

CABLE CONNECTION TECHNIQUE

Ring Connectors



ARCUS ELEKTROTECHNIK
ALOIS SCHIFFMANN GMBH

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Cable cross sections mentioned refer to DIN VDE 0295.

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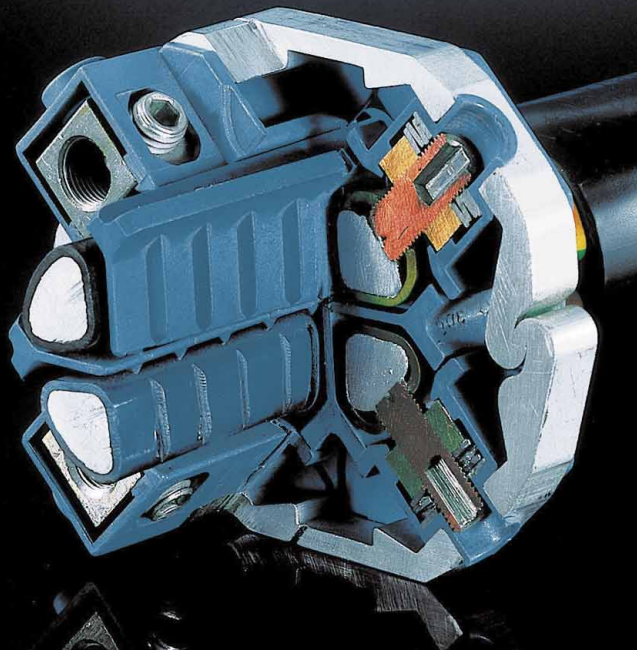
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Dear reader !

This catalogue will give you an overview on our programme for ring connectors and installation tools. We have split up these products into several groups to make the structure more clear for your search. All important data are listed in tables and additionally are shown in pictures.

In case of difficulties to find certain products or uncertainties regarding search criteria, please contact us. Contact information can be found on the backside of this catalogue.

ARCUS Schiffmann is not only able to offer a large programme of ring connectors and tools, but should also be pleased to offer our know-how to support you in finding the suitable product.



This service is a matter of course for us !

Why ring 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.

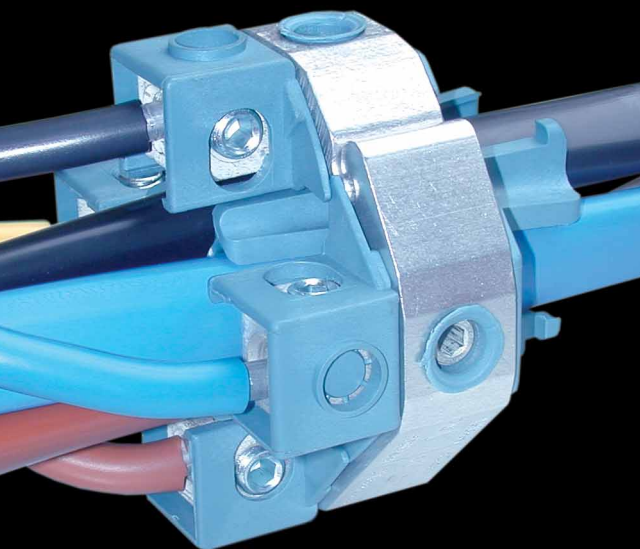
In former times mains cables were stripped at the installation point and the insulation was removed. Branches were made with simple bare branch connectors.

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

These connectors are provided with insulation-piercing teeth, cutting edges or screws which spare removal of insulation from conductors, and enabled live installation when used with personal protection equipment and insulated tools.

Duration of installation was reduced considerably and at the same time safety of the electrician was increased. Furthermore possible cable damage was reduced (entering of moisture, breaking strands) as the insulation as conductor protection cover remained nearly undamaged.



In most cases all phases of the mains cable were to be branched, so consequently the next development step was from a single connector to a multiple one. This multiple branch connector (in short: ring connector) enables branching of a cable on all phases under voltage, in narrowest space. Today this becomes even more important under the aspect of time and cost saving.

ARCUS Ring Connectors offer several advantages:

- safe live operation
- vast cross sectional range for mains and branch cables
- deliberate contacting of live conductors by use of insulation-piercing screws
- contact sequence definable, for instance neutral conductor first
- uniform key size for all contact screws
- equalisation of creepage and expansion processes by use of spring washers

Today's multitude of ring connectors relates to manifold cable constructions in low voltage networks. Ring connectors for 3-, 3 1/2- and 4-core cables, cables to standards DIN VDE, TGL or other standards, or ring connectors for large or for small cross sections are a consequence of a multitude of cables.

Beside the multitude of cables also different joint systems or working methods play a role. Ring connectors with grub screw or shear-head screw, ring connectors with axial or radial branch, and ring connectors with increased insulating properties are the result.

If you should not find the product that you look for on the following pages, please contact us !

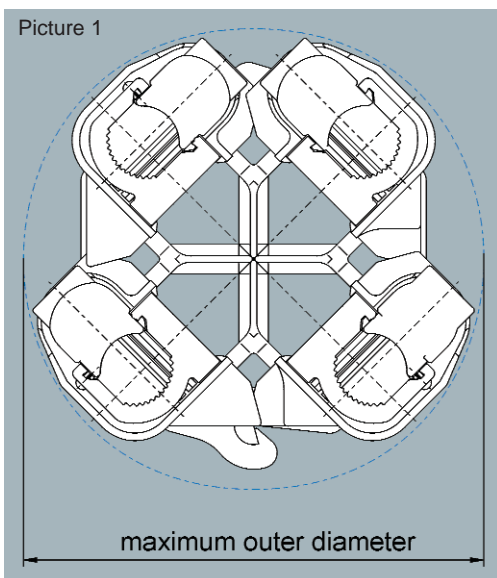
The following pages summarise the main ring connector details in tables.

Due to limited space and necessity to focus on the main features, we have used terms and abbreviations that may not be clear at first sight.

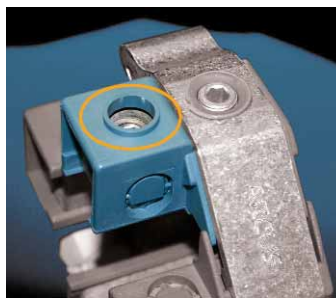
On this page you will find the explanation for these terms and abbreviations.

Ring Connector				Contact Screw							
Dimensions [mm]				Mains			Branch				
maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable	arrangement radial R	arrangement tangential T	SW(i) (DIN 475)	torque [Nm]
45	20	20	11.4	-	-	-	-	-	-	5	-

- 1) Diameter of a circle which totally encircles the installed ring connector (seen in direction of mains cable). This dimension is important to select the suitable joint (see picture 1).
- 2) Dimension for expansion of ring connector in direction of mains cable.
- 3) "R" stands for a radial arrangement of branch contact screws in relation to mains cable (see picture 2).
- 4) "T" stands for a tangential arrangement of branch contact screws in relation to mains cable (see picture 3).
- 5) SW(i) Wrench size for hexagonal socket of contact screws, wrench sizes of assembly tools are described in DIN 475.
- 6) SW(a) Wrench size for hexagonal head of contact screws, wrench sizes of assembly tools are described in DIN 475.



Picture 2 arrangement radial R



Picture 3 arrangement tangential T

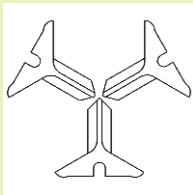
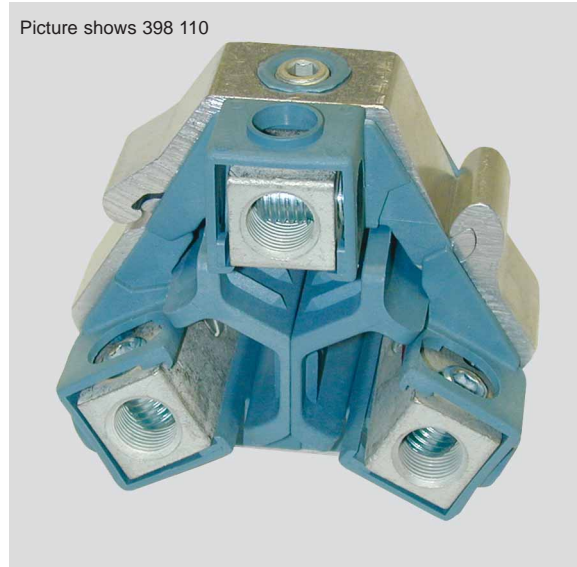


Ring Connector (basic model)

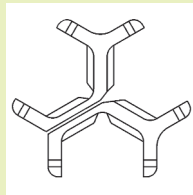
Picture shows 309 013



Picture shows 398 110



Type A



Type E

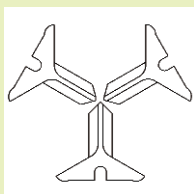
Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch					torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement	radial R	tangential T	SW(i) (DIN 475)			
35-50 RM	6-70 SM(r) 95 SE(r)	90	45.5	20	11.4	•		•			•	5	15	E	398 110
70-95 SM 120 SE	6-70 SM(r) 95 SE(r)	90	45.5	20	11.4	•		•			•	5	20	E	398 052
70-150 SE 150 SM	6-70 SM(r) 95 SE(r)	90	45.5	20	11.4	•		•			•	5	20	A	309 013
95-150 SM 185 SE	6-95 SM 120 SE	90	61	19	14.9	•		•			•	5	20	A	309 034

Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector with Mains Cable Shear Head Bolts

3-Core Cable

Picture shows 398 127



Type A

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch			SW(i) (DIN 475)	torque [Nm]	Type		
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T					
70-150 SE 150 SM	6-70 SM(r) 95 SE(r)	90	45.5	20	11.4		•	•			•	5	20	A	398 127

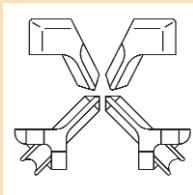
Explanation cross sections: S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector (basic model), Ring Connector with Mains Cable Shear Head Bolts

Picture shows 398 115



Picture shows 398 136



Type F

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch				SW(I) (DIN 475)	torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T					
3x 70 / 1x 35 3x 95 / 1x 50	6-50 SE	93	49.5	20	9.2	•		•		•		5	20	F	398 118
3x 70 / 1x 35 3x 95 / 1x 50	6-70 SM(r) 95 SE(r)	93	49.5	20	11.4		•	•			•	5	20	F	398 136
3x 70 / 1x 35 3x 95 / 1x 50 3x 120 / 1x 70	6-95	104	50	23	14.5	•		•			•	5	20	F	398 115
3x 95 / 1x 50 3x 150 / 1x 70	6-35 SM 50 SE	110	52	20	9.7		•	•			•	5	20	F	398 138

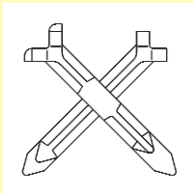
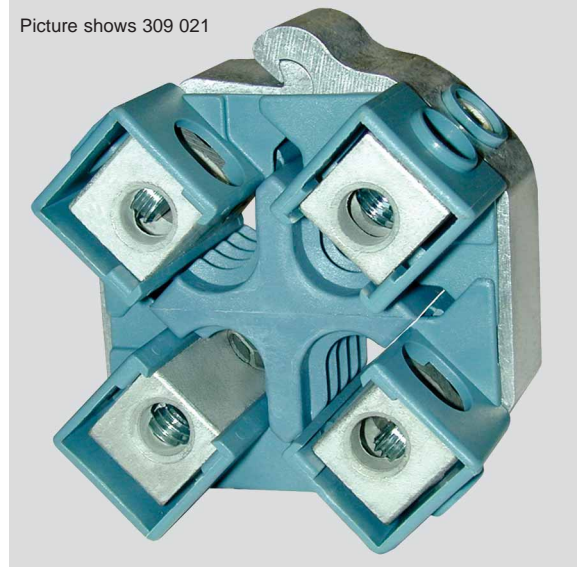
Explanation cross sections: S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector (basic model)

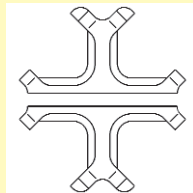
Picture shows 309 029



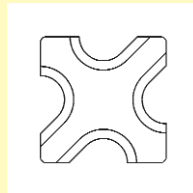
Picture shows 309 021



Type B



Type C



Type D

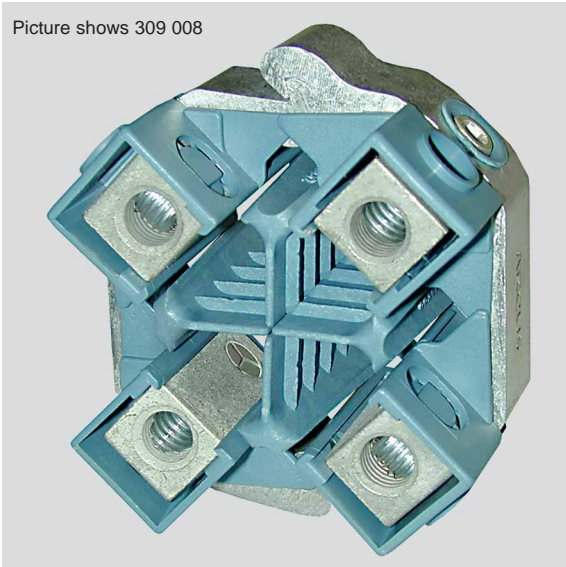
4-Core Cable

Cross Section [mm ²]		Ring Connector						Contact Screw					Wedges	Type Number
Mains	Branch	Dimensions [mm]				Mains		Branch			SW(I) (DIN 475)	torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T				
16-35 RM 35 SM 50 SE	6-35 SM 50 SE	91	49.5	20	9	•		•		•	5	15	D	309 021
Cu 25-50 Al 35-50	6-35 SM 50 SE	91	49.5	20	9.9	•		•		•	5	15	C	309 029
Cu 25-50 Al 35-50	6-70 SM(r) 95 SE(r)	91	49.5	20	11.4	•		•		•	5	15	C	398 067
Cu 25-50 Al 35-70 SE	6-35 SM 50 SE	91	49.5	20	9.9	•		•		•	5	15	B	309 038

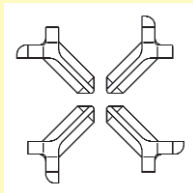
Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector (basic model)

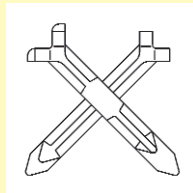
Picture shows 309 008



Picture shows 398 155



Type A



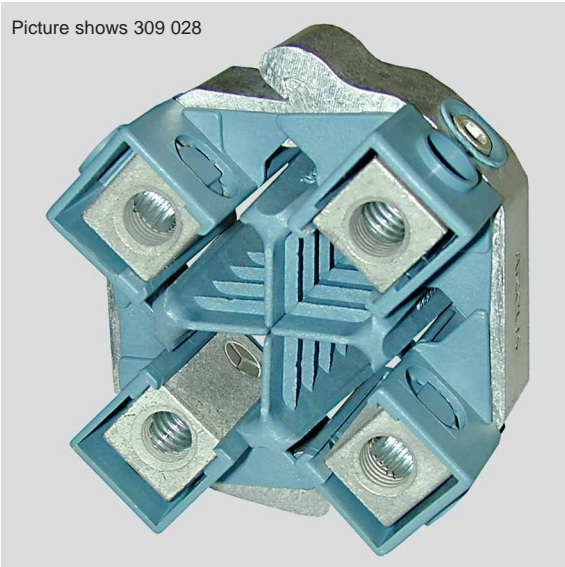
Type B

Cross Section [mm ²]		Ring Connector						Contact Screw					Wedges	Type Number
Mains	Branch	Dimensions [mm]				Mains		Branch			SW(i) (DIN 475)	torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T				
Cu 25-50 SM Al 35-70 SE	6-70 SM(r) 95 SE(r)	91	49.5	20	11.4	•		•		•	5	15	B	398 155
25-70 SM 95 SE	6-35 SM 50 SE	91	49.5	20	9	•		•	•		5	20	A	398 026
50-70 SM 95 SE	6-35 SM 50 SE	91	49.5	20	9.9	•		•	•		5	15	A	309 008
70-95 SM 120 SE	6-35 SM(r) 50 SE(r)	93	49.5	20	9	•		•	•		5	20	A	309 006

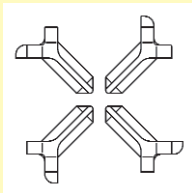
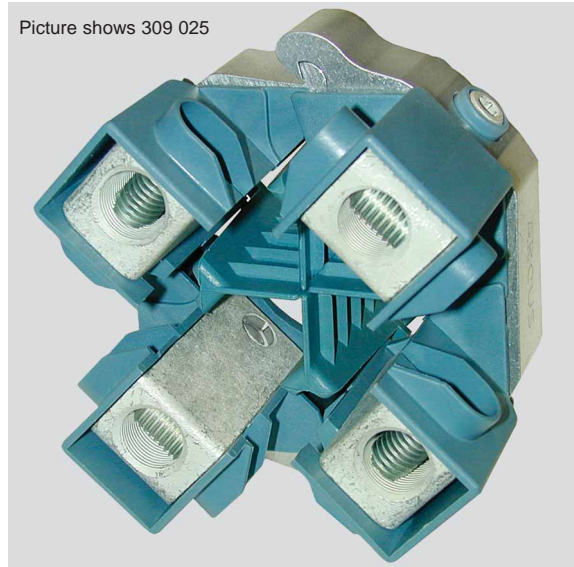
Explanation cross sections: S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector (basic model)

Picture shows 309 028



Picture shows 309 025



Type A

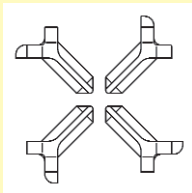
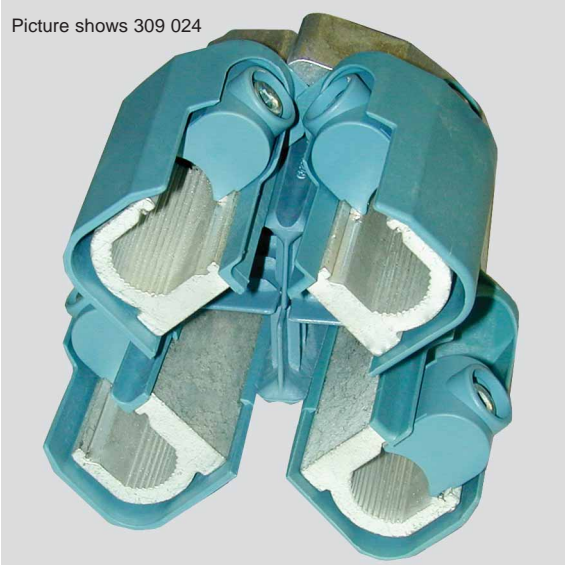
4-Core Cable

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch					torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement	radial R	arrangement tangential T	SW(I) (DIN 475)			
70-95 SM 120 SE	6-70 SM(r) 95 SE(r)	93	49.5	20	11.4	•		•			•	5	20	A	309 016
70-120 SM 150 SE	6-35 SM 50 RE / SE	94	49.5	20	9.7	•		•			•	5	20	A	309 028
70-150 SE 150 SM	6-70 SM(r) 95 SE(r)	110	50	20	11.4	•		•			•	5	20	A	309 019
70-150 SE 150 SM	35-50 SE 50 SM(r)	110	52	20	9.7	•		•			•	5	20	A	398 029
70-185 SE 150 SM	6-70 SM(r) 95 SE(r)	110	52	20	11.4	•		•			•	5	20	A	398 094
70-185 SE 150 SM	6-70 SM 95 SE	110	66	31	14.2	•		•			•	5	20	A	398 095
70-150 SM 185 SE	6-95 SM(r) 120 SE(r)	110	66	31	14.2	•		•			•	5	20	A	309 025

Explanation cross sections: S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector (basic model)

Picture shows 309 024



Type A

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch					torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement	radial R	tangential T	SW(i) (DIN 475)			
95-150 SE 150 SM	16-120 RM / SM 150 SE	120	93	55	17.9	•		•			•	5	20	A	309 024
95-150 SM 185 SE	6-70 SM(r) 95 SE(r)	114	50	20	11.4	•		•			•	5	20	A	309 020

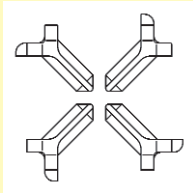
Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector with Mains Cable Shear Head Bolts

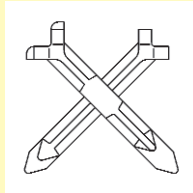
Picture shows 398 116



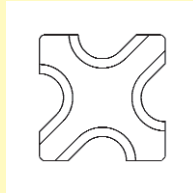
Picture shows 309 043



Type A



Type B



Type D

4-Core Cable

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch				SW(I) (DIN 475)	torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T					
25-35 RM 50 SM 70 SE	6-35 SM 50 SE	91	49.5	20	9.9		•	•		•	5	15	B	309 043	
Cu 25-50 Al 35-50	6-70 SM(r) 95 SE(r)	91	49.5	20	11.4		•	•		•	5	20	D	398 132	
50-70 SM 95 SE	6-35 SM 50 SE	91	49.5	20	9.9		•	•		•	5	20	A	398 133	
70-150 SE 150 SM	6-70 SM(r) 95 SE(r)	110	50	20	11.4		•	•		•	5	20	A	398 116	
70-150 SM 185 SE	6-35 SM 50 SE	106	52	20	11.4		•	•		•	5	20	A	398 125	

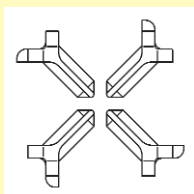
Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector with Mains Cable Shear Head Bolts

Picture shows 398 128



Picture shows 398 162



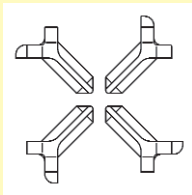
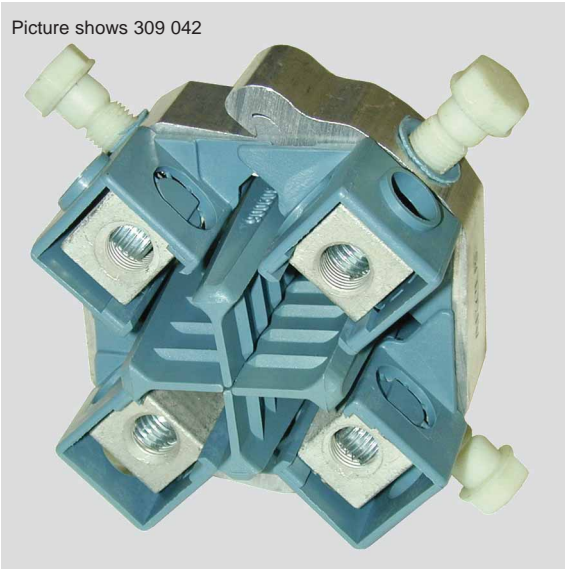
Type A

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch					torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T	SW(l) (DIN 475)				
70-95 SM 120 SE	6-70 SM(r) 95 SE(r)	93	49.5	20	11.4		•	•			•	5	20	A	398 166
70-150 SE 150 SM	35-50 SE 50 SM(r)	110	52	20	9.7		•	•			•	5	20	A	398 128
70-150 SE 150 SM	6-95 SM(r) 120 SE(r)	110	66	31	14.2		•	•			•	5	20	A	398 134
70-150 SM 185 SE	6-70 SM 95 SE	110	66	31	14.2		•	•			•	5	20	A	398 137
95-150 SE 150 SM	16-120 RM / SM 150 SE	120	93	55	17.9		•	•			•	5	25	A	398 162

Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded, (r)=rounded

Ring Connector with Insulated Shear Head Bolts for Mains Cable

Picture shows 309 042



Type A

4-Core Cable

Cross Section [mm ²]		Ring Connector				Contact Screw						Wedges	Type Number		
Mains	Branch	Dimensions [mm]				Mains		Branch				SW(i) / SW(a) (DIN 475)	torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T					
25-70 SM 95 SE	6-25 RE 25 RM	91	49.5	20	9		•	•		•	5 / 13	14	A	309 041	
50-95 SM 150 SE	6-25	91	49.5	20	9,2		•	•		•	5 / 13	14	A	309 042	

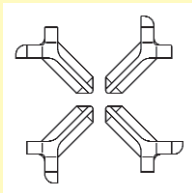
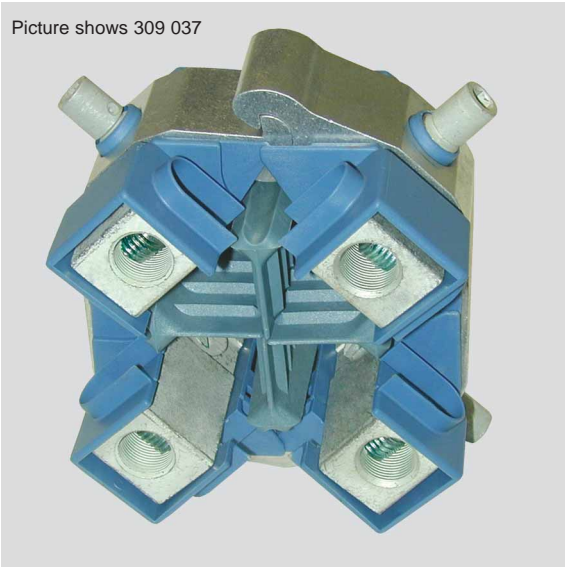
Explanation cross sections: R=round, S=sectorial, E=solid, M=stranded

These ring connectors are provided with mains insulation-piercing screws with shear-head made of synthetic material. The screw head is potential-free and offers an optimum protection against accidental contact.



Ring Connector for Cable to TGL Standard and other Uncompacted Aluminium Cables

Picture shows 309 037



Type A

Cross Section [mm ²]		Ring Connector				Contact Screw							Wedges	Type Number	
Mains	Branch	Dimensions [mm]				Mains		Branch					torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T	SW(i) (DIN 475)				
120 SM -240 SM ¹⁾ 150 SE - 240 SE	6-70 SM 95 SE	114	65	25.5	13.5		•	•			•	5 / 6	20	A	309 037

Explanation cross sections: S=sectorial, E=solid, M=stranded
 1) 240 SM only after consultation with ARCUS Schiffmann

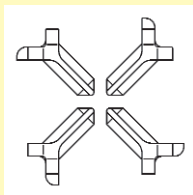
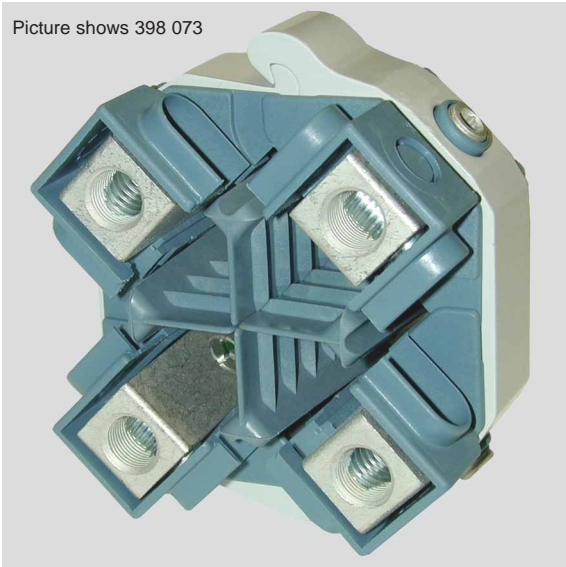
This ring connector was designed especially for cables to TGL Standard. Here the mains screws are provided with two shear-off positions to meet the demands of the special TGL cable construction, an uncompacted cable conductor.

After piercing the conductor insulation, this shear-head screw only operates as pure pressure screw, and prevents cutting of single conductor strands.



Ring Connector with Coated Aluminium Housing

Picture shows 398 073



Type A

Cross Section [mm ²]		Ring Connector				Contact Screw						Wedges	Type Number		
Mains	Branch	Dimensions [mm]				Mains		Branch				SW(i) (DIN 475)	torque [Nm]	Type	
		maximum outer diameter	width	length of branch drilling	diameter of branch drilling	insulation-piercing screw	insulation-piercing screw with shear head	socket screw	shear head screw unremovable arrangement radial R	arrangement tangential T					
50-70 SM 95 SE	6-35 SM 50 SE	91	50	20	9.9	•		•		•		5	20	A	398 074
70-150 SE 150 SM	6-70 SM(r) 95 SE(r)	110	50	20	11.4	•		•		•		5	20	A	398 073

Explanation cross sections: S=sectorial, E=solid, M=stranded, (r)=rounded

These ring connectors were designed for installation in mountainous areas with great altitude differences (inclines).

In such cable systems water that has entered the cable, would cause considerable hydrostatic pressure in service joints.

Above types are able to withstand this extreme strain because of the additional insulating special coating of the aluminium housing.

Hand Tools for Live Installation up to 1000 V AC and 1500 V DC

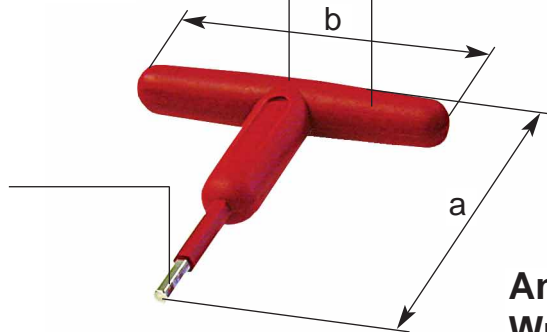
SW (DIN 475)	a (mm)	b (mm)	Type No.
4	120	100	620 155
5	120	100	620 156
6	120	100	620 157

ARCUS Tools ensure safe operation. Lever length and shape of handle are adjusted to key size.

T-Box Wrench

Synthetic insulation to VDE 0682 part 201

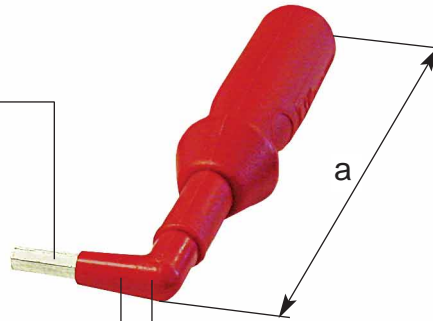
High-quality tool steel



Angular Wrench

High-quality tool steel

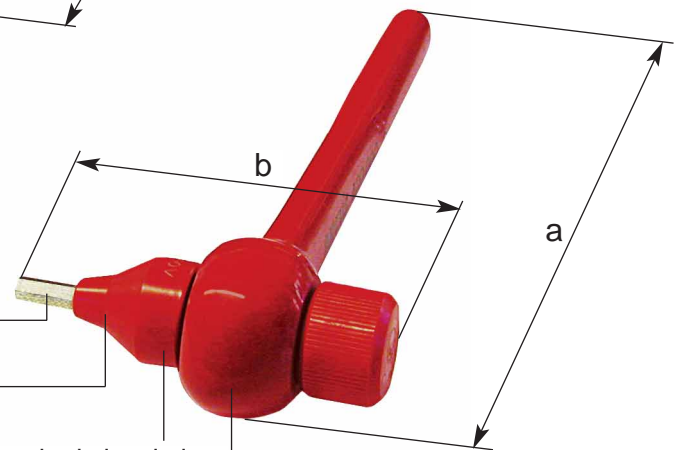
Synthetic insulation to VDE 0682 part 201



Ratchet Wrench with Inserts

SW (DIN 475)	a (mm)	Type No.
5	150	620 159
6	150	620 160

High-quality tool steel
Quick-change inserts



SW (DIN 475)	Type No.
5	620 137 05
6	620 137 06

Synthetic insulation to VDE 0682 part 201

Ratchet Wrench with Insert SW5	a (mm)	b (mm)	Type No.
	185	90	620 090

Explanation of key sizes of tools: SW=outer hexagon

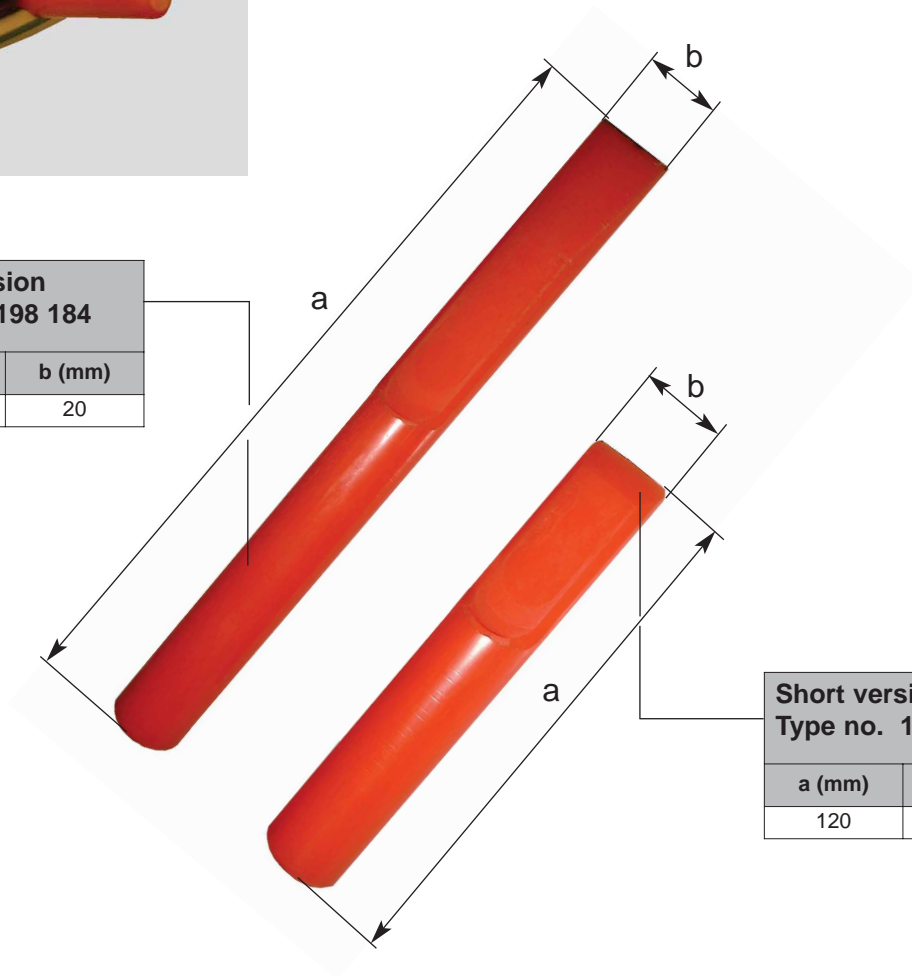
Spreading wedges

Suitable for live installation up to 1000 V AC / 1500 V DC



To spread mains cable cores.
Reinforced polyamide.

Long version Type no. 198 184	
a (mm)	b (mm)
198	20



Short version Type no. 109 177	
a (mm)	b (mm)
120	20

20 Nm Torque Wrench Type No. 620 147 (Inserts excluded)

Suitable for live installation up to 1000 V AC / 1500 V DC



Function

ARCUS torque wrench is released after clockwise rotation.

When torque is reached the release is audible and perceptible.

Testing

ARCUS torque wrenches are supplied with test certificate and a distinct identification number.

Precision

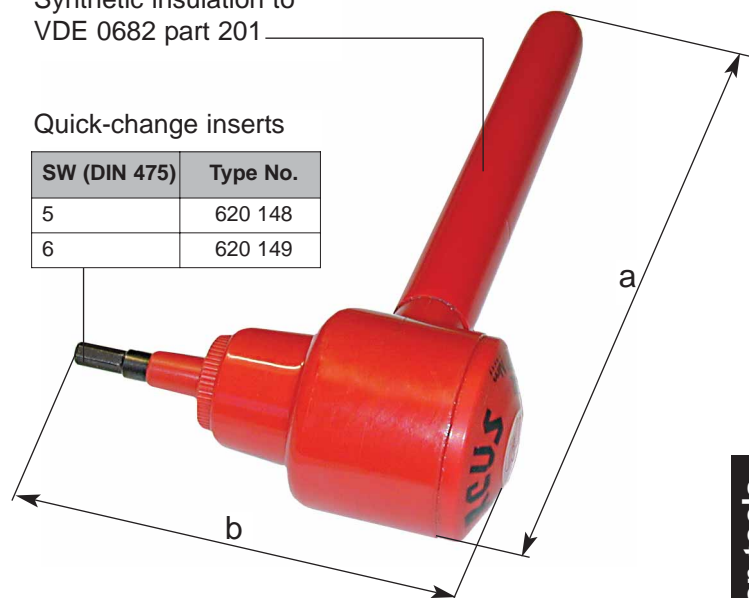
ARCUS torque wrenches are manufactured with release precision of ± 1 Nm.

Torque Wrench with Insert	a (mm)	b (mm)
	195	100

Synthetic insulation to VDE 0682 part 201

Quick-change inserts

SW (DIN 475)	Type No.
5	620 148
6	620 149



Case made of synthetic material Type No. 615 040

With foamed inlay to take up one torque wrench and two inserts.



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