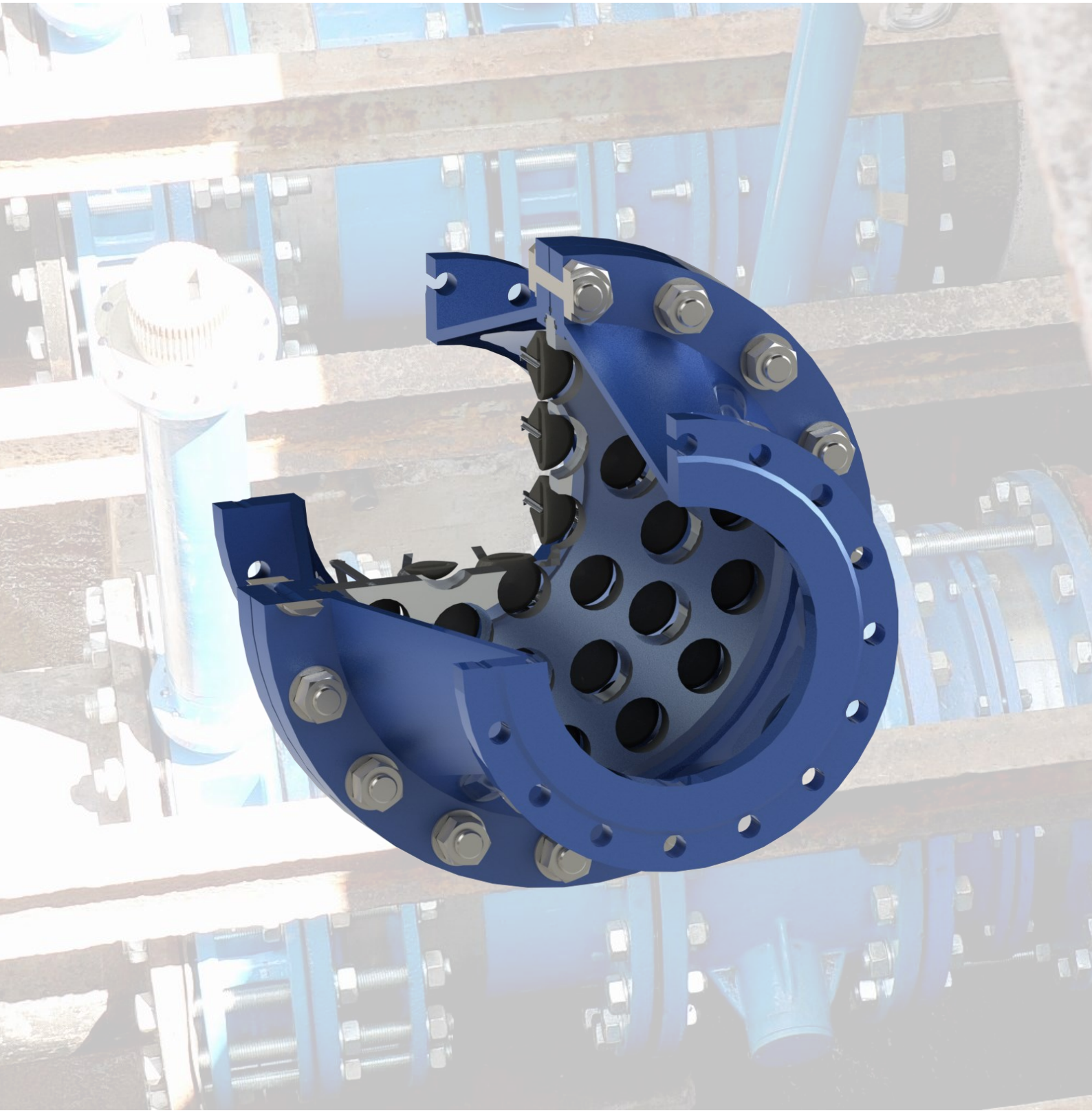


MNZ

CHECK VALVE (NRV)
MULTI-NOZZLE

ANGODOS
Válvulas

"From 1970, close to our clients"

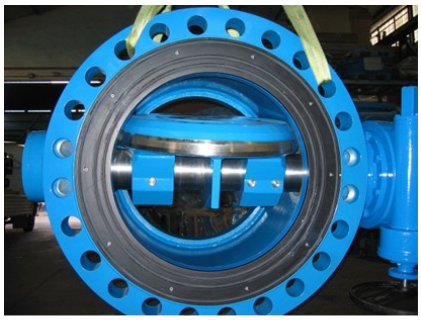
ANGODOS

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.

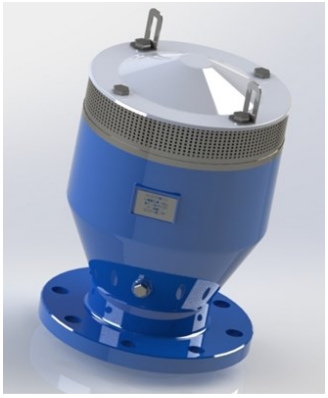


ANGDOS valve AG1 DN900 PN100

ANGODOS valve model AG1-CT with dismantling joint

Overspeed valve DN2000 PN25, double arm

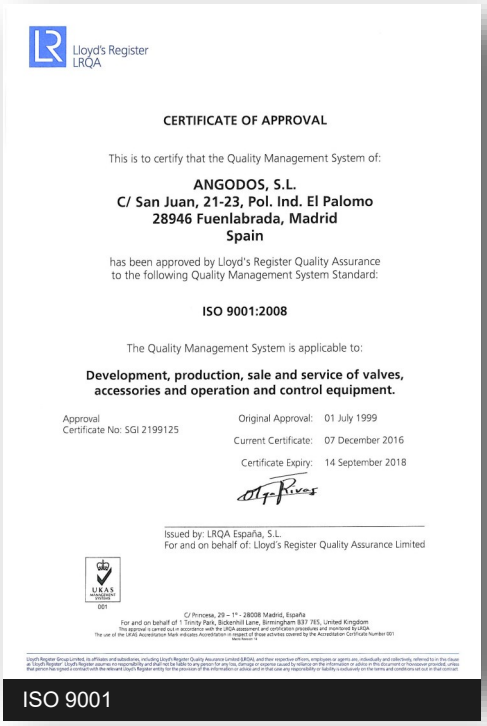
Interior plant view – big diameter valves



DN150 PN25 air release valve

Check valves DN900 PN16 with hydraulic shock absorber

Certificates



Lloyd's Register LRQA

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

Lloyd's Register

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.

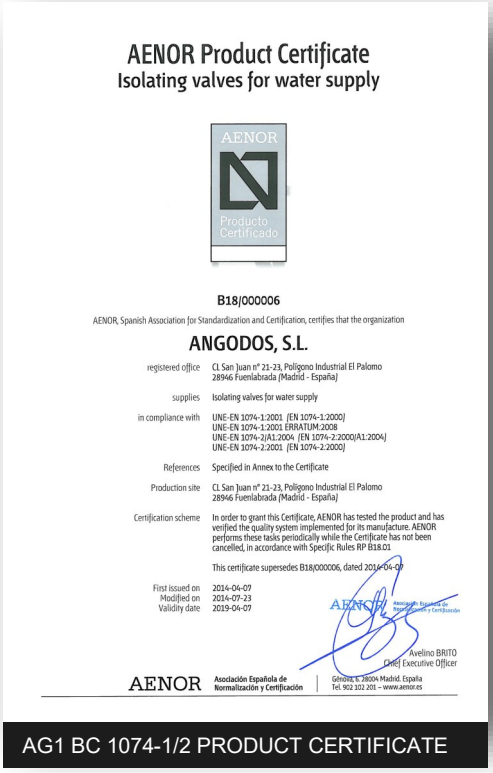
Authorisation is hereby given to use the LRV Notified Body Identification Number in accordance with the requirements of the specified Directive and Regulations in relation to the products as identified above.

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

Lloyd's Register Verification Limited

Teresa Souto on behalf of Lloyd's Register Verification

PRESSURE EQUIPMENT 2014/68/EU



AENOR Product Certificate
Isolating valves for water supply

AENOR Producto Certificado

B18/000006

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

ANGODOS, S.L.

registered office: CL 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/A1:2004 (EN 1074-2:2000/A1:2004)
UNE-EN 1074-2:2001 (EN 1074-2:2000)

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 tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP B18.01

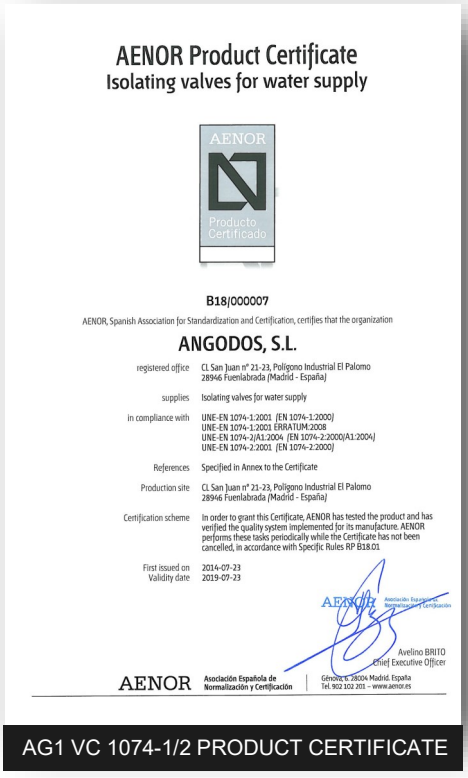
This certificate supersedes B18/000006, dated 2014-04-07

First issued on: 2014-04-07
Modified on: 2014-07-23
Validity date: 2019-04-07

Avelino BRITO
Chief Executive Officer

AENOR Asociación Española de Normalización y Certificación | Génova 6. 28004 Madrid. España Tel. 902 102 201 – www.aenor.es

AG1 BC 1074-1/2 PRODUCT CERTIFICATE



AENOR Product Certificate
Isolating valves for water supply

AENOR Producto Certificado

B18/000007

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

ANGODOS, S.L.

registered office: CL 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/A1:2004 (EN 1074-2:2000/A1:2004)
UNE-EN 1074-2:2001 (EN 1074-2:2000)

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 tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP B18.01

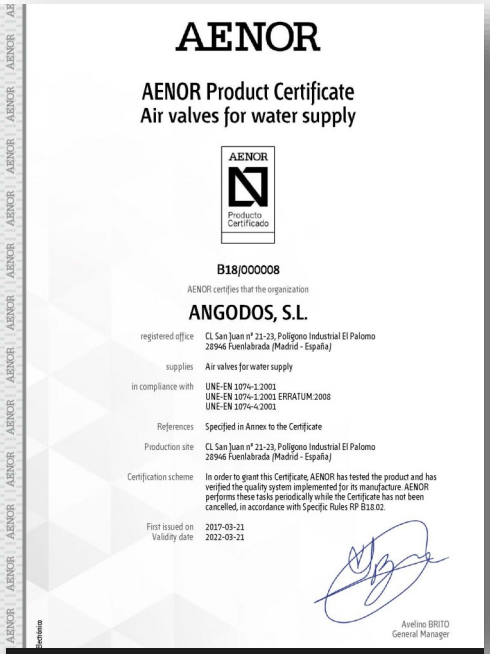
First issued on: 2014-07-23
Validity date: 2019-07-23

Avelino BRITO
Chief Executive Officer

AENOR Asociación Española de Normalización y Certificación | Génova 6. 28004 Madrid. España Tel. 902 102 201 – www.aenor.es

AG1 VC 1074-1/2 PRODUCT CERTIFICATE

Certificates



AENOR

AENOR Product Certificate
Air valves for water supply

AENOR
Producto Certificado

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 1074-1:2001
UNE-EN 1074-1:2001 ERRATUM:2008
UNE-EN 1074-4:2001

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 tasks 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

WRAS
Water Regulations Advisory Scheme

Our Ref: HL/M130483
Test Report: MAT/LAB 7110/2

22nd February 2013

Compounds AG.
Barzloostrasse 1,
CH-8330 Pfaffikon ZH,
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 6920-1:2000 'Suitability of non metallic 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: 1302524
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 accordingly 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 may be found at: www.wras.co.uk/directory

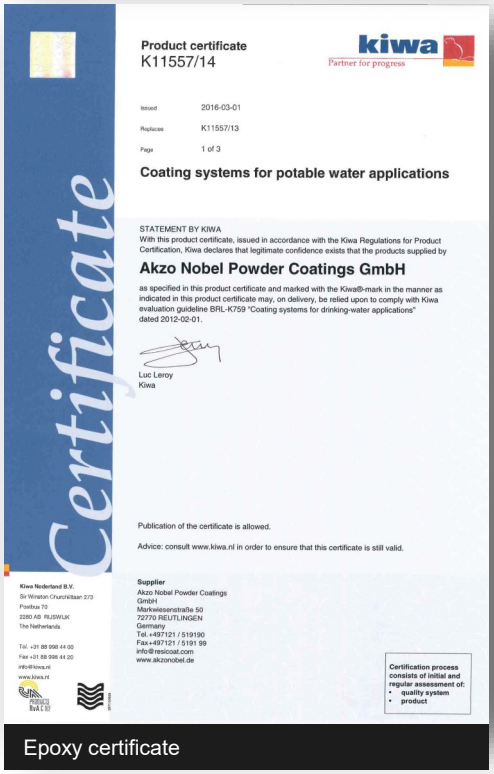
Yours faithfully

Jason Furnivall
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

11.10.2016
Compounds AG
Barzloostrasse 1
CH-8330 Pfaffikon ZH

ANGODOS S.L.

EPDM certificate



Certificate

Product certificate
K11557/14

kiwa
Partner for progress

Issued: 2016-03-01
Replaces: 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 BRL-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
Markwiesenstraße 50
72770 REUTLINGEN
Germany
Tel.+497121 / 519190
Fax.+497121 / 5191 99
info@resicoat.com
www.akzonobel.de

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

Kiwa Nederland B.V.
Sir Winston Churchilllaan 273
Postbus 70
2280 AB RIJSWIJK
The Netherlands
Tel. +31 88 998 44 00
Fax +31 88 998 44 20
info@kiwa.nl
www.kiwa.nl

Epoxy certificate

CERTIFICADO DE CALIBRACIÓN

ENAC CALIBRACIÓN Nº 13/C-LC14-113

Certificate of Calibration

Número / Number: 8852-3667

Página / Page: 1 de / of 3 páginas / pages

CALTEX SISTEMAS, S.L
LABORATORIO DE CALIBRACIÓN
Av. Juan de La Cierva, nº 10 46980 Paterna (VALENCIA)
Tel.: 96 182 99 62 – Fax: 96 143 82 72

CALTEX

OBJETO / Item: MANÓMETRO DE PRESIÓN RELATIVA
DIGITAL

MARCA / Mark: SIKA

MODELO / Model: E2 400 bar

IDENTIFICACION / Identification: CÓDIGO: NO CONSTA
Nº SERIE: 1189RB2

SOLICITANTE / Applicant: Angodos S.L.
P Ind El Palomo - C/San Juan, 21-23
28946 Fuenlabrada MADRID

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

Signatario/s autorizado/s / Authorized signatory/ies
Fecha de emisión / Date of issue

LABORATORIO DE CALIBRACIÓN CALTEX

Firmado digitalmente porRafael Juan Jiménez Villar
Motivo: He revisado este documento
Fecha:2013-10-22 16:04:02:00

martes, 22 de octubre de 2013

Responsable del centro

Este certificado se expide de acuerdo con las condiciones de la acreditación concedida por ENAC que ha comprobado las capacidades de medida y su trazabilidad a patrones nacionales o internacionales.
ENAC es el firmante del Acuerdo de Reconocimiento Mutuo (MLA) 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 signatures 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.

CALTEX colabora 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 180ºC.
- 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.

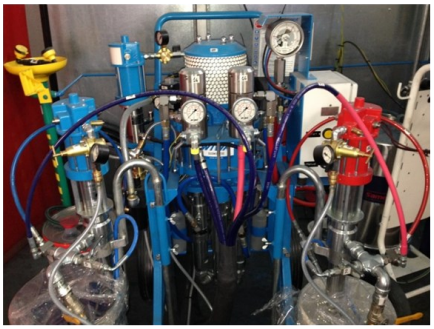
The process comprises three steps:

- 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).

Manual blasting cabin 4.5x4.5 meters

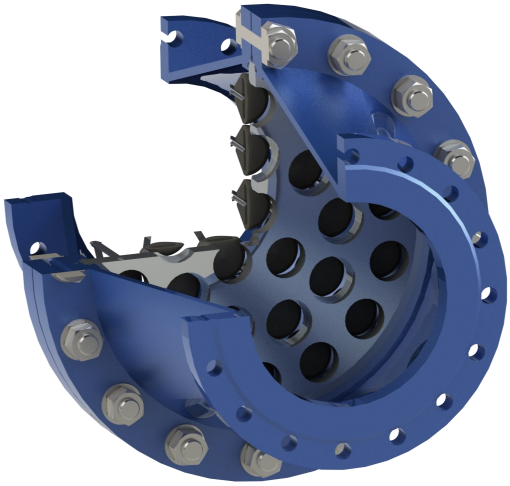


Equipment for corrosion protection with polyurethane coating

Manual powder coating, cabin 4x4.meters

Check Valve non slam multi-nozzle ANGODOS MNZ

Description



ANGODOS MNZ is a flanged check valve with multi-orifice system that will automatically close by the effect of a speed reduction.

It consists of a body made of two conic parts made of welded Steel or ductile cast iron. This parts of the body flange a multi-orifice disc made of stainless Steel which is the base for the closing. The body also includes Windows for maintenance works and optionally the installation of a by-pass system.

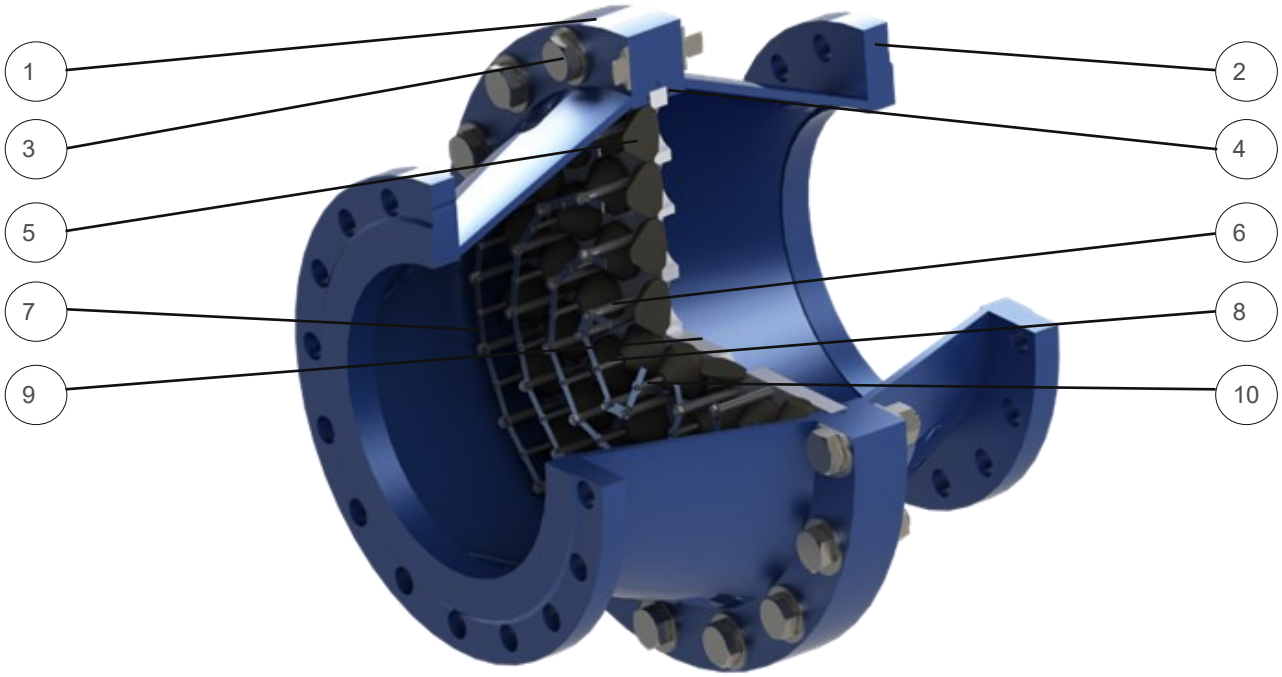
The nozzle are completely vulcanized of EPDM (other elastomer available for every kind of fluid) assuring an uniform seat and avoiding critical leaking by pressure discontinuities at the sealing area. The nozzles will move always guided by the use of shafts in the fluid direction. The multi-nozzle system will automatically close the valve by a reduction or change of speed and direction, this closing will happen fast due to the assistant of the resort installed which also allows the valve to work in any position.

Using this system the nozzles will move just 15mm so the valve will sudden close silently, avoiding slams and vibration.

Product features

- Ultra fast closing system when changing the flow direction.
- Works on every position.
- Cavitation free.
- Hydrodynamic design which avoids head-loss.
- Easy installation and maintenance.
- Sizes from DN150 toDN1600.
- Nominal pressure PN10, PN16, PN25, PN40.
- Made with top quality materials, certified for drinking water and highly corrosion resistant.
- Completely watertight closing system.
- Flange connection according to UNE-EN 1092/ ANSI
- Optimum performance in clean water and reused water systems up to 60ºC.

Parts list and materials (Standard)



1	Body flange for body connection and disc support	Steel or ductile cast iron.
2	Body flange for pipe connection	Steel or ductile cast iron.
3	Mounting bolts	Stainless Steel
4	Body O-ring	EPDM
5	Nozzle	Steel with vulcanized EPDM
6	Shafts	Stainless Steel
7	Support Bridges	Stainless Steel
8	Springs	Stainless Steel
9	Multi–orifice disc	Stainless Steel
10	Valve Body	Steel or ductile cast iron.

Advantages

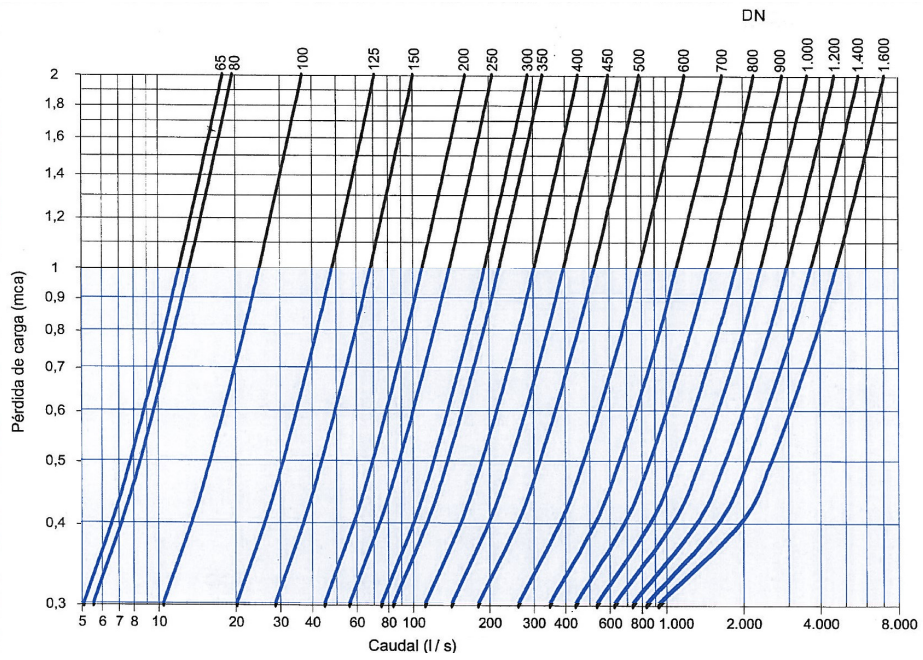
- Avoids the risk of overpressure which occurs during a pump stop, even when the pump system suddenly stops.
- When the fluid speed approximates to zero, the valve will close instantaneously.
- The closing inertia is drastically reduced due to the tiny movement of the nozzles.
- The valve works silently.
- Avoid vibrations.
- Avoid Water-hammer.
- Cavitation free

Operation

When a pump suddenly stops because of a power failure or because of any failure, the speed of the fluid will drastically drop. The installation of check valves after pumps is always recommended, but there is a problem when the drop of speed is higher than the closing of the valve, allowing the direction of the flow change, causing a very high closing pressure. The problem is aggravated when boilers are installed because this system allows higher speed drop. The multi-nozzle valve will protect the installation because of the short nozzle movement which allows instantly closing, offering high security, silence and vibration free operation

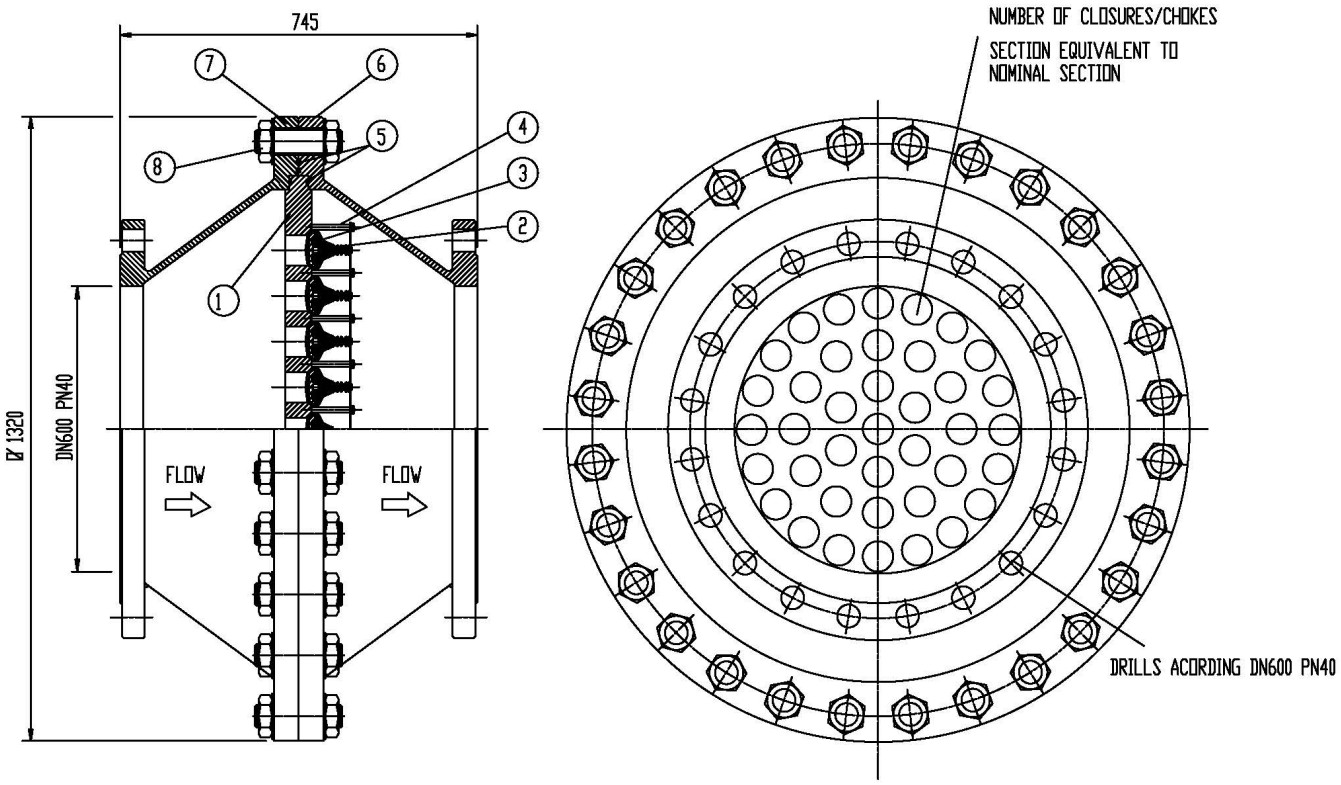
Head loss

Blue Zone: Recommended working conditions.



	DN															
	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600
Kv	781	1308	1712	2177	2615	3456	4608	6106	8887	12733	17583	22130	26706	32989	42480	51840

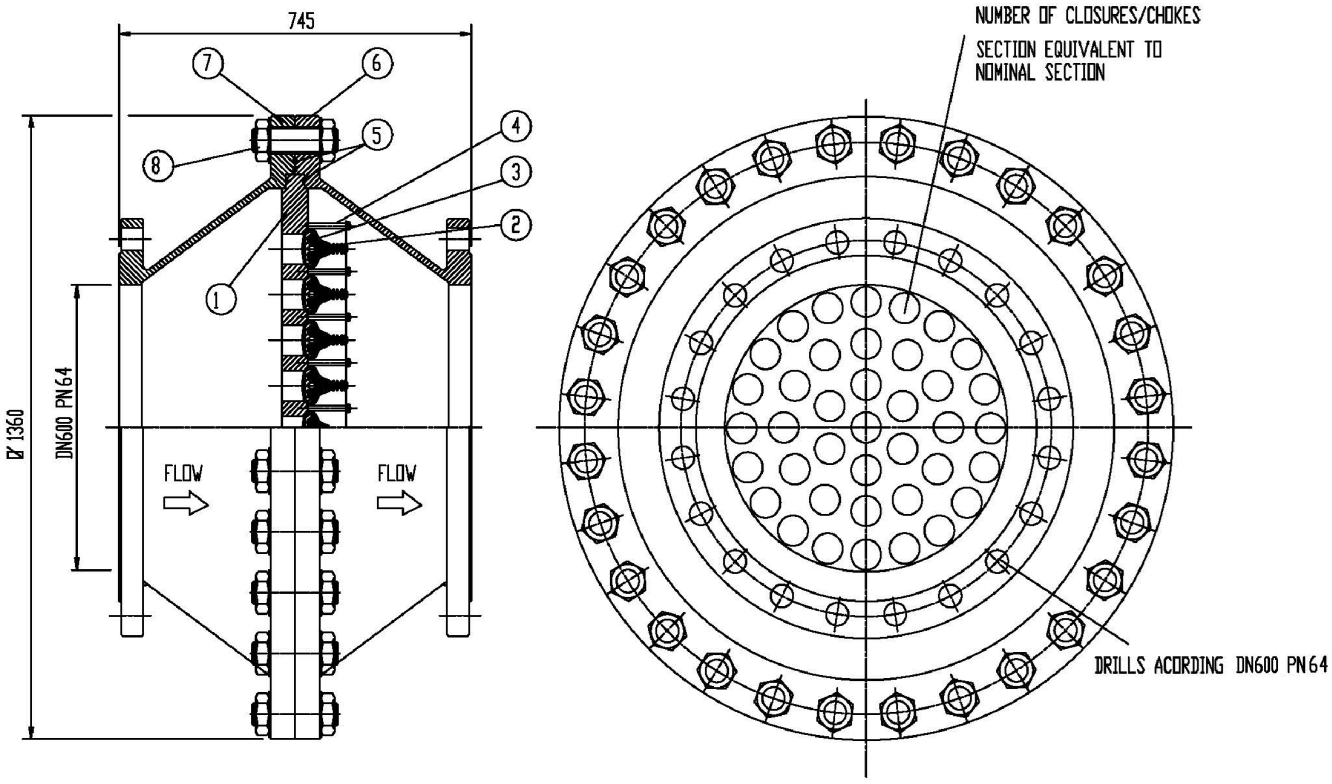
DN600 PN40 Overall dimensions parts list and materials



Weight 1450kg

1	Seat Disc	Stainless Steel AISI-316
2	Spring	Stainless Steel AISI-316
3	Choke	Stainless Steel AISI-316 + Vulcanized EPDM
4	Bracket	Stainless Steel AISI-316
5	O-rings	EPDM
6	Valve Body output	Carbon Steel S355JR + Epoxy (300 microns)
7	Valve body input	Carbon Steel S355JR + Epoxy (300 microns)
8	Body fixing screws	Carbon Steel

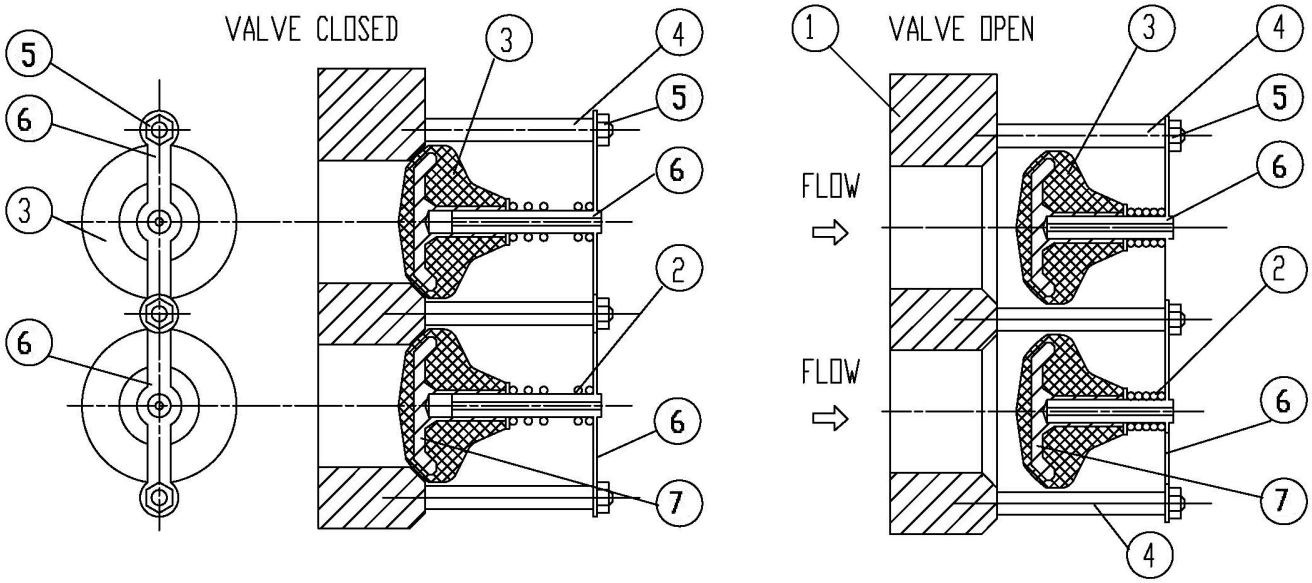
DN600 PN64 Overall dimensions parts list and materials



Weight 2100kg

1	Seat Disc	Stainless Steel AISI-316
2	Spring	Stainless Steel AISI-316
3	Choke	Stainless Steel AISI-316 + Vulcanized EPDM
4	Bracket	Stainless Steel AISI-316
5	O-rings	EPDM
6	Valve Body output	Carbon Steel S355JR + Epoxy (300 microns)
7	Valve body input	Carbon Steel S355JR + Epoxy (300 microns)
8	Body fixing screws	Carbon Steel

Chokes sealing system, parts list and materials



1	Seat Disc	Stainless Steel AISI-316
2	Spring	Stainless Steel AISI-316
3	Choke	EPDM (+ Stainless Steel Core)
4	Bracket	Stainless Steel AISI-316
5	Lock Nut	Stainless Steel AISI-316
6	Guide bridge	Stainless Steel AISI-316
7	Choke core	Stainless Steel AISI-316