



# PISTON VALVES

YVN - YVNB  
YVMN - YVSN

# Piston Valves

*We are having long term experience on elastic sealing systems, designed piston valve by long term research activities. Lots of our piston valves were used and are still in use in Turkey and all around the world. Main application areas are vapor, steam, water, heat transfer oils, high temperature hot water, thermal oil, chemical industry using corrosive fluids and food industry. We realized the idea of replacing seat and plug with elastic sealing rings and cylindrical piston in globe valves. Our aim is to ensure customer satisfaction by manufacturing valves meeting expectations based on international standards and legal regulations.*

## Application Examples



*Our piston valves can be used to control the flow of almost all kinds of fluids. We offers the optimum solutions. Valve body material may be cast iron, ductile iron, cast steel and stainless steel with appropriate sealing rings.*



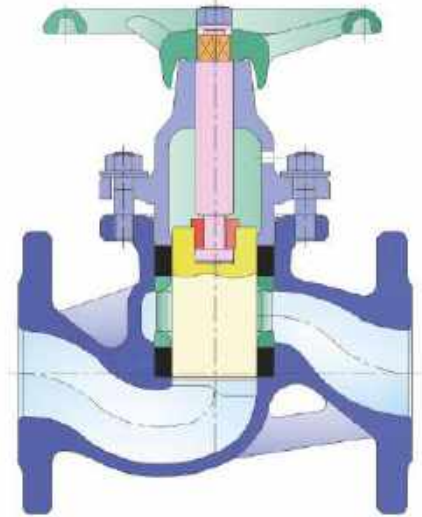
# Piston Valves

Piston Valves have two important components: fine ground cylindrical piston made of stainless steel and elastic valve rings. Suitable ring materials are used for almost all kinds of fluids. Elastic upper lower rings compress the piston with the required tightness. Thrust is provided by tightening the bonnet nuts. It is transmitted from upper ring to lower ring via lantern bushing. Axial thrust is converted to radial pressure by compressing the elastic rings. The compressed rings enable an outstanding leaktightness. The lower ring is leakproof across the ports, the upper ring is leakproof to atmosphere. At fully open or fully closed position, since there is no contact between the cylindrical piston surface and the fluid; abrasion does not take place

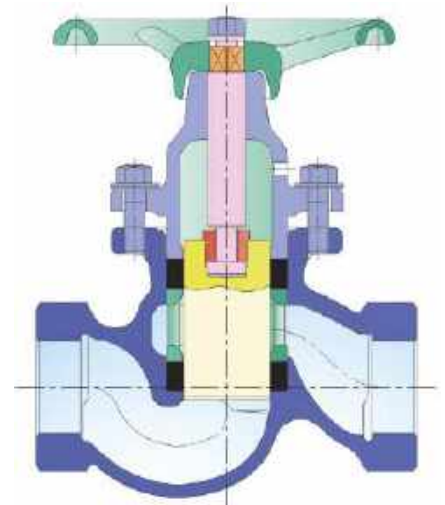
## Advantages

- Asbestos free
- Energy efficient
- Maintenance free
- Exceptional leaktightness across the ports and to atmosphere
- Abrasionproof sealing surface
- Valve rings are replaceable in the pipeline
- Excellent control characteristics
- Fire safe is tested according to ISO 10497 / API 607
- TUV certified
- Suitable for oxygen line
- Economic, easy to service
- Conforms to German TA Luft and USA EPA

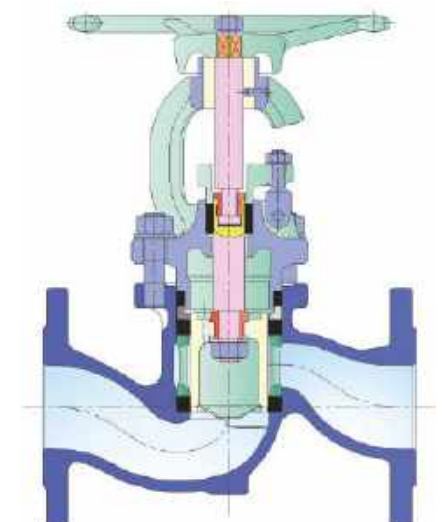
**YVN 15-50**



**YVMN 1/4"-2" and YVSN 1/4"-2"**



**YVNB 65-200**



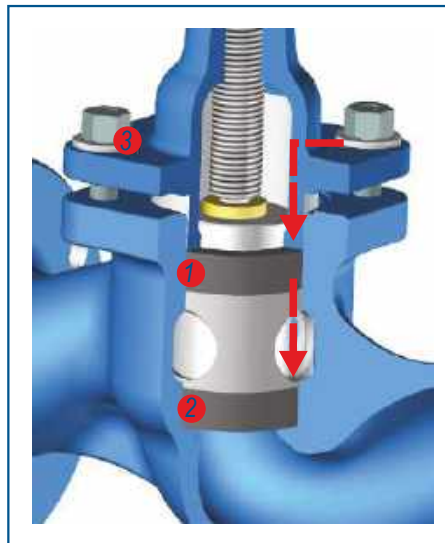
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# Piston Valve Working Principle

## Sealing System

- Sealing system in the piston valve is enabled by a stainless steel piston and a couple of special elastic rings which surround the piston tightly.
- Sealing surface is the side surface of the piston. While upper ring provides sealing to atmosphere (outside), lower ring provides tightness in the line (inside).
- Leakproofing is provided by tightness in the bonnet nuts acting axially to upper ring. The thrust is transmitted from upper ring to lower ring via lantern bushing. Special elastic rings are thereby compressed and transform this thrust into a radially acting pressure on the piston.
- Elastic rings, being supported against the wall of the valve body, surround the cylindrical piston surface thereby result in an outstanding sealing.



1. YX-GT upper ring
2. YX-GT lower ring
3. Belleville washer

- Layers of YX-GT rings press radially on the sealing surface of the piston
- Belleville washers compensate the pressure and temperature changes. Thereby, a spontaneous and permanent sealing is provided by itself.

Is not affected by unexpected materials flowing in the fluid.  
No corrosion on the leakproofing surface.



- There is no direct contact of the piston surface and the fluid. Therefore, there is no corrosion risk for the sealing surfaces. Only the bottom surface of the piston gets into contact with the fluid. This part is not related to the sealing performance.
- Unexpected materials in the medium do not harm a piston valve. When the valve is being shut and the piston enters the lower ring, it sweeps out any particles of sand, welding globules and other impurities existing in the medium. The possibility of damage to the sealing system by abrasive matter existing in the fluid; a well-known problem with seat valves, is eliminated with the piston valves. Fibrous and contaminated media can be reliably shut off without trouble.

- The piston valves of model YVN 15 to 50 have the same sealing system. There is no stuffing box with the ring.
- The balanced piston valves of model YVNB 65 to 200, have stuffing box with the ring. Easy operation is enabled thanks to pressure balance across the piston.
- Ring replacement takes short time, there is no need for difficult mechanical processes like seat grinding etc. for piston valves. A new valve is obtained just by replacing sealing rings. Since they are supported by stainless steel plate, rings have long service life.

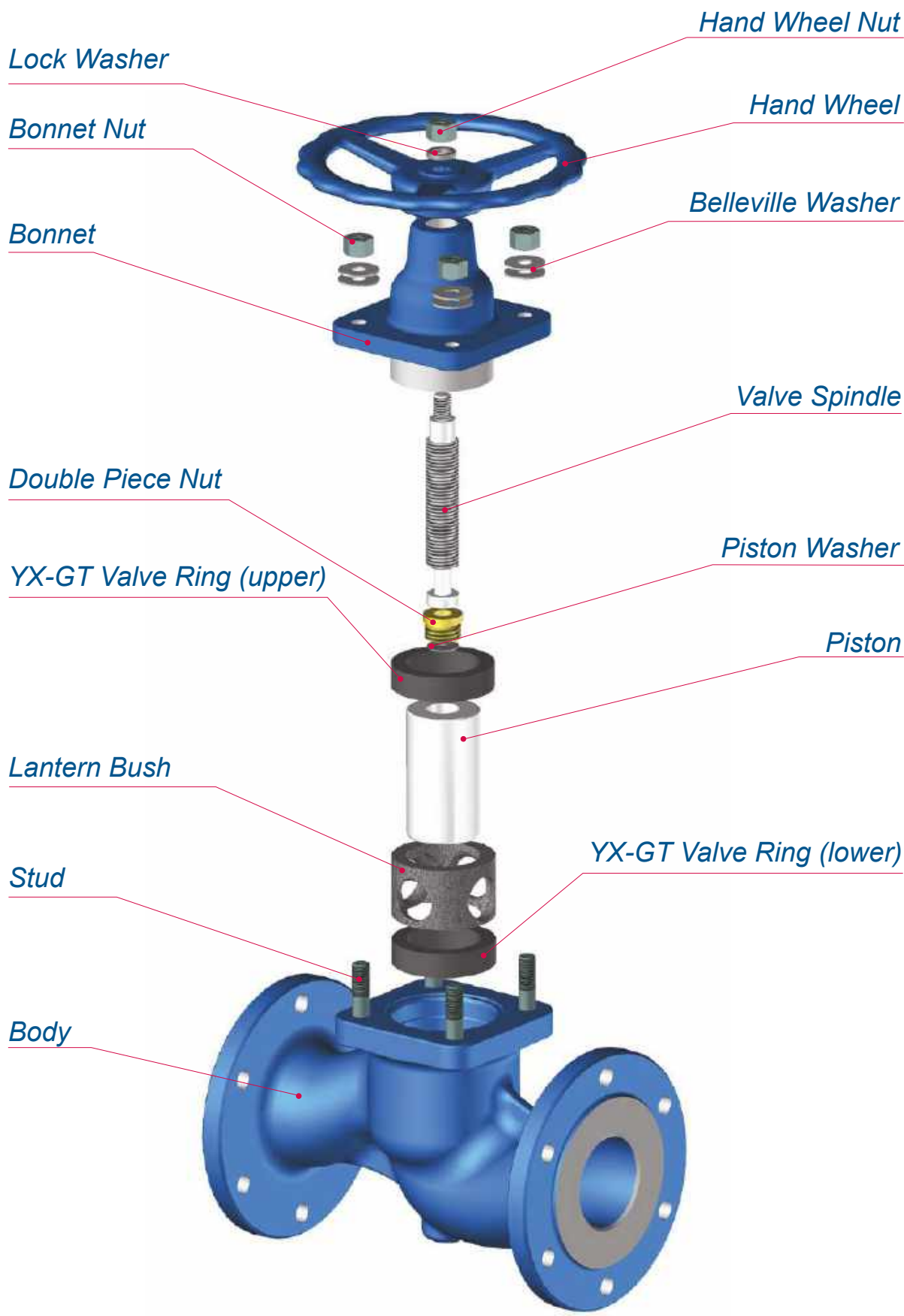


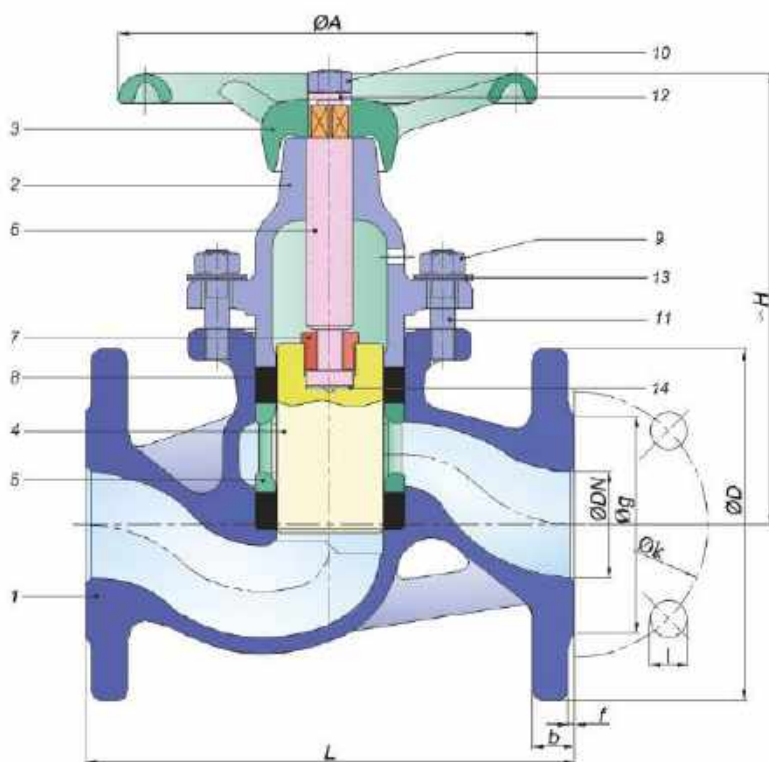
No environmental contamination  
Saves energy

- Our piston valves, providing an outstanding leaktightness across both to atmosphere and to line, prevent environmental contamination. Toxic fluids remain in the piping system and are not allowed to diffuse into atmosphere.
- Piston valves save energy via preventing leakage of steam and other power transfer fluids to atmosphere.

# Piston Valve

## YVN 15-50





# Piston Valves

## DN 15 - 50

### Type: YVN Flanged

| Material Type  | Cast Iron                          | Ductile Iron                       | Cast Steel                         | Stainless Steel                    |
|----------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Size           | DN15-50                            | DN15-50                            | DN15-50                            | DN15-50                            |
| Pressure Class | PN16                               | PN25                               | PN40                               | PN40                               |
| Dimensions     | DIN EN 558/1.serie                 | DIN EN 558/1.serie                 | DIN EN 558/1.serie                 | DIN EN 558/1.serie                 |
| Assembly       | Flanged according to DIN EN 1092-2 | Flanged according to DIN EN 1092-2 | Flanged according to DIN EN 1092-1 | Flanged according to DIN EN 1092-1 |
| Temperature    | -10°C +300 °C                      | -10°C +350 °C                      | -10°C * +400°C                     | -10°C * +400°C                     |
| Material Code  | 2                                  | 8                                  | 7                                  | 9                                  |
| Order Code     | YPG.2F___.00                       | YPG.8F___.00                       | YPG.7F___.00                       | YPG.9F___.00                       |

### Fluid Types

All kinds of fluids such as water, hot water, high temperature hot water, steam, thermal oil, LPG, fuel oil, pressurized air, etc.

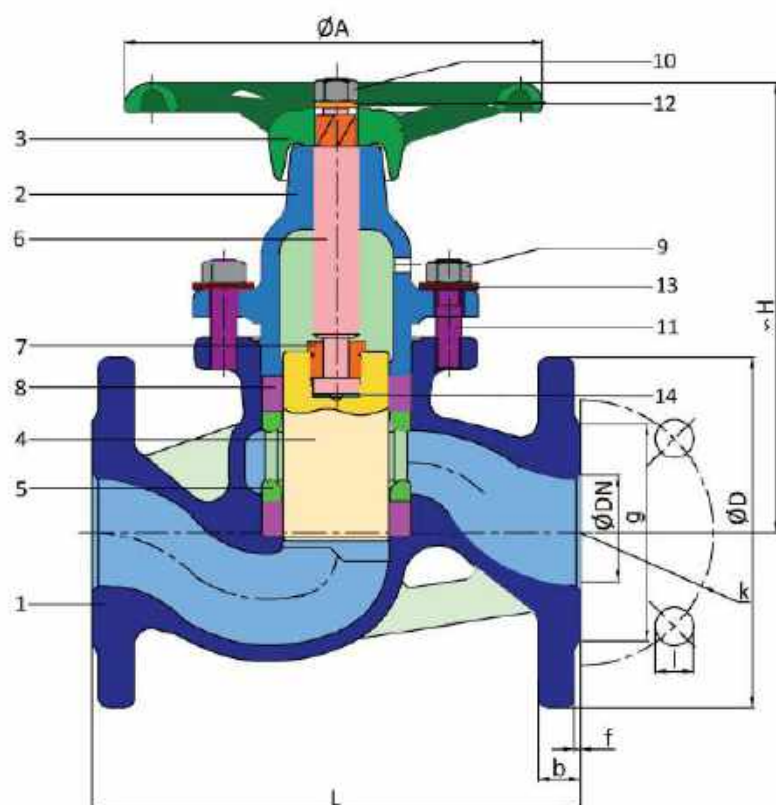
| P.No | Part Name         | Cast Iron           | Ductile Iron        | Cast Steel          | St. Steel | St. Steel |
|------|-------------------|---------------------|---------------------|---------------------|-----------|-----------|
| 1    | Body              | GJL 250             | 0.7040              | 1.0619              | 1.4308    | 1.4408    |
| 2    | Upper Bonnet      | GJL 250 ****        | 0.7040 ****         | 1.0619 ****         | 1.4308    | 1.4408    |
| 3    | Hand Wheel        | GJL 200             | GJL 200             | GJL 200             | GJL 200   | GJL 200   |
| 4    | Piston            | 1.4021              | 1.4021              | 1.4021              | 1.4301    | 1.4401    |
| 5    | Lantern Bush      | GJL 200 + Phosphate | GJL 200 + Phosphate | GJL 200 + Phosphate | 1.4308*** | 1.4408*** |
| 6    | Valve Spindle     | 1.4021/St-42        | 1.4021/St-42        | 1.4021/St-42        | 1.4301    | 1.4401    |
| 7    | Double Piece Nut  | Ms-58               | Ms-58               | Ms-58               | 1.4301    | 1.4401    |
| 8    | Valve Ring        | Graphite            | Graphite            | Graphite            | Graphite  | Graphite  |
| 9    | Nut               | 8.8+Gal.            | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 10   | Nut               | 8.8+Gal.            | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 11   | Stud              | 8.8+Gal.            | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 12   | Lock Washer       | 8.8+Gal.            | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 13   | Belleville Washer | 50CrV4              | 50CrV4              | 50CrV4              | A2-70     | A2-70     |
| 14   | Piston Washer     | Ms-58               | Ms-58               | Ms-58               | 1.4301    | 1.4301    |

| DN |        |        | Dimensions |     |     | Assembly size |     |          |     |      |   |    |      |   |    |      |   |    |
|----|--------|--------|------------|-----|-----|---------------|-----|----------|-----|------|---|----|------|---|----|------|---|----|
| mm | inch   | Type   | L          | H   | A   | D             | g   | Hole Nr. | k   | PN16 |   |    | PN25 |   |    | PN40 |   |    |
|    |        |        |            |     |     |               |     |          |     | b    | f | l  | b    | f | l  | b    | f | l  |
| 15 | 1/2"   | YVN 15 | 130        | 105 | 100 | 95            | 45  | 4        | 65  | 14   | 2 | 14 | 16   | 2 | 14 | 16   | 2 | 14 |
| 20 | 3/4"   | YVN 20 | 150        | 120 | 120 | 105           | 58  | 4        | 75  | 16   | 2 | 14 | 18   | 2 | 14 | 18   | 2 | 14 |
| 25 | 1"     | YVN 25 | 160        | 138 | 140 | 115           | 68  | 4        | 85  | 16   | 2 | 14 | 18   | 3 | 14 | 18   | 2 | 14 |
| 32 | 1 1/4" | YVN 32 | 180        | 154 | 160 | 140           | 78  | 4        | 100 | 18   | 2 | 19 | 18   | 3 | 19 | 18   | 2 | 18 |
| 40 | 1 1/2" | YVN 40 | 200        | 186 | 180 | 150           | 88  | 4        | 110 | 18   | 3 | 19 | 18   | 3 | 19 | 18   | 2 | 18 |
| 50 | 2"     | YVN 50 | 230        | 211 | 200 | 165           | 102 | 4        | 125 | 20   | 3 | 19 | 20   | 3 | 19 | 20   | 2 | 18 |

\* For temperatures below -10°C, stud and nut material should be stainless steel

\*\*\*1.4401 for DN15 and DN20

\*\*\*\* Ck22 for DN15 and DN20



# Piston Valves

## DN 15 - 50

### Type: Class 150

### YVN Flanged

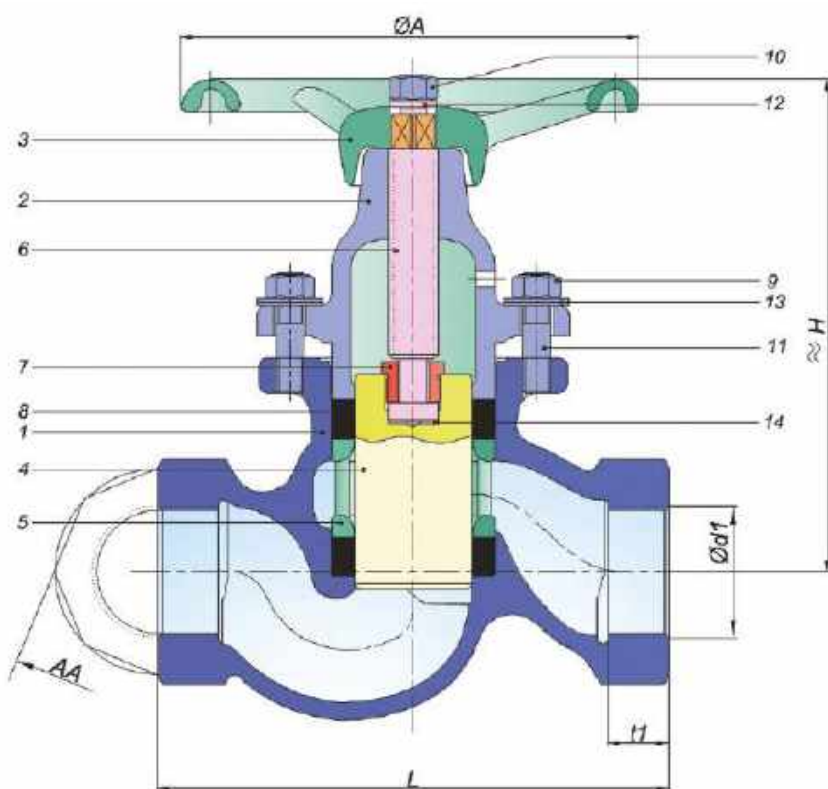
#### Fluid Types

All kinds of fluids such as water, hot water, high temperature hot water, steam, thermal oil, LPG, fuel oil, pressurized air, etc.

| Material Type  | Cast Steel      | St. Steel - CF8 | St. Steel - CF8M |
|----------------|-----------------|-----------------|------------------|
| Size           | DN15-50         | DN15-50         | DN15-50          |
| Pressure Class | Class 150       | Class 150       | Class 150        |
| Dimensions     | ANSI B16.10     | ANSI B16.10     | ANSI B16.10      |
| Assembly       | ANSI B16.5 - RF | ANSI B16.5 - RF | ANSI B16.5 - RF  |
| Temperature    | -10°C +400°C    | -10°C +400°C    | -10°C +400°C     |
| Material Code  | 7               | 9               | 9                |
| Order Code     | YPG.7F__00      | YPG.6F__00      | YPG.9F__00       |

| P.No | Part Name         | Cast Steel          | St. Steel | St. Steel  |
|------|-------------------|---------------------|-----------|------------|
| 1    | Body              | A-216 Grade WCB     | A-351-CF8 | A-351-CF8M |
| 2    | Bonnet            | A-216 Grade WCB     | A-351-CF8 | A-351-CF8M |
| 3    | Hand Wheel        | GJL 200             | GJL 200   | GJL 200    |
| 4    | Piston            | 1.4021              | 1.4301    | 1.4401     |
| 5    | Lantern Bush      | GJL 200 + Phosphate | 1.4308    | 1.4408     |
| 6    | Spindle           | 1.4021/St-42        | 1.4301    | 1.4401     |
| 7    | Split Nut         | Ms-58               | 1.4301    | 1.4401     |
| 8    | Sealing Ring      | Graphite            | Graphite  | Graphite   |
| 9    | Nut               | 8.8+Gal.            | A2-70     | A2-70      |
| 10   | Nut               | 8.8+Gal.            | A2-70     | A2-70      |
| 11   | Stud              | 8.8+Gal.            | A2-70     | A2-70      |
| 12   | Lock Washer       | 8.8+Gal.            | A2-70     | A2-70      |
| 13   | Belleville Washer | 50CrV4              | A2-70     | A2-70      |
| 14   | Piston Washer     | Ms-58               | 1.4301    | 1.4301     |

| Sizes | inch   | Type   | L   | H   | A   | D   | g    | f   | Hole Nr. | I    | k     | b    |
|-------|--------|--------|-----|-----|-----|-----|------|-----|----------|------|-------|------|
| 15    | 1/2"   | YVN 15 | 108 | 105 | 100 | 89  | 34.9 | 1.6 | 4        | 15.7 | 60.3  | 11.2 |
| 20    | 3/4"   | YVN 20 | 117 | 120 | 120 | 99  | 42.9 | 1.6 | 4        | 15.7 | 69.8  | 12.7 |
| 25    | 1"     | YVN 25 | 127 | 138 | 140 | 108 | 50.8 | 1.6 | 4        | 15.7 | 79.4  | 14.3 |
| 40    | 1 1/2" | YVN 40 | 165 | 186 | 180 | 127 | 73   | 1.6 | 4        | 15.7 | 98.4  | 17.5 |
| 50    | 2"     | YVN 50 | 203 | 211 | 200 | 152 | 91.9 | 1.6 | 4        | 19.1 | 120.6 | 19.1 |



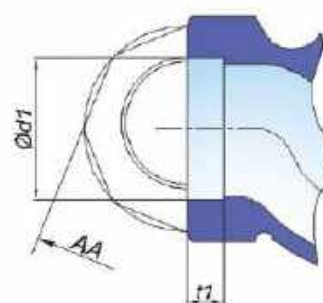
Screwed Type-YVMN

# Piston Valves

## DN 1/2"-2"

### Type: YVMN Screwed

### YVSN Socket Weld



Socket type – YVSN  
(For steel and stainless steel)

| Material Type        | Cast Iron                                | Cast Steel                                 | Stainless Steel                            |
|----------------------|------------------------------------------|--------------------------------------------|--------------------------------------------|
| Size                 | DN1/4"-2"                                | DN1/4"-2"                                  | DN1/4"-2"                                  |
| Pressure Class       | PN16                                     | PN40 DN 1/4"-2"<br>PN63 DN 1/4"-1"         | PN40 DN 1/4"-2"<br>PN63 DN 1/4"-1"         |
| Dimensions           | DIN EN 3202-4/M9<br>(Except DN 1/4")     | DIN EN 3202-4/M9<br>(Except DN 1/4")       | DIN EN 3202-4/M9<br>(Except DN 1/4")       |
| Assembly (Screwed)   | Screwed according to<br>DIN EN ISO 228-1 | Screwed according to<br>DIN EN ISO 228-1   | Screwed according to<br>DIN EN ISO 228-1   |
| Assembly (Socket)    | —                                        | Socketed according to<br>DIN EN 12760***** | Socketed according to<br>DIN EN 12760***** |
| Temperature          | -10°C +300 °C                            | -10°C * +400 °C                            | -10°C * +400 °C                            |
| Material Code        | 2                                        | 7                                          | 9                                          |
| Order Code (Screwed) | YPG.2M.__.00                             | YPG.7M.__.00                               | YPG.9M.__.00                               |
| Order Code (Socket)  | —                                        | YPG.7S.__.00                               | YPG.9S.__.00                               |

## Fluid Types

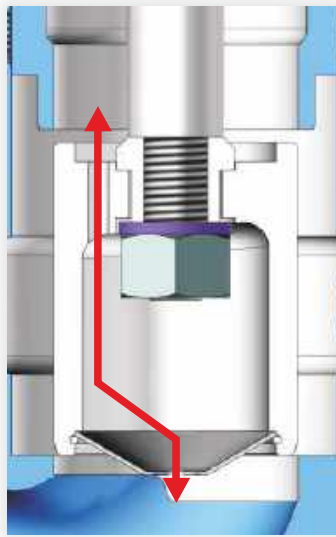
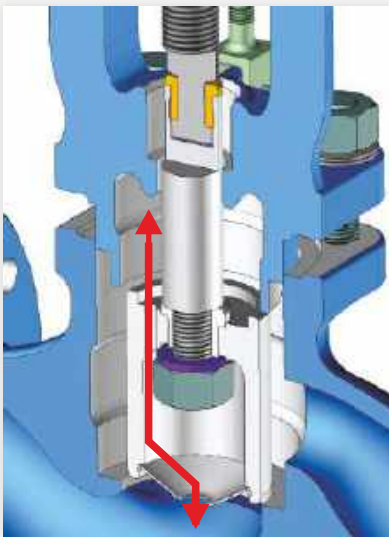
All kinds of fluids such as water, hot water, high temperature hot water, steam, thermal oil, LPG, fuel oil, pressurized air, etc.

| P.No | Part Name         | Cast Iron           | Cast Steel          | St. Steel | St. Steel |
|------|-------------------|---------------------|---------------------|-----------|-----------|
| 1    | Body              | GJL 250             | 1.0619              | 1.4308    | 1.4408    |
| 2    | Upper Bonnet      | GJL 250 ****        | 1.0619 ****         | 1.4308    | 1.4408    |
| 3    | Hand Wheel        | GJL 200             | GJL 200             | GJL 200   | GJL 200   |
| 4    | Piston            | 1.4021              | 1.4021              | 1.4301    | 1.4401    |
| 5    | Lantern Bush      | GJL 200 + Phosphate | GJL 200 + Phosphate | 1.4308*** | 1.4408*** |
| 6    | Valve Spindle     | 1.4021/St-42        | 1.4021/St-42        | 1.4301    | 1.4401    |
| 7    | Double Piece Nut  | Ms-58               | Ms-58               | 1.4301    | 1.4401    |
| 8    | Valve Ring        | Graphite            | Graphite            | Graphite  | Graphite  |
| 9    | Nut               | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 10   | Nut               | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 11   | Stud              | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 12   | Lock Washer       | 8.8+Gal.            | 8.8+Gal.            | A2-70     | A2-70     |
| 13   | Belleville Washer | 50CrV4              | 50CrV4              | A2-70     | A2-70     |
| 14   | Piston Washer     | Ms-58               | Ms-58               | 1.4301    | 1.4301    |

| DN |        | Dimensions                 |     |     | Assembly |          |        |         |        |
|----|--------|----------------------------|-----|-----|----------|----------|--------|---------|--------|
| mm | inch   | Type                       | L   | H   | A        | d1       |        | t1      |        |
|    |        |                            |     |     |          | Screwed  | Socket | Screwed | Socket |
| 6  | 1/4"   | YVMN 1/4"<br>YVSN 1/4"     | 85  | 105 | 100      | R 1/4"   | 14.2   | 10.5    | 10     |
| 10 | 3/8"   | YVMN 3/8"<br>YVSN 3/8"     | 85  | 105 | 100      | R 3/8"   | 17.6   | 12.5    | 10     |
| 15 | 1/2"   | YVMN 1/2"<br>YVSN 1/2"     | 100 | 105 | 100      | R 1/2"   | 22     | 15.5    | 10     |
| 20 | 3/4"   | YVMN 3/4"<br>YVSN 3/4"     | 120 | 120 | 120      | R 3/4"   | 27.5   | 16      | 13     |
| 25 | 1"     | YVMN 1"<br>YVSN 1"         | 135 | 138 | 140      | R 1"     | 34.5   | 19      | 13     |
| 32 | 1 1/4" | YVMN 1 1/4"<br>YVSN 1 1/4" | 160 | 154 | 160      | R 1 1/4" | 43     | 21      | 13     |
| 40 | 1 1/2" | YVMN 1 1/2"<br>YVSN 1 1/2" | 185 | 186 | 180      | R 1 1/2" | 49     | 21      | 13     |
| 50 | 2"     | YVMN 2"<br>YVSN 2"         | 220 | 211 | 200      | R 2"     | 61.5   | 26      | 16     |

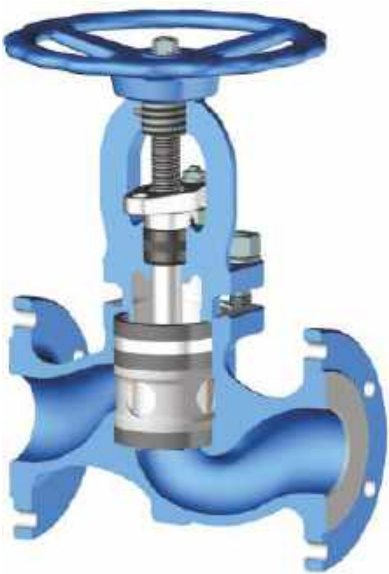
\* For temperatures below -10°C, stud and nut material should be stainless steel  
 \*\*\*1.4401 for DN15 and DN20  
 \*\*\*\* Ck22 for DN15 and DN20  
 \*\*\*\*\*NPT Screwed type is available according to ANSI 2.1 1960 on demand

# Balanced Piston Valves



## ■ Easy to operate:

*For balanced piston valves, top and bottom surfaces of the piston are in contact with fluid. In balance piston valves, the force applied by the fluid to the piston is determined by the valve shaft, not the piston. This keeps the fluid load on the piston at a low level, making it easy to open / close.*



## Sealing System

### ① Spindle Sealing

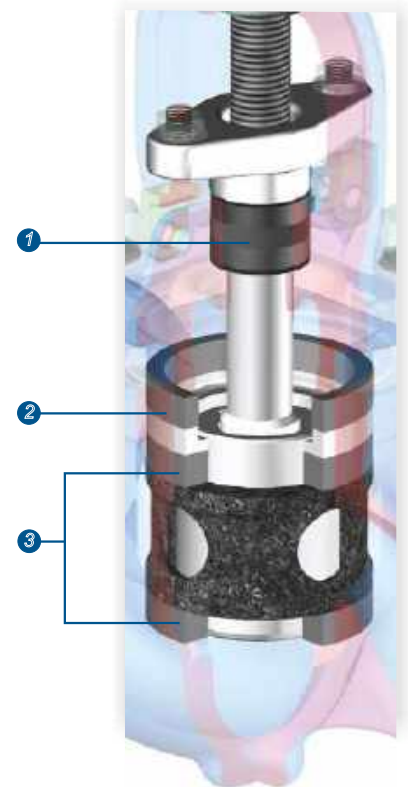
*The sealing between spindle and atmosphere is provided by stuffing box composed of 3 pieces of YX-GT rings.*

### ② Body Sealing

*The sealing between body and atmosphere is provided by 1 piece of YX-GT ring located between body and bonnet.*

### ③ Inner Sealing

*The inner sealing is provided by 2 pieces of specially manufactured YX-GT rings surrounding the piston elastically.*

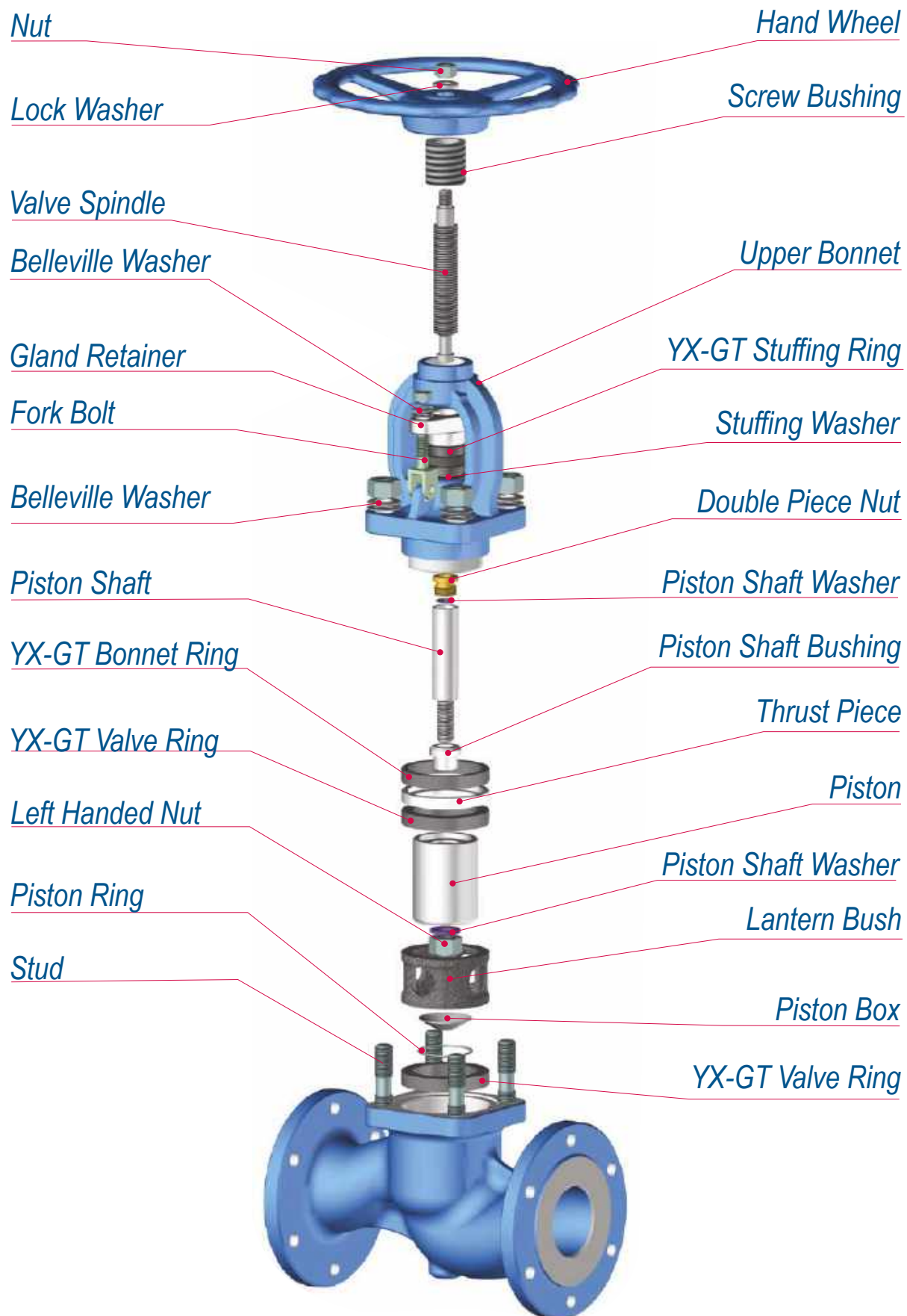


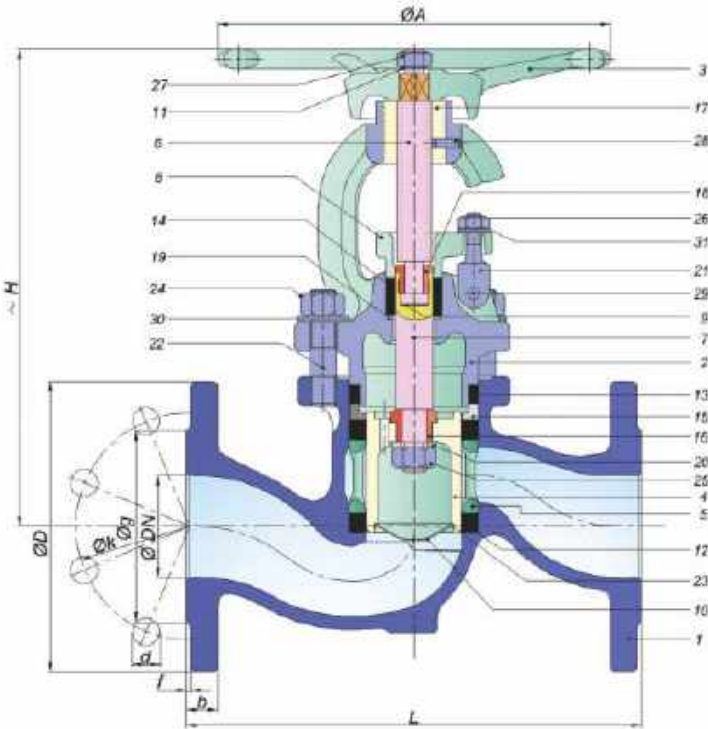
## ■ Maintenance Free

*High temperature resistant Belleville washers, one located on the bonnet and the other located under the stuffing box nuts, create a constant thrust on the rings. This compensates pressure and temperature variations and avoids loosening due to abrasion. An outstanding maintenance free sealing is achieved for a long service life.*



# Balanced Piston Valve YVNB 65-200





# Balanced Piston Valves

## DN 65 - 200

### Type: YVNB Flanged

| Material Type  | Cast Iron                          | Ductile Iron                       | Cast Steel                         | Stainless Steel                    |
|----------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Size           | DN65-200                           | DN65-200                           | DN65-200                           | DN65-200                           |
| Pressure Class | PN16                               | PN25                               | PN40                               | PN40                               |
| Dimensions     | DIN EN 558/1.serie                 | DIN EN 558/1.serie                 | DIN EN 558/1.serie                 | DIN EN 558/1.serie                 |
| Assembly       | Flanged according to DIN EN 1092-2 | Flanged according to DIN EN 1092-2 | Flanged according to DIN EN 1092-1 | Flanged according to DIN EN 1092-1 |
| Temperature    | -10°C +300 °C                      | -10°C +350 °C                      | -10°C* +400°C                      | -10°C* +400°C                      |
| Material Code  | 2                                  | 8                                  | 7                                  | 9                                  |
| Order Code     | YPG.2F__00                         | YPG.8F__00                         | YPG.7F__00                         | YPG.9F__00                         |

#### Fluid Types

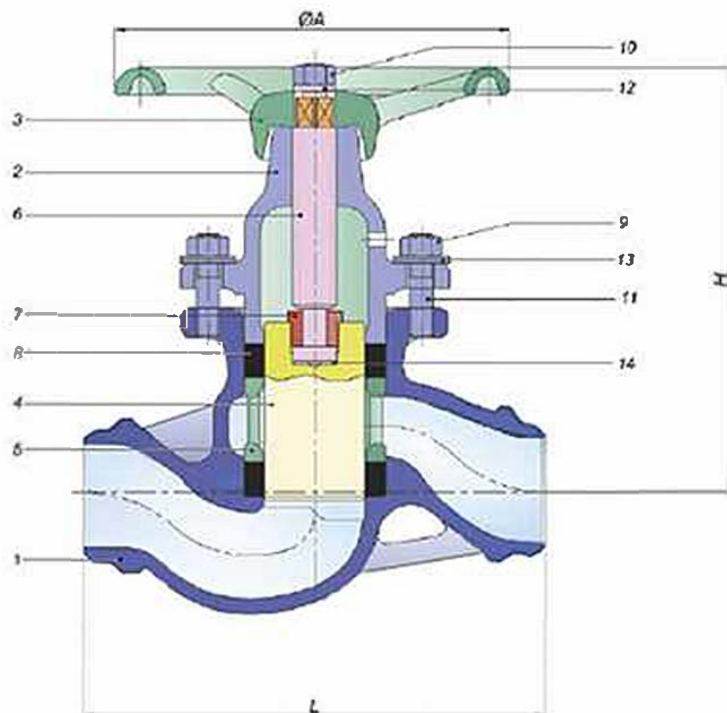
All kinds of fluids such as water, hot water, high temperature hot water, steam, thermal oil, LPG, fuel oil, pressurized air, etc.

| P.No | Part Name            | Cast Iron           | Ductile Iron        | Cast Steel          | St. Steel | St. Steel |
|------|----------------------|---------------------|---------------------|---------------------|-----------|-----------|
| 1    | Body                 | GJL 250             | 0.7040              | 1.0619              | 1.4308    | 1.4408    |
| 2    | Upper Bonnet         | GJL 250             | 0.7040              | 1.0619              | 1.4308    | 1.4408    |
| 3    | Hand Wheel           | GJL 200             | GJL 200             | GJL 200             | GJL 200   | GJL 200   |
| 4    | Piston               | 1.4016              | 1.4016              | 1.4016              | 1.4308    | 1.4408    |
| 5    | Lantern Bush         | GJL 200 + Phosphate | GJL 200 + Phosphate | GJL 200 + Phosphate | 1.4308    | 1.4408    |
| 6    | Valve Spindle        | St-42               | St-42               | St-42               | 1.4301    | 1.4401    |
| 7    | Piston Shaft         | 1.4021              | 1.4021              | 1.4021              | 1.4301    | 1.4401    |
| 8    | Gland Retainer       | 0.7040              | 0.7040              | 0.7040              | 1.4308    | 1.4408    |
| 9    | Piston Shaft Washer  | 1.4301              | 1.4301              | 1.4301              | 1.4301    | 1.4301    |
| 10   | Piston Box           | 1.4301              | 1.4301              | 1.4301              | 1.4301    | 1.4401    |
| 11   | Lock Washer          | 55Si7               | 55Si7               | 55Si7               | A2-70     | A2-70     |
| 12   | Valve Ring           | Graphite            | Graphite            | Graphite            | Graphite  | Graphite  |
| 13   | Bonnet Ring          | Graphite            | Graphite            | Graphite            | Graphite  | Graphite  |
| 14   | Stuffing Ring        | Graphite            | Graphite            | Graphite            | Graphite  | Graphite  |
| 15   | Thrust Piece         | GJL 200 + Phosphate | GJL 200 + Phosphate | GJL 200 + Phosphate | 1.4308    | 1.4408    |
| 16   | Piston Shaft Bushing | 1.4021              | 1.4021              | 1.4021              | 1.4301    | 1.4401    |

| P.No | Part Name                      | Cast Iron  | Ductile Iron | Cast Steel | St. Steel | St. Steel |
|------|--------------------------------|------------|--------------|------------|-----------|-----------|
| 17   | Screw Bushing                  | Ms-58      | Ms-58        | Ms-58      | Ms-58     | Ms-58     |
| 18   | Double Piece Nut               | Ms-58      | Ms-58        | Ms-58      | 1.4301    | 1.4301    |
| 19   | Stuffing Washer                | St-37+Gal. | St-37+Gal.   | St-37+Gal. | 1.4301    | 1.4401    |
| 20   | Piston Washer                  | Ms-58      | Ms-58        | Ms-58      | 1.4301    | 1.4401    |
| 21   | Fork Bolt                      | St-42      | St-42        | St-42      | 1.4301    | 1.4401    |
| 22   | Stud                           | 8.8+Gal.   | 8.8+Gal.     | 8.8+Gal.   | A2-70     | A2-70     |
| 23   | Piston Ring                    | 1.4301     | 1.4301       | 1.4301     | 1.4301    | 1.4301    |
| 24   | Nut                            | 8.8+Gal.   | 8.8+Gal.     | 8.8+Gal.   | A2-70     | A2-70     |
| 25   | Left Handed Nut                | A2-70      | A2-70        | A2-70      | A2-70     | A2-70     |
| 26   | Nut M10                        | 8.8+Gal.   | 8.8+Gal.     | 8.8+Gal.   | A2-70     | A2-70     |
| 27   | Nut                            | 8.8+Gal.   | 8.8+Gal.     | 8.8+Gal.   | A2-70     | A2-70     |
| 28   | Pin 6x15                       | St-42+Gal. | St-42+Gal.   | St-42+Gal. | A2-70     | A2-70     |
| 29   | Sloted pin 8x22                | 8.8        | 8.8          | 8.8        | 1.4301    | 1.4301    |
| 30   | Belleville Washer              | 50CrV4     | 50CrV4       | 50CrV4     | A2-70     | A2-70     |
| 31   | Belleville Washer (20/10.2x11) | 50CrV4     | 50CrV4       | 50CrV4     | A2-70     | A2-70     |

| DN  |        |          | Dimensions |     |     | Assembly size |    |     |          |    |     |   |      |    |     |          |    |     |   |      |    |     |          |    |     |   |
|-----|--------|----------|------------|-----|-----|---------------|----|-----|----------|----|-----|---|------|----|-----|----------|----|-----|---|------|----|-----|----------|----|-----|---|
| mm  | inch   | Type     | L          | H   | A   | PN16          |    |     |          |    |     |   | PN25 |    |     |          |    |     |   | PN40 |    |     |          |    |     |   |
|     |        |          |            |     |     | D             | b  | g   | Hole Nr. | d  | k   | f | D    | b  | g   | Hole Nr. | d  | k   | f | D    | b  | g   | Hole Nr. | d  | k   | f |
| 65  | 2 1/2" | YVNB 65  | 290        | 306 | 250 | 185           | 20 | 122 | 4        | 19 | 145 | 3 | 185  | 20 | 118 | 8        | 19 | 145 | 3 | 185  | 22 | 122 | 8        | 18 | 145 | 2 |
| 80  | 3"     | YVNB 80  | 310        | 327 | 250 | 200           | 22 | 138 | 8        | 19 | 160 | 3 | 200  | 22 | 132 | 8        | 19 | 160 | 3 | 200  | 24 | 138 | 8        | 18 | 160 | 2 |
| 100 | 4"     | YVNB 100 | 350        | 374 | 280 | 220           | 24 | 158 | 8        | 19 | 180 | 3 | 235  | 24 | 156 | 8        | 23 | 190 | 3 | 235  | 24 | 162 | 8        | 22 | 190 | 2 |
| 125 | 5"     | YVNB 125 | 400        | 447 | 320 | 250           | 26 | 188 | 8        | 19 | 210 | 3 | 270  | 26 | 184 | 8        | 28 | 220 | 3 | 270  | 26 | 188 | 8        | 26 | 220 | 2 |
| 150 | 6"     | YVNB 150 | 480        | 477 | 360 | 285           | 26 | 212 | 8        | 23 | 240 | 3 | 300  | 26 | 211 | 8        | 28 | 250 | 3 | 300  | 28 | 218 | 8        | 26 | 250 | 2 |
| 200 | 8"     | YVNB 200 | 600        | 561 | 400 | 340           | 30 | 268 | 12       | 23 | 295 | 3 | 360  | 30 | 274 | 12       | 28 | 310 | 3 | 375  | 34 | 285 | 12       | 30 | 320 | 2 |

\*For temperatures below -10°C, stud and nut material should be stainless steel



## Piston Valves

Type: YVNB Butt Welded

PN 40

DN 15 - 50

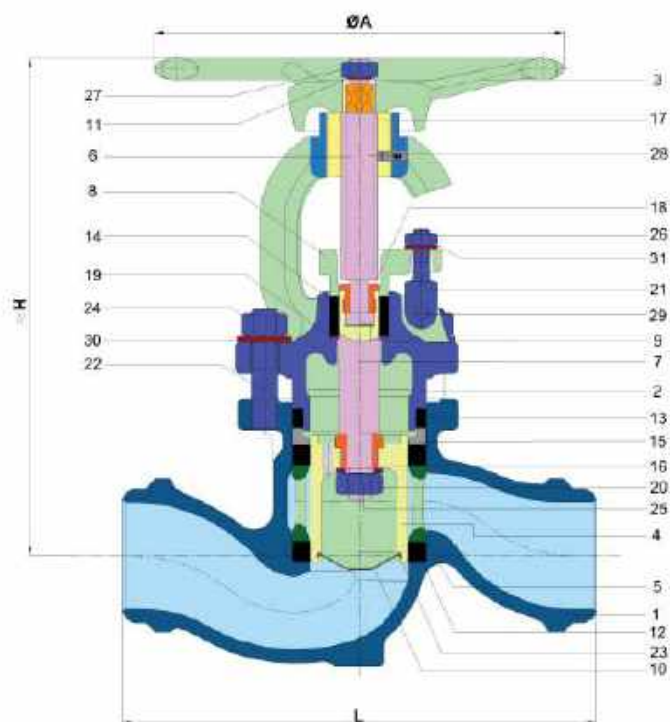
| Material Type  | Cast Steel                      | St. Steel - 1.4308              | St. Steel - 1.4408              |
|----------------|---------------------------------|---------------------------------|---------------------------------|
| Size           | DN15-50                         | DN15-50                         | DN15-50                         |
| Pressure Class | PN40                            | PN40                            | PN40                            |
| Dimensions     | DIN EN 12982                    | DIN EN 12982                    | DIN EN 12982                    |
| Assembly       | DIN EN 12627 according to fig.6 | DIN EN 12627 according to fig.6 | DIN EN 12627 according to fig.6 |
| Temperature    | -10°C +400°C                    | -10°C +400°C                    | -10°C +400°C                    |
| Material Code  | 7                               | 9                               | 9                               |
| Order Code     | YPG.7F__00                      | YPG.6F__00                      | YPG.9F__00                      |

## Fluid Types

All kinds of fluids such as water, hot water, high temperature hot water, steam, thermal oil, LPG, fuel oil, pressurized air, etc.

| P.No | Part Name         | Cast Steel         | St. Steel | St. Steel |
|------|-------------------|--------------------|-----------|-----------|
| 1    | Body              | 1.0619             | 1.4308    | 1.4408    |
| 2    | Upper Bonnet      | 1.0619 ****        | 1.4308    | 1.4408    |
| 3    | Hand Wheel        | GJL 200            | GJL 200   | GJL 200   |
| 4    | Piston            | 1.4021             | 1.4301    | 1.4401    |
| 5    | Lander Buch       | GJL 200 + Phosphor | 1.4308*** | 1.4408*** |
| 6    | Valve Spindle     | 1.4021/St-12       | 1.4301    | 1.4401    |
| 7    | Double Piece Nut  | M2-58              | 1.4301    | 1.4401    |
| 8    | Valve Ring        | Graphite           | Graphite  | Graphite  |
| 9    | Nut               | 8.8+Gal.           | A2-70     | A2-70     |
| 10   | Nut               | 8.8+Gal.           | A2-70     | A2-70     |
| 11   | Stud              | 8.8+Gal.           | A2-70     | A2-70     |
| 12   | Lock Washer       | 8.8+Gal.           | A2-70     | A2-70     |
| 13   | Belleville Washer | 50CrV4             | A2-70     | A2-70     |
| 14   | Piston Washer     | M2-58              | 1.4301    | 1.4301    |

| DN |        | Dimensions |     |     |     |
|----|--------|------------|-----|-----|-----|
| mm | inch   | Type       | L   | H   | A   |
| 15 | 1/2"   | YVN 15     | 130 | 105 | 100 |
| 20 | 3/4"   | YVN 20     | 150 | 120 | 120 |
| 25 | 1"     | YVN 25     | 160 | 138 | 140 |
| 32 | 1 1/4" | YVN 32     | 180 | 154 | 160 |
| 40 | 1 1/2" | YVN 40     | 200 | 186 | 180 |
| 50 | 2"     | YVN 50     | 230 | 211 | 200 |



# Balanced Piston Valves

## DN 65 - 200

### Type: YVNB Butt Welded

| Material Type  | Cast Steel                      | St. Steel - 1.4308              | St. Steel - 1.4408              |
|----------------|---------------------------------|---------------------------------|---------------------------------|
| Size           | DN65-200                        | DN65-200                        | DN65-200                        |
| Pressure Class | PN40                            | PN40                            | PN40                            |
| Dimensions     | DIN EN 12982                    | DIN EN 12982                    | DIN EN 12982                    |
| Assembly       | DIN EN 12627 according to fig.6 | DIN EN 12627 according to fig.6 | DIN EN 12627 according to fig.6 |
| Temperature    | -10°C +400°C                    | -10°C +400°C                    | -10°C +400°C                    |
| Material Code  | 7                               | 9                               | 9                               |
| Order Code     | YPG.7F__.00                     | YPG.6F__.00                     | YPG.9F__.00                     |

### Fluid Types

All kinds of fluids such as water, hot water, high temperature hot water, steam, thermal oil, LPG, fuel oil, pressurized air, etc.

| P.No | Part Name            | Cast Steel          | St. Steel | St. Steel |
|------|----------------------|---------------------|-----------|-----------|
| 1    | Body                 | 1.0619              | 1.4308    | 1.4408    |
| 2    | Bonnet               | 1.0619              | 1.4308    | 1.4408    |
| 3    | Hand Wheel           | GJL 200             | GJL 200   | GJL 200   |
| 4    | Piston               | 1.4016              | 1.4308    | 1.4408    |
| 5    | Lantern Bush         | GJL 200 + Phosphate | 1.4308    | 1.4408    |
| 6    | Spindle              | 1.4021/St-42        | 1.4301    | 1.4401    |
| 7    | Piston Shaft         | 1.4021              | 1.4301    | 1.4401    |
| 8    | Gland Retainer       | 0.7040              | 1.4308    | 1.4408    |
| 9    | Piston Shaft Washer  | 1.4301              | 1.4301    | 1.4301    |
| 10   | Piston Cone          | 1.4301              | 1.4301    | 1.4301    |
| 11   | Lock Washer          | 55Si7               | 1.4301    | 1.4301    |
| 12   | Valve Ring           | Graphite            | Graphite  | Graphite  |
| 13   | Bonnet Ring          | Graphite            | Graphite  | Graphite  |
| 14   | Stuffing Ring        | Graphite            | Graphite  | Graphite  |
| 15   | Thrust Piece         | GJL 200 + Phosphate | 1.4308    | 1.4408    |
| 16   | Piston Shaft Bushing | 1.4021              | 1.4301    | 1.4401    |

| P.No | Part Name         | Cast Steel | St. Steel | St. Steel |
|------|-------------------|------------|-----------|-----------|
| 17   | Screw Bushing     | Ms-58      | Ms-58     | Ms-58     |
| 18   | Split Nut         | Ms-58      | 1.4301    | 1.4301    |
| 19   | Stuffing Washer   | St-37+Gal. | 1.4301    | 1.4401    |
| 20   | Piston Washer     | 1.4301     | 1.4301    | 1.4401    |
| 21   | Fork Bolt         | St-42      | 1.4301    | 1.4301    |
| 22   | Stud              | 8.8+Gal.   | A2-70     | A2-70     |
| 23   | Piston Ring       | 1.4301     | 1.4301    | 1.4301    |
| 24   | Nut               | 8.8+Gal.   | A2-70     | A2-70     |
| 25   | Left Threaded     | A2-70      | A2-70     | A2-70     |
| 26   | Nut               | 8.8+Gal.   | 1.4301    | 1.4301    |
| 27   | Nut               | 8.8+Gal.   | A2-70     | A2-70     |
| 28   | Pin               | St-42      | A2-70     | A2-70     |
| 29   | Sloted Pin        | St-42      | 1.4301    | 1.4301    |
| 30   | Belleville Washer | 50CrV4     | 1.4301    | 1.4301    |
| 31   | Belleville Washer | 50CrV4     | 1.4301    | 1.4301    |

| DN  |        |          | Dimensions |     |     |
|-----|--------|----------|------------|-----|-----|
| mm  | inch   | Type     | L          | H   | A   |
| 65  | 2 1/2" | YVNB 65  | 290        | 306 | 250 |
| 80  | 3"     | YVNB 80  | 310        | 327 | 250 |
| 100 | 4"     | YVNB 100 | 350        | 374 | 280 |
| 125 | 5"     | YVNB 125 | 400        | 447 | 320 |
| 150 | 6"     | YVNB 150 | 480        | 477 | 360 |
| 200 | 8"     | YVNB 200 | 600        | 561 | 400 |

# Piston Valves with Pneumatic Actuators DN15 - DN100 Type: YVN, YVNB, YVMN, YVSN

Actuator types:

1. Single acting spring return
2. Double acting

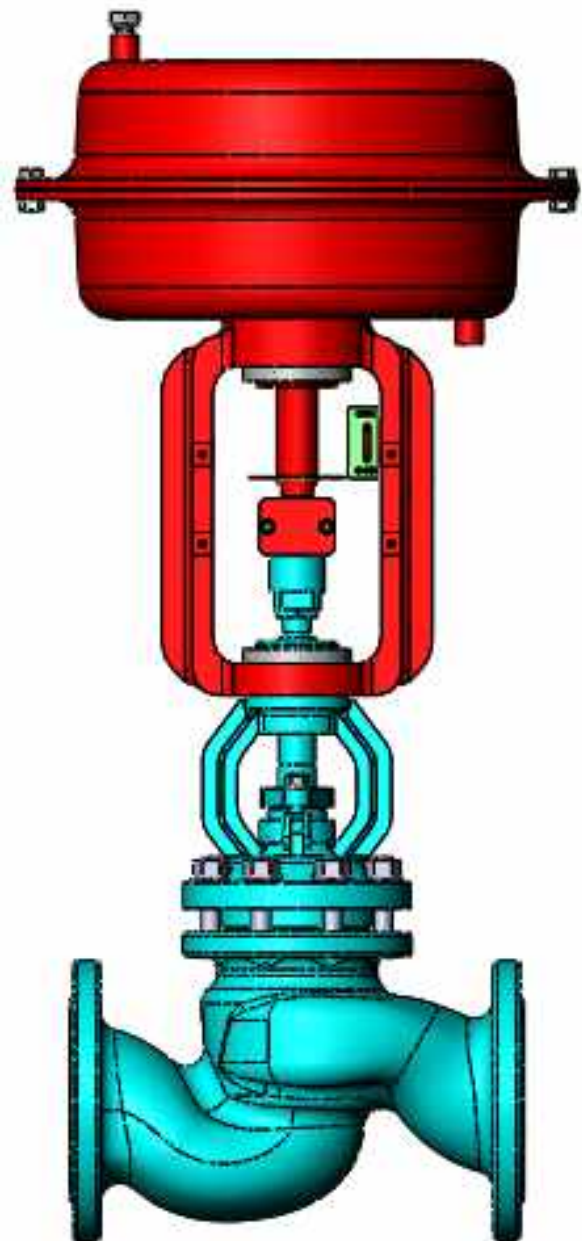
Standard air connection:  
NPT 1/4" - 18

Upon request other  
connections (BSP 1/4", ...) are available

Control types:

1. On / off
2. With regulating lantern

Suitable to mount positioner



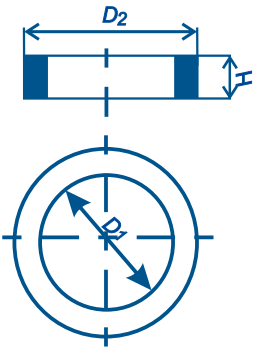
# Piston Valve Rings

## Piston Valve Ring Size

| YVN YX-GT 15-50                          |                       | Size                            |                                 |            |
|------------------------------------------|-----------------------|---------------------------------|---------------------------------|------------|
| Model                                    | Used Areas            | D <sub>2</sub> (Outer Diameter) | D <sub>1</sub> (Inner Diameter) | H (Height) |
| YVN YX-GT 15<br>YVMN 1/2", YVSN 1/2"     | Sealing Ring (2 pcs.) | 23.5                            | 15                              | 8          |
| YVN YX-GT 20<br>YVMN 3/4", YVSN 3/4"     | Sealing Ring (2 pcs.) | 30                              | 20                              | 9.3        |
| YVN YX-GT 25<br>YVMN 1", YVSN 1"         | Sealing Ring (2 pcs.) | 38                              | 25                              | 10.6       |
| YVN YX-GT 32<br>YVMN 1 1/4", YVSN 1 1/4" | Sealing Ring (2 pcs.) | 45                              | 30                              | 14.6       |
| YVN YX-GT 40<br>YVMN 1 1/2", YVSN 1 1/2" | Sealing Ring (2 pcs.) | 58                              | 40                              | 14,6       |
| YVN YX-GT 50<br>YVMN 2", YVSN 2"         | Sealing Ring (2 pcs.) | 70                              | 50                              | 16         |

## Balanced Piston Valve Ring and Stuffing Box Ring Size

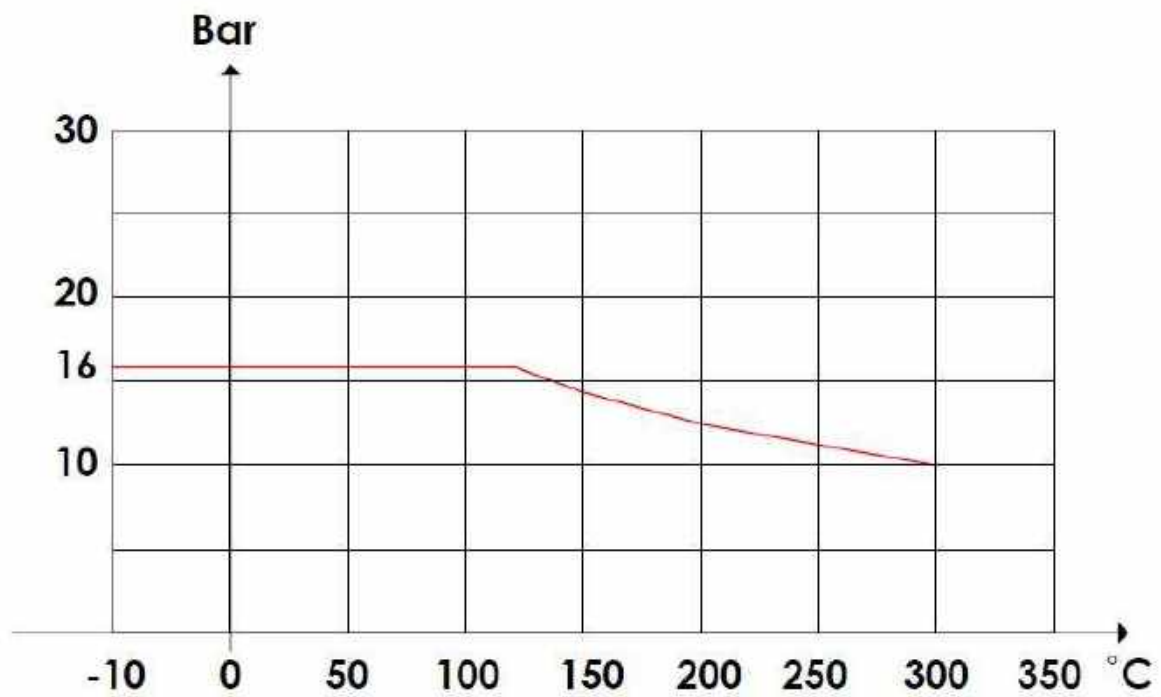
| YVNB YX-GT 65-200 |                            | Size                            |                                 |            |
|-------------------|----------------------------|---------------------------------|---------------------------------|------------|
| Model             | Used Areas                 | D <sub>2</sub> (Outer Diameter) | D <sub>1</sub> (Inner Diameter) | H (Height) |
| YVNB YX-GT 65     | Bonnet Ring (1 pc.)        | 82                              | 69                              | 10         |
|                   | Sealing Ring (2 pcs.)      | 82                              | 60                              | 13,3       |
|                   | Stuffing Box Ring (3 pcs.) | 36                              | 24                              | 8          |
| YVNB YX-GT 80     | Bonnet Ring (1 pc.)        | 94                              | 80                              | 10         |
|                   | Sealing Ring (2 pcs.)      | 94                              | 70                              | 14.6       |
|                   | Stuffing Box Ring (3 pcs.) | 36                              | 24                              | 8          |
| YVNB YX-GT 100    | Bonnet Ring (1 pc.)        | 112                             | 100                             | 11         |
|                   | Sealing Ring (2 pcs.)      | 112                             | 90                              | 14.6       |
|                   | Stuffing Box Ring (3 pcs.) | 46                              | 30                              | 10         |
| YVNB YX-GT 125    | Bonnet Ring (1 pc.)        | 135                             | 121                             | 13         |
|                   | Sealing Ring (2 pcs.)      | 135                             | 110                             | 16         |
|                   | Stuffing Box Ring (3 pcs.) | 46                              | 30                              | 10         |
| YVNB YX-GT 150    | Bonnet Ring (1 pc.)        | 155                             | 141                             | 13         |
|                   | Sealing Ring (2 pcs.)      | 155                             | 130                             | 17,3       |
|                   | Stuffing Box Ring (3 pcs.) | 46                              | 30                              | 10         |
| YVNB YX-GT 200    | Bonnet Ring (1 pc.)        | 200                             | 184                             | 15         |
|                   | Sealing Ring (2 pcs.)      | 200                             | 170                             | 18.6       |
|                   | Stuffing Box Ring (3 pcs.) | 46                              | 30                              | 10         |



| Material code | Body            | Bonnet          | Colour of body    |
|---------------|-----------------|-----------------|-------------------|
| II            | cast iron       | cast iron       | grey              |
| III           | ductile iron    | ductile iron    | green             |
| VII           | cast steel      | cast steel      | blue              |
| Xb            | stainless steel | stainless steel | polished, pickled |

# PISTON VALVE

## Temperature Pressure Diagram

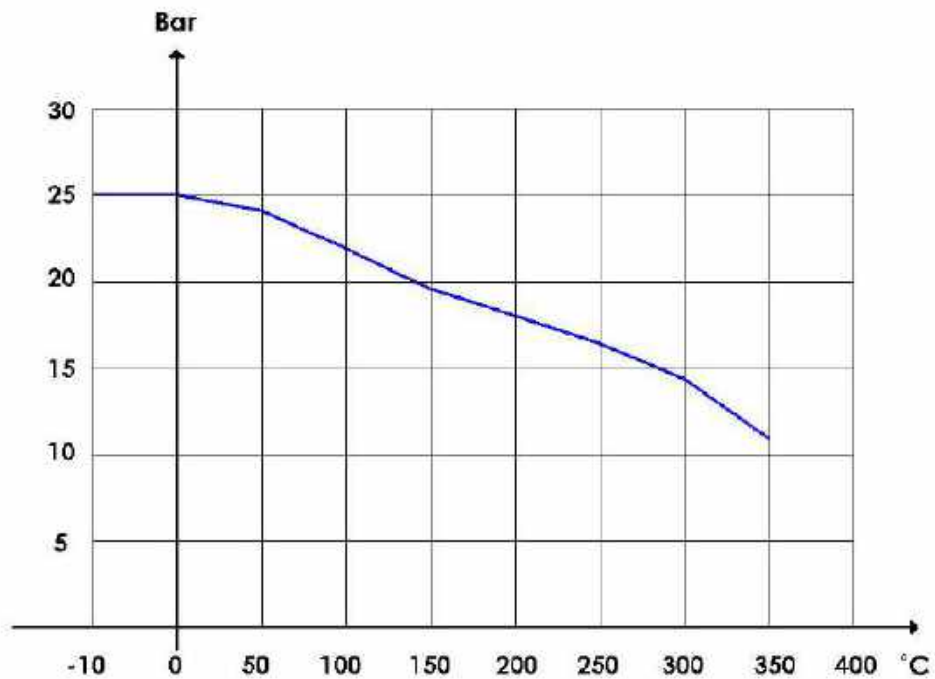


**Pressure Class : PN16**

**Material : GJL 250**

## PISTON VALVE

### Temperature Pressure Diagram



**Pressure Class : PN25**

**Material : 0.7040**

## PISTON VALVE

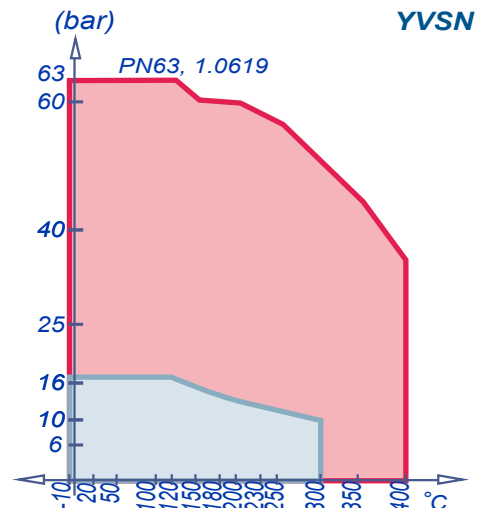
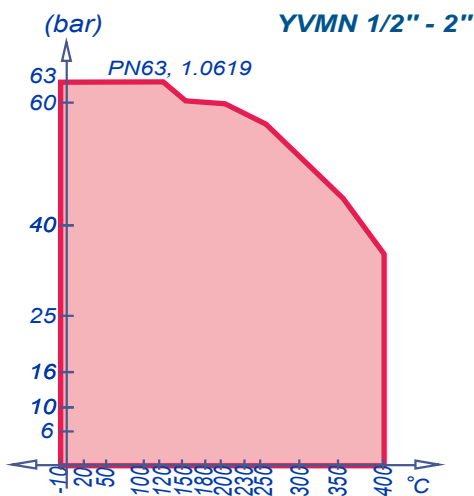
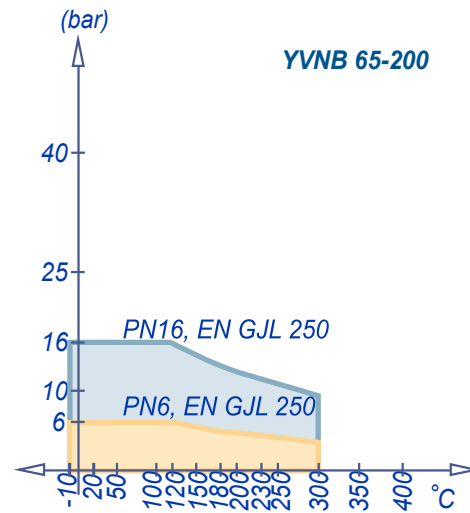
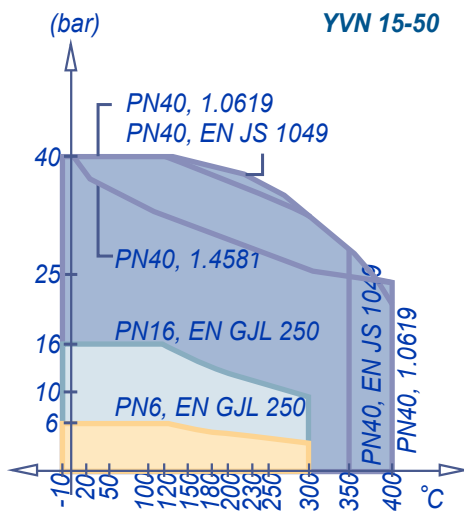
### Temperature Pressure Diagram



**Pressure Class : PN40**

**Material : 1.0619**

# Pressure / Temperature Diagrams



## Pressure drop calculation in piston valves

| DN  | $\xi$ | $K_v$ |
|-----|-------|-------|
| 15  | 4     | 4,5   |
| 20  | 4     | 8     |
| 25  | 4     | 12,5  |
| 30  | 4     | 20,5  |
| 40  | 4     | 32    |
| 50  | 4     | 50    |
| 65  | 6     | 69    |
| 80  | 6     | 104   |
| 100 | 6     | 163   |
| 125 | 7,2   | 233   |
| 150 | 7,2   | 335   |
| 200 | 7,5   | 582   |

Pressure drop formula  $\Delta p =$  pressure drop (mmWC)

$$\Delta p = \xi \frac{W^2}{2g} \rho \text{ (mmWC)}$$

$$\Delta p = \left( \frac{Q}{K_v} \right)^2 \times \frac{\rho}{1000}$$

$\xi$  : zeta value

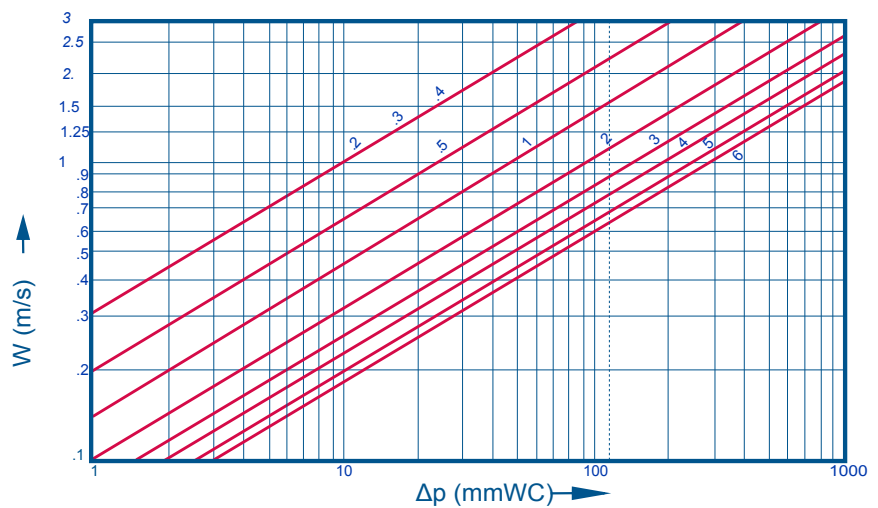
$W$  : fluid velocity, m/s

$2g$  : 20 m/s<sup>2</sup>

$\rho$  : 1000 kg/m<sup>3</sup>

$K_v$  : flow coefficient, m<sup>3</sup>/h. For  $\Delta p = 10$  mWC

$Q$  : flow rate, m<sup>3</sup>/h

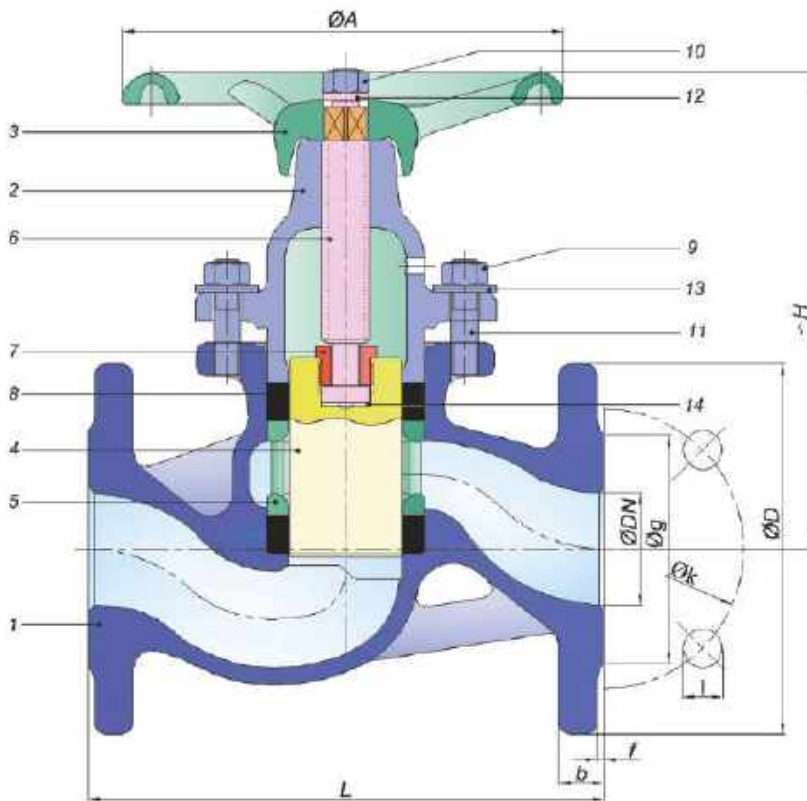


# Maintenance - Repair Instructions

## Maintenance of Valves and Ring Replacement

*In case a valves causes leakage in the piping system, first put the valve in fully closed position. Then tighten the nuts located on the bonnet and the leakage will disappear. If leakage still continues then the rings should be replaced.*

*Replacement can be done easily and in a short time. There is no need to remove the seat or grind any part. It's not necessary to remove the valve from the piping system. Rings can be replaced as follows:*



## Mounting, Dismounting and Maintenance Instructions of Piston Valves

- 1- Adjust the valve to fully open position, remove the bonnet fastening nuts (9).
- 2- Turn the handwheel (3) clockwise, the bonnet (2) will rise and be released from the studs (11).
- 3- Turn the bonnet a few degrees and place it on top of studs. Turn handwheel clockwise, piston (4) will get out of upper ring (8).
- 4- Remove the upper ring.
- 5- Remove the lantern bush (5).
- 6- Remove the lower ring.
- 7- Clean the inner part of the valve and the surface to which the rings contact.
- 8- Remove the nut (10) on the handwheel after the valve was put in closed position. Remove the handwheel and turn the valve spindle (6) by your hand. Take the spindle and the piston together out of the bonnet.
- 9- By removing the two piece nut (7), the piston and the shaft may be separated from each other.
- 10- By using appropriate tool suitable to ring dimensions, place the new lower ring into its location.
- 11- Place the lantern bush.
- 12- Place the new upper ring.
- 13- Place the bonnet, the piston will be guided by the upper ring. Thrust bonnet into its position and screw the nuts a few turns.
- 14- First turn the wheel to reach closed position, then turn it to reach open position, the bonnet will slide to its final position. Tighten the nuts.
- 15- After the valve is connected to piping system, close the valve and fasten the nuts (9) a little more.

# Reliable on Fire

YVN - YVNB Series are Fire Safe

*In September 2013, our YVN and YVNB series cast steel piston valves have been fire tested under fire according to API 6FA:2008 and ISO 10497:2010, with the guidance of notified body, TÜV SÜD.*

*Our valves have been passed the tests with extremely good results and approved as “fire safe” valves.*

CERTIFIKAT ♦ CERTIFICADO ♦ CERTIFICAT

  
Industrial Service

CERTIFICATE / SERTİFİKA

Fire test on PN 40 (30 #) and DN 50 (2") PISTON Valve  
PN 40 (300 #), DN 50 (2") PİSTONLU Vana Yangın Testi

|                                           |                                                                                                                    |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| User / Kullanıcı                          | General / Genel                                                                                                    |
| Project No. / Proje No                    | 13-B-00286/01                                                                                                      |
| Manufacturer / İmalatçı                   | YAKACIK VALF SAN. ve TİC. A.Ş. Cumhuriyet mah. Abdi İpekçi Cad. No:2 / 34876 Yakacak / Kartal / İstanbul / TÜRKİYE |
| Manufact. project no. / İmalatçı Proje no | OE21082013-1                                                                                                       |
| Manufacturer year / İmalat Yılı           | 2013                                                                                                               |
| Drawings No. / Resim No                   | In the related YAKACIK drawing No: YPG.7F.50.00<br>YAKACIK İşlet Resim No : YPG.7F.50.00                           |
| Max working pres. / Max. Çalışma Basıncı  | 40 Bar ( PN 40 (300 #) )                                                                                           |
| Related test standart / Test Standardı    | API 6FA:2008 and ISO 10497:2010                                                                                    |

Valve which has properties PN 40 (300 #) and DN 50 (2") PISTON Valve has been Fire tested According to related standards API 6FA and ISO 10497 under observation of TÜV SÜD. Inspector in the YAKACIK Factory for general using purpose. After the satisfactory results related Fire Test report of valve has been approved by TÜV Inspector. TÜV SÜD. Inspector prepared and approved this certificate Due to Client request.

DN 50 (2") Pistonlu Vana için, PN 40 (300 #) için, API 6FA:2008 ve ISO 10497:2010 standartlarına göre yapılan yangın testi sonucu başarılıdır.



CERTIFIKAT ♦ CERTIFICADO ♦ CERTIFICAT

  
Industrial Service

CERTIFICATE / SERTİFİKA

Fire test on PN 40 (30 #) and DN 100 (4") PISTON Valve  
PN 40 (300 #), DN 100 (2") PİSTONLU Vana Yangın Testi

|                                           |                                                                                                                    |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| User / Kullanıcı                          | General / Genel                                                                                                    |
| Project No. / Proje No                    | 13-B-00286/02                                                                                                      |
| Manufacturer / İmalatçı                   | YAKACIK VALF SAN. ve TİC. A.Ş. Cumhuriyet mah. Abdi İpekçi Cad. No:2 / 34876 Yakacak / Kartal / İstanbul / TÜRKİYE |
| Manufact. project no. / İmalatçı Proje no | OE21082013-2                                                                                                       |
| Manufacturer year / İmalat Yılı           | 2013                                                                                                               |
| Drawings No. / Resim No                   | In the related YAKACIK drawing No: YPG.7F.81.00<br>YAKACIK İşlet Resim No : YPG.7F.81.00                           |
| Max working pres. / Max. Çalışma Basıncı  | 40 Bar ( PN 40 (300 #) )                                                                                           |
| Related test standart / Test Standardı    | API 6FA:2008 and ISO 10497:2010                                                                                    |

Valve which has properties PN 40 (300 #) and DN 100 (4") PISTON Valve has been Fire tested According to related standards API 6FA and ISO 10497 under observation of TÜV SÜD. Inspector in the YAKACIK Factory for general using purpose. After the satisfactory results related Fire Test report of valve has been approved by TÜV Inspector. TÜV SÜD. Inspector prepared and approved this certificate Due to Client request.

DN 100 (4") Pistonlu Vana için, PN 40 (300 #) için, API 6FA:2008 ve ISO 10497:2010 standartlarına göre yapılan yangın testi sonucu başarılıdır.



# Parameters Used for Valve Orders

*It is important that you should specify the parameters stated below to choose the suitable valve. Please contact us for unclear issues.*

1- Valve Type

2- Quantity

3- Valve Size

4- Max. Operating Pressure

5- Max. and Min. Operating Temperatures

6- Connection Type

*(Flanged, Screwed, Socket or Butt Welded)*

7- Fluid

*Water, hot water, air, gas, steam, LPG, oil, thermal oil, acid, base, etc.  
(Concentration and other specifications)*

8- Actuation Type

9- Using Purpose

*Fully open or fully closed, throttling element*

10- Special requests

*(Material, control, etc.)*

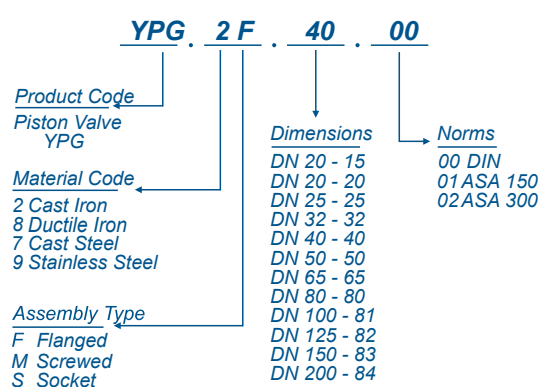


## VALVE ORDER

You can use the following encoding system in your orders.

Example: YPG.2F.40.00

Piston Valve, Cast Iron, Flanged, DN40, DIN Norm



## YALF Products

- **Piston Valves DN15 - DN50**
- **Balanced Piston Valves DN65 - DN200**
- **YX - GT Ring Sets DN15 - DN200**
- **Bellows Sealed Globe Valves DN15 - DN300**
- **Globe Valves DN15 - DN300**
- **Boiler Blowdown Valves DN32 - DN50**
- **Ball Valves DN15 - DN400**
- **T Type Strainers DN15 - DN300**
- **Y Type Strainers DN15 - DN500**
- **Expansion Joints DN25 - DN2500**
- **Cryogenic Valves DN15 - DN50**
- **Manometer Cocks 1/2"**
- **Ball Valves (for natural gas) DN15 - DN400**
- **Ball Valves Monoball DN15 - DN100**
- **Check Valves DN15 - DN300**
- **Disc Check Valves DN25 - DN100**
- **Dual Plate Check Valves DN40 - DN400**
- **Butterfly Valves DN32 - DN500**
- **Level Gauges YPBR - YUPR - YUPT**
- **Transparent Gauge Glass**
- **Safety Valves DN 20x32 - DN 100x150**
- **Fire Hydrants DN80 - DN150**



ISO 9001-2015

QUALITY MANAGEMENT SYSTEM



AD 2000 - W 0

MANUFACTURING QUALIFIED CERTIFICATE



CE 0045

PED 2014/68/EU



FIRE SAFE

BALL / PISTON VALVES



ATEX



TA LUFT



EAC