

# AG1-CT BUTTERFLY VALVE WITH DISMANTLING JOINT



*"From 1970 close to our clients"*

## ANGODOS

Since 1970 **ANGODOS** has been technological leader in valves industry, manufacturing everything in Madrid (Spain) and commercializing high performance valves internationally for different application fields.

**ANGODOS** Manufacturing range is pretty wide, covering a variety of application for different fields as waste water, drinking water, desalination, sanitation, irrigation system, mining, industry, gas and petroleum. from PN6 to PN100 and from DN40 to DN3000.

Since the creation of **ANGODOS**, the main objective has been providing Taylor-made solutions for the customers, developing a wide range of butterfly valves with different construction types and actuators, overspeed valves, check valves, air valves, and discharge valves solutions as howell-bunger valves.

Constant innovation and technological development allows **ANGODOS** to be the reference for the professionals interested in quality, safety, ease of use and installation and of course durability. **ANGODOS** has established a quality system for valves manufacturing, which has been approved by Lloyd's Register in accordance with the quality management system standard ISO 9001.



ANGODOS valve AG1 DN900 PN100



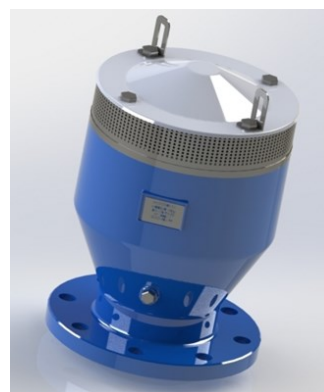
ANGODOS valve model AG1-CT with dismantling joint



Overspeed valve DN2000 PN25, double arm



Interior plant view – big diameter valves



DN150 PN25 air release valve



Check valves DN900 PN16 with hydraulic shock absorber

## Certificates

**CERTIFICATE OF APPROVAL**

This is to certify that the Quality Management System of:

**ANGODOS, S.L.**  
**C/ San Juan, 21-23, Pol. Ind. El Palomo**  
**28946 Fuenlabrada, Madrid**  
**Spain**

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standard:

**ISO 9001:2008**

The Quality Management System is applicable to:

**Development, production, sale and service of valves, accessories and operation and control equipment.**

Approval Certificate No: SGI 2199125

Original Approval: 01 July 1999  
 Current Certificate: 07 December 2016  
 Certificate Expiry: 14 September 2018

Issued by: LRQA España, S.L.  
 For and on behalf of: Lloyd's Register Quality Assurance Limited

C/ Princesa, 29 - 1<sup>o</sup> - 28020 Madrid, España  
 For and on behalf of: Trinity Park, Riverside Lane, Birmingham B17 7ES, United Kingdom  
 This approval is valid only in respect of the scope and conditions of approval as stated.  
 The use of the Lloyd's Register Quality Assurance logo in respect of their services is subject to the conditions of the Accreditation Certificate Number 001.

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**ISO 9001**

**EU CERTIFICATE OF CONFORMITY**

In accordance with the requirements of the Pressure Equipment Directive 2014/68/EU and the Pressure Equipment (Safety) Regulations 2016, UK Statutory Instrument 2016 No. 1105

This is to certify that the Quality Management System of:

**ANGODOS, S.L.**  
**C/San Juan nº 21/23**  
**28946 – Fuenlabrada (Madrid)**  
**Spain**

has been assessed against the requirements of Annex III, Module H of the Pressure Equipment Directive 2014/68/EU, and Schedule 4, Module H of the Pressure Equipment (Safety) Regulations 2016 and conforms to the requirements for the products shown below:

**Design and Manufacture of Industrial Valves**  
 (see attached schedule)

Approval is subject to the continued maintenance of the quality system in accordance with the requirements of the above Directive and Regulations for the products listed on the attached schedule.

Authorisation is hereby given to use the LRV Notified Body Identification Number in accordance with the requirements of the specified Directive and Regulations in relation to the products as identified above.

Certificate No: 0038/PED/MAD/0140  
 Original Approval: 31 January 2014  
 Current Certificate: 23 January 2017  
 Certificate Expiry: 31 January 2020  
 LRV Notified Body Number 0038

Teresa Souto on behalf of Lloyd's Register Verification

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**PRESSURE EQUIPMENT 2014/68/EU**

**AENOR Product Certificate**  
 Isolating valves for water supply

**B18/000006**

AENOR, Spanish Association for Standardization and Certification, certifies that the organization

**ANGODOS, S.L.**

registered office: C/ San Juan nº 21-23, Polígono Industrial El Palomo 28946 Fuenlabrada (Madrid - España)

supplies: Isolating valves for water supply

in compliance with: UNE-EN 1074-1:2001 [EN 1074-1:2000]  
 UNE-EN 1074-1:2001 ERRATUM:2008  
 UNE-EN 1074-2(A):2004 [EN 1074-2:2000(A):2004]  
 UNE-EN 1074-2:2001 [EN 1074-2:2000]

References: Specified in Annex to the Certificate

Production site: C/ San Juan nº 21-23, Polígono Industrial El Palomo 28946 Fuenlabrada (Madrid - España)

Certification scheme: In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP B18.01

This certificate supersedes B18/000006, dated 2014-04-07

First issued on: 2014-04-07  
 Modified on: 2014-07-23  
 Validity date: 2018-04-07

Avelino BRITO  
 Chief Executive Officer

**AENOR** Asociación Española de Normalización y Certificación | Girona 7, 28014 Madrid, España | Tel. 902 102 101 - www.aenor.es

**AG1 BC 1074-1/2 PRODUCT CERTIFICATE**

**AENOR Product Certificate**  
 Isolating valves for water supply

**B18/000007**

AENOR, Spanish Association for Standardization and Certification, certifies that the organization

**ANGODOS, S.L.**

registered office: C/ San Juan nº 21-23, Polígono Industrial El Palomo 28946 Fuenlabrada (Madrid - España)

supplies: Isolating valves for water supply

in compliance with: UNE-EN 1074-1:2001 [EN 1074-1:2000]  
 UNE-EN 1074-1:2001 ERRATUM:2008  
 UNE-EN 1074-2(A):2004 [EN 1074-2:2000(A):2004]  
 UNE-EN 1074-2:2001 [EN 1074-2:2000]

References: Specified in Annex to the Certificate

Production site: C/ San Juan nº 21-23, Polígono Industrial El Palomo 28946 Fuenlabrada (Madrid - España)

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First issued on: 2014-07-23  
 Validity date: 2019-07-23

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**AG1 VC 1074-1/2 PRODUCT CERTIFICATE**



## Epoxy coating system

Epoxy Powder is the standard coating material for **ANGODOS** valves. This coating guarantees high corrosion and abrasion resistance while shows outstanding impact resistance. Also excellent bonding with ductile iron is ensured for long service life without servicing the valves.

### Application process

**ANGODOS** Just applies the best epoxy powder, and always following the procedures carefully to ensure the quality and maintain the properties of the coating.

The process comprises four steps:

- Pre-Blasting cleaning of the element.
- Blasting grade SA 2 1/2 according to UNE-EN-ISO 8503 "Preparation of steel substrates before application of paints and related products - Surface roughness characteristics of blast-cleaned steel substrates".
- Heating elements to 180°C.
- Electrostatic spray is applied assuring 300 microns thick creating a polymerized, continue, and airtight film all over the valve.

### Coating performance

- Perfect airtight, zero porosity.
- Minimum coated thickness 300 microns.
- High adhesion to metal (min. 12 N/mm<sup>2</sup> ).
- High resilience never cracking.
- Smooth surface (makes incrustation more difficult).
- Suitable for drinking water and food use. WRAS certificate.



Manual blasting cabin 4.5x4.5 meters



Polymerization ovens, 3x3x5 meters



Manual powder coating, cabin 4x4 meters

## Polyurethane coating system

Polyurethane (PU) coating is an optional coating material for all **ANGODOS** valves. This coating guarantees high corrosion and abrasion resistance while having more flexibility than epoxy coating higher impact resistance. Also excellent bonding with ductile iron is ensured for long service life without servicing the valves. Polyurethane coating shows outstanding wear resistance and the advantage of being U.V stable, this means that it won't yellow like epoxy does when exposed to small amounts of sunlight over a period of time

### Application process

**ANGODOS** Just applies the best polyurethane and always following the procedures carefully to ensure the quality and maintain the properties of the coating.

The process comprises three steps:

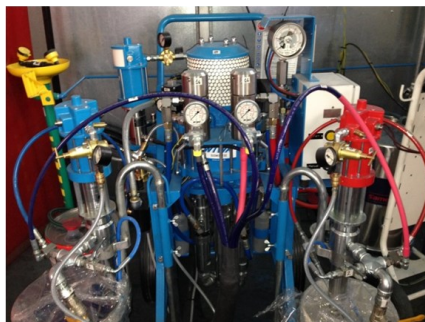
- Pre-Blasting cleaning of the element.
- Blasting grade SA 2 1/2 according to UNE-EN-ISO 8503 "Preparation of steel substrates before application of paints and related products - Surface roughness characteristics of blast-cleaned steel substrates".
- Polyurethane is applied assuring minimum 300 microns thick creating a polymerized, continue, and airtight film all over the valve, but the thickness could be up to 1000 microns.

### Coating performance

- Perfect airtight, zero porosity.
- Minimum coated thickness 300 microns but can reach 1000 microns as desired.
- Very good adhesion to metal (min. 10 N/mm<sup>2</sup> ).
- High resilience never cracking, very flexible, tolerates large temperatures swing.
- High scratch resistance.
- Smooth surface (makes incrustation more difficult).
- Suitable for drinking water and food use. WRAS certificate.



Manual blasting cabin 4.5x4.5 meters



Equipment for corrosion protection with polyurethane coating



Manual powder coating, cabin 4x4 meters

## Butterfly valve with dismantling joint

**ANGODOS AG1-CT** is a full bore butterfly valve with flanged body and incorporated dismantling joint. The valve is available from DN300 to DN2000, for PN10, PN16 and PN25.

The body is made of two elements. A fixed part made of welded steel, and a mobile part which allows to change the face to face dimensions, avoiding the need of installing an additional dismantling joint

The sealing gasket is the key for reliable sealing performance and it's placed in the fixed part of the body. The disc is attached to the eccentric (simple or double) shaft bearing assuring an uniform seat and avoiding critical leaking by pressure discontinuities at the sealing area. In this way **ANGODOS AG1-CT** sealing system assures perfect sealing under the most demanding conditions.

Full bore and hydrodynamic internal design provides outstanding hydrodynamic features minimizing the head loss.

### Product features

- Incorporates a dismantling joint.
- Full bore.
- Minimum head loss.
- Low maintenance due to robust, simple and compact design.
- Made with top quality materials, certified for drinking water and highly corrosion resistant.
- Easy elastomers replacement.
- Flat lateral gaskets included, body embedded for easy installation.
- Flange connection according to UNE-EN 1092.
- Face to face dimensions series 13 and 14 according to UNE-EN 558 but it is adjustable.
- Simple or double eccentricity.
- Low friction and maintenance free bearing system.
- Locking system on the shaft, no need to cut off the fluid flow for gearbox maintenance works (optional).
- Gearbox: smooth drive, IP67rating, standard motor connection, self-locking, adjustable stop, position indicator.
- Easy installation due to the lifting attachments and compact size.
- Wide manufacture range, DN300-DN2000 / PN10, PN16, PN25.
- Optimum performance in clean water and reused water systems up to 60°C.
- Special materials available upon request.
- Other dimensions available upon request.



## Design principles

### Bearing system

The Stainless Steel shafts are completely enclosed by using O-ring sealing. Bearing bush are made of steel covered of PTFE, a material with very low friction, additionally while mounting the system bearings are lubricated using silicone grease, getting extremely low friction in the system, allowing smooth operation and long and safe service life.

### Sealing system

The system consists of an elastomer (EPDM) gasket vulcanized to a metal core which is placed in the body using a retainer disk and screws. The sealing system is easily replaceable. Sealing seat in the disk is made of stainless steel for better sealing and longer life of the elastomer.

The cylindrical-conical shape of the sealing system makes **ANGODOS AG1-CT** valve suitable for working pressures up to 30 bar.

### Shaft system

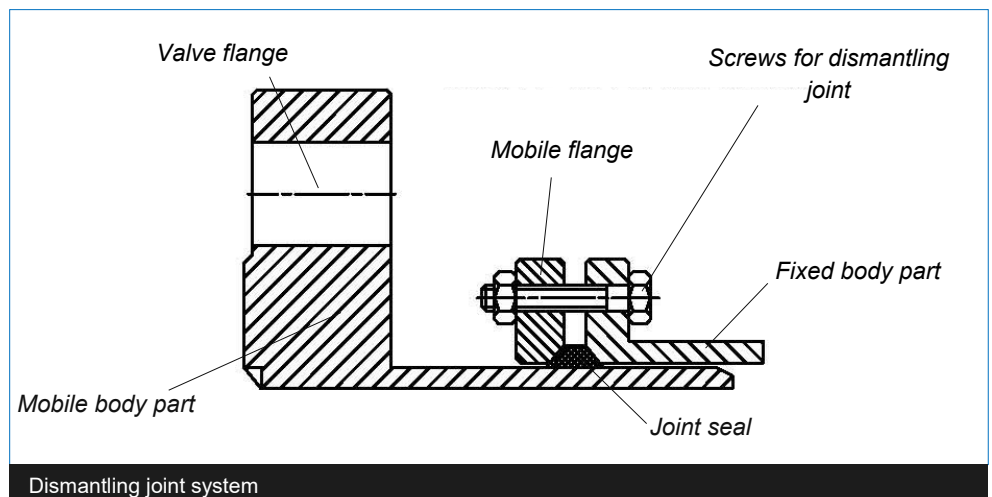
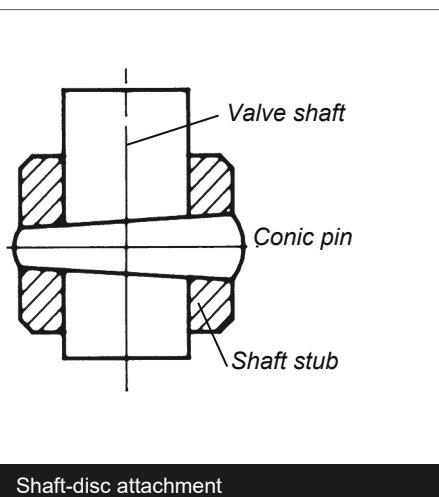
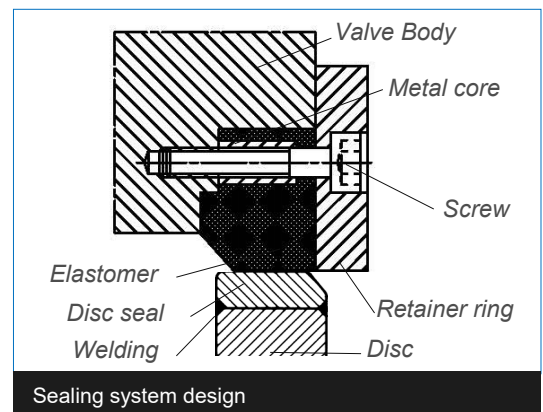
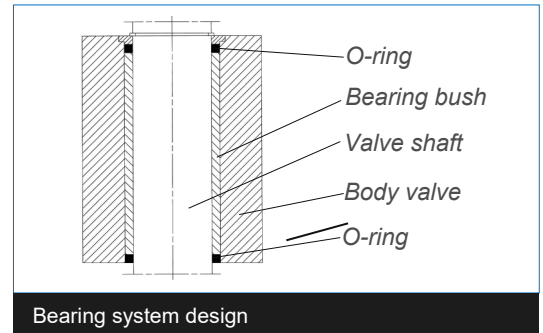
The drive shaft is attached to the using conic pins during the assembly operation, avoiding any kind of displacement. The actuator is attached to the shaft according to ISO 5211 standard.

Optionally a locking system can be mounted on the fixing shaft, enabling to lock the valve on open or closed position, no need to cut off the fluid flow for gearbox maintenance works.

**ANGODOS AG1-CT** is manufactured taking care of the operation conditions and client requirements, the design range includes simple (34mm-150mm according to DN) or double eccentricity (1mm-3mm) shaft, with bidirectional sealing.

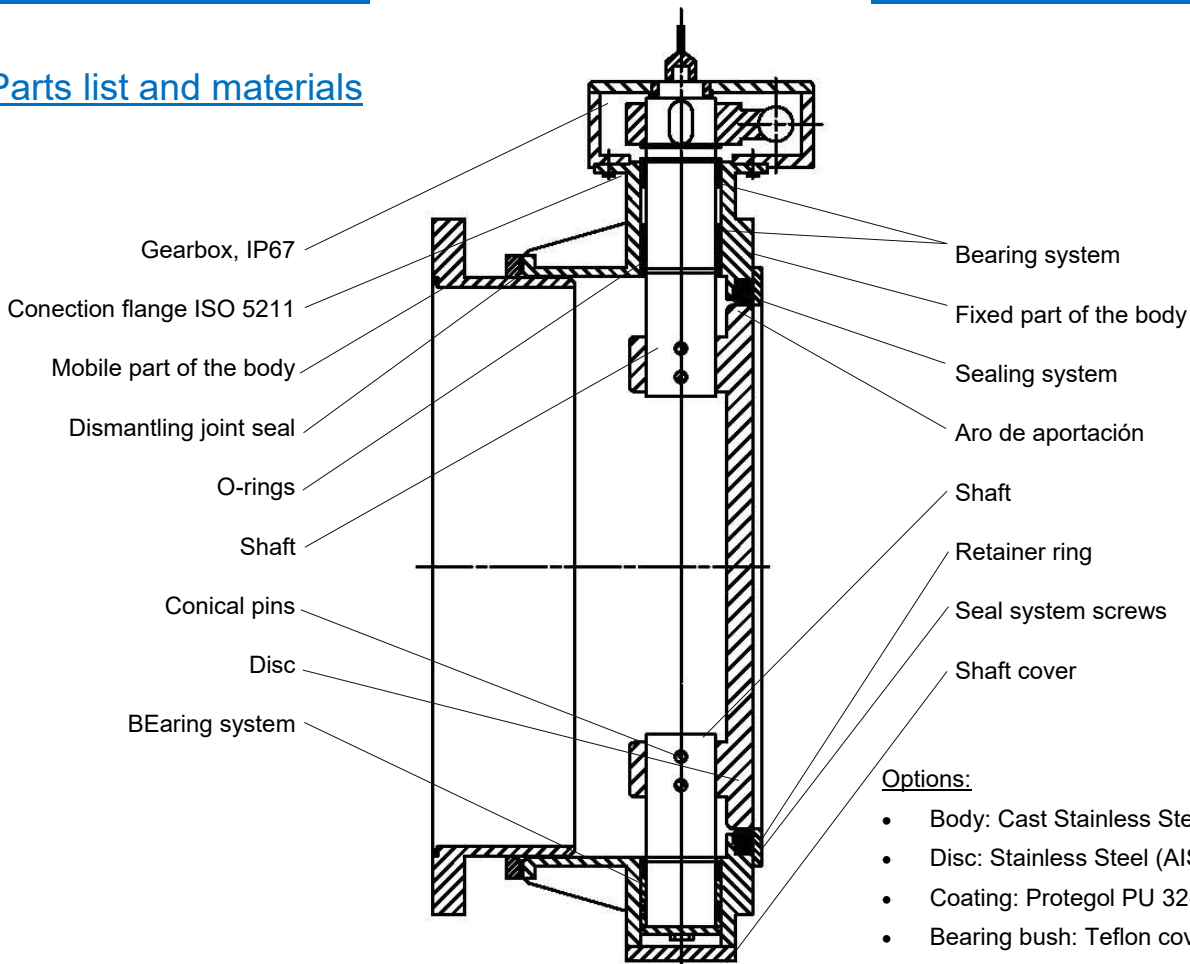
### Sealing and adjustment of dismantling joint

The dismantling joint integrated system allows to reduce screws and avoid the necessity of an additional element as the dismantling joint. Time, and cost during the assembly of the valve in the piping system is reduced in a 33% and even more for further maintenance works.





## Parts list and materials

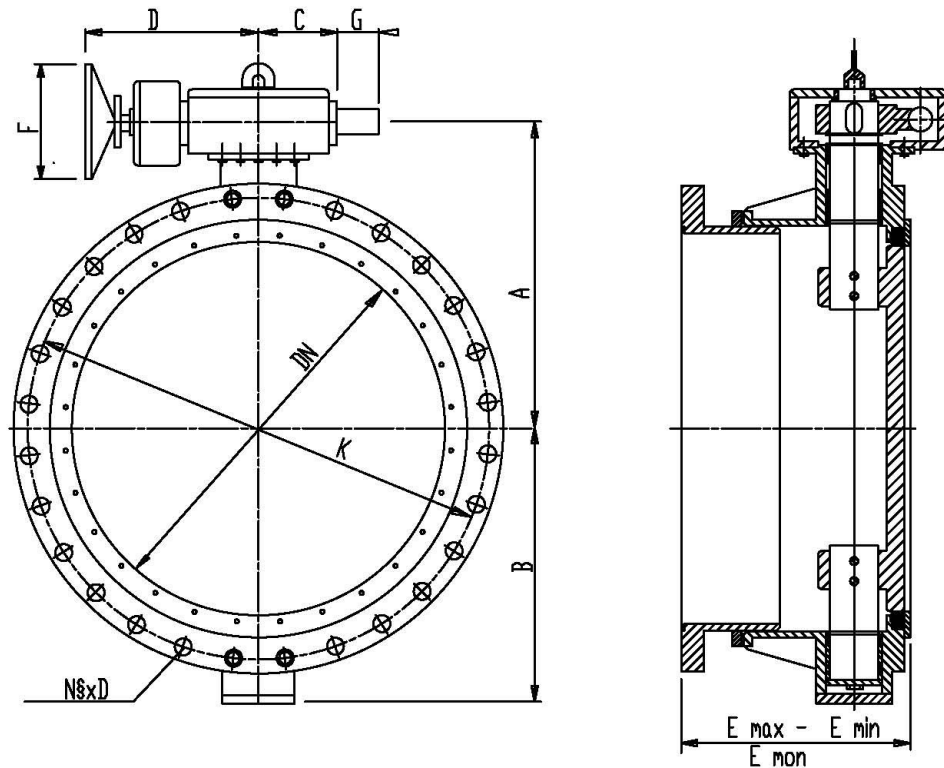


### Options:

- Body: Cast Stainless Steel (AISI 316)
- Disc: Stainless Steel (AISI 316)/ Duplex / Bronze
- Coating: Protegol PU 32-45.
- Bearing bush: Teflon covered carbon Steel.

Part	Material
1 Fixed body	Steel S275JR according to UNE-EN 10025-2 (ASTM A36) + 250µ Epoxy
2 Mobile body	Flange made of Steel S275 EN 10025-2, Body made of steel 14301 EN 10088-3 (AISI 304)
3 Disc	Steel S275JR according to UNE-EN 10025-2 (ASTM A36) + 250µ Epoxy
4 Sealing of dismantling joint	Elastomer EPDM 70 Shore according to UNE-EN 681-1
5 Sealing system seat	Stainless Steel 1.4301 according to UNE-EN 10088-1 (AISI 304)
6 Shaft	Stainless Steel 1.4021 according to UNE-EN 10088-1 (AISI 420)
7 Conical pins	Stainless Steel 1.4021 according to UNE-EN 10088-1 (AISI 420)
8 Sealing system gasket	Elastomer EPDM 70 Shore according to UNE-EN 681-1
9 Retainer ring	Steel S275JR according to UNE-EN 10025-2 (ASTM A36) + 250µ Epoxy
10 Screws	Stainless Steel 1.4021 according to UNE-EN 10088-1 (AISI 420)
11 Bearing bush	PTFE
12 O-rings	Elastomer EPDM 70 Shore according to UNE-EN 681-1
13 Lifting attachments	Stainless Steel 1.4021 according to UNE-EN 10088-1 (AISI 420)
14 Shaft cover	Steel S275JR according to UNE-EN 10025-2
15 Flat gasket, flange embedded	Elastomer EPDM 70 Shore according to UNE-EN 681-1
16 External screws	Stainless Steel 1.4021 according to UNE-EN 10088-1 (AISI 420)

## Dimensions



DN	A (mm)	B (mm)	C (mm)	D (mm)	E max (mm)	E mín (mm)	E mon (mm)	F (mm)	G (mm)	K (mm)
700	620	547	171	457	692	612	652	400	110	875
800	660	590	171	457	718	638	678	400	110	990
900	720	650	171	452	730	650	690	400	110	1090
1000	770	700	171	452	810	730	770	400	150	1210
1200	890	810	171	489	890	810	850	400	150	1420
1400	1.020	890	209	489	950	870	910	400	150	1640
1600	1.170	1.055	242	592	985	905	945	4000	150	1860

- Flanges PN10, PN16, PN25 according to UNE-EN 1092, ISO 2531 or ANSI
- Face to face UNE-EN 558, ISO 5752.
- Other dimensions, please request.
- Other materials, please request.