

BM6X Series Slam-Shut Valve

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INTRODUCTION

Scope of Manual

This manual provides instructions for installation, startup, maintenance and spare parts ordering for the BM6X Series slam-shut valves. It also contains information for the OS/80X-R Series slam-shut controller.



Figure 1. BM6X Series Slam-Shut Valve

Product Description

The BM6X Series slam-shut valves are axial flow type.

The slam-shut valves in the BM6X series are used in natural gas reduction, distribution and transfer stations.

They can also be used with air, propane, butane, LPG, city gas, nitrogen, carbon dioxide and hydrogen.

The standard gas pressure devices (safety shut-off devices - SSD slam-shut type) are those used in the assemblies dealt with into EN 12186 and EN 12279 and their use has to be under the provisions into ENs 12186 & 12279.

In the safety slam-shut valves manufactured by Emerson Process shall be used additional pressure accessories (e.g. controller or filters) manufactured and labeled by Emerson Process.

Emerson Process will be not responsible for any possible inefficiency due to installation of not own production additional pressure accessories.

When pressure containing parts of safety slam-shut device (SSD) valve and controller have different maximum allowable pressures (PS), the SSD is differential strength type.

BM6X Series

PED CATEGORIES AND FLUID GROUP

According to EN 14382, only in integral strength type and Class A configuration (when both over and under pressure protections are set up), this slam-shut valve can be classified like a safety accessory according to PED.

The minimum PS between SSD valve and controller shall be the PS of the safety accessory to comply the provisions of EN 14382 about integral strength type.

This product in its Class A and integral strength configuration is a safety accessory for pressure equipment in the following Pressure Equipment Directive 97/23/EC categories.

Table 1. P.E.D. Category for BM6X Series Slam-Shut Valves

PRODUCT SIZE	CATEGORY	FLUID GROUP
DN 80-100-150-200-250-300	IV	1

Possible built-in pressure accessories (e.g. controllers OS/80, OS/80-X) conform to Pressure Equipment Directive (PED) 97/23/EC Article 3 section 3 and were designed and manufactured in accordance with sound engineering practice (SEP).

Per Article 3 section 3, these “SEP” products must not bear the CE marking.

CHARACTERISTICS

Body Sizes and End Connection Styles

DN 80 - 100 - 150 - 200 - 250 - 300

ANSI 150 - 300 - 600 flanged



Maximum Operating Inlet Pressure⁽¹⁾⁽²⁾

ANSI 150: 20 bar

ANSI 300: 50 bar

ANSI 600: 100 bar

Overpressure Set Range

0.03 ÷ 80 bar

Underpressure Set Range

0.01 ÷ 80 bar

Minimum/Maximum Allowable Temperature (TS)⁽¹⁾

See label.

1. The pressure/temperature limits indicated in this instruction manual or any applicable standard or code limitation should not be exceeded.
2. At average ambient temperature.

Functional Features

Accuracy Class AG : ± 1%

Response Time t_a : ≤ 1 second

Temperature

Standard Version: Working -10° ÷ 60°C

Low Temperature Version: Working -20° ÷ 60°C

Materials

Body: Steel

Butterfly disk: Cast iron or steel



Shaft: Steel

Spring: Stainless steel

Lip seal: FKM

O-ring: NBR nitrile rubber or FKM

LABELLING



Notified body
XXXX

APPARECCHIO TIPO / DEVICE TYPE

Nota 1

MATRICOLA SERIAL Nr.

ANNO YEAR

NORME ARMONIZ. HARMONIZED STD. EN

CLASSE DI PERDITA LEAKAGE CLASS

CLASSE FUNZIONALE FUNCTIONAL CLASS

FLUIDO GRUPPO FLUID GROUP

TS °C

DN1

DN2

Wa bar

Wao bar

Wau bar

pmax bar

pao bar

PS body bar

PS covers bar

PT= x PS bar

Nota 2

Nota 3

Nota 4

Figure 2. Label for BM6X Series Slam-Shut Valves

Note 1: BM6X

Note 2: Year of manufacture

Note 3: Class 1: -10°/60°C
Class 2: -20°/60°C

Note 4: ANSI 150 PS: 20 bar
ANSI 300 PS: 50 bar
ANSI 600 PS: 100 bar

OVERPRESSURE PROTECTION

The recommended maximum allowable pressures are stamped on the slam-shut valve label.

Upstream overpressure protection shall be provided if the inlet pressure is greater than the maximum operating inlet pressure.

Downstream side pressure after slam-shut valve's intervention shall stay within the actual maximum operating set-up range to avoid anomalous back pressures that can damage the SSD's controller.

Downstream overpressure protection shall be also provided if the slam-shut valve outlet pressure can be greater than the PS of the pilot (differential strength type).

Slam-shut valve operation below the maximum pressure limitations does not preclude the possibility of damage from external sources or debris in the line.

The slam-shut valve should be inspected for damage after any intervention.

TRANSPORT AND HANDLING

Established transport and handling procedures shall be followed to avoid any damage on the pressure containing parts by shocks or anomalous stresses.

Eyebolts are designed just for handling of equipment weight.

Built-up sensing lines and pressure accessories (e.g. slam-shut controller) shall be protected by shocks or anomalous stresses

ATEX REQUIREMENTS



WARNING

If the provisions of EN 12186 & EN 12279, national regulations, if any, and specific manufacturer recommendations are not put into practice before installation and if purge by inert gas is not carried out before equipment's start-up and shut-down operations, a potential external and internal explosive atmosphere can be present in equipment & gas pressure regulating/measuring stations/installations.

If a presence of foreign material in the pipelines is foreseen and purge by inert gas is not carried out, the following procedure is recommended to avoid any possible external ignition source inside the equipment due to mechanical generated sparks:

- drainage to safe area via drain lines of foreign materials, if any, by inflow of fuel gas with low velocity in the pipe-work (5m/sec)

In any case,

- provisions of Directive 1999/92/EC and 89/655/EC shall be enforced by gas pressure regulating/measuring station/installation's end user
- with a view to preventing and providing protection against explosions, technical and/or organizational measures

appropriate to the nature of the operation shall be taken (e.g. : filling/exhausting of fuel gas of internal volume of the isolated part/entire installation with vent lines to safe area - 7.5.2 of EN 12186 & 7.4 of EN 12279 ; monitoring of settings with further exhaust of fuel gas to safe area ; connection of isolated part/entire installation to downstream pipeline;)

- provision in 9.3 of EN 12186 & 12279 shall be enforced by pressure regulating/measuring station/installation's end user
- external tightness test shall be carried out after each reassembly at installation site using testing pressure in accordance with national rules
- periodical check/maintenance for surveillance shall be carried out complying with national regulations, if any, and specific manufacturer recommendations.

BM6X Series

SLAM-SHUT CONTROLLER

The BM6X Series slam-shut valves are equipped with the OS/80X-R or OS/80X-R-PN series slam-shut reinforced version controller. The controllers are supplied in different models according to set ranges required.

Table 2. Characteristics for Type OS/80X-R Spring Loaded Pneumatic Slam-Shut Controller

MODEL		SERVOMOTOR BODY RESISTANCE (bar)	OVERPRESSURE SET RANGE W_{do} (bar)		UNDERPRESSURE SET RANGE W_{du} (bar)		BODY MATERIAL
VALVE FLOW FROM LEFT TO RIGHT	VALVE FLOW FROM RIGHT TO LEFT		Min.	Max.	Min.	Max.	
OS/80X-BP-S-R	OS/80X-BP-R	5	0.03	2	0.01	0.6	Aluminium
OS/80X-BPA-D-S-R	OS/80X-BPA-D-R	20					
OS/80X-MPA-D-S-R	OS/80X-MPA-D-R	100	0.5	5	0.25	4	Steel
OS/80X-APA-D-S-R	OS/80X-APA-D-R		2	10	0.3	7	
OS/84X-S-R	OS/84X-R		5	41	4	16	Brass
OS/88X-S-R	OS/88X-R		18	80	8	70	
N.B.: 1/4" NPT female threaded connections							

Table 3. Characteristics for Type OS/80X-R-PN Pneumatic Slam-Shut Controller with Type PRX Pilot

MODEL	SERVOMOTOR BODY RESISTANCE (bar)	OVERPRESSURE SET RANGE W_{do} (bar)		UNDERPRESSURE SET RANGE W_{du} (bar)		BODY MATERIAL
		Min.	Max.	Min.	Max.	
OS/80X-R-PN	100	0.5	40	0.5	40	Aluminium
OS/84X-R-PN	100	30	80	30	80	Brass
<p>OS/80X-R-PN: Pressure range 0.5 to 40 bar Appliance made of an OS/80X-APA-D-R set at about 0.4 bar and a variable number of PRX/182 pilots for overpressure and PRX/181 for underpressure, as many as necessary to control different points of the installation.</p> <p>OS/84X-R-PN: Pressure range 30 to 80 bar Appliance made of an OS/84X-R set at about 20 bar and a variable number of PRX-AP/182 pilots for overpressure and PRX-AP/181 for underpressure, as many as necessary to control different points of the installation.</p> <p>N.B.: 1/4" NPT female threaded connections.</p>						



Figure 3. OS/80X-BP-R Slam-Shut Device

DIMENSIONS AND WEIGHTS

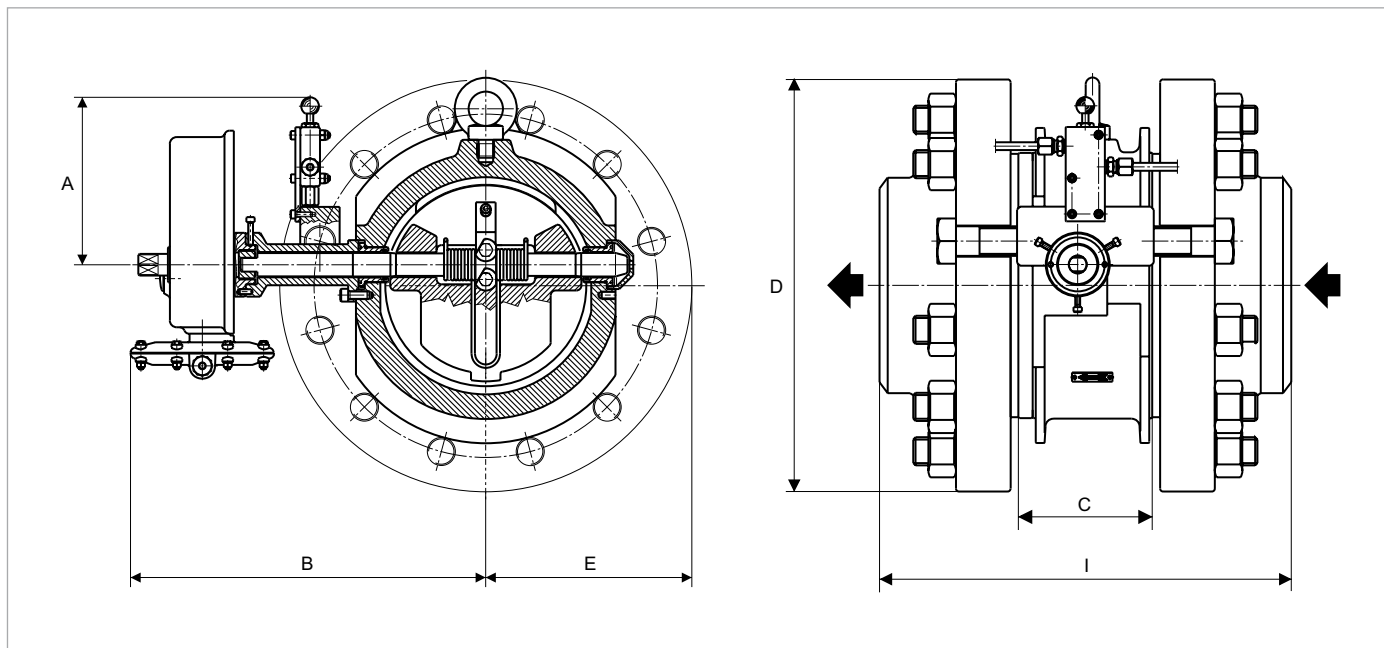


Figure 4. Type BM6X Series Dimensions

Table 4. Type BM6X Series Dimensions (mm)

TYPE		DN 80	DN 100	DN 150	DN 200	DN 250	DN 300
A		155	170	220	220	220	220
B		250	290	415	445	480	510
C		54	70	102	135	168	203
ANSI 150	D	190	230	279	343	406	482
	E	95	115	140	172	203	241
	I	197	227	284	342	375	436
ANSI 300	D	210	254	318	381	445	521
	E	105	127	159	191	223	261
	I	217	245	303	361	407	468
ANSI 600	D	210	274	357	419	508	559
	E	105	137	179	220	254	280
	I	235	264	354	419	490	531

N.B. The B dimensions are indicative and refer to the models with larger dimensions.

The threaded opening for the connection of the control line is 1/4" NPT female.

Table 5. Type BM6X Series Weights (kg)

TYPE		DN 80	DN 100	DN 150	DN 200	DN 250	DN 300
ANSI 150	10		13	22	33	47	81
ANSI 300				26	42	56	90
ANSI 600			15	33	51	85	125

BM6X Series

OPERATION

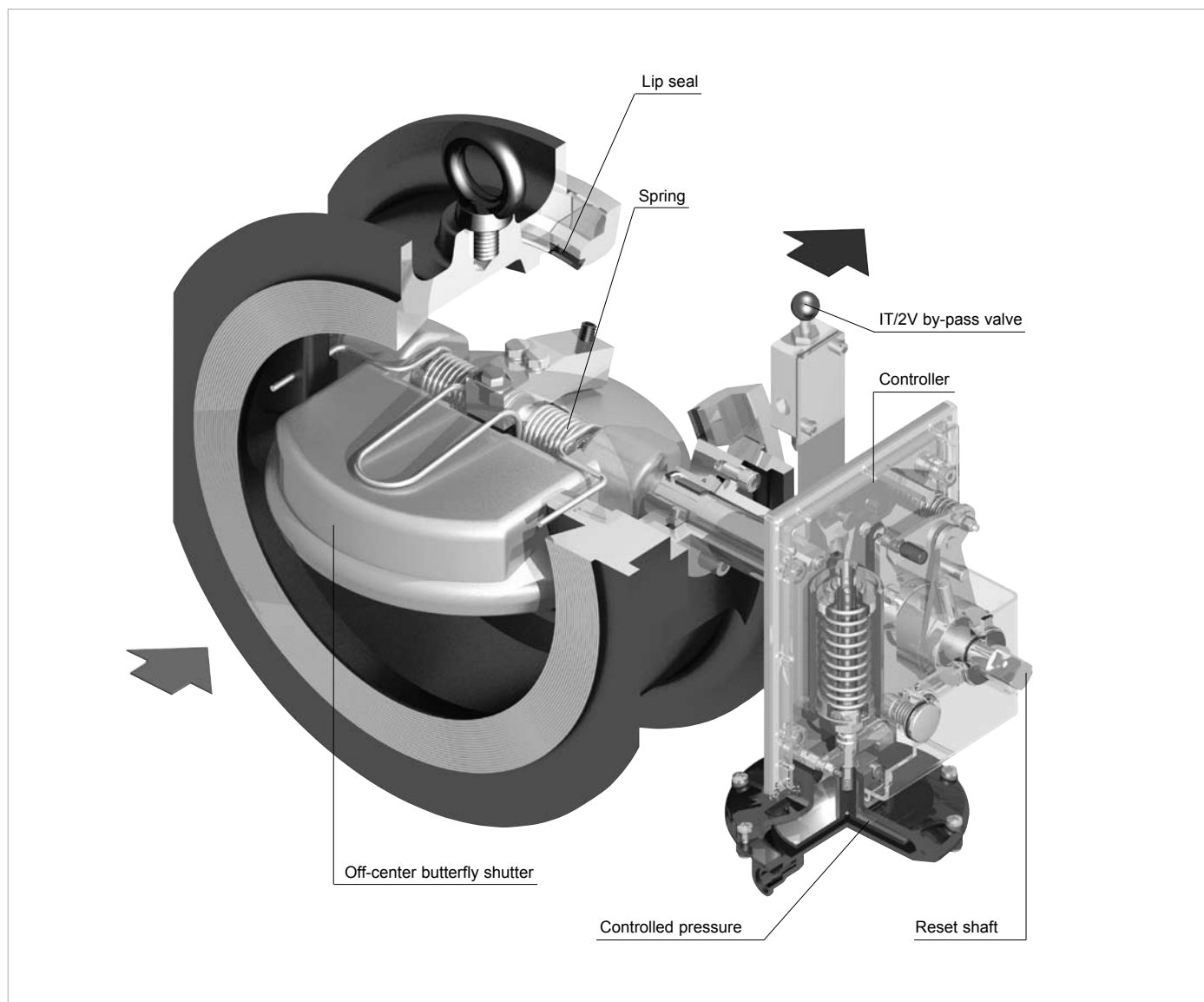


Figure 5. Type BM6X Operational Schematic

Slam-shut Valve

The BM6X series slam-shut valve consists of a “wafer” type valve body, an pilot and a by-pass valve.

The valve body has an off-center butterfly disk that is mounted eccentrically on the reset shaft.

A lip seal ensures tightness.

The spring thrust, with the additional weight of the eccentric off-center butterfly disk, ensures punctual and safe closure under any working conditions.

In addition, the compression of the seal, which is determined by the pressure, ensures perfect tightness.

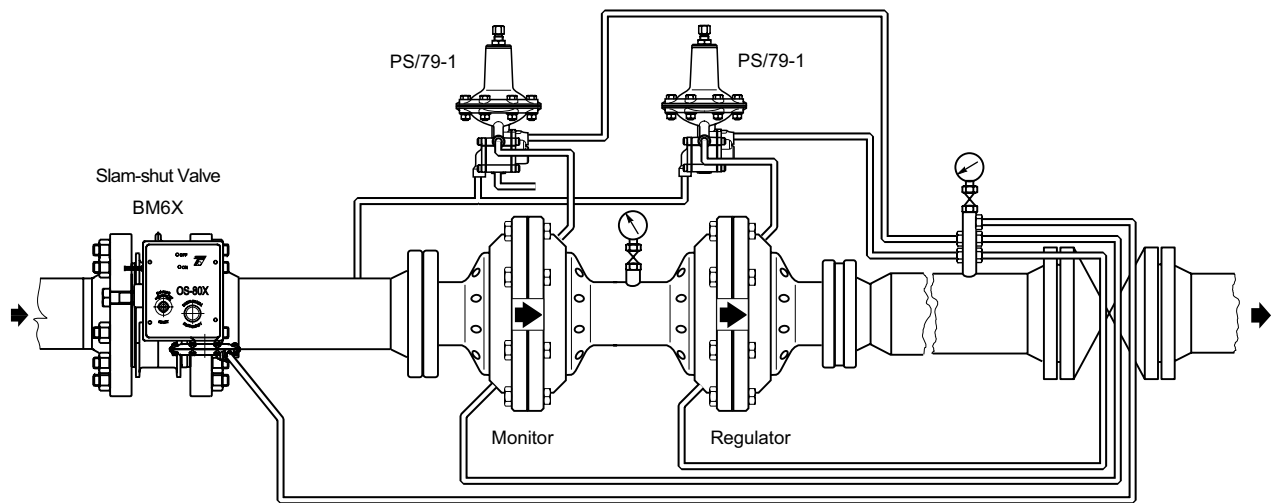
The slam-shut valve can only be opened if the upstream and downstream pressures are equal.

The IT/2V by-pass valve with automatic return makes it possible to balance these pressures. The valve can only be opened manually by rotating the pilot reset shaft.

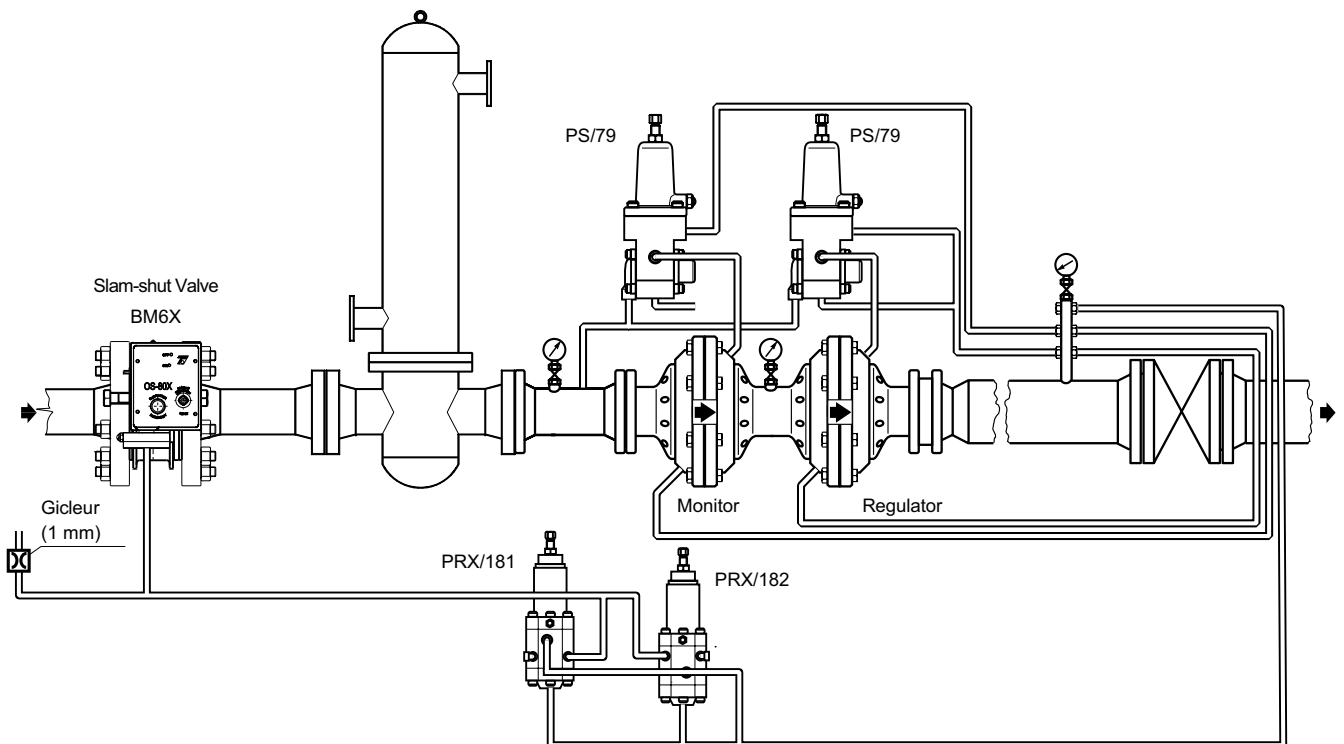
When the controlled pressure lies within the set levels for the pilot, the latter remains set and prevents rotation of the shaft while keeping the butterfly disk open.

When said pressure changes beyond the set levels, the butterfly disk moves to the closure position.

INSTALLATION



SLAM-SHUT VALVE WITH OS/80X-R CONTROLLER - INSTALLATION IN A LOW PRESSURE REGULATING LINE



SLAM-SHUT VALVE WITH OS/80X-R-PN CONTROLLER - OVERPRESSURE AND UNDERPRESSURE CONTROL DOWNSTREAM OF REGULATORS

LEGEND:

① DOWNSTREAM OR TO A SAFE AREA

NOTE: RECOMMENDED PIPING IS STAINLESS STEEL WITH 10 mm DIAMETER.

Figure 6. BM6X Series Connection/Installation Schematics

INSTALLATION (CONTINUED)

- Ensure that the data found on the slam-shut valve label are compatible with usage requirements.
- Make sure that slam-shut controller is installed up-right.
- Ensure that the slam-shut valve is mounted in accordance with the direction of flow indicated by the arrow.
- Make the connection of the pressure control pipe, taking it off a straight section of the downstream pipe, if possible far from narrow sections, curves, or branches, to avoid variations in the release values of slam-shut device caused by turbulence.



WARNING

Only qualified personnel should install or service a slam-shut valve.

Slam-shut valve should be installed, operated, and maintained in accordance with international and applicable codes and regulations.

If the slam-shut valve vents fluid or a leak develops in the system, it indicates that servicing is required.

Failure to take the slam-shut valve out of service immediately may create a hazardous condition.

Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this slam-shut valve is overpressured or is installed where service conditions could exceed the limits given in the "Characteristics" section, or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation, or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the slam-shut valve could result in personal injury and property damage due to escaping fluid.

To avoid such injury and damage, install the slam-shut valve in a safe location.

Before installation, check shall be done if service conditions are consistent with use

limitations and if its slam-shut device set-up is in accordance with service conditions of protected equipment.

All means for venting have to be provided in the assemblies where the pressure equipment are installed (ENs 12186 & 12279).

All means for draining have to be provided in the equipment installed before the slam-shut valve (ENs 12186 & 12279).

Further the ENs 12186 & 12279, where this product is used:

- Provide the cathodic protection and electrical isolation to avoid any corrosion
- In accordance with clause 7.3/7.2 of aforesaid standards, the gas shall be cleaned by proper filters/separators/scrubbers to avoid any technical & reasonable hazard of erosion or abrasion for pressure containing parts

Slam-shut valve shall be installed in non-seismic area and hasn't to undergo fire and thunderbolt action.

Clean out all pipelines before installation of the slam-shut valve and check to be sure the slam-shut valve has not been damaged or has collected foreign material during shipping.

Use suitable line gaskets and approved piping and bolting practices.

Installation must to be done avoiding anomalous stresses on the body and using suitable joint means (bolts, flanges, ...) according equipment dimensions and service conditions.

Install the slam-shut valve in any position desired, unless otherwise specified, but be sure flow through the body is in the direction indicated by the arrow on the body.

User has to check and carry out any protection suitable for assembly's specific environment.

For outdoor installations, the slam-shut valve should be located away from vehicular traffic and positioned so that water, ice, and other foreign materials cannot enter into the pilot mechanism.

Avoid placing the slam-shut valve beneath eaves or downspouts, and be sure it is above the probable snow level.

STARTUP

The built-in slam-shut controller is factory set at approximately the midpoint of the spring range or the pressure requested, so an initial adjustment may be required to obtain desired results.

- a. Slightly and very slowly open inlet valve upstream of the BM6X/.
- b. Open by-pass valve (key 18) by pressing knob (P). Keep knob pressed until downstream pressure increases so as to permit valve disc to become balanced, after which release knob.

- c. Using the appropriate lever, rotate shaft (B) in the direction shown by the arrow stamped on the OS/ cover so as to permit slam shut valve to open. Keep the valve open manually



CAUTION

In case you note an excessive resistance in the opening manoeuvre you have to depressurize the upstream pipe slightly.

- d. Slightly open outlet valve and wait for downstream pressure to stabilize.
- e. Act on shaft (B) several times to make sure that actuator remains properly latched.
- f. First slowly open the valve upstream of the BM6X/ completely, then slowly open the valve downstream of the regulator.

SLAM-SHUT CONTROLLER ADJUSTEMENT

To change the slam-shut controller setpoints (overpressure and/or underpressure), remove the spring closing cap of the controller and turn the adjusting screws clockwise to increase outlet pressure or counterclockwise to decrease pressure.

Monitor outlet pressure with a test gauge during the adjustment.

SHUTDOWN



WARNING

To avoid personal injury resulting from sudden release of pressure, isolate the slam-shut valve from all pressure before attempting disassembly and release trapped pressure from the equipment and pressure line. In case of disassembly of main pressure retaining parts for checks and maintenance procedures, external and internal tightness tests have to be done according to applicable codes.

MAINTENANCE (SEE FIGURE 7)



WARNING

All maintenance procedures must be carried out only by qualified personnel.

If necessary, contact our technical support representatives or our authorized dealers.

The valve and its pressure accessories are subject to normal wear and must be inspected periodically and replaced if necessary.

The frequency of inspection/checks and replacement depends upon the severity of service conditions and according to applicable National or Industry codes, standards and regulations/recommendations.

In accordance with applicable National or Industry codes, standards and regulations/recommendations, all hazards covered by specific tests after final assembling before applying the CE marking, shall be covered also after every subsequent reassembly at installation site, in order to ensure that the equipment will be safe throughout its intended life.

Before proceeding with any maintenance work, shutoff the gas upstream and downstream from the valve, also ensure that there is no gas under pressure inside the body by loosening the upstream and downstream connections.

Upon completion, check for leaks using suds.

General Maintenance

- a. Cause the actuator to trigger, remove the impulse line (A) and take off the slam shut valve from the line.
- b. Loosen screws (key 13) and slide the controller out.
- c. Remove gasket retaining ring (key 26) and replace gasket (key 25).
- d. Loosen screws (key 10) and remove hub (key 14).
- e. Loosen plug (key 6). Loosen screws (key 21), remove washers (key 22), and shaft lever (key 29).
- f. Rotate the shaft (key 2) for 180° and take off the bracket (key 27). Dismount the shaft from the OS/80X-R side.



CAUTION

The valve shutter (key 24) is free, hold it in order to prevent it from falling.

- g. With the given special wrench dismount the guide bushes (key 8), and replace O-Rings (key 3 and 5).
- h. Check all moving parts, paying special attention to nickel plated surfaces. Replace any that are worn or damaged.
- i. Remove by-pass valve (key 18) and carry out maintenance

Reassembly

Lubricate all seals with MOLYKOTE 55 M, being very careful not to damage them when reassembling.

Reassemble the parts by reversing the above steps.

As you proceed, make sure that parts move freely and without friction.

BM6X Series

In addition:

- a. Complete reassembly and make sure to tighten all screws uniformly.
- b. During the shaft insertion inside the shutter it's necessary to push spring (key 9). Make sure not to damage the shaft surface, near the guide bushes
- c. When reassembling lever shaft (29) replace the special washers (22).



WARNING

Check the dimension "C" value indicated on Table 7. If is necessary adjust, through the appropriate screw (key 20), the butterfly's position.

- d. After the reassembly completion, check the proper functioning of all parts. Check the valve with soapy water, making sure there are no leaks.
- e. Remount valve on the line and reestablish all connections.

SLAM-SHUT CONTROLLER MAINTENANCE (SEE FIGURE 8)

Installation

- a. Install the slam-shut controller in a covered area and protect it against weather agents.
- b. Check that data on the plate are compatible with actual working conditions.
- c. Make sure slam-shut controller is installed upright, i.e. screw (key 49) on top.



CAUTION

Mounting in any other way will jeopardize controller's performance.

- d. Carry out the connection of gas outlet (A). It must be derived from the pressure control piping, in a straight tract, possibly far away from restrictions, curves or derivations, in order to avoid turbulence that can alter the trip pressure setpoints.

Startup

- a. Using lever, activate slam-shut by turning reset stem (key 6) in the direction shown by the arrow.
- b. Wait until the pressure being controlled stabilizes and then slowly release lever.
- c. Now repeat this procedure, make sure that levers keep slam-shut controller properly set and that lever (key 33) is in horizontal position.

Periodical Checks

It is recommended that slam-shut controller be efficiency checked periodically.

Cut-off Test

- a. Cut-off the circuit by means of inlet and outlet valves and disconnect the pressure control pipe (A). The slam-shut controller should cut-off at minimum pressure (only if so set).
- b. Through the pressure control connection, use a small pump or other appropriate means, to raise the pressure to normal operating level. Reset slam-shut controller after cut-off in step a.
- c. Simulate pressure increase until maximum pressure cutoff value is reached.
- d. Connect the pressure control slam-shut controller (A) and set the circuit back to operating conditions by following the instructions described in the Startup section.

Valve-seal Check

- a. Slowly close the valve located downstream.
- b. Press the "EMERGENCY" button. This will cause the immediate closing of slam-shut controller.
- c. Loosen a connector in the downstream line of the slam-shut valve or of the regulator. Check the connector with soap and water, making sure there are no leaks; make any necessary repairs otherwise.

Maintenance

Routine slam-shut controller maintenance entails simply periodic checking of the diaphragm on the Type OS/80X-R (the piston Gaco flex on the Type OS/84X-R) and the movement of the levers, i.e. they should move freely with a minimum of friction. If necessary, lubricate pins with "Molykote 55 M".



WARNING

For a successful job it is indispensable to use qualified personnel, possibly calling on our Technical Support Representatives. Before starting maintenance, disconnect impulse connection (A) to make sure there is no gas under pressure in the slam-shut controller. When maintenance operations are finished check the tightness with suds.

Replacing Diaphragm (OS/80X-R Series only)

- a. Remove screws (key 27) and cover (key 61).
- b. Replace diaphragm (key 62).
- c. To remount diaphragm, coat it with grease, set it in place around the edge of cover (key 61) and evenly tighten screws (key 27) to ensure proper sealing.

Replacing O-ring (Type OS/84X-R and OS/88X-R only)

- a. Remove plug (key 61) and extract piston (key 68) from body (key 60).
- b. Replace O-ring (key 67) and gaco flex (key 66).
- c. Reassemble by reversing the above procedures.

General Maintenance

- a. Remove screws (key 40) and casing (key 47).
- b. Remove dowels (key 12) and bushing (key 13).
- c. Slide off stem (key 6), lever assembly (key 17 and 2), rollers (key 10) and shim ring (key 15). Wash parts, replace any if worn.
- d. Remove nuts (key 18), levers (key 20 and 36) and springs (key 37 and 21).
- e. Remove nut (key 30), screw (key 29) and lever (key 33).
- f. Remove minimum adjusting screw (key 49), maximum adjusting nut (key 50) and springs (key 53 and 54).
- g. Remove cover (key 61) on OS/80X-R Series, or plug on types OS/84X-R and OS/88X-R, and proceed as directed in replacing diaphragm/O-ring section.
- h. Remove nut (key 70) and locknut (key 69), then slide off stem unit (key 57).
- i. Loosen screw (key 3), unscrew nut (key 9), remove rollers holder (key 5) and check seals (key 4 and 8) for wear.
- j. Clean all parts with petrol, replace any if worn.

Reassembly

Reassemble all parts by reversing the steps in the general maintenance section.

As you proceed, make sure all parts move freely without friction. If necessary, lubricate them with Molykote 55 M.

Make sure to:

- a. Narrow the gap between nuts (key 30 and 18) so that levers (key 33, 36, and 20) have minimum play yet move freely without friction.
- b. Before mounting minimum spring (key 54), register position of lever (key 33) by means of nut (key 70), locking it into place with locknut (key 69).



CAUTION

The lever (key 33) is in proper position when it is exactly horizontal and in the center of the groove of lever (key 36).

- c. Now remount lever assembly (key 17 and 2), rollers (key 10), keeping them in their seat with grease, and stem (key 6), which is to be turned so the rollers enter their seats. The stem and lever assembly should now be tightly fitted together.
- d. Remount bushing (key 13), make sure that the dowels are firmly set in the grooves of the stem (key 6).
- e. Repeatedly check if pilot resets properly and, lastly, remount minimum spring (key 54).
- f. Always check controller setting.

Minimum and Maximum Setting

- a. Make sure that the lever (key 33) is in horizontal position when slam-shut controller is reset. If necessary, use nut and locknut (key 69 and 70) to adjust (see step b, Reassembly section).
- b. Use maximum adjusting nut (key 50) to completely load maximum pressure spring (key 53). Loosen minimum adjusting screw (key 49) to completely relieve minimum pressure spring (key 54).
- c. Disconnect pressure control pipe (A).
- d. Through the pressure control connection, use a small pump or other appropriate means to raise the pressure to normal operating level.
- e. Reset slam-shut controller and reduce the pressure until it reaches minimum cutoff level.
- f. Use minimum adjusting screw (key 49) to load spring (key 54) slowly until pilot is triggered.
- g. Repeat procedures (d) and (e) above, making any necessary adjustment in the setting.
- h. Bring pressure back to normal values.
- i. Reset controller and raise the pressure until it reaches maximum cutoff level.
- j. Using maximum adjusting nut (key 50), slowly unload spring (key 53) until cut-off point is reached.
- k. Repeat procedures (h) and (i) above, making any adjustment necessary in the setting.



CAUTION

Whenever minimum or maximum pressure setting is not required, omit corresponding steps.

SPARE PARTS

Spare parts storage shall be done by proper procedures according to national standard/rules to avoid over aging or any damage.

BM6X Series

TROUBLESHOOTING

Table 6. Troubleshooting for BM6X Series Slam-Shut Valve

SYMPTOMS	CAUSE	ACTIONS
Slam-shut device does not remain set	The actuator impulse intake (A) is not connected properly	Check connections (A)
	Downstream pressure coincides with the maximum or minimum slam-shut settings	Check slam-shut settings
	Diaphragm (key 62) is damaged (Gaco flex (key 66) on types OS/84X-R, OS/88X-R)	Replace the diaphragm
Sleeve does not seal properly	Worn seal gaskets	Check gaskets
	Dirt deposit on sleeve	Check sleeve
	Shaft (key 2) damaged	Check shaft

PARTS LISTS

BM6X Series Slam-Shut Valve (See Figure 7)

Key	Description	Key	Description
1	Eyebolt	22*	Washer
2	Shaft	23	Body
3*	O-Ring	24	Shutter
4*	Antiextrusion ring	25*	Gasket
5*	O-Ring	26	Ring
6	Plug	27	Shaft bracket
7	Bush	28	Pin
8	Guide bush	29	Shaft lever
9	Spring	30	Bracket
10	Screw	31	Screw
11	Needle	32	Plate
12	Controller	33	Rivet
13	Special screw	34	Shaft
14	Hub	35	Screw
15	Screw	36	Hub
16	Screw	37	Pin
17	Bracket	38*	O-Ring
18	IT/2V by-pass valve	39	Shaft
19	Self locking nut	40	Washer
20	Screw	41	Washer
21	Screw	42	Ring nut

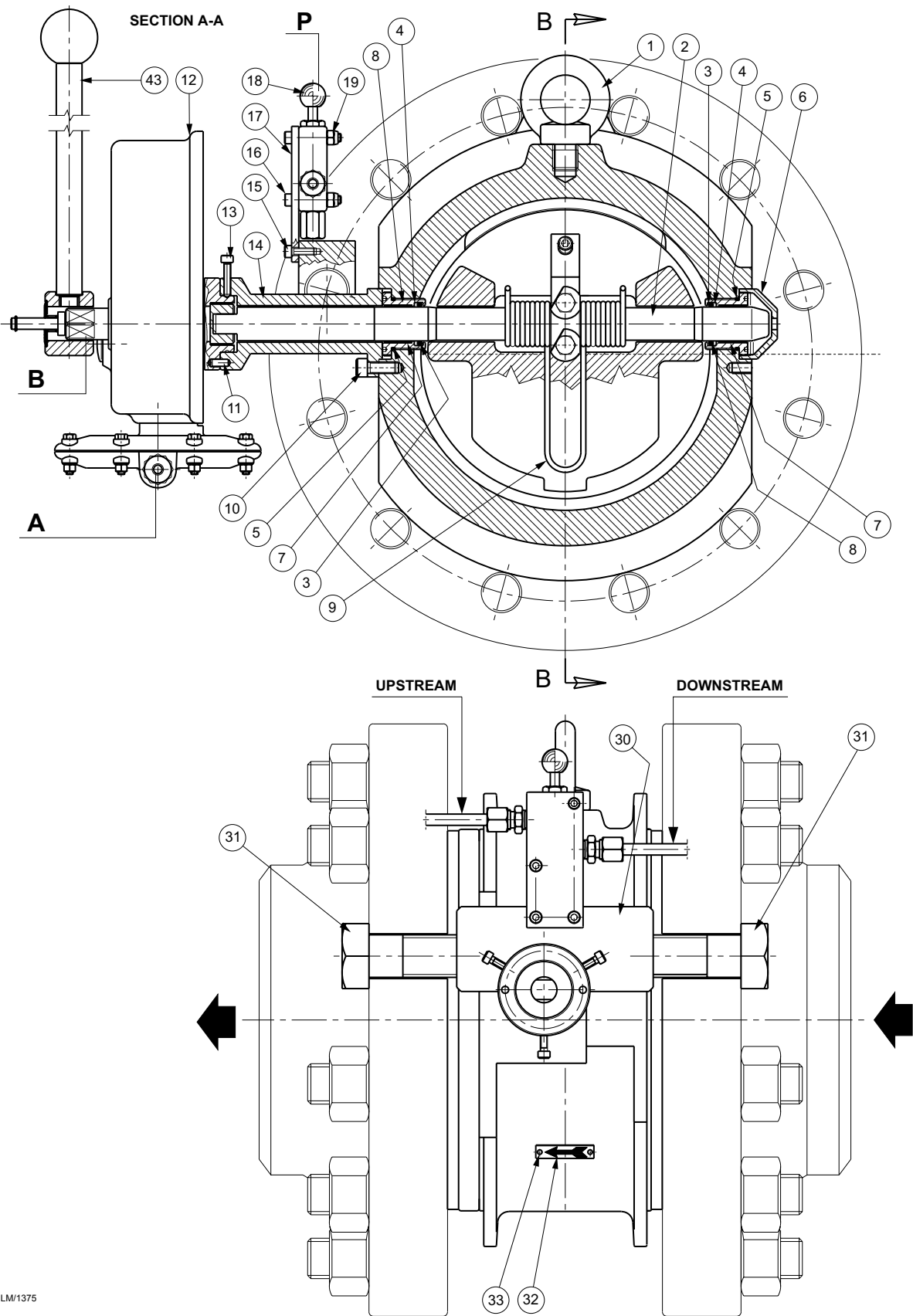
OS/80X-R Series Slam-Shut Controller (See Figure 8)

Key	Description	Key	Description
1	Plate	47	Casing
2	Releasing bushing	48	Screw
3	Screw	49	Minimum pressure adjusting screw
4*	Gasket	50	Maximum pressure adjusting nut
5	Rollers holder	51	Pipe assembly
6	Stem	52	Washer
7	Roller	53	Spring
8*	O-ring	54	Spring
9	Reloading nut	55	Lower spring holder unit
10	Roller	56	Seeger ring
11	Roller	57	Stem unit
12	Dowels	58	Spring
13	Reloading bushing	59	Plate holding stem unit
14*	O-ring	60	Top cover (Body for type OS/84X-R and OS/88X-R)
15	Ring	61	Lower cover (Plug for type OS/84X-R and OS/88X-R)
17	Reloading lever unit	62*	Diaphragm
18	Self-locking nut	63	Screw
19	Washer	64	Block
20	Return lever	65*	O-ring
21	Spring	66*	Gaco flex
22	Fulcrum	67*	O-ring
24	Label	68	Piston
26	Nut	69	Locknut
27	Screw	70	Nut
28	Reloading pin	71	Microswitch
29	Screw	73*	Gasket (only for BP, BPA-D, MPA-D)
30	Self-locking nut	74	Filter
31	Washer		
32	Plate fulcrum		
33	Lever		
34	Screw		
35	Cone		
36	Releasing lever		
37	Spring		
38	Plug		
39	Locking pin		
40	Screw		
41	Indicator pin		
42	On-Off indicator		
43	Button		
44*	O-ring		
45	Spring		
46	Gasket		

Rubber parts marked with (*) are supplied in the "spare parts kit", recommended as stock.

To order the kit it is necessary to communicate to us the type of the slam-shut valve or slam-shut controller and its serial number.

SCHEMATIC ASSEMBLIES



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Figure 7. BM6X Series Slam-Shut Valve

SECTION B-B

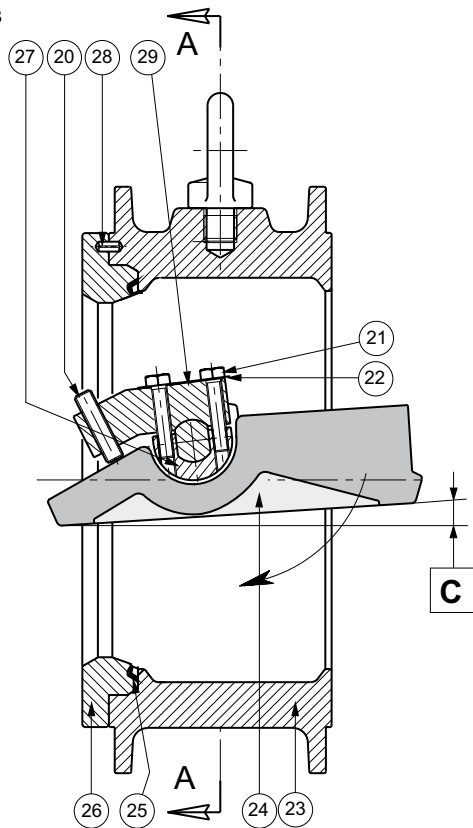
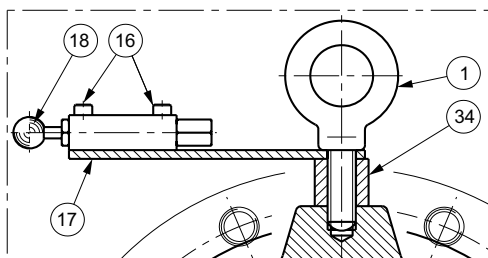


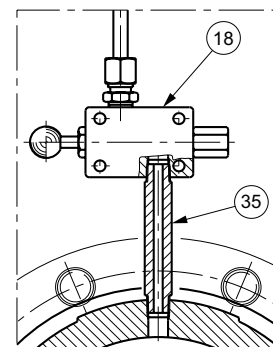
Table 7. Shutter Position Dimensions BM6X

TYPE	C
BM6X/80	Min. 1 mm - Max 3 mm
BM6X/100	Min. 1 mm - Max 5 mm
BM6X/150	Min. 3 mm - Max 8 mm
BM6X/200	Min. 5 mm - Max 10 mm
BM6X/250	Min. 6 mm - Max 11 mm
BM6X/300	Min. 8 mm - Max 13 mm

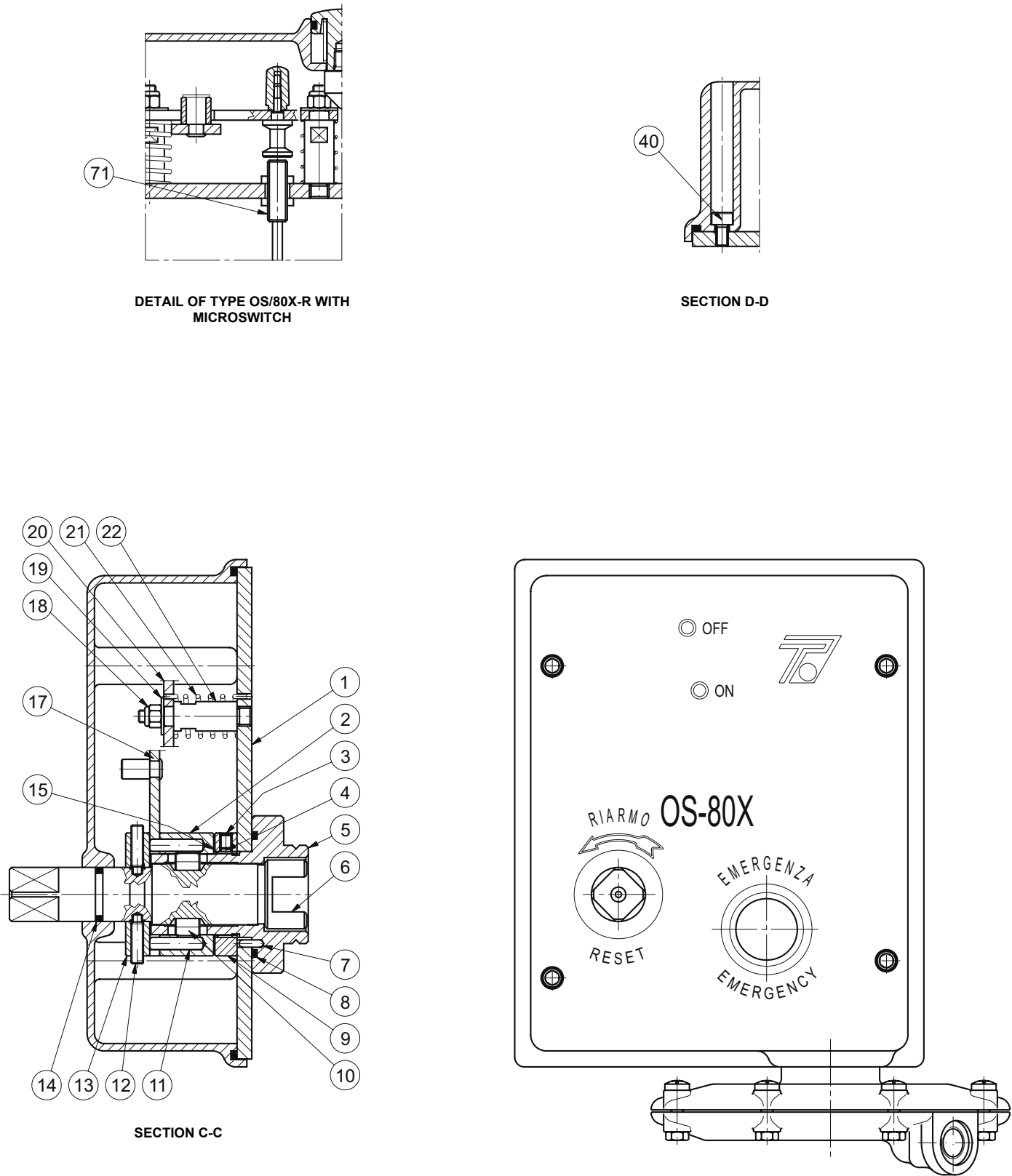
BM6X/200 ANSI 150 DETAIL



BM6X/150 ANSI 150 DETAIL

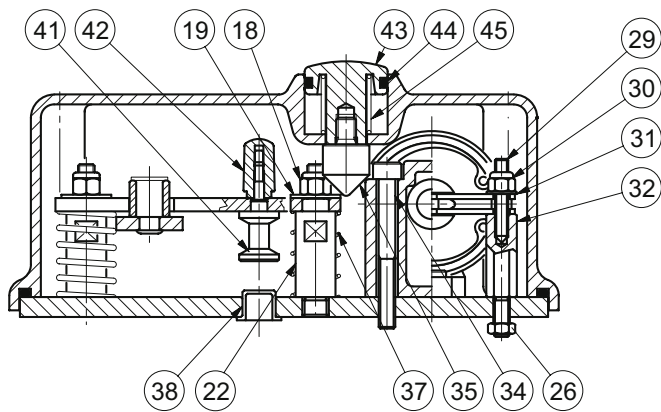


BM6X Series

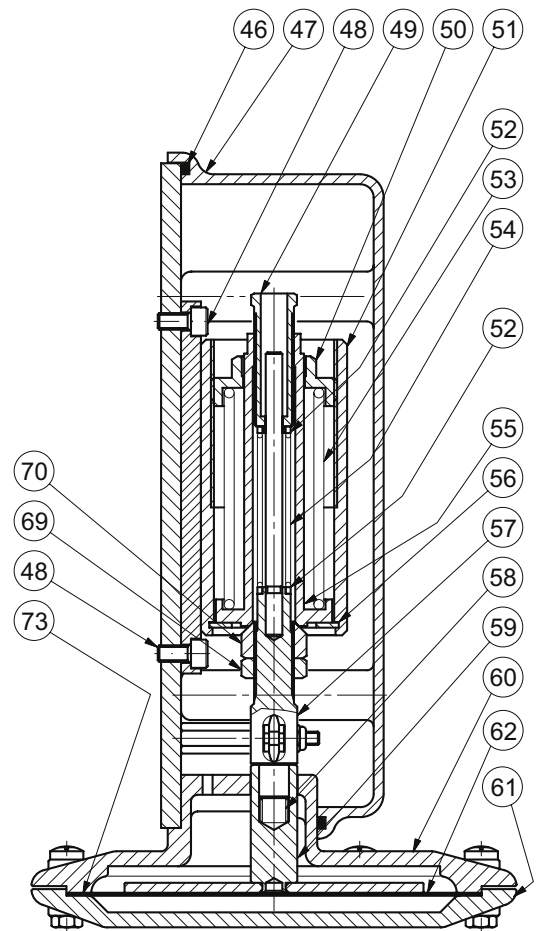
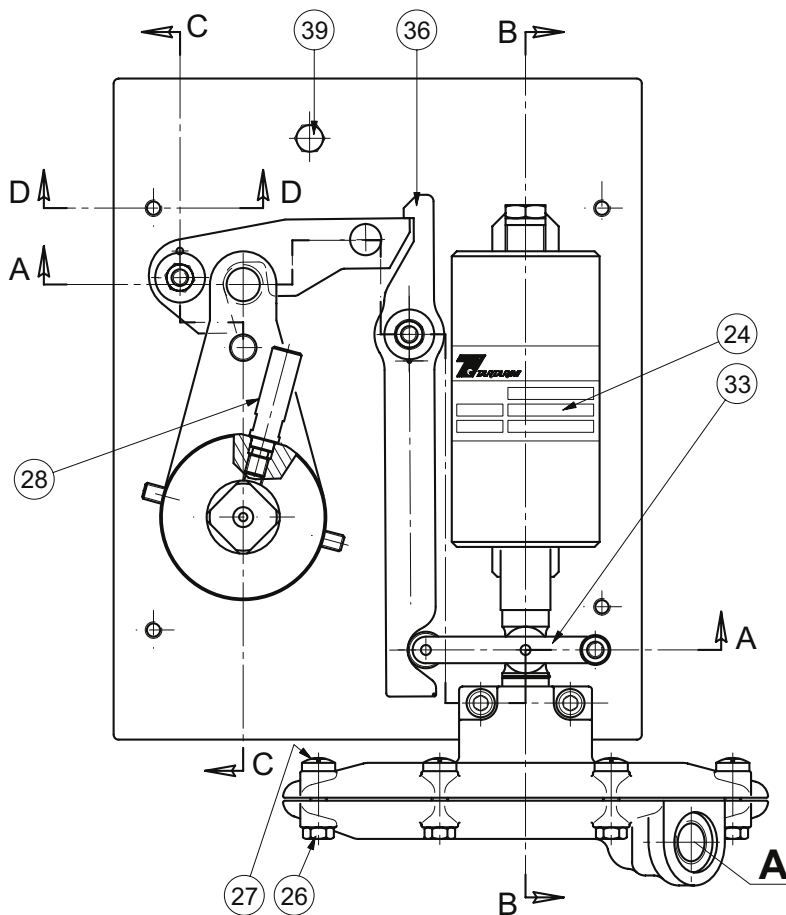


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Figure 8. OS/80X-R Slam-Shut Controller Reinforced Version



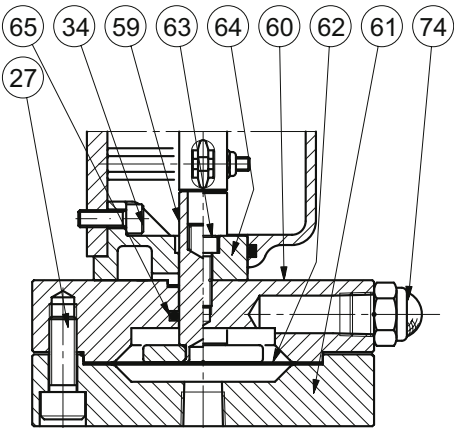
SECTION A-A



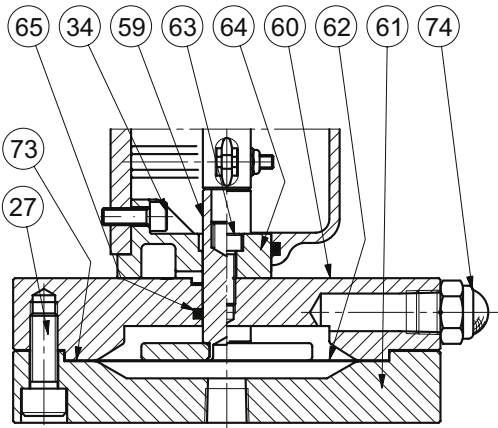
SECTION B-B

Figure 8. OS/80X-R Slam-Shut Controller Reinforced Version (continued)

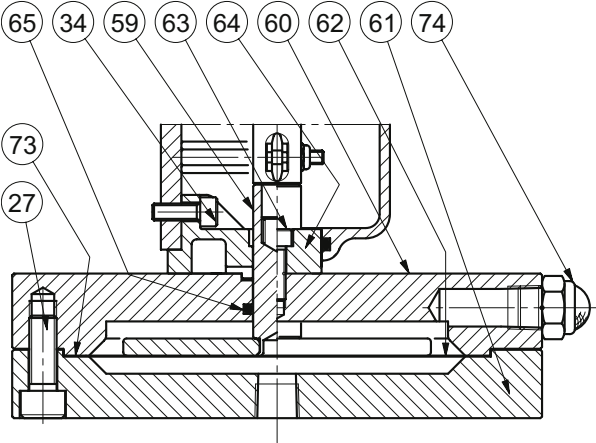
BM6X Series



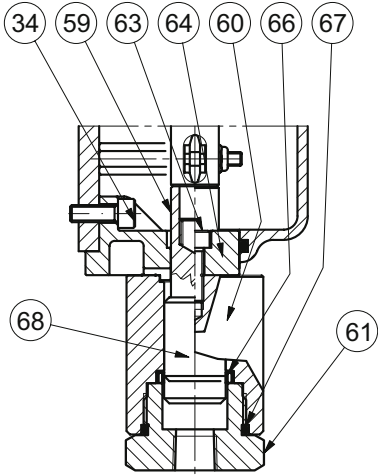
TYPE OS/80X-APA-D-R DETAIL



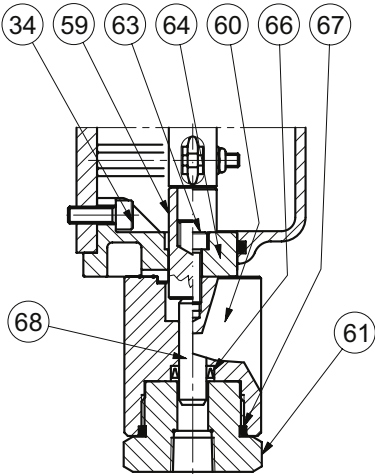
TYPE OS/80X-MPA-D-R DETAIL



TYPE OS/80X-BPA-D-R DETAIL



TYPE OS/84X-R DETAIL



TYPE OS/88X-R DETAIL

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Figure 8. OS/80X-R Slam-Shut Controller Reinforced Version (continued)

BM6X Series

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