1, snap hook 2 or with solidly integrated clamp
- Earthing poles made of glass-fibre reinforced polyester tube, coloured yellow
- Black marking indicates the required safety distance



Earthing Poles

Single-piece earthing poles. Further versions with different lengths, coupling adapters and other features are available on request.



No.	Version	Pole length (mm)	Diameter of insulating element d (mm)	Adapter head
364 172 001	0008	1038	33	Roller locking device
364 172 001	0009	1538	33	Roller locking device
364 172 001	0010	2038	33	Roller locking device
364 172 001	0011	2538	43	Roller locking device
364 172 001	0012	3038	43	Roller locking device
364 172 001	0013	3538	43	Roller locking device
364 172 001	0014	1038	33	Bayonet-type fitting
364 172 001	0015	1538	33	Bayonet-type fitting
364 172 001	0016	2038	33	Bayonet-type fitting
364 172 001	0017	2538	43	Bayonet-type fitting
364 172 001	0018	3038	43	Bayonet-type fitting
364 172 001	0019	3538	43	Bayonet-type fitting

Earthing Poles with Line Clamp P1

Single-piece earthing poles with fixed line clamp P1.
The one-piece design allows earth fittings to be attached/detached easily, even in places that are difficult to access. The yellow earthing poles also clearly mark the work site.

No.	Version	Pole length (mm)	Diameter of insulating element d (mm)
364 172 001	0020	1500	33

Earthing Poles with Line Clamp P6

Single-piece earthing poles with fixed line clamp P6.
The one-piece design allows earth fittings to be attached/detached easily, even in places that are difficult to access. The yellow earthing poles also clearly mark the work site.

No.	Version	Pole length (mm)	Diameter of insulating element d (mm)
364 172 001	0021	2500	43

Telescoping Earthing Poles

Telescopic earthing poles.

No.	Pole length extended L (mm)	Transporting length L_T (mm)	Diameter of insulating element d (mm)
364 169 169	1565	890	43
364 169 170	2030	1155	43
364 169 171	2464	1390	43
364 169 172	2905	1540	43
364 169 173	3405	1790	43
364 169 174	3905	2040	43
364 169 175	4415	2540	43
364 169 597	5917	4040	43

Telescoping Earthing Poles with Line Clamp P8

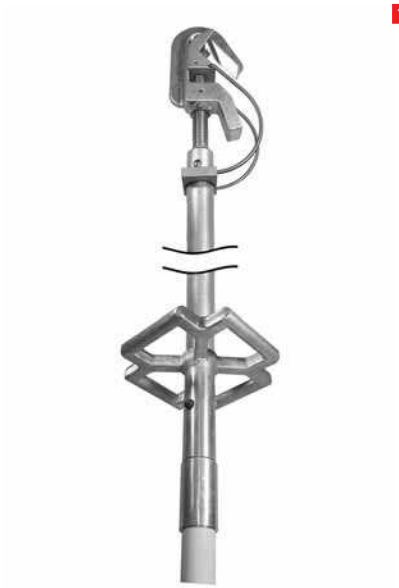
Earthing poles, telescopic type, with fixed HV line clamp P8.
This design allows earth fittings to be attached/detached easily, even in places that are difficult to access. The yellow earthing poles also clearly mark the work site.

No.	Pole length extended	Transporting length	Diameter of insulating element
	L (mm)	L_T (mm)	d (mm)
364 112 114	3050	1700	43
364 112 115	3540	1950	43
364 112 116	3950	2200	43
364 112 003	4460	2700	43
364 112 004	6650	3685	43

Telescoping Earthing Poles with Line Clamp P9

Earthing poles, telescopic type, with fixed parallel line clamp P9.
This design allows earth fittings to be attached/detached easily, even in places that are difficult to access. The yellow earthing poles also clearly mark the work site.

No.	Pole length extended	Transporting length	Diameter of insulating element
	L (mm)	L_T (mm)	d (mm)
364 084 084	2185	1470	43
364 084 086	3050	1845	43
364 084 087	3540	2095	43
364 084 001	4040	2345	43
364 084 089	4560	2845	43
364 084 002	6065	4190	43



1 Two-Piece Earthing Poles with Line Fixed Point

This **two-piece earthing pole with dropped Aluminium line fixed point** makes it easier to attach earthing and short-circuiting devices at high working positions on outdoor switchgear.
This two-piece earthing pole is attached to the line fixed point, tube or conductor, and then tightened. The earthing pole remains attached throughout the whole earthing process. During this phase the line fixed point is lowered to a height of approx. 4.5 m above the ground. Then a single-pole earthing and short-circuiting device can be attached using a separate earthing pole to the line fixed point of the two-piece earthing pole.

Technical description:
- The earthing and short-circuiting device can be used for short-circuit currents up to 29.6 kA / 1 s (conductor cross-section 150 mm^2)
- Working heights up to 9 m possible
- Easy handling thanks to shorter earthing conductor
- Shorter, weight-saving earthing conductor
- The earthed working location is very clearly marked by the hanging earthing pole
- Aluminium dropped fixed line point
- Suitable earthing poles:
  364 112 115 (with line clamp P8)
  364 169 173 (without line clamp)
- Diameter of insulating part: 43 mm

2

Earthing and short-circuiting device to connect line fixed point to ground potential needs to be ordered separately.

No.	Version	Total length L_G (mm)	Transporting length (mm)	Line clamp	
364 116 000	0001	4500	3107	P7	1
364 116 000	0002	5000	3107	P7	1
364 116 000	0003	5500	3107	P7	1
364 116 000	0004	6000	3107	P7	1
364 116 000	0005	6500	3494	P7	1
364 116 000	0006	7000	3494	P7	1
364 116 000	0007	7500	4494	P7	1
364 116 000	0008	8000	4494	P7	1
364 116 000	0010	4500	3107	P8	2
364 116 000	0011	5000	3107	P8	2
364 116 000	0012	5500	3107	P8	2
364 116 000	0013	6000	3107	P8	2
364 116 000	0014	6500	3501	P8	2
364 116 000	0015	7000	4001	P8	2
364 116 000	0016	7500	4501	P8	2
364 116 000	0017	8000	5001	P8	2

Earthing Poles for Railway Systems

Earthing poles for railway systems are used for connecting railway earthing devices. To do this, the earthing terminals are brought up to the contact wire. These earthing poles are marked with red stripes on a white background. This allows optimum identification of the work site.

Technical description:

- Contact wire earthing terminals held by spindle and cross-pin
- Receiving head with roller locking device allows the earthing pole to be easily attached / detached from the contact wire earthing terminal
- Robust construction for use in railway applications

Telescoping Earthing Poles, two-piece

Earthing poles for railway systems, in two-piece design. These earthing poles are used mainly for transformers and railway power lines. They are continuously adjustable.

No.	Length range	Pole length extended	Transporting length	Insulating length	Weight	DB drawing number
	(m)	L (mm)	L_T (mm)	L_I (mm)	(kg)	
362 744 001	1,8 - 3,0	3500	1800	500	3.8	3 Ebgw 01.17
362 744 744	2,6 - 5,0	5000	2600	500	3.8	3 Ebgw 01.12

Telescoping Earthing Poles, three-piece

Earthing poles for railway systems, in three-piece design. The upper section of this earthing pole is continuously adjustable.
A slider enables the connection between the earthing pole and the contact wire earthing terminal to be locked. The earthing pole can thus be used to mark the work site.

No.	Length range	Pole length extended	Transporting length	Insulating length	Weight
	(m)	L (mm)	L_T (mm)	L_I (mm)	(kg)
362 745 745	2,0 - 5,0	5080	2000	500	5.2
362 745 002	3,2 - 7,0	7000	3200	500	5.2

Earthing Poles, five-piece

Earthing pole for railway systems in five-piece design. Because of the short carrying length, this type is suitable for transport in all common passenger vehicle types.
The connection between the earthing pole and the contact wire earthing terminal can be locked using a slider. The earthing pole can thus be used to mark the work site.

No.	Length range	Pole length	Transporting length	Insulating length	DB drawing number
	(m)	L (mm)	L_T (mm)	L_I (mm)	
364 784 001	4,9	4892	1100	500	3 Ebgw 01.22

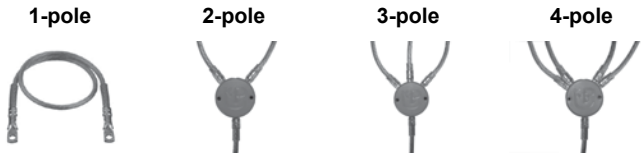
Earthing and Short-circuiting Devices

According to IEC 61230:2008, portable devices for earthing, or earthing and short-circuiting, are manually useable devices which, without forcible guidance are brought towards connection points of components of electrical systems for the purpose of earthing and short-circuiting, and then connected to these. They consist of earthing and short-circuiting devices (E&S devices) and earthing poles, and represent an essential factor in the realisation of the five basic safety rules for work to be performed in the absence of harmful voltage.

PFISTERER earthing and short-circuiting devices are manufactured to user requirements in accordance with IEC 61230. The right input specification therefore, is accordingly important for the correct configuration.

Procedure for the determination of the earthing and short-circuiting device

1. Number of conductors to be earthed:
If on a three-phase system all three lines need to be earthed, a 3-pole earthing and short-circuiting device should be chosen.



2. System short-circuit current:
For the determination of the required conductor cross-section the maximum system short-circuit current needs to be determined.

Short-circuiting- / Earthing cable		**Highest permissible short-circuit current (A)**		
Solid neutral earthing	**Compensated network** (impedance neutral earthing)	**over time period (s)**		
		2s	**1s**	**>0.5s**
25 / 25	**25 / 25**	3500	4900	7000
35 / 35	**35 / 35**	4900	6900	10000
50 / 50	**50 / 25**	7000	9900	14000
70 / 70	**70 / 35**	9800	13800	19500
95 / 95	**95 / 35**	13200	18700	26500
120 / 120	**120 / 50**	16700	23700	33500
150 / 150	**150 / 50**	20900	29600	42000

3. Line clamp:
This clamp connects the earthing cable with the conductor to be earthed. Line clamps can be selected from the summary tables. The maximum short-circuit currents (Ik /1s) must agree for the earthing and short-circuiting cables as well as for the clamps!

4. Earthing clamp:
This clamp connects the earthing cable to the connection point of the earthing system. Earthing clamps can be selected from the summary tables. The maximum short-circuit currents (Ik /1s) must match for the earthing and short-circuiting cables as well as for the clamps!

5. Cable lengths:
The length of the cables can be determined individually according to the particular requirements. The length of an earthing and short-circuiting device should be at least 1.2 times the distance between the two connection points. Nevertheless, the cable lengths should be kept as short as possible as a short-circuit incident can cause strong deflections to occur.

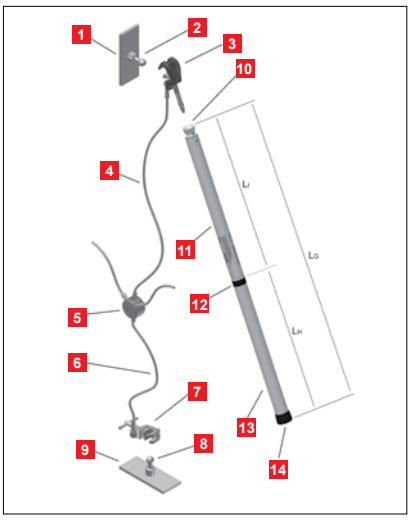
Earthing and short-circuiting devices are available in 1- to 5-pole versions with the following types of conductor insulation:

- PVC (transparent) standard
- SILICONE (transparent)
- TPE (orange)

6. Exchangeability:
The connecting cluster in a signal colour serves as protection against inadvertent touching and mechanical damage to the fastened connecting piece. When necessary, conductor lengths with mechanical damage can be replaced by PFISTERER or at lower cost by the user in accordance with the instruction manual.

7. Durability:
Extensive and durable protection against the penetration of moisture is achieved by compressing the insulation in the broadened area at the back of the compression cable lug.

1. conductor
2. line fixed point
3. line clamp
4. short-circuiting cable
5. connecting cluster
6. earthing cable
7. earthing clamp
8. earthing fixed point
9. earthing system
10. receiving head
11. insulating part
12. black marking
13. handle
14. end cap



Notes:

- Earthing and short-circuiting devices are designed for only one exposure to the rated short-circuit current.
- Short-circuiting cables of multi-pole earthing and short-circuiting devices must have the same cross-section.
- The length of an earthing and short-circuiting device should be at least 1.2 times the distance between the two connection points. The cable lengths should also be kept as short as possible as a short-circuit incident can cause strong deflections to occur.
- If earthing and short-circuiting devices are connected in parallel with conductors in order to achieve a particular total conductor cross-section, the following conditions must be met:
  - equal conductor lengths and cross-sections
  - same connection hardware and locations
  - installation of the devices close together with parallel cable routing
  - for each conductor the rated capacity is to be de-rated to a value corresponding to 75% of the conductor cross-section

In the following section earthing and short-circuiting devices without clamps will be described. For the line and earthing clamps, please refer to the summary tables.

Deviating versions with different conductor types, conductor cross-sections, clamps and lengths are available on request.

Overview Earth Clamps

No.	Type	Max. cross section (mm²)	 Ø (mm)	 Ø (mm)	 Ø (mm)	 Ø (mm)	 (mm)	Max. short-circuit current Ik 1 s (kA)	Clamping range (mm)	Clamping width (mm)	Weight (g)
364 811 001	A1 	150	-	16	-	-	-	29,6	16	-	656
364 544 002	A2 	150	-	-	-	16 - 22	-	29,6	16 - 22	-	736
360 419 004	E2 	70	-	-	-	2 - 30	2 - 30	13,8	2 - 30	-	370
360 416 002	F1 	50	-	-	-	-	2 - 20	9,9	2 - 20	-	442
360 628 002	F2 	95	-	-	-	-	2 - 22	18,7	2 - 22	-	978
360 414 001	U1 	95	20	-	15	5 - 20	2 - 20	18,7	2 - 20	38	720
361 346 001	U2 	150	25	-	15	5 - 20	2 - 20	29,6	2 - 20	38	754
364 704 004	U3 	95	20	-	15	5 - 20	2 - 20	18,7	2 - 20	38	806
364 704 003	U4 	120	25	-	15	5 - 20	2 - 20	23,7	2 - 20	38	836
364 714 002	U5 	150	25	-	20	5 - 25	2 - 25	29,6	2 - 25	50	902
361 657 001	M12 	150	-	-	-	-	-	29,6	-	-	210
361 657 002	S12 	150	-	-	-	-	-	29,6	-	-	250
361 659 010	HM12 	120	-	-	-	-	-	23,7	-	-	340
361 659 011	HS12 	120	-	-	-	-	-	23,7	-	-	360

Overview Line Clamps

No.	Type		Max. cross section						Max. short-circuit current	Clamping range	Clamping width	Weight
			(mm²)	Ø (mm)	Ø (mm)	Ø (mm)	Ø (mm)	(mm)	Ik 1 s (kA)	(mm)	(mm)	(g)
364 904 001	P1		120	-	-	-	4 - 20	-	23,7	4 - 20	48	382
364 903 001	P2		150	-	-	-	6 - 32	-	29,6	6 - 32	57	526
360 330 002	P3		95	20	5 - 20	15	5 - 20	5 - 20	18,7	2 - 20	38	754
360 332 001	P4		120	25	5 - 20	15	5 - 20	5 - 20	23,7	2 - 20	38	782
360 333 002	P5		150	25	5 - 25	20	5 - 25	5 - 20	29,6	2 - 25	50	850
364 309 005	P6		70	-	-	-	4 - 23	4 - 23	13,8	4 - 23	27	440
363 245 006	P7		120	-	-	-	4,5 - 35	4,5 - 35	23,7	4,5 - 35	34	714
364 459 009	P8		150	-	-	-	10 - 85	-	29,6	10 - 85	40	886
360 335 003	P9		95	-	-	-	10 - 32	10 - 32	18,7	10 - 32	38	968
360 335 004	P11		95	-	-	-	10 - 32	10 - 32	18,7	10 - 32	38	1010
363 091 297	P12		150	-	-	-	-	10 - 25	29,6	10 - 25	40	914
363 245 010	P13		95	-	-	-	15 - 60	15 - 60	18,7	15 - 60	35	900

Overview Rail Earth Clamps for Railway Systems

No.	Type	Max. cross section of connected cable (mm²)	Rail type	Max. short-circuit current Ik 1 s (kA)	Clamping range (mm)	Clamping width (mm)	Weight (g)
363 322 005	R50 	50		40 (Ik 0,12s)	-	-	2128
364 901 001	R51 	70		13,8 (Ik 1s)	-	-	5000
364 868 001	R52 	50		40 (Ik 0,12s)	-	-	858

Overview Contact Wire Earth Clamps for Railway Systems

No.	Type	Max. cross section of connected cable (mm²)	 Ø (mm)	Max. short-circuit current Ik 1 s (kA)	Clamping range (mm)	Clamping width (mm)	Weight (g)
363 418 003	P50 	120	4,5 - 35	23,7	4,5 - 35	34	814
361 499 001	P51 	50	Ri80 - 150	36,5 (Ik 0,12s)	-	30	1070
361 499 499	P52 	50	Ri80 - 150	36,5 (Ik 0,12s)	-	30	942
362 947 947	P53 	50	Ri80 - 150	23,3 (Ik 0,12s)	-	30	1968

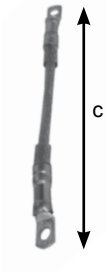
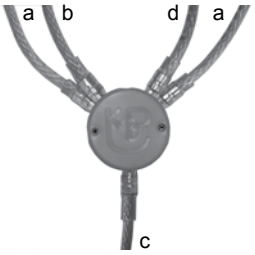
Form for request for Earthing and Short-circuit devices

Company: **Name:**

Telephone: **Date:**

E-mail: **Signature:**

1 Type:

☐ single-pole	☐ two-pole	☐ three-pole	☐ four-pole
369 201 001	369 100 001	369 203 001	369 100 003
			

2 Cables:

Conductor cable cross-section: _____ mm²

Length of conductor cable: a: _____ mm b: _____ mm d: _____ mm

Earth cable cross-section: _____ mm²

Length of earth cable: c: _____ mm

3 Clamps:

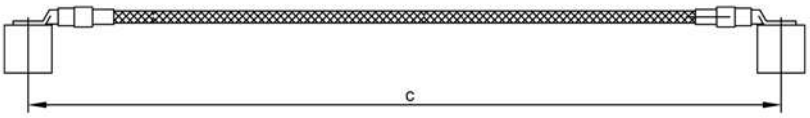
Line clamp(s): _____ Earth clamp: _____

Single-Pole Earthing and Short-Circuiting Cables

Utmost flexibility for assembling customer-specific earthing and short-circuiting devices. With a range of more than 25 line and earth clamps, conductor cross-sections are available from 25 to 150 mm² in any length.

The standard conductor lengths are:
Earthing cable: c = 5,000 mm

For line and earth clamps please refer to the summary tables.



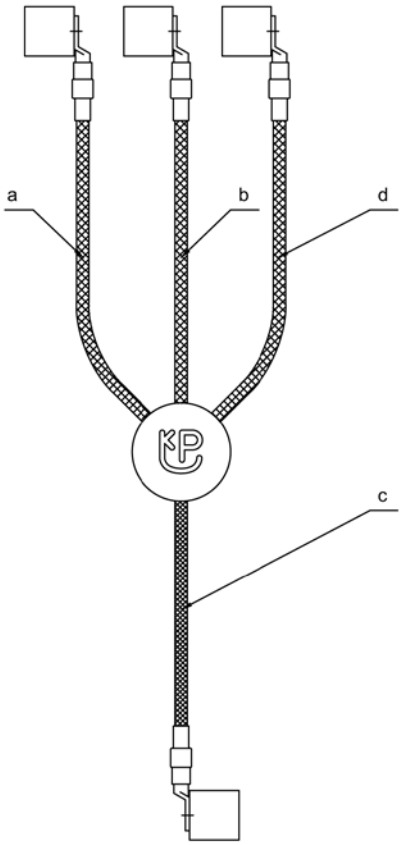
No.	Version	Cable cross section (mm²)	Max. short-circuit current I_K 1s (kA)
369 201 001	0024	25	4.9
369 201 001	0029	35	6.9
369 201 001	0001	50	9.9
369 201 001	0113	70	13.8
369 201 001	0002	95	18.7
369 201 001	0115	120	23.7
369 201 001	0520	150	29.6

Three-Pole Earthing and Short-Circuiting Conductors with Cross-Section-Reduced Earthing Conductor

Utmost flexibility for assembling customer-specific earthing and short-circuiting devices. With a range of more than 25 line and earth clamps, conductor cross-sections are available from 25 to 150 mm² in any length.

The standard conductor lengths are:
Short-circuiting cables: a = b = d = 600 mm
Earthing cable: c = 1500 mm

For line and earth clamps please refer to the summary tables.



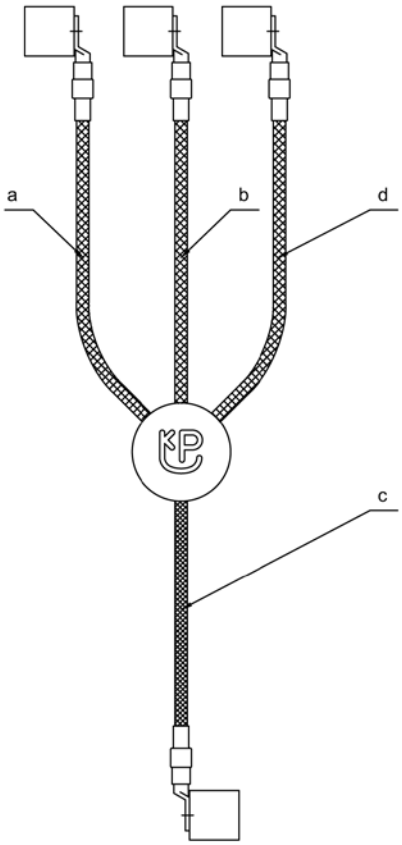
No.	Version	Cable cross section (mm²)	Max. short-circuit current I_K 1s (kA)
369 203 001	0020	50 / 25	9.9
369 203 001	0066	70 / 35	13.8
369 203 001	0067	95 / 35	18.7
369 203 001	0697	120 / 50	23.7
369 203 001	0700	150 / 50	29.6

Three-Pole Earthing and Short-Circuiting Conductors with Non-Reduced Earthing Conductor Cross-Section

Utmost flexibility for assembling customer-specific earthing and short-circuiting devices. With a range of more than 25 line and earth clamps, conductor cross-sections are available from 25 to 150 mm² in any length.

The standard conductor lengths are:
Short-circuiting cables: a = b = d = 600 mm
Earthing cable: c = 1500 mm

For line and earth clamps please refer to the summary tables.



No.	Version	Cable cross section (mm^2)	Max. short-circuit current I_K 1s (kA)
369 203 001	0062	25 / 25	4.9
369 203 001	1539	35 / 35	6.9
369 203 001	1027	50 / 50	9.9
369 203 001	0109	70 / 70	13.8
369 203 001	1640	95 / 95	18.7
369 203 001	0206	120 / 120	23.7
369 203 001	2048	150 / 150	29.6

Earthing and Short-Circuiting Devices for Low Voltage

Our low-voltage **earthing and short-circuiting devices** are used on low-voltage overhead lines as well as on low-voltage equipment parts, for example in cable distribution cabinets.

Fully-Insulated Earthing and Short-Circuiting Devices

This fully-insulated earthing and short-circuiting device is designed for use on low voltage overhead lines.

Technical description:

- Fully-insulated suspension clamps for conductor Ø 314 mm
- Suspension clamp with probe tip and LED indicator for voltage indication
- Earthing and short-circuiting cables in 600 mm cable lengths
- Fibreglass reinforced polyester tubes in 500 and 800 mm tube lengths
- Transparent insulating handles with bending protection
- Insulated screw-type connecting cluster
- Storage case 364 785 004 to be ordered separately

No.	Cable cross section (mm²)	Max. short-circuit current I_k 1 s (A)	Number of suspension clamps	Length of insulating rods (mm)
360 528 528	25	4900	4	3 x 500 + 1 x 800
360 528 529	25	4900	5	4 x 500 + 1 x 800
360 528 530	25	4900	6	5 x 500 + 1 x 800

Fully-Insulated Earthing and Short-Circuiting Device with Line Clamp P6

This earthing and short-circuiting device is designed for use on low voltage overhead lines with high short-circuit currents.

Technical description:

- Line clamp P6 fixed to handle
- Grip for easy handling

No.	Cable cross section (mm²)	Max. short-circuit current I_k 1 s (A)	Number of suspension clamps
360 528 531	35	6900	5

Earthing and Short-Circuiting Devices for Low Voltage Distribution Boards

These earthing and short-circuiting devices are designed for use on low-voltage distribution boards, cable distribution cabinets and fuse boxes. They are supplied as a set, consisting of the following components.

Further versions with different conductor lengths and types and different contents available on request.

Case - Set 1

Technical description:
Case set 1 consists of following components:
- one three-pole earthing and short-circuiting device DIN VDE 0683 Part 100
- conductor cross-section: 25 mm²
- conductor lengths:
  a = 300 mm
  b = 600 mm
  d = 800 mm
  c = 1000 mm
- threaded screw connection for earthing cartridges
- earthing clamp for flat tape with flexible grip and two spindle settings
- 1 earthing grip, 350 mm
- 3 earthing cartridges, sizes 1 - 3
- 3 earthing cartridges, size 00
- 3 HRC fuse elements, size E33
- 1 plastic storage case with foam liners

No.	Version
360 481 100	0018

Case - Set 2

Technical description:
Case set 2 consists of following components:
- two three-pole earthing and short-circuiting device DIN VDE 0683 Part 100
- conductor cross-section: 25mm²
- conductor lengths:
  a = 300 mm
  b = 600 mm
  d = 800 mm
  c = 1000 mm
- threaded connector for earthing cartridges
- earthing clamp for flat tape with flexible grip and two spindle settings
- 1 earthing grip, 350 mm
- 6 earthing cartridges, sizes 1-3
- 6 earthing cartridges, size 00
- 6 HRC fuse elements, size E33
- 1 plastic storage case with foam liners

No.	Version
360 481 100	0019

Case - Set 3

Technical description:
Case set 3 consists of following components:

- one three-pole earthing and short-circuiting device DIN VDE 0683 Part 100
- conductor cross-section: 25 mm^2
- conductor lengths:
  a = 300 mm
  b = 600 mm
  d = 800 mm
  c = 1000 mm
- threaded screw connection for earthing cartridges
- earthing clamp for flat tape with flexible grip and two spindle settings
- 1 earthing grip, 350 mm
- 3 earthing cartridges with electromagnetic interlock, size 1 - 3
- 1 plastic storage case with foam liners

No.	Version
360 481 100	0020

Special Earthing Sets

Besides the earthing and short-circuiting fittings for medium and high voltage levels, PFISTERER also offers **special earthing fittings** for special applications.

Discharge Rods for High Voltage Capacitors

Discharge rods are used for discharging induced and equalizing voltages on high voltage capacitors.

Technical description:
- Copper hook fixed to yellow fibreglass reinforced polyester tube, colour yellow
- Earthing cable with cable lug
- Insulation length L_I = 500 mm
- Diameter of insulating element = 24 mm
- Copper hook length = 120 mm
- Copper hook diameter = 8 mm

Other versions with differing rod and cable lengths are available on request.

No.	Version	Cable cross section (mm²)	Cable length (mm)	Pole length L (mm)
363 800 000	0025	25	2000	1000
363 800 000	0021	25	3000	1500

Earthing and Short-Circuiting Devices for Electrostatic Air Filter Equipment

This earthing and short-circuiting device is used to discharge induced and equalizing voltages on electrostatic air filter equipment.

Technical description:
- Spring-loaded knife contact firmly mounted on a yellow, fibreglass-reinforced polyester tube
- Earthing cable with earthing clamp Type E2
- Insulating distance LI = 500 mm
- Diameter of insulating part = 33 mm
- Suitable for application to circular conductors of 12 – 26.5 mm diameter

Further versions with different rod – and conductor lengths are available on request.

No.	Version	Cable cross section (mm²)	Cable length (mm)	Pole length L (mm)
363 800 000	0020	25	3000	1500
363 800 000	0032	25	5000	2000

Earthing Devices for Railway Systems

Earthing devices that meet the highest quality and reliability requirements are a prerequisite for work on the overhead lines of electric railways.
PFISTERER has been developing and producing earthing devices for railway systems for decades, and symbolises this kind of quality and reliability. Through an optimised process, we are able to supply the widest variety of types of earthing devices.

Technical description:

- Earthing devices for mainline railways with AC or DC voltage, as well as for underground railways and trolley lines
- Copper earthing and short-circuiting cables available with cross-sections from 25 mm^2 to 150 mm^2
- Earthing and short-circuiting devices available for non-protruding earthing
- Optimised protection against damage and atmospheric influences on cable ends
- Components suitable for various types of application
- Components dimensioned for high short-circuit currents

Railway Earthing Devices for Overhead Lines

This railway earthing device is designed for use on overhead catenaries. It can be used for contact wire heights between 4.8 and 6.25 m. The use of rail earthing clamp R50 allows non-protruding earthing, thus allowing diesel locomotive operation in earthed conditions.

Technical description:
Depending on type, this railway earthing device is made up of the following components:

- 1 contact wire earthing clamp, 361 499 001
- 1 rail earthing clamp, 363 322 005
- 1 earthing cable, 8.5 or 12 m long, 362 138 138
- 1 suspension hook, 360 453 453
- 1 telescopic type earthing pole (two-piece), 362 744 744

No.	Remark	Length of earthing cable (m)	Non-protruding	DB drawing number
364 845 001	with telescopic earthing pole, 2-piece	8.5	-	3 Ebgw 01.11
364 845 006	without earthing pole	8.5	-	-
364 845 002	with telescopic earthing pole, 2-piece and suspension hook for earth wire	12	■	3 Ebgw 01.11
364 845 005	without earthing pole with suspension hook for earth wire	12	■	-

Railway Earthing Devices for Overhead Lines (Automobile Type)

This railway earthing device is designed for mobile use and is suitable for transport in cars and service vehicles of emergency services and fire brigades. The use of rail earthing clamp R50 allows non-protruding earthing, thus allowing diesel locomotive operation in earthed conditions. To secure the working site the earthing pole and the ratchet can be removed.

Technical description:
- Transport length of 5-piece earthing pole approx. 1,100 mm
- Short-circuit capacity Ik = 36.5 kA/ 0.12 s

Depending on type this railway earthing device consists of the following components:
- 1 segmented earthing pole, No. 364 784 001
- 2 rail earthing clamps, No. 363 322 005
- 2 contact wire earthing clamps, No. 361 499 001
- 2 short-circuiting cables 50 mm², length 8.5 m or 12 m, with red marking flags
- 1 storage case for earthing pole, No. 364 786 001
- 1 storage case for 2 earthing devices, No. 364 785 001

No.	Remark	Length of earthing cable (m)	Non-protruding	DB drawing number
364 766 001	with plug-in type earthing pole, 5-piece	8.5	-	3 Ebgw 01.21
364 766 004	with plug-in type earthing pole, 5-piece	12	■	-

Railway Earthing Devices for Railway Power Lines

This railway earthing device is designed for use on railway power lines.

Technical description:
It is made up of the following components:
- 1 Telescopic type earthing pole, two-piece, No. 362 744 001
- 1 Earth clamp U2, No. 361 346 001
- 1 contact wire earth clamp P50, with feeler rod, No. 363 418 003
- 1 short-circuiting cable 50 mm², length 4 m

No.	Length of earthing cable (m)	DB drawing number
363 571 571	4	3 Ebgw 01.23

Railway Earthing Devices for Transformers

This railway earthing device is designed for use on pole-mounted transformers on overhead lines.

Technical description:
This railway earthing device is made up of the following components:
- 1 telescopic type earthing pole, 362 744 001
- 2 earth connection clamp U2, 361 346 001
- 2 line connection clamps P4, 360 332 001
- 2 short-circuiting cables 50 mm², length 4 m

No.	Length of earthing cable (m)	DB drawing number
364 844 001	4	3 Ebgw 01.16

Railway Earthing Devices for Construction Machines

This railway earthing device is suitable for the protective earthing of construction machines.

Technical description:
It is made up of the following components:
- 1 earth terminal clamp U2, 361 346 001
- 1 rail earthing clamp R50, 363 32 005
- 1 short-circuiting cable 50 mm², length 12 m

No.	Length of earthing cable (m)	DB drawing number
364 843 001	12	3 Ebgw 01.15

Single-Pole Earthing and Short-Circuiting Cables

Fitted on both sides with compression type cable lugs with 30° angled palms and 13 mm mounting hole for M12 connecting screw. The conductor egress at the mouth of the cable lugs is provided with bending protection.

No.	Cable cross section (mm²)	Max. short-circuit current I_k 0,12 s (A)	Length of earthing cable (m)	Non-protruding	DB drawing number
362 138 138	50	36500	8.5	-	3 Ebgw 01.11
362 138 529	50	36500	12	■	3 Ebgw 01.11
362 138 004	50	36500	13	-	-

Suspension Hook

For non-protruding suspension of earthing wire.

No.	DB drawing number
360 453 453	3 Ebgw 01.11

Earth Clamps

PFISTERER offers an extensive range of earthing clamps for earthing and short-circuiting devices (see overview). These earth clamps are offered in various versions designed for different earth types of connections in indoor and outdoor installations.

Technical description:

- Earthing clamps available in clamping ranges between 2 and 25 mm
- Earthing clamps available with short-circuit current carrying capacity up to 29.6 kA/1 s
- Compact, robust design
- Easy handling
- Connection to earthing and short-circuiting device with an M12 screw

Universal Earth Connection Clamps U1

Earth clamp with capstan-head screw for use at various earth connection points.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
360 414 001	95	18700	2 - 20	38

Universal Earth Connection Clamps U2

Earth clamp with capstan-head screw for use at various earth connection points. Suitable for higher short-circuit currents.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
361 346 001	150	29600	2 - 20	38

Universal Earth Connection Clamps U3

Earth clamp with handle for use at various earth connection points.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
364 704 004	95	18700	2 - 20	38

Universal Earth Connection Clamps U4

Earth clamp with capstan-head screw for use at various earth connection points.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
364 704 003	120	23700	2 - 20	38

Universal Earth Connection Clamps U5

Earth clamp with handle for use at various earth connection points.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
364 714 002	150	29600	2 - 25	50

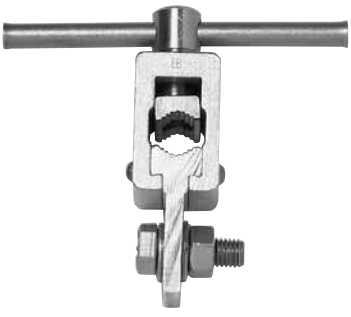
Earth Connection Sockets A1

Earth connection socket with wing screw for connection to a cylindrical earthing bolt.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range
	(mm^2)	I_k 1 s (A)	(mm)
364 811 001	150	29600	16

Earth Connection Sockets A2

Earth connection socket with wing screw for connection to a cylindrical earthing bolt.



No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range
	(mm^2)	I_k 1 s (A)	(mm)
364 544 002	150	29600	16 - 22

Earth Clamps E2

Earth clamp with capstan-head screw.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range
	(mm^2)	I_k 1 s (A)	(mm)
360 419 004	70	13800	2 - 30

Earth Connection Penetrating Earth Clamps F1

Earth clamp with capstan-head screw for use on coated masts. The cupped gripping point and tip are hardened to ensure reliable contact.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range
	(mm^2)	I_k 1 s (A)	(mm)
360 416 002	50	9900	2 - 20

Gösag Penetrating Earth Clamps F2

Earth clamp with capstan-head screw for use on coated masts. The cupped gripping point and tip are hardened to ensure reliable contact.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range
	(mm^2)	I_k 1 s (A)	(mm)
360 628 002	95	18700	2 - 22

Earth Connection with M12 / M16 Wing Nut

Earth connection to a threaded bolt

No.	Max. cross section of connected cable	Max. short-circuit current	Thread
	(mm^2)	I_k 1 s (A)	G
361 657 001	150	29600	M12
361 658 001	150	29600	M16

Earth Connection with S12 / S16 Wing Screw

Earth connection for threaded connection

No.	Max. cross section of connected cable	Max. short-circuit current	Thread
	(mm^2)	I_k 1 s (A)	G
361 657 002	150	29600	M12
361 659 001	150	29600	M16

Earth Connection HM12 with Swivel Arm and M12 Internal Thread

Earth connection to a threaded bolt

No.	Max. cross section of connected cable	Max. short-circuit current	Thread
	(mm^2)	I_k 1 s (A)	G
361 659 010	120	23700	M12

Earth Connection HS12 with Swivel Arm and M12 Threaded Bolt

Earth connection for threaded connection

No.	Max. cross section of connected cable	Max. short-circuit current	Thread
	(mm^2)	I_k 1 s (A)	G
361 659 011	120	23700	M12

Multi-contact connection devices U2

Suitable for connecting to 25 mm ball pins.
The multi-contact connection device consists of a copper bar, universal clamp no. 361 346 001, and two 25 mm ball pins no. 360 938 095.

No.	Max. short-circuit current	Short-circuiting bar	Short-circuiting bar thickness	Weight	DB drawing number
	I_k 1 s (A)	L x B (mm)	(mm)	(kg)	
363 463 463	29600	200 x 40	6	1.7	3 Ebgw 01.27

Multi-contact connection devices A1

with earth terminal socket A1 and three cylindrical earthing bolts with annular groove. The triple earth connection serves to earth and short circuit three single-pole earthing and short-circuiting cables.
Short-circuiting bar and connecting angle of Cu/Sn, 40 x 8 mm. Total length 195 mm.

No.	Max. short-circuit current	Short-circuiting bar	Short-circuiting bar thickness	Weight
	I_k 1 s (A)	L x B (mm)	(mm)	(kg)
364 900 001	29600	195 x 40	8	1.2

Multi-contact connection devices A2

with earth terminal socket A1 and three cylindrical earthing bolts with annular groove. The triple earth connection serves to earth and short circuit three single-pole earthing and short-circuiting cables.
Short-circuiting bar and connecting angle of Cu/Sn, 40 x 8 mm. Total length 195 mm.

No.	Max. short-circuit current	Short-circuiting bar	Short-circuiting bar thickness	Weight
	I_k 1 s (A)	L x B (mm)	(mm)	(kg)
364 899 001	29600	195 x 40	8	1.3

Rail earthing clamps

PFISTERER offers a range of rail earthing clamps for railway lines.

Rail Earth Clamps R50

This rail earthing clamp is suitable for all rail base gauges. The small overall height of 35 mm below the rail base makes removal of gravel unnecessary. A separate handle allows easy placing of the clamp and protects the earth wire connection. When tightening the clamp, the annular cutting edge cuts through layers of dirt and oxide, thus ensuring reliable contact. The counter-surface, a hardened metal tip, is spring-mounted and insulated. The clamp is therefore flame-resistant in the event of a short circuit.

No.	Max. cross section of connected cable	Max. short-circuit current	With ratchet	Weight	DB drawing number
	(mm^2)	I_k 0,12 s (A)		(g)	
363 322 005	50	40000	■	2128	3 Ebgw 01.13
363 322 006	50	40000	-	1706	-

Rail Earth Clamps R51

This rail earthing clamp is designed as an earthing magnet for use on trolley lines.

No.	Max. cross section of connected cable	Max. short-circuit current	Weight
	(mm^2)	I_k 1 s (A)	(g)
364 901 001	70	13800	5000

Rail Earth Clamps R52

These rail earthing clamps are suitable for use on grooved rails.

No.	Max. cross section of connected cable	Max. short-circuit current	Weight
	(mm^2)	I_k 0,12 s (A)	(g)
364 868 001	50	40000	858

Line Clamps

PFISTERER offers an extensive range of line clamps for earthing and short-circuiting devices (see overview). Depending on type, these line clamps are designed for connection to overhead lines or in switchgear.

Technical description:
- Line clamps available with clamping ranges between Ø 4 and 85 mm
- Line clamps available with short-circuit current carrying capacity up to 29.6 kA/1s
- Screw spindle made of A2 stainless steel ensures reliable contact between clamp and conductor
- Compact, robust design
- Easy handling
- Earthing poles for application of line clamps available in all versions

Line Clamps P1 for Overhead Lines

Line clamp for use on overhead lines. The tilting screw spindle allows the line clamp to be attached even at places that are difficult to access. This line clamp is distinguished by its particularly easy handling.

Technical description:
- Swivelling spindle with swivel range ±20°
- Base made of AlSi10Mg(Fe)

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
364 904 001	120	23700	4 - 20	48

Line Clamps P2 for Overhead Lines

Line clamp for use on overhead lines. The tilting screw spindle allows the line clamp to be attached even at places that are difficult to access. This line clamp is distinguished by its particularly easy handling.
Line clamp P2 has a larger clamping range than line clamp P1, which is similar in design.

Technical description:
- Swivelling spindle with swivel range ±20°
- Base made of AlSi10Mg(Fe)

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
364 903 001	150	29600	6 - 32	57

Universal Line Clamps P3

Universal line clamp for different line connection points.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm²)	I_k 1 s (A)	(mm)	(mm)
360 330 002	95	18700	2 - 20	38

Universal Line Clamps P4

Universal line clamp for different line connection points.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm²)	I_k 1 s (A)	(mm)	(mm)
360 332 001	120	23700	2 - 20	38

Multipurpose Line Clamps P5

Very short-circuit resistant line clamp for multiple applications.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm²)	I_k 1 s (A)	(mm)	(mm)
360 333 002	150	29600	2 - 25	50

Line Clamps P6 for Overhead Lines

Line clamp for slanting attachment to overhead lines.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm²)	I_k 1 s (A)	(mm)	(mm)
364 309 005	70	13800	4 - 23	27

Line Clamps P7 for High-Voltage Overhead Lines

Line clamp for slanting attachment to high-voltage overhead lines.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
363 245 006	120	23700	4,5 - 35	34

High-Voltage Line Clamps P8

Line clamp for connection to Al and Al/St conductors, tubes and line fixed point connections.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
364 459 009	150	29600	10 - 85	40

Parallel Line Clamps P9

Line clamp for slanting attachmentto high-voltage overhead lines. Thanks to the parallel setting of the clamping jaws, this line clamp is suitable for attachment from above, e.g. from the cross arms of high-voltage towers.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
360 335 003	95	18700	10 - 32	38

Parallel Line Clamps P11

Line clamp for slanting attachmentto high-voltage overhead lines. Thanks to the parallel setting of the clamping jaws, this line clamp is suitable for attachment from above, e.g. from the cross arms of high-voltage towers.
This line clamp is also fitted with a guard stirrup which can be prevent loosened line clamps from falling off.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
360 335 004	95	18700	10 - 32	38

Line Clamps P12 for Blade Contacts

Line clamp for use in fully-insulated switchgear with withdrawable elements Type R with blade contact of thickness 10, 16 and 20 mm and bead. The clamping jaws of the line clamp have fine-toothed grooves to ensure secure electrical contact and the best possible mechanical grip.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
363 091 297	150	29600	10 - 25	40

Line Clamps P13 for High-Voltage Overhead Lines

Line clamp for slanting attachment to high-voltage overhead lines.

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width
	(mm^2)	I_k 1 s (A)	(mm)	(mm)
363 245 010	95	18700	15 - 60	35

Current Collector Clamps S100

Technical description:

- With tilting spindle
- For current sampling on overhead lines up to 300 mm^2
- Screw jack with cross-pin for insulating pole 363 810 8xx
- Compact, simple robust design
- Spindle max. tightening torque = 25 Nm
- Conductor max. tightening torque = 6 Nm

No.	Swivel range	Conductor range	Continuous current-carrying capacity	Max. cross section of connected cable	Weight
		(mm)	(A)	(mm^2)	(g)
360 328 010	± 20°	4 - 20	144	25	370

Contact wire earthing terminals

PFISTERER offers contact wire earthing clamps for railway earthing devices. These contact wire earthing clamps are designed for connection to various contact wires.

Technical description:

- Contact wire earthing clamps for grooved, circular and shaped contact wires as well as for twin contact wires
- Screw spindle of A2 stainless steel ensures reliable contact between clamp and contact wire
- Compact, robust design
- Easy handling
- Earthing poles available for attaching all types of contact wire earthing clamps

Contact Wire Earthing Clamp P50

This contact wire earthing clamp has a twist-proof earthing cable terminal at the front. The frame and thrust block are finely grooved to ensure secure electric contact and firm mechanical grip even when the conductors are corroded.

Technical description:

- Conductor range 4.5 – 35 mm
- With feeler rod for verifying absence of voltage to railway-internal specifications

No.	Max. cross section of connected cable	Max. short-circuit current	Clamping range	Clamping width	Weight	DB drawing number
	(mm^2)	I_k 1 s (A)	(mm)	(mm)	(g)	
363 418 003	120	23700	4,5 - 35	34	814	4 Ebgw 01.26

Contact Wire Earthing Clamp P51

This contact wire earthing clamp is fitted with a flexible spindle and is used for grooved, circular or shaped conductors.

Technical description:

- With feeler rod for easy application onto the contact wire
- The spring-mounted thrust block is connected to the M12 connecting screw on the back by means of flexible copper straps
- 361 499 002 with shortened feeler rod

No.	Max. cross section of connected cable	Max. short-circuit current	Contact wire	Clamping width	Weight	DB drawing number
	(mm^2)	I_k 0,12 s (A)		(mm)	(g)	
361 499 001	50	36500	Ri 80 - 150	30	1070	3 Ebgw 01.14
361 499 002	50	36500	Ri 80 - 150	30	1010	-

Contact Wire Earthing Clamp P52

This contact wire earth clamp is fitted with a rigid spindle and is used for grooved, circular or shaped conductors.

Technical description:

- With feeler rod for easy application onto the contact wire
- The spring-mounted thrust block is connected to the M12 connecting screw on the back by means of flexible copper straps

No.	Max. cross section of connected cable	Max. short-circuit current	Contact wire	Clamping width	Weight
	(mm^2)	I_k 0,12 s (A)		(mm)	(g)
361 499 499	50	36500	Ri 80 - 150	30	942

Contact Wire Earthing Clamp P53

This contact wire earthing clamp is designed for use on twin contact wires.

No.	Max. cross section of connected cable	Max. short-circuit current	Contact wire	Clamping width	Weight
	(mm^2)	I_k 0,12 s (A)		(mm)	(g)
362 947 947	50	23300	Ri 80 - 150	30	1968

Earthing and Line Fixed Points

PFISTERER has a range of both earthing and line fixed points.
Special line fixed points on request.

Maximum installation torque
M10: 33 Nm
M12: 56 Nm
M16: 135 Nm

Ball Pin, Straight, with Outside Thread

According to DIN 48088 Part 1.

Technical description:
German Railways licence 4 Ebgw 01.24
- 360 938 095 DB-No. 00 157 503
- 360 938 939 DB-No. 00 157 495
- 360 384 003 DB-No. 00 621 849

No.	Max. cross section of connected cable	Head diameter	Thread length	Thread	Width across flats	Max. short-circuit current	for line clamp
	(mm^2)	(mm)	(mm)	G	(SW)	I_k 1 s (A)	
360 382 004	95	20	28	M12	22	18700	360 330 002
360 382 005	95	20	38	M12	22	18700	360 330 002
360 382 006	95	20	48	M12	22	18700	360 330 002
360 938 095	150	25	25	M16	27	29600	360 332 001 360 333 002
360 384 002	150	25	28	M12	27	29600	360 332 001 360 333 002
360 384 003	150	25	38	M12	27	29600	360 332 001 360 333 002
360 384 004	150	25	48	M12	27	29600	360 332 001 360 333 002
360 938 939	150	25	55	M16	27	29600	360 332 001 360 333 002

Ball Pin, Straight, with Inside Thread

According to DIN 48088 Part 1.

No.	Max. cross section of connected cable	Head diameter	Thread	Width across flats	Max. short-circuit current	for line clamp
	(mm^2)	(mm)	G	(SW)	I_k 1 s (A)	
612 633 005	95	20	M10	22	18700	360 330 002
612 633 004	95	20	M12	22	18700	360 330 002
615 820 001	150	25	M12	27	29600	360 332 001 360 333 002
615 822 001	150	25	M16	27	29600	360 332 001 360 333 002
360 786 003	95	20	M16	24	18700	360 330 002

Ball Pin, Angled, with Outside Thread

No.	Bracket	Max. cross section of connected cable	Head diameter	Thread length	Thread	Width across flats	Max. short-circuit current	for line clamp
		(mm^2)	(mm)	(mm)	G	(SW)	I_k 1 s (A)	
360 784 001	45°	70	20	38	M12	24	13800	360 330 002
360 385 001	90°	95	25	45	M12	27	18700	360 332 001 360 333 002
360 786 001	90°	70	20	35	M12	24	13800	360 330 002

Ball Pin, Angled, with Inside Thread

No.	Bracket	Max. cross section of connected cable	Head diameter	Thread	Width across flats	Max. short-circuit current	for line clamp
		(mm^2)	(mm)	G	(SW)	I_k 1 s (A)	
360 385 002	45°	95	25	M12	27	18700	360 332 001 360 333 002
360 786 002	90°	70	20	M12	24	13800	360 330 002
611 370 001	45°	70	20	M12	24	13800	360 330 002

T-Bolts, Straight, with Outside Thread

suitable for universal line clamp P3.

No.	Max. cross section of connected cable	Diameter	Width	Thread length	Thread	Max. short-circuit current
	(mm^2)	Ø (mm)	(mm)	(mm)	G	I_k 1 s (A)
360 372 001	95	15	30	28	M12	18700
360 372 002	95	15	30	48	M12	18700

T-Bolts, Straight, with Inside Thread

suitable for universal line clamp P3.

No.	Max. cross section of connected cable	Diameter	Width	Thread	Max. short-circuit current
	(mm²)	Ø (mm)	(mm)	G	I_k 1 s (A)
610 670 001	150	20	58	M12	29600
615 805 001	95	15	30	M12	18700

T-Bolts, Angled, with Outside Thread

suitable for universal line clamp P3.

No.	Max. cross section of connected cable	Diameter	Width	Thread length	Thread	Max. short-circuit current
	(mm²)	Ø (mm)	(mm)	(mm)	G	I_k 1 s (A)
360 567 001	95	15	30	28	M12	18700
360 567 002	95	15	30	48	M12	18700
600 925 001	95	15	30	38	M12	18700

T-Bolts, Straight, with Outside Thread

suitable for multi-purpose line clamp P5.

No.	Max. cross section of connected cable	Diameter	Width	Thread length	Thread	Max. short-circuit current
	(mm²)	Ø (mm)	(mm)	(mm)	G	I_k 1 s (A)
360 386 001	150	20	58	28	M12	29600
360 386 002	150	20	58	48	M12	29600

Cylindrical Earthing Bolt with Outside Thread

According to DIN 48088, part 2.
with annular groove.
suitable for terminal sockets type A1 (No. 364 811 001) and A2 (No. 364 544 002).
Diameter = 16 mm

No.	Thread G	Thread length (mm)	Width across flats (SW)	Max. short-circuit current I_k 1 s (A)
360 407 407	M12	40	22	29600
360 408 408	M16	40	27	29600
360 408 003	M16	25	27	29600

Cylindrical Earthing Bolt with Inside Thread

According to DIN 48088, part 2.
with annular groove.
suitable for terminal sockets type A1 (No. 364 811 001) and A2 (No. 364 544 002).
Diameter = 16 mm

No.	Thread G	Width across flats (SW)	Max. short-circuit current I_k 1 s (A)
610 923 001	M12	22	29600

Earth Coupling Bolt with Radial Groove

According to DIN 48088 Part 2.
Suitable for connection bolts Type A1 (No. 364 811 001) and Type A2 (No. 364 544 002).
Diameter = 16 mm

No.	Width across flats (SW)	Length (mm) (mm)	Max. short-circuit current I_k 1 s (A)
360 409 409	22	145	29600

Earthing Connector M12, with Outside Thread

According to DIN 48088 Part 5.

No.	Width across flats (SW)	Length (mm) (mm)	Max. short-circuit current I_k 1 s (A)
360 421 421	30	60	23700

Earthing Connector M12, with Inside Thread

According to DIN 48088 Part 5.

No.	Length (mm) (mm)	Max. short-circuit current I_k 1 s (A)
360 425 615	25	23700

Earthing Connection Bolts

According to DIN 48088 Part 5.

No.	Width across flats (SW)	Length (mm) (mm)	Max. short-circuit current I_k 1 s (A)
361 206 206	27	85	23700
361 206 001	27	110	23700
361 206 002	27	145	23700

Hex Bolts M12

According to DIN 48088 Part 5.

No.	Width across flats (SW)	Length (mm) (mm)	Max. short-circuit current I_k 1 s (A)
621 007 003	27	40	23700
621 007 004	27	65	23700
621 007 005	27	110	23700

Thread Adapter M12 / M10

suitable for all PFISTERER clamps, for the attachment of compression cable lugs with 10 mm spade drilling.

No.	Width across flats (SW)	Length (mm) (mm)
360 480 482	22	37

Line Fixed Point for High-Voltage Overhead Lines

Line fixed points serve as an aid for attachment of line clamps to high-voltage equipment up to 420 kV. They are available in various sizes in curved, straight and hooked form or for bundle conductors in Copper or Aluminium versions.
Further versions are available on request, whereby the conductor diameter should always be stated.

No.
360 365 020

Voltage Detecting Systems

Voltage detecting systems that meet Standard EN 61243-5:2001 are used for ensuring absence of voltage in metal-clad switchgear and transformers. As the live components in these systems cannot be contacted with voltage detectors, it is necessary to use voltage detecting systems that can clearly identify and indicate a capacitively sensed signal as an operating voltage. This signal is sensed by the integrated coupling electrodes that may be integrated in various components:

- Post-type insulator with capacitive voltage divider
- Transducer
- Bushings
- Duresca rails
- Outside/inside tapered cable terminations

Voltage detection systems used for both medium and high voltage.

Standard EN 61243-5:2001 generally distinguishes between two systems defining the interface conditions for the reliable operation of voltage detecting systems:

- HR systems (high resistance system)
- LRM systems (low resistance systems)

PFISTERER supplies the following components for both systems:

- Voltage detecting systems
- Connection materials such as connecting cables and connector strips
- Testing systems for testing voltage detecting systems
- Testing systems for testing interfaces
- Phase comparators

Our voltage detection systems are optimised for PFISTERER CONNEX connection technology components.

Indicators

These indicators show when operating voltage is present.

Continuous Voltage Indicator DSA-2

The **DSA-2 continuous voltage indicator** is a plug-in indicator for the HR system. It allows absence of voltage to be checked on the basis of capacitively sensed voltages.

Technical description:
- No external power required
- Voltage indicator with flashing red LED
- All-insulated system (IP66) made of impact-resistant plastic with moulded Europlug
- Function test possible on 230 V AC plug sockets
- EURO-Test HR in-service test possible
- Suitable for all climate zones

No.
827 161 005

Continuous Voltage Indicator DSA-LRM

The **DSA-LRM continuous voltage indicator** is a plug-in indicator for the LRM system. It allows absence of voltage to be checked on the basis of capacitively sensed voltages.

Technical description:
- No external power required
- Voltage indication by flashing red LED
- All-insulated system (IP66) made of impact-resistant plastic
- Integrated connector pins with seal for interface
- In-service test possible with Euro-Test LRM
- Suitable for all climate zones

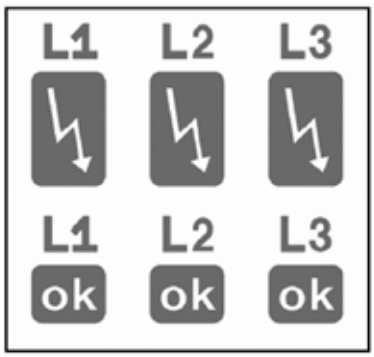
No.
827 020 001

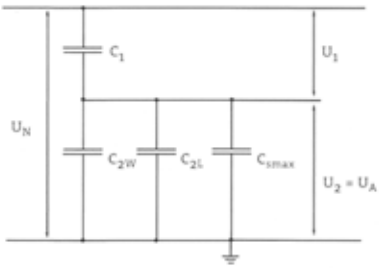
Integrated Voltage Detecting System DSA-i3

The DSA-i3 integrated voltage detecting system has an integrated indicator. It is designed for integration in switchgear cabinets. An additional display makes in-service tests unnecessary. This voltage detecting system is therefore particularly maintenance-free, reliable and cost-effective when used in continuous operation. Exact matching of DSA-i3 and the coupling capacitance C_1 can be achieved by selection of the additional capacitance C_{2L}.

Technical description:

- No external power supply required
- Red LCD display
- Test sockets available for phase comparison
- Additional third socket for testing the integrated LCD display
- Secure cover for sockets
- Conscious test process using three buttons
- Integrated breaking point for voltage-limiting
- Simple assembly
- No test repetition required
- Interface adaptation possible by means of additional capacitances
- Protection class IP 66
- Operating temperature -25...+55°C
- Dimensions (mm): width 96 x height 48 x depth 30





No.	Version	Nominal frequency f_N (Hz)	Threshold voltage (V)	Input impedance (MΩ)	Additional capacitance C_{2L} (nF)
827 216 004	0008	50...60	4...5	2	—
827 216 004	0007	50...60	4...5	2	2,2
827 216 004	0006	50...60	4...5	2	3,3
827 216 004	0005	50...60	4...5	2	10
827 216 004	0009	50...60	4...5	2	33
827 216 004	0010	50...60	4...5	2	47

Assembly Bracket

This practical assembly bracket is available for mounting the DSA-i3 integrated voltage detection system outside front panels.

No.
993 008 002

Interfaces and Connecting Leads

PFISTERER offers a range of interfaces and connecting leads for connecting indicators. Connecting leads on request.

Three-Pole Interfaces for HR-System

This **three-pole interface for HR systems** is designed as a measuring and testing block with safety test socket and earthing socket. It can be mounted on switchgear.

Note:
To meet the standard, this interface must also be equipped with a voltage-limiting breaking point. The interface, the terminals on the coupling element, and the voltage-limiting breaking point must be individually protected against humidity.

No.
560 915 001

Single-Pole Interface for HR-System

This **single-pole interface for HR systems** is designed as a test socket. It can be mounted anywhere near the capacitive tap.

Note:
The standard requires that this interface is also to be equipped with a voltage-limiting breaking point. The interface, the terminals on the coupling element, and the voltage-limiting breaking point must be individually protected against humidity.

No.
827 668 001

Testers for Continuous Voltage Indicators

These testers can be used to carry out function tests on continuous voltage indicators. They can also be used for the in-service test. These testers are operated from a mains power outlet and, during the function test, simulate the minimum response threshold specified in the standard.

EURO-Test HR

This EURO-Test HR tester is suitable for checking the continuous voltage indicator of HR systems.

No.	Min. threshold voltage	Min. threshold current range	Permissible ambient temperature	Standby indication
	U_{tmin} (V)	I_{tmin} (µA)	(°C)	
827 160 001	90	2.5	-25 ... +55	LED

EURO-Test LRM

This EURO-Test LRM tester is suitable for testing the continuous voltage indicator of LRM systems.

No.	Min. threshold voltage	Min. threshold current range	Permissible ambient temperature	Standby indication
	U_{tmin} (V)	I_{tmin} (µA)	(°C)	
827 160 003	5	2.5	-25 ... +55	LED

Testers for Interfaces

These testers can be used for testing the interface.

MP-Test

This MP tester is suitable for testing the interfaces on HR systems and LRM systems. It can be used in connection with a multimeter.

No.
827 094 001

Testers for Continuous Voltage Indicators and Interfaces

PFISTERER offers testers for continuous voltage indicators and interfaces in a set.

Test Box

This text box contains testers for continuous voltage indicators and interfaces for the HR as well as the LRM system.

Technical description:
- Practical storage case with foam liners
- Multimeter
- MP test
- HR EURO test
- LRM EURO test

No.
827 092 002

Phase Comparators for Interfaces and Measuring Points

Phase comparators that meet standard EN 61243-5:2001 can be used to carry out phase comparisons on interfaces and measuring points.

Electronic Phase Comparators EPV

The **EPV electronic phase comparator** allows phase comparison at interfaces and measuring points. It can be used for the HR system as well as the LRM system. At the same time, it also allows checks for absence of voltage and tests on the interface.

Technical description:
- Integrated test leads
- Touch-safe testing
- Function test and battery check with integrated self-test
- Clear voltage indication by means of LEDs
- Active phase balance indication by two LEDs
  (green=phase balance; red=phase unbalance)
- Imtegrated safety function
- Interface control
- Manual or automatic shutdown of the device

No.	Version	Scope of application	Nominal frequency f_N (Hz)	Adapter for HR-System	suitable bag
827 189 008	0005	LRM	50...60	827 217 002	970 318 003
827 189 008	0004	LRM	50...60	827 217 002	364 889 001

Twinpole Adapter LRM - HR-system

This twin-pole adapter allows the phase comparator EPV to be used on HR interfaces.

No.	Remark
827 217 002	-
827 217 004	Adapter EPV HR-LRM 6,3mm phone jack

1

2

Cases

Two different types of cases are available for the electronic phase comparator EPV. Design 2 offers separate slip-in pockets for the phase comparator, the adapter and additional measuring cables.

No.	
970 318 003	1
364 889 001	2

In-Service Tests for Phase Comparators EPV

We offer in-service testing for the EPV phase comparator.

PFISTERER have been successfully carrying out these in-service tests in their own test facility for many years. Testing of the EPV phase comparator is part of this process.

When the tests are completed, the results are documented in full detail.

To request an In-service test, please contact your local sales representative.

Customers in Germany are requested to use the following mailing address:

PFISTERER Kontaktsysteme GmbH
Bereich Wiederholungsprüfung
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Germany


Prüfprotokoll

zur Wiederholungsprüfung

für Elektronischer Phasenvergleicher EPV

Der Elektronische Phasenvergleicher

EPV 827 189 008 / 006

Seriennummer 75977

hat die Wiederholungsprüfung gemäß IEC 61481:2001 bestanden.

No.	Version	Remark
200 000 200	0113	EPV

Adapter for Voltage Detectors

All KP-Test 5 Series single-pole voltage detectors are available either complete (with insulating poles) or separately (without insulating poles). With the separate type, the operator uses his own insulating poles. In this case, the minimum insulation requirements and minimum insulation lengths must be maintained.
PFISTERER offers a range of adapters for attaching separate KP-Test 5 voltage detectors to various types of connections.

Adapter, C1 Series

Adapter from PFISTERER hex to various other systems.

No.	Type	Remark
935 100 001	C1A	Universal toothed coupling with groove
935 100 002	C1B	Spindle
935 100 003	C1C	Hex SW 12
935 100 004	C1D	Two-level pushbutton
935 100 005	C1E	Universal toothed coupling with M8 thread
935 100 007	C1H	UDI

Adapter, C2 Series

Adapter from universal adapter M8 multitooth coupling to various other systems. Can be used for KP-Test 5HL.

No.	Type	Remark
935 101 002	C2B	Spindle
935 101 003	C2C	Hex SW 12
935 101 004	C2D	Two-level pushbutton
935 101 005	C2F	SW 19 inside
935 101 007	C2H	UDI

Test Electrode Attachments for KP-Test 5

Angled Types, 90°

Can be used for all KP-Test 5 Series devices. For indoor installations only.

No.	Nominal voltage U_n (kV)
935 000 001	3 - 36

Types for Medium Voltage Overhead Lines

Can be used for all KP-Test 5 Series devices. For use on medium voltage overhead lines.

No.
935 000 002

Types for Special Switchgear, Type I

Can be used for all KP-Test 5 Series devices. For use on various Eaton, Holec and Magnefix switchgear. For indoor installations only.

No.	Nominal voltage U_n (kV)
935 000 003	3 - 15

Types for Special Switchgear, Type II

Can be used for all KP-Test 5 Series devices. For use on various Calor Emag, Isopond and Krone/KES switchgear with 11 mm diameter. For indoor installations only.

No.	Nominal voltage U_n (kV)
935 000 004	3 - 24

Types for Special Switchgear, Type III

Can be used for all KP-Test 5 Series devices. For use on medium voltage switchgear with 5.5 mm diameter. For indoor installations only.

No.	Nominal voltage U_n (kV)
935 000 005	1 - 10

Headpieces for Operating Poles

Switching Heads

Fully-insulated with actuating bolt

No.	Material
614 495 495	POM nf

Carrying Cases

Carrying Cases for Voltage Detectors KP-Test 5 - Type K3

For safe transport and dust-free storage, PFISTERER supplies a high-quality **carrying case for the KP-Test 5 voltage detector**.

Technical description:
- Hard-shell case made of impact-resistant plastic
- Aluminium strips for edge protection
- Foam liner for KP-Test 5 voltage detector and related accessories

No.	Insertion depth of voltage detector	Width	Height	Depth
	A_i (mm)	(mm)	(mm)	(mm)
900 073 006	220 393	700	125	218
900 073 005	603	920	125	217

Carrying Case for Voltage Detectors KP-Test 5L - Type K1

PFISTERER supplies a practical **carrying case for KP-Test 5L voltage detector** for safe transport and dust-free storage of the KP-Test 5L voltage detector.

Technical description:
- Hard-shell case made of impact-resistant plastic
- Bright red colour with marking
- Foam liner for KP-Test 5L voltage detector and associated adapters

No.	Width	Height	Depth
	(mm)	(mm)	(mm)
900 075 001	444	320	108

Carrying Case - Type K2

PFISTERER supplies a practical carrying case for safe transport and dust-free storage of voltage detectors.

Techncal description:
- Metal case
- Colour: red
- Two toggle fasteners
- Foam liner

No.	Width (mm)	Height (mm)	Depth (mm)
900 076 001	290	160	100

Carrying Cases for Single-pole Phase Comparators

These storage cases are used for the safe transport and dust-free storage of phase comparators SPPC.

Technical description:
- Hard-shell case made of impact-resistant plastic
- Aluminium strips for edge protection
- Foam lining for phase comparator and accessories

No.	Width (mm)	Height (mm)	Depth (mm)	Suitable for
900 068 001	605	80	240	364788004
900 073 001	1020	80	250	364788002 364788003 364825002 364825003 364825004 364750001 364830001
900 073 002	900	190	250	364788001 364825001
900 073 003	888	143	235	364788001 364825001
900 073 004	1050	170	220	364788002 364788003 364825002 364825003

Carrying Cases

Carrying Cases - Type A

These storage cases are used for the safe transport and dust-free storage of voltage detectors and insulating poles.

Technical description:
- Storage case made of hard-wearing artificial leather
- Easy to close using zip fastener
- Carrying strap

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

Carrying Cases - Type B

These storage cases are used for the safe transport and dust-free storage of voltage detectors and insulating poles.

Technical description:
- Storage case made of hard-wearing artificial leather
- Easy to close using snap fasteners
- Two shoulder straps
- Possibility of attaching the magnetic fastener and cable for KP-Test 5R DC

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

Carrying Cases - Type E

These storage cases are used for the safe transport and dust-free storage of insulating poles.

Technical description:
- Storage case made of hard-wearing artificial leather
- Easy to close using Velcro fastener
- Shoulder strap

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

Carrying Cases - Type F

These storage cases are used for the safe transport and dust-free storage of insulating poles.

Technical description:
- Storage case made of hard-wearing artificial leather
- Easy to close using Velcro fastener
- Shoulder and carrying strap

No.	Type	Width (mm)	Height (mm)
364 786 001	F1	1140	650

Carrying Cases for Single-pole Phase Comparators

These storage cases are used for the safe transport and dust-free storage of single-pole phase comparators SPPC.

Technical description:
- Storage case made of hard-wearing artificial leather
- Easy to close using the Velcro fastener
- Flexible, adjustable carrying straps

No.	Width (mm)	Height (mm)	Suitable for
364 886 001	1050	410	364788001 364788002 364788003 364825001 364825002 364825003 364825004
364 887 001	700	260	364788004

Carrying Cases for Earthing and Short-Circuiting Poles

These storage cases are used for the safe transport and dust-free storage of earthing and short-circuiting devices.

No.	Width (mm)	Height (mm)
364 785 005	400	300
364 785 001	520	350
364 785 004	1000	230

Storage Cabinet for Voltage Detectors and Earthing Devices

This storage cabinet is designed for the storage of voltage detectors, earthing and short-circuiting devices and earthing rods. It protects the stored equipment against harmful environmental impact and theft by third parties.

Maximum storage volume:
- 2 voltage detectors for overhead lines incl. carrying case
- 2 telescopic insulating poles
- 2 railway earthing devices (set)

The storage cabinet is designed for fixing on walls or masts.

Material:
- Sheet steel, galvanized and paint coated

No.	Dimensions (mm)	DB drawing number
364 807 001	320 x 464 x 3000	3 Ebgw 04.42

Operating Attachment for Insulating Poles

Attachable Pruning Saws

Attachable pruning saws enable individual branches protruding into the danger zone of electrical equipment to be cut away. Special saw devices are attached to insulating poles made of fibreglass reinforced polyester tubing.

Matching insulating poles available on request.

No.	Version
360 488 000	0008

Attachable Pruning Shears

Attachable pruning shears enable individual branches protruding into the danger zone of electrical equipment to be cut away. Special cutting devices are attached to insulating poles made of fibreglass reinforced polyester tubing.

Matching insulating poles available on request.

No.	Version
360 488 000	0009

Cable Pulling Hook

This **cable pulling hook** is used for moving live superflexible cables, especially in mining applications.

No.	Nominal voltage U_n (kV)
362 000 001	30

Wall Holders

Flexible Wall Holders

Wall holders for space-saving storage and securing of KP-Test 5, single-pole phase comparators SPPC, operating and earthing poles.

Technical description:
- Holder made of impact-resistant plastic
- Clamp straps made of heavy-duty rubber
- Easily mounted on the guide bar provided, or directly on the wall

No.	for pole diameter (mm)
360 330 100	20 - 30
360 330 101	30 - 40

Guide Rails for Wall Holders

Aluminum guide rail.
Length = 900 mm

No.
360 330 102

Fastening Clips

Fastening clips for the attachment and space-saving storage of KP-Test 5, single-pole phase comparators (SPPC), and operating and earthing poles.

No.	for pole diameter (mm)
360 330 110	21 - 24
360 330 111	25 - 28
360 330 112	29 - 33
360 330 113	34 - 38
360 330 114	39 - 43

Carrying Case

Carrying case as support for pole diameters up to 38 mm

No.
360 330 115

Double Wall Holders

For storage of earthing and short-circuiting devices in substations. Bracket with two retaining clamps for operating and/or earthing poles.

No.	Weight (kg)
360 877 001	0.8

Wall Holders for Earthing and Short-Circuiting Devices

For storage of earthing and short-circuiting devices in substations.

No.	Weight (kg)
360 878 001	5.2

Wall Holders for Earthing and Short-Circuiting Devices

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

No.	Weight (kg)
616 157 157	0.7

Wall Holders for Fuses

For storing a set of HH fuses with fuse tongs. For wall mounting, Ø 9 mm drill holes, hole spacing 390 mm.

No.	Weight (kg)
364 007 001	1.7

Other Accessories

Potential Equalization Cable

The potential equalisation cable establishes an equal electrical potential between two busbars. Possibly occurring disturbances in the transmission of data for signalling systems during testing for the absence of voltage with a double-pole voltage tester are avoided thereby.

Technical Description:
- Magnetic connection
- Insulated high voltage cable

No.	Cable length (mm)
935 300 001	1500

Silicone Compound „DC 4“

For maintenance of all operating poles according to DIN VDE 0681-1/10.86, following the related operating instructions.

No.	Type	Weight (g)
002 922 922	tube	100

Earthing Spikes

Technical description:
T-iron earthing spike, hot-dip galvanized, (without earthing cable), with M12 connecting screw and two half-shells for winding the extension earthing cable.

No.	Length (mm) (mm)	Weight (kg)
360 115 115	1300	3.7

Suspension Hook

For non-protruding suspension of earthing wire.

No.	DB drawing number
360 453 453	3 Ebgw 01.11

Spare Parts for Voltage Detectors KP-Test 5

Lithium Batteries

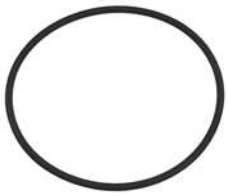
Can be used for all KP-Test 5 Series devices. Two batteries are required for each device.

No.
619 435 004

Sealing Rings for Indicator

Can be used for all KP-Test 5 Series devices.

No.
021 970 009



Threaded Rings for Indicator

Can be used for all KP-Test 5 Series devices.

No.
973 005 001

Forked Electrodes

Can be used for all KP-Test 5 Series devices from 1 to 36 kV nominal voltage with contact electrode extensions with M8 internal thread.

No.
973 210 001

Spare Parts for Earthing and Short-Circuiting Devices

Connecting Clusters

Connecting cluster consisting of upper and lower parts, for use on multi-pole earthing and short-circuiting devices. Compression cable lugs and heat-shrink tubes are not included.

No.	Connecting cluster (mm²)
622 680 004	25 - 35
622 685 005	50 - 70
622 681 006	95 - 150

Shrink-on Tubes

Available in various diameters only by the metre.

No.	For conductor cross-section (mm²)
000 071 010	25
000 071 001	35
000 071 002	50
000 071 003	70
000 071 004	95
000 071 006	120
000 071 008	150

Spare Parts for Earthing and Short-Circuiting Devices for Low Voltage Distribution Boards

Earthing Cartridges, Size 00

No.	Length (mm) (mm)
364 754 002	78

Earthing Cartridges, Sizes 1 - 3

No.	Length (mm) (mm)
364 754 001	150

Earthing Cartridges, Sizes 1 - 3 with Electromagnetic Interlocking

No.	Length (mm) (mm)
361 337 337	150

Screw Adapters E33 / M12

For DIAZED fuses

No.
623 688 001

Earthing Grips

For inserting earthing cartridges or the earthing and short-circuiting device for low-voltage distribution boards.

No.	Length (mm) (mm)	
364 778 002	350	For earthing cartridge with electromagnetic interlock
364 778 003	350	For earthing cartridges sizes 00 and 1 - 3

Carrying Cases

Carrying case for low voltage earthing and short-circuiting devices.

No.	
364 558 004	Case for one earthing and short-circuiting device
364 558 005	Case for two earthing and short-circuiting devices

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