

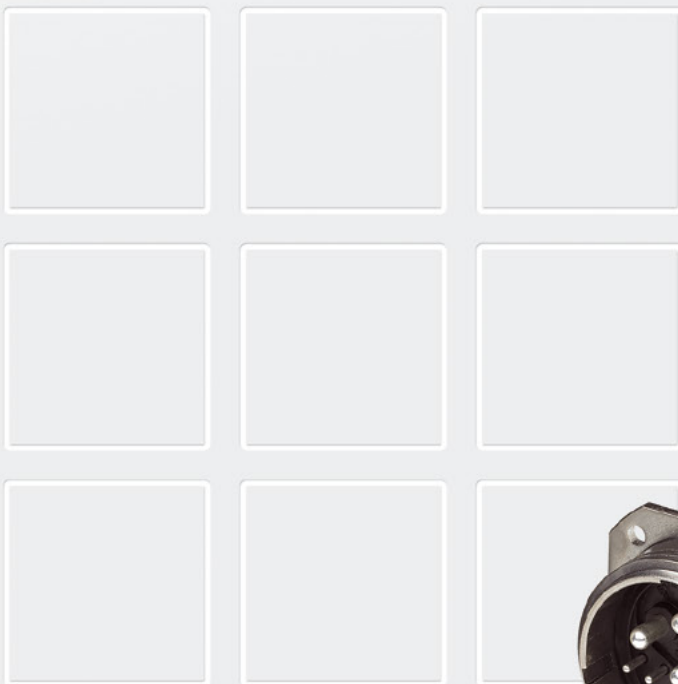
# 1

## Connectors

### GA Series

Circular connectors  
to industry standard

Catalogue [A25.en](#)



## Industrial connectors, GA Series

Series GA industrial connectors are high-quality special purpose connectors.

The 15 pole circular connector has a housing made of high strength aluminium magnesium alloy. The contact arrangement is a combination of 4 power contacts and 11 control contacts.

The thermoset contact inserts allow the connector to be used for a wide temperature range. Cable-connecting and flange mount plugs and receptacles with different threads for cable glands are available as stock items. Protection caps are available as accessory. Special variants upon request!

Sealed to IP67/IP69K: The pin contacts and solder cups are moulded watertight in the contact inserts of the receptacles, so that there is no ingress of water even when the connector is unplugged.

The polarized key and keyway construction of the connector prevents the contacts from touching the insulator, thus making possible a "blind" mating of the connector halves. The functional threaded coupling ensures reliable connection.

### Features

- High-quality robust metal housing
- 4 power and 11 control contacts
- Functional threaded coupling with polarized key and keyway construction for easy and reliable connection
- Receptacles watertight to IP67/IP69K when mated and unmated
- Resistant to corrosive liquids
- Electrical and mechanical characteristics to IEC 61984

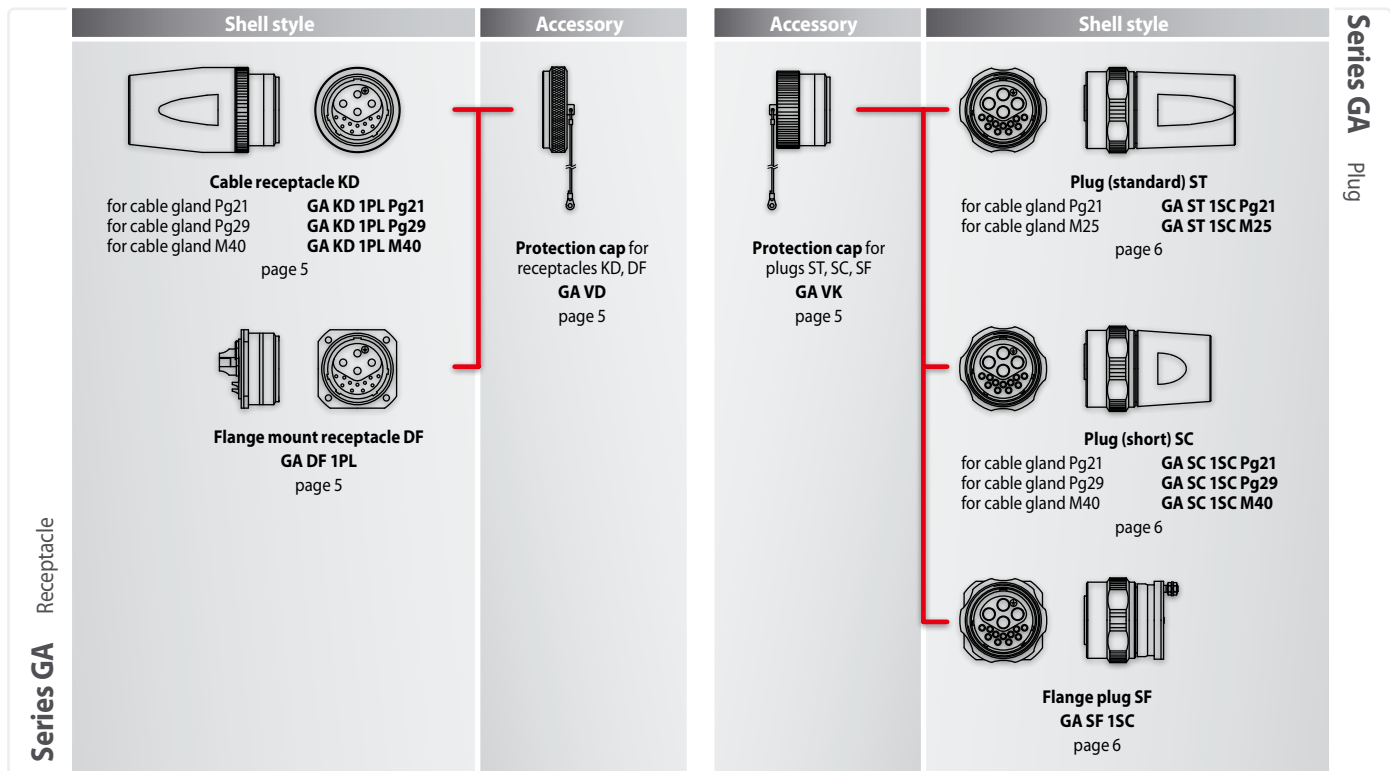
### Applications

- Machine tool building
- Test bays
- Custom machine building
- Renewable energy resources

Series GA

### Overview

Series GA



### Competence

For decades Schaltbau has been a well-known and competent manufacturer of products designed for use in harsh environments. Typical applications:

- Industry
- Military communications
- Traffic engineering

Based on the success of the proven industrial connectors, the high quality and reliability typical of Schaltbau is being continued by the GA Series.

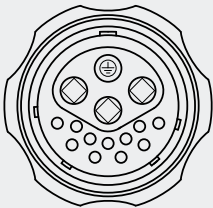
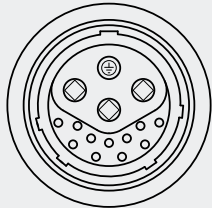
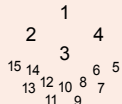
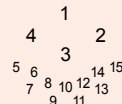






























### Standards

Series GA

- Electrical and mechanical characteristics of connectors in accordance with IEC 61984
- Degree of protection according to IEC 60529 (IP code)
- UL 94-V0 flammability rating of plastics used

## Specifications

Series GA

Series GA	Plugs	Receptacles
Max. number of contacts	3 pole + PE + 11	3 pole + PE + 11
Contact arrangement		
Contact identification marked on insert: Pin insert: Rear view Socket insert: Front view		
Rated voltage (IEC 60038) at pollution degree 3 (IEC 60512)	 400 V / 400 V  Earth contact  25 V / 60 V	 400 V / 400 V  Earth contact  25 V / 60 V
Orientation / keys and keyways	1 / 5	1 / 5
<b>Contacts</b> Max. rated current of individual contact see page 7	 3 x 50 A  11 x 16 A	 3 x 50 A  11 x 16 A
Contact size / type	 Ø 4 mm / Crimp contact, Type C  Ø 1.58 mm / Crimp contact, Type A	 Ø 4 mm / Solder contact  Ø 1.58 mm / Solder contact
<b>PE contact</b> Contact size / type	 Ø 4 mm / Crimp contact, Type C	 Ø 4 mm / Solder contact
<b>Max. rated current of individual contact depending on wire gauge</b>		
0.50 mm <sup>2</sup>	---	---
0.75 mm <sup>2</sup> ... 1.00 mm <sup>2</sup>	 10 A / Crimp contact, Type A	---
1.50 mm <sup>2</sup>	 16 A / Crimp contact, Type C * <sup>1</sup>	 10 A / Solder contact
2.50 mm <sup>2</sup>	---	---
4.00 mm <sup>2</sup>	 35 A / Crimp contact, Type C * <sup>2</sup>	---
6.00 mm <sup>2</sup>	 50 A / Crimp contact, Type C	 50 A / Solder contact
<b>Wire gauge PE contact</b>		
1.50 mm <sup>2</sup>	 Crimp contact, Type C * <sup>1</sup>	---
4.00 mm <sup>2</sup>	 Crimp contact, Type C * <sup>2</sup>	---
6.00 mm <sup>2</sup>	 Crimp contact, Type C	 Solder contact
Contact resistance (IEC 60512-2)	 < 2 mΩ /  < 10 mΩ	
Insulation resistance (IEC 60512-2)	 > 5,000 MΩ /  > 5,000 MΩ	
Temperature range* <sup>3</sup>	-25° C ... +60° C	
Degree of protection (IEC 60529)	mated: IP67 / IP69K	mated/not mated: IP67 / IP69K
Test standard (IEC 60068-1) (t <sub>min</sub> [°C]/t <sub>max</sub> [°C]/t <sub>testing time</sub> [days])	-25/60/21	
Mechanical endurance (mating cycles) (IEC 60512-5, test 9a)	> 2,000	
Retention force (crimp contacts)	> 75 Nm	--- * <sup>4</sup>
<b>Materials</b> Shells Inserts Seals Flammability rating (contact insert)	Aluminium or PA 66 (only GA SC 1SC xxx) Thermoset Silicone rubber (SIR) UL94V-0	Aluminium Synthetic rubber Perbunane (NBR) UL94V-0
<b>Contacts</b> Terminal type Material Plating	Crimp Crimp-type copper wrought alloy Ag	Solder Solder-type copper wrought alloy Ag

\*<sup>1</sup> With reducing bushing RH-6,0/1,5 - included with contacts\*<sup>2</sup> With reducing bushing RH-6,0/4,0 - included with contacts\*<sup>3</sup> Operating temperatures exceeding 25°C account for a lower current rating, see derating diagram on page 7\*<sup>4</sup> Solder contacts are moulded in the contact insert of the receptacle shell

## Ordering code

Baureihe GA

Our GA Series connectors have a modular structure. All components of the connector are shown in the Overview on page 2.

You will find the ordering code for a connector variant as presented in this catalogue in the table opposite its dimension diagram.

### • Ordering code for »plug and receptacle shells«

Example: <b>GA KD 1PL Pg21</b>	
<b>Series</b>	
GA	Designation of series
<b>Shell style</b> (with contact insert 3+PE+11)	
ST	Plug (standard)
SC	Plug (short)
SF	Flange plug
KD	Cable receptacle
DF	Flange mount receptacle
<b>Contact arrangement</b>	
1	3 + PE + 11
<b>Contact type</b>	
P	Pin contact (receptacle)
S	Socket contact (plug)
<b>Terminal type</b>	
L	Solder, pin contacts (receptacle)
C	Crimp, socket contacts (plug)
<b>Threaded connection for cable gland</b>	
Pg21	Thread Pg21
Pg29	Thread Pg29
M25	Thread M25
M40	Thread M40

### • Ordering code for »Protection caps«

Example: <b>GA VD</b>	
<b>Series</b>	
GA	Designation
<b>Type of cap</b>	
VD	Protection cap for receptacle styles KD, DF
VK	Protection cap for plug styles ST, SC, SF

### • Ordering code for »tools«

Example: <b>AWZ-A</b>	
<b>Extraction tool</b>	
AWZ	Designation
<b>for contacts</b>	
A	Crimp contact, Type A (BAC-1,00-Ag)
C/H	Crimp contact, Type C (BAC-6,00-Ag)

Example: <b>CWZ-600-1</b>	
<b>Crimp tool</b>	
CWZ-600-1	Crimp tool for wire range 0.14 ... 6 mm <sup>2</sup>



#### Note:

This catalogue shows only stock items.

**For some variants minimum quantities apply.**

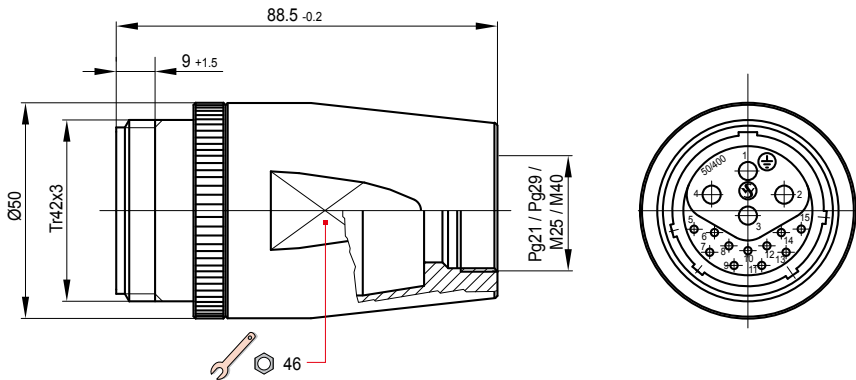
**Please ask for the conditions.**

#### Special variant:

If you need a special variant of the connector, please do not hesitate to contact us. Maybe the type of connector you are looking for is among our many special designs. If not, we can also supply customized designs. In this case minimum quantities apply.

**GA KD 1PL xx** Cable receptacle

Series GA

**Dimension diagram**

**Note:**

- The solder-type pin contacts are moulded in the insert of the receptacle shell.
- Cable glands are not included in the delivery.

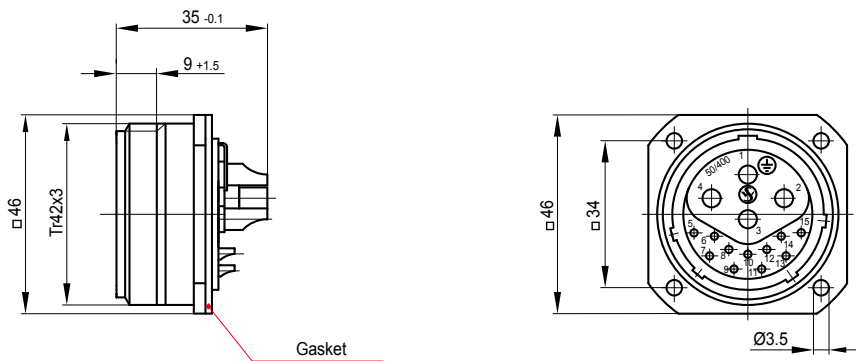
**Ordering code**
**Example:**
**GA KD 1PL Pg21**

Series **GA**  
 Shell style **KD** cable receptacle  
 Contact arr./ contacts / terminal type **1PL**  
 Threaded connection **Pg21 Pg29 M25 M40**

Ordering code	Threaded connection for
<b>GA KD 1PL Pg21</b>	Cable gland Pg21
<b>GA KD 1PL Pg29</b>	Cable gland Pg29
<b>GA KD 1PL M40</b>	Cable gland M40

**Accessory:** Protection cap **GA VD**
**GA DF 1PL** Flange mount receptacle

Series GA

**Dimension diagram**

**Note:**

- The solder-type pin contacts are moulded in the insert of the receptacle shell.
- Gasket included in the delivery.

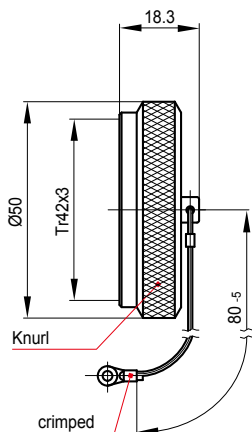
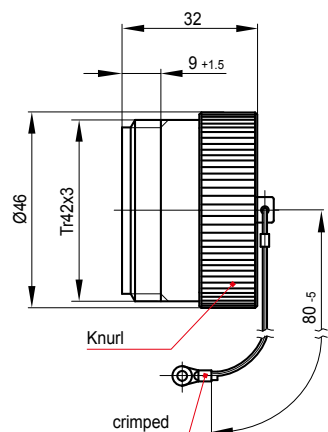
**Ordering code**
**Example:**
**GA DF 1PL**

Series **GA**  
 Shell style **DF** Flange mount receptacle  
 Contact arrangement / contacts / terminal type **1PL**

Ordering code
<b>GA DF 1PL</b>

**Accessory:** Protection cap **GA VD**
**GA VD / GA VK** Protection cap for receptacle / plug

Series GA

**Dimension diagram GA VD**

**Dimension diagram GA VK**

**Ordering code**
**Example:**
**GA VD**

Series **GA**  
 Protection cap **VD VK**

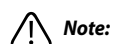
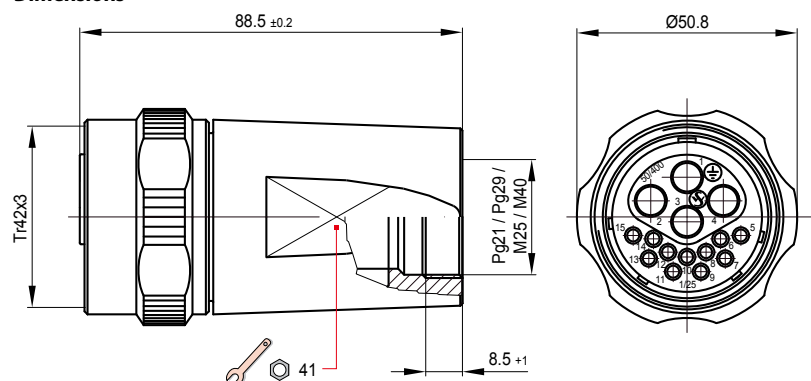
Ordering code	Description
<b>GA VD</b>	Protection cap for receptacles KD, KF
<b>GA VK</b>	Protection cap for plugs ST, SC, SF



**Note:** Protection cap delivered with loose cord end and separate ferrule and eyelet. Optional delivery with loop or attached eyelet (e.g. crimping of ferrule or eyelet with flat pliers).

**GA ST 1ST xx Plug, standard**

Series GA

**Dimensions**

**Note:**

- The plug shell comes with the following crimp contacts added as loose parts:
  - Socket contacts: 4x BCC-6,00-Ag, 11x BAC-1,00-Ag,
  - Reducing bushings: 4x RH-6,0/4,0, 4x RH-6,0/1,5
  - Cable glands are not included in the delivery.

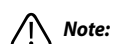
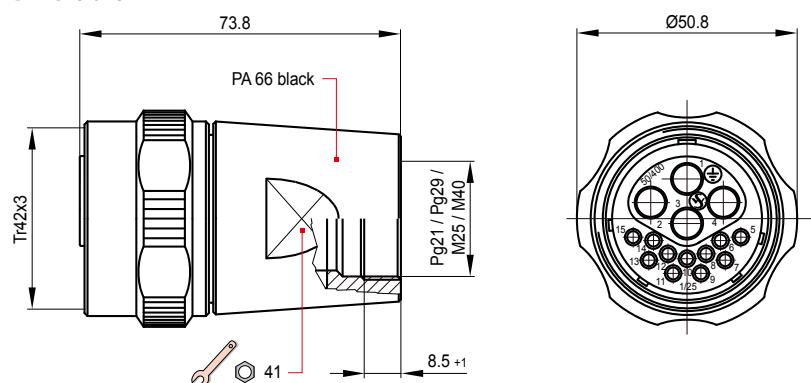
**Ordering code**
**Example:**
**GA ST 1SC Pg21**

Series **GA**  
 Shell style **ST** Plug, standard  
 Contact arr./ contacts / terminal type **1SC**  
 Threaded connection **Pg21 Pg29 M25 M40**

Ordering code	Threaded connection for
<b>GA ST 1SC Pg21</b>	Cable gland Pg21
<b>GA ST 1SC Pg29</b>	Cable gland Pg29
<b>GA ST 1SC M25</b>	Cable gland M25
<b>GA ST 1SC M40</b>	Cable gland M40

**Accessory:** Protection cap **GA VK**
**GA SC 1SC Plug, short**

Series GA

**Dimensions**

**Note:**

- The plug shell comes with the following crimp contacts added as loose parts:
  - Socket contacts: 4x BCC-6,00-Ag, 11x BAC-1,00-Ag,
  - Reducing bushings: 4x RH-6,0/4,0, 4x RH-6,0/1,5
  - Cable glands are not included in the delivery.

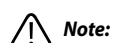
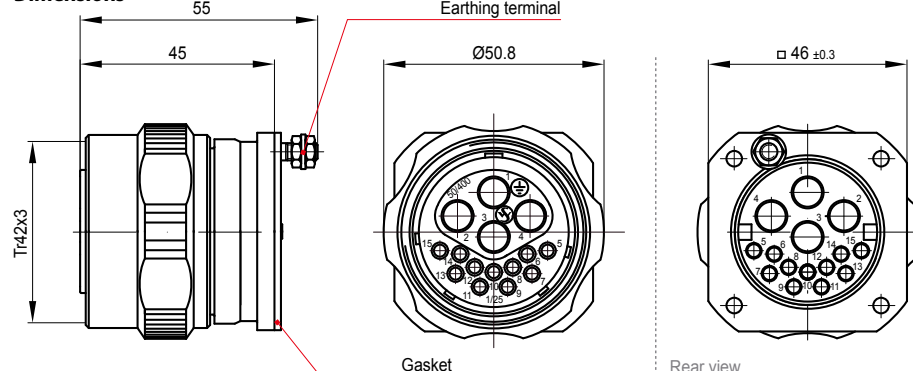
**Ordering code**
**Example:**
**GA SC 1SC Pg21**

Series **GA**  
 Shell style **SC** Plug, short  
 Contact arr./ contacts / terminal type **1SC**  
 Threaded connection **Pg21 M25**

Ordering code	Threaded connection for
<b>GA SC 1SC Pg21</b>	Cable gland Pg21
<b>GA SC 1SC M25</b>	Cable gland M25

**Accessory:** Protection cap **GA VK**
**GA SF 1SF Flange plug**

Series GA

**Dimensions**

**Note:**

- The plug shell comes with the following crimp contacts added as loose parts:
  - Socket contacts: 4x BCC-6,00-Ag, 11x BAC-1,00-Ag,
  - Reducing bushings: 4x RH-6,0/4,0, 4x RH-6,0/1,5

**Ordering code**
**Example:**
**GA SF 1SC**

Series **GA**  
 Shell style **SF** Flange plug  
 Contact arr./ contacts / terminal type **1SC**

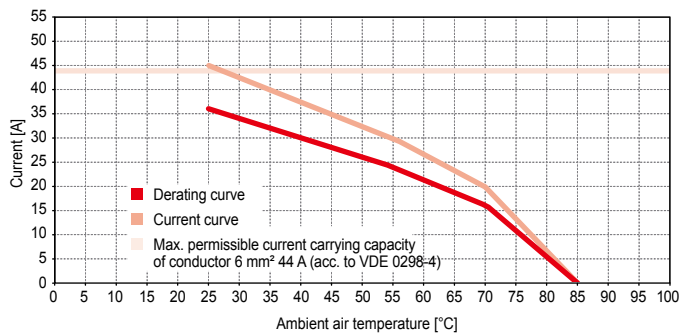
Ordering code
<b>GA SF 1SC</b>

**Accessory:** Protection cap **GA VK**

## Derating curve

Series GA

### Derating curve power contacts (3x )



#### Note:

- According to VDE 0298-4 the wire gauge of the conductor should be determined in this way that within the limits of its specified current carrying capacity there will be no heating of the conductor exceeding the permissible operating temperature at any place or any time.
- The derating diagram shows the permissible operating range..
- Control and test procedures according to IEC 60512-3, test 5b.






## Contacts Plugs: Crimp contacts, Receptacles: Solder contacts

Series GA

### Plugs ST / SC / SF

#### Crimp type socket contacts



# of	Drawing	Contact type	Identification	Ordering code
3x  1x 		Crimp, Type C	1 wide groove	BCC-6,00-Ag
11x 		Crimp, Type A	1 groove	BAC-1,00-Ag

\*1 With reducing bushing RH-6,0/4,0 - included with contacts

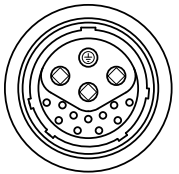
\*2 With reducing bushing RH-6,0/1,5 - included with contacts






#### Specifications

Wire gauge	Rated current of individual contact
6.0 / 4.0*1 / 1.5*2 mm²	50 / 35*1 / 16*2 A
0.75 ... 1 mm²	10 A

### Receptacles KD / DF

#### Solder type pin contacts (not replaceable)



# of	Drawing	Contact type	Identification	Ordering code
3x  1x 		Solder	---	--- *3
11x 		Solder	---	--- *3

\*3 Moulded in the contact insert of the receptacle shell; item cannot be ordered individually

#### Specifications

Wire gauge	Rated current of individual contact
6.0 mm²	50 A
1.5 mm²	16 A

## Tools Extraction tools AWZ-A and AWZ-C/H, Crimp tool CWZ-600-1

Series GA

### AWZ-x Extraction tool

Ordering code	Extraction tool for
AWZ-A	Extraction tool for contacts, Type A
AWZ-C/H	Extraction tool for contacts, Type C and H



**Note:** Extraction tool for crimp-type socket contacts as used for plugs BAC-1,00-Ag (Type A) and BAC-6,00-Ag (Type C)



### CWZ-600-1 Crimp tool

Ordering code	Crimp tool for
CWZ-600-1	Contacts SAC-x*, BAC-x*, SBC-x, BBC-x, SCC-x, BCC-x * Do not use for contacts SAC-2.50-xx, BAC-2.50-xx
Tool frame M22520/1-01 & Turret M22520/1-02 (No fig.)	For contacts SAC-2.50-xx, BAC-2.50-xx only. Crimp tool and turret from DMC or Buchanan. Order direct from OEM.



**Note:** Crimp tool for crimping the socket contacts of the plug BAC-1,00-Ag and BAC-6,00-Ag

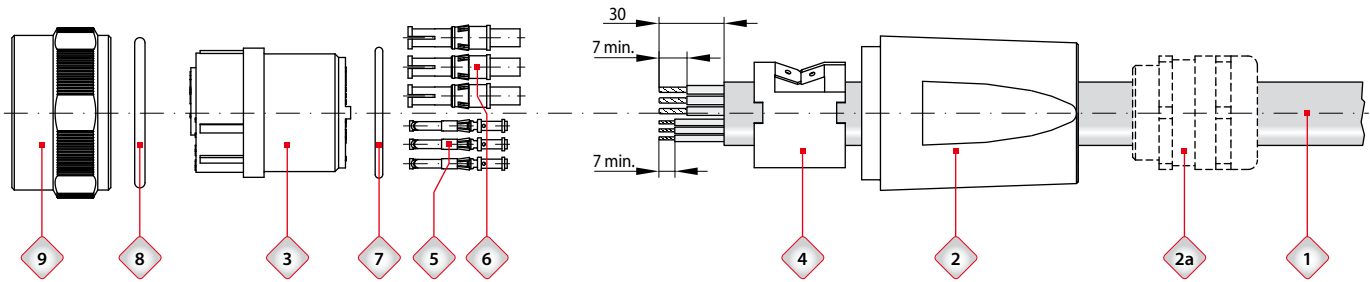




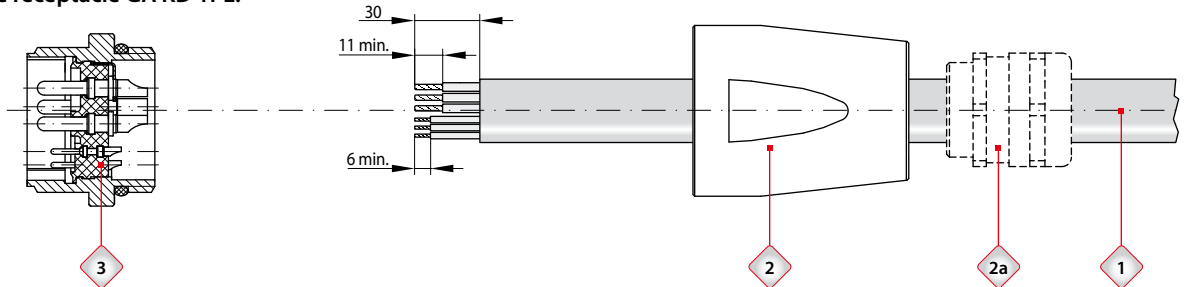
## Assembly instructions

Series GA

### • Assembly of cable plug GA ST 1SC:



### • Assembly of cable receptacle GA KD 1PL:



#### Assembly of cable plug

- Strip jacket of cable ① to a length of approx. 30 mm and the insulation of the stranded wires to a length of 7 mm min.
- Thread cable gland (OEM part) ②a, backshell ② and earthing sleeve ④ on cable ①.
- Crimp stripped wire ends to the control contacts ⑤ and power contacts ⑥ (use crimp tool CWZ-600-1) and secure contacts in the contact insert ③.
- Slide O-ring ⑦ on contact insert ③ and insert it into the backshell ②.
- Place O-ring ⑧ in coupling ring ⑨ and screw on backshell ②.

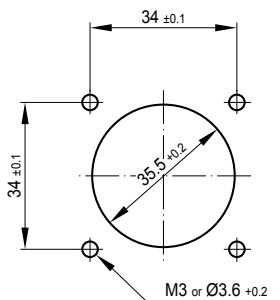
#### Assembly of cable receptacle

- Strip jacket of cable ① to a length of approx. 30 mm and the insulation of the stranded wires to a length of 6 mm min. and 11 mm min. respectively.
- Thread cable gland (OEM part) ②a and backshell ② on cable ①.
- Solder stripped wire ends to the terminal ends of the contact insert in the receptacle shell ③.
- Screw receptacle shell with contact insert ③ into backshell ②.

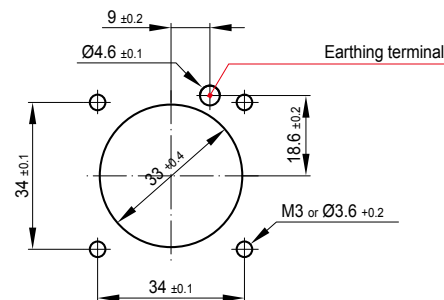
## Mounting holes Flange mount receptacle GA DF 1PL, Flange plug GA SF 1SC

Series GA

### • for flange mount receptacle GA DF 1PL



### • for flange plug GA SF 1SC



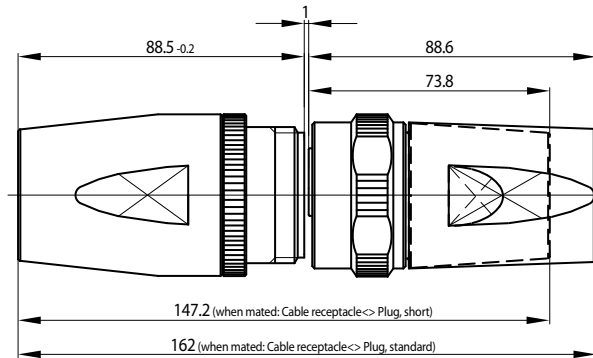
**Note:** Flange mount receptacle (GA DF 1PL) and flange plug (GA SF 1SC) are to be front-mounted. With plug (GA SF 1SC) please mind the extra hole for earthing.



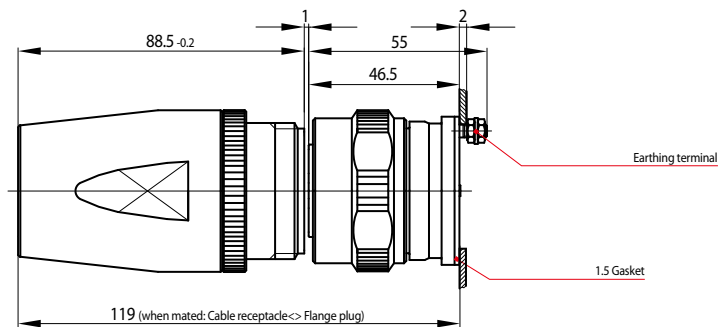
## Assembly and installation dimensions

Series GA

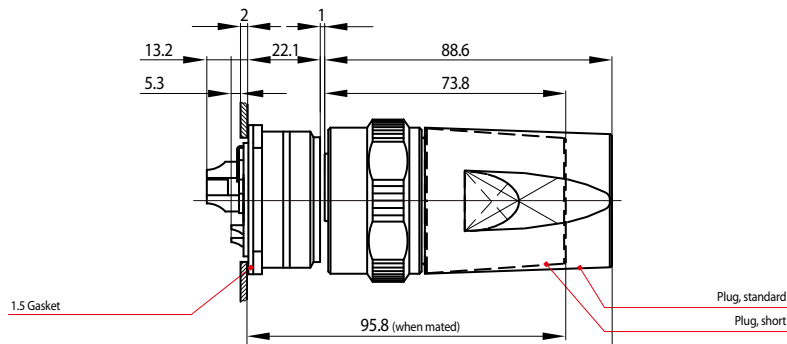
- Cable receptacle ↔ plug, standard / Cable receptacle ↔ plug, short



- Cable receptacle ↔ flange plug



- Flange mount receptacle ↔ plug, standard / Flange mount receptacle ↔ plug, short



## Safety instructions

Series GA

### Visual inspections

Be sure to make visual inspections regularly. Improper handling of the connector, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.



**Defective parts must be replaced immediately!**

### Note:

According to IEC 61984 connectors are electrical components which must not be engaged or disengaged in normal use when live or under load. Improper handling of the connector when engaging and disengaging can result in a shorter design life.

# Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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with compliments:



Schaltbau GmbH manufactures in compliance with RoHS.



The production facilities of Schaltbau GmbH have been IRIS certified since 2008.



Certified to DIN EN ISO 14001 since 2002. For the most recent certificate visit our website.



Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

## Electrical Components and Systems for Railway Engineering and Industrial Applications

### Connectors

- Connectors manufactured to industry standards
- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

### Snap-action switches

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Enabling switches
- Special switches to suit customer requirements

### Contactors

- Single and multi-pole DC contactors
- High-voltage AC/DC contactors
- Contactors for battery powered vehicles and power supplies
- Contactors for railway applications
- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

### Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements

We reserve the right to make technical alterations without prior notice.

For updated product information visit [www.schaltbau-gmbh.com](http://www.schaltbau-gmbh.com).  
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