Multiway tap

MV

Instructions

Reference: MV_NOT_EN

Version D

SERVINOX

34-36 Avenue Roger Hennequin
78197 Trappes cedex - France
Tel: + 33 (0)1 30 16 15 00
Fax: +33 (0)1 30 16 15 01
Home page: http://www.servinox.com

1 INTRODUCTION

1.1. The manufacturer

SERVINOX is a specialist, making process equipment for the brewing, food, cosmetic and chemical industries.

Skill and knowledge about process equipment:
In areas such as the protection of tanks, sampling, injection of gas in liquids, scouring or cleaning pipes with patented products.

SERVINOX is certified ***ISO 9001: 2008*** and makes products complying with the following applicable standards and directives:

- Pressure Equipment Directive ***(PED) 2014/68/EU.***
- European Directive concerning Devices for Use in Explosive Atmospheres ***(ATEX) 2014/34/EC.***
- Hygienic standard for manufacturers US 3A.

We are an active member of the association ***EHEDG France*** (hygienic standard for European manufacturers).

1.2. Instructions

To ensure the integrity of the device and the safety of people, you should be aware of the information contained in these instructions before installing and using the device.

Depending on the installation and the fluid, the specific directives and regulations apply, and should be complied with.

In addition to these instructions, the general instructions for safety at work and protection should be applied. The regulations concerning the protection of the environment must also be followed.

1.3. About the equipment

The MV device allows you to fit your pipes with a manual or automatic multiway valve, for your fluids under pressure.

These multiway gate valves are designed to close one or more circuits or to distribute the fluid towards one or more routes.

They are sealed by PTFE rings in contact with the plug.

This valve should be used on a circuit conveying ***clear or viscous liquid products of group 2 (Article 13 of European Directive 2014/68/EU),*** in no case is the device required to carry the EC sign.

1.4. Signs

If you have difficulties these instructions cannot resolve, you should ask for further information from the manufacturer or from the equipment distributor.

It is essential to mention the SERVINOX order and/or the serial/production order number, beginning with SVX, for all special requests (spare parts, etc).

2 SAFETY INSTRUCTIONS

This technical manual contains basic instructions that should be followed. It is therefore essential to read it before installation and commissioning.

2.1. Indications and symbols

The following pictograms are designed to draw your attention to important points relating to the safety of people and the integrity of the device:

SYMBOL	DEFINITION
	Direct danger for people.
	Possible damage to the product or its environment.
	Useful information and application guidelines.
	Minimum number required for certain operations. (The number of characters in the pictogram indicates the minimum number of persons).
	Minimum technical skill level. (the number in red indicates the minimum level required).

Some jobs require special technical skills and qualifications, such as for maintenance repairs or work on electrical equipment.

Three levels specify the required technical skill (knowledge of the equipment concerned, experience, training, etc):

	WORKER'S PROFILE	QUALIFICATIONS
Level 1	**End user** with no technical knowledge	**Default level** if the skill pictogram is not present. Permits only **ordinary use and routine maintenance**.
Level 2	**Experienced professional**	**Trained and experienced - knowing the equipment and the technologies used**.
Level 3	**The manufacturer's personnel** / expert of the product	**Work reserved for the manufacturer** of the documented device.

2.2. Safety of workers

Installation, test, adjustment, maintenance and replacement should be performed:

- By qualified persons.
- Following the recommendations and guidelines given in these instructions.
- Complying with the arrangements for safety at work, procedures and resources of the fitter, and the legal notifications for the prevention of accidents, especially those concerning electrical installations.

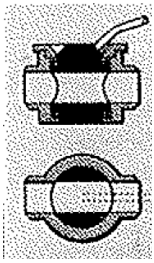
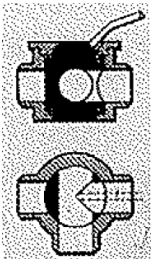
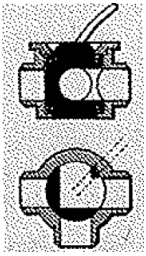
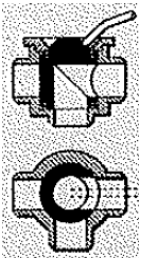
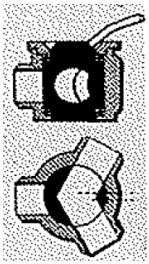
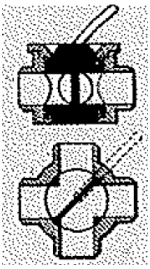
Not following these safety instructions can result in the loss of all right to claim damages.

2.3. Intended use

Correct utilisation

In the certification documents, check that the device chosen is right for its intended use.

How it works

MVA	MVB
	
All-or-nothing valve	**Plug in "T" at 90°**
MVC	**MVD**
	
Plug in "L" at 90°	**Rear gate of product entry** **Plug in "L" distributor**
MVH	**MVI**
	
Plug in "L" at 120°	**Plug in "L/L" at 90°** **2 inlets/outlets**

The MV valve consists of a body which is defined by a number of gates (from 2 to 4), and a plug (gate) which directs the circulation of the fluid.

Incorrect utilisation

The device must not be used for any other purpose other than its intended use. The manufacturer cannot be held responsible in case of incorrect utilisation.

THE MV VALVE MUST NOT BE USED AS A FLOW REGULATING VALVE!

The equipment must not be used beyond the following operating limits:

PARAMETER	LIMITS
Pressure - MAXIMUM	10 bar
Temperature - MINIMUM/MAXIMUM	1° / 120°C

2.4. Breakdown of the risks

DANGER / RISK			
	Hot fluid	**Very hot surface**	**Aggressive fluid**
HARM	Burns	Burns	Burns
PREVENTION			
	Garments, goggles, suitable gloves	Suitable gloves	Gloves, goggles, suitable mask

3 TECHNICAL SPECIFICATIONS

3.1. Standard version

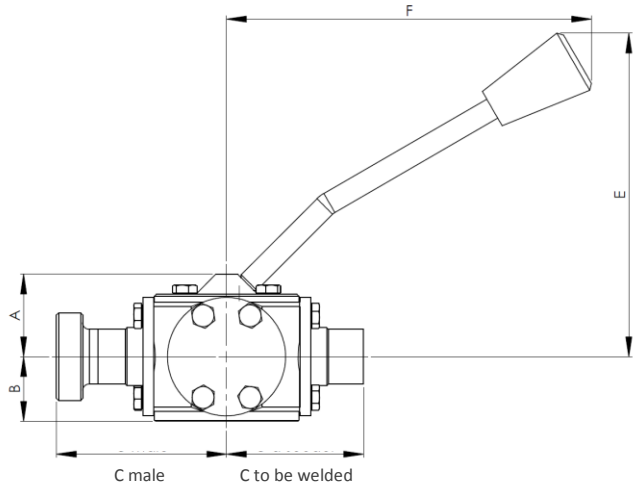
Specifications

SPECIFICATIONS	SERVINOX PROPOSAL
Product pressure	6 bar (model not reinforced). 10 bar (model reinforced).
Service temperature	1°C to 80°C (model not reinforced). 1°C to 120°C (model reinforced and high temperature).
Materials: • Parts in contact with the product • Other parts • Sealing (OPTION) • Seals	 Stainless-steel 1.4404 (316L). Stainless-steel 1.4301 (304L). PTFE pure (PTFE TFM 1600, Polyethylene, PTFE charged stainless-steel). EPDM, NBR, FKM, VMQ, Silicone coated PTFE, FFKM.
Sizes of the valves: • SMS • DIN 11851	 25 mm (1"), 38mm (1.1/2"). 51 mm (2"), 63.5 mm (2.1/2"). 76.1 mm (3"),104 mm (4"). DN10, DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125, DN150
Connection	To weld, Clamp, Female, Male, Flange

- All the standard valves (DN10 to DN65) are fitted with a lever of manoeuvre, and a double lever for models DN80 to DN100.
- For models as from the DN80 using a pneumatic or electric actuator is recommended.
- All the valves have a sign under the gate for determining the orientation of the routes.

Standard dimensions (mm).

- ***Connection to be welded and male***



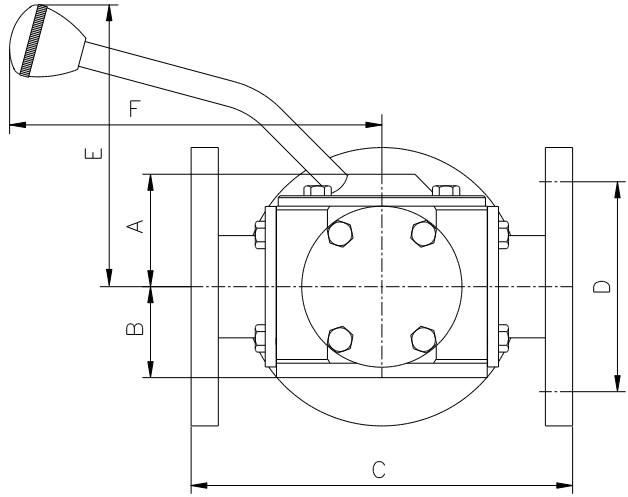
SIZES	DN10	DN15	DN20	DN25 SMS25	DN32
A	25	28.5	31.5	34	40.5
B	20	24.5	26	29.5	35.5
C to be welded	38	50.1	53.1	53.5	59.1
C male	55	63.6	78.1	78	78
E	64	55	98	115	101
F	71	71	110	135	146

(The model MVH is only available as from the DN25).

SIZES	DN40 SMS38	DN50 SMS51	SMS 63.5	DN65	DN80 SMS76.1
A	49	57.5	65.5	65.5	78.5
B	43	50	58	58	67.5
C to be welded	71.1	79.2	92	87	110.7
C male	96.2	107	123	117	139
E	155	155	198	198	250
F	160	205	265	265	295

SIZES	DN100 SMS104	DN125	DN150
A	89	-	-
B	81.5	-	-
C to be welded	122	-	-
C male	160	-	-
E	265	-	-
F	295	-	-

- ***Flange connection***



SIZES	DN10	DN15	DN20	DN25 SMS25	DN32
A	25	28.5	31.5	34	40.5
B	20	24.5	26	29.5	35.5
C flange	130	130	150	160	180
D	4 holes Ø14 D = Ø70	4 holes Ø14 D = Ø65	4 holes Ø14 D = Ø75	4 holes Ø14 D = Ø85	4 holes Ø14 D = Ø100
E	64	55	98	115	101
F	71	71	110	135	146

(The model MVH is only available as from the DN25).

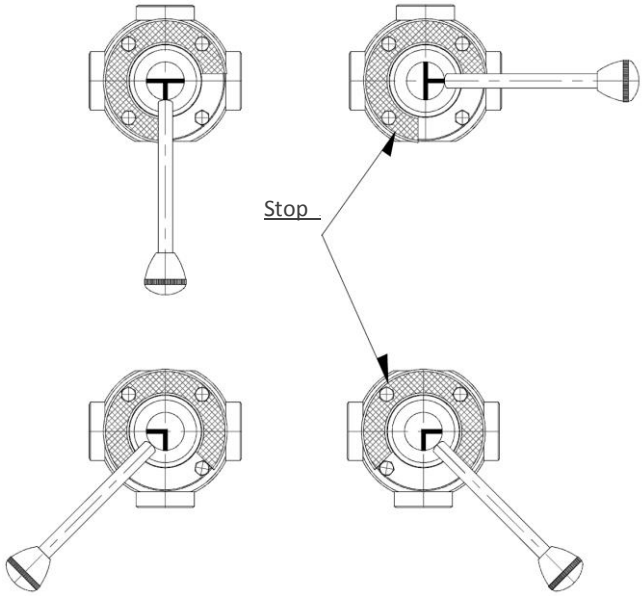
SIZES	DN40 SMS38	DN50 SMS51	SMS 63.5	DN65	DN80 SMS76.1
A	49	57.5	65.5	65.5	78.5
B	43	50	58	58	67.5
C flange	200	230	290	290	310
D	4 holes Ø18 D = Ø110	4 holes Ø18 D = Ø125	4 holes Ø18 D = Ø145	4 holes Ø18 D = Ø145	8 holes Ø18 D = Ø160
E	155	155	198	198	250
F	160	205	265	265	295

SIZES	DN100 SMS104	DN125	DN150
A	89	-	-
B	81.5	-	-
C flange	350	-	-
D	8 holes Ø18 D = Ø180	-	-
E	265	-	-
F	295	-	-

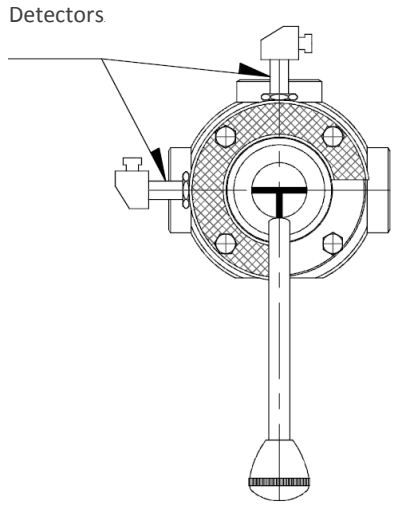
3.2. Options

- Lever with **stop for maneuver.**

We advise you to equip the MV valve with a stop for maneuver to prevent any risk of mixture of fluid or uncontrolled manipulation.



- **Position detectors** for lever (inductive sensors).



- **Pneumatic actuator** (simple or double effect).

  Angle of rotation available: 0° → 90° and 0° → 90° → 180°

  0° → 120° and 0° → 120°→ 240°

- **Electric actuator**

  Angle of rotation available: 0° → 90°

  0° → 180°

  0° → 270°

- **Solenoid** for pneumatic actuator.

  To optimise the rotation performance of the valve fitted with pneumatic actuator, you are advised to directly connect the air supply of the actuator by the solenoid on the main system. The solenoid can- controlled be pneumatically or electrically.

- **Indexing of the positions** for the MV with lever without stop.

- **Position detector** for actuator (inductive sensors).

- Model MVB only: **Reception of scouring insert** with/without detection presence of insert.

- **End-piece reinforced for passage of scouring insert** and/or high pressure of the fluid.

- Model MV without intercommunication of the routes ***(Be careful about this option: the overall space requirements are not standard).***

- **Heating** of the valve body (double envelope) by heat-transfer fluid.

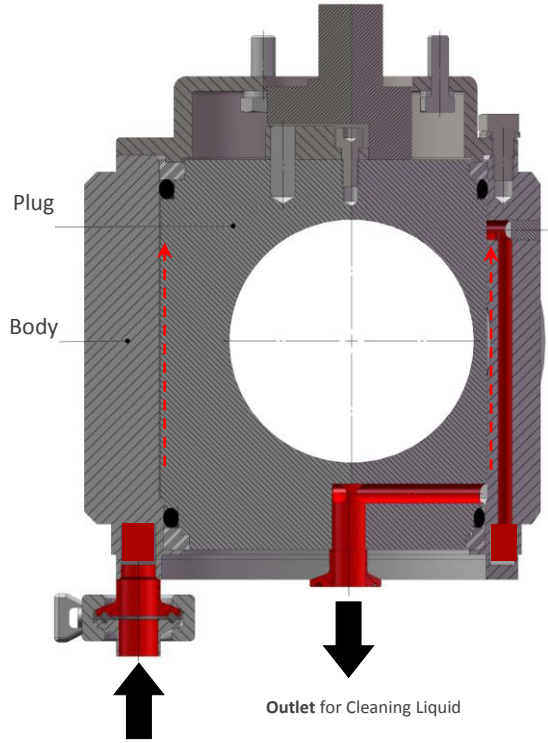
  Connection for auxiliary heating fluid:

SIZES	DN10	DN15	DN20	DN25
Male pdg	1/3''	1/2''	1/2''	1/2''

SIZES	DN32	DN40	DN50	SMS 63
Male pdg	1/2''	1/2''	1/2'' 3/4''	3/4''

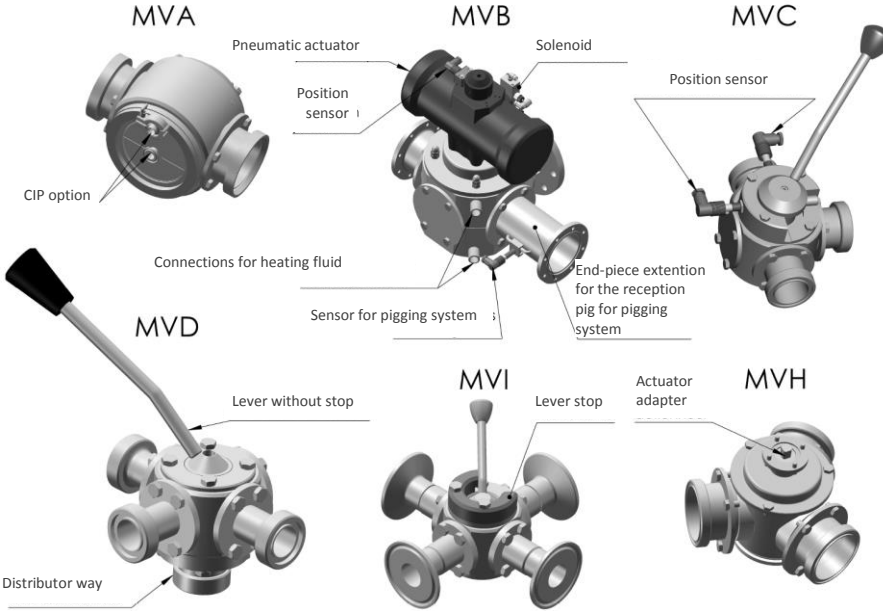
SIZES	DN65	DN80	DN100	DN125	DN150
Male pdg	3/4''	3/4''	3/4''	On request	

- **Reinforced cleaning (**Cleaning System for the valve's components): cleaning between the body and the plug (passage of the Cleaning Liquid through 4 canals in the plug and the body).



View of the device

The views below show 6 models of MV valve with optional equipment (position detectors, extended end-pieces, heating body, cleaning option (double envelope body), stop for maneuver, etc).



3.3. ATEX option

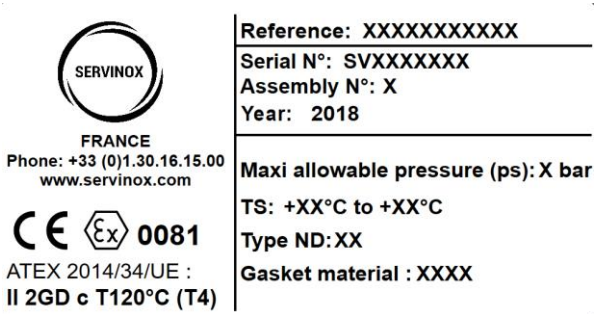
ATEX version 2014/34/EC , areas 1 & 21, gas and dust.

This device is intended for use in surface installations (group II).

The protection level of category 2 is suitable for normal use and frequently occurring disturbances for which malfunctions are normally taken into account. This equipment is for use in areas in which explosive atmospheres caused by mixtures of air and gas (G), vapours, mist or mixtures of air with dust (D), are likely to occur.

The maximum surface temperature is the temperature of the fluid.

This valve of type MV is suitable for ATEX areas 1 and 21; it has a Servinox sticker similar to the model below:



ATEX specifications

The MV ATEX valve keeps the same specifications as the standard model for the dimensions and available options (excluding reinforced cleaning and double-envelope body for heating)

SPECIFICATIONS	SERVINOX PROPOSAL
Product pressure	6 bar (model not reinforced). 10 bar (model reinforced).
Service temperature	1°C to 80°C (model not reinforced). 1°C to 120°C (model reinforced).
Materials: • Parts in contact with the product • Other parts • Sealing (Option) • Guiding • Seals	 Stainless-steel 1.4404 (316L). Stainless-steel 1.4301 (304L). PTFE pure (PTFE TFM 1600) PTFE +15% Graphite EPDM, NBR, FKM, VMQ, Silicone coated PTFE, FFKM.
Sizes of the valves: • SMS • DIN 11851	 25 mm (1"), 38mm (1.1/2"). 51 mm (2"), 63.5 mm (2.1/2"). 76.1 mm (3"),104 mm (4"). DN10, DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125, DN150
Connection	To weld, Clamp, Female, Male, Flange

4 COMMISSIONING

4.1. Transport/ Reception/ Handling

Upon receipt, check:

- That ***the package is in good condition***
- That the device ***is delivered as ordered***
- That the device ***has not been damaged***

If the device is damaged, it must not be fitted on the installation. Contact the manufacturer or your distributor.

4.2. Storage

If the device is not fitted immediately after delivery, it should be stored ***carefully***.

It should be stored in its original packaging, in a covered area, with protection against dirt, rain, snow, insects and away from shock.

The safe storage temperature is between 5°C and 40°C, with relative humidity of the air < 50%.

If the device is stored at negative temperatures, the resistance of the materials to cold should be taken into account (e.g.: the seals).

If storage is for longer than one year, the seals need to be replaced before commissioning.

4.3. Installation

General

Before any utilisation of the equipment, the user must visually verify good condition: absence of corrosion, bits of packaging, etc.

If the fluid is harmful, inflammable, toxic, etc, fit the installation with discharge pipes going into a safe place.

Also, you are advised to check the compatibility of these products with the seals and materials before using them.

The workers

The work described below should be carried out by qualified and experienced persons.

The personnel must be fitted with gloves, helmet, and safety shoes.

Precautions before installation

The support of the MV is ideally ensured by the three branches of piping BEFORE & AFTER the connection of the MV (this allows to deposit it without having to touch the support). The MV should never be supported otherwise (ex: by the actuator, by the end-pieces, etc).

Before fitting the valve, check:

- Plan a support on the MV valve installation for models DN50 to DN125: use the 3 or 4 threaded holes found on the lower part of the body.
- ***MV to be welded***: **plan removable pipes for maintenance work on the equipment.**
- The end-piece faces are parallel.
- Good alignment of the pipes.
- The quality of seating of the end-pieces.
- Mark the space requirements of the valves by provisionally installing them on the pipes.

Do not handle the valve by the actuator or the lever.

Welded connections

You must remove the end-pieces to be welded before welding.

For the correct functioning of the taps, the following precautions must without fail be taken when dismantling and refitting the end-pieces:

- Carefully identify the end-pieces in order to refit them on the orifice that they occupied on delivery.
- Be particularly careful that the little chocks in PTFE (Ref. 4.23 and 4.24) are replaced exactly so that the thickness of chocking originally provided is restored.
- Under no circumstances remove the sealing rings in PTFE (Ref. 4.7) fitted in the orifices of the body (Ref. 1), and which bear on the plug (Ref. 2).
- If any of these rings escapes from its housing when dismantling, check the cleanliness and the absence of shock, then replace the rings very carefully in their original position.

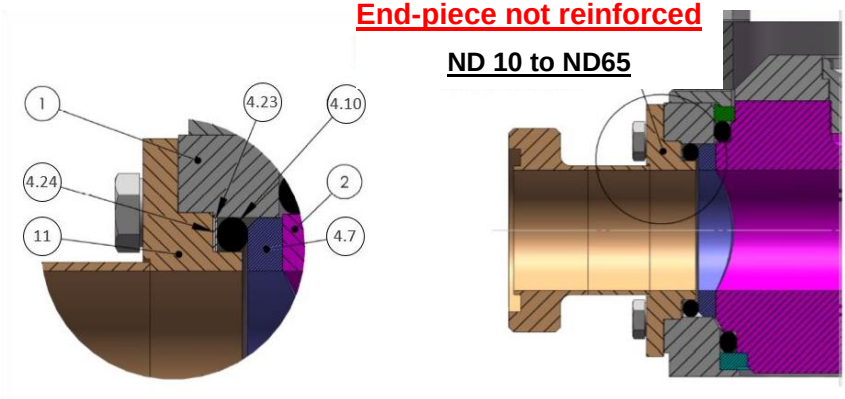
To remove the end-pieces (Ref. 11):

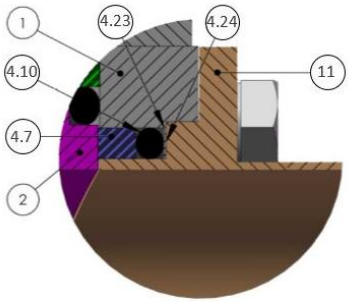
1) Unscrew the 4 fixing screws (Ref. 10) from the end-pieces.
2) The end-pieces can then be freed from the body (Ref. 1).
3) Place the valve in reserve.

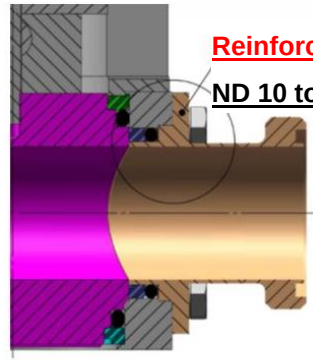
Three types of end-piece are available:

End-piece not reinforced

ND 10 to ND65







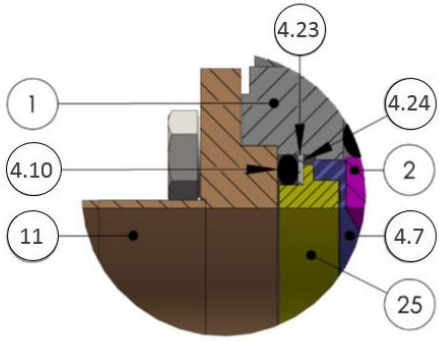
Reinforced end-piece

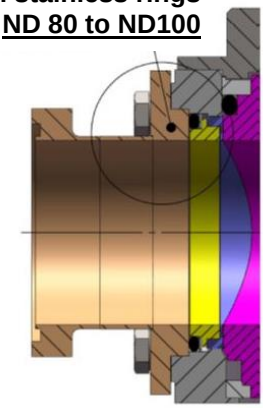
ND 10 to ND150

End-piece not reinforced

With stainless rings

ND 80 to ND100





Weld the end-pieces on the pipes.

The device should be welded to the tank by qualified persons following the regulations in force in the country of installation. The weld must not contain impurities and should be carried out hygienically.

After all welding and/or polishing work, the device should be cleaned of all residues, dust, etc.

When refitting the valve, in order to preserve its sealing quality, you should perform the following operations before the fitting the body:

1) Remove all foreign objects inside the pipes (filings, burrs, etc).

2) ***<u>Refit the MV valve on its welded end-pieces:</u>***

WITHOUT stainless-steel rings

- Make sure that the seals (Ref. 4.10) and the rings (Ref. 4.23 and Ref. 4.24) are in good position on the end-piece (Ref. 11).
- Check the positioning of the sealing rings (Ref. 4.7) in the body (Ref. 1) in contact with the plug (Ref. 2).
- Fit the welded end-piece on the body and screw on the 4 screws (Ref. 10) until they fully support the assembly.

  → ***Do not tighten!***

WITH stainless-steel rings

- Check the positioning of the sealing rings (Ref. 4.7) in the body (Ref. 1) in contact with the plug (Ref. 2).
- Insert the stainless rings (Ref. 25), then the chocking rings (Ref. 4.23 and 4.24) and the thrust seal (Ref. 4.10), in the body.
- Fit the welded end-piece on the body and screw on the 4 screws (Ref. 10) until they fully support the assembly.

  → ***Do not tighten!***

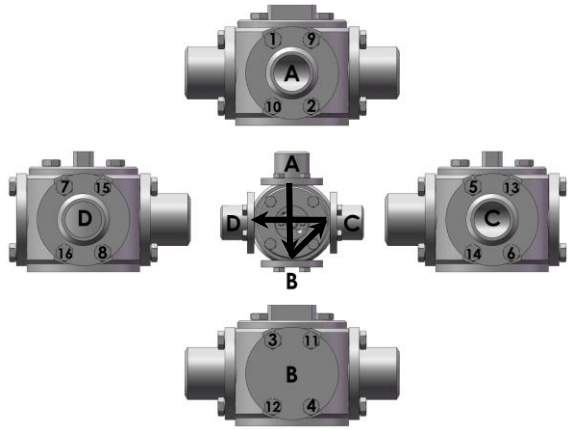
3) Screw on the 4 screws holding each end-piece ***(without using a mallet or plug extension)*** and proceeding as follows:

4) ***Method of tightening for a good assembly:***

- First, put on all the end-piece screws until they fully support the components, and screwing as follows:

  Assemble the end-pieces A, B, C and D in the form of a cross:

  A (1 & 2) → B (3 & 4) → C (5 & 6) → D (7 & 8) → A (9 & 10) → B (11 & 12) → C (13 & 14) → D (15 & 16).



- Perform a second final tightening, following the plan described previously.

- ***For valves with a pneumatic actuator:***

  - Check the pneumatic specifications of the actuator (rate and minimum pressure = 6 bar)

DANGER FOR THE OPERATOR
ATTENTION TO THE RISK OF CUTTING A LIMB WHEN MANOEUVRING THE GATE.
Withdraw your hands from inside the valve before any manoeuvre!

- Check the direction of the pneumatic connections (direction of rotation), and the correct rotation of the valve on all its positions (orientation of the gate marked by the lower sign on the plug).

- Measure and include the time of rotation of the valve in the installation process.

- ***Valves fitted with electrodistributor or position detectors:***

  In such cases, check the type of electrical voltages to use and the statutory classification of the distributors and the signs.

- ***Valves fitted with a cleaning system:***

  Connect the inlet point of the Cleaning Liquid on the connector situated on the body (Ref. 1) and the outlet point on the turning connector situated under the plug (Ref. 2).

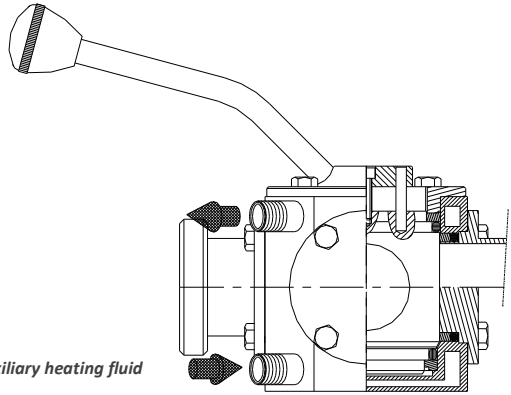
  (See option reinforced cleaning, chapter "standard options" page 12).

  Programme a swinging of the gate on all these positions during the cleaning cycle of the valve. The cadence of swinging must occur about once a minute; duration of the swing is about 15 seconds.

- ***Valves fitted with a heating body:***

  Connect the inlet point of the heating fluid on the bottom connector and the outlet point on the top connector for a better circulation of heat transfer.

  (See table of Connection for auxiliary heating fluid, chapter "standard options" page 12).



Auxiliary heating fluid

4.4. Before commissioning

BEFORE THE FIRST ROTATION OF VALVE:

It is imperative to proceed with the cleaning of the piping on which the MV valve is installed in order to remove any presence of impurities which could damage the seals.

5 USE

5.1. Functional checks

After installation, before using the valve or during maintenance work:

- Check the sealing of the body/plug and the end-pieces.

- You should also check their manual or automatic manoeuvrability. A "sticking point" may be observed during the first manoeuvres.

- Check that the actuator installed is operational.

- Check that the detectors, electrodistributors installed are operational.

- After the first hours of operation, in pressure or in temperature, you should check the tightness (end-pieces, cap).

- Taken into account the intercommunication between the routes during the manoeuvre of the tap.

5.2. Adjustment

Adjustments are reserved for the manufacturer of the documented device.

Contact SERVINOX or your distributor.

6 SERVICING AND MAINTENANCE

6.1. General

The equipment requires maintenance to make sure it functions correctly.

An inspection must be carried out at regular intervals. There should be an initial inspection interval of six months.

Certain properties of fluids (corrosive, aggressive, abrasive, residues, viscosity, etc) and certain environmental conditions (climate, pollution, etc) may require a reduction of these inspection intervals.

SERVINOX supplies the spare parts for proper maintenance and the warranty on the equipment. Specify the production number and the product reference for all orders.

We keep a store of sachets of wear parts (seals, etc) and we recommend that you keep a few sachets in stock for quick jobs.

You can contact SERVINOX for all advice about maintenance of the device.

6.2. Inspections and servicing

The maintenance of the MV taps should be carried out periodically. The frequency of this servicing depends on the conditions of use and is to be decided for each case.

The minimum points to inspect are:

- Absence of leak
- Traces of corrosion
- The tightness of the assemblies
- The correct functioning of the valve

Required periodic maintenance:

Every year, change:

- The upper and interior rings
- The seals
- The sealing rings
- The chocking rings

You are advised to check the compatibility of your products with the seals and materials before using them

We advise you to enter all the maintenance and test operations carried out on the installation in a form of this type:

Date	Company	Name of the worker	Signature
PREVENTIVE MAINTENANCE			
Operations		**Other, Comments**	
CHECKS ON CORRECT FUNCTIONING AND GOOD CONDITION			
Operations		**Other, Comments**	

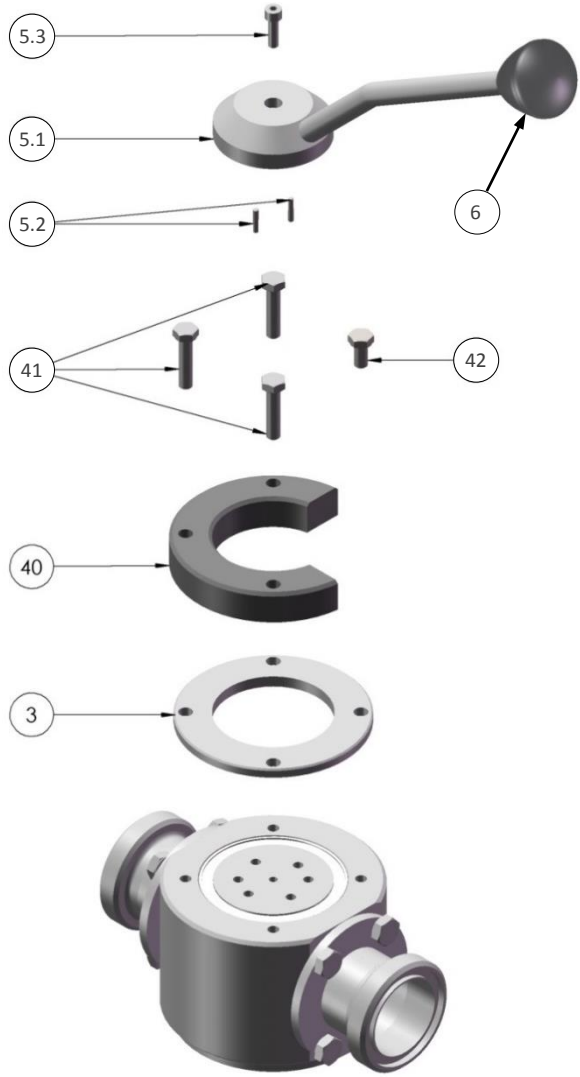
The workers

The work described below should be carried out by qualified and experienced persons.

The personnel must be fitted with gloves, helmet, and safety shoes.

6.3. Maintenance operations

Exploded view of the MV manual valve

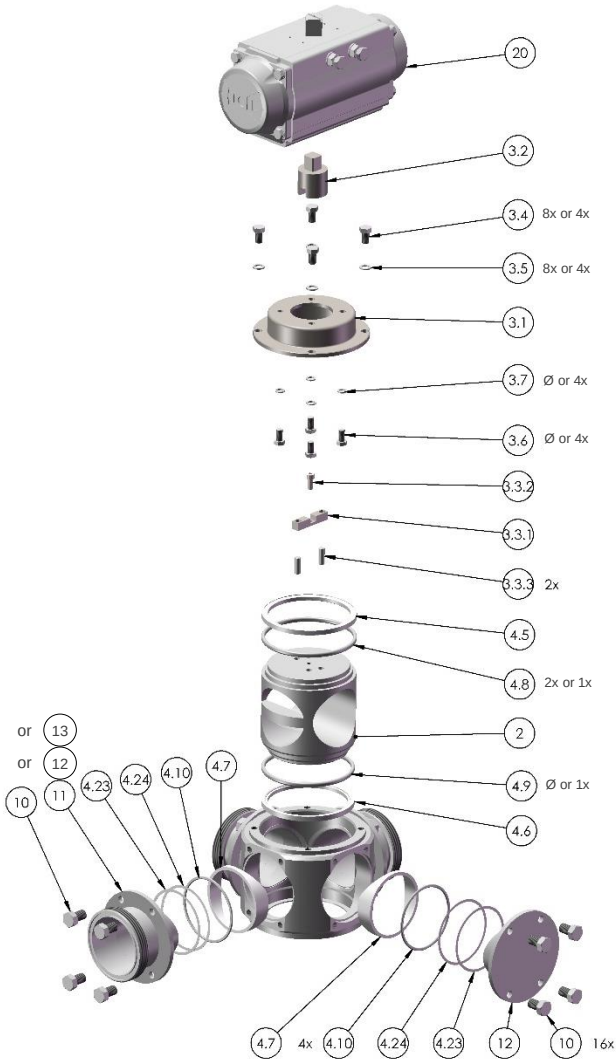


The exploded view of the components of the valve body are shown on page 27 "MV with pneumatic actuator"

Parts list of the MV manual valve

REF	DESCRIPTION
3	Cap
5.1	Valve lever
5.2	Pin
5.3	Screw
6	Handle
40	Stop
41	Screw for stop
42	Screw for cap

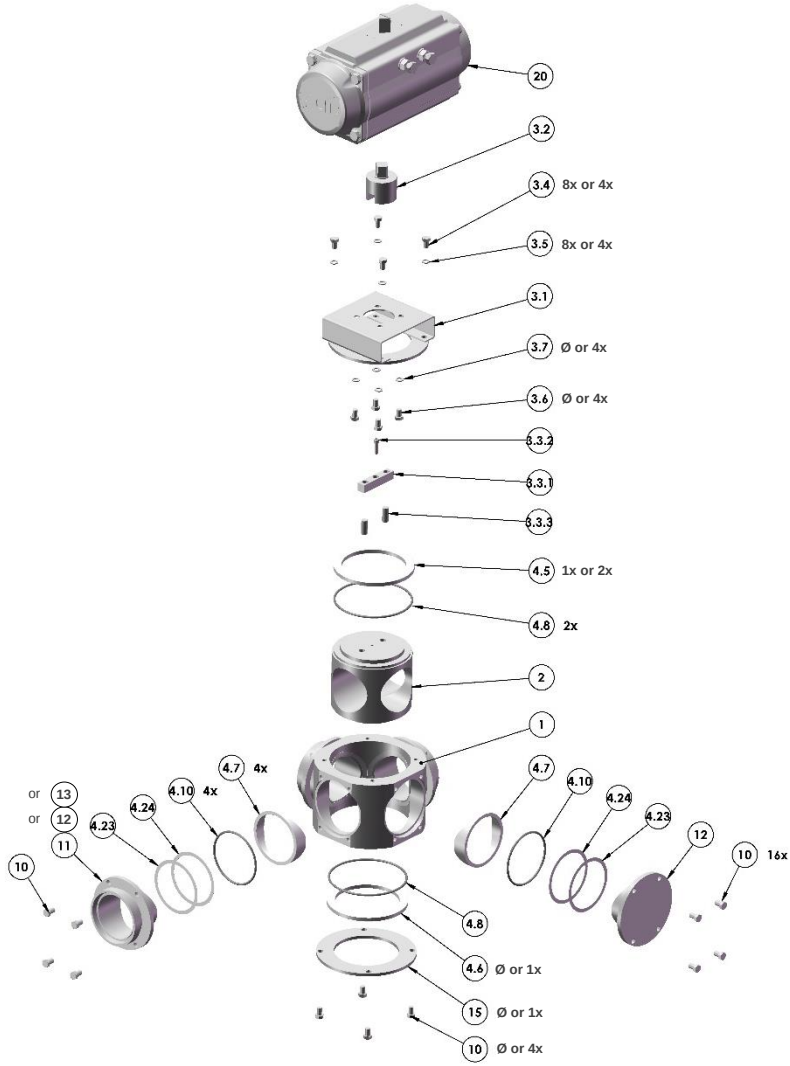
Exploded view of the MV standard valve with actuator



Parts list of the MV standard valve with actuator

REP	DESIGNATION
1	Body
2	Plug (gate)
3.1	Arcade cap
3.2	Shank
3.3.1	Cotter pin
3.3.2	Screw
3.3.3	Pin
3.4	Screw
3.5	Washer
3.6	Screw
3.7	Washer
4.5	Upper ring
4.6	Lower ring
4.7	Sealing ring
4.8	Upper seal
4.9	Lower seal
4.10	End-piece seal
4.23	Chocking ring
4.24	Chocking ring
10	Screw
11/12/13	End-piece
20	Actuator
21	Full end-piece

Exploded view of the MV valve DN125/150 with actuator



Parts list of the MV valve DN150 with actuator

REP	DESIGNATION
1	Body
2	Plug (gate)
3.1	Arcade cap
3.2	Shank
3.3.1	Cotter pin
3.3.2	Screw
3.3.3	Pin
3.4	Screw
3.5	Washer
3.6	Screw
3.7	Washer
4.5	Upper ring
4.6	Lower ring
4.7	Sealing ring
4.8	Upper and lower seal
4.10	End-piece seal
4.23	Chocking ring
4.24	Chocking ring
10	Screw
11/12/13	End-piece
15	Bottom plate
20	Actuator
21	Full end-piece

Dismantling the equipment

For disassembly of the screws and end pieces made by the customer, the warranty of the valve becomes obsolete, because this will affect the setting and / or alignment that have been set at the factory.

Start dismantling the valve as follows:

Unless otherwise stated, identification of the components described below is based on the exploded view of the MV standard valve with actuator (page 27).

MANUAL valve:

-  For detection (option), disconnect the electrical wires from the proximity detectors.

Valve with ACTUATOR:

-  Disconnect the air inlets and disconnect the electrical wires from the proximity detectors.

1) Identify the direction of fitting the valve (position of the end-pieces) on the pipes.
2) Use help for lifting the valve ***(do not handle the valve by the lever or by the actuator).***
3) Withdraw the valve from the process line:
   - ***MV (with end-pieces to be welded)***: Remove the pipes upstream from the MV valve and withdraw the valve from the process.
   - ***MV (with end-pieces SMS, DIN, Clamp)***: Uncouple the end-pieces fixed on the pipes and withdraw the valve from the process.
4) Place the equipment on a bench.

Identify the position of the plug compared with the end-pieces.

5) Undo the screws (Ref. 10) and remove all the end-pieces from the valve:

   - Side end-pieces (Ref. 11, 12 and 13 if different).
   - Full end-piece (Ref. 21).
   - Distributor end-piece (Ref. 42) if exist (see page 38).

6) Extract the chocking rings (Ref. 4.23 and 4.24) and the seal (Ref. 4.10) and the sealing ring PTFE (Ref. 4.7).

Measure and note the thickness of the chocks (Ref. 4.23 and 4.24)

7) ***Manual valve:***

   - Undo the central screw (Ref. 5.3) on the lever (Ref. 5.1).
   - Withdraw the 2 cotter pins (Ref. 5.2).
   - Withdraw the stop (Ref. 40) held by its screws (Ref. 41).
   - Undo the screws (Ref. 42).
   - Remove the cap (Ref. 3).

8) ***Valve with actuator:***

   - Identify the direction of fitting the valve on the actuator.
   - Withdraw the screw (Ref. 3.4) with its washers (Ref. 3.5) and remove the actuator with the arcade cap (Ref. 3.1).
   - Remove the adapter square (if any) and the shank (Ref. 3.2).

9) Turn over the tap and extract the body (Ref. 1) pushing by the rear of the valve on the plug (Ref. 2).

10) Remove withdraw the upper ring (Ref. 4.5) and lower (Ref. 4.6) on the plug (Ref. 2) with the upper and lower seals (Ref. 4.8 and 4.9).

11) Clean the interior of the body and the exterior of the plug.

Refitting the equipment

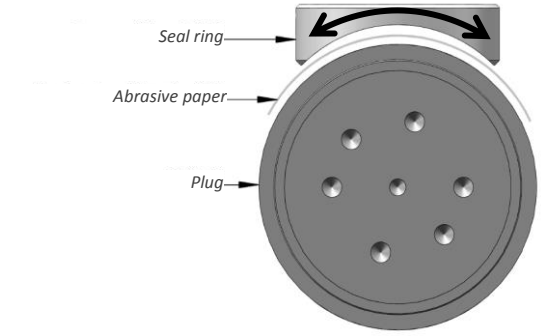
To refit the valve, proceed as follows:

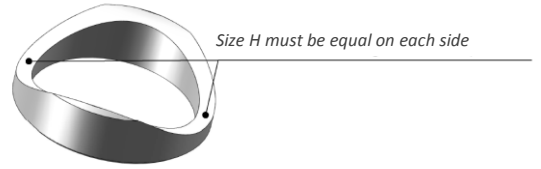
Unless otherwise stated, identification of the components described below is based on the exploded view of the MV valve with standard pneumatic actuator (page 27).

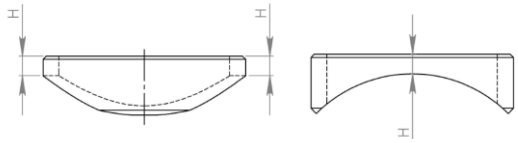
1) ***Burnish the new sealing rings only (Ref. 4.7) of the end-pieces:***

This burnishing is intended to obtain a smooth surface without visual fault on the PTFE ring and to adjust as much as possible the concave shape of the end-piece to the convex shape of the gate.

- Axially tighten the plug (previously cleaned and dried) in a vice with soft jaws.
- Position a piece of abrasive paper (grain 400) on the circumference of the plug (abrasive side towards the exterior).
- Burnish the sealing ring with a movement of rotation of the ring (concave side) on the abrasive paper.
- Check that the measurement H is equal each side of the ring with a tolerance of +/-0.1 mm.







2) Lubricate the interior of the valve body with food-standard silicone in spray.

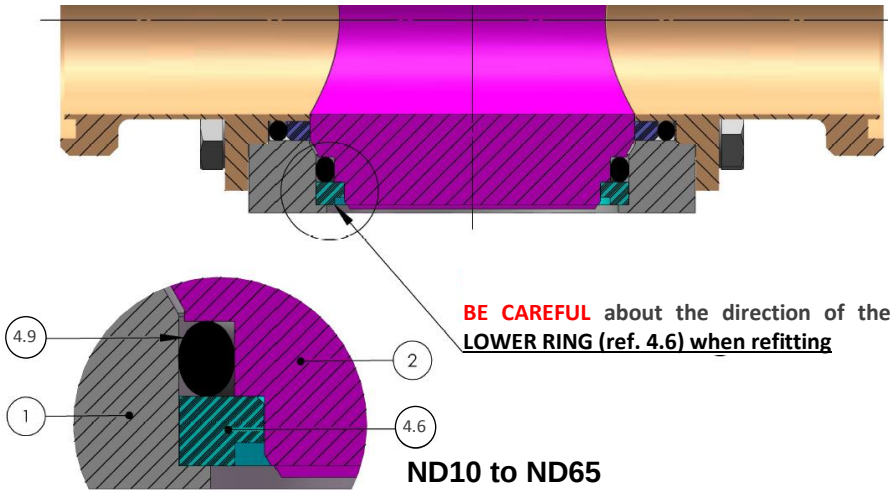
3) Position the plug upside down on the bench (groove indicating the hole of the gate upwards).

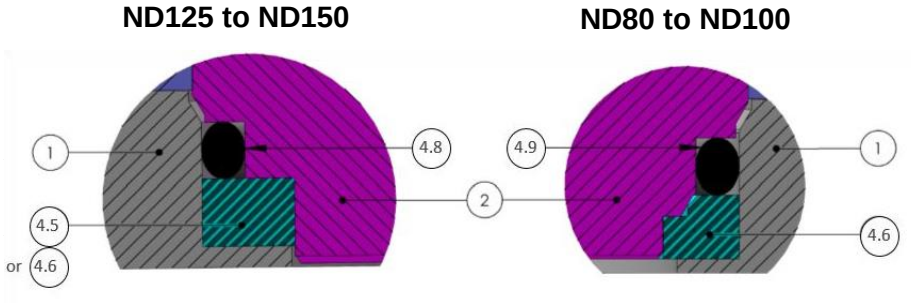
4) Lubricate the lower seal (Ref. 4.9) with food-standard silicone in spray.

5) Fit the lower seal (Ref. 4.9) on the gate (Ref. 2).

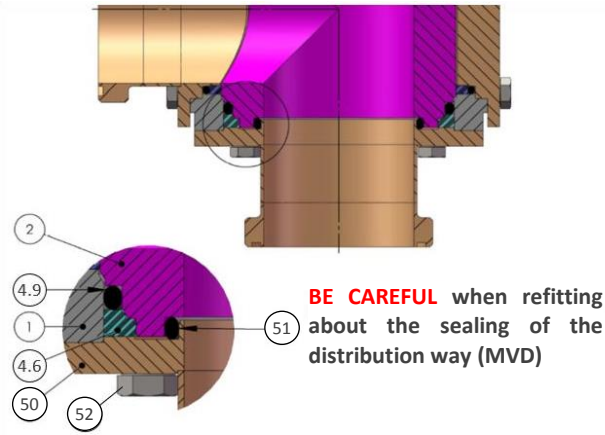
6) Position the lower ring (Ref. 4.5 or 4.6) on the gate (Ref. 2).

→ ***Check the direction of fitting following the diameter of the valve.***





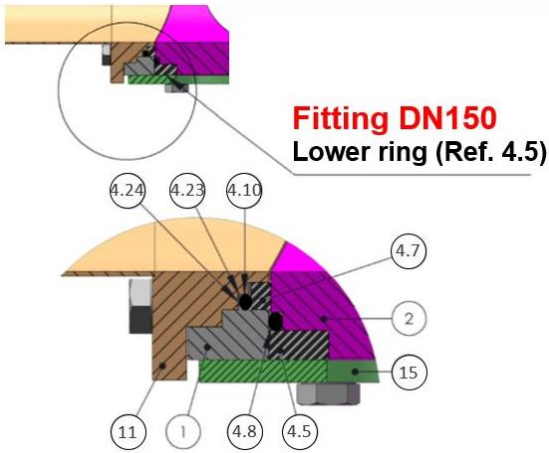
7) ***MVD valve***



- Fit the distribution end-piece (Ref. 50) with its seal (Ref. 51) on the body (Ref. 1).
- Screw on the 4 screws in cross fashion (Ref. 52) against the distributor end-piece.

  → ***Check the tightness of the assembly***

8) ***Valve DN150***



- Fit the lower cap (Ref. 15) with its screw (Ref. 10).
- Screw on the 4 screws in cross fashion (Ref. 10) against the cap.

  → ***Check the tightness of the assembly.***

9) Fit the body (Ref. 1) on the plug (Ref. 2) and push fully down.

→ ***Align the passages of the end-pieces on the body with the holes in the gate.***

10) Turn over the body (Ref. 1) with the plug (Ref. 2) fitted.

11) Lubricate the upper seal (Ref. 4.8) with food-standard silicone in spray.

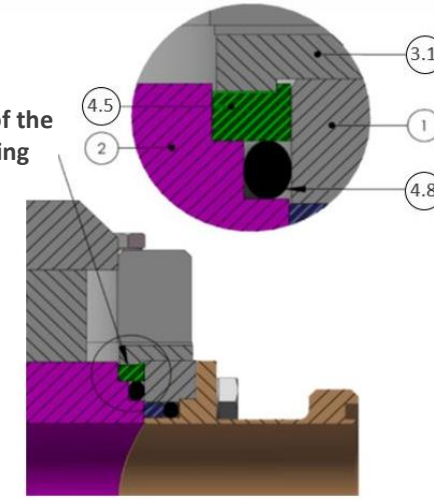
12) Fit the upper seal (Ref. 4.8) on the gate (Ref. 2).

13) Fit the upper ring (Ref. 4.5).

→ ***Check the direction of fitting the upper ring (Ref. 4.5).***

→ ***Valve DN150 fitting identical to lower ring***

BE CAREFUL about the direction of the UPPER RING (ref. 4.5) when refitting



MV with PNEUMATIC ACTUATOR

→ ***Check the orientation of the cotter pin according to the positions of the actuator.***

- Assemble the arcade cap (Ref. 3.1) on the body (Ref. 1) with the 4 screws (Ref. 3.4) with its washers (Ref. 3.5).

  → ***Check the tightness of the assembly.***

MV with LEVER

- Fit the cap (Ref. 3) + the stop (Ref. 40) with the 3 screws (Ref. 41) and the screw (Ref. 42).

  → ***Check the orientation of the stop according to the positions of the valve.***

  → ***Check the tightness of the assembly.***

- Position the 2 cotter pins (Ref. 5.3) on the gate.
- Assemble the lever (Ref. 5.1) on the plug of the valve with the screw (Ref. 5.2).

  → ***Check the tightness of the assembly.***

14) Position the chocks (Ref. 4.24 and Ref. 4.23) then the thrust seals (Ref. 4.10) on the end-piece (Ref. 11, 12 and 13 if different) and the full end-piece (Ref. 21).

→ ***Fit the same thickness of new chocking washers as those removed.***

→ ***Fit 0.5mm minimum of chocking***

→ ***Possibility of standard chocking:***

NUMBER OF CHOCKS	THICKNESS OF CHOCKS	CHOCKING SIZE
1 x	0.5 mm	0.5 mm (chocking minimum)
2 x	0.5 mm + 0.3 mm	0.8 mm
2 x	0.5 mm	1 mm (chocking maximum)
3 x	0.3 mm	0.9 mm
2 x	0.3 mm	0.6 mm

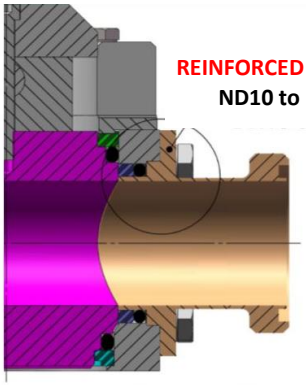
→ ***Check that the chocking is identical on each end-piece***

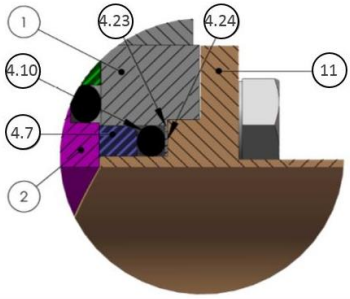
15) Introduce the rings (Ref. 4.7) in the body (Ref. 1) in contact with the plug (Ref. 2), then the stainless ring if any (Ref. 25).

16) Fit the end-pieces on the body (Ref. 1) and manually screw on the 4 screws (Ref. 10) on each end-piece until the assembly is fully supported

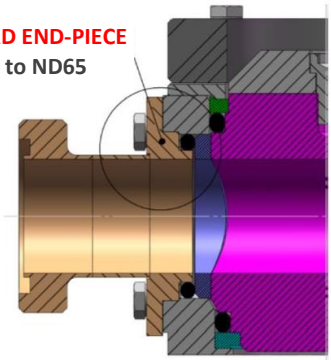
→ ***Do not tighten!***

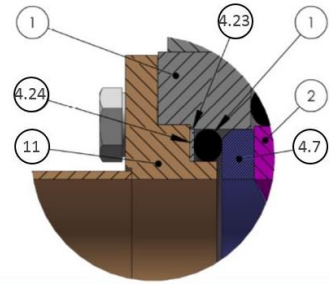
REINFORCED END-PIECE
ND10 to ND150



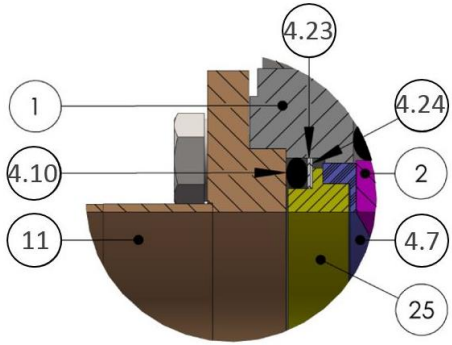


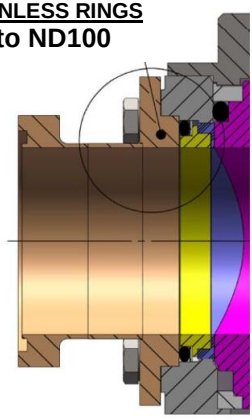
STANDARD END-PIECE
ND10 to ND65





END-PIECE NOT REINFORCED
WITH STAINLESS RINGS
ND80 to ND100





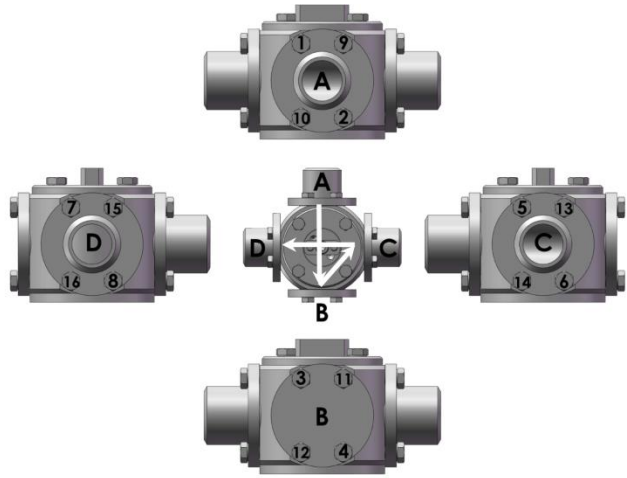
17) With the plug, perform a pre-screwing of all the end-piece screws (Ref. 10) until the components are fully supported.

18) Screw on the end-pieces in cross fashion A, B, C and D in the order and using the following method:

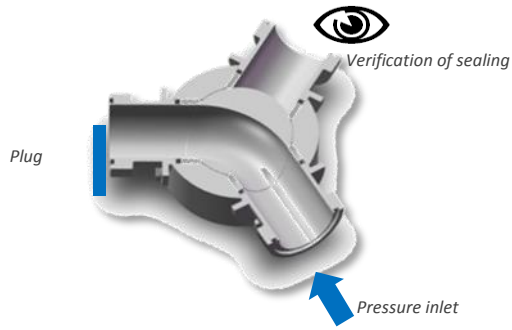
A (1 and 2) → B (3 and 4) → C (5 and 6) → D (7 and 8).

→ A (9 and 10) → B (11 and 12) → C (13 and 14) → D (15 and 16).

→ ***Check the tightness of the assemblies***



19) Test the equipment to verify the sealing of the valve.



1) Put the open gate of the valve under hydraulic pressure (water) using a manual pump at 150% of the service pressure.
EVACUATE ALL THE AIR INSIDE THE VALVE.

If the valve is used for a scouring system and the service pressure is under 6 bar, in this case only the test pressure is 9 bar.

2) Maintain the valve under pressure for 2 minutes, check the loss of pressure then verify the absence of leak from the closed end-piece.
- No leak = TEST OK
- Leak of water = remove and re-chock all the end-pieces with +0.3mm minimum (start again from step 13 of the chapter "refitting the equipment").

20) ***MV with LEVER***:

Maintain the MV in a vice and check the manual rotation of the valve WITHOUT TOOL.

21) ***MV with ACTUATOR:***

- Position the shank (Ref. 3.2) on the plug (Ref. 2).
- Connect the shank (Ref. 3.2) on the valve (with adapter square if necessary).
- Assemble the arcade cap on the body (Ref. 1) with the screw (Ref. 3.4) with its washers (Ref. 3.5).

  → ***Check the tightness of the assembly***
- Keep the actuator (pressure/pneumatic rate identical to the process) and turn the plug through all its positions.

  → ***Check and adjust the alignment of the end-piece/gate.***

DANGER FOR THE OPERATOR

ATTENTION TO THE RISK OF CUTTING A LIMB WHEN MANOEUVRING THE GATE. Withdraw your hands from inside the valve before any manoeuvre!

22) If the tests are OK, replace the valve in good position on its installation.

23) For valves with detectors (Scouring insert, stop, actuator, etc) and actuators:

 Connect the electrical wires of the detectors.

7 DIAGNOSTIC AID

The table below is a diagnostic aid in order to remedy simple functional problems.

PROBLEM	POSSIBLE CAUSE	REMEDY
Leaking valve	- Worn seals.	> Replace the seals.
	- Overpressure of the fluid.	> Adjust the pressure.
	- Chocking of the end-pieces insufficient.	> Chock of +0.3mm minimum.
	- Absence of burnishing of the PTFE rings.	> Burnish the rings using the method described in the maintenance chapter.
Jamming of the plug in rotation	- Too much chocking.	> Adjust the chocking by intervals of 0.3mm.
	- Absence of lubrication of the seals.	> Spray food-standard silicone on the upper and lower seals of the gate, and inside the valve body. Then operate the valve for 10 minutes on short cycles.
	- Air supply insufficient in the actuator.	> Minimum pressure of the actuator +4 bar, increase by +1 bar if necessary (maximum pressure 8 bar). > Verify the absence of air leak on the pneumatic connections and the absence of damage to the actuator.
	- Solid object inside the valve (scouring insert).	> Inspect the interior of the valve and withdraw the blocking object. > Check the alignment of the plug with the routes on all the positions of the valve.
Leak of liquid by the CIP outlet (option reinforced cleaning)	- Rotation of the gate during the process (fluid under pressure).	> Stop the process before making the valve rotate (pressure = 0 bar in the line process).
	- Misalignment of the gate compared with the routes.	> Remove the valve from the line and adjust the routes with the gate, on all the positions of the valve (adjust the position stops).

8 WARRANTY

Unless otherwise stated in the proposal, the device is guaranteed ***12 months as from the date of delivery***.

After an examination in our factory, the parts considered as defective will be replaced at our expense.

All replacement of the device's components (wear parts, seal, etc) must be replaced by SERVINOX original parts

The warranty does not cover damage due to:

- Poor fitting, inappropriate or abusive utilisation
- An accident or incorrect installation
- Modification of the equipment
- Leaks following the passage of impurities will not be taken into account
- Required maintenance not performed

The warranty on our products covers the free repair of parts returned when proved that they have become unusable prematurely, following a manufacturing or material fault.

We are not bound to any compensation or any other obligation of this kind.

This equipment has been inspected before leaving the factory.

This equipment has been certified as having been inspected and authorised for sale

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34-36 Avenue Roger Hennequin
78197 Trappes cedex - France
Tél. : + 33 (0)1 30 16 15 00
Fax : +33 (0)1 30 16 15 01
Home page : http://www.servinox.com