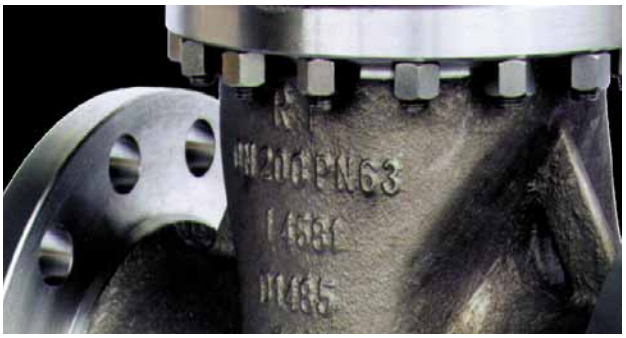
# EN DIN




## Gate Valves
## Swing Check Valves

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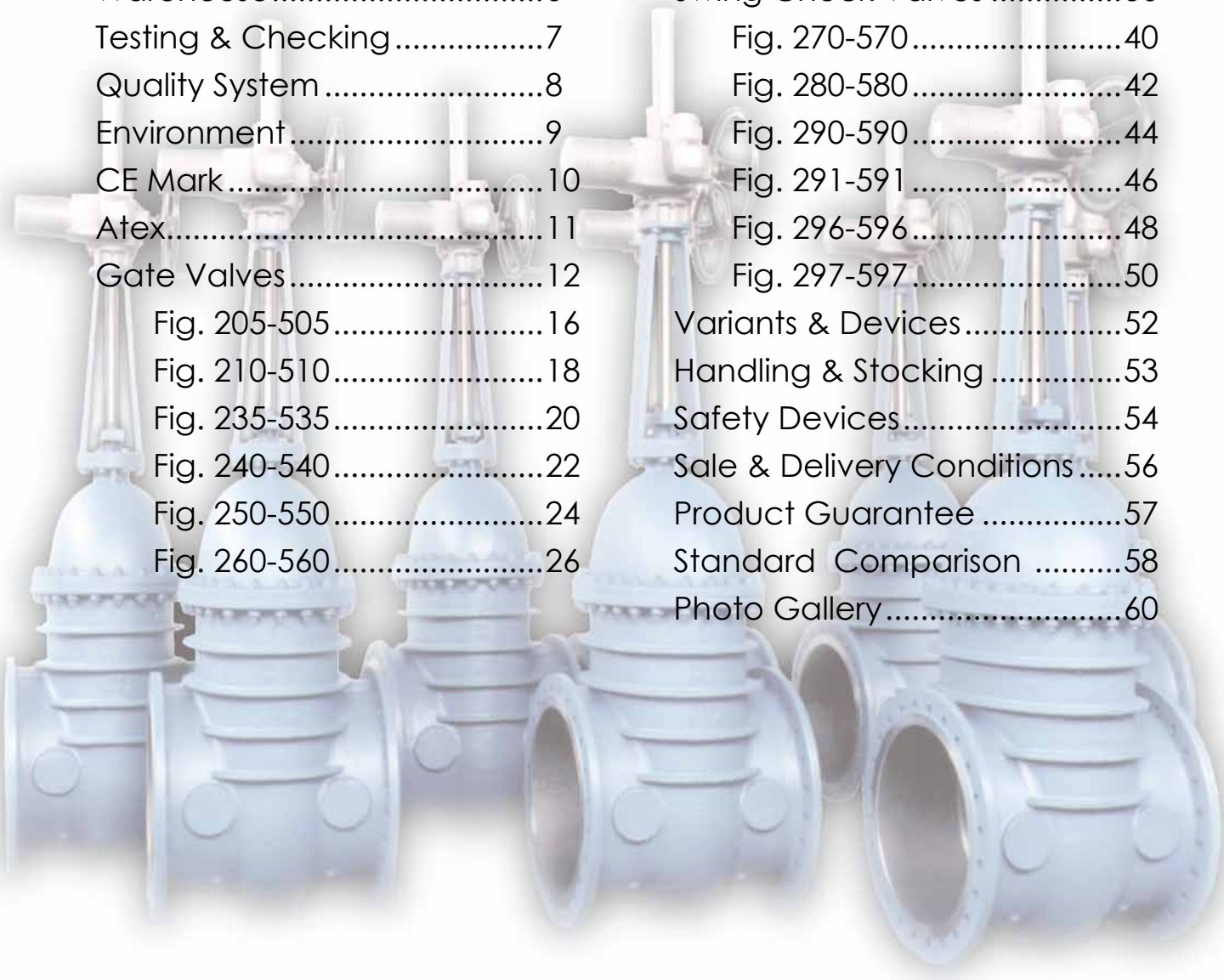

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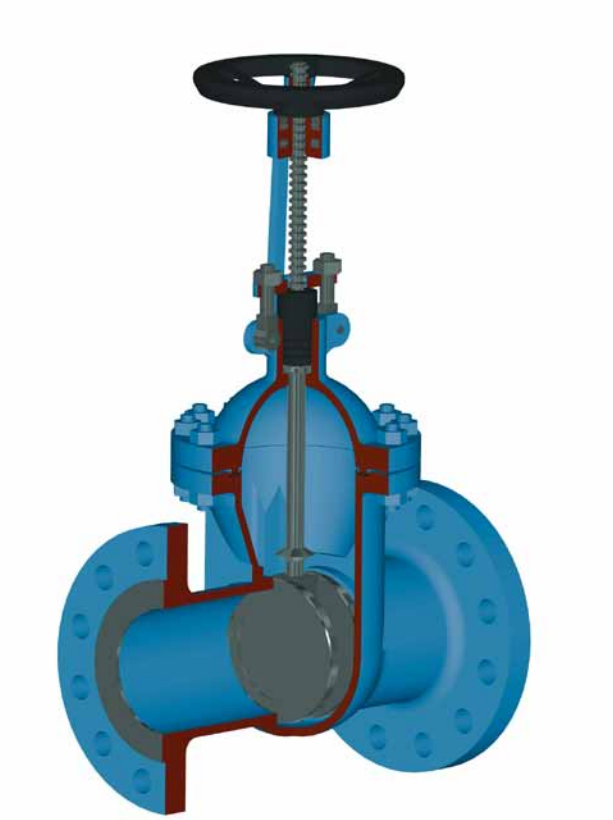
# Company Profile

Since from our foundation in the year 1947, we produce valves for industrial applications.
The standard production range covers the sizes from DN 50 up to DN 1000 for pressure rating up to PN 320.
A long experience in making valve with the most advanced technologies guarantees a top quality product with a wide range of solutions for many different applications.
For these reasons, today, the valves produced by us are widely used in chemical, petrochemical, food, gases, power generation, water treatment and distribution plants in many countries.
The design, experiment, manufacturing, and test of the products are done under one roof in strict accordance with the relevant national standards and engineering rules to ensure an easy installation, maintenance, replacing and as guarantee of a high product quality and long durability.
The quality system is in compliance whit the EN ISO 9001 standard and has been approved since the year 1993.
The company energies and resources have always been addressed to the research of new solutions and to the acquisition of most advanced technologies offered by the market, in order to achieve a constant evolution of the valve performance and quality. Project innovations, performances and confidence improvement, assurance and easy maintenance are criteria always applied in the production.
A special program for environmental protection guarantee the design and the manufacturing of products with the lowest impact for the environment obtainable with the technologies now available.

# Engineering

We provides the complete design of all the products in our studios whit the most advanced technologies.
All the valves are accurately designed totally according to last editions of DIN, EN and ISO standards. With the new releases of reference standards the products are updated to meet the new requirements.
A CAD - CAM system aid the technicians to develop the project and to produce the detailed drawings of the complete valve and subparts: on request we can provide quickly to our customer all drawings that they need. All the characteristics are obtained and verified with multiple calculation to reach the optimal performances.
A specific software developed according to the current engineering rules (DIN 3840 o EN 12516) allow the technicians to determine in advance the pressure effects on valves body: the stress and the forces generated are calculated to verify the material resistance in working conditions.
The prototype of a new product is subject



to several and intensive test:

- the quality of the casting is verified whit X-ray and with magnetic particle or dye liquids, to determine if the heating method is correct and the final quality level is in compliance whit the requirements;
- the behaviour of the valve material is verified in standard working conditions during a long time period whit an intensive pressure test;
- the resistance of all valve components is verified in standard working conditions with multiple operations.

# Manufacturing

We makes our products on latest production equipment.
The CNC machines are used in making of both valve bodies and inner parts. This is a guarantee for an accurate and precise realisation in accordance with design characteristics and a perfect interchangeability and substitutability of all valve components.
These machining systems permit to reach the top quality of the products: the finish and the precision of machined surfaces are the best that can be obtained whit latest technologies.

The welding process is totally automated, to obtain the best quality of chemical and mechanical characteristics. Stainless steels, duplex, stellite, Monel, Hastelloy, Inconel and all other alloyed materials are overlay welded on the seats maintaining on the seats maintaining they characteristics of resistance to corrosion and temperature with the highest hardness.
The easy and quick assembly is the main target of all other steps: a short assembly time is also a guarantee for the customer of a low cost and easy maintenance.

Our technicians survey with attention the assembly step to ensure that each components have no defects, each valve is correctly assembled, and the final product is totally in accordance with design characteristics.
Also the bolts tightening is performed in controlled condition: each bolt is tightened to the exactly required torque to guarantee the perfect tightness of the bolted connection. All our technicians and workers are well qualified and experienced and guarantee together with up to date equipment a high and constant quality of the product.

# Warehouse

In our warehouse a big stock of raw materials and work in progress is stored. A large covered area is used only to store the materials.
All arriving goods are subject to rigid tests and controls according to Quality Assurance Manual to guarantee that no defective material shall be used in the production.
The stock level is constantly monitored and the acquired customer's orders are considered for the requirement of row materials. The orders to the qualified suppliers are placed on the basis of MRP (Manufacturing Requirements Program) results produced by the data elaboration of the bill of materials, the minimum programmed stock levels and the suppliers standard delivery times.

The availability of row material and the status of work in progress are updated every day with the orders received from the customers and the data from the production: in this way we can inform the customer in each moment about the order situation, and can guarantee a punctual delivery. The raw materials are stored by appropriate methods to preserve their quality for a long time and their conditions and conservation are constantly monitored.
All the stored materials, after the inspections, are correctly identified to prevent an improper use. With these methods the traceability for each valve component and the related material certificates is guaranteed.

# Testing & Checking

During the stages of manufacturing process, all components are subjected to rigid quality controls according to our Quality Control Plans and DIN, EN and ISO applicable standards.
All completed valves, before leaving the factory have undergone to several tests on up to date equipment.
The testing equipment are regularly calibrated according to formal procedures with the reference to samples certified by official testing laboratories (Sit, Namas,etc.).
These equipment permits to our technicians to perform all the required tests like dimensional checks, strength tests and tightness tests.
By these methods we can guarantee that 100% of the valves delivered to the customers are completely in conformity with the requirements of Quality Control Plans and reference standards.

Apposite Quality Control Plans are predisposed for valves ordered for special applications (ex. gas, flammable fluids, etc.) or subject particular regulations (TRB, TRD, TRbF, etc.).
The know how of our personnel employed in the tests is verified and certified by an independent authority according to the current regulations.
All the performed tests are certified according to EN 10204.

# Quality System

We have done of the total quality one of its firm missions. Since the year 1993 the Quality Assurance System have been certified according to EN ISO 9001 standards.
Well-qualified personnel are employed in each stage of the production process, from the reception of row materials up to delivery of the products. Periodically the personnel are subjected to refresher courses and his technical capabilities are verified.
All the stored materials, after the inspections, are correctly identified to prevent an improper usage.
During the production the material identification and traceability is guaranteed by appropriate methods. The origin certificates of row material are recorded to guarantee the traceabilty for each valve component. The goods conformity to the applicable standards and to the customer's technical specifications are guaranteed and certified according to EN 10204. The order situation, availability and the advancing state of work are brought up to date in real time.
The Quality System is approved and certified by independent authorities also as suitable in the production of valves for special application like steam or dangerous fluids.


CERTIFICATO

R.T. VALVOLE INDUSTRIALI S.r.l.

UNI EN ISO 9001:2008


CERTIFICATE

R.T. VALVOLE INDUSTRIALI S.R.L

AD 2000-Merkblatt HP 0 / HP100R / A4 and EN ISO 3834-3

Pressure Equipment Directive 97/23/EC

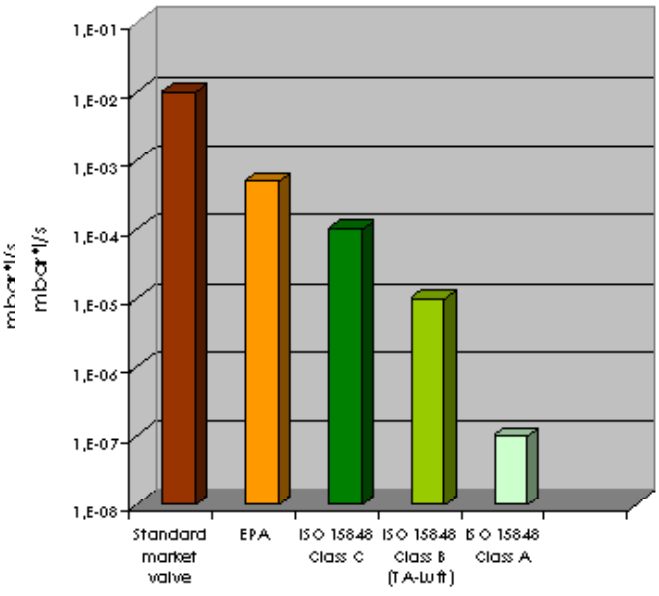
APPROVALS

| Reference standard | Issuing body |
|---|---|
| ISO 9001:2008 | TUV |
| AD 2000 – M. A4 | TUV |
| AD 2000 – M. HP 0 | TUV |
| PED | TUV |

# Environment

On request we can supply valves certified by TUV in accordance with the new standard ISO 15848 and with directive TA-Luft 2002. The standard ISO 15848 fix restrictive limits for fugitive emissions from valve sealings to make possible to use these valves also with very dangerous or polluting fluids.
To meet these high performance requirements, these valves are provided with special sealings and additional devices expressly designed to limit the fugitive emissions.
The qualified range cover the diameters from DN 50 up to DN 800 and the pressure classes from PN 6 up to PN 100
These valves are available in three versions to meet the customer's needs in all possible application ranges with three different performance levels according to ISO 15848


## Leak rate in helium test




definitions

- AH - CO2 - SS0 - RT: fugitive emissions up to a $10^{-6}$ mg*s$^{-1}$*m$^{-1}$ He maximum during 1500 cycles with any packing setup
- BH – CO2 – SS0 – RT : fugitive emissions up to a $10^{-4}$ mg*s$^{-1}$*m$^{-1}$ He maximum during 1500 cycles with any packing setup
- BH – CO2 – SS1 - RT : fugitive emissions up to a $10^{-4}$ mg*s$^{-1}$*m$^{-1}$ He maximum during 1500 cycles with one packing setup

The class AH-CO2-SS0 is generally suitable for all kind of application also with dangerous, toxic or polluting liquids or gas and guarantee a high safety level.
The class BH-CO2-SS0 is generally suitable polluting liquid or gases and can guarantee excellent performances also in case of infrequent maintenance.
The class BH-CO2-SS1 is suitable for polluting liquids and can guarantee a low emission level.

# CE Mark

All valves manufactured by us are designed, produced and certified according to European Directive 93/23/EC (also know as Pressure Equipment Directive or PED).
Since May 2001 we have been qualified according to the PED requirement by the Notified Body TÜV SÜDDEUTSCHLAND according to module H (full quality assurance).
This qualification permit to use thye valves supllied by us for dangerous or not dangerous fluids (as specified in the directive 67/548/EC), without limitations for service pressure and temperature and falling in categories I, II or III of PED classification.
The pressure bearing parts are always made with materials specified in EN harmonized standards or qualified according to specific PMA procedures. These base materials are purchased only from qualified factories according to Annex I art. 4 of 97/23/EC.


CERTIFICATO
CERTIFICATE
L'Ente di Certificazione TÜV Italia Srl
Organismo Notificato Pressure Equipment Directive
R.T. VALVOLE INDUSTRIALI S.r.l.
Via alle Cave 25/29
I - 20029 TURBIGO (MI)
PROGETTAZIONE E PRODUZIONE DI VALVOLE A SARACINESCA, A RITEGNO E A FARFALLA DA DN40 A DN1200
DESIGN AND MANUFACTURE OF GATE, CHECK AND BUTTERFLY VALVES FROM DN40 TO DN1200
CE 0948

CE

To meet the requirement of PED directive the valves are always supplied as CE marked with a tag plate indicating the service limits for the specific model based on body material, options and device installed.
With the delivered products are always supplied also:

- the declaration of conformity according to Annex VII of European Directive 97/23/EC
- the operating instructions according to Annex I point 3.4 of European Directive 97/23/EC and EN 764-6

On request we can supply to his customers all details contained in the technical file for each single valve model including desing data, calculations and risk analysis.

# Atex

On request we can supply valves designed and produced to meet the requirement of European Directive 94/9/EC for equipment and protective system intended for use in explosive atmospheres, also know as Atex directive. The valves in this special configuration are designed to meet the requirement for equipment Category II Group 2 GD then to work controlling the risk of ignition in potentially explosive atmosphere. The valves in this group / category are certificated to not represent an ignition source under normal operation but also in case of expected malfunctioning in presence of gas or dust. According to Atex directive the valves meeting the requirement of Category II Group 2 GD can be used in the following zones:

- Zone 1 (an area in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally)
- Zone 21 (an area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally)
- Zone 2 (an area in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only)
- Zone 22 (an area in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only)


EC-Certificate
No. EX9 06 05 59808 001
Holder of Certificate: RT Valvole Industriali S.r.l.
Name of Object: Nonelectrical devices and components group 2
ZERTIFIKAT ◆ CERTIFICATE ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

The valves supplied in Atex version are


II 2 GD

provided with:

- Ex marking and tag plate with the equipment category and group classification (II 2 GD)
- Specific and additional installation maintenance and use instructions for use in potentially explosive atmospheres

On customer request we can supply also the details of the file with desing data, calculations and risk analysis. In case of additional device to be installed on the valve (electric actuators, pneumatic actuators, gearboxes, limit switches etc.) also these equipments will be provided in compatible Atex versions.

# Gate Valves

## APPLICATIONS

The gate valves are used where minimum pressure drop and / or bi-directional on-off service are required.
Typical applications are:

- water
- chemicals
- petrochemicals
- steam
- gases
- liquid gases (cryogenic service)

## CONSTRUCTION DETAILS

### Body

The body geometry is designed as the result of stress calculations to achieve the most regular distribution of the internal forces dues to pressure action.
The body material is high quality cast steel.
The seats surface is covered by a wear resistance stainless steel deposited by welding overlay with a hardness difference of +50 HB in comparison with the wedge seats. On request the seat surface can be covered also with stellite or other special material overlays.

### Bonnet

The bonnet is the bolted type, or pressure seal type (for higher pressures), designed to achieve the minimum turbulence and flow resistance.
The bonnet material is the same of the body material. Beside, the bonnet is designed and manufactured in order to ensure a perfect seal, as well as to allow an easy reassembly and reassembly work.

## Wedge

All our standard gate valves are "full bore" and in the open position their wedge is fully retracted to ensure the lowest pressure drop. The gate valves can be provided with the following obturators:

- Split wedge (double disk wedge): this type is the best solution for small valves with frequent operation due to his durability guaranteed also by the construction with the inner parts in stainless steel. The normal wear is easily recovered by the automatic adjustment of two disk and a perfect tight can be obtained with low torque. In high and low temperature services, compensating the body deformations, this wedge provide the best performances. The split wedge is always required in case of valve installation with horizontal stem.
- Flexible wedge: this is the most used and well known type of wedge. Owing to his low weight and the flexibility due to his particular construction can be employed in medium and large size valves with very good result also in high and low temperature services.

- Solid wedge: this type is generally used in larger size where due to small space between the two body seat other types can't be used (typically in short face to face valves). This execution is required also when the valves are used for fluid that can be solidified due to temperature variations.

Please refer to technical sheets for the execution provided by standard on each size and type.

## Yoke and handwheel

The standard valves are provided with yoke sleeve and handwheel for manual operation. On request the yoke can be provided with a connection flange according to ISO 5210 that allow the mounting of other operation devices (actuator, gearbox, etc.). In high-pressure valves or in the larger sizes the yoke sleeve is supported by two thrust roll bearings. The yoke sleeve is treated to prevent the seizure and the corrosion. A feather key transmits the torque from the handwheel to the yoke sleeve and permits a quick and easy disassembling. The handwheel is retained by a clamping ring (seeger) and it is not rising.

# Gate Valves

## Stem

In all outside screw valves the stem is provided with integral backseat as emergency device in case of packing failure. The stem is produced whit special turning machinery for a high resistance and durability. The stem thread is metric type according to ISO 2901 with trapezoidal section. The thread is left hand type in the way that the valve opens rotating clockwise the handwheel.
To avoid any leakage the stem has a high finish degree and a strict diametrical clearance.

## Gasket

The standard gasket is in pure graphite stainless steel reinforced. This type of gasket is suitable for many different applications. For special applications (cryogenic gases, high corrosion acids etc.) we can supply special gaskets designed for the specific application or according to customer specifications. All valves with round body are provided by standard with chambered gasket.

## Packing

The standard packing is made of four or more pure graphite rings with square section. The first and the last ring are reinforced with stainless steel to avoid the extrusion.
Other materials like PTFE are available on request. The graphite is always treated with special corrosion inhibitors to prevent the corrosion of ferritic stainless steel stem due to galvanic cell action.
For special applications (cryogenic gases, high corrosion acids, etc.) we can supply special packings designed for the specific application or according to customer requirements.
To meet the TA-Luft requirements, on request, we can supply valves with special design of stem and packing. The stuffing box housing is produced with a high finish degree and a strict clearance to guarantee a perfect tight of the packing.

## WARNINGS

- The gate valves are not designed for throttling and regulating service. A prolonged use in partially open position would generally cause some damages.
- The gate valves are not suitable for media which tend to produce high sedimentation or encrustation, as well as fluids containing foreign solids which, due to their hardness, present the risk to damage the seat faces.
- In case of horizontal installation the valves shall be always provided with split wedge and, for sizes over 200 mm, the yoke shall be sustained by appropriate devices.
- The solid wedge is always required for medium that can be subjected to solidification.
- In case of medium that, due to temperature gradient, can change his physical phase from liquid to gas or vapour, the gate valves shall be provided by appropriate safety device.

## INSTALLATION

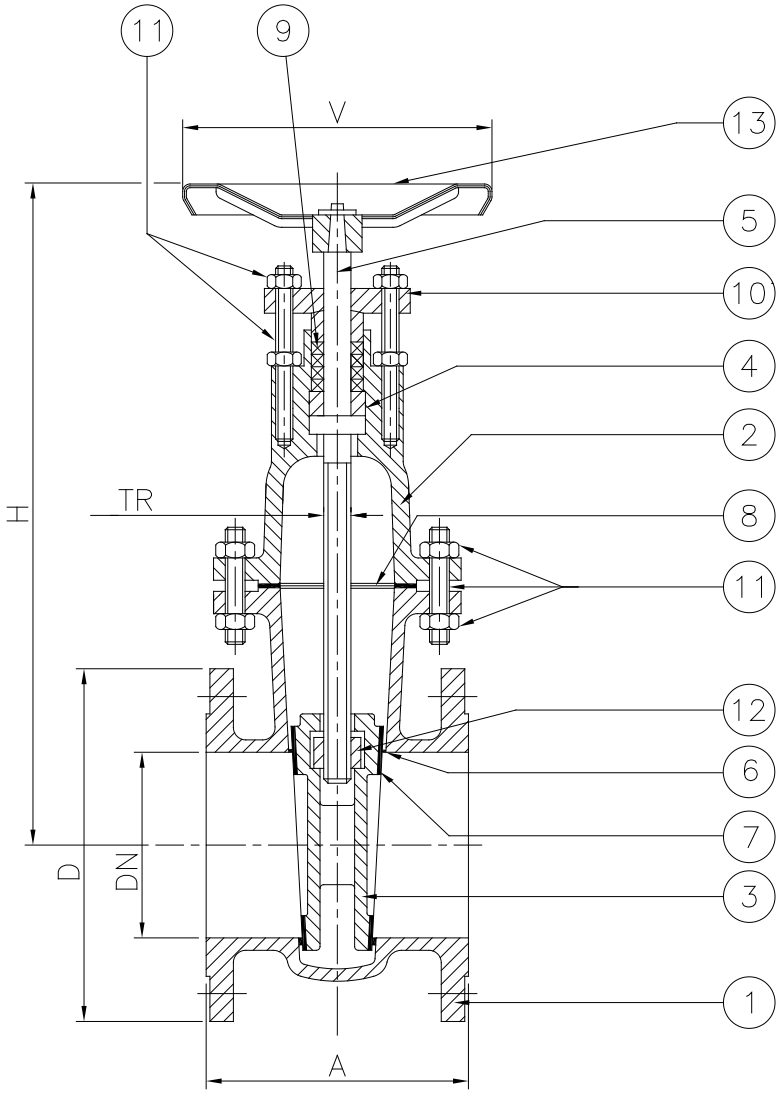
The standard installation position for the gate valves is with the vertical stem and upright (operator on the top). This position avoids many adverse influences and stresses during the functioning. Only the gate valves with split wedge can be installed also in horizontal position. The gate valves close turning the handwheel clockwise.
For a correct and easy installation please refer to the installation manual and follow the instructions there contained.

# Gate Valve Inside Screw

## PN 16 DN 50 - DN 1000

Flanges PN 16 or PN 10

Fig. 205-505

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 series 14 |
| | DIN 3202 F4 |
| ☑ Flanges | EN 1092-1/21/B1 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 6
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12982 / EN 12627)
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 205 | FIG. 305 | FIG. 305-J | FIG. 405 | Fig. 405-H | FIG. 505 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Bonnet | 1.0619 (1) | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 3 | x | Wedge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 4 | x | Retaining ring | 1.0511 | 1.4571 | 1.4301 | 1.0511 | 1.0511 | 1.0511 |
| 5 | x | Stem | 1.4021 (2) | 1.4571 (2) | 1.4301 (2) | 1.4021 (2) | 1.4021 (2) | 1.4021 (2) |
| 6 | | Body seats | 1.4502 (3) | 1.4430 (3) | 1.4316 (3) | 1.4502 (3) | Stellite | 1.4502 (3) |
| 7 | | Wedge seats | 1.4502 (3) | 1.4581 (3) | 1.4308 (3) | 1.4502 (3) | Stellite | 1.4502 (3) |
| 8 | O | Gasket | Graphite+1.4401 (4) | Graphite+1.4401 (4) | PTFE (4) | Graphite+1.4401 (4) | Graphite+1.4401 (4) | Graphite+1.4401 (4) |
| 9 | O | Packing | Graphite+1.4401 (4) | Graphite+1.4401 (4) | PTFE (4) | Graphite+1.4401 (4) | Graphite+1.4401 (4) | Graphite+1.4401 (4) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.4301 |
| 11 | | Bolts | 1.7225 (5) | 1.4301 (5) | 1.4301 (5) | 1.7711 (5) | 1.7711 (5) | 1.7225 (5) |
| 11 | | Nuts | 1.1191 (5) | 1.4301 (5) | 1.4301 (5) | 1.7225 (5) | 1.7225 (5) | 1.7225 (5) |
| 12 | x | Sleeve | 1.4401 NHT | 1.4401 NHT | 1.4301 NHT | 1.4401 NHT | 1.4401 NHT | 1.4401 NHT |
| 13 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) can be supplied 1.0352 from DN 50 up to DN 150.
(2) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(3) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(4) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(5) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | TR | V | Kg | Δp(6) | Wedge (7) |
|---|---|---|---|---|---|---|---|---|---|
| PN 16 | 50 | 150 | 165 | 280 | 18 x 4 | 200 | 15 | 16 | Split |
| | 65 | 170 | 185 | 340 | 20 x 4 | 200 | 22 | 16 | Split |
| | 80 | 180 | 200 | 370 | 20 x 4 | 200 | 25 | 16 | Split |
| | 100 | 190 | 220 | 380 | 20 x 4 | 200 | 30 | 16 | Split |
| | 125 | 200 | 250 | 420 | 24 x 5 | 250 | 37 | 16 | Split |
| | 150 | 210 | 285 | 500 | 24 x 5 | 250 | 50 | 16 | Flexible |
| | 200 | 230 | 340 | 600 | 28 x 5 | 300 | 80 | 16 | Flexible |
| | 250 | 250 | 405 | 760 | 32 x 6 | 400 | 148 | 16 | Flexible |
| | 300 | 270 | 460 | 825 | 32 x 6 | 400 | 175 | 13 | Flexible |
| | 350 | 290 | 520 | 910 | 32 x 6 | 400 | 245 | 10 | Flexible |
| | 400 | 310 | 580 | 950 | 36 x 6 | 400 | 295 | 7 | Flexible |
| | 450 | 330 | 640 | 1180 | 40 x 7 | 500 | 480 | 0 | Flexible |
| | 500 | 350 | 715 | 1215 | 40 x 7 | 500 | 605 | 0 | Flexible |
| | 600 | 390 | 840 | 1380 | 40 x 7 | 500 | 930 | 0 | Flexible |
| | 700 | 430 | 910 | 1500 | 50 x 8 | 600 | 1070 | 0 | Flexible |
| | 800 | 470 | 1025 | 1670 | 50 x 8 | 600 | 1440 | 0 | Flexible |
| | 900 | 510 | 1125 | 1810 | 60 x 9 | 600 | 1770 | 0 | Flexible |
| | 1000 | 550 | 1255 | 2020 | 60 x 9 | 600 | 2120 | 0 | Flexible |

(6) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(7) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 205 | 16 | | | | | 16.0 | 16.0 | 15.8 | 14.9 | 13.7 | 12.4 | 11.4 | 10.3 | 9.6 | 9.2 | 7.6 | 5.9 | | | | | | |
| Fig. 305(8) | 16 | | | 16.0 | 16.0 | 16.0 | 16.0 | 15.4 | 13.2 | 12.3 | 11.4 | 10.8 | 10.3 | 9.8 | 9.2 | 9.1 | 8.9 | 8.7 | 8.5 | 8.4 | 8.2 | | |
| Fig. 305-J | 16 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.1 | 11.4 | 10.1 | 8.9 | 8.4 | 7.8 | | | | | | | | | | |
| Fig. 405(8)(9) | 16 | | | | | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.3 | 14.2 | 13,9 | 13,5 | 10,9 | 8.3 | 6.1 | 3.9 | | |
| Fig. 405-H(9) | 16 | | | | | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.8 | 15.5 | 12.6 | 9.7 | 7.2 | 4.7 | 3.3 | 2.0 |
| Fig. 505 | 16 | | | | 16.0 | 16.0 | 16.0 | 15.6 | 14.2 | 13.5 | 12.8 | 12.4 | 12.1 | | | | | | | | | | |

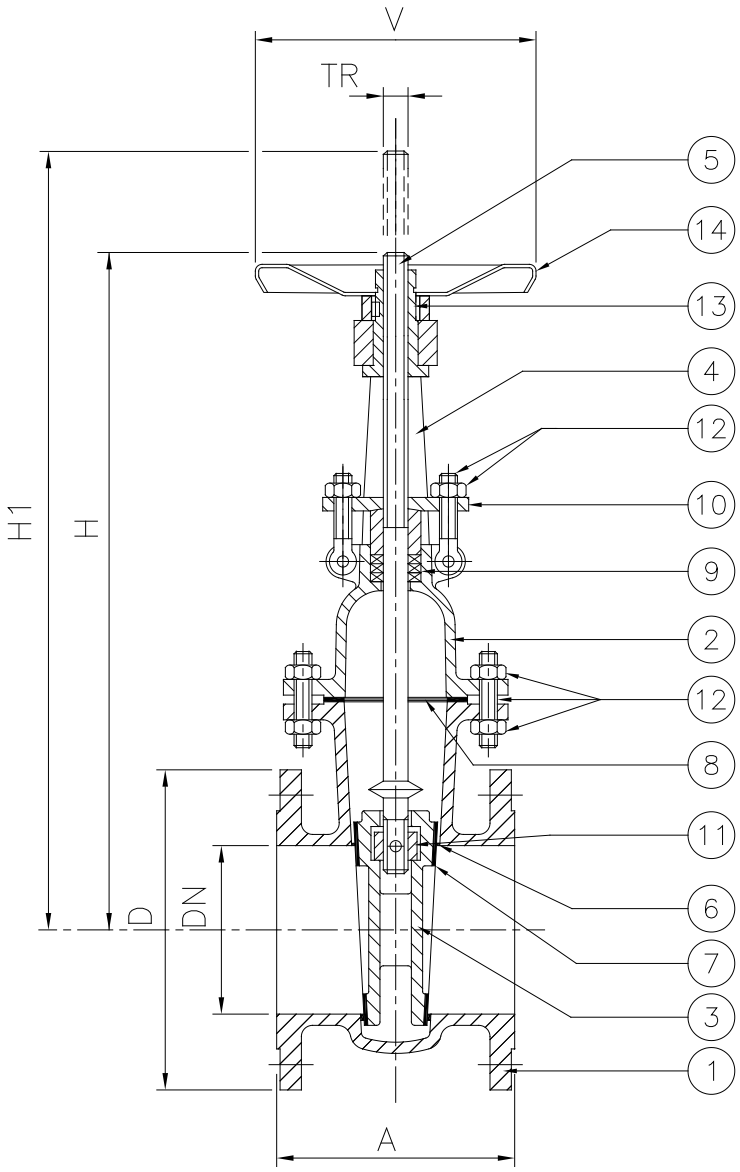
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 10 or PN 6 the maximum allowable pressure must be proportionally reduced.
(8) Suitable over 450 °C only if provided with stellited seats. (9) Suitable over 530 °C only if provided with 1.3964 stem.
Due to short face to face depending on DN and required execution some flange holes can be treaded.

# Gate Valve Outside Screw

## PN 16 DN 50 - DN 1000

Flanges PN 16 or PN 10

Fig. 210-510

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 series 14 |
| | DIN 3202 F4 |
| ☑ Flanges | EN 1092-1/21/B1 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 6
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12982 / EN 12627)
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 210 | FIG. 310 | FIG. 310-J | FIG. 410 | Fig. 410-H | FIG. 510 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 3 | x | Wedge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 4 | | Yoke | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | O | Gasket | Graphite+1.4401 (3) | Graphite+1.4401 (3) | PTFE (3) | Graphite+1.4401 (3) | Graphite+1.4401 (3) | Graphite+1.4401 (3) |
| 9 | O | Packing | Graphite+1.4401 (3) | Graphite+1.4401 (3) | PTFE (3) | Graphite+1.4401 (3) | Graphite+1.4401 (3) | Graphite+1.4401 (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.4301 |
| 11 | x | Boss | 1.4571 | 1.4571 | 1.4301 | 1.4571 | 1.4571 | 1.4571 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 16 | 50 | 150 | 165 | 315 | 375 | 18 x 4 | 200 | 15 | 16 | Split |
| | 65 | 170 | 185 | 370 | 450 | 20 x 4 | 200 | 25 | 16 | Split |
| | 80 | 180 | 200 | 410 | 500 | 20 x 4 | 200 | 27 | 16 | Split |
| | 100 | 190 | 220 | 450 | 560 | 22 x 5 | 200 | 35 | 16 | Split |
| | 125 | 200 | 250 | 525 | 660 | 24 x 5 | 250 | 40 | 16 | Split |
| | 150 | 210 | 285 | 600 | 765 | 24 x 5 | 250 | 55 | 16 | Flexible |
| | 200 | 230 | 340 | 760 | 975 | 28 x 5 | 300 | 82 | 16 | Flexible |
| | 250 | 250 | 405 | 990 | 1255 | 32 x 6 | 400 | 155 | 16 | Flexible |
| | 300 | 270 | 460 | 1095 | 1415 | 32 x 6 | 400 | 225 | 13 | Flexible |
| | 350 | 290 | 520 | 1245 | 1610 | 32 x 6 | 400 | 265 | 10 | Flexible |
| | 400 | 310 | 580 | 1350 | 1770 | 36 x 6 | 500 | 320 | 8 | Flexible |
| | 450 | 330 | 640 | 1485 | 1950 | 40 x 7 | 500 | 490 | 8 | Flexible |
| | 500 | 350 | 715 | 1660 | 2180 | 40 x 7 | 500 | 630 | 8 | Flexible |
| | 600 | 390 | 840 | 1965 | 2585 | 40 x 7 | 500 | 990 | 6 | Flexible |
| | 700 | 430 | 910 | 2185 | 2905 | 50 x 8 | 600 | 1150 | 1 | Flexible |
| | 800 | 470 | 1025 | 2500 | 3320 | 50 x 8 | 600 | 1550 | 0 | Flexible |
| | 900 | 510 | 1125 | 2820 | 3720 | 60 x 9 | 600 | 1800 | 0 | Flexible |
| | 1000 | 550 | 1255 | 3150 | 4150 | 60 x 9 | 600 | 2160 | 0 | Flexible |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 210 | 16 | | | | | 16.0 | 16.0 | 15.8 | 14.9 | 13.7 | 12.4 | 11.4 | 10.3 | 9.6 | 9.2 | 7.6 | 5.9 | | | | | | |
| Fig. 310(8) | 16 | | | 16.0 | 16.0 | 16.0 | 16.0 | 15.4 | 13.2 | 12.3 | 11.4 | 10.8 | 10.3 | 9.8 | 9.2 | 9.1 | 8.9 | 8.7 | 8.5 | 8.4 | 8.2 | | |
| Fig. 310-J | 16 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.1 | 11.4 | 10.1 | 8.9 | 8.4 | 7.8 | | | | | | | | | | |
| Fig. 410(8)(9) | 16 | | | | | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.3 | 14.2 | 13,9 | 13,5 | 10,9 | 8.3 | 6.1 | 3.9 | | |
| Fig. 410-H(9) | 16 | | | | | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.8 | 15.5 | 12.6 | 9.7 | 7.2 | 4.7 | 3.3 | 2.0 |
| Fig. 510 | 16 | | | | 16.0 | 16.0 | 16.0 | 15.6 | 14.2 | 13.5 | 12.8 | 12.4 | 12.1 | | | | | | | | | | |

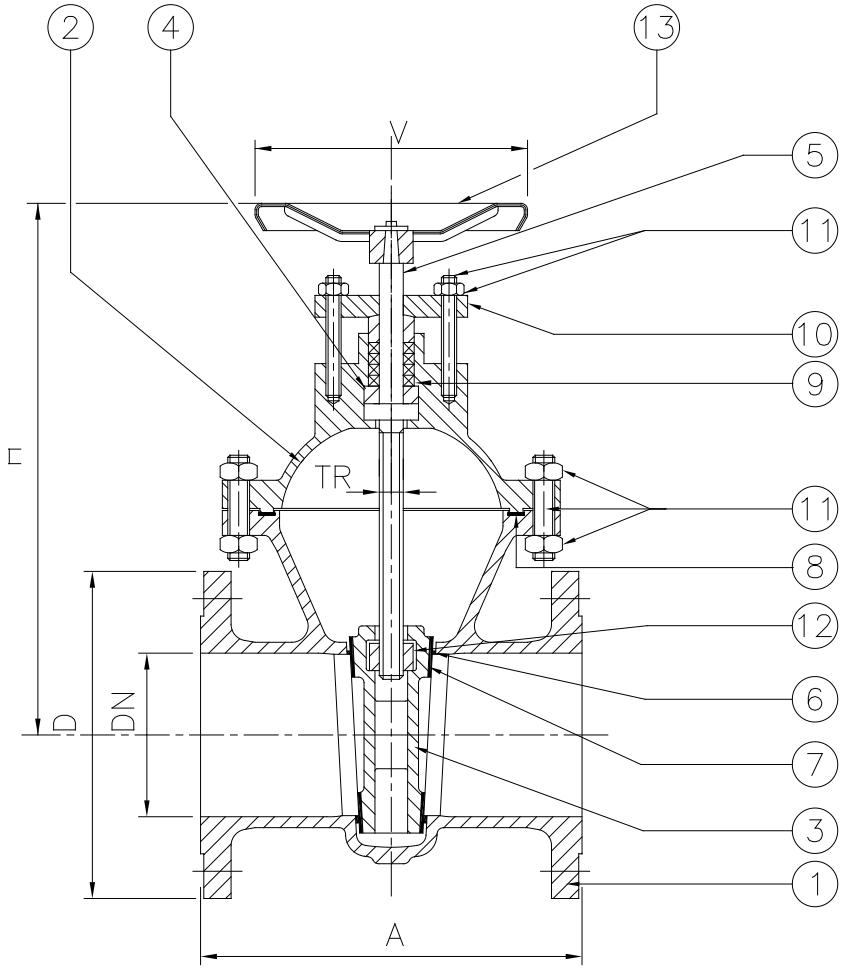
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 10 or PN 6 the maximum allowable pressure must be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.
Due to short face to face depending on DN and required execution some flange holes can be treaded.

# Gate Valve Inside Screw

## PN 40 DN 50 - DN 150
## PN 25 DN 200 - DN 800

Flanges PN 40 or PN 25 or PN 16

Fig. 235-535

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 series 15 |
| | DIN 3202 F5 |
| ☑ Flanges | EN 1092-1/21/B1 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 10 or PN 6
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12982 / EN 12627)
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 235 | FIG. 335 | FIG. 335-J | FIG. 435 | Fig. 435-H | FIG. 535 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 3 | x | Wedge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 4 | x | Retaining ring | 1.0511 | 1.4571 | 1.4301 | 1.0511 | 1.0511 | 1.0511 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.4301 |
| 11 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 11 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 12 | x | Sleeve | 1.4401 NHT | 1.4401 NHT | 1.4301 NHT | 1.4401 NHT | 1.4401 NHT | 1.4401 NHT |
| 13 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|
| PN 40 | 50 | 250 | 165 | 275 | 18 x 4 | 200 | 20 | 40 | Split |
| | 65 | 270 | 185 | 320 | 20 x 4 | 200 | 30 | 40 | Split |
| | 80 | 280 | 200 | 330 | 20 x 4 | 200 | 35 | 40 | Split |
| | 100 | 300 | 235 | 365 | 20 x 4 | 200 | 50 | 40 | Split |
| | 125 | 325 | 270 | 480 | 25 x 5 | 250 | 65 | 40 | Split |
| | 150 | 350 | 300 | 500 | 25 x 5 | 250 | 95 | 40 | Flexible |
| PN 25 | 200 | 400 | 360 | 570 | 28 x 5 | 300 | 145 | 16 | Flexible |
| | 250 | 450 | 425 | 700 | 32 x 6 | 400 | 215 | 16 | Flexible |
| | 300 | 500 | 485 | 765 | 36 x 6 | 400 | 315 | 14 | Flexible |
| | 350 | 550 | 555 | 915 | 36 x 6 | 500 | 385 | 12 | Flexible |
| | 400 | 600 | 620 | 1030 | 40 x 7 | 500 | 570 | 0 | Flexible |
| | 450 | 650 | 670 | 1140 | 40 x 7 | 500 | 755 | 0 | Flexible |
| | 500 | 700 | 730 | 1240 | 50 x 8 | 600 | 815 | 0 | Flexible |
| | 600 | 800 | 845 | 1440 | 50 x 8 | 600 | 1070 | 0 | Flexible |
| | 700 | 900 | 960 | 1540 | 60 x 9 | 600 | 1925 | 0 | Solid |
| | 800 | 1000 | 1085 | 1710 | 70 x 10 | 600 | 2270 | 0 | Solid |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 235 | 25 | | | | | 25.0 | 25.0 | 24.7 | 23.3 | 21.4 | 19.4 | 17.8 | 16.1 | 15.0 | 14.4 | 11.8 | 9.2 | | | | | | |
| Fig. 335(7) | 25 | | | 25.0 | 25.0 | 25.0 | 25.0 | 24.1 | 20.6 | 19.2 | 17.8 | 16.9 | 16.1 | 15.3 | 14.4 | 14.2 | 13.9 | 13.6 | 13.3 | 13.1 | 12.8 | | |
| Fig. 335-J | 25 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.6 | 17.8 | 15.8 | 13.9 | 13.1 | 12.2 | | | | | | | | | | |
| Fig. 435(7)(8) | 25 | | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.9 | 22.2 | 21,7 | 21,1 | 17,1 | 13.0 | 9.6 | 6.1 | | |
| Fig. 435-H(8) | 25 | | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.6 | 24.2 | 19.7 | 15.1 | 11.2 | 7.3 | 5.2 | 3.1 |
| Fig. 535 | 25 | | | | 25.0 | 25.0 | 25.0 | 24.4 | 22.2 | 21.1 | 20.0 | 19.4 | 18.9 | | | | | | | | | | |
| Fig. 235 | 40 | | | | | 40.0 | 40.0 | 39.5 | 37.3 | 34.2 | 31.1 | 28.4 | 25.8 | 24.0 | 23.1 | 18.9 | 14.8 | | | | | | |
| Fig. 335(7) | 40 | | | 40.0 | 40.0 | 40.0 | 40.0 | 38.6 | 32.9 | 30.7 | 28.4 | 27.1 | 25.8 | 24.4 | 23.1 | 22.7 | 22.2 | 21.8 | 21.3 | 20.9 | 20.4 | | |
| Fig. 335-J | 40 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 37.7 | 28.4 | 25.3 | 22.2 | 20.9 | 19.6 | | | | | | | | | | |
| Fig. 435(7)(8) | 40 | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 38.2 | 35.6 | 34,7 | 33,8 | 27,3 | 20.8 | 15.3 | 9.8 | | |
| Fig. 435-H(8) | 40 | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 39.4 | 38.8 | 31.5 | 24.2 | 18.0 | 11.7 | 8.4 | 5.0 |
| Fig. 535 | 40 | | | | 40.0 | 40.0 | 40.0 | 39.1 | 35.6 | 33.8 | 32.0 | 31.1 | 30.2 | | | | | | | | | | |

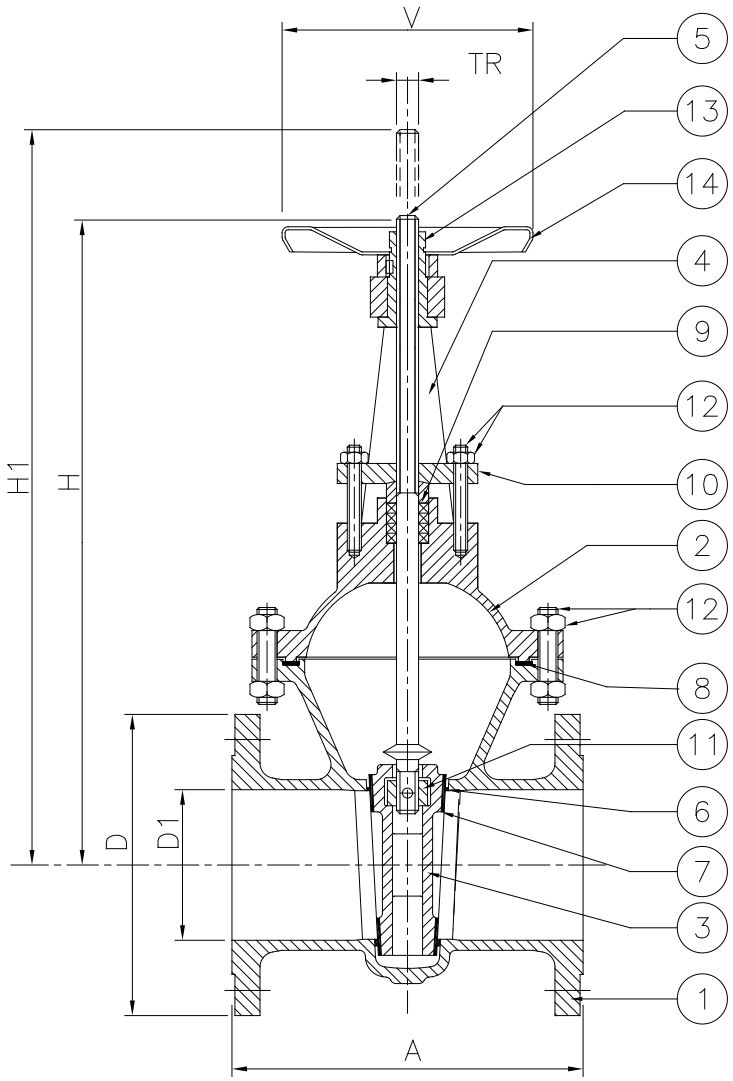
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 16 or PN 10 the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

# Gate Valve Outside Screw

## PN 40 DN 50 - DN 150
## PN 25 DN 200 - DN 800

Flanges PN 40 or PN 25 or PN 16

Fig. 240-540

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Rel. 6.0

## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 series 15 |
| | DIN 3202 F5 |
| ☑ Flanges | EN 1092-1/21/B1 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 10 or PN 16
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12982 / EN 12627)
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 240 | FIG. 340 | FIG. 340-J | FIG. 440 | FIG. 440-H | FIG. 540 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 3 | x | Wedge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 4 | | Yoke | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.4301 |
| 11 | x | Boss | 1.4571 | 1.4571 | 1.4301 | 1.4571 | 1.4571 | 1.4571 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 40 | 50 | 250 | 165 | 340 | 400 | 18 x 4 | 200 | 23 | 40 | Split |
| | 65 | 270 | 185 | 360 | 435 | 20 x 4 | 200 | 31 | 40 | Split |
| | 80 | 280 | 200 | 410 | 500 | 20 x 4 | 200 | 36 | 40 | Split |
| | 100 | 300 | 235 | 500 | 610 | 22 x 5 | 250 | 53 | 40 | Split |
| | 125 | 325 | 270 | 535 | 670 | 24 x 5 | 250 | 73 | 40 | Split |
| | 150 | 350 | 300 | 615 | 780 | 24 x 5 | 250 | 98 | 40 | Flexible |
| PN 25 | 200 | 400 | 360 | 720 | 935 | 28 x 5 | 300 | 150 | 22 | Flexible |
| | 250 | 450 | 425 | 975 | 1240 | 32 x 6 | 400 | 230 | 19 | Flexible |
| | 300 | 500 | 485 | 1045 | 1360 | 36 x 6 | 500 | 330 | 17 | Flexible |
| | 350 | 550 | 555 | 1250 | 1615 | 36 x 6 | 500 | 400 | 12 | Flexible |
| | 400 | 600 | 620 | 1410 | 1830 | 40 x 7 | 500 | 600 | 12 | Flexible |
| | 450 | 650 | 670 | 1640 | 2110 | 50 x 8 | 600 | 790 | 12 | Flexible |
| | 500 | 700 | 730 | 1645 | 2165 | 50 x 8 | 600 | 845 | 12 | Flexible |
| | 600 | 800 | 845 | 1980 | 2600 | 50 x 8 | 600 | 1125 | 7 | Flexible |
| | 700 | 900 | 960 | 2190 | 3010 | 60 x 9 | 600 | 2000 | 1 | Flexible |
| | 800 | 1000 | 1085 | 2800 | 3630 | 70 x 10 | 600 | 2270 | 0 | Flexible |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 240 | 25 | | | | | 25.0 | 25.0 | 24.7 | 23.3 | 21.4 | 19.4 | 17.8 | 16.1 | 15.0 | 14.4 | 11.8 | 9.2 | | | | | | |
| Fig. 340(7) | 25 | | | 25.0 | 25.0 | 25.0 | 25.0 | 24.1 | 20.6 | 19.2 | 17.8 | 16.9 | 16.1 | 15.3 | 14.4 | 14.2 | 13.9 | 13.6 | 13.3 | 13.1 | 12.8 | | |
| Fig. 340-J | 25 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.6 | 17.8 | 15.8 | 13.9 | 13.1 | 12.2 | | | | | | | | | | |
| Fig. 440(7)(8) | 25 | | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.9 | 22.2 | 21,7 | 21,1 | 17,1 | 13.0 | 9.6 | 6.1 | | |
| Fig. 440-H(8) | 25 | | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.6 | 24.2 | 19.7 | 15.1 | 11.2 | 7.3 | 5.2 | 3.1 |
| Fig. 540 | 25 | | | | 25.0 | 25.0 | 25.0 | 24.4 | 22.2 | 21.1 | 20.0 | 19.4 | 18.9 | | | | | | | | | | |
| Fig. 240 | 40 | | | | | 40.0 | 40.0 | 39.5 | 37.3 | 34.2 | 31.1 | 28.4 | 25.8 | 24.0 | 23.1 | 18.9 | 14.8 | | | | | | |
| Fig. 340(7) | 40 | | | 40.0 | 40.0 | 40.0 | 40.0 | 38.6 | 32.9 | 30.7 | 28.4 | 27.1 | 25.8 | 24.4 | 23.1 | 22.7 | 22.2 | 21.8 | 21.3 | 20.9 | 20.4 | | |
| Fig. 340-J | 40 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 37.7 | 28.4 | 25.3 | 22.2 | 20.9 | 19.6 | | | | | | | | | | |
| Fig. 440(7)(8) | 40 | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 38.2 | 35.6 | 34,7 | 33,8 | 27,3 | 20.8 | 15.3 | 9.8 | | |
| Fig. 440-H(8) | 40 | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 39.4 | 38.8 | 31.5 | 24.2 | 18.0 | 11.7 | 8.4 | 5.0 |
| Fig. 540 | 40 | | | | 40.0 | 40.0 | 40.0 | 39.1 | 35.6 | 33.8 | 32.0 | 31.1 | 30.2 | | | | | | | | | | |

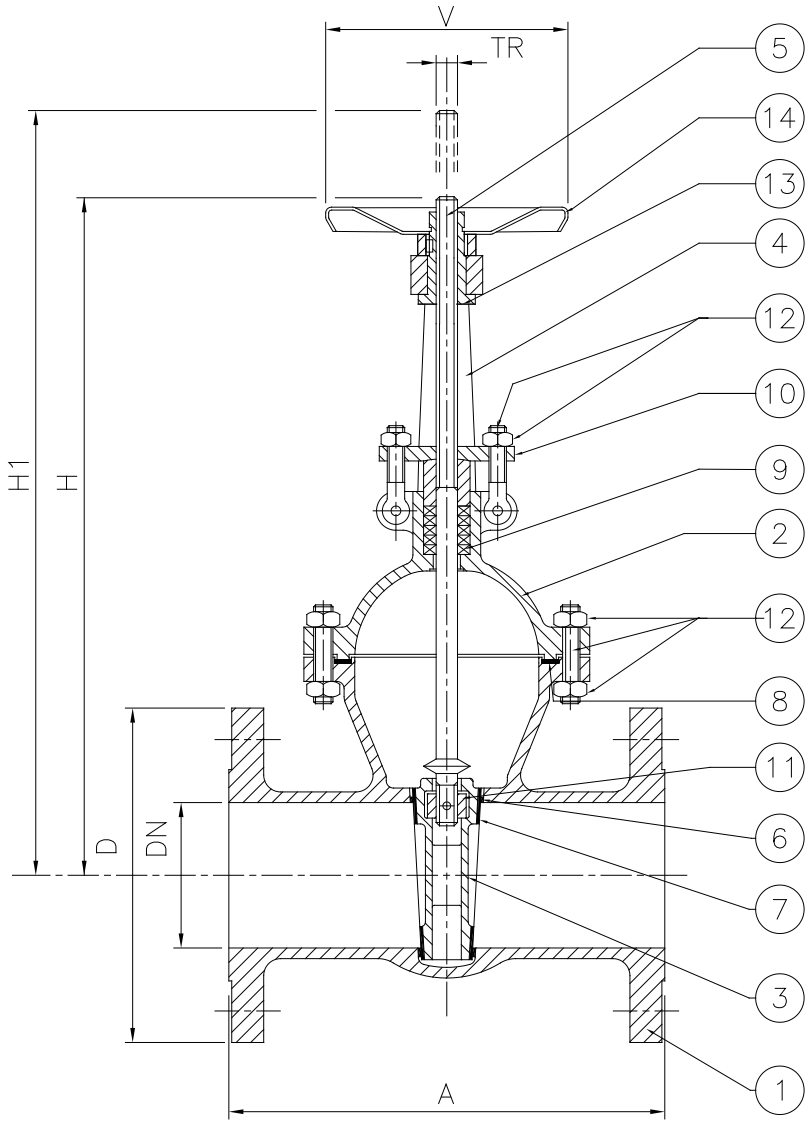
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 16 or PN 10 the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

# Gate Valve Outside Screw

## PN 63 DN 50 - DN 500

Flanges PN 63 or PN 40

Fig. 250-550

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 series 26 |
| | DIN 3202 F7 |
| ☑ Flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 25 or PN 16
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12982 / EN 12627)
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 250 | FIG. 350 | FIG. 350-J | FIG. 450 | FIG. 450-H | FIG. 550 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 3 | x | Wedge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 4 | | Yoke | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.4301 |
| 11 | x | Boss | 1.4571 | 1.4571 | 1.4301 | 1.4571 | 1.4571 | 1.4571 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 63 | 50 | 250 | 180 | 380 | 440 | 20 x 4 | 200 | 35 | 63 | Split |
| | 65 | 290 | 205 | 455 | 530 | 22 x 5 | 200 | 44 | 63 | Split |
| | 80 | 310 | 215 | 465 | 545 | 22 x 5 | 250 | 48 | 63 | Split |
| | 100 | 350 | 250 | 490 | 600 | 22 x 5 | 250 | 57 | 63 | Split |
| | 125 | 400 | 295 | 615 | 750 | 24 x 5 | 250 | 81 | 63 | Split |
| | 150 | 450 | 345 | 695 | 860 | 28 x 5 | 300 | 125 | 63 | Flexible |
| | 200 | 550 | 415 | 845 | 1060 | 28 x 5 | 300 | 210 | 51 | Flexible |
| | 250 | 650 | 470 | 1000 | 1265 | 36 x 6 | 500 | 400 | 51 | Flexible |
| | 300 | 750 | 530 | 1140 | 1455 | 36 x 6 | 500 | 540 | 39 | Flexible |
| | 350 | 850 | 600 | 1250 | 1650 | 40 x 7 | 500 | 850 | 23 | Flexible |
| | 400 | 950 | 670 | 1430 | 1850 | 50 x 8 | 600 | 1120 | 15 | Flexible |
| | 450 | 1050 | 700 | 1490 | 1910 | 60 x 9 | 600 | 1630 | 4 | Flexible |
| | 500 | 1150 | 800 | 1830 | 2350 | 70 x 10 | 600 | 1830 | 0 | Flexible |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is mandatory).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 250 | 63 | | | | | 63,0 | 63,0 | 62,2 | 58,8 | 53,9 | 49,0 | 44,8 | 40,6 | 37,8 | 36,4 | 29,8 | 23,2 | | | | | | |
| Fig. 350(7) | 63 | | | 63,0 | 63,0 | 63,0 | 63,0 | 60,8 | 51,8 | 48,3 | 44,8 | 42,7 | 40,6 | 38,5 | 36,4 | 35,7 | 35,0 | 34,3 | 33,6 | 32,9 | 32,2 | | |
| Fig. 350-J | 63 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 59,4 | 44,8 | 39,9 | 35,0 | 32,9 | 30,8 | | | | | | | | | | |
| Fig. 450(7)(8) | 63 | | | | | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 60,2 | 56,0 | 54,6 | 53,2 | 43,0 | 32,8 | 24,1 | 15,4 | | |
| Fig. 450-H(8) | 63 | | | | | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 62,0 | 61,0 | 49,6 | 38,1 | 28,3 | 18,5 | 13,2 | 7,8 |
| Fig. 550 | 63 | | | | 63,0 | 63,0 | 63,0 | 61,6 | 56,0 | 53,2 | 50,4 | 49,0 | 47,6 | | | | | | | | | | |

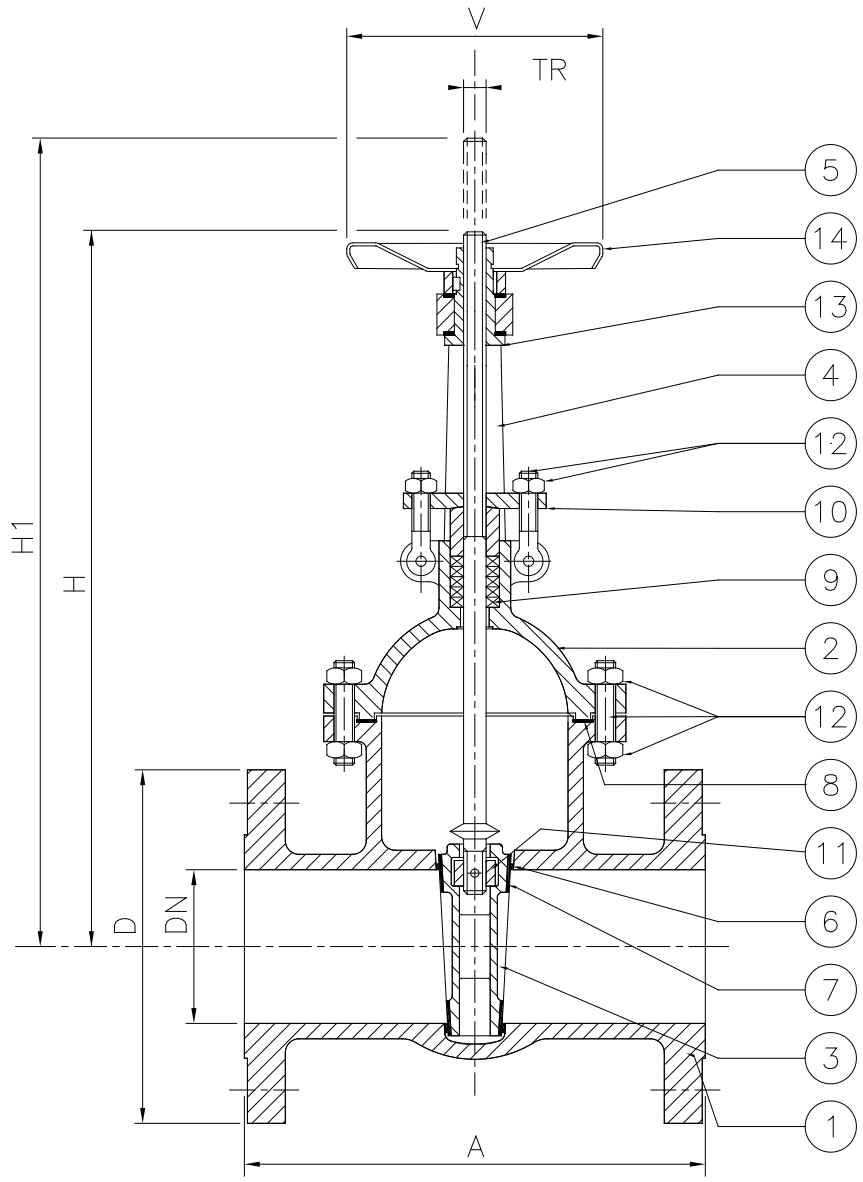
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 40 the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

# Gate Valve Outside Screw

## PN 100 DN 50 - DN 400

Flanges PN 100

Fig. 260-560

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 series 26 |
| | DIN 3202 F7 |
| ☑ Flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 63
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12982 / EN 12627)
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 260 | FIG. 360 | FIG. 360-J | FIG. 460 | FIG. 460-H | FIG. 560 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 3 | x | Wedge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 4 | | Yoke | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.4301 |
| 11 | x | Boss | 1.4571 | 1.4571 | 1.4301 | 1.4571 | 1.4571 | 1.4571 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 100 | 50 | 250 | 195 | 380 | 440 | 20 x 4 | 200 | 35 | 100 | Split |
| | 65 | 290 | 220 | 520 | 595 | 22 x 4 | 200 | 70 | 100 | Split |
| | 80 | 310 | 230 | 540 | 630 | 24 x 5 | 250 | 76 | 100 | Split |
| | 100 | 350 | 265 | 590 | 700 | 28 x 5 | 300 | 110 | 100 | Split |
| | 125 | 400 | 315 | 770 | 905 | 32 x 6 | 400 | 144 | 100 | Split |
| | 150 | 450 | 355 | 795 | 960 | 32 x 6 | 400 | 185 | 100 | Flexible |
| | 200 | 550 | 430 | 1000 | 1215 | 36 x 6 | 400 | 325 | 62 | Flexible |
| | 250 | 650 | 505 | 1150 | 1415 | 40 x 7 | 500 | 535 | 43 | Flexible |
| | 300 | 750 | 585 | 1300 | 1615 | 60 x 9 | 600 | 800 | 0 | Flexible |
| | 400 | 850 | 715 | 1450 | 1880 | 100 x 12 | 600 | 1250 | 0 | Flexible |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

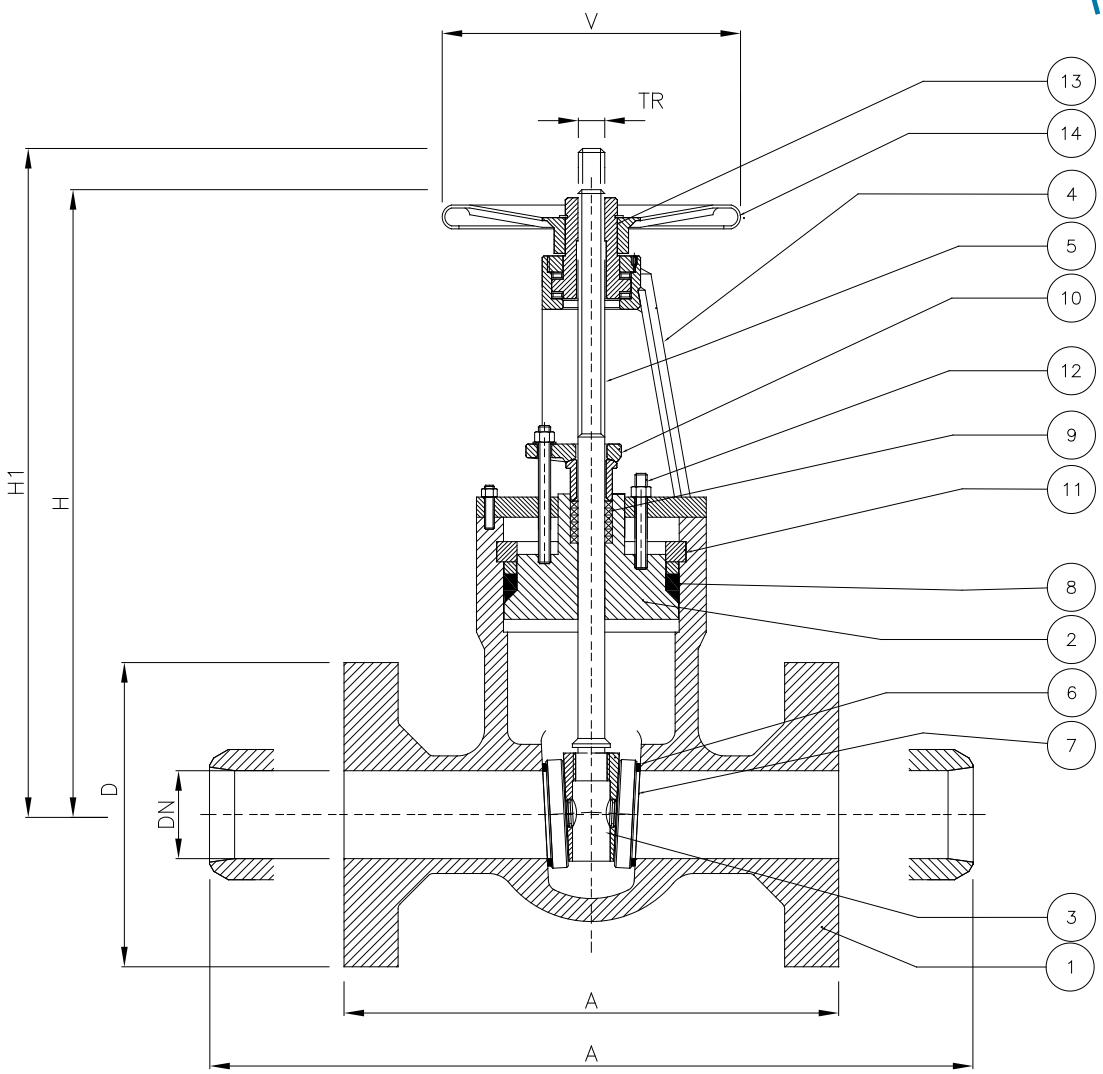
| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 260 | 100 | | | | | 100 | 100 | 98,7 | 93,3 | 85,6 | 77,8 | 71,1 | 64,4 | 60,0 | 57,8 | 47,3 | 36,9 | | | | | | |
| Fig. 360(7) | 100 | | | 100 | 100 | 100 | 100 | 96,4 | 82,2 | 76,7 | 71,1 | 67,8 | 64,4 | 61,1 | 57,8 | 56,7 | 55,6 | 54,4 | 53,3 | 52,2 | 51,1 | | |
| Fig. 360-J | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 94,2 | 71,1 | 63,3 | 55,6 | 52,2 | 48,9 | | | | | | | | | | |
| Fig. 460(7)(8) | 100 | | | | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95,6 | 88,9 | 86,7 | 84,4 | 68,2 | 52,0 | 38,2 | 24,4 | | |
| Fig. 460-H(8) | 100 | | | | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98,4 | 96,9 | 78,7 | 60,4 | 44,9 | 29,3 | 20,9 | 12,4 |
| Fig. 560 | 100 | | | | 100 | 100 | 100 | 97,8 | 88,9 | 84,4 | 80,0 | 77,8 | 75,6 | | | | | | | | | | |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 63 the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

# Gate Valve Outside Screw

## PN 160 DN 50 - DN 300
## PD special ratings for BWE version

Fig. 261-561

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Rel. 6.0

### Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 serie 99 |
| | DIN 3202 F8 |
| ☑ With flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

### Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With butt welding ends EN 12627 (FTF DIN 3202 S10)
- ☐ With flanges form A, B1, B2, C, D, E, F, G, H
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 261 | FIG. 361 | FIG. 361-J | FIG. 461 | FIG. 461-H | FIG. 461-K |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 3 | x | Wedge | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 4 | | Yoke | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4923 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.0402 |
| 11 | | Segment ring | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials.
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 160 | 50 | 300 | 195 | 530 | 600 | 20 x 4 | 200 | 35 | 240 | Split |
| | 65 | 360 | 220 | 600 | 690 | 22 x 4 | 200 | 50 | 160 | Split |
| | 80 | 390 | 230 | 640 | 730 | 24 x 5 | 250 | 100 | 160 | Split |
| | 100 | 450 | 265 | 750 | 870 | 28 x 5 | 300 | 130 | 160 | Split |
| | 125 | 525 | 315 | 800 | 950 | 36 x 6 | 400 | 150 | 160 | Split |
| | 150 | 600 | 355 | 980 | 1150 | 40 x 7 | 400 | 280 | 0 | Split |
| | 200 | 750 | 430 | 1200 | 1430 | 50 x 8 | 500 | 520 | 0 | Split |
| | 250 | 900 | 515 | 1400 | 1680 | 60 x 9 | 600 | 810 | 0 | Split |
| | 300 | 1050 | 585 | 1650 | 1980 | 70 x 10 | 600 | 1350 | 0 | Split |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 261 | 160 | | | | | 160 | 160 | 157 | 149 | 136 | 124 | 113 | 103 | 96 | 92 | 76 | 59 | | | | | | |
| Fig. 361(7) | 160 | | | 160 | 160 | 160 | 160 | 154 | 131 | 122 | 113 | 108 | 103 | 98 | 92 | 91 | 89 | 87 | 85 | 84 | 82 | | |
| Fig. 361-J | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 150 | 113 | 101 | 89 | 84 | 78 | | | | | | | | | | |
| Fig. 461(7)(8) | 160 | | | | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 152 | 142 | 138 | 135 | 109 | 83 | 61 | 39 | | |
| Fig. 461-H(8) | 160 | | | | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 155 | 125 | 97 | 72 | 47 | 33 | 20 |
| Fig. 461-K(8) | 160 | | | | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 147 | 115 | 84 | 59 | 35 |

Special ratings for butt welding ends versions only (desing pressure)

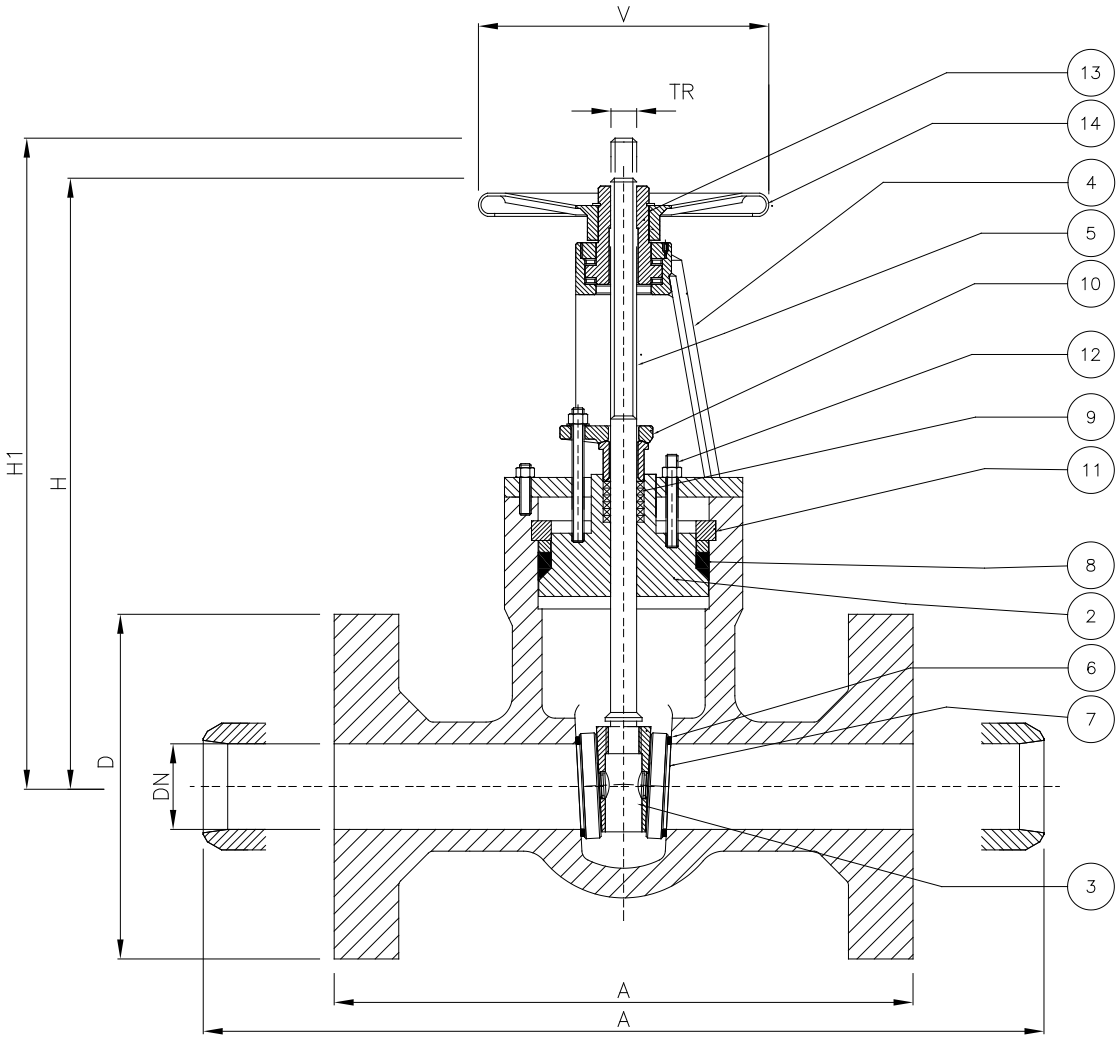
| | PD | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 461-BW(8) | 224 | | | | | 224 | 224 | 224 | 224 | 201 | 178 | 171 | 164 | 153 | 142 | 139 | 135 | 109 | 83 | 61 | 39 | | |
| Fig. 461-H-BW(8) | 284 | | | | | 284 | 284 | 284 | 284 | 268 | 252 | 249 | 245 | 235 | 224 | 190 | 155 | 125 | 97 | 72 | 47 | 33 | 20 |
| Fig. 461-K-BW(8) | 384 | | | | | 384 | 384 | 384 | 384 | 352 | 320 | 312 | 305 | 291 | 277 | 248 | 219 | 183 | 147 | 115 | 84 | 59 | 35 |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection with lower PN the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

# Gate Valve Outside Screw

## PN 320 DN 50 - DN 300
## PD special ratings for BWE version

Fig. 266-566




0948

Rel. 6.0

### Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 serie 91 |
| | DIN 3202 F9 |
| ☑ With flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

### Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With butt welding ends EN 12627
- ☐ With flanges form A, B1, B2, C, D, E, F, G, H
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 266 | FIG. 366 | FIG. 366-J | FIG. 466 | FIG. 466-H | FIG. 466-K |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 3 | x | Wedge | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 4 | | Yoke | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4923 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.0402 |
| 11 | | Segment ring | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials.
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 250 | 50 | 350 | 200 | 550 | 600 | 20 x 4 | 200 | 60 | 240 | Split |
| | 65 | 425 | 230 | 625 | 690 | 22 x 4 | 250 | 81 | 190 | Split |
| | 80 | 470 | 255 | 670 | 750 | 24 x 5 | 300 | 122 | 160 | Split |
| | 100 | 550 | 300 | 790 | 900 | 28 x 5 | 400 | 170 | 90 | Split |
| | 125 | 650 | 340 | 840 | 960 | 40 x 7 | 500 | 275 | 0 | Split |
| | 150 | 750 | 390 | 1015 | 1170 | 50 x 8 | 500 | 390 | 0 | Split |
| | 200 | 950 | 485 | 1260 | 1480 | 60 x 9 | 600 | 750 | 0 | Split |
| | 250 | 1150 | 585 | 1460 | 1710 | 70 x 10 | 600 | 1190 | 0 | Split |
| | 300 | 1350 | 690 | 1710 | 2010 | 80 x 10 | 600 | 1830 | 0 | Split |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 266 | 250 | | | | | 250 | 250 | 250 | 233 | 214 | 194 | 178 | 161 | 150 | 144 | 118 | 92 | | | | | | |
| Fig. 366(7) | 250 | | | 250 | 250 | 250 | 250 | 250 | 206 | 192 | 178 | 169 | 161 | 153 | 144 | 142 | 139 | 136 | 133 | 131 | 128 | | |
| Fig. 366-J | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 178 | 158 | 139 | 131 | 122 | | | | | | | | | | |
| Fig. 466(7)(8) | 250 | | | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 239 | 222 | 217 | 211 | 180 | 130 | 96 | 61 | | |
| Fig. 466-H(8) | 250 | | | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 246 | 242 | 197 | 151 | 112 | 73 | 52 | 31 |
| Fig. 466-K(8) | 250 | | | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 240 | 230 | 181 | 131 | 93 | 54 |

Special ratings for butt welding ends versions only (desing pressure)

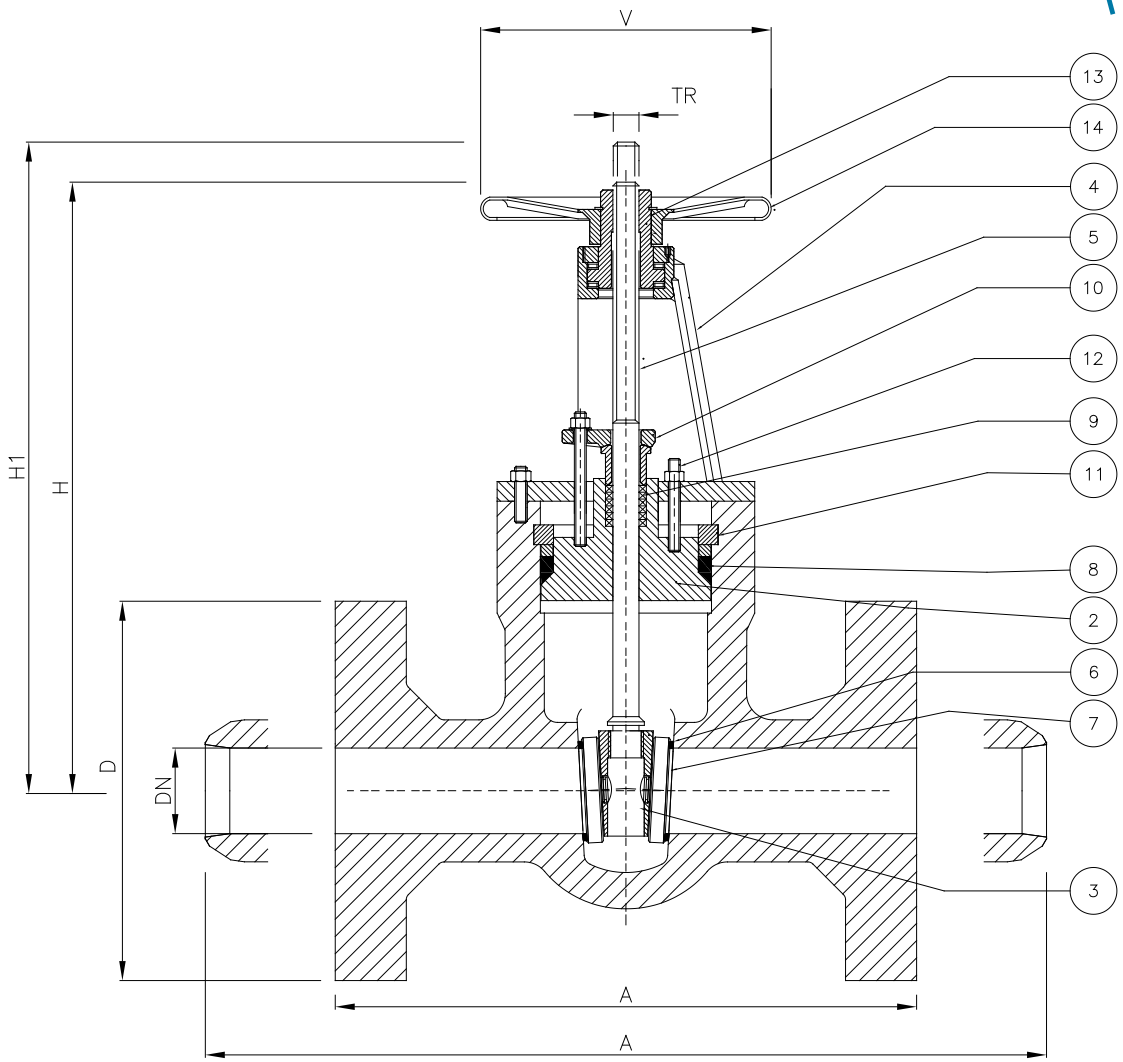
| | PD | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 466-BW(8) | 350 | | | | | 350 | 350 | 350 | 350 | 314 | 278 | 267 | 256 | 239 | 222 | 217 | 211 | 171 | 130 | 96 | 61 | | |
| Fig. 466-H-BW(8) | 444 | | | | | 444 | 444 | 444 | 444 | 419 | 394 | 389 | 383 | 367 | 350 | 296 | 242 | 197 | 151 | 112 | 73 | 52 | 31 |
| Fig. 466-K-BW(8) | 600 | | | | | 600 | 600 | 600 | 600 | 550 | 500 | 489 | 478 | 456 | 433 | 388 | 343 | 287 | 230 | 181 | 131 | 93 | 54 |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 100 the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

# Gate Valve Outside Screw

## PN 320 DN 50 - DN 300
## PD special ratings for BWE version

Fig. 267-567




0948

Rel. 6.0

### Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 1984 |
| ☑ Face to face | EN 558 serie 91 |
| | DIN 3202 F9 |
| ☑ With flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 1984 |
| | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

### Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With butt welding ends EN 12627
- ☐ With flanges form A, B1, B2, C, D, E, F, G, H
- ☐ With special devices (see pages 34 – 35)

# Material Specification



| | | DESCRIPTION | FIG. 267 | FIG. 367 | FIG. 367-J | FIG. 467 | FIG. 467-H | FIG. 467-K |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 2 | | Bonnet | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 3 | x | Wedge | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 4 | | Yoke | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 5 | x | Stem | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4923 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 7 | | Wedge seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 8 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 9 | O | Packing | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 10 | x | Gland | 1.0402 | 1.4571 | 1.4301 | 1.0402 | 1.0402 | 1.0402 |
| 11 | | Segment ring | 1.0425 | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 12 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 12 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 13 | x | Yoke sleeve | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT | 1.0511 NHT |
| 14 | x | Handwheel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel | Pressed steel |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials.
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | H1 | TR | V | Kg | Δp(5) | Wedge (6) |
|---|---|---|---|---|---|---|---|---|---|---|
| PN 320 | 50 | 350 | 210 | 560 | 610 | 24 x 5 | 250 | 80 | 160 | Split |
| | 65 | 425 | 255 | 635 | 705 | 28 x 5 | 300 | 165 | 80 | Split |
| | 80 | 470 | 275 | 680 | 760 | 40 x 7 | 500 | 170 | 30 | Split |
| | 100 | 550 | 335 | 800 | 910 | 50 x 8 | 500 | 260 | 0 | Split |
| | 125 | 650 | 380 | 855 | 975 | 60 x 9 | 600 | 480 | 0 | Split |
| | 150 | 750 | 425 | 1030 | 1185 | 70 x 10 | 600 | 670 | 0 | Split |
| | 200 | 950 | 525 | 1280 | 1500 | 80 x 10 | 600 | 1470 | 0 | Split |
| | 250 | 1150 | 640 | 1490 | 1740 | 100 x 12 | 600 | 2010 | 0 | Split |
| | 300 | 1350 | 780 | 1750 | 2060 | 120 x 14 | 600 | 2990 | 0 | Split |

(5) Maximum differential pressure for manoeuvre without gear box or by-pass according to EN 12570 (if equal to 0 the gearbox is recommended).
(6) Standard wedge type. Other execution available on request.

# Pressure Temperature Ratings (°C / bar)

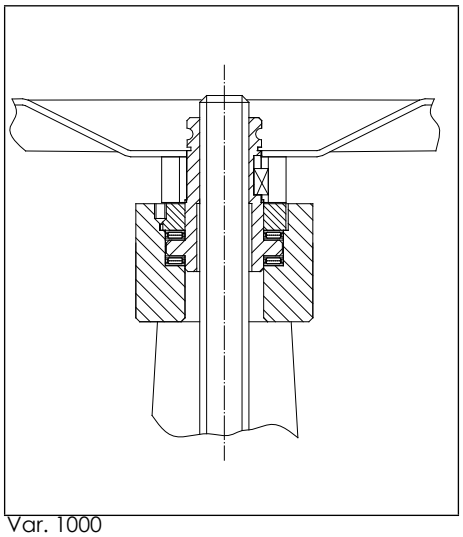
| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 267 | 320 | | | | | 320 | 320 | 316 | 299 | 274 | 249 | 228 | 206 | 192 | 185 | 151 | 118 | | | | | | |
| Fig. 367(7) | 320 | | | 320 | 320 | 320 | 320 | 309 | 263 | 245 | 228 | 217 | 206 | 196 | 185 | 181 | 178 | 174 | 171 | 167 | 164 | | |
| Fig. 367-J | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 302 | 228 | 203 | 178 | 167 | 156 | | | | | | | | | | |
| Fig. 467(7)(8) | 320 | | | | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 306 | 284 | 277 | 270 | 218 | 166 | 122 | 78 | | |
| Fig. 467-H(8) | 320 | | | | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 315 | 310 | 252 | 193 | 144 | 94 | 67 | 40 |
| Fig. 467-K(8) | 320 | | | | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 307 | 294 | 231 | 168 | 119 | 70 |

Special ratings for butt welding ends versions only (desing pressure)

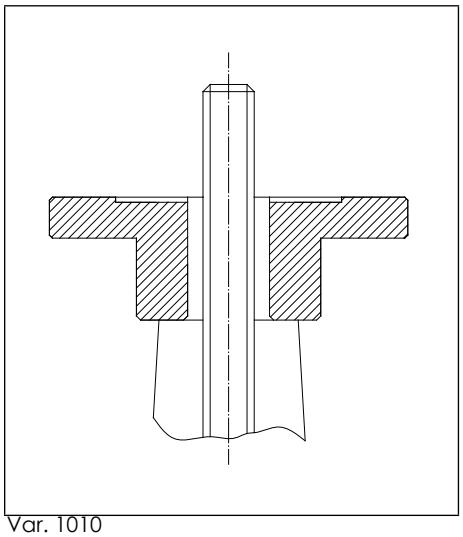
| | PD | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 467-BW(8) | 448 | | | | | 448 | 448 | 448 | 448 | 402 | 356 | 341 | 327 | 306 | 284 | 277 | 270 | 218 | 166 | 122 | 78 | | |
| Fig. 467-H-BW(8) | 569 | | | | | 569 | 569 | 569 | 569 | 537 | 505 | 498 | 491 | 469 | 448 | 379 | 310 | 252 | 193 | 144 | 94 | 67 | 40 |
| Fig. 467-K-BW(8) | 768 | | | | | 768 | 768 | 768 | 768 | 704 | 640 | 626 | 612 | 583 | 555 | 497 | 439 | 367 | 294 | 231 | 168 | 119 | 70 |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 100 the maximum allowable pressure should be proportionally reduced.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 stem.

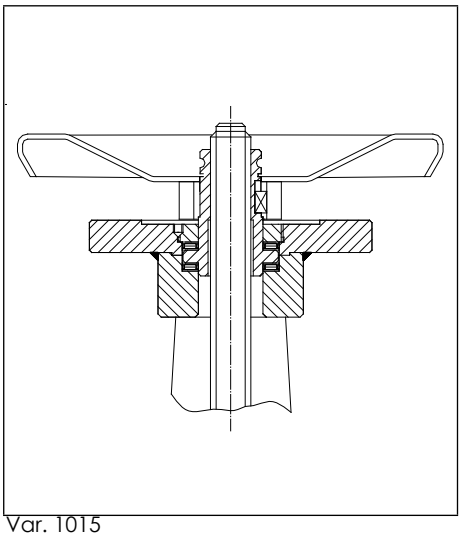
# Variants & Devices



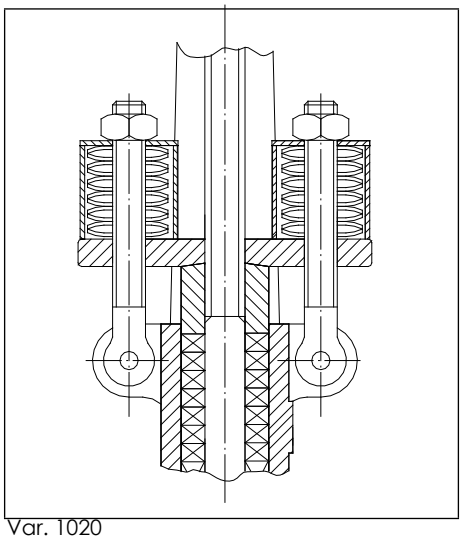
Var. 1000
Top disassembling yoke nut



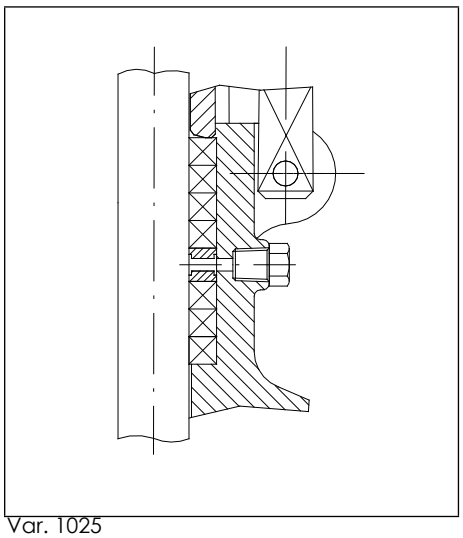
Var. 1010
Top flange acc. to ISO 5210



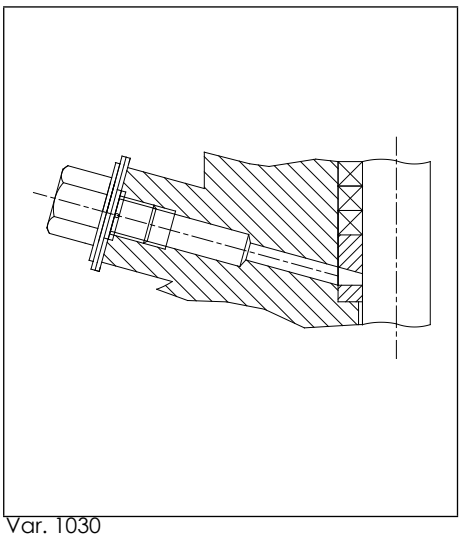
Var. 1015
Convertible top flange acc. to ISO 5210



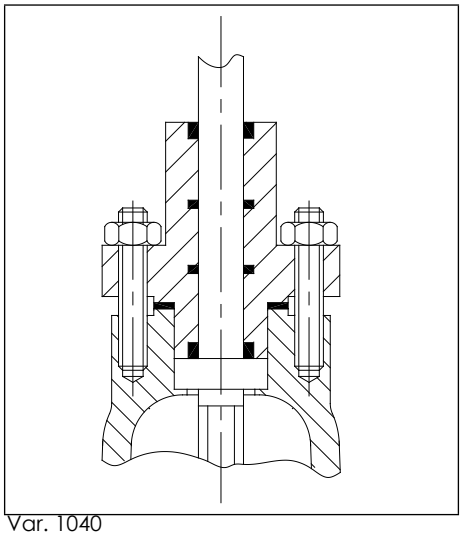
Var. 1020
Live loading packing



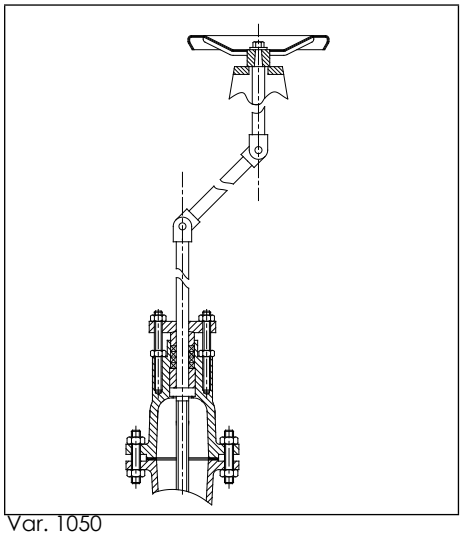
Var. 1025
Lantern ring



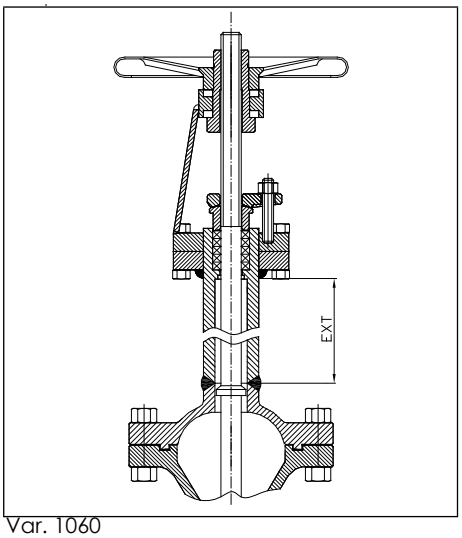
Var. 1030
Packing extraction system



Var. 1040
O - ring packing (inside screw)



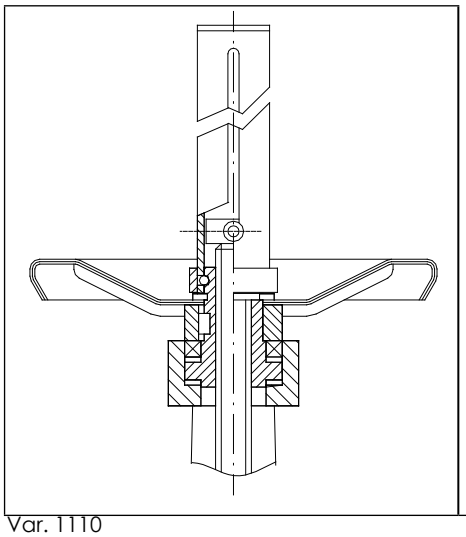
Var. 1050
Stem extension



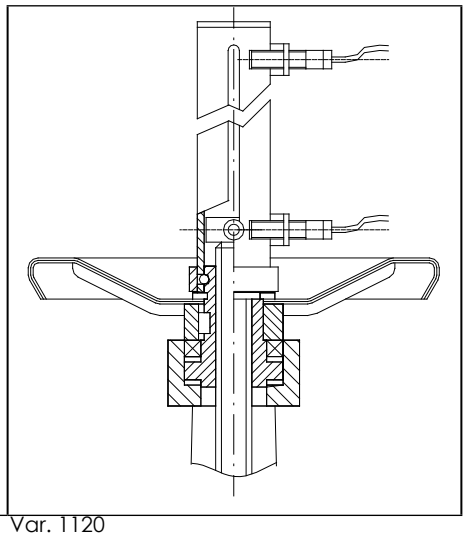

Var. 1060
Cryogenic extension

The drawings of the executions contained in this page are purely indicative, not binding and they can be subjected to change without notice.

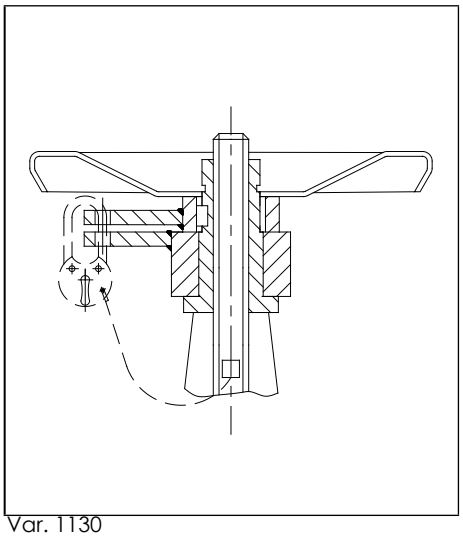
# Variants & Devices



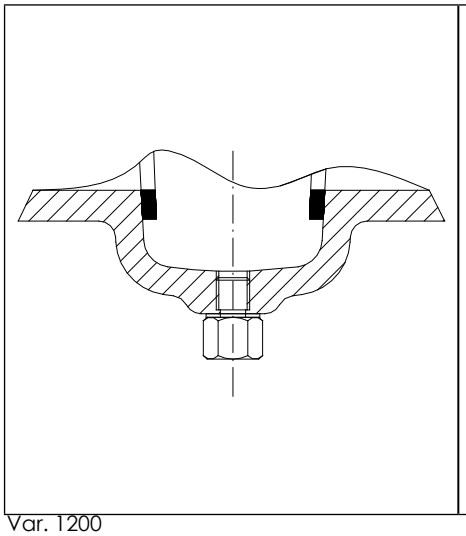
Var. 1110
Position indicator



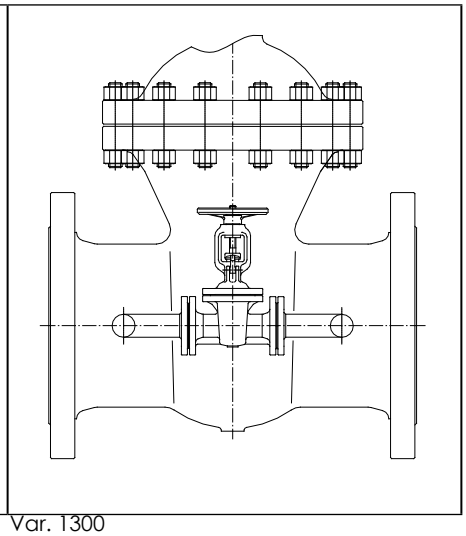
Var. 1120
Position indicator with limit switches



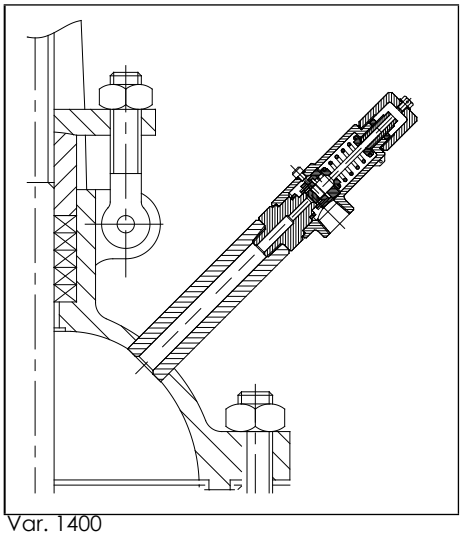
Var. 1130
Locking system



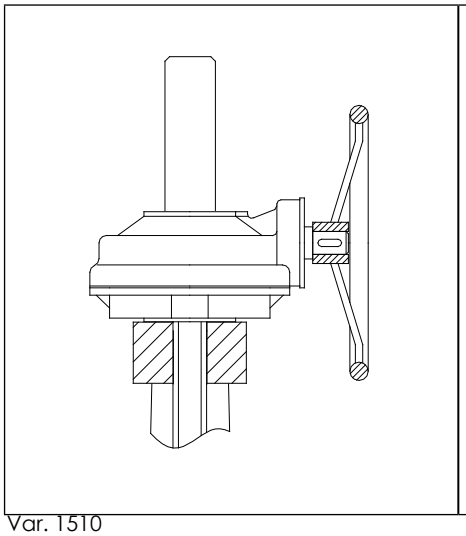
Var. 1200
Drain plug



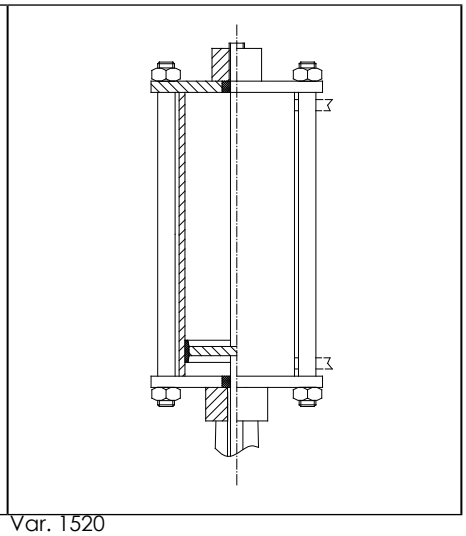
Var. 1300
By pass



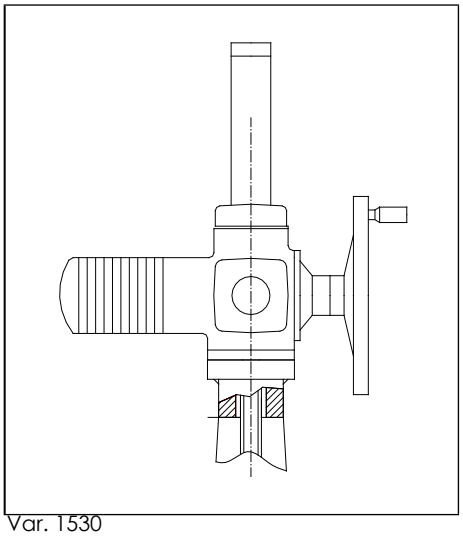
Var. 1400
Pressure relief valve



Var. 1510
Bevel gear box



Var. 1520
Pneumatic or hydraulic actuator



Var. 1530
Electric actuator

The drawings of the executions contained in this page are purely indicative, not binding and they can be subjected to change without notice.

# Swing Check Valves

## APPLICATIONS

The swing check valves are used to prevent flow reversal in piping systems. The swing check is the most efficient non-return valve due to the minimum pressure drop because his "full open" design. Typical applications are:

- water
- chemicals
- petrochemicals
- steam
- gases
- liquid gases (cryogenic service)

## CONSTRUCTION DETAILS

### Body

The body geometry is designed as the result of stress calculations to achieve the most regular distribution of the internal forces dues to pressure action.
The body material is high quality cast steel. The seat surface is covered by a wear resistance stainless steel deposited by welding overlay with a hardness difference of +50 HB in comparison with the disk seats. On request the seat surface can be covered also with stellite or other special material overlays.

## Cover

The cover is bolted type or pressure seal type for the higher pressures. The cover is produced with forged material similar to the body material.
Besides, the cover is designed and manufactured in order to ensure a perfect seal, as well as to allow an easy disassembly and reassembly work.

## Disk

The disk is produced with forged material similar to the body material. A welding overlay of stainless steel material, with high hardness, is deposited on the contact surface. On request the disk can be provided with an overlay of stellite or other materials.
The disk - hinge joint is built to achieve a perfect tightness mean a self-positioning system. Also the normal wear is easily recovered by this system that guarantee a prolonged life of the valve with low maintenance costs.

## Pin

The pin is produced only whit special turning machinery for a high resistance and durability.
The pin is produced with a high finish degree and a strict diametrical clearance to reduce the wear at the minimum possible.

## Gasket

The standard gasket is in pure graphite stainless steel reinforced. This type of gasket is suitable for many different applications.
For special applications (cryogenic gases, high corrosion acids, etc.) we can supply special gaskets designed for the specific application or according to customer specifications. All swing check valves are provided by standard with chambered gasket.

# Swing Check Valves

## Lever and counterweight

On request the swing check valve can be provided with lever with counterweight to balance the weight of the disk and make the closing more soft.
This optional device is suggested for diameters over 200 mm where the weight of the disk is relevant. Also in vertical installation the counterweight can reduce the adverse influence of gravity on the functioning of the swing check valve.
On request the counterweight can be adjustable to be easily adapted to the specific operating conditions.

## Hydraulic brake

Where the flow reversal is very quick the swing check valve shall be provided with a hydraulic brake connected to the lever. The brake, lengthening the time of closing to the selected value, avoids the risk that the swing check valve, due to the quick closing of the disk, can cause a water hammer in the pipeline.
Different types of brake are available depending on customer requirements.
All the brakes are provided by a pin valve to set-up the closing time to the required value.

## Anti-shock device

When cause a quick closing of a valve or a quick stop of a pump or in any other situation where the pipeline can be subject to water hammers, the swing check valve must be provided with an anti-shock device. The water hammers indeed can give rise strong impacts of the disk against the body seats. This fact generally cause several damaged to the swing check valves and vibrations propagating in the pipeline. The anti-shock device avoids the impacts mean a spring that absorbs all the kinetic energy decelerating quickly the disk. The anti-shock devices are adjustable to be easily adapted to the specific operating conditions.

## WARNINGS

- The swing check valves can't be used for media whom tend to produce high sedimentation or encrustation, as well as fluids containing foreign solids that, due to their hardness, present the risk of damage to the seat faces.
- For larger sizes (over DN 200) and frequent opening and closing the lever and counterweight are required to reduce the wear of the components.
- In case of quick flow reversal the swing check valve shall be always provided with lever and brake to avoid causing water hammers.
- When they are possible water hammers caused by other devices, the swing check valve shall be provided with anti-shock device to avoid damages to the valve and to the pipeline.
- When the swing check valve is provided with lever, appropriate devices shall be predisposed on the installation to avoid the risk of accident for the people due to rapid movement of the lever.

## INSTALLATION

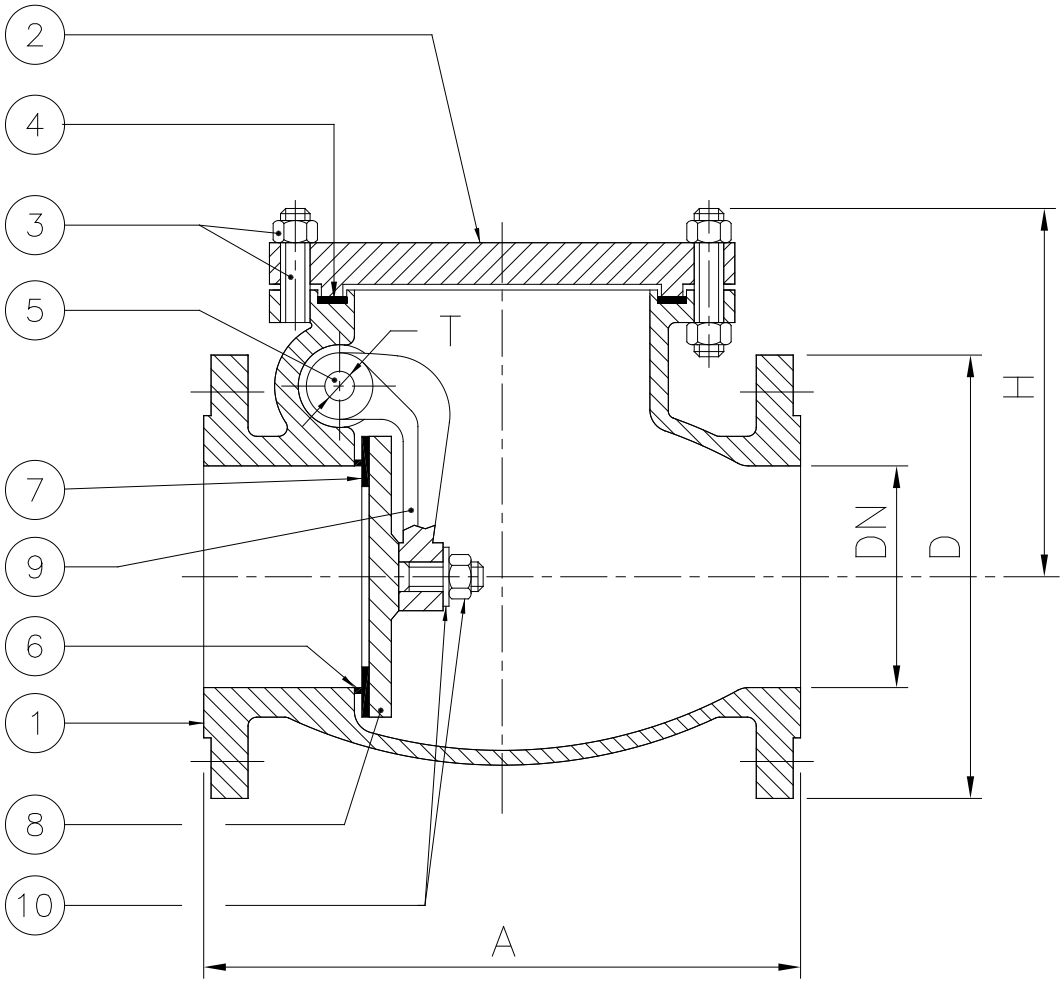
The installation position for the swing check valves shall be vertical or horizontal. In case of vertical installation if the direction of the fluid is from the top to down the swing check valve have to be always provided with a counterweight. Before the installation remove the plastic caps from the flanges and verify the correct functioning of the clap. If necessary grease the pin to reduce the friction. Once the medium pressure and temperature are established check the tightness of the bolted connection and of the pin plug: small leakage can be eliminated fastening the bolts. For other information please refer to the installation manual and follow the instructions there contained.

# Swing Check Valve

## PN 25 DN 50 - DN 900

Flanges PN 25 or PN 16

Fig. 270-570

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 14341 |
| ☑ Face to face | EN 558 series 48 |
| | DIN 3202 F6 |
| ☑ Flanges | EN 1092-1/21/B1 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 10 or PN 6
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12627)
- ☐ With special devices (see page 52)

# Material Specification



| | | DESCRIPTION | FIG. 270 | FIG. 370 | FIG. 370-J | FIG. 470 | FIG. 470-H | FIG. 570 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Cover | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.0508 |
| 3 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 3 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 4 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 5 | x | Hinge pin | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Disk seats | 1.4502 (2) | 1.4571 (2) | 1.4301 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | x | Disk | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.0508 |
| 9 | | Hinge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 10 | | Stud | 1.7225 (4) | 1.4401 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 10 | | Nut | 1.1191 (4) | 1.4401 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.
(5) 1.0044 for swing check valves with DN over 125 mm.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | T | Kg |
|---|---|---|---|---|---|---|
| PN 25 | 50 | 200 | 165 | 160 | 10 | 15 |
| | 65 | 240 | 185 | 170 | 15 | 24 |
| | 80 | 260 | 200 | 175 | 15 | 28 |
| | 100 | 300 | 235 | 195 | 15 | 38 |
| | 125 | 350 | 270 | 210 | 18 | 58 |
| | 150 | 400 | 300 | 240 | 18 | 96 |
| | 200 | 500 | 360 | 280 | 18 | 131 |
| | 250 | 600 | 425 | 320 | 24 | 212 |
| | 300 | 700 | 485 | 365 | 24 | 273 |
| | 350 | 800 | 555 | 425 | 28 | 440 |
| | 400 | 900 | 620 | 440 | 28 | 465 |
| | 450 | 1000 | 670 | 520 | 36 | 750 |
| | 500 | 1100 | 730 | 620 | 36 | 1100 |
| | 600 | 1300 | 845 | 710 | 40 | 1500 |
| | 700 | 1500 | 960 | 750 | 50 | 2100 |
| | 800 | 1700 | 1085 | 810 | 60 | 2800 |
| | 900 | 1900 | 1185 | 880 | 70 | 3050 |

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 270(5) | 25 | | | | | 25.0 | 25.0 | 24.7 | 23.3 | 21.4 | 19.4 | 17.8 | 16.1 | 15.0 | 14.4 | 11.8 | 9.2 | | | | | | |
| Fig. 370(6) | 25 | | | 25.0 | 25.0 | 25.0 | 25.0 | 24.1 | 20.6 | 19.2 | 17.8 | 16.9 | 16.1 | 15.3 | 14.4 | 14.2 | 13.9 | 13.6 | 13.3 | 13.1 | 12.8 | | |
| Fig. 370-J | 25 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.6 | 17.8 | 15.8 | 13.9 | 13.1 | 12.2 | | | | | | | | | | |
| Fig. 470(6)(7) | 25 | | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.9 | 22.2 | 15.7 | 9.2 | 11.1 | 13.0 | 9.6 | 6.1 | | |
| Fig. 470-H(7) | 25 | | | | | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.6 | 24.2 | 19.7 | 15.1 | 11.2 | 7.3 | 5.2 | 3.1 |
| Fig. 570 | 25 | | | | 25.0 | 25.0 | 25.0 | 24.4 | 22.2 | 21.1 | 20.0 | 19.4 | 18.9 | | | | | | | | | | |

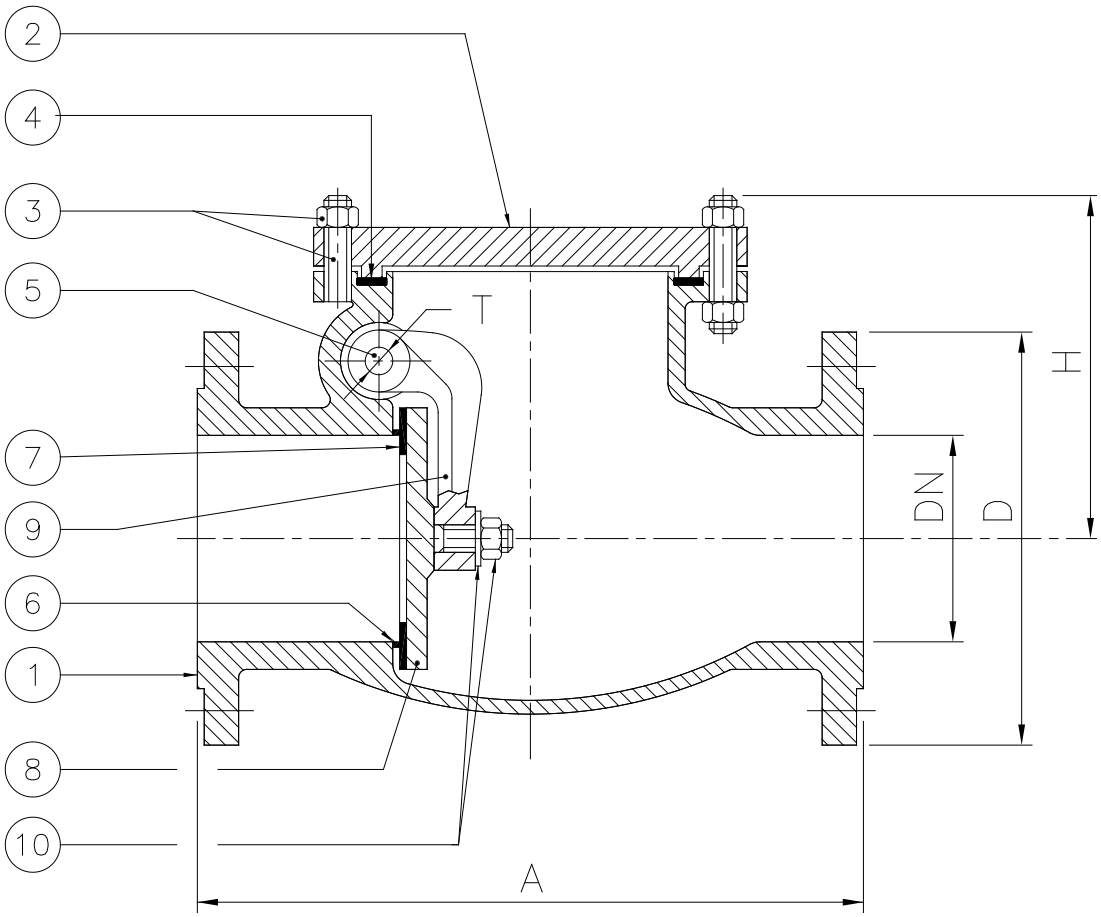
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 25 or PN 16 the maximum allowable pressure should be proportionally reduced.
(5) Supplied suitable for service temperature up to 300°C and for higher temperatures only on request.
(6) Suitable over 450 °C only if provided with stellited seats. (7) Suitable over 530 °C only if provided with 1.3964 pin.

# Swing Check Valve

## PN 40 DN 50 - DN 400

Flanges PN 40 or PN 25 or PN 16

Fig. 280-580

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 14341 |
| ☑ Face to face | EN 558 series 1 |
| | DIN 3202 F1 |
| ☑ Flanges | EN 1092-1/21/B1 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 10
- ☐ With flanges form A, B2, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12627 / EN 12982)
- ☐ With special devices (see page 52)

# Material Specification



| | | DESCRIPTION | FIG. 280 | FIG. 380 | FIG. 380-J | FIG. 480 | FIG. 480-H | FIG. 580 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Cover | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.0508 |
| 3 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 3 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 4 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 5 | x | Hinge pin | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 7 | | Disk seats | 1.4502 (2) | 1.4571 (2) | 1.4301 (2) | 1.4502 (2) | Stellite | 1.4502 (2) |
| 8 | x | Disk | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.0508 |
| 9 | | Hinge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 10 | | Stud | 1.7225 (4) | 1.4401 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 10 | | Nut | 1.1191 (4) | 1.4401 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.
(5) 1.0044 for swing check valves with DN over 125 mm.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | T | Kg |
|---|---|---|---|---|---|---|
| PN 40 | 50 | 230 | 165 | 160 | 10 | 20 |
| | 80 | 310 | 200 | 175 | 15 | 33 |
| | 100 | 350 | 235 | 215 | 15 | 46 |
| | 125 | 400 | 270 | 230 | 18 | 65 |
| | 150 | 480 | 300 | 240 | 18 | 95 |
| | 200 | 600 | 375 | 290 | 18 | 165 |
| | 250 | 730 | 450 | 320 | 24 | 230 |
| | 300 | 850 | 515 | 395 | 24 | 380 |
| | 350 | 980 | 580 | 435 | 28 | 500 |
| | 400 | 1100 | 660 | 450 | 28 | 580 |

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 280(5) | 40 | | | | | 40.0 | 40.0 | 39.5 | 37.3 | 34.2 | 31.1 | 28.4 | 25.8 | 24.0 | 23.1 | 18.9 | 14.8 | | | | | | |
| Fig. 380(6) | 40 | | | 40.0 | 40.0 | 40.0 | 40.0 | 38.6 | 32.9 | 30.7 | 28.4 | 27.1 | 25.8 | 24.4 | 23.1 | 22.7 | 22.2 | 21.8 | 21.3 | 20.9 | 20.4 | | |
| Fig. 380-J | 40 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 37.7 | 28.4 | 25.3 | 22.2 | 20.9 | 19.6 | | | | | | | | | | |
| Fig. 480(6)(7) | 40 | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 38.2 | 35.6 | 25.2 | 14.8 | 17.8 | 20.8 | 15.3 | 9.8 | | |
| Fig. 480-H(7) | 40 | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 39.4 | 38.8 | 31.5 | 24.2 | 18.0 | 11.7 | 8.4 | 5.0 |
| Fig. 580 | 40 | | | | 40.0 | 40.0 | 40.0 | 39.1 | 35.6 | 33.8 | 32.0 | 31.1 | 30.2 | | | | | | | | | | |

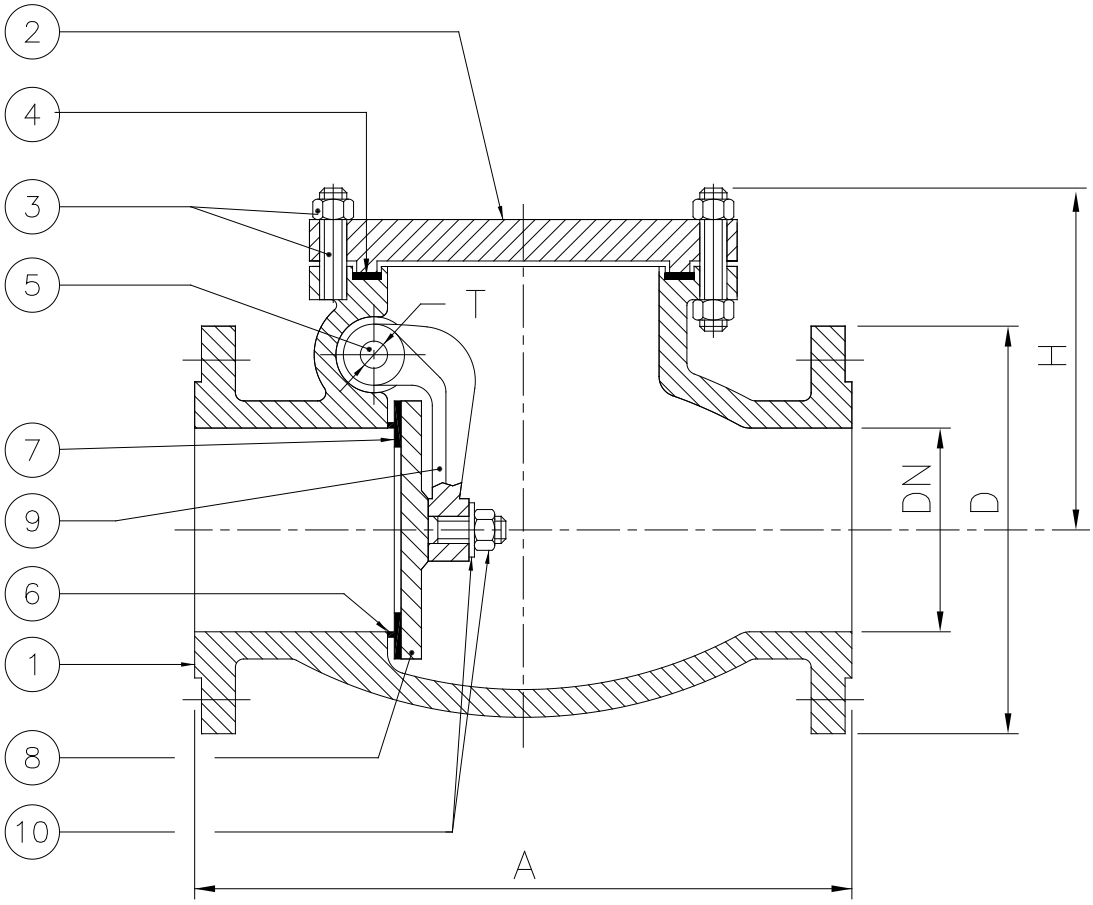
Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 25 or PN 16 the maximum allowable pressure should be proportionally reduced.
(5) Supplied suitable for service temperature up to 300°C and for higher temperatures only on request.
(6) Suitable over 450 °C only if provided with stellited seats. (7) Suitable over 530 °C only if provided with 1.3964 pin.

# Swing Check Valve

## PN 100 DN 50 - DN 400

Flanges PN 100 or PN 63

Fig. 290-590

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## Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 14341 |
| ☑ Face to face | EN 558 series 2 |
| | DIN 3202 F2 |
| ☑ Flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

## Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With flanges PN 40 or PN25
- ☐ With flanges form A, B1, C, D, E, F, G, H
- ☐ With butt welding ends (EN 12627 / EN 12982)
- ☐ With special devices (see page 52)

# Material Specification



| | | DESCRIPTION | FIG. 290 | FIG. 390 | FIG. 390-J | FIG. 490 | FIG. 490-H | FIG. 590 |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 2 | | Cover | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.0508 |
| 3 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 3 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 4 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 5 | x | Hinge pin | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4021 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4430 (2) | 1.4316 (2) | 1.4502 (2) | Stellite (2) | 1.4502 (2) |
| 7 | | Disk seats | 1.4502 (2) | 1.4571 (2) | 1.4301 (2) | 1.4502 (2) | Stellite (2) | 1.4502 (2) |
| 8 | x | Disk | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.0508 |
| 9 | | Hinge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.1138 |
| 10 | | Stud | 1.7225 (4) | 1.4401 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 10 | | Nut | 1.1191 (4) | 1.4401 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials and different desing (e.g. cam-profile).
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.
(5) 1.0044 for swing check valves with DN over 125 mm.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | T | Kg |
|---|---|---|---|---|---|---|
| PN 100 | 50 | 300 | 195 | 175 | 10 | 26 |
| | 80 | 380 | 230 | 200 | 15 | 54 |
| | 100 | 430 | 265 | 245 | 15 | 75 |
| | 125 | 500 | 315 | 260 | 18 | 100 |
| | 150 | 550 | 355 | 275 | 18 | 130 |
| | 200 | 650 | 400 | 315 | 24 | 200 |
| | 250 | 775 | 515 | 360 | 24 | 260 |
| | 300 | 900 | 585 | 415 | 24 | 420 |
| | 350 | 1025 | 655 | 620 | 28 | 910 |
| | 400 | 1150 | 715 | 700 | 28 | 1200 |

# Pressure Temperature Ratings (°C / bar)

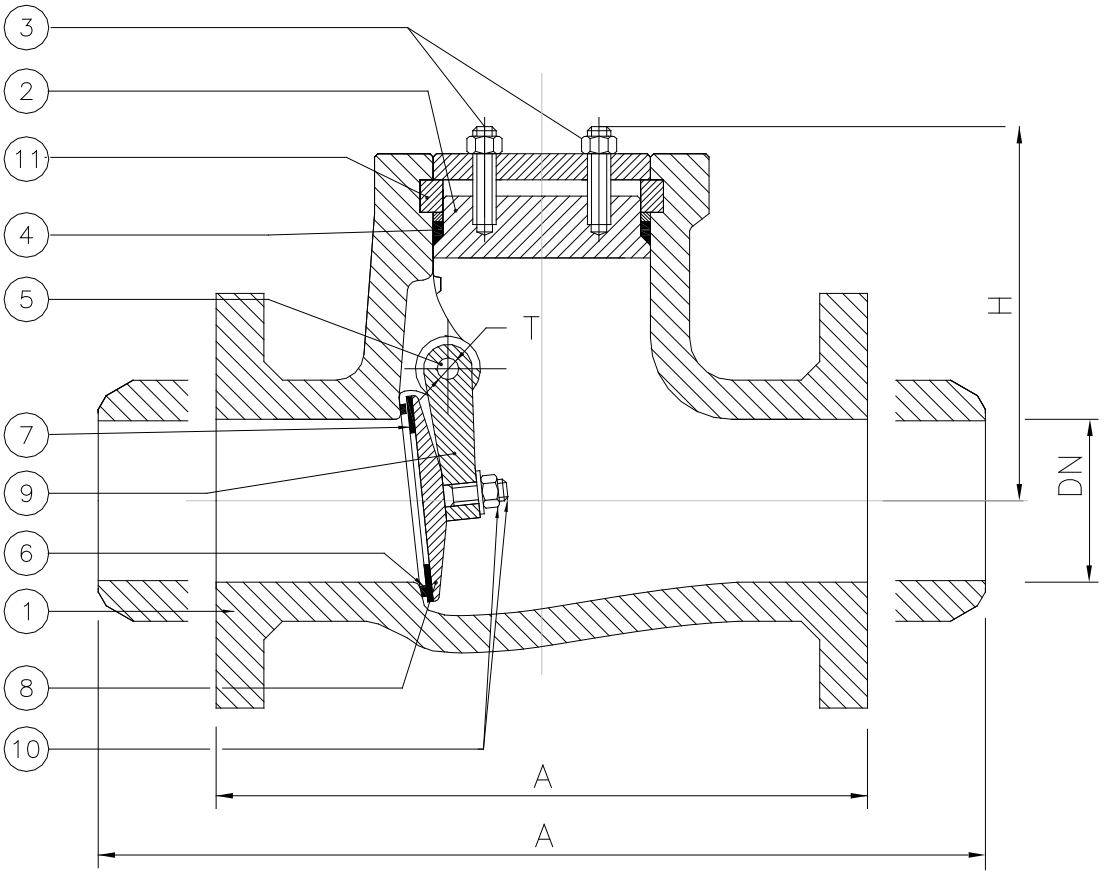
| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 290(5) | 100 | | | | | | | 98,7 | 93,3 | 85,6 | 77,8 | 71,1 | 64,4 | 60,0 | 57,8 | 47,3 | 36,9 | | | | | | |
| Fig. 390(6) | 100 | | | 100 | 100 | 100 | 100 | 96,4 | 82,2 | 76,7 | 71,1 | 67,8 | 64,4 | 61,1 | 57,8 | 56,7 | 55,6 | 54,4 | 53,3 | 52,2 | 51,1 | | |
| Fig. 390-J | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 94,2 | 71,1 | 63,3 | 55,6 | 52,2 | 48,9 | | | | | | | | | | |
| Fig. 490(6)(7) | 100 | | | | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95,6 | 88,9 | 86,7 | 84,4 | 68,2 | 52,0 | 38,2 | 24,4 | | |
| Fig. 490-H(7) | 100 | | | | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98,4 | 96,9 | 78,7 | 60,4 | 44,9 | 29,3 | 20,9 | 12,4 |
| Fig. 590 | 100 | | | | 100 | 100 | 100 | 97,8 | 88,9 | 84,4 | 80,0 | 77,8 | 75,6 | | | | | | | | | | |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 63 the maximum allowable pressure should be proportionally reduced.
(5) Supplied suitable for service temperature up to 300°C and for higher temperatures only on request.
(6) Suitable over 450 °C only if provided with stellited seats. (7) Suitable over 530 °C only if provided with 1.3964 pin.

# Swing Check Valve

## PN 160 DN 50 - DN 300
## PD special ratings for BWE version

Fig. 291-591

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### Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 14341 |
| ☑ Face to face | EN 558 series 99 |
| | DIN 3202 F8 |
| ☑ With flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

### Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With butt welding ends EN 12627
- ☐ With flanges form A, B1, B2, C, D, E, F, G, H
- ☐ With special devices (see page 52)

# Material Specification



| | | DESCRIPTION | FIG. 291 | FIG. 391 | FIG. 391-J | FIG. 491 | FIG. 491-H | FIG. 491-K |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 2 | | Cover | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4931 |
| 3 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 3 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 4 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 5 | X | Hinge pin | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4923 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 7 | | Disk seats | 1.4502 (2) | 1.4430 (2) | 1.4301 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 8 | X | Disk | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 9 | | Hinge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4903 |
| 10 | | Stud | 1.7225 (4) | 1.4401 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 10 | | Nut | 1.1191 (4) | 1.4401 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 11 | | Segmented ring | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials.
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.
(5) 1.0044 for swing check valves with DN over 125 mm.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | T | Kg |
|---|---|---|---|---|---|---|
| PN 160 | 50 | 300 | 195 | 175 | 10 | 45 |
| | 80 | 390 | 230 | 205 | 15 | 65 |
| | 100 | 450 | 265 | 270 | 15 | 90 |
| | 125 | 525 | 315 | 305 | 18 | 150 |
| | 150 | 600 | 355 | 320 | 18 | 190 |
| | 200 | 750 | 430 | 410 | 18 | 360 |
| | 250 | 900 | 515 | 490 | 24 | 540 |
| | 300 | 1050 | 585 | 550 | 24 | 780 |

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 291(6) | 160 | | | | | 160 | 160 | 157 | 149 | 136 | 124 | 113 | 103 | 96 | 92 | 76 | 59 | | | | | | |
| Fig. 391(7) | 160 | | | 160 | 160 | 160 | 160 | 154 | 131 | 122 | 113 | 108 | 103 | 98 | 92 | 91 | 89 | 87 | 85 | 84 | 82 | | |
| Fig. 391-J | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 150 | 113 | 101 | 89 | 84 | 78 | | | | | | | | | | |
| Fig. 491(8) | 160 | | | | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 152 | 142 | 138 | 135 | 109 | 83 | 61 | 39 | | |
| Fig. 491-H(8) | 160 | | | | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 155 | 125 | 97 | 72 | 47 | 33 | 20 |
| Fig. 491-K(8) | 160 | | | | | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 147 | 115 | 84 | 59 | 35 |

Special ratings for butt welding ends versions only (desing pressure)

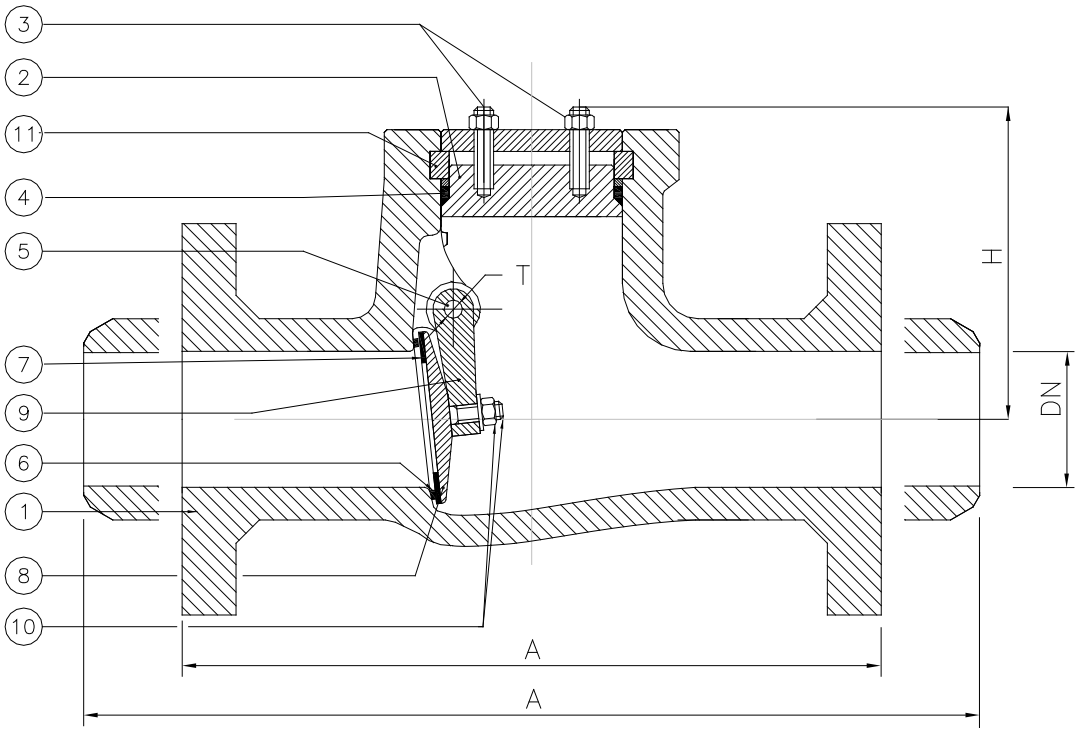
| | PD | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 461-BW(8) | 224 | | | | | 224 | 224 | 224 | 224 | 201 | 178 | 171 | 164 | 153 | 142 | 139 | 135 | 109 | 83 | 61 | 39 | | |
| Fig. 461-H-BW(8) | 284 | | | | | 284 | 284 | 284 | 284 | 268 | 252 | 249 | 245 | 235 | 224 | 190 | 155 | 125 | 97 | 72 | 47 | 33 | 20 |
| Fig. 461-K-BW(8) | 384 | | | | | 384 | 384 | 384 | 384 | 352 | 320 | 312 | 305 | 291 | 277 | 248 | 219 | 183 | 147 | 115 | 84 | 59 | 35 |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection with lower PN the maximum allowable pressure should be proportionally reduced.
(6) Supplied suitable for service temperature up to 300°C and for higher temperatures only on request.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 pin.

# Swing Check Valve

## PN 250 DN 50 - DN 300
## PD special ratings for BWE version

Fig. 296-596




0948

Rel. 6.0

### Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 14341 |
| ☑ Face to face | EN 558 series 91 |
| | DIN 3202 F9 |
| ☑ With flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

### Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With butt welding ends EN 12627
- ☐ With flanges form A, B1, B2, C, D, E, F, G, H
- ☐ With special devices (see page 52)

# Material Specification



| | | DESCRIPTION | FIG. 296 | FIG. 396 | FIG. 396-J | FIG. 496 | FIG. 496-H | FIG. 496-K |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 2 | | Cover | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4931 |
| 3 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 3 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 4 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 5 | X | Hinge pin | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4923 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 7 | | Disk seats | 1.4502 (2) | 1.4430 (2) | 1.4301 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 8 | X | Disk | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 9 | | Hinge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4903 |
| 10 | | Stud | 1.7225 (4) | 1.4401 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 10 | | Nut | 1.1191 (4) | 1.4401 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 11 | | Segmented ring | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials.
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.
(5) 1.0044 for swing check valves with DN over 125 mm.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | T | Kg |
|---|---|---|---|---|---|---|
| PN 250 | 50 | 350 | 200 | 180 | 10 | 40 |
| | 80 | 470 | 255 | 215 | 15 | 80 |
| | 100 | 550 | 300 | 285 | 15 | 135 |
| | 125 | 650 | 340 | 325 | 18 | 250 |
| | 150 | 750 | 390 | 340 | 18 | 310 |
| | 200 | 950 | 485 | 435 | 18 | 525 |
| | 250 | 1150 | 585 | 520 | 24 | 830 |
| | 300 | 1350 | 690 | 580 | 24 | 1250 |

# Pressure Temperature Ratings (°C / bar)

| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 296(6) | 250 | | | | | 250 | 250 | 250 | 233 | 214 | 194 | 178 | 161 | 150 | 144 | 118 | 92 | | | | | | |
| Fig. 396(7) | 250 | | | 250 | 250 | 250 | 250 | 250 | 206 | 192 | 178 | 169 | 161 | 153 | 144 | 142 | 139 | 136 | 133 | 131 | 128 | | |
| Fig. 396-J | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 178 | 158 | 139 | 131 | 122 | | | | | | | | | | |
| Fig. 496(8) | 250 | | | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 239 | 222 | 217 | 211 | 180 | 130 | 96 | 61 | | |
| Fig. 496-H(8) | 250 | | | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 246 | 242 | 197 | 151 | 112 | 73 | 52 | 31 |
| Fig. 496-K(8) | 250 | | | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 240 | 230 | 181 | 131 | 93 | 54 |

Special ratings for butt welding ends versions only (desing pressure)

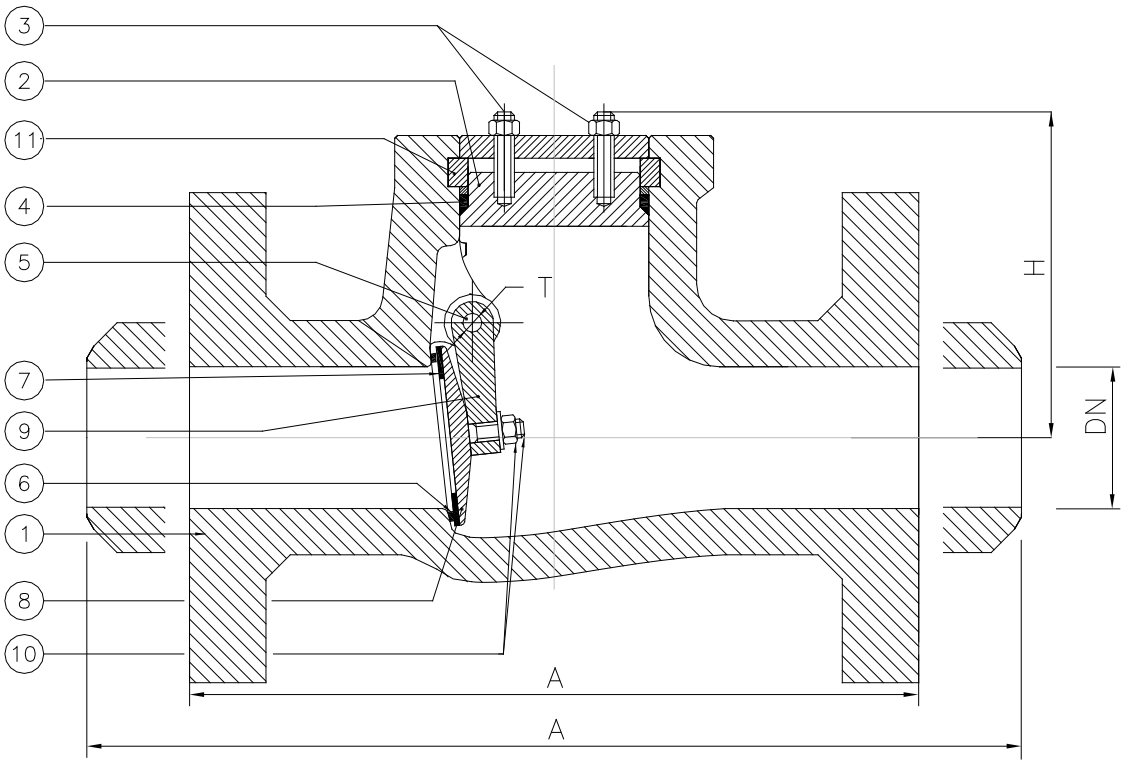
| | PD | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 496-BW(8) | 350 | | | | | 350 | 350 | 350 | 350 | 314 | 278 | 267 | 256 | 239 | 222 | 217 | 211 | 171 | 130 | 96 | 61 | | |
| Fig. 496-H-BW(8) | 444 | | | | | 444 | 444 | 444 | 444 | 419 | 394 | 389 | 383 | 367 | 350 | 296 | 242 | 197 | 151 | 112 | 73 | 52 | 31 |
| Fig. 496-K-BW(8) | 600 | | | | | 600 | 600 | 600 | 600 | 550 | 500 | 489 | 478 | 456 | 433 | 388 | 343 | 287 | 230 | 181 | 131 | 93 | 54 |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 100 the maximum allowable pressure should be proportionally reduced.
(6) Supplied suitable for service temperature up to 300°C and for higher temperatures only on request.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 pin.

# Swing Check Valve

## PN 320 DN 50 - DN 300
## PD special ratings for BWE version

Fig. 297-597




0948

Rel. 6.0

### Standard features:

| | |
|---|---|
| ☑ Design | EN 12516 |
| | EN 14341 |
| ☑ Face to face | EN 558 series 91 |
| | DIN 3202 F9 |
| ☑ With flanges | EN 1092-1/21/B2 |
| ☑ Materials | EN 10213 |
| | EN 10269 |
| | EN 10088 |
| ☑ Bolts and nuts | EN 1515-1 |
| ☑ Welding overlay | AD-M HP 0 |
| ☑ Testing | EN 12266 |
| ☑ Marking | EN 19 |
| ☑ Certificates | EN 10204 |

### Optional versions:

- ☐ AD 2000 – A4
- ☐ TRD 110
- ☐ DIN 3230 Part 4
- ☐ DIN 3230 Part 5
- ☐ DIN 3230 Part 6
- ☐ TRbF 131
- ☐ TRbF 301 or 302
- ☐ ATEX
- ☐ TA-Luft
- ☐ With butt welding ends EN 12627
- ☐ With flanges form A, B1, B2, C, D, E, F, G, H
- ☐ With special devices (see page 52)

# Material Specification



| | | DESCRIPTION | FIG. 297 | FIG. 397 | FIG. 397-J | FIG. 497 | FIG. 497-H | FIG. 497-K |
|---|---|---|---|---|---|---|---|---|
| 1 | | Body | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4931 |
| 2 | | Cover | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4931 |
| 3 | | Bolts | 1.7225 (4) | 1.4301 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 3 | | Nuts | 1.1191 (4) | 1.4301 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 4 | O | Gasket | Graphite + SS (3) | Graphite + SS (3) | PTFE (3) | Graphite + SS (3) | Graphite + SS (3) | Graphite + SS (3) |
| 5 | X | Hinge pin | 1.4021 (1) | 1.4571 (1) | 1.4301 (1) | 1.4021 (1) | 1.4021 (1) | 1.4923 (1) |
| 6 | | Body seats | 1.4502 (2) | 1.4581 (2) | 1.4308 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 7 | | Disk seats | 1.4502 (2) | 1.4430 (2) | 1.4301 (2) | 1.4502 (2) | Stellite (2) | Stellite (2) |
| 8 | X | Disk | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |
| 9 | | Hinge | 1.0619 | 1.4581 | 1.4308 | 1.7357 | 1.7379 | 1.4903 |
| 10 | | Stud | 1.7225 (4) | 1.4401 (4) | 1.4301 (4) | 1.7711 (4) | 1.7711 (4) | 1.7225 (4) |
| 10 | | Nut | 1.1191 (4) | 1.4401 (4) | 1.4301 (4) | 1.7225 (4) | 1.7225 (4) | 1.7225 (4) |
| 11 | | Segmented ring | 1.0425 (5) | 1.4571 | 1.4301 | 1.7335 | 1.7380 | 1.4903 |

(1) Also available on request 1,4571, 1.4301, 1.3964, Hastelloy, or other materials.
(2) Also available on request stellite, 1.4462 (duplex), 1.4430, 1.4316, Hastelloy, or other materials.
(3) Also available on request PTFE, Gore-tex, graphite, or other materials.
(4) Also available on request 1.7225 / 1.1191, 1.7711 / 1.7225, 1.4401, 1.4301, A4-70 or other materials.
(5) 1.0044 for swing check valves with DN over 125 mm.

O recommended spare parts for 2 years standard service; x recommended spare parts for 5 years standard service.

# Dimensions

| | DN | A | D | H | T | Kg |
|---|---|---|---|---|---|---|
| PN 320 | 50 | 350 | 210 | 190 | 10 | 65 |
| | 80 | 470 | 275 | 225 | 15 | 140 |
| | 100 | 550 | 335 | 300 | 15 | 240 |
| | 125 | 650 | 380 | 350 | 18 | 460 |
| | 150 | 750 | 425 | 370 | 18 | 540 |
| | 200 | 950 | 525 | 460 | 18 | 1150 |
| | 250 | 1150 | 640 | 560 | 24 | 1680 |
| | 300 | 1350 | 780 | 630 | 24 | 2240 |

# Pressure Temperature Ratings (°C / bar)

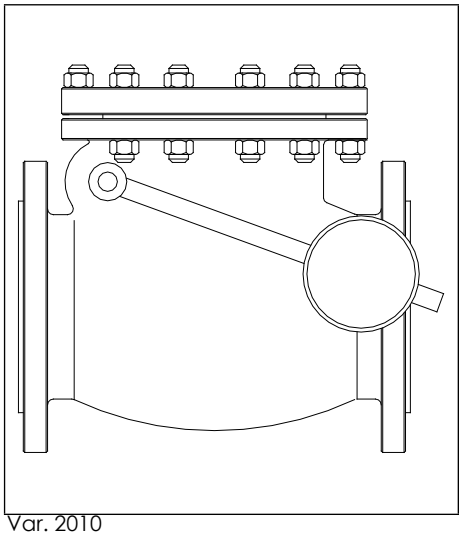
| | PN | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 297(6) | 320 | | | | | 320 | 320 | 316 | 299 | 274 | 249 | 228 | 206 | 192 | 185 | 151 | 118 | | | | | | |
| Fig. 397(7) | 320 | | | 320 | 320 | 320 | 320 | 309 | 263 | 245 | 228 | 217 | 206 | 196 | 185 | 181 | 178 | 174 | 171 | 167 | 164 | | |
| Fig. 397-J | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 302 | 228 | 203 | 178 | 167 | 156 | | | | | | | | | | |
| Fig. 497(8) | 320 | | | | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 306 | 284 | 277 | 270 | 218 | 166 | 122 | 78 | | |
| Fig. 497-H(8) | 320 | | | | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 315 | 310 | 252 | 193 | 144 | 94 | 67 | 40 |
| Fig. 497-K(8) | 320 | | | | | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 307 | 294 | 231 | 168 | 119 | 70 |

Special ratings for butt welding ends versions only (desing pressure)

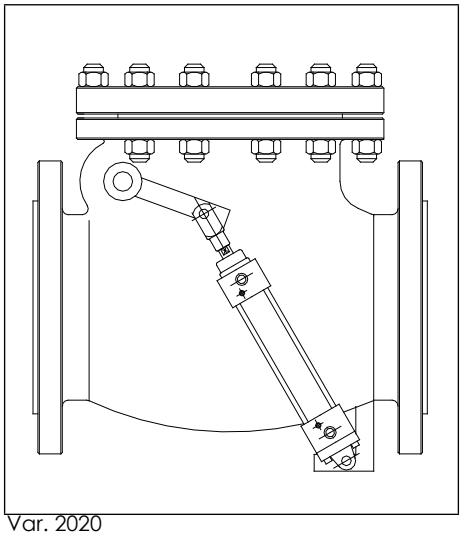
| | PD | -195 | -150 | -100 | -50 | -10 | 0 | 20 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 425 | 450 | 475 | 500 | 525 | 550 | 575 | 600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fig. 497-BW(8) | 448 | | | | | 448 | 448 | 448 | 448 | 402 | 356 | 341 | 327 | 306 | 284 | 277 | 270 | 218 | 166 | 122 | 78 | | |
| Fig. 497-H-BW(8) | 569 | | | | | 569 | 569 | 569 | 569 | 537 | 505 | 498 | 491 | 469 | 448 | 379 | 310 | 252 | 193 | 144 | 94 | 67 | 40 |
| Fig. 497-K-BW(8) | 768 | | | | | 768 | 768 | 768 | 768 | 704 | 640 | 626 | 612 | 583 | 555 | 497 | 439 | 367 | 294 | 231 | 168 | 119 | 70 |

Please, in the inquiry and in the order, specify always the maximum service temperature when it's over 100 °C.
If the valves are provided with flanged connection PN 100 the maximum allowable pressure should be proportionally reduced.
(6) Supplied suitable for service temperature up to 300°C and for higher temperatures only on request.
(7) Suitable over 450 °C only if provided with stellited seats. (8) Suitable over 530 °C only if provided with 1.3964 pin.

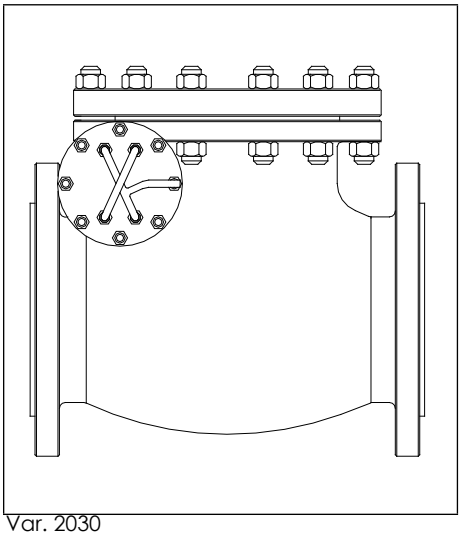
# Variants & Devices



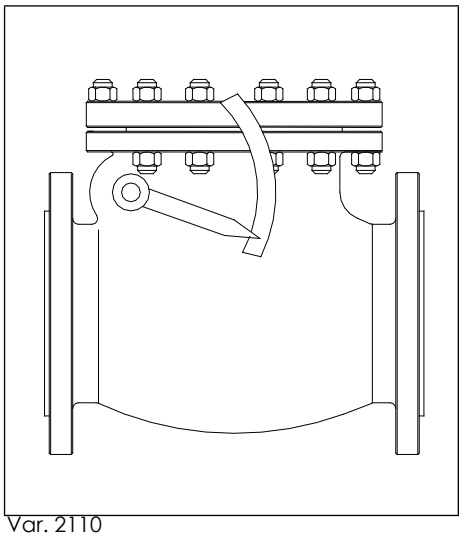
Var. 2010
Lever and counterweight



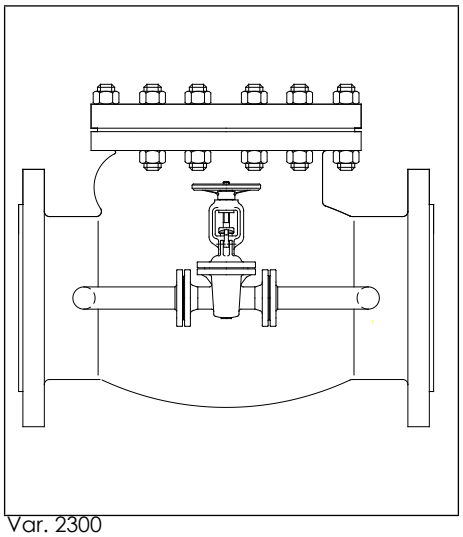
Var. 2020
Hydraulic linear brake



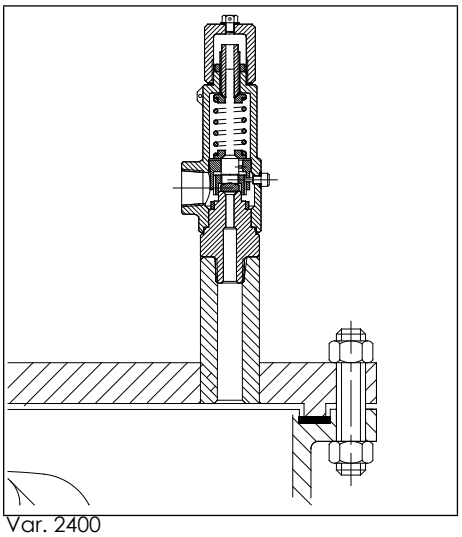
Var. 2030
Hydraulic rotative brake



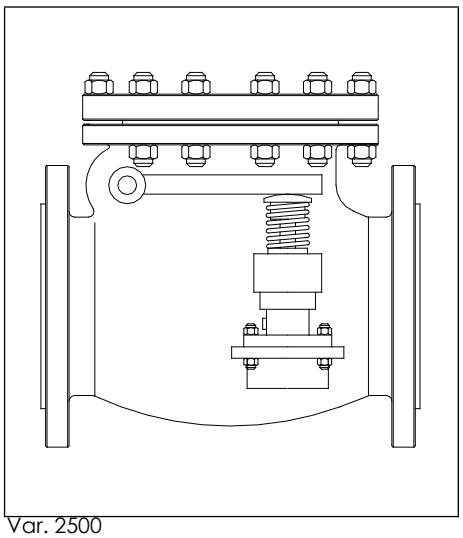
Var. 2110
Position indicator



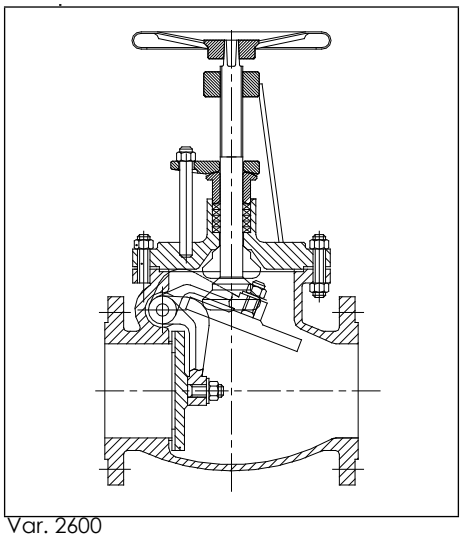
Var. 2300
By pass



Var. 2400
Pressure relief valve



Var. 2500
Anti-shock device



Var. 2600
Stop device

The drawings of the executions contained in this page are purely indicative, not binding and they can be subjected to change without notice.

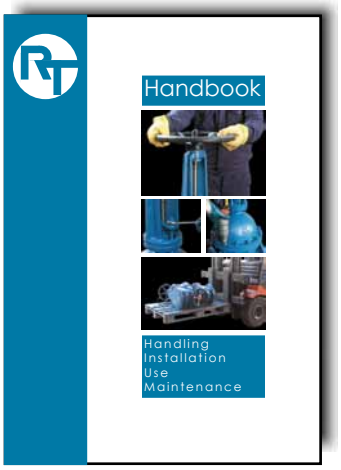
# Handling & Stocking

## HANDLING

1) Don't lift the valves mean the handwheel or the operation device.
2) To lift the valve hook up them by the yoke or / and by the flange holes.
3) In all cases never drag the valve along the floor.
4) During the handling avoid damaging the coating with scratches.
5) If the valve is delivered on a pallet or in a crate don't remove it from the package and handle using an appropriate device (transpallet and / or cranes).

## INSTALLATION & MAINTENANCE

1) Please refer always to the "Operting Instructions" supplied with the valves before to proceed with the installation.
2) For maintenance works follow strictly the "Operating Instructions" supplied with the valve and avoid absolutely improper operations: in case of doubt don't hesitate to contact our customer service and refer to the "Handbook" for more details.




## STOCKING

1) Stock the valves in an ambient with low humidity and protected from the wind.
2) Stock the valves in the original package and don't remove the original caps from the flanges.
3) Stock the valves in closed position.
4) Don't expose the valves to the sun, heat or rain.
5) If possible grease the stem and the yoke sleeve every 3 months.
6) In presence of sand or dust cover the valve, protect the stem and remove the plastic caps only in the moment of the installation.
7) After a stocking period of 18 months or more it's required to replace the gaskets and the stem packing before to install the valve.
8) If the valve is provided with an operation device (ex. electric actuator) don't remove the device protections until the installation.
9) Care the "Operating Instructions" for the valve and for the operation device (if present) with the valve until the moment of the effective installation.
10) The certificates, if enclosed in the packages under separate cover, should be removed and delivered to the Quality Assurance Department before to stock the valve.
11) If the valve is delivered in a crate for sea transport, after a period of 12 months it's required to open the package and to substitute the anti-humidity salts.
12) Remember always that improper stocking conditions can reduce the life of the valve and in some cases can cause also damages.

# Safety Devices

When a gate valve during the service is closed, due to body - bonnet cavity, a part of the medium is trapped in a closed chamber (Fig. E1). If the medium is a liquid with high thermal expansion coefficient (ex. water) during the heating of the fluid the evaporation can rise the pressure in this chamber over the maximum admissible working pressure for the valve.
This fact is very dangerous and can cause several damages to the body structure and to the gaskets. Further, the operation of the valve in this situation can be very difficult and sometime also impossible because the high pressure in the cavity block the wedge in the closed position.

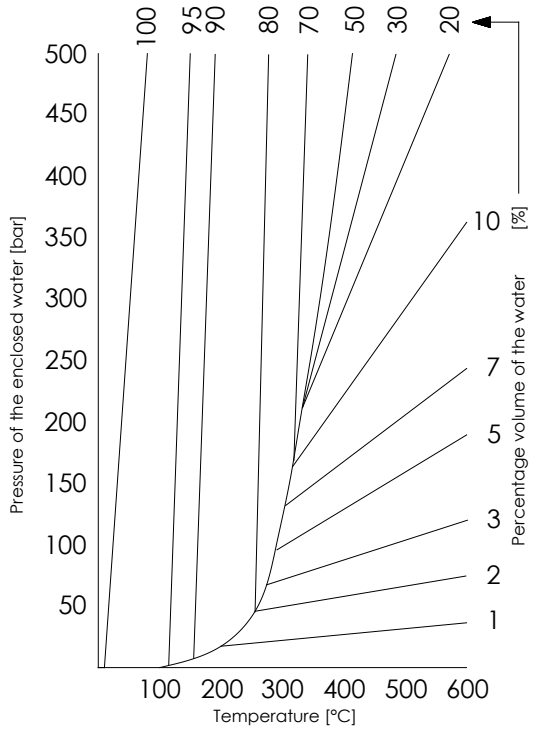



Fig. E2

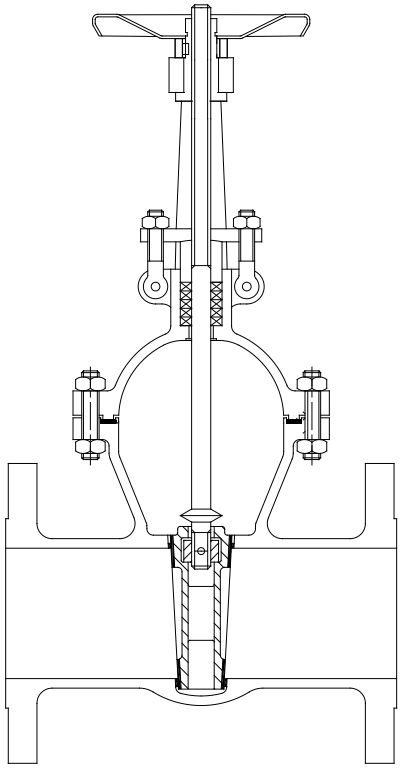


Fig. E1

This situation typically, but not only, can happen for valves used for steam and for liquid gases applications (cryogenic service).
The rise of the developing pressure is a function of the percentage of filling of the chamber with liquid and of the temperature (see the diagram in Fig. E2 valid for water). For a constant percentage of water a little increasing of the temperature cause a quick rise of the pressure in the closed chamber.
In such cases the gate valves shall be always provided with an appropriate safety device that equalise the pressure in the closed chamber.

Normally this safety device consists in two alternative solutions:

1) connecting the body - bonnet cavity with the upstream side with a hole in a side of the wedge (Fig. E3): in this way the overpressure is discharged directly in the system avoiding any external leakage, therefore in this way the valve can be used only for unidirectional service (because is guaranteed the full tightness in one direction only);
2) connecting the body - bonnet cavity with a small safety valve that can discharge the overpressure at the external but maintaining the valve tightness in both directions (Fig. E4); in this case the output side of the safety valve shall be appropriately connected with a discharge pipe to avoid any possible hazard for the people.

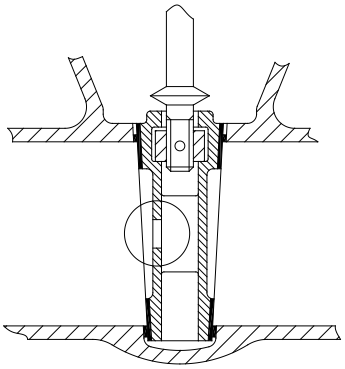


Fig. E3

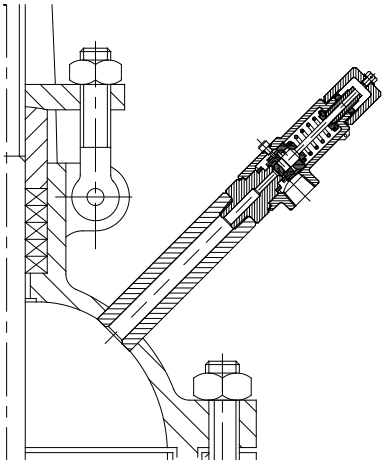


Fig. E4

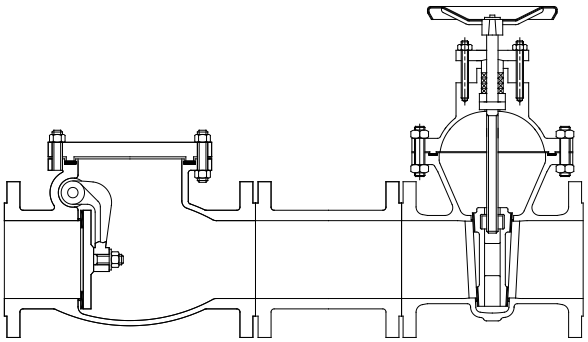


Fig. E5

The choice of the correct method is depending on the specific application. In such situations please always contact us for a correct choice. The same problem can occur also with a swing check valve due to presence of a shut-off valve at the upstream side. In this case the closed cavity is formed by the pipe between the swing check valve and the shut - off valve (Fig. E5). In this situation the swing check valve or the pipeline shall be provided with a safety valve.

# Sale & Delivery Conditions

1) The contract is closed only after the receipt by the Buyer of written order confirmation issued by RT Valvole Industriali according to the terms and conditions specified therein. Subsequent order modifications are valid only if accepted by R.T. Valvole Industriali Srl with written confirmation.
2) If not differently agreed in the order confirmation the acceptance of order by R.T. Valvole Industriali Srl is subjected to the acceptance of the following conditions by the Buyer. Any other clause or condition specified in the inquiry or in the order by the Buyer have to be considered null and void and don't have any application also partial if not accept by written confirmation issued by RT Valvole Industriali Srl.
3) All the offered quantities are intended subject to prior sale and the delivery time stated in the offer or in the order confirmation, is to be intended from the order date and ex works Turbigo (according to INCOTERM 2012).
4) The prices indicated in the price list and in the offers are not binding. R.T. Valvole Industriali Srl have the right to change the prices in any moment before the order confirmation without notice.
5) The information contained in the catalogue or in other commercial documents are not binding. R.T. Valvole Industriali Srl have the right to change in any moment all the material or construction details, which are not expressly specified in the order confirmation, without notice and without the Buyer approval.
6) RT Valvole Industriali Srl have the right to refuse the order in all the cases if the conditions stated in the order (prices, quantities, delivery or other details) make not economically profitable or convenient the supply and this right is valid for all the products also if listed in catalogue as available.
7) If not differently agreed in the order confirmation, the confirmed delivery time is not binding and in all cases it's admitted a minimum tolerance of 30 days on the agreed delivery time. In case of delay over 30 days on the confirmed delivery time the Buyer will have the only right to cancel the order. The right to cancel the order is loss in case of materials ordered out of this catalogue or with special executions or special devices that make the product different form the standard version or for valves produced with body material different from 1.0619 or with nominal diameter (DN) over 300 mm or with nominal pressure (PN) over 63.
8) If not differently agreed in the order confirmation with a written acceptance signed by R.T. Valvole Industriali Srl, no compensation or penalty for the damages caused by a (partial or total) delayed delivery will be accepted.
9) In all the cases R.T. Valvole Industriali Srl can't be considered responsible for a delay caused by a delay in the supply of row materials or components, or by an act of God.
10) If not differently agreed in the order confirmation the goods are always supplied "ex works" Turbigo according to INCOTERM 2012 packing excluded.
11) The goods, in all the cases, also if delivered free destination, travel on account and risk of the buyer.
12) If not differently stated in the catalogue or agreed in the order confirmation the "Technical conditions of delivery for valves" specified in the standards DIN 3230 part 1 and part 2 (current editions) are valid as formal contractual clauses.
13) All the valves ordered in the actuator predisposed version are supplied provided with connection flange according to ISO 5210 (if not differently specified) but without yoke sleeve or other necessary parts to assemble the actuator but not expressly requested in the order.
14) The certificates are supplied on request according to EN 10204 type 2.1. Other types (ex. 3.1, 3.2 etc.) will be delivered only if expressly required in the order with extra costs debited to Buyer as specified in the current price list. The certificates type 3.2 for the materials test can be supplied only if clearly and expressly requested by the Buyer in the order: the costs for the third party inspection, for materials, workmanship and use of testing devices necessary to issue these certificates will be completely on Buyer charge.
15) In case of inspection by the Buyer or a third party, and not differently agreed in the order confirmation, all the costs for the tests performed during the inspection and the necessary workmanship, will be debited to the Buyer. In all the cases the Buyer, or his authorised inspectors, will have the right to inspect the goods only if they will have advised R.T. Valvole Industriali Srl, about the visit, one week in advance at least. The execution, during the Buyer inspection, of supplementary tests or checks non originally specified in the order it's excluded.
16) All the quoted prices are with packing excluded. The cost of the packing will be invoiced to the Buyer according to current price list. If not differently agreed in the order confirmation the goods are packed in the most convenient way in the opinion of R.T. Valvole Industriali Srl.
17) If not differently agreed in the order confirmation the valves will be provided with external row surfaces sandblasted or machined or grinded. The necessary production weldings are grinded and not necessarily sandblasted. The valves in carbon or low alloyed steels are painted with a coating suitable to protect the valves against the rust up to the installation and in all cases for a period not longer than 12 months if kept on stock sheltered from the weather. No other surface treatment or coating will be provided if not differently specified in the order confirmation.
18) Orders with amount less than 1000 EURO will be charged for bookkeeping costs according to the current price list.
19) All the products are guaranteed against production defects according to the terms specified in the guarantee terms enclosed in the catalogue.
20) In all the cases R.T. Valvole Industriali Srl is not responsible for the quality, the suitability and the integrity of the products supplied by the Buyer to complete an order.
21) The certificates, if required, are delivered in single copy with the goods or by separate cover sent by mail or email.
22) The invoices will be delivered in single copy with the goods or by separate cover sent by mail or by email.
23) If not differently agreed in the order confirmation all the goods will be invoiced in EURO currency.
24) If not differently agreed in the order confirmation or in the invoice, the payment term is at goods ready for shipping.
25) In case of delayed payment R.T. Valvole Industriali Srl will be authorised to debit the Buyer the interest calculated on the total amount of the supply. The minimum interest rate applied will be equal to the statutory rate established by the European Directive 2000/35/EC Art. 3, subject to major damages.
26) For all goods and services supplied by RT Valvole Industriali is valid the retention title as established by the European Directive 2000/35/EC Art. 4, this means that the goods until the complete payment of the due amount will remain exclusive propriety of RT Valvole Industriali Srl.
27) For all the litigation or dispute about the sale and delivery conditions it is valid the Italian law only.
28) For all the litigation or dispute about the sale and delivery conditions it is competent the court of Busto Arsizio (VA – Italy).

# Product Guarantee

## Guarantee

By this Guarantee, RT Valvole Industriali Srl guarantees his products to be free of visible defects on materials and workmanship at the time of its original purchase for the period of 12 months from the installation or 18 months from the purchase from RT Valvole Industriali Srl. If during this period of guarantee the product proves defective due to improper workmanship or material defects, RT Valvole Industriali Srl will, without charge the Buyer for labour and spare parts, repair or (at the discretion of RT Valvole Industriali Srl) replace this product or its defective parts or reimburse the Buyer the amount invoiced on the conditions explained hereafter. On RT Valvole Industriali Srl request the Buyer is obliged to send back the product supposed defective FCA Turbigo, Italia (according INCOTERM 2000) as completely drained and vented from service fluid (if the retuned product is not completely drained and vented from service fluid RT Valvole Industriali Srl have the right refuse the guarantee service). The request by RT Valvole Industriali Srl to return back the product supposed defective can't be considered in any case as an acknowledgement of defect existence.

## Producer responsibility limitation

This guarantee is the only responsibility for products defects or not conformities. For this reason they are excluded all other conventional or legal, implicit or explicit responsibilities. After the expiration of this guarantee the Buyer will cannot make any other request for reimbursement or compensation or price reduction or contract resolution or remedy. Except fraud or gross negligence by RT Valvole Industriali Srl, the compensation for all damages occurred to the Buyer can't be grater than the total value of the defective and / or not conform products.

## Responsibility for putting in circulation the products

All responsibilities that can arise for the putting in circulation the products, enclosed therein possible damages to people and / or things will be on exclusive charge of the Buyer that get mixed up to discharge RT Valvole Industriali Srl from all possible requests from thirty party. The Buyer, moreover, get mixed up also to assure in a proper way against all risks coming from the use and the ownership of the products, without recourse right against RT Valvole Industriali Srl.

## Conditions

1) The guarantee will be granted only if the claim is explained sending a copy of this guarantee with the complete data of the Buyer and of the defective product. RT Valvole Industriali Srl reserves the right to refuse guarantee service if the mark RT or the heat number or the size or the pressure rating or the CE tag plate have been removed from the valve or modified.
2) A valve will be never considered defective in materials or workmanship if it need to be adapted, changed or adjusted to conform it to the national or local technical or safety standards in force in any country which are different than EN ones. This guarantee shall not reimburse (a) such adaptations, changes, or adjustments or attempts to do so, whether properly performed or not, nor (b) any damage resulting from them.
3) This guarantee covers none of the following:
   A) periodic check-up, maintenance, and repair or replacement of parts due to normal wear and tear;
   B) the risks of transport relating directly or indirectly to the guarantee of these products;
   C) damages to these products resulting from:
      i) abuse and misuse, included but not limited to (a) the use of the products outside of the limits specified in the CE tag plate or outside of the material temperature / pressure ratings, or (b) the use the products outside of their normal purposes (as specified in the order or order confirmation according to DIN 3230 part 1 and part 2 standards or, if not detailed in these ones, for pure water at 20°C at speed of 1 m/sec and pressure equal to nominal pressure for sectionalising service) or, (c) the use of the products contrarily to RT Valvole Industriali Srl instructions on the proper use and maintenance, (d) the installation or the use of the products in a manner inconsistent with the technical or safety regulations in force in the country were these products are used or inconsistent with EN standards and RT Valvole Industriali Srl instructions;
      ii) repair done by other than RT Valvole Industriali Srl;
      iii) accident, acts of God, or any cause beyond the control of RT Valvole Industriali Srl, including but not limited to lightning, water, fire, and public disturbances;
      iv) improper storing conditions care of the Buyer or other than RT Valvole Industriali Srl;
   D) hidden defects in the materials not detectable with the standard tests and checks required by the European Directive 97/23/EC and with the tests and checks required in the order.
4) The durability of all parts subjected to wear or natural ageing as (but not only) gaskets, packings, roll bearings, yoke sleeves and coating is not covered by this guarantee.
5) If not differently confirmed by RT Valvole Industriali Srl with written acceptance the correct functioning of the valve is not guaranteed in these situations:
   a) free discharge service or in all cases for service different from simple sectionalising service
   b) installation in different positions than those specified as allowable in the installation use and maintenance instructions
   c) use outside of the limits specified in the CE tag plate or for service in class IV according to Directive 97/23/EC
   d) use for corrosive or toxic or dangerous fluids for which they have not been specified in the inquiry and in the order the maximal operating temperature and pressure and the chemical composition.
6) If not differently agreed in the order confirmation, the final coating suitable for the specific application is on Buyer responsibility and it must be applied for a correct protection against the corrosion before the use. The standard painting applied by RT Valvole Industriali Srl is intended to protect the valves during the transport and the stocking periods during maximum 12 months from the delivery, and no guarantee is given for the suitability and the durability of this painting for the specific operating conditions (temperature, humidity, etc). In all the cases, also if the coating is provided according to Buyer specifications, it have to be considered as part subject to wear and for this reason his durability is not covered by this guarantee.
7) The Buyer right of exercise this guarantee is loosed if the products are manumitted or repaired or modified by other than RT Valvole Industriali Srl.
8) In all the cases the compensation for the expenses to repair a defective product is excluded.
9) In all the cases the compensation of direct or indirect damage of any nature at things or people for the use or the use interruption of RT Valvole Industriali Srl products is excluded.
10) For all litigations or disputes about the terms or the conditions or the exercise of the guarantee is valid only the Italian law.
11) For all litigations or disputes about the terms or the conditions or the exercise of the guarantee it's competent the court of Busto Arsizio (VA – Italy).

# Standard Comparison

| Steel No. (EN) | EN (DIN - UNI - BS – AFNOR) | AISI – SAE - ASTM | AFNOR (old name) | BS (old name) | JIS | GOST |
|---|---|---|---|---|---|---|
| 1.0044 | S275JR | A 570 Gr 40 / A 36 | E 28-2 | Fe 430 B | SM 400 B | St4ps |
| 1.0352 | P245GH | A 105 N | XC18 | - | - | - |
| 1.0402 | C22 | M 1023 | AF42C20 | 055 M 15 | S 20 C | 20 |
| 1.0425 | P265GH | A 515 Gr 60 | A42-CP | 1501-161 400 | SB 410 | - |
| 1.0460 | C22.8 | - | - | - | - | - |
| 1.0478 | P285QH | A350 LF2 | A42CP | 1501 Gr 161-400 | SPV315 | 16K |
| 1.0486 | P275N | A 106 / A 234 WPB | - | - | SM 400 A | - |
| 1.0487 | P275NH | A 516 Gr 60 | - | 224 – 400 A | - | - |
| 1.0488 | P275NL1 | A516 Gr 60 | A42AP | 1501-224 400 | SGV 410 | - |
| 1.0511 | C40 | 1040 | 1 C 40 | 080 M 40 | - | - |
| 10562 | P355N | A 350 LF1 / A 516 Gr70 | A 510 AP | 225 – 490 A | SM 490 A | - |
| 1.0565 | P355NH | A 516 Gr 70 | A510 AP | 225 – 490 A | | |
| 1.0566 | P355NL1 | A 516 Gr 70 | A510 FP | 225 – 490 A | STK 490 | - |
| 1.0619 | GP240GHN | A 216 WCB | A480CP-M | 1504-161 Gr B | - | - |
| 1.1104 | P275NL2 | - | A 510 AP | 224 – 400 A | STK 400 | - |
| 1.1106 | P355NL2 | - | - | 225 – 490 A | STK 490 | - |
| 1.1131 | G17Mn5 | - | - | - | - | - |
| 1.1138 | GS21Mn5 | A 352 LCC | - | - | - | - |
| 1.1156 | GSCk24 | A 352 LCB | - | - | - | - |
| 1.1181 | C35E | - | - | - | - | - |
| 1.1191 | C45E | A 194 2H | AF65C45 | 162 | - | - |
| 1.3964 | X2CrNiMnMoNNb21-16-5-3 | A479 XM-19 | - | - | - | - |
| 1.4021 | X20Cr13 | A 420 | Z20C13 | 420 S 37 | SUS420J1 | 20Ch13 |
| 1.4107 | GX8CrNi12 | - | - | - | - | - |
| 1.4301 | X5CrNi18-9 | A 304 / B8 | Z7CN18-09 | 304S31 | SUS304 | 08Ch18N10 |
| 1.4305 | X12CrNiS18-8 | A 303 | Z8CNF18-09 | 303S31 | SUS303 | - |
| 1.4306 | X2CrNi19-11 | A 304L | Z1CN19-11 | 304S11 | SUS304L | 03Ch18N11 |
| 1.4308 | GX5CrNi18-9 | A 351 CF8 | Z6CN18-10M | 304C15 | SCS13 | 07Ch18N9L |
| 1.4309 | GX2CrNi19-11 | A 351 CF3 | Z3CN19-9M | - | - | - |
| 1.4311 | X2CrNiN18-10 | A 304 LN | Z3CN18-10Az | 304S61 | SUS 304LN | - |
| 1.4317 | GX4CrNi13-4 | A 352 CA6NM | - | 425 C11 | - | - |
| 1.4362 | X2CrNiN23-4 | S32304 (2304) | Z2CN23-04AZ | - | - | - |
| 1.4401 | X5CrNiMo17-12-2 | A 316 / B8M | Z7CND17-11-02 | 316S31 | SUS316 | - |
| 1.4404 | X2CrNiMo17-13-2 | A 316L | Z3CND17-11-02 | 316S11 | SUS316L | - |
| 1.4405 | GX4CrBiMo16-5 | - | - | - | - | - |
| 1.4408 | GX5CrNiMo19-11-2 | A 351 CF8M | - | 316 C 16 | SCS 14 | 07Ch18N10G2S2M2L |
| 1.4409 | GX2CrNiMo19-11-2 | A 351 CF3M | Z2CND18-12-3M | - | - | - |
| 1.4410 | X2CrNiMoN25-7-4 | A 182 F53 (2507) | Z5CND20.10M | - | SCS 14A | - |
| 1.4430 | X2CrNiMo19-12 | AWS A5.9 ER 316L | Z2CND20.10 | 316S92 | - | - |
| 1.4458 | GX2NiCrMo28-20-2 | - | - | - | - | - |
| 1.4462 | X2CrNiMoN22-5-3 | A 182 F51 (2205) | Z3 CND 25-06-3 | 318 S13 | - | - |
| 1.4469 | GX2CrNiMo26-7-4 | A890 Gr 5A (2507) | - | - | - | - |
| 1.4470 | GX2CrNiMoN22-5-3 | A890 Gr 4A (2205) | - | - | - | - |
| 1.4500 | GX7NiCrMoCuNb25-20 | Uranus B6M | Z3CNUD25-20M | - | - | - |
| 1.4502 | X8CrTi18 | AWS A5.9 ER 430 | Z8CT17 | - | - | - |
| 1.4517 | GX3CrNiMoCuN25-6-3-3 | A890 Gr 1A | - | - | - | - |
| 1.4529 | X1CrMoCuN25-20-6 | A744CK3MCuN(254SMO) | - | - | - | - |
| 1.4539 | X1NiCrMoCu25-20-5 | UNS N08 904 L | Z1NCDU25-20 | - | SUS329J3L | - |
| 1.4541 | X6CrNiTi18-10 | A 321 | Z6CNT18-10 | 321S31 | SUS321 | 06Ch18N10T |

All the correspondence here indicated are purely indicative. They can be used only as guideline in the choice of different material. In all the cases RT valves will not be responsible for any choice based on these data.

| Steel No. (EN) | EN (DIN - UNI - BS – AFNOR) | AISI – SAE - ASTM | AFNOR (old name) | BS (old name) | JIS | GOST |
|---|---|---|---|---|---|---|
| 1.4550 | X6CrNiNb18-10 | A 347 | A6CNNb18-10 | 347S31 | SUS347 | - |
| 1.4552 | GX5CrNiNb19-11 | A 351 CF8C | Z6CNNb18-10M | 347C17 | SCS21 | - |
| 1.4563 | X1NiCrMoCu31-27-4 | Sanicro 28 | - | - | - | - |
| 1.4571 | X6CrNiMoTi17-12-2 | A 316Ti | Z6CNDT17-12 | 320S17 | - | 10Ch17N13M2T |
| 1.4580 | X6CrNiMoNb17-12-2 | A 316Cb | Z6CNDNb18-12 | 318S17 | | |
| 1.4581 | GX5CrNiMoNb19-11-2 | - | Z4 CNDNb18-12M | 318C17 | SCS 22 | OTA 10NbMoNiCr170 |
| 1.4903 | X10CrMoVNb9-1 | A 182 F91 | - | - | - | - |
| 1.4931 | GX23CrMoV12-1 | - | - | - | - | - |
| 1.5415 | 16Mo3 | A 204 Gr A | 15 D 3 | - | - | - |
| 1.5419 | G20Mo5 | A 217 WC1 | - | - | - | - |
| 1.5422 | G18Mo5 | - | - | - | - | - |
| 1.5636 | G9Ni10 | - | - | - | - | - |
| 1.5637 | 12Ni14 | A 203 Gr D / A350 LF3 | 12 N 14 | 503 | SL3N255 | |
| 1.5638 | G10Ni14 | A 352 LC3 | - | - | - | - |
| 1.5662 | X8Ni9 | A 333 Gr 8 / A533 Gr I | 9 Ni | 502 - 650 | SL9N520 | - |
| 1.5680 | X12Ni5 | A 2515 / A 645 | 5 Ni | - | SL5N590 | - |
| 1.6220 | G20Mn5 | A 352 LCC | - | - | - | - |
| 1.6228 | 15NiMn6 | - | 15 N 6 | - | - | - |
| 1.6781 | G17NiCrMo13-6 | - | - | - | - | - |
| 1.6982 | GX3CrNi13-4 | - | - | - | - | - |
| 1.7219 | 26CrMo4 | - | - | - | - | - |
| 1.7225 | 42CrMo4 | A 193 B7 / L7 / 7 / 4 | 42CD4 | | | |
| 1.7258 | 24CrMo5 | - | - | - | - | - |
| 1.7219 | G26CrMo4 | A 352 LC1 | FC1-M | - | - | - |
| 1.7335 | 13CrMo4-5 | A182 F11 | 15CD4-05 | 620-470 | SFVA F 12 | 15ChM |
| 1.7353 | G12CrMo19-5 | A 217 C5 | Z13CD5 | - | - | - |
| 1.7357 | G17CrMo5-5 | A 217 WC6 | 15CD4-05-M | - | - | - |
| 1.7362 | 12CrMo19-5 | A182 F5 | - | - | - | - |
| 1.7365 | GX15CrMo5 | - | - | 625 | - | - |
| 1.7379 | G19CrMo9-10 | A 217 WC9 | - | - | - | - |
| 1.7380 | 10CrMo9-10 | A182 F22 | 12 CD 9.10 | 1501-622 | SFVA F22 A | 12Ch8 |
| 1.7383 | 11CrMo9-10 | A182 F22 | 15 CD 4.05 | - | - | - |
| 1.7389 | G-X12CrMo10-1 | A217 C12 | - | B6 | - | - |
| 1.7706 | G17CrMoV5-10 | A 356 Gr 9 | - | - | SPCH 23 | - |
| 1.7709 | 21CrMoV5-7 | - | - | - | - | - |
| 1.7711 | 40CrMoV4-6 | A 193 B16 | 42CDV4 | 670-860 | - | - |
| 1.7720 | G12MoCrV5-2 | - | - | - | - | - |
| 2.4066 | Ni 99.2 | CZ100 (Nickel 200) | - | - | - | - |
| 2.4360 | NiCu30Fe | M-35-1 (Monel 400) | - | - | - | - |
| 2.4537 | NiMo16CrW | CW-12M (Hastelloy C) | - | - | - | - |
| 2.4602 | NiCr21Mo14W | Hastelloy C22 | - | - | - | - |
| 2.4617 | NiMo28 | Hastelloy B2 | - | - | - | - |
| 2.4810 | NiMo30 | N-7M (Hastelloy B) | - | - | - | - |
| 2.4816 | NiCr15Fe | CY40 (Inconel 600) | - | - | - | - |
| 2.4819 | NiMo16Cr15W | Hastelloy C276 | - | - | - | - |
| 2.4856 | NiCr22Mo9Nb | CW6MC (Inconel 625) | - | - | - | - |
| 2.4858 | NiCr21Mo | Incolloy 825 | - | - | - | - |

All the correspondence here indicated are purely indicative. They can be used only as guideline in the choice of different material. In all the cases RT valves will not be responsible for any choice based on these data.

# Photo Gallery

Gate valves with hydraulic actuator (Fig. 240 Var. 1520 -H)

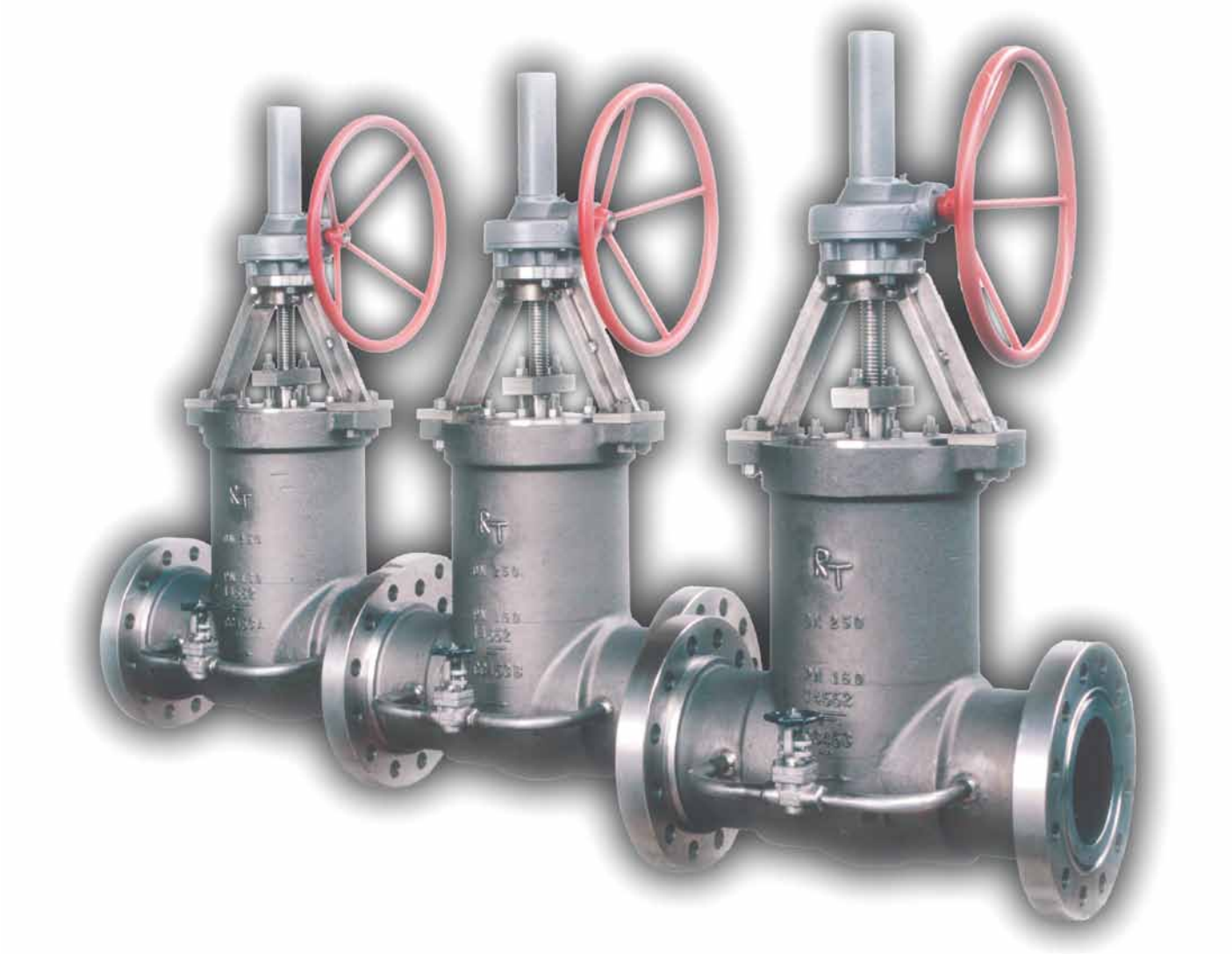
Stainless steel  gate valves with bellow seal (Fig. 350 Var. 1070)

# Photo Gallery

Gate valve DN 900 PN 25 (Fig. 240 Var 1530) and gate valve DN 50 PN 25 (Fig. 240)

Gate valve with steam jacket (Fig. 250 Var. 1080)

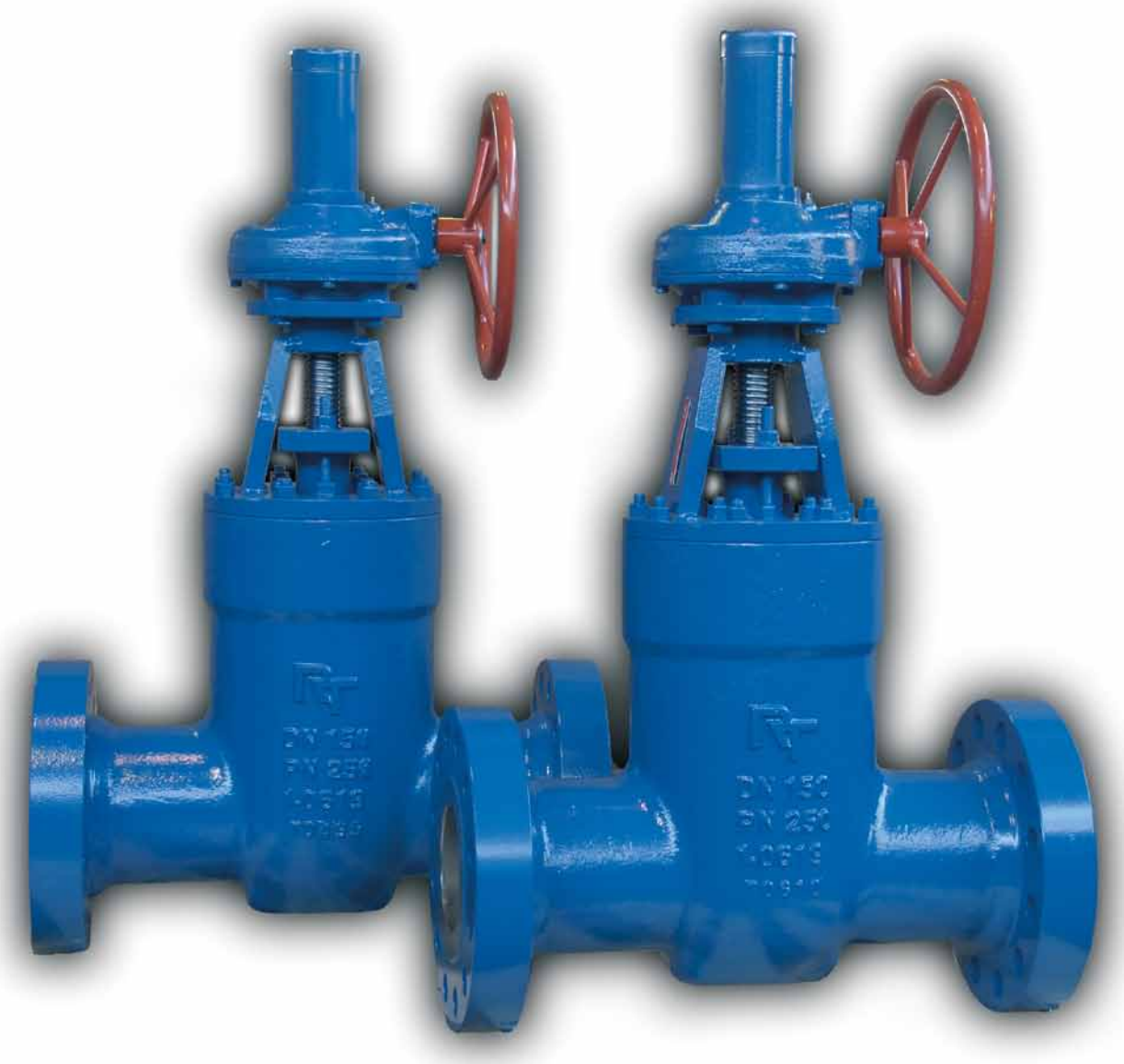
# Photo Gallery



Stainless steel g ate valves DN 250 PN 160 pressure seal desing (Fig. 361 Var.1510)


Swing check valve DN 700 PN 25 with lever and weight (Fig. 270 Var. 2010)

# Photo Gallery



Steel g ate valves DN 150 PN 250 pressure seal desing (Fig. 266 Var.1510)

Swing check valve DN 200 PN 25 with  hydraulic rotative brake(Fig. 270 Var. 2030)

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