

Produktkatalog
Product Catalogue



Binding Posts, Sockets, Lead-through Bolts

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Klemmen, berührungsgeschützt mit Isolierabdeckung
Binding Posts, Protected Against Electric-shock Hazard
With Insulating Cap

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Binding Posts

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Lead-through Bolts, Oiltight

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Durchführungsschraubklemmen
Lead-through Bolts

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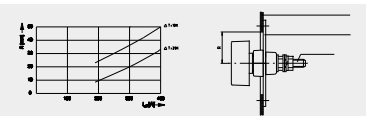
Buchsen
Sockets

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| Type | 011 | 012 | 001 | 002 | 004 | 003 | 004 | 003 | 004 | 003 | 004 | 003 | 004 | 003 | 004 |
|----------------------------------------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Bezugsstrom (Nennstrom max. 10 A) Rating current (long connection max. 10 A) | 32 A | 63 A | 32 A | 63 A | 100 A | 63 A | 100 A | 63 A | 100 A | 63 A | 100 A | 200 A | 315 A | 400 A | |
| Materialie (shell parts) | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Mikroing brass | Kupfer copper |
| Isolierende (shell parts) | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate |
| Temperaturfestigkeit (temperature stability) | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C | 115 °C |
| Ableitungsvermögen (dissipation) | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V | 1000 V |





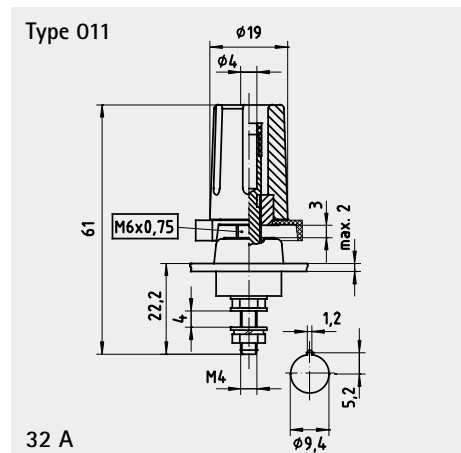
Klemmen, berührungsgeschützt mit Isolierabdeckung Binding Posts, Protected Against Electric-shock Hazard With Insulating Cap

D Der Berührungsschutz nach VDE 0100 Teil 410 und 723, VDE 0104, VDE 0110, VDE 0411 und VDE 0470 sowie IEC 664 und IEC 1010 ist sichergestellt:

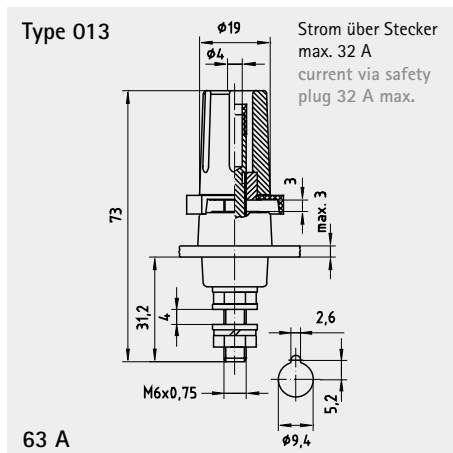
- bei Kabelschuhanschluss nach spannungsloser Verbindung bei Verwendung hierfür geeigneter Isolationsarmierter Kabelschuhe
- bei Steckanschluss über 4 mm Sicherheitsstecker mit feststehendem Kragen

E Protection against electric-shock hazards (according to VDE 0100, part 410 and 723, VDE 0104, VDE 0110, VDE 0411 and VDE 0470 as well as IEC 664 and IEC 1010) is guaranteed:

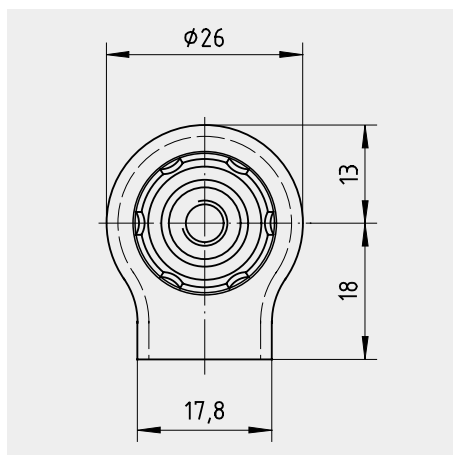
- with lug connection after connecting without voltage, if suitable insulation-armored lugs are used
- with connection via 4 mm safety plug with fixed collar



| | |
|--------------------------|------------|
| schwarz black | 8770110100 |
| rot red | 8770110200 |
| blau blue | 8770110300 |
| gelb-grün yellow-green | 8770110900 |



| | |
|--------------------------|------------|
| schwarz black | 8770130100 |
| rot red | 8770130200 |
| blau blue | 8770130300 |
| gelb-grün yellow-green | 8770130900 |



Berührungsschutz 360° drehbar.
Electrical shock protection, rotatable 360°.

Klemmen Binding Posts



Type 001, 003, 004



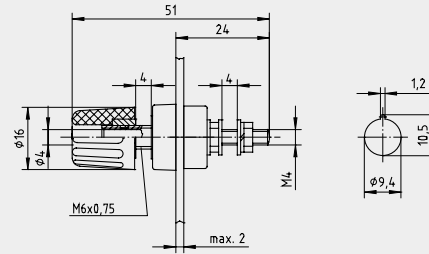
Type 063, 064



Type 154

Klemmen Binding Posts

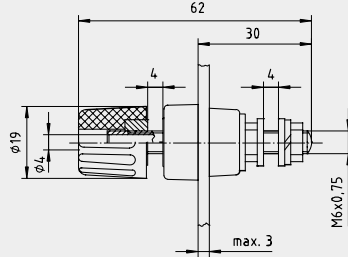
Type 001



32 A

| | |
|--------------------------|------------|
| schwarz black | 8770010100 |
| rot red | 8770010200 |
| blau blue | 8770010300 |
| gelb yellow | 8770010400 |
| grün green | 8770010500 |
| violett purple | 8770010600 |
| gelb-grün yellow-green | 8770010900 |

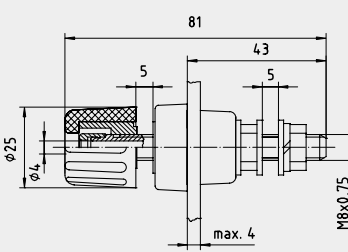
Type 003



63 A

| | |
|--------------------------|------------|
| schwarz black | 8770030100 |
| rot red | 8770030200 |
| blau blue | 8770030300 |
| gelb yellow | 8770030400 |
| grün green | 8770030500 |
| violett purple | 8770030600 |
| gelb-grün yellow-green | 8770030900 |

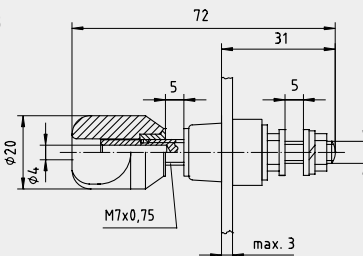
Type 004



100 A

| | |
|--------------------------|------------|
| schwarz black | 8770040100 |
| rot red | 8770040200 |
| blau blue | 8770040300 |
| gelb yellow | 8770040400 |
| grün green | 8770040500 |
| violett purple | 8770040600 |
| gelb-grün yellow-green | 8770040900 |

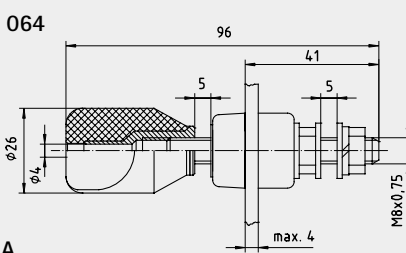
Type 063



63 A

| | |
|--------------------------|------------|
| schwarz black | 8770630100 |
| rot red | 8770630200 |
| blau blue | 8770630300 |
| gelb yellow | 8770630400 |
| grün green | 8770630500 |
| violett purple | 8770630600 |
| gelb-grün yellow-green | 8770630900 |

Type 064

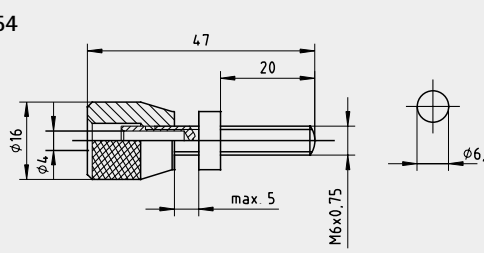


100 A

Flachknebel abschraubbar
flat clamp unscrewable

| | |
|--------------------------|------------|
| schwarz black | 8770640100 |
| rot red | 8770640200 |
| blau blue | 8770640300 |
| gelb yellow | 8770640400 |
| grün green | 8770640500 |
| violett purple | 8770640600 |
| gelb-grün yellow-green | 8770640900 |

Type 154



63 A

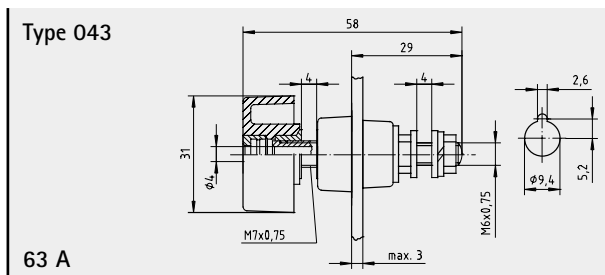
Erdungsklemme
grounding type

| | |
|-------------|------------|
| Type 154 Ms | 8771540000 |
|-------------|------------|

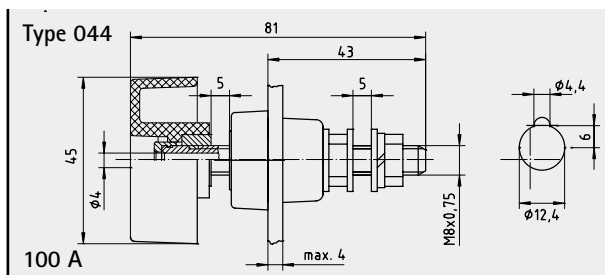


Klemmen mit Flachknebel Binding Posts With Flat Clamp

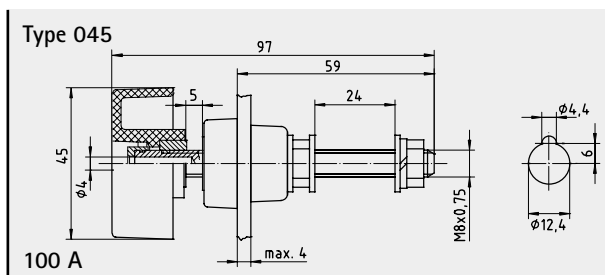
| | |
|--------------------------|------------|
| schwarz black | 8770430100 |
| rot red | 8770430200 |
| blau blue | 8770430300 |
| gelb yellow | 8770430400 |
| grün green | 8770430500 |
| violett purple | 8770430600 |
| gelb-grün yellow-green | 8770430900 |



| | |
|--------------------------|------------|
| schwarz black | 8770440100 |
| rot red | 8770440200 |
| blau blue | 8770440300 |
| gelb yellow | 8770440400 |
| grün green | 8770440500 |
| violett purple | 8770440600 |
| gelb-grün yellow-green | 8770440900 |

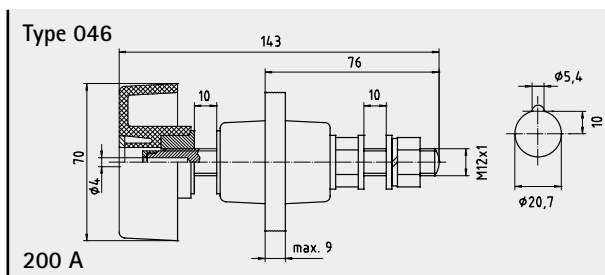


| | |
|--------------------------|------------|
| schwarz black | 8770450100 |
| rot red | 8770450200 |
| blau blue | 8770450300 |
| gelb yellow | 8770450400 |
| grün green | 8770450500 |
| violett purple | 8770450600 |
| gelb-grün yellow-green | 8770450900 |



Flachknebel abschraubbar
flat clamp unscrewable

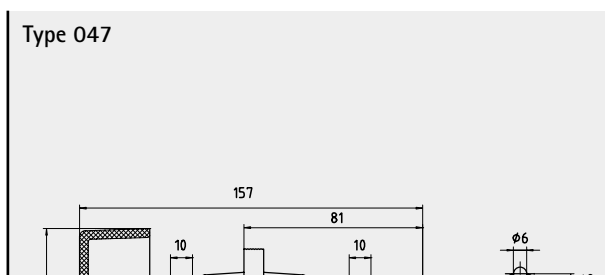
| | |
|--------------------------|------------|
| schwarz black | 8770460100 |
| rot red | 8770460200 |
| blau blue | 8770460300 |
| gelb yellow | 8770460400 |
| grün green | 8770460500 |
| violett purple | 8770460600 |
| gelb-grün yellow-green | 8770460900 |



Flachknebel abschraubbar
flat clamp unscrewable

Bolzen Messing | bolt brass
Ms 315 A

| | |
|--------------------------|------------|
| schwarz black | 8760470100 |
| rot red | 8760470200 |
| blau blue | 8760470300 |
| gelb yellow | 8760470400 |
| grün green | 8760470500 |
| violett purple | 8760470600 |
| gelb-grün yellow-green | 8760470900 |



Bolzen Kupfer | bolt copper
Cu¹⁾ 400 A

| | |
|--------------------------|------------|
| schwarz black | 8770470100 |
| rot red | 8770470200 |
| blau blue | 8770470300 |
| gelb yellow | 8770470400 |
| grün green | 8770470500 |
| violett purple | 8770470600 |
| gelb-grün yellow-green | 8770470900 |



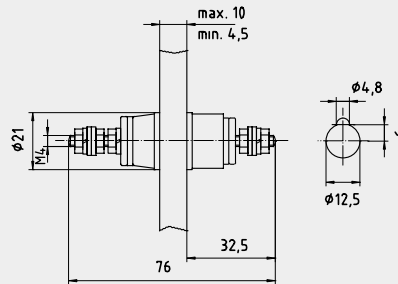
¹⁾ Scheiben und Muttern aus Messing | nuts and washers made of brass



Öldichte Durchführungsschraubklemmen Lead-through Bolts, Oiltight



Type 421

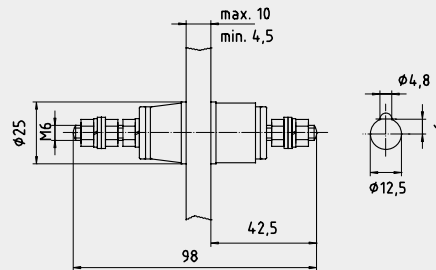


16 A

schwarz | black
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8774210100
Perbunan | Buna variety 8774210110

Type 423

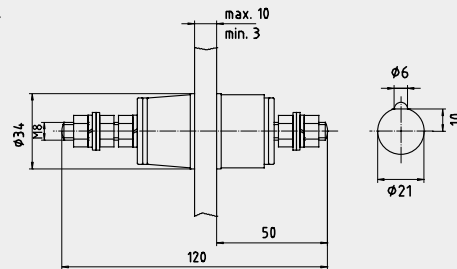


63 A

schwarz | black
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8774230100
Perbunan | Buna variety 8774230110

Type 424

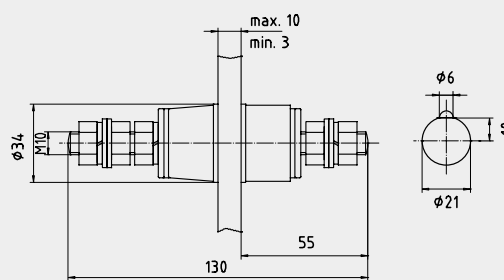


100 A

schwarz | black
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8774240100
Perbunan | Buna variety 8774240110

Type 426



Ms = 160 A
Cu¹⁾ = 200 A

Ms = Messing | brass
Cu¹⁾ = Kupfer | copper

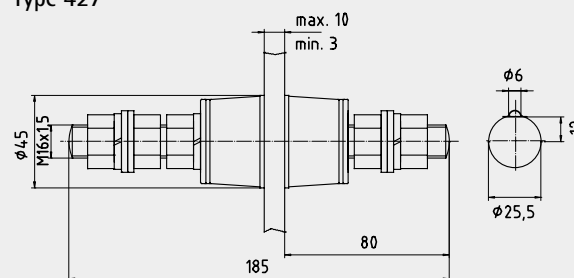
schwarz | black (MS)
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8764260100
Perbunan | Buna variety 8764260110

schwarz | black (Cu)
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8774260100
Perbunan | Buna variety 8774260110

Type 427



Ms = 315 A
Cu¹⁾ = 400 A

Ms = Messing | brass
Cu¹⁾ = Kupfer | copper

schwarz | black (MS)
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8764270100
Perbunan | Buna variety 8764270110

schwarz | black (Cu)
Dichtungsringe | gasket rings
SIL C 4400

grün | green 8774270100
Perbunan | Buna variety 8774270110

¹⁾ Scheiben und Muttern aus Messing | nuts and washers made of brass

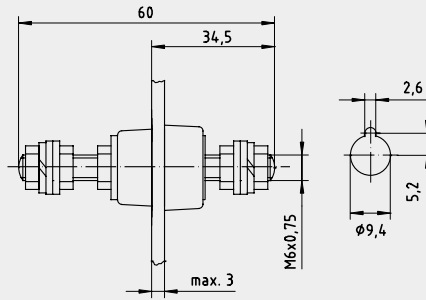


Durchführungsschraubklemmen Lead-through Bolts

schwarz | black
rot | red
blau | blue
gelb | yellow
grün | green
violett | purple

8775230100
8775230200
8775230300
8775230400
8775230500
8775230600

Type 523

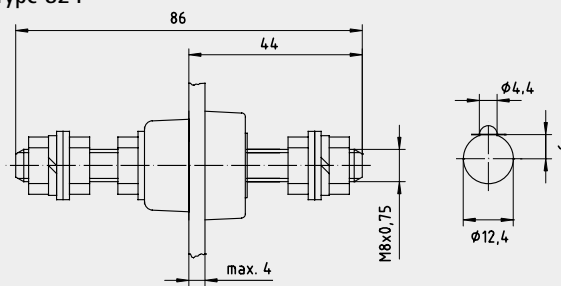


63 A

schwarz | black
rot | red
blau | blue
gelb | yellow
grün | green
violett | purple

8775240100
8775240200
8775240300
8775240400
8775240500
8775240600

Type 524

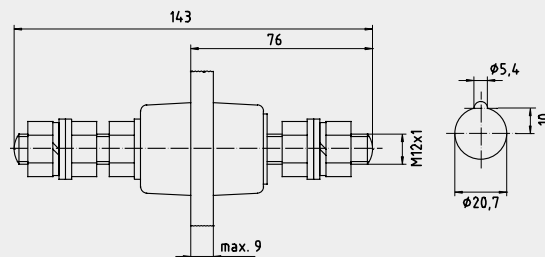


100 A

schwarz | black
rot | red
blau | blue
gelb | yellow
grün | green
violett | purple

8775260100
8775260200
8775260300
8775260400
8775260500
8775260600

Type 526



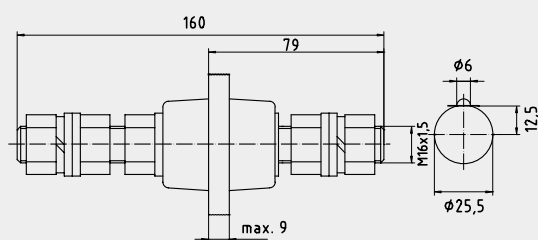
200 A

Ms = Messing | brass

schwarz | black
rot | red
blau | blue
gelb | yellow
grün | green
violett | purple

8765270100
8765270200
8765270300
8765270400
8765270500
8765270600

Type 527



Ms = 315 A
Cu¹⁾ = 400 A

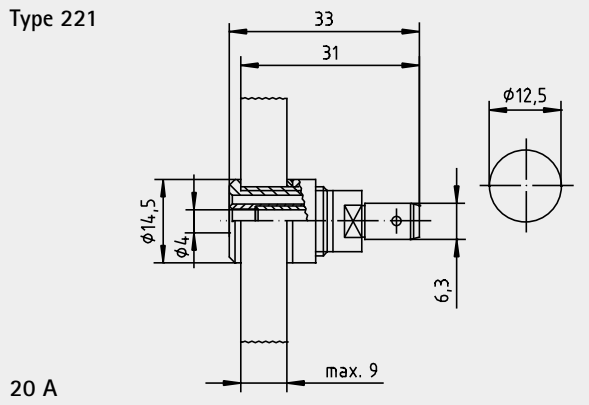


Klemmen, Buchsen, Durchführungen | Binding Posts, Sockets, Lead-through Bolts

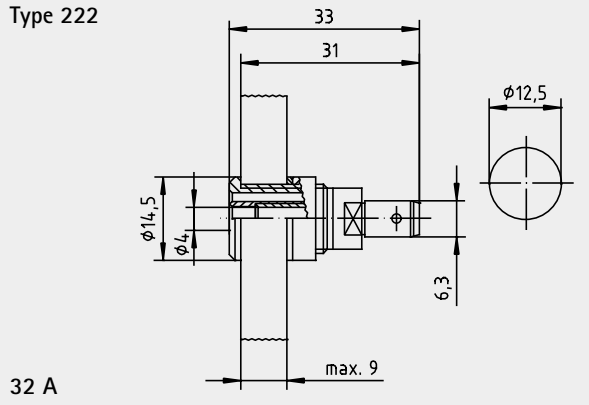
¹⁾ Scheiben und Muttern aus Messing | nuts and washers made of brass



Buchsen
Sockets



- schwarz | black 8772220100
- rot | red 87722210200
- blau | blue 87722210300
- gelb-grün | yellow-green 87722210900



- schwarz | black 8772220100
- rot | red 8772220200
- blau | blue 8772220300
- gelb-grün | yellow-green 8772220900

| | Type 221 | Type 222 |
|-----------------------------------------------------------------------------|----------------------------------------|----------------------------------------|
| Bemessungsstrom design current | 20 A | 32 A |
| Metallteile metal parts | Messing, verzinkt brass, tin-plated | Messing, verzinkt brass, tin-plated |
| Isolierteile insulated parts | Polyamid polyamide | Polyamid polyamide |
| Temperaturfestigkeit temperature stability | 80 °C | 80 °C |
| Arbeitsspannung working voltage | 1600 V | 1600 V |
| Isolationskoordination insulation co-ordination | 6 kV/1 | 6 kV/1 |
| Bemessungs-Stoßspannung design impact potential | 6 kV | 6 kV |
| Prüfspannung testing voltage | 3200 V | 3200 V |
| max. leitende Gehäusewandstärke (SG) conducting wall thickness max. (SG) | 10 mm | 10 mm |
| Kriechstrecke (SK max.) creep distance (SK max.) | 18.8 mm | 18.8 mm |
| Isoliermaterial insulating material | II | II |
| Isolationswiderstand insulation resistance | >10 ⁹ Ω | >10 ⁹ Ω |
| Durchgangswiderstand pass-through resistance | 0.8 m Ω | 0.8 m Ω |
| Anzugsdrehmoment starting torque | | 1.2 Nm |

Stahlblech-Gehäuseerwärmung durch Wirbelströme Heating-Up Of The Sheet Steel Enclosure By Eddy Currents

Im Bereich wechselstromdurchflossener Klemmen, Buchsen oder Durchführungen tritt eine radiale örtliche Erwärmung des Stahlblechgehäuses durch Wirbelströme auf.

In Abb. 9.1 ist die Abhängigkeit des Blechausschnittes von der Stromstärke dargestellt.

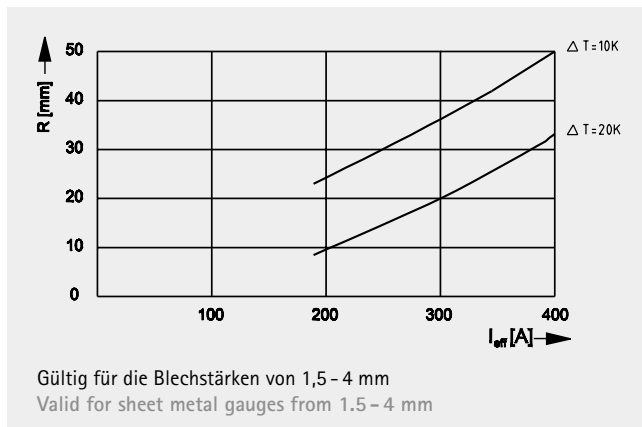


Abb. 9.1 Parameter: Temperaturzunahme im Bereich der Klemme bei Stahlblechgehäuse.

fig. 9.1 Parameter: Temperature increase around the binding post by use of a sheet steel enclosure.

Beispiel:

Stromstärke: I_{eff} : 400 A

Im Bereich der Klemmen werden 10 K zugelassen, deshalb muss laut Abb. 9.1 ein Klemmenradius von 50 mm aus antimagnetischem Werkstoff bestehen.

Abb 9.2 zeigt einen Lösungsvorschlag.

Kriechstrecken

Die örtlich zulässige Arbeitsspannung ist unter Berücksichtigung der Isoliermaterialien und des vorliegenden Verschmutzungsgrades gemäß VDE 0110 Teil 1, IED 1010 Teil 1, bzw. IEC Report 664 festzulegen.

Die einzusetzende Kriechstrecke beträgt

$$S_K = S_{K_{\text{max}}} - S_G$$

S_K = Kriechstrecke mit leitendem Gehäuse

$S_{K_{\text{max}}}$ = Kriechstrecke ohne Gehäuse

S_G = Gehäusewandstrecke in mm

Unsere Klemmen werden teilmontiert geliefert, d.h. nur die Teile 1-3 sind fertig montiert.

Bolzen 1 mit Isoliermutter 2 und verdornter Flanschmutter 3

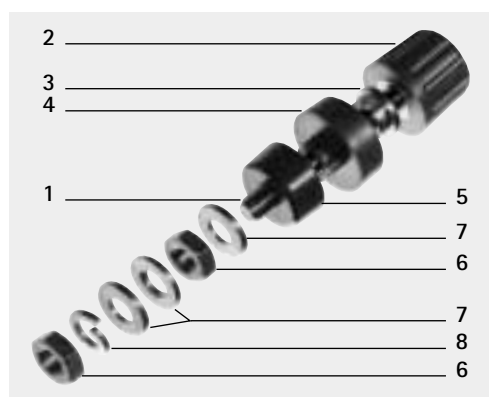
Isolierbuchse 4 mit Verdrehungsschutz

Isolierring 5

Sechskantennuttern 6

Unterlegscheiben 7

Federring 8



Our binding posts will be delivered partly assembled, i.e. the parts 1 to 3 only are assembled.

Bolt 1 with insulating nut 2 and hinged flange nut 3

Insulating socket 4, torsion protected

Insulating ring 5

Nuts 6

Washers 7

Spring washer 8

E

The AC flowing through binding posts, sockets and feed-throughs, will locally lead to a radial warming up of the sheet steel enclosure caused by eddy currents.

Fig. 9.1 shows the sheet cut-out dependent on the current intensity.

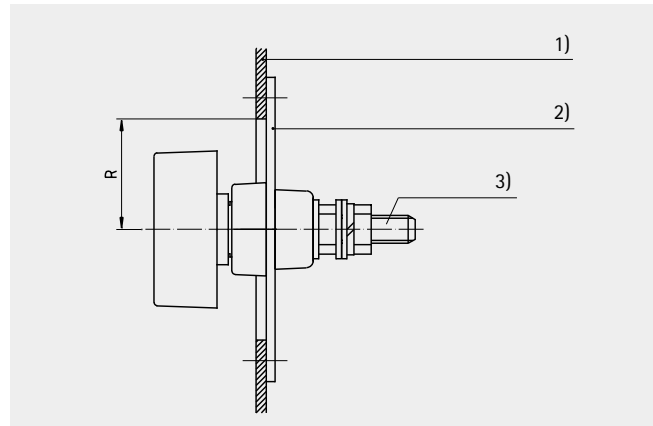


Abb. 9.2 Lösungsvorschlag:

- 1) Stahlblechgehäuse
- 2) antimagnetischer Werkstoff
- 3) Klemme

fig. 9.2 Proposed solution:

- 1) sheet steel enclosure
- 2) antimagnetic material
- 3) binding post

Example:

Current rating: I_{eff} : 400 A

Around the binding posts 10 K are permissible, therefore, a radius of 50 mm around the binding post has to be out of antimagnetic materials – see fig. 9.1.

A solution is suggested acc. to fig. 9.2.

Creepage

The locally permissible working voltage has to be determined acc. to VDE 0110 part 1, IEC 1010 part 1, resp. IEC report 664, taking into consideration the insulating materials and the degree of pollution.

The creepage to be considered is

$$S_K = S_{K_{\text{max}}} - S_G$$

S_K = creepage with conducting enclosure

$S_{K_{\text{max}}}$ = creepage without enclosure

S_G = wall thickness of enclosure in mm

| Type | 011 | 013 | 001 | 003 | 004 | 063 | 064 | 043 | 044/045 | 046 | 047 | 047 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------|--------------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Bemessungsstrom (Steckverbindung max. 16 A) design current (plug connection max. 16 A) | 32 A | 63 A über Stecker max. 32 A via safety plug max. 32 A | 32 A | 63 A | 100 A | 63 A | 100 A | 63 A | 100 A | 200 A | 315 A | 400 A |
| Metallteile metal parts | Messing brass | Messing brass | Messing brass | | | Messing brass | | Messing brass | | | Kupfer copper | |
| Isolierteile insulated parts | Polycarbonat polycarbonate | Polycarbonat polycarbonate | Polycarbonat polycarbonate | | | Polycarbonat polycarbonate | | | | | | |
| Temperaturfestigkeit temperature stability | 115 °C | 115 °C | 115 °C | | | 115 °C | | 115 °C | | | | |
| Arbeitsspannung working voltage | 1000 V | 1000 V | 1000 V | | | 1000 V | | 1000 V | | | | |
| Isolationskoordination insulation co-ordination | 4 kV / 1 | 4 kV / 1 | 4 kV / 1 | | | 4 kV / 1 | | 4 kV / 1 | | | | |
| Bemessungs-Stoßspannung design impact potential | 4 kV | 4 kV | 4 kV | | | 4 kV | | 4 kV | | | | |
| Prüfspannung testing voltage | 2200 V | 2200 V | 2200 V | | | 2200 V | | 2200 V | | | | |
| max. leitende Gehäuse- wandstärke (SG) conducting wall thickness max. (SG) | 2 mm | 3 mm | 2 mm | 3 mm | 4 mm | 3 mm | 4 mm | 3 mm | 4 mm | 9 mm | 9 mm | 9 mm |
| Kriechstrecke (SK max.) creep distance (SK max.) | 5.3 mm | 6.3 mm | 5.3 mm | 6.3 mm | 7.5 mm | 6.3 mm | 7.8 mm | 6.3 mm | 7.8 mm | 18 mm | 18 mm | 18 mm |
| Isoliermaterial insulating material | III a | III a | III a | | | III a | | III a | | | | |
| Isolationswiderstand insulation resistance | >10 ¹⁰ Ω | >10 ¹⁰ Ω | >10 ¹⁰ Ω | | | >10 ¹⁰ Ω | | >10 ¹⁰ Ω | | | | |
| Durchgangswiderstand (SK max.) a) bei Kabelschuhverbindung b) bei Steckverbindung pass-through resistance (SK max.) a) with lug connection b) with plug connection | a) 0.5 m Ω b) 1.0 m Ω | a) 0.4 m Ω b) 0.8 m Ω | a) 0.2 m Ω b) 0.5 m Ω | a) 0.15 m Ω b) 0.4 m Ω | a) 0.1 m Ω b) 0.4 m Ω | a) 0.2 m Ω b) 0.4 m Ω | a) 0.15 m Ω b) 0.4 m Ω | a) 0.2 m Ω b) 0.4 m Ω | a) 0.15 m Ω b) 0.4 m Ω | a) 0.15 m Ω b) 0.3 m Ω | a) 0.1 m Ω b) 0.15 m Ω | a) 0.1 m Ω b) 0.15 m Ω |
| Bohrung für Sicherheitsstecker Ø mm borehole for safety plug Ø mm | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Anzugsdrehmoment starting torque | 1.2 Nm | 3 Nm | 1.2 Nm | 3 Nm | 6 Nm | 3 Nm | 6 Nm | 3 Nm | 6 Nm | 15.5 Nm | 30 Nm | 30 Nm |

D

Type 044 und Type 064 auch für 125 A lieferbar. Diese Ausführung besteht aus glasfaserverstärktem Polyamid für hohe Temperaturbeständigkeit (160 °C) in den Farben Schwarz und Rot.

E

Types 044 and 064 also available for 125 A. For reasons of high temperature stability (160 °C) this type consists of polyamide, reinforced by glass fiber in colours black and red.

| Type | 421 | 423 | 424 | 426 | | 427 | | 523 | 524 | 526 | 527 | |
|-------------------------------------------------------------------------------------|-------------------------------|------------|------------|------------------|------------|------------------|------------------|-------------------------------|-------------|-------------|------------------|------------------|
| Bemessungsstrom design current | 16 A | 63 A | 100 A | 160 A | 200 A | 315 A | 400 A | 63 A | 100 A | 200 A | 315 A | 400 A |
| Metallteile metal parts | Messing brass | | | Kupfer copper | | Messing brass | Kupfer copper | Messing brass | | | Messing brass | Kupfer copper |
| Isolierteile insulated parts | Pressmasse molded bakelite | | | | | | | Polycarbonat polycarbonate | | | | |
| Temperaturfestigkeit temperature stability | 100 °C | | | | | | | 115 °C | | | | |
| Arbeitsspannung working voltage | 1000 V | | | | | | | 1000 V | | | | |
| Isolationskoordination insulation co-ordination | 5 kV / 1 | | | | | | | 4 kV / 1 | | | | |
| Bemessungs-Stoßspannung design impact potential | 5 kV | | | | | | | 4 kV | | | | |
| Prüfspannung testing voltage | 3200 V | | | | | | | 2200 V | | | | |
| max. leitende Gehäuse- wandstärke (SG) conducting wall thickness max. (SG) | 10 mm | | | | | | | 3 mm | 4 mm | 9 mm | 9 mm | 9 mm |
| Kriechstrecke (SK max.) creep distance (SK max.) | 16.5 mm | 15.5 mm | 17.5 mm | 17.0 mm | 17.0 mm | 18.0 mm | 18.0 mm | 6.3 mm | 7.8 mm | 18.0 mm | 18.0 mm | 18.0 mm |
| Isoliermaterial insulating material | II | | | | | | | IIIa | | | | |
| Isolationswiderstand insulation resistance | >10 ⁹ Ω | | | | | | | >10 ⁹ Ω | | | | |
| Durchgangswiderstand pass-through resistance | 0.7 m Ω | 0.5 m Ω | 0.3 m Ω | 0.2 m Ω | 0.2 m Ω | 0.2 m Ω | 0.12 m Ω | 0.2 m Ω | 0.15 m Ω | 0.15 m Ω | 0.1 m Ω | 0.1 m Ω |
| Anzugsdrehmoment starting torque | 1.2 Nm | 3 Nm | 6 Nm | 10 Nm | 10 Nm | 30 Nm | 30 Nm | 3 Nm | 6 Nm | 15.5 Nm | 30 Nm | 30 Nm |

- D**
- Dichtungsringe wahlweise lieferbar aus asbestfreiem Hochdruck-Dichtungsmaterial (SIL C 4400 grün) für glatte Oberflächen oder aus Nitrilbutadienkautschuk (Perbunan) für raue Oberflächen.
 - Beim Einbau ist die fest mit dem Bolzen verbundene Flansch-scheibe innerhalb des Gehäuses vorzusehen.
 - Generell Durchführung zunächst mit der unteren Mutter arretieren, dann Abstand lassen und elektrischen Anschluss zwischen die beiden verbleibenden Muttern legen.

- E**
- Gasket rings are optionally available made of high-pressure sealing material (SIL C 4400, green), free of asbestos, for smooth surfaces, or made of nitril butadiene caoutchouc (Perbunan) for rough surfaces.
 - For proper installation, the flange washer fixed to the bolt has to be located inside the enclosure.
 - In general, first lock the lead-through bolt with the lower nut; leave a space and than make the electrical connection between the two remaining nuts.