

Hazardous Area Valve Assembly – Ex ‘ia’ (Intrinsic Safety) method

Revision: B

Approved:



Date: 9/10/14

Introduction:

This SMC Pneumatics solenoid valve assembly has been retro-fit with an ‘IECEX’ scheme certified (Ex ‘ia’ - Intrinsically Safe) solenoid arrangement to make it suitable for application in Hazardous Area Zones:

- 1 & 2 (only) for Group II equipment applications
(Flammable Gas, Liquid & Vapour hazards)
- 21 & 22 (only) for Group III equipment applications
(Combustible Dust, Fibre & Flying hazards)

! WARNING

There are specific limitations as to zone applications and how this valve must be installed to maintain legal & safety compliance for Hazardous Area application.

Disclaimer:

SMC Pneumatics Australia Pty Ltd as a subsidiary of SMC Corporation and supplier of goods accepts no liability for the installation or operation of equipment contrary to the details of these instructions and the prescriptions of any relevant Australian Standards, Laws & Regulatory Acts.

- * Responsibility for safety of the Hazardous Area Equipment rests with the parties in control of the installation, including: Plant Owner, Supplier, Installer, Maintainer & Inspector.
- * Selection, Installation, Maintenance & Inspection of equipment employed in Hazardous Area applications must be performed by competent personnel.
- Please consult relevant Standards series AS/NZS4761 to define competence.
- * Installation of this equipment must remain in accordance with the instructions provided here-in & those of the nominated IECEX Certificate of Conformance.
- * These instructions shall not over-ride or contravene the prescriptions of any relevant Australian Standards, Laws & Regulatory Acts.

Hazardous Area Valve Assembly – Ex ‘ia’ (Intrinsic Safety) method

Please also refer to the following attachments for further information pertinent to the safe and effective operation of this completed solenoid operated pneumatic valve assembly.

Attachments:

- 1) Please consult Certificate(s) of Conformance: IECEx PTB 08.0023 (type 1259) or IECEx PTB 13.0009 (type 1262) in conjunction with this instruction set for specific application requirements of the solenoid operator (marked: Ex ia IIC/IIB T6 Ga &/or Ex tb IIIC T80 deg.C Db IP65) used in this completed assembly.
- 2) Nass Magnet GmbH - Operating Instructions & Declaration of Conformity for Solenoid Operator assembly type 1259 or type 1262 (as applicable).
- 3) SMC Corporation – Operation Manual for appropriate model valve series.

This Operation Manual conveys critical information pertaining to the pneumatic operation of the valve as an assembly & also provides safety related instructions.

- 4) General Arrangement Drawing(s).

Notes regarding attachments:

Certificate(s) of Conformance: IECEx PTB 08.0023 & IECEx PTB 13.0009 are registered to Solenoid manufacturer “Nass Magnet GmbH” & available on-line via the official IECEx website.

A ‘current’ copy of the Certificate may be printed, but must be supplied in-full, including any annexes or attachments to ensure complete compliance.

The certificate copy supplied with your SMC valve products is valid at the time of printing and should be checked via the website to ensure continued compliance.

! Important

This instruction set complete with all listed attachments should be retained and filed in the dossier created for the Hazardous Area installation.

Hazardous Area Valve Assembly – Ex ‘ia’ (Intrinsic Safety) method

Temperature classification requirements:

Note: The ignition potential of the electrical component is rated for a wider range of temperatures than that of the operation requirements for the valve assembly.

The complete SMC Pneumatics Solenoid Operated Pneumatic Valve assembly is only rated for operation between -10° to +50°C.

As stated in the conditions of IECEx PTB 08.0023 or IECEx PTB 13.0009 certificates:

- to maintain a ‘T6’ classification of the installed solenoid operator the permissible ambient temperature range for the environment is from -40° to +50°C

There are also Ui/Ii electrical limitations that affect the rated temperature classifications, please consult the nominated certificate of conformance for further details of these.

Electrical Installation – Intrinsic Safety:

For compliance with the ‘Intrinsic Safety’ method of explosion protection, the electrical energy supplied to energize the solenoid coil(s) of this valve product as installed must be regulated to the limits specified by the current certificate(s): IECEx PTB 08.0023 or IECEx PTB 13.0009 (as appropriate).

An Intrinsically Safe ‘Zener Barrier’ or other ‘Intrinsic Safety System’ with ‘IECEx’ or ‘ANZEx’ certification must be employed & suitably installed to provide this electrical supply regulation to the solenoid operator of this pneumatic valve assembly.

Please consult the nominated certificate of conformance for prescription on energy limitations as these also affect the temperature classification for the installation.

Selection, supply, installation & maintenance of such equipment shall be performed by competent personnel.

SMC Pneumatics Australia Pty Ltd accepts NO responsibility for the selection, supply, or installation & maintenance of such ‘Intrinsic Safety Systems’ or ‘Zener Barrier’ devices as they are beyond the scope of supply for the supplied valve product.

General Note:

Be sure to confirm polarity for any wiring into or out of solenoid connections. Reversed polarity may adversely affect electrical components.

Hazardous Area Valve Assembly – Ex ‘ia’ (Intrinsic Safety) method

!!! IMPORTANT NOTICE:

Light Metal restrictions for Hazardous Area equipment:

The use of light metals (as defined by AS/NZS2381.1:2005 – Appendix C) is explicitly prohibited from ‘Zone 0’ & ‘Zone 20’ Hazardous Areas - under NO circumstances may this valve assembly be installed in Zone: 0 or 20 classified environments.

Due to the ‘light metal’ (Aluminium) body construction of the valve, there may exist a risk of frictional sparking or mechanical impact with an oxidised article igniting a flammable atmosphere due to exothermic &/or chemical reactions (e.g.: thermite).

As such, these valve installations shall be physically guarded to prevent frictional contact and/or mechanical impact on light metal (Aluminium) parts under any foreseeable site conditions, e.g.: normal operation, maintenance, inspection, installation & removal, etc.

Such protective guarding is compulsory for all Group II ‘Zone 1’ or Group III ‘Zone 21’ installations, and is also recommended for any Group II ‘Zone 2’ or Group III ‘Zone 22’ Hazardous Area installations to help eliminate risks of mechanical ignition potential.

Any guarding employed must be constructed of a suitably rigid structure and material that is not conducive to exothermic or chemical reactions (e.g. not a light metal), nor susceptible to static charges, or other potential sources of mechanical ignition.

Guarding shall be designed to physically exclude frictional contact of oxygen carrying materials (e.g.: Iron Oxide) that may cause reactions with the light metal surfaces.

Ex ‘d’ (flameproof enclosures) would be subject to their own certification specifics for allowable contents and placement there-of, so are-not considered pertinent.

Ex ‘e’ (Increased Safety) or Ex ‘tD’ (Dust Tight) certified enclosures of appropriate materials may be suitable – check classification requirements specific to your application.

Stainless Steel (or similar non-oxidizing material) cabinets may also be suitable.

A competent hazardous area installer shall be ultimately responsible for the selection and implementation of such guarding or protection techniques.

SMC Pneumatics Australia Pty Ltd & SMC Corporation accepts no liability or responsibility for such guarding or protection techniques, as again they are beyond the scope of supply for the supplied valve assembly.

Hazardous Area Valve Assembly – Ex ‘ia’ (Intrinsic Safety) method

Physical Installation & Pipe work attachment:

Please observe any precautions on the General Assembly drawing particularly with regards to group mounting configurations (if applicable).

The attached Operation & Maintenance Manual for your chosen model SMC Pneumatic valve & the General Arrangement Drawing (also attached) describe suitable preparation and techniques for physical mounting & pipe work installation of this valve product.

Please specifically observe the nominated tightening torque values for mounting hardware and pipe work installations.

Again, due to the Aluminium construction of the base valve, adherence to the recommended tightening torque values will prevent damage to the product and ensure correct operation with proper gasket sealing and no distortion of the valve structure.

Other precautions specific to Hazardous Area installations:

The installer shall also ensure pipe or tube fittings installed to the valve do not conflict with the earlier precautions regarding light metal reactive properties.

Anti-static tubing may be required depending on site classification.
Please consult your Hazardous Area classification for such anti-static requirements.

Limits of Application:

The supplied SMC Pneumatic Hazardous Area valve is a product specifically engineered to suit given Hazardous Area classified installations and these instructions form part of its scope of supply.

Deployment of this product is thus limited to the application for which it was engineered and it shall not be installed into other Hazardous Area classifications beyond those explicitly indicated by these installation instructions.

For further information please contact:

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