= Safety

1 Intended usage

Please review all ATEX data and notes in this operating manual to eliminate any risks which would jeopardize the safe function of the complete configured valves with valve solenoids. Any use beyond the permissible limits, or the failure to comply with the instructions of this manual, will cause the user to be liable for damages. In case of non-permissible intrusions or modifications of the valve, as well as failing to comply with the instructions of this manual, the claim forguarantee expires and our liability is excluded. The valves must be used only with noncombustible mediums which do not corrode, chemically or mechanically, the materials used. Use only mediums approved by IMI Norgren.

2 Operating manual

2.1 General conditions

- The valves mentioned in this manual must be used with its permissible valve solenoids (armature assembly and coil) and these valve solenoids must be used with the IMI Norgren valves. If the valve solenoid used is from another manufacturer, or if our valve solenoids are used on another manufacturer's valve, IMI Norgren assumes no liability. Moreover the Ex approval as well as the claim of guarantee expires for items of equipment and accessories.
- Before installation, the specifications of the device identification are to be compared with the intended operating conditions to ensure proper usage.
- Take measures to avoid unintentional or improper activation.
- Consider in case of pressurised systems that lines, valves and other components should not be removed.
- ATTENTION: There is some risk of injury! The surface of coils could become very warm in continuous operation.
- Leak and strength tests on open and closed valves are admissible until max. 1.5 times the max. operating pressure. It is not allowed to operate the valve during these tests.
- Do not use inlet air of an area with potentially explosive atmosphere.
- In case of applications with vacuum, please consider that no ambient gases or dust could be leak into the valve so that no potentially explosive situation inside of the valve or other components can arise.
- Never use the valve solenoid as well as the complete valve as lever arm or a step for climbing.

2.2 Installation

Please consider following points before assembling and installing the valve:

- It is imperative that the appropriate Ex regulations are observed during installation, maintenance or repair – in particular EN 60079-14.
- Electrical installation must be carried out under additional observation of all respective national regulations (in Germany, VDE 0100) by a qualified electrician or under the supervision there-of.
- Before installation, the specifications of the device identification are to be compared with the intended operating conditions to ensure proper usage.
- Check if classification of the valve solenoid, the permissible application area of the basic valve and the marking on the equipment are suitable for the application.
- Basic valve (of solenoid actuated valves)

=> Please take note of section 3.2

- Air pilot actuated valve

=> Please take note of section 3.4

- Pilot valve

=> Please take note of section 4.1

- Check the installation technical data, such as voltage level and current type, on the product label for compliance with the existing operating conditions.
- After removing the packaging, make sure that no contamination enters into the system.
- Check before the installation of the system that no contamination exists in the piping and valve body.
- Check during installation of the system that gaskets will not become damaged.

Please consider following points during the installation of the valve:

- The installation must be taken by qualified personnel with consideration of relevant regulations.
- Any fitting position of the valve is permissible but indicating coils up is preferred.
- The pilot valve must be operated with the provided electrical connector.
- Please insure the polarity of the connections matches the pilot valve.
- Damaged parts must be replaced with original spare parts from IMI Norgren.
- Order spare parts with the part number indicated on the product labels (valve and/or pilot valve).
- For equal potential bonding link all electro-conductive parts including accessories together.
- Ground the complete system.
- Important: Power must be removed from the system while assembling and disassembling connector and pilot valve.

2.3 Operating

- Ensure before commissioning of the valve, that the whole equipment/machine conform to the provisions of the machine, ATEX and EMC directives as well as other applicable standards and directives.
- The valve must be used with compressed air only (see also section 3.2).
- Avoid contact with liquid and corrosive mediums.
- Do not load the system by bending or torsion.

2.4 Failures

- In case of failure check the connection of pipes, the operating voltage as well as the operating pressure.
- Any service or repair work as well as replacement of components must be taken in unpressurized condition. Also, power must be removed from the system.
- Important: It is not allowed to detach a plug or to open a body in a zone with potentially explosive atmosphere when power is not removed.

2.5 Maintenance and repair

It is recommended to make precautionary maintenance depending on the operating conditions and in case of significant changes in response times. The user is liable for adequate test and maintenance spacing dependent on the operating conditions of the valve. Precipitation, contamination, and aged or worn gaskets can cause failures.
Damaged parts must be replaced with original spare parts from IMI Norgren.

3 ATEX conformity of complete configured valves

3.1 Mechanical basic valves

(without pilot valves)
3.1 Mechanical basic valves (without pilot valves)
The «mechanical basic valve» of the Mini ISO valve series (V40 ... V45) as well as the corresponding accessories does not fall under the EU directive 2014/34/EU «ATEX» because they do not contain an own potential ignition source. It is to pay attention that no flammable fluids are allowed. Due to this fact, these items of equipment can be used in areas with potentially explosive atmosphere without any ATEX identification admittedly only with pilot valves complying with the corresponding categories.

ATTENTION :
Certain permissible operating conditions for ATEX applications can vary from normal applications.
Part numbers of the mechanical Mini ISO basic valves without solenoid pilot:
V405****-A1000, V415****-A1000,
V44A****-A1000, V45A****-A1000

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3.2 Use conditions for mechanical basic valves

(of solenoid actuated valves)

Pilot pressure	max. 7 bar	For use condition of pilot valve please refer to section 4.1.
Operating pressure	max. 16 bar	(if permissible for valve type)
Ambient temperature	-15°C ... 40°C	Consider the dew point of supply air (see also air quality) less than the air temperature to prevent ice from forming. Take note of temperature ranges in section 4.1.
Medium temperature	max. 40°C	
Medium	compressed air	Recommended air quality acc. to ISO 8573-1. Indoor at 15°C to 35°C air quality category: 5,6,4 Outdoor until -15°C air quality category: 2,3,3
Use conditions	100% ED	
Volume of operating ports (mostly ports 2 and 4)	min. 20 cm3 min. 30 cm3	for Mini ISO valve series V40*****-***** and V41*****-***** for Mini ISO valve series V44*****-***** and V45*****-***** This aims for metallic volumes. In case of materials with worse caloric conductance, larger volumes are necessary. In case of doubt, take measurements.

3.3 Solenoid actuated complete configured Mini*ISO valves with solenoid pilot valve

Complete valve part number	Basic valve part number *1)	Solenoid pilot valve kit part no. & voltage *2)	ATEX category *3)	Applicable in Ex zones
V405****-E313F	V405****-A1000	VZC7BAA1-E313F 24V AC/DC	II2G Ex ia IIC T6/T4 Gb II2D Ex ia IIIC T85°C/T135°C Db	1 and 2 (gases) 21 and 22 (dusts)
V415****-E313F	V415****-A1000			
V44A****-E313F	V44A****-A1000			
V45A****-E313F	V45A****-A1000			

1) Do not fall under ATEX acc. EU directive 2014/34/EU, section 1
2) EU Declaration of Conformity exists and is included with pilot valve.
3) For use conditions of pilot valve please refer to section 4.1
Note: Although the solenoid pilot valve is approved in a higher category, the valve does not fulfil II 1GD, because the permissible limit of light metal is exceeded.

3.4 Use conditions for air pilot actuated valves

The air pilot actuated valves of the Mini ISO valve series as well as the corresponding accessories does not fall under the EU directive 2014/34/EU «ATEX» because they do not contain an own potential ignition source. It is to pay attention that no flammable fluids are allowed.

Part numbers of air pilot actuated Mini ISO valves:
V405*3*A-X*0, V415*3*A-X***0, V44A*3*A-X***0, V45A*3*A-X***0**

Pilot pressure	max. 16 bar	(if permissible for valve solenoid)
Operating pressure	max. 16 bar	(if permissible for valve type)
Ambient temperature	-15°C ... 50°C	Consider the dew point of supply air (see also air quality) less than the air temperature to prevent ice from forming.
Medium temperature	max. 50°C	
Medium	compressed air	Recommended air quality acc. to ISO 8573-1. Indoor at 15°C to 35°C air quality category: 5,6,4 Outdoor until -15°C air quality category: 2,3,3
Max. surface temperature:	75°C	is equivalent to Ex temperature class T6
Applicable in Ex zones:	1 and 2, 21 and 22	(gases) (dusts)
Use conditions	100% ED	
Volume of operating ports (mostly ports 2 and 4)	min. 20 cm3 min. 30 cm3	for Mini ISO valve series V40*****-***** and V41*****-***** for Mini ISO valve series V44*****-***** and V45*****-***** This aims for metallic volumes. In case of materials with worse caloric conductance, larger volumes are necessary. In case of doubt, take measurements.

3.5 Accessories

Following accessories are applicable in Ex zones 1, 2, 21 and 22:

Description	Part numbers V40/V41 (18mm)	Part numbers V44/V45 (26mm)
Sub-base assemblies	all types of IMI Precision Engineering	all types of IMI Precision Engineering
Modular sub-base	V70425-*5*; V70426-*5*	V70525-*A*; V70526-*A*
End plate kit	V70424-*5C; V70431-*5F	V70524-*AC
Double station modular sub-base	V70432-*5F	-
Fixed length sub-base	V704**-A50; V704**-P50	V705**-BA0; V705**-RA0
Single station sub-base	V70401-*5B	V70501-*A*
Intermediate supply/exhaust module	V70429-*50	V70529-*A0
Single valve shut-off plate	V70430-K50	V70530-*A0
Sandwich plate with additional pressure port 1	V70435-*50	V70535-*A0
Pressure regulator plate	V70427-K5*	V70527-KA*
Flow regulator plate 1)	V70428-K50	V70528-KA0
Blanking plate	V70400-K50	V70500-KA0
DIN-rail EN 50 022	V10009-C00	V10009-C00; V10009-C01
DIN-rail mounting kit	V70531-KA0	V70531-KA0
Blanking disc to modular sub-base	V70422-K50; V70423-K50	V70522-K00; V70523-K00
Blanking plug for fixed length sub-base	V70421-K50	V70522-K00; V70523-K00
Transition plate	V70436-*00	V70436-*00

For details see catalogue or data sheets 5.4.146 & 5.4.152.

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4 Valve solenoid

4.1 Technical data & use conditions of pilot valve & allocation to the FAS part number / EU Declaration of Conformity

Following pilot valve is based on the dedicated product series of the company FAS:

Part number (IMI Norgren)	Type of current	Power input	Nominal voltage	Nominal current	Pilot pressure	FAS part number/EU-Type Examination Certificate
VZC7BAA1-E313F	a.c/d.c	0.72 W	24 V	30 mA	Max. 7 bar	01-311P-00-H0 H012004 24V AC/DC 0.7W
						INERIS 02ATEX0007X

Ambient temperature	Ex temperature class
-15°C ... +40°C	T6
-15°C ... +50°C	T4

4.2 Specific conditions

The solenoid valve type 01-311P-00-H0 H012004 24V AC/DC 0.7W must be used with a power source which is certificated for use in areas with explosive atmosphere of categories IIC, IIB or IIA and whose output circuit and
connections are approved as intrinsically safe. The power source used has the following maximum values: Ui = 30.0 V; Ii =330 mA for the version with 24V nominal coil. Example of such power supply is the «solenoid drivers» type KFD2 from PEPPERL-FUCHS.

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