

Original installation instructions with operating instructions and technical documentation.

In accordance with:

- Pressure Equipment Directive 2014/68/EC
- Machinery Directive 2006/42/EC
- Standard EN 161
- Gas Appliances Regulation 2016/426/EC (GAR)

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1. Introduction

This manual is intended to support the user during the installation, operation and maintenance of the butterfly valves models Desponia® and Desponia® plus in accordance with the EN 161.



The “warning” and “caution” notes must be strictly followed. Not following the advice might result in damages of various severity levels for the operators and the place of installation of the valves, and the warranty may be invalidated.

The butterfly valves according EN 161 are always supplied from the factory with a pneumatic actuator and accessories to assure the closing of the valve when de-energized and other technical features according the EN 161.

The valves are class A and Group 2 according the EN 161.

2. Intended use

Butterfly valves models Desponia® and Desponia® plus in accordance with the EN 161 are intended to shut-off or regulate fluids of various natures, including those mentioned in the EN 161 standard and the Gas Appliances Regulation 2016/426/EC (GAR). After installation the valves in the piping system, please ensure the temperature and pressure limits of the valve are always kept.

The technical datasheets of the Desponia® and Desponia® plus valves, show the different limits in temperature and pressure of the different materials.

In the valve labels (example provided on page 5), „PS“ and „TS“, show the limits of pressure and temperature according to the EN 161 standard and complement the data provided by the technical datasheets. The information is based on neutral liquids only, so please contact InterApp if you need additional information for other liquids.



If the valve is operated outside its limits of pressure and temperature, personal damage and to the equipment might occur.

Please avoid cavitation and water hammer, which can cause a failure of the valve, with personal and equipment damages.

Butterfly valves models Desponia® and Desponia® plus by themselves, are no equipment according to article 1 of the directive 2014/34/EU (ATEX), but they can be used in explosive areas. In potentially explosive areas, the user is obliged to identify dangerous ignition sources, perform a risk analysis of the entire system and initiate the necessary preventive measures. Therefore, the use of conductive versions might be necessary. Electrical and mechanical actuators as well as accessories are subject to a separate conformity analysis according to ATEX. The user is responsible to consider all the safety instructions for applications in explosion hazardous areas.

Additional safety instructions for the proper selection of the InterApp valves materials and their use in explosion hazardous zones are listed in the document "interapp-butterfly-valves-for-use-in-potentially-explosive-atmospheres.pdf", which can be downloaded from www.interapp.net.

For the actuators and accessories safety instructions according ATEX directive, please refer to the specific documentation, which can be obtained from InterApp.

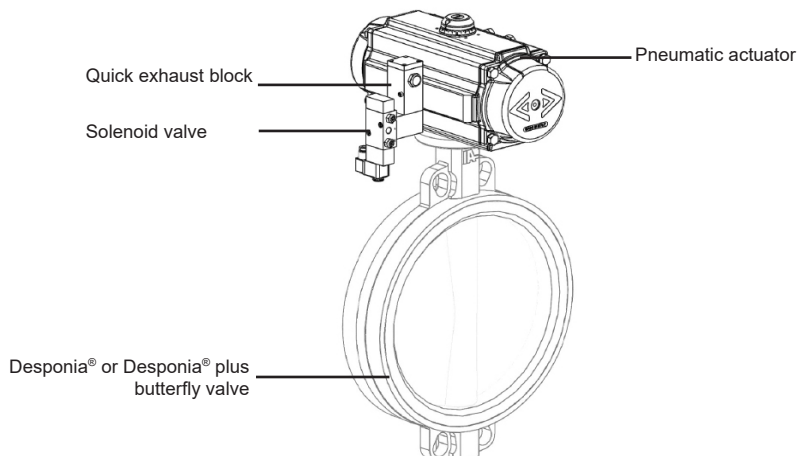
Note: The valve fitted with actuator and accessories may not be used as an automatic shut-off valve for domestic cooking appliances burning gas in accordance with standard EN 30.

3. Configuration

Butterfly valves according EN 161 are always supplied from the factory with a pneumatic actuator and accessories to assure the compliance with the EN 161.

Please refer to the technical datasheet „EN161 butterfly valves“ that includes the possible combinations of actuators and accessories for the valves according the EN161.

The different parts that could be included are:



Butterfly valves

Models Desponia and Desponia plus. D1/D3/D4-DP1/DP3. Sizes DN50 to DN250. Disc: 4C0 and Liner: NG.

Single acting pneumatic actuators

Model: PTB - XXX -YY -FA

Where XXX denotes the size of the actuator and YY the flange connection to the butterfly valve. The FA denotes the special execution of the actuators, which is Fast Acting.

The pneumatic actuators have their own manuals, which will be attached together with this manual, when ordering the valves.

Solenoid valve

Models VSNC- XXX

Where XX denotes the different voltage and current possibilities, according to the different coils options.

According the EN 161 cl 6.6 the input signal has to be 0-20 mA to ensure a safe shutdown, 4 mA trip signal is not allowed. The solenoid valves have their own manuals, which will be attached together with this manual, when ordering the valves.

Models 331N03 - XXX

Where XX denotes the different voltage and current possibilities. According the EN 161 cl 6.6 the input signal has to be 0-20 mA to ensure a safe shutdown, 4 mA trip signal is not allowed.

The solenoid valves have their own manuals, which will be attached together with this manual, when ordering the valves.

Quick exhaust block

Model: SENR-207-01-Ex

Other optional equipment

Limits switches can be provided together with the valves, and they do not affect the behavior of the assembled unit or its capacity to close in the required time when the actuator is de-energized.

Due to the temperature range of the valve, and the required cycling operations proximity switches are recommended, and the materials have to be selected to be compatible with the ambient operations.

Rated flow:

DN	opening angle of the valve							
	20°	30°	40°	50°	60°	70°	80°	90°
50	2	7	15	28	45	68	88	100
65	3	11	24	48	85	138	180	210
80	8	22	50	83	134	230	312	360
100	15	35	70	130	225	410	585	650
125	28	70	135	230	360	600	920	1050
150	33	95	205	320	580	980	1410	1620
200	60	175	355	580	910	1600	2450	2800
250	132	340	590	940	1480	2550	3950	4480

Ambient temperature: as shown on the label -20°C up to +60°C.

Opening and closing time: Less than one second for all sizes between DN 50 and DN 250

4. Safety information

General safety information

Butterfly valves are intended to be installed in a piping system, so the same regulations and safety measures that apply to the complete system, must be applied to the valve. In this manual, additional safety instructions related to the butterfly valve are contained.

Safety instructions to the operators

InterApp does not assume any responsibility, so therefore the operator must ensure when operating the valve that:

- The valve is only used properly as intended.
- The piping system has been laid professionally and is checked regularly.
- The valve is professionally connected to the piping.

- In the piping system, the common flow speeds in permanent operation are not exceeded.
- If abnormal operational conditions such as vibrations, cavitation, erosion, solids in the medium, are present, they have been discussed with InterApp.
- At operating temperatures that result in hot or cold valve parts (incl. add-ons) and therefore might cause dangers, the installation must take into account protective measures against accidental touching.
- Only expert personnel operate and service the valve.



For the installation of the valve in explosive atmospheres, please refer to the additional safety instructions for the proper selection the InterApp valves materials. Their use in explosion hazardous zones are listed in the document „interapp-butterfly-valves-for-use-in-potentially-explosive-atmospheres.pdf“, which can be downloaded from www.interapp.net. For the actuators and accessories safety instructions according ATEX directive, please refer to the specific documentation, which can be obtained from InterApp.

Particular hazards



Before the valve is removed from the piping system, ensure that the pressure in the system is completely relieved from both sides of the valve. Do not attempt to unscrew the valve of the pipes with pressure, failure to follow this recommendation can cause damages to the personnel and the equipment.

Please notice that some residues could remain in the inner of the valve and that they might be dangerous for people or the environment. Therefore, the butterfly valve has to be handled with the corresponding caution.

For valve to be installed at the end of line, please always follow the instructions on chapter 6. Never attempt to unscrew or operate the valve without relieving the pressure.

Do not remove the actuator of the valve, while the valve is still under pressure.

Lifetime for safe function

Verify the external tightness of the valve at suitable intervals, and if leakage is detected please proceed to uninstall the valve and replace the liner.

The liners are suitable for the following frequency of operations without replacement:

Nominal Size DN	Number of cycles without service operations
50 ≤ DN ≤ 80	100.000
80 < DN ≤ 150	50.000
150 < DN ≤ 250	25.000

Marking and labelling

InterApp valves carry a label with the following information:

Label	Details	Explanation
	Manufacturer	InterApp
	Conformity ID and number	CE marking and notified body as per EU directives
	Valve class (VC)	Class A
	Ambient temperature (AT)	-20°C – 60 °C (according EN 161 certification)
	Nominal size	DN and number (in mm)
	Maximum pressure	PS – maximum allowable pressure in bar at room temperature
	Maximum Temperature	TS –Allowable temperature in Celsius (for clean neutral fluids)
	Valve type and codification	D1XXX / D3XXX / Sequence of alphanumeric characters that identify the valve. See the valve datasheet for an explanation of the same
	Body Material	BOD → Material used for the body
	Shaft Material	SH → Material used for the shaft
	Disc material	DIS → Material used for the disc
	Reference number	A set of numbers that identify the production order, therefore establishing the date of manufacture

5. Transport and Storage

Special care should be taken when handling, storing and transporting the butterfly valves Desponia® and Desponia® plus. Local regulations as well as the necessary safety measure must always be observed.

The butterfly valves must be kept in the original packaging up to the installation.

InterApp butterfly valves Desponia® and Desponia® plus should always be stored free from dust and humidity.

6. Installation

Introduction



To guarantee the benefits of the InterApp butterfly valves Desponia® and Desponia® plus, proper procedures and compliance with the installation instruction are essential. The installation has to be carried out according to the state of the art and only by qualified personnel. InterApp reserves the right to decline responsibility for damage or premature failure if the recommendations contained in this instruction are not being followed. Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. Dimension, material and application range of the butterfly valves Desponia® and Desponia® plus are according to the technical documentation.

The weight of the butterfly valves Desponia® and Desponia® plus is shown on the technical datasheets.

Due to its weight, special care should be taken during the installation of the valves, and the use of lifting devices, ropes, slings, etc. should always be contemplated.

For these operations the end user and personnel should wear the necessary protection equipment as per the local regulations and follow the local safety regulations.

Precautions to be taken prior to installation



Please make sure that the valve intended for installation is suitable for the service conditions prevailing. The responsibility about the used fluids (corrosion resistance, pressure, temperature, etc.) lies by the user of the plant.

Call your supplier or InterApp if you need any assistance.

Please consider that turbulences (i.e. created by piping bow) generate hydro dynamic forces increasing the operating torque of the valve. We recommend installing the valve minimum 5 x DN after pipe fittings.

Check before installation:

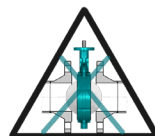
Positioning



For the installation of valves in horizontal pipelines, we recommend installing the valves with their shaft in a horizontal position.

Please ensure that the lower edge of the disc opens with the direction of the flow. This prevents deposition of slurries and contamination in the shaft sealing area. (Fig. 2)

Gaskets



Never use gaskets nor grease. (Fig. 3)

Installation

Flange facings must be smooth and clean. Rust, welding scores, rests of paint, dirt, etc. must be removed in order to prevent damage of the valve gasket. The flange shape and dimension has to assure metal to metal contact between the valve body and the flange surface.

Desponia® and Desponia® plus butterfly valves, in wafer style design, are suitable for installation between DIN PN10/16 or ANSI150 flanges. For the installation of valve between flanges of other standards consult InterApp or its authorized distributors. Special precautions need to be taken into account with raised faces flanges for lower pressure classes (e.g PN 6). The valve should not be mounted in pipes, where the actual bore diameter is less than the nominal bore dimension of the valve. In that case, spacer rings should be fitted between flanges and valve to prevent damage to the disc on opening. (Fig.4)

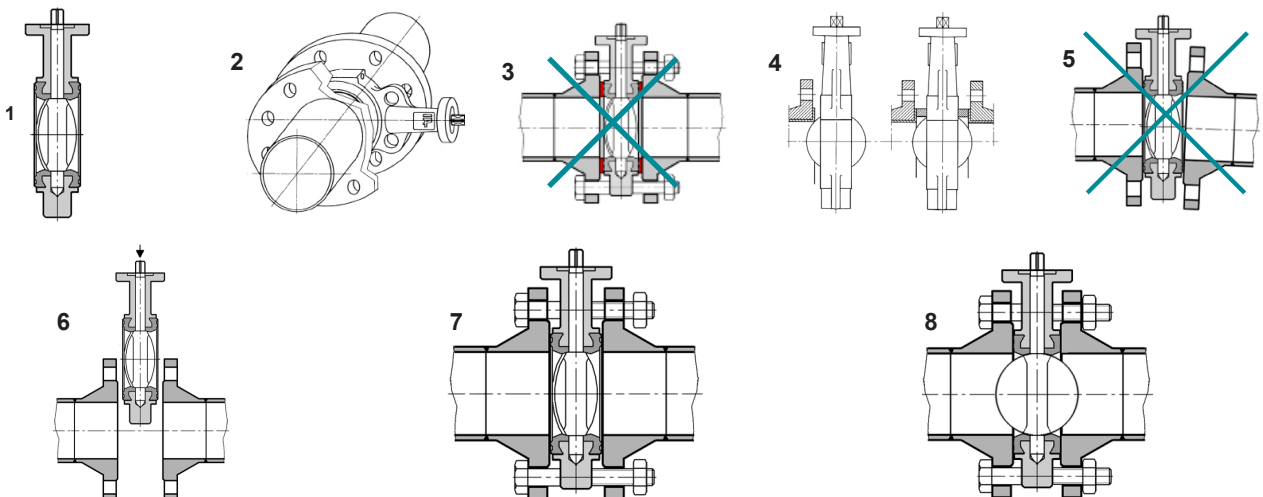
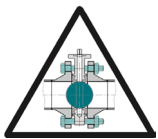
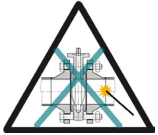
The valve should never be installed between flanges which are not parallel to each other. Make sure that pipes and valves are installed concentric. The disc of a misaligned valve may be damaged. (Fig.5). Furthermore, it is inadmissible to carry out any welding on the piping while the valve is between the flanges. This would destroy the liner of the valve.

The flanges have to be spread in order to ease the installation of the valve and the disc must be partially open (Fig. 6).

Misspread flanges may damage or roll the liner outside the body flanges.

Set all stay-bolts by keeping the disc slightly open and do not tighten the nuts (Fig. 7).

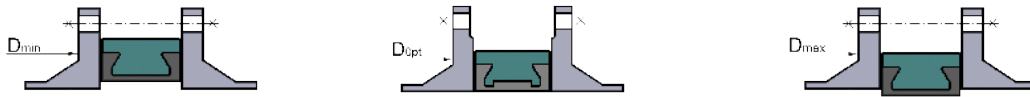
By tightening the stay-bolts when the disc is closed, the liner will be compressed in a wrong position. An excessive closing torque and leakage will result. Open completely the disc (Fig. 8). Ensure that the piping is aligned. Tighten diagonally opposite the nuts.



Flange inside diameter



The InterApp butterfly valve has to be mounted between flanges without gasket. It has bidirectional tightness. Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. It is centred by stay-bolts or by screws. The diameter of the flange should be in accordance with the stated values D_{opt} , D_{min} , D_{max} .



D_{min} Minimum diameter of the flange enabling to move the disc (in case of a perfectly centred valve).

D_{opt} Diameter of the flange for optimal mounting.

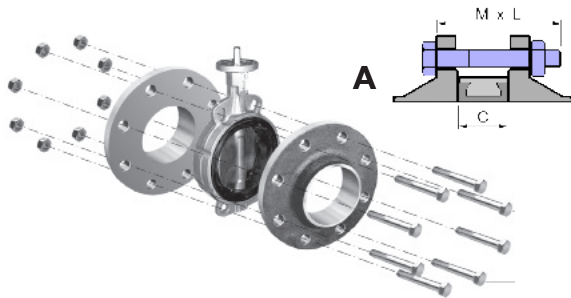
D_{max} Maximum diameter of the flange.

DN	50	65	80	100	125	150	200	250
D_{min}	35	53	74	93	119	147	198	247
D_{opt}	53	68	83	103	128	153	202	253
D_{max}	68	87	104	126	154	174	226	277

Bolting

Wafer + U-section body DN 50 - 250

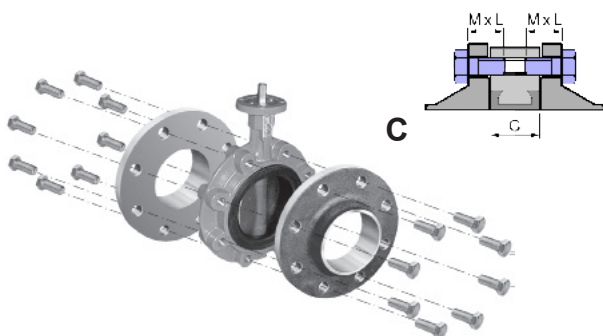
A Bolt with nut



DN	C	n	PN 6		PN 10		PN 16		ANSI 150	
			A	n	A	n	A	n	A	n
50	43	4	M12x100	4	M16x110	4	M16x110	4	UNC 5/8"-11 x 4"	
65	46	4	M12x100	4	M16x110	4(8)	M16x110	4	UNC 5/8"-11 x 4 1/2"	
80	46	4	M16x110	8	M16x120	8	M16x120	4	UNC 5/8"-11 x 4 1/2"	
100	52	4	M16x120	8	M16x120	8	M16x120	8	UNC 5/8"-11 x 5"	
125	56	8	M16x120	8	M16x130	8	M16x130	8	UNC 3/4"-10 x 5"	
150	56	8	M16x120	8	M20x140	8	M20x140	8	UNC 3/4"-10 x 5 1/4"	
200	60	8	M16x130	8	M20x150	12	M20x150	8	UNC 3/4"-10 x 5 1/2"	
250	68	12	M16x140	12	M20x160	12	M24x170	12	UNC 7/8"-9 x 6 1/4"	

LUG type DN 50 - 250

C Bolt

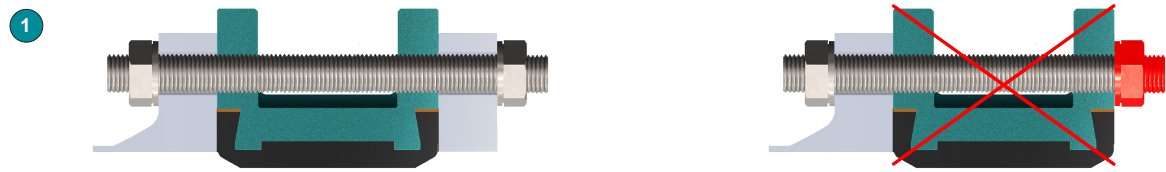


DN	C	n	PN 10		PN 16		ANSI 150	
			A	n	A	n	A	n
50	43	8	M16x30	8	M16x30	8	UNC 5/8"-11 x 1 1/2"	
65	46	8	M16x40	8	M16x40	8	UNC 5/8"-11 x 1 1/2"	
80	46	16	M16x40	16	M16x40	8	UNC 5/8"-11 x 1 3/4"	
100	52	16	M16x40	16	M16x40	16	UNC 5/8"-11 x 2"	
125	56	16	M16x50	16	M16x50	16	UNC 3/4"-10 x 2"	
150	56	16	M20x50	16	M20x50	16	UNC 3/4"-10 x 2"	
200	60	16	M20x50	24	M20x50	16	UNC 3/4"-10 x 2"	
250	68	24	M20x60	24	M24x60	24	UNC 7/8"-9 x 2 1/2"	

n = number of bolts for one valve

Mounting the valve at the end of a line

When installing of the valve at the end of a line please note:	
Fluid	Only neutral liquids, temperature 10 - 80°C
Body material	Ductile iron GGG 40 / EN-GJS-400-15, carbon steel 1.0619 or stainless steel 1.4408
Flange bolting	Tightening torque values according to the supplier of the bolting you are using



Body type	Picture	Mounting end of line	DN	Max. working pressure
Wafer D1	--	not allowed	--	--
Lug D3	--	possible without counter flange	DN 25 - 250	valve PN 16 = 10 bar, valve PN 10 = 6 bar
		with flanges on both sides	DN 25 - 250	nominal pressure of the valve
Flanged D4	1	only with counter flange using passing through bolts	DN 150 - 250	nominal pressure of the valve



Cleansing of the piping:

When cleansing the piping system, it is very important to assure that the cleaning products and devices are harmless for the valve. Not convenient products and devices might destroy the valve.

Removal:

When removing the valve from the pipe please take care not to damage the disc and the liner of the valve.



Disposal:

Please notice that some residues could remain in the inner of the valve and that they might be dangerous for people or the environment. Therefore, the butterfly valve has to be handled with the corresponding caution. After its use, the butterfly valve has to be disposed of according to the state of the art and under consideration of the environment.

7. Functional Tests

Pressure tests on the valves has already been done by InterApp.

When putting the piping system in operation for the first time, please follow the local regulations and the necessary safety measures of the whole system.

In order to remove potential debris located in the piping system, prior to the normal operation of the same, it is recommended to flush the piping system.

Prior starting to use the installation, we recommend making a function test. Therefore, the valve must be opened and closed at least once in order to check that the disc doesn't touch the flanges and that the valve is tight through the passage and toward outside.

To make the pressure test of the piping system with the valves installed, please observe the following:

- Valve Open: The pressure test must not exceed the value of $x \ 1,5$ PS (Ps is shown on the label)
- Valve Closed: The pressure test must not exceed the value of $x \ 1,1$ PS (Ps is shown on the label)

8. Operation and Maintenance

Normal operation



Please notice that fluid residues inside the butterfly could be dangerous for humans and the environment. The butterfly valve must be handled accordingly and be cleaned carefully prior to the maintenance.

Maintenance

Introduction



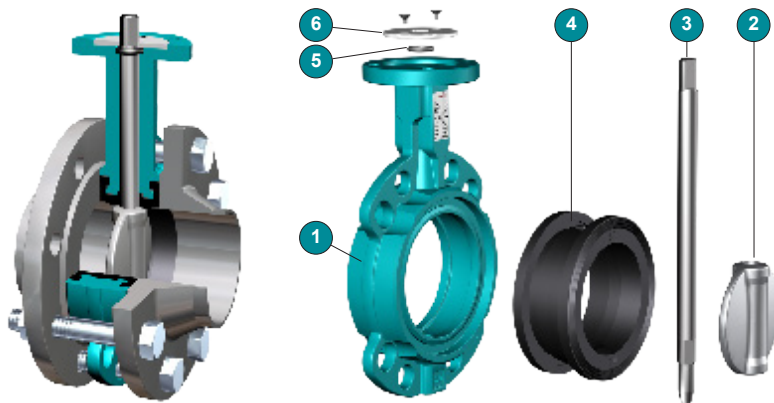
Maintenance is made at the own risk of the user. Maintenance on a Desponia® must be executed by trained staff only. Only original spare parts are to be used.

The frequency of replacement of the wear parts, is highly dependent on the fluid, cycles, operating conditions, etc.

The user should include in its maintenance program a chapter for inspecting the valves to check the wear parts and change them if necessary.

In the next paragraph the spare parts are identified. Please contact InterApp to obtain the specific codes and additional information for the spare parts.

1. Parts of a DESPONIA®, DESPONIA® plus



Parts list

1	Body
2	Disc
3	Shaft
4	Liner*
5	O-ring*
6	Retaining washer + 2x Screws*

*Spare parts

2. Valve removal from the line:

Before removing the valve from the pipe consider that dangerous fluids might leak. Corresponding measures of precaution must be applied.

When removing the valve from the pipe please take care not to damage the disc and the liner of the valve.

- 2.1 Do not close the valve completely.
- 2.2 Loosen all bolts and remove the valve.
- 2.3 Use flange spreaders and remove the valve

3. Disassembly:

- 3.1 Make sure there is no overpressure trapped inside of the valve prior disassembly.
- 3.2 Open the valve completely.
- 3.3 Remove the actuator.
- 3.4 Unlock screws and remove the retaining washer
- 3.5 Remove the shaft (either by using an extractor or by tightening the square of the shaft in a vise).
- 3.6 Remove the disc.
- 3.7 Loosen the liner at a point, squeeze until it is heart-shaped and then remove the liner.

4. Reassembly:

- 4.1 Clean all parts. Use, if possible, a silicone spray or like ease the handling.
- 4.2 Ensure that the bigger hole of the liner is on the top side of the valve (the shaft diameter on the upper side is bigger than this on the lower side).
- 4.3 Insert the heart-shaped liner. Set the upper part facing the shaft hole (use the shaft to centre the liner), let the liner expand and adapt with the body.
- 4.4 Replace the disc. Ensure that the square is at the lower part (opposite the top of the valve). Take care not to damage the liner.
- 4.5 Introduce the shaft through the liner and the disc, by rotating the disc in an alternated movement to ease the operation.
- 4.6 Properly align the axis of the shaft square with the axis of the disc. Completely insert the shaft, evacuating air from the lower shaft housing (slightly lift the liner using a screwdriver).
- 4.7 Remount the actuator.



Before using the valve in a piping system, if it is required to make a tightness test (e.g. EN 12266-1) or similar as well as a function test. Afterwards, put the disc in a slightly open position, so that the disc edge doesn't surpass the flange surface. This position must be kept until the valve is being installed.

9. Troubleshooting

Fault	Action
Leak at the piping flange connection of the valve	1. Tighten the flange bolts. Please follow the recommendations of the bolt's supplier being used.
	2. If the medium leaks even after tightening the bolts: remove the valve from the pipe and observe the instructions mentioned in paragraph 7 of this manual.
	3. Ensure that the pipe flanges are aligned and the flange surface is smooth and clean.
	4. If still the leaking persists, check for damages in the liner. Order replacement parts from InterApp.
Leaking from the shaft of the valve	1. Repair needed. Repair shaft sealing system. Remove the valve from the pipe and observe the instructions mentioned in paragraph 7 of this manual
	2. Order replacement parts from InterApp and contact us for further instructions.
The valve does not open or close	1. If the valve carries an actuator, please check if the supply pressure is high enough and the corresponding documentation of the actuator.
	2. If the valve is manually operated, please check for the following possibilities: <ul style="list-style-type: none"> • If foreign media is present → Please flush the piping. • Operating pressure too high → Operate the valve with its corresponding allowable pressure.
	3. If still the problem persists, please check for damages on the valve. Remove the valve from the pipe and observe the instructions mentioned in paragraph 7 of this manual.
	4. Order replacement parts from InterApp and contact us for further instructions.
Leakage between disc and liner	1. Please check that the valves have been correctly installed. Follow the instructions on paragraph 6.
	2. If the valve is correctly installed, and the leakage still occurs, disc/liner might be damaged. Contact InterApp for spare parts and further instructions.
Other malfunctions	1. If the valve is damaged, please contact InterApp for further instructions and spare parts ordering.

10. Further Information

Technical datasheets, drawings, other documents and further advice can be obtained from:

InterApp Valcom S.A.
 Calle Almenara, s/n.
 Carretera Nacional A-1, KM 31.1 (Salida 30),
 (Polígono Industrial Sur)
 28750 San Agustín del Guadalix, Madrid, Spain

☎ +34 916 584 134 ✉ info@es.interapp.net

Additional further information can be obtained from: www.interapp.net

1.1.2 a) b) c) d)	See operating manuals and related documentation. The protective measures for personnel are the same as the ones where the product will be installed
1.1.2 e)	No specific tools are needed
1.1.3	The materials in contact with the media are identified in the product datasheet, the order confirmation and in the valve label. The user must make a risk analysis.
1.1.5	Relevant instructions and information are given in the operating manuals and related documentation
1.2	Responsibility of the user following the instructions of the actuator.
1.3.1	See operating manual and handling instructions.
1.3.2	For the parts under pressure, through the declaration of conformity according 2014/68/EC. For the functional parts, ensured through the intended use.
1.3.3	Fulfilled through design and assembling process
1.3.4	Fulfilled
1.3.7, 1.3.8, 1.3.9 and 1.4	Ensured through the intended use. Maintenance and servicing operations are never allowed with the valve under pressure and/or connected to the control system.
1.5.1, 1.5.2, 1.5.3 and 1.5.4	Responsibility of the user. See operating manuals and related documentation of the actuators.
1.5.5	Responsibility of the user when the products are installed in its destination. See warnings and intended use of the operating manual.
1.5.7	In potentially explosive areas, the user is obliged to identify dangerous ignition sources, perform a risk analysis of the entire system and initiate the necessary preventive measures. If Ex-protection is required is must be stated in the order. See also document "interapp-butterfly-valves-for-use-in-potentially-explosive-atmospheres-XXX.pdf", which can be downloaded from www.interapp.net
1.5.8	It is the responsibility of the user to verify the hydrodynamic conditions of the media line and establish the noise limits
1.5.13	Valves are installed in piping systems, which can carry dangerous fluids. The user is responsible to ensure a correct installation of the valves for which information is given in the operation and installation manual and ensure the intended use.
1.6.1 and 1.6.5	See operating manual.
1.7.3	According to the manuals for the valves and the actuators.
1.7.4	Fulfilled through the manuals.

InterApp Valcom S.A. declares that the following basic requirements according to EN ISO 12100 , are applied and fulfilled	
Scope	<p>The risk analysis has been done considering the products a "partly completed machinery". The basis for the analysis of the butterfly valves is the product standard EN 593 (Industrial valves - Metallic butterfly valves). For the actuators, please refer to their own documentation. For the risk analysis, our long experience supplying the above-mentioned valves + actuators, has been taken into account, with the result of the different instructions and warnings contained in the Manuals.</p> <p><i>It is mandatory that for fulfilling the requirements of the clauses 4 to 6 of the ISO 12100, the user must make a risk analysis of the actuator+valve installed and taking into account all details of the final application. This type of analysis cannot be done by InterApp Valcom S.A.</i></p>
Machine limits	The limits of the "partly completed machinery" have been defined according the "intended use"
Hazard Identification	The hazards mentioned in the standard ISO 12100, have been identified for the complete risk assessment. Hazard related to dismantling, decommissioning and scrapping are not under the responsibility of InterApp Valcom S.A.
Risk estimation	A risk estimation has been carried out, with the "intended use" for the products as a prerequisite.
Risk evaluation	A risk evaluation has been carried out.
Risk reduction	By means of; Inherent safe design measures and Information for use contained in the manual
Documentation of risk assessment and risk reduction	InterApp Valcom S.A. has the documentation that demonstrates that the ISO 12100 procedure has been followed and the consequent results.

Installation



Introduction:

To guarantee the benefits of the InterApp actuator **IA motion**, proper procedures and compliance with the installation instruction are essential. The installation has to be carried out according to the state of the art and only by qualified personnel. InterApp reserves the right to decline responsibility for damage or premature failure if the recommendations contained in this instruction are not being followed. Dimension, material and application range of the **IA motion** actuator are according to the technical documentation.

Working conditions and technical data:

- Operating media: Dry or lubricated air or inert gases, provided that they are compatible with the actuator internal parts and lubricant. The operating media must have a dew point equal to -20°C (-4°F) or at least 10°C below the ambient temperature. The maximum particle size contained into the operating media must not exceed $30\ \mu\text{m}$.
- Supply pressure: The maximum supply pressure is 8 bar (116 Psi), only for IA800 it is 7 bar (101,5 Psi). For double acting and spring return actuators the working pressure is from 2.5 bar (36 Psi) to 8 bar (116 Psi).
- Operating temperature: Standard IA motion from -40°C (-40°F) to $+80^{\circ}\text{C}$ ($+176^{\circ}\text{F}$) For low and high temperature service please contact InterApp. Working at high or low temperature can affect the life and the output torque of the actuator.
- Operating time (see technical data sheet): Caution: the operating time depends on several factors such as supply pressure, supply system capacity (pipe diameter, flow capacity of pneumatic accessories), valve type, valve torque and figures, applied safety factor, cycle frequency, temperature, etc.
- Rotation and stroke adjustment (see technical data sheet): For standard actuators (90° rotation). Stroke adjustment at 0° (closed pistons): $+15^{\circ}\text{max}/ - 5^{\circ}$. Stroke adjustment at 90° (open pistons): $+5^{\circ}/-15^{\circ}\text{max}$. For actuator IA045 the stroke adjustment at 90° (open pistons) is available only on request.
- Lubrication: The actuators IA motion are factory lubricated for the life of the actuator in normal working conditions. The standard lubricant type GSTD is suitable for use from -40°C (-40°F) to $+80^{\circ}\text{C}$ ($+176^{\circ}\text{F}$). For extreme low temperature (LLT) and high temperature (HT) service, special grease is required: please contact InterApp.
- Construction: rack and pinion actuator design suitable for both indoor or outdoor installations.
- Protection and corrosion resistance: All the actuators are supplied with corrosion protection for normal environments. For corrosion resistance of the different types of protection see technical data sheet. Before installing the actuator in aggressive environment, ensure that the selected protection level is suitable.
- Actuator designation and marking (see technical data sheets): The actuator type, size, operating pressure, output torque, direction of rotation, spring action, operating temperature and type of connections/interfaces are determined by designation.
- All IA motion actuators are supplied with an identification label showing the serial number and all necessary information on use, service, operation and product designation. Where applicable, the label indicates the classification according to ATEX Directive ATEX 2014/34/EC.

Check before mounting:

- Please make sure that the actuator is suitable for the service conditions prevailing (air supply pressure, temperature, torque). Before mounting the **IA motion** on a valve, please check that the mounting flange and the shaft dimension of the actuator are compatible with this of the valve. Is the shaft of the valve smaller than this of the actuators, please use an adaptor. Do both flanges not fit to each other, than you have to use a bracket and a coupling piece. Actuators and valves ordered as a unit at InterApp include already the necessary adapting parts.
- Do not operate the actuator using inflammable, oxidizing, corrosive, explosive or unstable gases or liquids (use only not dangerous fluids - group 2 according to 97/26/EC directive). Moreover, for actuators installed in potentially explosive zones, make sure that the internal parts of the actuator do not come into contact with the external atmosphere.
- Referring to the Machinery Directive 2006/46/EC, the actuators can be classified as "PARTLY COMPLETED MACHINERY" (see the DECLARATION OF INCORPORATION). Therefore the actuator can not put into service until the machinery and/or the system, where the actuator is incorporated, will be declared in compliance with the requirements of the Directive 2006/42/EC.
- **IA motion** actuators are designed, produced and classified according to the ATEX 2014/34/EC (see actuator label and safety instructions). The use of the actuators in potential explosive atmosphere zones has to comply with the ATEX classification indicated on the actuator label and according to the ATEX safety instructions.
- The use, the installation and the maintenance of the **IA motion** actuators must be made by adequately trained personnel. For the use, installation and maintenance of **IA motion** actuators it is recommended to comply to the safety notice and to use proper equipment to protect health and prevent accidents.
- It is important that the actuator is used only within the working limits indicated in the technical specifications.
- Do not operate the actuator over temperature limits: this could damage internal and external components (disassembly of spring return actuator may become dangerous).
- Do not operate the actuator over pressure limits: this could damage internal parts as well as cause damage to the housing and end-caps.
- Do not use the actuator in corrosive environments with incorrect protection: this could damage the internal and external parts.
- Do not disassemble individual spring cartridges, this may result in personal injury. If maintenance to springs is necessary, send them to InterApp.
- Close and disconnect all air supply lines and make sure that air connections are vented during maintenance and installation on valve.
 - Do not disassemble the actuator or remove end caps while the actuator is pressurized.
 - The **IA motion** actuators are designed to be used only on valves.
 - Before installing the actuator onto the valve make sure that the rotation direction and the position indicator are in the correct position.
 - If the actuator is incorporated in a system or used within safety devices or circuits, the customer shall ensure that the national and local safety laws and regulations are observed.



Operating function and direction of rotation:

The actuator is a pneumatic device for remote operation of industrial valves. The operation (90°, 120°, 135° or 180° rotation) may be activated by different methods:

- Direct mounting of solenoid valve (5/2 for double acting, 3/2 for spring return) to pressure connections 2 and 4, connected to supply and control lines.
- Screwed connection (to pressure connections 2 and 4) with air lines from separate control cabinet. The standard rotation (when port 4 is pressurized or for spring action) is clockwise to close. When port 2 is pressurized, counter-clockwise rotation is obtained. **IAmotion** actuators can be supplied with different types of assembly/rotation direction depending on the type of required operation and/or installation, see technical data sheets.

Standard mounting, IA...D + IA...S normal closed

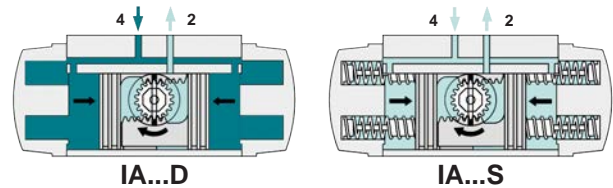
1. Close the actuator (pistons in inner position)

IA...D double acting:

The closed position is achieved by giving supply pressure to connection «4».

IA...S single acting:

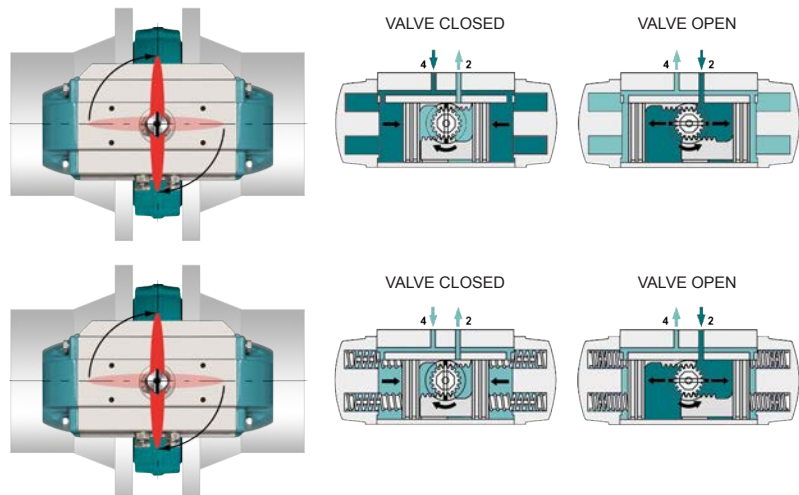
The closed position is already achieved by the springs pushing the pistons toward each other.



2. Close the valve

3. Mount the actuator to the valve

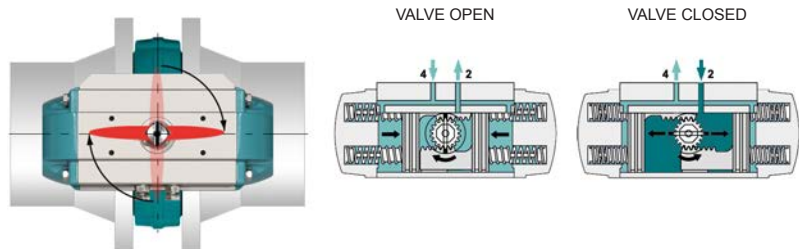
The actuator can be mounted either parallel to the pipe (standard) or perpendicular to it. InterApp delivers the valves with actuators mounted parallel to the pipe.



Mounting of single acting actuator IA...S normal open

Use the same procedure as described under standard mounting, but **open the valve** before mounting the closed actuator.

Please note that in this case the valve is closed by counter clockwise rotation and the slit at the top of the actuator shaft does not correspond with the valve position.

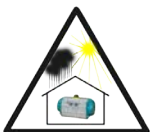


Screw stroke adjustment - turns „n“ for 1° angle:

IA motion	n
IA050 - IA200	1/6
IA250 - IA350	1/5
IA400 - IA1000	1/4

Actuator size, solenoid valve and air supply pipe according table below.

Actuator size	Solenoid valve	Air supply pipe
IA050 - 350	≥ DN 4	≥ DN 4
IA400 - 600	≥ DN 7	≥ DN 6
IA650 - 700	≥ DN 12	≥ DN 8
IA750 - 1000	≥ DN 12	≥ DN 10



Storage:

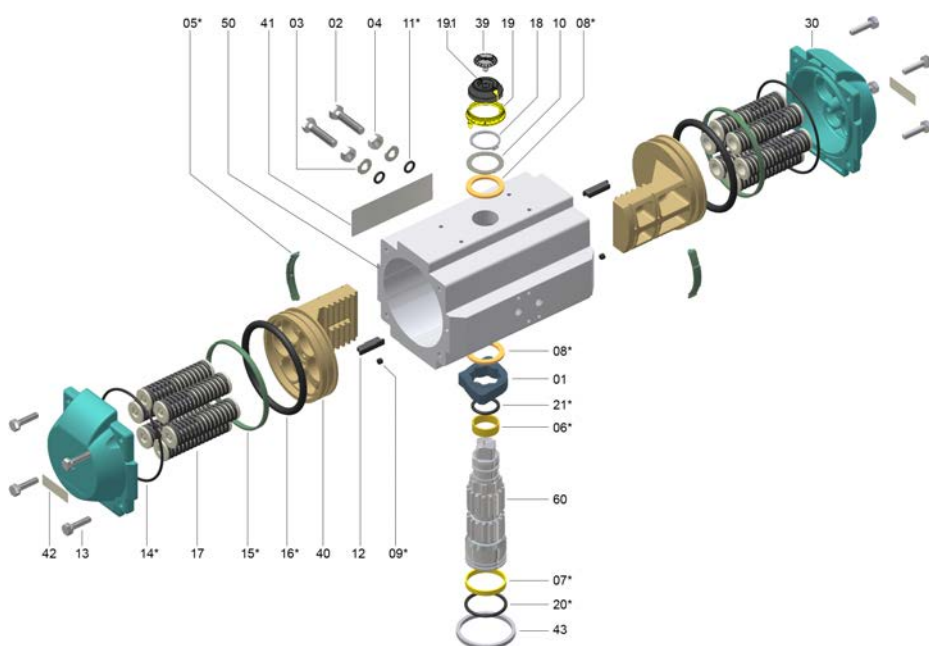
- If the actuator is not for immediate use, the following precaution must be taken for storage:
- Store the actuator in a clean and dry environment and at temperature between -20°C and +40°C.
 - It is recommended that the actuator be stored in its original box.
 - Do not remove the plastic plugs on air supply ports.

Lifting and handling:

It is recommended to lift the actuators with proper, adequate and permitted systems in relation to the actuator weight and by following the ruling laws in terms of safety and health protection. The weight of the actuators is indicated on the Air Torque catalogue and on the related technical data-sheets. During the lifting and the handling of the actuators, it is recommended to avoid clashes and/or accidental falls in order to avoid irreparable damages to the actuators and to compromise the functionality. Contact InterApp for any information and technical data-sheets.

Maintenance instruction

Parts list:



	Pcs	Description
01	1	OCTI-CAM (Stop arrangement)
02	2	STOP CAP SCREW
03	2	WASHER
04	2	NUT (Stop screw)
05*	2	BEARING (Piston back)
06*	1	BEARING (Pinion top)
07*	1	BEARING (Pinion bottom)
08*	2	THRUST BEARING (Pinion)
09*	2	PLUG
10	1	THRUST WASHER (Pinion)
11*	2	O-RING (Stop screw)
12	2	PISTON GUIDE
13	8-16	CAP SCREW (End cap)
14*	2	O-RING (End cap)
15*	2	BEARING (Piston head)
16*	2	O-RING (Piston)
17	5-12	SPRING (Cartridge)
18	1	SPRING CLIP (Pinion)
19	1	GRADUATED RING
19.1	1	POSITION INDICATOR
20*	1	O-RING (Pinion bottom)
21*	1	O-RING (Pinion top)
30	2	END CAP
39	1	CAP SCREW (Indicator)
40	2	PISTON
41	1	IDENTIFICATION LABEL
42	2	END CAP LABEL
43	1	SPIGOT (Only on request)
50	1	BODY
60	1	DRIVE SHAFT

* Suggested spare parts for maintenance

DISASSEMBLY

When disassembly of actuator is required for maintenance, firstly remove the actuator from the valve. Before performing any disassembly operations it is important to verify that the actuator is not pressurised.

Always use caution and double check that the ports 2 and 4 are vented and are free from any accessory and/or device. When the actuator is a spring return unit, make sure that the actuator is in the failed position and with pistons completely inwards before disassembling.

A) Removal of position indicator and graduated ring (Part N° 19,19.0,19.1), figure 01:

- Remove cap screw (39) if fitted.
- Lift position indicator (19 or 19.1) off shaft, it may be necessary to pry gently with a screwdriver.
- Lift, if necessary, the graduated ring (19.0) off the body, it may be necessary to pry gently with a screwdriver.

B) Removal of stop cap screws (Part N° 02), figure 02:

- Remove both stop cap screws together with nut (04) and washer (03).
- Remove stop screw o-rings (11) and discard if replacing all soft parts.

C) End caps disassembly (Part N° 30), figure 03:

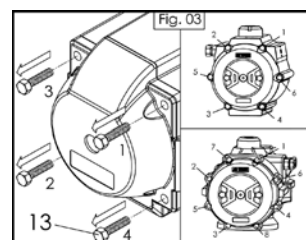
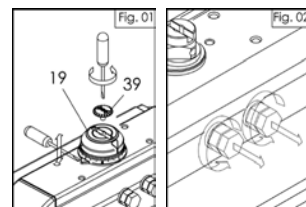
- End caps disassembly for spring return actuators (disassemble one end cap at a time). Unscrew the end cap bolts (13) in the sequence shown in figure 03, until the end-caps are free from springs force (for IA050 20-23 turns of the screws, for IA100 to IA800 4-5 turns of the screws). Then completely unscrew the screws and remove the end-cap and the springs. If there is still force on the end-caps after unscrewing as indicated above, this may indicate that spring cartridge is damaged or that the pistons are not completely closed, so any further disassembly should be discontinued. Further disassembly of the end caps may result in injury.
- End caps disassembly for double acting actuators (disassemble one end cap at a time). Unscrew the end cap bolts (13) in the sequence shown in figure 03, until the screws are completely unscrewed and the end caps are free.
- Remove the o-rings (14) using a screwdriver. Discard soft parts if replacing.
- Only for actuators with adjustment 50% or 100%, remove the nut 04R, the washers 03R and o-rings 11R and discard soft parts if replacing.

D) Pistons disassembly (Part N° 40), figure 04:

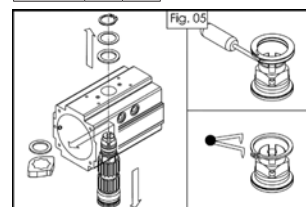
- Holding the body (50) in a vice or similar device, rotate the drive shaft (60) until the pistons (40) are released. Caution: air pressure should not be used to remove the pistons from the body.
- Remove o-rings (16) using a screwdriver. Remove the piston back (05) and piston head (15) bearings.
- Discard bearings when replacing all soft components.

E) Drive shaft disassembly (Part N° 60), figure 05:

- If necessary, remove the graduated ring (19.0) with a screwdriver, remove the spring clip (18) using snap-ring pliers or screwdriver for spiral rings, remove the thrust washer (10) and the external thrust bearing (08). Apply downward force to top of drive shaft (60), until it is partially out of the bottom of the body when it is possible to remove the internal thrust bearing (08) and the octi-cam (01), then push the pinion (60) completely out of the body. If pinion is not easily removed, gently tap the top of the shaft with a plastic hammer.
- Remove top (06) and bottom (07) pinion bearings and top (20) and bottom (21) pinion o-rings.
- Discard bearings (06) and (07), internal and external thrust washer (08) and o-rings (20) and (21) if replacing the soft components. All the components disassembled and not replaced will have to be cleaned and inspected for wear and before reassembly, if necessary, also replace the plugs (09).



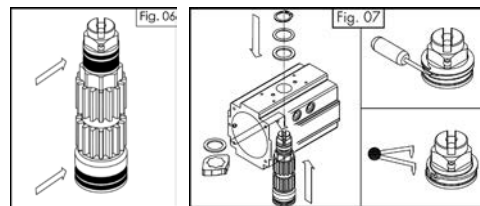
	SW1	SW2
IA050	10	8
IA100	10	10
IA200-250	13	10
IA300	17	13
IA350	19	13
IA400	19	17
IA450	22	17
IA500	22	19
IA550	24	19
IA600	30	22
IA650	30	24
IA700	36	22
IA750-800	46	24



ASSEMBLY

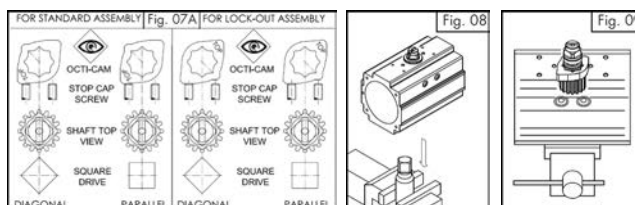
A) Drive shaft assembly (Part N° 60), figures 06, 07 and 07A:

- Install top (06) and bottom (07) bearings, grease and insert the bottom (20) and top (21) pinion o-rings onto the shaft.
- Grease the outside surface of the drive shaft as shown in figure 06.
- Insert partially the drive shaft (60) in the body (50), install octi-cam (01) in the correct position (for standard assembly or for lock-out) as shown in figures 07 and 07A, related to the bottom and top of the drive shaft and the rotation of the actuator when energised. Install the internal thrust bearing (08). Insert completely the drive shaft in the body.
- Fit external thrust bearing (08), thrust washer (10) and then external spring clip (18) using snap ring pliers or screwdriver for spiral rings.



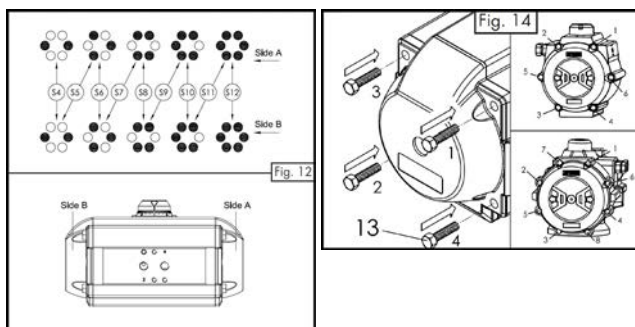
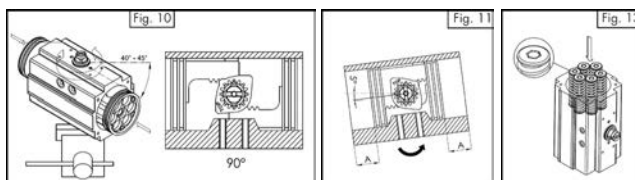
B) Pistons assembly (Part N° 40), figures 08, 09, 10 and 11:

- Grease and install o-rings (16), piston back (05) and piston head (15) bearings.
- Grease the internal surface of the body (50) and the piston (40) rack teeth.
- Insert the female connection of the drive shaft (60) in a properly fixed coupling.
- Ensure that the octi-cam is in the right position as shown in figure 09.
- For standard rotation assembly type "ST" (clockwise to close), rotate the body (50) about 40-45° clockwise from top view, as shown in figure 10.
- Insert and press the two pistons (40) simultaneously inside the body (50) until the pistons are engaged, then rotate the body anticlockwise from top view until the stroke is completed.
- Ensure that with pistons completely closed, the rotation obtained referred to the axis of the body is about over 0° and that the dimension "A" on both sides is the same as shown in figure 11.



C) End cap assembly (Part N° 30), figures 12, 13 and 14:

- Assemble one end cap at a time.
- Lubricate the body.
- For spring return actuators, insert the springs in each end cap according to the desired configuration, as shown in figure 12 and related tables. For models IA100→IA800 B insert spring cartridges as shown in figure 13.
- Fit end cap o-ring seal (14) into the groove on both end caps.
- Fit end caps onto the body (50), verifying that the o-ring remains in the groove.
- Only for actuators with 50% or 100% stroke adjustment, ensure that the adjustment screws 221G/222G are completely screwed into the end-cap.
- Insert the cap screws (13) and tighten each only partially. Complete tightening by making 1-2 turns for each screw in the sequence shown in figure 14 until tightening is completed. See the table for screw tightening torque.



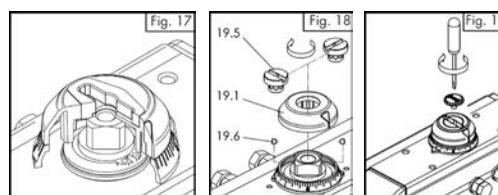
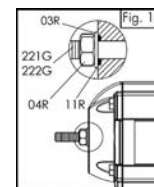
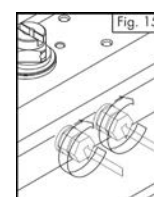
D) Assembly of stop cap screws (Part 02) and stroke adjustment for models IA050 B→ IA800 B, figures 15 and 16:

- Insert on both stop screws (02) the nut (04), the washer (03) and the o-ring (11).
- Fit the stop cap screws (02) in the body.
- Stroke adjustment for actuators with standard type "ST" rotation / assembly (clockwise to close).
Stroke adjustment in close position: with the actuator in close position 0°, screw or unscrew the right (from top view) stop cap screw until the desired stop position is achieved. Then tighten the stop adjustment nut (04) to lock it in place.
Stroke adjustment in open position: with the actuator in open position 90°, screw or unscrew the left (from top view) stop cap screw until the desired stop position is achieved. Then tighten the stop adjustment nut (04) to lock it in place.
For spring return actuators, it could be necessary to make rotation tests to verify the correct stroke adjustment in open position.

- Only for actuators with adjustment 50% or 100%, fit on end-cap adjustment screws 221G/222G the o-rings 11R, the washers 03R and the nuts 04R. To adjust the stroke in open position: with the actuator in partially or totally open position, screw or unscrew the end-cap adjustment screw 221G/222G until the desired position is achieved. It is important that the two end-cap adjustment screws are both in contact with the pistons. Then lock the nuts 04R.

E) Assembly of graduated ring and position indicator (Part N° 19,19.0,19.1), figures 17,18 and 19:

- Fix the graduated ring (19.0) to the body.
- If necessary, correctly position the "Top Adaptor" (19.5) and lock it with the proper screws (19.6).
- Insert the indicator (19 or 19.1) making sure that it indicates the correct actuator position.
- Screw the indicator screw (39) if assembled.

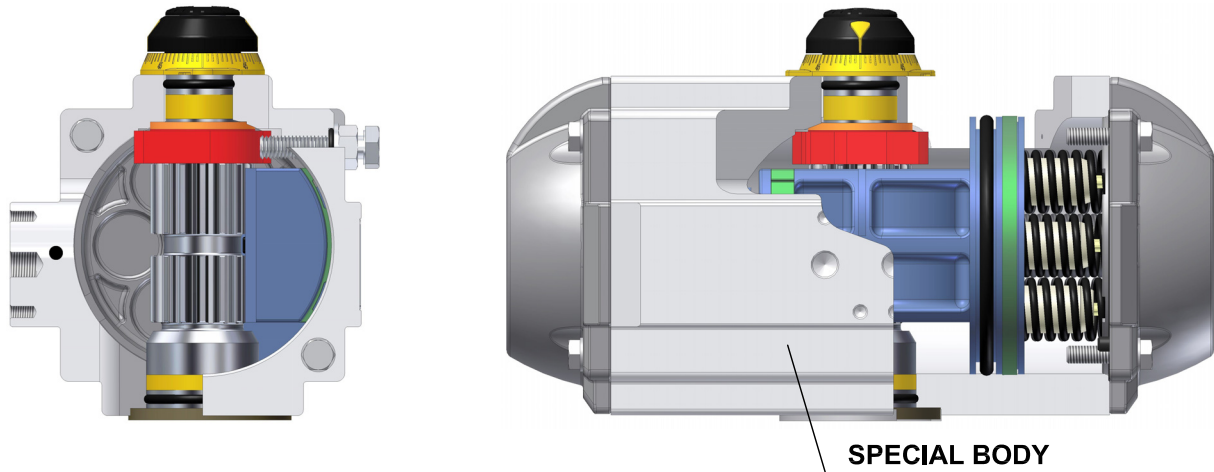




Spring Return Fast Acting Actuators PTB Series

Construction and Technical data for models FA PT250 B => FA PT800 B

Construction:



Technical Data and Operating Times:

ACTUATOR MODEL	AIR CONNECTION SIZE		AIR BORE (mm)		* MINIMUM OPERATING TIME (sec.)	
	PORT 2	PORT 4	PORT 2	PORT 4	Spring Return	
					Opening	Closing
FA PT250 B S	G 1/8"-ISO228	G 1/8"-ISO228	ø6	ø4,5	0,30	0,25
FA PT300 B S	G 1/4"-ISO228	G 1/4"-ISO228	ø7	ø5	0,40	0,35
FA PT350 B S	G 1/4"-ISO228	G 1/4"-ISO228	ø9	STD	0,15	0,20
FA PT400 B S	G 1/4"-ISO228	G 1/4"-ISO228	ø9	STD	0,20	0,25
FA PT450 B S	G 1/4"-ISO228	G 1/4"-ISO228	ø10	STD	0,22	0,28
FA PT500 B S	G 1/4"-ISO228	G 1/4"-ISO228	ø10	STD	0,28	0,35
FA PT550 B S	G 3/8"-ISO228	G 3/8"-ISO228	ø12	STD	0,32	0,40
FA PT600 B S	G 3/8"-ISO228	G 3/8"-ISO228	ø12	STD	0,38	0,45
FA PT650 B S	G 1/2"-ISO228	G 1/2"-ISO228	ø13	STD	0,48	0,59
FA PT700 B S	G 1/2"-ISO228	G 1/2"-ISO228	ø15	STD	0,64	0,73
FA PT750 B S	G 3/4"-ISO228	G 1/2"-ISO228	ø18	STD	0,87	0,95
FA PT800 B S	G 3/4"-ISO228	G 1/2"-ISO228	ø20	STD	1,00	1,30

* Test Conditions to obtain the indicated minimum operating times:

- Room Temperature
- Spring Return Actuator S12
- Stroke: 90° ± 1°
- Minimum inside diameter for air supply circuit equal or bigger of air bore Port 2
- Medium: clean air
- Air supply pressure: 6bar (87 Psi)
- Actuator without external resistance load
- Reaction time of solenoid valve not considered
- Flow capacity of solenoid valve at 6bar (87Psi):
 - for model FA PT250B ÷ FA PT300B = 700 NI/min min.
 - for model FA PT350B ÷ FA PT550B = 6000 NI/min min.
 - for model FA PT600B ÷ FA PT1000B = 12000 NI/min min.

Cautions: The indicated operating times are strictly related to the above test conditions. The operating times on the field applications shall be different depending on the working conditions.

Note:

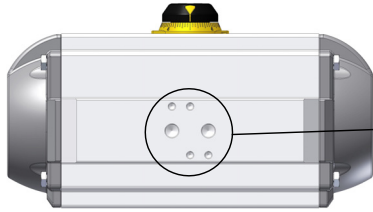
- For other dimensions see catalogue or technical data sheet.
- For maintenance and installation see manual instruction.
- Fast Acting actuator cycle life may result lower than standard actuators in relation to field working conditions.



Spring Return Fast Acting Actuators PTB Series

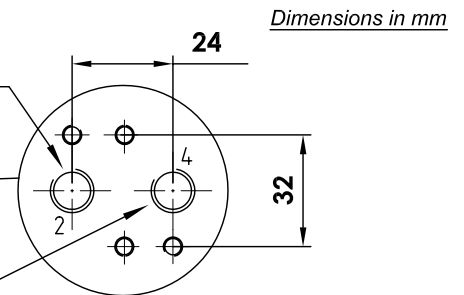
Construction and Technical data for models FA PT250 B => FA PT800 B

Model: FA PT250 B

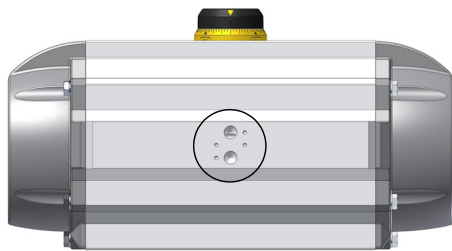


Port 2:
Air connection
for internal chamber
With special bigger bore

Port 4:
Air connection
for external chambers



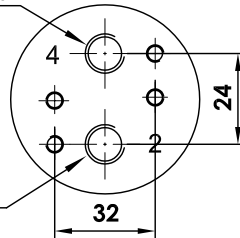
Models: FA PT300 B ÷ FA PT500 B FA PT650 B ÷ FA PT700 B



Interface connection for models FA PT300 B => FA PT500 B

Port 4:
Air connection
for external chambers

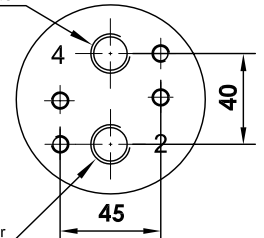
Port 2:
Air connection
for internal chamber



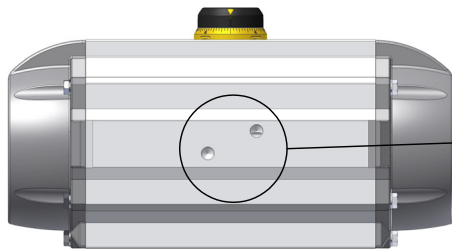
Interface connection for models FA PT650 B => FA PT700 B

Port 4:
Air connection
for external chambers

Port 2:
Air connection
for internal chamber

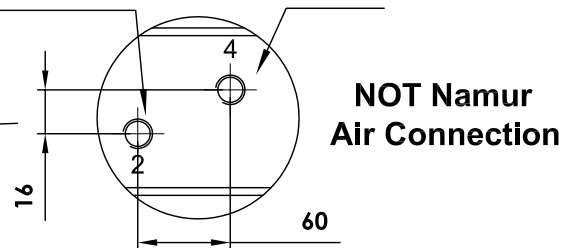


Models: FA PT550 B ÷ FA600 B

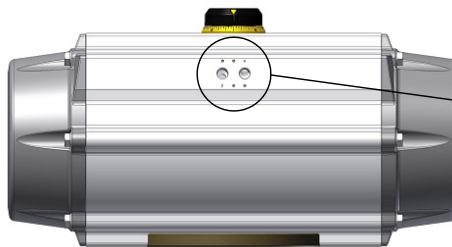


Port 2:
Air connection
for internal chamber

Port 4:
Air connection
for external chamber

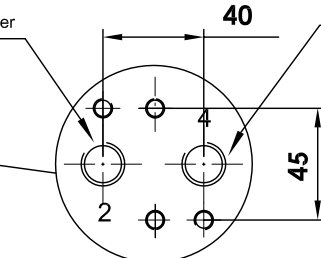


Model: FA PT750 B

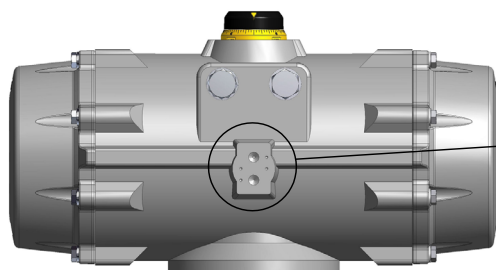


Port 2:
Air connection
for internal chamber

Port 4:
Air connection
for external chambers

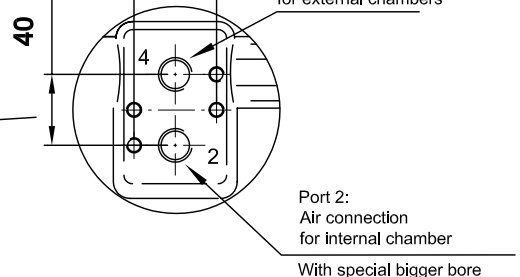


Model: FA PT800 B

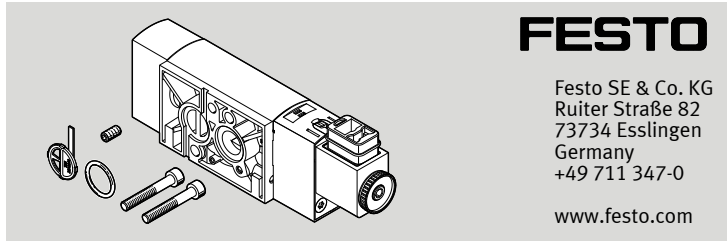


Port 4:
Air connection
for external chambers

Port 4:
Air connection
for external chambers



VSNC-F...-M52-...-F... Solenoid valve



FESTO

Festo SE & Co. KG
Rüter Straße 82
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Assembly instructions

8149717
2020-12c
[8149719]



Translation of the original instructions

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1 Applicable Documents

All available documents for the product → www.festo.com/sp.

2 Safety

2.1 Safety instructions

- Before working on the product, switch off the power supply and secure it against being switched on again.

2.2 Intended use

The solenoid valve is intended for mounting on a drive with a NAMUR plug pattern in accordance with VDI/VDE 3845 Sheet 1:2010-09.

3 Additional information

- Accessories → www.festo.com/catalogue.

4 Scope of delivery

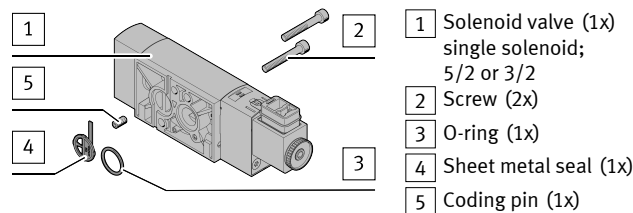


Fig. 1

5 Preassembly

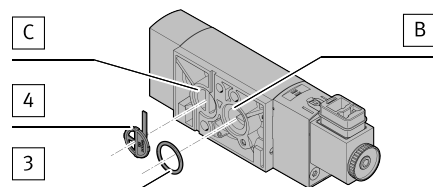


Fig. 2 Valve function 5/2

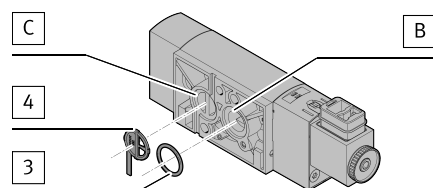


Fig. 3 Valve function 3/2

- Press O-ring [3] into the recess [C].
- Orient the sheet metal seal [4] in accordance with the desired valve function.
- Press the sheet metal seal [4] into the recess [C].

6 Assembly

Requirement for outdoor application:

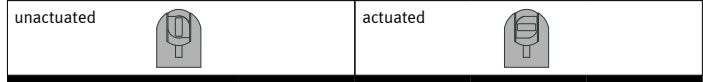
Protection against sealing of exhaust ducts 3/5 e.g. by frozen condensate or nesting insects.

- Take on-site environmental conditions into account.
- Take suitable protective measures. For example:
 - Use exhaust protection VABD-D3-SN-G14.
 - Duct exhaust air.

Requirement for solenoid valves VSNC-...-FN and VSNC-...-F8:

- Set manual override to unactuated prior to mounting.

Manual override



Tab. 1

Installing the solenoid valve

i

The alignment of the solenoid valve [1] depends on the position of the coding pin [5]. The position of the coding pin [5] determines the direction of movement at the drive.

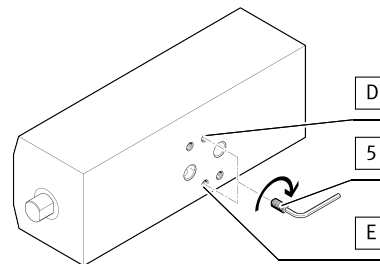


Fig. 4

- Position coding pin [5] on the thread [D]/[E] in accordance with the desired direction of movement.
- Screw coding pin [5] into the thread [D]/[E] to the stop.

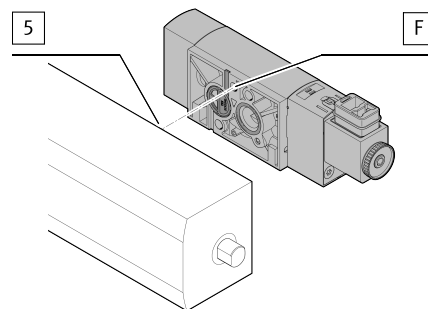


Fig. 5

- Place coding recess [F] on the coding pin [5].

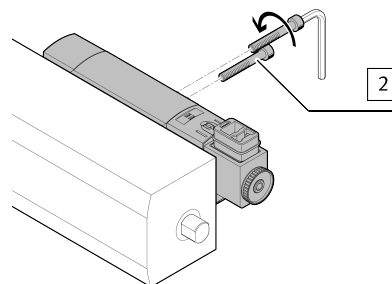
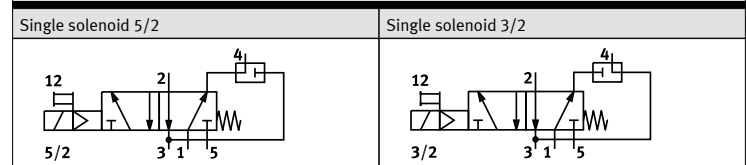


Fig. 6

- Tighten screws [2]. Tightening torque: 3.5 Nm ± 20%.

7 Circuit diagrams

VSNC-F...-M52-...-F...



Tab. 2



Installation and Maintenance Instructions

Spool valves Series

331-341-342-347-531-541-542-547 N03 N04

DESCRIPTION

3/2 NC or 5/2 5/3 monostable or bistable spool valves with anodized aluminium body and threaded 1/4" or 1/2" inlet ports and NAMUR interface 1/4" or 1/2".

Pilot operated with standard solenoid or pneumatic ally

SPECIAL CONDITIONS FOR SAFE USE



To ensure the proper function of the device and promote long service life, you must comply with the information in these Operating Instructions and the application conditions and specification provided in the Data Sheet. Usage of the device in a manner that is contrary to these Operating Instructions or the application conditions and specification provided in the Data Sheet is improper and will void your warranty. This device serves exclusively as a 3/2 or 5/2 solenoid valve for the media stated to be permissible on the Data Sheet. Any other use is considered improper use. The manufacturer will not be responsible for any improper use of the device

Changes to the product may only be made after consulting the manufacturer or his representative. Installation and maintenance of the valve must be carried out by qualified personnel only.

Those solenoid spool valves are designed to operate with filtered, dry or lubricated air or neutral gas and within the technical characteristics specified on the nameplate and in the Data Sheet.

MOUNTING



Prior installing the solenoid valve, depressurize the pipes and clean them internally to avoid particles entering the system. (tape sealant, thread compound). The valves may be mounted in any position.

Fixing is made with 2 screw M5 (Torque 4 to 5 Nm) provided for model with NAMUR 1/4" and with 2 screws M6 for model NAMUR 1/2".

Pneumatic connection

- **General recommendations for pneumatic connection**
Connect pipes for the required functions in accordance with this documentation and the ports markings on the product.
Make sure that no foreign matter enters the system.
Correctly support and align pipes to prevent mechanical strain on the valve. When tightening, do not use the valve as a lever. Locate wrenches as close as possible to connection point. To avoid damage to the equipment, DO NOT OVERTIGHTEN pipe connections.
- **Connection of the spool NAMUR valve**
 - **Models with subbase mounting NAMUR 7mm (Flow 1270NI/mn)**
Pressure inlet at port 1 G 1/4". Pressure outlet at port 2 and 4 on subbase. Exhaust at ports 3 and 5 G 1/4".
 - **Models with subbase mounting NAMUR 12mm (Flow 3000NI/mn)**
Pressure inlet at port 1 G 1/2". Pressure outlet at port 2 and 4 on subbase. Exhaust at ports 3 and 5 G 1/2".
 - **Connection for externally operated version**
1/8" (Model 531N..541N.. 542N.. 547N..)

Electrical connection



- **General recommendation**
 - Electrical connection must be made by qualified personnel and according to applicable local standards and regulations.
 - Before any intervention, turn off the electrical current to power off the components.
 - Depending on the voltage, electrical components must be grounded according to local standards and regulations
 - Most valves are designed for continuous duty. To prevent the risk of personal injury, do not touch the solenoid operator which can become hot under normal operating conditions.
- **Miniature coils**
Electrical connection is made with detachable DIN 43650 B plug connector for cable dia. 6-8mm (Pg9), rotatable by 180° increments (3 pins: 2 + earth)

SERVICE

The spool valves comprise a manual override providing operation without electrical supply.

Spool valves offer the following standard options:

- In line pilot
- 22mm pilot
- Nominal flow 1270NI/mn (7mm) or 3000I/mn (12mm)
- Standard Fluid temperature (-10°C to 50°C)
- Monostable electrically operated, spring return (341 series)
- Bistable electrically operated, with neutral position return (342 series)
- Bistable electrically operated, air-solenoid return (347 series)
- Monostable pneumatic operated, spring return (541 series)
- Bistable pneumatic operated, with neutral position return (542 series)
- Bistable pneumatic operated and return (547 series)

MAINTENANCE



Prior any maintenance work, switch off power supply, depressurise and vent the valve to prevent the risk of personal injury or damage equipment.

- **Preventive maintenance**
Operate the valve at least once a month to check its function.
Avoid obstruction of exhaust port when it is not connected or protect it with a cap.
 - **Cleaning**
Maintenance of the valve depends on the operating conditions. They must be cleaned at regular intervals. Cleaning must be done when a slowing down of the cycle, a leakage or an abnormal noise is noticed. The components must be checked for excessive wear. Cleaning must not be made with solvent.
 - **Troubleshooting**
- | | |
|---|--|
| Valve fails to operate (No switching noise) | - Check that electrical supply complies with values mentioned on the nameplate or coil.
- Check coil for shorts or open coil.
- Check that mobile parts (spool, pilot plunger) are not blocked by foreign particles. |
| Valve switches but without effect. | - Verify air pilot pressure (mini 2 bar)
- Verify if the pilot plunger spring is broken. |
| External leakage | - Verify connectors and tightening of the valve on its subbase.
- Verify the tightening of the pilot. |

Monostable in line Miniature pilot (331N03, 341N03)

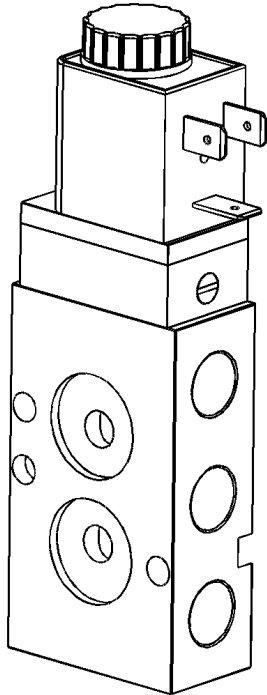


Fig. 1

Bistable Miniature pilot (342N03, 347N03)

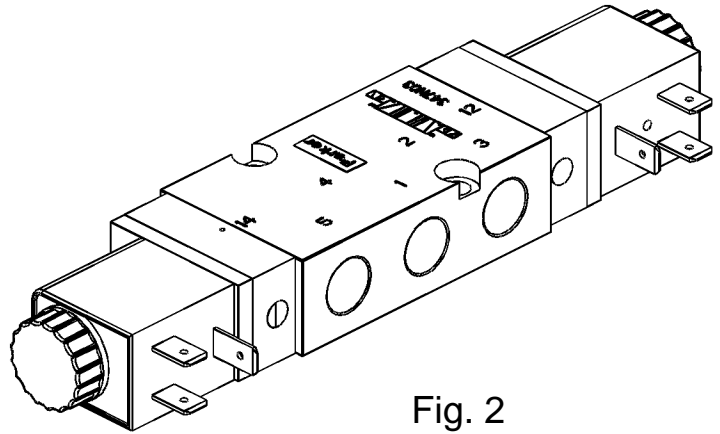


Fig. 2

Monostable in line Pneumatic pilot (531N03, 541N03)

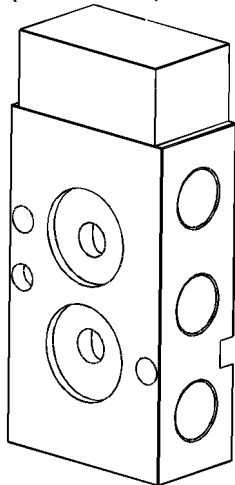


Fig.3

Bistable Pneumatic pilot (542N03, 547N03)

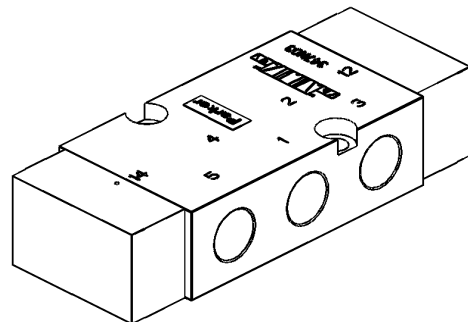
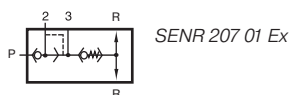


Fig.4

SENR 207 01 Ex

Quick-exhaust-block with non-return valve



The valve is designed for fast closing of spring-return actuators with 1/4" NAMUR-interface.

Any 3/2-way valve can be used as pilot valve. The connection towards the pilot valve is G 1/4" ported and for NAMUR-valves with the 1/4" NAMUR-interface.

The block assures that only compressed air that has been used to open the actuator is used in the spring-chamber (non-return-function). Excess air is released very fast by the quick-exhaust valve, exhaust-port G 1/2", orifice 10 mm. The non-return valve makes absolutely sure that no ambient atmosphere can be sucked into the actuator.

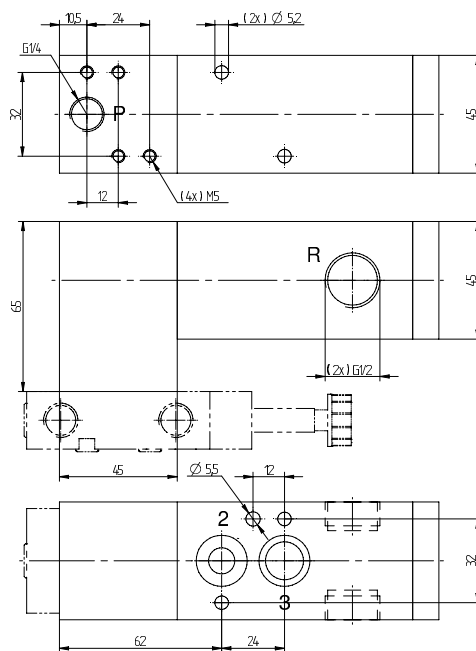
Two exhaust-ports R allow that the product can always be assembled so the silencer faces downwards.

Delivery includes 2 screws, 2 O-rings, 1/2" plug for port R.

Marking von valve:

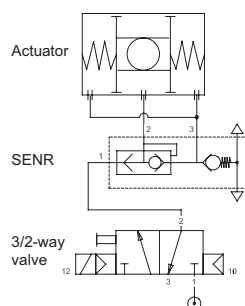
CE Ex II 3G/D c T6 -10°C ≤ Ta ≤ 50°C

Zone: 2 and 22



SENR 207 01 Ex

Function:



Type	NAMUR Port P	Port R	Air flow P to 2	Air flow exhaust	Operating press.	Weight
SENR 207 01 Ex	1/4"	G 1/4" - 1/4" NAMUR	G 1/2"	1250 l/min	2500 l/min	2 - 10 bar 0,85 kg