Galactic Valve

EXCELLENT CORROSION RESISTANCE

VAMEIN de españa, s.a.

VALVULAS DE MARIPOSA Y ACCIONAMIENTOS

ENGINEERED BUTTERFLY VALVES

RAZVALVE PACIFIC

Galactic Valve

VAMEIN de España

VAMEIN DE ESPAÑA, S.A. is an internationally well known leader company dedicated to the manufacture of Butterfly Valves and Actuators since 1970. Thanks to their wide experience, technical and human resources, **VAMEIN** offers a high quality product appropriated for the needs of the customer.

Steady modernization in production center, technical office and quality assurance system enable **VAMEIN DE ESPAÑA, S.A.** to supply products with certified guarantee. The Quality System of **VAMEIN DE ESPAÑA, S.A.** has been approved to design and manufacture butterfly valves according to ISO 9001:2008 standard and meets the requirements of the Pressure Equipment Directive 97/23/EC, Annex III, Module H of the European Economic Community.

Besides, VAMEIN also has European Directive ATEX 94/9/EC, concerning equipment and protective systems intended for using in potentially explosive atmospheres.

Fields of application for VAMEIN products are very diversified. This has given the possibility to develop a wide range of products with high reliability, covering practically all segments of the market where it is necessary to work with liquids, gases and high-density /powder products, at different pressures and temperatures bearing always in mind the respect towards the environment.

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Valve design features

The search for a reliable valve resisting highly corrosive and aggresive fluids to satisfy the demands of the market, and our concern to improve led us to design the "GALACTIC" butterfly valve which is fully guaranteed as usual. It is designed according to the latest technology, the accurate, reliable and long-lasting shutting is also guaranteed.
The "GALACTIC" butterfly valve is specially recommended for heavy duty applications where a high performance is required.

The following features of this new model can be emphasized:

- Body encircling type seat made of virgin Poly Tetra Fluoro Ethylene "PTFE", isostatically moulded of 3mm thickness, and makes this valve highly suited for chemical applications.
- Disc encapsulated with PFA and UHMWPE, 3 mm thick, mechanically fastened and isostatically moulded.
- The one piece investment cast stainless steel slim disc and shaft offers a very high "Cv" or "Kv" rating, which minimizes obstructions to the flow (low pressure drop).
- Shaft PFA or UHMWPE coated in areas in contact with the liner, ensures complete stem isolation from the fluid.
- The contact between the PTFE liner and the encapsulated PFA disc causes a minimal friction coefficient and therefore minimum wear and, consequently, a constant and low torque value.
- Only the disc and the liner are into contact with the fluid.
- PTFE coated self-lubricating bearings.
- Centring holes in Wafer body for the right alignment with flanges during installation.
- Body design permitting to place heat insulation.
- Top flange to ISO-5211 to fit any type of standardized actuator.
- Stainless steel bolting to fix both parts of the body.
- Maintenance free.
- Full trazability of components.
- Manufactured according to latest standards and applicable regulations.

TECHNICAL INFORMATION		
BODY TYPE	Split body, two pieces	
MODELS	WAFER AND LUG	
RANGE OF PRODUCTION	DN-50 to DN-300 (2" to 12")	
WORKING PRESSURE	From vacuum up to 16 bar (Depending on size and working temperature)	
TEMPERATURE OF USE	-40 º C to + 200º C (Depending on the working pressure)	
SPEED LIMITS	FLUIDS: 5m/sg.	GASES:70 m/sg.
ASSEMBLY BETWEEN FLANGES	DIN PN-10 / PN16 AND ANSI 150 Lbs	
FLOW DIRECTION	BIDIRECTIONAL	

Principles of tightness

Spherical shutting design similar to a ball valve allows a perfect shutting on the entire peripheral contact surface between the PTFE liner and disc with no interruption.

Basically the high rigidity and the extreme low flexibility or possibility to recuperate the liners original shape has been taken into consideration. For this reason, a high accuracy in machining of all valve components is required, both dimensional and geometrical, demanding also a constant pressure on the whole contact surface between the PTFE liner and disc to guarantee a long-lasting watertight shutting and to facilitate the memory effect of the liner.
To reach this purpose the following solutions have been adopted:

Shaft area: Sets of pre-stressed washers placed in the valve body and take effect on the shaft pitch by giving a constant dynamic force at any position of the disc.

Contact area between the liner and the disc: A high elasticity and fast coming to the original shape energizer rubber has been designed. Placed between the body valve and the PTFE seat, it guarantees a constant and positive pressure to the disc when closing the valve.

Body / Shaft tightness: Designed to prevent atmosphere pollution by means of Viton® O-Rings and placed in opposite pushing rings in order not to weaken the shafts or to create assembly problems.
Closed body design at the lower shaft pitch minimizes the risk of leakages to the atmosphere.

Tightness between flanges: The big contact surface of the liner with the pipe flanges eliminates the use of additional seals reducing the possibility of radial cold-flow.

Applications

The "GALACTIC" butterfly valve has been designed by the Innovation, Development and Investigation Technical Department (I+D+I) of VAMEIN DE ESPAÑA, S.A. Our main aim has been to design a valve with the highest level of quality to work with corrosive and aggressive fluids.
After passing a rigorous prototype programme and many tests, we have managed to guarantee an accurate, reliable and long-lasting shutting.

Some types of industries and fluids where the "VAMEIN-GALACTIC" butterfly valve is recommended are listed below:

SEVERAL TYPICAL SERVICES INDUSTRIES AND FLUIDS	
Abrasive applications	Oil and gas Industries
Adhesives and solvents	Oxygen
Beverage industries	Paint processing
Bio-technology	Petrochemical
Chemical corrosive media	Pharmaceutical
Chlorine	Pigments processing
Chlorine dioxide	Pulp and paper
Cleanroom (high purity)	Purification plants
Conductive applications	Refinery
Cosmetic Industry	Semiconductor
Demineralised water	Sewage
Desalination of sea water	Slurry
Desalination	Sodium chloride
Fertilizers	Sugar industries
Food industry	Sulfuric acid
High temperature applications	Textile processing
Hydrochloric acid	Ultrapure water (Special manufacturing)
Liquor industries	Vacuum installations
Mining and steel-mills	Wet chlorine
Nitric acid	

Torques

The flow of a liquid through a partially open butterfly valve disc creates a force on the disc which tends to close it, which is called "Dynamic Torque". For valves smaller than DN 150 mm (6") this dynamic torque usually does not have an important effect and therefore negligible.

For valves from DN 150 mm (6") on, the Dynamic Torque must be taken into account when choosing the actuators. Therefore gear-boxes for manual operation are recommended for valves starting from this nominal diameter.

The maximum normal torques are those given by the valves at their best working conditions in a normal pipeline application. The necessary normal torque to operate a valve varies depending on the service conditions, as on the time in service as well as on the operation frequency.

TORQUES IN Nm. AT 10 Bar DIFFERENTIAL PRESSURE									
LINER / DISC MATERIAL COMBINATIONS	NOMINAL DIAMETER								
	50 – 2"	65 – 2 ½"	80 – 3"	100 – 4"	125 – 5"	150 – 6"	200 – 8"	250 – 10"	300 – 12"
PTFE / PFA	35	40	60	75	100	155	235	350	485
PTFE / STAINLESS STEEL	46	52	78	98	130	202	306	455	631
UHMWPE / UHMWPE	53	60	90	113	150	233	353	525	728

TORQUES IN Lbs. Inch. AT 150 psi DIFFERENTIAL PRESSURE									
LINER / DISC MATERIAL COMBINATIONS	NOMINAL DIAMETER								
	50 – 2"	65 – 2 ½"	80 – 3"	100 – 4"	125 – 5"	150 – 6"	200 – 8"	250 – 10"	300 – 12"
PTFE / PFA	310	354	531	664	885	1.372	2.080	3.098	4.292
PTFE / STAINLESS STEEL	403	460	690	863	1.151	1.783	2.704	4.027	5.580
UHMWPE / UHMWPE	465	531	797	996	1.328	2.058	3.120	4.646	6.438

REMARK: Torques listed in the above table are a guideline and they have been calculated for a constant pressure and working conditions and valid for "VAMEIN-GALACTIC" butterfly valves with PTFE liners and water at ambient temperature (20° C approx.) at 10 bar pressure.

As the figures we presented in the above table were obtained from tests made on static benches, it is necessary to take into consideration the dynamic conditions of the fluid for every specific line (velocity, flow, cavitation, hydraulic factors, etc), specially for the hydrodynamic stress caused by the flow on the valve disc.

The "VAMEIN-GALACTIC" butterfly valve is designed to work with fluids, which act like lubricants. For air or gas service, torques are considerably higher, at least 35 %. In this case, please contact our Technical Department to analyze the situation and get the best advice.

Safety factors are included in these torque values.

Hidraulic characteristics

Kv value (m³/hour)

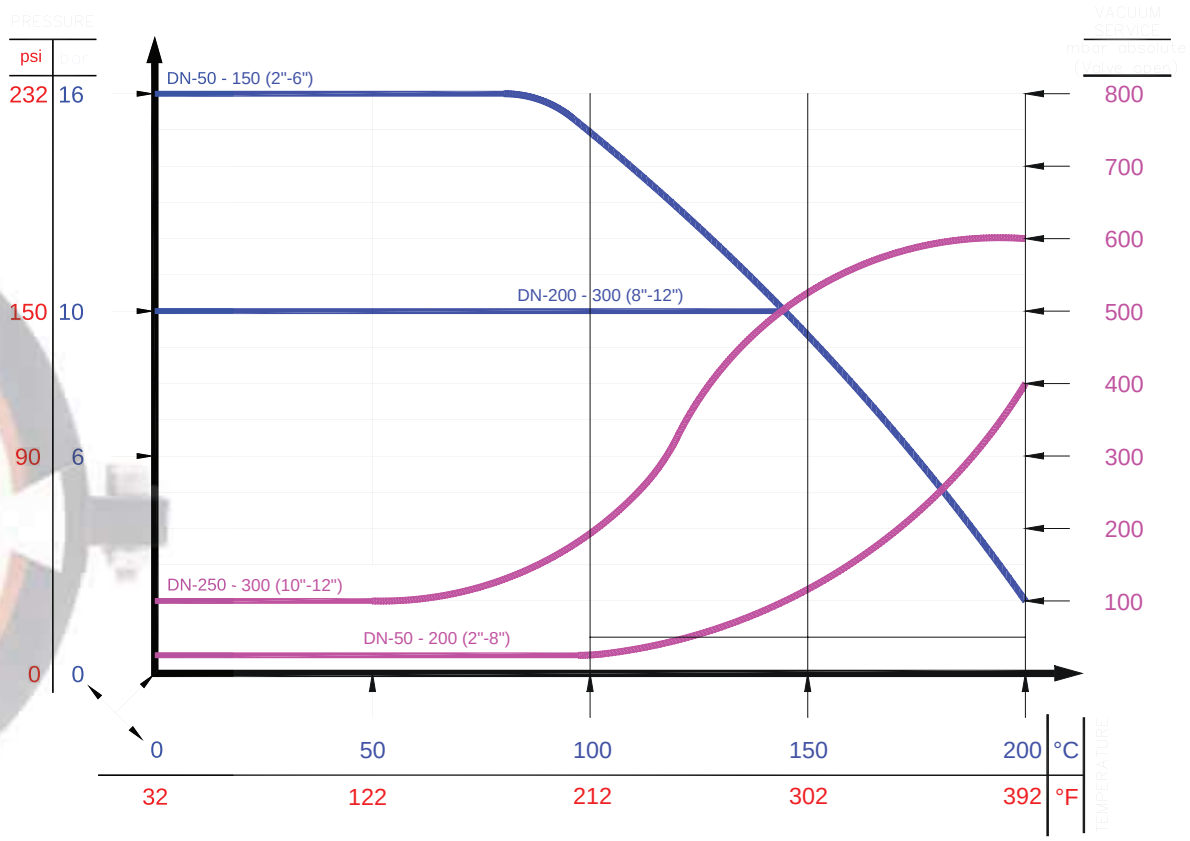
Values shown in the following table are in m³/hour, making the pressure drop calculation easier.

Kv VALUES (m³/h)									
D.N. VALVE		OPENING ANGLE							
mm	Inch	20º	30º	40º	50º	60º	70º	80º	90º
50	2″	7	16	26	43	69	110	170	190
65	2½″	9	22	38	60	95	155	250	280
80	3″	14	33	57	95	150	240	370	430
100	4″	24	54	95	155	240	400	620	710
125	5″	38	86	155	240	390	640	950	1.100
150	6″	52	120	220	345	550	950	1.400	1.600
200	8″	95	220	345	600	950	1.600	2.400	2.800
250	10″	155	345	610	950	1.600	2.600	4.000	4.700
300	12″	220	510	860	1.500	2.300	3.800	5.900	6.900

Kv (Cv) Flow coefficient value definition =Water flow value in l/ minute at 20º C (US gallons/minute at 60º F), which passing through a valve creates a pressure drop of 1 Kg/cm². (1 p.s.i.).

Kv – Cv Ratio: Cv (US Gallons / minute) = 1,155 • Kv (l/minute)

Pressure / Temperature diagram



Applicable standards

CONCERNING QUALITY SYSTEM	
CODE	**TITLE**
UNE-EN-ISO 9001:2008	Quality management systems. Requirements.
97/23/EC	Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment.
ATEX 94/9/EC	European Directive concerning equipment and protective systems intended for use in potentially explosive atmospheres.
CONCERNING DESIGN	
CODE	**TITLE**
API 609-97	Butterfly Valves: Double Flanged, Lug-and Wafer-Type.
EN-593	Industrial valves. Metallic butterfly valves.
MSS SP-67-95	Butterfly valves.
ASME/ANSI B16.24-01	Cast copper alloy pipe flanges and flanged fittings.
ASME/ANSI B16.34-96	Valves-Flanged, threaded, and welding end.
ASME/ANSI B16..42-98	Ductile Iron pipe flanges and flanged fittings.
CONCERNING ASSEMBLY BETWEEN FLANGES	
CODE	**NOMINAL PRESSURE**
EN 1092-1	Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Part I: Steel flanges.
EN 1092-2	Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated Part 2: Cast iron flanges.
ANSI B 16.5	Pipe flanges and flanged fittings: NPS ½ through NPS 24. (DN 15 through DN 600)
ANSI B 16.1	Cast iron pipe flanges and flanged fittings classes 25, 125, and 250.
CONCERNING PRODUCTION	
CODE	**TITLE**
UNE-EN-ISO 5211-01	Industrial valves. Part-turn actuator attachments.
UNE-EN 558-1-96	Industrial valves. Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems. Part 1 PN-designated valves.
UNE-EN 558-2-96	Industrial valves. Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems. Part 2 Class-designated valves.
ISO 5752-82	Metal valves for use in flanged pipe systems – Face-to-face and centre-to-face dimensions.
CONCERNING TESTING	
CODE	**TITLE**
ISO 5208-93 (DIN 3230)	Technical delivery conditions for valves. Compilation of test methods.
DIN EN 60243-1	Electrical strengh of isulating materials-Test methods. (Porosity spark test for PTFE seat and PFA encapsulated disc).
CONCERNING MARKING AND LABELLING	
CODE	**TITLE**
UNE-EN 19-93 (ISO-5209)	Marking of general purpose industrial valves.
CONCERNING MATERIAL AND TEST CERTIFICATES	
CODE	**TITLE**
EN 10204-91	2.2 / 3.1

Liner and disc encapsulation

USE AND PERFORMANCE OF DIFFERENT LINER TYPES						
MATERIAL	CHEMICAL RESISTANCE	TEMPERATU-RE RANGE (ºC)	PERMEABILITY	COLD-FLOW PREVENTION	ABRASION RESISTANCE	ELECTROSTATIC SHOCK PREVENTION
PTFE	EXCELLENT	-40 a +200	GOOD	MODERATE	MODERATE	MODERATE
PTFE CONDUCTIVE	EXCELLENT	-40 a +200	GOOD	MODERATE	MODERATE	EXCELLENT
NXT/TFM	EXCELLENT	-40 a +200	EXCELLENT	GOOD	GOOD	MODERATE
NXT/TFM CONDUCTIVE	EXCELLENT	-40 a +200	EXCELLENT	GOOD	GOOD	EXCELLENT
UHMWPE	GOOD	-35 a +90	BAD	EXCELLENT	EXCELLENT	BAD

Special treatment on PTFE and NXT/TFM Liners can be offered on request for high purity applications in pharmaceutical and semiconductor industries, as well as for ultrapure water by implementing a special cleaning, assembly and handling process up to their vacuum-packing in perfectly sealed double bags.

USE AND PERFORMANCE OF DIFFERENT DISC ENCAPSULATION TYPES						
MATERIAL	CHEMICAL RESISTANCE	TEMPERATURE RANGE (ºC)	PERMEABILITY	COLD-FLOW PREVENTION	ABRASION RESISTANCE	ELECTROSTATIC SHOCK PREVENTION
PFA	EXCELLENT	-40 a +200	GOOD	GOOD	MODERATE	MODERATE
PFA CONDUCTIVE	EXCELLENT	-40 a +200	GOOD	GOOD	MODERATE	EXCELLENT
UHMWPE	GOOD	-35 a +90	BAD	EXCELLENT	EXCELLENT	BAD

GENERIC PROPERTIES OF THE DIFFERENT MATERIALS		
MATERIAL	TECHNICAL DESCRIPTION	BASIC DESCRIPTION AND GENERAL APPLICATIONS
PTFE	Poly Tetra Fluoroethylene	PTFE is a granular virgin fluoropolymer resin made by DUPONT® with the name of Teflon® 807-N. Good non-ageing characteristics, chemical inert-ness, excellent dielectric properties, heat resistant, good flexibility, low coefficient of friction, non-stick, excellent weather resistance, negligible moisture absorption.
NXT/TFM	Chemically modified PTFE	NXT 85 is the brand name manufactured by DUPONT® of the PTFE new generation. It possesses all the properties associated with traditional PTFE, and also lower deformation under load, better dielectric properties, higher density, lower permeability and better resistance to fatigue..
PFA	Per Fluoro Alkoxy	PFA is a copolymer of tetrafluoroethylene and perfluoroalkyl vinyl ether, manufactured by DUPONT® with the brand name PFA® C980. It is used for disc encapsulating by injection methods. It has the same capabilities as PTFE even at extreme temperatures, and keeps its thermal stability. It also shows an excellent chemical resistance against acids and alkalies.
UHMWPE	UHMWPE	Ultra High Molecular Weight Polyethylene with an excellent combination of physical and mechanical properties, high performance under very rigorous conditions. Suitable to work in chemical services with high abrasion power due to its exceptional resistance.
CONDUCTIVE	PTFE . NXT and PFA CONDUCTIVE	The property of conductivity is basically obtained by adding up to 1,2% of carbon to the formula of each material. Suitable to be used in plants where the anti explosion protection is an important factor. Designed to prevent electrostatic shocks. For applications with possible electrostatic shocks, the use of an earth wire from the valve to the installation is necessary.

Certificates

EC CERTIFICATE OF CONFORMITY

Lloyd's Register

Lloyd´s Register España, S.A.

Notified Body N° 0094

EC CERTIFICATE OF CONFORMITY

In accordance with the requirements of R.D. 769/1999 which transpose the Pressure Equipment Directive 97/23/CE

This is to Certify that the Quality Management System of:

VAMEIN DE ESPAÑA, S.A.
Pol. Ind. Tres Cantos
28760 Tres Cantos (Madrid)
Spain

has been assessed against the requirements of Annex III **Module H** *of the Pressure Equipment Directive 97/23/CE schedule and conforms to the requirements for the product shown below:*

Design and production of wafer, flanged and lug type butterfly valves in ductile iron, carbon steel, stainless steel and bronze, for nominal diameters from DN-50 to DN-1200 (DN-2" to 48") and nominal pressures PN 10 and PN 16

Approval is subject to the continued maintenance of Quality System in accordance with the requirements of the above Directive and Regulations

Authorisation is hereby given to use the LR Notified Body Identification Number 0094 (Princesa 29, 1º Madrid – Spain) in accordance with the requirements of specified Directive and Regulations in relation to the products as identified above

Certificate N°: **009**

Original Approval: 30/05/2002
Current Certificate: 31/05/2008
Certificate Expiry: 31/05/2011

ATEX: EC TECHNICAL FILE RECEIPT

Lloyd's Register

EC TECHNICAL FILE RECEIPT

CERTIFICATE ISO 9001:2008

CATE OF APPROVAL

e Quality Management System of:

DE ESPAÑA, S.A.
ntos, Madrid
Spain

d's Register Quality Assurance
anagement System Standards:

01:2008

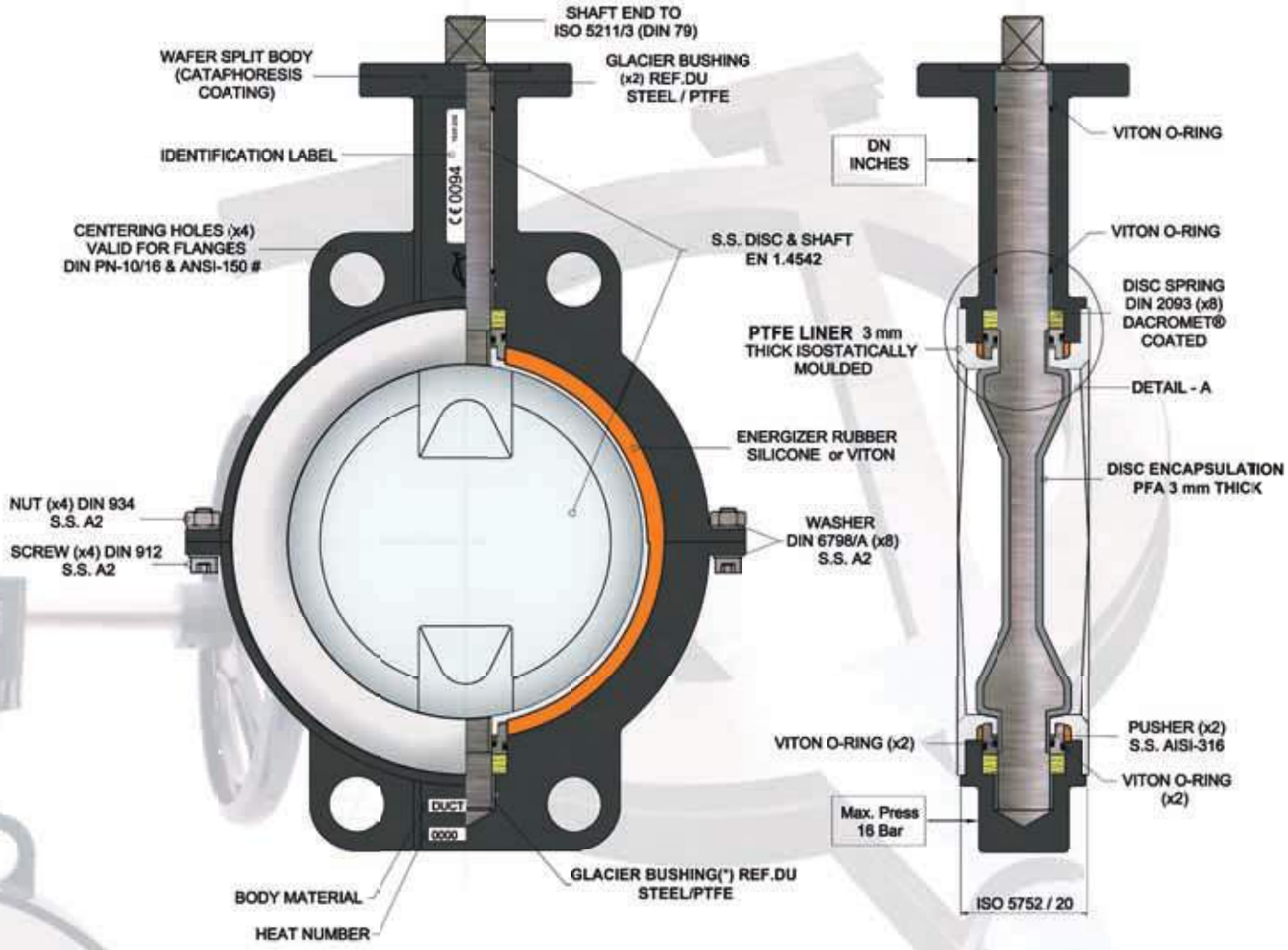
System is applicable to:

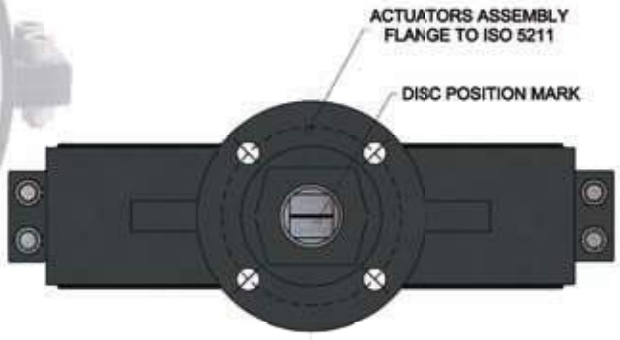
afer, flanged and lug type
ameters from dn 50 to dn
dn 48").

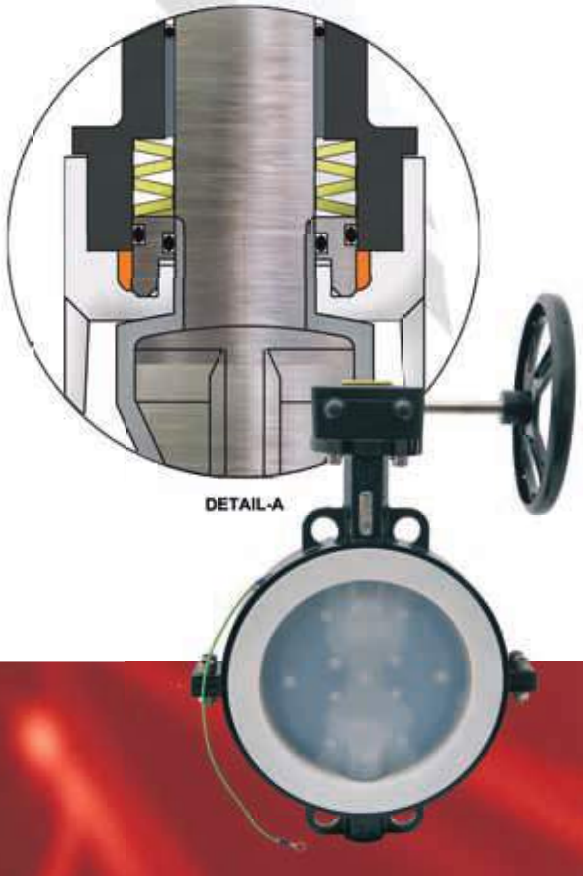
Approval: 17 May 2002
Certificate: 15 December 2009
Certificate Expiry: 14 December 2012

Issued by: LRQA, Ltd. Operaciones España

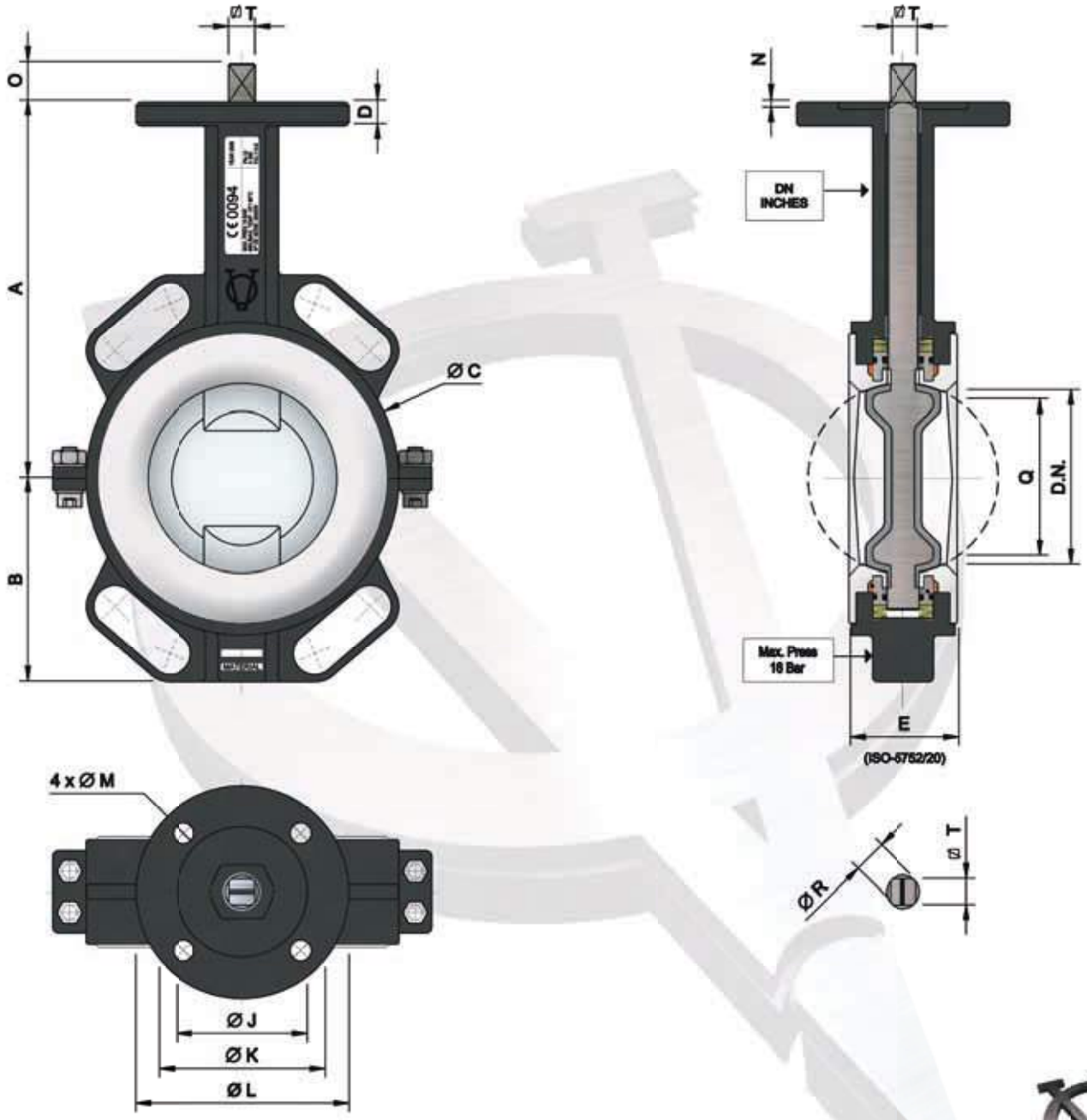
Wafer type: Design and dimensions







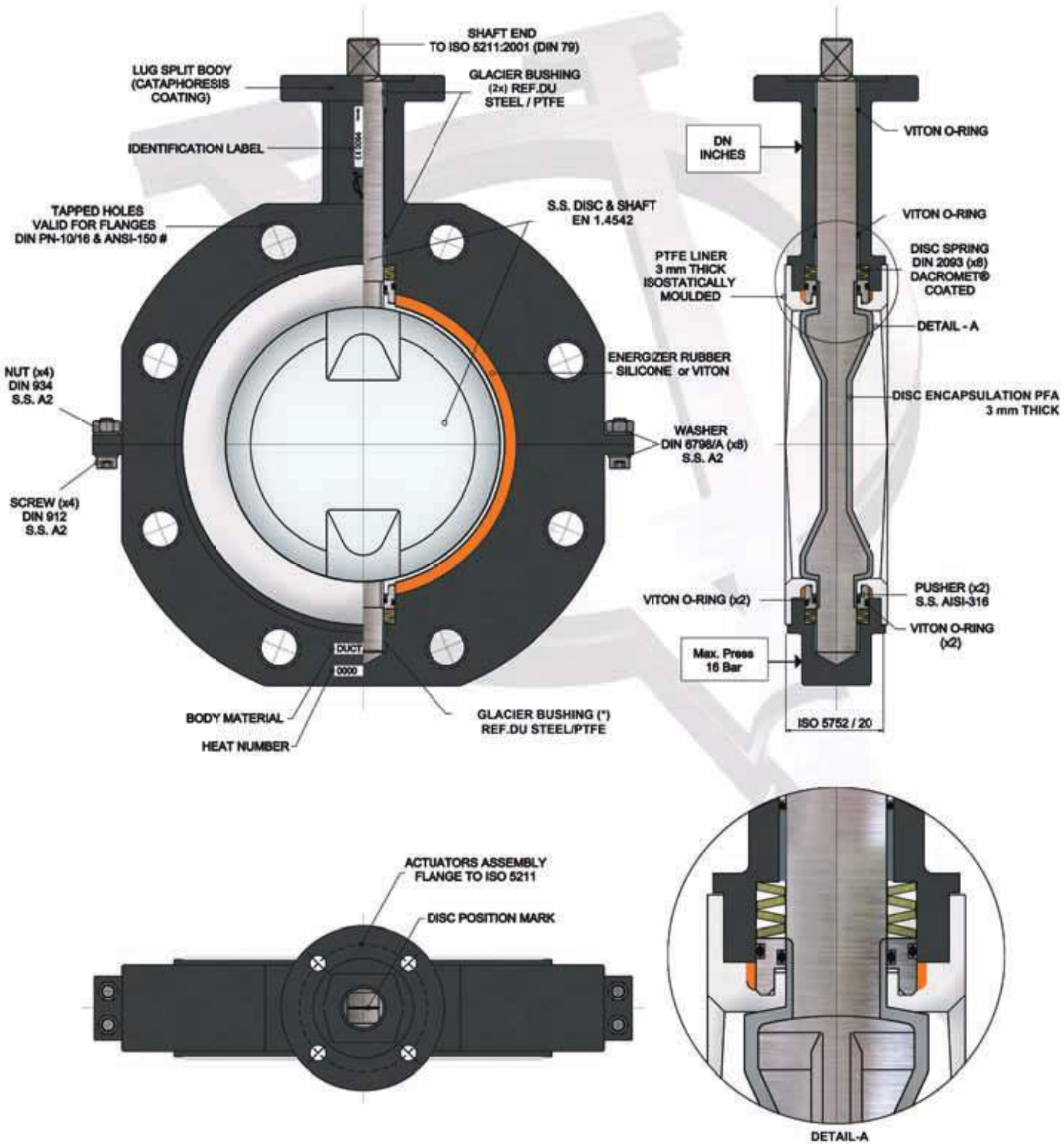
(*)Only for Valves ≥ DN100 - 4"



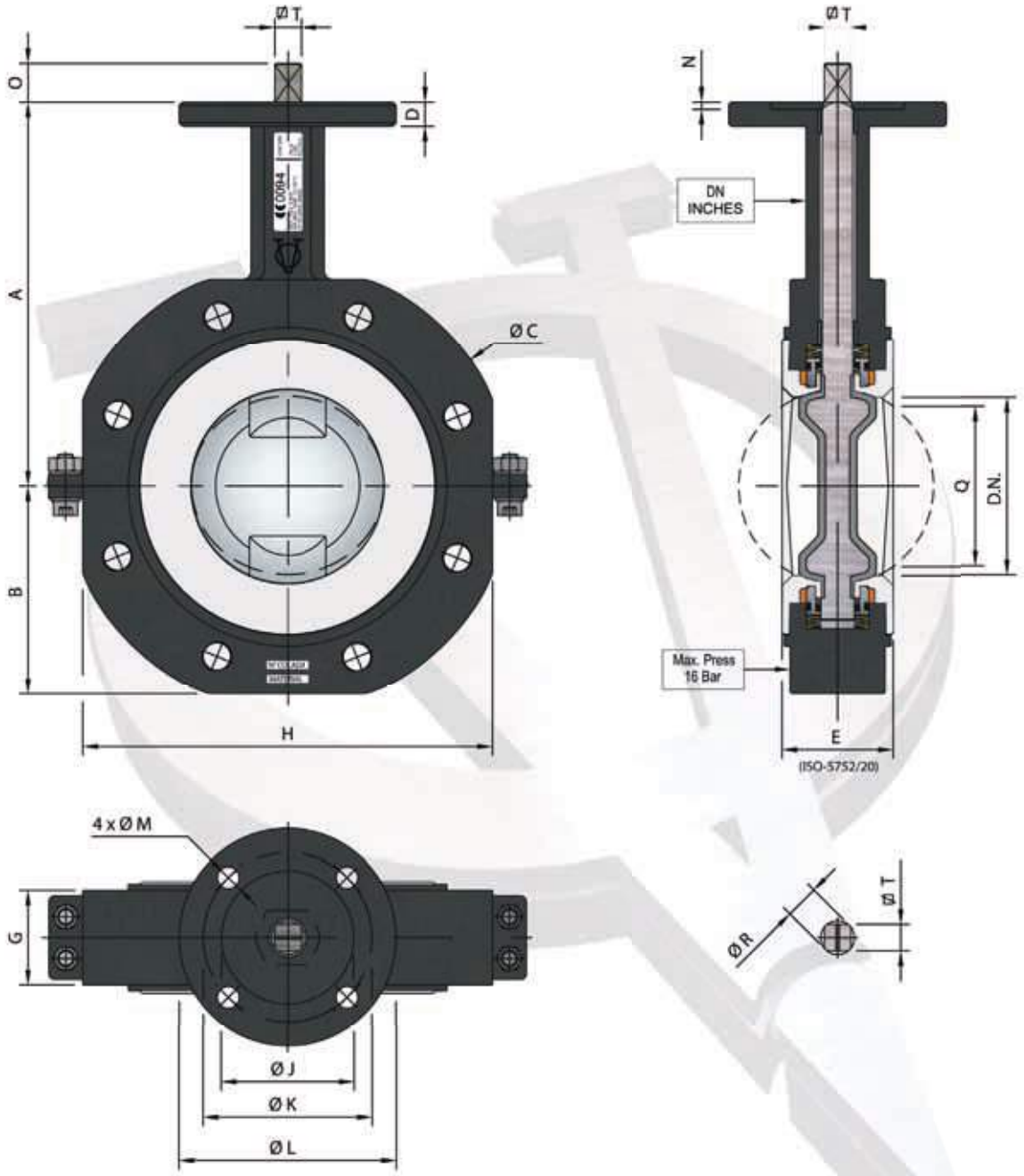
NOMINAL DIAMETER		GENERAL DIMENSIONS BODY					FLANGES STANDARD	ACTUATORS ASSEMBLY ACCORDING TO ISO-5211									"Q"	WEIGHT (Kg)
								ASSEMBLY FLANGE						SHAFT END				
mm	Inch	A	B	Ø C	D	E		TIPO	ØJ(*)	Ø K	Ø L	Ø M	N (*)	O	Ø R	Ø T		
50	2"	135	57	95	10	43	VALVE DESIGNED TO SUIT EITHER DIN PN10/16 & 125/150LBS (ANY OTHER STANDARD UPON REQUEST)	F-07	55	70	90	9	3	16	14	11	27,4	2,8
65	2½"	145	63	114	10	46		F-07	55	70	90	9	3	16	14	11	46,6	3,5
80	3"	159	86	132	10	46		F-07	55	70	90	9	3	16	14	11	66,1	4,0
100	4"	175	104	152	12	52		F-07	55	70	90	9	3	18	18	14	85,5	5.2
125	5"	190	118	183	12	56		F-07	55	70	90	9	3	18	18	14	110	6.8
150	6"	203	132	207	14	56		F-07	55	70	90	9	3	20	22	17	140,3	8
200	8"	240	160	260	14	60		F-07	55	70	90	9	3	20	22	17	188,7	12,5
250	10"	275	197	327	16	68		F-10	70	102	125	11	3	22	28	22	237.5	22
300	12"	310	232	375	16	78		F-10	70	102	125	11	3	22	28	22	286,6	31

Dimensions in mm are orientative

Lug type: design and dimensions



(*)Only for Valves ≥ DN100 - 4”



NOMINAL DIAMETER		GENERAL DIMENSIONS BODY							FLANGE STANDARD TO DIN PN-10/16, ANSI 125/150 LBS STANDARDS. (ANY OTHER STANDARD UPON REQUEST)	ACTUATORS ASSEMBLY ACCORDING TO ISO-5211									"Q"	WEIGHT (Kg)
										ASSEMBLY FLANGE						SHAFT END				
mm	Inch	A	B	Ø C	D	E	G	H		TIPO	Ø J	Ø K	Ø L	Ø M	N	O	Ø R	Ø T		
50	2"	135	57	95	10	43	35	114	TO BE FILLED IN ON EVERY CASE (SEE TABLE OF STANDARDS)	F-07	55	70	90	9	3	16	14	11	27,4	2,8
65	2½"	145	63	114	10	46	38	126		F-07	55	70	90	9	3	16	14	11	46,6	3,8
80	3"	159	86	200	10	46	38	172		F-07	55	70	90	9	3	16	14	11	66,1	5,0
100	4"	175	104	228,6	10	52	44	208		F-07	55	70	90	9	3	18	18	14	85,5	7
125	5"	190	118	254	10	56	48	236		F-07	55	70	90	9	3	18	18	14	110	9
150	6"	203	132	285	14	56	48	264		F-07	55	70	90	9	3	20	22	17	140,3	11
200	8"	240	160	343	14	60	52	320		F-07	55	70	90	9	3	20	22	17	188,7	18
250	10"	275	197	406,4	16	68	60	394		F-10	70	102	125	11	3	22	28	22	237.5	22
300	12"	310	232	482,6	16	78	64	464		F-10	70	102	125	11	3	22	28	22	286,6	31

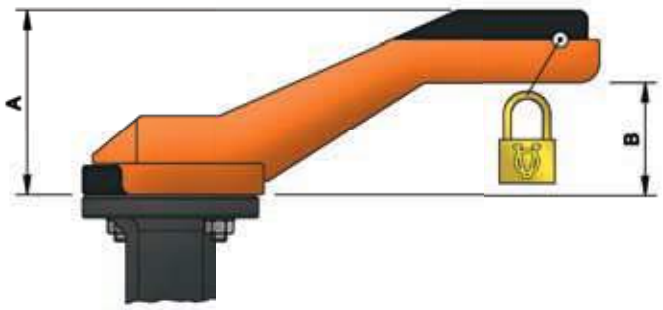
Dimensions in mm are orientative

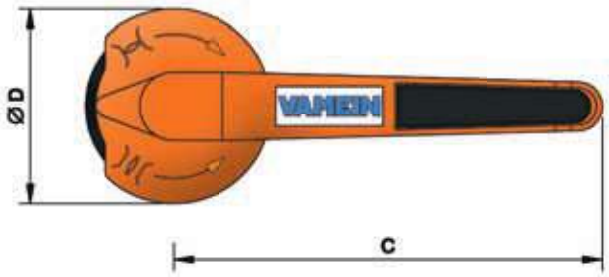
Lever operator

PAI-01/02 (DN 50-200):

Features:

- Injected aluminium casting.
- Stainless steel bolting.
- Complete integrated lever set for direct mounting on valve.
- Ideal for mounting in pipe-systems wiht heat-insulation.
- 6 regulating positions.
- Interchangeable plate for VAMEIN logo (other logo-types upon request).
- Padlock blocking device.
- Possibility to fit limit switches for remote position indication.





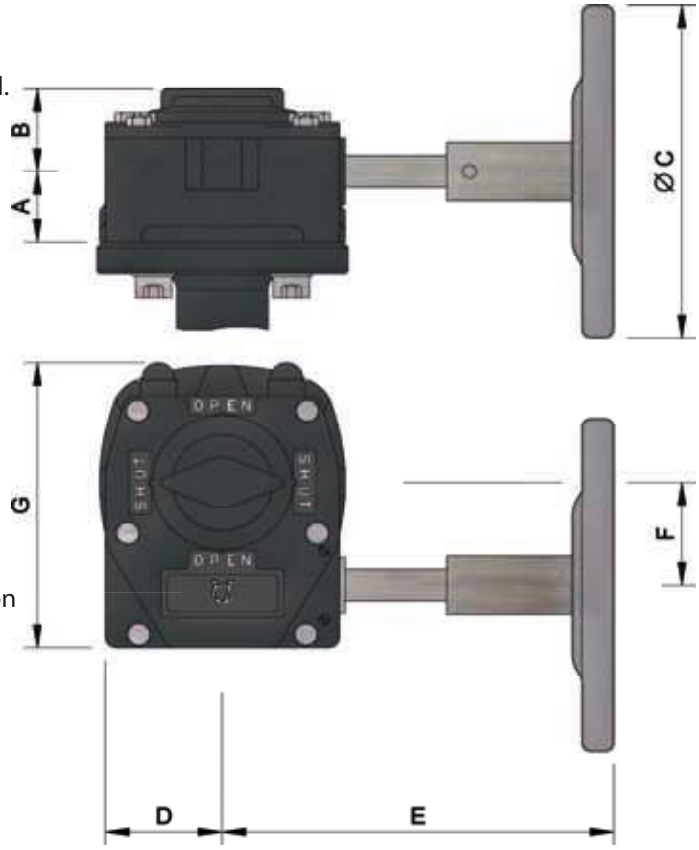
CODE	DN	A	B	C	Ø D	WEIGHT (Kg)
PAI01-11	50-80	95	58	220	100	0.7
PAI01-14	100	95	58	220	100	0.7
PAI02-14	125	95	58	320	100	0.8
PAI02-17	150-200	95	58	320	100	0.8

Dimensions in mm are orientative

Gearbox operator

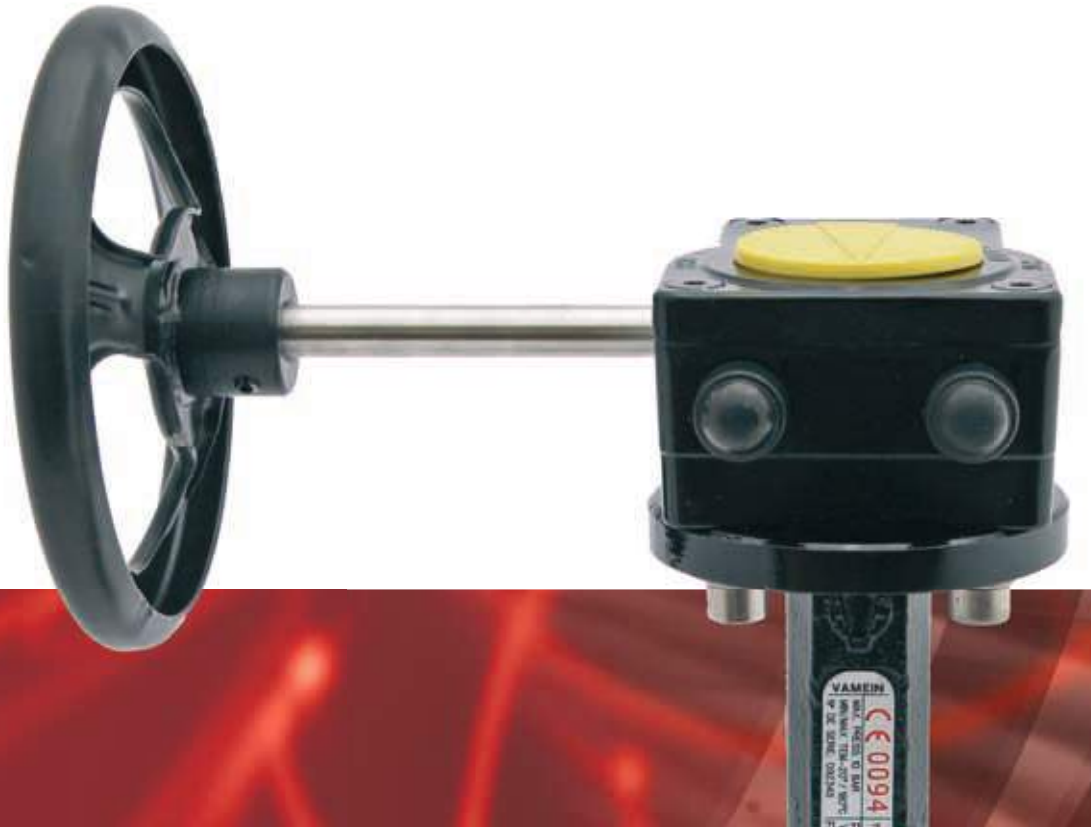
Features:

- Construction: cast iron body, gear mechanism from steel.
- Precise close position which guarantees full tightness.
- Self-blocking mechanism.
- Mechanical stoppers enabling regulation.
- Lubricated for life.
- Visual position indicator.
- Protection class IP 65.
- Possibility of padlock device.
- Mounting of limit switches for remote position indication possible.
- Underwater-application and service possible (IP 68)



GEARBOX REFERENCE	A	B	Ø C	D	E	F	G	RATIO	TURNS AT 90°	WEIGHT (Kg)
RS DN 50-80	26.5	31.8	140	44	145.5	38.5	107.3	40:1	10	3.1
RS DN 100-125	26.5	31.8	140	44	145.5	38.5	107.3	40:1	10	3.1
RS DN 150-200	26,5	31,8	140	44	145.5	38.5	107.3	40:1	10	3.1
RS DN 250-300	28,6	34	250	51	212	52	130	37:1	9,25	5,2

Dimensions in mm are orientative



Key Figures

Fig 6 2 2 P T

BODY TYPE	
6	7
WAFER SPLIT BODY	LUG SPLIT BODY

BODY MATERIALS				
GENERIC	ASTM STANDARD	EN STANDARD	COATING	
1. Ductile iron	A 395 M:88 A 395	EN-JS 1020 EN1563	CATHAFORESIS	(*)
2. Carbon Steel	A 216-93 WCB	1.0619 EN 10213-2	CATHAFORESIS	
3. Aluminium Bronze	B 148 C95800	1982 CC333K	WITHOUT	(*)
4. Stainless Steel 18/8	A 351-94 CF8	1.4308 EN 10213-4	WITHOUT	(*)
5. Stainless Steel 18/8/2	A 351-94 CF8M	1.4408 EN 10213-4	WITHOUT	(*)
6. Bronze	B 62-93 C83600	CC491K EN1982	WITHOUT	(*)

DISC - SHAFT MATERIALS				
GENERIC	ASTM STANDARD	EN STANDARD	COATING	
1. Stainless Steel 17.4.PH	A 747 CB7Cu-1	1.4542	WITHOUT	
2. Stainless Steel 17.4.PH	A 747 CB7Cu-1	1.4542	PFA	
3. Stainless Steel 17.4.PH	A 747 CB7Cu-1	1.4542	PFA CONDUCTIVE	(*)
4 Stainless Steel 17.4.PH	A 747 CB7Cu-1	1.4542	UHMWPE	(*)

ACTUATORS							
P	RS	MF	ND	NS	SE	HD	HS
Hand Lever	Gearbox	Tee-Square	Double Acting Pneumatic	Spring Return Pneumatic	Electric Motor	Double Acting Hydraulic	Spring Return Hydraulic

SEAT AND ENERGIZER RUBBER MATERIALS				
T		N	NC	U
PTFE / SILICONE	PTFE CONDUCTIVE / SILICONE	NXT / SILICONE	NXT CONDUCTIVE / SILICONE	UHMWPE / SILICONE
	(*)	(*)	(*)	(*)

NOTES: For different materials, coatings or actuators, please contact our Technical Department.
The damper material can optionally be supplied in VITON®.
(*): Special manufacture. Ask about availability and minimum quantity required per order.

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