CCG CABLE TERMINATIONS

VORTEx INSPECTABLE INJECTION RESIN BARRIER GLAND

TMCX

Class I,II,III Div. 1,2; Class I Zone 1 AEx d / Ex d, AEx e/ Ex e Zone 21 AEx tb / Ex tb; Class I Zone 2 AEx nR/ Ex nR Ex d / Ex e, Ex tb, Ex nR IP66/67/68 (Metric) IP65 (NPT), Type 4X

CABLE SEALING CONNECTOR FOR USE WITH MC-HL OR TECK CABLES

Features and Benefits

- Liquid resin barrier sealing system
- For use in ordinary, wet and hazardous locations.
- Available with NPT or metric threads.
- Glands with metric threads are supplied with a sealing gasket as standard.

NEMA 4X

Technical Data

Type:	TMCX
Gland Material:	Aluminium, Brass (Marine Grade Electroless Nickel Plated™), Stainless Steel
Seal Material:	EPDM or Silicone
Sealing Gasket Material:	HDPE, Nylon or PTFE
Cable Type:	MC-HL, Teck Cable
Optional Accessories:	Earth tag, Serrated Washer, Locknut
Note:	The installer should check that the materials are suitable for the installation environment

Temperature Range

When fitted with sealing gaskets the temperature range for the gland will be:-

Sealing Gasket Material	Temperature range
All types	-50°C to +95°C

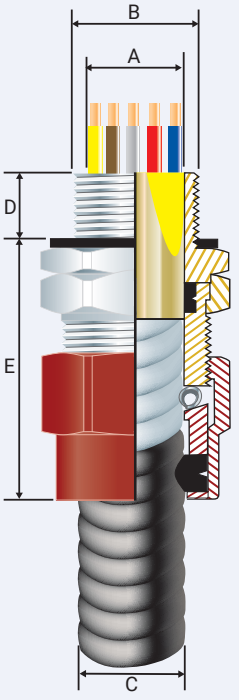
Certification Details

Equipment Protection Levels:
NEC / CEC: Class I, Div.1 Gr ABCD, Class II, Div.1 Gr EFG, Div.2 Gr FG, Class III, Div.1,2,Class I, Zone 1 AEx db IIC Gb/ I, Zone 1 AEx eb IIC Gb / Ex eb IIC Gb, Zone 21 AEx tb IIIC Db/ Ex tb IIIC Db, Class I Zone 2 AEx nR IIC Gc / Ex nR IIC Gc, IP66/67/68, Type 4X
IECEx/INMETRO: Ex db IIC Gb, Ex eb IIC Gb, Ex ta IIIC Da, Ex nR IIC Gc
ATEX/UKEX: Ⓔx II 2/3G 1D, Ex db IIC Gb, Ex eb IIC Gb, Ex ta IIIC Da

Conformance:	Standard:	Certificate:
CEC	CSA C22.2 No. 18.3-12, 174:2018 & 213:2017 CSA C22.2 No. 60079 - 0, 1, 7, 15, 31	E115594
NEC	UL514B, UL121201 UL 60079 - 0, 1, 7, 15, 31	
IECEx	IEC 60079 - 0, 1, 7, 15, 31	IECEx CML 18.0018X
ATEX	EN 60079 - 0, 1, 7, 31	CML 16ATEX1001X
	EN 60079-15	CML 16ATEX4002X
UKEX	BS EN 60079 Part 0, 1, 7, 31	CML 21UKEX1011X
	BS EN 60079-15	CML 16UKEX4006X
INMETRO (Brazil)	ABNT NBR IEC 60079 Part 0, 1, 7, 15, 31	TÜV 15.0483X
SANS	SANS/IEC 60079 Part 0, 1, 7, 15, 31	MASC MS/22-9001X
IP66/67/68 (850m) - Metric	IEC60529	CML 15Y728
IP65/66 - NPT	IEC 60529	
IP68 - Tapered and approved grease	IEC 60529	IECEx CML 18.0018X
Nema Type 4X	NEMA 250	E115594

Specific Conditions for Use

- Metric threads have an IP rating of IP66/67/68 when fitted with the supplied sealing gasket. NPT threads have an IP rating of IP65 and can have an IP rating of IP66/67/68 if fitted using a suitable thread sealant.
- The cable glands shall only be used in the temperature, at the point of entry, is in the range specified according to sealing gasket material and application.
- Only the resin supplied by CCG may be used in these glands.
- Not suitable for use with Acetic Acid or Methanol.



NPT / Metric Entry Thread

NPT Entry Thread

Model	Product Code	NPT Thread 'B'	Thread Length 'D'	Cable Armour		Cable Jacket		Max. Length 'E'	Dia. Over Cores	Max. No of Cores	Hexagon		Jacket Strip Length
				Min 'A'	Max 'A'	Min 'C'	Max 'C'				A/F	A/C	
TMCX050A00	058900-012NPT-A	½	0.782	0.311	0.512	0.354	0.530	2.283	0.429	10	1.063	1.161	1.102
TMCX050A-0	0589-0-012NPT-A	½	0.782	0.421	0.630	0.500	0.748	2.677	0.492	16	1.259	1.417	1.299
TMCX075A-0	0589-0-034NPT-A	¾	0.794	0.421	0.630	0.500	0.748	2.677	0.492	16	1.259	1.417	1.299
TMCX050A01	058901-012NPT-A	½	0.782	0.586	0.890	0.690	0.983	2.913	0.492	16	1.574	1.771	1.495
TMCX075A01	058901-034NPT-A	¾	0.794	0.586	0.890	0.690	0.983	2.913	0.610	25	1.574	1.771	1.495
TMCX075A02	058902-034NPT-A	¾	0.794	0.791	1.100	0.870	1.180	3.031	0.610	25	1.771	1.991	1.574
TMCX100A02	058902-001NPT-A	1	0.985	0.791	1.100	0.870	1.180	3.031	0.854	48	1.771	1.991	1.574
TMCX100A03	058903-001NPT-A	1	0.985	0.936	1.260	1.020	1.360	3.307	0.854	48	2.046	2.302	1.692
TMCX125A03	058903-114NPT-A	1¼	1.009	0.936	1.260	1.020	1.360	3.307	1.181	76	2.046	2.302	1.692
TMCX125A04	058904-114NPT-A	1¼	1.009	1.220	1.500	1.300	1.585	3.346	1.181	76	2.165	2.436	1.692
TMCX150A04	058904-112NPT-A	1½	1.025	1.220	1.500	1.300	1.585	3.346	1.429	96	2.165	2.436	1.692
TMCX150A05	058905-112NPT-A	1½	1.009	1.488	1.771	1.570	1.870	4.016	1.429	96	2.558	2.877	1.771
TMCX200A05	058905-002NPT-A	1½	1.025	1.488	1.771	1.570	1.870	4.016	1.429	96	2.558	2.877	1.771
TMCX200A06	058906-002NPT-A	2	1.058	1.570	1.880	1.650	2.000	4.370	1.429	96	2.755	3.101	2.046
TMCX200A07	058907-002NPT-A	2	1.058	1.719	2.223	1.910	2.330	4.646	1.885	100	3.148	3.542	2.204
TMCX250A07	058907-212NPT-A	2½	1.571	1.719	2.223	1.910	2.330	4.646	1.885	100	3.148	3.542	2.204
TMCX250A08	058908-212NPT-A	2½	1.571	2.140	2.610	2.270	2.722	5.079	2.290	120	3.778	4.250	2.597
TMCX300A08	058908-003NPT-A	3	1.634	2.140	2.610	2.270	2.722	5.079	2.290	120	3.778	4.250	2.597
TMCX300A09	058909-003NPT-A	3	1.634	2.490	2.970	2.620	3.188	5.394	2.774	160	4.368	4.919	2.715
TMCX350A09	058909-312NPT-A	3½	1.684	2.490	2.970	2.620	3.188	5.394	2.774	160	4.368	4.919	2.715
TMCX350A10	058910-312NPT-A	3½	1.684	2.950	3.540	3.160	3.760	6.024	3.109	180	4.919	5.549	3.188
TMCX400A10	058910-004NPT-A	4	1.734	2.950	3.540	3.160	3.760	6.024	3.109	180	4.919	5.549	3.188
TMCX400A11	058911-004NPT-A	4	1.734	3.636	4.030	3.700	4.250	5.906	3.109	180	5.313	5.982	3.188

Dimensions are in inches. Note tightening torque for NPT threads is 'wrench tight'.

TMCX Cable Sealing Connector

CABLE TERMINATIONS

Metric Entry Thread

Model	Product Code	Thread 'B'	Thread Length 'D'	Cable Armour		Cable Jacket		Max. Length 'E'	Dia. Over Cores	Max. No of Cores	Hexagon		Jacket Strip Length	Tightening Torque Nm/lb ft
				Min 'A'	Max 'A'	Min 'C'	Max 'C'				A/F	A/C		
TMCXM20A00	058900-A	M20x1.5	0.590	0.311	0.512	0.354	0.530	2.283	0.429	10	1.063	1.161	1.102	21/15
TMCXM20A-0	0589-0-A	M20x1.5	0.590	0.421	0.630	0.500	0.748	2.677	0.492	16	1.259	1.417	1.299	21/15
TMCXM20A01	058901-A	M20x1.5	0.590	0.586	0.890	0.690	0.983	2.913	0.492	16	1.574	1.771	1.495	21/15
TMCXM25A02	058902-A	M25x1.5	0.590	0.791	1.100	0.870	1.180	3.031	0.610	25	1.771	1.991	1.574	30/22
TMCXM32A03	058903-A	M32x1.5	0.590	0.936	1.260	1.020	1.360	3.307	0.854	48	2.046	2.302	1.692	42/31
TMCXM40A04	058904-A	M40x1.5	0.590	1.220	1.500	1.300	1.585	3.346	1.181	76	2.165	2.436	1.692	52/38
TMCXM50A05	058905-A	M50x1.5	0.590	1.488	1.771	1.570	1.870	4.016	1.429	96	2.558	2.877	1.771	57/42
TMCXM63A06	058906-A	M63x1.5	0.590	1.570	1.880	1.650	2.000	4.370	1.429	96	2.755	3.101	2.046	66/49
TMCXM75A07	058907-A	M75x1.5	0.590	1.719	2.223	1.910	2.330	4.646	1.885	100	3.148	3.542	2.204	72/53
TMCXM80A08	058908-A	M80x2.0	0.787	2.140	2.610	2.270	2.722	5.079	2.290	120	3.778	4.250	2.597	80/59
TMCXM90A09	058909-A	M90x2.0	0.787	2.490	2.970	2.620	3.188	5.394	2.774	160	4.368	4.919	2.715	89/66
TMCXM100A10	058910-A	M100x2.0	0.787	2.950	3.540	3.160	3.760	6.024	3.109	180	4.919	5.549	3.188	98/72
TMCXM110A11	058911-A	M110x2.0	0.787	3.636	4.030	3.700	4.250	5.906	3.109	180	5.313	5.982	3.188	175/129

Dimensions are in inches

FITTING INSTRUCTION

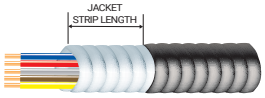
ENCLOSURES AND EQUIPMENT TO WHICH CABLE GLANDS ARE FITTED:-

- Must be made from materials which are compatible with the cable gland materials.
- Have a sealing area around the cable gland entry point with a surface roughness < Ra 6.3 µm.
- Have entries that are perpendicular to the enclosure face in the area where the cable gland will seal to within 2.5°.
- Are sealed using the supplied sealing gasket (parallel threads) or by fully tightening into a threaded entry (tapered threads). Note that for tapered threads the IP rating can be improved to IP68 with the use of a suitable thread sealant.

MUST HAVE THREADED ENTRIES

- The same thread size as the cable gland. (Thread adapters should be used to correct any mismatch).
- With a thread tolerance of metric class '6H' or equivalent.
- Where the thread length is a minimum of 15mm for Ex d applications.

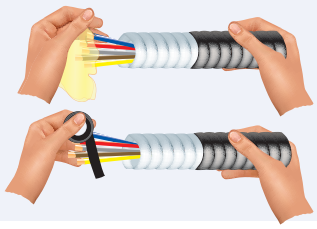
1. Prepare the cable by cutting the jacket and armour to suit the Installation. Strip the jacket back a further distance as shown in the tables above. Cut any fillers or sheath around the cores flush with the end of the armour.



2. Using a clean cloth wipe the cable cores to remove any dust. Wrap some tape around the end of the cable cores so that the resin seal is not damaged when the cable is fitted to the connector.

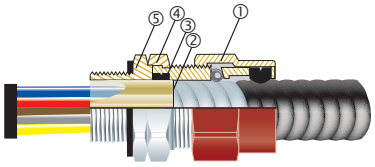
3. Secure the TMCX connector to the equipment by screwing it into a threaded entry. To maintain IP66/68 ensure, that the thread gasket is in place for metric entry threads.

   If the gland has NPT entry threads then IP68 (2m) can be achieved by applying one of the following tested and approved grease types to the thread:- Renolit Lubrene CA700 or LX220 EP2, Renolit LC-WP2 or Moly LX2, or Dow Corning 4 Electrical Compound.



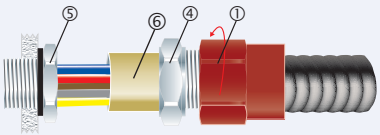
4. Slacken the body ① to relax the internal spring and rubber seal. DO NOT fully unscrew the body. Do not slacken the captive nut ④.

5. Introduce the cable into the connector carefully so that the resin seal ③ is not damaged. Push the cable forward until the cable armour contacts the end stop ②. (If it is not possible to pass the cable cores through the bore of the plastic end stop then remove the end stop from the gland as it is not needed for that cable size. The cable armour will then contact a step within the gland entry item.) The tape can be removed from the cable cores.



6. Tighten the body ① to close down the earthing spring onto the cable armour. Continue tightening until the outer seal contacts the jacket and then tighten the body one more full turn.

7. Slacken the captive nut ④ fully whilst withdrawing the connector body. The connector assembly should come free leaving only the entry item ⑤ in the equipment. The connector assembly should now be positioned so that it is vertical , ready for the liquid resin to be introduced into the barrier pot ⑥. Separate the cores slightly to allow resin to flow between them.

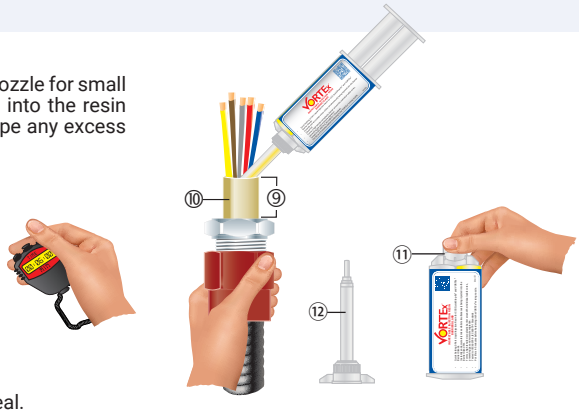


8. Remove the cap ⑪ from resin applicator and attached the mixing nozzle ⑫ (use extension nozzle for small multicore cables). Whilst holding the barrier pot sub-assembly ⑨ upright inject the resin into the resin chamber*. Ensure the resin fills all the way to the top of the protective resin pot ⑩ and wipe any excess resin away.

   Wait for the resin to set from a liquid to a gel, this should take:
   - 15 minutes at 10°C
   - 7 minutes at 20°C
   - 6 minutes at 30°C
   - 5 minutes at 40°C

   For installations in less than 5°C Ambient, warm the Resin tube in warm water at ± 50°C.
   If there is still resin left in the tube, discard the mixing nozzle ⑫ and replace the cap ⑪ for use with the next gland.

   * The installation is acceptable if the cable sheath is pushed 2mm or 3mm into the resin seal.



9. Once the resin has cured the connector assembly can be re-introduced into the entry item. Tighten the captive nut ④ to complete the assembly.