

PNEUMATIC DIAPHRAGM VALVES OPERATION AND MAINTENANCE DOC 01.2012



TYPE W BS

The valves are type BS W through-on with body BS-5156-flanged

The valve body is made of cast iron coated with rubber. The shutter is a type of natural rubber membrane. They are built specifically for the regulation of plants with abrasive fluids.

W BS valves are with pneumatic actuators with multi spring S200, S.275, S.335, S.430 , direct or reverse action.

The valve can be supplied with accessories such as:

- Positioner
- limit switch
- Solenoid valves

FEATURES

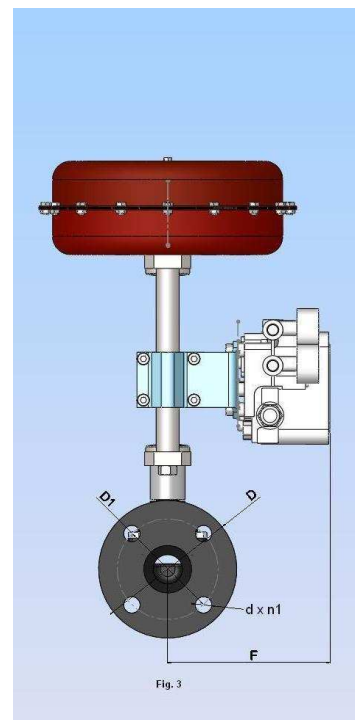
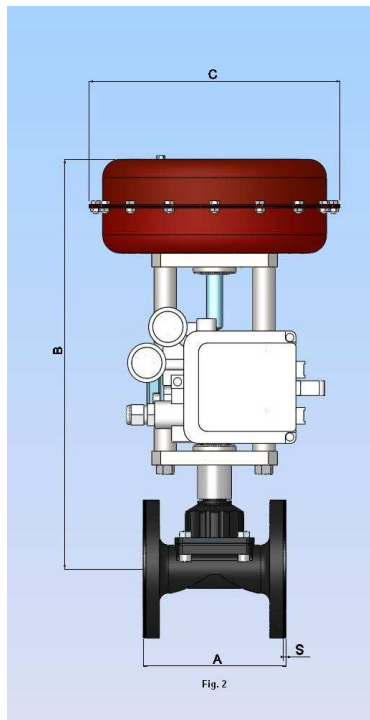
TYPE W BS	CAST IRON	
DIAMETRE	DN20 ÷ DN100	
BODY	CONNECTION	FLANGED BS-5156
	MATERIAL	CAST IRON
WEDDED PARTS	SHUTTER	DIAFRAGM NATURAL RUBBER
	LINING	NATURAL RUBBER
ACTUATOR	SIZE	200,275 , 335 , 430
	MATERIAL	CARBON STEEL
	AIR SUPPLY	Max. 2,5 bar
	ACTIONN	DIRECT/REVERSE
	CONNECTION	1/4 NPT
WORKING TEMPERATURE	- 5 ÷ 80 °C	

DIFFERENTIAL PRESSURE TABLE *

CODE	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	10		
	25	10		
	32	10		
	40	10		
	50		10	
	65		10	
	80			7
	100			7(430 Mag)

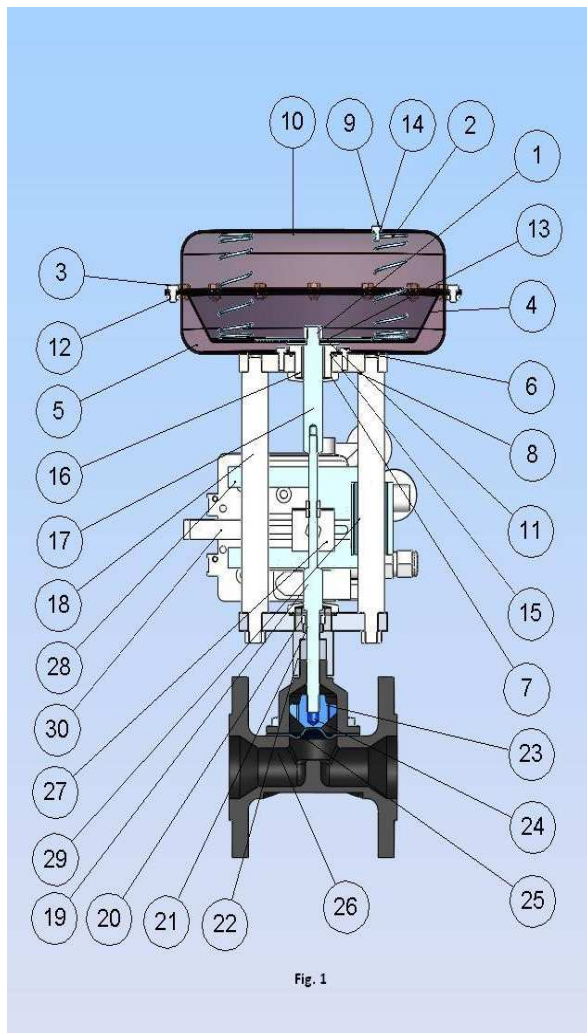
*our standard Dp is 7 bar

OVERALL DIMENSIONS



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

COMPONENTS AND MATERIALS LIST



N°	DESCRIZIONE
1	SHAFT LOCKING NUT
2	SPRING
3	LOCKING SCREW
4	MEMBRANE
5	LOWER SHELL
6	PLATE LOCKING SCREW
7	LOCKING NUT
8	LOWER PLATE
9	VENT CUP
10	UPPER SHELL
11	MEMBRANE PLATE SPRING GUIDE
12	ACTUATOR NUT
13	MEMBRANE AGAINST PLATE
14	ACTUATOR AIR SUPPLY
15	ACTUATOR GASKET
16	SHAFT CUP
17	ACTUATOR SHAFT
18	COLUMNS CARRIAGE
19	STEM
20	LOCKING NUT
21	GRAPHITE GASKET
22	BUSH
23	BONNET
24	PUSHER+
25	DIAPHRAGM
26	BODY LOCKING NUTS
27	REFERENCE PLATE
28	BRACKET

The "W" valves have a two-way body and actuator diaphragm type. Valve bodies are cast iron, coated with natural rubber. The diaphragm (25) is a type of rubber membrane suitable for flow control of corrosive fluids in industry, in a safe area — liquids do not fall into the category "dangerous / toxic," — exhaustively with a pressure not exceeding 10 bar (see table) — and a liquid temperature not exceeding 80 °C.

In conformity with **PED 97/23/EC**, the almost machine-Diaphragm Valve

Controller is designed and built exclusively for shut off / flow control (with pneumatic actuator) of non-hazardous liquids belonging to Group 2-safe area.

The W valves are operated by pneumatic actuators multi springs (1) T200, T.275, T.335, T.430, direct or reverse action.

The valves can be supplied with accessories such as:

Positioner

Actuator with manual release

Limit switch

LIFTING AND TRANSPORT

ROPES AND CHAINS FIXED TO THE N °-2 EYEBOLTS SITUATED ON THE UPPER STRUCTURE OF THE PNEUMATIC ACTUATOR

INSTALLATION

Before installation check that the valve is not damaged, is not obstructed and the operation of opening and closing is correct. Make sure the clamp bolts (26, Fig 1) between the body and the bonnet (23, Fig1) is correct. Check the coating and the diaphragm are suitable to the type of process fluid

Make sure that inside the valve body there is no other material. Clean all pipes to remove scale, welding slag and other materials. **LOCATION:** The normal method is with the actuator vertical above the valve.

Install the valve in the pipe using standard techniques of execution pipelines.

Do not produce oscillations that can damage the valve, clamp the pipe sections upstream and downstream

AIR OPEN (SPRING CLOSE)

Before you start working continuously, make more run tests with the liquid to intercept / control at the maximum working pressure (do not exceed 10 bar).

Verify that a sudden loss of pressure in the valve actuator control circuit (with the relative positioning of the valve in the resting state: normally closed (AIR OPEN -SPRING CLOSE-or vice versa) does not bring dangers in other parts of the plant; if this possibility exists, install the appropriate solutions as a result of thorough risk analysis

WARNING

Before performing any operation of maintenance:

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

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

Depending on the structure of the actuator, it will be necessary to control the supply pressure of the pneumatic actuator and any precompression of the actuator spring . It is essential to consult the

appropriate instructions in the manual to ensure removal in safety conditions of actuator from the valve.

Use locking procedures to ensure that these measures are valid even while working on the equipment. The valve bonnet group can contain process fluids ,even when the valve has been removed from the pipe.

The process fluid can leak

Verify that the bolts (26, Fig 1) locking the valve body to the bonnet (23, Fig1) is correct. Check that the coating and the diaphragm are suitable to the type of process fluid

PERIODIC CHECKS

Make sure the bolts are blocked

Verify that there is no leakage

Check the condition of external parts, oxidation and / or damages

Valve Body Maintenance *

The diaphragm is a part that is subject to wear, due to the contact with the fluid and therefore subject to the abrasive and corrosive action. It must therefore be continuously monitored and replaced, to restore the proper functioning

Diaphragm Replacement *

Unscrew the bolts (26) making sure that the valve body and the actuator does not fall causing damage to person or things. The stem (17) will be in the closed position (open). Turn the diaphragm (DN20 to detach from the seat of the carriage 24) to unscrew it.

Replace the diaphragm

Proceed to mount positioning the 'toes' of the compressor (21) in correspondence with the recesses in the bonnet (23)

Return the diaphragm in a neutral position by aligning the holes with the bonnet (23), re-tighten the bolts diagonally (torque value see table)-DN 80 and 100 for the bolts arrive at the bottom plate of the actuator carriage

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

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

Replace the sealing element (21) on the valve stem, unscrew the locking nuts (20) from the bush (22)

Push out the compressor (24) from the bonnet (23). The coupling is a fixed joint type(for DN 80 and DN100) to remove the safety pins that hold the stem to the compressor.

Clean and lubricate (never oil) or replace the compressor

Proceed with the assembly positioned the two 'toes' of the compressor at the recesses of the bonnet (23)

Torque chart 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

Replacing the valve body *

The body is protected by a natural rubber lining , but the abrasive / corrosive action determines a no-stop decay. Periodic inspection are required and also the replacement of the body to restore the original features.

After removing the valve from the line unscrew the bolts (26), making sure that the valve body does not fall causing damage to person or things , replace and re- tighten the bolts again (see torque chart)

MAINTENANCE FOR PNEUMATIC ACTUATOR *

INSTALLATION

AIR HOSE

Connect the air hose to the 1/4 "NPT connection on the pneumatic actuator or to the filter pressure reducer.

Air must be dried and free of oils and fats.

The maximum direct pressure apply to the application must not exceed 3.5 Bar. The signal and the air value are stamped on the nameplate applied to the actuator

MAINTENANCE

PNEUMATIC DIAPHRAGM REPLACEMENT I

No need to remove the valve from the line. Remove the actuator from the valve

Loose all the screws and nuts (Pos 3 and Pos 22). Make sure to leave the two “long” safety screws tightened and unscrew they slowly to prevent the extension of the springs.

Remove the cover(Pos 20), remove completely the stem-diaphragm-internal plate and counterplate, with appropriate equipment, unscrew the nut (Pos 1) remove and replace a diaphragm (Pos.4)

For the re- installation procede in reverse mode

FOR SPARE PARTS OR INFORMATION ONLY AND ALWAYS QUOTE THE SERIAL NUMBER .*

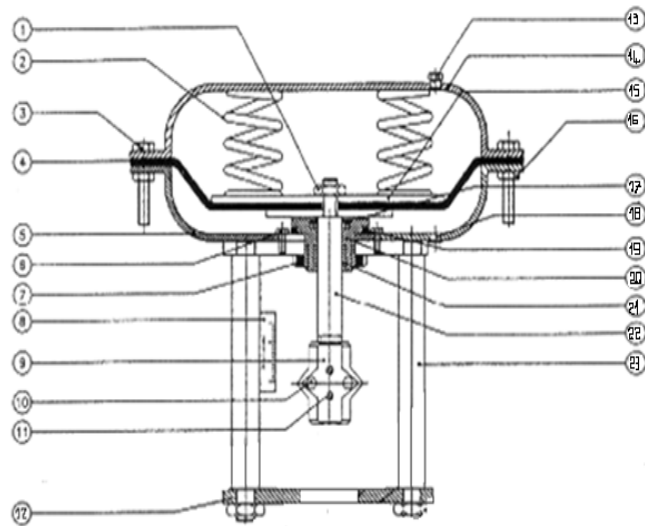
* SIX MONTH PERIODIC CONTROL

SPRING CALIBRATION CHECK

POSITIONE FUNCTIONALALITY CHECK

STATUS OF THE EXTERIOR WEAR, OXIDATION, ETC CHECK

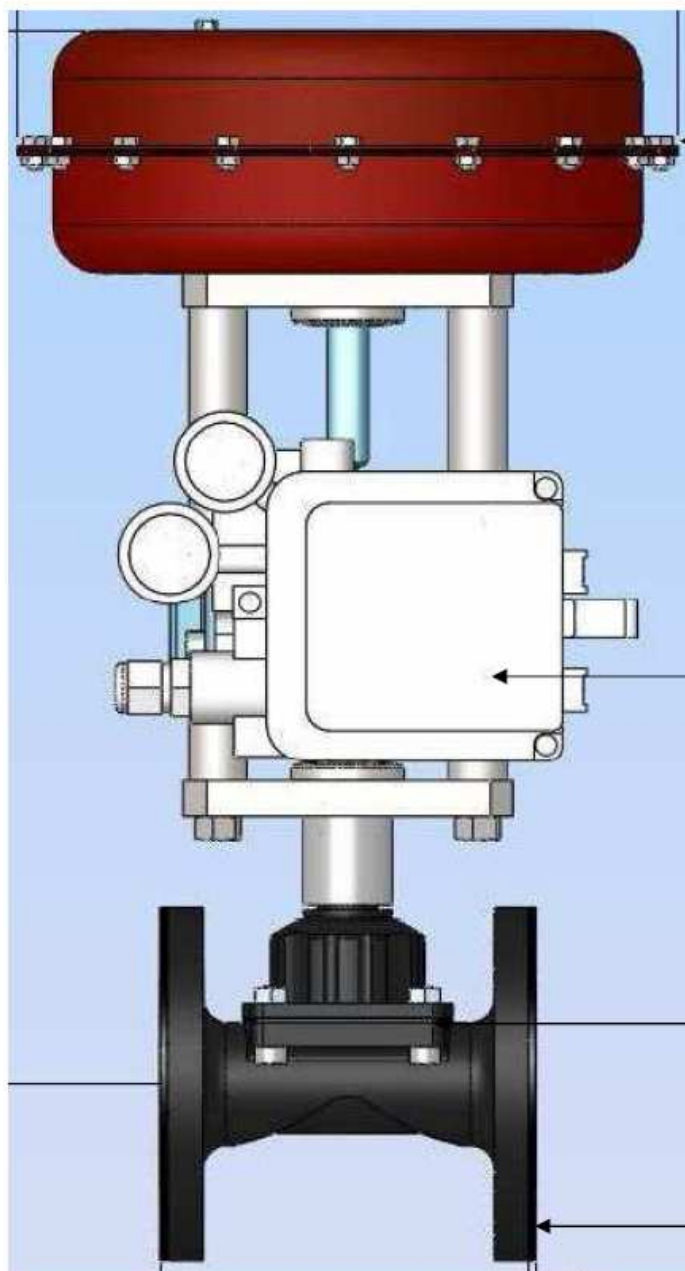
* Extract from the manufacturer's manual



N°	Particolare
1	Shaft docking nut
2	Spring
3	Locking screw
4	Membrane
5	Lower shell
6	Plate locking screw
7	Locking nut
8	////////
9	////////
10	////////
11	////////
12	Lower plate
13	Vent cup
14	Upper shell
15	Membrane plate springs guide
16	Actuator nut
17	Membrane against plate
18	Actuator air supplì
19	Actuator gasket
20	Shaft cup
21	Busch
22	Actuator shaft
23	Columns carriage

SPARE PARTS

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



WBS-MA



WBS-SMC



WBS-MC



WBS-CV