CCG CABLE TERMINATIONS

VORTEx INSPECTABLE INJECTION RESIN BARRIER GLAND

A2F VX

VORTEx BARRIER COMPRESSION GLAND for Unarmoured Tray Cable

Features and Benefits

- Cable gland for use in Ordinary and Hazardous Locations.
- Fitted with a specially formulated elastomeric displacement seal, giving superior cable retention, explosion protection, and IP rating.
- Precision manufactured from high-quality brass (Marine Grade Electroless Nickel Plated™) available in aluminium or stainless steel 316/316L on request. (Note: Aluminium is not suitable for Group I applications.)
- Supplied with a thread-sealing gasket (parallel threads only).

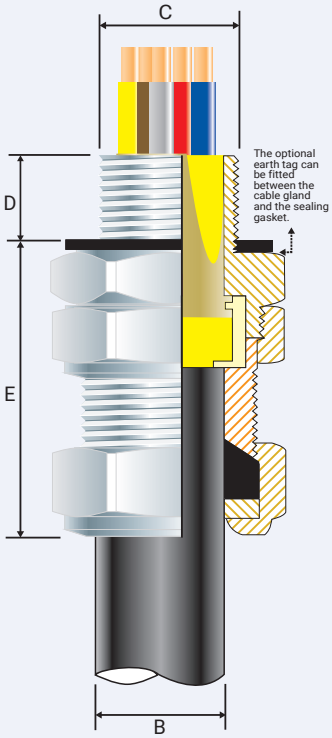
NEMA 4X | 100m IP68 | Ex 30 BAR SEAL

Technical Data

Type:	A2F VX (VORTEx™)
Gland Material:	Brass (Marine Grade Electroless Nickel Plated™), Aluminium or Stainless Steel 316/316L
Seal Material:	Standard Thermoset Elastomer or Extreme Temperature Seals
Sealing Gasket Material:	HDPE, Nylon 66 or PTFE
Cable Type:	Unarmoured Tray Cable
Sealing Area:	Outer Sheath and VORTEx® Resin around Cable Conductors
Optional Accessories:	Adaptor, Reducer, Earth Tag, Locknut, Serrated Washer and Shroud
Note:	The installer should ensure that the materials are suitable for the installation environment.

Standards and Certifications

Equipment Protection Levels:	NEC / CEC: Class I Div. 2 Gr ABCD, Class II Div. 2 Gr FG, Class III Division 2 Ex db IIC Gb, Class I Zone 1 AEx eb IIC Gb / Ex eb IIC Gb, Zone 20 AEx ta IIIC Da / Ex ta IIIC Da Class I Zone 2 AEx nR IIC Gc / Ex nR IIC Gc IP66/67/68, Type 4X IECEx: Ex db eb I Mb, Ex db eb IIC Gb, Ex nR IIC Gc, Ex ta IIIC Da	
Continuous Operating Temp:	-50°C to +95°C	
Conformance:	Standard:	Certificate:
CEC	CSA C22.2 No. 18.3-12, 174:2018 13:2017 CSA C22.2 No. 60079-0, 1, 7, 15, 31	E115595
NEC	UL514B, UL121201, UL60079-0,7,15,31	
IECEx	IEC 60079 Part 0, 1, 7, 15, 31	IECEx TSA 23.0026
IP66/68 850m – Parallel	IEC 60529	CML 15Y728
IP65/66 – Tapered	IEC 60529	
Nema Type 4X	NEMA 250	E115595
Deluge Protection	DTS-01	CML 14CA370-2
Corrosion Protection	ASTM B117-11, BS EN ISO 3231	EXOVA N968667
Marine ABS	IEC/EN 60079 Part 0, 1, 7, 15, 31	ABS 20-1952706-1-PDA



Installation Requirements / Specific Conditions of Use

- The cable glands, sizes M20, ¾" NPT and smaller, shall only be used on fixed installations where the cable is clamped, or stress applied to the cable in the gland is prevented. (NEC/CEC only)
- The cable glands, when supplied with suffix '-FC', shall only be used with an approved UL 514B conduit fitting. (NEC/CEC only)
- The cable glands shall only be used if the temperature, at the point of entry, is as specified above

NPT Entry Thread

Gland Size Ref	Product Code	NPT Entry Thread 'C'	NPT Entry Thread Min 'D'	Alternative Thread Product Code	NPT Entry Thread 'C'	NPT Entry Thread Min 'D'	Cable Detail Min 'B'	Cable Detail Max 'B'	Max Length 'E'	Maximum Dia. Over Cores	Maximum No. of Cores	Hexagonal Detail Max 'Flats'	Hexagonal Detail Max 'Crns'
00-20ss	041200-012NPT-MNA	½	0.591	041200-034NPT-MNA	¾	0.591	0.118	0.335	0.984	0.421	10	0.945	1.063
0-20s	0412-0-012NPT-MNA	½	0.591	0412-0-034NPT-MNA	¾	0.591	0.276	0.472	0.984	0.429	10	0.945	1.063
1-20	041201-012NPT-MNA	½	0.591	041201-034NPT-MNA	¾	0.591	0.433	0.591	1.181	0.492	25	1.063	1.196
2s-25s	041222-034NPT-MNA	¾	0.591	041222-001NPT-MNA	1	0.748	0.453	0.689	1.181	0.650	48	1.378	1.550
2-25	041202-034NPT-MNA	¾	0.591	041202-001NPT-MNA	1	0.748	0.591	0.787	1.181	0.650	48	1.378	1.550
3s-32s	041233-001NPT-MNA	1	0.748	041233-114NPT-MNA	1¼	0.748	0.630	0.866	1.181	0.945	76	1.654	1.860
3-32	041203-001NPT-MNA	1	0.748	041203-114NPT-MNA	1¼	0.748	0.787	1.043	1.181	0.945	76	1.654	1.860
4s-40s	041244-114NPT-MNA	1¼	0.748	041244-112NPT-MNA	1½	0.826	0.866	1.240	1.496	1.260	96	2.047	2.303
4-40	041204-114NPT-MNA	1¼	0.748	041204-112NPT-MNA	1½	0.826	1.024	1.339	1.496	1.260	96	2.047	2.303
5s-50s	041255-112NPT-MNA	1½	0.826	041255-002NPT-MNA	2	0.826	1.142	1.496	1.811	1.429	96	2.559	2.879
5-50	041205-112NPT-MNA	1½	0.826	041205-002NPT-MNA	2	0.826	1.339	1.752	1.811	1.429	96	2.559	2.879
6s-63s	041266-002NPT-MNA	2	0.826	041266-212NPT-MNA	2½	1.181	1.496	1.969	2.047	1.886	100	3.150	3.543
6-63	041206-002NPT-MNA	2	0.826	041206-212NPT-MNA	2½	1.181	1.752	2.224	2.047	1.886	100	3.150	3.543
7s-75s	041277-212NPT-MNA	2½	1.181	041277-003NPT-MNA	3	1.259	1.969	2.441	2.126	2.362	120	3.780	4.252
7-75	041207-212NPT-MNA	2½	1.181	041207-003NPT-MNA	3	1.259	2.205	2.657	2.126	2.362	120	3.780	4.252
8-80	041208-003NPT-MNA	3	1.259	-	-	-	2.323	2.717	2.677	2.421	140	3.780	4.252
9s-90s	041299-003NPT-MNA	3	1.259	041299-312NPT-MNA	3½	1.299	2.362	2.953	2.756	2.776	160	4.370	4.916
9-90	041209-003NPT-MNA	3	1.259	041209-312NPT-MNA	3½	1.299	2.874	3.209	2.756	2.776	160	4.370	4.916
10-100	041210-312NPT-MNA	3½	1.299	041210-004NPT-MNA	4"	1.338	3.189	3.583	2.756	3.110	180	4.921	5.536

All dimensions are in inches. NPT threads should be tightened 'wrench tight'.

FITTING INSTRUCTIONS
Metric Illustration

VORTEx INSPECTABLE INJECTION RESIN BARRIER GLAND

CCG CABLE TERMINATIONS

A2F VX (VORTEx®) Barrier Gland

Metric Entry Thread

Gland Size Ref	Product Code	Metric Entry Thread		Cable Detail		Max Length 'E'	Max Dia. Over Cores	Max No. of Cores	Hexagonal Detail		Tightening Torque Nm/lb ft
		'C'	Min 'D'	Min 'B'	Max 'B'				Max 'Flats'	Max 'Crns'	
00-16ss	041200-16-MNA	M16x1.5	0.591	0.118	0.335	0.984	0.315	6	0.945	1.063	33/24
00-20ss	041200-MNA	M20x1.5	0.591	0.118	0.335	0.984	0.421	10	0.945	1.063	33/24
0-20s	0412-0-MNA	M20x1.5	0.591	0.276	0.472	0.984	0.429	10	0.945	1.063	33/24
1-20	041201-MNA	M20x1.5	0.591	0.433	0.591	1.181	0.492	25	1.063	1.196	33/24
2s-25s	041222-MNA	M25x1.5	0.591	0.453	0.689	1.181	0.650	48	1.378	1.550	48/35
2-25	041202-MNA	M25x1.5	0.591	0.591	0.787	1.181	0.650	48	1.378	1.550	48/35
3s-32s	041233-MNA	M32x1.5	0.591	0.630	0.866	1.181	0.945	76	1.654	1.860	55/41
3-32	041203-MNA	M32x1.5	0.591	0.787	1.043	1.181	0.945	76	1.654	1.860	55/41
4s-40s	041244-MNA	M40x1.5	0.591	0.866	1.240	1.496	1.260	96	2.047	2.303	65/48
4-40	041204-MNA	M40x1.5	0.591	1.024	1.339	1.496	1.260	96	2.047	2.303	65/48
5s-50s	041255-MNA	M50x1.5	0.591	1.142	1.496	1.811	1.429	96	2.559	2.879	83/61
5-50	041205-MNA	M50x1.5	0.591	1.339	1.752	1.811	1.429	96	2.559	2.879	83/61
6s-63s	041266-MNA	M63x1.5	0.591	1.496	1.969	2.047	1.886	100	3.150	3.543	98/72
6-63	041206-MNA	M63x1.5	0.591	1.752	2.224	2.047	1.886	100	3.150	3.543	98/72
7s-75s	041277-MNA	M75x1.5	0.591	1.969	2.441	2.126	2.362	120	3.780	4.252	116/85
7-75	041207-MNA	M75x1.5	0.591	2.205	2.657	2.126	2.362	120	3.780	4.252	116/85
8-80	041208-MNA	M80x2.0	0.787	2.323	2.717	2.677	2.421	140	3.780	4.252	120/89
9s-90s	041299-MNA	M90x2.0	0.787	2.362	2.953	2.756	2.776	160	4.370	4.916	120/89
9-90	041209-MNA	M90x2.0	0.787	2.874	3.209	2.756	2.776	160	4.370	4.916	120/89
10-100	041210-MNA	M100x2.0	0.787	3.189	3.583	2.756	3.110	180	4.921	5.536	120/89

All 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 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.)

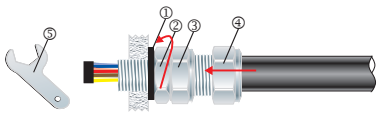
1. Strip back the outer sheath to expose the inner cable cores. Using a clean cloth, clean the cable cores insulation.

   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.

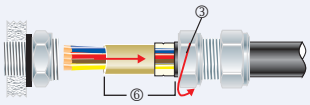
2. Using insulation tape, bundle the cores together at the end.

3. To maintain IP66/68, ensure that the gasket ① is in place. Screw the gland unit into the apparatus and tighten the inner ② using a CCG spanner ⑤. Slacken, but do not remove, the outer seal nut ④. Pass the cable end through the outer seal nut ④ and push the bundled cable cores through the gland, taking care as it passes through the protective resin pot ⑧. Once the cable is correctly positioned, tighten the outer seal nut ④ to the recommended installation torque.

   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.



4. Unscrew the coupling nut ③. Withdraw the cable and barrier pot sub-assembly ⑥. Remove the insulation tape.



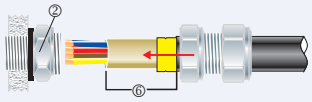
Only Resin supplied by CCG may be used in the glands.

5. Remove the cap ⑨ from resin applicator and attach the mixing nozzle ⑩ (use extension nozzle for small multicore cables). Whilst holding the barrier pot sub-assembly ⑥ 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 ⑦ all the way to the top of the protective resin pot ⑧ and wipe any excess resin away.

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

   The cable gland can now be handled safely, and the resin will continue to cure until it reaches its full hardness. For installations in less than 5°C Ambient, warm the Resin tube in warm water at ± 50°C. If there is Resin left in the tube, discard the mixing nozzle ⑩ and replace the cap ⑨ for use with the next gland.
   * The installation is acceptable if the cable sheath is pushed 2mm or 3mm into the resin seal.

6. Re-insert the barrier pot sub-assembly ⑥ back into the inner ②.



7. Tighten the coupling nut ③ to complete the assembly.