Product Catalogue

3

CABLE CONNECTION TECHNIQUE

Single Connectors

ARCUS ELEKTROTECHNIK
ALOIS SCHIFFMANN GMBH

Availability by phone:

For queries concerning products and delivery time, and to place an order by phone, we are available as follows:

+49 (0)89/436 04-0

Monday - Thursday

8:00 am-12:00 noon and 12:30 pm-16:00 pm

Friday:

8:00 am-12:00 noon

Information concerning this catalogue:

 All dimensions and pictures are not binding. We permanently strive to improve products and reserve the right to change design, dimensions or material.

Contents

List of Type Numbers

Why Single Connectors?

It is daily business to connect a mains cable to a branch cable, especially in low voltage cable networks, for instance for a house service connection.

In these cases the mains cable will be stripped at the installation point and the conductor insulation will be removed. Then branch conductors are connected with simple uninsulated tap-off clamps.

Live installation of course is impossible under such conditions, so the mains cable and all connected consumers are without electric energy until the job is done.

To minimise disturbance of consumers and to increase working safety for the electrician, insulated single connectors were developed, to be installed on insulated conductors.

Insulation-piercing tap-off clamps are provided with insulation-piercing teeth, cutting edges or screws which spare removal of insulation from conductors.

Insulation-piercing tap-off clamps enable live installation when used with personal protection equipment and insulated tools, under observation of corresponding regulations.

Additional benefits:

- Required installation time is reduced,
- Safety of the jointer is increased,
- Impairment of cable and thus danger of damage (ingress of moisture, breaking of strands) is reduced because the insulation as conductor protection remains nearly intact.

Design characteristics:

ARCUS Direct Terminals are available in two designs:

1. 

As flat direct terminal with top part and bottom part for use in service boxes, cable distribution cabinets and substation terminal blocks (see page 17).

2. 

As V-type direct terminal for connection to circuit bars with V-shaped bar ends (see page 18).

Tin-plated direct terminals are suitable for connection of stranded copper conductors and solid or stranded aluminium conductors.

All parts of the connection barrel in contact with conductors are grooved.

Recommended torque:

Whilst pressure force (F) of flat direct terminals is bisected due to additional support of top clamp part, pressure force (F) of screws in V-shaped direct terminals will directly merge into contact force (FK).

Please take our recommended torques for flat direct terminals and V-type direct terminals from the following table.

Type	Partitioning of pressure	Effective contact pressure on conductor	Recommended torque
		F_K ~ 1/2 F	40 Nm (Screw M12)
		F_K = F	25 Nm

Testing:

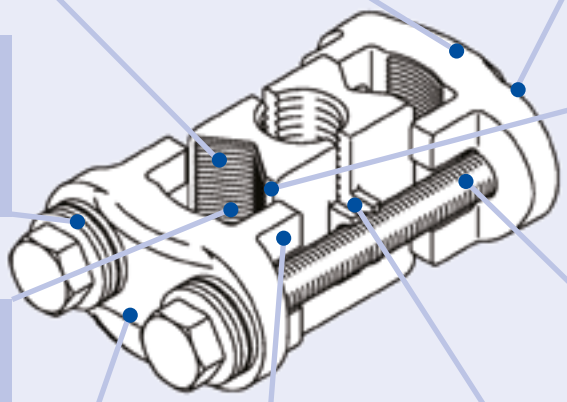
ARCUS Direct Terminals are tested to DIN VDE 0220 part 1.

Technical Information Transformer Clamps and Connection Terminals

Universal barrel shape
for round and sectorial 3- and 4-core cables of 120-300 mm².

Cross bracings
prevent bending of terminal top when tightened excessively.

Force fitted hexagons
secure nuts reliably against coming loose and supersede counterholding during installation.
(see picture 1, 3 and 4).



Conical spring washers
for compensation of creep deformation of aluminium conductors.

Lateral stops
save insertion of a dummy conductor into the second connection barrel when only one conductor is connected.

Serrated connection areas
improve contact transition between terminal and conductor.

Long elongation screws
provide stable contact conditions and a continuous current resistant connection by elastic elongation.

Tin-plated surfaces
allow usage on aluminium conductors as well as on copper conductors.

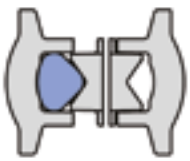
Lateral noses
prevent angular traction of top parts and escape of strands.

Longitudinal-slotted connector barrel
makes separate connection of transformer bolt and conductor unnecessary.

→ ***Overview of clamps on page 19***

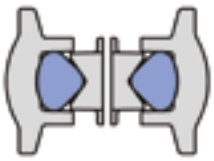
Number of conductor connections:

1 conductor



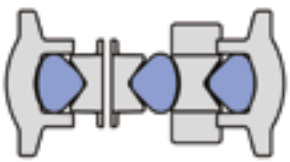
Pict. 1

2 conductor



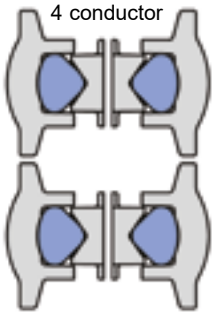
Pict. 2

3 conductor



Pict. 3

4 conductor



Pict. 4

T-Type Tap-Off Clamps

109 186

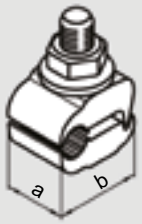
198 085

109 042

198 084

109 043

109 186



- Due to minimum dimensions specially suitable for cast resin joints.
- Suitable for solid and stranded cable conductors.
- No evasion of mains conductor by overlapping grippers.
- Also suitable for use as neutral connection clamp.
- Insulation caps fitting to branch terminals can be found on page 9.

Material	
Connector	Copper alloy
Screws	Galvanised steel
Conical spring washer	Galvanised spring steel

Cross Section [mm²]		Connector						Packing Unit	Type Number
		Dimensions [mm]		Screw					
Mains	Branch	a	b	KS DIN 475	Thread DIN 13	Number	Grade DIN 267	Pieces	
Ø 8	1.5-2.5 RE	18	26	13	M8[1)]	1	8.8	50	109 186[2)]
6 RE-70	6 RE-35	18	32	13	M8	1	8.8	50	109 042
		18	32	13	M8[1)]	1	8.8	100	198 085
50-150	16-50 2x 16	20	39	13	M8	1	8.8	50	109 043
		20	39	13	M8[1)]	1	8.8	50	198 084

Explanation cross sections: R=round, E=solid
1) Stud
2) Galvanised

Insulation Covers for Parallel Tap-Off Clamps

- Protection of exposed terminals against accidental touch.
- Simple installation by pressing.
- Simple disassembly of sealed cable terminals with insulation cover.

Material	
Black caps	Soft rubber

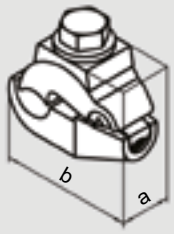
For Tap-off Clamp		Type Number
Type Number	Page	
109 042	8	109 050
109 043	8	109 051

109 050

109 051

109 001

109 003



109 004

109 120

- Advantageous storage due to universal usage with large cross-sectional ranges.
- Stable contact behaviour, especially on aluminium conductors, due to compensation of creepage by means of spring elements.
- Pivoting pressure piece in top connector part to secure uniform partitioning of contact pressure, independent from cross sectional proportion of conductors.
- Finely serrated connection channels for improved contact.
- Advantageous division of space with T-branches, especially in house service joints.
- Also suitable for use as neutral connection clamp.
- Insulation caps for branch terminals can be found on page 11.
- Installation tools can be found on page 21.

Material	
Connector	Copper alloy
Screws	Galvanised steel
Spring elements and conical spring washers	Galvanised spring steel

Cross Section [mm²]		Connector								Packing Unit	Type Number
		Dimensions [mm]		Screw							
Mains	Branch	a	b	Outer Hexagon	Inner Hexagon	KS DIN 475	Thread DIN 13	Number	Grade DIN 267	Pieces	
6-50	4-25	15	31	•		10	M 6	1	8.8	100	109 001
		15	31		•	5	M 6	1	8.8	100	109 169
50-120	6-50	18	44	•		13	M 8	1	8.8	50	109 003
		18	44	•		13	M 8	1	A2-70	50	198 395
		18	44		•	6	M 8	1	8.8	50	109 170
		33	44	•		13	M 8	2	8.8	30	109 004
70-150	50-70	42	57	•		13	M 8	2	8.8	15	109 006
95-150	95-150	47	62	•		13	M 8	2	8.8	12	109 120
120-185	6-50	18	48	•		13	M 8	1	8.8	50	109 007
		18	48		•	6	M 8	1	8.8	50	109 171

Insulation Covers for T-Type Tap-Off Clamps

- Protection of exposed terminals against accidental touch.
- Transparent caps enable visual inspection of enclosed connector.
- Simple installation by pressing.
- Simple disassembly of sealed cable terminals with insulation cover.

Material	
Transparent caps	PVC

For Tap-Off Clamp		Type Number
Type Number	Page	
109 001	10	109 027
109 003	10	109 028
109 004	10	109 118
109 006	10	109 119
109 169	10	109 172
109 170	10	109 173
109 171	10	109 174

109 027

109 028

109 118

109 119

109 172

109 173

109 174

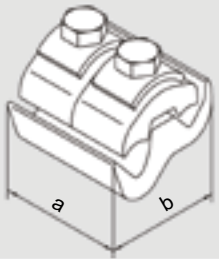
Parallel Tap-Off Clamps for Sectorial Mains Conductors

- Advantageous storage due to universal usage with large cross-sectional ranges.
- Due to minimum dimensions specially suitable for cast resin joints.
- Suitable for solid and stranded cable conductors.
- No rounding of conductor, connection channels suitable for round and sectorial conductors.
- Stable contact behaviour, especially on aluminium conductors, due to compensation of creepage by means of spring elements.
- Finely serrated connection channels for improved contact.
- Also suitable for use as neutral connection clamp.
- Mutual connection of two branches.

109 060

109 061

109 081



109 063

Material	
Connector	Copper alloy, uncoated or tin-plated
Screw	Galvanised steel
Spring elements and conical spring washers	Galvanised spring steel

Cross Section [mm²]		Connector								Packing Unit	Type Number
				Dimensions [mm]		Screw					
Mains	Branch	Uncoated	Tin-plated	a	b	KS DIN 475	Thread DIN 13	Number	Grade DIN 267	Pieces	
35-70 SE 25-50 SM	6-35 RE 6-35 RM	•		16	28	11	M 7	1	8.8	100	109 060
			•	16	28	11	M 7	1	8.8	100	109 150
70-150 SE 50-120 SM	16-70 RE 16-70 RM	•		20	40	13	M 8	1	8.8	50	109 061
			•	20	40	13	M 8	1	8.8	50	109 154
		•		40	40	13	M 8	2	8.8	25	109 063
			•	40	40	13	M 8	2	8.8	25	109 155
70-185 SE 50-150 SM	16-70 RM 16-95 SE 95 SM	•		23	44	13	M 8	1	8.8	20	109 080
			•	23	44	13	M 8	1	8.8	20	109 156
70-185 SE 50-150 SM	16-120 RM 150 SE 120 SM	•		47	44	13	M 8	2	8.8	15	109 081
			•	47	44	13	M 8	2	8.8	15	109 157

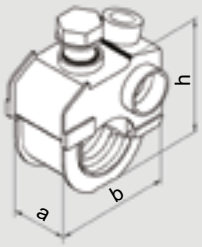
Parallel Insulation-Piercing Tap-Off Clamps, Insulated

109 214

198 388

198 414

109 214



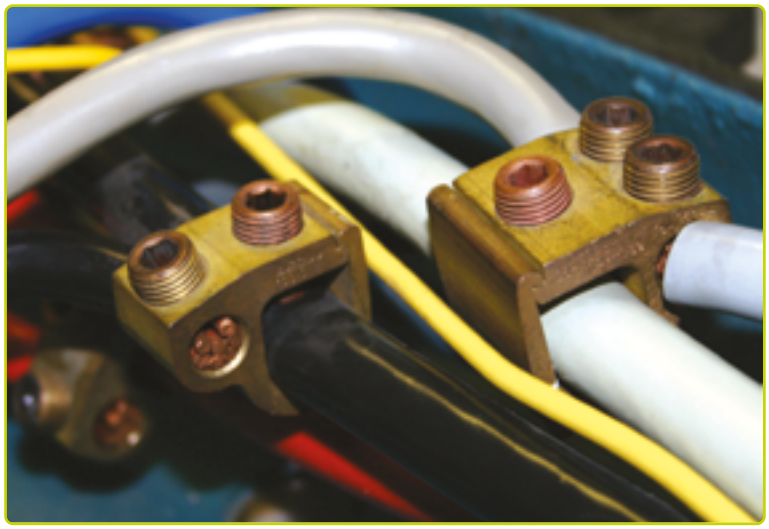
Material	
Contact screw (mains)	Electrolytic copper, tin-plated
Contact screw (branch)	Galvanised steel
Screw head (109 214, 198 408, 198 414)	Plastic glassfibre-reinforced
Insulated housing	Plastic glassfibre-reinforced
Connector	Copper alloy, tin-plated

- Suitable for live installation without stripping of mains conductor.
- Separate installation of branch conductor from mains conductor to prevent shifting of live mains conductor during installation.
- No evasion of mains conductor as connection channel is closed with a slide.
- Reliable contact by piercing of main conductor insulation with insulation-piercing screws and cross cuttings.
- Strengthening of material and increased stability of up to 50% in contact area.
- Advantageous storage due to universal usage with large cross-sectional ranges.
- Simple installation with fully-insulated T-box wrench. (see pages 21).

Cross Section [mm²]		Connector									Packing Unit	Type Number
		Dimensions [mm]			Contact Screw							
Mains	Branch	a	b	h	Outer Hexagon	Inner Hexagon	KS DIN 475	Thread DIN 13	Number	Torque [Nm]	Pieces	
16 RE-150 SE	2.5-50 RM	25	45	45	•		13	M 10 x 1	1	14	10	109 214
						•	5	M 10	1[1)]	---		
16 RE-150 SE	2.5-70 SE	25	45	45		•	5	M 10 x 1	1	15-20	10	198 388
						•	5	M 10	1[1)]	---		
16 RE-150 SM	2.5-50 RM	25	45	50	•		13	M 10 x 1	1	14	10	198 408
						•	5	M 10	1[1)]	---		
16 RE-150 SE	35RE-95 RM	25	45	50	•		13	M 10 x 1	1	14	10	198 414[2)]
						•	5	M 10	1[1)]	---		

Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded
1) Contact screw (branch)
2) This single connector is to be used only on neutral conductors or ground conductors

Parallel Insulation-Piercing Tap-Off Clamps



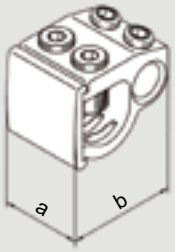
- Suitable for live installation without stripping of mains conductor.
- Separate installation of branch conductor from mains conductor to prevent shifting of live mains conductor during installation.
- No evasion of mains conductor as connection channel is closed with a slide.
- Reliable contact by piercing of main conductor insulation with insulation-piercing screws and cross cuttings.
- Strengthening of material and increased stability of up to 50% in contact area.
- Advantageous storage due to universal usage with large cross-sectional ranges.
- Simple installation with fully-insulated T-box wrench (see page 21).

109 094

109 097

109 098

109 098



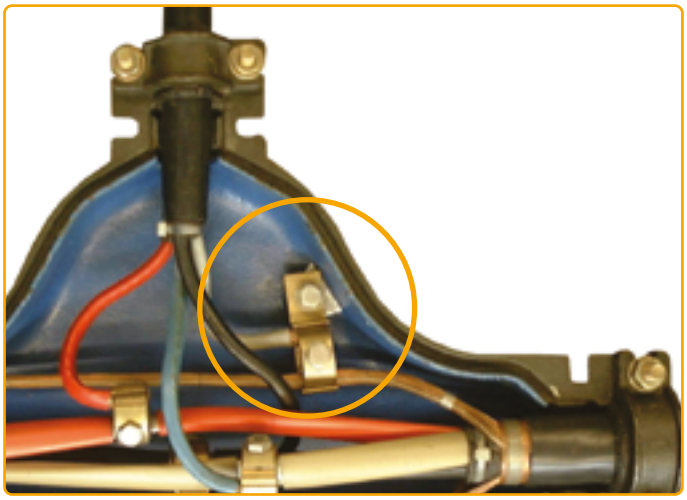
Material	
Connector Slide	Copper alloy, uncoated or tin-plated
Insulation piercing screw	Copper alloy, uncoated or tin-plated
Contact screw (branch)	Galvanised steel

Cross Section [mm²]		Connector								Packing Unit	Type Number
				Dimensions [mm]		Contact Screw					
Mains	Branch	Uncoated	Tin-plated	a	b	KS DIN 475	Thread DIN 13	Number	Torque [Nm]	Pieces	
25-70 RM 50-70 SE 35-50 SM	2.5-16 RM / 25 RE	•		16	32	5	M 10 x 1	1	15	30	198 025
						5	M 10	1[1)]	-		
25-70 RM 50-70 SE 35-50 SM	6-150		•	27	43	5	M 10 x 1	1	15	20	109 158
						5	M 10	2[1)]	-		
25-70 RM 50-70 SE 35-50 SM	16-35 RM / 50 RE	•		16	32	5	M 10 x 1	1	15	30	109 094
						5	M 10	1[1)]	-		
			•	16	32	5	M 10 x 1	1	15	30	198 119
						5	M 10	1[1)]	-		
		•		27	32	5	M 10 x 1	1	15	20	109 095
						5	M 10	2[1)]	-		
25-70 RM 50-70 SE 35-50 SM	16-50 RM / 70 RE		•	16	32	5	M 10 x 1	1	15	30	198 224
						5	M 10	1[1)]	-		
70-150 RM 70-150 SE 70-120 SM	2.5-16 RM / 25 RE	•		18	43	5	M 12 x 1	1	20	30	198 026
						5	M 10	1[1)]	-		
70-150 RM 70-150 SE 70-120 SM	6-150		•	32	52	5	M 12 x 1	2	20	20	109 159
						5	M 10	2[1)]	-		
70-150 RM 70-150 SE 70-120 SM	16-35 RM / 50 RE	•		18	43	5	M 12 x 1	1	20	30	109 096
						5	M 10	1[1)]	-		
		•		27	43	5	M 12 x 1	1	20	20	109 097
						5	M 10	2[1)]	-		
70-150 RM 70-150 SE 70-120 SM	16-50 RM / 70 RE	•		18	43	5	M 12 x 1	1	20	30	198 225
						5	M 10	1[1)]	-		
70-150 RM 70-150 SE 70-120 SM	50-70 RM / 95 RE	•		32	43	5	M 12 x 1	2	20	10	109 098
						5	M 10	2[1)]	-		

Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded
1) Contact screw (branch)

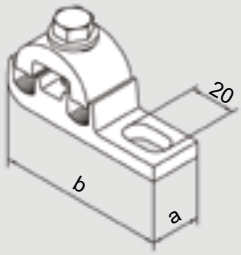
Connection Clamps for Earth and Neutral Conductors

- Separate connection channels for mains and branch conductor.
- Secure connection of concentric ceander sheath with neutral conductor of branch cable and joint.
- Advantageous storage due to universal usage with large cross-sectional ranges.
- Contact on all untwisted ceander wires through connection channels with grippers and high shoulders.
- Type 109 179 especially suitable for smallest cast iron joints.



109 179

109 090



Material	
Connector	Copper alloy, uncoated or tin-plated
Screws	Galvanised steel
Conical spring washers	Galvanised spring steel

109 090

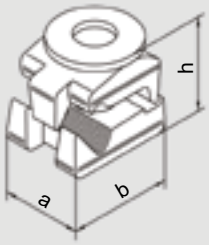
Cross Section [mm²]		Connector								Packing Unit	Type Number
				Dimensions [mm]			Screw				
Mains	Branch	Uncoated	Tin-plated	a	b	Suitable for Earthing Screw	KS DIN 276	Thread DIN 13	Grade DIN 267	Pieces	
16-95	16-95	•		20	42	-	13	M 8	8.8	50	109 179
			•	20	42	-	13	M 8	8.8	50	109 185
			•	22	73	M 10	13	M 8	8.8	40	109 090
			•	22	73	M 12	13	M 8	8.8	40	109 091

Aluminium Flat Direct Terminals for Connection of Cable Conductor Ends to Circuit Bars or Flat Bars

→ *Technical information on page 6*

206 024

206 032



Finely serrated connection channel and connection area for improved contact.

Material	
Connectors made of aluminium alloy	
Connector	Aluminium alloy, hardened and tempered
Screws	Galvanised steel
Conical spring washers	Galvanised spring steel
Connectors made of copper alloy	
Connector	Copper alloy, tin-plated
Screws	Galvanised steel
Conical spring washers	Galvanised spring steel

Cross Section [mm²]	Connector							Packing Unit	Type Number
	Dimensions [mm]			Screw					
	a	b	h	KS DIN 475	Thread DIN 13	Number	Grade DIN 267	Pieces	
Direct terminals made of aluminium alloy with tin-plated lower part									
50 RE 35-150 SM 50-185 SE	28	38	32	19	M 12 x 55[2)]	1	8.8	30	206 024
	28	38	32	for switchgear: stud M 12 x 55[1)]				50	206 032
Direct terminals made of aluminium alloy with tin-plated upper and lower part									
50-120 SM 150 SE	28	33	32	19	M 12 x 50[2)]	1	8.8	30	206 014
50 RE 35-150 SM 50-185 SE	28	38	32	19	M 12 x 55[2)]	1	8.8	30	206 033
	28	38	32	for switchgear: stud M 12 x 55[1)]				50	206 034
Direct terminals made of copper alloy with tin-plated upper and lower part									
10-35 RM 35 SM 70 SE	20	25	25	for switchgear: stud M 8 x 35[1)]				100	106 047
	20	25	25	13	M 8 x 35[2)]	1	8.8	50	106 052
50 RE 25-150 SM 50-185 SE	26	38	30	19	M 12 x 50[2)]	1	8.8	30	106 050
	26	38	30	19	M 12 x 55[2)]	1	8.8	30	106 057
	26	38	30	for switchgear: stud M 12 x 50[1)]				40	106 054

Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded
1) Check dimensions of stud before order
2) Recommended torque: M 8 max. 22 Nm, M 12 = 40 Nm

V-Type Direct Terminals for Connection of Cable Conductor Ends with V-Shaped Plates

→ *Technical information on page 6*

Finely serrated connection channel and connection area for improved contact.

206 028

206 039

Material	
Pressure piece	Copper alloy, tin-plated
Screws	Galvanised steel
Conical spring washers	Galvanised spring steel
Frame	Aluminium alloy

Accessories	Type Number
V-shaped plates fo 206 028, 206 039 and 298 240	198 358
Insulation cap for 206 028	206 029

206 028

206 029

198 358

Cross Section [mm²]	Connector						Packing Unit	Type Number
	Dimensions [mm]		Screw					
	a	b	KS DIN 475	Thread DIN 13	Number	Torque [Nm]	Pieces	
Suitable for V-shaped plates 25x3, 25x4								
50-240 SE 35-185 SM	23	36	6	M 12	1	25	40	206 028
	23	36	6	M 12[1)]	1	25	40	206 039
70-240 SM	23	36	6	M 12	1	25	40	298 240

Explanation cross sections: S=sectorial, E=solid, M=stranded
1) Shear-head screw

Transformer Clamps and Connection Terminals for Transformer Bushings DT 630 and DT 1000

→ *Technical information on page 7*

105 027

105 029

105 037

Advantageous storage due to universal usage with large cross-sectional ranges.

Best contact transition conditions and good protection against loosening by additional clamping of threaded connection element.

Finely serrated connection channel and connection area for improved contact.

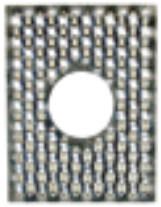
Material	
Connector	Copper alloy, tin-plated
Screws	Galvanised steel
Conical spring washers	Galvanised spring steel
Nuts	Galvanised steel

Cables		Connector						Packing Unit	Type Number
				Screw					
Cross Section [mm²]	Number	Type	Transformer Stud	KS DIN 475	Thread DIN 13	Number	Grade DIN 267	Pieces	
120-240 RM 120-240 SM 150-300 SE	1-2	90° offset	M 20	17	M 10	2	8.8	4	105 027
	1-2		M 30 x 2	17	M 10	2	8.8	4	105 028
	1-3		M 20	17	M 10	2	8.8	3	105 029
	1-3		M 30 x 2	17	M 10	2	8.8	3	105 030
120-300 RM 120-240 SM 150-300 SE	1-2	straight	M 30 x 2	17	M 10	2	8.8	4	105 037
	1-3		M 30 x 2	17	M 10	2	8.8	4	105 039

Explanation cross section: R=round, S=sectorial, E=solid, M=stranded

Contact Plates, Pressure Plates and Separating Wedges

504 083



504 065

Contact plates for removal of oxide and foreign layers, elastically smooth out irregularities and create optimum contact connections.

Pressure plates stabilise contact behaviour through compensation of creepage deformation, especially with aluminium, by means of spring elements.

Contact and Pressure Plates	Dimensions [mm]	for Transformer Stud	Packing Pieces	Type Number
Contact plate	40 x 30	M 12	100	504 083
Pressure plate	40 x 40	M 12	100	504 065

Material	
Contact plate	Copper alloy, hardened and tin-plated
Pressure plate	Spring steel, hardened and galvanisedzinkt

Separating wedges

109 101

109 102

Separating wedges with high leakage current strength for uniform spacing of cable conductors.

Cables		Dimensions [mm]	Type Number
Cross Section [mm²]	Number		
25-150	3	48 x 14	109 101
25-150	4	48 x 14	109 102

T-Box Wrench Hexagon Socket Screw	Type Number
SW 4	620 155
SW 5	620 156
SW 6	620 157

Angular Wrench Hexagon Socket Screw	Type Number
SW 5	620 159
SW 6	620 160

Spreading Wedge Length	Type Number
120 mm	109 177
198 mm	198 184

T-Handle Socket Wrench External Hexagon, Length	Type Number
SW 10, 200 mm lang	620 031
SW 11, 200 mm lang	620 032
SW 12, 200 mm lang	620 033
SW 13, 200 mm lang	620 034
SW 14, 200 mm lang	620 035
SW 17, 200 mm lang	620 036
SW 19, 300 mm lang	620 037

Torque Wrench	Type Number
Torque wrench 20 Nm inserts excluded	620 147

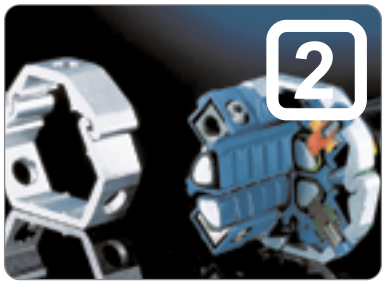
- Suitable for live installation up to 1000 V AC / 1500 V DC.
- With synthetic insulation to VDE 0682 part 201.
- High release precision of ±1 Nm.
- Quick-change inserts.
- Release signal clearly audible and perceptible when the adjusted torque is reached.
- Including calibration certificate.

Insert for Torque Wrench	Type Number
SW 5	620 148
SW 6	620 149

Case made of Synthetic Material, Empty	Type Number
To take up the torque wrench 620 147 and 2 inserts.	615 040

Catalogues from Product Range “Cable Connection Technique“

Screw Connectors
and Screw Cable Lugs



Ring Connectors

Single Connectors

Phone
General
+49 (0) 89 / 4 36 04 - 0

Fax
General
+49 (0) 89 / 4 31 68 88

Fax
Sales Department
+49 (0) 89 / 4 36 04 - 73

Internet
www.ARCUS-Schiffmann.com
info@ARCUS-Schiffmann.com

Seat of the Company
Truderinger Str. 199
D-81673 Munich

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