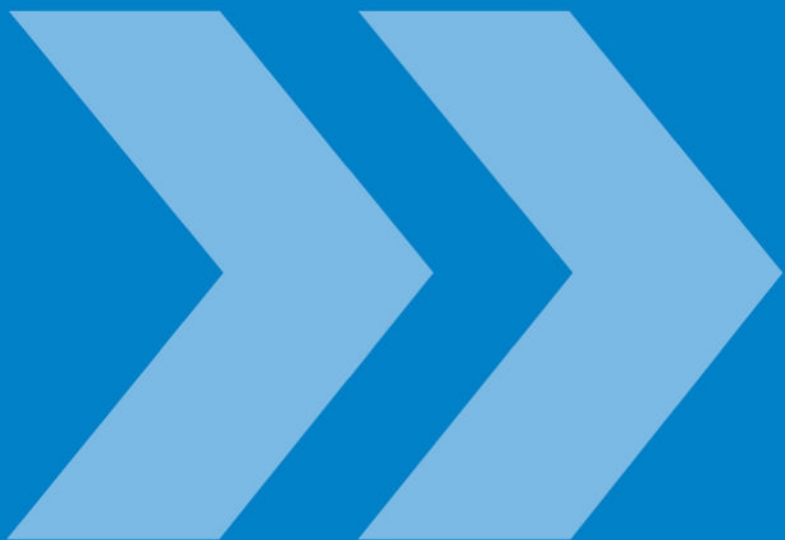




TX3706 • Falcon 25 Ex Connectors
IECEX (Australia)




TROLEX <<

User Manual

TX3706 • FALCON 25 Series Ex Connectors

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1. Product Overview



1.1 Operating Features

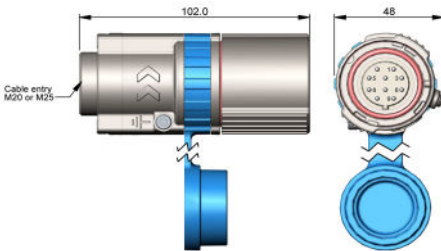
- Multi-pin connector for use in Group I hazardous areas
- Precision cast metal **Line Plug** and **Line Receptacle** for cable mounting
- Precision cast metal **Fixed Receptacle** for Ex d mounting
- Standard cable glands are utilised to user preference
- Simple connection - no special tools required
- Double insulated contact cartridge for added safety and ease of connection
- Pilot circuit interlocking safety protection can be incorporated
- Rapid double bayonet engagement ensures that pilot circuit contacts break under Ex d protection for live disconnection
- Security coding options to prevent non-permitted engagement
- Supplied with flexible ingress protection cover caps
- Ex d blanking cover caps may be supplied where specified

1.2 Application

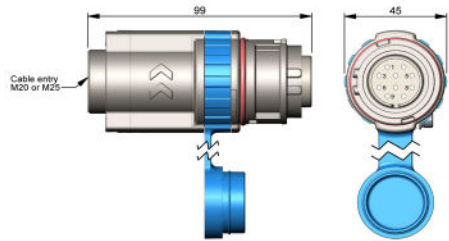
- High integrity, multi path, robust, explosion proof connector, designed for extra heavy duty and critical applications.
- IECEx certified for underground mines.
- Rapid and convenient connect/disconnect of control circuits and power circuits for electrical equipment installation.
- Pilot pin live disconnect of critical equipment for maintenance and change-out.

1.3 Dimensions

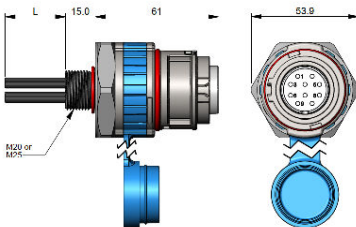
TX3706.1 Line Plug



TX3706.2 Line Receptacle



TX3706.3 Fixed Receptacle
M20 or M25 bush mounting on
Ex d enclosures



1.4 Technical Information

Housing material:	Stainless Steel : ANC4B
Cable entry on free plug and receptacle:	Choice of threaded cable entry sizes for standard Ex d cable glands M20 and M25
Mounting of fixed receptacle:	<ul style="list-style-type: none">• M20 onto Ex d housing• M25 onto Ex d housing
Connections of fixed receptacle:	1.5 mm ² x 1m / 2m / 3m (L) 2.5 mm ² x 1m / 2m / 3m (L)
Mating cycles:	10,000 with no load connected
Security Coding:	5 selectable coding positions - A, B, C, D, E
Ingress protection:	IP66
Temperature limits:	-50 °C to +60 °C
Weight:	Stainless Steel
Free Plug	0.5kg
Free Receptacle	0.43kg
Fixed Receptacle	0.4kg
Conformity:	IEC 60079-0: 2011 - Explosive atmospheres - Part 0: Equipment - General requirements IEC 60079-1: 2014 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

Contact Inserts



Contact ways:	10	4
Maximum rated current per contact:	25 A	25 A
Maximum total current (all contacts):	100 A	100 A
Rated voltage:	250 V ac/ 100 V dc	250 V ac/ 100 V dc
Maximum live disconnect voltage Power factor 0.4 to 0.5	80 V ac/dc	250 V ac/dc
Load breaking current (up to 200 mating cycles):	1 A	1 A
Creepage and clearance: (IEC 60664-1)	2 mm	5 mm
Cable terminations:	6 or 8 point crimp or solder - IEC 60352-2	
Wire size:	1.5 mm ² or 2.5 mm ²	
Insert material:	Glass filled polymer	
Fire rating:	VL94, V-0	
Contacts:	Multi-spring wire socket and solid pin	
Insertion force:	6 N per contact	
Contact protection:	Passivated silver plating	
Contact resistance:	400 ohm	
Test Voltage:	2000 V	
Insulation:	Class II double insulated BS 61140	
Over voltage transients:	3000 V	
Protective earth connections	Screw clamp terminals for 2.5 mm cables	

Checkpoint

Intrinsically safe circuits

The contact inserts are clearance compatible for use with approved intrinsically safe circuits up to 30 Volts. This feature can be used to maintain flameproof properties where intrinsically safe circuits are exiting a flameproof enclosure.

Caution

Intrinsically safe circuits must not be mixed with non-intrinsically safe circuits on the same connector.

2. Certification and Conformity



IECEX (International) certification for use in underground mines in Australia (including Queensland) and New Zealand.

Standards:

IEC 60079-0: 2011 Edition: 6.0

IEC 60079-1: 2014 Edition: 7.0

2.1 Underground mines (stainless steel versions only)

1) Line Plug and Line Receptacle

Product Code:	Ex Certificate Number:	Ex Certification Code:
TX3706.1.06 TX3706.2.06 TX3706.4.06	IECEX ExTC 18.0028X	Ex db I Mb -50 °C ≤ Ta ≤ +60 °C

2) Fixed Receptacle (low risk of mechanical danger only - refer to conditions of use below)

Product Code:	Ex Certificate Number:	Ex Certification Code:
TX3706.3.06	IECEX ExTC 18.0028X	Ex db I Mb -50 °C ≤ Ta ≤ +60 °C

2.2 The following Conditions of Certification and Special Conditions for Safe Use apply to the above IECEx Certificate:

The following conditions relate to safe installation and/or use of the equipment:

1. When included, the total capacity of all pin options shall not exceed 100 A, with a maximum rating per pin of 25 A.
2. The cable entries and cable used with the TX3706 Falcon 25 Connectors may reach 60 °C above ambient temperatures, therefore, shall be selected accordingly for these temperatures.
3. The TX3706 Falcon 25 fixed receptacles must not be used on enclosures where the entry point temperature exceeds 119 °C.
4. The connector arrangement remains flameproof through the first stage of disconnection which fully disconnects the pins, however, this only applies to circuits with a power factor of between 0.6 and 1.0. For circuits outside this range, unless for resistive loads only, additional time delays shall be considered before fully disconnecting the connector even when de-energised.
5. The stainless steel fixed receptacle, when used in Group I areas, shall only be used in areas considered to be low risk of mechanical danger or shall be additionally protected from mechanical impact by installation.

2.3 Additional Notes

Parts of the enclosure are made from the following non-metallic materials:

- O Seals - Silicone
- Rubber Caps - TPE
- Inserts - Polyamide 66
- Potting - Epoxy Resin/Adhesive

Consider material performance with respect to chemicals which may be present in the hazardous area.

3. Fitting and Installation

3.1 Precautions

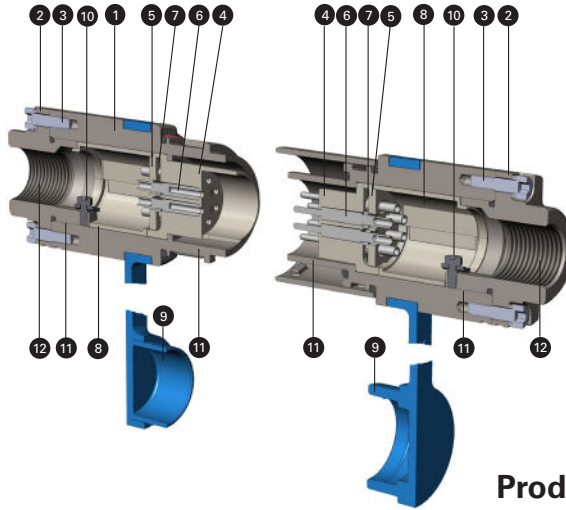
- Special conditions of use relating to the Ex certification may apply to particular applications.
- The cable gland used with Free Plugs and Free Receptacles must be an approved Ex d type which is suitably certified for the equipment and the type of cable to be used.
- Gland entries must be fitted with suitable ingress seals to maintain the overall ingress protection of the connector.
- Ensure that the current and voltage parameters of the electrical circuits are within the limits specified.
- The sealing faces and flame paths will have been treated with a protective film of grease during manufacture. Renew if necessary before assembly or engagement, in accordance with the relevant installation standards and procedures.
- Ensure that the end cap screws are in place and are fully tightened before engagement.
- Always fit either a rubber ingress protection cap or an Ex protection cap to disengaged connectors to protect flame paths and to exclude debris and moisture.
- Do not disengage the connector by pulling on the cable as this may damage the fitting of the cable into the cable gland.
- A connector with a damaged flame path is an explosion risk and should be removed from service.

3.2 Tools and Equipment

- 2.5mm & 3mm Allen key
- Wire cutters
- Wire strippers
- 6 or 8 point crimping tool (or soldering iron for soldered connections)

3.3 Free plug and free receptacle

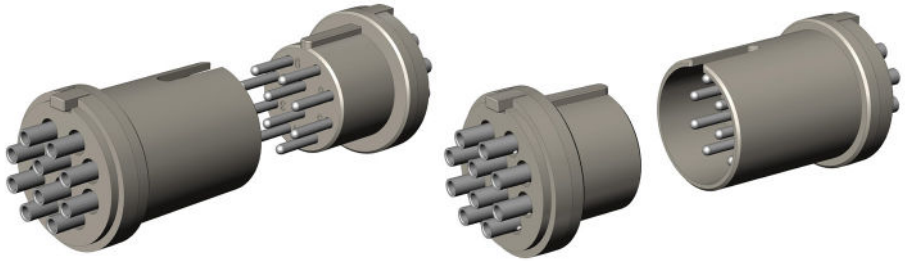
3.3.1 General assembly and definitions



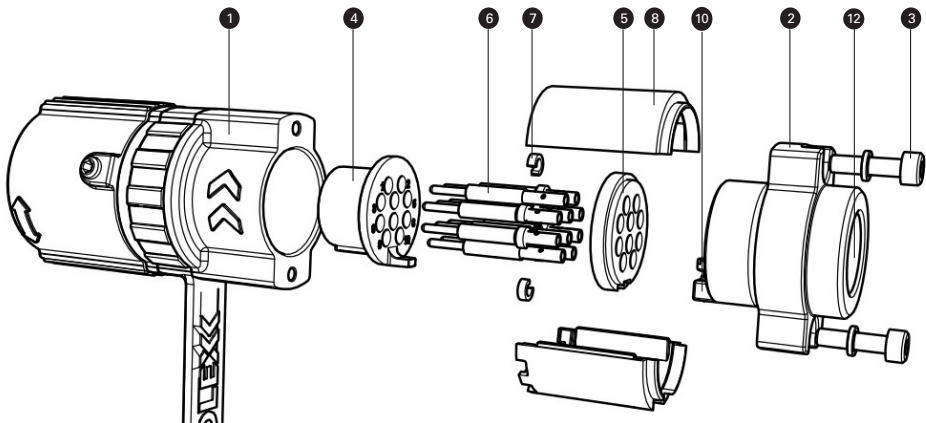
Product Options

1. Body (Plug or receptacle) Group I	Stainless Steel
2. End cap	
3. End cap screws	
4. Contact insert	10 way/4 way
5. Backing ring	
6. Contacts	Pins/Sockets Pilot Pin when specified
7. Retainer	
8. Sleeve (Upper and lower pair)	
9. Ingress protection cap	
10. Earth bonding terminal	
11. Flame path	
12. Cable entry for standard Ex cable glands	M20 or M25

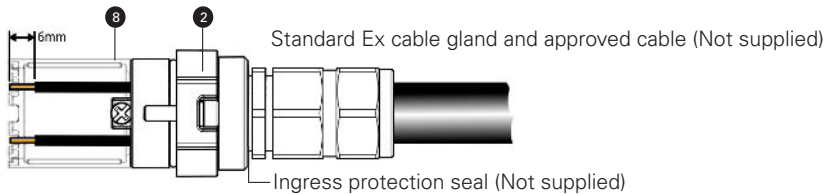
- PINS or SOCKETS can be fitted into MALE or FEMALE contact inserts
- MALE or FEMALE contact inserts can be fitted into PLUGS or RECEPTACLES



3.3.2 Connecting



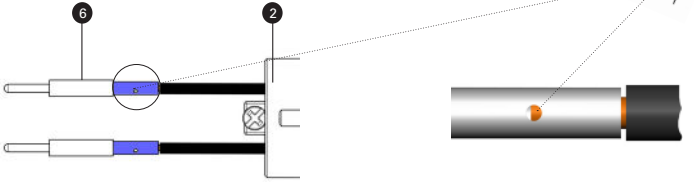
- Prepare cable



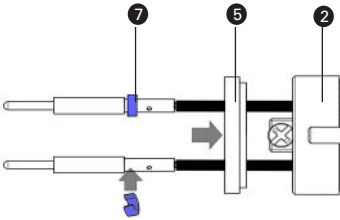
Checkpoint

Use sleeve 8 as a temporary wire length cutting gauge.

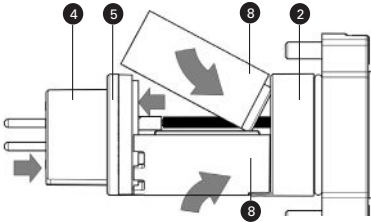
- Crimp or solder connectors



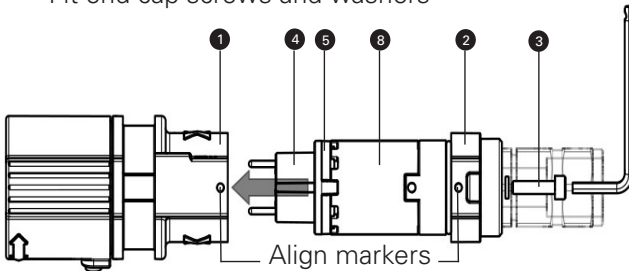
- Fit backing ring 5
- Clip a retaining clip 7 to each contact



- Load contacts into the contact insert 4
- Slide the backing ring 5 up to the contact insert 4
- Clip the sleeves 8 in place

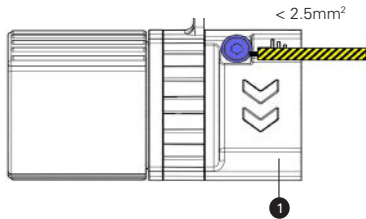


- Load into connector body 1
- Fit end cap screws and washers

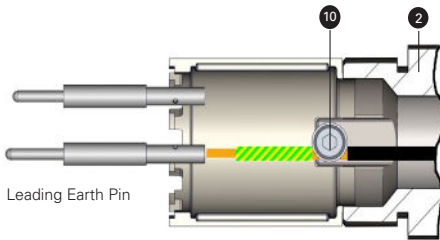


3.3.3 Earth Bonding

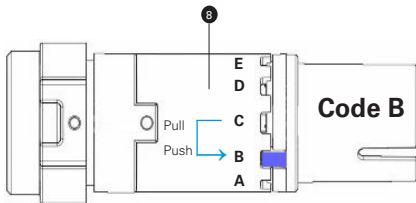
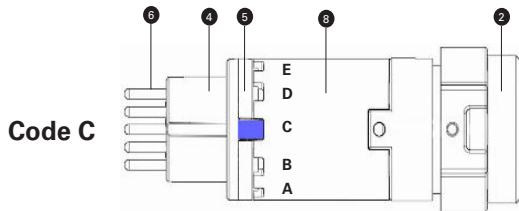
- External Earth bonding



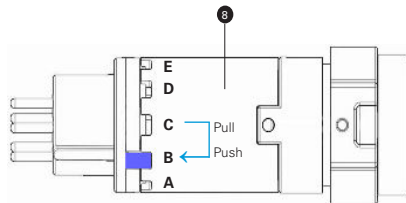
- Internal Earth Continuity bonding



3.3.4 Security Coding



Female
Contact insert



Male
Contact insert

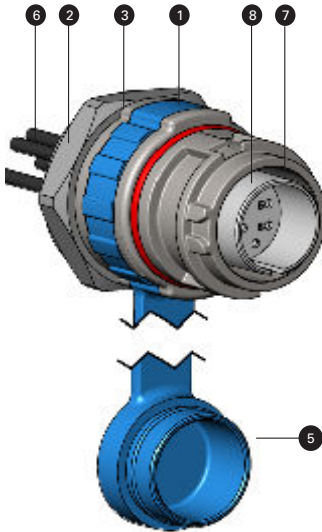
3.4 Fixed Receptacle

3.4.1 General assembly and definitions

TX3706.03

Fixed Receptacle

Bush mounting onto Ex d housing (Section 3.4.2)



Product options

1. Body (Plug or receptacle) Group I	Stainless Steel
2. Threaded entry mounting bush	M20 or M25
3. Locking ring with ingress seals	
4. Ingress seal for surface mounting	
5. Ingress protection cap	
6. Pre-wired encapsulated connections	1.5 mm ² X 1M / 2M / 3M (L) 2.5 mm ² X 1M / 2M / 3M (L)
7. Female contact insert	10 way/4 way (Security code to be specified)
8. Contacts	Pins/sockets (Pilot pin when specified)

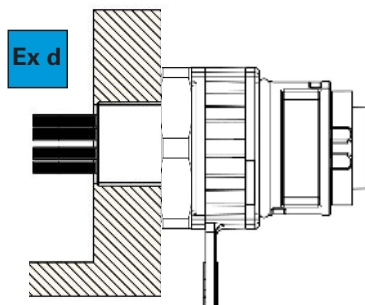
3.4.2 Ex d bush mounting

TX 3706.3...20

TX 3706.3...25

A locking ring enables the Receptacle to be radially positioned to suit user preference and incorporates ingress seals to IP66 standards.

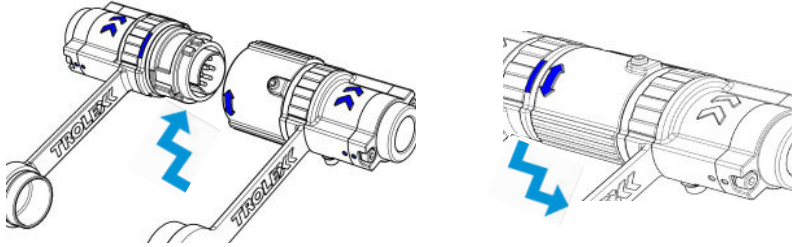
- Position the Receptacle to concur with any radial position of the corresponding free plug.
- Align Receptacles for best visual appearance
- Locks against the effect of rotational forces which may occur from the connecting cable.



1. Screw the Receptacle all the way into the mounting bush on the enclosure. This must be a minimum of five threads engaged on an Ex d enclosure.
2. Use a half-spanner to apply counter-clockwise locking force to the locking ring.

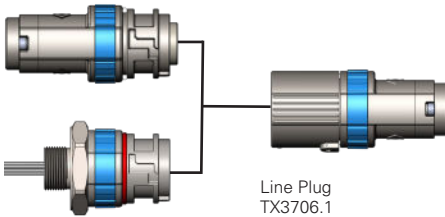
4. Operation

4.1 Engage and separate



Engage				Ex d Protection
Break				Ex d Protection
Separate				IP30 on Socket

Line Receptacle
TX3706.2



Fixed Receptacle
TX3706.3

Line Plug
TX3706.1

Locking Screw

The locking screw must be tightened to complete the connection process giving full Ex d protection.



4.2 Safety Precautions



There are two methods of safety protection depending upon the application and local safety regulations.

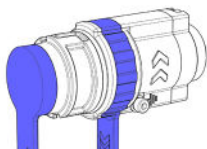
4.2.1 Isolate elsewhere

Isolate all electrical power at source BEFORE separation



Checkpoint

IP65



Fit the rubber ingress protection cap when separated.

Ex d + IP66

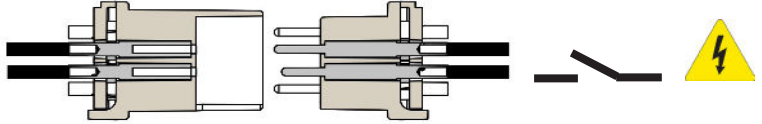


Fit an Ex protection cap if the system power is to be reinstated.

4.2.2 Pilot circuit interlocking

Automatic isolation of the power source during separation using one of the connector contacts for interlocking a pilot switching circuit.

- Fit a lagging pilot pin P5609.23.02 or P5609.16.02

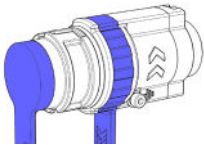


Engage			Ex d Protection
Break			Ex d Protection
Separate			---

Checkpoint

- The pilot relay will isolate the power source slightly in advance of the main contacts during separation
- Breaking of the pilot contract will take place under Ex d protection
- The pilot circuit must be de-energised along with the power source.

IP65



Fit the rubber ingress protection cap when separated.

Ex d + IP66



Fit an Ex protection cap if the system power is to be reinstated.

Important:

- Before an Ex d protection cap is fitted and whilst disconnected, the connector is no longer Ex d protected. Fitting an Ex d protection cap restores full Ex d protection.
- The rubber protection cap provides an ingress protection IP65 when fitted but does not provide an enclosure meeting the requirements IEC/EN 60079-0.

5. Accessories

Leading earth pin 1.5 mm²

P5609.23.01



Leading earth pin 2.5 mm²

P5609.16.01



Pilot pin 1.5 mm²

Maximum current: 1 Amp

P5609.23.02



Pilot pin 2.5 mm²

Maximum current: 1 Amp

P5609.16.02



Ex protection plug cap

Stainless Steel

TX3706.42



Ex protection receptacle cap

Stainless Steel

TX3706.44



6 Maintenance

No regular maintenance is required

Flame paths and ingress protection seals should be inspected at periodic intervals, in accordance with local statutory regulations and light protective grease applied when necessary.

Disclaimers

The information provided in this document contains general descriptions and technical characteristics of the performance of the product. It is not intended as a substitute for and is not to be used for determining suitability or reliability of this product for specific user applications. It is the duty of any user or installer to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use. Trolex shall not be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments, or find errors in this publication, please notify us at marketing@trolex.com.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only Trolex or its affiliates should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Trademarks

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Patent pending.

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