



# Inclined pressure reducing valve

## Function:

In the residential water supply system, the pressure of the tap water network is usually high and unstable. The pressure reducing valve is used in the household tap water supply system, which plays the role of reducing and stabilizing the tap water pressure.



## Technical specification

mebrane	Maximum operating water temperature
NBR	65°C
sealing material	Pressure dial range
NBR	0-10kg
Fine mesh strainer	medium
stainless steel	water
intake pressure	pipe joint
16kg	See product range description
Adjustable water pressure	Gauge connection aperture
1-6kg	1/4"internal thread
Factory preset pressure	
3kg	

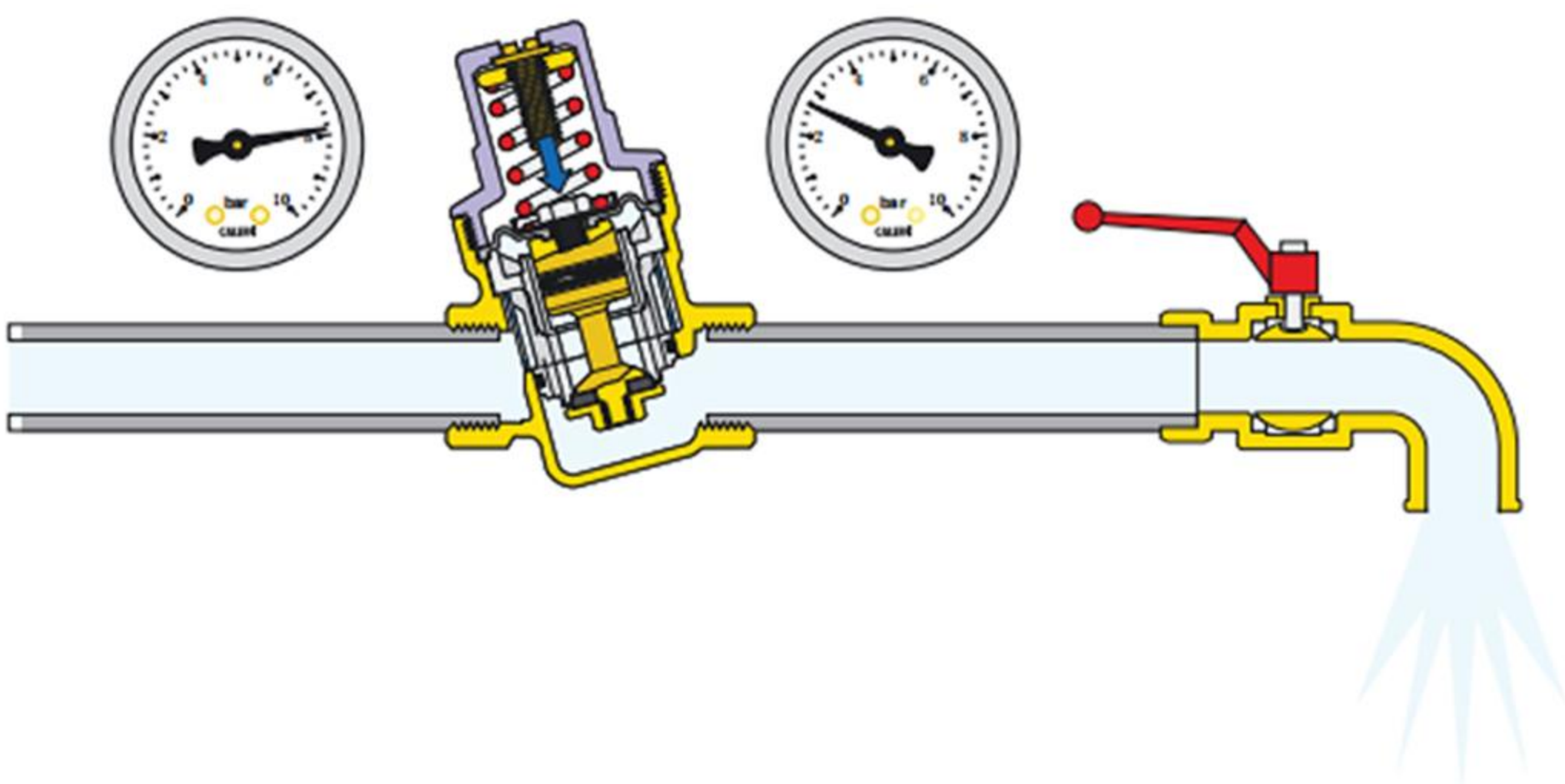
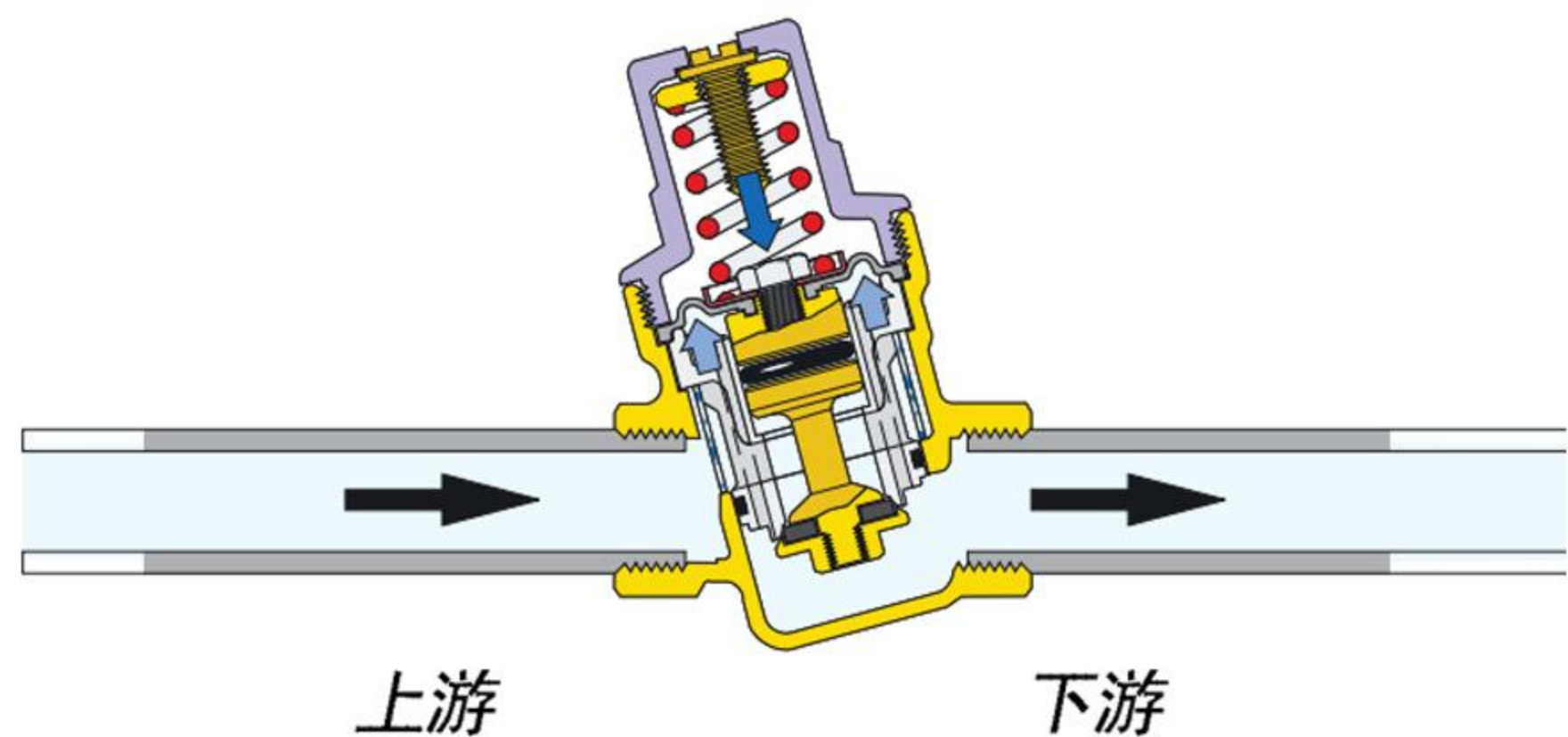
## operating principle

The working principle of the pressure reducing valve is based on the mutual balance of two corresponding forces:

- 1. The downward force applied by the spring to open the water flow.
- 2. The upward action of the diaphragm closes the water flow.

When the tap is opened, the pressure of the spring is greater than the water pressure acting on the lower end of the diaphragm, and the piston moves down to open the water channel.

The more the downstream tap is opened, the smaller the water pressure acting on the lower end of the diaphragm, and the greater the flow through the pressure reducing valve.



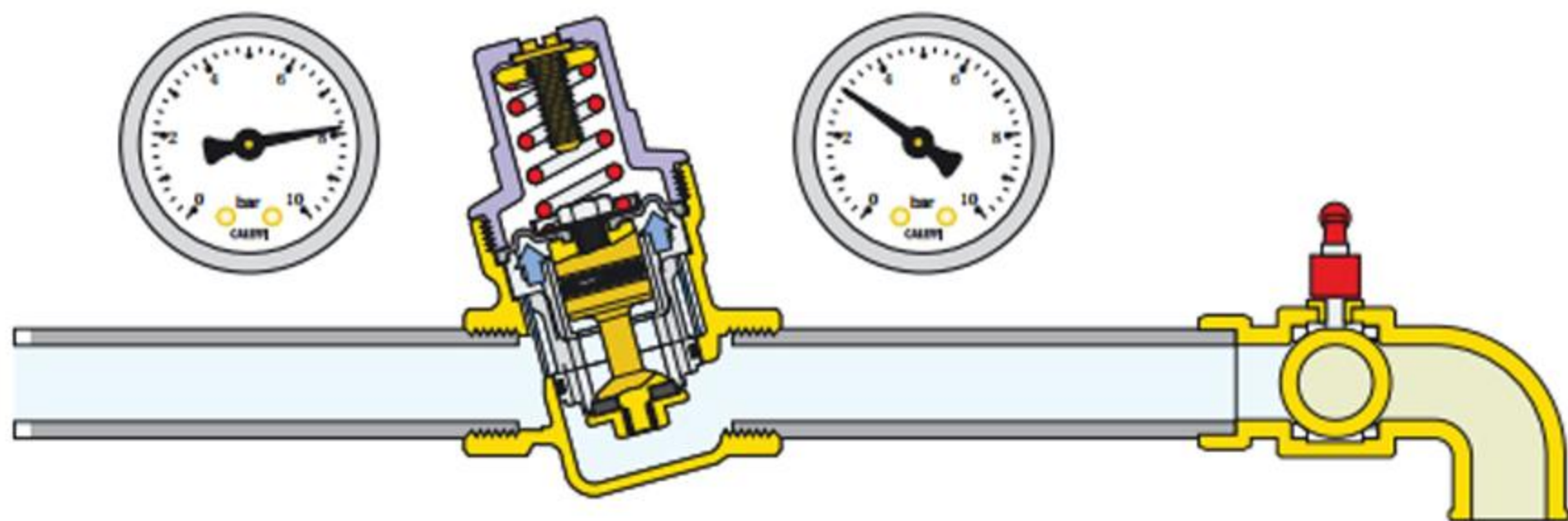


## Working condition without water

When the tap is turned off, the downstream water pressure increases, pushing the diaphragm upward. The diaphragm pushes upward to close the water flow channel, the downstream pressure is stable at the set pressure value, and the downstream is completely isolated from the upstream, so it is not affected by the upstream water pressure changes.

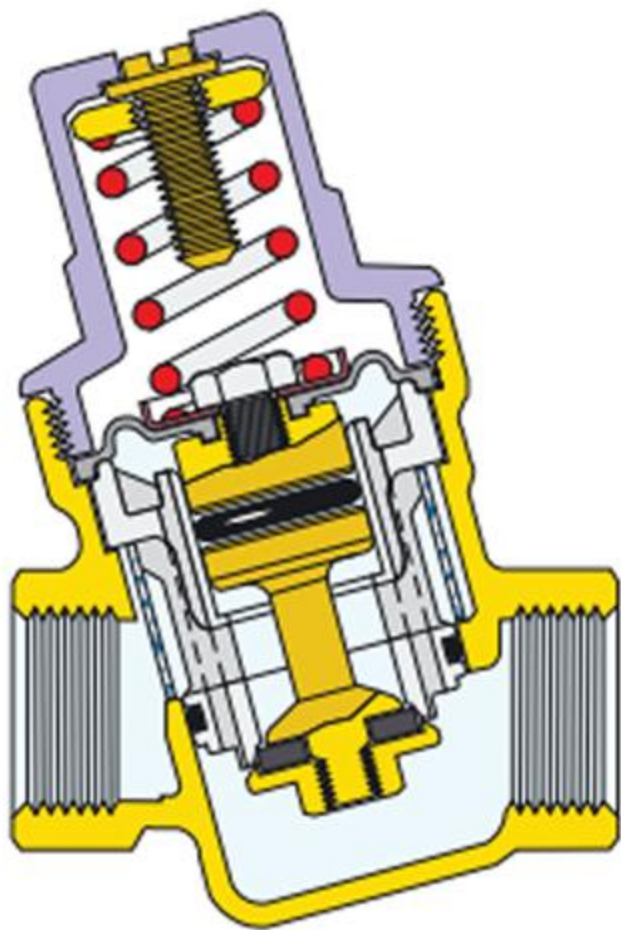
The upward force of the diaphragm slightly higher than the tension of the spring can cause the pressure reducing valve to close quickly.

The more the downstream tap is opened, the smaller the water pressure acting on the diaphragm, and the greater the flow through the pressure reducing valve.



## Tentonic characteristics

**Special design of diaphragm**  
The diaphragm is designed with a special shape to ensure accurate decompression when downstream water pressure fluctuates. At the same time, it can resist the instantaneous change of pressure, resist aging, and extend the service life of the pressure reducing valve.



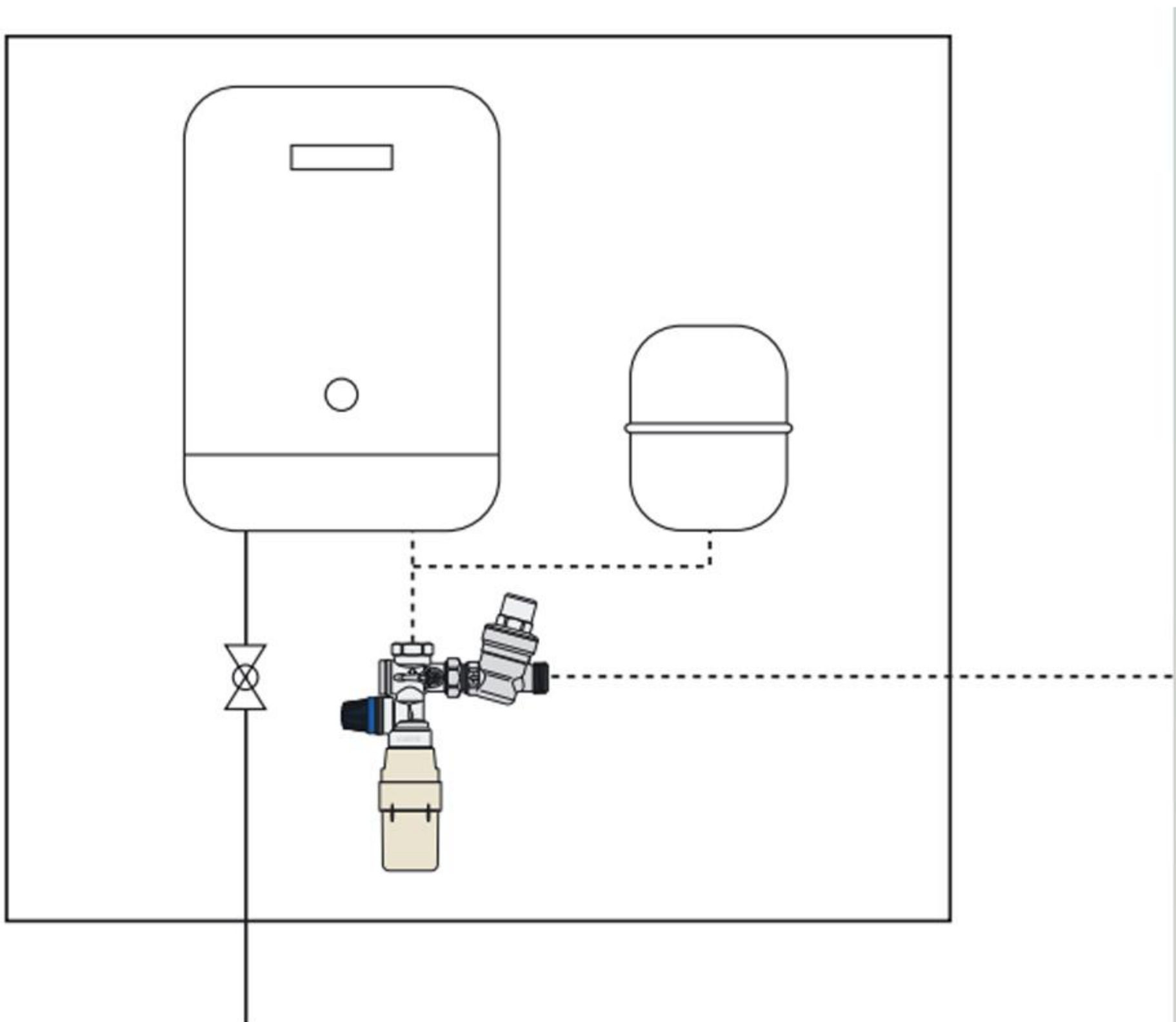
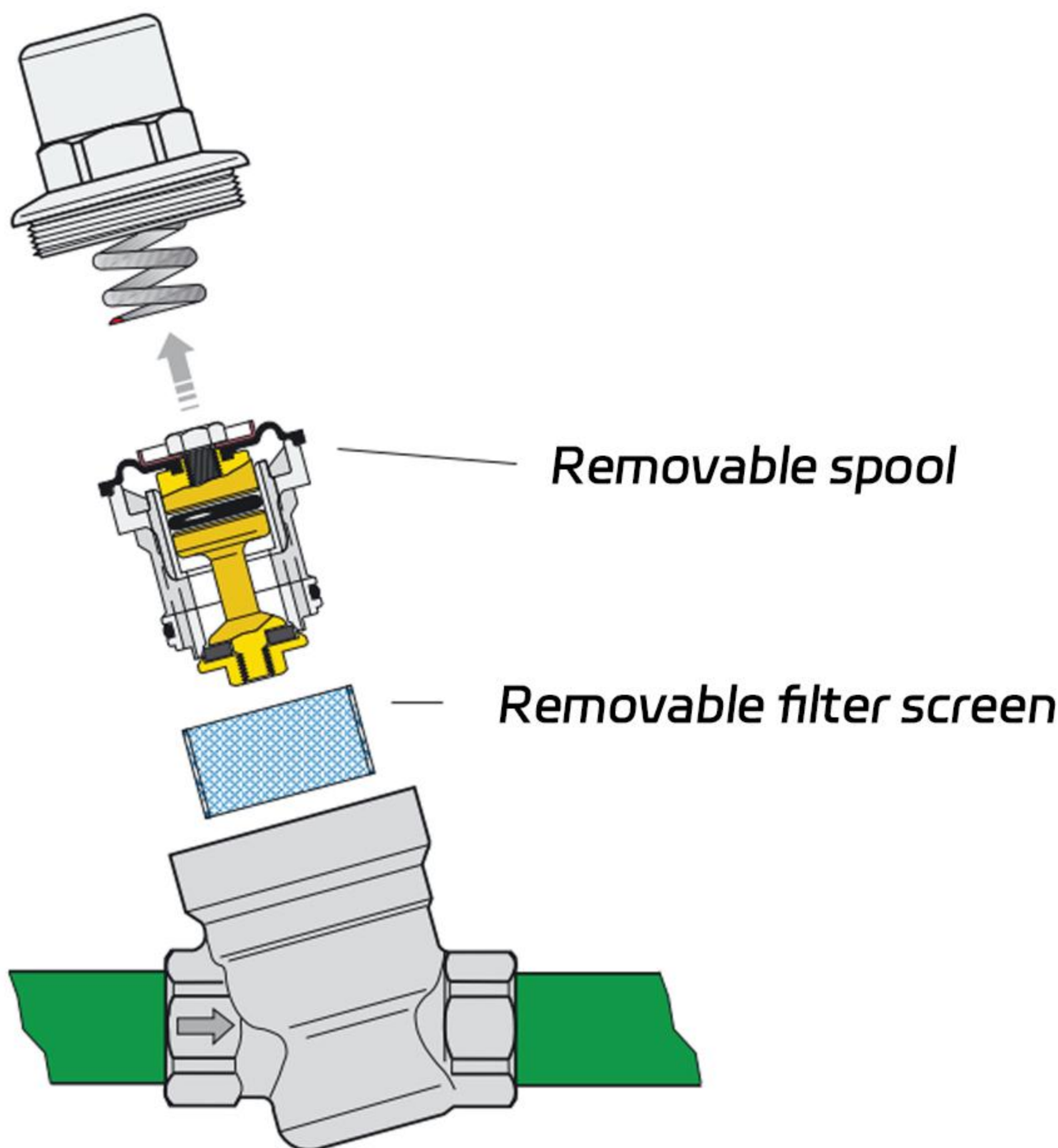
**noiseless**  
The downstream outlet area is large, so that the water speed is reduced, which is conducive to reducing the noise caused by the flow channel change.

**Small size**  
The inclined design of the pressure reducing valve is suitable for installation in home systems and does not take up space.

**Anti-scaling material**  
The support material combined with the moving part of the valve core is a special plastic with low viscosity, which reduces the possibility of fouling and prolonging the service life of the valve.

## Replaceable spool

The spool of the Model 53 pressure reducing valve can be removed for cleaning or replacement.





# Tentonic characteristics

Figure 1 Velocity/flow diagram

Flow rate (m/s)

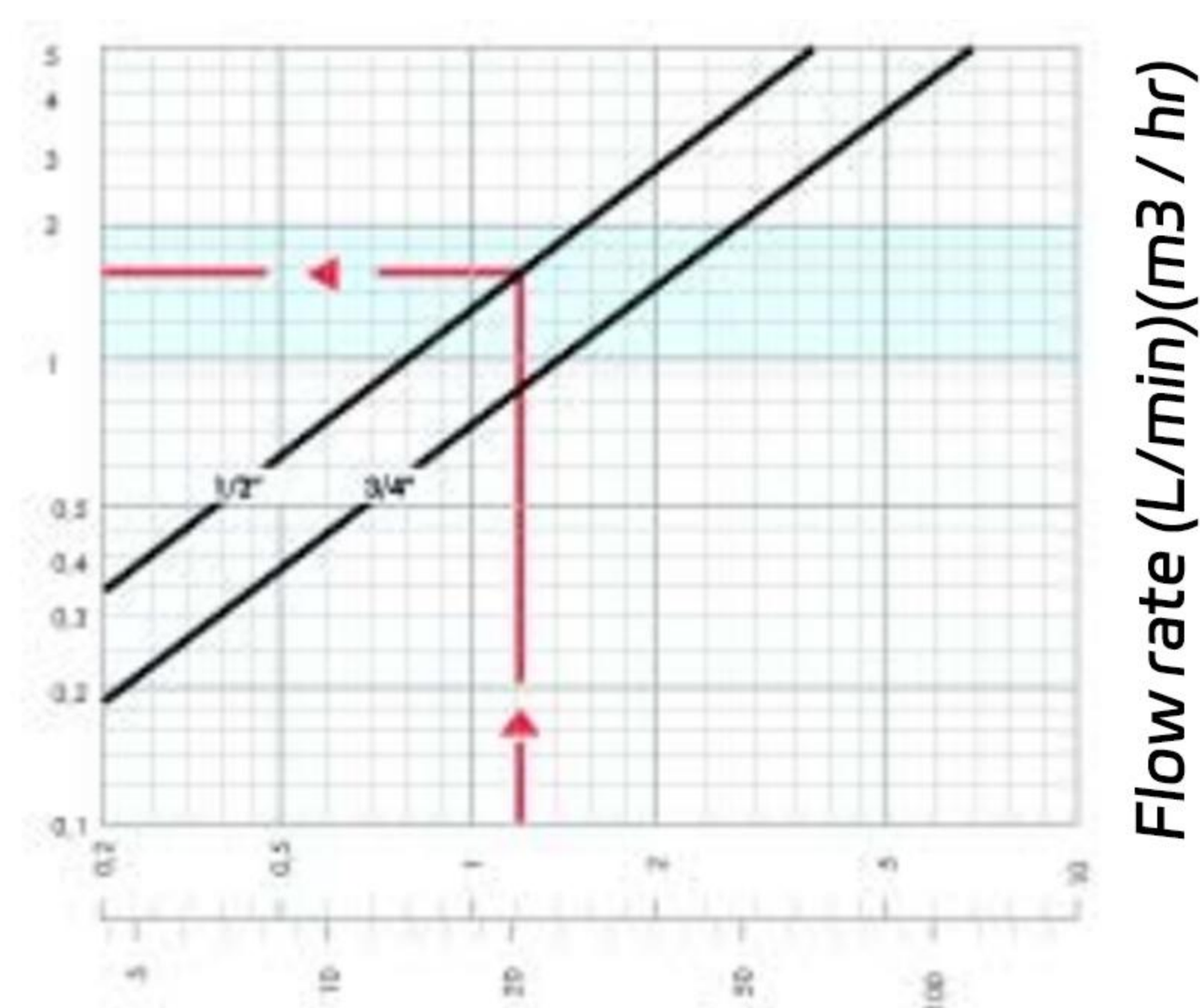
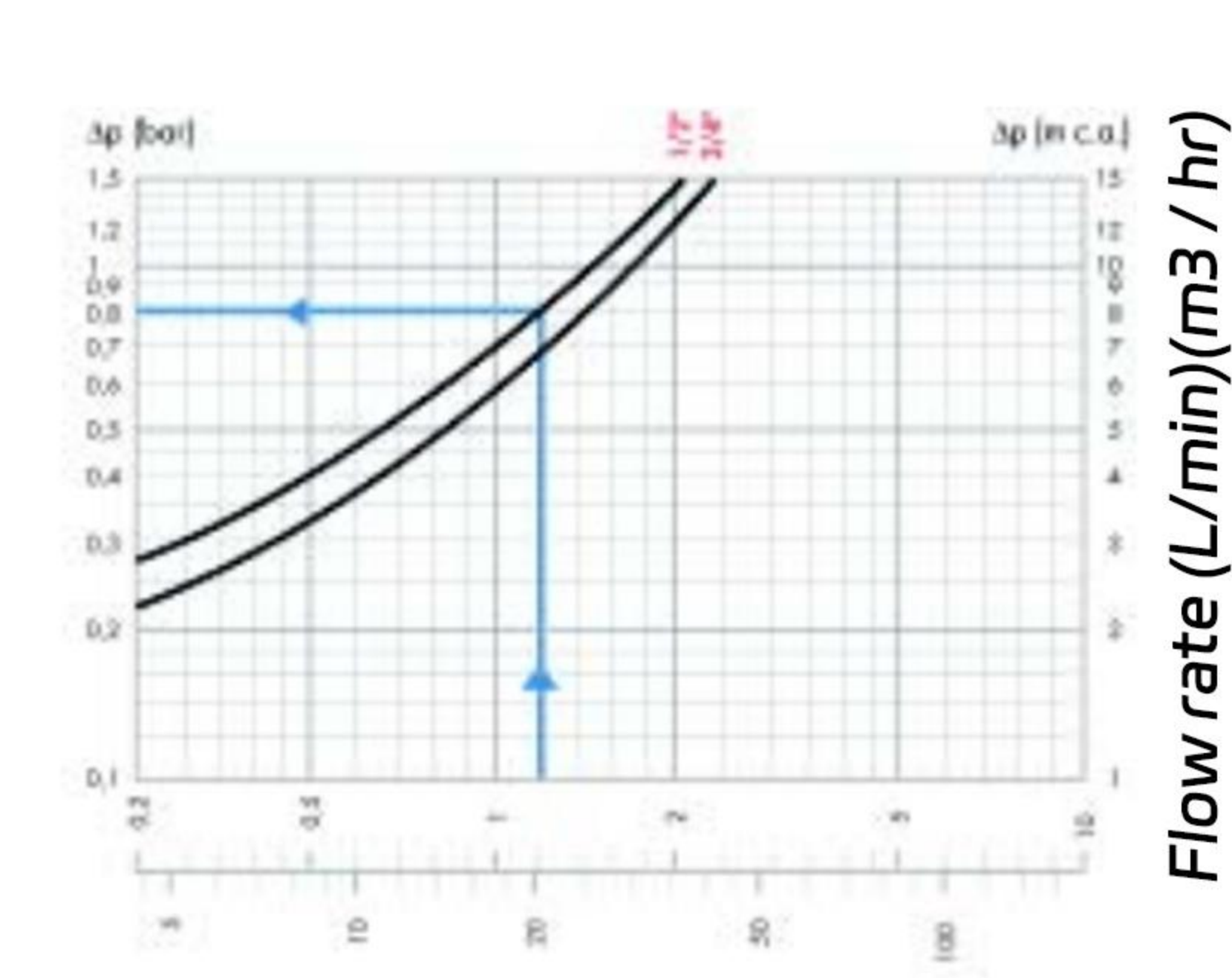


Figure 2 Flow/pressure drop diagram



## Pressure reducing valve selection

The following household faucet flow chart helps to correctly select the pressure reducing valve calibers:

### Faucet flow meter

Bathtub, dish basin, dishwasher	12 liters per minute
shower	9 liters per minute
Wash basin, body cleaner, washing machine, flush toilet	6 liters per minute

When calculating water flow, the probability of simultaneous water use must be considered to avoid selecting too large a caliber. In general, the smaller the household population, the lower the probability of using more than two water taps at the same time.

### Unit of probability chart for simultaneous use :%

Number of taps	household water-consumption	water for public use
5	54	64.5
10	41	49.5
15	35	43.5
20	29	37
25	27.5	34.5
30	24.5	32

Number of taps	household water-consumption	water for public use
35	23.2	30
40	21.5	28
45	20.5	27
50	19.5	26
60	18	24
70	17	23

Number of taps	household water-consumption	water for public use
80	16.5	22
90	16	21.5
100	15.5	20.5
150	14	18.5
200	13	17.5
300	12.5	16.5

The steps to correctly select the diameter of the pressure reducing valve are as follows:

- Calculate the total amount of water used by all taps.

Give a typical example

One-bathroom room

Flow rate of 1 cleanser =6 L/min

1 shower flow =9 L/min

Flow rate of 1 basin =6 L/min

Flow rate of 1 toilet =6 L/min

Flow rate of 1 vegetable basin =12 L/min

Flow rate of 1 washing machine =12 L/min

Total flow rate =51 L/min

Water taps; six

- The design water consumption is calculated according to the water use probability table

Give a typical example

Design flow rate: Total flow rate x41%=21 L/min

The ideal flow rate of the pressure reducing valve should be between 1-2 meters/second, which can reduce the noise of the pipeline and the loss of water flow to various water equipment.

- Figure 1- The blue area in the flow rate/flow diagram is the ideal flow rate area for the pressure reducing valve.

Give a typical example

The longitudinal selection of the flow rate of 21 L/min, in the blue area, intersects with the 1/2" caliber, so the caliber =1/2" is selected.

- Figure 2 is the flow/pressure drop diagram: It shows the pressure loss caused by each diameter pressure reducing valve at a certain flow rate.

Give a typical example

Design flow rate =21 L/min, caliber 1/2"

pressure loss :0.8 kg

## Recommended flow

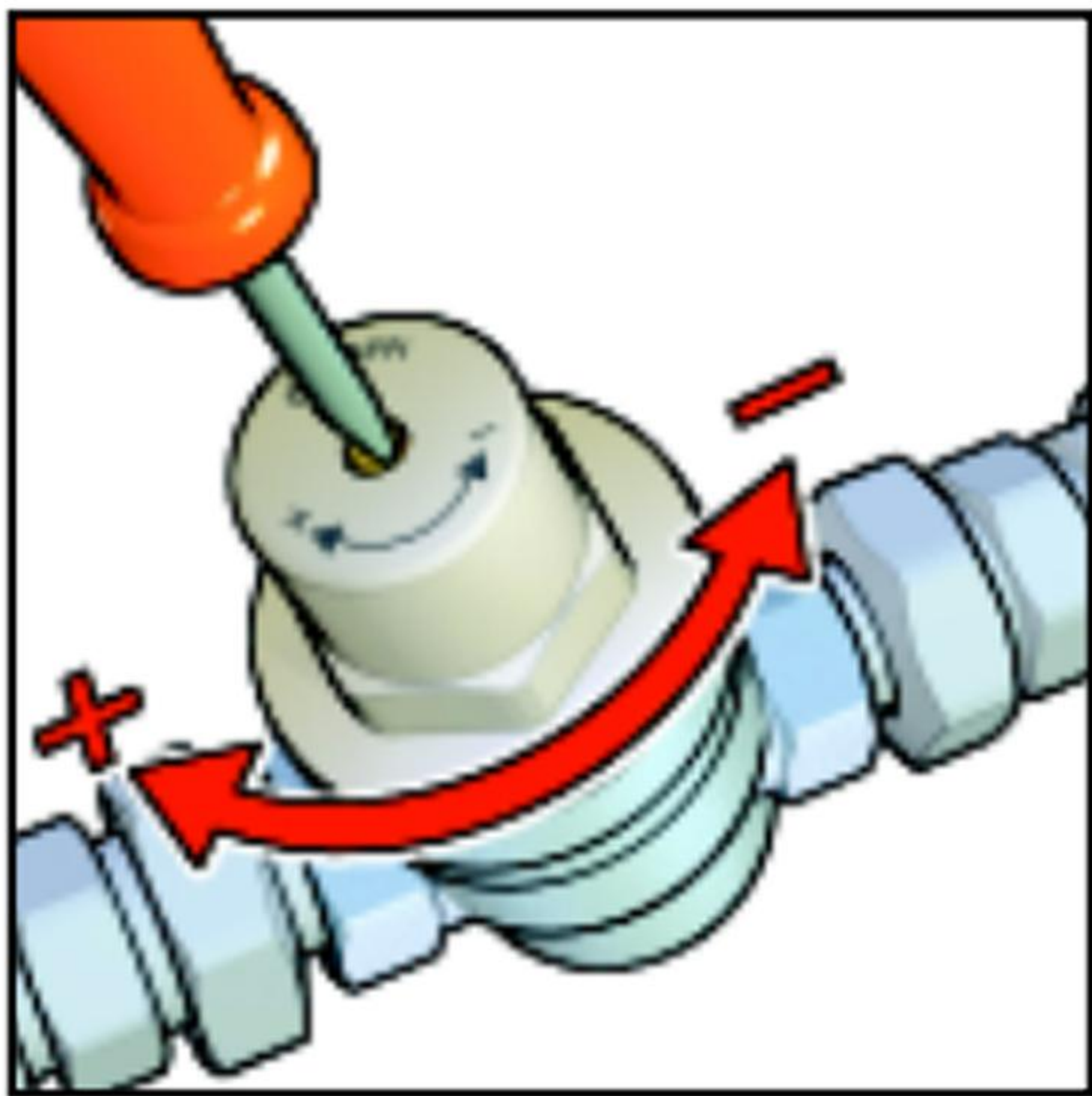
Recommended flow values for each aperture corresponding to an average flow rate of 1.5 m/s

Caliber	1/2"	φ 15	3/4"	φ 22
Flow rate (cubic meters/hour)	1.2	1.2	2.1	2.1
Flow rate (L/min)	20	20	35	35



# Installation instruction

1. Before installing the pressure reducing valve, open all the water taps to clean the pipeline and remove the gas in the pipeline.
2. Install the stop valve before and after the pressure reducing valve for future maintenance. A stop valve with a built-in check spool can be installed before the reducing valve
3. The pressure reducing valve can be installed horizontally or vertically.
4. Close the stop valve behind the reducing valve when adjusting the water pressure.
5. Adjust the pressure knob on the valve cover with a screwdriver. Adjust clockwise to increase the pressure counterclockwise to reduce the pressure.
6. The adjusted pressure can be seen by the pressure gauge on the reducing valve. The pressure of the reducing valve is 3 kg after the factory preset valve.
7. The pressure reducing valve can not be installed in a place that may freeze, such as outdoor, freezing will damage the pressure reducing valve.
8. The pressure reducing valve should be installed in a place where it is easy to adjust the pressure and read the pressure. It is not recommended to install it in the pipeline well, because it may cause freezing.
9. The phenomenon of "water hammer" is one of the main reasons for the damage of the pressure reducing valve. It is recommended to install waterproof hammer valves in systems where "water hammer" is present.



# Abnormal working condition

Users often blame the problem of abnormal system pressure on the pressure reducing valve, but it is actually the problem of the system itself, such as:

1. The pressure at the back end of the reducing valve in the system of a storage water heater is increased. This phenomenon stems from the increase in pressure when the water heater is heated, and in the state of unmanned water use, because the reducing valve is closed, the increased pressure cannot be "discharged".  
Caused. The solution is to install an expansion tank between the water intake of the water heater and the pressure reducing valve to absorb the increased pressure.
2. The pressure after the reducing valve is inconsistent with the set pressure. In the case of poor water quality, impurities flowing through the reducing valve are easy to accumulate  
Between the seat and the sealing piston, the pressure reducing valve can not be completely closed, and the upstream pressure will gradually penetrate into the downstream, so the pressure behind the valve increases.  
The solution is to install a filter in front of the pressure reducing valve and clean the spool regularly (see maintenance instructions).

