

# VARITEx™ -D VX

Ex db IIC, Ex eb IIC, Ex ta IIIC, Ex nR IIC

**VORTEX** BARRIER COMPRESSION GLAND

for use cables using Braid or CopperTape screening such as VSD or VFD cable

## Features and Benefits

- For indoors, outdoors, Group II, III, Zone 1, 2, 20, 21 and 22 hazardous areas.
- Passes the IECEx / UKEX / ATEX 100% pull test, so no additional cable clamping is required.
- EMC compliance enhanced by an integral and automatic 360° earth connection to the cable braid or copper tape screening.
- Braid can be cut to length and automatically earthed in the gland only or left uncut and earthed in the gland and the enclosure.
- Certified for use with all Ex Protection concepts.
- Instantly mixed and injected VORTEX® resin forms a 100% barrier seal around the individual elements of the cable and also the braid if it is left uncut.
- The VORTEX® resin seals around the elements of the cable and can prevent explosive gases or liquids from passing down the cable. An elastomeric seal grips the cable sheath giving superior cable retention and IP rating.
- Precision manufactured from high-quality brass (Marine Grade Electroless Nickel Plated™) available in aluminium or stainless steel 316/316L on request.
- Supplied with a captive thread sealing gasket (parallel threads only)

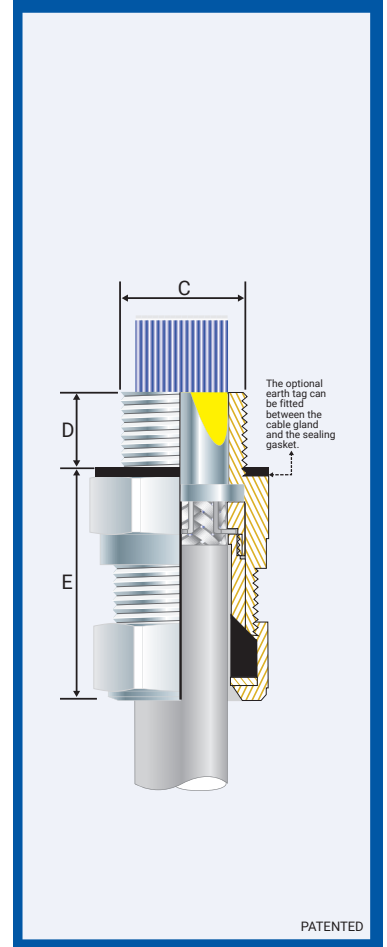


## Technical Data

Type:	VARITEx-D VX (VORTEX®)	
Gland Material:	Brass (Marine Grade Electroless Nickel Plated™), Aluminium or Stainless Steel 316/316L	
Seal Material:	Standard Thermostat Elastomer, Quick Setting Injection Barrier Resin	
Sealing Gasket Material:	HDPE, Nylon 66 or PTFE	
Cable Type:	Cables using braid or copper tape screening such as VSD or VFD	
Sealing Area:	Outer Sheath plus resin seal on 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:	IECEX/INMETRO: Ex db IIC Gb, Ex eb IIC Gb, Ex ta IIIC Da, Ex nR IIC Gc	
	ATEX/UKEX: Ex II 2/3 G, 1D, Ex db IIC Gb, Ex eb IIC Gb, Ex ta IIIC Da, Ex nR IIC Gc	
Continuous Operating Temp:	-60°C to +100°C	
Conformance:	Standard:	Certificate:
IEC/BS EN	IEC/BS EN 62444, 6121	CML 14CA364
IECEX	IEC 60079 Part 0, 1, 7, 15, 31	IECEX CML 20.0011
ATEX	BS EN 60079 Part 0, 1, 7, 31	CML 20ATEX1026
	BS EN 60079 Part 0, 15	CML 22ATEX4116
UKEX	EN 60079 Part 0, 1, 7, 31	CML 21UKEX1013
	EN 60079 Part 0, 15	CML 22UKEX4117
INMETRO (Brazil)	ABNT NBR IEC 60079 Part 0, 1, 7, 15, 31	TÜV 24.0267
SANS	SANS/IEC 60079 Part 0, 1, 7, 15, 31	MASC S/20-9022
IP66/68 850m – Parallel	IEC 60529	IECEX CML 20.0011
IP65/66 – Tapered	IEC 60529	
IP68 – Tapered and approved grease	IEC 60529	IECEX CML 20.0011
Deluge Protection	DTS-01	CML 14CA370-2
Corrosion Protection	ASTM B117-11, BS EN ISO 3231	EXOVA N968667
EMC Compatible	EN 55011, + A1, EN 55022	SGS EMC305079/1



Product Code	Gland Size Reference	Metric Entry Thread		NPT Entry Thread		Cable Detail		Max Dia. Over Cores	Max No. of Cores	Max Length 'E'	Hexagonal Detail		Install. Torque Value Nm
		'C'	Min 'D'	'C'	Min 'D'	Min 'B'	Max 'B'				Max 'Flats'	Max 'Crns'	
047100-16	00-16ss	M16x1.5	12	-	-	3.0	8.5	38.0	8.0	6	24.0	27.0	32.5
047100	00-20ss	M20x1.5	12	1/2/3/4	15	3.0	8.5	38.0	10.7	10	24.0	27.0	32.5
0471-0	0-20s	M20x1.5	12	1/2/3/4	15	7.0	12.0	39.0	10.9	16	24.0	27.0	32.5
047101	1-20	M20x1.5	12	1/2/3/4	15	11.0	15.0	45.0	12.5	25	27.0	30.0	32.5
047122	2s-25s	M25x1.5	12	3/4/1	15/19	11.5	17.5	44.0	16.5	48	35.0	39.0	47.5
047102	2-25	M25x1.5	12	3/4/1	15/19	15.0	20.0	44.0	16.5	48	35.0	39.0	47.5
047133	3s-32s	M32x1.5	12	1/1 1/4	19	16.0	22.0	48.0	24.0	76	42.0	47.0	55.0
047103	3-32	M32x1.5	12	1/1 1/4	19	20.0	26.5	48.0	24.0	76	42.0	47.0	55.0
047144	4s-40s	M40x1.5	12	1 1/4/1 1/2	19/21	22.0	31.5	55.0	32.0	96	52.0	59.0	65.0
047104	4-40	M40x1.5	12	1 1/4/1 1/2	19/21	26.0	34.0	55.0	32.0	96	52.0	59.0	65.0
047155	5s-50s	M50x1.5	12	1 1/2/2	21	29.0	38.0	57.0	36.3	96	65.0	73.0	82.5
047105	5-50	M50x1.5	12	1 1/2/2	21	34.0	44.5	57.0	36.3	96	65.0	73.0	82.5
047166	6s-63s	M63x1.5	12	2/2 1/2	21/30	38.0	50.0	63.0	47.9	100	80.0	90.0	97.5
047106	6-63	M63x1.5	12	2/2 1/2	21/30	44.5	46.0	63.0	47.9	100	80.0	90.0	97.5
047177	7s-75s	M75x1.5	12	2 1/2/3	30/32	50.0	62.0	64.0	60.0	120	96.0	102.0	115.5
047107	7-75	M75x1.5	12	2 1/2/3	30/32	56.0	67.5	64.0	60.0	120	96.0	102.0	115.5
047108	8-80	M80x2.0	16	3	32	54.0	69.0	71.0	61.5	140	96.0	102.0	120.0

All dimensions are in mm. Intermediate thread sizes are available on request.

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# VARITEx™ -D VX BARRIER COMPRESSION 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 <math>< Ra 6.3 \mu m.</math>
- 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.)

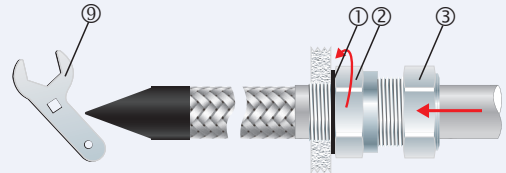
The following illustration is for cables using a braid screen. Unless stated otherwise, the instructions also apply to cables with a copper tape screen.

- The VARITEx-D-VX cable gland can be used in two ways.  
**METHOD 1** is to leave the braid length intact and to earth the braid inside the equipment. (Does not apply to copper tape screened cables).  
**METHOD 2** is to trim the screen length so that it is only earthed in the gland and it does not pass through the resin barrier.



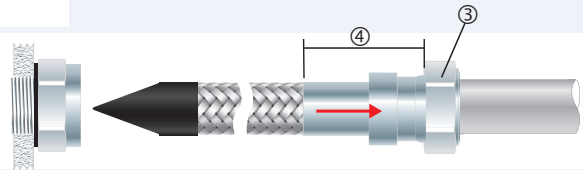
- Cut the cable outer sheath to the length required to suit the installation. The screen is left full length at this stage.
- Wrap insulation tape over, and around, the end of the screen to form a gradual taper. This will prevent the screen from being displaced as the cable is fitted to the cable gland. It will also help to ease the cable through the internal earthing device and the rubber resin-retaining seal.

- 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 ⑨. Pass the cable end through the outer nut ③ and push the cable carefully through the inner component ②, earthing device and resin-retaining seal until the tapered end protrudes and then use this to pull the cable through the gland. Continue until light resistance is felt. (This is the point when the cable sheath has made contact with the earthing device.) Withdraw the cable by 2 or 3mm to ensure that the earthing device is in contact with the braid only.

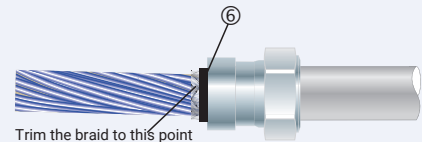


If the gland has NPT threads fitted to a threaded entry then IP68 (2m) can be achieved by applying one of the following tested and approved grease types to the thread:- Renolit Lubrene CA700 or LX220 EP2, Renolit LC-WP2 or Moly LX2, or Dow Corning 4 Electrical Compound.

- Unscrew the outer nut ③. Withdraw the cable and resin sleeve / insert sub-assembly ④. Remove the resin sleeve ⑤ from the sub-assembly ④, leaving the resin-retaining seal ⑥ in place. Remove the tape from the end of the braid.



- Method 1.** Either
  - displace the braid close to the resin-retaining seal ⑥ to form a hole and feed the cores through the hole, or
  - make a spiral cut down the length of the braid (following a wire strand) to close to the resin-retaining seal ⑥ and separate the braid from the cores or
  - unravel the braid from its end to close to the resin-retaining seal ⑥ as appropriate. Twist the braid to form a conductor and insulate using heat-shrink sleeve.



*Note that it may be preferred to twist the braid into more than one conductor or to trim some of the braid away to reduce its bulk.*

**Method 2.** Trim the braid or copper tape as close to the resin seal as possible.

- Strip back the outer sheath to expose the inner cable cores. Remove all exposed tapes and foils. Using a clean cloth, clean the cable cores insulation. Any drain wires can be dealt with individually or twisted together into groups and then insulated using heat shrink tube or insulating varnish/drain wires can be dealt with individually or twisted together into groups and then insulated using heat shrink tube or insulating varnish.

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

- For installations in less than 5°C Ambient, or if a lower resin viscosity will help the resin installation, warm the VORTEX® resin tube in warm water at ~ 50°C for a few minutes. Remove the cap ⑦ from the resin applicator and attach the mixing nozzle ⑧ (use a nozzle with an extension where required). Hold the resin sleeve / insert sub-assembly ④ upright, inject the resin into the sleeve ⑤ and fill to near the top. (Push the nozzle in between the cable elements as much as possible, while injecting the resin, to help fill all voids.)

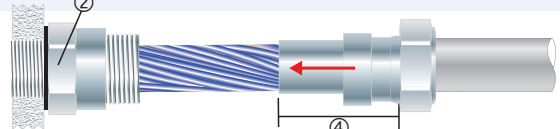
Wiggle the cable elements to help release any trapped air and then inject more resin to fill the chamber to the top. Wipe away any excess resin from the outside of the resin sleeve ⑤.

- 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. If there is Resin left in the tube, discard the mixing nozzle ⑧ and replace the cap ⑦ for use with the next gland.



- Re-insert the resin sleeve / insert sub-assembly ④ back into the inner ②.



- Tighten the outer nut ③ to the specified installation torque using a CCG Spanner ⑨ to produce a seal and grip on the cable. This completes the gland installation.

