⚠ = 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 for guarantee 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 3.3
• Solenoid (coil)
=> 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.
• During assembly all coils can be rotated and locked in 90° increments.
• The tightening torque for fastening nut of the coil is 0.5 Nm.
• 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 coil).
• 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 plug and valve solenoid.

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 valve solenoids)
The «mechanical basic valve» of the ISO*STAR and MIDI*STAR 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. Due to this fact, these items of equipment can be used in areas with potentially explosive atmosphere without any ATEX identification admittedly only with valve solenoids complying to the corresponding categories.

ATTENTION:
Certain permissible operating conditions for ATEX applications can vary from normal applications.
Part numbers of the mechanical ISO*STAR basic valves:
SXE**7*-1**-00K, SXE**7*-1**-01K, SXE**7*-1**-02K
Part numbers of the mechanical MIDI*STAR basic valves:
SXE**6*-1**-00K, SXE**6*-1**-01K, SXE**6*-1**-02K

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3.2 Use conditions for mechanical basic valves

(of solenoid actuated valves)

Pilot pressure	max. 10 bar	(if permissible for valve solenoid)
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. When mounting on single sub-bases, the maximum ambient and medium temperature increases from 40°C ... 50°C.
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	100% duty is allowed even under the most unfavourable permissible operating conditions. It must be ensured that neither the maximum permitted ambient and fluid temperatures nor the limit rating (max.10% overvoltage) are exceeded during operation. The solenoid may need to be protected against overloading.
Volume of operating ports (mostly ports 2 and 4)	min. 30 cm^3 min. 30 cm^3 min. 60 cm^3 min. 120 cm^3	for valve series MIDI*STAR SXE**61-***-*** for valve series ISO*STAR ISO1 SXE**73-***-*** for valve series ISO*STAR ISO2 SXE**74-***-*** for valve series ISO*STAR ISO3 SXE**75-***-*** 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 Use conditions for air pilot actuated valves

The air pilot actuated valves of the ISO*STAR and MIDI*STAR 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 ISO*STAR valves: SXP**7*-1**-00K

Part numbers of air pilot actuated MIDI*STAR valves:
SXP**6*-1**-00K, SXP**6*-1**-01K

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. 30 cm3 min. 30 cm3 min. 60 cm3 min. 120 cm3	for valve series MIDI*STAR SXE**61-***-*** for valve series ISO*STAR ISO1 SXE**73-***-*** for valve series ISO*STAR ISO2 SXE**74-***-*** for valve series ISO*STAR ISO3 SXE**75-***-*** This aims for metallic volumes. In case of materials with worse caloric conductance, larger volumes are necessary. In case of doubt, take measurements.

3.4 Accessories

Following accessories of the MIDI*STAR series are applicable in Ex zones 1, 2, 21 and 22:

Description	Part numbers
Single station sub-base	FP 2011-20; FP2011; FP2021-20; FP2021
Fixed length sub-base	BL 3**1-21; BP 4***-13-91
Modular manifold	FP 2880
Blanking end plate	FP 2857
Blanking disc	FP 2858
Blanking plate	FP 2001
Blanking plug	FP 2080; FP 2081

For details see catalogue or data sheets 5.2.580.

3.4 Accessories

Following accessories of the ISO*STAR series are applicable in Ex zones 1, 2, 21 and 22:

Description	Part numbers		
	ISO 1	**ISO 2**	**ISO 3**
Single station sub-base form A	M/P19126	M/P19132	M/P19138
Single station sub-base form B	M/P19125	M/P19131	M/P19137
Modular sub-base form C	CQM/22152/3/21	CQM/22253/3/21	CQM/22354/3/21
End plate kit form D	CQM/22152/3/22	CQM/22253/3/22	CQM/22354/3/22
Directional cylinder port device	FP 8361	FP 8461	FP 8561
Blanking disc	FP 8382	FP 8482	FP 8582
Modular sub-base	CQM/22152/3/27	CQM/22253/3/27	-
Transition plate	CQM/22152/3/29	-	-
Blanking disc	M/P43173	M/P43174	-
	CQM/22152/3/28	CQM/22253/3/28	-
End plate kit	CQM/22152/3/31	CQM/22253/3/31	-
Pressure regulator sandwich plate	V71012-KB2	-	-
Pressure regulator sandwich plate	V71012-KB3	-	-
Flow regulator sandwich plate	CQM/22152/3/26	CQM/22253/3/26	CQM/22354/3/26
Transition plate	CQM/22152/3/24	CQM/22253/3/24	-
Blanking plate	CQM/22152/3/23	CQM/22253/3/23	CQM/22354/3/23

For details see catalogue or data sheets 5.2.500.

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4 Valve solenoid

4.1 Technical data of valve solenoids & allocation to the EU declarations of conformity and suitability to basic ISO*STAR and MIDI*STAR valves. Following valve solenoids are based on the dedicated EU declarations of conformity:

Solenoid width	Voltage	Rated current (mA)	Power consumption	Ex-Protection	IP-Protection class (to EN 60529) Ex-Protection (ATEX-Category)	Temperature Ambient/ Fluid (°C)	Electrical connection	EU Declaration of conformity	Model Current	Model Old	Old valve voltage code reference
22 mm 	24 V d.c.*)	207	5,0 W	II2G II2D	Ex mb IIC T4 Gb Ex mb tb T130°C Db	-15 ... +50	Cable H05V2V2-F 3G1 Length: 3 m	Certificate PTB 03 ATEX 2015X	306002400	TM3902-AT	E3K
	48 V d.c.*)	98	4,7 W						306004800	—	—
	110 V d.c.*)	45	5,0 W						306011000	—	—
	24 V a.c. *)	192	4,6 VA						306102450	—	—
	48 V a.c. *)	98	4,7 VA						306104850	—	—
	110 V a.c. *)	41	4,5 VA						306111050	TM3947-AT	E8K
	230 V a.c. *)	22	5,1 VA						306123050	TM3948-AT	E9K
	24 V d.c.*)	115	2,8 W	II2G II2D	Ex mb IIC T5 Gb Ex mb tb T95°C Db				306202400	TM2002-AT	D3M
	48 V d.c.*)	38	1,9 W						306204800	—	—
	110 V d.c.*)	23	2,6 W						306211000	—	—
	24 V a.c. *)	121	2,9 VA						306302450	TM2042-AT	D4M
	48 V a.c. *)	54	2,6 VA						306304850	TM2045-AT	D6M
	110 V a.c. *)	21	2,3 VA						306311050	TM2047-AT	D8M
	230 V a.c. *)	9	2,1 VA						306323050	TM2048-AT	D9M
30 mm 	24 V d.c.	84	2,0 W	II3G II3D	Ex nA IIC T5 Gc Ex tc IIIC T95° Dc IP65 (with connector)	-15 ... + 50°C	With special connector DIN EN 175301-803 Form A	EU Declaration of conformity	304602400	TM1702-AT	F3N
	24 V 50Hz	166	4,0 W						304702450	TM1742-AT	—
	24 V 60Hz	127	3,1 W						304702450	TM1742-AT	—
	110 V 50Hz	36	4,0 W						304711050	TM1746-AT	F8N
	110 V 60Hz	28	3,1 W						304711050	TM1746-AT	F8N
	120 V 60Hz	33	4,0 W						304711050	TM1746-AT	F8N
	230 V 50Hz	18	4,0 W						304723050	TM1748-AT	F9N
	230 V 60Hz	14	3,1 W						304723050	TM1748-AT	F9N
	240 V 60Hz	15	3,5 W						304723050	TM1748-AT	F9N

*) With AC voltage a system frequency of 50...60 Hz is permitted with DC voltage a max ripple of 20% is permitted
Standard voltage tolerance +/-10%.
The maximum permitted ambient temperature of solenoids with a single coil is 40 °C with battery installation and 50 °C in the case of single installation.
Detail information in Operating instructions for solenoids Type 3046, 3047: 750347400000050.03.13
Detail information in Operating instructions for solenoids Type 306x: 750347300000050.01.13
Further version on request.

Solenoid order quantity related to part number of Basic valves:
1x solenoid .. SXE95**-1**-0*K
2x solenoids .. SXE05**, SXE15**, SXE96**, SXE97**, SXE98**-1**-0*K

Combination of complete configured MIDI*STAR valves and coils size 30 mm can only be used with single station sub-bases.
EU Declaration of Conformity exists and is included with each coil.

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