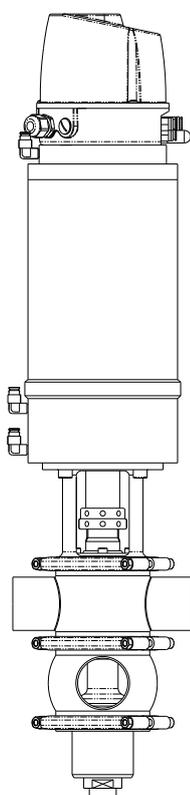




## INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

# INOXPA DOUBLE SEAT VALVES *DOUBLE SEAL LOW LEAK BALANCED, SEAT LIFTING VALVE*



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Original Manual

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## Declaration of Incorporation

The manufacturer: **INOXPA, S.A.**  
c/ Telers, 57  
17820 Banyoles (Girona), Spain

herewith declares that the machine:

### **MIX-PROOF valve Seat Lifting Balanced**

with the serial number: \_\_\_\_\_

conforms to the relevant provisions of the following directives:

Machinery Directive 2006/42/EC (RD 1644/2008)  
Pressure equipment Directive 97/23/EC

It also declares that the technical documentation for this partly completed machinery has been developed in compliance with Appendix VII Section B and it agrees to issue this documentation as and when required by the national authorities.

The aforementioned partly completed machinery shall NOT be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the Machinery Directive, as required by Appendix II A.

Identification of the person empowered to draw up the Declaration on behalf of the manufacturer, and qualified to compile the technical file established by the Community:

Banyoles, 8 January 2014

David Reyro Brunet  
Technical Office Manager

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# SERVICING INSTRUCTIONS

## **WARNING**

***Before working on the valves, ensure that:-***

- All pneumatic and electrical power supplies have been isolated.***
- Valves have been isolated from the process, and lines have been drained.***

## **1.0 FULL OVERHAUL OF VALVES**

Before working on the valve refer to "WARNING" at the beginning of this section.

**Note:** For Double Seal Routing Valves and Mixed Body Valves refer to additional Supplements .

To gain access to the internal valve components it is necessary to split the full assembly at the top clamp arrangement into two sub-assemblies.

- (a) Poppets and Actuator Assembly
- (b) Bodies and Seat Assembly

With the exception of the seat seals all internal seals, bearings and components may be checked and replaced without removing the valve bodies from the process line.

## **WARNING**

***Care should be exercised in handling either the complete Valve or the Actuator/Poppet Assembly and, to avoid damage and bending, lifting via the exposed lower poppet shaft and/or the control box shaft must be avoided.***

To ensure that the degree of lift on the top seat remains constant before and after any servicing it is necessary to measure and note this prior to undertaking any work on the valve.

Apply air to the bottom connection on the actuator and note the degree of lift of the upper poppet by measuring the movement of the lock nut located in the adaptor.

The degree of lift on the bottom poppet is non adjustable and is set during manufacture with the use of shims located under the Control Box.

## 1.1 Initial Disassembly

It is advisable to remove the upper poppet spring load from the seat prior to releasing the upper clamps.

This can be achieved by applying air to the main actuator either directly or via the control box if fitted, to lift the valve.

Fully release the body assembly from the poppet/actuator assembly by unscrewing the 2 off nuts and socket head screws from the upper clamps and remove the clamps.

Release the air pressure to allow the valve to close and note that the actuator assembly separates from the body assembly by approx 3mm.

Disconnect all the air lines and either remove control box and shaft (Refer to Control Box Manual for details) while retaining external wiring connections, or disconnect external wiring from termination block and retain control box on the top of the actuator.

Vertically withdraw the poppet/actuator assembly from the body assembly taking note of the above warning on handling the valve/assemblies (see page MBSPS5).

## 1.2 Poppet/Actuator Dismantling (Fig MBSPS1)

Complete Section 1.1.

Unscrew the lower poppet (1) by applying a spanner to the flats on the poppet body and withdraw this through the upper poppet.

Slightly release the locknut (2) using a 5mm bar positioned in one of the holes.

Apply air to lift the actuator and unscrew the upper poppet assembly (3) from the actuator collar (4). Measure and note the position of the locknut (2) and then remove from the poppet shaft (3).

Extract the poppet through the top shaft seal (5).

Remove the top spacer (6), intermediate spring (7), lower bearing (8) and shaft seal (9).

On the 1½" and 2", DN40 and DN50 valves the top plate (10) will become free at this stage and can be withdrawn.

On the 2½", 3" and 4", DN65, DN 80 and DN100 valves remove the top plate (10) from the adaptor (11) by releasing the 4 x M8 socket head cap screws (12).

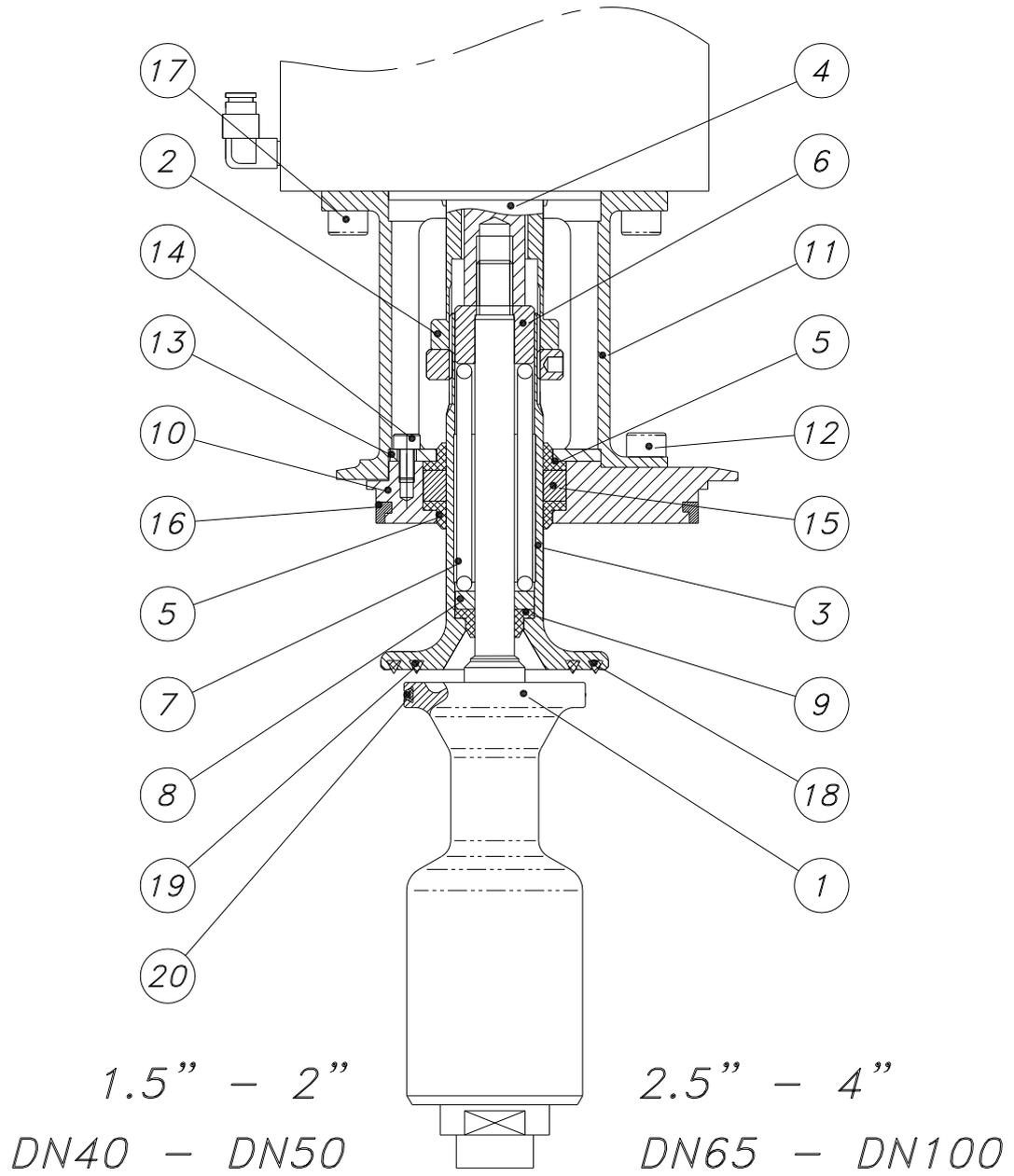
Remove bearing retaining plate (13) from top plate by unscrewing the 3 x M5 cap screws (14).

Bearing (15) and dynamic seals (5) can now be removed.

Remove body seal (16).

If actuator requires replacing remove control box, adaptor plate and shaft (if fitted).

**Note:** (Ref Fig MBSPS4) The degree of seat lifting on the lower poppet is set during manufacture using a number of thin shims (Item 4) located over the top of the upper



**Fig MBSPS1**

actuator shaft and are retained in position by the shaft adaptor (Item 3). To remove these release the shaft adaptor and retain in a safe place for refitting on assembly.

Release the valve adaptor (11) by removing the 4 x M8 cap head screws (17).

All parts of this sub-assembly can now be fully inspected.

**WARNING:**

***The Double Seal Low Leak Balanced, Seat Lifting Actuator is a fully welded structure and cannot be dismantled.***

***It must be returned to INOXPA for repair or replacement. On no account should end cap welds be machined off since the high tension spring trapped inside may cause serious damage or injury.***

### **1.3 Body and Seat Dismantling (Fig MBSPS2)**

Complete Section 1.2.

Remove the bottom body clamp ring (5) by releasing the 2 off nuts and socket head screws.

Remove the bottom plate assembly (6) and seal location ring (8).

The bearing ring (7) will become free at this stage and can be withdrawn.

Remove the bottom shaft seal (10) and body seal (9) from the seal location ring (8).

The following operation needs only to be carried out if seat and/or seat/body seals are to be replaced.

For single valves connected in line, disconnect top body port(s).

**Note:** For manifolds of partly welded construction it will be necessary to lift more than one top body half. This will entail stripping of the necessary valves to allow the top bodies to be lifted without danger of damaging other valve internals.

Remove the top body clamp ring (2) by releasing the 2 off nuts and socket head screws.

Lift the top body (1) off the seat (3).

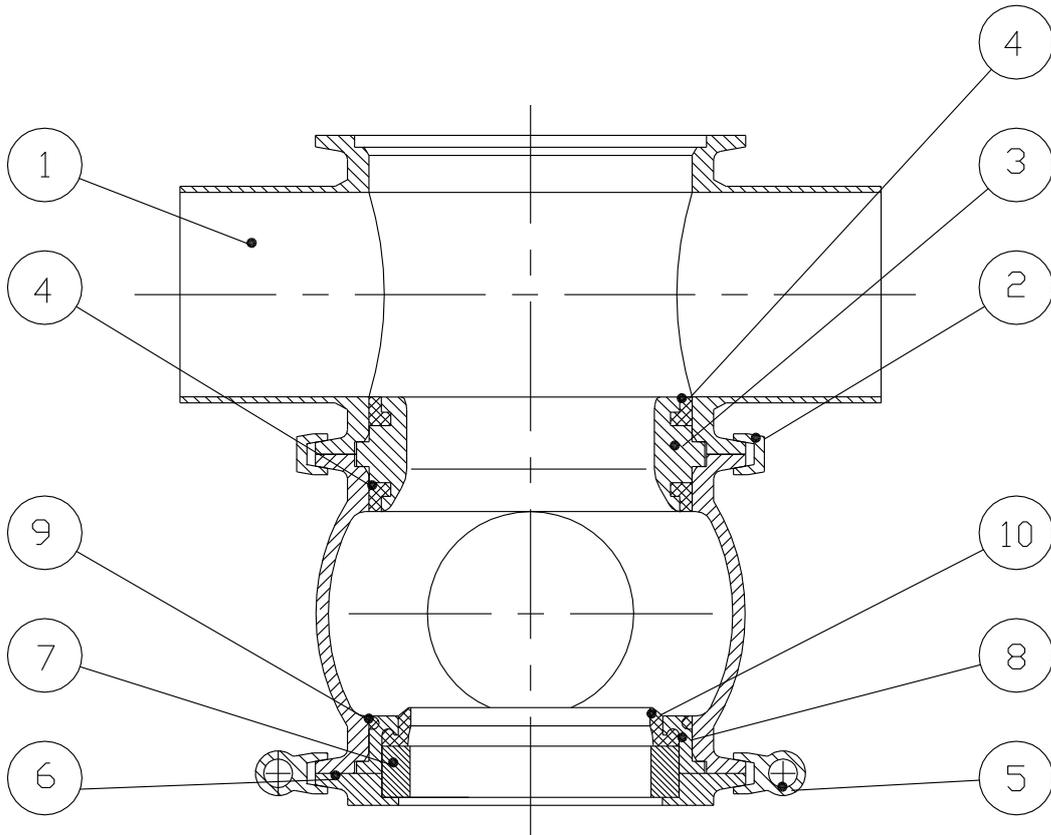
Withdraw seat (3) from remaining body half and remove the two body seals (4).

All parts of this assembly are now available for inspection.

### **1.4 Refitting Body Assembly (Fig MBSPS2)**

Before final assembly, lightly grease all seals and bearings with a food quality lubricant.

Fit the body seals (4) on to seat (3) ensuring correct location and positioning.



**Fig MBSPS2**

Squarely insert the centre seat (3) into the bore of the lower body.

The L shaped body seals are tapered to allow easy initial location. The material is then compressed to produce a seal as the component is pushed into its final position.

Squarely locate the bore of the upper body (1) over the seat at the port orientation required.

Secure the assembly with clamp ring (2).

**Note:-** Although the Bottom Shaft Seal could be fitted before the poppet assembly Inoxpa recommend fitting this as the last operation to avoid possible damage to the lip when introducing the drain tube.

## 1.5 Reassembly of Poppets and Actuator (Fig MBSPS1)

**WARNING** Care should be exercised in handling the completed Actuator/Poppet Assembly and, to avoid damage or bending, lifting via the exposed shaft of the lower poppet must be avoided.

During assembly lightly grease all seals and bearings using food quality lubricant.

Insert shaft seals (5) and bearing (15) in top plate (10) and refit retaining plate (13) using the 3 x M5 cap screws (14).

Locate L section body seal (16) around outside of top plate.

Insert the inner shaft seal (9), lower bearing (8), intermediate spring (7) and top spacer (6) inside the upper poppet shaft. Ensure correct orientation of the seal such that the lip protrudes through the inner bore of the poppet.

Holding actuator securely to allow access to lower shaft end secure adaptor (11) using 4 x M8 cap screws (17).

### **2½" to 4", DN65 to DN 100 Valves**

Bolt adaptor (11) to assembled top plate (10) using 4 x M8 cap screws (12)

Before fully tightening the securing screws insert the complete upper poppet assembly (3) through the top shaft seals (5) and refit the lock nut (2) in the same location as noted on dis-assembly.

Apply air to lift the actuator and screw the poppet into the actuator collar (4) up to the lock nut and tighten the locknut.

Release the air pressure

Insert the lower poppet shaft (1) through the upper poppet and fully tighten into the actuator. Two flats are supplied on the lower poppet for this purpose.

Finally tighten down the adaptor securing screws (17) and check all other fasteners.

Refit the adaptor plate, stroke adjusting shims, shaft adaptor and switchbox shaft if removed.

The unit is now ready for insertion into the body assembly.

## 1½" and 2", DN40 and DN50 Valves

A different assembly procedure is required since the top plate is reduced in section and trapped in the body on final full assembly.

Insert the complete upper poppet assembly (3) through the top shaft seals (5) on the top plate (10) ensuring the correct orientation of the plate and refit the lock nut (2) in the same location as noted on dis-assembly.

Apply air to lift the actuator and screw the poppet into the actuator collar (4) up to the lock nut and tighten the locknut.

Release the air pressure

Insert the lower poppet shaft (1) through the upper poppet and fully screw into the actuator using the flats provided.

Refit the adaptor plate, stroke adjusting shims, shaft adaptor and switchbox shaft if removed.

The unit is now ready for insertion into the body assembly.

### 1.6 Final Assembly

**Note:-** Notice should be taken of the warning given at the beginning of Section 1.5.

During assembly lightly grease all seals and bearings using food quality lubricant.

To assemble the valve the upper poppet has to be lifted sufficiently to enable the adaptor to fully seat on the body assembly.

This can be achieved by applying air to the main actuator via the control box or directly into the lower side connection on the actuator.

Remove the bottom shaft seal from body assembly if fitted (See Section 1.3).

Squarely insert poppet/actuator assembly into body assembly and locate the seal on the top plate into the upper body ensuring even insertion.

Rotate the actuator assembly within the body to achieve correct orientation of control box.

Secure the poppet/actuator assembly to the top body using the clamps (1) and 2 off nuts (2) and socket head screws (3).

Check tightness of all fasteners and then remove air.

## 1.7 Refit Bottom Shaft Seal and Bearing (Fig MBSPS2)

Fit the body seal (9) on to the seal location ring (8) and carefully insert this into the body.

Carefully insert the bottom shaft seal (10) into the location ring and seals around the lower poppet.

Fit the bearing ring (7) and bottom plate (6) and secure with clamps (5) and nuts and socket head screws.

Check the degree of lift on each individual seat separately by applying air to the top and bottom connections on the actuator and adjust as necessary. (See Section 3.0).

## 2.0 SEAL AND BEARING REPLACEMENT

**Note:-** It is recommended that all seals and bearings are renewed if the valves are being dismantled. Before installing seals and bearing check all mating components for signs of wear and damage. Ensure all surfaces are clean and free from product contamination, grit or debris.

### 2.1 Top Shaft Seals and/or Bearing (Fig MBSPS1)

Complete Section 1.1

Unscrew the lower poppet (1) by applying a spanner to the flats on the poppet body and withdraw this through the upper poppet.

Slightly release the knurled locknut (2) using a 5mm bar positioned in one of the holes.

Apply air to lift the actuator and unscrew the upper poppet assembly (3) from the actuator collar (4). Measure and note the position of the locknut (2) and then remove from the poppet shaft (3).

On the 1½" and 2", DN40 and DN50 valves the top plate (10) will become free at this stage and can be withdrawn.

On the 2½", 3" and 4", DN65, DN 80 and DN100 valves remove the top plate (10) from the adaptor (11) by releasing the 4 x M8 socket head cap screws (12).

Remove bearing retaining plate (13) from top plate (10) by unscrewing the 3 x M5 cap screws (14).

Bearing (15) and dynamic seals (5) can now be removed and replaced as necessary.

Lightly grease seal and bearing with food quality lubricant before reassembly.

Locate new shaft seals and/or bearing in top plate and refit retaining plate using the 3 x M5 cap screws (14).

On 1½" and 2", DN40 and DN50 insert the complete upper poppet assembly (3) through the top shaft seals (5) on the top plate (10) ensuring the correct orientation of the plate and refit the lock nut (2) in the same location as noted on dis-assembly.

Apply air to lift the actuator and screw the poppet into the actuator collar (4) up to the lock nut and tighten the locknut.

Release the air pressure

Insert the lower poppet shaft (1) through the upper poppet and fully screw into the actuator using the flats provided.

Refit the adaptor plate, stroke adjusting shims, shaft adaptor and switchbox shaft if removed.

The unit is now ready for insertion into the body assembly.

On 2½", 3" and 4", DN65, DN 80 and DN100 valves secure the top plate assembly to the adaptor using the 4 x M8 cap screws (8).

Before fully tightening the securing screws insert the complete upper poppet assembly (3) through the top shaft seals (5) and refit the lock nut (2) in the same location as noted on dis-assembly.

Apply air to lift the actuator and screw the poppet into the actuator collar (4) up to the locknut and tighten the locknut.

Release the air pressure

Insert the lower poppet shaft (1) through the upper poppet and fully tighten into the actuator. Two flats are supplied on the lower poppet for this purpose.

Finally tighten down the adaptor securing screws (12) and check all other fasteners.

The unit is now ready for insertion into the body assembly.

For final assembly see Section 1.6.

## 2.2 Top Body Seal (Fig MBSPS1)

Complete Sections 1.1.

Remove L section body seal (16) from outside of top plate.

Fit new seal and lightly grease with food quality lubricant.

For final assembly see Section 1.6.

## 2.3 Central Body Seals (Fig MBSPS2)

Complete Section 1.1.

For single valves connected in line, disconnect top body port(s).

**Note:-** For manifolds of partly welded construction it will be necessary to lift more than one top body half. This will entail stripping the associated valves to allow top bodies to be lifted without danger of damaging other valve internals.

Remove the top body clamp ring (2) by releasing the 2 off nuts and socket head screws.

Lift the top body (1) off the seat (3).

Withdraw seat (3) from remaining body half and remove the two body seals (4).

Before final assembly, lightly grease all seals and bearings with a food quality lubricant.

Locate new seals in the upper and lower register in the seat (3).

Squarely insert the centre seat (3) into the bore of the lower body (2).

Squarely locate the bore of the upper body (1) over the seat at the port orientation required.

The L shaped body seal is tapered to allow easy initial location. The material is then compressed to produce a seal as the component is pushed into its final position.

Secure the assembly with clamp ring (2).

For final assembly see Section 1.6 and 1.7.

## 2.4 Poppet Seal (Fig MBSPS1)

Complete Section 1.1.

Unscrew the lower poppet (1) by applying a spanner to the flats on the poppet body and withdraw this through the upper poppet.

Slightly release the locknut (2) using a 5mm bar positioned in one of the holes.

Apply air to lift the actuator and unscrew the upper poppet assembly (3) from the actuator collar (4). Measure and note the position of the locknut (2) and then remove from the poppet shaft (3).

Extract the poppet through the top shaft seal (5).

Remove the top spacer (6), intermediate spring (7), lower bearing (8) and shaft seal (9).

The top poppet seals (18,19) have a triangular section and the lower poppet seal (20) has a circular section.

To replace a seal, lever out the old seal taking care to avoid scoring the poppet. Clean out the groove.

For the top poppet seals position new seal over the groove and insert using special tool 0000805016 by locating inner edge of seal in the groove and firmly pushing outer edge into the groove. Initially locate the seal in 4 places and then work round between these points. Avoid excessive localised bunching of the seal.

For the lower poppet seal locate the ring in 2 places and work between these to evenly insert in the groove.

**Note:-** The diameter of the seals are slightly less than the diameter of the grooves and to ease insertion it is recommended that the seal is lubricated with a thin film of washing-up liquid.

Ensure that seal is correctly, evenly and fully seated around full circumference.

Insert inner shaft seal (9), lower bearing (8) intermediate spring (7) and top spacer (6) inside upper poppet shaft. Ensure correct orientation of the seal such that the lip protrudes through the inner bore of the poppet.

Insert the complete upper poppet assembly (3) through the top shaft seals (5) and refit the lock nut (2) in the same location as noted on dis-assembly.

Apply air to lift the actuator and screw the poppet into the actuator collar (4) up to the locknut and tighten the locknut.

Remove air pressure.

Insert the lower poppet shaft (1) through the upper poppet and fully tighten into the actuator. Two flats are supplied on the lower poppet for this purpose.

For final assembly see Section 1.6.

## **2.5 Inner Shaft Seal and/or Bearing (Fig MBSPS1)**

Complete Sections 1.1.

Unscrew the lower poppet (1) by applying a spanner to the flats on the poppet body and withdraw this through the upper poppet.

Slightly release the locknut (2) using a 5mm bar positioned in one of the holes.

Apply air to lift the actuator and unscrew the upper poppet assembly (3) from the actuator collar (4). Measure and note the position of the locknut (2) and then remove from the poppet shaft (3).

Extract the poppet through the top shaft seal (5).

Remove the top spacer (6), intermediate spring (7), lower bearing (8) and shaft seal (9).

Locate new seal (9) and/or bearing (8) into top poppet ensuring correct orientation of the seal such that the lip protrudes through the inner bore of the poppet and fit intermediate spring (7) and top spacer (6).

Insert the complete upper poppet assembly (3) through the top shaft seals (5) and refit the lock nut (2) in the same location as noted on dis-assembly.

Apply air to lift the actuator and screw the poppet into the actuator collar (4) up to the locknut and tighten the locknut.

Insert the lower poppet shaft (1) through the upper poppet and fully tighten into the actuator. Two flats are supplied on the lower poppet for this purpose.

For final assembly see Section 1.6.

## 2.6 Bottom Body Seal, Shaft Seal and/or Bearing (Fig MBSPS2)

Complete Section 1.1.

Remove the bottom body clamp ring (5) by releasing the 2 off nuts and socket head screws.

Remove the bottom plate assembly (6) and seal location ring (8).

The bearing ring (7) will become free at this stage and can be withdrawn.

Remove the bottom shaft seal (10) and body seal (9) from the seal location ring (8).

Lightly grease seals and bearing with food quality lubricant before reassembly.

We recommend that the lower shaft seal is fitted after the valve is reassembled. See Section 1.6.

Fit the body seal (9) on to the seal location ring (8) and carefully insert this into the body.

Carefully insert the bottom shaft seal (10) into the location ring and seals around the lower poppet.

Fit the bearing ring (7) and bottom plate (6) and secure with clamps (5) and nuts and socket head screws.

## 3.0 SEAT PULSING SETTING OR ADJUSTMENT

The degree of movement of the upper and lower poppet are dependant upon the CIP flowrate and pressure conditions applied to the upper and lower valve bodies plus the time allowed for pulsing.

The degree of motion on the lower poppet is nominally preset during manufacture but can be modified during commissioning if required by the addition or subtraction of shims.

The lifting of the upper poppet is fully adjustable and can be easily modified during commissioning.

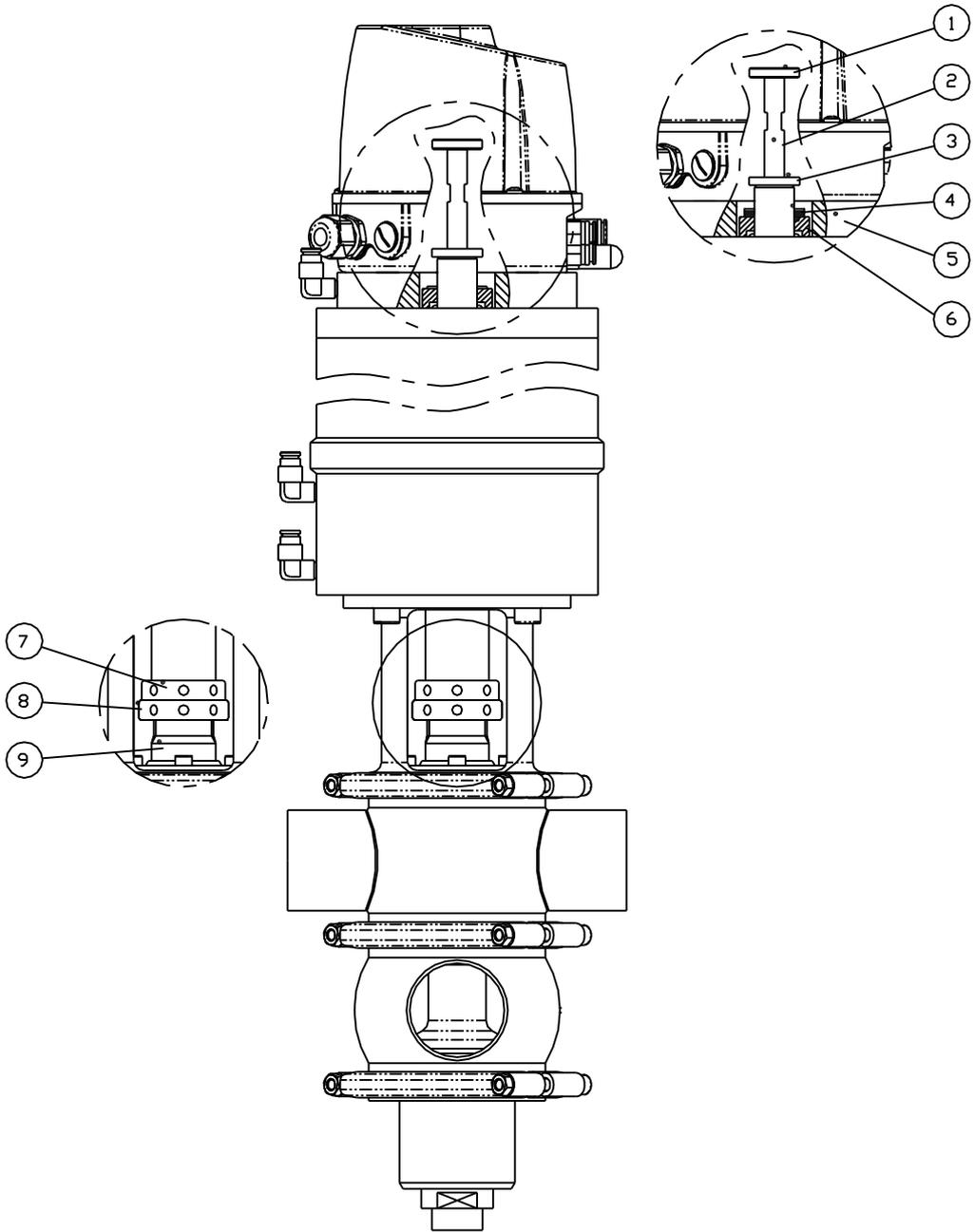
Final setting should be carried out under operating conditions such that effective cleaning is achieved with the minimum of fluid loss.

### 3.1 Lower Poppet (Fig MBSPS3)

#### ■ Setting

Cleaning of the lower poppet seal is achieved during the lower body line CIP by pulsing the lower poppet downwards to allow the seal to clear the seat opening a flow passage for the CIP fluid to pass across the seat and down the centre leakage tube.

if required by the addition or subtraction of shims located under the Control Head.



**Fig MBSPS3**

It should be noted that at the same time as the lower poppet seal is being pulsed a flow path is also formed around the lower shaft seal allowing CIP fluid to pass around the outside of the balancing plug.

The degree of motion on the lower poppet is preset during manufacture to give a nominal clearance in both areas. However, if during commissioning this is considered to be unacceptable the stroke length can be modified during commissioning if required by the addition or subtraction of shims located under the Control Head.

### ■ Adjustment

Remove the Control Box and shaft (2) from the valve.

Release the shaft adaptor (3) to expose the adjusting shims.

Remove or add the necessary number of shims (4) to give the required degree of CIP flow (Each shim is 1mm thick) and replace the shaft adaptor.

The exact number will have to be decided by experimentation with a balance being achieved between the amount of flow across the seat and amount of flow around the balancing plug. The two settings are not independent.

Refit the Control box and shaft.

## 3.2 Upper Poppet (Fig MBSPS3)

### ■ Setting

With the valve closed ensure that the lock nut (8) is loose and at the bottom of the outer thread on the upper poppet (9). If this nut is tight release by inserting a 5mm dia bar into one of the holes provided.

Rotate the collar (7) anti-clockwise to move it up the thread on the poppet shaft a distance of approx 5mm. If this is tight insert the 5mm dia bar in one of the holes provided.

Apply air to the bottom connection on the actuator to raise the internal piston

Check that the collar (7) rotates freely. If this is not the case remove the air and raise the collar further on the poppet thread and re-apply the air.

Screw the collar (7) clockwise down the thread on the poppet until resistance to rotation is felt. The collar will then just be engaged on the raised piston.

Remove the air.

The collar will again rotate freely and should be screwed clockwise further down the poppet the necessary number of turns to generate the desired lift (1 turn is 1.5mm).

Using the holes provided lock the collar in position with the locknut (8).

### ■ Adjustment

Apply air to the bottom connection on the actuator and note the degree of lift of the upper poppet by measuring the movement of the lock nut (8) located in the adaptor.

Remove the air.

Release the locknut nut (8) using a 5mm dia bar in the holes provided and rotate the collar (7) clockwise to increase lift or anti-clockwise to decrease lift as necessary (1 turn is 1.5mm).

When the desired position is achieved lock the collar (7) with the nut (8) using the bar in the holes provided.

## 4.0 TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
Valve fails to fully operate.	<p>Low air pressure/exhaust blocked. Electrical failure.</p> <p>Obstruction in line.</p> <p>Actuator inoperative.</p> <p>Component failure.</p> <p>Excess pressure in upper body due to hydraulic shock or fluid lock-up.</p>	<p>Check air supply pressure and feed and exhaust lines. Check all air lines.</p> <p>Check all electrical lines and measure supply voltage. If working then replace coil. Try manual override. Check For water ingress (See Control Box Manual) Ensure lines are clear and that valve has properly seated.</p> <p>Remove actuator (Sects. 1.2) and bench test. Replace as necessary.</p> <p>Remove valve, strip down (Sect. 1.0) and refurbish.</p> <p>Relieve excess pressure by releasing union. Check overall system for cause of problem and eliminate accordingly.</p>
Signal failure from switches	<p>Switch incorrectly positioned. Loose wiring.</p> <p>Switch failure Water ingress.</p>	<p>Reposition - (See Control Box Manual).</p> <p>Check electrical terminations (See Control Box Manual).</p> <p>Replace switch - (See Control Box Manual).</p> <p>Clean and replace `O' ring seals. Check all plugged holes in base. Ensure lid is not damaged. (See Control Box Manual).</p>
Valve lifts during operation.	<p>Excessive line pressure.</p> <p>Water hammer or shock wave Loss of air pressure</p>	<p>Check max. line rating (see Technical Data). Check for "Dead Head" during operation.</p> <p>Check for source and eliminate.</p> <p>For double acting actuators check air lines and supply. Check solenoid valve if fitted.</p>
Leak through adaptor	Leak past top shaft seal.	Remove actuator/poppet assembly and replace seal (sect. 2.1).
Leak between bodies or around upper and lower end plate.	Body seal failure	Remove actuator/poppet assembly and dismantle bodies as required to replace body seal (sect. 2.2, 2.3).
Leak down outer wall of drain tube.	Lower shaft seal failure.	Remove retaining plate and replace seal. (sect. 2.6).
Leak down inside of drain tube	Failure of poppet seal	Remove actuator/poppet assembly. Dismantle poppet and replace seal as necessary (sect. 2.4).
Leak from shaft joints	<p>Failure of 'O' ring</p> <p>Failure of inner shaft seal</p>	<p>Remove switchbox and replace `O' ring seal. (See Control Box Manual).</p> <p>Remove actuator/poppet assembly.</p> <p>Remove poppet and replace inner seal (See sect. 2.5).</p>

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Upper poppet fails to lift during pulsing	<p>Incorrectly adjusted</p> <p>Insufficient air pressure</p> <p>Excess pressure in upper body due to hydraulic shock or fluid lock-up.</p> <p>Component failure</p> <p>Air leakage</p>	<p>Check adjustment (Section 3.2)</p> <p>Check air supply pressure and feed and exhaust lines</p> <p>Relieve excess pressure by releasing union. Check overall system for cause of problem and eliminate accordingly.</p> <p>Remove valve, strip down (Sect 1.0) and refurbish.</p> <p>Check lower actuator and contact Inoxpa for repair or replacement.</p>
Lower poppet fails to move during pulsing.	<p>Incorrectly adjusted</p> <p>Insufficient air pressure.</p> <p>Component failure</p> <p>Air leakage</p>	<p>Check adjustment (Sect 3.1)</p> <p>Check air supply pressure and feed and exhaust lines.</p> <p>Remove valve, strip down (Sect 1.0) and refurbish.</p> <p>Check upper actuator and contact Inoxpa for repair or replacement.</p>
Individual seats do not clean.	<p>Incorrectly adjusted</p> <p>Insufficient time allowed for pulse.</p> <p>Poor installation.</p>	<p>Check adjustment (Sect 3.1)</p> <p>Adjust time on control system.</p> <p>Check pipeline is full during pulsing sequence.</p>

# PARTS LIST

## 5.0 SPARES

### 5.1 Recommended Spares

Recommended spares are dependant on the quantity, size and mix of valves in the installation. As a minimum Inoxpa recommend complete sets of seals are ordered.

For individual installation requirements, refer to Inoxpa.

### 5.2 Tool Kit

The following special tools are supplied by Inoxpa to assist with maintenance of the DS valve:

- (i) Poppet spanner - part no. 0000805015
- (ii) Seal insertion tool - part no. 0000805016.

### 5.3 Seal Material Identification

All seals are coded with a coloured spot to identify materials as follows:-

Maroon -	Medium Nitrile
Yellow -	EPDM
Blue -	Viton

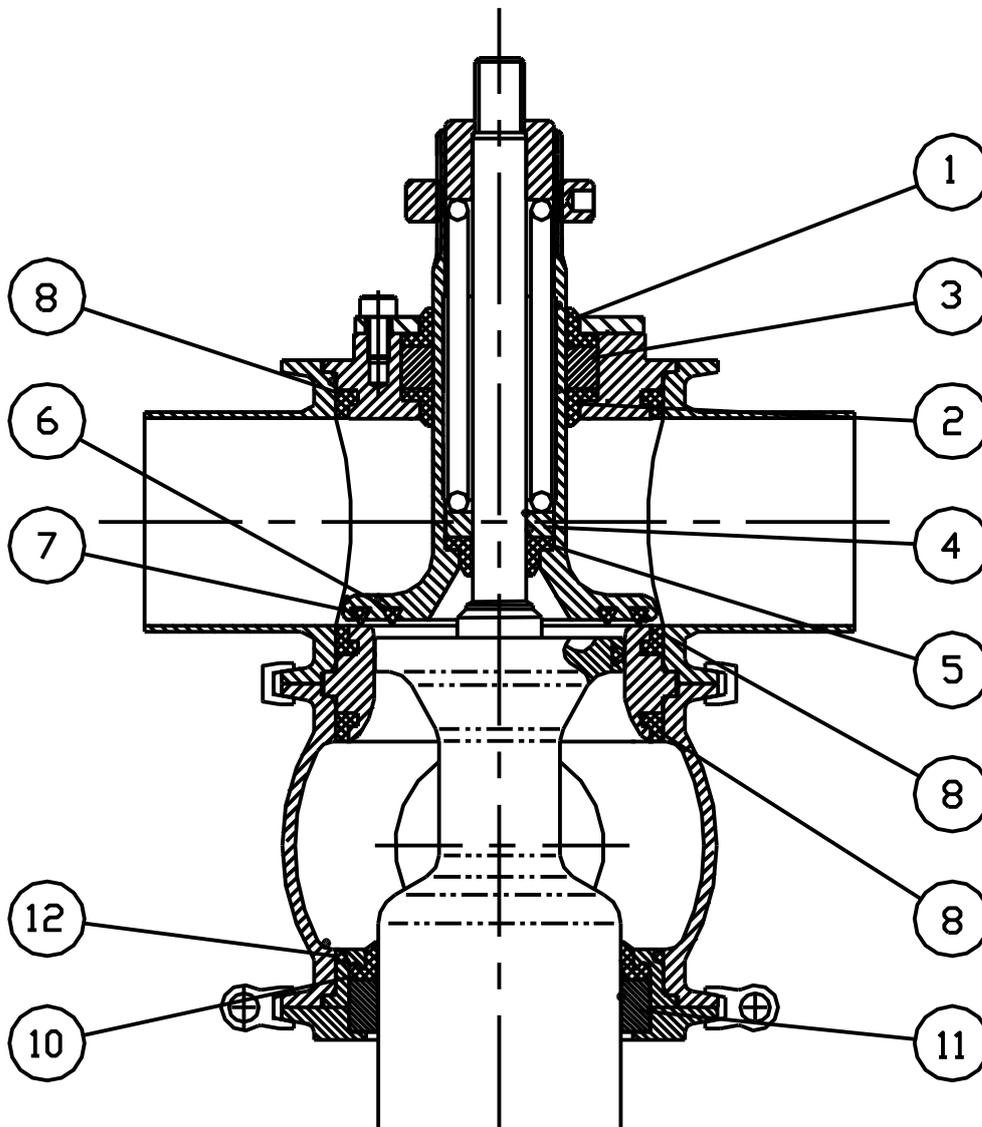
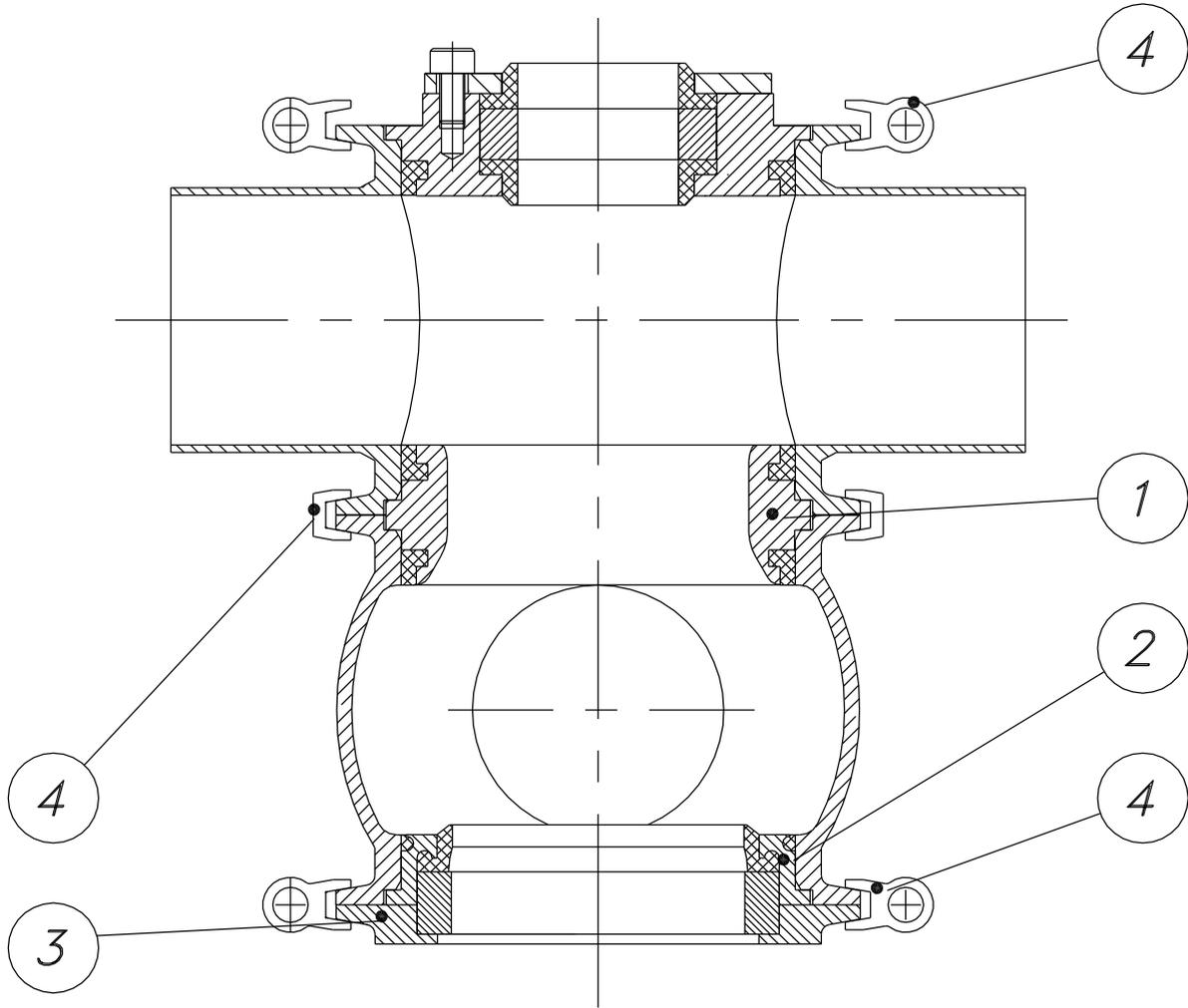


Fig MBSPP1

## 6.0 RUNNING SPARES - SEALS AND BEARINGS (Fig MBSPP1)

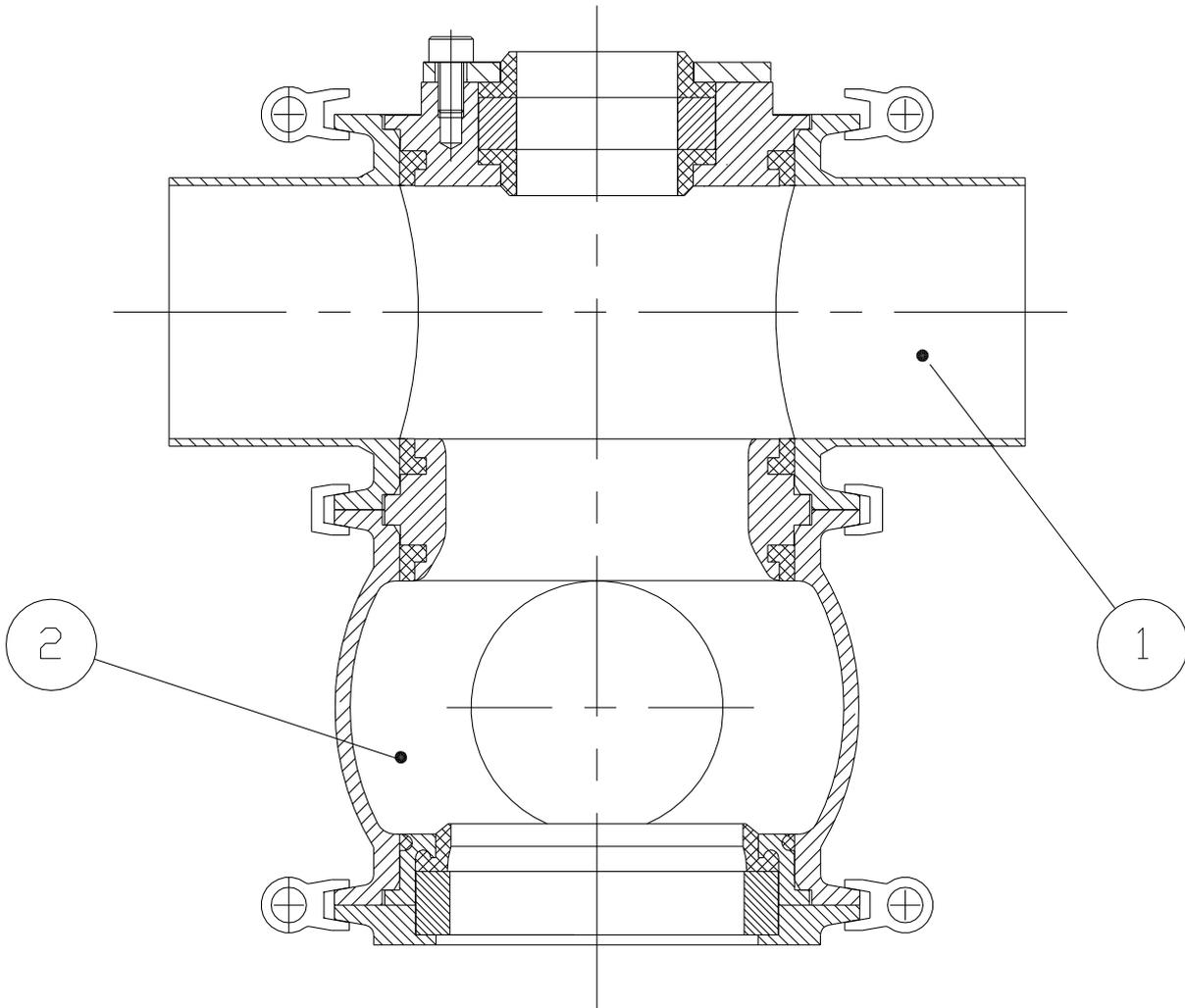
			VALVE SIZE				
ITEM DESCRIPTION			1½"/DN40	2"/DN50	2½"/DN65	3"/DN80	4"/DN100
1/2	Shaft Seal (x2) Upper Poppet	Nitrile	4000806001A	4000806001A	4000806001A	4000806001A	7000806001A
		EPDM	4000806001C	4000806001C	4000806001C	4000806001C	7000806001C
		Viton	4000806001D	4000806001D	4000806001D	4000806001D	7000806001D
3	Bush – Upper Poppet		4000806017	4000806017	4000806017	4000806017	7000806017
4	Bush – Inner		4000806011	4000806011	4000806011	4000806011	7000806011
5	Shaft Seal – Inner	Nitrile	4000806003A	4000806003A	4000806003A	4000806003A	7000806003A
		EPDM	4000806003C	4000806003C	4000806003C	4000806003C	7000806003C
		Viton	4000806003D	4000806003D	4000806003D	4000806003D	7000806003D
6	Upper Poppet Seal	Nitrile	4000806006A	4000806006A	6000806006A	6000806006A	7000806006A
		EPDM	4000806006C	4000806006C	6000806006C	6000806006C	7000806006C
		Viton	4000806006D	4000806006D	6000806006D	6000806006D	7000806006D
7	Upper Poppet Seal	Nitrile	4000806005A	4000806005A	6000806005A	6000806005A	7000806005A
		EPDM	4000806005C	4000806005C	6000806005C	6000806005C	7000806005C
		Viton	4000806005D	4000806005D	6000806005D	6000806005D	7000806005D
8	Body Seal (x3)	Nitrile	4000806013A	4000890006A	6000890006A	6000890006A	7000890006A
		EPDM	4000806013C	4000890006C	6000890006C	6000890006C	7000890006C
		Viton	4000806013D	4000890006D	6000890006D	6000890006D	7000890006D
9	Poppet Seal – Lower	Nitrile	3000890019A	4000890019A	6000890019A	6000890019A	7000806020A
		EPDM	3000890019C	4000890019C	6000890019C	6000890019C	7000806020C
		Viton	3000890019D	4000890019D	6000890019D	6000890019D	7000806020D
10	Bottom Shaft Seal	Nitrile	3000890033A	4000890033A	6000890033A	6000890033A	7000890033A
		EPDM	3000890033C	4000890033C	6000890033C	6000890033C	7000890033C
		Viton	3000890033D	4000890033D	6000890033D	6000890033D	7000890033D
11	Piston Guide Ring		3000890032	4000890032	6000890032	6000890032	7000890032
12	Lower Body Seal	Nitrile	O3069030	O3070030	O3101030	O3101030	O3128030
		EPDM	O4069030	O4070030	O4101030	O4101030	O4128030
		Viton	O2069030	O2070030	O2101030	O2101030	O2128030



**Fig MBSPP2**

## 7.0 BODY COMPONENTS (Fig MBSPP2)

ITEM DESCRIPTION	VALVE SIZE				
	1½"/DN40	2"/DN50	2½"/DN65	3"/DN80	4"/DN100
1 Inner Seat	3000890028	4000890028	6000890028	6000890028	7000890028
2 Seal Ring	3000890029	4000890029	6000890029	6000890029	7000890029
3 Bottom Plate	3000890030	4000890030	6000890030	6000890030	7000890030
4 Split Clamp Ring (pair)	K80693	K80694	K80695	K80695	K80696

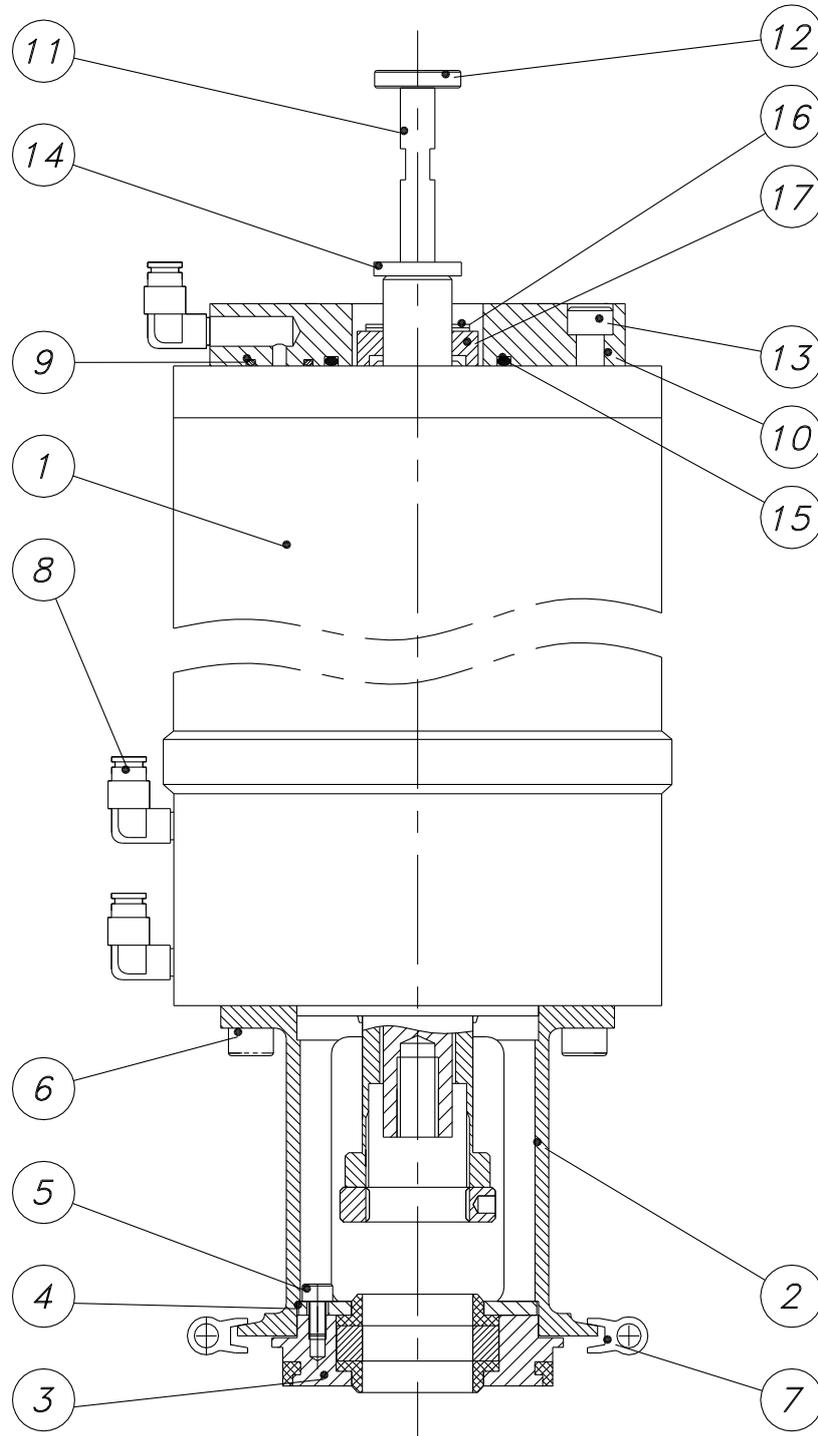


**Fig MBSPP3**

## 8.0 VALVE BODIES (Fig MBSP3)

ITEM DESCRIPTION		VALVE SIZE					
		1½"	2"	2½"	3"	4"	
1&2 Top and Bottom Body	- Single Port	- Plain	3000891090	4000891090	5000891090	6000891090	7000891090
		- RJT	3100891090	4100891090	5100891090	6100891090	7100891090
		- IDF	3200891090	4200891090	5200891090	6200891090	7200891090
	- Double Port	- Plain	3000892090	4000892090	5000892090	6000892090	7000892090
		- RJT	3100892090	4100892090	5100892090	6100892090	7100892090
		- IDF	3200892090	4200892090	5200892090	6200892090	7200892090

ITEM DESCRIPTION		VALVE SIZE					
		DN40	DN50	DN65	DN80	DN100	
1&2 Top and Bottom Body	- Single Port	- Plain	M030891090	M040891090	M050891090	M060891090	M070891090
		- DIN Male	M530891090	M540891090	M550891090	M560891090	M570891090
		- Double Port	M030892090	M040892090	M050892090	M060892090	M070892090
	- DIN Male	M530892090	M540892090	M550892090	M560892090	M570892090	

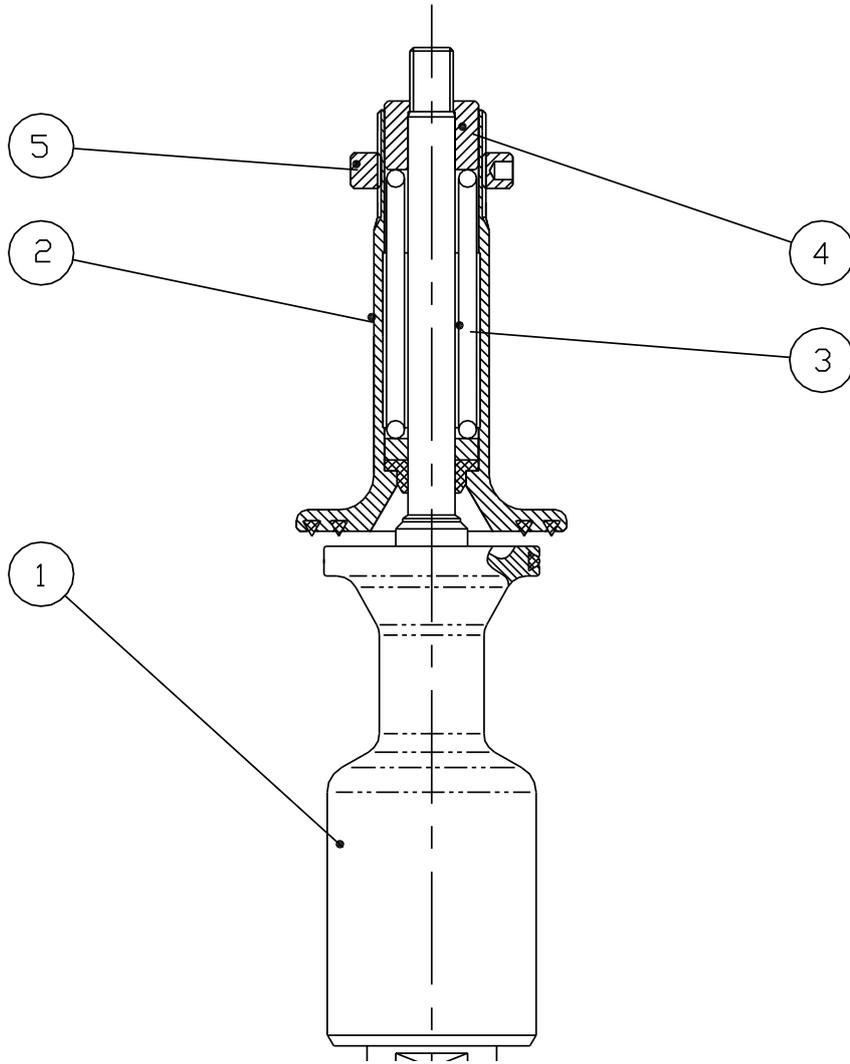


**Fig MBSPP4**

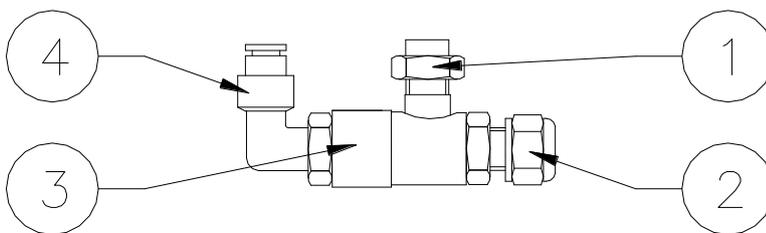
## 9.0 ACTUATOR COMPONENTS (Fig MBSPP4)

See Section 11.0 for Details of Quick Exhaust Valve

ITEM DESCRIPTION	VALVE SIZE				
	1½"/DN40	2"/DN50	2½"/DN65	3"/DN80	4"/DN100
1 Actuator <b>S2</b> 142mm dia (SA) <b>S3</b> 219mm dia (SA)	00008851 -	00008851 -	00008861 00008871	00008861 00008871	- 00008881
2 Actuator Adaptor	3000890005	4000890005	6000890005	6000890005	7000890005
3 Top Plate	3000890002	4000890002	6000890002	6000890002	7000890002
4 Bearing Retainer Plate	4000800011	4000800011	4000800011	4000800011	7000800011
5 Capscrew M5 x 10 LG (x3)	TA0510	TA0510	TA0510	TA0510	TA0510
6 Capscrew M8 x 16 LG (x4)	TA0816	TA0816	TA0816	TA0816	TA0816
7 Split Clamp Ring (pair)	K80693	K80694	K80695	K80695	K80696
8 Elbow Air Connection (x3)	RI21806	RI21806	RI21806	RI21806	RI21806
9 Seal	O3012624	O3012624	O3012624	O3012624	O3012624
10 Adaptor Plate	0000832056	0000832056	0000832056	0000832056	0000832056
11 Switchbox Shaft	0000832057	0000832057	0000832057	0000832057	0000832057
12a Proximity Switch Actuator	0000832064	0000832064	0000832064	0000832064	0000832064
12b Micro Switch Actuator	0000832063	0000832063	0000832063	0000832063	0000832063
13 Capscrew M8 x 16 LG (x2)	TA0816	TA0816	TA0816	TA0816	TA0816
14 Actuator Shaft Adaptor	0000874003	0000874003	0000874003	0000874003	0000874003
15 Adaptor Plate Seal	O3044530	O3044530	O3044530	O3044530	O3044530
16 Stroke Adjusting Shim	0000874005	0000874005	0000874005	0000874005	0000874005
17 Stroke Adjusting Spacer	0000874006	0000874006	0000874006	0000874006	0000874006



**Fig MBSPP5**



**Fig MBSPP6**

## 10.0 POPPET COMPONENTS (Fig MBSP5)

ITEM DESCRIPTION	VALVE SIZE				
	1½"/DN40	2"/DN50	2½"/DN65	3"/DN80	4"/DN100
1 Lower Poppet Assembly	3000890036	4000890036	6000890036	6000890036	7000890036
2 Upper Poppet Assembly	4000804033	4000804033	6000804033	6000804033	7000804033
3 Spring – Upper Poppet	4000806016	4000806016	6000806016	6000806016	7000806016
4a Spring Spacer ( Inch Sizes)	4000806037	4000805037	6000805037	6000805037	7000805037
4b Spring Spacer (DN Sizes)	M030890071	M040890071	M060890071	M060890071	M070890071
5 Locking ring	4000805038	4000805038	4000805038	4000805038	7000805038

## 11.0 QUICK EXHAUST VALVE COMPONENTS (Fig MBSP6)

(For use with a Size 3 Actuator)

1.1.1. ITEM DESCRIPTION	PART No.
1. 1/8" BSP Double Nipple	0000830035
2. 1/8" BSP Silencer	RI518
3. 1/8" BSP Quick Exhaust Valve	0000853005
4. 6mm/ 1/8" BSP Swivel Elbow	RI21806

## 12.0 SPARES KITS (Fig MBSPP1)

ITEM DESCRIPTION	VALVE SIZE				
	1½"/DN40	2"/DN50	2½"/DN65	3"/DN80	4"/DN100
1. Seal Kit comprising items: 1,2, 5, 6, 7, 8, 9, 10,12  - Nitrile - EPDM - Viton	30008905A 30008905C 30008905D	40008905A 40008905C 40008905D	60008905A 60008905C 60008905D	60008905A 60008905C 60008905D	70008905A 70008905C 70008905D





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