Brief Instructions ENG

Cable Glands, Metal, for non-amored cables CG.NA.* for shielded EMC cables CG.EM.*

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Validity

Specific processes and instructions in this instruction manual require special provisions to guarantee the safety of the operating personnel.

Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the device. The trained and qualified personnel must have read and understood the instruction manual.

Reference to Further Documentation

Observe laws, standards, and directives applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EC-type-examination certificates, certificates, and control drawings if applicable support this document. You can find this information under www.pepperl-fuchs.com.

Intended Use

The metal cable glands type CG.NA.* can be used indoor andoutdoor in Zone 1, Zone 2, Zone 21 and Zone 22 hazardous areas. They are intended for use with non-armored elastomer and plastic insulated cables providing a combined flameproof seal and environmental seal on the cable outer sheath.

Type CG.EM.* are intended to be used with shielded cables where the shield will be connected to the inner shielding ring of the gland in order to provide the necessary EMC protection.

Remarks on Assembly

For non-threaded enclosures it is recommended to use flat washer gaskets (e.g. fiber washer of Klingersil type C-4400 or similar, or chloroprene or silicone washer gaskets) between screw-in component and the enclosure.

For threaded enclosures both fiber washers or O-rings can be used.

Metric metal cable glands or screw-in components when supplied as single components are equipped with washer gasket, O-ring and further accessories. Variants for ambient temperatures below -50 °C are available. Please refer to the individual datasheets for details.

Requirements for Cables and Connection Lines

In order to guarantee the mechanical characteristics of the glands, an additional clamping of the cables has to be ensured by appropriate clamping outside of the gland and of the enclosure.

Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

If you intend to install the device or enclosure in areas that may be exposed to aggressive substances, ensure that the stated surface materials are compatible with these substances. If required, contact Pepperl+Fuchs for further information.

Close all unused cable glands with the appropriate sealing plugs.

Disassemble the parts of the cable gland.

Choose the optimal seal insert combination (S*) according to the cable diameter. Use the outer seal insert S1 (6) for cables with large diameter. Use a combination of up to 3 seal inserts (4) ... (6) for cables with smaller diameter.

Fit the seal insert combination into the gland body basis (3).

Install the gland body basis (3) in the entry of the enclosure.

Use washer gasket (1) and O-Ring (2) when appropriate.

Push the cap nut (7) onto the cable.

Push the cable through the seal inserts (4) ... (6).

Only with GG.EM.*: Place the shield inside the EMC spring insert (8). Cut off the excess parts of shield and cable sheath.

Tighten the cap nut (7) to the gland body basis (3).

Tighten all screw threads with the appropriate torque.

IP Protection Method Mode for Ex d / Ex e

Tapered NPT threads:
In order to guarantee the specified IP66 / IP68 rating when using NPT threads, sealant agent (Loctite 577 or similar) shall be applied on at least two full threads before fitting the gland to the box. In any case pay attention to guarantee the metallic continuity.

Ex d enclosures and tapered NPT threads:
Assemble through a threaded hole. The enclosure wall has to be thick enough to engage at least 5 full threads.

Ex d enclosures and metric threads:
Assemble through a threaded hole with O-ring on the thread outside of the enclosure. The enclosure wall has to be thick enough to engage at least 5 full threads.

Ex e enclosures, metric threads and tapered NPT threads:
Tighten with locknut inside and fiber washer gasket on the thread outside of the enclosure. In case of O-ring it has to be positioned between fiber washer and screw head. An enclosure wall thickness of minimum 1.5 mm has to respected.

Operation, Maintenance, Repair

Observe IEC/EN 60079-17 for maintenance and inspection.

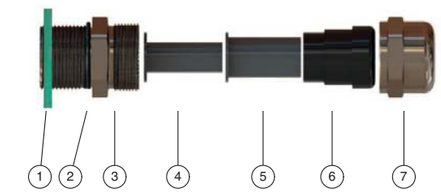
If there is a defect, always replace the device with an original device.

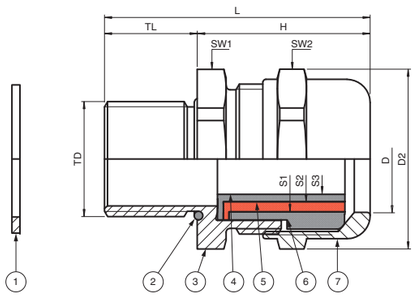
Do not modify or manipulate the device.

Delivery, Transport, Disposal

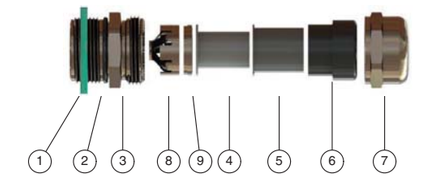
Disposing of device and packaging must be in compliance with the applicable laws and guidelines of the respective country.

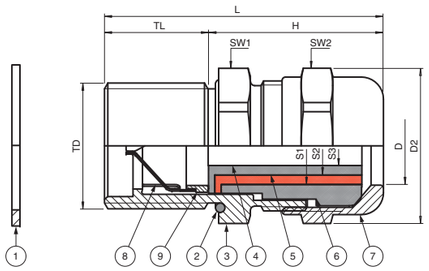
Dimensions and Assembly CG.NA*



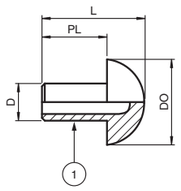


Dimensions and Assembly CG.EM*





Dimensions Sealing Plugs BP.*



Allocation of sealing plugs to cable glands please see data table below.
Material polyamide, further technical information see individual datasheets.

Legend - details and values see data table	
1	Washer gasket (accessory)
2	O-Ring
3	Gland body basis
4	Seal insert S3
5	Seal insert S2
6	Seal insert S1
7	Cap nut
8	EMC spring insert (CG.EM.* only)
9	Pressure ring (CG.EM.* only)
D	Clamping range, cable sheath diameter
D2	Width across corners
DT	Diameter thru-hole in enclosure
H	Length outside enclosure
L	Total length
S*	Clamping range, seal insert combinations
SW*	Width across flats
TD	Thread size
TL	Thread length

Type Code / Model Number

1		2		3		4		5		6		7
CG	.	**	.	***	.	**	.	*	.	**	.	K**
CG	.	NA	.	M20	.	BN	.	C	.	16	.	K01

Example: Cable gland metal, for non-armored cables, thread size M20, body brass nickel-plated, chloroprene seals for -40 °C ... 80 °C, installation thread length 16 mm, one piece

1	Series
CG	cable glands
2	Type
EM	metal, for shielded EMC cables
NA	metal, for non-armored cables
3	Thread, type and size
M*	metric ISO pitch 1.5; sizes see dimensions data table
NPT	NPT ANSI ASME B1.20.1; sizes see dimensions data table
4	Material
BN	brass nickel-plated
SS	stainless steel
5	Material seals / O-Ring
C	chloroprene / neoprene
S	silicone
6	Thread length for installation in enclosure
**	length in mm
7	Packaging unit
	units not packaged, for use in Pepperl+Fuchs Solution Engineering Centers
K**	units quantity per package

Release date 2022-05-20 DOCT-3950E Refer to „General Notes Relating to Pepperl+Fuchs Product Information“

Technical Specifications

General	
Types and variants	CG.EM* - see type code table CG.NA* - see type code table
Mechanical specifications	
Dimensions and torques	see data table
Cable type	non-armored cables
Clamping range (D)	see data table
Thread type	metric ISO pitch 1.5 mm or NPT ANSI ASME B1.20.1
Thread size (TD)	see data table
Degree of protection	IP66 / IP68 , UL Type 4X
Mass	see datasheets
Material	
Finish	inherent color silver
Cable gland	brass nickel-plated or AISI 316 (1.4401) stainless steel
Washer gasket	aramid fibers bonded with NBR
O-Ring	chloroprene / neoprene or silicone
Seal insert	chloroprene / neoprene or silicone
Ambient conditions	
Ambient temperature	Ex eb and Ex tb versions: chloroprene seal: -40 ... 80 °C (-40 ... 176 °F) silicone seal: -60 ... 140 °C (-76 ... 284 °F) washer gasket: -50 ... 80 °C (-58 ... 176 °F) sealing plugs: -60 ... 70 °C (-76 ... 158 °F) Ex db versions: chloroprene seal: -40 ... 80 °C (-40 ... 176 °F) silicone seal: -60 ... 80 °C (-76 ... 176 °F) washer gasket: -50 ... 80 °C (-58 ... 176 °F) Service temperature might be limited by the use of sealing plugs or washer gaskets.
Data for application in connection with hazardous areas	
EU-Type Examination Certificate	IMQ 14 ATEX 012X
Marking	Ⓔx II 2 GD Ex db IIC Gb Ex eb IIC Gb Ex tb IIIC Db
International approvals	
UL approval cULus	E490324 tested to UL 514B E490962 tested to UL 2225
CSA approval	CSA 60079-7 , CSA 60079-31
IECEx approval	IECEx IMQ 14.0004X
UKCA approval	CML 21 UKEX 11380X
INMETRO approval	DNV 20.0029 X
EAC approval	RU C-DE.AA87.B.00459/20
CCC approval	2021312313000344
Conformity	
Degree of protection	EN 60529
CE marking	0102
Standards	IEC/EN 60079-0: 2012 IEC/EN 60079-1: 2014 IEC/EN 60079-7: 2015 IEC/EN 60079-31: 2014

Variant-Specific Data

Type	Thread size	Clamping range [mm] seal insert combinations				Dimensions [mm]							Nut torques [Nm] seal insert combinations				Sealing plugs	UL approval
	TD	D	S1+S2+S3	S1+S2	S1	H	L	TL	D2	SW1	SW2	DT	SW1	SW2 S1+S2+S3	SW2 S1+S2	SW2 S1		
CG.NA.M16.*.*.16.*	M16	4 ... 12	4 ... 6	6 ... 9	9 ... 12	33	49	16	24	22	22	16 ... 16.2	4	20	18	15	BP.NA.M16-M20S.PA	-
CG.NA.M20S.*.*.16.*	M20	4 ... 12	4 ... 6	6 ... 9	9 ... 12	29	45	16	26.5	24	22	20 ... 20.2	5.5	20	18	15	BP.NA.M16-M20S.PA	X
CG.NA.M20.*.*.16.*	M20	10 ... 16	10 ... 12	12 ... 14.5	14.5 ... 16	32	48	16	31	28	28	20 ... 20.2	6	24	22	18	BP.NA.M20-M25S.PA	X
CG.NA.M25S.*.*.16.*	M25	10 ... 18	10 ... 12	12 ... 14.5	14.5 ... 18	32.5	48.5	16	31	28	28	25 ... 25.2	6	25	22	18	BP.NA.M20-M25S.PA	X
CG.NA.M25.*.*.16.*	M25	14 ... 20	14 ... 17	17 ... 20	-	36	52	16	39	35	35	25 ... 25.2	6	26	22	-	BP.NA.M25-M32S.PA	X
CG.NA.M32S.*.*.16.*	M32	14 ... 24	14 ... 17	17 ... 20	20 ... 24	35	51	16	39	35	35	32 ... 32.3	6	28	23	20	BP.NA.M25-M32S.PA	X
CG.NA.M40S.*.*.18.*	M40	22 ... 32	22 ... 24	24 ... 27	27 ... 32	42.5	60.5	18	49.5	45	45	40 ... 40.3	12	56	50	45	BP.NA.M32-M40S.PA	X
CG.NA.M50S.*.*.18.*	M50	26 ... 35	26 ... 28	28 ... 31	31 ... 35	45.5	63.5	18	61	55	50	50 ... 50.3	18	57	55	52	BP.NA.M40-M50S.PA	X
CG.NA.M50.*.*.18.*	M50	35 ... 44	35 ... 38	38 ... 41	41 ... 44	45	63	18	70	64	64	50 ... 50.3	18	190	155	140	BP.NA.M50-M63S.PA	X
CG.NA.M63S.*.*.18.*	M63	35 ... 45	35 ... 38	38 ... 41	41 ... 45	45	63	18	75	68	64	63 ... 63.3	25	190	155	140	BP.NA.M50-M63S.PA	X
CG.NA.M63.*.*.18.*	M63	46 ... 56	46 ... 48	48 ... 52	52 ... 56	54	72	18	89	75	80	63 ... 63.3	25	160	145	135	BP.NA.M63-M75S.PA	X

Type	Thread size	Clamping range [mm] seal insert combinations				Dimensions [mm]							Nut torques [Nm] seal insert combinations				Sealing plugs	UL approval
	TD	D	S1+S2+S3	S1+S2	S1	H	L	TL	D2	SW1	SW2	DT	SW1	SW2 S1+S2+S3	SW2 S1+S2	SW2 S1		
CG.NA.NPT3/8.*.*.16.*	NPT 3/8"	4 ... 12	4 ... 6	6 ... 9	9 ... 12	33	49	16	24.5	22	22	17.2 ... 17.4	4	20	18	16	BP.NA.M16-M20S.PA	-
CG.NA.NPT1/2S.*.*.16.*	NPT 1/2"	4 ... 12	4 ... 6	6 ... 9	9 ... 12	29	45	16	26.5	24	22	21.4 ... 21.6	8	20	18	15	BP.NA.M16-M20S.PA	-
CG.NA.NPT1/2.*.*.16.*	NPT 1/2"	10 ... 16	10 ... 12	12 ... 14.5	14.5 ... 16	32	48	16	31	28	28	21.4 ... 21.6	8	24	22	18	BP.NA.M20-M25S.PA	-
CG.NA.NPT3/4S.*.*.16.*	NPT 3/4"	10 ... 18	10 ... 12	12 ... 14.5	14.5 ... 18	32	48	16	31	28	28	26.7 ... 26.9	10	25	22	18	BP.NA.M20-M25S.PA	X
CG.NA.NPT3/4.*.*.16.*	NPT 3/4"	14 ... 20	14 ... 17	17 ... 20	-	35	51	16	39	35	35	26.7 ... 26.9	10	26	22	-	BP.NA.M25-M32S.PA	X
CG.NA.NPT1S.*.*.20.*	NPT 1"	14 ... 24	14 ... 17	17 ... 20	20 ... 24	35	55	20	39	35	35	33.5 ... 33.7	8	28	23	20	BP.NA.M25-M32S.PA	X
CG.NA.NPT1.*.*.20.*	NPT 1"	22 ... 26	22 ... 24	24 ... 26	-	42	62	20	49.5	45	45	33.5 ... 33.7	8	45	40	-	BP.NA.M32-M40S.PA	X
CG.NA.NPT1-1/4S.*.*.20.*	NPT 1-1/4"	22 ... 32	22 ... 24	24 ... 27	27 ... 32	42.5	62.5	20	49.5	45	45	42.2 ... 42.4	10	56	50	45	BP.NA.M32-M40S.PA	X
CG.NA.NPT1-1/4.*.*.20.*	NPT 1-1/4"	26 ... 34	26 ... 28	28 ... 31	31 ... 34	45.5	65.5	20	55.5	50	50	42.2 ... 42.4	10	57	55	52	BP.NA.M40-M50S.PA	X
CG.NA.NPT1-1/2S.*.*.20.*	NPT 1-1/2"	26 ... 35	26 ... 28	28 ... 31	31 ... 35	45.5	65.5	20	61	55	50	48.3 ... 48.5	12	57	55	52	BP.NA.M40-M50S.PA	X
CG.NA.NPT1-1/2.*.*.20.*	NPT 1-1/2"	35 ... 41	35 ... 38	38 ... 41	-	44	64	20	70	64	64	48.3 ... 48.5	12	190	155	-	BP.NA.M50-M63S.PA	X
CG.NA.NPT2S.*.*.20.*	NPT 2"	35 ... 45	35 ... 38	38 ... 41	41 ... 45	45	65	20	75	68	64	60.4 ... 60.7	40	190	155	140	BP.NA.M50-M63S.PA	X

Type	Thread size	Clamping range [mm] seal insert combinations				Dimensions [mm]							Nut torques [Nm] seal insert combinations				Sealing plugs	UL approval
	TD	D	S1+S2+S3	S1+S2	S1	H	L	TL	D2	SW1	SW2	DT	SW1	SW2 S1+S2+S3	SW2 S1+S2	SW2 S1		
CG.EM.M16.*.*.16.*	M16	4 ... 8	-	4 ... 6	6 ... 8	30.5	46.5	16	22	20	20	16 ... 16.2	4	-	25	18	BP.NA.M16-M20S.PA	-
CG.EM.M20.*.*.18.*	M20	4 ... 12	4 ... 6	6 ... 9	9 ... 12	28.5	46.5	18	26.5	24	20	20 ... 20.2	5.5	20	18	15	BP.NA.M16-M20S.PA	X
CG.EM.M25.*.*.16.*	M25	10 ... 18	10 ... 12	12 ... 14.5	14.5 ... 18	32	48	16	31	28	28	25 ... 25.2	6	25	22	18	BP.NA.M20-M25S.PA	X
CG.EM.M32.*.*.19.*	M32	14 ... 24	14 ... 17	17 ... 20	20 ... 24	35	54	19	39	35	35	32 ... 32.3	6	28	20	18	BP.NA.M25-M32S.PA	X
CG.EM.M40.*.*.20.*	M40	22 ... 32	22 ... 24	24 ... 27	27 ... 32	42.5	62.5	20	49.5	45	45	40 ... 40.3	15	56	50	45	BP.NA.M32-M40S.PA	X
CG.EM.M50.*.*.20.*	M50	26 ... 35	26 ... 28	28 ... 31	31 ... 35	48.5	68.5	20	61	55	50	50 ... 50.3	18	57	55	52	BP.NA.M40-M50S.PA	X

Type	Thread size	Clamping range [mm] seal insert combinations				Dimensions [mm]							Nut torques [Nm] seal insert combinations				Sealing plugs	UL approval
	TD	D	S1+S2+S3	S1+S2	S1	H	L	TL	D2	SW1	SW2	DT	SW1	SW2 S1+S2+S3	SW2 S1+S2	SW2 S1		
CG.EM.NPT3/8.*.*.16.*	NPT 3/8"	4 ... 8	-	4 ... 6	6 ... 8	30.5	46.5	16	24.5	22	22	17.2 ... 17.4	4	-	25	18	BP.NA.M16-M20S.PA	-
CG.EM.NPT1/2.*.*.18.*	NPT 1/2"	4 ... 12	4 ... 6	6 ... 9	9 ... 12	28.5	46.5	18	26.5	24	22	21.4 ... 21.6	8	20	18	15	BP.NA.M16-M20S.PA	X
CG.EM.NPT3/4.*.*.16.*	NPT 3/4"	10 ... 18	10 ... 12	12 ... 14.5	14.5 ... 18	32.5	48.5	16	31	28	28	26.7 ... 26.9	10	25	22	18	BP.NA.M20-M25S.PA	X
CG.EM.NPT1.*.*.20.*	NPT 1"	14 ... 24	14 ... 17	17 ... 20	20 ... 24	35	55	20	39	35	35	33.5 ... 33.7	10	28	20	18	BP.NA.M25-M32S.PA	X
CG.EM.NPT1-1/4.*.*.20.*	NPT 1-1/4"	22 ... 32	22 ... 24	24 ... 27	27 ... 32	42.5	62.5	20	49.5	45	45	42.2 ... 42.4	10	56	50	45	BP.NA.M32-M40S.PA	X
CG.EM.NPT1-1/2.*.*.20.*	NPT 1-1/2"	26 ... 35	26 ... 28	28 ... 31	31 ... 35	45	65	20	61	55	50	48.3 ... 48.5	12	57	55	52	BP.NA.M40-M50S.PA	X