operating instructions
maintenance devices series 09

Please read the following instructions carefully before you use this device. Make sure that it is always available where the equipment is located and operates and that all the personnel working with it in any way knows its content. Trouble-free and safe operating can only be guaranteed if recommendations and conditions stated in this manual are respected.

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The life of a pneumatic system depends mainly upon the preparation of the compressed air. For this reason, filters, pressure regulators and filter regulators are employed as service units in every pneumatic control system, but they must be properly handled and above all properly serviced. Please read these operating instructions carefully and heed the safety advice.

APPROPRIATE USE

The maintenance units of the stainless steel series have been solely designed for the following purpose:
Conditioning of compressed air out of air pipes.

Application ranges: *You will find the use of compressed air maintenance units in fabrication, manufacturing and inspection. The units can be used in almost all industrial areas: Engineering, electronic and automotive industry and others.*

These units must only be used for the above mentioned purpose, for which they had been designed. Any inappropriate use shall be viewed as improper use. The manufacturer is not liable for damages which result from any improper use! The risk lies exclusively with the user.

SAFETY GUIDELINES

- *The operator/user should become familiar with the functioning, installing and using the devices. It is always required to make sure that all the operators have fully understood all the operation rules.*
- *The units must only be taken into service by trained and qualified persons. The use, maintenance and correct set-up of the parameters are responsibility of the relevant machine's user or supervisor.*
- *Children may never operate this tool. Juveniles and persons with limited mental and physical abilities are only allowed to use this tool after instruction and only under supervision.*
- *Respect the valid laws and regulations of health and occupational safety as well as other hazard informations for your own security and the one of other people. Pay attention to the manufacturer`s informations concerning operation and security, for example the „Machinery Directive" or other application-specific guidelines.*
- *While working with compressed air - depending on its specific use - you have to wear suiting safety clothes and body protection (i.e. protective goggles, working gloves, mouth and hearing protection)*
- *Always check the flow direction marked on the units before mounting them.*
- *Make sure there are no visible damages on the units. Do not use the units with a malfunction or a visible damage.*
- *Pay attention to the max. operating pressure of the units. The maximum operating pressures and max. temperatures must never be exeeded.*
- *Depressurize units prior to servicing, otherwise you risk an accident.*
- *Before starting, check the connections of units and retighten if necessary. Relieve pressure on regulator and filter regulator.*
- *The units must not be alienated or modified.*
- *Do not remove or damage labels, notices or warnings placed on the product.*
- *The plant's user or designer is responsible for the dimensioning and the choice of appropriate models with respect to the plant in which it is supposed to be installed.*
- *Appropriate fire-protection devices are the user's responsibility.*

HAZARD WARNINGS

The equipment works with compressed gas, therefore it is important that the ones who operate with the device know the risks of handling gases. Always respect the instructions on the safety sheets provided by your gas supplier. These safety xsheets indicate mainly toxicological features, risks of handling, individual protection devices to be used and other important information for the safety of the operators. For further questions please contact your gas supplier and the deliverer.

Maintenance units can be dangerous if the safety guidelines are not respected. Wrong operating and disregard of safety guidelines can result in grievous bodily harm and property damages.

STARTING AND TAKING INTO SERVICE

- *Unpack the units thoroughly and make sure that no packaging parts get into the devices.*
- *Depressurize the units prior to servicing, otherwise you risk an accident.*
- *Before starting, check the connections of the units and retighten if necessary. Relieve pressure on regulator and filter regulator by turning the knob to the left.*
- *Observe the marked flow direction on the units before mounting them!*

INSTALLATION

During installation the degree of cleanliness has to be preserved:

Before installing the product make sure that the pipes are cleaned. Connect the equipment to the system taking account of the correct flow (see stamped arrow). Once it is connected, the supply can be gradually opened.

Regulator

*Once it is supplied and with an unloaded spring, make sure that no pressure flows downstream. If there is the manometer (optional) check that it indicates the pressure 0 bar. Operate clockwise on the adjusting screw **(A)** to increase the outlet pressure and check the required pressure on the manometer, if present. Make sure that the set pressure remains stable and does not increase during the operation. If the downstream pressure must be decreased, operate the adjusting screw **(A)** counter-clockwise. If the regulator is provided with a relieving system, the downstream overpressure will be discharged in the atmosphere even while the plant is not operating through the bonnet of the relieving system **(B)**. If there is no relieving system, the pressure will gradually decrease during the operation of the plant.*

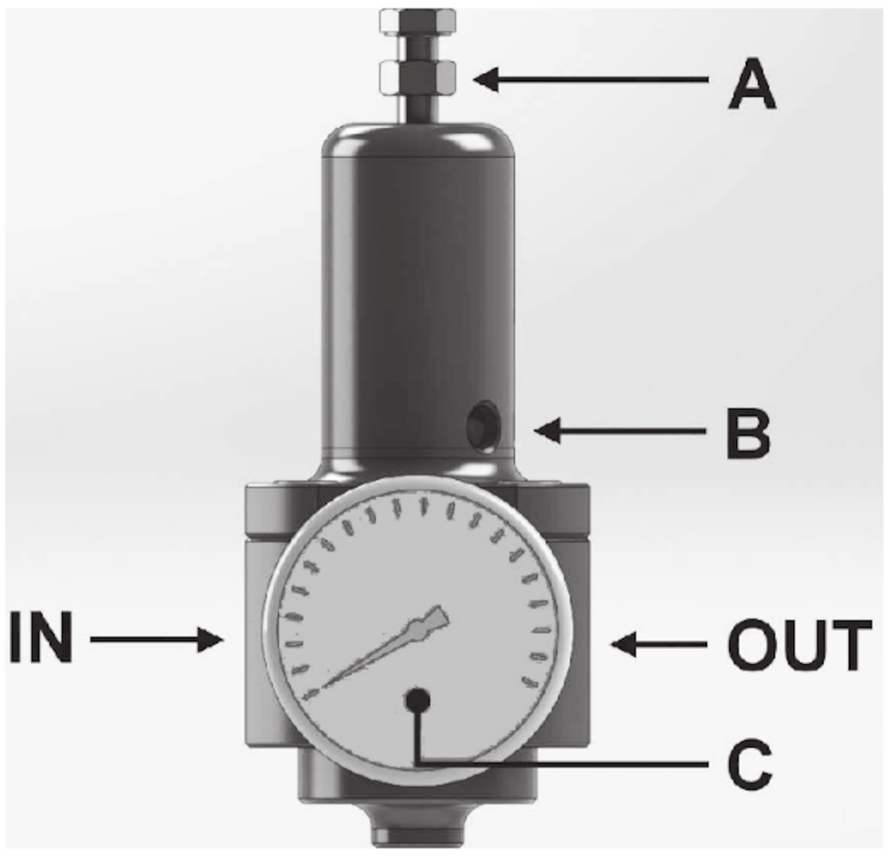
Filter-regulator

The operation is identical to the regulator with the addition of the following remarks:
*Periodically deplete the condensate with an appropriate drain valve **(D)**. It is recommended to perform the procedure in absence of pressure. In case of dangerous gases or liquids it is forbidden to perform such procedure during operation.*

Filter

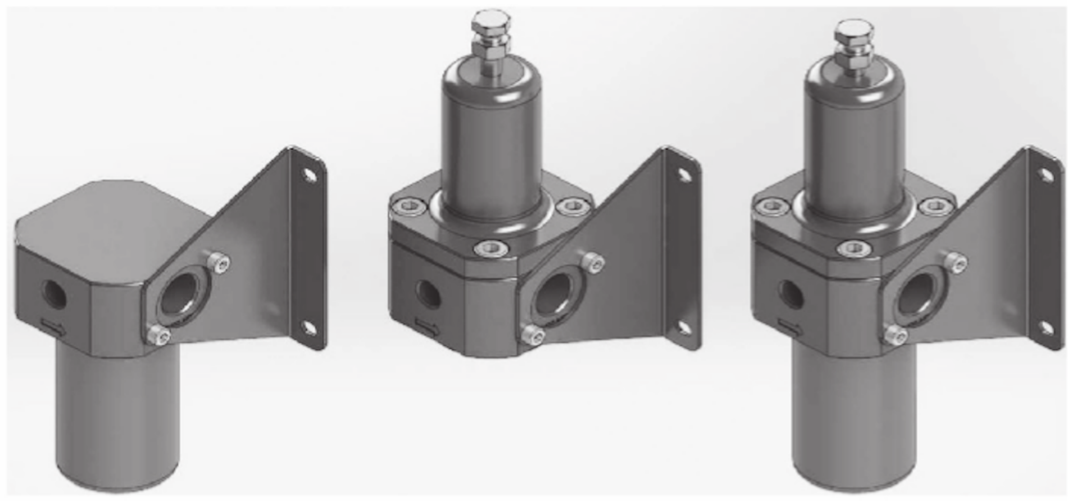
*Check that there are no leakages or passages of pressure between the connections. Periodically deplete the condensate by an appropriate drain valve **(D)**. It is recommended to perform the procedure in absence of pressure. In case of dangerous gases or liquids it is forbidden to perform such procedure during the operation.*

For a longer duration of the product, carefully and gently handle the supply valves!



FIXING TO WALL

The product can be fixed to a panel with the bracket kit (bracket + screws) which is available optionally. The panel is not available in the ewo product range.



TECHNICAL DATA

Connection threads:	Size I: G 1/4, G 3/8; size II: G 1/2; size III: G 3/4, G1			
Process fluids*:	*- NBR sealings:*	*N_2-Ar-CO_2-Air–GPL-NG*		
	- PDM sealings:	*N_2-Ar-O_2-H_2*		
	- Silicone sealings:	*N_2-Ar-Air*		
Max. operating pressure (p_1):	*60 bar*			
Operating Temperatures*:	*- NBR sealings:*	*-20°C / +80°C*		
	- EPDM sealings:	*-45°C / +80°C*		
	- Silicone sealings:	*-60°C / +200°C*		
Manometer connection thread:	*G ¼ female*			
Pressure ranges (p_2):	*- Filter pressure regulator:*	*0,2-3 / 0,5-8 / 1,0-15 bar*		
	- Pressure regulator:	*0,1-1,5 / 0,2-3 / 0,5-8 / 1,0-15 bar*		
Flow rates**:		**Size I (G 1/4 - G 3/8)**	**Size II (G 1/2)**	**Size III (G 3/4 - G1)**
	- Filter:	2500	3600	7200
	- Filter pressure regulator:	4000	5000	8400
	- Pressure regulator:	5000	6200	10500
Weight:	- Filter:	1,6	2,3	3,3
	- Filter pressure regulator:	1,6	2,3	4,2
	- Pressure regulator:	1,6	2,3	3,5

Subject to technical changes

** the fluid and the temperature depend on the type of gasket applied, other types of gaskets are available upon request, for such models check the technical data which are described in the relevant technical sheet of the product.*
Only use the device with the fluid/liquid for which it was purchased!
***measured at 10 bar pre-pressure (p1), 6.3 bar outlet pressure, P=1 bar*

Each regulator, filter-regulator and filter is provided with flow rate curves or load loss curves. Request such curves from your deliverer if required.

MAINTENANCE

The duration and good working of the product depend on the observance of these instructions. Any possible malfunctioning problem, imputable to the product, must be solved with an extraordinary maintenance operation. Any extraordinary maintenance operation must be performed by your deliverer. Other personnel is only allowed to perform extraordinary maintenance operations after appropriate training courses and with the authorization by your deliverer.

DIAGNOSTICS AND TROUBLESHOOTING

Problem	***Solution***
The product presents gas leakages	*Check the various connections.*
The product does not keep the outlet pressure (PR-FR)	*1. The upstream pressure is too low.* *2. The flow rate required by the plant is too high.* *3. There are some leakages from the connections or the relieving system.*
Increase of the outlet pressure (PR-FR)	*Leakage from the shutter.* *Check the integrity of the shutter or the presence of dirt.* *Impurities or small granules may damage the shutter sealing.*
High load losses between inlet and outlet	*1. The flow rate required by the plant is too high.* *2. Dirty and clogged filter (remove and clean).* *3. The shutter group is dirty, damaged or seized. Insufficient opening of the shutter group.*
Decrease of the flow rate performances	*See previous point.*
Leakage of fluid from the bonnet vent hole	*1. Relieving system in operation, check the plant pressures and the ones which were set in the regulator.* *2. Break or leakage of the membrane.*

For further problems not indicated in the previous table please contact the supplier without handling the product!

REPAIR

Repairs may only be performed by the manufacturer or by authorized repair shops, using original parts.

DIRECTIVES AND DECLARATIONS

The units have been developed in accordance to the following directives:
- Dir. 97/23/EC PED Art. 3.3
- Dir. 94/9/EC ATEX Area 1, Ex II 2GD c Tx

The product is pressure-tested and is subject to a function test according to the quality system ISO 9001 and Dir. 93/27/EC PED. The product is compatible to be used with gases indicated in section "Technical data". The product falls within the scope of Art. 3 §3 in compliance with the Dir. 97/23/EC PED. Therefore it does not require any Declaration of EC Conformity.

WARRANTY

Problems that can be proven to be factory defects will be repaired free of charge. Provided you report the problem immediately after detecting it and within the warranty period. Damages caused by improper use or due to non-compliance with the operating manual are excluded from this warranty.
The warranty period is 12 months. Unless otherwise specified, the warranty period for accessories is 6 months. Warranty claims do not cause an extension of the warranty period. If necessary repairs, adjustments etc. are carried out in addition to the warranty services, then the warranty services are free of charge but the other services are charged including transport and packaging. Additional or other claims, especially for damages that do not concern the device, are excluded if liability is not prescribed by law.

EXCLUSION OF WARRANTY

Warranty does not apply in the following cases:

- *The operating manual was not followed during the initial operation and maintenance.*
- *The device was used in an impermissible and improper manner.*
- *The device was used in spite of obvious faults.*
- *Other spare or replacement parts were used instead of original parts.*
- *The permissible operating parameters were not followed.*
- *Unauthorised modifications were made to the device or parts of the device, which should not be opened, were dismantled (except for maintenance purpose).*
- *Serial numbers were changed, damaged or removed from the device.*