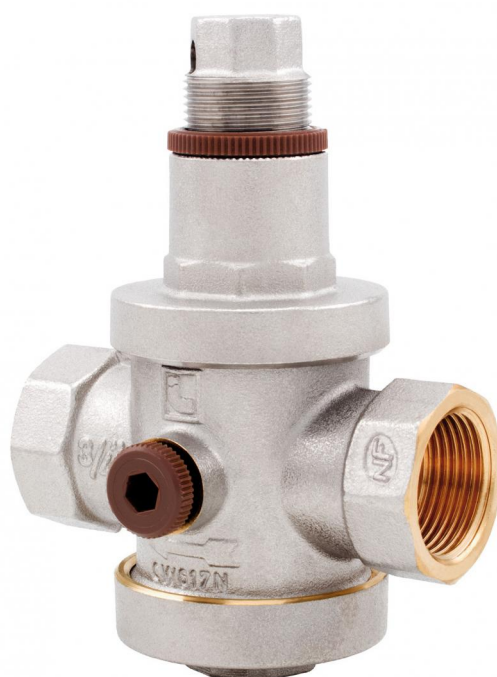


TECHNICAL CATALOGUE

# PRESSURE REDUCING VALVES

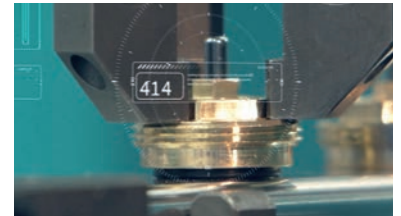


## > THE COMPANY

ITAP SpA, founded in Lumezzane (Brescia) in 1972, is currently one of the leading production companies in Italy of **valves, fittings and distribution manifolds** for plumbing and heating systems.

Thanks to fully automated production processes, with 87 transfer machines and 70 assembly lines, we are able to produce 400,000 pieces per day.

Our innate pursuit for innovation and observance of technical regulations is supported by the company certification ISO 9001. The company has always considered its focus on quality as the main tool to obtain significant business results: today ITAP SpA is proud to offer products bearing the approval of numerous international certifying bodies.



> ITAP products have obtained approvals by more than 30 certification bodies from all over the world.





# PRESSURE REDUCING VALVES

## 143 EUROPRESS pressure reducing valve

EUROPRESS



SIZE	PRESSURE	CODE	PACKING
1/2" (DN 15)	25bar/362.5psi	1430012	1/22
3/4" (DN 20)	25bar/362.5psi	1430034	1/22
1" (DN 25)	25bar/362.5psi	1430100	1/11
1"1/4 (DN 32)	25bar/362.5psi	1430114	1/6
1"1/2 (DN 40)	25bar/362.5psi	1430112	1/6
2" (DN 50)	25bar/362.5psi	1430200	1/3
2"1/2 (DN 65)	25bar/362.5psi	1430212	1/2
3" (DN 80)	25bar/362.5psi	1430300	1/2
4" (DN 100)	25bar/362.5psi	1430400	1/2

### CERTIFICATIONS



### TECHNICAL SPECIFICATIONS

Compensated piston operation.

Female/female threads.

Body in nickel-plated brass.

Minimum and maximum working temperatures: 0°C, 80°C.

Maximum inlet pressure: 25 bar.

Outlet pressure:

1/2" - 3/4" - 1" between 1 and 5,5 bar.

1"1/4 through 4" between 1 and 6 bar.

Factory preadjustment 3 bar.

Outlet pressure gauge connection 1/4" on both sides.

Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).

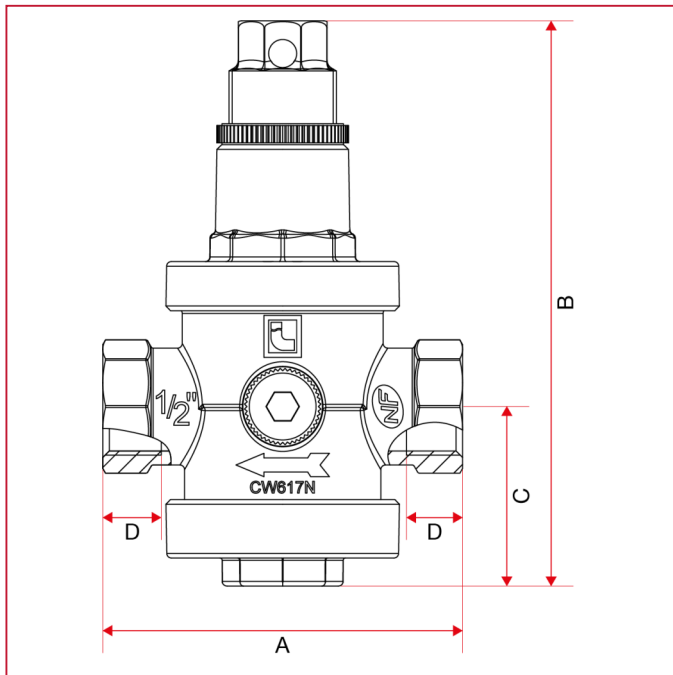
Available also with NPT thread in the sizes 2"1/2 - 3" - 4".

NF approved in 1/2 "and 3/4" sizes



# PRESSURE REDUCING VALVES

## OVERALL DIMENSIONS

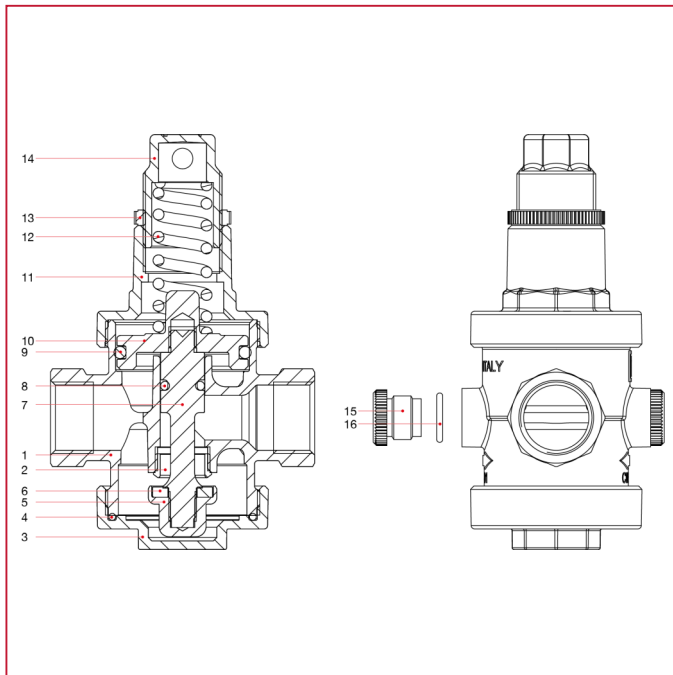


	1/2"	3/4"	1"	1"1/4	1"1/2	2"	2"1/2	3"	4"
DN	15	20	25	32	40	50	65	80	100
A	77	85	91	118	126	142	147	179	188
B	127	124	159	220	220	248	267	290	331
C	38,5	38,5	56	68	68	86	87,5	96,5	103,5
D	12	12	13	18	18	20	20	22	23,5
Kg/cm <sup>2</sup> bar	25	25	25	25	25	25	25	25	25
LBS - psi	362,5	362,5	362,5	362,5	362,5	362,5	362,5	362,5	362,5



# PRESSURE REDUCING VALVES

**MATERIALS sizes 1/2" through 1"**

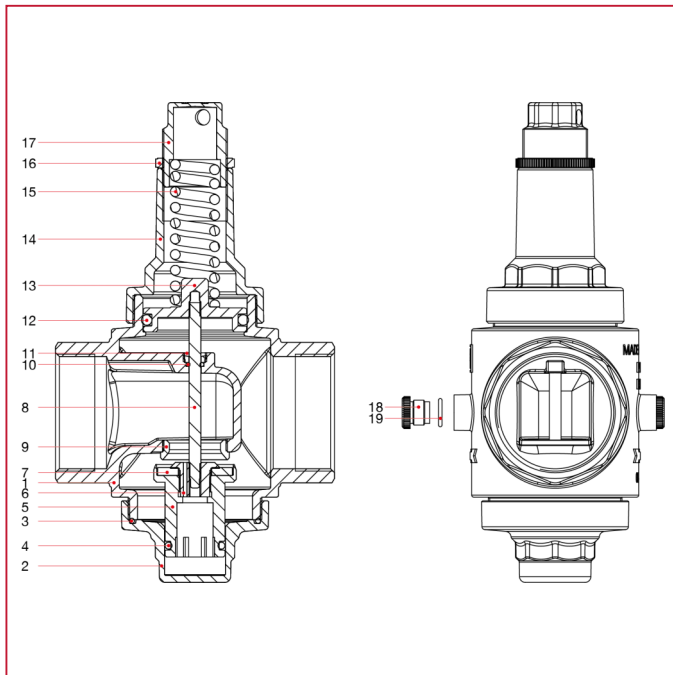


POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Nickel-plated brass CW617N
2	Seat	1	Stainless steel AISI 303
3	Bottom plug	1	Nickel-plated brass CW617N
4	O-ring	1	EPDM
5	Shutter	1	Brass CW614N
6	Flat seat washer	1	EPDM
7	Stem	1	Brass CW614N
8	O-ring	1	EPDM
9	O-ring	1	EPDM
10	Diaphragm	1	Brass CW617N
11	Upper plug	1	Nickel-plated brass CW617N
12	Spring	1	EN 10270-1 DH
13	Nut	1	Polimero
14	Regulator	1	Nickel-plated brass CW617N
15	Cap	2	Polymer
16	O-ring	2	EPDM



# PRESSURE REDUCING VALVES

**MATERIALS sizes 1"1/4 through 4"**



POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Nickel-plated brass CW617N
2	Bottom plug	1	Nickel-plated brass CW617N
3	O-ring	1	NBR
4	O-ring	1	NBR
5	Shutter	1	Brass CW614N
6	Stop washer	1	Brass CW614N
7	Flat seat washer	1	NBR
8	Stem	1	Stainless steel AISI 303
9	Seat	1	Stainless steel AISI 303
10	O-ring	1	NBR
11	Stop ring	1	Brass CW625N
12	O-ring	1	NBR
13	Diaphragm	1	Brass CW617N
14	Upper plug	1	Nickel-plated brass CW617N
15	Spring	1	EN 10270-1 SM/SH
16	Nut	1	Polymer
17	Regulator	1	Nickel-plated brass CW617N
18	Cap	2	Polimero
19	O-ring	2	EPDM



# PRESSURE REDUCING VALVES

## INSTRUCTIONS ON INSTALLATION, USE AND MAINTENANCE

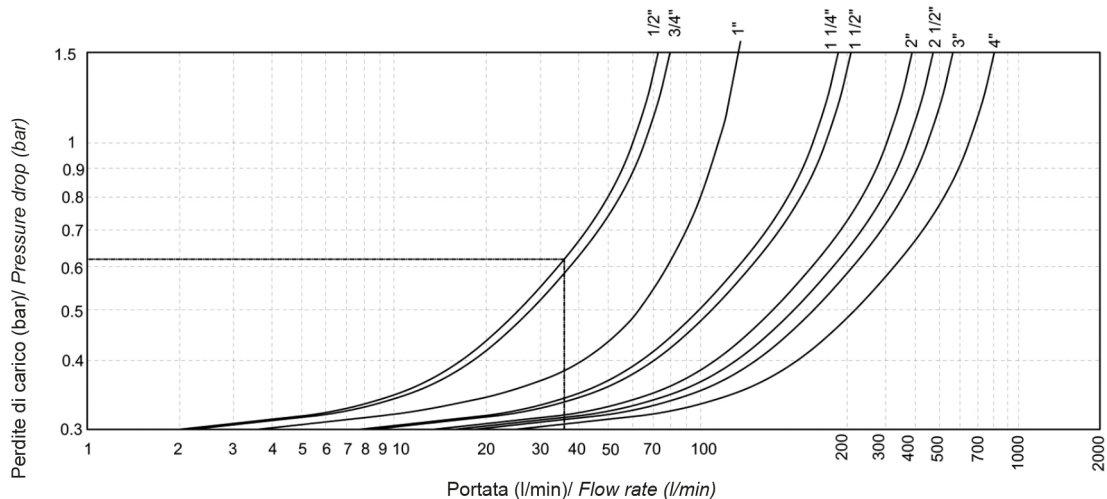
### 1. FUNCTION

Pressure reducing valve is a device which reduces and stabilizes the upstream pressure to an adjusted downstream pressure. When the entering pressure from the public mains is too high and variable, pressure reducing valve stabilizes the downstream pressure to the adjusted one.

Possible variations of the upstream pressure do not influence the adjusted downstream pressure. This range of pressure reducing valves allows the operator to adjust the downstream pressure to a set figure.

### 2. HYDRAULIC CHARACTERISTICS

Pressure drop diagram



N.B. Figure about 4" are approximate.

Here mentioned figures refer to: upstream pressure 8 bar downstream pressure 3 bar

### 2.1 USE OF DIAGRAM

Pressure drop diagram includes the loss of pressure proportional to a specific flow rate. According to the requested flow rate, it is possible to measure the water system and the pressure reducing valve correctly (it would be better to have a flow speed between 1 m/s and 2 m/s in the piping). INSTANCE. In case of 1/2" pressure reducing valve with an adjusted downstream pressure of 3 bar and a flow rate of 35 l/min, the pressure drop diagram states a loss of pressure of 0.62 bar. It means that the pressure gauge installed on the outlet way of pressure reducing valve shows a figure of 2.38 bar (= 3 bar – 0.62 bar).

### 3. USE

Pressure reducing valves are suitable for domestic water services, heating and air-conditioning plants, compressed air systems\*. They can be used with water, compressed air and no-aggressive fluids. ITAP Pressure reducing valves comply with the requirements of Council Directive 2014/68/UE (PED) and the CE marking is not requested according to art. 4 clause 3. (\* In the type-testing according to PED Council Directive, it is necessary that pressure reducing valves were approved as a part of the installation)

### 4. RECOMMENDATIONS ON RIGHT INSTALLATION

#### 4.1 INSTALLATION

For the best use and duration of the system, it is necessary to comply with the following instructions on installation, with the national regulations and with relevant local requirements.

- Place of installation has to be protected from frost and has to be easily inspectable.
- Install the pressure reducing valve on the private water system, immediately downstream of the water meter.
- It would be better to install shut-off valves upstream and downstream of the pressure reducing valve, to facilitate the maintenance operations.
- In order to protect pressure reducing valve from overpressure, install a check valve immediately downstream of the pressure reducing valve.
- The right scheme of installation is shown in Fig. 5.2
- In case of water heater downstream of the pressure reducing valve, install an expansion vessel between the valve and the



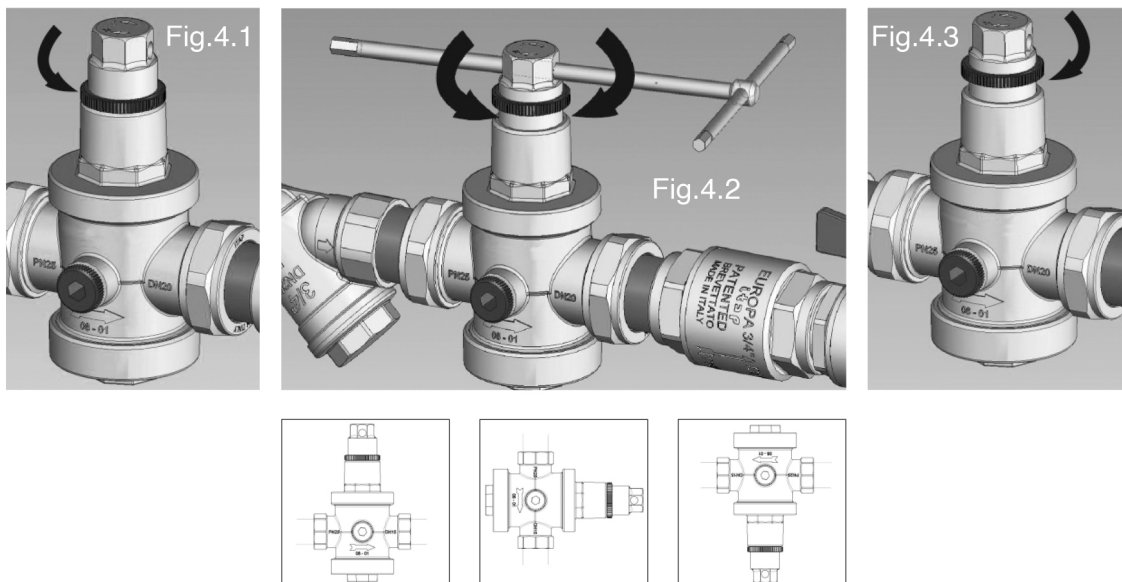
# PRESSURE REDUCING VALVES

water heater

- Pressure reducing valve is not a safety device. It would be better to install all the necessary safety relief valves.
  - In order to avoid cavitation and therefore excessive noisiness, it is strongly recommended that the ratio between maximum upstream pressure and regulating downstream pressure does not exceed the value of 2,5.
- Please, duly note the downstream pressure of the reducing valve has not to be higher than the maximum working pressure of the devices installed in the private water system, in order to avoid possible damages or malfunctions. When the connection is made on the multi-threaded end the sealing must be done in the thread only.

## 4.2 INSTRUCTION ON INSTALLATION

1. Before installing the pressure reducing valve, open all the outlets to flush the system and expel any air left in piping.
2. Install shut-off valves upstream and downstream to facilitate maintenance operations.
3. For a right flow direction, use the arrow stamped on the body.
4. ITAP pressure reducing valve can be installed in either vertical or horizontal piping. It can be installed also upside down.
5. Art. 143 is equipped with a threaded connection suitable for a pressure gauge. It is possible to unscrew the plug in order to install a pressure gauge in the size of 1/4". In such a position, the pressure gauge shows the downstream pressure of the reducing valve.
6. The whole range of ITAP pressure reducing valves are tested and adjusted with a downstream pressure of 3 bar. It is possible to change the downstream pressure by means of the adjusting device.
7. The final adjustment of the pressure reducing valve has to be carried out with a filled private water system and with all the outlets shut-off. The upstream pressure has to be at least 1 bar higher than the adjusted pressure. Adjustment of the pressure reducing valve to a downstream pressure different from the pre-adjusted one (3 bar): Close the downstream shut-off valve; - Unscrew the nylon nut (Fig. 4.1); - Adjustment is carried out by means of a tool or a screwdriver on the upper part of the device (Fig. 4.2); turn in clockwise way to increase the downstream pressure, turn in anticlockwise way to reduce the downstream pressure; - Open the outlets in the private water system, in order to check the stability of the adjusted pressure; - Adjust the downstream pressure with outlets totally shut-off and with water at room temperature only; - Screw the nylon nut (Fig. 4.3).
8. The use of PTFE as a sealant in junctions between pressure reducing valve and water pipings is only allowed.



## 5. TROUBLESHOOTING

1. Increase in pressure downstream on the pressure reducing valve with a water heater in-line.  
This problem is due to heating of the water, caused by the water heater. The pressure downstream increases, due to water expansion, as the pressure reducing valve is correctly closed. It is necessary to install an expansion vessel between the pressure reducing valve and the water heater to absorb the pressure increase (Fig. 5.1).

### 5.1 THE PRESSURE REDUCING VALVE DOES NOT MAINTAIN THE ADJUSTED FIGURE

In most cases, this problem is due to the presence of impurities on the valve seat, causing blow-by and consequent increase in





# PRESSURE REDUCING VALVES

the downstream pressure.

Install an Y-strainer upstream of the pressure reducing valve. Carry-out the maintenance of the Y-strainer. Flush the water system before installing the pressure reducing valve.

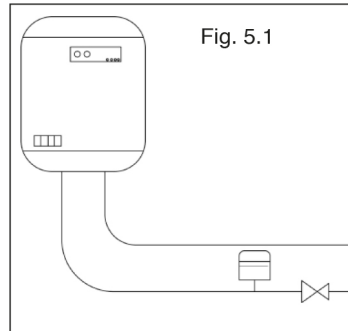
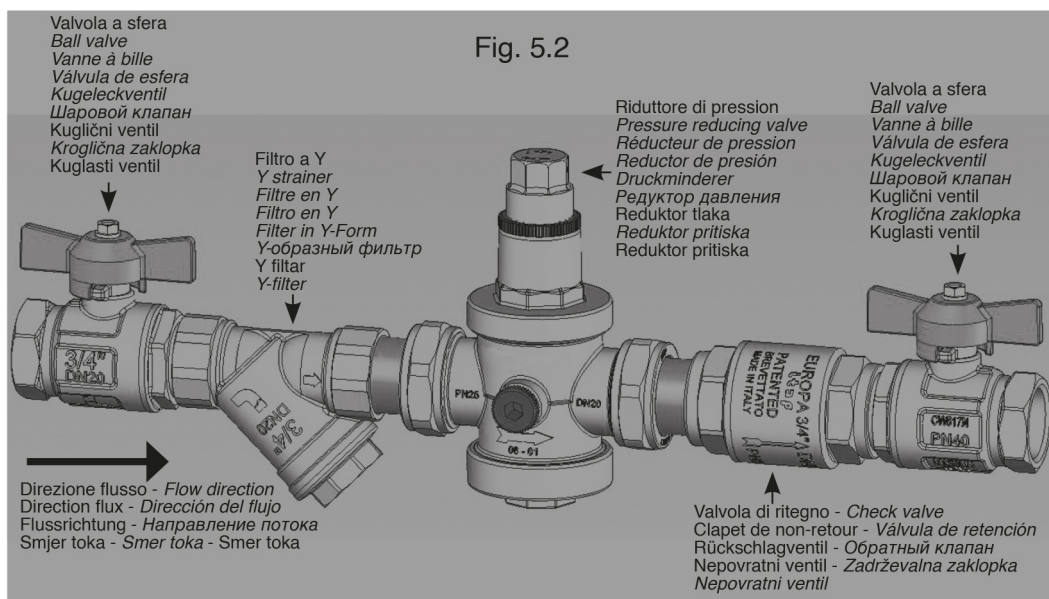


Fig. 5.1





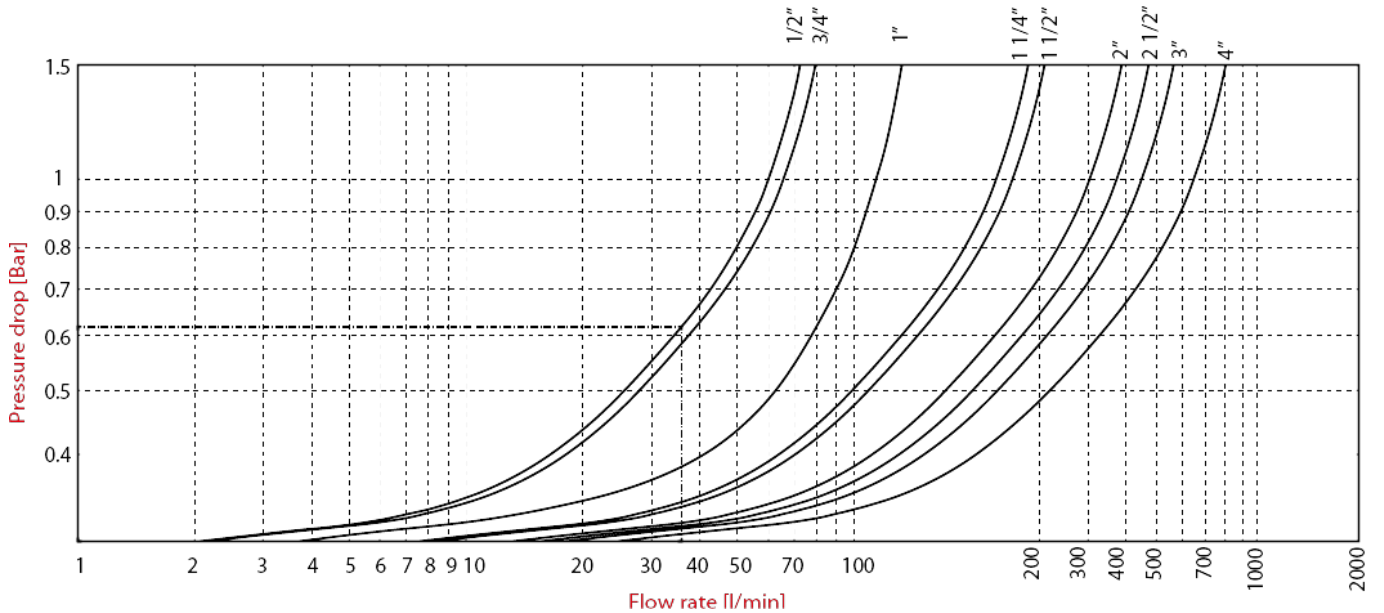
# PRESSURE REDUCING VALVES

## LOSS DIAGRAM (With water)

N.B. Figure about 4" are approximate

Here mentioned figures refer to: upstream pressure 8 bar downstream pressure 3 bar

	1/2"	3/4"	1"	1"1/4"	1"1/2"	2"	2"1/2"	3"	4"
<b>KV</b>	3,6	4	6,6	9,6	10,2	18	22,8	27	39





# PRESSURE REDUCING VALVES

## 143MM EUROPRESS pressure reducing valve with union connection

EUROPRESS



SIZE	PRESSURE	CODE	PACKING
1/2" (DN 15)	25bar/362.5psi	1430012MM	1/22
3/4" (DN 20)	25bar/362.5psi	1430034MM	1/22
1" (DN 25)	25bar/362.5psi	1430100MM	1/11
1"1/4 (DN 32)	25bar/362.5psi	1430114MM	1/6
1"1/2 (DN 40)	25bar/362.5psi	1430112MM	1/6
2" (DN 50)	25bar/362.5psi	1430200MM	1/3

### CERTIFICATIONS



### TECHNICAL SPECIFICATIONS

Compensated piston operation.

Union connections.

Body in nickel-plated brass.

Minimum and maximum working temperatures: 0°C, 80°C.

Maximum inlet pressure: 25 bar.

Outlet pressure:

1/2" - 3/4" - 1" between 1 and 5,5 bar.

1"1/4 through 2" between 1 and 6 bar.

Factory preadjustment 3 bar.

Outlet pressure gauge connection 1/4" on both sides.

Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).

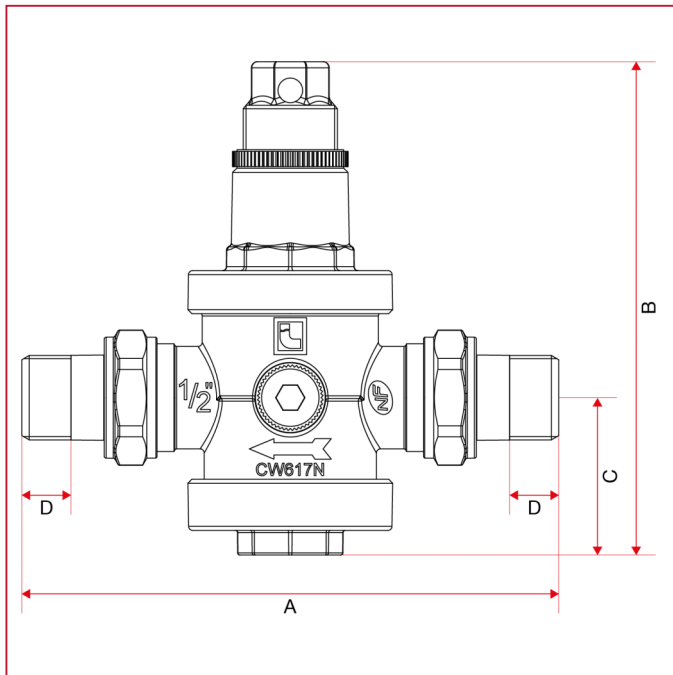
Multithread model available in 1/2" size.

NF approved in 1/2" and 3/4" sizes



# PRESSURE REDUCING VALVES

## OVERALL DIMENSIONS

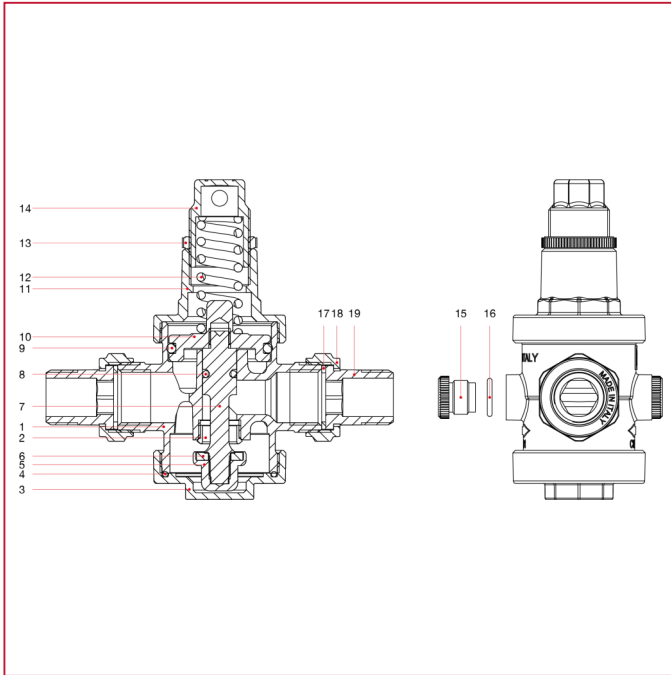


	1/2"	3/4"	1"	1"1/4	1"1/2	2"
DN	15	20	25	32	40	50
A	129	135	156	177	188	213
B	124	124	159	220	220	248
C	38,5	38,5	56	68	68	86,5
D	12	12	14	16	16	17
Kg/cm <sup>2</sup> bar	25	25	25	25	25	25
LBS - psi	362,5	362,5	362,5	362,5	362,5	362,5



# PRESSURE REDUCING VALVES

**MATERIALS sizes 1/2" through 1"**

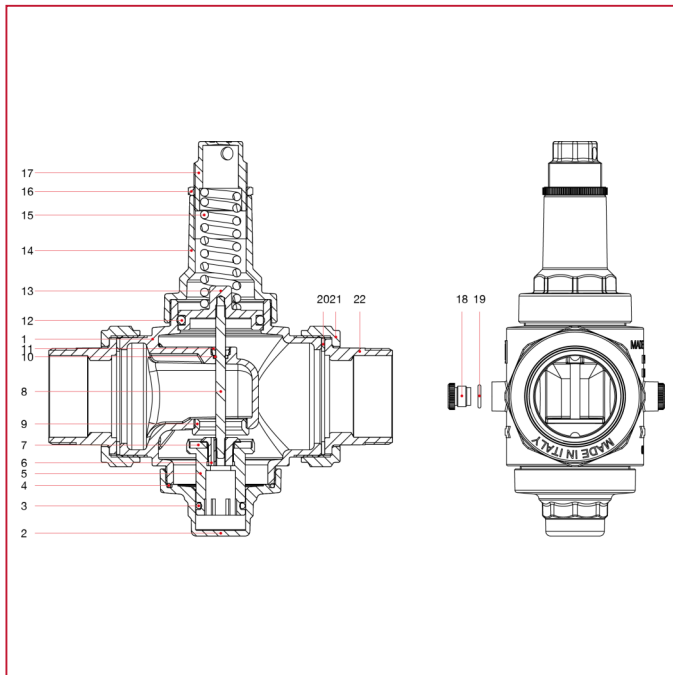


POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Nickel-plated brass CW617N
2	Seat	1	Stainless steel AISI 303
3	Bottom plug	1	Nickel-plated brass CW617N
4	O-ring	1	EPDM
5	Shutter	1	Brass CW614N
6	Flat seat washer	1	EPDM
7	Stem	1	Brass CW614N
8	O-ring	1	EPDM
9	O-ring	1	EPDM
10	Diaphragm	1	Brass CW617N
11	Upper plug	1	Nickel-plated brass CW617N
12	Spring	1	EN 10270-1 DH
13	Nut	1	Polimero
14	Regulator	1	Nickel-plated brass CW617N
15	Cap	2	Polymer
16	O-ring	2	EPDM
17	Flat seat washer	2	Red fiber
18	Nut	2	Nickel-plated brass CW617N
19	Fitting with flat seat	2	Nickel-plated brass CW617N



# PRESSURE REDUCING VALVES

**MATERIALS sizes 1"1/4 through 4"**



POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Nickel-plated brass CW617N
2	Bottom plug	1	Nickel-plated brass CW617N
3	O-ring	1	NBR
4	O-ring	1	NBR
5	Shutter	1	Brass CW614N
6	Stop washer	1	Brass CW614N
7	Flat seat washer	1	NBR
8	Stem	1	Stainless steel AISI 303
9	Seat	1	Stainless steel AISI 303
10	O-ring	1	NBR
11	Stop ring	1	Brass CW625N
12	O-ring	1	NBR
13	Diaphragm	1	Brass CW617N
14	Upper plug	1	Nickel-plated brass CW617N
15	Spring	1	EN 10270-1 SM/SH
16	Nut	1	Polymer
17	Regulator	1	Nickel-plated brass CW617N
18	Cap	2	Polimero
19	O-ring	2	EPDM
20	Washer	2	FASIT 202
21	Nut	2	Nickel-plated brass CW617N
22	Fitting with flat seat	2	Nickel-plated brass CW617N



# PRESSURE REDUCING VALVES

## INSTRUCTIONS ON INSTALLATION, USE AND MAINTENANCE

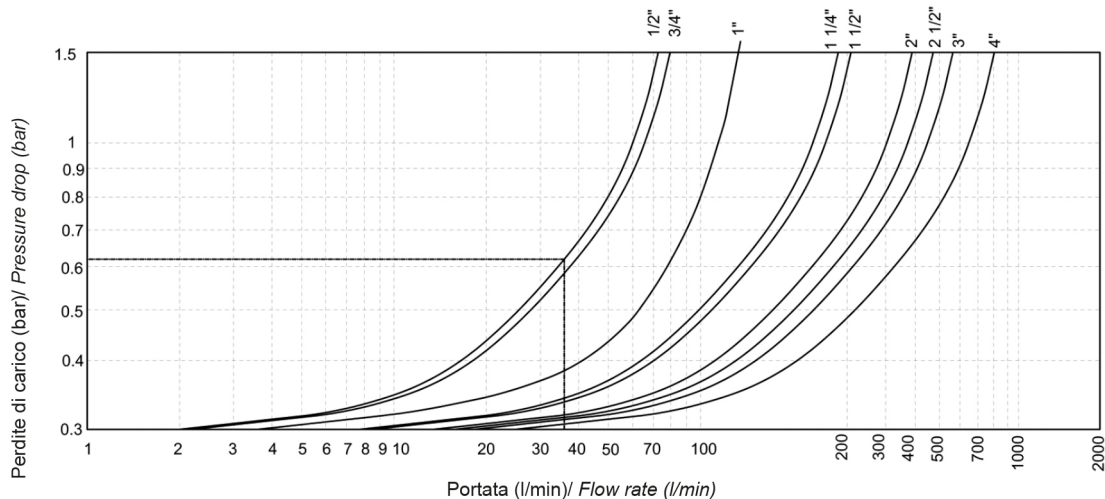
### 1. FUNCTION

Pressure reducing valve is a device which reduces and stabilizes the upstream pressure to an adjusted downstream pressure. When the entering pressure from the public mains is too high and variable, pressure reducing valve stabilizes the downstream pressure to the adjusted one.

Possible variations of the upstream pressure do not influence the adjusted downstream pressure. This range of pressure reducing valves allows the operator to adjust the downstream pressure to a set figure.

### 2. HYDRAULIC CHARACTERISTICS

Pressure drop diagram



N.B. Figure about 4" are approximate.

Here mentioned figures refer to: upstream pressure 8 bar downstream pressure 3 bar

### 2.1 USE OF DIAGRAM

Pressure drop diagram includes the loss of pressure proportional to a specific flow rate. According to the requested flow rate, it is possible to measure the water system and the pressure reducing valve correctly (it would be better to have a flow speed between 1 m/s and 2 m/s in the piping). **INSTANCE.** In case of 1/2" pressure reducing valve with an adjusted downstream pressure of 3 bar and a flow rate of 35 l/min, the pressure drop diagram states a loss of pressure of 0.62 bar. It means that the pressure gauge installed on the outlet way of pressure reducing valve shows a figure of 2.38 bar (= 3 bar – 0.62 bar).

### 3. USE

Pressure reducing valves are suitable for domestic water services, heating and air-conditioning plants, compressed air systems\*. They can be used with water, compressed air and no-aggressive fluids. ITAP Pressure reducing valves comply with the requirements of Council Directive 2014/68/UE (PED) and the CE marking is not requested according to art. 4 clause 3. (\* In the type-testing according to PED Council Directive, it is necessary that pressure reducing valves were approved as a part of the installation)

### 4. RECOMMENDATIONS ON RIGHT INSTALLATION

#### 4.1 INSTALLATION

For the best use and duration of the system, it is necessary to comply with the following instructions on installation, with the national regulations and with relevant local requirements.

- Place of installation has to be protected from frost and has to be easily inspectable.
- Install the pressure reducing valve on the private water system, immediately downstream of the water meter.
- It would be better to install shut-off valves upstream and downstream of the pressure reducing valve, to facilitate the maintenance operations.
- In order to protect pressure reducing valve from overpressure, install a check valve immediately downstream of the pressure reducing valve.
- The right scheme of installation is shown in Fig. 5.2
- In case of water heater downstream of the pressure reducing valve, install an expansion vessel between the valve and the



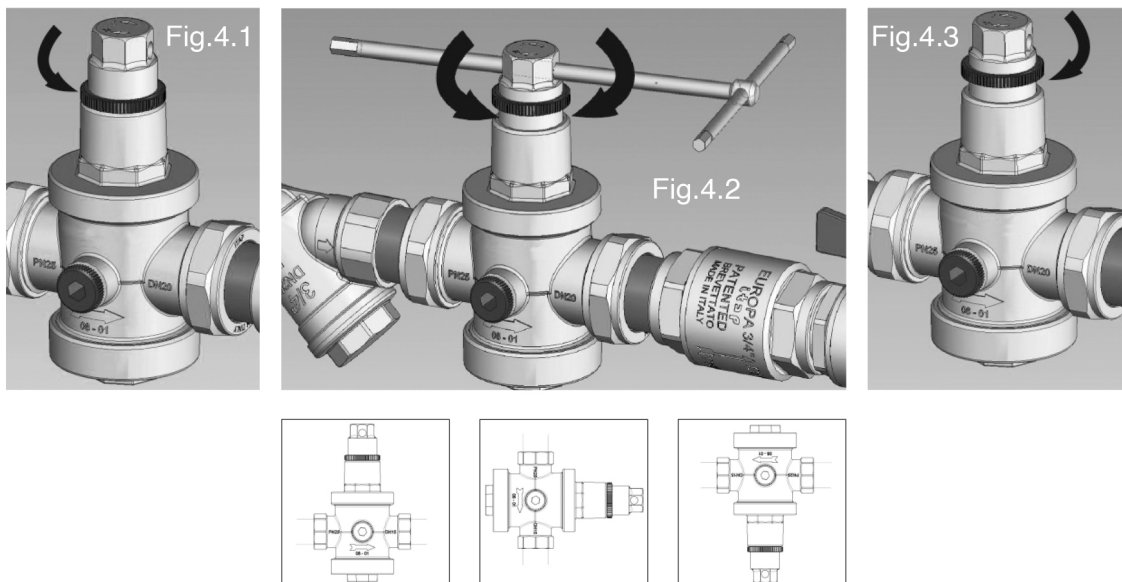
# PRESSURE REDUCING VALVES

water heater

- Pressure reducing valve is not a safety device. It would be better to install all the necessary safety relief valves.
  - In order to avoid cavitation and therefore excessive noisiness, it is strongly recommended that the ratio between maximum upstream pressure and regulating downstream pressure does not exceed the value of 2,5.
- Please, duly note the downstream pressure of the reducing valve has not to be higher than the maximum working pressure of the devices installed in the private water system, in order to avoid possible damages or malfunctions. When the connection is made on the multi-threaded end the sealing must be done in the thread only.

## 4.2 INSTRUCTION ON INSTALLATION

1. Before installing the pressure reducing valve, open all the outlets to flush the system and expel any air left in piping.
2. Install shut-off valves upstream and downstream to facilitate maintenance operations.
3. For a right flow direction, use the arrow stamped on the body.
4. ITAP pressure reducing valve can be installed in either vertical or horizontal piping. It can be installed also upside down.
5. Art. 143 is equipped with a threaded connection suitable for a pressure gauge. It is possible to unscrew the plug in order to install a pressure gauge in the size of 1/4". In such a position, the pressure gauge shows the downstream pressure of the reducing valve.
6. The whole range of ITAP pressure reducing valves are tested and adjusted with a downstream pressure of 3 bar. It is possible to change the downstream pressure by means of the adjusting device.
7. The final adjustment of the pressure reducing valve has to be carried out with a filled private water system and with all the outlets shut-off. The upstream pressure has to be at least 1 bar higher than the adjusted pressure. Adjustment of the pressure reducing valve to a downstream pressure different from the pre-adjusted one (3 bar): Close the downstream shut-off valve; - Unscrew the nylon nut (Fig. 4.1); - Adjustment is carried out by means of a tool or a screwdriver on the upper part of the device (Fig. 4.2); turn in clockwise way to increase the downstream pressure, turn in anticlockwise way to reduce the downstream pressure; - Open the outlets in the private water system, in order to check the stability of the adjusted pressure; - Adjust the downstream pressure with outlets totally shut-off and with water at room temperature only; - Screw the nylon nut (Fig. 4.3).
8. The use of PTFE as a sealant in junctions between pressure reducing valve and water pipings is only allowed.



## 5. TROUBLESHOOTING

1. Increase in pressure downstream on the pressure reducing valve with a water heater in-line.  
This problem is due to heating of the water, caused by the water heater. The pressure downstream increases, due to water expansion, as the pressure reducing valve is correctly closed. It is necessary to install an expansion vessel between the pressure reducing valve and the water heater to absorb the pressure increase (Fig. 5.1).

### 5.1 THE PRESSURE REDUCING VALVE DOES NOT MAINTAIN THE ADJUSTED FIGURE

In most cases, this problem is due to the presence of impurities on the valve seat, causing blow-by and consequent increase in

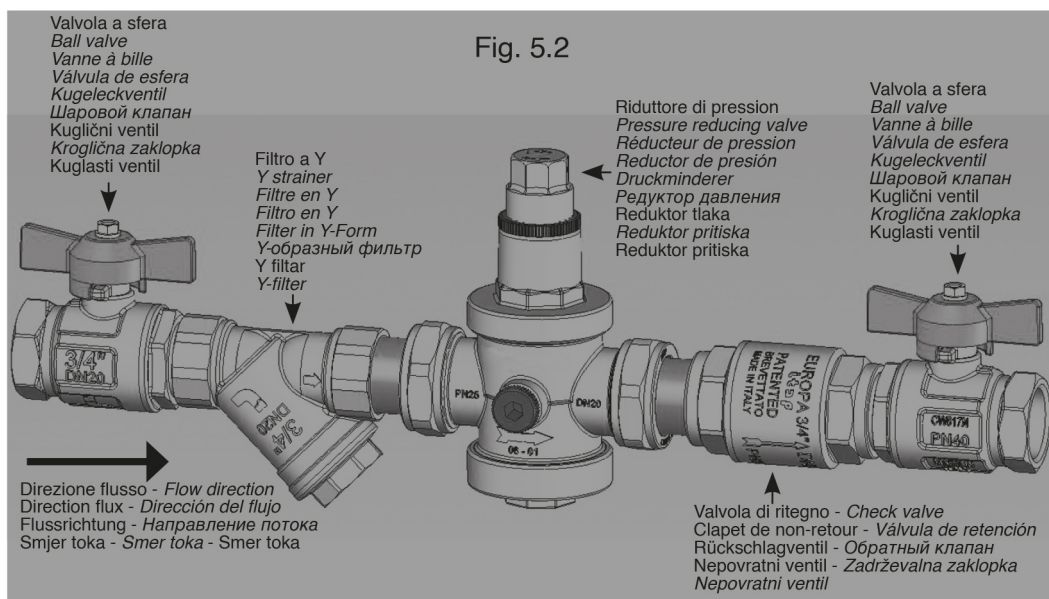
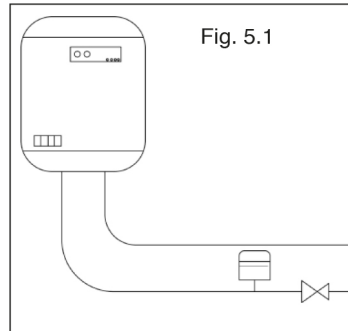




# PRESSURE REDUCING VALVES

the downstream pressure.

Install an Y-strainer upstream of the pressure reducing valve. Carry-out the maintenance of the Y-strainer. Flush the water system before installing the pressure reducing valve.

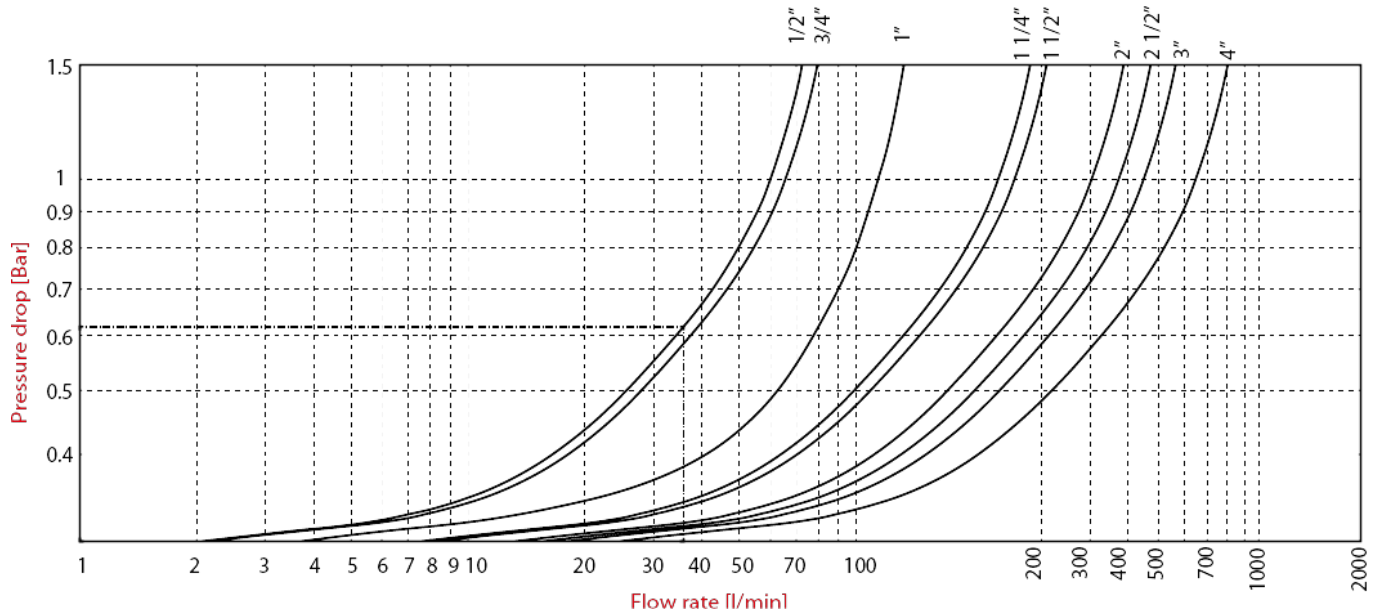




# PRESSURE REDUCING VALVES

## LOSS DIAGRAM (With water)

	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
KV	3,6	4	6,6	9,6	10,2	18





# PRESSURE REDUCING VALVES

## 243 EUROPRESS pressure reducing valve dezincification resistant brass

EUROPRESS



SIZE	PRESSURE	CODE	PACKING
1/2" (DN 15)	25bar/362.5psi	2430012	1/22
3/4" (DN 20)	25bar/362.5psi	2430034	1/22
1" (DN 25)	25bar/362.5psi	2430100	1/11
1"1/4 (DN 32)	25bar/362.5psi	2430114	1/6
1"1/2 (DN 40)	25bar/362.5psi	2430112	1/6
2" (DN 50)	25bar/362.5psi	2430200	1/3

### CERTIFICATIONS



### TECHNICAL SPECIFICATIONS

Compensated piston operation.

Female/female threads.

Body in antidezincification brass.

Minimum and maximum working temperatures: 0°C, 80°C.

Maximum inlet pressure: 25 bar.

Outlet pressure:

1/2" - 3/4" - 1" between 1 and 5,5 bar.

1"1/4 through 2" between 1 and 6 bar.

Factory preadjustment 4 bar.

Outlet pressure gauge connection 1/4" on both sides.

Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).

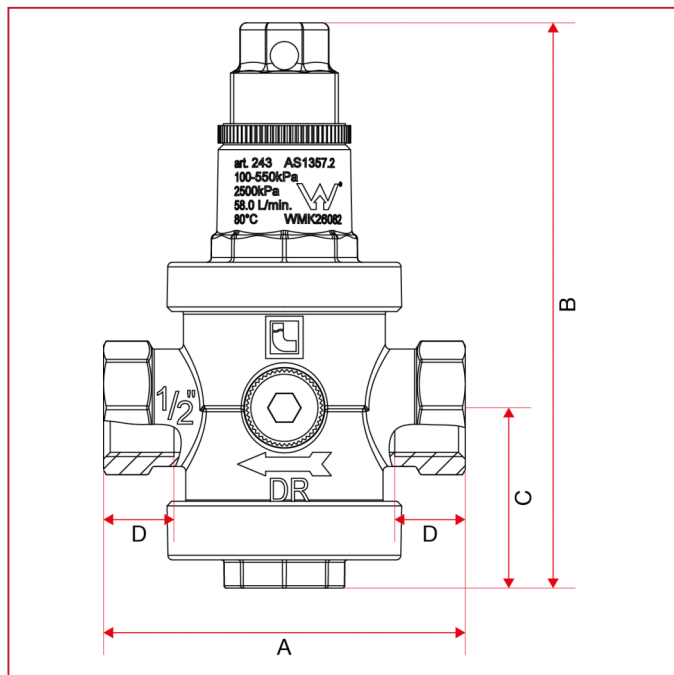
Watermark and WRAS approved in 1/2", 3/4" and 1" sizes

WRAS approved to 16 bar



# PRESSURE REDUCING VALVES

## OVERALL DIMENSIONS

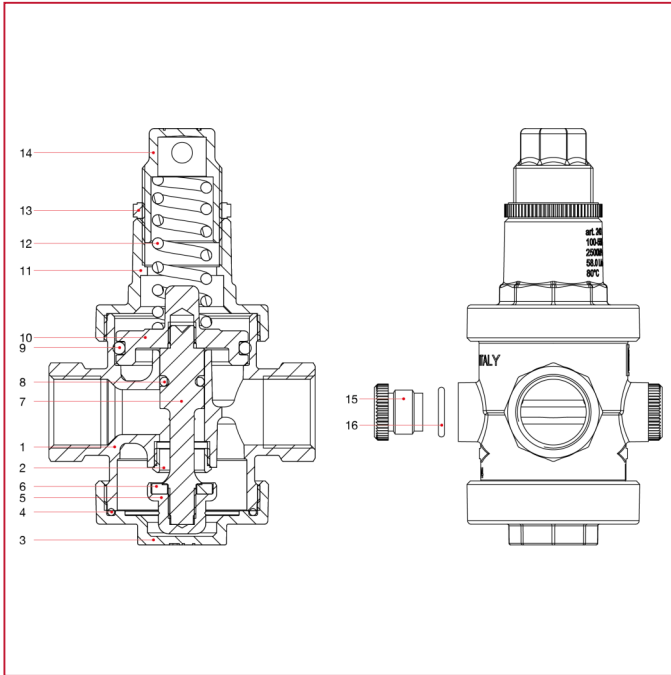


	1/2"	3/4"	1"	1"1/4	1"1/2	2"
DN	15	20	25	32	40	50
A	77	85	91	118	126	142
B	125,5	125,5	159	218	225	250
C	40	40	59	69,5	126	87
D	15	16,3	19,1	18	18	20
Kg/cm <sup>2</sup> bar	25	25	25	25	25	25
LBS - psi	362,5	362,5	362,5	362,5	362,5	362,5



# PRESSURE REDUCING VALVES

**MATERIALS sizes 1/2" through 1"**

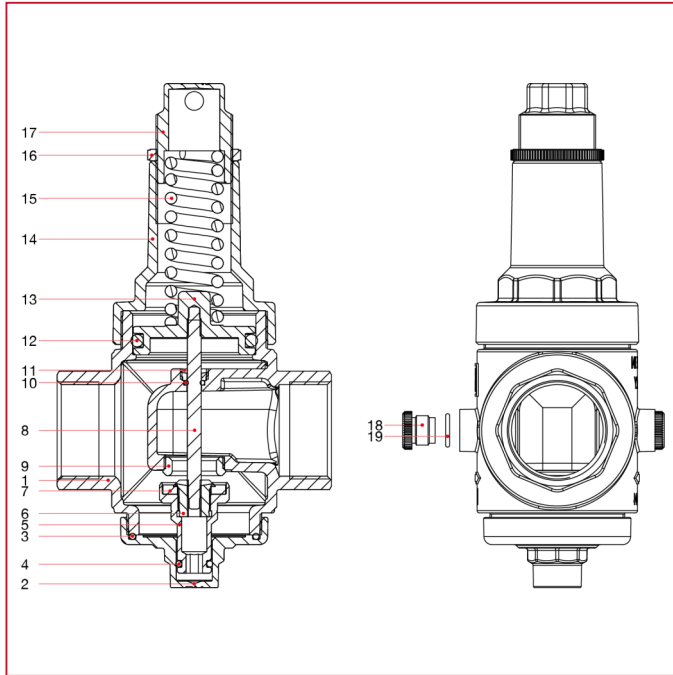


POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Brass CW625N
2	Seat	1	Stainless steel AISI 303
3	Bottom plug	1	Brass CW625N
4	O-ring	1	EPDM
5	Shutter	1	Brass CW625N
6	Flat seat washer	1	EPDM
7	Stem	1	Brass CW625N
8	O-ring	1	EPDM
9	O-ring	1	EPDM
10	Diaphragm	1	Brass CW625N
11	Upper plug	1	Brass CW617N
12	Spring	1	EN 10270-1 DH
13	Nut	1	Polimero
14	Regulator	1	Brass CW617N
15	Cap	2	Polymer
16	O-ring	2	EPDM



# PRESSURE REDUCING VALVES

**MATERIALS sizes 1"1/4 through 4"**



POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Brass CC770S
2	Bottom plug	1	Brass CW625N
3	O-ring	1	EPDM
4	O-ring	1	NBR
5	Shutter	1	Brass CW625N
6	Stop washer	1	Brass CW625N
7	Flat seat washer	1	NBR
8	Stem	1	Stainless steel AISI 303
9	Seat	1	Stainless steel AISI 303
10	O-ring	1	NBR
11	Stop ring	1	Brass CW625N
12	O-ring	1	NBR
13	Diaphragm	1	Brass CW625N
14	Upper plug	1	Brass CW617N
15	Spring	1	EN 10270-1 SM/SH
16	Nut	1	Polymer
17	Regulator	1	Brass CW617N
18	Cap	2	Polimero
19	O-ring	2	EPDM



# PRESSURE REDUCING VALVES

## INSTRUCTIONS ON INSTALLATION, USE AND MAINTENANCE

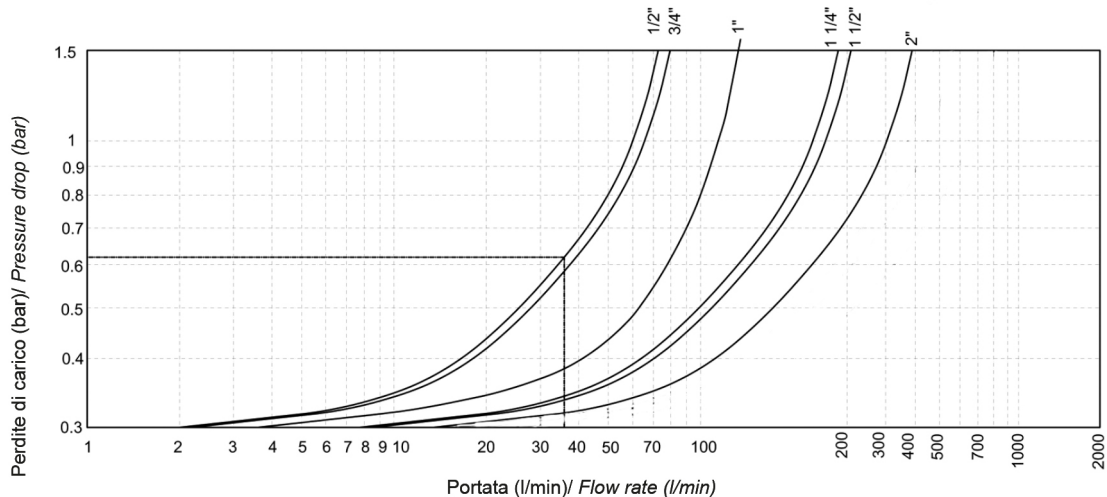
### 1. FUNCTION

Pressure reducing valve is a device which reduces and stabilizes the upstream pressure to an adjusted downstream pressure. When the entering pressure from the public mains is too high and variable, pressure reducing valve stabilizes the downstream pressure to the adjusted one.

Possible variations of the upstream pressure do not influence the adjusted downstream pressure. This range of pressure reducing valves allows the operator to adjust the downstream pressure to a set figure.

### 2. HYDRAULIC CHARACTERISTICS

Pressure drop diagram



Here mentioned figures refer to: upstream pressure 8 bar, downstream pressure 3,5 bar.

#### 2.1 USE OF DIAGRAM

Pressure drop diagram includes the loss of pressure proportional to a specific flow rate. According to the requested flow rate, it is possible to measure the water system and the pressure reducing valve correctly (it would be better to have a flow speed between 1 m/s and 2 m/s in the piping). **INSTANCE.** In case of 1/2" pressure reducing valve with an adjusted downstream pressure of 3,5 bar and a flow rate of 35 l/min, the pressure drop diagram states a loss of pressure of 0.62 bar. It means that the pressure gauge installed on the outlet way of pressure reducing valve shows a figure of 2.38 bar (= 3,5 bar – 0.62 bar).

### 3. USE

Pressure reducing valves are suitable for domestic water services, heating and air-conditioning plants, compressed air systems\*. They can be used with water, compressed air and no-aggressive fluids. ITAP Pressure reducing valves comply with the requirements of Council Directive 2014/68/UE (PED) and the CE marking is not requested according to art. 4 clause 3. (\* In the type-testing according to PED Council Directive, it is necessary that pressure reducing valves were approved as a part of the installation)

### 4. RECOMMENDATIONS ON RIGHT INSTALLATION

#### 4.1 INSTALLATION

For the best use and duration of the system, it is necessary to comply with the following instructions on installation, with the national regulations and with relevant local requirements.

- Place of installation has to be protected from frost and has to be easily inspectable.
- Install the pressure reducing valve on the private water system, immediately downstream of the water meter.
- It would be better to install shut-off valves upstream and downstream of the pressure reducing valve, to facilitate the maintenance operations.
- In order to protect pressure reducing valve from overpressure, install a check valve immediately downstream of the pressure reducing valve.
- The right scheme of installation is shown in Fig. 5.2
- In case of water heater downstream of the pressure reducing valve, install an expansion vessel between the valve and the



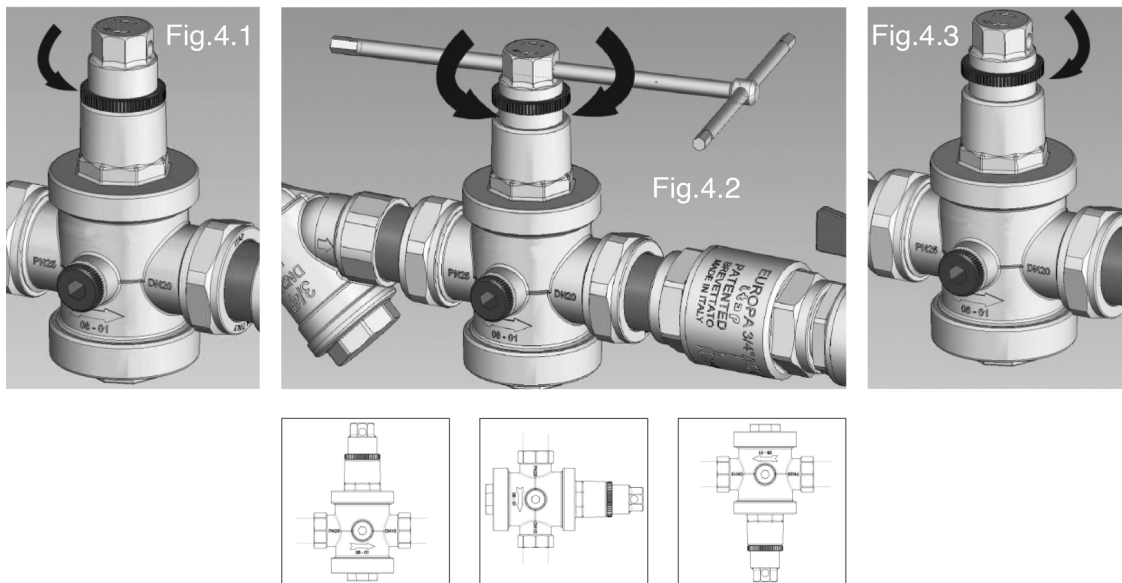
# PRESSURE REDUCING VALVES

water heater

- Pressure reducing valve is not a safety device. It would be better to install all the necessary safety relief valves.
  - In order to avoid cavitation and therefore excessive noisiness, it is strongly recommended that the ratio between maximum upstream pressure and regulating downstream pressure does not exceed the value of 2,5
- Please, duly note the downstream pressure of the reducing valve has not to be higher than the maximum working pressure of the devices installed in the private water system, in order to avoid possible damages or malfunctions.

## 4.2 INSTRUCTION ON INSTALLATION

1. Before installing the pressure reducing valve, open all the outlets to flush the system and expel any air left in piping.
2. Install shut-off valves upstream and downstream to facilitate maintenance operations.
3. For a right flow direction, use the arrow stamped on the body.
4. ITAP pressure reducing valve can be installed in either vertical or horizontal piping. It can be installed also upside down.
5. Art. 243 is equipped with a threaded connection suitable for a pressure gauge. It is possible to unscrew the plug in order to install a pressure gauge in the size of 1/4". In such a position, the pressure gauge shows the downstream pressure of the reducing valve.
6. The whole range of ITAP pressure reducing valves are tested and adjusted with a downstream pressure of 3 bar. It is possible to change the downstream pressure by means of the adjusting device.
7. The final adjustment of the pressure reducing valve has to be carried out with a filled private water system and with all the outlets shut-off. The upstream pressure has to be at least 1 bar higher than the adjusted pressure. Adjustment of the pressure reducing valve to a downstream pressure different from the pre-adjusted one (3 bar): Close the downstream shut-off valve; - Unscrew the nylon nut (Fig. 4.1); - Adjustment is carried out by means of a tool or a screwdriver on the upper part of the device (Fig. 4.2); turn in clockwise way to increase the downstream pressure, turn in anticlockwise way to reduce the downstream pressure; - Open the outlets in the private water system, in order to check the stability of the adjusted pressure; - Adjust the downstream pressure with outlets totally shut-off and with water at room temperature only; - Screw the nylon nut (Fig. 4.3).
8. The use of PTFE as a sealant in junctions between pressure reducing valve and water pipings is only allowed.



## 5. TROUBLESHOOTING

1. Increase in pressure downstream on the pressure reducing valve with a water heater in-line.  
This problem is due to heating of the water, caused by the water heater. The pressure downstream increases, due to water expansion, as the pressure reducing valve is correctly closed. It is necessary to install an expansion vessel between the pressure reducing valve and the water heater to absorb the pressure increase (Fig. 5.1).

### 5.1 THE PRESSURE REDUCING VALVE DOES NOT MAINTAIN THE ADJUSTED FIGURE

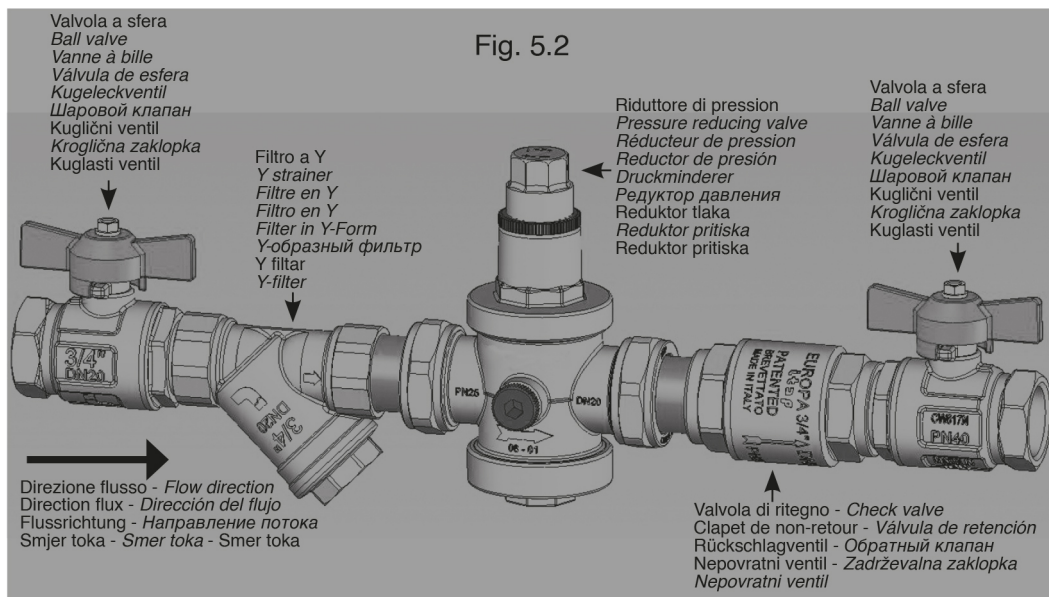
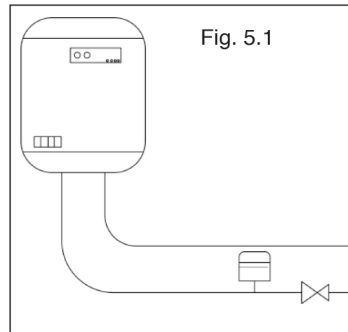
In most cases, this problem is due to the presence of impurities on the valve seat, causing blow-by and consequent increase in the downstream pressure.





# PRESSURE REDUCING VALVES

Install an Y-strainer upstream of the pressure reducing valve. Carry-out the maintenance of the Y-strainer. Flush the water system before installing the pressure reducing valve.

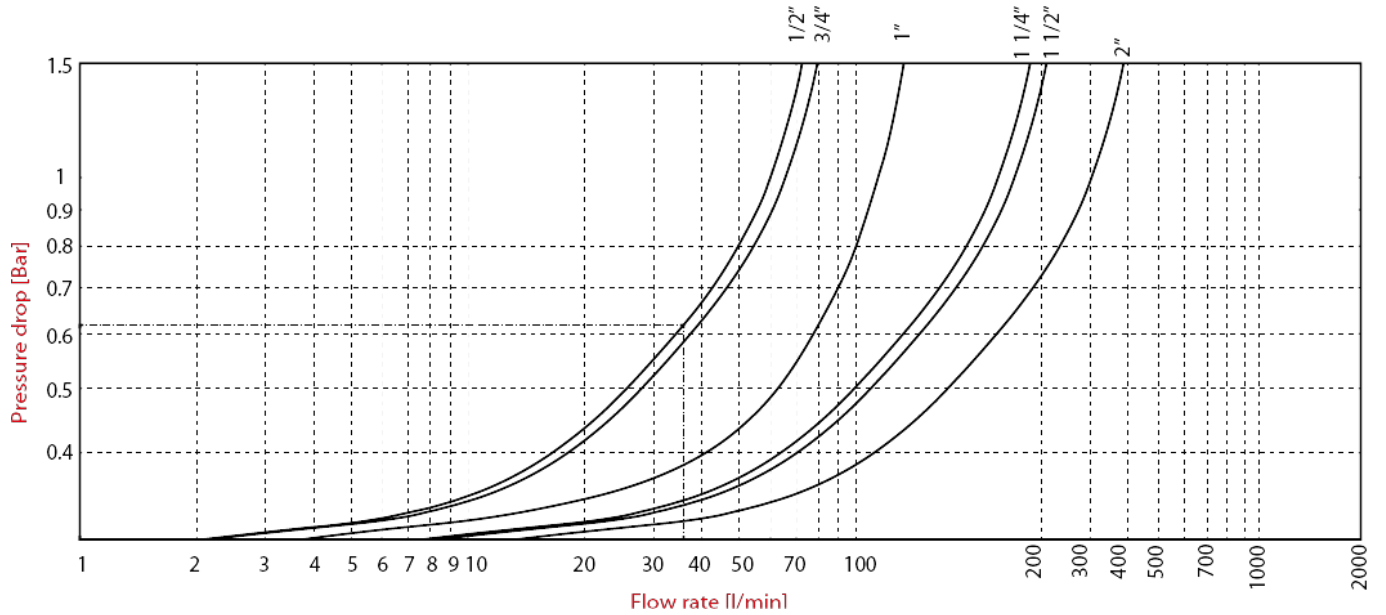




# PRESSURE REDUCING VALVES

## LOSS DIAGRAM (With water)

	1/2"	3/4"	1"	1"1/4"	1"1/2"	2"
KV	3,6	4	6,6	9,6	10,2	18





# PRESSURE REDUCING VALVES

## 360 MINIPRESS pressure reducing valve

MINIPRESS



SIZE	PRESSURE	CODE	PACKING
1/2" (DN 15)	15bar/217.5psi	3600012	4/60
3/4" (DN 20)	15bar/217.5psi	3600034	4/60

### CERTIFICATIONS



### TECHNICAL SPECIFICATIONS

Compensated piston operation.

Female/female threads.

Body in nickel-plated brass.

Minimum and maximum working temperatures: 0°C, 80°C.

Maximum inlet pressure: 15 bar.

Outlet pressure can be adjusted between 1 and 4 bar.

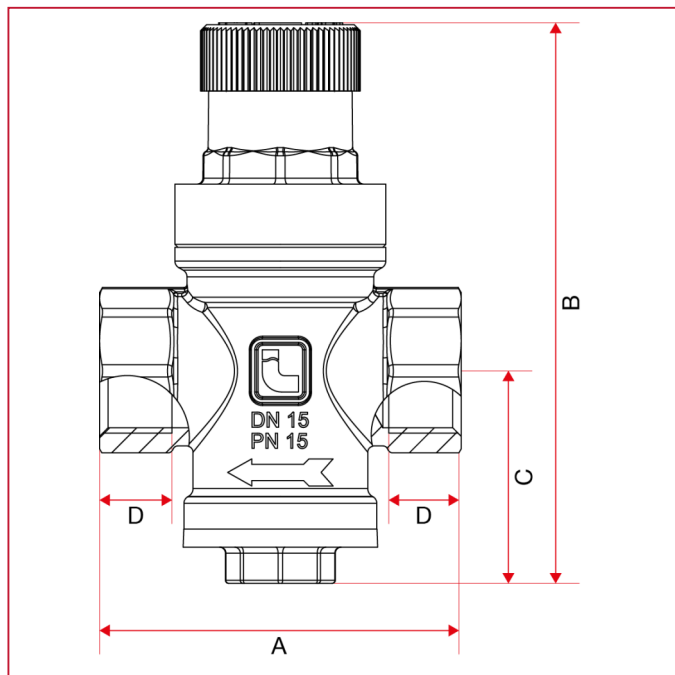
Factory preadjustment 3 bar.

Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).



# PRESSURE REDUCING VALVES

## OVERALL DIMENSIONS

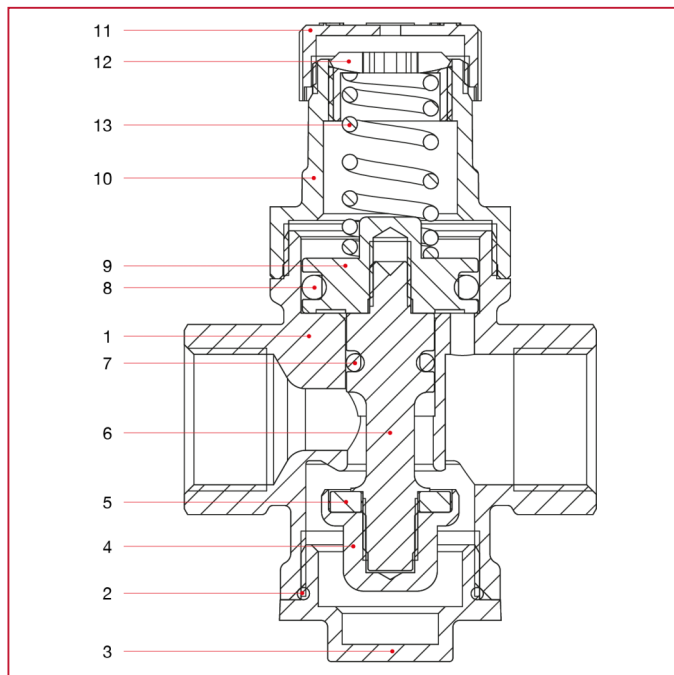


	1/2"	3/4"
DN	15	20
A	60	60
B	93	93
C	35,25	35,25
D	12	12
Kg/cm <sup>2</sup> bar	15	15
LBS - psi	217,5	217,5



# PRESSURE REDUCING VALVES

## MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Nickel-plated brass CW617N
2	O-ring	1	NBR
3	Bottom plug	1	Nickel-plated brass CW617N
4	Shutter	1	Brass CW614N
5	Flet seat washer	1	NBR
6	Stem	1	Brass CW614N
7	O-ring	1	NBR
8	O-ring	1	NBR
9	Diaphragm	1	Brass CW614N
10	Upper plug	1	Nickel-plated brass CW617N
11	Cover	1	Nylon
12	Regulator	1	Brass CW614N
13	Spring	1	Stainless steel AISI 302



# PRESSURE REDUCING VALVES

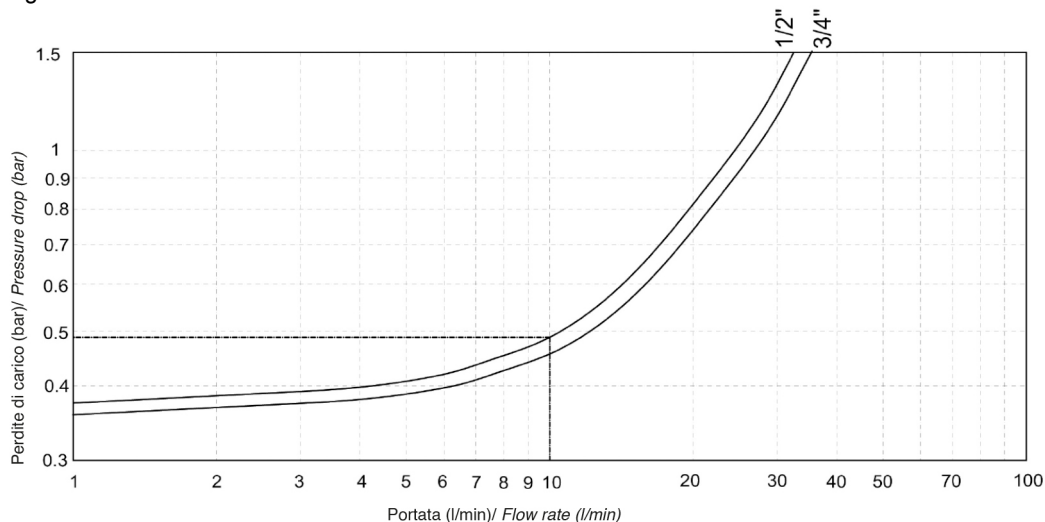
## INSTRUCTIONS ON INSTALLATION, USE AND MAINTENANCE

### 1. FUNCTION

Pressure reducing valve is a device which reduces and stabilizes the upstream pressure to an adjusted downstream pressure. When the entering pressure from the public mains is too high and variable, pressure reducing valve stabilizes the downstream pressure to the adjusted one. Possible variations of the upstream pressure do not influence the adjusted downstream pressure. This range of pressure reducing valves allows the operator to adjust the downstream pressure to a set figure.

### 2. HYDRAULIC CHARACTERISTICS

Pressure drop diagram



Here mentioned figures refer to: upstream pressure 8 bar downstream pressure 3 bar

### 2.1 USE OF DIAGRAM

Pressure drop diagram includes the loss of pressure proportional to a specific flow rate. According to the requested flow rate, it is possible to measure the water system and the pressure reducing valve correctly (it would be better to have a flow speed between 1 m/s and 2 m/s in the piping).

#### INSTANCE.

In case of 1/2" pressure reducing valve with an adjusted downstream pressure of 3 bar and a flow rate of 10 l/min, the pressure drop diagram states a loss of pressure of 0.49 bar. It means that the pressure gauge installed on the outlet way of pressure reducing valve shows a figure of 2.51 bar (= 3 bar – 0.49 bar).

### 3. USE

Pressure reducing valves are suitable for domestic water services, heating and air-conditioning plants, compressed air systems\*. They can be used with water, compressed air and no-aggressive fluids. ITAP Pressure reducing valves comply with the requirements of Council Directive 97/23/EC (PED) and the CE marking is not requested according to art. 3 clause 3 of DL 25/02/2000 n. 93. (\* In the type-testing according to PED Council Directive, it is necessary that pressure reducing valves were approved as a part of the installation).

### 4. RECOMMENDATIONS ON RIGHT INSTALLATION

#### 4.1 INSTALLATION

For the best use and duration of the system, it is necessary to comply with the following instructions on installation, with the national regulations and with relevant local requirements.

- Place of installation has to be protected from frost and has to be easily inspectable.
- It would be better to install shut-off valves upstream and downstream of the pressure reducing valve, to facilitate the maintenance operations.
- In order to protect pressure reducing valve from overpressure, install a check valve immediately downstream of the pressure reducing valve.
- In case of water heater downstream of the pressure reducing valve, install an expansion vessel between the valve and the water heater.
- In order to avoid cavitation and therefore excessive noisiness, it is strongly recommended that the ratio between maximum



# PRESSURE REDUCING VALVES

upstream pressure and regulating downstream pressure does not exceed the value of 2,5.

Pressure reducing valve is not a safety device. It would be better to install all the necessary safety relief valves.

Please, duly note the downstream pressure of the reducing valve has not to be higher than the maximum working pressure of the devices installed in the private water system, in order to avoid possible damages or malfunctions.

## 4.2 INSTRUCTION ON INSTALLATION

1. Before installing the pressure reducing valve, open all the outlets to flush the system and expel any air left in piping.

2. Install shut-off valves upstream and downstream to facilitate maintenance operations.

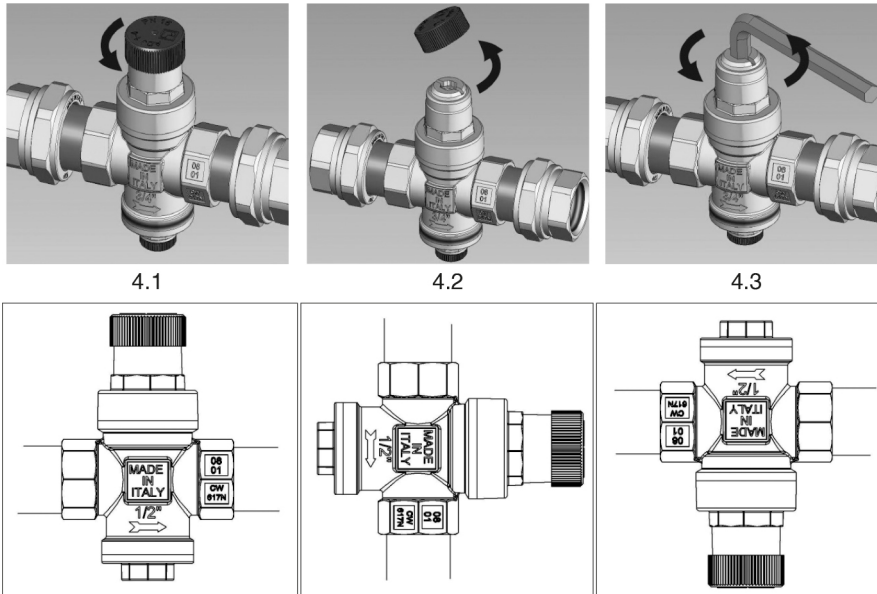
3. For a right flow direction, use the arrow stamped on the body.

4. ITAP pressure reducing valve can be installed in either vertical or horizontal piping. It can be installed also upside down.

5. Art. 361 is equipped with a threaded connection suitable for a pressure gauge. It is possible to unscrew the plug made by Nylon PA6 in order to install a pressure gauge in the size of 1/4". In such a position, the pressure gauge shows the downstream pressure of the reducing valve.

6. The whole range of ITAP pressure reducing valves are tested and adjusted with a downstream pressure of 3 bar. It is possible to change the downstream pressure by means of the adjusting device.

7. The final adjustment of the pressure reducing valve has to be carried out with a filled private water system and with all the outlets shut-off. The upstream pressure has to be at least 1 bar higher than the adjusted pressure. Adjustment of the pressure reducing valve to a downstream pressure different from the pre-adjusted one (3 bar): - Close the downstream shut-off valve; - Unscrew the plug (Fig. 4.1); - Adjustment is carried out by means of an hexagonal key on the upper part of the device; turn in clockwise way in order to increase the downstream pressure, turn in anticlockwise way in order to reduce the downstream pressure (Fig. 4.3); - Open outlets in the private water system, in order to check the stability of the adjustment; - Adjust the downstream pressure with outlets totally shut-off and with water at room temperature only; - Screw the plug.



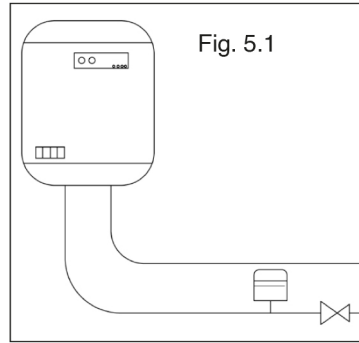
## 5 TROUBLESHOOTING

A. Increase in pressure downstream on the pressure reducing valve with a water heater in-line. This problem is due to heating of the water, caused by the water heater. The pressure downstream increases, due to water expansion, as the pressure reducing valve is correctly closed. It is necessary to install an expansion vessel between the pressure reducing valve and the water heater to absorb the pressure increase (Fig. 5.1).

B. The pressure reducing valve does not maintain the adjusted figure. In most cases, this problem is due to the presence of impurities on the valve seat, causing blow-by and consequent increase in the downstream pressure. Install an Y-strainer upstream of the pressure reducing valve. Carry-out the maintenance of the Y-strainer. Flush the water system before installing the pressure reducing valve.



# PRESSURE REDUCING VALVES



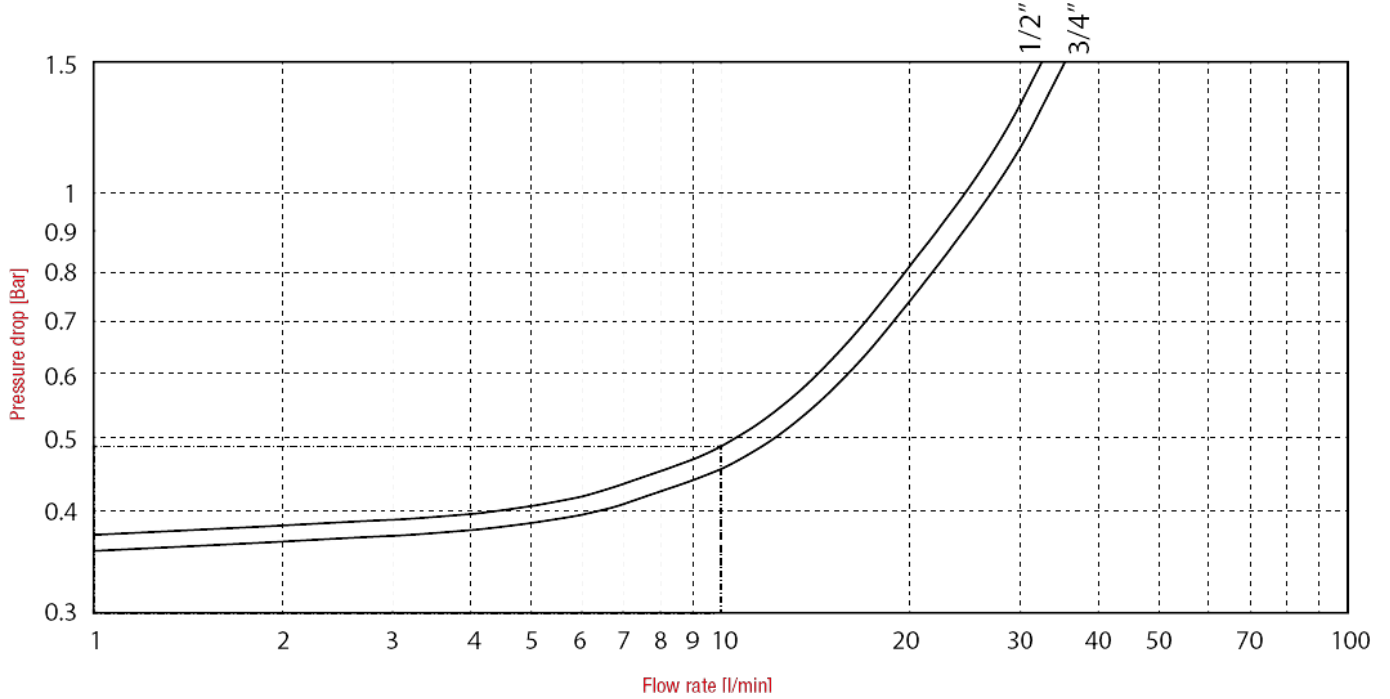




# PRESSURE REDUCING VALVES

## LOSS DIAGRAM (With water)

	1/2"	3/4"
<b>KV</b>	1,4	1,7





# PRESSURE REDUCING VALVES

## 361 MINIPRESS pressure reducing valve with pressure gauge connection

MINIPRESS



SIZE	PRESSURE	CODE	PACKING
1/2" (DN 15)	15bar/217.5psi	3610012	4/60
3/4" (DN 20)	15bar/217.5psi	3610034	4/60

### CERTIFICATIONS



### TECHNICAL SPECIFICATIONS

Compensated piston operation.

Female/female threads.

Body in nickel-plated brass.

Minimum and maximum working temperatures: 0°C, 80°C.

Maximum inlet pressure: 15 bar.

Outlet pressure can be adjusted between 1 and 4 bar.

Factory preadjustment 3 bar.

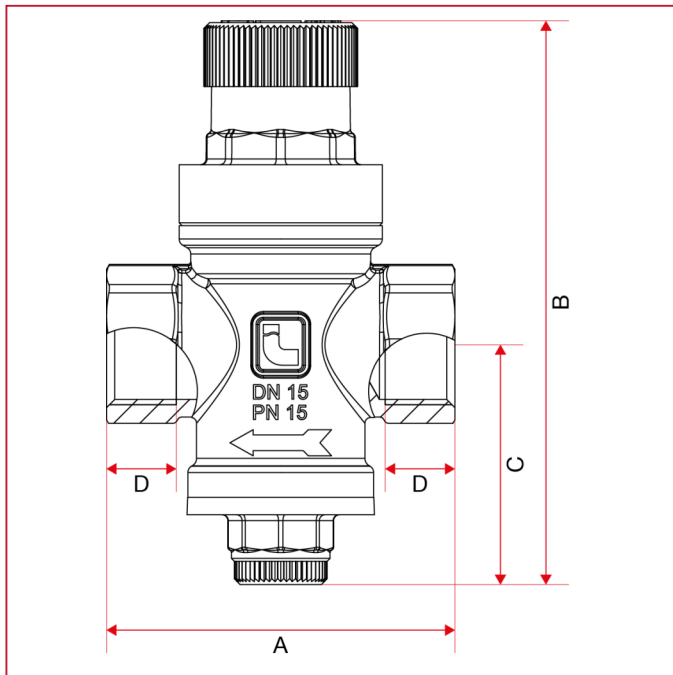
Outlet pressure gauge connection 1/4".

Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).



# PRESSURE REDUCING VALVES

## OVERALL DIMENSIONS

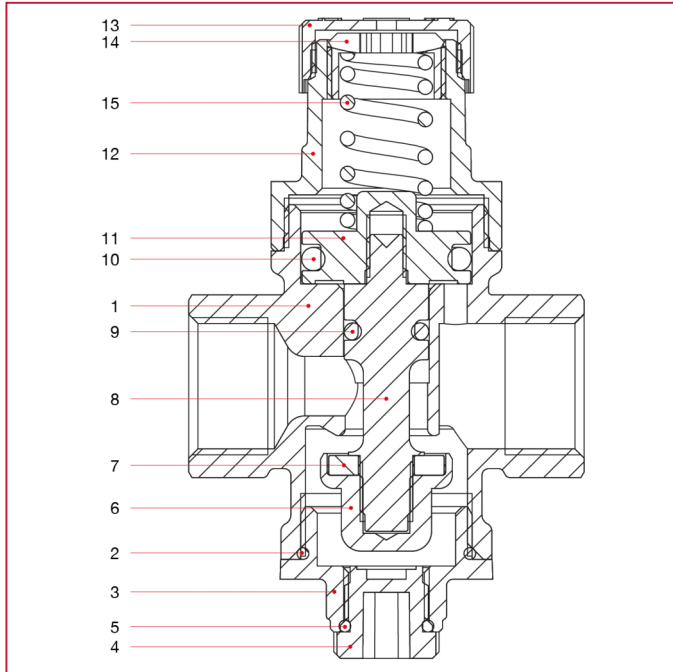


	1/2"	3/4"
DN	15	20
A	60	60
B	97	97
C	41,25	41,25
D	12	12
Kg/cm <sup>2</sup> bar	15	15
LBS - psi	217,5	217,5



# PRESSURE REDUCING VALVES

## MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	Body	1	Nickel-plated brass CW617N
2	O-ring	1	NBR
3	Bottom plug	1	Nickel-plated brass CW617N
4	Cap	1	POM
5	O-ring	1	EPDM
6	Shutter	1	Brass CW614N
7	Flat seat washer	1	NBR
8	Stem	1	Brass CW614N
9	O-ring	1	NBR
10	O-ring	1	NBR
11	Diaphragm	1	Brass CW614N
12	Upper plug	1	Nickel-plated brass CW617N
13	Cover	1	Nylon
14	Regulator	1	Brass CW614N
15	Spring	1	Stainless steel AISI 302



# PRESSURE REDUCING VALVES

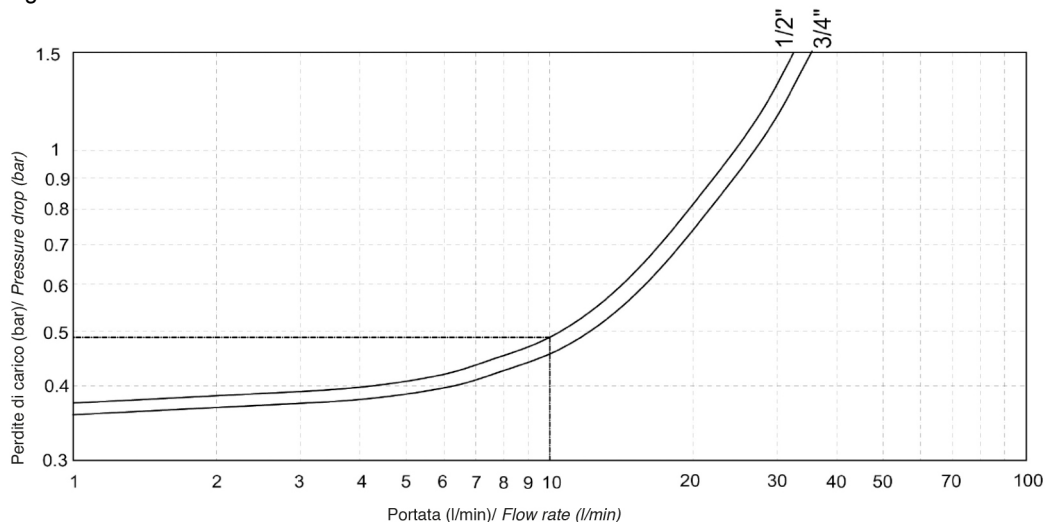
## INSTRUCTIONS ON INSTALLATION, USE AND MAINTENANCE

### 1. FUNCTION

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### 2. HYDRAULIC CHARACTERISTICS

Pressure drop diagram



Here mentioned figures refer to: upstream pressure 8 bar downstream pressure 3 bar

#### 2.1 USE OF DIAGRAM

Pressure drop diagram includes the loss of pressure proportional to a specific flow rate. According to the requested flow rate, it is possible to measure the water system and the pressure reducing valve correctly (it would be better to have a flow speed between 1 m/s and 2 m/s in the piping).

#### INSTANCE.

In case of 1/2" pressure reducing valve with an adjusted downstream pressure of 3 bar and a flow rate of 10 l/min, the pressure drop diagram states a loss of pressure of 0.49 bar. It means that the pressure gauge installed on the outlet way of pressure reducing valve shows a figure of 2.51 bar (= 3 bar – 0.49 bar).

### 3. USE

Pressure reducing valves are suitable for domestic water services, heating and air-conditioning plants, compressed air systems\*. They can be used with water, compressed air and no-aggressive fluids. ITAP Pressure reducing valves comply with the requirements of Council Directive 97/23/EC (PED) and the CE marking is not requested according to art. 3 clause 3 of DL 25/02/2000 n. 93. (\* In the type-testing according to PED Council Directive, it is necessary that pressure reducing valves were approved as a part of the installation).

### 4. RECOMMENDATIONS ON RIGHT INSTALLATION

#### 4.1 INSTALLATION

For the best use and duration of the system, it is necessary to comply with the following instructions on installation, with the national regulations and with relevant local requirements.

- Place of installation has to be protected from frost and has to be easily inspectable.
- It would be better to install shut-off valves upstream and downstream of the pressure reducing valve, to facilitate the maintenance operations.
- In order to protect pressure reducing valve from overpressure, install a check valve immediately downstream of the pressure reducing valve.
- In case of water heater downstream of the pressure reducing valve, install an expansion vessel between the valve and the water heater.
- In order to avoid cavitation and therefore excessive noisiness, it is strongly recommended that the ratio between maximum



# PRESSURE REDUCING VALVES

upstream pressure and regulating downstream pressure does not exceed the value of 2,5.

Pressure reducing valve is not a safety device. It would be better to install all the necessary safety relief valves.

Please, duly note the downstream pressure of the reducing valve has not to be higher than the maximum working pressure of the devices installed in the private water system, in order to avoid possible damages or malfunctions.

## 4.2 INSTRUCTION ON INSTALLATION

1. Before installing the pressure reducing valve, open all the outlets to flush the system and expel any air left in piping.

2. Install shut-off valves upstream and downstream to facilitate maintenance operations.

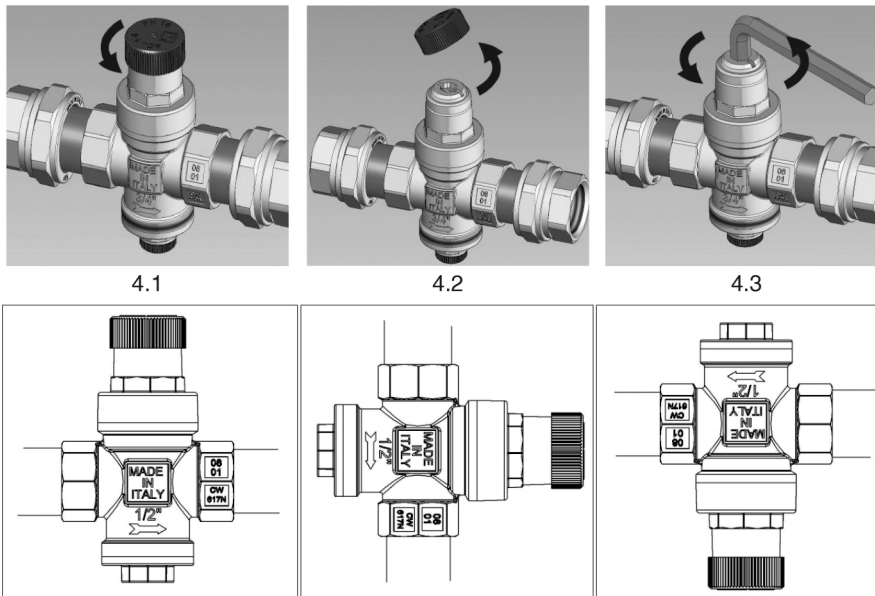
3. For a right flow direction, use the arrow stamped on the body.

4. ITAP pressure reducing valve can be installed in either vertical or horizontal piping. It can be installed also upside down.

5. Art. 361 is equipped with a threaded connection suitable for a pressure gauge. It is possible to unscrew the plug made by Nylon PA6 in order to install a pressure gauge in the size of 1/4". In such a position, the pressure gauge shows the downstream pressure of the reducing valve.

6. The whole range of ITAP pressure reducing valves are tested and adjusted with a downstream pressure of 3 bar. It is possible to change the downstream pressure by means of the adjusting device.

7. The final adjustment of the pressure reducing valve has to be carried out with a filled private water system and with all the outlets shut-off. The upstream pressure has to be at least 1 bar higher than the adjusted pressure. Adjustment of the pressure reducing valve to a downstream pressure different from the pre-adjusted one (3 bar): - Close the downstream shut-off valve; - Unscrew the plug (Fig. 4.1); - Adjustment is carried out by means of an hexagonal key on the upper part of the device ; turn in clockwise way in order to increase the downstream pressure, turn in anticlockwise way in order to reduce the downstream pressure (Fig. 4.3); - Open outlets in the private water system, in order to check the stability of the adjustment; - Adjust the downstream pressure with outlets totally shut-off and with water at room temperature only; - Screw the plug.



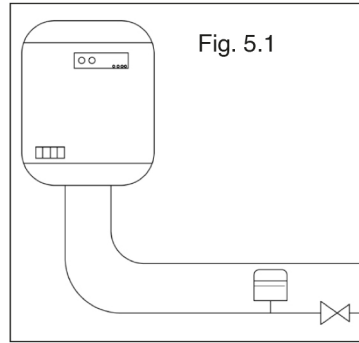
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A. Increase in pressure downstream on the pressure reducing valve with a water heater in-line. This problem is due to heating of the water, caused by the water heater. The pressure downstream increases, due to water expansion, as the pressure reducing valve is correctly closed. It is necessary to install an expansion vessel between the pressure reducing valve and the water heater to absorb the pressure increase (Fig. 5.1).

B. The pressure reducing valve does not maintain the adjusted figure. In most cases, this problem is due to the presence of impurities on the valve seat, causing blow-by and consequent increase in the downstream pressure. Install an Y-strainer upstream of the pressure reducing valve. Carry-out the maintenance of the Y-strainer. Flush the water system before installing the pressure reducing valve.



## PRESSURE REDUCING VALVES

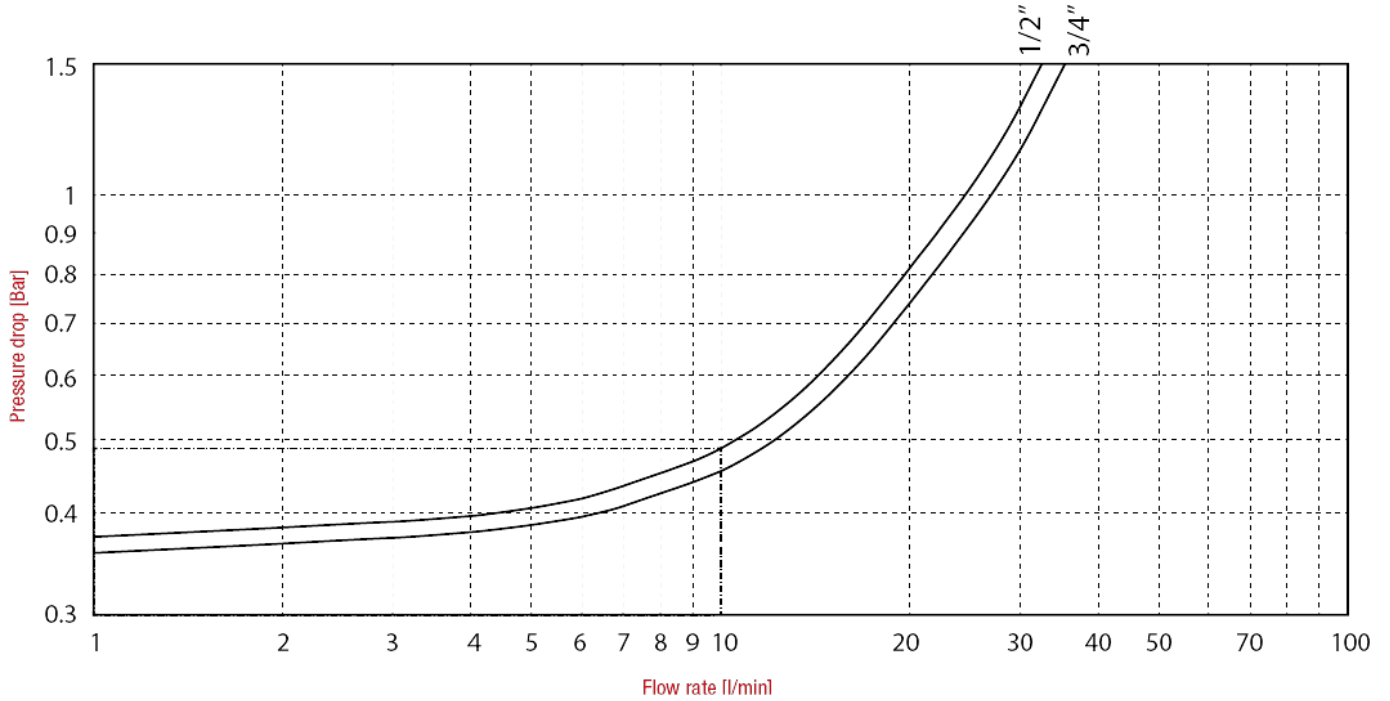




# PRESSURE REDUCING VALVES

## LOSS DIAGRAM (With water)

	1/2"	3/4"
<b>KV</b>	1,4	1,7







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We reserve the right to make improvements and changes to the products described herein and to the relative technical data, at any time and without forewarning.

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