

INSTRUCTION MANUAL

Explosion Proof Solenoid with Junction Box & LED, Size I, II, III, IV , EEx d 2GD IIC T AAA

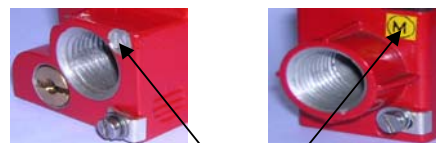
Function of the solenoid is that when energized it actuates the Plunger of the valve.

Refer relevant Instruction Manual for the valve.

INSTALLATION

- Ensure that the solenoid valve is properly installed in desired position. Take care that the rain water / process fluid does not fall on the solenoid and has a possibility to run along the cable and enter into the termination area.
- Provide cable of sufficient rating for operating solenoid. The maximum power rating of the solenoid is < 18 W and Temperature $\geq 80^{\circ}\text{C}$. Cable should not be less than 1.5 mm².
- Select cable gland matching to the cable entry provided on the solenoid and the diameter of the cable.

Code (DD)	Cable Entry (DD)	Identification mark on the Solenoid
36	3/4" ET (F)	-
37	1/2" NPT (F)	N
39	M20 x 1.5 (F)	M



Cable Entry Identification

The solenoids are suitable for use in following conditions.

	Presence of Explosive Atmosphere	Category of Equipment	Designation (Equipment Group)
Zone 1 + Zone 21 (Dust)	Intermittent in normal service (probable)	2	II (Surface)
Zone 2 + Zone 22 (Dust)	Occasional or for short periods (never in normal service)	3	II (Surface)

- The cable and cable gland should meet local standards.
- The wiring, cable gland fixing etc. is meeting local regulations and sound engineering practice.
- Provide earthing to the solenoid if needed by local authorities. Earthing Terminals are provided inside termination area as well as externally on the solenoid housing.
- The cable ends are properly fixed by tightening terminal screws provided in the termination area.
- The cover of the solenoid should fully tightened with rubber gasket in its usual place.
- The solenoid is provided by works with Test Leads to facilitate valve testing at test bed. Kindly remove the same from termination before final installation of the valve.
- The temperature (AAA) mentioned on the solenoid is considering maximum temperature rise solenoid can have + maximum ambient temperature (KKK) + margin (5°C).
- The higher temperature class solenoid still can be used for T5 or T6 temperature class for application where maximum ambient temperature is Lower
i.e. AAA – KKK + maximum ambient temperature should be \leq maximum permissible surface temperature (Refer Label & Coding and table of Temperature Class on next page)
e.g. EExd IIC T4 IP66 T 110°C solenoid is suitable for ambient temperature -40°C to 60°C
Case (a) : For ambient temperature $\leq 50^{\circ}\text{C}$ using above formula i.e. $110 - 60 + 50 = 100$ which is equal to maximum permissible surface temperature for T5 class and hence the same solenoid can be installed for T5 temperature class application.
Case (b) : For ambient temperature $\leq 35^{\circ}\text{C}$ using above formula i.e. $110 - 60 + 35 = 85$ which is equal to maximum permissible surface temperature for T6 class and hence the same solenoid can be installed for T6 temperature class application.
- Solenoid with Temperature Class T6 can be used for T5, T4, T3, T2 or T1.
- Product certified for Group IIC can be used for Group IIA, IIB also.

CAUTION

- Use cable suitable for operating temperature $\geq 80^{\circ}\text{C}$.
- Tighten Terminal Box cover properly.
- Cable gland is properly fitted using sound engineering practice ensuring that rain water / other fluid does not enter in the solenoid.
- Cable gland threads are properly matching to that provided in the solenoid cable entry.
- Prevent excess voltage as it may damage solenoid and create undue heating of the solenoid.
- Do not keep solenoid energized if it is not fitted on the valve.
- Excessive tightening of the nut can damage the solenoid.
- Do not interchange the cover of the solenoid. In case if the covers gets mixed up segregate the same based on the rated voltage and current which are marked at the bottom of the solenoid.
- The diametrical clearance between the cover and the bore in the housing should not be more than 0.2mm. Verify this in case if the cover is damaged.

OPERATION

- Supply rated voltage to the solenoid.
- Solenoid has been provided with LED to help user to confirm that the voltage is available at the solenoid terminals. However, it does not confirm that the rated voltage is available to the solenoid.
- In case of DC supply solenoid, reverse connection in case if the solenoid operates but, the LED does not work.

REMOVING / REPLACING SOLENOID

- The electrical supply must be switched off and isolated before opening cover.
- Remove cable from terminal and then cable gland from the solenoid.
- Ensure that the new solenoid has same voltage, current rating, cable entry, insulation, temperature class, special version etc. Check label contents completely.
- Remove solenoid by opening nut (Part NO. 37).
- Fix new solenoid and tighten the nut till solenoid just stops rotating.

CHECKING OF THE SOLENOID

- Mega Ohms insulation between winding and solenoid housing should be more than 100 mega Ohms at 500V DC.
- If possible, conduct High voltage test between winding and the housing at 1500 V for AC for 1 minute and trip current sensitivity 25 mA.
- Check the soundness of the O Ring and Gasket fitted on the cover. It should not have any crack or deformity due to ageing.
- Measure current at rated voltage. This should be $\pm 10\%$ of value mentioned on the label (Refer IIIII).

LABEL & CODING



MMM & KKK can be obtained referring Activity Instruction No. A/PROD/23.

Certification (XX)	Supply (Current) (CCCC)	Temp. Class (T)	F	YY	BBBB	NNNN
			Works	Year	Batch No.	Sr. No.
			VVVV		IIII	WWW
			Volts		Current mA	Power
			SSS		DD	XX
			Size		Cable Entry	Certification
			AAA = Maximum Temperature of the Solenoid.			
			MMM = Minimum Ambient Temperature.			
			KKK = Maximum Ambient Temperature.			

TABLE OF TEMPERATURE CLASS

Temperature Class	Maximum Surface temperature (° C)
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

PRODUCTION QUALITY ASSURANCE CODE AS PER ANNEX IV TO ATEX DIRECTIVE 94/9/EC

CESI 0722
DNV 0575 with effect from 1st Feb. 2007.