IP65 IP67 EExd

Measure Monitor Control

L65.d.p.s

Solenoid Valve - Model L65 - 3/8”-2” /2 Normally Closed

- Specification & Dimensions: **Pages 2-3**
- Installation & Maintenance Procedures: **Page 4**
- Wiring Details IP65 Solenoid Coil: **Page 5**
- Wiring Details IP67 Housing Solenoid Coil: **Page 6**
- Solenoid Coil Replacement IP67 Housing: **Pages 7-9**

IP65 IP67 EExd

Measure Monitor Control

L65.d.p.s

Solenoid Valve - 2/2 NC - Pilot Diaphragm

Benefits & Features

- Pilot operated diaphragm for high dependency applications
- Suitable for gaseous and liquid media
- Manual override option
- High pressure versions sizes 1” to 2” designated /AP
- IP65, Ex-d IIB or Ex-d IIC versions
- Ex-d IIC -60°C to +60°C ambient versions
- ATEX, EAC Ex (CU TR 012) and IECex, Ex-d approved

Specification

Configuration	Pilot diaphragm
Port Sizes	3/8” to 2”
Orifice	see table below
Kv	see table below
Body	Brass or 316 Stainless Steel (1/2” and 3/4” only)
Media	Air, gases, liquids etc. Subject to material compatibility
Pressure ranges	See individual data tables below
Seals	NBR, VITON, EPDM*, HNBR * FDA approved EPDM for 1/2” model size as standard
Voltage	12, 24, 48, 110, 220, 230 AC/DC. Other voltages upon request

IP65 safe area version with brass or stainless steel body

IP65

EExd

EExd hazardous area version with 316 Stainless Steel body (½” and 3/4” only)

Technical Data

Standard Models IP65 IP67 EExd

	A		B	C	D	E	Port Size	Orifice mm	Body Rating	Min . /Max. Operating Differential Pressures. BAR. Min.	Normally Closed Maximum AC	Normally Closed Maximum DC	KV Flow Factor L/min.
L65		12					⅜”	12.7	25	0.2	16	16	35
L65		12					½”	12.7	25	0.2	16	16	40
L65		18					¾”	18	25	0.2	14	14	87
L65		25					1”	25	25	0.2	12	12	170
L65		36					1 ¼”	36	20	0.3	10	10	300
L65		36					1 ½”	36	20	0.3	10	10	340
L65		50					2”	50	20	0.3	10	10	600

High Pressure Models (/AP) IP65 IP67 EExd

	A	Orifice	B	C	D	E	Port Size	Orifice mm	Body Rating	Min . /Max. Operating Differential Pressures. BAR. Min.	Maximum AC	Maximum DC	KV Flow Factor L/min.
L65		12				/AP	⅜” & ½”	12	20	0.3	25	25	300
L65		18/25				/AP	¾” & 1”	18/25	20	0.3	20	20	340
L65		36/50				/AP	1 ¼”-2”	0.72	20	0.3	18	18	600

IP67

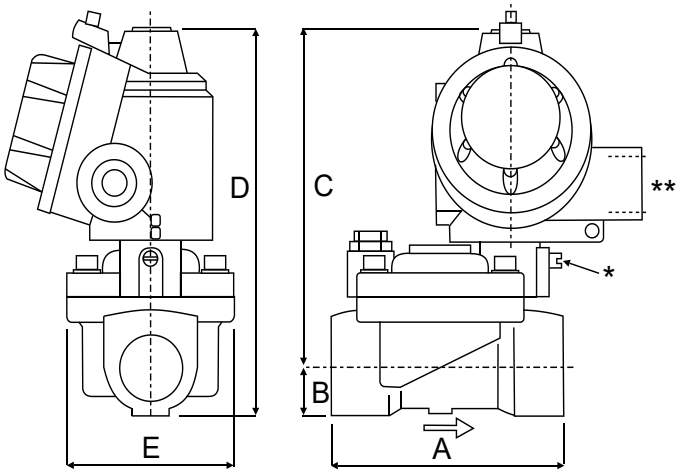
IP67 safe area version with brass body

Solenoid Valve - 2/2 NC - Pilot Diaphragm

Weights & Dimensions

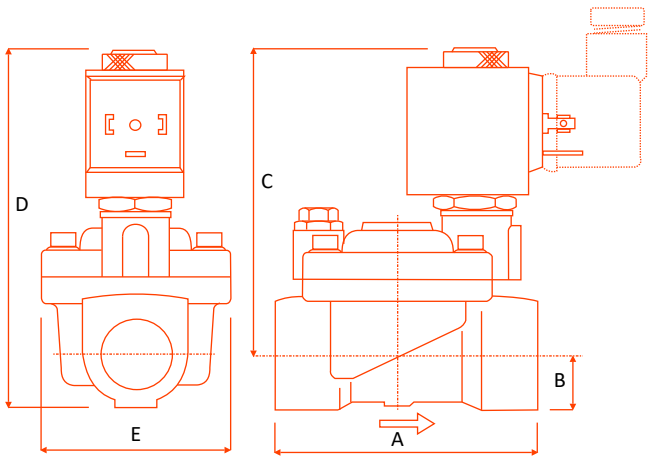
EExd & IP67 Safe Area IP67 EExd

Port Size	Weight Kg	Dimensions mm					
		Brass Body	Stainless Steel Body				
		A	A	B	C	D	E
⅜"	1	64	/	14	119	133	45
½"	1	64	66	14	119	133	45
¾"	1.3	82	88	17	128	145	55
1"	1.8	100	/	20	135	155	70
1 ¼"	3.3	144	/	28	142	170	98
1 ½"	3.1	144	/	28	142	170	98
2"	4.9	152	/	35	153	188	120



IP65 Safe Area IP65

Port Size	Weight Kg	Dimensions mm					
		Brass Body	Stainless Steel Body				
		A	A	B	C	D	E
⅜"	1	64	/	14	119	133	45
½"	1	64	66	14	119	133	45
¾"	1.3	82	88	17	128	145	55
1"	1.8	100	/	20	135	155	70
1 ¼"	3.3	144	/	28	142	170	98
1 ½"	3.1	144	/	28	142	170	98
2"	4.9	152	/	35	153	188	120



Order Codes

A	Body
I	316 Stainless steel*
N	Niploy Plated Brass**
T	Brass
* 1/2" & 3/4" only	
** Upon request	

B	Port		
E	3/8" BSP	T	3/8" NPT
F	1/2" BSP	G	1/2" NPT
H	3/4" BSP	I	3/4" NPT
L	1" BSP	M	1" NPT
N	1 1/4" BSP	O	1 1/2" BSP
V	1 1/2" NPT	P	2" BSP
W	2" NPT	X	ANSI 300*
Y	ANSI 150*		

C	Seals (fluid temp. min / max)
0	NBR (-10°C to + 70°C)
1	VITON (-10°C to + 90°C)
6	EPDM* (-10°C to + 90°C)
7	HNBR (-45°C to + 90°C)
* FDA approved EPDM for 1/2" model size as standard	

D	Protection
P	IP65 Safe Area
S	IP67 Safe Area
B	II 1/2 GD Ex-d IIB T6 (-20 to +40°C)
C	II 1/2 GD Ex-d IIC T6 (-20 to +40°C)
/LT	II 1/2 GD Ex-d IIC T6 (-60 to +60°C)
H	Ex-d c IIB IP67 IECEX
T	Ex-d c IIC IP67 IECEX
R	Ex-d IIC EAC Ex

E	Options
X	Manual Override
/SG	Degreased for oxygen
/AP	High pressure version***
*** 1", 1 1/2" and 2" only	

Solenoid Valve Installation & Maintenance

Section 1: How to install Solenoid Valves

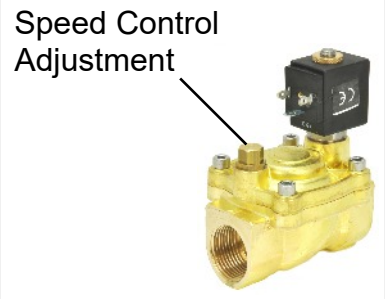
Solenoid Valves can normally be installed and operate in any orientation. However, certain models are designed to operate in horizontal installations. Please contact Red Dragon for further information.

Installation Procedure:

Check that the Solenoid Valve is the correct product ordered for the application:

- Isolate the site electrical power supply
- Isolate the site media supply (dependant on the application)...air, water, steam etc. Leave until cool/safe.
- Insert the valve onto the pipe, ensuring that the flow direction is observed.....IN for incoming media, or an arrow stamped on the valve body.
- Ensure that the pipe connections are free from burrs or loose pipe thread tape
- Tighten all pipe joints
- Connect electrical power supply via DIN electrical socket connector, as detailed in section 1
- Ensure that DIN connector is properly connected to solenoid coil and the gasket is installed correctly
- Apply media pressure and check for leaks

Section 3: Speed Control Adjustment (body sizes 1” - 2” only)



The speed control adjustment effects the speed at which the valve main diaphragm closes over the main internal orifice. The adjuster can be used to limit the effect of the inlet pressure wave in high pressure systems.

Adjustment Procedure-Normally Closed Models L65:

- Install the solenoid valve as per section 2. Electrically operate the solenoid valve
- De-energise the solenoid valve and check if the valve is effected by system pressure hammer
- Remove the top hexagonal nut of the speed adjuster. With a small flat-blade screwdriver, turn the centre

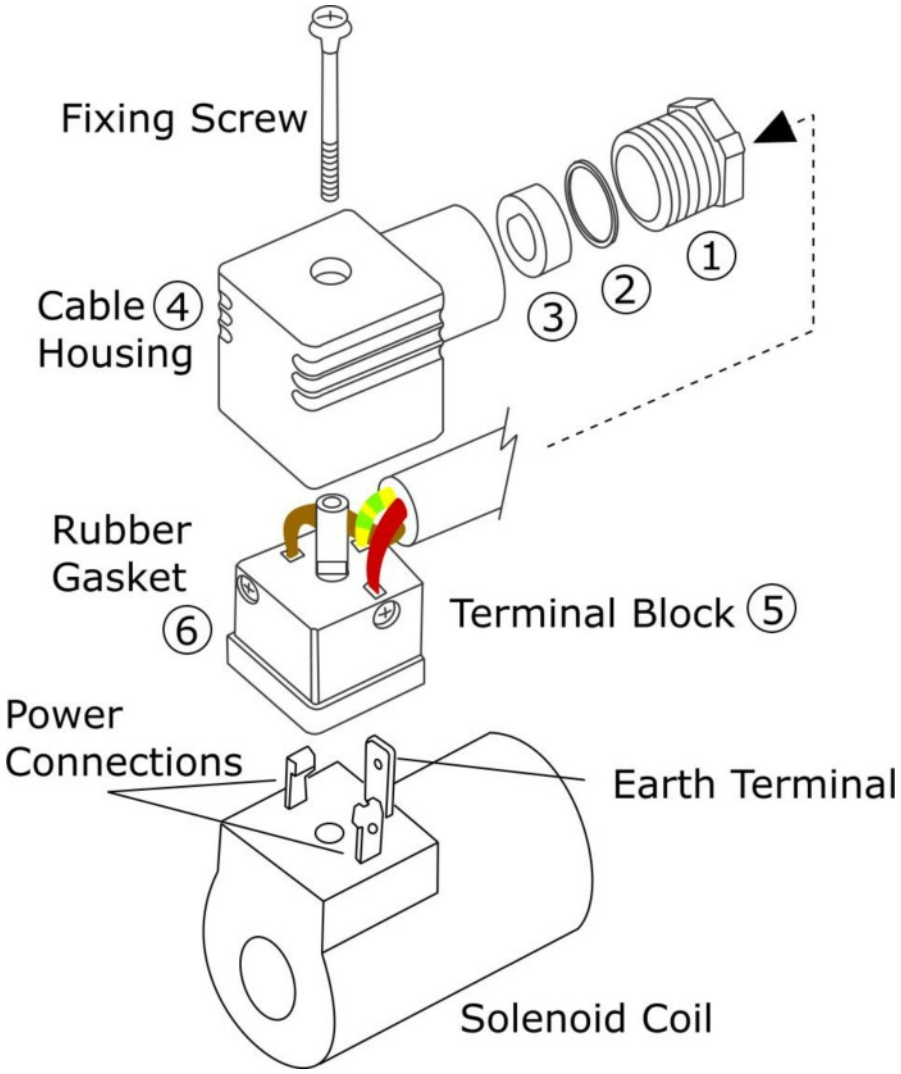
Section 3: Maintenance Procedure for Solenoid Valves - IP67 Safe Area & EExd with Housing

In the unlikely event of a valve malfunction, or routine maintenance, follow these instructions:

- Isolate the site electrical power supply
- Isolate the site media supply (dependant on the application)...air, water, steam etc.
- Remove the solenoid coil by unscrewing the coil retention nut anti-clockwise
- Remove the coil tube stem by unscrewing anti-clockwise
- Carefully remove the plunger assembly (inside the coil stem)
- Check the plunger assembly for damage or worn seals
- Check the face inside the coil stem for foreign particles that could prevent correct operation
- For Pilot Diaphragm Solenoid Valves: remove the top cover housing and check the diaphragm for damage and blocked transfer port.
- Re-assemble the valve in reverse order, ensuring that all parts are cleaned and assembled correctly

Solenoid Valve Wiring - IP65 DIN Connector

IP65 DIN Connector

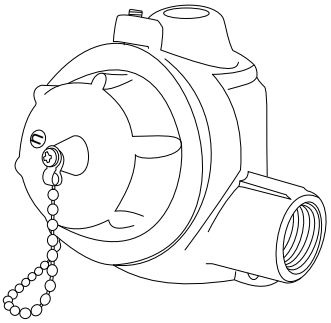


Section 1: DIN Connector Assembly

- Insert the electrical power cable through the gland assembly (1,2,3)
- Push the cable through cable housing (4)
- Connect power and earth cables to terminal block 5
- Push terminal block (5) backwards, inside cable housing (4)
- Place rubber gasket (6) on terminal block (5) front face
- Push terminal block onto solenoid coil terminals
- Push fixing screw through complete assembly
- Tighten fixing screw with small screwdriver
- Do not over tighten
- Tighten cable gland (1,2,3) by hand

Electrical Wiring - IP67 Housing

Installation Procedures & Methods



Attention: For safety purposes, always ensure that the power supply is disconnected. After de-energising, allow 15 minutes before continuing the following procedures

A

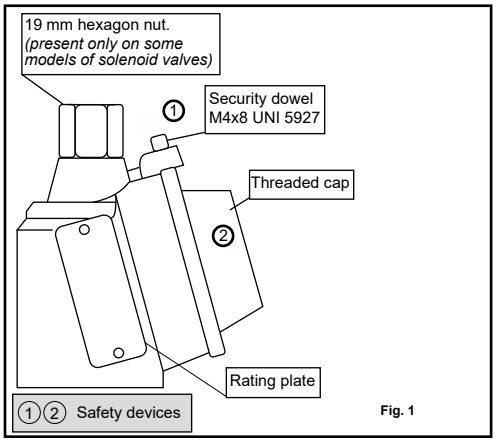
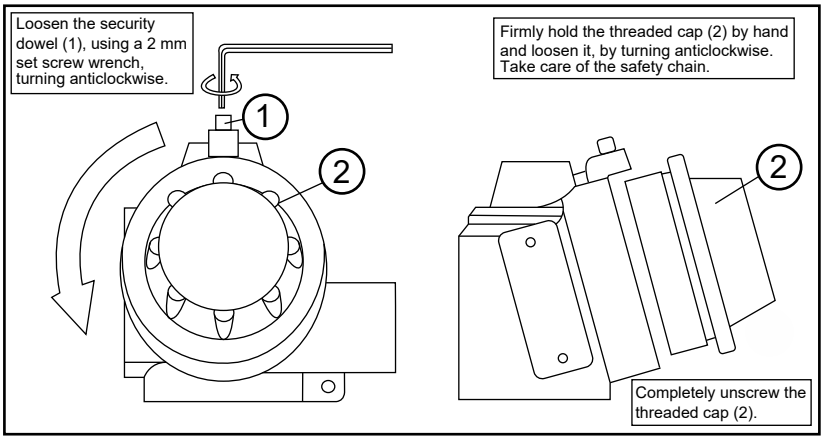
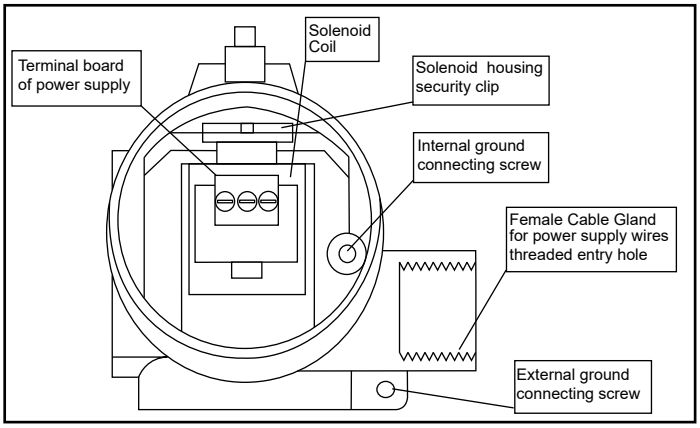


Fig. 1

B

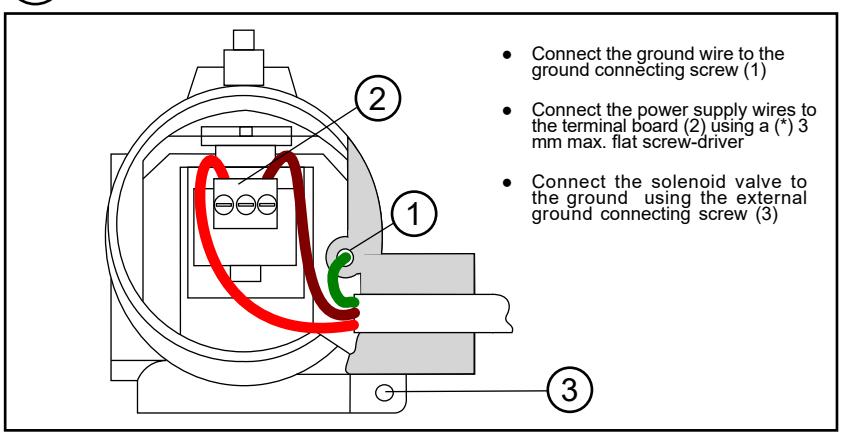


C

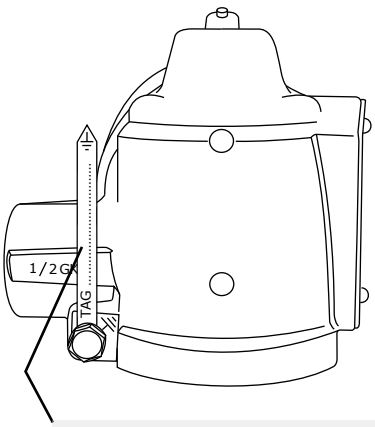


Pipe fittings used for cable entry (Cable, duct, conduit etc) are NOT supplied by the manufacturer.
Installation engineers should ensure that the use of fittings are of the correct diameter and suitable to secure the tightness of the cable used. Where site conditions indicate, cable duct, conduit etc. must be ATEX approved, for a protection degree equal or greater than the protection degree indicated on the rating plate.
The thread type is indicated on the housing:
M20*1.5mm, 1/2"NPT or 1/2"GK

D



- Connect the ground wire to the ground connecting screw (1)
- Connect the power supply wires to the terminal board (2) using a (*) 3 mm max. flat screw-driver
- Connect the solenoid valve to the ground using the external ground connecting screw (3)



Earth Tag. Can be customised with Tag number, part number etc.

Solenoid Valve Maintenance - IP67 Housing

Solenoid Coil Removal - Operations 1-2

Tools Required

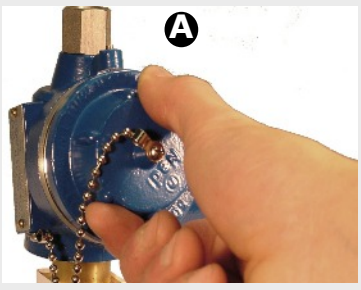
1	Solenoid housing security clip extraction tool (KM/3062)
2	Flat screwdriver (max. 3x1)
3	Special fixed core wrench (KM/2621)
4	Fixed core wrench lever pin 8mm
5	Setscrew wrench no.2
6	19mm spanner

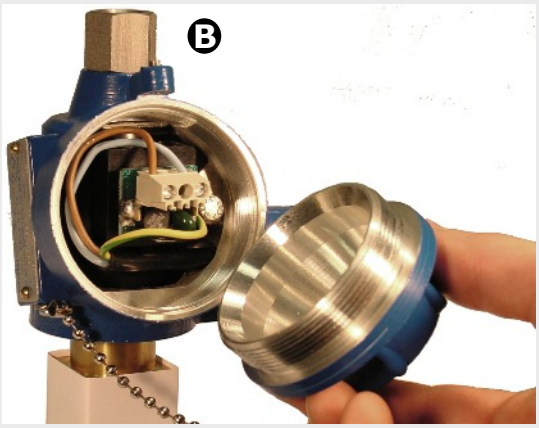
Ensure that the power supply is switched off before commencing the following procedures

Operation 1

Loosen the security dowel using the setscrew wrench 5

Operation 2





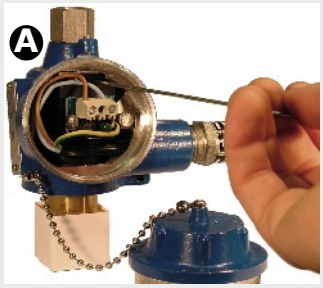
Unscrew the solenoid
Housing threaded cap,
By turning anti-clockwise

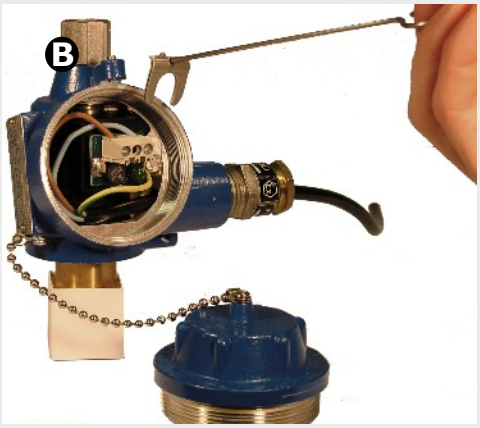
Solenoid Valve Maintenance - IP67 Housing

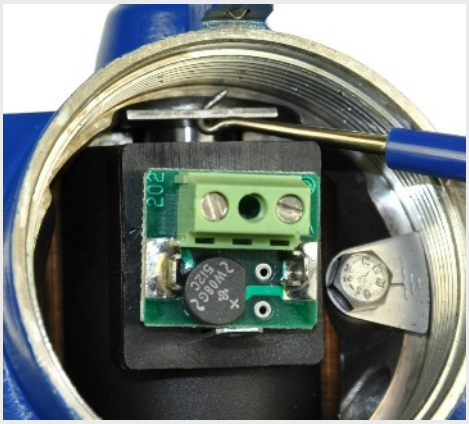
Solenoid Coil Removal - Operations 3-5

Operation 3

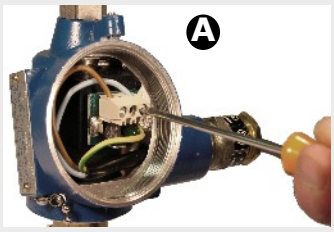
Insert the clip extraction tool in the solenoid housing security clip. Gently pull the clip away from the housing until it is extracted.

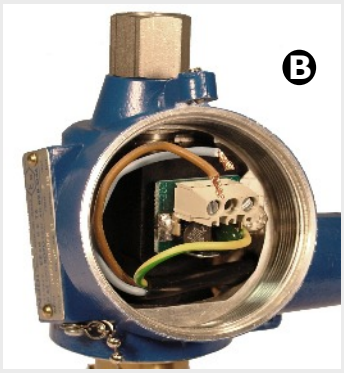






Operation 4

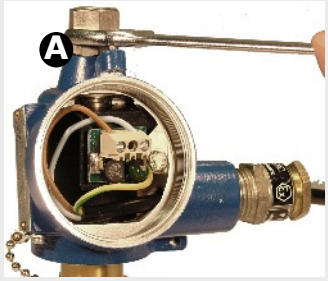


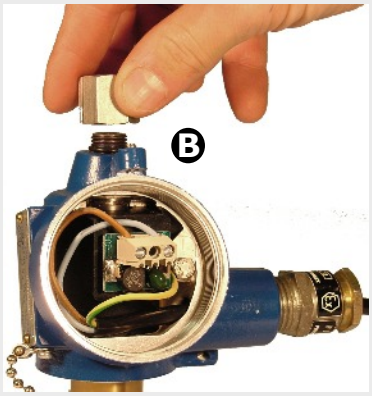


Loosen the terminal board screws and pull out the two power supply Wires (A)

It is not necessary to unscrew the internal earth connecting wire.

Operation 5 (if fitted)





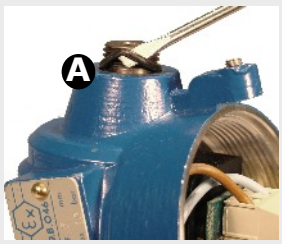
Depending on the model, loosen the hexagonal nut with a 19mm spanner, turning anti-clockwise (A)

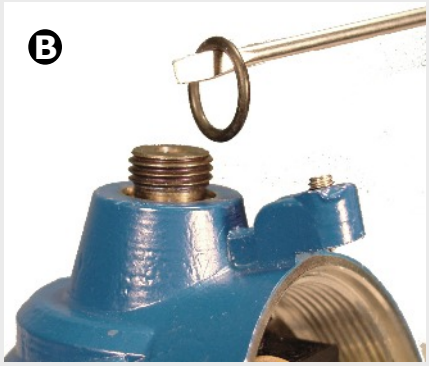
Once loose, unscrew the nut by Hand (B)

Solenoid Valve Maintenance - IP67 Housing

Solenoid Coil Removal - Operations 6-8

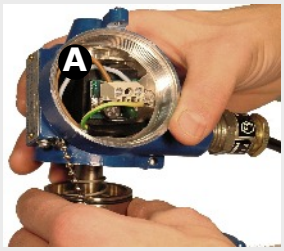
Operation 6





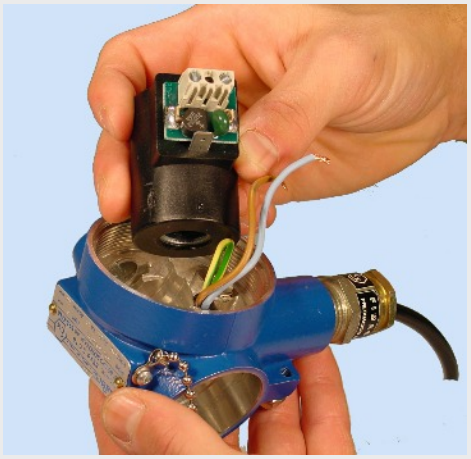
If operation 5 was necessary, carefully extract the O ring from the solenoid coil housing

Operation 7



Pull up the solenoid housing until the solenoid coil is clear of the pilot assembly tube C.

Operation 8



Extract the solenoid coil from the housing, by twisting it gently leading with the top edge.