rotork®
Controls

IQ and IQT Range

Plug and socket field wiring connector
Instructions for Safe Use and Installation

⚠ **This manual contains important safety information. Please ensure it is thoroughly read and understood before installing, operating or maintaining the equipment. This book must be read in conjunction with the IQ/IQT Instructions for safe use, installation basic setup and maintenance manual (PUB002-039/PUB002-004).**

PUB002-127-00
Date of issue 08/18

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⚠ **WARNING**
Isolate all power supplies to the actuator before removing the terminal cover.

Note: For reference in this document, the **socket** is located in the cover and has female connections, the **plug** is located in the actuator gearcase and has male pins.

1. Cover and socket removal

Using a 6 mm AF allen key, undo the four captive screws securing the terminal cover and pull the cover straight off using the cast grips provided. Do not attempt to rotate the cover before it is fully removed. (fig 1, fig 2).

Fig 1

Fig 2

A method to hold the cover in place during cable entry and field wiring termination is to temporarily suspend the cover next to the plug and socket chamber. This can be done by creating a loop with wire or a cable tie through the gearcase earth lug and hooking the top cover screw through it (fig 3).

Fig 3

Fig 4

Using a 3 mm allen key undo the four captive screws and remove the socket from the cover (fig 4).

A safety earth wire is connected between the cover and the socket earth terminal located behind the red flash guard. This is a safety earth connection and must not be removed (fig 5, fig 6).

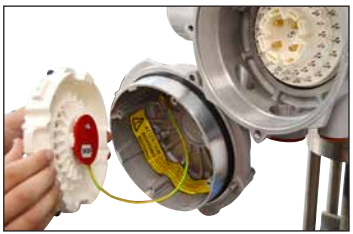

Fig 5

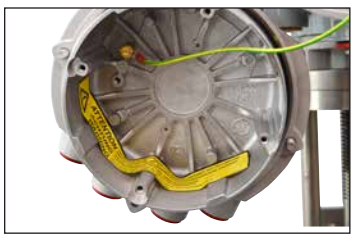

Fig 6

To secure the socket while terminating field wiring it can be loosely connected onto the plug. Ensuring the socket is aligned, lightly push the socket onto the plug. Be careful not to push the socket on fully as this will make it hard to remove after field wiring termination is complete (fig 7).

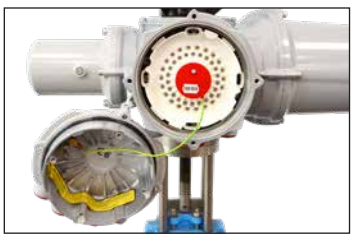

Fig 7

2. Cable connections

There are 4 x M25 x 1.5p threaded conduit entries provided in the cover. Make off the required cables using appropriate certified cable glands. Any unused entries should be sealed with cable entry plugs that meet the enclosure rating. Failure to use correct glands and seal entries may lead to ingress of moisture resulting in subsequent damage and will invalidate Rotork's warranty (fig 8).

In hazardous locations; only one appropriate certified explosionproof thread adaptor per entry may be used, any unused cable entries must be fitted with an appropriately certified threaded blanking plug without the use of any interposing thread adaptor.

3. Field wiring termination

Note: Power and control/indication wire cores should be terminated using appropriate ring tags, accepting a 5 mm pan head screw for power supply and earth wires and a 4 mm screw for control and indication. Terminal screws are supplied in the commissioning bag and should be hand tightened – not exceeding a torque up to 1.5 Nm / 1.1 lbf.ft.

Remove the red flash guard to access the power supply terminations. The supply cable earth wire must be connected to the terminal located at the bottom of the cover (fig 8). External earth points are located on the main gearcase and also on the cover. Terminate the power supply wires – refer to the supplied circuit wiring diagram for power connections (Fig 9).

⚠ **Do not remove the Rotork supplied earth wire bonding the cover to the earth terminal.**

Refit the flash guard (fig 10).

Terminate the required field control/ indication wires (fig 11) – refer to the supplied circuit diagram.

Note that the power and control/ indication terminals in the socket are held in place but are designed to float in order to allow alignment and full contact when fitted to the plug. This means that once ring tags are connected and terminal screws tightened, each terminal assembly is able to rotate slightly.

Separate the socket from the plug by gently easing it out (fig 12). Do not twist or pull the socket at an angle as this could damage the pins.

Fig 8

Fig 9

Fig 10

Fig 11

4. Refitting the socket into the cover

The orientation of the socket in the cover depends on where the cable entries are required to be relative to the gearcase. The socket may be orientated in one of four different positions within the cover however, upon connecting to the plug it is important to ensure the top of the socket aligns to the top of the plug. Arrows on the socket, highlighted in fig 13, indicate the top.

Once the orientation of the socket is identified, tighten the four capscrews using a 3 mm AF allen key (fig 14). The socket is able to rotate a little within the cover to aid alignment. Remove any temporary restraining strap used to hold the cover (fig 15).

5. Refitting the plug and socket cover

⚠ Make sure the cover spigot o-ring is in place. A spare o-ring is provided in the commissioning bag.

Ensure the arrows marking the top of the socket are approximately aligned with the top of the plug. Ease the cover back onto the gearcase by applying a gentle pushing and turning motion until the pins slot into place and the cover spigot enters the gearcase easily.

⚠ Do not force the cover as it will only fit in one orientation.

Once the socket and plug are engaged, the cover can be rotated to align the fixing screws. Tighten the four screws using a 6 mm AF Allen key before turning on any power supplies (fig 16).

Fig 15

Fig 12

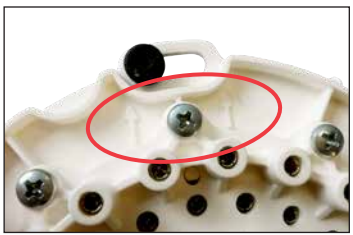

Fig 13

Fig 14

Fig 16

6. Approvals

Refer to actuator nameplate for unit specific approvals details

European – Hazardous Area

ATEX (2014/34/EU) II 2 GD c

Ex d IIB T4 Gb

Ex tb IIIC T120°C Db, IP66 & IP68

Temperature -20°C to +70°C (-4°F to +158°F)

International - Hazardous Area

IECEx, IEC 60079-0, IEC 60079-1 & IEC 60079-31

Ex d IIB T4 Gb

Ex tb IIIC T120°C Db, IP66 & IP68

Temperature -20°C to +70°C (-4°F to +158°F)

USA - Hazardous Area

CSAus - Explosionproof to NEC Article 500

CSAus - Dust Ignition Proof to NEC Article 500

Class I, Division 1, Groups C & D

Class II, Division 1, Groups E, F & G

Temperature -20°C to +70°C (-4°F to +158°F)

Canada - Hazardous Area

CSA Explosionproof to C22.2 No 30

CSA Dust Ignition Proof to C22.2 No 25

Class I, Division 1, Groups C & D

Class II, Division 1, Groups E, F & G

Temperature -20°C to +70°C (-4°F to +158°F)

International Non Hazardous

Watertight, BS EN 60529

IP66 & IP68 (7 metres for 72 hours)

Temperature -20°C to +70°C (-4°F to +158°F)

USA & Canada - Non Hazardous

Enclosure Type 4 & 6

Temperature -20°C to +70°C (-4°F to +158°F)

7. Conditions for Safe Use

7.1 Thread details for ATEX and IECEx Approved Plug and Socket Installations

Flamepath	Size	Length	Actuator
Cable Entry	M25x1.5p	20.00 mm	All

7.2 Maximum constructional flamepath gaps for ATEX & IECEx Approved Plug & Socket Installations

Flamepath	Max. Gap	Min. Length	Actuator
Plug & Socket Cover	0.15 mm	27.00 mm	All

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POWTG0718

PUB002-127-00
Date of issue 08/18