

Series MX SAFEMAX 3/2-way quick exhaust safety valves with soft start valve



CAMOZZI
Automation

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(This is a translation of the original instructions)

Made in Italy

For all other languages available and for further information regarding the declarations of compliance, please refer to the sections Certifications and Instruction sheets on the site <http://catalogue.camozzi.com>

Series MX SAFEMAX cut-off valves allow supply and a safe and quick exhaust of the pneumatic circuit. The valve integrates a sensor that reads the position of the spool, making the valve status available.

The products comply with the following technical standards: EN ISO 4414:2010 - Pneumatic fluid power – General rules and safety requirements for systems and their components; EN ISO 13849-1 that establishes safety requirements and provides guidance on the design and integration of components, classifies the single valve suitable for use in systems up to category 4.

1 General data

Safety function	Isolation and energy dissipation function
Mission time	To be calculated according to the specific application. In any case, not more than 20 years
Construction	Modular, compact, spool-type
Ports	G1/2
Mounting	In-line, wall-mounting (by means of clamps)
Operating temperature	-5 ÷ +60 °C
Operating pressure	With internal servo-pilot: 3,5 bar ÷ 10 bar With external servo-pilot: 0,5 bar ÷ 10 bar (pilot 3,5 bar ÷ 10 bar, greater or equal to operating P)
Flow (6 bar)	1→2 = 3300 NL/min (ΔP 1) 2→3 = 5000 NL/min (free flow)
Medium	Filtered air in class 7.4.4 according to ISO 8573-1. In case lubricated air is used, we recommend ISOVG32 oil and to never interrupt lubrication

Sound pressure level of the weighted emission A (pressure 6 bar - measuring distance 1 m)
Without silencer = 102 dB(A)
With silencer = 90,5 dB(A)

Maximum value of the weighted instantaneous sound pressure C (pressure 6 bar - measuring distance 1 m)
Without silencer = 113 dB(C)
With silencer = 90,2 dB(C)

COIL SPECIFICATIONS	
Connection	DIN EN 175 301-803-B
Voltage	24V DC (±10%) 3,1W (ED 100%)

SENSOR SPECIFICATIONS	
Connection	With wires, M8
Voltage	10-28V DC

Operation	Magnetostrictive
Type of contact	N.O. PNP

Max. current	EX version: 200 mA 0,65 W UL version: 100 mA 3 W CE versione: 200 mA 5,5W
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Position sensor reliability data	B10D = 14.700.000 cycles
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COMPLIANCE WITH EN ISO 13849-1 STANDARD	
Performance level reachable (PL)	Category 4, PLe

Solenoid valve reliability data	B10D = 2.000.000 cycles
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The person responsible for the correct implementation of the safety solution, compliance with the Machinery Directive, periodically provide test pulses to check the presence of short-circuits and the functioning of the outputs related with their ability to switch off. These test pulses have a different duration depending on the manufacturer of the PLC. The Series MX Safemax quick exhaust safety valves can receive test pulses of maximum 2 ms without generating malfunctions or false switchings. In case the PLC is programmed to provide longer pulses and it is not possible to reduce their duration, it is necessary to deactivate these pulses to avoid abnormal switchings.

The safety modules used to manage and control the solenoid valves that comply with the Machinery Directive, periodically provide test pulses to check the presence of short-circuits and the functioning of the outputs related with their ability to switch off. These test pulses have a different duration depending on the manufacturer of the PLC. The Series MX Safemax quick exhaust safety valves can receive test pulses of maximum 2 ms without generating malfunctions or false switchings. In case the PLC is programmed to provide longer pulses and it is not possible to reduce their duration, it is necessary to deactivate these pulses to avoid abnormal switchings.

1 General recommendations

Please comply with the recommendations for safe use described in this document. These recommendations are classified so as to identify the level of danger and the possible associated risk.



WARNING
In extreme conditions, errors or carelessness could lead to serious injury or death

- Some hazards can be associated with the product only after it has been installed on the machine/equipment. It is the responsibility of the end user to identify these hazards and reduce the risks associated with them.
- For information regarding the reliability of the components, contact Camozzi Automation.
- Read the information in this document carefully before using the product.
- Keep this document in a safe place and close at hand for the whole of the product life cycle.
- Pass this document on to any subsequent holder or user.
- The instructions in this manual must be followed in combination with the instructions and further information regarding the product described in this manual, which can be found using the following references:
 - Website www.catalogue.camozzi.com
 - Camozzi Automation Valves and solenoid valves Catalogue
 - Customer Service

- Assembly and commissioning must be performed by qualified and authorised personnel only, according to these instructions.
- It is the responsibility of the system/machine designer to choose correctly the most appropriate pneumatic component according to the required use.



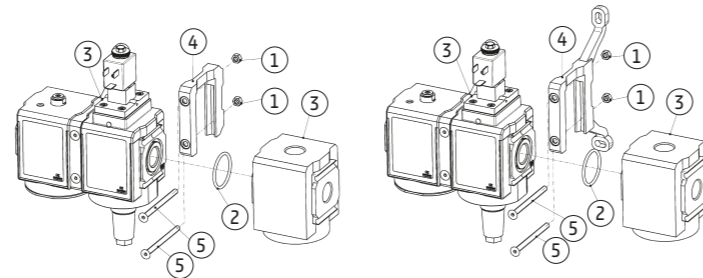
The use of appropriate personal protection is recommended to minimise the risk of injury.

- For all those situations of use not covered in this manual and in situations in which damage could be caused to property, persons or animals, contact Camozzi Automation before use.
- Do not make unauthorised modifications to the product. In the event of any such modifications, the user shall be liable for any possible damage caused to property, persons or animals.
- It is recommended to comply with all safety regulations that apply to the product.
- Do not perform any maintenance on the machine/system until you have verified the safety of work conditions.
- Before installation or maintenance, make sure that the specifically designed safety locks have been activated, then shut down the electricity power supply (where necessary) and the system pressure supply, draining all the residual compressed air from the system and deactivating the residual energy stored in springs, condensers, containers and gravity.
- After installation or maintenance, reconnect the system's pressure and electricity supply (where necessary) and check the proper operation and tightening of the product.
- In case of leaks or malfunctioning, the product must not be put into operation.
- Do not wash the product with aggressive substances or varnish it before consulting Camozzi Automation.

2 Installation and commissioning

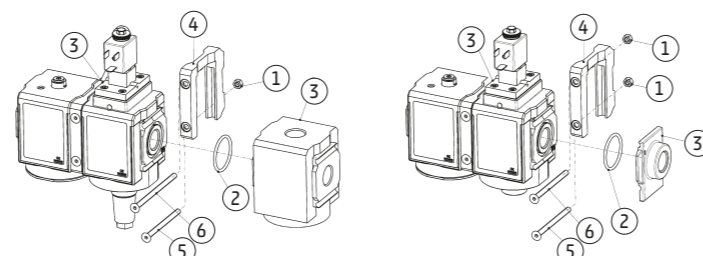
- Installation**
- Do not install the product in the presence or proximity of strong electromagnetic fields or large masses of ferromagnetic material
 - When unpacking, take great care not to damage the product.
 - Check for any defects caused by transport or storage of the product.
 - Remove all the securing/locking devices of the moving parts.
 - Separate the packaging materials for recycling or disposal according to the regulations in force in your country.
 - Before operating the component, check that the characteristics and performance stated in the catalogue correspond to those required.
 - Use appropriate overpressure protection devices when installing the component.
 - Prevent, as far as possible, any sudden changes in pressure in the circuit on which the component is installed.
 - Ensure that the air discharged from the component is conveyed to an area where it cannot cause danger to the surrounding equipment and persons.
 - When installing the component, make sure that there is no danger due to mechanical movements.
 - Install the component in an area where set-up and maintenance can be easily performed and do not lead to hazards for the operator.
 - Check the proper operation of the product at least once a month. In case of long periods of inactivity of the product, check its proper operation before starting the system.

3 Assembly instructions



3.1 Connection of modules with "quick clamp" and wall mounting with "wall flange"

- Insert the nuts into the seats on the clamp.
- Insert the O-Ring in the seat on the side of the body.
- Bring the two modules close to one another until they are in contact.
- Insert the quick wall clamp in the groove.
- Insert and tighten the two M5x69 screws. Tightening torque: 2,5 ± 0,5 Nm
- Fix to the wall (only wall flange version) using the special hooks on the clamp.

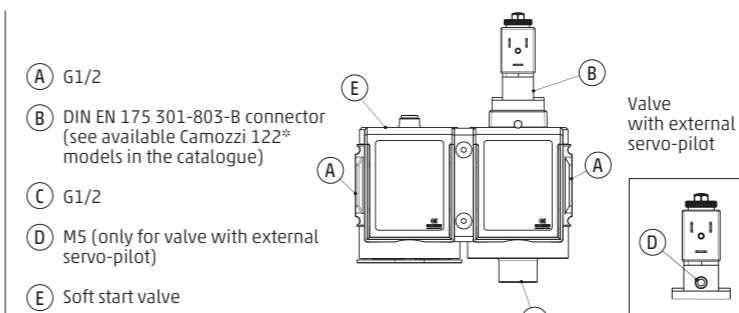


3.2 Assembly of "quick wall clamp" for both the connection of modules as for wall mounting

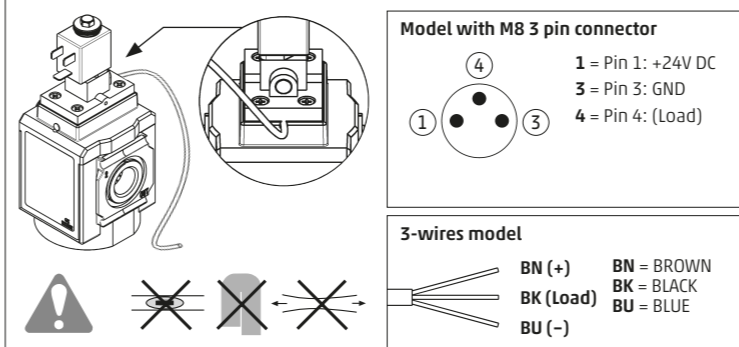
- Insert the nut only in the lower seat of the clamp.
- Insert the O-Ring in the seat on the side of the body.
- Bring the two modules close to one another until they are in contact.
- Insert the quick clamp in the groove.
- Insert the M5x69 screw in the lower hole of the clamp and tighten. Tightening torque: 2,5 ± 0,5 Nm
- Insert the M5x85 screw in the upper hole of the clamp and tighten. Tightening torque: 2,5 ± 0,5 Nm

3.3 Assembly of the flange

- Insert the nuts into the seats on the clamp.
- Insert the O-Ring in the seat on the side of the flange body.
- Place the flange onto the side of the module.
- Insert the quick clamp or the quick wall clamp in the groove.
- Insert and tighten the two M5x69 screws. Tightening torque: 2,5 ± 0,5 Nm



4 Sensor connection



Attenzione!
In the 3-wires version, do not connect the black to the blue and do not connect the black wire to any pole of the power supply. Do not squash, bend, stretch the cables.

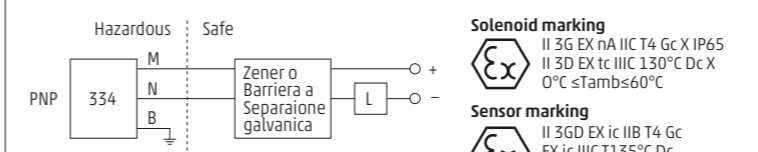
5 Zones permitted (ATEX version)

In places and for the types of equipment subject to Directive 99/92/EC, the employer has to carry out the classification of the zones based on enclosure I of the Directive regarding the danger of the formation of explosive atmospheres because of the presence of gas or dust. Classification of the zones according to Directive 99/92/EC:

Zone 0	Area in which (permanently, for long periods or often) an explosive atmosphere is present, consisting of a mixture of air and inflammables in the form of gas, vapour or mist
Zone 20	Area in which (permanently, for long periods or often) an explosive atmosphere is present in the form of a dust/powder cloud which is combustible in the air
Zone 1	Area in which, during normal activities, the formation of an explosive atmosphere is probable, consisting of a mixture of air and inflammables in the form of gas, vapours or mist
Zone 21	Area in which occasionally during normal activities the formation of an explosive atmosphere is probable, in the form of a dust/powder cloud which is combustible in the air
Zone 2	Area in which, during normal activities, the formation of an explosive atmosphere, consisting of a mixture of air and inflammables in the form of gas, vapour or mist is not probable and, whenever this should occur, it is only of a short duration
Zone 22	Area in which, during normal activities, the formation of an explosive atmosphere in the form of a combustible dust/powder cloud is not probable and, whenever this should occur, it is only of a short duration

Table installation suitability		
Product Category	GAS	DUST/POWDER
1	Zone 0	Zone 20
2	Zone 1	Zone 21
3	Zone 2	Zone 22

- The solenoids can be used with environmental temperatures from 0°C to +60 °C.
- The solenoids must always be used with a 122-800EX coded connector.
- The sensor must be powered through an intrinsically safe barrier with the following parameters and in the following way:



Failure to comply with the nominal values of use or incorrect connection can cause the destruction of the product itself with the risk of igniting explosions.

6 Use

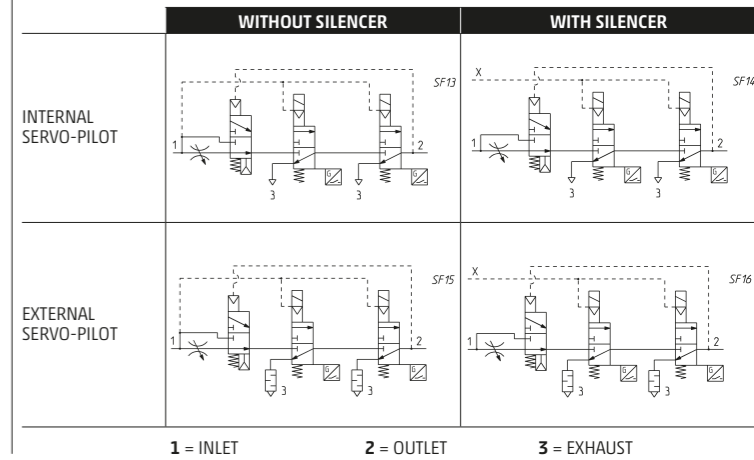
- Before operating the product, check that the pressure of the compressed air supply and all the operating conditions are within the tolerance values.
- The product must be supplied only with compressed air according to ISO 8573-1:2010 [7:4:4]
- These valves, when integrated in an air treatment unit, shall be positioned as last element. With the exclusion of derivative blocks, other elements downstream of the valves could bias the effectiveness of their function.
- The use of the product with liquids or not neutral gases is not permitted.
- The LED on the valve indicates the status of the product, please see the table below:

LED status	Contact	Meaning
LED on	Closed	Valve NOT activated
LED off	Open	Valve activated

- Do not exceed the technical specifications illustrated in the Camozzi Products Catalogue.
- Unless specific intended use, do not use the product in environments where there may be direct contact with corrosive gases, chemicals, salt water, water or steam.

7 Operation

The operation of the different versions of the valve is reported below:



8 Identification of faults and/or exceptional situations

Failure	Cause	Solution
Leakage	Wear/damage to sealing elements	Contact Camozzi Automation Service.
The valves are not activated or has an inappropriate opening time	No pressure	Check if the inlet pressure is adequate, that it is properly connected and that there are no leakages. For the valves with external servo-pilot, check if the pilot pressure meets the minimum required pressure indicated on the label.
	No electric signal	Check if the connector is properly connected and that the voltage is in accordance with the value reported on the coil.
The valves does not close, or closes in an inappropriate time	Valve is blocked	Contact Camozzi Automation Service.
	Failure to remove the drive signal	Verify that the signal that actuates the valve has actually been removed.
Sensors does not read	Valve is blocked	Contact Camozzi Automation Service.
	Presence of strong electromagnetic masses near the product	Check there are no ferromagnetic masses nearby or that you are working in presence of strong fields. Replace non suitable materials with similar parts of non-ferromagnetic material, adequately shield the area around the valve.
Soft start doesn't work	Wrong sensor connection	Check that the sensor connection is according to the specifications reported in this sheet.
Reduced flow rate than declared	Soft start valve malfunction	Contact Camozzi Automation Service.

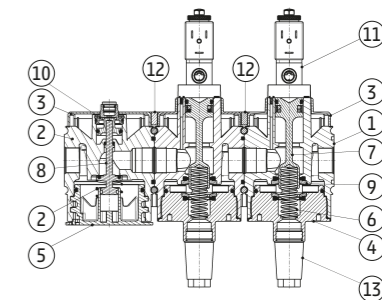
In case the malfunction found is not among those described, contact Camozzi Automation Service.

9 Maintenance

- In case the silencer is used, check it periodically and replace it when it is clogged.

10 Ecological Information

- At the end of the product's life, we recommend the separation of materials for recycling purposes. Detailed information on the nature of the materials used are reported in the sheet below.
- Comply with the disposal of waste material regulations in force in your country.



Num.	Parts	Materials
1	Body	Aluminium
2	Covering	Pom
3	Valve cover	Alluminium
4	Soft start valve cover	Pom
5	Springs	Stainless steel
6	Valve spool	Stainless steel, Fkm, Ptfе, plastoferrite
7	Soft start valve spool	Brass
8	Cage elements	Brass
9	Solenoids	Copper, Brass, Stainless steel, PET
10	Intermediate flanges	PA66
11	Silencers and plugs	Stainless steel, Bronze
-	O-Ring and seals	Nbr, Fkm
-	Sensor	Electric waste

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