

Glands

Cable glands are designed to provide some or all of the following functions in a cabling system:

- Mechanical connection: Locate and anchor cable
- Earth continuity: Armour termination
- Ingress Protection: Protect against dust and liquids
- Hazardous area: Flameproof protection

The design of cable glands are covered by BS6121, which covers size, finish, materials, performance, etc. The gland designs are basically a combination of compatibility with cable and installation requirements.

Gland Types

There are several distinct gland types covered in BS6121 Part 1;

A Type

B Type

C Type

D1 Type

E1 Type

D2 Type

E2 Type

Suffixes are used to identify the type of armour on a cable:

W = single wire armour

X = wire braid armour

Y = aluminium wire armour

Z = steel tape armoured

Hence, CW would be a single wire armour, whereas CX would be for a braid armour. The only difference is in the armour lock which caters for the physical size of the armour.

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19**Gland Type**

A1/A2

Application/Use

Indoor/outdoor brass gland for use with unarmoured cable.

BW

Indoor, low-cost, two-part brass gland for use with single wire armoured cable.

CW

Indoor/outdoor brass glands for use with single wire armoured cable. Provides seal on outer sheath of cable and separate armour locking ring. N.B. Aluminium gland available for aluminium wire armoured cable.

CX

Indoor/outdoor brass gland for use with braid armoured cables. Provides seal on outer sheath of cable and separate armour locking ring.

E1W

Indoor/outdoor brass gland for use with single wire armour cable. Provides seal on inner and outer sheaths of cable, and has separate armour locking ring.

LSF Glands

BW

Indoor, low cost, two-part brass gland for use with LSF single wire armoured cables.

CW

Indoor/outdoor brass gland for use with LSF single wire armoured cables. Provides LSF seal onto outer sheath of cable and separate armour locking ring.

Glands for Hazardous Areas

A2F

Indoor/outdoor brass gland for use with unarmoured cables. For use with flameproof or increased safety equipment (E.Exd or E.Exe)

E1WF

Indoor/outdoor brass gland for use with single wire armoured cable. Provides seal on inner and outer sheaths of cable, and has separate locking ring. For use with flameproof or increased safety equipment (E.Exd or E.Exe)

E1XF

Indoor/outdoor brass gland for use with braid armoured cable. Provides seal on inner and outer sheaths of cable, and has separate armour locking ring. For use with flameproof or increased safety equipment (E.Exd or E.Exe).

E2WF

Indoor/outdoor brass gland for use with single wire armoured and lead sheathed cables (e.g. EEMUA types, BS5308 PT1/Type 3). Provides seal onto outer sheath of cable. Inner seal grips and provides earth continuity to lead sheath. Design has separate armour locking ring. For use with flameproof or increased safety equipment (E.Exd or E.Exe).

BARR-X

Indoor/outdoor brass barrier gland for use with a braid armoured cable. Provides seal on outer sheath of cable, and solid setting compound squeezed into the interstices of cable when installed to prevent escape of gases through centre of cable. For use with explosion proof equipment.

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Accessories

I.P Ratings for Cable Glands

I.P. (Index of Protection) Ratings detail the degree of protection against solid bodies and liquids, and is tested against EN 60529.

Generally any seal has a rating of IP66.

However, since they are tested in isolation, when they are in conjunction with a piece of equipment this needs to be taken into consideration.

Generally the following can be taken:-

1. Gland used in Plain Entry with Backnut - IP54.
2. Gland used in Plain Entry with sealing washer between gland and equipment interface - IP66.
3. Gland used in Tapped Entry - IP65.
4. These can be uprated by the use of Sealing washers and Thread Sealants.
5. Special designs of Gland are available which can achieve an IP Rating of IP68. (N.B. Interface with equipment then becomes critical.)

Degree of Protection EN 60529 I.P. Ratings

First Digit	Protection (Against Solid Bodies)
0	No protection
1	Protected against solid bodies larger than 50mm, e.g., accidental contact with hand.
2	Protected against solid bodies larger than 12mm, e.g., finger.
3	Protected against solid bodies larger than 2.5mm, e.g., tools and wires.
4	Protected against solid bodies larger than 1.0mm, e.g., fine tools and small wires.
5	Protected against dust (no harmful deposits).
6	Completely protected against dust.

Second Digit	Protection (Against Liquids)
0	No protection.
1	Protected against vertically falling drops of water (condensation).
2	Protected against drops of water falling at up to 15° from the vertical.
3	Protected against rain falling at 60° from vertical.
4	Protected against splashes of water from all directions.
5	Protected against jets of water from all directions.
6	Protected against jets of water of similar force to heavy seas.
7	Protected against the effects of temporary immersion.
8	Protected against prolonged effects of immersion under pressure.