Hawke 501/453 & ICG 653 Glands — Installation & Inspection

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The field guide to the Hawke 501/453 family and the ICG 653 barrier gland, built from the current assembly instructions: component names, strip lengths, clamp-ring orientation, tightening turns and torque figures, barrier compound mixing and inspection, the conditions that keep IP66 to IP69 real at the enclosure, a sizing table for NEK TS 606 BFOU offshore cable, IEC 60079-17 inspection points, and the article numbers each step consumes.

Published by cballast.com. Last reviewed November 2026. Figures are taken from Hawke International's current assembly instructions (AI 2000, AI 302, AI 2001, AI 2034, AI 2037) and specification sheets; the instruction sheet packed with the gland always governs. In brief. The Hawke 501/453 family is the most widely installed range of hazardous-area cable glands for armoured cable. Three members share one body, one set of size letters and one armour clamp: the 501/453/UNIV (diaphragm seal), the 501/453/RAC (compression seal) and the ICG 653/UNIV (compound barrier). This guide sets out, in one place and in tables, what Hawke's instruction sheets require: component names, strip lengths, clamp-ring orientation, tightening turns, torque figures, barrier compound handling, ingress-protection conditions and inspection points. It adds a sizing table for NEK TS 606 BFOU offshore cable and the cballast article numbers for the parts each step consumes.

1. Key facts

Item | 501/453/UNIV | 501/453/RAC | ICG 653/UNIV |

Purpose | Armoured cable, including cables whose insulation cold-flows | Armoured cable | Armoured cable where a barrier seal around the cores is required |
Inner seal | Diaphragm seal on the inner sheath | Elastomeric compression seal on the inner sheath | Two-part compound in a transparent pot around the individual cores |
Marking | Ex db IIC Gb, Ex eb IIC Gb, Ex nR IIC Gc, Ex tb IIIC Db | Same | Same |
Certificates | CML 18ATEX1268X; IECEx CML 18.0131X; CML 21UKEX1132X | CML 19ATEX1167X; IECEx CML 19.0045X; CML 21UKEX1161X | CML 18ATEX1268X; IECEx CML 18.0131X; CML 21UKEX1132X |
Ex nR certificates | CML 19ATEX4507X; IECEx CML 21.0012X; CML 21UKEX4133X | Same | Same |
North America | cCSAus 1015065 | cCSAus 1015065 (sizes G to J not CSA approved) | cCSAus 1024328 |
Operating temperature | " 60 to +80 °C | " 60 to +100 °C | " 60 to +80 °C |
Ingress protection | IP66, IP67, IP68, IP69, NEMA 4X | IP66, IP67, IP68, NEMA 4X | IP66, IP67, IP68, IP69, NEMA 4X |
Impact and deluge | IK10; DTS01 | IK10; DTS01 | IK10; DTS01 |
Armour types | Wire armour W, wire braid X, steel tape Z | W, X, Z | W, X, Z |
Deluge boot colour | Black | — | Red |
Assembly instruction | AI 2000 | AI 302 | AI 2001, with AI 2034 (putty) or AI 2035 (resin) |

The IP68 rating is conditional: 30 m for 7 days with thread sealant on the entry thread, or 10 m for 24 hours without thread sealant on sizes Os to C (per AI 2000 and AI 2001). IP66, IP67 and IP69 at the enclosure require a Hawke-certified sealing washer or another approved sealing method on a smooth, undamaged sealing face.

2. Component names

Hawke's instruction sheets use these names, in assembly order from the enclosure outward. Using them on a requisition or an inspection report removes ambiguity.

Position | 501/453/UNIV | 501/453/RAC | ICG 653/UNIV |

1 | Entry with deluge boot | Entry | Entry with deluge boot |
2 | Diaphragm seal and armour spigot | Inner seal | Compound pot |
3 | Armour clamp ring | Spigot | Spigot |
4 | Middlenut | Armour clamp ring | Armour clamp ring |
5 | Backnut | Middlenut | Middlenut |
6 | — | Backnut | Backnut |
Optional | Shroud; sealing (IP) washer at the enclosure | Shroud; sealing washer | Shroud; sealing washer |

Accessories named in the instructions: shroud (additional corrosion protection), locknut (secures the gland in a clearance hole), sealing washer (ingress protection at the entry), earth tag (external bonding point), serrated washer (resists loosening of the locknut under vibration).

3. Sizes, threads and spanners

Size | Metric entry | NPT entry | Across flats (mm) | Across corners (mm) |

Os | M20 (M16 available) | ½" | 24.0 | 26.5 |
O | M20 (M16 available) | ½" | 24.0 | 26.5 |
A | M20 | ¾" or ½" | 30.0 | 32.5 |
B | M25 | 1" or ¾" | 36.0 | 39.5 |
C | M32 | 1¼" or 1" | 46.0 | 50.5 |
C2 | M40 | 1½" or 1¼" | 55.0 | 60.6 |
D | M50 | 2" or 1½" | 65.0 | 70.8 |
E | M63 | 2½" or 2" | 80.0 | 88.0 |

F | M75 | 3" or 2½" | 95.0 | 104.0 |
G | M80 | 3½" | 106.4 | 115.0 |
H | M90 | 3½" | 115.0 | 130.0 |
J | M100 | 4" | 127.0 | 142.0 |

Entry threads are metric to BS 3643 or NPT to ASME B1.20.1. Metric threads on sizes Os to F are 1.5 mm pitch with a 15 mm thread length; G to J are 2 mm pitch with a 20 mm thread length. Two spanners are needed for every gland: one to hold the entry or middlenut, one to turn the nut in front of it. With an M16 entry on a size O gland the maximum inner sheath diameter is 10.9 mm.

Cable acceptance for the 501/453/UNIV, from the current specification sheet:

Size | Inner sheath min–max (mm) | Outer sheath min–max (mm) | Armour, thick orientation (mm) | Armour, thin orientation (mm) |

Os | 3.5–8.1 | 5.5–12.0 | 0.8–1.25 | 0–0.8 |
O | 6.5–11.4 | 9.5–16.0 | 0.8–1.25 | 0–0.8 |
A | 8.4–14.3 | 12.5–20.5 | 0.8–1.25 | 0–0.8 |
B | 11.1–19.7 | 16.9–26.0 | 1.25–1.6 | 0–0.7 |
C | 17.6–26.5 | 22.0–33.0 | 1.6–2.0 | 0–0.7 |
C2 | 23.1–32.5 | 28.0–41.0 | 1.6–2.0 | 0–0.7 |
D | 28.9–44.4 | 36.0–52.6 | 1.8–2.5 | 0–1.0 |
E | 39.9–56.3 | 46.0–65.3 | 1.8–2.5 | 0–1.0 |
F | 50.5–68.2 | 57.0–78.0 | 1.8–2.5 | 0–1.0 |

The 501/453/RAC uses the same outer-sheath and armour columns with inner-sheath ranges of 3.2–8.0 (Os), 6.5–11.9 (O), 10.0–14.3 (A), 13.0–20.2 (B), 19.5–26.5 (C), 25.0–32.5 (C2), 31.5–44.4 (D), 42.5–56.3 (E), 54.5–68.2 (F), 67.0–73.0 (G), 67.0–77.6 (H) and 77.0–91.6 mm (J), with armour ranges of 2.0–3.5 / 0–1.0 mm on G and H and 2.5–4.0 / 0–1.0 mm on J.

4. Cable preparation

Common to all three glands:

Slide the shroud (if used), backnut, middlenut and armour clamp ring onto the cable, in that order.
Confirm the armour clamp ring orientation (section 5) before it goes on.
Cut the cable to length, strip the outer sheath and cut the armour to the exposed length in the table below. The length of cores beyond the gland is set by the equipment.
For steel tape armour, spread the tape and trim the ends square at 90°.

Gland size | Exposed armour or braid length |

Os to C | 20 mm |
C2 to F | 25 mm |
G to J | 32 mm |

Cable conditions the certificates attach (schedule of limitations, AI 302): the cable must have an extruded solid polymeric bedding completely surrounding the cores, with no holes or ventilation through the inner jacket or along the cores; glands used with unarmoured or braided cable are for fixed apparatus only; the glands are suitable for certified marine shipboard cables built to IEEE 45 and IEC 60092-353.

5. Armour clamp ring orientation

The reversible armour clamp (RAC) ring is the reason one gland covers wire armour, braid and tape. Each face of the ring is marked with an armour thickness range, and Hawke's rule is that the marking for the armour in hand must point towards the equipment. One orientation grips thick armour (single wire armour), the other thin armour (braid and tape).

Size | Standard ring, thick orientation | Standard ring, thin orientation | Alternative ring (AR), orientation 1 | Alternative ring (AR), orientation 2 |

Os, O, A | 0.8–1.25 mm | 0–0.8 mm | — | — |
B | 1.25–1.6 mm | 0–0.7 mm | 0.9–1.25 mm | 0.5–0.9 mm |
C, C2 | 1.6–2.0 mm | 0–0.7 mm | 1.2–1.6 mm | 0.6–1.2 mm |
D, E, F | 1.8–2.5 mm | 0–1.0 mm | 1.45–1.8 mm | 1.0–1.45 mm |

An armour thickness that falls between the two orientations of the standard ring (0.9 mm wire on a size B gland, for example) is what the alternative ring exists for. It is ordered with the gland by adding R to Hawke's part string (453UCM32R is a 501/453/UNIV, size C, M32, with the alternative ring) or AR to the long designation.

6. Installing the 501/453/UNIV (AI 2000)

Step | Action | Check |

1. Install diaphragm seal | Push the cable through the diaphragm seal; remove and discard the protective cap; push the armour or braid up to the spigot shoulder; slide the clamp ring up to the armour by hand | Armour evenly distributed around the spigot cone |
2. Clamp the armour | Slide the middlenut up to the entry and hand tighten; support the cable so it cannot twist; hold the entry with one spanner and tighten the middlenut a further ½ to ¾ turn with a second | Cable not twisted |
3. Strip the inner sheath | Strip the inner sheath to suit the application, leaving about 5 mm of inner sheath beyond the seal | Cores undamaged |
4. Inspect the clamp | Unscrew the middlenut; the clamp ring should now be locked in place; confirm visually that the armour is gripped between spigot and ring; if not, repeat step 2 | The only point at which the armour termination can be seen |
5. Fit to the enclosure | Screw the entry into the enclosure with a spanner, with the IP washer if required; slide the cable through until the diaphragm seats in the entry; hand tighten the middlenut to the entry, then a further ¼ turn | Entry

perpendicular to the mounting face |
6. Install the backnut | Tighten the backnut until a seal forms around the cable; hold the middlenut with one spanner and give the backnut one further full turn with a second | Middlenut must not turn |
7. Inspect the backnut | Use the tightening guide on the middlenut to confirm the backnut position suits the cable diameter; slide the shroud over the gland if used | Guide reading matches cable |

The diaphragm seal is passive: it closes on the inner sheath without the compressive force of a conventional seal, which is why the gland is specified for cables whose bedding or insulation cold-flows under sustained pressure, and why the backnut and its tightening guide, rather than the inner seal, are the parts that can be overtightened.

7. Installing the 501/453/RAC (AI 302)

The RAC has a separate inner seal that is compressed after the armour is clamped, so the sequence differs:

Step | Action |

1. Fit armour to spigot | Slide the spigot over the cable; push the armour or braid up to the spigot shoulder; slide the clamp ring up by hand; support the cable against twisting |
2. Prepare to clamp | Remove the inner seal from the assembly and slide the entry over the cable. A spare entry component can be used for clamping, so that the gland's own inner seal need not be removed |
3. Clamp the armour | Hand tighten the middlenut to the entry; hold the entry and tighten the middlenut a further ½ to ¾ turn |
4. Inspect the clamp | Unscrew the middlenut; confirm the ring is locked and the armour gripped; repeat step 3 if not |
5. Install the inner seal | Remove the entry, refit the inner seal, fit the entry into the enclosure with the IP washer if required |
6. Compress the inner seal | With the inner seal seated in the entry, tighten the middlenut by hand, then a further 1 to 2 turns with a spanner until fully tight |
7. Install the backnut | Tighten until a seal forms around the cable; hold the middlenut and give the backnut one further full turn |
8. Inspect the backnut | Check the backnut position against the middlenut guide (sizes O to F) |

Torque figures printed in AI 302, generated on metallic mandrels; on cable, Hawke's instruction is to follow the turn-based method above:

Size | Os | O | A | B | C | C2 | D | E | F |

Middlenut (N·m) | 6 | 6 | 8 | 8 | 10 | 15 | 15 | 28 | 35 |
Backnut (N·m) | 12 | 12 | 20 | 30 | 35 | 45 | 56 | 60 | 75 |

8. Installing the ICG 653/UNIV barrier gland (AI 2001)

A barrier gland fills the space between the individual cores with a setting compound so that an explosion inside a flameproof enclosure cannot travel down the cable. The ICG 653/UNIV is specified for cables that are not effectively filled, cables with hygroscopic fillers, cables with cold-flow characteristics and fibre-optic cores, and wherever the installation designer's reading of IEC 60079-14 calls for a barrier.

Step | Action |

1. Fit armour to spigot | Check the cut inner sheath for sharp edges and smooth them; slide the spigot over the cable without damaging the resin dam; push the armour up to the spigot shoulder; slide the clamp ring up by hand |
2. Prepare to clamp | Remove the compound pot and slide the entry over the cable |
3. Clamp the armour | Hand tighten the middlenut to the entry; hold the entry and tighten the middlenut a further ½ to ¾ turn |
4. Inspect the clamp | Unscrew the middlenut; confirm the ring is locked and the armour gripped |
5. Strip the inner sheath | Strip the inner sheath back to between flush with the spigot end and 3 mm from it, without damaging the resin dam; the inner sheath must protrude through the dam; fit the pot so that the inner sheath sits below the pot shoulder |
6. Pot with compound | Follow the instruction for the compound supplied: AI 2034 for the two-part putty, AI 2035 for the pouring resin |
7. Fit to the enclosure | Fit the entry into the enclosure, with the IP washer if required; slide the cable through until the pot seats in the entry; hand tighten the middlenut, then a further !U to ¼ turn |
8. Install the backnut | Tighten until a seal forms around the cable; hold the middlenut and give the backnut one further full turn |
9. Inspect the backnut | Check the backnut position against the middlenut guide; fit the shroud if used |

Limits from the current ICG 653/UNIV specification sheet and AI 2001:

Size | Maximum cores | Maximum fibre-optic cores | Maximum diameter over cores (mm) | Maximum inner sheath (mm) | Outer sheath min–max (mm) |

Os | 12 | 48 | 8.0 | 8.1 (10.0 with putty) | 5.5–12.0 |
O | 12 | 48 | 8.8 | 11.7 | 9.5–16.0 |
A | 15 | 72 | 10.8 | 14.0 | 12.5–20.5 |
B | 30 | 144 | 15.9 | 19.9 | 16.9–26.0 |
C | 42 | — | 21.9 | 26.2 | 22.0–33.0 |
C2 | 60 | — | 26.7 | 32.3 | 28.0–41.0 |
D | 80 | — | 37.7 | 44.2 | 36.0–52.6 |
E | 100 | — | 49.0 | 56.0 | 46.0–65.3 |
F | 120 | — | 59.8 | 68.0 | 57.0–78.0 |

The compound cross-section must be at least 20% of the total area over a depth of 20 mm (schedule of limitations, AI 2001). With an M16 entry on sizes Os and O the maximum diameter over cores falls to 7 mm. Drain wires and screens are covered by a separate instruction (AI 2028), and use on unarmoured cable by AI 2040.

8.1 The compound

Property | Hawkeseal two-part epoxy putty (AI 2034) | ExPress liquid barrier resin |

Supply | Ordered by adding Q to the part string (QSP, quick-set putty) | Standard supply with the gland |
Mixing | Equal parts, 1:1, rolled and folded until one uniform colour with no streaks | Per AI 2035 |
Working time | Use within 30 minutes of mixing | 30-minute gel time (specification sheet) |
Temperature | Keep at 20 °C or above before use; do not mix or install below 5 °C | Per AI 2035 |
Storage | Between 5 °C and 30 °C | Per AI 2035 |
Protection | The gloves supplied must be worn; solvent vapours may affect the compound in service | Per AI 2035 |
Resin dam | Removed when putty is used (it is needed only with the liquid resin) | Retained; with no inner sheath, tape the base of the cores to form a sealing surface |

Packing the putty, in Hawke's sequence: spread the cores and pack compound between them; bring the cores together and pack around the outside; tape the cores so that the seal is not disturbed; slide the pot over the compound; remove surplus where the pot meets the spigot; fit the entry over the pot hand tight; then remove the entry at once and inspect for voids through the transparent pot, repairing any before the compound cures; refit the entry to hold the pot's shape while curing. Cure time depends on temperature and is read from Hawke's cure-time graphs; glands assembled with the quick-set grade can be completed before full cure, and cores are manipulated and the circuit energised only once the compound has fully cured.

8.2 Converting an installed 501/453/UNIV to a barrier gland (AI 2037)

Hawke's barrier upgrade kit converts a dual-marked 501/453/UNIV into an ICG 653/UNIV, reusing the entry, middlenut, backnut and armour clamp ring. It applies only to glands whose body marking reads "HAWKE 501/453 UNIV (BLACK) / HAWKE ICG 653 UNIV (RED)". The kit contains a compound pot and spigot, a red deluge boot and the compound.

Unscrew the entry from the middlenut.
Remove and discard the diaphragm seal and spigot assembly; keep the armour clamp ring.
Pull the black deluge boot off the entry and discard it.
Fit the red deluge boot over the entry until it seats in the entry groove, without damaging the threads.
Install the compound pot and spigot.
Screw the entry into the middlenut until resistance is felt, then install as an ICG 653/UNIV to AI 2001.

The boot colour is the field identifier afterwards: black is a 501/453/UNIV, red is an ICG 653/UNIV. Conversion kits in our range: size Os, size O, size A, size B.

9. At the enclosure: installation notes that decide compliance

From the installation notes common to AI 2000, AI 302 and AI 2001:

Requirement | Consequence |

Installation only by suitably trained and competent persons | Competence records are part of the installation's verification dossier under IEC 60079-14 |
Installer confirms material compatibility with enclosure and environment | Brass, nickel-plated brass or 316L chosen against the enclosure material and atmosphere |
IP66, IP67 and IP69 need a Hawke-certified sealing washer or another approved method | The sealing washer is a line on every Ex e entry |
For increased safety (Ex e) the entry thread must be sealed so that the enclosure's ingress rating is maintained | The X in the certificate number refers to this condition |
Sealing face smooth and free from damage | Painted, pitted or burred faces are reworked before the gland is fitted |
Wall thickness and thread engagement to suit the thread length or the locknut; Ex d entries to IEC/EN 60079-1 | Flameproof threaded joints need the engagement the standard specifies (five full threads is the familiar figure for cylindrical threads) |
All entries perpendicular to the mounting surface | Angled entries void the seal and the certificate |
Unarmoured or braided cable: fixed apparatus only | Cable clamped against pull and twist |

The parts a compliant entry consumes, with examples from our range: sealing washers (M20, M25, M32, M40); earth tags (M20, M25, M32); serrated washers in 316 stainless (M20, M25, M32); locknuts (M20 brass, M25 brass, M25 316 stainless).

10. Gland sizes for NEK TS 606 BFOU cable

Norwegian and North Sea offshore installations are cabled largely to NEK TS 606, whose power and control cable (BFOU, flame-retardant, halogen-free, mud-resistant, with a tinned copper wire braid) is built with a thicker bedding and sheath than onshore cable. The table applies the 501/453/UNIV acceptance ranges in section 3 to the nominal dimensions one cable maker (Prysmian, for its BFOU M 0.6/1 kV P5/P12/P105 to NEK TS 606 and IEC 60092-353) publishes. Other makers' dimensions differ by a few tenths of a millimetre to a millimetre or more; the cable in hand is measured before the gland is ordered.

Cores × mm² | Ø over inner sheath (mm) | Nominal overall Ø (mm) | Braid wire Ø (mm) | 501/453/UNIV size | Also fits |

2 × 1.5 | 10 | 13 | 0.2 | O (M20) | A (M20) |
2 × 2.5 | 10.5 | 14 | 0.2 | A (M20) | O (M20) |
3 × 1.5 | 10.5 | 13.5 | 0.2 | A (M20) | O (M20) |
3 × 2.5 | 11.3 | 14.8 | 0.3 | A (M20) | O (M20) |
3 × 4 | 12.5 | 16 | 0.3 | A (M20) | — |
3 × 6 | 13.5 | 17.5 | 0.3 | A (M20) | B (M25) |
3 × 10 | 15.5 | 19.5 | 0.3 | B (M25) | — |
3 × 16 | 18 | 22 | 0.4 | B (M25) | C (M32) |
3 × 25 | 21.9 | 24.6 | 0.3 | C (M32) | — |
3 × 35 | 24.1 | 28.6 | 0.3 | C (M32) | C2 (M40) |
3 × 50 | 27.5 | 32.5 | 0.4 | C2 (M40) | — |
3 × 70 | 32 | 37.5 | 0.5 | D (M50) | C2 (M40) |

3 × 95 | 37 | 43 | 0.5 | D (M50) | — |
3 × 120 | 40.9 | 47.7 | 0.61 | D (M50) | E (M63) |
3 × 150 | 45 | 52.5 | 0.4 | E (M63) | — |
3 × 185 | 49.5 | 58.9 | 0.5 | E (M63) | — |
3 × 240 | 56 | 65.5 | 0.61 | F (M75) | — |
4 × 1.5 | 11.3 | 15 | 0.3 | A (M20) | O (M20) |
4 × 2.5 | 12.5 | 16 | 0.3 | A (M20) | — |
4 × 4 | 13.5 | 17.5 | 0.3 | A (M20) | B (M25) |
4 × 6 | 15 | 18.5 | 0.3 | B (M25) | — |
4 × 10 | 17.3 | 20.6 | 0.3 | B (M25) | — |
4 × 16 | 20 | 24 | 0.3 | C (M32) | — |
4 × 25 | 24.3 | 27 | 0.3 | C (M32) | — |
4 × 35 | 26.8 | 31.5 | 0.3 | C2 (M40) | — |
4 × 50 | 30.5 | 35.5 | 0.4 | C2 (M40) | — |
4 × 70 | 35.5 | 41 | 0.4 | D (M50) | — |
4 × 95 | 41.2 | 48.1 | 0.5 | D (M50) | E (M63) |
4 × 120 | 45.5 | 52 | 0.61 | E (M63) | — |
4 × 150 | 50 | 58.5 | 0.5 | E (M63) | — |
4 × 185 | 55 | 64 | 0.61 | F (M75) | E (M63) |
7 × 1.5 | 13.5 | 17 | 0.3 | A (M20) | B (M25) |
7 × 2.5 | 14.6 | 18.5 | 0.3 | B (M25) | — |
12 × 1.5 | 17.6 | 22.1 | 0.3 | B (M25) | C (M32) |
12 × 2.5 | 19.5 | 23.5 | 0.3 | C (M32) | B (M25) |
19 × 1.5 | 20.5 | 24.5 | 0.3 | C (M32) | — |
19 × 2.5 | 22.9 | 27.7 | 0.3 | C (M32) | — |
27 × 2.5 | 27.9 | 33.3 | 0.3 | C2 (M40) | — |
37 × 2.5 | 31.5 | 36 | 0.3 | C2 (M40) | D (M50) |

How to read it. The size column is the row in which both the inner sheath and the overall diameter sit furthest from the limits; "also fits" is a second row that accepts both nominal dimensions, which matters when a cable's actual diameter is at the edge of its tolerance. Braid is thin armour: the clamp ring is fitted in its thin orientation (0–0.8 mm on Os to A, 0–0.7 mm on B to C2, 0–1.0 mm on D to F), and the braid's thickness, which is greater than the diameter of its wires where they cross, is measured on the cable. Larger cables with 0.5 to 0.61 mm braid wires, and cables with two braids, are checked against both the standard ring and the alternative ring before ordering. Three observations follow from the table: most instrument and small power cable on an offshore installation lands on size A or B; the M20 entry that a field device arrives with is correct for cable up to about 3 × 6 mm² and wrong above it; and a schedule that assumes onshore cable diameters will be one size small on the larger cross-sections.

11. Inspection: what a gland is checked for

IEC 60079-17 requires an initial detailed inspection of every hazardous-area installation and periodic inspections thereafter at visual, close or detailed grade. For a 501/453 or ICG 653 gland the points are:

Point | Grade at which it is visible | Pass condition |

Type and marking match the enclosure's protection concept and the cable | Close | Ex db, Ex eb, Ex nR or Ex tb as required; body marking legible |
Deluge boot colour matches the documentation | Visual | Black for 501/453/UNIV, red for ICG 653/UNIV |
Backnut position against the tightening guide | Close | Guide reading corresponds to the cable diameter |
Outer seal closed on the outer sheath | Close | No gap; sheath not necked or cut |
Sealing washer present where Ex e or IP66 and above | Close | Present, not hardened or extruded |
Earth tag and serrated washer where the armour is bonded externally | Close | Present and tight |
Gland tight in the entry; locknut tight | Close | No movement by hand |
Entry perpendicular; sealing face undamaged | Close | As installed |
Armour gripped between spigot and clamp ring | Detailed (gland opened) | Armour evenly clamped; ring locked |
Inner seal or diaphragm on the inner sheath; compound free of voids on a barrier gland | Detailed | Seal seated; pot fully filled as seen through the transparent pot |
Unused entries closed with a certified stopping plug of the right protection concept | Visual | Ex d plug on Ex d enclosure; Ex e plug on Ex e |
Corrosion of body and thread | Visual | No pitting or dezincification; shroud intact where fitted |

A gland that fails on size, on a missing washer or tag, or on a corroded brass body is replaced or completed from the same identifier; a gland that fails because a barrier is now required is converted with the upgrade kit in section 8.2 where the body is dual-marked.

12. The parts by size: cballast article numbers

Each number is the Nordic trade article number and links to its page.

Size | 501/453/UNIV brass | 501/453/UNIV nickel-plated | 501/453/UNIV 316L | 501/453/RAC nickel-plated | ICG 653/UNIV brass | ICG 653/UNIV nickel-plated | ICG 653/UNIV 316L |

Os, M20 | 1253539 | 1232844 | on request | 1232830 | 1253270 | 1232812 | 1232821 |
O, M20 | 1253540 | 1232843 | 1253810 | 1232829 | 1253271 | 1232811 | 1232820 |
A, M20 | 1253541 | 1232833 | 1253811 | 1232822 | on request | 1232804 | 1232813 |
B, M25 | 1253542 | 1232834 | 1253812 | 1232823 | 1253273 | 1232805 | 1232814 |
C, M32 | 1253543 | 1232835 | 1253813 | 1232824 | 1253274 | 1232806 | 1232815 |
C2, M40 | 1253544 | 1232836 | 1253814 | 1232825 | 1253275 | 1232807 | on request |

D, M50 | 1253545 | 1232837 | on request | 1232826 | 1253276 | 1232808 | 1232817 |
E, M63 | 1253546 | 1232838 | 1253816 | 1232827 | 1253277 | 1232809 | 1232818 |
F, M75 | 1253547 | 1232839 | on request | 1232828 | 1253278 | 1232810 | on request |

The complete Hawke line, including unarmoured glands, adapters, stopping plugs and breather drains, is on the Hawke brand page.

Frequently asked questions

How far is the armour stripped on a Hawke 501/453 gland?20 mm of exposed armour or braid on sizes Os to C, 25 mm on C2 to F and 32 mm on G to J, per Hawke's assembly instructions.How tight should a Hawke 501/453/UNIV be?Hawke's method is by turns, not torque: middlenut hand tight plus ½ to ¾ turn to clamp the armour; after inspection, middlenut hand tight plus ¼ turn; backnut tightened until it seals on the cable, then one further full turn with the middlenut held; the backnut position is then checked against the tightening guide on the middlenut. Torque figures in the instructions were generated on metallic mandrels and are not the acceptance criterion on cable.Which way round does the Hawke armour clamp ring go? With the marking for the armour in hand pointing towards the equipment: the thick orientation for single wire armour (0.8–1.25 mm on Os to A, 1.25–1.6 mm on B, 1.6–2.0 mm on C and C2, 1.8–2.5 mm on D to F), the thin orientation for braid and tape (0–0.8, 0–0.7 and 0–1.0 mm on the same size groups).What is the difference between the installation of the UNIV and the RAC?The UNIV's diaphragm seal and spigot are one assembly and the middlenut is finally tightened ¼ turn; the RAC's inner seal is removed while the armour is clamped, refitted, and then compressed by tightening the middlenut 1 to 2 turns.How long does Hawke barrier compound take to set?The putty must be used within 30 minutes of mixing and the liquid resin has a 30-minute gel time; full cure depends on temperature and is read from Hawke's cure-time graphs. The putty is mixed at 20 °C or above and is not mixed or installed below 5 °C.How do I tell a 501/453/UNIV from an ICG 653/UNIV in the field?By the deluge boot: black on the 501/453/UNIV, red on the ICG 653/UNIV. Dual-marked bodies carry both designations.Which Hawke gland size fits BFOU 3 × 2.5 mm² and 4 × 16 mm²?On the dimensions one maker publishes for NEK TS 606 BFOU 0.6/1 kV, 3 × 2.5 mm² (inner sheath 11.3 mm, overall 14.8 mm) is size A, M20, and 4 × 16 mm² (20 mm and 24 mm) is size C, M32, on the 501/453/UNIV. Measure the cable in hand.Can a 501/453 gland be used on unarmoured cable?The certificates permit it for fixed apparatus, with the cable clamped against pull and twist; for the ICG 653/UNIV Hawke publishes a separate instruction (AI 2040). Hawke's unarmoured families (501/421, 501/423) are the usual choice.

14. Terms

Entry: the gland component that screws into the enclosure.
Deluge boot: the seal on the entry that protects the gland interior against deluge systems; black on the 501/453/UNIV, red on the ICG 653/UNIV.
Spigot (cone): the component the armour is spread over.
Armour clamp ring (RAC ring): the reversible ring that grips the armour on the spigot; AR is the alternative ring.
Middlenut and backnut: the nut that clamps the armour and compresses the inner seal, and the nut that closes the outer seal on the cable.
Tightening guide: the scale on the middlenut against which the backnut position is checked.
Diaphragm seal: the 501/453/UNIV's passive inner seal for cold-flow cables.
Compound pot and resin dam: the transparent pot that holds the barrier compound, and the seal that retains liquid resin.
QSP: quick-set putty, the hand-mixed two-part barrier compound.
Schedule of limitations: the special conditions for safe use indicated by the X in a certificate number.
NEK TS 606: the Norwegian technical specification for halogen-free offshore cables (BFOU, RFOU and related types).

15. Sources

Hawke International: Assembly Instruction AI 2000 (501/453/UNIV), AI 302 (501/453/RAC), AI 2001 (ICG 653/UNIV), AI 2034 (Hawkeseal barrier compound), AI 2037 (barrier gland upgrade kit); specification sheets for the 501/453/UNIV, 501/453/RAC and ICG 653/UNIV. Prysmian: datasheet for BFOU M 0.6/1 (1.2) kV P5/P12/P105, NEK TS 606. Standards: IEC 60079-0, -1, -7, -14, -15, -17 and -31; IEC 60529; IEC 62262; IEC 62444; IEC 60092-353; NEK TS 606.

Related guides

Hawke International — product range, types & certificates
Hawke cable glands & fittings — the sourcing index
Cable gland selection guide — metric, NPT, PG, Ex, marine
Cable gland size chart M12–M63
Marine cable types — RFOU, BFOU and IEC 60092
Hazardous-area lighting — Ex luminaires Zone 1/2
Intrinsically safe barriers — Zener and galvanic

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