

Solenoid Valve - 2/2 - Cryogenic (-192°C)

Benefits & Features

- Cryogenic applications where reliability is very important
- Direct acting, does not require pressure to close
- Internal parts are machined to precise tolerances
- Brass or 316 Stainless Steel bodies
- IP65, EExd IIB or 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

Configuration	Direct Acting, lift assisted piston design
Port Sizes	3/8" and 1/2" BSP or NPT (3/4" special order)
Orifice	12mm
Kv	35
Body	Brass or 316 Stainless Steel
Media	Cryogenics, Oxygen etc. Subject to material compatibility
Pressure ranges	See individual data tables below
Seals	PTFE -192°C

Technical Data

	A	B	C	D	Orifice mm	Min. /Max. Operating Differential Pressures. BAR.				
						Min.	Maximum		Cv Flow Factor	
							AC	DC		
L90	T	12	E/T	3	3/8"	12.7	0	10	10	35
L90	I/T	12	F/G	3	1/2"	12.7	0	10	10	35
L90	I/T	18	H/I	3	3/4"	18	0	10	10	87

Order Codes

A	Body	B	Port	C	Seals (fluid temp. min / max)	D	Protection	E	Options
T	Brass	E	3/8" BSP	3	PTFE (-192°C)	P	IP65 Safe Area	FL	Flanged PN16**
I	316 Stainless Steel*	F	1/2" BSP			S	IP67 Safe Area	/SG	Degreased for oxygen
* 1/2" body only	T	3/8" NPT	B			II 1/2 GD Ex-d IIB T6 (-20 to +40°C)	** 316 Stainless Steel Body Only		
	G	1/2" NPT	C			II 1/2 GD Ex-d IIC T6 (-20 to +40°C)			
	H	3/4" BSP	/LT			II 1/2 GD Ex-d IIC T6 (-60 to +60°C)			
	I	3/4" NPT	H			Ex-d c IIB IP67 IECEX			
		3/4" special order	T			Ex-d c IIC IP67 IECEX			
		R	Ex-d IIC EAC Ex						

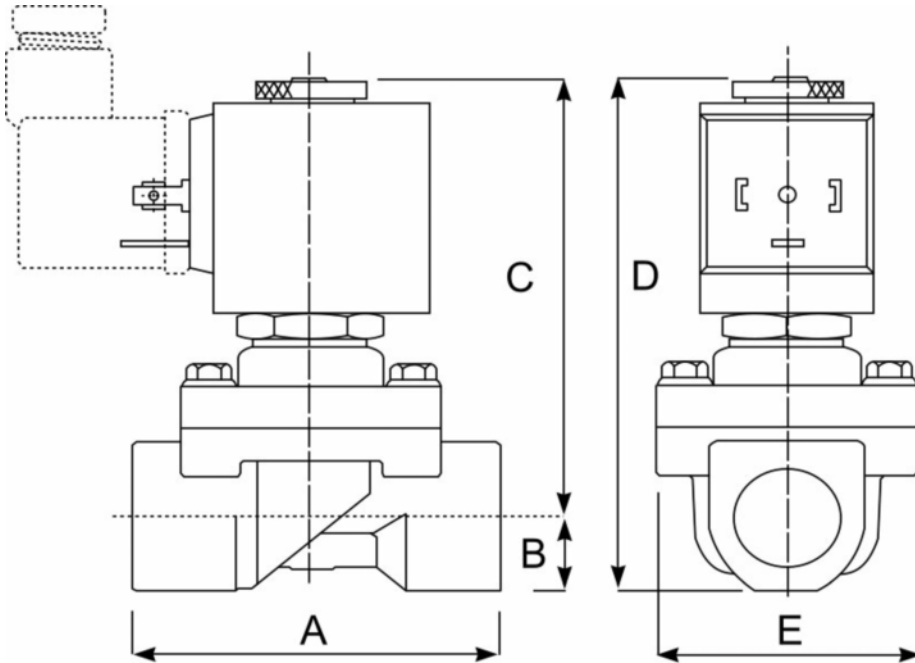


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Dimensions

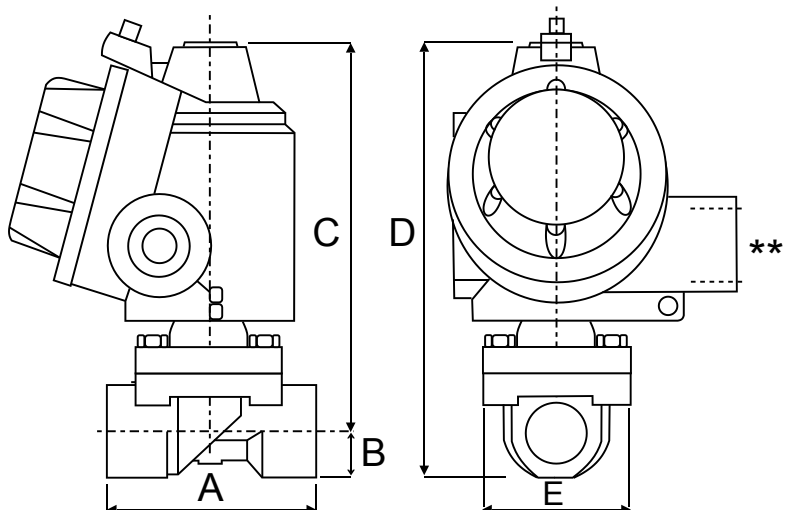
Safe Area. IP65

Port Size	Weight Kg	Dimensions mm				
		A	B	C	D	E
3/8"	0.7	64	14	70	84	45
1/2"	0.7	64	14	70	84	45



Hazardous Area & Safe Area IP67

Port Size	Weight Kg	Dimensions mm				
		A	B	C	D	E
3/8"	1	64	14	115	128	45
1/2"	1	64	14	115	128	45





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.

SAFETY MAINTENANCE AND INSTALLATION INSTRUCTIONS - IP67 Housing - Safe Area



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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.

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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 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

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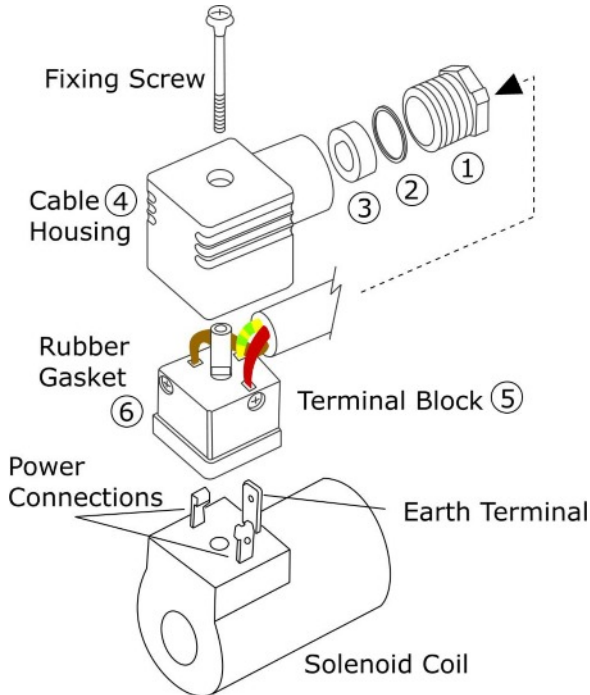
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Pull up the solenoid turning it lightly.

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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