

UL-X* Marine Shipboard Cable Glands – ASSEMBLY INSTRUCTIONS

Brief Description

Peppers UL-X* Compound-filled cable glands are for outdoor use in the appropriate Hazardous Locations with Tray cable and unarmoured Marine Shipboard cables (CEC and NEC applications) and any unarmoured cables of any construction (IEC applications), with or without braids or screens, where the braids or screens pass through the compound. They give environmental protection to IP66, IP68 and Type 4X.

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. The compound has application limitations and may be adversely affected by some solvent vapours. If such vapours are likely to be present when the cable gland is in service, necessary precautions should be taken. Peppers Technical Datasheet can be downloaded from our website for further guidance. The compound should be stored in its

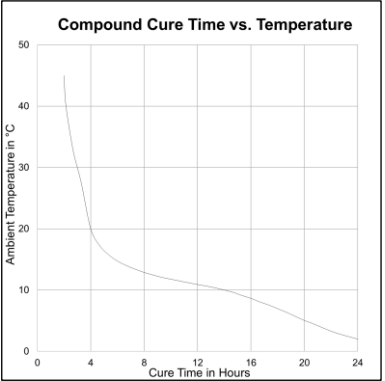
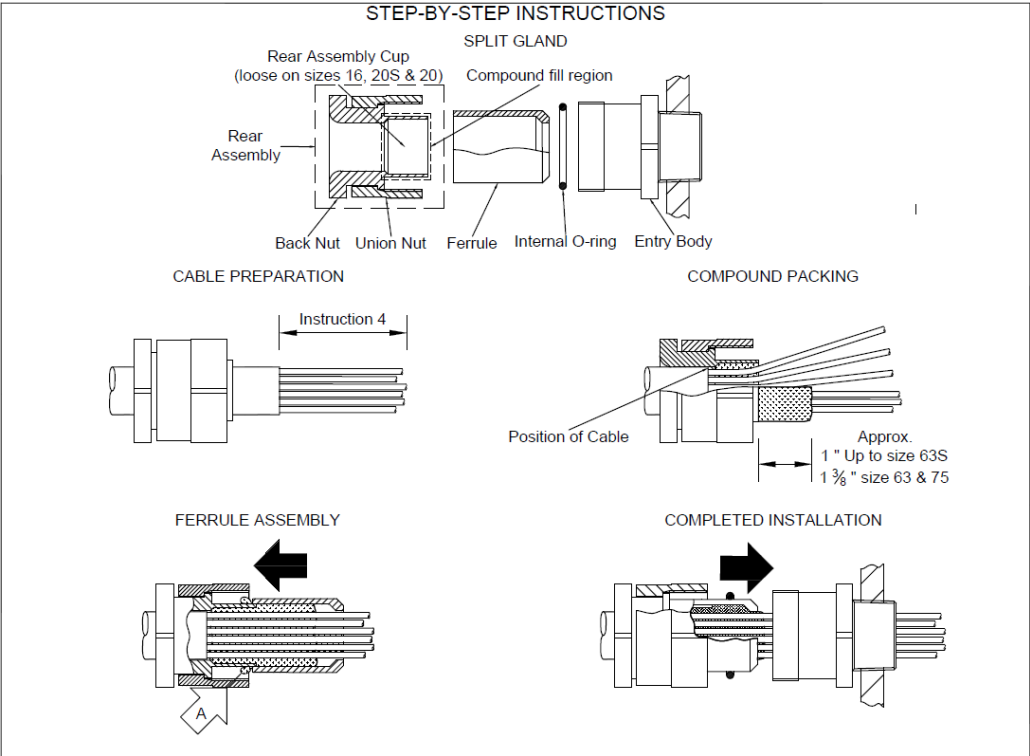


Figure 2



Figure 1



original packaging in a dry area at temperatures between 5°C and 21°C.

STEP-BY-STEP FITTING INSTRUCTIONS

- Split gland as shown.
- 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.
- Slide Rear Assembly (and shroud if required) onto cable as shown. Put Ferrule and Internal O-ring to one side.
- CABLE PREPARATION: Strip jacket so that cores are fully exposed in the compound chamber, length to suit installation. Remove protective foils, and any cords/fillers from around and between the cores level with the trimmed jacket. Take care not to cut the insulating sleeves of the cores. Using Listed sleeving, pigtail and sleeve any screens to be passed through compound and Entry Body.

HEALTH AND SAFETY WARNING:

The resin used in the compound can cause eye and skin irritation. For your personal protection, wear the gloves supplied whilst in contact with the compound. **A COMPREHENSIVE SAFETY DATA SHEET IS AVAILABLE FOR DOWNLOAD FROM OUR WEBSITE.**
- Check compound has not passed its "Use By" date. It has a work life of about 30 minutes at 16-27°C (60-80°F), during which time it can be worked and shaped before it begins to cure. Full cure takes 24 hours at 16-27°C (60-80°F). Lower temperatures will give a longer cure time. E.g. at 3°C (37°F) full cure takes about seven days. See Compound Cure Time Vs. Temperature. It is recommended to mix the putty and pack the fitting at 20°C (68°F). Minimum mixing/packing temperature is 10°C. Minimum curing temperature is 3°C.
- Trim any hardened pieces from ends of stick. Mix the compound by rolling, folding and breaking. Ease mixing by cutting large sticks in half. Fully mixed compound has a uniform colour with no streaks (figure 1).
- Support the cable and Rear Assembly so that they are roughly concentric. Position the Rear Assembly so that the cable jacket is just behind the Rear Assembly Cup. Cable must be held firmly (see diagram). Splay out the cores.
- Starting at the middle, fill the Rear Assembly Cup by packing small amounts of rolled-out compound around and between the cores. Re-straighten each core and work outwards until all gaps are filled. Pack around the outside of the outer cores. Push compound down to make sure the Rear Assembly Cup is filled.
- Similarly build up compound in and around the protruding cores. Apply the compound in rolled-out strips where possible so that unbroken layers are formed. Where joins occur or there are suspected holes, work the compound together to ensure a gas-tight seal. The cylinder of compound should project approx. 1" (or 1 3/8" for sizes 63 & 75 (see diagram). Retrieve Ferrule and pass it over cores. Locate and press Ferrule onto Cone and remove squeezed-out compound (arrow A). Pass cores through O-ring and Entry Body. Fit O-ring over Ferrule. Engage Ferrule in Entry Body and screw on Union Nut. Tighten with wrench to close up the Ferrule Assembly.
- Slacken off Union Nut to inspect Cable Unit. Where the cores exit the Ferrule, projecting compound must not foul the Entry Body. Bundle cores with cable-tie, cord or tape so they are not disturbed (figure 2). Leave to cure. Cores may be disturbed after 1 hour.
- Re-assemble Cable Unit to Entry Body ensuring the O-ring is seated on the outside of the ferrule. Tighten Union Nut using wrench.

Gland Trade Size, Cable Size (imperial & metric) and Construction

Gland Size	Standard Trade Size		Max. Number of Cores by Approval		Max. Diameter Over Cores		Max. Outer Jacket Diameter	
	NPT	Metric	UL	Other	Inch	mm	Inch	mm
20S	1/2" & 3/4"	M20 & M25	8	40	10.4	0.409	0.461	11.7
20	1/2" & 3/4"	M20 & M25	16	60	12.5	0.492	0.551	14.0
25	3/4" & 1"	M25 & M32	30	80	17.8	0.701	0.787	20.0
32	1" & 1 1/2"	M32 & M40	60	130	23.5	0.925	1.035	26.3
40	1 1/4" & 1 1/2"	M40 & M50	5	400	28.8	1.134	1.268	32.2
50	2"	M50 & M63	4	425	39.4	1.551	1.736	44.1
63	2 1/2"	M63 & M75	4	425	50.0	1.969	2.205	56.0
75	3"	M75	4	425	60.8	2.394	2.677	68.0

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Approvals and Certification

Approval	Certificate Number	Protection Concept / Type
ATEX (2014/34/EU)	CML 19ATEX1349X / CML 21UKEX1028X	Ex I M2 II 1D 2G Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex ta IIIC Da
UKCA (SI 2016 No. 1107)	CML 19ATEX4114X / CML 21UKEX4037X	Ex II 3G Ex nR IIC Gc
IECEX	IECEX CML 19.0107X	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
UL	E248936	Class I Div 2 Gas Groups A, B, C & D Type 4X
CSA	70004604	Class I, Div. 2, Groups A, B, C and D; Class II, Div. 1, Groups E, F and G; Class III; Type 4X Ex d IIC Gb / Ex e IIC Gb / Ex ta IIIC Da (Canada) Class I Zone 1 AEx d IIC Gb / AEx e IIC Gb Type 4X / Class II, Zone 21 AEx ta IIIC Da (USA)
INMETRO	NCC 13.1957 X	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
EAC	ПРОММАШ TECT RU C-GB.AJK58.B.05106	PB Ex db I Mb / 1Ex db IIC Gb X / PB Ex eb I Mb X / 1Ex eb IIC Gb X / 2Ex nR IIC Gc X / Ex ta IIIC Da X
UKRAINE	CLJ 18.0324 X	I M2 Ex db I Mb / Ex eb I Mb / II 1D 2G 3G Ex db IIC Gb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
CCC	2021312313000425	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da IP66
CCoE (PESO)	P494321/9 & P494321/20	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc
ECASEx	25-06-153223/E25-06-159811/NB0007	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
ABS	25-0158110-PDA	Specified ABS Rules – See certificate
Lloyd's Register	LR2124442TA	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da
DNV	TAE00004XK	Ex db I Mb / Ex db IIC Gb / Ex eb I Mb / Ex eb IIC Gb / Ex nR IIC Gc / Ex ta IIIC Da

Installation Guidance

Point	Advice
1	BS/EN/IEC 60079-10 BS/EN/IEC 60079-14 National Electrical Code (NEC 500-505) Canadian Electrical Code (CSA C22.1)
2	CEC and NEC Offshore/Marine Shipboard Applications: For Class I Division 1 Group ABCD Installations this product is intended for Marine Shipboard cables and installed according to the prevailing Electric Code, US Coast Guard Electrical Engineering Regulations & Ship Safety Electrical Standards.
3	Comprehensive details of the compliance standards can be found on the product certificates which are available for download from our website
4	Installation should only be carried out by a competent electrician, skilled in cable gland installation.
5	NO INSTALLATION SHOULD BE CARRIED OUT UNDER LIVE CONDITIONS.
6	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.
7	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.
8	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 and IP68. 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.
9	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.
10	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.
11	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.
12	Environmental and ingress protection may be reduced when using unjacketed cable
13	If required an anti-seize lubricant may be used to aid assembly of gland threads. The lubricant should comply with the prevailing code of practice and care should be taken to ensure no lubricant comes into contact with the cable gland seals as this may impair performance.

Approved Temperature Range

UL Approval	All Other Approvals
-25°C to +85°C / -13°F to +185°F	-60°C to +135°C / -76°F to +275°F

Environmental Protection

UL Approval	CSA Approval	All Other Approvals
Type 4X / Raintight	IP66 / IP68 (100 metres for 7 days) / Type 4X Oil resistant II	IP66 / IP68 (100 metres for 7 days)

Interpretation of Markings

Markings on the outside of this gland carry the following meanings: **UL-X-a-bbb-ccc-nn**

UL =	Barrier gland product range	bbb =	Gland size
X =	Unarmoured cable incorporating an epoxy-resin based compound	ccc =	Entry thread type and size
a =	Main component material	nn =	Year of manufacture
	B = Brass S = Stainless steel		

Specific Conditions of Use

- UL-X* glands must not be used in enclosures where the temperature at the point of contact is outside the range of -25°C to +85°C for UL applications or -60°C to +135°C for other (IEC based) applications.
- The interface seals comply with the requirements of the standards listed the certificates above when UL-X* glands are fitted to a representative enclosure having a smooth flat mounting surface. In practice the interface between the male thread of the glands and their associated enclosure cannot be defined, therefore it is the user's responsibility to ensure that the appropriate ingress protection level is maintained at these interfaces.
- UL-X* glands with parallel threaded entry components shall be suitably sealed using a method that is suitable for the associated equipment, in accordance with the relevant installation code of practice such that any ingress protection and restricted breathing sealing requirements are maintained.
- When used in explosive dust atmospheres and installed in threaded entries without interface O-ring seals, UL-X* 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.
- UL-U* glands are manufactured with a cylindrical flameproof joint between the entry body and the front ferrule. This joint is not intended for repair.