

AG3 BUTTERFLY VALVE



"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

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

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

AENOR Asociación Española de Normalización y Certificación | Girona 17, 28004 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)

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

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

AENOR Asociación Española de Normalización y Certificación | Girona 17, 28004 Madrid, España | Tel. 902 102 101 - www.aenor.es

AG1 VC 1074-1/2 PRODUCT CERTIFICATE

Certificates

AENOR

AENOR Product Certificate
Air valves for water supply

B18/000008

AENOR certifies that the organization

ANGODOS, S.L.

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

supplies: Air valves for water supply

in compliance with: UNE-EN 1076-1:2001
UNE-EN 1076-2:2001 ERRATUM 2008
UNE-EN 1076-4:2001

References: Specified in Annex to the Certificate

Production site: Cl 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 tests periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP B18.02.

First issued on: 2017-03-21
Validity date: 2022-03-21

Avelino BRITO
General Manager

VAIU 1074-1/4 PRODUCT CERTIFICATE

Our Ref: HLM130483
Test Report: MAT/LAB 7110/2

22nd February 2013

WRAS
Water Regulations Advisory Scheme

Compounds AG,
Baroldstrasse 1,
CH-8330 Pfäfers 2H,
Switzerland

WATER REGULATIONS ADVISORY SCHEME (WRAS) MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS 6933-3:2000 'Suitability of plastic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

ETHYLENE PROPYLENE DIENE MONOMER (EPDM) - MATERIAL ONLY **5365**

Sunaflex T 8165, Black coloured, compression moulded EPDM sheet material. Shore hardness 70A. Tested in radius size 1.0mm. For use with water up to 65°C.

APPROVAL NUMBER: 130524
APPROVAL HOLDER: COMPOUNDS AG

The Scheme reserves the right to review approval. This approval is valid between February 2013 and February 2018.

An entry, as above, will not be included in the Water Fittings Directory on-line under the section headed 'Materials which have passed full tests of effect on water quality'.

The Directory can be found at www.wras.co.uk/directory

Yours faithfully,

Jason Loughran
Approval & Enquiries Manager
Water Regulations Advisory Scheme

11.10.2016
Compounds AG
Baroldstrasse 1
CH-8330 Pfäfers

Water Regulations Advisory Scheme Ltd,
100, Victoria Road, Watlington, Oxford, OX12 0JF, UK
Tel: +44 (0)1235 836100 Fax: +44 (0)1235 836101
Email: enquiries@wras.co.uk Website: www.wras.co.uk

The Water Regulations Advisory Scheme
is a not-for-profit organisation
registered in England and Wales
No. 2705967. Registered office:
100, Victoria Road, Watlington,
Oxford, OX12 0JF, UK

EPDM certificate

Product certificate
K11557/14

Partner for progress

Issued: 2018-03-01
Reference: K11557/13
Page: 1 of 3

Coating systems for potable water applications

STATEMENT BY KIWA
With this product certificate, issued in accordance with the Kiwa Regulations for Product Certification, Kiwa declares that legitimate confidence exists that the products supplied by

Akzo Nobel Powder Coatings GmbH

as specified in this product certificate and marked with the Kiwa®-mark in the manner as indicated in this product certificate may, on delivery, be relied upon to comply with Kiwa evaluation guideline ENL-K759 'Coating systems for drinking-water applications' dated 2012-02-01.

Luc Leroy
Kiwa

Publication of the certificate is allowed.
Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid.

Supplier:
Akzo Nobel Powder Coatings GmbH
Markenstrasse 50
72770 NEUTLINGEN
Germany
Tel: +497121 / 519130
Fax: +497121 / 519139
info@rescoat.com
www.rescoat.de

Certification process consists of initial and regular assessment of:
• quality system
• product

Epoxy certificate

CERTIFICADO DE CALIBRACIÓN
Certificate of Calibration

ENAC
N.º 1337/AC.12.133

Número: 8852-3667
Página: 1 de 3 páginas
Page: 1 of 3 pages

CALTEX SISTEMAS, S.L.
LABORATORIO DE CALIBRACIÓN
Av. Juan de La Cerda, nº 10 - 46980 Paterna (VALENCIA)
Tel: 96 182 99 02 - Fax: 96 143 82 72
Email: calibracion@caltex.com www.calibracion.com

MANÓMETRO DE PRESIÓN RELATIVA DIGITAL

OBJETO: Rem
MARCA: SIKA
MODELO: E2 400 bar
Model
IDENTIFICACION: CÓDIGO: NO CONSTA
Nº SERIE: 1189RB2
SOLICITANTE: Angodos S.L.
Applicant: P. del El Palomo - CS San Juan, 21-23 28946 Fuenlabrada MADRID

FECHA/S DE CALIBRACIÓN: 22/10/2013
Date/s of calibration

Signatario/s autorizados: Autorized signatory/ies
Firmado digitalmente por Rafael Juan Jiménez Villar. Motivo: He revisado este documento. Fecha: 2013-10-22 16:56:42:00
Fecha de emisión: martes, 22 de octubre de 2013
Date of issue

Responsable del centro
Este certificado es emitido de acuerdo con las condiciones de la acreditación concedida por ENAC que ha comprobado las capacidades de medida y su trazabilidad a patrones nacionales e internacionales.
ENAC es el formato del Acuerdo de Reconocimiento Múltiple (MRA) de calibración de European Cooperation for Accreditation (EA) y de International Laboratory Accreditation Cooperation (ILAC).
Este certificado no podrá ser reproducido parcialmente sin la aprobación por escrito del Laboratorio de calibración CALTEX SISTEMAS.
This certificate is issued in accordance with the conditions of accreditation granted by ENAC which has assessed the measurement capability of the laboratory and its traceability to national standards.
ENAC is one of the signatories of the Multilateral Agreement of the European Cooperation for Accreditation (EA) and the International Laboratory Accreditation Cooperation (ILAC).
This certificate may not be partially reproduced, except with the prior written permission of the issuing laboratory CALTEX SISTEMAS.
A CALTEX SISTEMAS con el medio ambiente. IMPRESIÓN A DOBLE CARA. LP-DEC-03-01 Ver. 34

CALIBRATION CERTIFICATES

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

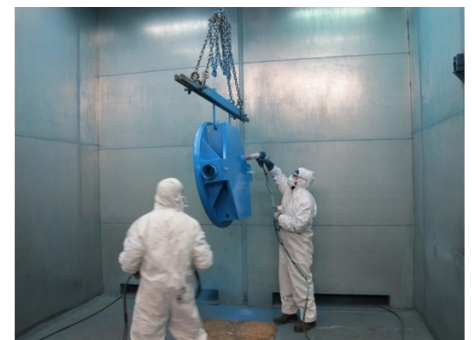
- Perfect airtight, zero porosity.
- Minimum coated thickness 300 microns.
- High adhesion to metal (min. 12 N/mm²).
- High resilience never cracking.
- Smooth surface (makes incrustation more difficult).
- Suitable for drinking water and food use. WRAS certificate.



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:

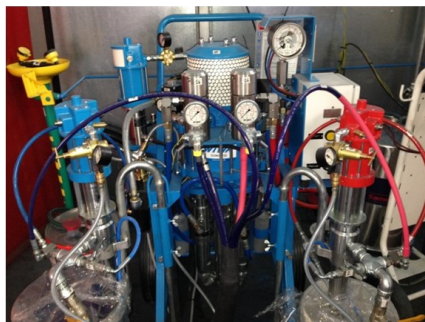
- Pre-Blasting cleaning of the element.
- Blasting grade SA 2 1/2 according to UNE-EN-ISO 8503 "Preparation of steel substrates before application of paints and related products - Surface roughness characteristics of blast-cleaned steel substrates".
- Polyurethane is applied assuring minimum 300 microns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

Coating performance

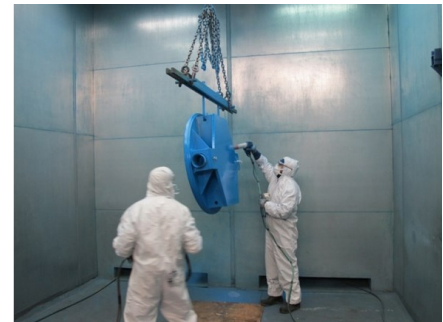
- Perfect airtight, zero porosity.
- Minimum coated thickness 300 microns but can reach 1000 microns as desired.
- Very good adhesion to metal (min. 10 N/mm²).
- High resilience never cracking, very flexible, tolerates large temperatures swing.
- High scratch resistance.
- Smooth surface (makes incrustation 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

ANGODOS AG3 is a full bore butterfly valve with wafer body. The valve is manufactured from a single cast iron body internally vulcanized with EPDM elastomer.

The internal vulcanized elastomer gasket offers conical sealing system and is the key for reliable performance. The disc is attached to the eccentric shaft bearing assuring an uniform seat and avoiding critical leaking by pressure discontinuities at the sealing area. In this way **ANGODOS AG3** sealing system assures perfect sealing under the most demanding conditions.

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



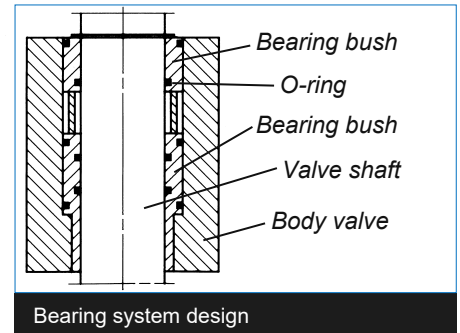
Product features

- 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.
- Sealing gaskets and lateral sealing vulcanized to the body, maintenance free.
- Wafer connection according to UNE-EN 1092-2
- Face to face dimensions series 20 according to UNE-EN 558.
- Simple eccentricity.
- Low friction and maintenance free bearing system.
- Gearbox: smooth drive, IP67rating, standard motor connection, self-locking, adjustable stop, position indicator.
- Hand-wheel or square drive with ratchet (without gearbox) available.
- Hydraulic or pneumatic upon request.
- Easy installation.
- Manufacture range, DN40-DN350 / PN10, PN16, PN25.
- Optimum performance in water systems up to 65°C.
- Vacuum allowed up to 1 torr.
- 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 embedded inside and outside the bronze bearing bush internally and externally. Bronze material has self-lubricating properties, additionally while mounting the system bearings are lubricated using silicone grease, getting low friction in the system, allowing smooth operation and long and safe service life. Also PTFE gaskets are available.

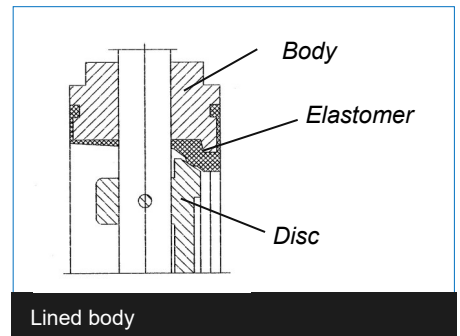


Sealing system

The disc is a single piece of Stainless Steel up

The elastomer is made of one piece of EPDM certified for drinking water vulcanized to the body. It also includes the flat side gaskets for easy installation.

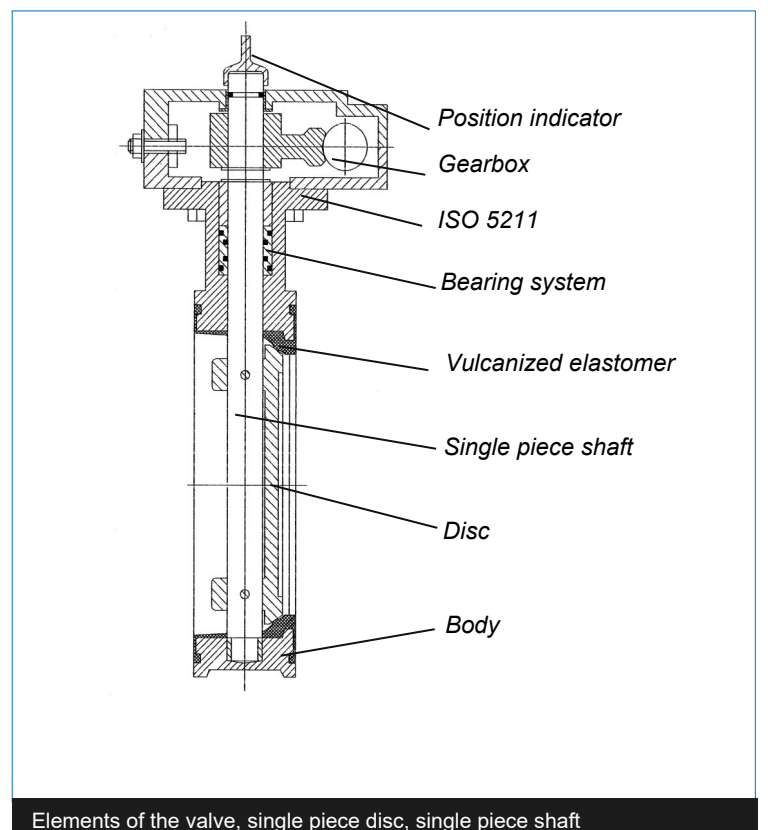
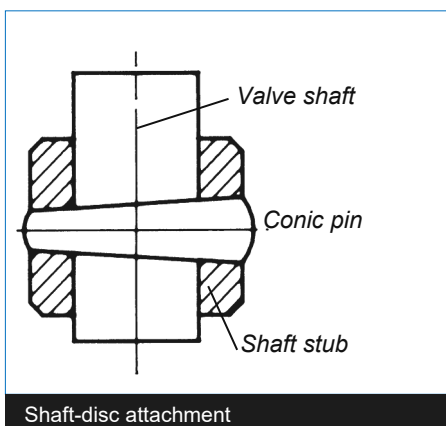
The conical shape of the sealing system makes **ANGODOS AG3** valve suitable for working pressures up to PN25.



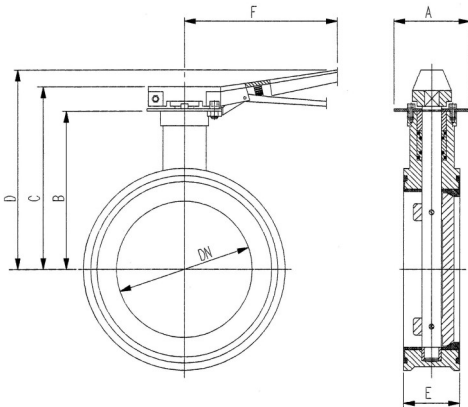
Shaft system

The shaft is made of a single piece, reducing deflection, and it 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.

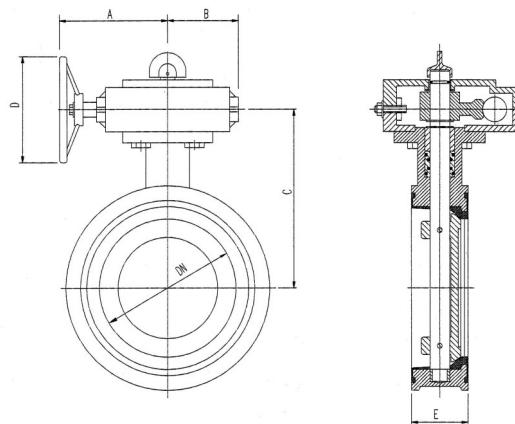
ANGODOS AG3 is manufactured taking care of the operation conditions and client requirements, the design range includes simple eccentricity shaft, with bidirectional sealing, even for vacuum conditions.



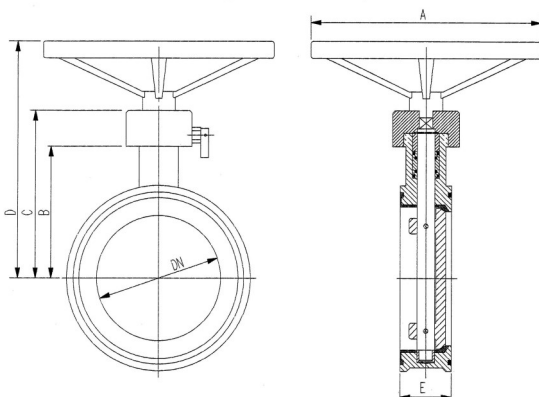
Dimensional characteristics



| DN | A | B | C | D | E | F |
|-----|----|-----|-----|-----|----|-----|
| 40 | 86 | 104 | 133 | 149 | 42 | 210 |
| 50 | 86 | 107 | 136 | 152 | 43 | 210 |
| 65 | 86 | 113 | 142 | 158 | 46 | 210 |
| 80 | 86 | 129 | 158 | 174 | 46 | 210 |
| 100 | 86 | 137 | 166 | 187 | 52 | 260 |
| 125 | 86 | 155 | 184 | 205 | 56 | 260 |
| 150 | 86 | 176 | 204 | 226 | 57 | 260 |



| DN | A | B | C | D | E |
|-----|-----|----|-----|-----|----|
| 50 | 150 | 90 | 137 | 150 | 43 |
| 65 | 150 | 90 | 144 | 150 | 46 |
| 80 | 150 | 90 | 154 | 150 | 46 |
| 100 | 150 | 90 | 168 | 150 | 52 |
| 125 | 150 | 90 | 185 | 150 | 56 |
| 150 | 150 | 90 | 210 | 150 | 57 |
| 200 | 170 | 90 | 265 | 200 | 61 |
| 250 | 170 | 90 | 330 | 200 | 69 |



| DN | A | B | C | D | E | F |
|-----|----|-----|-----|-----|----|-----|
| 40 | 86 | 104 | 133 | 149 | 42 | 210 |
| 50 | 86 | 107 | 136 | 152 | 43 | 210 |
| 65 | 86 | 113 | 142 | 158 | 46 | 210 |
| 80 | 86 | 129 | 158 | 174 | 46 | 210 |
| 100 | 86 | 137 | 166 | 187 | 52 | 260 |
| 125 | 86 | 155 | 184 | 205 | 56 | 260 |
| 150 | 86 | 176 | 204 | 226 | 57 | 260 |

- PN10, PN16, PN25 to UNE-EN 1092, ISO 2531
- Face to face length according to series 20 UNE-EN 558, ISO 5752.
- Hand wheel or square drive with ratchet without gearbox available
- Other dimensions available upon request.