

## UL-U\* Marine Shipboard Cable Gland – ASSEMBLY INSTRUCTIONS FOR SAFE USE

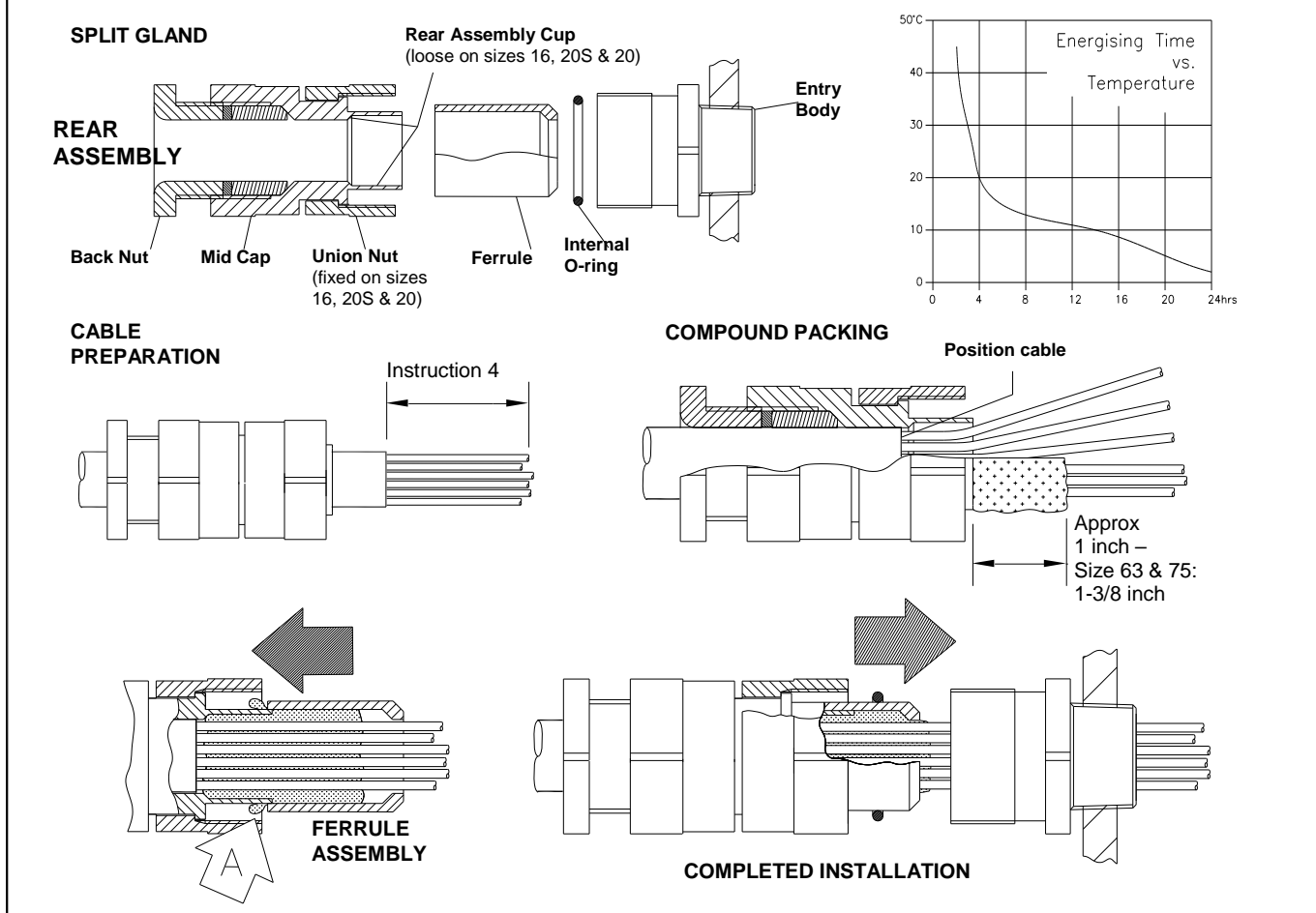
### Brief Description

Peppers UL-U\* 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 original packaging in a dry area at temperatures between 5°C and 21°C.

### STEP-BY-STEP FITTING INSTRUCTIONS



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- 1 Split gland as shown
  - 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 Slide Rear Assembly (Back Nut, Mid Cap and Union Nut) and shroud if required onto cable as shown. Put Ferrule and Internal O-ring to one side.
  - 4 **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.**
- 5 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 Energising Time data. 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.
  - 6 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 – see Figure 1.
  - 7 Support the cable and Rear Assembly. Tighten the Back Nut so that the jacket seal grips the cable slightly. Ensure that the Rear Assembly is positioned so that the cable jacket is just behind the Rear Assembly cup (see diagram). Splay out the cores.
  - 8 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.
  - 9 Similarly build up compound in and around the protruding cores. Apply the compound in rolled-out strips wherever possible so that unbroken layers are formed. Where joins occur in the fill or there are suspected holes, work the compound together to ensure a gas-tight seal. The cylinder of compound should project approx 1 in (or 1½ in 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 Entry Body. Engage Ferrule in Entry Body and screw on Union Nut. Tighten with wrench to close up the Ferrule Assembly
  - 10 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. Leave to cure. Cores may be disturbed after 1 hour.
  - 11 Slide inside o-ring over outer diameter of ferrule and ensure it is located at base of ferrule.
  - 12 Re-assemble Cable Unit to Entry Body ensuring the o-ring is seated on the outside of the ferrule. Tighten Union Nut using wrench. Hold Mid Cap with wrench and tighten Back Nut onto cable. Ensure jacket seal makes full contact with cable then tighten Back Nut 1 extra turn.

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### Gland trade sizes, cable sizes (inch) & construction

Gland Size	Standard Trade Size		Max No of Cores	Max No of Cores	Max Diameter Over Cores		Outer Jacket Size			
	NPT	Metric			Inch	mm	Min		Max	
16	½" & ¾"	M20 & M25	1	15	10.4	0.409	0.134	3.4	0.331	8.4
20S	½" & ¾"	M20 & M25	4	35	10.4	0.409	0.189	4.8	0.461	11.7
20	½" & ¾"	M20 & M25	8	40	12.5	0.492	0.374	9.5	0.551	14.0
25	¾" & 1"	M25 & M32	16	60	17.8	0.701	0.461	11.7	0.787	20.0
32	1" & 1 ½"	M32 & M40	30	80	23.5	0.925	0.713	18.1	1.035	26.3
40	1 ¼" & 1 ½"	M40 & M50	60	130	28.8	1.134	0.89	22.6	1.268	32.2
50S	2"	M50 & M63	5	200	34.9	1.374	1.11	28.2	1.504	38.2
50	2"	M50 & M63	5	400	39.4	1.551	1.303	33.1	1.736	44.1
63S	2 ½"	M63 & M75	4	400	44.8	1.764	1.547	39.3	1.972	50.1
63	2 ½"	M63 & M75	4	425	50.0	1.969	1.839	46.7	2.205	56.0
75S	3"	M75	4	425	55.4	2.181	2.059	52.3	2.441	62.0
75	3"	M75	4	425	60.8	2.394	2.283	58.0	2.677	68.0

1 UL Approvals

2 All Other Approvals

Figure 1



### Approvals and Certification

Approval	Certificate Number	Protection Concept / Type
ATEX	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 – Canada	70004604	Class I, Div. 2, Groups A, B, C and D; Class II, Div. 1, Groups E, F and G; Class III; Type 4X Class I Zone 1 Ex d IIC Gb / Ex e IIC Gb Type 4X / Class II, Zone 21 Ex ta IIIC Da
CSA – US	70004604	Class I, Div. 2, Groups A, B, C and D; Class II, Div. 1, Groups E, F and G; Class III; Type 4X Class I Zone 1 AEx d IIC Gb / AEx e IIC Gb Type 4X / Class II, Zone 21 AEx ta IIIC Da
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	RU C-GB.BH02.B.00693/18	1Ex d IIC Gb X / 1Ex e IIC Gb X / 2Ex nR IIC Gc X / PB Ex d I Mb / Ex ta IIIC Da X
UKRAINE	CLJ 18.0324 X	1 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 d I Mb / Ex d IIC Gb / Ex e I Mb / Ex e IIC Gb / Ex nR IIC Gc / Ex tD A20 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
ABS	20-LD1944057-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
Russian Maritime	19.00189.278	Ex d I Mb / Ex d IIC Gb / Ex e I Mb / Ex e IIC Gb / Ex ta IIIC Da

### Installation Guidance

Point	Advice
1	CEC and NEC Offshore/Marine Shipboard Applications: For Class I Division 2 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.
2	EN/IEC 60079-10 EN/IEC 60079-14 National Electrical Code (NEC 500 – 505) Canadian Electrical Code (CSA C22.1)
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 parallel threads is required. 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.
7	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 sufficiently flat and rigid to support the assembly and make the IP joint. The surface must be clean and dry. The product incorporates a thread run out according to general machining techniques and will not have a full form thread for the entire length and as such entry threads 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. Any thread sealant used shall be suitable for use in hazardous area locations, be suitable for the temperature range at the point of mounting, shall not contain evaporating solvent and cannot cause corrosion at the threaded interface when used for dissimilar materials.
8	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. Further guidance can be found in Peppers document CT0017 which can be found on our website. 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.
9	Peppers external metric entry threads comply with ISO 965-1 and ISO 965-3 with a 6g tolerance fit. Peppers standard metric thread pitch is 1.5mm for threads up to M75. Alternative thread pitches are available upon request. Peppers external NPT threads are in accordance 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.
10	Once installed do not dismantle except for routine inspection. An inspection should be conducted as per IEC/EN 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.
11	Do not damage enclosure entry threads on assembly. Check the number of full turns of thread engaged is 5 (8 for parallel threads)
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

ATEX / IECEX / CSA / INMETRO / EAC / UKRAINE / NEPSI / CCoE	UL
-60°C to +135°C / -76°F to +275°F	-25°C to +85°C / -13°F to +185°F

### Environmental Protection

ATEX / IECEX / INMETRO / EAC / NEPSI / UKRAINE	CSA	UL
IP66 / IP68 (100 metres for 7 Days)	IP66 / IP68 (100 metres for 7 Days) / Type 4X / Oil Resistant II	Type 4X / Raintight

### Interpretation of Markings. Markings on the outside of this gland carry the following meanings: -

Markings: UL-U-a-bbb-ccc-nn; where: -

UL =	Barrier Gland Product Range	a =	Main component material B = brass S = stainless steel	ccc =	Entry thread type and size
U =	Unarmoured cable incorporating an epoxy –resin based compound	bbb =	Gland size	nn =	Year of manufacture

### Specific Conditions of Use

- These cable glands shall not be used in enclosures where the temperature, at the point of entry/mounting, is outside of the range -60°C to +135°C-for ATEX / IEC applications and -25°C to +85°C for UL applications.
- The Ingress Protection rating that is required to ensure compliance with the standards used in this certificate was determined by testing the devices fitted into 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.
- The parallel threaded entry component threads will be suitably sealed using a method that is applicable to the associated equipment to which the gland will be attached. This will be in accordance with the relevant installation code of practice and will ensure that any ingress protection and restricted breathing sealing requirements are maintained.
- The threaded entry component threads without interface o-ring seals installed in an explosive dust atmosphere, within threaded entries, shall only be fitted into enclosures that have either:
  - parallel entries that will ensure that a minimum of 5 full threads of contact will be maintained, this is in accordance with clause 5.1.2 of EN 60079-31:2014,
  - tapered entries that will ensure that a minimum of 3 ½ full threads of contact will be maintained, this is in accordance with clause 5.1.2 of EN 60079-31:2014.
- These cable glands are manufactured with a cylindrical flameproof joint between the entry body and the front ferrule. This joint is not intended for repair.