

Operating Instructions

Valves
Atkomatic 15800 Series ATEX and 30800 Series ATEX

15800 Series

30800 Series



Atkomatic 15800 Series ATEX and 30800 Series ATEX

Installation and Maintenance Instructions Revision 0

Instructions specific to hazardous area installations
(Reference: European ATEX Directive 94/9/EC, Annex II, 1.0.6.)

WARNING: THIS DOCUMENT CONTAINS INSTRUCTIONS FOR INSTALLING A PRODUCT CAPABLE OF CONTAINING HIGH PRESSURE, USING HIGH VOLTAGE, AND IS INTENDED FOR A HAZARDOUS/EXPLOSIVE ENVIRONMENT. FAILURE TO OBSERVE PRECAUTIONS HEREIN AND APPLICABLE SAFETY REGULATIONS MAY RESULT IN SEVERE INJURY OR DEATH.

1. Standards used:

CENELEC EN 60079-0 - EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT GENERAL REQUIREMENTS - Edition 1 - Issue Date 2006
CENELEC EN 60079-1 - EXPLOSIVE ATMOSPHERES - PART 1: EQUIPMENT PROTECTION BY FLAMEPROOF ENCLOSURES "D" - Edition 1 - Issue Date 2007/07/01

2. Applicability:

The following instructions apply to the **Atkomatic Solenoid Valves** covered by certificate number **DEMKO 11 ATEX7265494X**.

3. Nomenclature:

Nomenclature for type 158b0-cdefghjkAm	Nomenclature for type 3b8cd-efghjkmnAp
General Series 15800 Normally Closed Valve material 316/CF8M b = pipe connection sizes 0 - 1/4 inch 1 - 3/8 inch 2 - 1/2 inch 3 - 3/4 inch 4 - 1 inch 5 - 1 1/4 inch 6 - 1 1/2 inch c = Voltage AC/60 Hz 0 - AC/50 Hz or DC 1 - 24 VAC 2 - 100 VAC 3 - 115 VAC 4 - 200 VAC	General Series 30800 Normally Open & Normally Closed Valve material 316/CF8M b = normal position of valve 1 - normally closed 2 - normally open c = pipe connection sizes 0 - 1/4 inch 1 - 3/8 inch 2 - 1/2 inch 3 - 3/4 inch 4 - 1 inch 5 - 1 1/4 inch 6 - 1 1/2 inch 9 - 3 inch d - body style

<p>5 – 230 VAC 6 – 460 VAC</p> <p>d = Voltage AC/50 Hz</p> <p>0 – AC Voltage/60 Hz or DC</p> <p>1 – 24 VAC 2 – 110 VAC</p> <p>3 – 220 VAC 4 – 380 VAC</p> <p>e = Voltage DC</p> <p>0 – AC Voltage</p> <p>1 – 12 VDC 2 – 24 VDC</p> <p>3 – 32 VDC 4 – 72 VDC</p> <p>5 – 125 VDC 6 – 250 VDC</p> <p>f = Pipe Connection Thread Type</p> <p>P – NPT J – British Taper Pipe</p> <p>g = Maximum Differential Pressure in PSID</p> <p>A – 100 B - 125 C - 150 D - 200</p> <p>E - 250 F - 300 G - 350 H - 500</p> <p>I - 700 J - 1000 K - 1200 L - 1500</p> <p>h = Seat/Pilot Material</p> <p>A – TFE pilot/TFE disc</p> <p>B – Buna N pilot/Buna N disc</p> <p>C – Viton pilot/Viton Disc</p> <p>D – EPR pilot/EPR disc</p> <p>E – PCTFE pilot/PCTFE disc</p> <p>F – Metal pilot/Metal disc</p> <p>G – Metal pilot/TFE disc</p> <p>H – Metal pilot/Buna N disc</p> <p>I – Metal pilot/Viton disc</p> <p>J – Metal pilot/EPR disc</p> <p>K – Metal pilot/PCTFE disc</p> <p>j = External Seal Material</p> <p>A – Teflon B – Buna</p> <p>C – Viton D – EPR</p> <p>k = Fluid Media Type</p> <p>1 – Gas</p> <p>2 – Liquid up to 40 sus</p> <p>3 – Liquid from 40 sus to 150 sus</p> <p>4 – Steam</p> <p>5 - Cryogenic</p> <p>A = ATEX coil housing</p> <p>m = Options</p> <p>P – Position Indication</p> <p>M – Manual Override</p> <p>Specials (Variant of the valve portion only) are identified as 158b0-zzzz where zzzz is a unique number, and b is the connection size</p>	<p>0 – threaded cylinder cap on ¼ in. – 1 in. and flanged cylinder cap on 1 1/4 in.- 1 1/2 in. (3000 psig)</p> <p>1 - screwed cylinder cap on 1 1/4 in.-2 in. (1500 psig)</p> <p>e = voltage AC/60 Hz</p> <p>0 – AC/50 Hz or DC</p> <p>1 - 100 VAC 2 – 115 VAC</p> <p>3 - 200 VAC 4 – 230 VAC</p> <p>5 – 460 VAC</p> <p>f = Voltage AC/50 Hz</p> <p>0 – AC Voltage/60 Hz or DC</p> <p>1 – 110 VAC 2 – 220 VAC</p> <p>g = Voltage DC</p> <p>0 – AC Voltage</p> <p>1 – 12 VDC 2 – 24 VDC</p> <p>3 – 48 VDC 4 – 125 VDC</p> <p>5 – 250 VDC</p> <p>h = Pipe Connection Thread Type</p> <p>P – NPT J – British Taper Pipe</p> <p>j = Maximum Differential Pressure in PSID</p> <p>A – 75 B - 100 C - 150 D - 200</p> <p>E - 250 F - 300 G - 350 H - 500</p> <p>I - 750 J - 1000 K - 1200 L – 1500</p> <p>M – 3000 N – 2000 O – 50</p> <p>k = Seat/Pilot Material</p> <p>A – TFE pilot/TFE disc</p> <p>B – Buna N pilot/Buna N disc</p> <p>C – Viton pilot/Viton Disc</p> <p>D – EPR pilot/EPR disc</p> <p>E – PCTFE pilot/PCTFE disc</p> <p>F – Metal pilot/Metal disc</p> <p>G – Metal pilot/TFE disc</p> <p>H – Metal pilot/Buna N disc</p> <p>I – Metal pilot/Viton disc</p> <p>J – Metal pilot/EPR disc</p> <p>K – Metal pilot/PCTFE disc</p> <p>m = External Seal Material</p> <p>A – Teflon B – Buna</p> <p>C – Viton D – EPR</p> <p>n = Fluid Media Type</p> <p>1 – Gas</p> <p>2 – Liquid up to 40 sus</p> <p>3 – Liquid from 40 sus to 150 sus</p> <p>4 – Steam</p> <p>5 – Cryogenic</p> <p>A = ATEX coil housing</p> <p>p = Options</p> <p>P – Position Indication</p> <p>M – Manual Override</p> <p>Specials (Variant of the valve portion only) are identified as 3b8cd-zzzz where zzzz is a unique number, and other letters are from above description</p>
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4. Technical Information

The equipment may be used with flammable gases and vapors with apparatus groups **IIB** and with temperature classes **T5** (15800 Series) or **T4** (30800 series).

The equipment is certified for use in ambient temperatures of **-20°C to +60°C**.

The equipment has not been assessed as a safety related device (as referred to by Directive 94/9/EC Annex II, clause 1.5).

The approved ATEX version of the 30800 will always contain the following marking:



The approved ATEX version of the 15800 series solenoid will always contain the following marking:



The ambient temperature range is $-20^{\circ}\text{C} < T_a < 60^{\circ}\text{C}$.

The maximum constructional gap (iC) is less than that required by Table 1 of EN 60079-1:2007 as detailed below:

Flamepath	Maximum Gap	Minimum Width	Comment
1. Between the cover and base of the 15000 series solenoids.	0.0381mm (0.0015")	10.92 mm	Flange Joint
2. Between the cylindrical cap assy nut and name plate of the 30000 series solenoids.	0.0381mm (0.0015")	12.38 mm	Flange Joint
3. Between the nameplate and main body of the 30000 series solenoids. (This joint is optionally bonded with adhesive).	0.0381mm (0.0015")	36.19 mm	Flange Joint
4. Between the cylindrical cap assy and base of the 30000 series solenoids	0.0381mm (0.0015")	12.19 mm	Flange Joint

Note: Flamepath 1 on the solenoid base component in part is interrupted by four 10.668 mm (0.420") holes. This flamepath has an engaged part flamepath length between components from the inside of the enclosure to each hole of 9.4 mm minimum. This is in compliance with EN60079-1 clause 5.2.

The certification of this equipment relies upon the following materials used in its construction as detailed on drawing numbers **15800-ATEX and 30800-ATEX**.

5. Environmental and Media Compatibility

Ensure that the product is compatible with the external environment and the process media.

Valve Materials:

External Exposure 15800 Series

Carbon Steel, Plated
Cast Iron, Plated & Painted
Aluminum
Bronze
316 Stainless Steel

External Exposure 30800 Series

Carbon Steel, Plated
Brass
Aluminum
316 Stainless Steel
304 Stainless Steel

Internal (Media) Exposure (Both 15800 and 30800 series)

316/CF8M Stainless Steel
440 Stainless Steel
416 Stainless Steel – Electroless Nickel Plated
304 Stainless Steel
Various Elastomers and/or Plastics – See individual Valve Part Number
Elemental Silver (AC Valves only)

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

Aggressive substances defined: e.g. acidic liquids or gases that may attack metals or solvents that may affect polymeric materials

Suitable precautions defined: e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals

CAUTION: It is the end users responsibility to ensure the materials of construction as detailed above as suitable for the intended point of installation. If in doubt, consult the manufacturer.)

The 15800 series and 30800 series is suitable for installation into most vibration environments. Observation of the torque values for the coil housings and installation with conduit piping will prevent any rotation that would degrade the protection. If the installation is subject to severe vibration, contact the factory prior to installation to ensure that not only will the protection scheme be suitable, but also that the valve mechanism is suitable for sustained operations.

6. General Installation

Ensure that the system pressure does not exceed the rating of the valve. **OVER PRESSURIZATION OF THE VALVE MAY RESULT IN CATASTROPHIC FAILURE WITH A POTENTIAL FOR INJURY OR DEATH.**

Ensure that the system differential pressure matches, or closely matches the differential pressure noted in the valve part number. Failure to match the differential pressure may result in failure of the valve to correctly operate.

Valves must be installed in a horizontal process line with the coil oriented over the piping vertically (within +/- 10 degrees of vertical).

Ensure that media temp will not exceed 500 degrees F (260 degrees C). **Note: The surface of the valve containing the media may not exceed the T-Class assigned. Conformal/contact insulation or other scheme may be required that meets requirements for the hazardous environment.**

Ensure that the ambient air around the electrical enclosure does not exceed 60 degrees C. Cooling or air circulation may be required. If the the enclosure cannot dissipate heat, then the T-Class may be violated as well as risking valve failure.

An adequate filter system must be installed in the process line upstream of each valve to prevent foreign matter from entering and damaging the seal faces and/or obstructing the valve orifices causing operational failure and leakage. A maximum rating of such a filter is 40 microns nominal to provide adequate protection.

Install the valve into the piping, observing the flow direction on the valve. Install in a manner appropriate to the fitting style and in accordance with applicable regulations. Use appropriate sealant (dope or Teflon tape) to seal fittings. Process

fittings provided are NOT dryseal type. Leak check after installation is recommended.

7. Wiring/Electrical Connection

Check the nameplate and provide the specified voltage to the valve. This is particularly important with DC voltage due to their typically high voltage drop through supply lines. All AC coils are for single phase use only. **ENSURE THERE IS NO ELECTRICAL POWER TO THE SUPPLY LINES BEFORE INSTALLING THE VALVE. USE OF LOCKOUT DEVICES ON ELECTRICAL SUPPLIES IS RECOMMENDED DURING ELECTRICAL INSTALLATION OR REMOVAL.**

Do not open the enclosures; there are no terminal blocks or electrical attachment points inside. If the enclosure is opened and is not properly re-torqued on reassembly, the ATEX rating will be compromised. If enclosure has been opened, contact Circor Aerospace to obtain proper reassembly and torque information, or return the product to the factory for sealing and recertification.

Both the 15800 series and 30800 series solenoid valve require conduit installation only and require the use of a user supplied, suitably certified, conduit sealing device, metal, and a grounded terminal/junction box. The enclosure is provided with a single ½ inch conduit fitting (marked on enclosure as ½ inch NPT), and both valves provide two polarity independent flying leads for powering the valves. The flying leads shall be terminated in a suitable ATEX approved terminal enclosure flameproof "d", or increased safety "e", when terminated in a classified (Zoned) area.

A sealing device such as a stopping box with a setting compound shall be used to electrically connect to the valve. The sealing compound(s) and method(s) of application shall be as specified in the certificate for the sealing device and according to instructions provided by the device manufacturer. The distance from the face of the seal (seal closest to the conduit fitting) to the entrance of the conduit fitting shall be as close as practical but not to exceed 1.0 inches (25 mm). The sealing device shall be an approved device and appropriate to the installation location.

All valve grounding is via the conduit fitting through metal to the grounded terminal/junction box/enclosure. There are no separate ground leads provided.

Solenoid valves generate heat when actuated. Conducted heat from the enclosure into the conduit/stopping box may rise to 88 degrees C (15800 series) or 100 degrees C (30800 series) at a maximum ambient temp of 60C. Use appropriately rated components.

Alignment of coil housing to conduit:

For a 31800/32800 valve, the orientation of the conduit fitting may be changed to match with the electrical conduit. Loosen the nut at the top of the coil housing;

rotate the fitting to the desired location, then torque the nut to 90-100 lbf-in (10-11.3 N-m).

It is critical that the proper torque be applied after aligning the housing to the conduit. Incorrect torque will result in loss of protection, and may allow loosening of the housing during vibration, also allowing loss of protection.

The 15800 series uses cast iron explosion-proof housing that is threaded directly to the valve body bonnets. This means that the angular position of the conduit fitting will be random when the housing is tightened down. When the ATEX coil housing is ordered, a set of 4 shims is included with the valve. The part number for this shim kit is 64127-*. If the angular alignment of the coil housing is not important the installation of the shims is not required.

Instructions for Installing Shims onto the 15800

1. Unscrew the cast iron coil housing assembly from the valves bonnet or cylinder cap. Note: If holding the valve in a vise, clamp on it either end to end or on the hex portion. Do NOT clamp across the width of the valve body. This can distort the valve body and prevent proper piston motion.
2. Place the shims over the cylinder cap tube so that they rest on the cylinder cap or bonnet.
3. Screw the cast iron coil housing back onto the bonnet or cylinder cap. Torque to 5-10 lbf-ft (6.7-13.5 N-m).

Note: There are 4 shims with an inch thickness of 0.005, 0.010, 0.015, and 0.020. Use any combination of these that allow the coil housing thread to bottom out such that the conduit fitting is oriented in the desired direction.

4. Repeat steps 2 and 3 as required.

NOTE: DO NOT USE MORE THAN 0.050 INCH THICKNESS IF SHIMS (ALL THOSE PROVIDED) ARE USED. VALVE MAY LOSE FUNCTIONALITY OTHERWISE.

11. Maintenance and Removal:

The ATEX solenoid valve enclosure contains no user serviceable parts. When repair is required, remove unit from service and return to manufacturer or manufacturer approved repair facility.

If the bolting on the 15800 series housing must be removed for any reason, ensure that M10 bolts marked "A2-70" or "A4-70" are installed and torqued to 110-120 lbf-

in (12.4-13.6 N-m). **Loss of protection may occur if incorrect bolting or incorrect torque is used.**

CAUTION:

Depressurize process/media piping prior to valve removal.

Ensure that electrical lines are de-energized prior to disconnecting the coil housing from the conduit.

Use appropriate protective gear if exposure to residue of hazardous/noxious media during disconnect of process piping is anticipated.

Remove, or decontaminate unit of, hazardous media prior to handling or shipping by unprotected workers.

Allow coil housing to cool prior to handling, or handle wearing/using adequate protection.

12. For questions or additional information, please contact:

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