


Hazardous Area Valve Assembly – Ex ‘m’ Encapsulation protection.

Revision: A

Approved: 

Date: 11/4/13

Introduction:

This SMC Pneumatics Solenoid Valve assembly has been retro-fit with an ‘IECEX’ scheme certified (Ex ‘m’ - Encapsulated) solenoid arrangement to make it suitable for certain hazardous area applications.

Dependant upon the Solenoid arrangement installed, the final assembly may be suitable for application in:

Zones 1 & 2 (only) for Group II applications (Flammable Gases, Liquids & Vapours)

&/or

Zones 21 & 22 (only) for Group III applications (Combustibles Dusts, Fibres & Flyings)

! 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/NZS60079 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.

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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) For “Nass Magnet GmbH” type 0515 or 1215 series Solenoid Coils consult: ‘Certificate of Conformance IECEX PTB 04.0002X’ and associated ‘Installation Instructions & Declaration of Conformity’ for specific application requirements of the solenoid operator with markings: Ex m II T6.
- 2) For “Nass Magnet GmbH” type 0513 or 1213 series Solenoid Coils consult: ‘Certificate of Conformance IECEX PTB 05.0006X’ and associated ‘Installation Instructions & Declaration of Conformity’ for specific application requirements of the solenoid operator with markings: Ex m II T4, IP65 DIP A21 T130°C.
- 3) SMC Corporation – Operation Manual for the Base Model/Series valve.

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

Notes regarding attachments:

The ‘IECEX’ Certificates of Conformance are registered to Solenoid manufacturer “Nass Magnet GmbH” and are 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.



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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 completed Solenoid Operated Pneumatic Valve assembly
(for Stand-Alone installations) is rated for operation between: -10° to +50°C.

There are specific limitations for group mounting configurations (relative to ambient temperature and physical installation of the Solenoids) that can affect the classified temperature rating of the installed assemblies.

Group or Manifold mounted assemblies may be restricted to operation within the temp. range: -10° to +40° C - avoiding Heat Soak by Solenoids in close proximity.

Please reference the Schedule/Annexe of the IECEx Certificate of Conformance (applicable to the Solenoid Operator) to ensure compliance with temp. classifications.

Electrical Installation – Ex ‘m’ (Encapsulation):

For compliance with the ‘Encapsulation’ method of explosion protection, the electrical energy supplied to energize the solenoid coil(s) of this valve product as installed must include a fuse connected in series as specified by the applicable IECEx certificate.

Please consult the nominated certificate of conformance for these prescriptions:

Refer:

Certificate: **IECEx PTB 04.0002X** (for 0515/1215 series Coils)

Certificate: **IECEx PTB 05.0006X** (for 0513/1213 series Coils)

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 electrical systems or devices as they are beyond the scope of supply for the supplied SMC Solenoid Operated Pneumatic Valve assembly.

General Note:

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

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!!! IMPORTANT NOTE:

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’ (Group II) & ‘Zone 20’ (Group III) Hazardous Areas.

* Under ***NO*** circumstances may this valve assembly be installed in ‘Zone 0’ (Group II) or ‘Zone 20’ (Group III) classified Hazardous Area 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’ & Group III ‘Zone 21’ installations, and is also recommended for any Group II ‘Zone 2’ & 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) certified enclosures of appropriate materials may be suitable.

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 accept no liability or responsibility for such guarding or protection techniques, as again they are beyond the scope of supply for the supplied SMC Solenoid Operated Pneumatic Valve assembly.

Hazardous Area Valve Assembly – Ex ‘m’ Encapsulation protection.**!!! IMPORTANT NOTE:**

To maintain temperature classifications for the Hazardous Area environment the installed products may be subject to prescribed physical coil spacing to provide air-gap insulation & avoid heat-soak under normal operating conditions affecting neighbouring solenoids.

Please observe all precautions on the IECEx scheme Certificate &/or Annexe, particularly with regards to group mounting (manifold) configurations.

Physical Installation:

SMC Pneumatics solenoid operated pneumatic valve assemblies may be configured as Body-Ported or Sub-Base style constructions & available with provision for various types of physical mounting in Stand-alone or Manifold type installations.

For Sub-Base &/or Manifold Mounting (typical for grouped installations):

In this configuration the supplied mounting screws pass through staggered holes in the top face of the body of the valve for connection to a lower mounting surface.

There is a sub-base gasket supplied that must be sandwiched between the ported lower surface of the valve and the mounting surface of the sub-base or manifold.

For stand-alone applications with Body Ported construction:

Body-Ported style valves may also be mounted on their non-porting side faces directly to a suitable flat mounting surface.

General Prescriptions:

In all cases, this valve should be mounted using the supplied hardware where possible. These bolts/screws shall pass through the relevant holes in the body of the valve.

Note: Again, due to the Aluminium alloy construction of this valve, tightening torque values for the mounting hardware shall be observed to prevent damage and to ensure proper sealing and general operation of the product.

* Please refer to the SMC base valve series Operation & Maintenance Manual, &/or published catalogue data to derive recommended hardware tightening torque values.

Hazardous Area Valve Assembly – Ex ‘m’ Encapsulation protection.Pipe work attachment:

The attached Operation & Maintenance Manual for the SMC Pneumatic base valve describes suitable preparation for pipe work installation.

Further to the information contained in the attached manual...

Please observe the following recommended tightening torque values for pipe or tube fittings that may be installed for this valve assembly:

<u>Port thread (size):</u>	<u>Tightening Torque:</u>
Rc_1/2 (1/2" BSPT)	28.0 ~ 30.0 N.m
Rc_3/8 (3/8" BSPT)	22.0 ~ 24.0 N.m
Rc_1/4 (1/4" BSPT)	12.0 ~ 14.0 N.m
Rc_1/8 (1/8" BSPT)	7.0 ~ 9.0 N.m

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 Solenoid Operated Pneumatic Valve assembly is a product specifically engineered to suit given Hazardous Area classified installations and these instructions form part of the scope of supply.



Deployment of the supplied product is thus limited to the application for which it was engineered and 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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-	Initial release.	 PRI	29/10/09
A	Was 'VF' specific, text modified for Generic application.		11/4/13