

## A\*L\*\* & A\*LC\*\*\* Type Cable Glands – ASSEMBLY INSTRUCTIONS

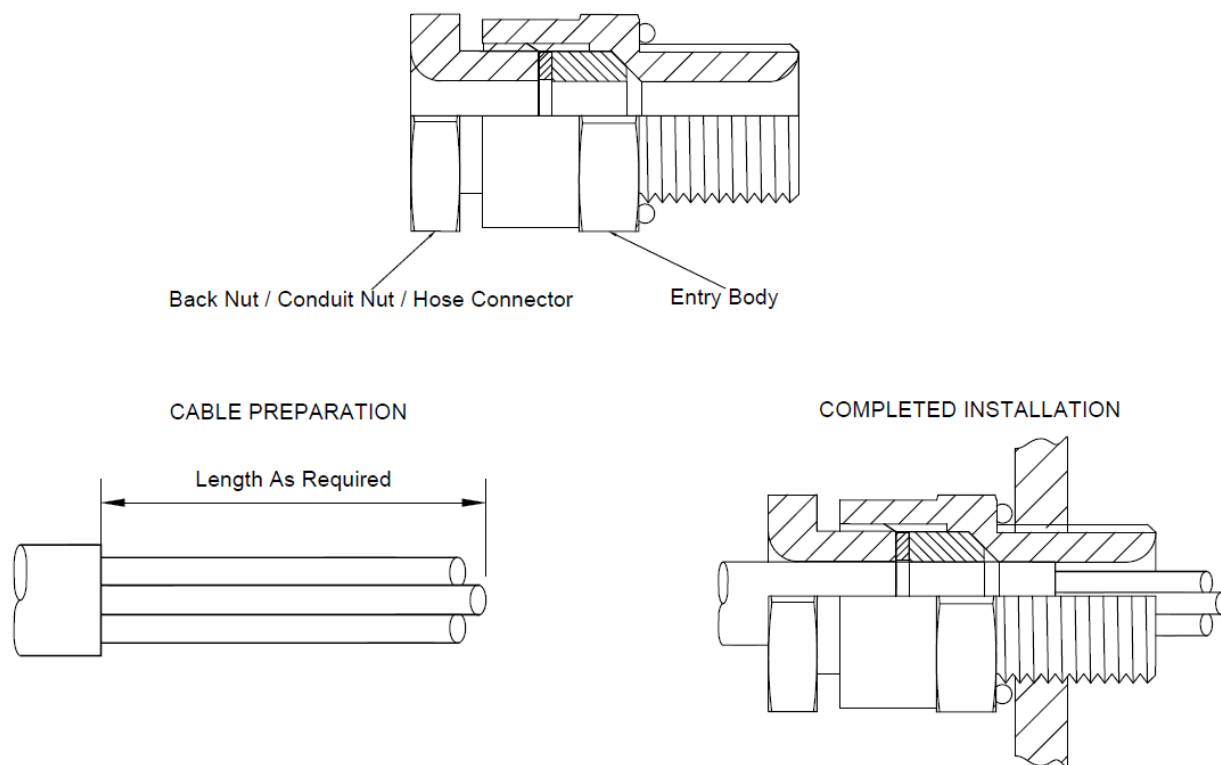
### Brief Description

Peppers A\*L\*\* and A\*LC\*\*\* type cable glands are for outdoor use in the appropriate Hazardous Areas with unarmoured, braided or armoured cable where the braid or armour is to be terminated inside the enclosure. They provide a displacement seal on the cable outer sheath and give environmental protection to IP66 and IP68 (50 metres for 7 days) and deluge.

### Warning

Please read these instructions carefully. These products should not be used in applications except as detailed here or in our datasheets, unless confirmed in writing by Peppers. Peppers take no responsibility for any damage, injury or other consequential loss caused where products are not installed or used according to these instructions. This leaflet is not intended to advise on the selection of product. Further guidance can be found in the standards listed overleaf or the prevailing code of practice.

### STEP-BY-STEP INSTRUCTIONS



### STEP-BY-STEP FITTING INSTRUCTIONS

1. Check there is no tension in the threads. It is not necessary to dismantle the gland.
2. Fit Entry Body, allowing for any installation accessories, and fully engage the thread into the equipment. Hand-tighten, then suitably secure with a wrench. Further guidance can be found in Peppers document CT0030 which can be found on our website.
3. Prepare cable as required for the installation. If required, fit the shroud over the cable.
4. Insert cable through the cable gland. Position the cable correctly. The seal must grip the outer jacket of the cable when the cable gland is tightened.
5. Tighten Back Nut/Conduit Nut to the Entry Body. Ensure the seal makes full contact with cable sheath and then tighten the Back Nut/Conduit Nut by the additional turns detailed in Table 1. Support the cable to prevent it from twisting during tightening. If fitted, pull shroud over gland assembly.
6. (A\*LCF\*\* & A\*LCM\*\* options) Fasten mating conduit/equipment to the Conduit Nut to complete the installation.  
(A\*LCH\*\* option) Push hose onto the connector and secure with a suitable hose clip to complete the installation.

Note - Cable Glands featuring Lead Sheath Option (A1L\*\*, A4L\*\*, A1LC\*\*\* & A4LC\*\*\* types)

To ensure that continuity is provided for the lead sheath and the installation is completed correctly the cable gland should be installed as follows: -



- A section of the cable outer sheath should be stripped back to expose the lead sheath. It should be stripped back in a position suitable to terminate the conductors correctly and for the internal cable gland seal to secure the cable outer sheath.
- The continuity washer within the gland should make full contact with the lead sheath of the cable.
- The gland should then be installed as per the above instructions.
- Contact Peppers for further advice if required.

Table 1 – Installation Data and Cable Sizes (mm)

Gland size	Back Nut Turns – Step 5	Outer Sheath	
		Min.	Max.
12	¼	0.9	6.0
16	2	4.0	8.4
20S	1	7.2	11.7
20	2	9.4	14.0
25	2	13.5	20.0
32	2	19.5	26.3
40	2	23.0	32.2
50S	1.5	28.1	38.2
50	2	33.1	44.1
63S	1.5	39.2	50.1
63	2	46.7	56.0
75S	2	52.1	62.0
75	2	58.0	68.0
80	1.5	62.2	72.0
85	1.5	69.0	78.0
90	1.5	74.0	84.0
100	2	82.0	90.0

## A\*L\*\* & A\*LC\*\*\* Type Cable Glands – ASSEMBLY INSTRUCTIONS

### Approvals and Certification

Approval	Certificate Number	Protection Concept / Type
ATEX (2014/34/EU)	CML 19ATEX1345X / CML 21UKEX1032X	 II 1D 2G Ex db IIC Gb / Ex eb IIC Gb / Ex ta IIIC Da
UKCA (SI 2016 No. 1107)	CML 19ATEX4109X / CML 21UKEX4043X	 II 3G Ex nR IIC Gc
IECEX	IECEX CML 19.0103X	Ex db IIC Gb / Ex eb IIC Gb / ExnR IIC Gc / Ex ta IIIC Da
CSA	1356011	Ex db IIC Gb / Ex eb IIC Gb / Ex ta IIIC Da Class I Zone 1 AEx eb IIC Gb / Zone 20 AEx ta IIIC Da CL II Gr EFG / CL III Type 4X / IP66 IP68
INMETRO	NCC 13.2012 X	Ex db IIC Gb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
EAC	PROMMAW TECT RU C-GB.AX58.B.05106	1Ex db IIC Gb X / 1Ex eb IIC Gb X / 2Ex nR IIC Gc X / Ex ta IIIC Da X
UKRAINE	CU 18.0325 X	II 1D 2G 3G Ex db IIC Gb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
CCC	2021312313000408	Ex db IIC Gb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da IP66
CCoE (PESO)	P494321/6 & P494321/13	Ex db IIC Gb / Ex eb IIC Gb / Ex ta IIIC Da / Ex nR IIC Gc
ECASEx	25-06-153223/E25-06-159811/NB0007	Ex db IIC Gb / Ex eb IIC Gb / Ex ta IIIC Da / Ex nR IIC Gc
ABS	20-LD1944057-PDA	Specified ABS Rules – See certificate
Lloyd's Register	LR2124442TA	Ex db IIC Gb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
DNV	TAE00004XK	Ex db IIC Gb / Ex eb IIC Gb / ExnR IIC Gc / Ex ta IIIC Da

### Installation Guidance

Point	Advice
1	BS/EN/IEC 60079-10
2	BS/EN/IEC 60079-14
3	National Electrical Code (NEC 500 -505)
4	Canadian Electrical Code (CSA C22.1)
5	Installation should only be carried out by a competent electrician, skilled in cable gland and appropriate electrical installations.
6	Comprehensive details of the compliance standards can be found in the product certificates which are available for download from our website.
7	NO INSTALLATION SHOULD BE CARRIED OUT UNDER LIVE CONDITIONS.
8	Threaded entries: the product can be installed directly into threaded entries. Threaded entries should comply with the relevant applicable standards and have a lead-in chamfer to allow for full engagement of the threads. Failure to provide a sufficient lead-in chamfer may lead to ingress sealing issues. For Ex db applications a minimum of 5 fully engaged threads is required.
9	Clearance holes: these shall be no larger than 0.7mm above the nominal diameter of the external entry thread. The product should be secured with a Peppers locknut and then tightened to ensure the cable gland is secure. Where no integral sealing method is provided a Peppers sealing washer should be used to maintain IP ratings. A Peppers serrated washer should be used for additional installation protection. Peppers does not recommend using tapered threads in clearance holes.
10	Ingress protection: to maintain the Ingress Protection rating of the product, the entry hole must be perpendicular to the surface of the enclosure. The surface should be clean, dry and must be sufficiently flat and rigid to support the assembly and make the IP joint. Metric threads are supplied with an O-ring and will maintain IP66. Other parallel entry threads will maintain an IP rating of IP64. A Peppers sealing washer should be used to maintain all IP ratings greater than IP64. Whilst Peppers products with tapered threads, when installed into a threaded entry, have been tested to maintain IP66 without any additional sealant, due to the differing gauging tolerances associated with the use of tapered threads it is recommended to use a non-hardening thread sealant if an IP rating higher than IP64 is required. Any thread sealant used should be suitable for use in the hazardous area or location where the equipment is installed, have a suitable temperature range for the temperature at the point of mounting, not contain evaporating solvents and not cause corrosion at the threaded interface when used with dissimilar materials. The product incorporates a thread run out according to general machining techniques and will not have a full form thread for the entire length. Threaded entries should have a suitable lead-in chamfer to ensure a seal is maintained, further guidance can be found on Peppers website. It is the user's/installer's responsibility to ensure that the interface between the enclosure and cable gland is suitably sealed for the required application.
11	Where a bonding connection to earth is required a Peppers earth tag should be used. Peppers earth tags have been independently tested to comply with the Category B values given in IEC 62444. Peppers earth tags should be fitted over the external entry thread from either inside or outside the enclosure. If fitted internally they must be secured with a Peppers locknut and optionally a Peppers serrated washer. Further guidance can be found in Peppers document CT0170 which can be found on our website.
12	Peppers external metric entry threads comply with ISO 965-1 & ISO 965-3 with a 6g tolerance fit. The standard metric thread pitch is 1.5mm for threads up to M75 and 2.0mm for size M80 and above. Alternative thread pitches are available upon request. Peppers external NPT threads comply with ASME B1.20.1 with gauging to clause 8.1. All threads comply with the threaded joint requirements of clause 5.3 from IEC 60079-1. Information on other thread types can be found in the product certificates.
13	Once installed do not dismantle except for routine inspection. An inspection should be conducted as per IEC 60079-17. After inspection the gland should be re-assembled as instructed, ensuring the compression nut, mid cap and back nut are correctly tightened to ensure the cable is secure.
14	If required an anti-seize lubricant may be used to aid assembly and routine inspection, if used care should be taken to ensure no lubricant comes into contact with the cable gland seals as this may impair performance. Any lubricant used should comply with the prevailing code of practice, be suitable for use in the hazardous area or location where the equipment is installed, have a suitable temperature range and not contain evaporating solvents.

### Interpretation of Markings

Markings on the outside of this gland carry the following meanings:

Cable Gland Type & Size A-a-L-bb-c-d-eee-fff-ggg-nn.

a =	Seal Type	1 = Neoprene (black)	2 = Neoprene with Continuity Washer	eee =	Connector Option (A*LC*** only)
b =	Design Option	3 = Silicone (white)	4 = Silicone with Continuity Washer	fff =	Gland size
c =	Main component material	No characters = single seal gland	CH = Hose Connector	ggg =	Entry thread type and size
d =	Design Option	CF = Female connection thread	CM = Male connection thread	nn =	Year of manufacture
		B = Brass	S = Stainless Steel		
		F = Dual Certified Ex db & Ex eb	A = Aluminium		
			E = Ex eb only		

### Specific Conditions of Use

- A\*L\*\* and A\*LC\*\*\* glands must not be used in enclosures where the temperature at the point of contact is outside the range of -35°C to +90°C using neoprene seals, or -60°C to +180°C using silicone seals.
- A\*L\*\* and A\*LC\*\*\* cable glands shall only be used for fixed installations, in addition the cables must be effectively clamped to prevent pulling or twisting.
- When installed in accordance with these instructions within appropriate equipment, A\*L\*\* and A\*LC\*\*\* glands are capable of providing an ingress protection of IP66 and IP68 (50 metres - 7 days).
- When used in explosive dust atmospheres and installed in threaded entries without interface O-ring seals, A\*L\*\* and A\*LC\*\*\* glands shall only be fitted into enclosures that have either:
  - parallel entries that will ensure a minimum of 5 full threads of contact will be maintained, this is in accordance with clause 5.1.2 of IEC 60079-31.
  - tapered entries that will ensure a minimum of 3 ½ full threads of contact will be maintained, this is in accordance with clause 5.1.2 of IEC 60079-31.