

## Solenoid Valve - 3/2 - 1/4" - Universal

### Benefits & Features

- High dependency applications
- Universal, direct acting, all ports in the base
- Internal moving parts available as spares kit
- Brass or 316 Stainless Steel bodies
- IP65, IP67, EExd IIB, EExd IIC versions
- Ex-d IIC -60°C to +60°C ambient versions
- ATEX, EAC Ex (CU TR 012) and IECEx, Ex-d approved

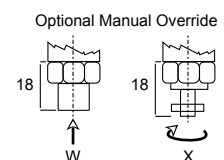


### Specification

<b>Configuration</b>	Direct Acting, all ports in the base
<b>Port Sizes</b>	1/4" BSP or 1/4" NPT
<b>Orifice</b>	6.0mm
<b>Kv</b>	see table below
<b>Body</b>	Brass or 316 Stainless Steel
<b>Media</b>	Air, Gasses. Subject to material compatibility
<b>Pressure ranges</b>	See individual data tables below
<b>Seal options</b>	NBR -10 to +70°C   VITON (-10 to +90°C)   EPDM -10 to +90°C   HNBR -45 to +90°C

### Technical Data

C28	A	60	B	C	D	E	Nominal Max. Bar	Orifice mm	Min. /Max. Operating Differential Pressures. BAR.			KV Flow Factor L/min.	Weight Kg
									Min.	Maximum			
										AC	DC		
							10	6.0	0	10	10	9	0.9



### Order Codes

A	Body	B	Port	C	Seals (fluid temp. min / max)	D	Protection	E	Options
T	Brass	C	1/4" BSP	0	NBR (-10°C to + 70°C)	P	IP65 Safe Area	X	Manual Override. Turn Pin
I	316 Stainless steel	D	1/4" NPT	1	VITON (-10°C to + 90°C)	S	IP67 Safe Area	W	Push Button Override *
				6	EPDM (-10°C to + 90°C)	B	II 1/2 GD Ex-d IIB T6 (-20 to +40°C)	/SG	Degreased for oxygen
				7	HNBR (-45°C to + 90°C)	C	II 1/2 GD Ex-d IIC T6 (-20 to +40°C)		*Brass body only
						/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		

### Options

Degreased for oxygen service | UREPAN seals for Liquid CO2

Manual Override (Turn-screw type: Brass or Stainless steel. Push Button type: Brass body only)



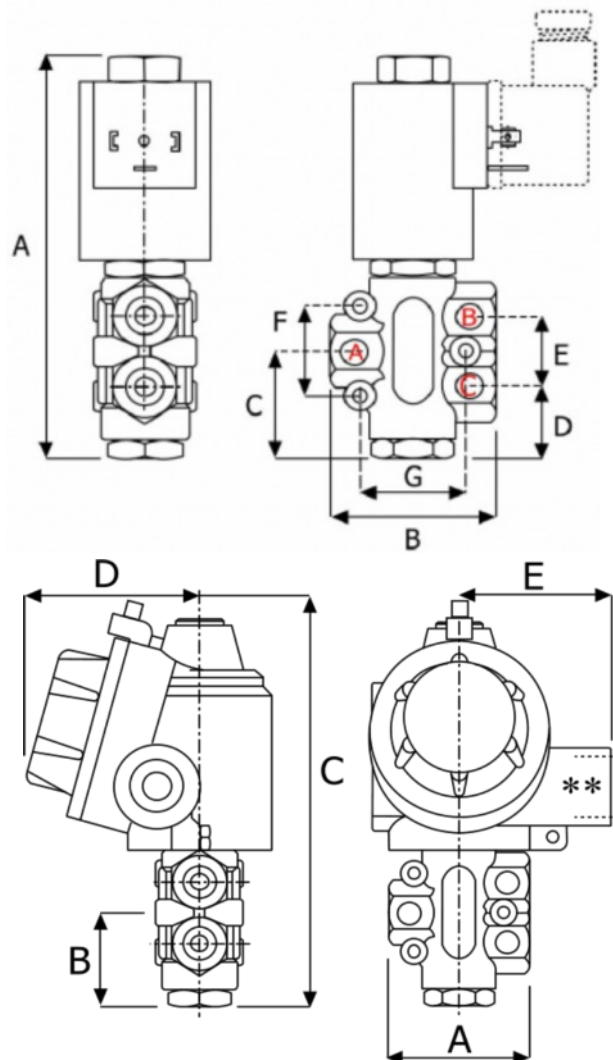
## Solenoid Coil Options

	B6E / B6R (Internal Rectifier for AC voltages). EExd	B6/B6R. IP 67 Safe Area	B6/B6R. IP 65 Safe Area
Insulation Class:	F (155°C) - H (180°C) upon request		
Winding Wire Class:	H (180°C)		
Coil Housing:	Type 3050 (EExd IIB) or 3070 (EExd IIC)		
Protection Class:	Watertight IP67 (EN60529)		IP65 (EN60529)
Temperature Class:	T6 (ref. T.amb _ +40°C). T5 (ref. T.amb _ +60°C) upon request	n/a	n/a
Duty:	Continuous (S.I.) 100% ED		
Power Consumption:	AC: 11VA (28VA Inrush). DC 11W		
Voltage Tolerance:	± 10%		
Insulation:	> 1000 Mohm		
Dielectric Strength:	> 2000 V/1'		
Standard Voltages: (Other Voltages Available Upon Request)	12, 24, 48, 110, 220 VAC 50/60 Hz		
	12, 24, 48, 110, 220 VDC		

## Dimensions

### Safe Area. IP65

Weight Kg	Dimensions mm						
	A	B	C	D	E	F	G
0.9	138.5	50	33.5	23	21	28	32



### Hazardous Area & Safe Area IP67

Weight Kg	Dimensions mm				
	A	B	C	D	E
0.9	50	33.5	138.5	60	54



**Solenoid Valve Series: "L", "C", "D", "E", "F", "G" and "H"**



The following data is intended exclusively for specialised users only. These person(s) must comply with local and national regulations. This document is for information regarding the installation, assembly, disassembly and authorised maintenance. Such operations must exclusively be performed by authorised technical personnel. The product should be verified and checked that it is suitable for the application, by checking the Solenoid Valve specification against the Application demands (fluids, pressures, temperatures etc.)

Make sure that the type and degree of Solenoid Valve protection, as well as the temperature of the fluid that the valve intercepts are compatible With the degree, the type of protection and the class of temperature required by the classification of the zone, which the valves will be installed.

Use Solenoid Valves only with fluids compatible with the materials of which they are composed: Brass OT58 Uni 5705-65 (Cu 58% Zn 40% Pb 2%), Stainless Steel A X5CrNiMo1712 (AISI 316s) or A X2 CrNiMo1712 (AISI 316Ls) and the type of elastomer used for the seal.

Do not use Solenoid Valves with pressure limits outside that marked on the Identification Plate.

Make sure that the voltage and type of power supply (alternate or continuous) are the same as that marked on the Identification Plate. Make sure the Tolerance of +/- 10% is not exceeded.

Do not energise the Solenoid Valve without the protection cap being completely closed and sealed, the security dowel screwed tight, and the cable Correctly fitted and secured.

Before removing the safety cap, make sure that the Solenoid Valve is not energised.

In the event of Solenoid Coil replacement, use the following procedure using the tools and methods advised by the manufacturer. Use only a replacement Solenoid Coil supplied by the manufacturer. Verify that the coil has the correct voltage, and is suitable for the model of Solenoid Valve, as indicated on Identification Plate. Ensure that the threaded safety cap and the security dowel are reassembled correctly and that all joints are tight. Ensure that the Electrical Cable is fitted correctly, and that the Explosion Proof Housing is free from the ingress of water.

Do not use the Solenoid Valve Explosion Proof Housing as a lever when mounting the Solenoid Valve on the process pipe line.

**INSTALLATION PROCEDURE & METHODS**

19 mm hexagon nut.  
*(present only on some models of solenoid valves)*

Security dowel  
M4x8 UNI 5927

Rating plate

Threaded cap

① ② Safety devices.

Fig. 1

**Attention:**

**For safety Purposes, ensure that the power supply is disconnected. After De-energising, Allow 15 mins. before continuing the next operation**

Loosen the security dowel (1), using a 2 mm set screw wrench, turning anticlockwise.

Firmly hold the threaded plug (2) and loosen it, by turning anticlockwise. Do not unscrew it completely.

Unscrew completely the threaded plug (3).

Coil

solenoid housing security clip

Terminal board of power supply

Internal ground connecting screw

Power supply wires threaded entry hole.

External ground connecting screw

Connect the ground wire to the ground connecting screw (2).

Connect the power supply wires to the terminal board (3) using a (\*) 3 mm max. flat screw-driver.

Connect the solenoid valve to the ground using the external ground connecting screw (3).

**!** Pipe fittings used for cable entry (cable duct, conduit, etc) are NOT supplied by the manufacturer. Should be care of the installer to use fittings of proper diameter and type suitable to secure tightness for the cable used. Pipe fittings (cable duct, conduit, etc) must be ATEX approved for a protection degree equal or greater than the protection degree indicated on the rating plate. Type of thread of the cable entry for the solenoid housing is stamped on the outlet side of the cable entry and it could be: 1/2" Gk, 1/2" NPT, M20x1,5 (ISO M20x1,5).

**SOLENOID REPLACEMENT**

If fitted unscrew the hexagon nut with a (\*) 19 mm wrench turning it anticlockwise.

extraction tool hooking hole

Extract the clip putting the extraction tool (KM/3062) in the hole of the security clip then pull hard to extract the clip.

Extract the solenoid housing and the solenoid from the solenoid valves pulling up. Solenoid housing and solenoid will remain connected to the power supply cable.

Disconnect power supply and internal ground connecting wires then extract the solenoid housing and the solenoid from the solenoid

Pull up the solenoid turning it lightly.

**!** For product safety purpose and conformity with the Certificate, replace the coil only with a coil supplied by the manufacturer suitable for the model stamped on the rating plate. Do not supply the power until the solenoid and the housing have been assembled correctly on the solenoid valve body/pilot.



**Solenoid Valve Series: "L", "C", "D", "E", "F", "G" and "H"**



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Make sure that the type and degree of Solenoid Valve protection, as well as the temperature of the fluid that the valve intercepts are compatible With the degree, the type of protection and the class of temperature required by the classification of the zone, which the valves will be installed.

Use Solenoid Valves only with fluids compatible with the materials of which they are composed: Brass OT58 Uni 5705-65 (Cu 58% Zn 40% Pb 2%), Stainless Steel A X5CrNiMo1712 (AISI 316s) or A X2 CrNiMo1712 (AISI 316Ls) and the type of elastomer used for the seal.

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Make sure that the voltage and type of power supply (alternate or continuous) are the same as that marked on the Identification Plate. Make sure the Tolerance of +/- 10% is not exceeded.

Do not energise the Solenoid Valve without the protection cap being completely closed and sealed, the security dowel screwed tight, and the cable Correctly fitted and secured.

Before removing the safety cap, make sure that the Solenoid Valve is not energised.

In the event of Solenoid Coil replacement, use the following procedure using the tools and methods advised by the manufacturer. Use only a replacement Solenoid Coil supplied by the manufacturer. Verify that the coil has the correct voltage, and is suitable for the model of Solenoid Valve, as indicated on Identification Plate. Ensure that the threaded safety cap and the security dowel are reassembled correctly and that all joints are tight. Ensure that the Electrical Cable is fitted correctly, and that the Explosion Proof Housing is free from the ingress of water.

Do not use the Solenoid Valve coil housing as a lever when mounting the Solenoid Valve on the process pipe line.

**INSTALLATION PROCEDURE & METHODS**

19 mm hexagon nut.  
(present only on some models of solenoid valves)

Security dowel  
M4x8 UNI 5927

Rating plate

Threaded cap

**A**

① ② Safety devices.

Fig. 1

**Attention:**

**For safety Purposes, ensure that the power supply is disconnected. After De-energising, Allow 15 mins. before continuing the next operation**

Loosen the security dowel (1), using a 2 mm set screw wrench, turning anticlockwise.

**B**

Firmly hold the threaded plug (2) and loosen it, by turning anticlockwise. Do not unscrew it completely.

Unscrew completely the threaded plug (3).

**C**

Connect the ground wire to the ground connecting screw (2).

Connect the power supply wires to the terminal board (3) using a (\*) 3 mm max. flat screw-driver.

Connect the solenoid valve to the ground using the external ground connecting screw (3).

**!** Pipe fittings used for cable entry (cable duct, conduit, etc) are NOT supplied by the manufacturer. Should be care of the installer to use fittings of proper diameter and type suitable to secure tightness for the cable used. The type of thread of the cable entry for the solenoid housing is stamped on the outlet side of the cable entry and it could be: 1/2" Gk, 1/2" NPT, M20x1,5 (ISO M20x1,5).

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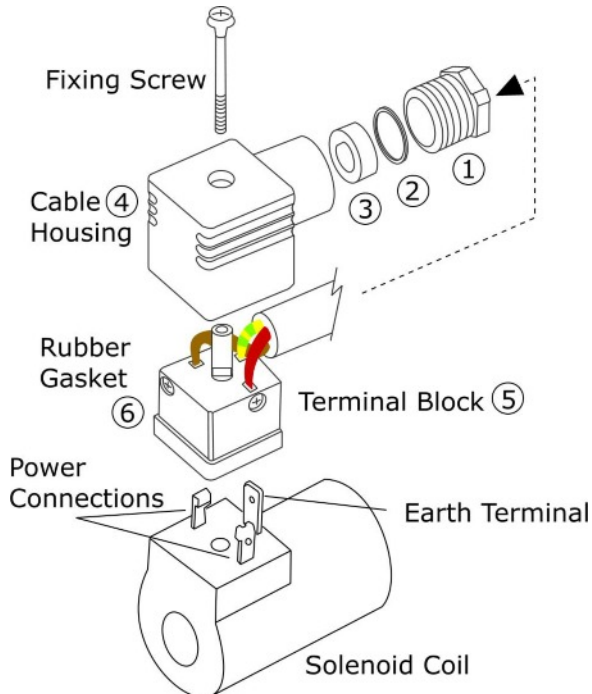
Extract the solenoid housing and the solenoid from the solenoid valves pulling up. Solenoid housing and solenoid will remain connected to the power supply cable.

Disconnect power supply and internal ground connecting wires then extract the solenoid housing and the solenoid from the solenoid

Pull up the solenoid turning it lightly.

**!** For product safety purposes, replace the coil only with a coil supplied by the manufacturer suitable for the model stamped on the rating plate. Do not apply the power until the solenoid and the housing have been assembled correctly on the solenoid valve body/pilot.

DIN electrical socket connectors to protect solenoid coil terminals and wiring.



## 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

## Section 2: 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: Maintenance Procedure for Solenoid Valves

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