

## PNEUMATIC MEMBRANE VALVES USE AND MAINTENANCE DOC 7.4.1-7.4.2 / 04.2014



### Type W BS

Type W BS valves are type "W" with started flow with body gauge BS-5156.

The valve body is made of cast iron with natural rubber coating.

The shutter is of the natural rubber membrane type.

They are built specifically for the regulation of systems with abrasive fluids and obviously clean fluids.

W BS valves are operated by pneumatic multi actuators S 200, S.275, S.335, S.430 direct or reverse action spring.

The valves can be supplied with accessories such as:

- ⌚ Positioner
- ⌚ End-of-stroke
- ⌚ Solenoid valve

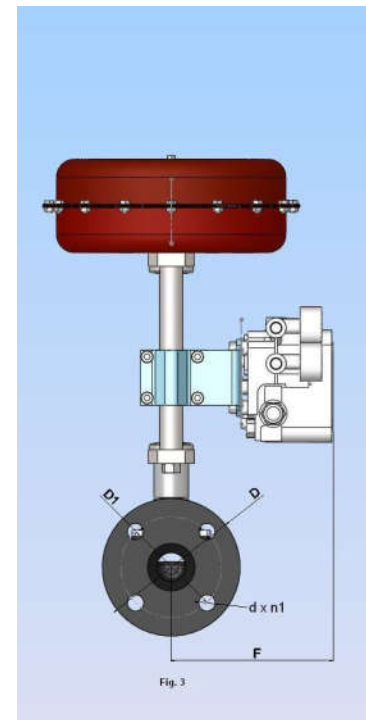
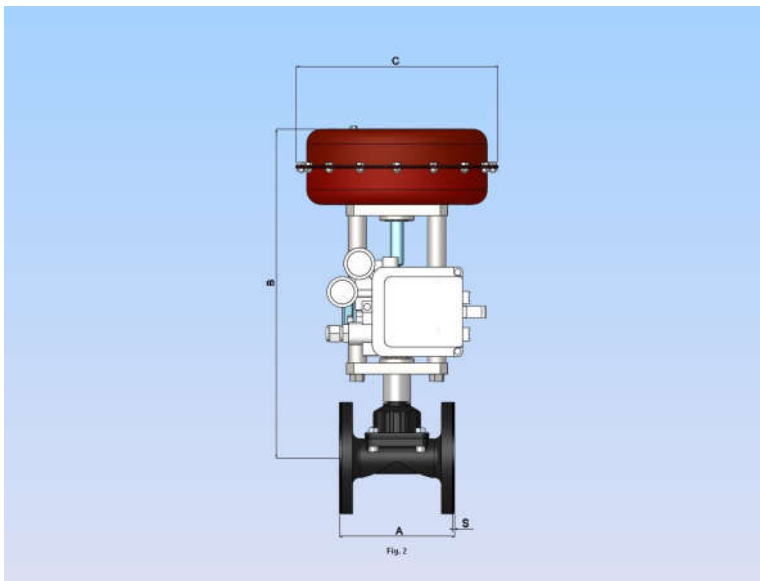
### CHARACTERISTIC DATA

TYPE W BS	CAST IRON	
DIAMETERS	DN20 ÷ DN100	
BODY	CONNECTION	FLANGED BS-5156
	MATERIAL	CAST IRON
INTERIORS	SHUTTER	MEMBRANE IN NATURAL RUBBER
	COATING	NATURAL RUBBER
SERVOMOTOR	SIZE	DN20 - 25 - 32 - 40 - 50 - 65 - 80 - 100
	MATERIAL	CARBON STEEL
	SUPPLY-	Max. 6-30 PSI
	ACTION	IREVERSE OR DIRECT
	CONNECTION	¼ NPT
TEMPERATURE	- 5 ÷ 80°C	

## TABLE OF DIFFERENTIAL PRESSURES (BAR)

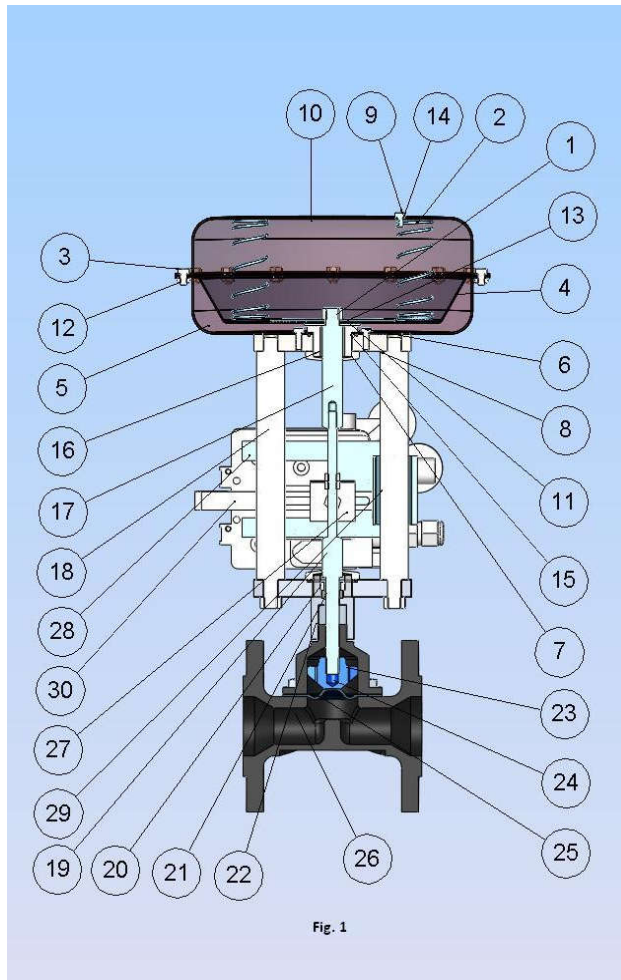
	DN	S.200/275	S.335	S.430
		3-15 PSI / 6-30 PSI	3-15 PSI / 6-30 PSI	3-15 PSI / 6-30 PSI
	20	9		
	25	9		
	32	8		
	40	8		
	50		6	
	65		6	
	80			5
	100			5(430 M)

## OVERALL DIMENSIONS



<b>DN</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>S</b>	<b>F</b>	<b>d</b>	<b>n1</b>	<b>D1</b>	<b>D</b>
<b>20</b>	123	340	200	2	176	14	4	75	105
<b>25</b>	133	350	200	2	176	14	4	85	115
<b>32</b>	152	370	280	2	176	18	4	100	140
<b>40</b>	165	440	280	3	176	18	4	110	150
<b>50</b>	196	480	340	3	176	18	4	125	165
<b>65</b>	222	540	340	3	176	18	4	145	185
<b>80</b>	260	550	440	3	176	18	8	160	200
<b>100</b>	313	570	440 M	2	176	18	8	180	220

## LIST OF COMPONENTS AND MATERIALS



N°	DESCRIPTION
1	Actuator rod locking nut
2	Spring
3	Actuator screws
4	Membrane
5	Lower shell actuator
6	Plate Locking Screws
7	Locking Nut
8	Lower plate
9	Vent plug
10	Upper shell
11	Spring Guide Membrane Plate
12	Actuator Nuts
13	Counterplate Membrane
14	Air Supply Shutter
15	Actuator gasket
16	Rod Guide Cap
17	Rod Actuator
18	Colonna Castle
19	Stem
20	Seal Lock Ring
21	Graphite seal
22	Compass
23	Bonnet
24	Pusher
25	Membrane
26	Body Tightening Screws
27	Reference plate
28	Support bracket
29	Fixing sheet
30	Position Indicator

W valves have a two-way body and diaphragm type actuator.

The valve bodies are made of cast iron, with natural rubber coating,

The shutter (25) is of the rubber membrane type

Suitable for regulating the flow rate of abrasive and clean fluids in industrial environments, in a safe area

\_ with liquids not falling within the "dangerous / toxic" category,

\_ with a pressure strictly not exceeding 10bar, (see table)

\_ and a liquid temperature not exceeding 80 ° C.

In compliance with the PED Directive 97/23 / EC, the partly completed machine DIAPHRAGM VALVE DI

REGULATION was designed and built exclusively for

the interception / flow regulation (via pneumatic actuator) of non-hazardous liquids

belonging to Group 2-safe area

The W valves are operated by pneumatic multi-spring actuators (1) T.275, T.335, T.430 with direct or reverse action.

The valves can be supplied with accessories such as:

Positioner

Actuator with manual release

End of stroke

## LIFTING AND TRANSPORT

BY ROPES OR CHAINS FIXED TO N ° -2 GOLFARI  
PRESENT ON THE UPPER STRUCTURE  
OF THE PNEUMATIC ACTUATOR.

## INSTALLATION

Before installation check that the valve is not damaged, that it is not obstructed, that the opening and closing operation is correct. Check that the tightening bolts (26, Fig 1) between the body and the bonnet (23, Fig1) are correct. Check that the liner and diaphragm are suitable for the type of process fluid. Make sure that there is no foreign material inside the valve body. Clean all pipes to remove scale, weld slag and other material. POSITIONING: The normal method is the one with the actuator vertically above the valve. Install the valve in pipes using common piping techniques. Avoid causing oscillations such as to damage the valve, clamp the pipe sections upstream and downstream

***AIR OPENS (SPRING CLOSSES) Before starting the continuous working, carry out several functioning tests with the liquid to be intercepted / regulated at the maximum working pressure foreseen (in any case not higher than 10bar). Check that a sudden lack of pressure in the valve actuator control circuit (with relative positioning of the valve itself in the rest condition: normally closed (AIR OPENS / SPRING CLOSSES - or vice versa) does not generate hazards in other parts of the system; if this possibility exists, install suitable solutions following an in-depth risk analysis.***

Before performing any operation of maintenance :

To avoid personal injury, always wear protective gloves, safety clothing and eye protection when performing maintenance operations

Disconnect the service lines that feed compressed air, electricity or a control signal to the actuator. Make sure that the actuator cannot suddenly open or close the valve. Use bypass valves or stop the process to isolate the valve from the process pressure. Relieve the process pressure from both sides of the valve.

Based on the structure of the actuator, it will be necessary to check the supply pressure of the pneumatic actuator and any pre-pressure of the actuator spring. It is essential to consult the

appropriate instructions in the manual to ensure removal in

safety of the actuator from the valve.

Use locking procedures to ensure that the above measures are valid

even while working on the equipment The valve bonnet unit can contain

process fluids even if the valve has been removed from the piping.

Process fluids can escape

Check that the tightening of the bolts (26, Fig 1) that locks the valve body to the bonnet (23, Fig1) is correct. Check that the liner and diaphragm are suitable for the type of process fluid

## PERIODIC CHECK

Check that the bolts are tightened properly

Check that there are no leaks and leaks

Check external parts wear, oxidation and / or damage

Valve Body Maintenance \*

The membrane is a part that is subject to wear because in contact with the fluid and therefore subject to corrosive abrasive action, it must therefore be continuously monitored and replaced, to restore correct operation

### **Membrane replacement \***

Unscrew the bolts (26) taking care that the valve body and the actuator assembly do not fall causing damage to person and property. The stem (17) will be in the closed (open) position. Turn the diaphragm (for DN20, detach it from the seat of the pusher 24) to unscrew it.

Replace the membrane

Proceed with the assembly by positioning the two references of the pusher (21) in correspondence with the grooves of the bonnet (23)

Return the diaphragm to its neutral position by aligning the diaphragm / bonnet holes (23) with each other, tighten the bolts again (see tightening torque table) - for DN 80 and 100 the bolts reach the lower plate of the actuator yoke

Replace the sealing element and replacement / lubrication of the pusher (24) \*

Uncouple the actuator stem (17) from the valve stem (19).

Replace the sealing element (21) on the valve body stem, unscrewing the ring nut (20) from the bush (22)

Pull the pusher (24) out of the bonnet (23). The coupling is interlocking (, for DN 80 and 100 remove the safety pins that lock the stem to the pusher)

Clean and lubricate with grease (never oil) or replace the pusher

Proceed with the assembly positioned the two references of the pusher in correspondence with the grooves of the bonnet (23)

### **Tightening torque table bonnet / body \***

DN 15	Nm 4
DN 20	Nm 4
DN 25	Nm 5.5
DN 32	Nm 6.5
DN 40	Nm 8
DN 50	Nm 13
DN 65	Nm 22
DN 80	Nm 35.5
DN100	Nm 26.5

### **Valve body replacement \***

*The valve body is protected by a natural rubber coating, but the abrasive / corrosive action determines itThe slow decay. It is necessary a periodic check and possible replacement to restore itfunctionality*

*After removing the valve from the lineUnscrew the four bolts (26) taking care that the valve body does not fall causing damage to person and property, replace it and reassemble by retightening the bolts (see tightening table)*

## **MAINTENANCE FOR PNEUMATIC ACTUATOR \***

### **INSTALLATION**

#### **AIR PIPE**

Connect the air piping to the free ¼ "NPT connection on the pneumatic actuator or reducer filter,the air must be dehumidified and free from oils and fats.

The maximum direct pressure applicable to the actuator must not exceed 3.5 Bar. The regulated signal and power supply are stamped on the identification plate applied to the actuator

**MAINTENANCE**

**REPLACING THE MEMBRANE IN THE PNEUMATIC ACTUATOR**

There is no need to remove the valve from the line. Disassemble the actuator from the valve following the instructions. Loosen all screws and nuts Pos 3 and Pos 22. Taking care to leave the two longer safety screws screwed in. Unscrew slowly to avoid the extension of the springs.

Remove the cover pos 20, completely remove the rod-membrane-plate and counter-plate assembly, with suitable tools, unscrew the nut Pos 1 and replace the membrane Pos 4.

To reassemble, repeat the operations in reverse order

**FOR SPARE PARTS OR CLARIFICATIONS, ALWAYS AND EXCLUSIVELY MENTION THE SERIAL NUMBER.**

\*

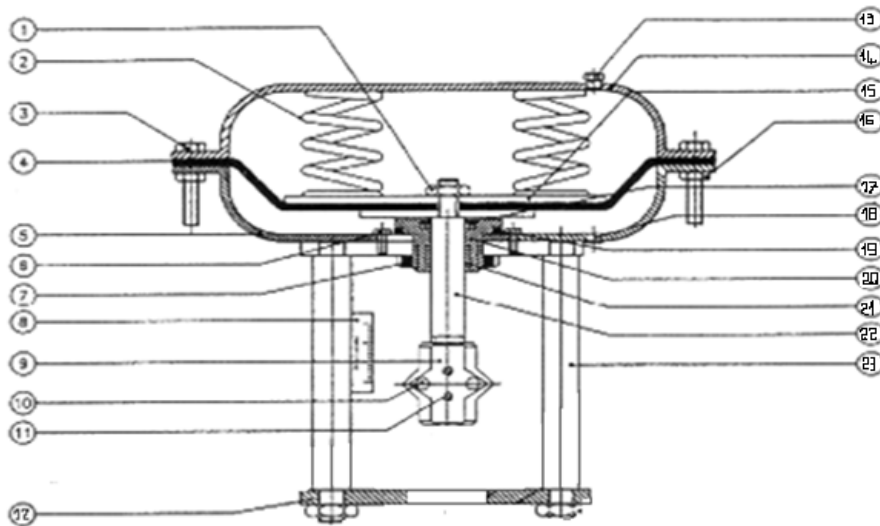
**HALF-YEAR PERIODIC CHECK \***

**SPRING CALIBRATION CHECK**

**CHECK POSITIONER FUNCTIONALITY**

**CHECK THE STATE OF WEAR OF THE EXTERNAL PARTS, OXIDATION, ETC.**

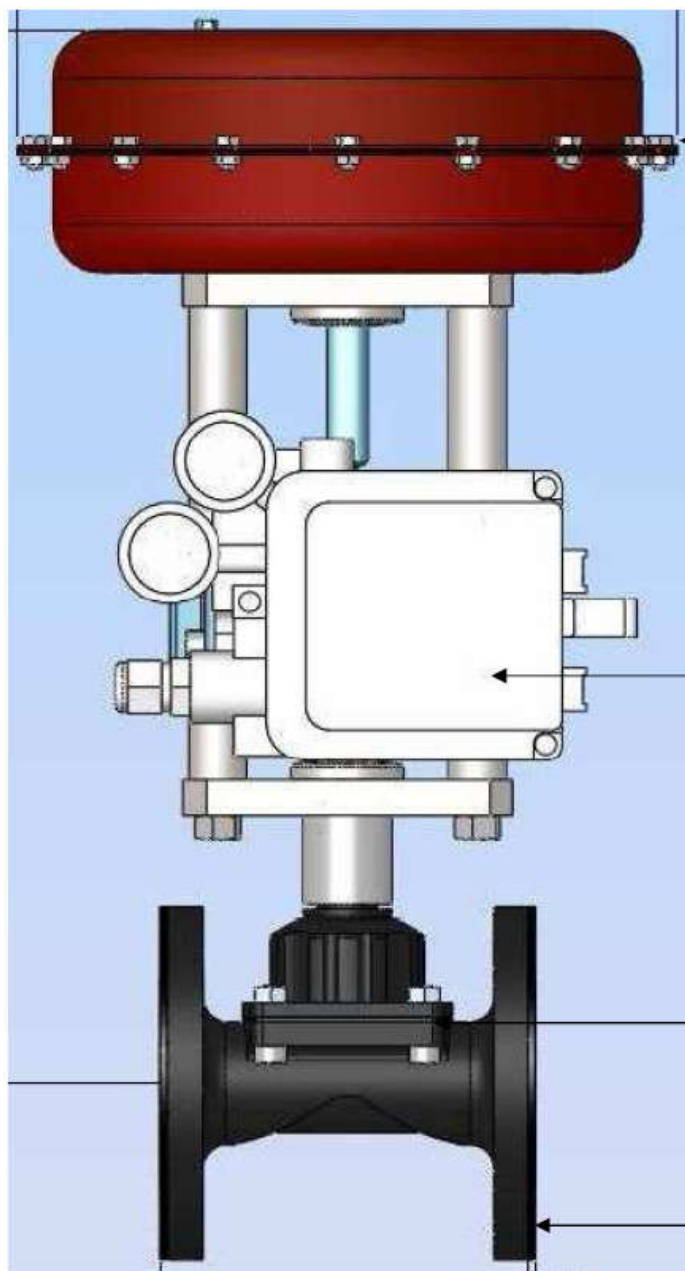
\* extracted from the manufacturer's manual



N°	DETAILS
1	Actuator rod locking nut
2	Spring
3	Actuator screws
4	Membrane
5	Lower actuator shell
6	Plate locking screws
7	Locking ring
8	
9	
10	
11	
12	Lower plate
13	Breather plug
14	Upper actuator shell
15	Spring guide membrane plate
16	Actuator nuts
17	Counter-plate membrane
18	Actuator air supply
19	Actuator gasket
20	Rod guide cap
21	Guide bush actuator
22	Actuator rod
23	Column castle

## WBS VALVE SPARE PARTS

CODE	DESCRIPTION	
WBS.MA.GT200	ACTUATOR MEMBRANE DN15-20-25	
WBS.MA.GT280	ACTUATOR MEMBRANE DN32-40	
WBS.MA.GT335	ACTUATOR MEMBRANE DN50-65	
WBS.MA.GT430	ACTUATOR MEMBRANE DN80-100	
WBS.MC.SNR015	BODY DIAPHRAGM NATURAL RUBBER DN15	
WBS.MC.SNR020	BODY DIAPHRAGM NATURAL RUBBER DN20	
WBS.MC.SNR025	BODY DIAPHRAGM NATURAL RUBBER DN25	
WBS.MC.SNR032	BODY DIAPHRAGM NATURAL RUBBER DN32	
WBS.MC.SNR040	BODY DIAPHRAGM NATURAL RUBBER DN40	
WBS.MC.SNR050	BODY DIAPHRAGM NATURAL RUBBER DN50	
WBS.MC.SNR065	BODY DIAPHRAGM NATURAL RUBBER DN65	
WBS.MC.SNR080	BODY DIAPHRAGM NATURAL RUBBER DN80	
WBS.MC.SNR0100	BODY DIAPHRAGM NATURAL RUBBER DN100	
WBS.CV.SNR015	VALVE BODY DN15	
WBS.CV.SNR020	VALVE BODY DN20	
WBS.CV.SNR025	VALVE BODY DN25	
WBS.CV.SNR032	VALVE BODY DN32	
WBS.CV.SNR040	VALVE BODY DN40	
WBS.CV.SNR050	VALVE BODY DN50	
WBS.CV.SNR065	VALVE BODY DN65	
WBS.CV.SNR080	VALVE BODY DN80	
WBS.CV.SNR100	VALVE BODY DN100	
WBS.SMC8000.030.X14	VALVE POSITIONER	
WBS.SMC8000.1MPA	POSITIONER MANOMETER	



WBS-MA



WBS-SMC



WBS-MC



WBS-CV



**SCHIBUOLA LAURO**

Products for Plant Automation

[www.schibuola.com](http://www.schibuola.com) - [info@schibuola.com](mailto:info@schibuola.com)

tel. 011-6991507 - 011-6502223 cell. 3355367761

