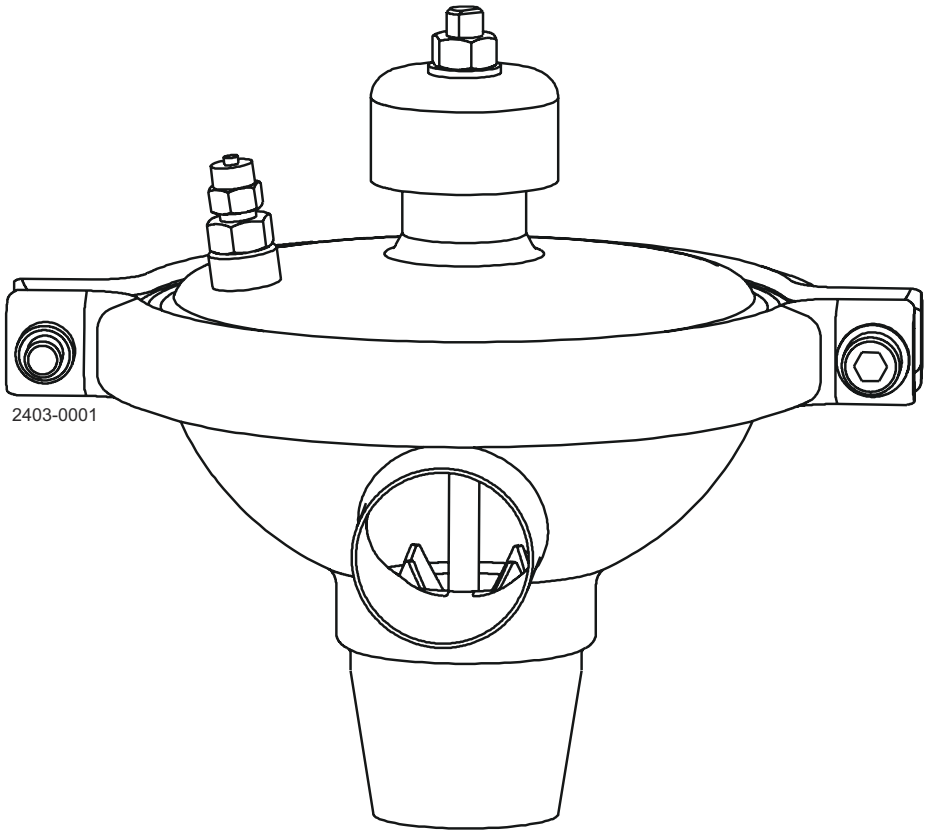
Alfa Laval CPM-2

Regulating valve



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Instruction Manual

BRITISH ENGLISH

Published by
Alfa Laval Kolding A/S
Albuen 31
DK-6000 Kolding, Denmark
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The original instructions are in English

Contents

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1 Declaration of Conformity

1.1 EU Declaration of Conformity

The designated company

Alfa Laval Kolding A/S, Albuen 31, DK-6000 Kolding, Denmark, +45 79 32 22 00

Company name, address and phone number

Hereby declare that

Valve

Designation

CPM-2

Type

is in conformity with the following directives with amendments:

- Machinery Directive 2006/42/EC

The person authorised to compile the technical file is the signer of this document.

Vice President BU Hygienic Fluid Handling Head of Product Management	Mikkel Nordkvist	
Title	Name	
Kolding, Denmark	2024–05–01	
Place	Date (YYYY-MM-DD)	Signature

DoC Revison_ 01_052024 / This Declaration of Conformity replaces Declaration of Conformity dated 2022–10–01

1.2 UK Declaration of Conformity

The designated company

Alfa Laval Kolding A/S, Albuen 31, DK-6000 Kolding, Denmark, +45 79 32 22 00

Company name, address and phone number

Hereby declare that

Valve

Designation

CPM-2

Type

is in conformity with the following directives with amendments:

- The Supply of Machinery (Safety) Regulations 2008

Signed on behalf of: Alfa Laval Kolding A/S.

Vice President BU Hygienic Fluid Handling Head of Product Management	Mikkel Nordkvist
Title	Name
Kolding, Denmark	2024–05–01
Place	Date (YYYY-MM-DD)

DoC Revison_ 02_052024

2 Safety

Read this first

This Instruction Manual is designed for operators and service engineers working with the supplied Alfa Laval product.

Operators must read and understand the ***Safety, Installation and Operating*** instructions of the supplied Alfa Laval product before carrying out any work or before you put the supplied Alfa Laval product into service!

Not following the instructions can result in serious accidents.

This documentation describes the authorized way to use the supplied Alfa Laval product. Alfa Laval will take no responsibility for injury or damage if the equipment is used in any other way.

This Instruction Manual is designed to provide the user with the information to perform tasks safely for all phases in the lifetime of the supplied Alfa Laval product.

The operator shall always read the chapter ***Safety*** first. Hereafter the operator can skip to the relevant section for the task to be carried out or for the information needed.

Always read the chapter ***Technical Data*** thoroughly.

This is the complete Instruction Manual for the supplied Alfa Laval product.

NOTE

The illustrations and specifications in this Instruction Manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify the Instruction Manual without prior notice or any obligation.

The English version of the Instruction Manual is the original manual. Alfa Laval cannot be held responsible for incorrect translations. In case of doubt, the English version applies.

2.1 Safety Signs

Mandatory Action Signs

	General mandatory action sign.
	Refer to instruction manual.
	Use eye protection - safety glasses.
	Use protective hand wear - safety gloves.
	Wear protective equipment - safety helmet.
	Use ear protection in noisy environments - noise protector.
	Wear protective equipment - safety shoes.

Warning Signs

	General warning.
	Corrosive substance.
	Hot surface and burning danger.
	Cutting danger.
	Transportation with forklift truck or other industrial vehicles if heavy.

2.2 Safety Precautions

All warnings in the Instruction Manual are summarised on these pages. Pay special attention to the instructions below so that severe personal injury and/or damage to the supplied Alfa Laval product is avoided.

Transportation and Lifting

Transportation and Lifting

Always ensure that personnel must have experience with lifting operations.

Always ensure that compressed air is released.

Always ensure that all connections are disconnected before attempting to remove the valve from the installation.

Always use predesigned lifting points if defined. Ensure that the lifting equipment is suitable for the specific supplied product.

Always ensure the lifting point to be in line with centre of gravity. Adjust lifting point if necessary.

Always use appropriate lifting equipment for heavy parts when relevant. Use lifting logs when available.

Always keep an eye on the load and stay clear during the lifting operation.

Always drain liquid out of the valves before transportation.

Always ensure sufficient fixing of the valve during transportation - if specially designed packaging material is available , it must be used.

Installation

Installation

If the local safety regulations prescribe that the installation has to be inspected and approved by responsible authorities before the valve is put into service, consult with such authorities before installing the equipment and have the projected installation approved by them.

Always ensure all pipe lines (product, air, and water) are depressurized and emptied before installation, inspection, assembling and disassembling.

Always assemble the valve completely before start and make sure everything is in place and properly tightened.

Always release compressed air after use.

Never work on the valve or touch moving parts if the actuator is supplied with compressed air.

Never dismantle or touch the valve or pipelines when processing hot liquids or when sterilising.

Never dismantle the valve with valve and pipelines under pressure.

Operation

Operation

Never operate the valve unless it is properly mounted or installed.

Never work on the valve or touch moving parts if the actuator is supplied with compressed air.

Never dismantle or touch the valve or pipelines when processing hot liquids or when sterilising.

Never dismantle the valve with valve and pipelines under pressure.

Always release compressed air after use.

Always rinse well with clean water after cleaning.

Always handle lye and acid with great care.

Always follow the instructions in the safety data sheets from the suppliers of cleaning agents, detergents, oils etc.

Maintenance

Maintenance

In order to optimise the operation of the supplied product and to minimize the down time due repair activities, the maintenance should consist of:

- Inspection and maintenance of the supplied product: strictly follow the technical documentation
- **Preventive maintenance:** visual inspection of the supplied product followed by necessary adjustments and planned periodic replacement of wear and tear parts
- **Repairs:** unscheduled break-down of a component, often causing the system to stop. Damaged components shall be replaced or repaired
- **Stock of Alfa Laval genuine spare parts:** Alfa Laval recommends keeping a stock of genuine spare parts facilitating preventive maintenance and reducing down time in case of unplanned break-downs

Never work on the valve or touch moving parts if the actuator is supplied with compressed air.

Never dismantle or touch the valve or pipelines when processing hot liquids or when sterilising.

Never service the valve with valve and pipelines under pressure.

Storage

Alfa Laval recommend:

- Store the supplied Alfa Laval product as supplied in original packaging
- Port opening(s) should be protected against any ingress
- Bare steel (not stainless) should be lightly oiled/greased
- Store in a clean, dry place without direct sunlight or UV light
- Temperature range -5 °C to 40 °C (23 °F - 104 °F)
- Relative humidity less than 60%
- No exposure to corrosive substances (including contained air)

Noise

- One metre away from and 1.6 metres above the exhaust, the noise level of a valve actuator will be approximately 77db (A) without noise damper and approximately 72 db (A) with damper - measured at 7 bar air-pressure

Hazards

Burn Hazard

- Lubrication oil, machine parts and various machine surfaces can be hot and cause burns. Wear protective gloves

Corrosive Hazard

- Always handle cleaning liquids, lye and acid with great care and in accordance with separate instructions for those fluids
- When using chemical cleaning agents and lubricants, make sure you follow the general rules and suppliers recommendation regarding ventilation, personnel protection etc.

Cut Hazard

- Sharp edges, especially on bowl discs and threads, can cause cuts. Wear protective gloves
- Avoid placing hands into valve orifice pinch points

Safety check

A visual inspection of any protective device (shield, guard, cover or other) on the supplied Alfa Laval product shall be carried out at least every 12 months. If the protective device is lost or damaged, especially when this leads to deterioration of safety performance, it shall be replaced. The fixing of the protective device should only be replaced with fixings of the same or an equivalent type.

Inspection acceptance criteria:

- It should not be possible to reach moving parts originally protected by a protective device
- The protective device must be securely mounted
- Ensure that screws for the protective device are securely tightened

Procedure in case of non-acceptance:

- Fix and/or replace the protective device

How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com to access the information directly.

2.3 Warning Signs in Text

Pay attention to the safety instructions in this manual.

Below are definitions of the four grades of warning signs used in the text where there is a risk for injury to personnel or product damage.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate damage on the product.

NOTE

Indicates important information to simplify or clarify procedures.

2.4 Requirements of Personnel

Operators

The operators shall read and understand the instruction manual for the supplied product.

Maintenance personnel

The maintenance personnel shall read and understand the instruction manual. The maintenance personnel or technicians shall be skilled within the field required to carry out the maintenance work safely.

Trainees

Trainees can perform tasks under the supervision of an experienced employee.

People in general

The public shall not have access to the supplied product.

In some cases special skilled personnel may need to be hired, like electricians and others. In some of these cases the personnel has to be certified according to local regulations with experience of similar types of work.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com to access the information directly.

2.5 Recycling Information

Unpacking

Packing material may consist of wood, plastics, cardboard boxes and in some cases metal straps.

	• Wood and cardboard boxes can be reused, recycled or used for energy recovery • Plastics should be recycled or burnt at a licensed waste incineration plant • Metal straps should be sent for material recycling

Maintenance

During maintenance, oil (if used) and wear parts in the supplied Alfa Laval product should be replaced.

- Oil and all non-metal wear parts must be disposed of in accordance with local regulations
- Rubber and plastics should be burnt at a licensed waste incineration plant. If not available they should be disposed of in accordance with local regulations
- Bearings and other metal parts should be sent to a licensed handler for material recycling
- Seal rings and friction linings should be disposed of to a licensed land fill site. Check your local regulations
- All metal parts should be sent for material recycling
- Worn out or defected electronic parts should be sent to a licensed handler for material recycling

Scrapping

At end of use, the equipment must be recycled in accordance with the relevant local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit *www.alfalaval.com* to access the information directly.

3 Introduction

The Alfa Laval CPM Constant-Pressure Modulating Valve is a pneumatic regulating valve that maintains a constant pressure in hygienic process lines at the valve inlet or outlet. Safe, reliable and easy to clean, these regulating valves provide accurate pressure control, quickly adjusting position to maintain the pressure at pre-set values without any need for electronic control.

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4 Installation

4.1 Unpacking/delivery

NOTE

The instruction manual is part of the delivery.

CPMI-2: Constant-Pressure Modulating Inlet.

CPMO-2: Constant-Pressure Modulating Outlet.

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

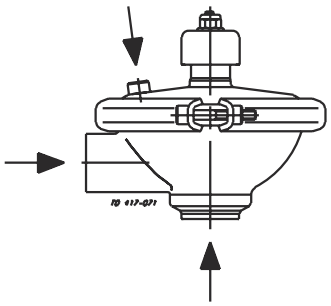
Check the delivery for:

1. Complete valve, CPMI-2 or CPMO-2
2. Delivery note
3. Instruction manual

1

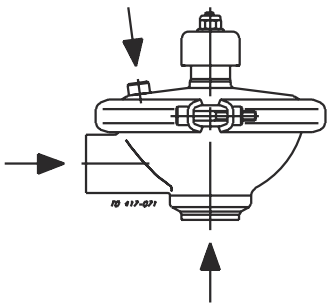
Remove possible packing materials from the valve ports.

Avoid damaging the air connection and the valve ports.



2

Inspect the valve for visible transport damage.



4.2 General installation

NOTE

Always read the technical data thoroughly (see *Technical Data* on page 39.

CPMI-2: Constant-Pressure Modulating Inlet.

CPMO-2: Constant-Pressure Modulating Outlet.

The valve has welding ends as standard but can also be supplied with fittings.

CAUTION

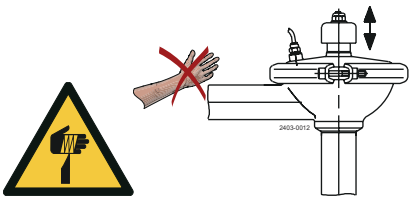
Alfa Laval **cannot** be held responsible for incorrect installation.

The required product pressure is preset by means of an air pressure regulating valve (optional extra).

WARNING

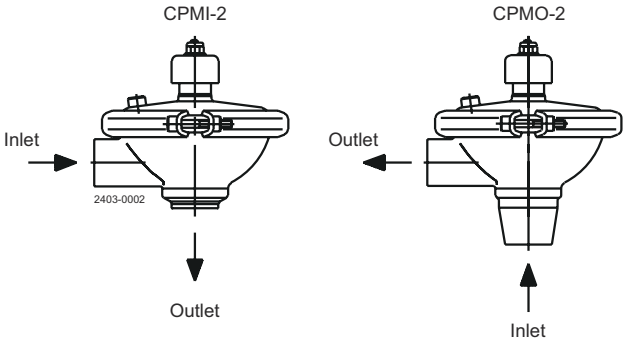
Never touch the valve top if compressed air is supplied to the valve.

Always release compressed air after use.



1

Ensure that the flow direction is correct.



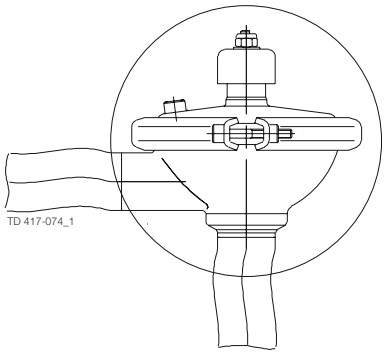
2

Avoid stressing the valve.

Pay special attention to:

- Vibrations
- Thermal expansion of the tubes
- Excessive welding
- Overloading of the pipelines

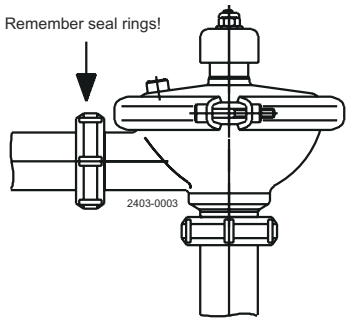
Risk of damage!



3

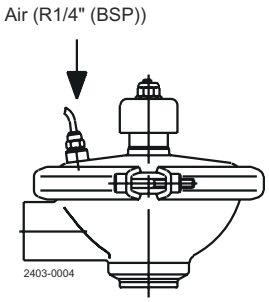
Fittings:

Ensure that the connections are tight.



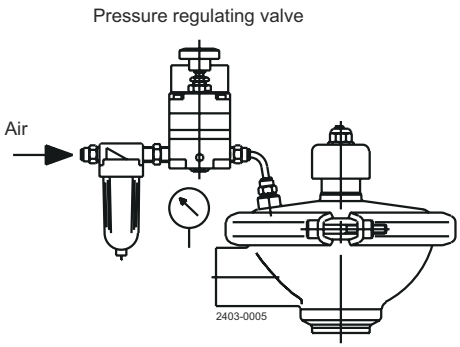
4

Air connection:



5

Air pressure regulating valve (optional extra): An air pressure regulating valve must be used and should be installed with min. clearance to the Booster/CPM-2 valve.



4.3 Welding

NOTE

The valve has welding ends as standard.

Weld carefully.

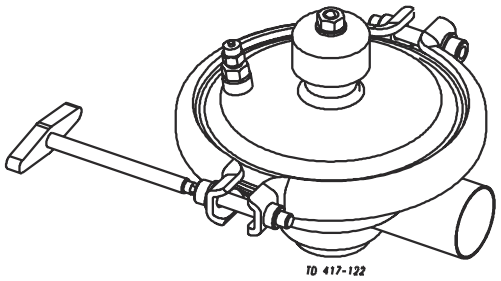
CPMI-2: Constant-Pressure Modulating Inlet.

CPMO-2: Constant-Pressure Modulating Outlet.

1

Dismantle the valve in accordance with step *1* - *4* in *Dismantling* on page 32.

Pay special attention to the warning!

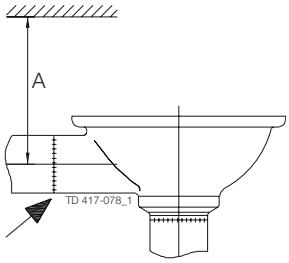


2

CPMI-2:

1. Weld the valve body into the pipelines
2. Maintain the minimum clearance so that the internal valve parts can be removed

A = 200 mm (without booster) / 250 mm (with booster)



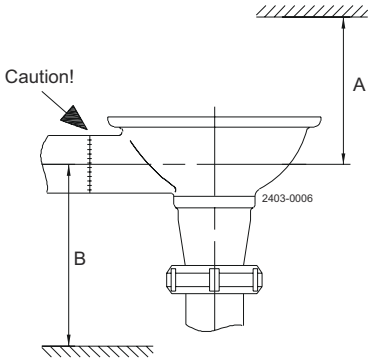
3

CPMO-2:

1. Weld the valve body into the pipelines (see also step *4* on page 20)
2. Maintain the minimum clearance so that the valve plug can be removed

A = 150 mm (without booster) / 200 mm (with booster)

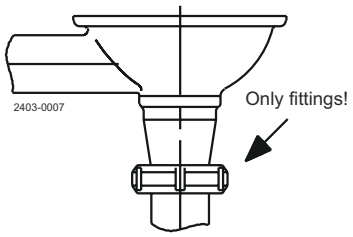
B = 250 mm



4

CPMO-2:

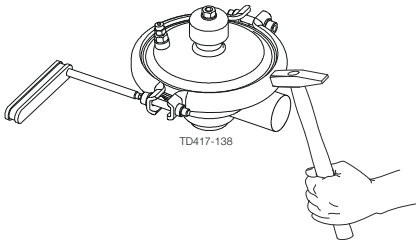
Never weld the bottom connection as this will make it impossible to dismantle the valve.



5

Assemble the valve in accordance with step *6* - *10* in *Assembly* on page 35.

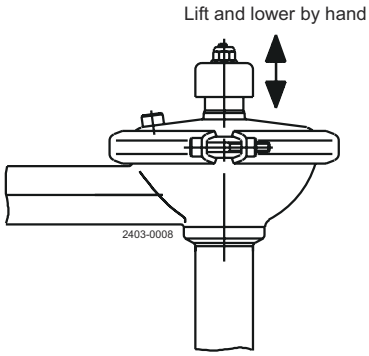
Tighten clamp 10-15 Nm (7.5-11 lbf-ft).



6

Pre-use check:

Lift and lower the valve top several times to ensure that the valve operates smoothly.



4.4 Fitting of booster (optional extra)

NOTE

The items refer to *Part List and Exploded View* on page 43.

The valve can be fitted with a Booster to allow for a product pressure higher than available air pressure.

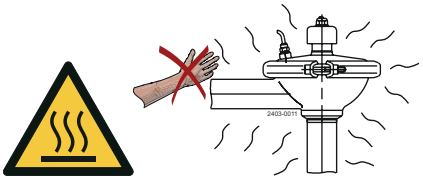
Pay special attention to the warnings!

WARNING

Never touch the valve or the pipelines when processing hot liquids or when sterilising.

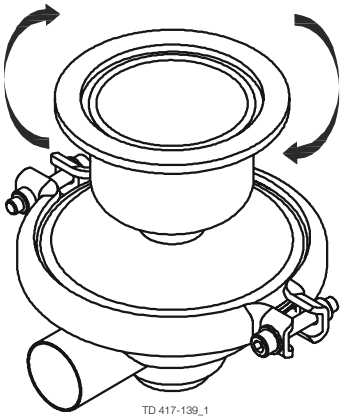
The valve and the pipelines must **never** be pressurised when dismantling the valve.

Atmospheric pressure required



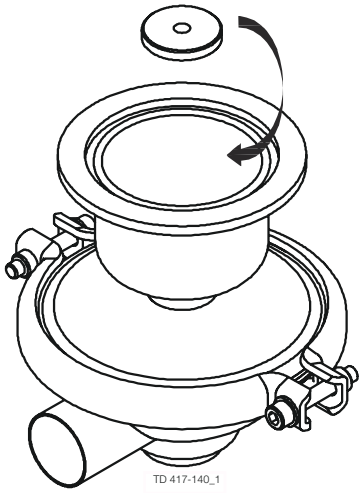
(1)

1. Remove the valve top in accordance with step *3* on page 32
2. Fit Booster housing (1) on the cover
3. Fit and tighten lock nut (2)



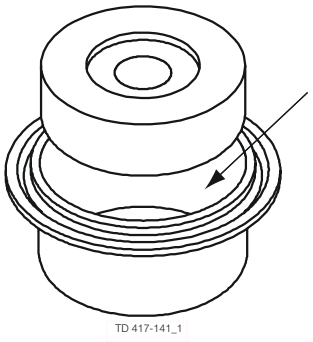
(2)

1. Fit washer (3)
2. Refit the washer and the top nut on the valve plug



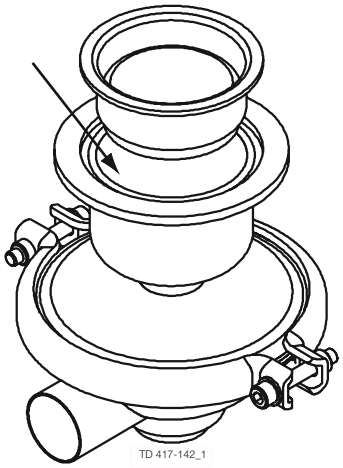
3

1. Turn diaphragm (7) inside out
2. Place piston (6) in the diaphragm so that the hole is visible



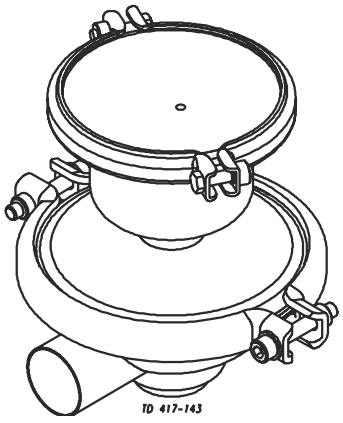
4

1. Roll diaphragm (7) down half it's length
2. Fit the diaphragm with piston (6) in Booster housing (1)



5

1. Fit cover (8) on Booster housing (1)
2. Fit and tighten clamp (9)
3. The valve and the Booster are now ready for operation

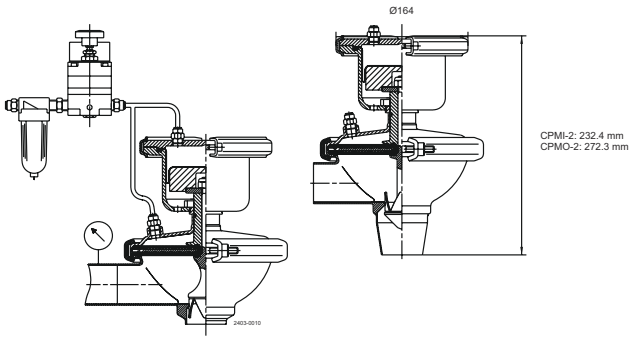


6

Compressed air: An air pressure compensating regulating valve must be used and should be installed with min. clearance to the Booster/ CPM-2 valve.

The pressure regulating valve (PR) and the pressure gauge (PG) are optional extras.

Alfa Laval recommends using the air pressure regulating valve from Alfa Laval.



5 Operation

NOTE

The valve is lubricated, adjusted and tested before delivery.

The items refer to *Part List and Exploded View* on page 43.

Pay special attention to the warnings!

CAUTION

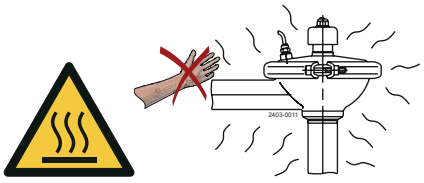
Always read the technical data thoroughly.

Always release compressed air after use.

Alfa Laval **cannot** be held responsible for incorrect operation.

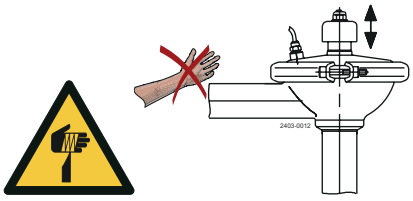
WARNING

Never touch the valve or the pipelines when processing hot liquids or when sterilizing.



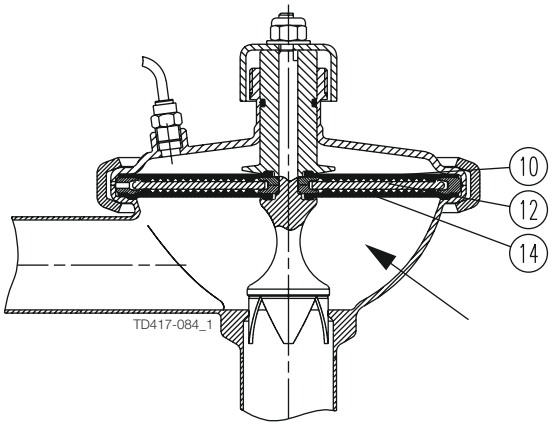
WARNING

Never touch the valve top if compressed air is supplied to the valve.



CAUTION

There must not be vacuum in the valve as air can be drawn into the product and diaphragms (14) can then be pulled out from support sectors (12).

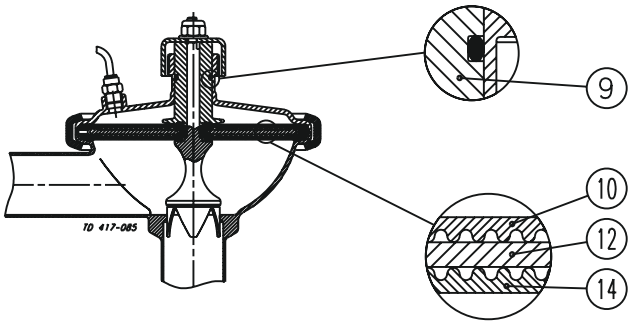


1

Lubrication:

1. Ensure smooth movement between diaphragms (10,14) and support sectors (12)
2. Ensure smooth movement of guide (9)

Lubricate if necessary! (See “Lubrication (before assembly)” in *General Maintenance* on page 31).



5.1 Fault Finding

NOTE

Study the maintenance instructions carefully before replacing worn parts - see *Maintenance* on page 31.

Pay attention to possible break-down.

The items refer to *Part List and Exploded View* on page 43.

Problem	Cause/result	Repair
The valve does not maintain the preset pressure		
	Faulty diaphragm	Replace the diaphragm
	Guide (9) seizes	Lubricate the guide (see Lubrication (before assembly) in *General Maintenance* on page 31)
	Incorrect operating range	Check the pressure drop over the valve and check the flow rate (see *Selection / pressure drop - capacity diagram* on page 40)
	The available air pressure is lower than the product pressure	Increase the air pressure e.g. by using a Booster (see *Fitting of booster (optional extra)* on page 22)
	The air pressure is not correctly adjusted	Readjust the air pressure
	Faulty air pressure regulating valve or incorrect type	Repair the valve or check that it is pressure compensating
Product leakage		
	Worn diaphragm	Replace the diaphragm
	Product affected diaphragm	
Air leakage		
	Worn O-ring	Replace the O-ring
	Worn diaphragm (10)	Replace the diaphragm
	Worn and hard diaphragm (10)	Replace by a diaphragm of a different grade for higher temperature (see *Technical Data* on page 39)
Valve plug moving too fast up and down (unstable)		
	Pressure pulsations because of fast changes in process conditions	Use an air throttling valve (optional extra between the air pressure regulating valve and the CPM-2 valve

5.2 Recommended Cleaning

NOTE

The supplied product is designed for cleaning in place (CIP).

NaOH = Caustic soda.

HNO_3 = Nitric acid.

The cleaning agents must be stored/disposed of in accordance with current regulations/directives.

CAUTION

Never touch the supplied product or the pipelines when sterilizing.

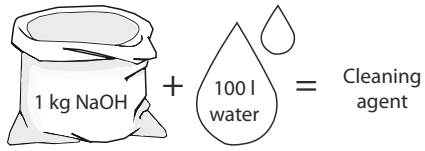
Always handle lye and acid with great care.

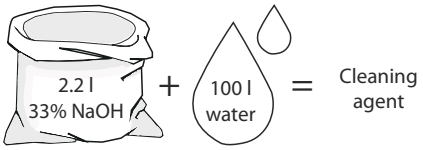
Examples of cleaning agents

Use clean water free from chlorides

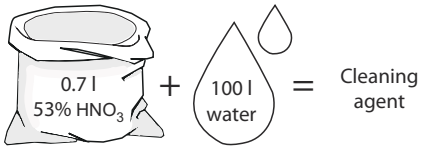
Metric System

1. 1% by weight NaOH at 70°C



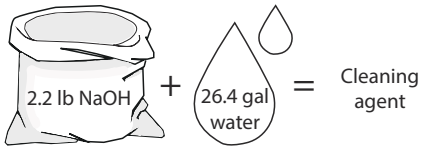


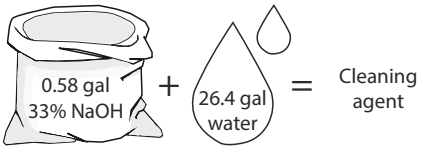
2. 0.5% by weight HNO_3 at 70°C



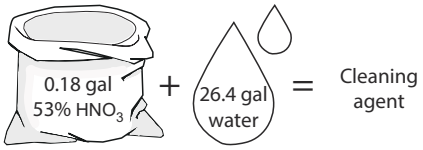
Imperial System

1. 1% by weight NaOH at 158°F





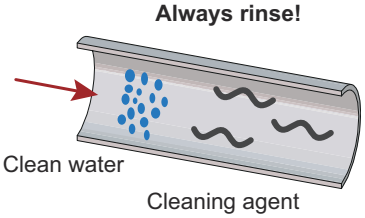
2. 0.5% by weight HNO_3 at 158°F



1. Avoid excessive concentration of the cleaning agent ⇒ **Dose gradually!**
2. Adjust the cleaning flow to the process **Milk sterilization/viscous liquids ⇒ Increase the cleaning flow!**

CAUTION

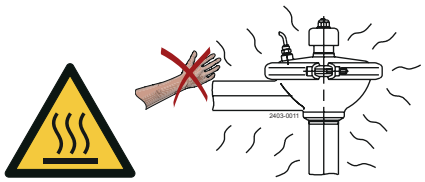
Always rinse well with clean water after the cleaning.



5.3 Cleaning

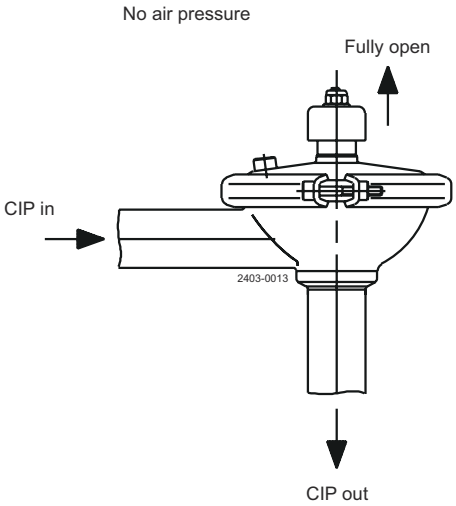
WARNING

Never touch the valve or the pipelines when sterilizing

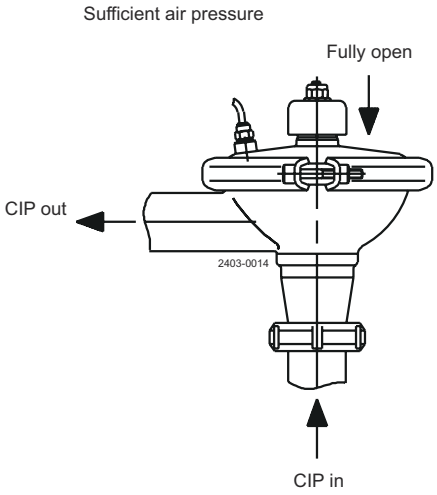


Ensure that the valve is fully open to allow for maximum CIP flow.

CPMI-2



CPMO-2



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6 Maintenance

6.1 General Maintenance

NOTE

Maintain the valve carefully.

Always keep spare diaphrams and O-rings in stock.

Pay special attention to the warnings!

CAUTION

Always read the technical data thoroughly. (See *Technical Data* on page 39).

Always disconnect the compressed air before service.

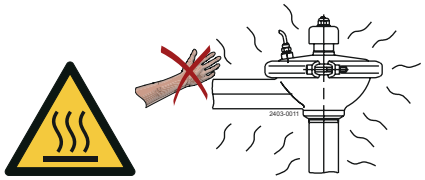
All scrap must be stored/discharged in accordance with current rules/directives.

WARNING

Never service the valve when it is hot.

Never service the valve with valve and pipelines under pressure.

Atmospheric pressure required



	Diaphragms	O-ring
Preventive maintenance	**Replace after 12 months**	Replace when replacing the diaphragms
Maintenance after leakage (leakage normally starts slowly)	**Replace by the end of the day**	Replace when replacing the diaphragms
Planned maintenance	• Regular inspection for leakage and smooth operation • Keep a record of the valve • Use the statistics for planning of inspections	Replace when replacing diaphragms
	Replace after leakage	

Lubrication (before assembly)

Guide: Molycote longtherm 2 Plus.

Sectors: Molycote 111.

Threads: Molycote TP42.

6.2 Dismantling

NOTE

Study the instructions carefully.

The items refer to *Part List and Exploded View* on page 43.

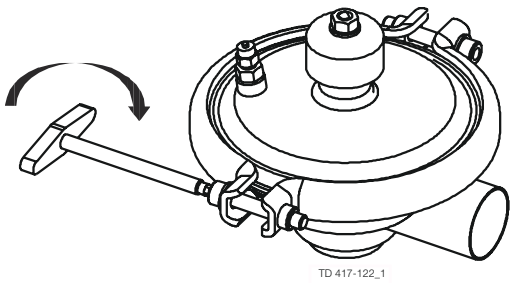
Handle scrap correctly.

CPMI-2: Constant-Pressure Modulating Inlet.

CPMO-2: Constant-Pressure Modulating Outlet.

1

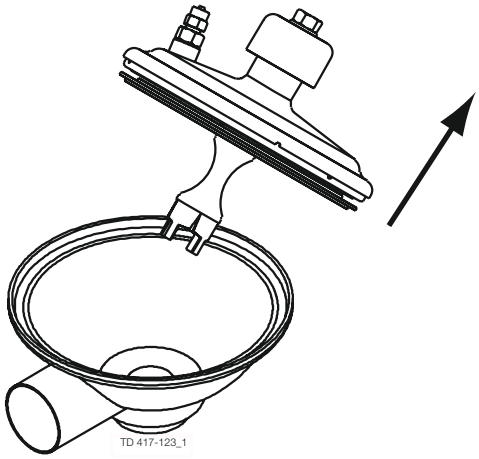
Loosen and remove clamp (6).



2

CPMI-2:

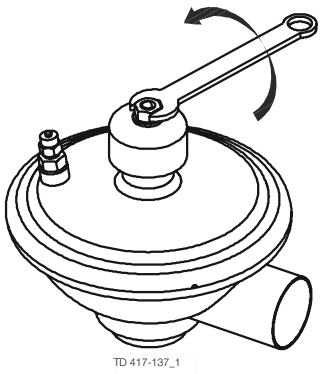
Remove cover (7) together with the internal parts of the valve from valve body (16).



3

CPMI-2 and CPMO-2 valves:

Remove top nut (1), washer (2) and top (3) from plug (15a or 15b).

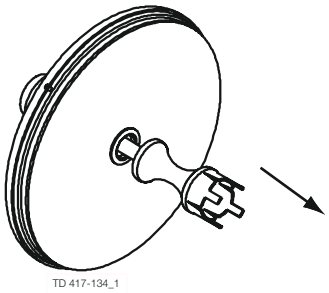


4

Remove plug (15a) from the diaphragm unit and guide (9), or for **CPMO-2** remove plug (15b) from valve body (16) and remove cover (7) and the internal parts of the valve.

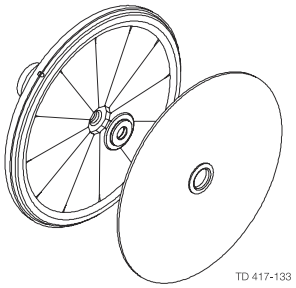
CAUTION

Ensure that cover (7) is turned downwards and plug (15a) is pulled upwards so that sectors (12) are not separated from diaphragms (10, 14).



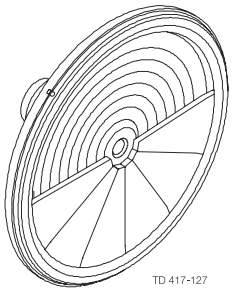
5

Remove lower inner ring (11) and lower diaphragm (14).



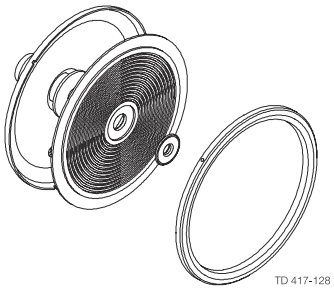
6

Remove sectors (12).



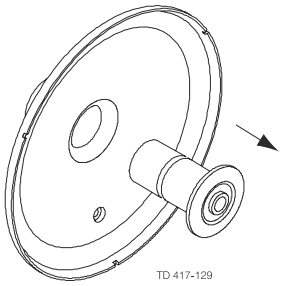
7

Remove outer ring (13), upper inner ring (11) and upper diaphragm (10).



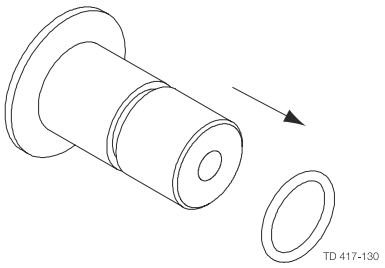
8

Remove guide (9) from cover (7).



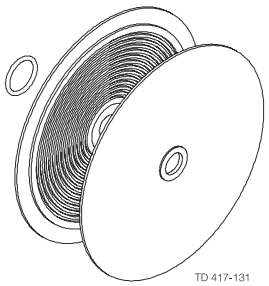
9

Remove O-ring (8) from guide (9).



10

Replace the O-ring and the diaphragms.



6.3 Assembly

NOTE

Study the instructions carefully.

The items refer to *Part List and Exploded View* on page 43.

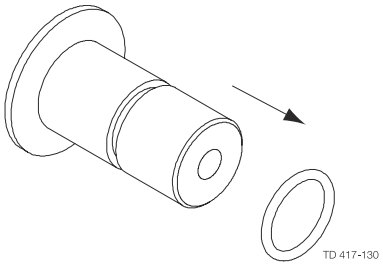
Lubricate the guide, the sectors and the threads before assembly.

CPMI-2: Constant-Pressure Modulating Inlet.

CPMO-2: Constant-Pressure Modulating Outlet.

1

Fit O-ring (8).

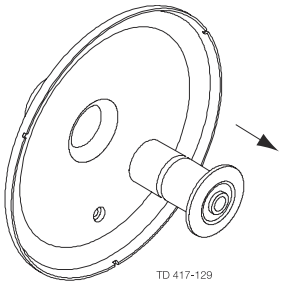


2

Lubricate guide (9) and fit it into cover (7).

NOTE

Turn cover (7) downwards before continuing.



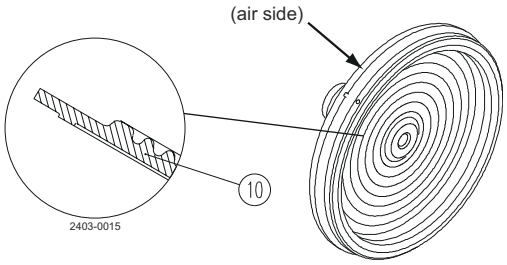
3

Fit upper diaphragm (10), upper inner ring (11) and outer ring (13) on guide (9) and cover (7).

NOTE

The upper diaphragm has a small recess.

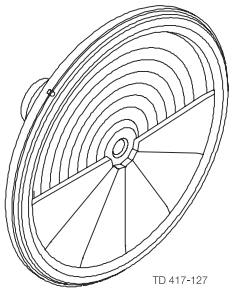
The outer ring must be fitted with the recess turned uppermost so that the indication hole is fixed opposite the indication hole in the cover.



Fit the correct diaphragm!

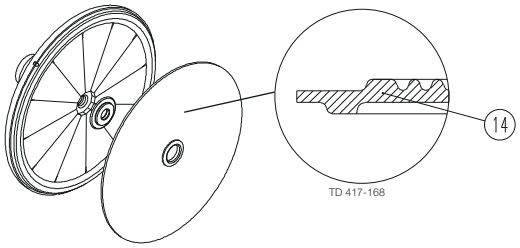
4

Fit sectors (12) between upper inner ring (11) and outer ring (13).



5

Fit lower inner ring (11) and lower diaphragm (14). Concentric grooves should point towards the steel segments.

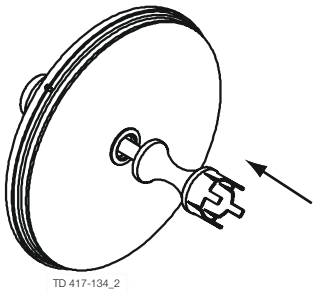


Fit the correct diaphragm!

6

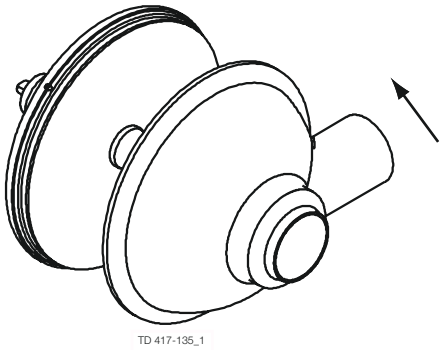
CPMI-2:

Fit plug (15a) in the diaphragm unit and guide (9) until the flange of the plug contacts lower diaphragm (14).



7

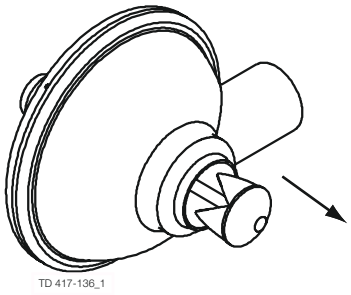
Fit valve body (16) in cover (7).



8

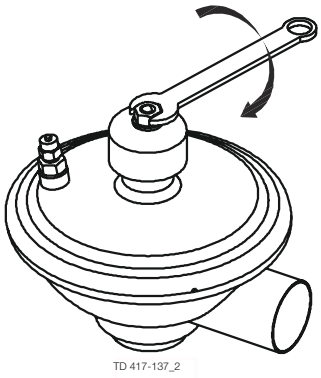
CPMO-2:

Fit plug (15b) through valve body (16) and in the diaphragm unit and guide (9) until the flange of the plug contacts lower diaphragm (14).



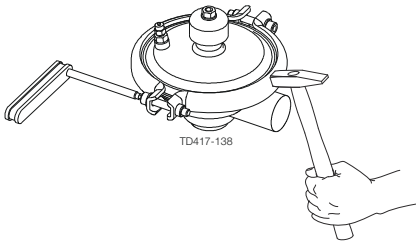
9

Fit top (3), washer (2) and top nut (1) on plug (15a or 15b).



10

Fit and torque tighten clamp (6) to 10-15Nm (7.5-11 lbf-ft).



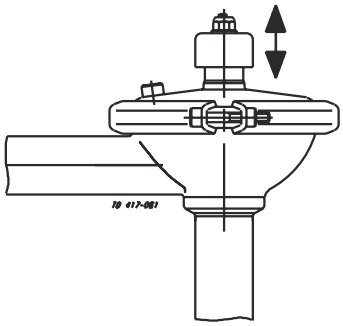
10-15Nm (7.5-11 lbf-ft)

11

Pre-use check:

Lift and lower the valve top several times to ensure that the valve operates smoothly.

Pay special attention to the warning!



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7 Technical Data

NOTE

It is important to observe the technical data during installation, operation and maintenance.

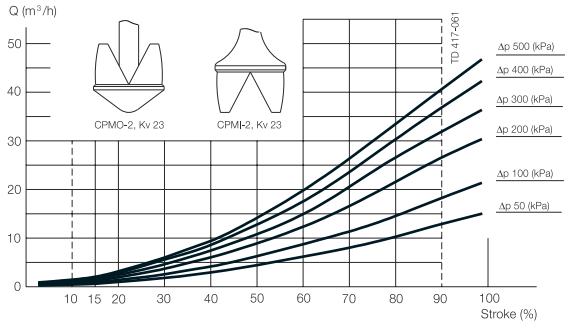
Inform the personnel about the technical data.

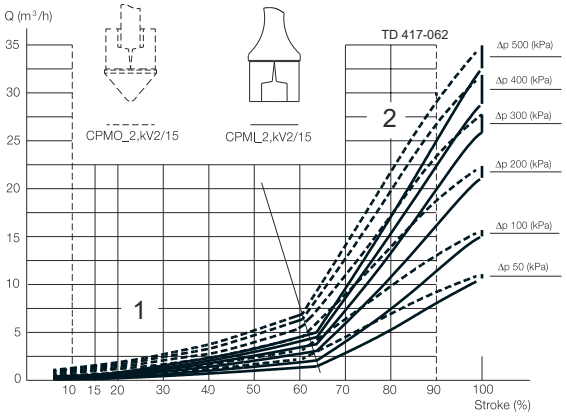
Valve - data	
Max. product pressure	1000 kPa (10 bar) (145 PSI)
Min. product pressure	No vacuum
Temperature range	-10° C to +95° C (14° F to 203° F)
Temperature range (with upper diaphragm in PTFE/ EPDM)	-10° C to +140° C (14° F to 284° F) (higher on request)
Air pressure	0 to 600 kPa (0 to 6 bar) (0 to 87 PSI)
Flow range Kv (Lv), fully open (Δ p = 1bar) (14.5 PSI)	Approx. 23 m^3/h (101 gal/m)
Flow range Kv (Lv), low capacity (Δ p = 1bar) (14.5 PSI)	Approx. 2 m^3/h (8.8 gal/m)
(Alternative size)	(regulating area)Approx. 15 m^3/h (66 gal/m)(CIP area)

Valve - materials	
Product wetted steel parts	AISI 316L/1.4404
Other steel parts	AISI 304
Upper diaphragm	Nitrile (NBR), (standard)
Lower diaphragm	PTFE covered EPDM rubber, (standard)
Alternative upper diaphragm	EPDM/PTFE, (for temperatures 95° C - 140° C) (203° F –284° F)
Alternative upper diaphragm	Solid Teflon (PTFE), (for temperatures above 140° C) (284° F)
Alternative lower diaphragm	Solid Teflon (PTFE), (for temperatures above 140° C) (284°F). O-ring Nitrile (NBR), (standard)
Alternative O-ring	Viton (FPM), (for temperatures above 95° C) (203° F)
Finish	Semi bright

Size	CPMI - 2			CPMO - 2			CPM-I-D60
	Kv 23	Kv 7	Kv 2/15	Kv 23	Kv 9	Kv 2/15	76 mm
Weight (kg)	5.5	5.5	5.5	5.5	5.5	5.5	10

7.1 Selection / pressure drop - capacity diagram





NOTE

For the diagrams the following applies:

Medium: Water (20° C) (68° F).

Measurement: In accordance with VDI 2173.

Example 1:

CPMI-2:

Pressure drop Δ p = 200 kPa. (29 PSI)

Flow Q = 8 m^3/h. (35 gal/min)

Select: CPMI-2, Kv 23 which at working point will be 48% open

Example 2:

CPMI-2:

Pressure drop Δ p = 300 kPa.(43.5 PSI)

Flow Q = 1 m^3/h. (4.4 gal/m)

Select: CPMI-2, Kv 2/15 which at working point will be approx. 35% open equal to about 50% of the regulating area

8 Spare Parts

For every delivered Alfa Laval Product, a spare part list is available.

This spare part list contains a range of the most common wear parts for the machinery. If any component not mentioned is required, please contact your local Alfa Laval representative for availability.

You can find our spare part catalogue at *https://hygienicfluidhandling-catalogue.alfalaval.com*.

Always use Alfa Laval genuine spare parts. The warranty of Alfa Laval products is dependent on use of Alfa Laval genuine spare parts.

8.1 Ordering Spare Parts

When ordering spare parts, please always state:

1. Serial number (if available)
2. Item number/spare part number (if available)
3. Capacity or other relevant identification

8.2 Alfa Laval Service

Alfa Laval is represented in all larger countries of the world.

Do not hesitate to contact your local Alfa Laval representative, with any questions or requirement of spare parts for Alfa Laval equipment.

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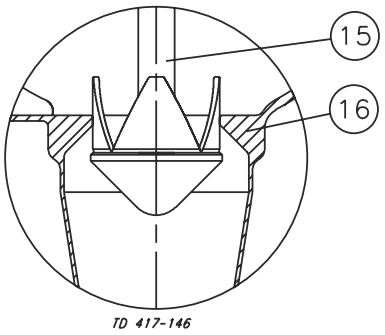
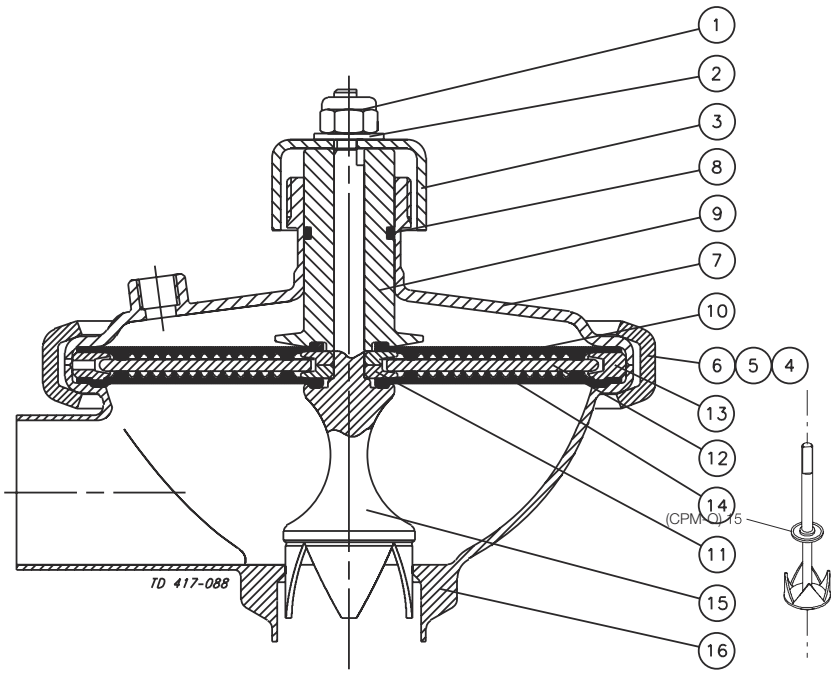
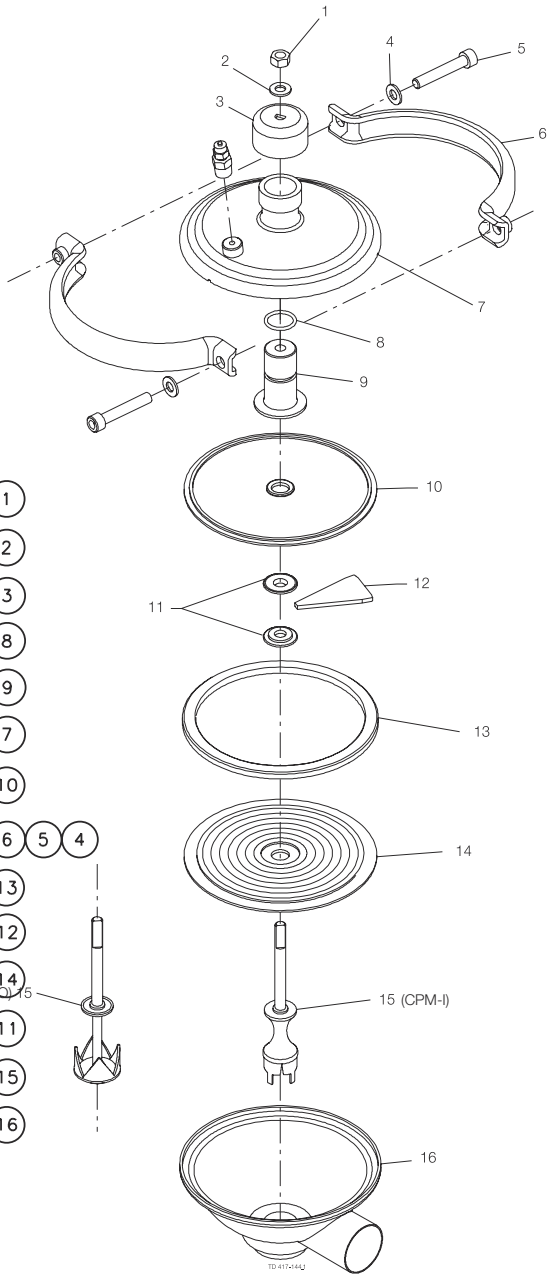
9 Part List and Exploded View

9.1 CPM-2

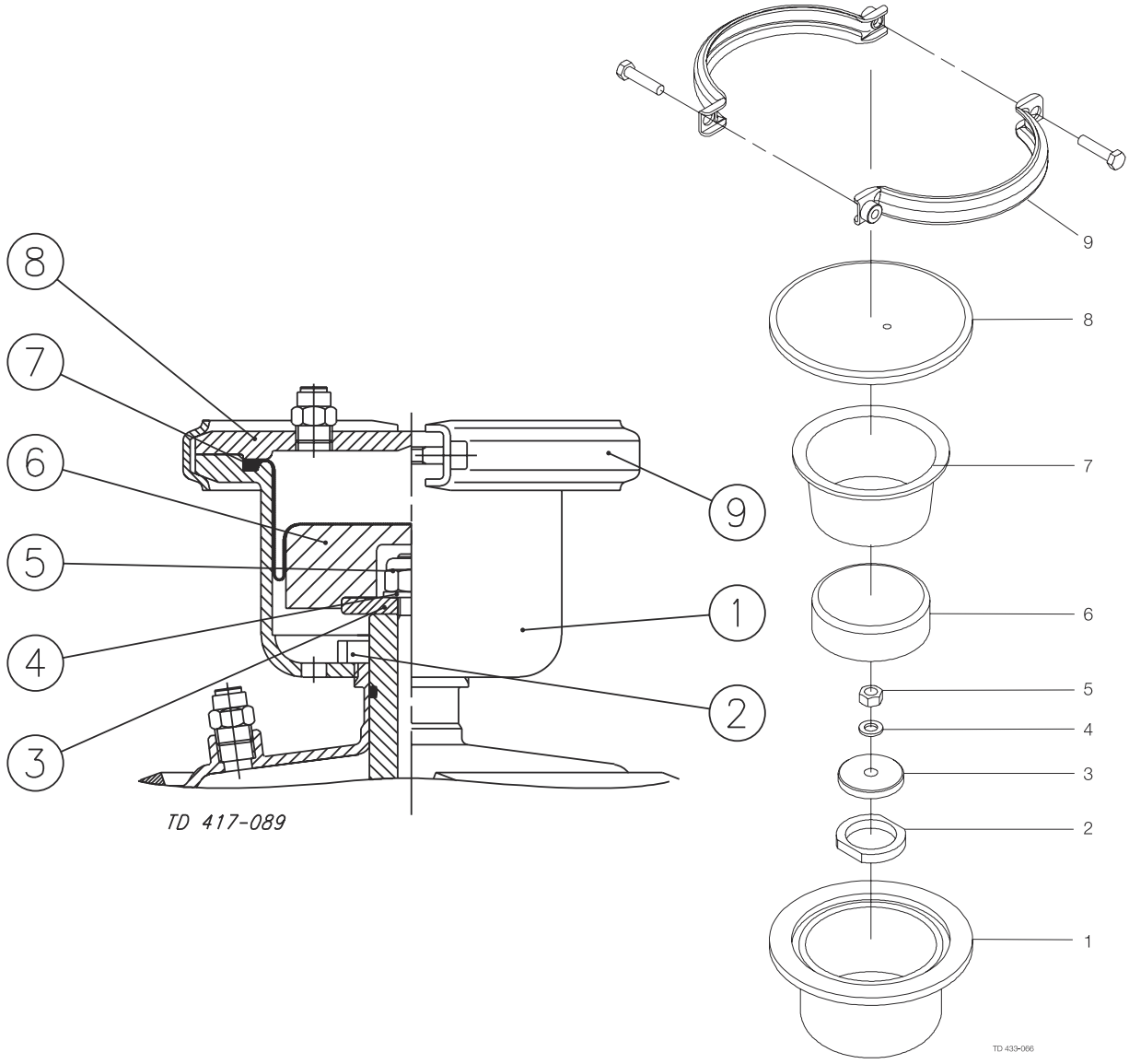






Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Nut	9	1	Guide
2	1	Washer	10	1	Upper diaphragm
3	1	Top	11	2	Inner ring
4	2	Washer	12	12	Support sector
5	2	Screw	13	1	Outer ring
6	2	Clamp	14	1	Lower diaphragm
7	1	Cover	15	1	Valve plug Kv23
8	1	O-ring	16	1	Valve body

9.2 Booster



Pos.	Qty.	Denomination	Pos.	Qty.	Denomination
1	1	Booster housing	6	1	Booster pistion
2	1	Lock nut	7	1	Diaphragm
3	1	Washer	8	1	Booster cover
4	1	Spring washer	9	1	Clamps and screws
5	1	Nut			