CCG CABLE TERMINATIONS

VORTEx INSPECTABLE INJECTION RESIN BARRIER GLAND

# FLP VX

## Ex db I/IIC, Ex eb I/IIC, Ex ta IIIC, Ex nR IIC

## VORTEx BARRIER GLAND for Unfilled Steel Wire Armoured Cable

### Features and Benefits

- For Group I underground mines, Group II, III, Zone 1, 2, 21 and 22 hazardous areas.
- For unfilled hygroscopic multicore cables refer to IEC 60079-14; 9.3.2 and 10.6.2a, IEC 61892-7, 10.6 and 10.7.
- Two-part handling, freely rotating captive cone and inspectible cone ring provides an armour clamp and earth bond on steel wire armour.
- Factory fitted with a specially formulated elastomeric seal provides Built-in Safety™.
- Instantly mixed and injected Resin forms a 100% barrier seal around the individual cores of the cable.
- Prevents explosive gases and/or liquids transmitting down the cable.
- Precision manufactured from high-quality brass (Marine Grade Electroless Nickel Plated™) available in stainless steel 316/316L on request.
- Supplied with a thread sealing gasket (parallel threads only).

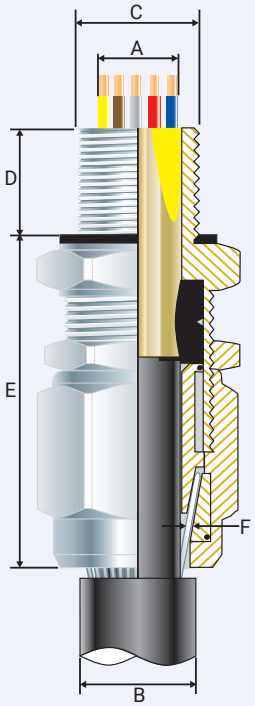
IP68 · 30 BAR SEAL · EMC

### Technical Data

| | |
|---|---|
| Type: | FLP VX (VORTEx®) |
| Gland Material: | Brass (Marine Grade Electroless Nickel Plated™), Stainless Steel 316/316L |
| Seal Material: | Standard Thermoset Elastomer or Extreme Temperature Seals, Quick setting Barrier Resin |
| Sealing Gasket Material: | HDPE, Nylon 66 or PTFE |
| Cable Type: | Steel Wire Armour |
| Armour Clamping: | Rotating Captive Cone and Inspectible Cone Ring |
| Sealing Area: | Inner Sheath and QuickStop® Resin around Cable Conductors |
| Optional Accessories: | Adaptor, Reducer and Shroud |
| Note: | The installer should ensure that the materials are suitable for the installation environment. |

### Standards and Certifications

| | | |
|---|---|---|
| Equipment Protection Levels: | IECEx/INMETRO: Ex d I Mb/ IIC Gb, Ex e I Mb/IIC Gb, Ex ta IIIC Da, Ex nR IIC Gc<br>ATEX/UKEX: Ⓔx I M2, Ⓔx II 2/3G 1D, Ex db I Mb/ IIC Gb, Ex eb I Mb/IIC Gb, Ex ta IIIC Da, Ex nR IIC Gc<br>TR CU: [Ex] 1Ex d IIC Gb X / PB Ex d I Mb X / 1Ex e IIC Gb X / РП Ex e I Mc X / 2Ex nR IIC Gc X / Ex tb IIIC Db X | |
| Continuous Operating Temp: | -50°C to +95°C | |
| Conformance: | Standards: | Certificate: |
| IEC/BS EN | IEC/BS EN 62444 | CML 14CA364 |
| IECEx | IEC 60079 Part 0, 1, 7, 15, 31 | IECEx TSA 22.0011X |
| ATEX | EN 60079 Part 0, 1, 7, 31<br>EN 60079 Part 0, 15 | CML 16ATEX1001X<br>CML 16ATEX4002X |
| UKEX | BS EN 60079 Part 0, 1, 7, 31<br>BS EN 60079 Part 0, 15 | CML 21UKEX1011X<br>CML 21UKEX4006X |
| INMETRO (Brazil) | ABNT NBR IEC 60079 Part 0, 1, 7, 15, 31 | TÜV 15.0483X |
| TR CU (Russia) | ГОСТ 31610-0, 15, ГОСТ IEC 60079-1<br>ГОСТ Р МЭК 60079-7, 31 | ЕАЭС RU C-ZA.HA91.B.00245/21 |
| SANS | SANS/IEC 60079 Part 0, 1, 7, 15, 31<br>SANS 808 | MASC MS/22-9001X |
| IP66/68 - Parallel<br>IP65 - Tapered | SANS/IEC 60529<br>SANS/IEC 60529 | MASC MS/22-9001X |
| IP68 - Tapered and approved grease | IEC 60529 | IECEx CML 18.0018X |
| Deluge Protection | DTS-01 | CML 14CA370-2 |
| Corrosion Protection | ASTM B117-11, BS EN ISO 3231 | EXOVA N968667 |
| Marine ABS<br>DNV-GL | IEC 60079 Part 0, 1, 7, 15, 31, IEC 60529<br>IEC 60079 Part 0, 1, 7, IEC 60529 | ABS 20-1952706-1-PDA<br>DNV-GL TAE0000010 |
| EMC Compatible | EN 55011, + A1, EN 55022 | SGS EMC305079/1 |




PATENTED

### Conditions for Safe Use - X

- The cable glands shall only be used where the temperature, at the point of entry, is between -50°C and +95°C.
- Only resin supplied by CCG may be used in the glands.

| Product Code | Gland Size Ref | Metric Entry Thread | | NPT Entry Thread | | Cable Detail | | | Max Length 'E' | Max Dia. Over Cores | Max No. of Cores | Armour Dia | | Hexagonal Detail | | Install. Torque Value Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 'C' | Min 'D' | 'C' | Min 'D' | Min 'A' | Max 'A' | Max 'B' | | | | Min 'F' | Max 'F' | Max 'Flats' | Max 'Crns' | |
| 058100-16-VX | 00-16ss | M16x1.5 | 15 | - | - | 3.0 | 8.0 | 13.5 | 46.0 | 8.0 | 6 | 0.20 | 1.25 | 25.0 | 28.0 | 35.0 |
| 058100-VX | 00-20ss | M20x1.5 | 15 | ½/¾ | 15 | 3.0 | 8.0 | 13.5 | 46.0 | 10.9 | 10 | 0.20 | 1.25 | 25.0 | 28.0 | 35.0 |
| 0581-0-VX | 0-20s | M20x1.5 | 15 | ½/¾ | 15 | 8.0 | 11.5 | 16.0 | 46.0 | 10.9 | 10 | 0.20 | 1.25 | 25.0 | 28.0 | 35.0 |
| 058101-VX | 1-20 | M20x1.5 | 15 | ½/¾ | 15 | 11.5 | 14.0 | 19.0 | 48.0 | 12.5 | 13 | 0.20 | 1.25 | 27.0 | 30.0 | 35.0 |
| 058102-VX | 2-25 | M25x1.5 | 15 | ¾/1 | 15/19 | 14.0 | 20.2 | 26.5 | 60.0 | 15.5 | 20 | 0.20 | 1.60 | 40.0 | 45.0 | 50.0 |
| 058103-VX | 3-32 | M32x1.5 | 15 | 1/1¼ | 19 | 20.0 | 26.5 | 33.0 | 76.0 | 21.7 | 40 | 0.20 | 2.00 | 45.0 | 51.0 | 70.0 |
| 058104-VX | 4-40 | M40x1.5 | 15 | 1¼/1½ | 19/21 | 26.5 | 34.0 | 40.5 | 84.0 | 30.0 | 60 | 0.30 | 2.00 | 55.0 | 62.0 | 90.0 |
| 058155-VX | 5s-50s | M50x1.5 | 15 | 1½/2 | 21 | 32.5 | 38.0 | 46.0 | 90.0 | 36.3 | 80 | 0.40 | 2.50 | 70.0 | 79.0 | 100.0 |
| 058105-VX | 5-50 | M50x1.5 | 15 | 1½/2 | 21 | 38.0 | 44.5 | 52.0 | 90.0 | 36.3 | 80 | 0.40 | 2.50 | 70.0 | 79.0 | 100.0 |
| 058165-VX | 6s-63s | M63x1.5 | 15 | 2/2½ | 21/30 | 44.5 | 50.0 | 60.0 | 96.0 | 47.9 | 100 | 0.40 | 2.50 | 85.0 | 96.0 | 120.0 |
| 058106-VX | 6-63 | M63x1.5 | 15 | 2/2½ | 21/30 | 50.0 | 56.0 | 67.0 | 96.0 | 47.9 | 100 | 0.40 | 2.50 | 85.0 | 96.0 | 120.0 |
| 058107-VX | 7-75 | M75x1.5 | 15 | 2½/3 | 30/32 | 56.0 | 65.0 | 78.0 | 105.0 | 58.2 | 120 | 0.40 | 3.15 | 96.0 | 108.0 | 120.0 |

All dimensions except NPT are in mm. Intermediate thread sizes are available on request. NPT threads should be tightened 'wrench tight'.

# FITTING INSTRUCTIONS
## Metric Illustration

CCG CABLE TERMINATIONS

# FLP VX (VORTEx®) BARRIER GLAND

**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 10mm for Ex d applications or 3mm for all other applications

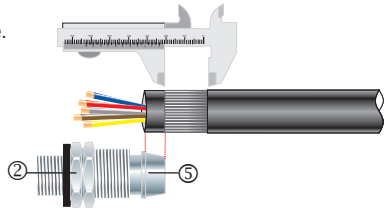
**OR CLEARANCE HOLES** (not Ex d)

- Where the hole size is the thread nominal size with a tolerance of +0.1 to +0.7mm. (e.g. the clearance hole for an M20 thread will have a diameter between 20.1mm and 20.7mm).
- Through material that is between 1mm and 12mm thick. (Thicker materials can be accommodated using glands with extended entry threads.)

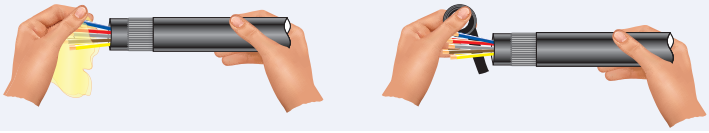
1. Separate the inner ② from the outer ③. Cut back the cable outer sheath to expose the armour to a length as per the table below. Strip back the inner bedding to expose the inner cable cores using the cone ⑤ as a gauge.

| Gland Size | Armour Length | Gland Size | Armour Length | Gland Size | Armour Length | Gland Size | Armour Length |
|---|---|---|---|---|---|---|---|
| 00-16ss | 20.0 | 1-20 | 25.0 | 4-40 | 30.0 | 6s-63s | 45.0 |
| 00-20ss | 20.0 | 2-25 | 25.0 | 5s-50s | 35.0 | 6-63 | 45.0 |
| 0-20s | 20.0 | 3-32 | 30.0 | 5-50 | 35.0 | 7-75 | 50.0 |

If the cable cores have screens these should be cut away or twisted together into a single core. This single core should be insulated with heat shrink tubing or coated with insulating varnish. Any drain wires should also be insulated with heat shrink tubing or coated with insulating varnish.

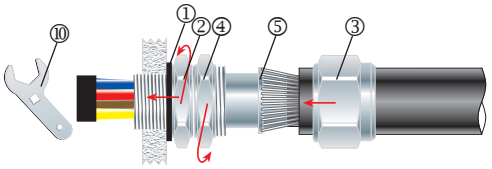



2. Using a clean cloth, clean the cable cores.
3. Using the insulation tape, bundle the cores together at the end.

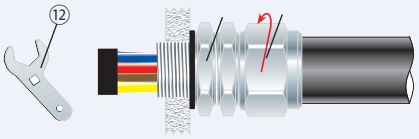


4. To maintain IP66/68, ensure the thread gasket ① is in place. Screw the inner ② into the apparatus and tighten to the installation torque using a CCG Spanner ⑩. Ensure the locknut ④ is screwed up against the inner ②. Pass the bundled cable cores through the outer ③, locknut ④, the inner ② and inner diaphragm seal and splay the armour wires over the cone ⑤.

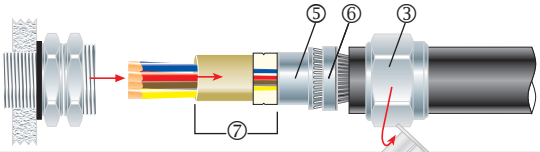
If the gland has NPT entry threads fitted to a threaded entry then IP68 (2m) can be achieved by applying one of the following tested and approved grease types to the thread:- Renolit Lubrene CA700 or LX220 EP2, Renolit LC-WP2 or Moly LX2, or Dow Corning 4 Electrical Compound.




5. Tighten the outer ③ onto the inner ② until hand tight, then tighten with a CCG Spanner ⑫ with ¾ turn to lock armour between the cone ⑤ and the cone ring ⑥.




6. Unscrew the outer ③. Check that the armour has locked between the cone ⑤ and the cone ring ⑥ (O-Ring on the cone ring ⑥ is sacrificial). Withdraw the barrier pot sub-assembly ⑦ and bundled cables. Remove insulation tape.




7. Remove the cap ⑩ from resin applicator and attach the mixing nozzle ⑪ (use extension nozzle for small multicore cables). Whilst holding the barrier pot sub-assembly ⑦ upright and holding the diaphragm seal firmly against the cable sheath inject the resin into the resin chamber*. Ensure the resin fills the inspectible resin seal pot ⑧ all the way to the top of the protective resin pot ⑨ and wipe any excess resin away.

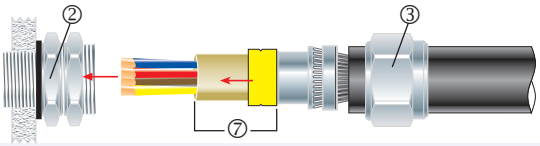
Wait for the resin to set from a liquid to a gel, this should take:

- 15 minutes at 10°C
- 7 minutes at 20°C
- 6 minutes at 30°C
- 5 minutes at 40°C

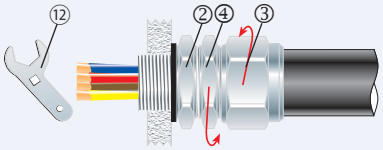
For installations in less than 5°C Ambient, warm the Resin tube in warm water at ± 50°C. If there is still Resin left in the tube, discard the mixing nozzle ⑪ and replace the cap ⑩ for use with the next gland.

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


8. Re-insert the barrier pot sub-assembly ⑦ back into the inner ②.




9. Tighten the outer ③ onto the inner ② to the required torque using a CCG Spanner ⑫. Tighten the locknut ④ against the outer ③.

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