

MANUALLY OPERATED VALVE

VLM SYNCHROFLUX



TECHNICAL MANUAL MT042/E

INSTALLATION, COMMISSIONING AND MAINTENANCE INSTRUCTIONS

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1.0 INTRODUCTION

The aim of this manual is to provide all the information needed for the installation, start-up and maintenance of throttling valves

VLM (manual control, see figure 1)

SYNCROFLUX (electrical control, see figure 2).

It has also been deemed useful to include a brief illustration of the main characteristics of the valves.

It is not the aim of this manual to provide information relating to the electrical controls and relative control systems installed on the SYNCROFLUX valves; for this information, please refer to the specific related documentation.

1.1 MAIN CHARACTERISTICS

VLM / SYNCROFLUX valves are bypass and throttling devices suitable for use with previously treated, non-aggressive gaseous fluids.

The main characteristics of these valves are:

- top-entry body suitable for flanged coupling;
- a soft insert on the valve seats for better tightness;
- balanced shutter for easier opening and closing;
- possibility of incorporating
 - silencer;
 - blocking valve;
 - second shutter in series with the main shutter (see figure 3).

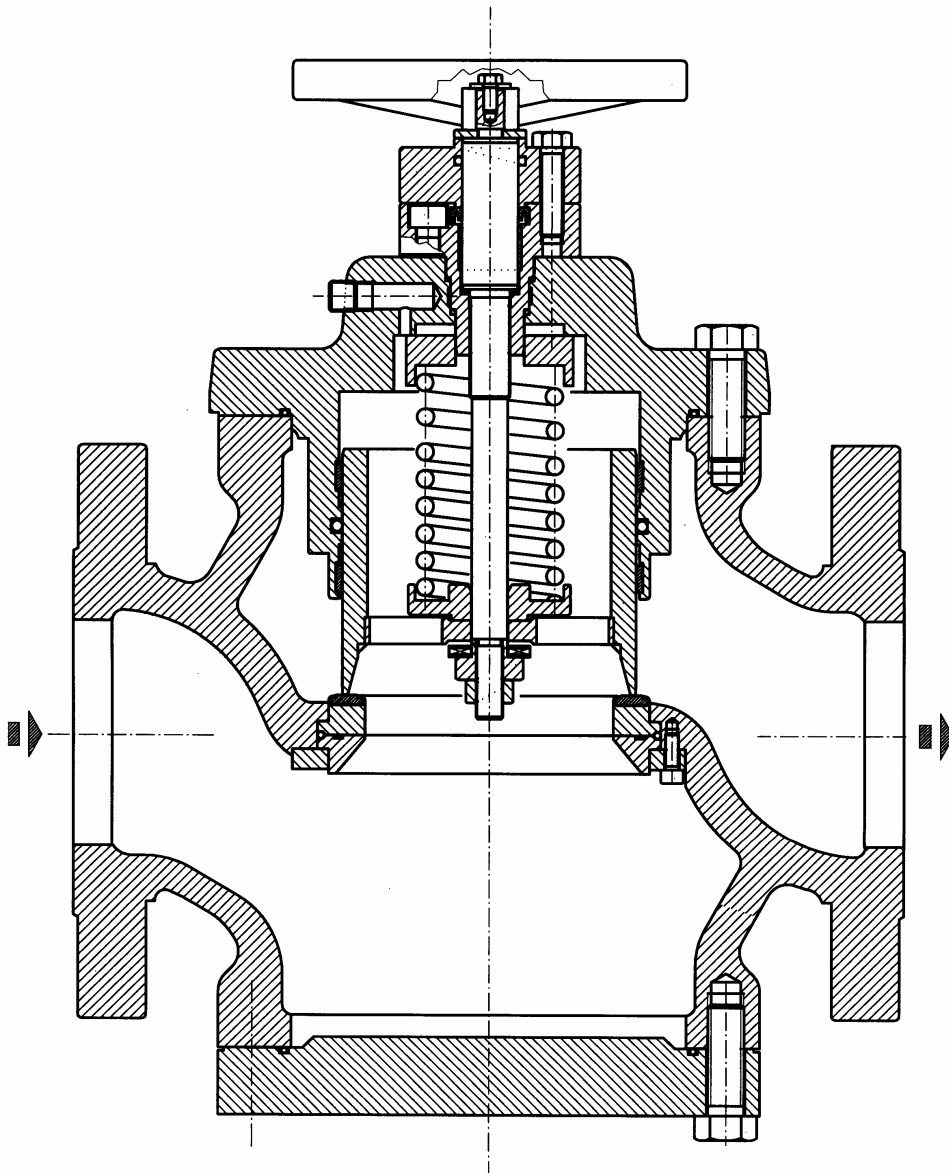


Figure 1

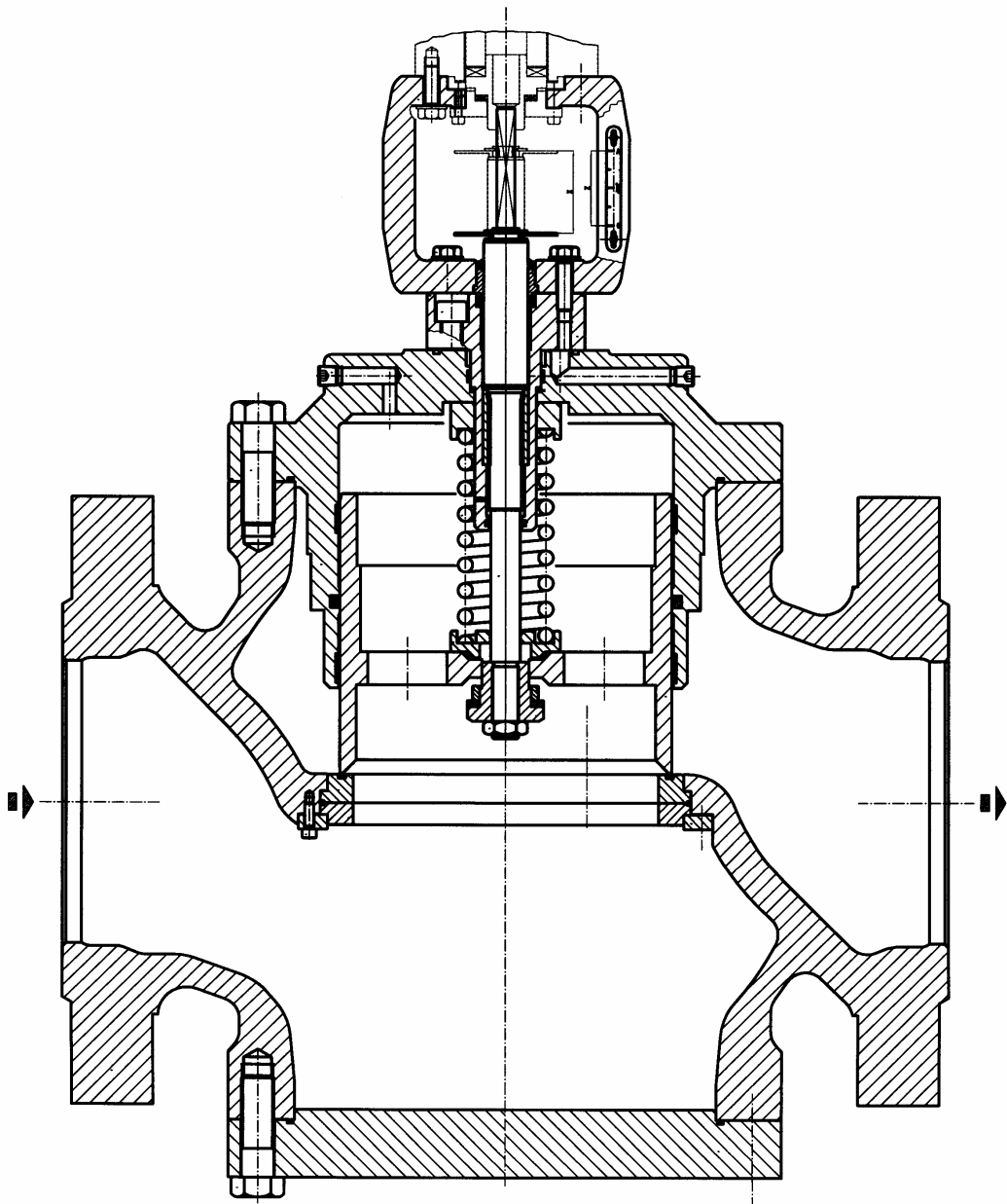


Figure 2

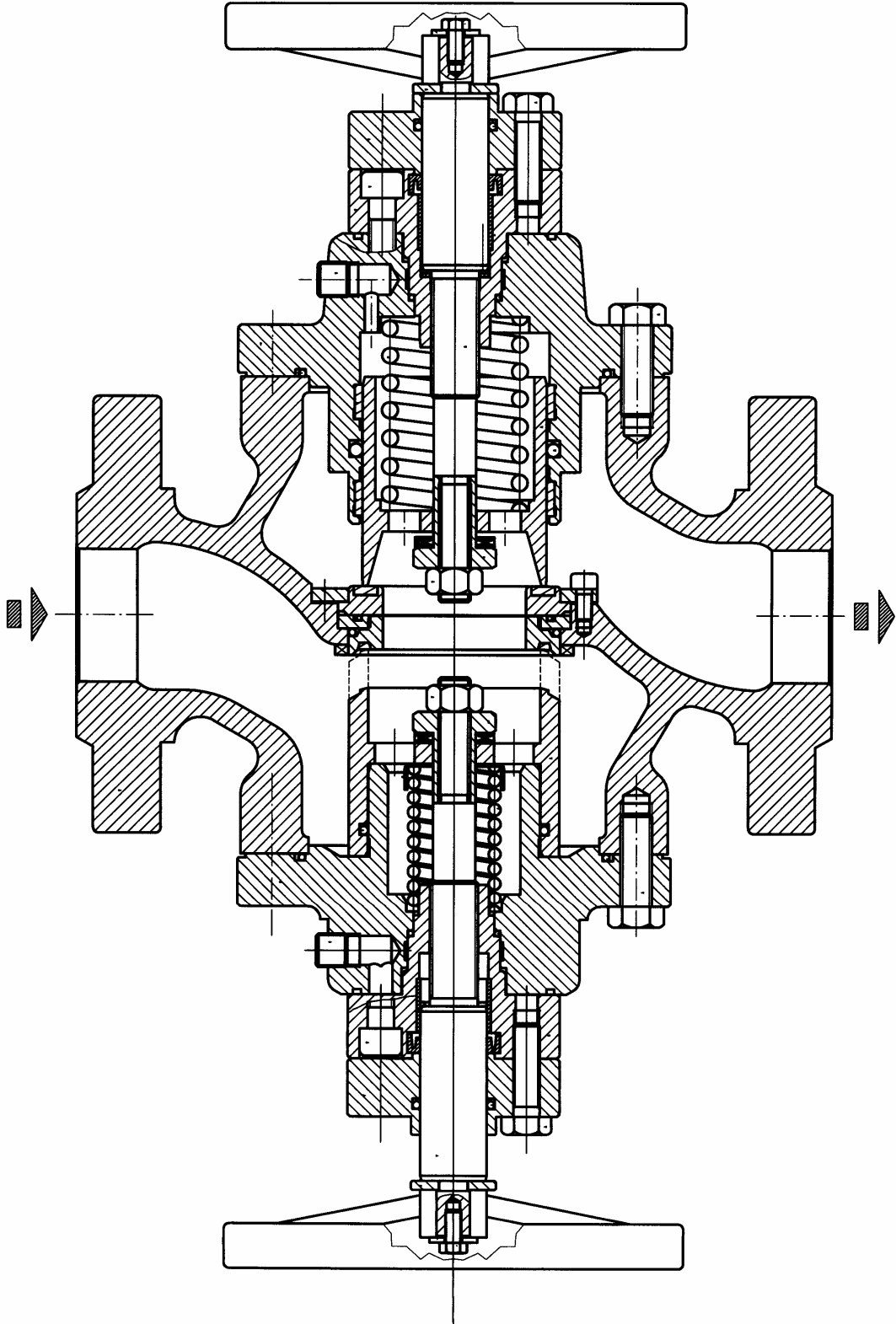


Figure 3

1.2 VALVE CONTROL

Valve opening and closing operations are carried out by means of various types of hand wheel (VLM) or electrical (SYNCROFLUX) controls; for the latter please refer to the specific instructions for use and maintenance.

2. INSTALLATION

2.1 GENERAL INFORMATION

Before carrying out installation, start-up or maintenance, operators must:

- read the safety procedures relating to the equipment on which they will be working;
- obtain necessary operation authorisation, where required;
- equip themselves with the appropriate personal protection equipment (hard hat, goggles, etc..);
- ensure that the working area is equipped with the proper collective protection devices and the necessary safety instructions.

The equipment and its components must only be moved after ensuring that the lifting equipment used can cope with the loads to be lifted (lifting capacity and functionality).

The equipment must be moved using the specific lifting points on the unit.

Motorised lifting equipment must only be used by qualified staff.

Should installation of the equipment and its accessories require the use of compression fittings, these should be installed following the instructions provided by the manufacturer. The choice of fittings used should be compatible with the equipment's specified use and with the system specifications.

Start-up must be carried out by properly prepared staff:

During start-up activities, all non-essential staff must distance themselves from the unit, and the exclusion area around the unit must be properly indicated (signs, safety barriers, etc...).

2.2 GENERAL INSTRUCTIONS

Valve installation must conform to the rules (laws or standards) in force in the place of installation.

In particular, natural gas systems must conform to the current legal provisions or standards in force in the place of installation, or they must at least conform to standards EN 12186 or EN12279 (remember that installation conforming to these standards minimises the risk of fire hazard).

The valve is fitted with external pressure limiting devices. Therefore, when it is being installed, it must be ensured that the operating pressure of the system it is being connected to never exceeds the maximum permissible pressure value (PS). Pressure peaks equivalent to $1.1 \times PS$ are permitted for short periods only.

Therefore, should the user consider it necessary, appropriate pressure limiting systems should be fitted to the main system; the user must also equip the system with adequate bleed and drainage systems, in order to be able to release the pressure and drain any fluid contained in the system before undertaking any testing and maintenance activities.

2.3 SPECIAL INSTRUCTIONS

Before installing the valve, it needs to be ensured that:

- the valve fits into the space provided and is sufficiently practicable for later maintenance operations;
- the tubing upstream and downstream of the valve are at the same level as the inlet and outlet connections and can support the weight of the valve;
- the tubing inlet/outlet flanges are parallel to the valve's contact surfaces;
- the inside of the valve is clean and the valve itself has not suffered any damage during transport;

- the upstream tubing has been cleaned in order to eliminate residual impurities such as welding slag, sand, paint residues, water, etc.

The valve has a compulsory direction of flow indicated with an arrow on the valve body and preferably it should be installed with the stem in a vertical position.

Connections to the inlet and outlet tubes are made using standard flanges whose size and type are indicated on the data plate (see chapter 2.4); the choice of connecting screws and seals must be made by the installer based on this information and on the conditions of use at the place of installation;

2.4 CONDITIONS OF USE

Before start-up, it should be checked that the conditions of use conform to the unit's specifications.

These specifications can be found on the identification plates each valve is fitted with (figure 4).

Figure 4

Particular attention should be paid to the following specifications:

- Maximum permissible pressure PS.
- Design temperature (the minimum and maximum values are shown).
- The class of the inlet and outlet connections.

The user should also check that the materials used and any surface treatments applied are compatible with the intended use.

Given the valve's geometric characteristics, during the design phase stresses due to traffic, wind or possible seismic activity were not taken into consideration; the user should therefore take every possible precaution to limit the effects of such events on the system, should they be present.

3.0 START UP

3.1 PRESSURISATION

After installation, check that the line connections have been made correctly and that any bleeds and drainage outlets on the system are closed.

Slowly pressurise the system (or section of the system) using the upstream line valve or other pressurisation systems.

3.2 EXTERNAL TIGHTNESS CHECK

The tightness test on the connections between the valve and the system is carried out according to the methods in force in the place of installation.

External tightness is ensured when, after spraying the element under pressure with a foaming agent, no bubbles form.

3.3 INTERNAL TIGHTNESS CHECK

The valve's internal tightness can be checked by closing it completely, while maintaining the upstream line pressure in the system and checking that there is no increase in pressure downstream of the valve.

3.4 SYNCROFLUX VALVE START-UP

To start up the SYNCROFLUX valve control system, please refer to the specific documentation.

3.5 INCORPORATED BLOCKING VALVE START-UP

For installation of the VLM or SYNCROFLUX valve with incorporated SB 82 blocking valve, please refer to the technical manual MT 015 relating to blocking valve SBC/SB.

4.0 MAINTENANCE

4.1 GENERAL

Maintenance is strictly linked to the quality of the transported fluid (impurities, humidity, etc...). Preventive maintenance should always therefore be carried out, at intervals that (if not already established by standards) relate to:

- the quality of the fluid transported;
- the cleanliness and conditions of the system tubing; in general, after the system is switched on the first time, more frequent maintenance is required for internal tubing cleanliness.

Regular maintenance should also be carried out on the external valve surfaces. In particular the protective surfaces (normally paintwork) should be restored in the event of deterioration.

Before carrying out any maintenance, ensure that the section of the system being worked on has been isolated upstream and downstream and that the pressure in the section concerned has been released.

Also ensure that a series of recommended parts are available. Parts used must be original Pietro Fiorentini Spa parts.

N.B. The use of non-original parts relieves the manufacturer of all liability.

4.2 VLM VALVE MAINTENANCE PROCEDURE

4.2.1 DISASSEMBLY

See figure 5

- 1) Unloose screws (position 25) using an open-ended spanner.
- 2) Remove regulation assembly from main body using appropriate equipment and turning hand wheel (pos. 17)
- 3) Unloose screws (pos. 25) using an open-ended spanner.
- 4) Remove bottom flange (pos. 25).
- 5) Unloose screws (pos. 27) on blocking ring (pos. 3) for the reinforced seal (pos. 5) using a no. 5 hexagonal male T-wrench.
- 6) Unloose screw (pos. 28) using an open-ended spanner.
- 7) Remove hand wheel (pos. 17)
- 8) Remove stop disc (pos. 14) sideways
- 9) Holding shaft (pos. 11) steady with an open-ended spanner, remove nut (pos. 21) using an open-ended spanner and shutter blocking nut (pos. 9) using a socket wrench.
- 10) Remove collar bearing (pos. 34), shutter (pos. 12) and spring (pos. 20) from the shutter guide.
- 11) Unloose screws (pos. 26) using an open-ended spanner and remove upper flange (pos. 13).
- 12) Unloose screws (pos. 31) using a hexagonal male T-wrench and remove stem guide (pos. 16) and shaft (pos. 11)
- 13) Check and clean all disassembled metal parts.
- 14) Carefully check condition of shutter seat (pos. 12).
- 15) Replace all components contained in parts kit.

4.2.2 REASSEMBLY -

- 16) Replace stem guide (pos. 16) and shaft (pos. 11) and fasten screws (pos. 31) using a hexagonal male T-wrench.
- 17) Replace upper flange (pos. 13) and fasten screws (pos. 26) using an open-ended spanner.
- 18) Mount stop disc (pos. 14) and tighten shaft completely using an open-ended spanner.
- 19) Replace spring (pos. 20), shutter (pos. 12), and collar bearing (pos. 34) on the shutter guide.
- 20) Fasten shutter blocking nut (pos. 9) using a socket wrench and nut (pos. 21) using an open-ended spanner, holding shaft (pos. 11) steady with an open-ended spanner.
- 21) Replace hand wheel (pos. 17) and fasten with screw (pos. 28) using open-ended spanner.
- 22) Replace reinforced seal (pos. 5) and blocking ring (pos. 3) on main body and fasten screws (pos. 27) using a no. 5 hexagonal male T-wrench.
- 23) Replace bottom blind flange (pos. 1) and fasten screws (pos. 25) using an open-ended spanner.
- 24) Replace regulation assembly on the main body and fasten screws (pos. 25) using an open-ended spanner.

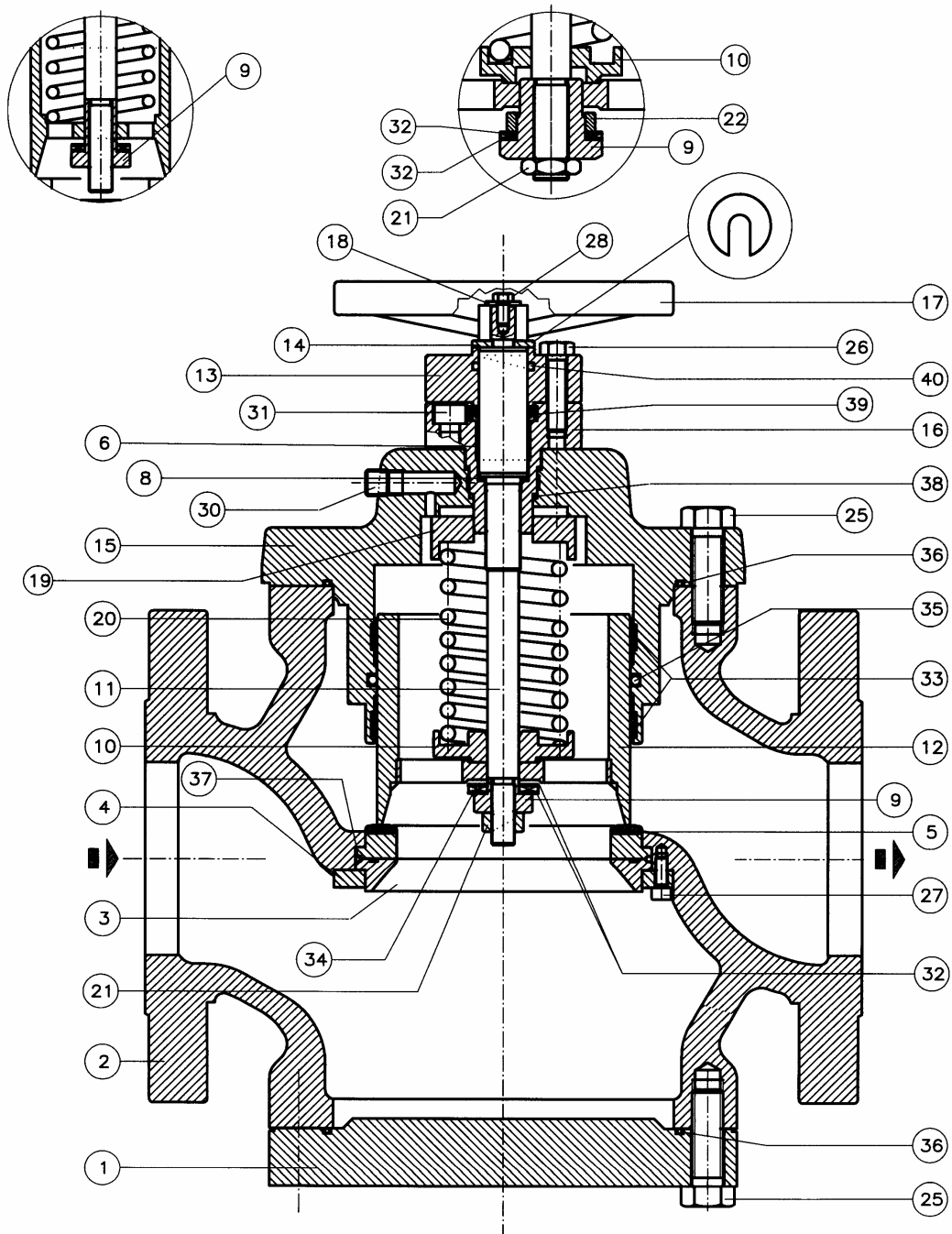


Figure 5

4.3 VLM DOUBLE SHUTTER VALVE MAINTENANCE PROCEDURE

Refer to figure 6 and carry out operations described in chapter 4.2 for both heads

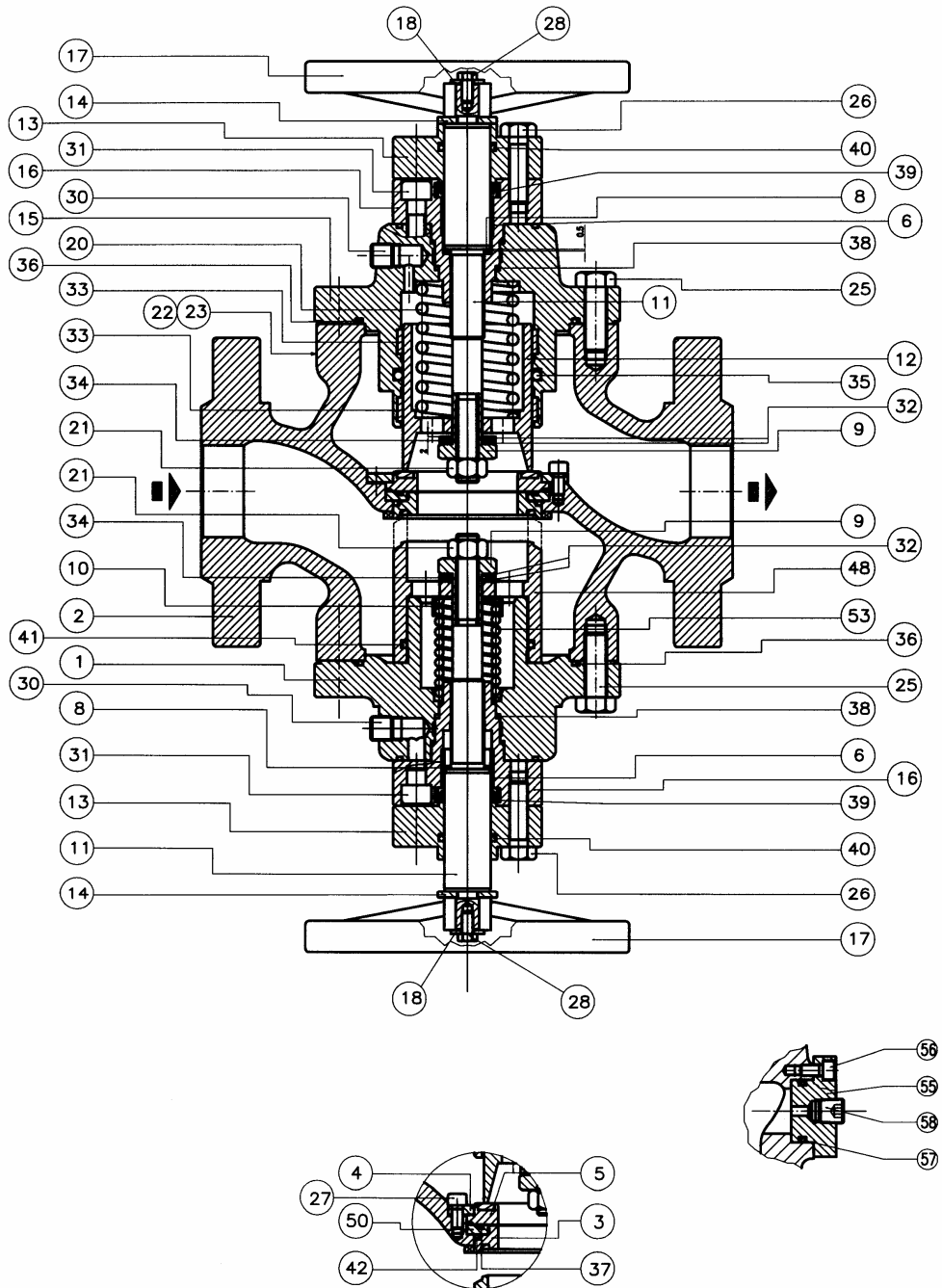


Figure 6

4.4 SYNCROFLUX VALVE MAINTENANCE PROCEDURE

Refer to figure 7 and, after removing the control system, follow the procedure described in chapter 4.2.

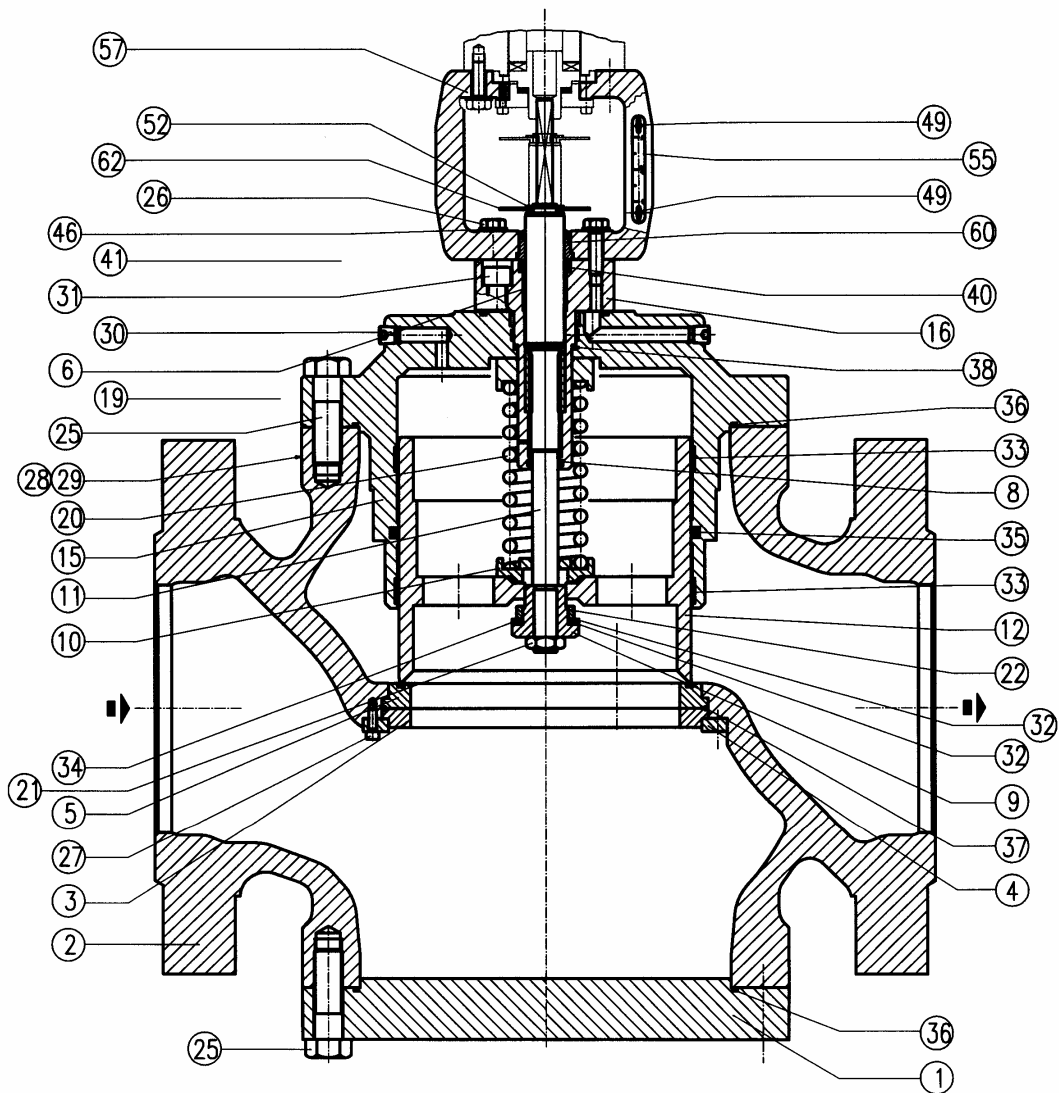


Figure 7

4.5 INCORPORATED SILENCER MAINTENANCE PROCEDURE

Refer to figure 8

To disassemble the silencer follow the steps described below

- 1) Unloose and remove screws (pos. 31) and remove upper cap from main body;
- 2) Loosen nuts (pos. 87) and lift off flange (pos. 72);
- 3) Remove unit composed of grille (pos. 75), reinforced seal (pos. 7) and locking ring (pos. 98) from the sleeve (pos. 79);
- 4) Take apart grille (pos. 75) and reinforced seal (pos. 7) by unloosing screws (pos. 99);
- 5) Remove internal drum (pos. 77) from sleeve (pos. 79);
- 6) Remove external drum (pos. 78) with its seals (pos. 73 and 80);
- 7) Remove outer cover (pos. 83);
- 8) Unloose screws (pos. 86) and remove bottom flange of silencer (pos. 82).

To reassemble the silencer follow the steps described above in reverse order.

Note that the washers at position 88, once they have been disassembled, can no longer guarantee tightness and should therefore be replaced.

When replacing the external drum (pos. 78), ensure that the support with the smaller internal diameter is turned towards the flange (pos. 82).

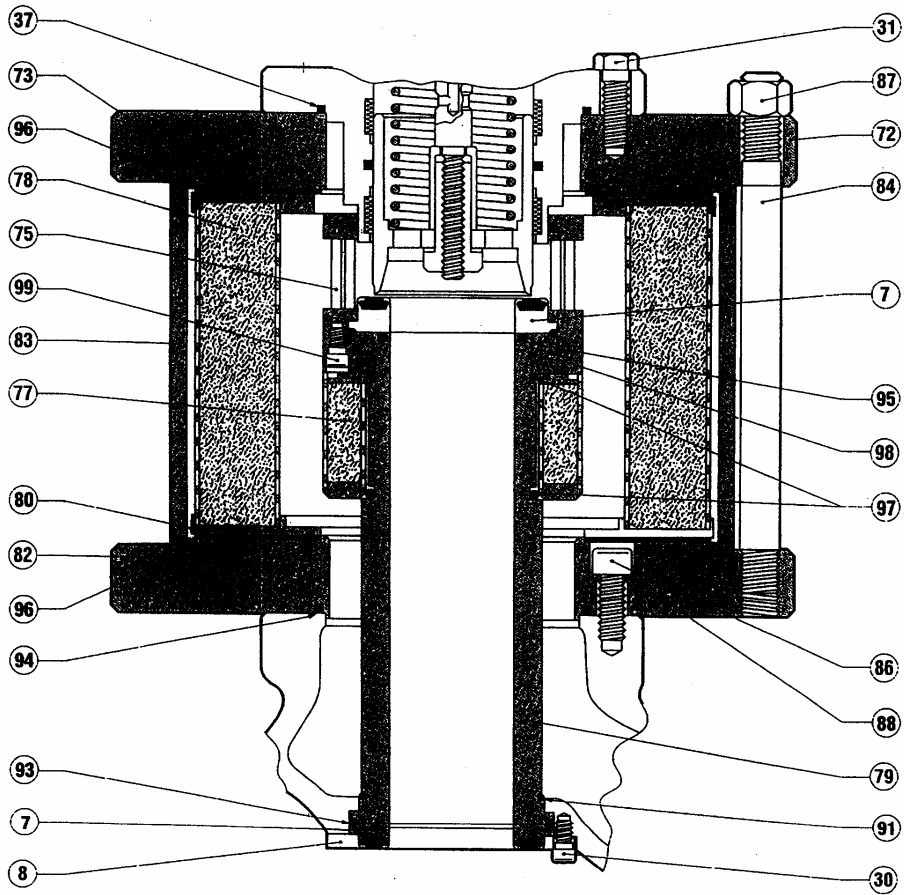


Figure 8

4.6 INCORPORATED BLOCKING VALVE SB 82 MAINTENANCE PROCEDURE

For maintenance of the incorporated blocking valve, please refer to Manual MT 015 relating to blocking valve SBC/SB.

5.0 LUBRICATION

The valves are already lubricated during assembly (using the product most suitable for operation if specified in the order) for the following reasons:

- 1) to facilitate component assembly
- 2) to improve manoeuvrability
- 3) to help maintain the unit in good condition if it is to be stored in a warehouse

During normal operation there is no need to lubricate the valve.

During maintenance operations, it is recommended to lubricate the moving parts (shutter, stem, ...) and the seals with silicon grease.

6.0 STORAGE

VLM valves do not require any special measures to be taken if they are to be stored for long periods; it is nevertheless recommended to be sure to:

- keep the valves in their original packaging;
- retain the protective devices applied in the factory to the flanged connections;
- keep the valves in the open position to safeguard the condition of the seal seating.
- keep rubber parts away from direct sunlight, to prevent premature ageing;

7.0 PARTS

For parts identification, please refer to figures 5, 6, 7, and 8.

To order parts, please specify:

Valve type

Accessories incorporated,

Registration no.

Year of construction

Type of fluid used

Part no. (position)

Quantity

I dati sono indicativi e non impegnativi. Ci riserviamo di apportare eventuali modifiche senza preavviso.
The data are not binding. We reserve the right to make modifications without prior notice.

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