Measure Monitor Control

L90d.p.s

Solenoid Valve - 2/2 - Cryogenic (-196°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	⅜" and ½" BSP or NPT (¾" special order)
Orifice	12mm (⅜" and ½"), 18mm (¾")
Kv	35, 87
Body	Brass or 316 Stainless Steel
Media	Cryogenics, Oxygen etc. Subject to material compatibility
Pressure ranges	See individual data tables below

Electrical Specification

Cable gland entry	½" NPT or M20*1.5mm (female)
Protection class	IP67
Temperature class	T6 or T5 (t.amb -20 ÷ +40 °C), T5 or T4 (t.amb -20 ÷ +55 °C) upon request
Coil insulation class	F (155°C) - H (180°C) upon request
Winding wire class	H (180°C)
Duty	Continuous (S.I.) 100% ED
Power consumption	Alternate current 11VA (inrush 28VA). Direct current 11W
Voltage tolerance	± 10% (standard) others available upon request
Insulation	>1000 Mohm
Dielectric strength	>2000 V/1'
Standard voltages	12, 24, 48, 110, 115, 125, 220, 240 Volt DC or AC~(50/60Hz): other voltages available upon request

Technical Data

	A		B	C	D	Port Size BSP or NPT	Orifice mm	Min . /Max. Operating Differential Pressures. BAR. Min.	Maximum AC	Maximum DC	Cv Flow Factor
L90	T	12	E/T	3		⅜"	12.7	0	10	10	35
L90	I/T	12	F/G	3		½"	12.7	0	10	10	35
L90	I/T	18	H/I	3		¾"	18	0	10	10	87

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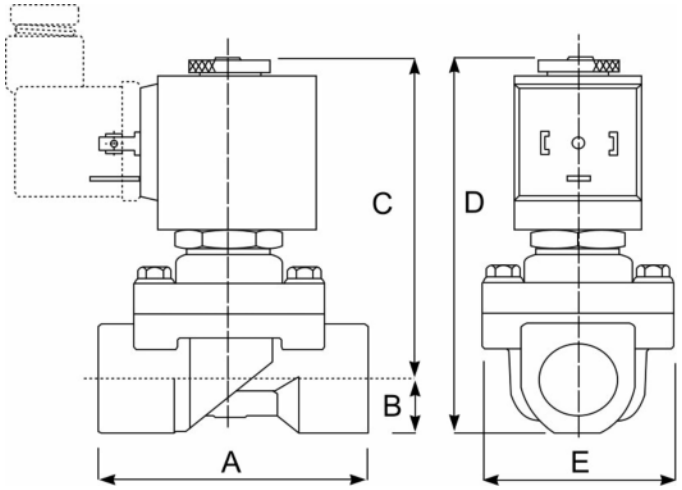
Dimensions

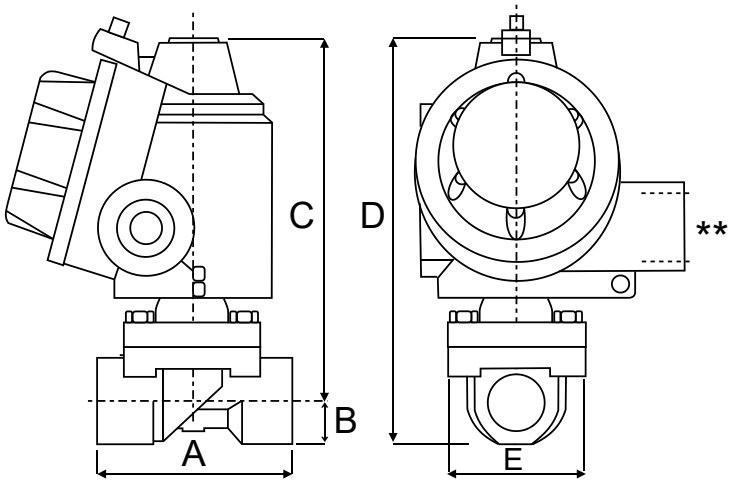
Safe Area. IP65

Port Size	Weight Kg	Dimensions mm				
		A	B	C	D	E
⅜"	0.7	64	14	70	84	45
½"	0.7	64	14	70	84	45



Hazardous Area & Safe Area IP67

Port Size	Weight Kg	Dimensions mm				
		A	B	C	D	E
⅜"	1	64	14	115	128	45
½"	1	64	14	115	128	45



Order Codes

A	Body	B	Port	C	Seals (fluid temp. min / max)	D	Protection	E	Options
T	Brass	E	3/8" BSP	3	PTFE (-196°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		

Pilot Assembly Order Codes

Port Size	Order Code	Description
⅜" & ½"	KGIP/L89L90DCT12.3	Pilot Kit. L90 1/2" plunger, guide tube & body to cap sealing ring
¾"	KGIP/L89L90DCT18.3	Pilot Kit. L90 3/4" plunger, guide tube & body to cap sealing ring

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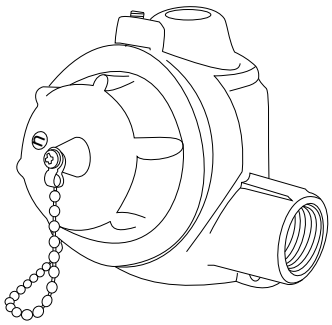
Measure Monitor Control

Solenoid Wiring
IP67 Housing
SAFE AREA & EEXD

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

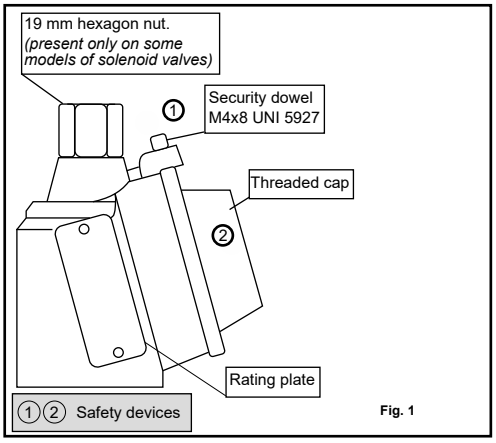
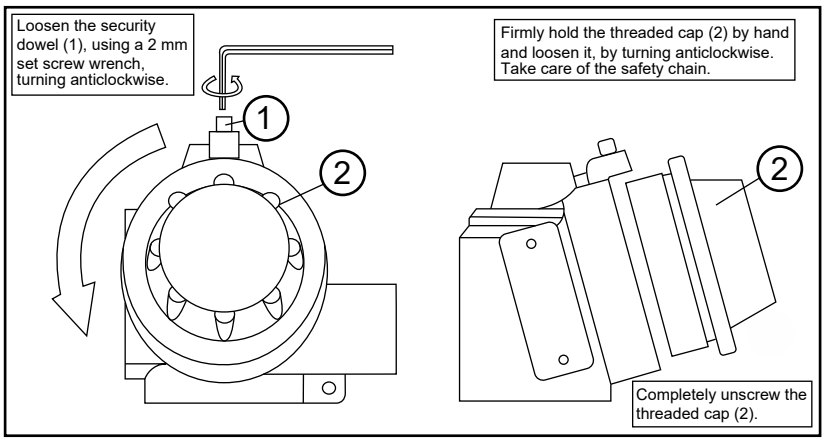
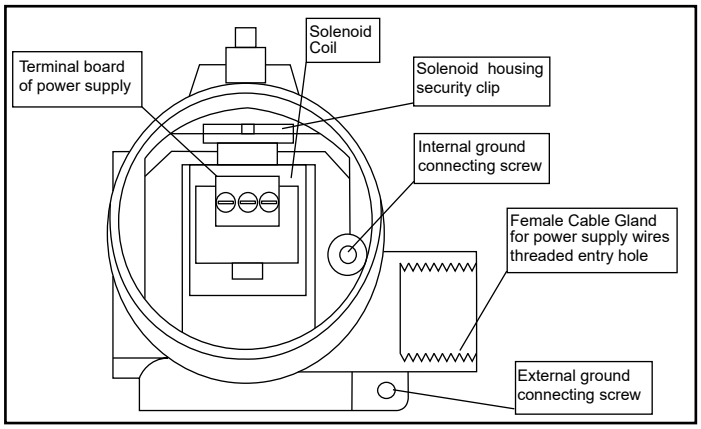


Fig. 1

B

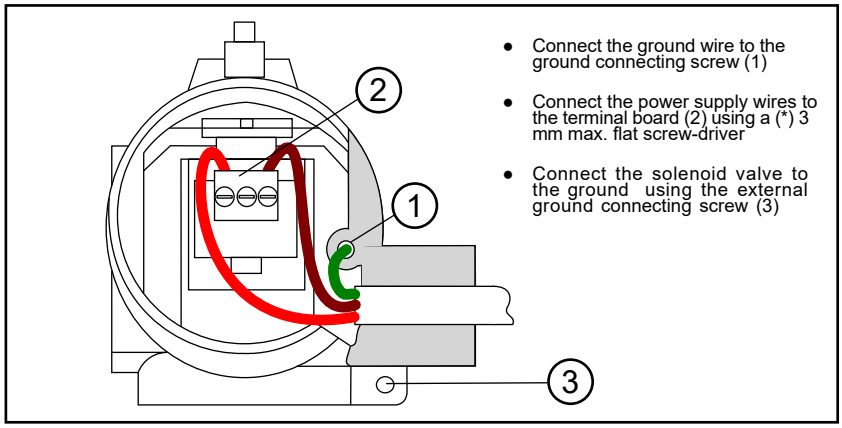


C



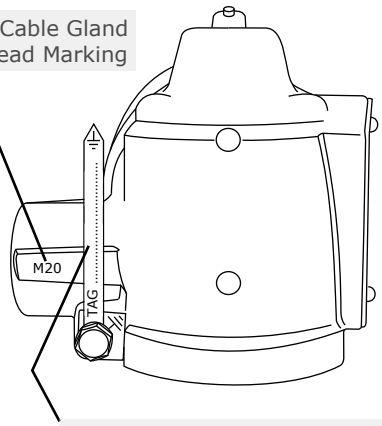
Pipe fittings used for cable entry (Cable, duct, conduit etc) are NOT supplied by the manufacturer.
Installation engineers should ensure that the use of fittings are of the correct diameter and suitable to secure the tightness of the cable used. Where site conditions indicate, cable duct, conduit etc.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

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)

Electrical Cable Gland Entry Thread Marking



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

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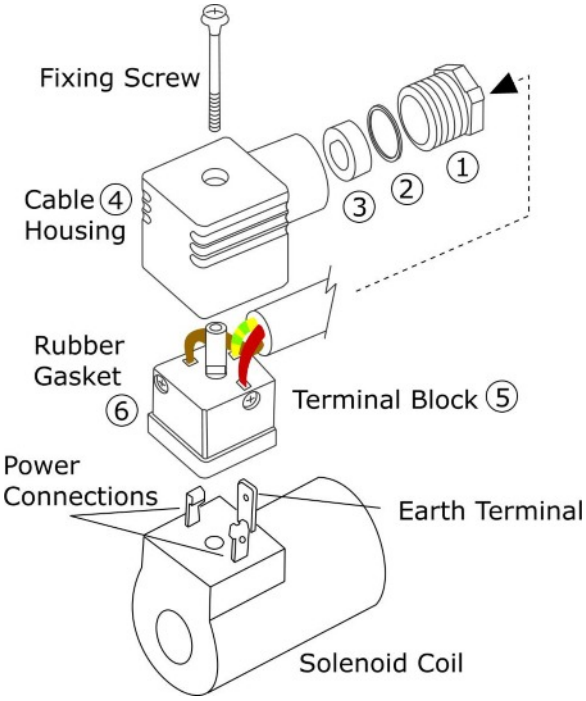
Measure Monitor Control

IP65 SAFE AREA INSTALLATION & MAINTENANCE

SAFE AREA
SOLENOID VALVES
DIN 43650-A (Large)
DIN 43650-B (Small)

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

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