

**Vamein**

de españa, s.a.

VALVULAS DE MARIPOSA Y ACCIONAMIENTOS  
ENGINEERED BUTTERFLY VALVES



200 series  
Flanged type

# Butterfly Valves



**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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## General advantages of butterfly valves:

- ✓ Low-pressure drop, consequently energy saving.
- ✓ Lower weight and dimensions than other types of valves.
- ✓ Maximum purchase benefits and low maintenance.
- ✓ Easy and safe operation.
- ✓ Only disc and liner are in contact with the fluid.

## Advantages of the exclusive VAMEIN design, complementary to the general ones of butterfly valves

- ✓ Quality compliance to ISO 9001:2008
- ✓ Total and permanent water tightness up to 16 bar.
- ✓ No gaskets necessary for installation between flanges.
- ✓ Maintenance free.
- ✓ Liners easy to replace.
- ✓ Due to the design with no pins, screws or keys and narrow machining tolerances of its components all parts of the valve are interchangeable.
- ✓ Extreme low operating torque.
- ✓ Possibility to use it as control (regulating) valve.
- ✓ Self-cleaning.
- ✓ Cavity free.
- ✓ Thanks to the centring holes enabling a correct alignment and a fast installation easy to place in the pipeline.
- ✓ Enables the use of insulation in heat-resistant installations.
- ✓ Quality identification for material: each body, disc and liner is marked with its code number to have a perfect quality traceability of the materials used for their production. Thus with the Heath Number our Quality Assurance Department obtain a perfect traceability of the quality of materials, enabling them to know at any time the chemical composition and mechanical properties.
- ✓ Descriptive label indicating: name of manufacturer, valve figure description, maximum working pressure, maximum working temperature, flange standard and country of origin.
- ✓ Packing in individual plastic bags up to DN 300 (12").
- ✓ Possibility of EC marking as per the Pressure Equipment Directive 97/23/EC and European Directive ATEX 94/9/EC on equipments and protective systems intended for use in explosive atmospheres.



VALVE TYPE	GLOBE	GATE	BALL	BUTTERFLY
APPROXIMATE WEIGHT	165 Kg	145 Kg	80 Kg	17 Kg
FACE TO FACE	600 mm	600 mm	230 mm	60 mm

# Applications and certifications

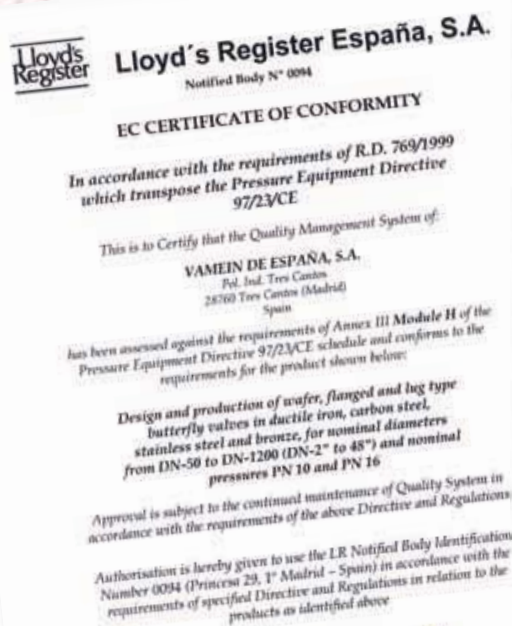
The VAMEIN butterfly valve has many uses in many different fields. The following list contains some of the different types of industries and fluids that our valves are used for:

INDUSTRIES	
Air and gas conductors	Mining
Cement Factories	Nuclear Power Stations
Chemical Industry	Oil Refinery
Combined Cycles	Paper Industry
Dairies	Power Stations
Dams and water Pumping Stations	Purifying plants
Desalination of sea water	River diversion
Destilleries	Sea water desalination
Fire-prevention systems	Sugar Refineries
Food industry	Vacuum installations
Heating and air conditioning	Water treatment and piping
Iron and steel Industry	Wine Industry
Irrigation	Lorry tankers
	Etc

FLUIDS	
Acids	Gases
Air	Hydrogen
Beer	Kerosene
Concrete	Milk
Chlorine	Oils
Demineralised water	Oxygen
Dissolvents	Ozone
Drinking water	Paints
Fats	Petroleum
Fluor	Raw oil
Fruit juices	Sea water
Fuels	Sewage
Wine	Water steam

## ATEX: EC TECHNICAL FILE RECEIPT

## EC CERTIFICATE OF CONFORMITY



Certificate N°: 009  
Original Approval: 30/05/2002  
11/05/2008



### EC TECHNICAL FILE RECEIPT

This is to certify that Lloyd's Register Verification, a Notified Body under the terms of the Protective Systems intended for use in Potentially Explosive Atmospheres Directive (94/9/EC) and Directive Systems intended for use in Potentially Explosive Atmospheres Regulation (EU) 2014/54, has, in conformity with the requirements of the Directive for the assessment under Article 8 (1) of the Directive (and Regulation 30 (3)(b)(i) of the LR for verification a Technical File as detailed below:

This receipt is issued to:

APPLICANT: VAMEIN DE ESPAÑA, S.A.  
C/ Temple, 1  
28760 Tres Cantos  
Madrid (Spain)

#### TECHNICAL FILE DESCRIPTION

Wafer, flanged and lug type butterfly valves for nominal DN50 to DN1200 (2\"/>

TECHNICAL FILE REFERENCE: AT-001, fecha 17-05-2009

The file will be stored for an initial period of five years from date of receipt, 100 years and the file will be either returned or destroyed, or a new retention

This receipt must be produced by the manufacturer to include the stated in

Storage file: 0036/ATEX/800089

Date of Receipt: 24 June 2009

LR Notified Body Number 0034

B. Almona on behalf

English Report Reference: 0036, 17-05-2009

## CERTIFICATE ISO 9001:2008





# Applicable regulations

CONCERNING QUALITY SYSTEM	
CODE	TITLE
UNE-EN-ISO 9001:2008	Quality management systems. Requirements.
97/23/EC	European Directive 97/23/EC 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	TITLE
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.
ASME B 16.47	Large diameter steel flanges NPS 26 through NPS 60. (DN 650 through DN 1500)

CONCERNING PRODUCTION - ACTUATOR COUPLING	
CODE	TITLE
UNE-EN-ISO 5211-01	Industrial valves. Part-turn valve actuator coupling.
<b>DN 50-300 mm (2"- 12")</b> • Standard Vamein dimensions with parallel square to 0° (two faces of square parallel to the disc) with dimensions to UNE-EN-ISO 5211 and DIN 79 standards. • Optionally, with diagonal square to 45° (vertexes of the square in line with the disc) with dimensions to UNE-EN-ISO 5211 and DIN 79 standards. N.B.: From DN 50-200mm., the central groove on the top flange, as per UNE-EN-ISO 5211, is special construction.	

# Applicable regulations

## DN 350-1200 (14"- 48"):

- Standard Vamein dimension with key-way shaft end to ISO/R 773.
- Optionally, with parallel or diagonal square with dimensions to UNE-EN-ISO 5211 and DIN 79 standards.

### CONCERNING PRODUCTION - FACE TO FACE DN 50-500 (2" – 20")

CODE	TITLE
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 PRODUCTION - FACE TO FACE DN 600-1200 (24" – 48")

CODE	TITLE
VAMEIN	Standard manufacture

### CONCERNING TESTING

CODE	TITLE
ISO 5208-93 (DIN 3230)	Technical delivery conditions for valves. Compilation of test methods.

### CONCERNING MARKING AND LABELLING

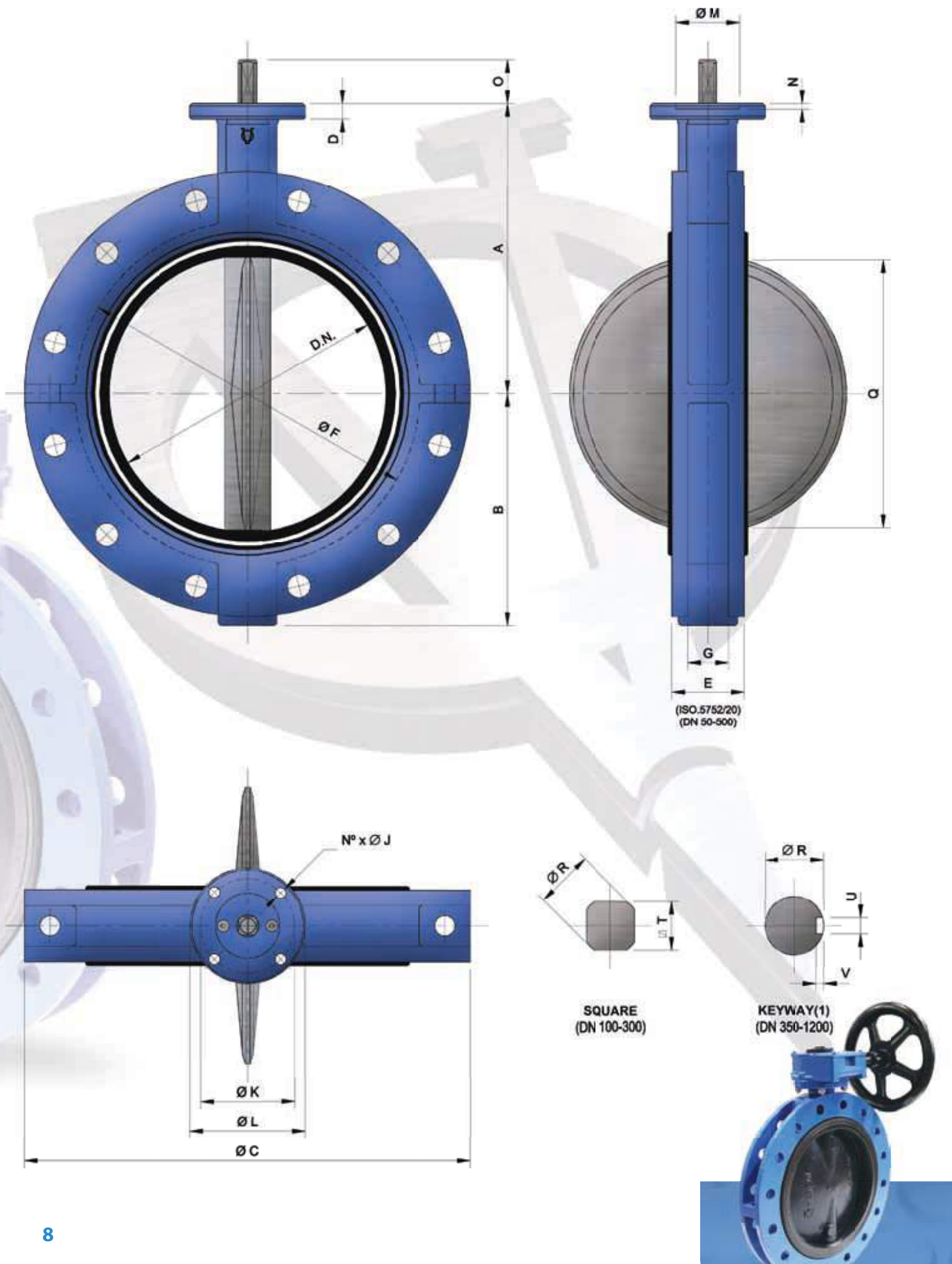
CODE	TITLE
UNE-EN 19-93 (ISO-5209)	Marking of general purpose industrial valves.

### CONCERNING MATERIAL AND TEST CERTIFICATES

CODE	TITLE
EN 10204	2.2 / 3.1



## 200 Series Flanged Type





# Standard manufacture range

## 200 Series Flanged Type

### Features

- ✓ Nominal diameters from 100 mm (2") to 2000 mm (80").
- ✓ Assembly between flanges to DIN PN-10, PN-16 and ANSI 125/150. (for other drilling standards, please ask).
- ✓ Standard working pressure 16 bar (DN 100-300) and 10 bar (DN 350-2000) for higher pressures, ask our Commercial Department.
- ✓ Temperature limits from -45°C to +200°C (depending on type of liners and coatings).
- ✓ Integral drilling making the installation time shorter and enabling the perfect alignment of the valve with the pipe flanges.
- ✓ As this is a design to be used between flanges, the mechanical stress of the pipe is transferred to the valve only by compression on the body and, therefore, there are not traction mechanical stresses.
- ✓ 4 threaded holes per each side of the body as from DN 600, according to the drilling standard required. This must be taken into account.

### DIMENSIONS

DN		BODY DIMENSIONS							ASSEMBLY FLANGE							SHAFT END					"Q"	WEIGHT (Kg)
mm	Inch	A	B	Ø C	D	E	Ø F	G	ISO-5211/2	Nº	Ø J	Ø K	Ø L	Ø M <sub>(1)</sub>	N <sub>(1)</sub>	O	Ø R	Ø T	U	V		
100	4"	178	120	229	14	52	152	32	F-07	4	9	70	90	55	3	30	16.8	14			89	10.3
125	5"	191	132	254	14	56	182	32	F-07	4	9	70	90	55	3	30	16.8	14			115	13.6
150	6"	203	148	285	15	56	207	32	F-07	4	9	70	90	55	3	33	20.4	17			143	17.3
200	8"	245	180	343	15	60	262	37	F-07	4	9	70	90	55	3	33	20.4	17			194	22.5
250	10"	275	211	406	17	68	323	38	F-10	4	11	102	125	70	3	47	28	22			243	38.8
300	12"	315	251	483	17	78	373	44	F-10	4	11	102	125	70	3	47	28	22			293	50.3
350	14"	307	291	535	22	78	425	44	F-12	4	13	125	150	85	3	55	36		10	4.7	332	66.7
400	16"	342	325	597	24	102	475	62	F-14	4	17	140	175	100	4	65	42		12	4.9	382	98.7
450	18"	387	357	635	27	113	530	65	F-14	4	17	140	175	100	4	65	48		14	5.5	432	128.6
500	20"	425	381	715	27	126	587	67	F-14	4	17	140	175	100	4	65	48		14	5.5	478	171.1
600	24"	532	488	840	40	146	680	90	F-25	8	18	254	300	200	5	110	72		20	7.4	585	304
650	26"	550	493	870	40	175	730,5	103	F-25	8	18	254	300	200	5	110	72		20	7.4	619	380
700	28"	573	506	927	40	175	792	103	F-25	8	18	254	300	200	5	110	72		20	7.4	683	456
750	30"	622	555	984	40	176	862	96	F-25	8	18	254	300	200	5	110	72		20	7.4	733	556
800	32"	657	583	1060	40	215	902	135	F-25	8	18	254	300	200	5	110	72		20	7.4	755	608
900	36"	707	643	1168	40	246	998	166	F-25	8	18	254	300	200	5	110	98		28	9.9	852	745
1000	40"	755	729	1255	40	280	1108	190	F-25	8	18	254	300	200	5	110	98		28	9.9	958	1038
1050 <sup>(3)</sup>	42"	781	755	1346	40	280	1190	190	F-25	8	18	254	300	200	5	110	98		28	9.9	1013	1364
1100 <sup>(3)</sup>	44"	800	774	1403	40	280	1220	176	F-25	8	18	254	300	200	5	110	98		28	9.9	1050	1690
1200	48"	900	855	1511	50	360	1320	244	F-30	8	22	298	350	230	5	130	120		32	11.1	1098	1880

Dimensions in mm are orientative

VAMEIN DE ESPAÑA, S.A. reserves the right to modify dimensions with no previous advise.

For DN > 1200, please ask.

(1): For DN 1200, two keyways in line.

(2): Central recess Ø M x N optional in DN 50-200.

(3): Special manufacture valves. Ask for availability.

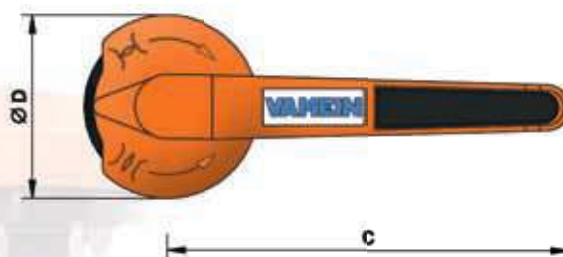
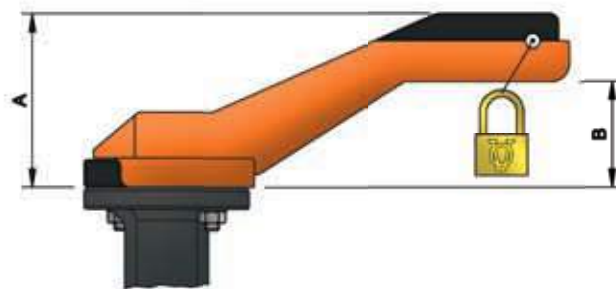
# Manual actuators

## Lever

### 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 with 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

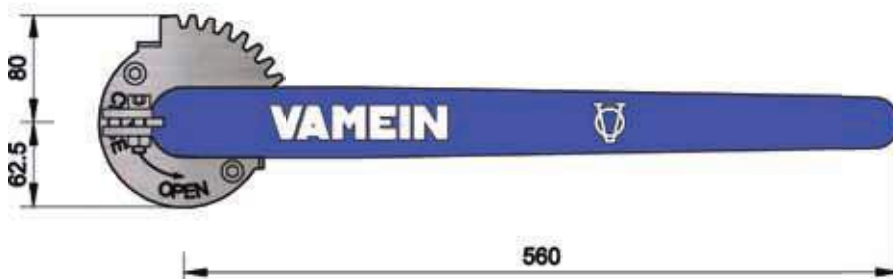
Dimensions in mm are orientative

### PA-1005 (DN 250-300):

#### Features

- ✓ Aluminium casting.
- ✓ 10 regulating positions.
- ✓ Possibility to fit limit switches for remote positioning indication.

*NOTE: For DN 250 and 300, and due to the great effort necessary to operate the levers, it is advisable to choose the gearbox as a manual actuator.*



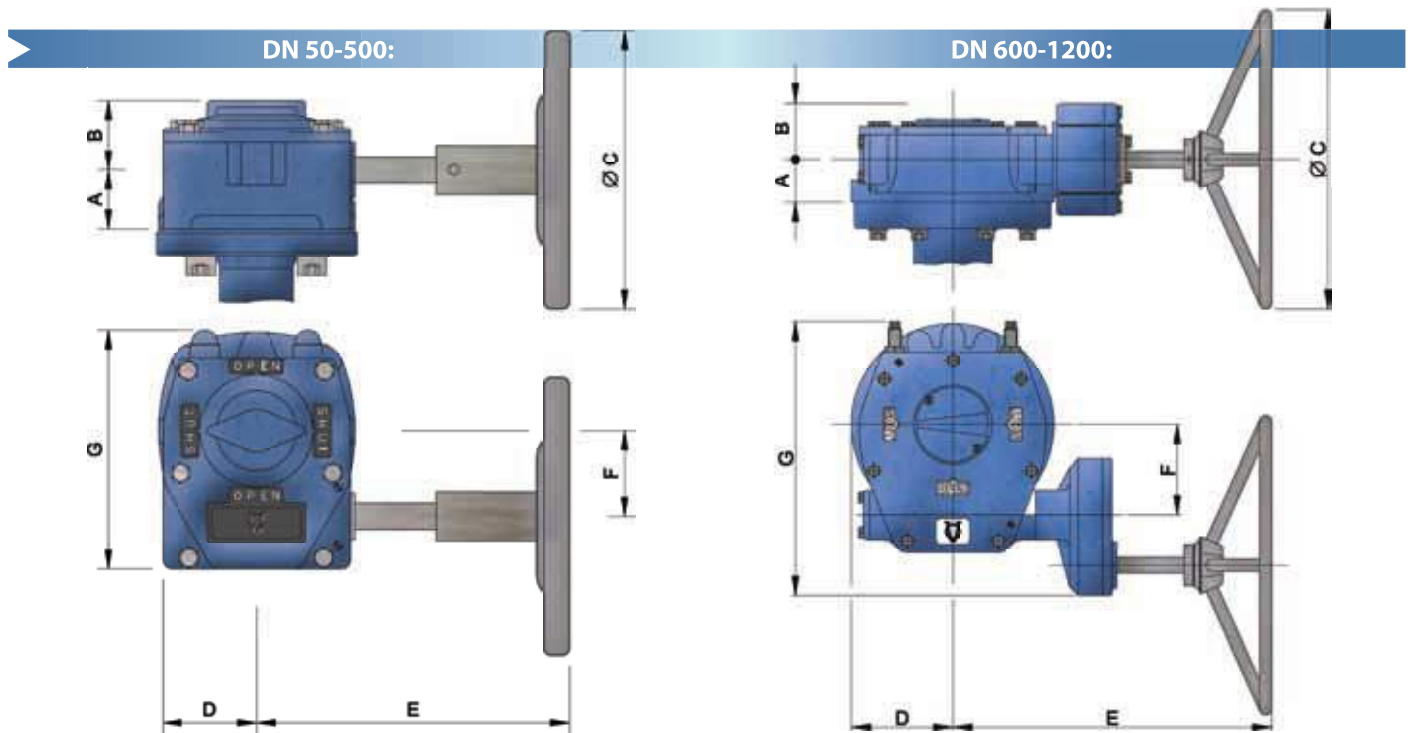
CODE	DN	WEIGHT (Kg)
PA1005-22	250-300	2,4

Dimensions in mm are orientative



# Manual actuators

## Gearbox



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
RS DN 350	40,5	47	300	65	282	71	180	34:1	8,5	10,5
RS DN 400	42	50,5	300	77	270	86	226	38:1	9,5	16
RS DN 450-500	48	53.5	400	91	326	104,5	258	55:1	13,75	26
RS DN 600-800	55	100	500	142,5	447	130	402,5	208:1	52	49
RS DN 900-1000	59	100	600	185	500	182	482	312:1	79	75
RS DN 1050-1100	59	110	600	185	556	182	584	702:1	175	105
RS DN 1200	85	110	700	255	589	256	725	705:1	176	231

Dimensions in mm are orientative

### 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 67.
- ✓ Possibility of padlock device.
- ✓ Mounting of limit switches for remote position indication possible.
- ✓ Underwater-application and service possible (IP 68)

# Seat liners

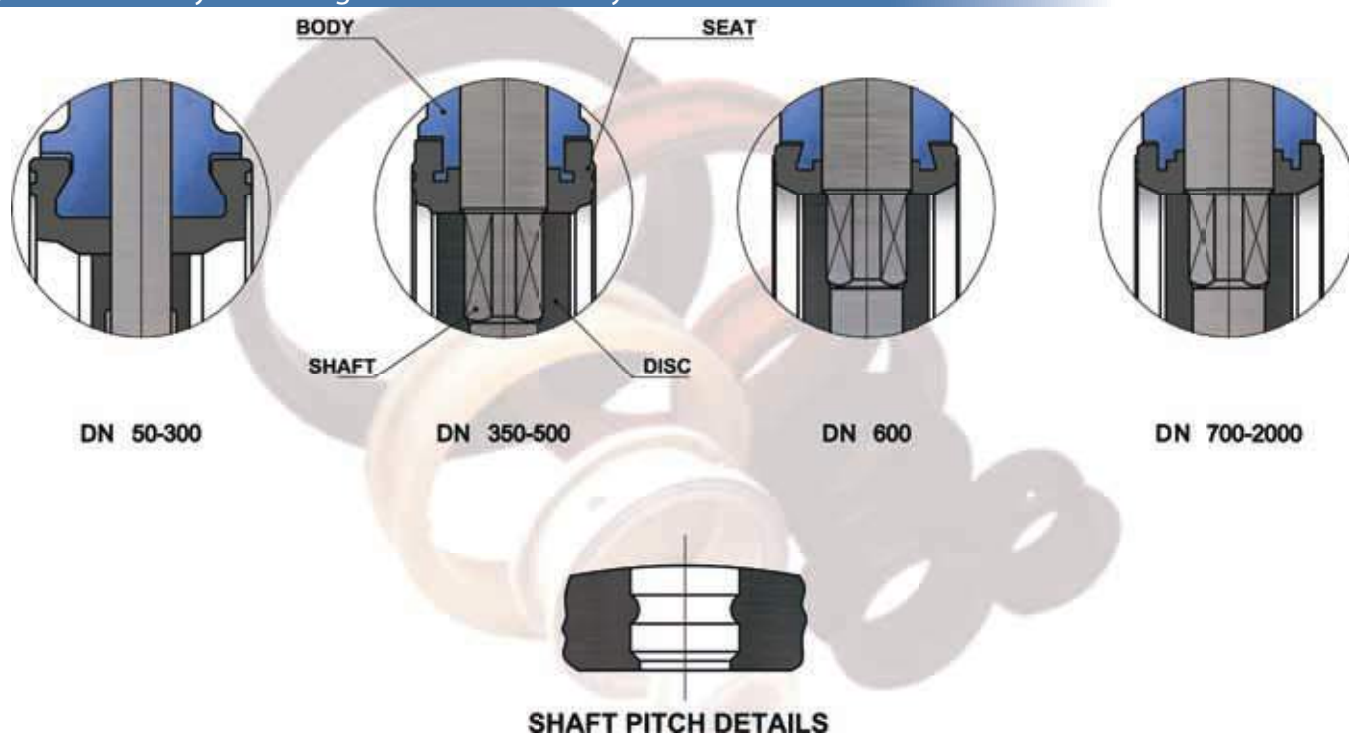
## Design

They are specially designed by **VAMEIN DE ESPAÑA, S.A.** to allow a perfect fit with the valve's body and making it completely watertight. Their O-RINGS allow a perfect seal with the flanges without requiring any additional joints.

For the valve life and perfect working it is imperative that the right seat material is chosen for the line conditions, i.e., temperature and chemical composition of fluid.

**VAMEIN DE ESPAÑA, S.A.** Technical Department is prepared to help you choose the right kind of seat. Do not hesitate to ask about the particular conditions of the fluid to be used.

## Detailed ways on fitting the seat to the body



## Codes and temperatures of the most usual liners

MATERIAL	VAMEIN CODE	COMERCIAL CODE	° C MINIMUN TEMPERATURE	° C MAXIMUN TEMPERATURE
EPDM	E	EPDM	-15	100 (110)
HT-EPDM	EC	EPDM HT	-15	120 (130)
BUNA-N	N	NBR	-15	100 (115)
HYPALON	H	CSM	-15	105 (115)
VITON	V	FKM	-20	180 (200)
SILICONE	S	VMQ	-40	180 (200)

**N.B.:** There are two possible maximum temperatures, depending if the temperature applied is constant or intermittent. Those shown in brackets refer to the intermittent temperature.

It is to be taken into account that the more the working temperature approaches the limit temperature of the liner, the more premature ageing will take place and its original qualities reduced more quickly.

Temperatures just as an information.



# Hydraulic features

## Kv (m<sup>3</sup>/hour) Values

Values shown in the following table are in m<sup>3</sup>/hour in order to make the pressure drop calculation easier.

DN VALVE		OPENING ANGLE							
mm	Inches	20°	30°	40°	50°	60°	70°	80°	90°
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
350	14"	290	660	1.200	1.900	2.900	4.800	7.800	8.600
400	16"	380	860	1.600	2.400	3.900	6.400	9.500	11.200
450	18"	490	1.100	2.000	3.100	5.000	8.300	12.900	15.500
500	20"	610	1.400	2.500	4.000	6.200	10.300	15.500	19.000
600	24"	860	2.000	3.400	5.500	8.600	14.700	22.400	25.900
650	26"	980	2300	4000	6100	10400	16650	25850	31500
700	28"	1.100	2.600	4.600	6.700	12.200	18.600	29.300	37.100
750	30"	1.300	3.100	5.200	8.500	13.800	22.400	34.500	40.500
800	32"	1.800	3.600	6.600	9.700	16.600	28.300	43.200	52.300
900	36"	2.200	4.500	7.800	12.900	19.800	32.800	51.700	60.300
1.000	40"	3.100	5.300	8.700	16.000	24.100	42.200	62.100	78.400
1.050	42"	3.400	5.900	9.600	17.700	26.600	46.600	68.400	86.200
1.100	44"	3.800	6.500	10.600	19.500	29.300	51.300	75.100	95.100
1.200	48"	4.500	7.800	12.700	23.300	35.200	61.500	90.700	114.400

Kv (Cv) Flow coefficient value definition = Water flow value in l/ minute at 20° C (US gallons/minute at 60 ° F), which passing through a valve creates a pressure drop of 1 Kg/cm<sup>2</sup>. (1 p.s.i.)

### Kv – Cv Ratio:

$$Cv \text{ (US Gallons / minute)} = 1,155 \cdot Kv \text{ (l/minute)}$$

**N.B.:** This ratio is only valid for the above mentioned units.



# Torque table

NOMINAL DIAMETER		WORK PRESSURE	10 bar	16 bar	150 p.s.i.	225 p.s.i.
mm	Inches	UNITS	N•m	N•m	Lbs x Inch.	Lbs x Inch.
50	2"	TORQUES	15	15	133	133
65	2 ½"		20	20	177	177
80	3"		25	25	221	221
100	4"		40	40	354	354
125	5"		50	50	443	443
150	6"		60	60	531	531
200	8"		160	160	1.416	1.416
250	10"		250	250	2.213	2.213
300	12"		300	300	2.655	2.655
350	14"		900	1.350	7.965	11.948
400	16"		1.200	1.800	10.620	15.930
450	18"		1.650	2.400	14.603	21.240
500	20"		2.300	3.500	20.355	30.975
600	24"		4.100	6.150	36.285	54.428
650	26"		4800	7200	42480	63720
700	28"		5.500	8.250	48.675	73.013
750	30"		6.500	9.500	57.525	84.075
800	32"		8.100	12.150	71.685	107.528
900	36"		10.000	15.000	88.500	132.750
1.000	40"		13.500	20.000	119.475	177.000
1.050	42"		14.200	21.300	188.505	125.670
1.100	44"		15.000	22.000	132.750	194.700
1.200	48"		16.500	24.500	146.025	216.825

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" 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" 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.

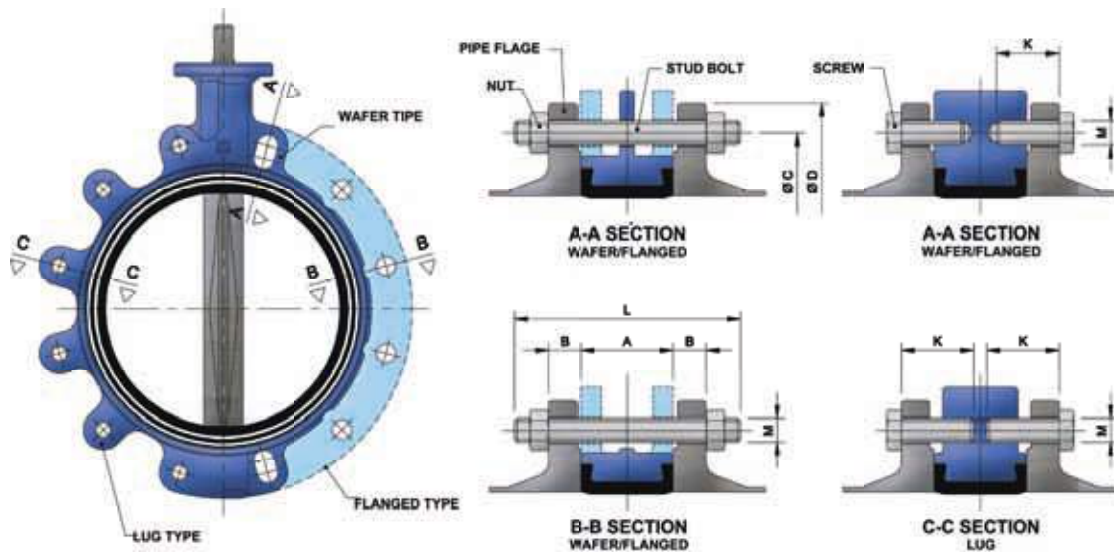
Safety factors are included in these torque values.





# Bolting list

## DIN PN-10 STANDARD



DIN PN-10 STANDARD																				
VALVE		FLANGES (DIN-2632)					NECESSARY BOLTS FOR WAFER AND FLANGED TYPE								BOLTS FOR LUG TYPE					
DN		FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	Ø EXTERNAL	STUD BOLTS			NUTS		SCREWS			SCREWS					
							LENGTH	THREAD	QUANTITY	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY			
mm	Inch.	A	B	Ø C	Nº	Ø D	L	M	Nº	M	Nº	L	M	Nº	L	M	Nº			
50	2"	43	18	125	4	165	120	M-16	4	M-16	8				35	M-16	8			
65	2½"	46	18	145	4	185	125	M-16	4	M-16	8				35	M-16	8			
80	3"	46	20	160	8	200	130	M-16	8	M-16	16				40	M-16	16			
100	4"	52	20	180	8	220	135	M-16	8	M-16	16				40	M-16	16			
125	5"	56	22	210	8	250	140	M-16	8	M-16	16				45	M-16	16			
150	6"	56	22	240	8	285	150	M-20	8	M-20	16				45	M-20	16			
200	8"	60	24	295	8	340	160	M-20	8	M-20	16				50	M-20	16			
250	10"	68	26	350	12	395	170	M-20	12	M-20	24				55	M-20	24			
300	12"	78	26	400	12	445	180	M-20	12	M-20	24				60	M-20	24			
350	14"	78	26	460	16	505	180	M-20	16	M-20	32				60	M-20	32			
400	16"	102	26	515	16	565	215	M-24	16	M-24	32				70	M-24	32			
*450	18"	113	28	565	20	615	230	M-24	20	M-24	40				80	M-24	40			
500	20"	126	28	620	20	670	240	M-24	20	M-24	40				85	M-24	40			
600	24"	146	28	725	20	780	270	M-27	16	M-27	32				75	M-27	8	75	M-27	8
700	28"	175	30	840	24	895	305	M-27	20	M-27	40				80	M-27	8			
750	30"	176	-	-	-	-	-	-	-	-	-				-	-	-			
800	32"	215	32	950	24	1015	355	M-30	20	M-30	40				90	M-30	8			
900	36"	246	34	1050	28	1115	390	M-30	24	M-30	48				90	M-30	8			
1000	40"	280	34	1160	28	1230	430	M-33	24	M-33	48				90	M-33	8			
1050	42"	280	-	-	-	-	-	-	-	-	-				-	-	-			
1100	44"	280	-	-	-	-	-	-	-	-	-				-	-	-			
1200	48"	360	38	1380	32	1455	525	M-36	28	M-36	56				95	M-36	8			

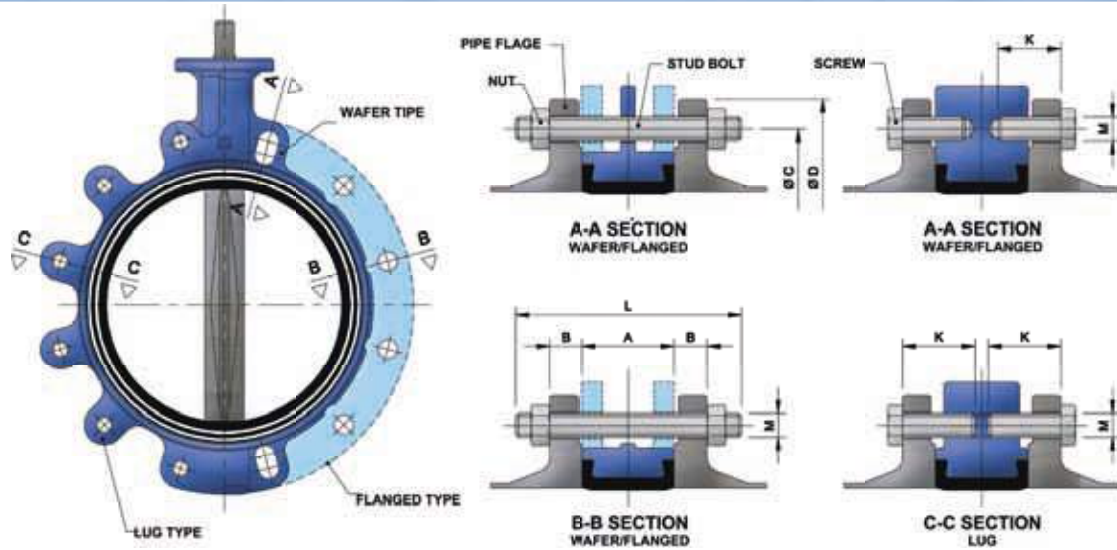
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For DN>1200, please consult.

(\*): As per B.S. 4504 PN-10.

# Bolting list

## DIN PN-16 STANDARD



DIN PN-16 STANDARD																	
VALVE		FLANGES (DIN-2633)					NECESSARY BOLTS FOR WAFFER AND FLANGED TYPE						BOLTS FOR LUG TYPE				
DN		FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	Ø EXTERNAL	STUD BOLTS			NUTS		SCREWS			SCREWS		
							LENGTH	THREAD	QUANTITY	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY
mm	Inch.	A	B	Ø C	Nº	Ø D	L	M	Nº	M	Nº	L	M	Nº	L	M	Nº
50	2"	43	18	125	4	165	120	M-16	4	M-16	8				35	M-16	8
65	2½"	46	18	145	4	185	125	M-16	4	M-16	8				35	M-16	8
80	3"	46	20	160	8	200	130	M-16	8	M-16	16				40	M-16	16
100	4"	52	20	180	8	220	135	M-16	8	M-16	16				40	M-16	16
125	5"	56	22	210	8	250	140	M-16	8	M-16	16				45	M-16	16
150	6"	56	22	240	8	285	150	M-20	8	M-20	16				45	M-20	16
200	8"	60	24	295	12	340	160	M-20	12	M-20	24				50	M-20	24
250	10"	68	26	355	12	405	180	M-24	12	M-24	24				55	M-24	24
300	12"	78	28	410	12	460	195	M-24	12	M-24	24				65	M-24	24
350	14"	78	30	470	16	520	195	M-24	16	M-24	32				65	M-24	32
400	16"	102	32	525	16	580	235	M-27	16	M-27	32				80	M-27	32
*450	18"	113	34	585	20	640	250	M-27	20	M-27	40				85	M-27	40
500	20"	126	34	650	20	715	270	M-30	20	M-30	40				95	M-30	40
600	24"	146	36	770	20	840	300	M-33	16	M-33	32	75	M-33	8	85	M-33	8
700	28"	175	36	840	24	910	325	M-33	20	M-33	40	80	M-33	8	100	M-33	32
750	30"	176	-	-	-	-	-	-	-	-	-	-	-	-			
800	32"	215	38	950	24	1025	380	M-36	20	M-36	40	90	M-36	8			
900	36"	246	40	1050	28	1125	415	M-36	24	M-36	48	90	M-36	8			
1000	40"	280	42	1170	28	1255	460	M-39	24	M-39	48	90	M-39	8			
1050	42"	280	-	-	-	-	-	-	-	-	-	-	-	-			
1100	44"	280	-	-	-	-	-	-	-	-	-	-	-	-			
1200	48"	360	48	1390	32	1485	565	M-45	28	M-45	56	105	M-45	8			

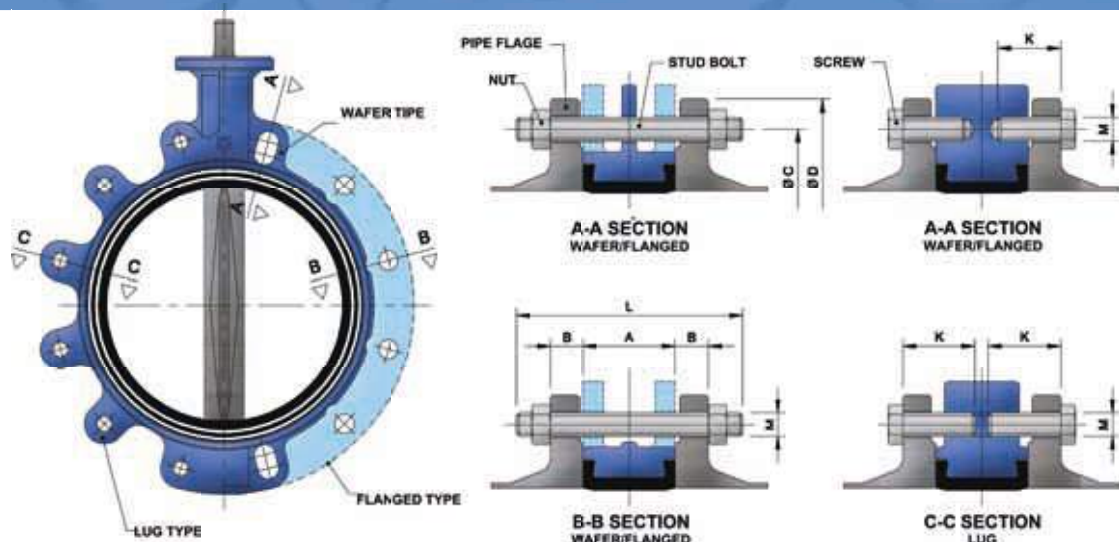
For DN>1200, please consult

(\*): As per B.S. 4504 PN-16.



# Bolting list

## ANSI B16.5 Class 150 Lbs & ASME B16.47 Class 150 Lbs A-Series



### ANSI 150 Lbs. STANDARD

VALVE		FLANGES					NECESSARY BOLTS FOR WAFER AND FLANGED TYPE									BOLTS FOR LUG TYPE							
DN		FACE TO FACE	THICKNESS	BOLT CENTRE	QUANTITY	Ø EXTERNAL	STUD BOLTS			NUTS		SCREWS			SCREWS								
							LENGTH	THREAD	QUANTITY	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY	LENGTH	THREAD	QUANTITY						
mm	Inch	A	B	Ø C	Nº	Ø D	L	M	Nº	M	Nº	L	M	Nº	L	M	Nº						
50	2"	43	19.1	120.6	4	152.4	120	5/8"UNC	4	5/8"UNC	8				35	5/8"UNC	8						
65	2½"	46	22.2	139.7	4	177.8	130	5/8"UNC	4	5/8"UNC	8				40	5/8"UNC	8						
80	3"	46	23.8	152.4	4	190.5	135	5/8"UNC	4	5/8"UNC	8				40	5/8"UNC	8						
100	4"	52	23.8	190.5	8	228.6	140	5/8"UNC	8	5/8"UNC	16				45	5/8"UNC	16						
125	5"	56	23.8	215.9	8	254	155	3/4"UNC	8	3/4"UNC	16				45	3/4"UNC	16						
150	6"	56	25.4	241.3	8	279.4	155	3/4"UNC	8	3/4"UNC	16				45	3/4"UNC	16						
200	8"	60	28.6	298.4	8	342.9	165	3/4"UNC	8	3/4"UNC	16				50	3/4"UNC	16						
250	10"	68	30.2	361.9	12	406.4	185	7/8"UNC	12	7/8"UNC	24				60	7/8"UNC	24						
300	12"	78	31.7	431.8	12	482.6	200	7/8"UNC	12	7/8"UNC	24				65	7/8"UNC	24						
350	14"	78	34.9	476.2	12	533.4	215	1"UNC	12	1"UNC	24				70	1"UNC	24						
400	16"	102	36.5	539.7	16	596.9	245	1"UNC	16	1"UNC	32				85	1"UNC	32						
450	18"	113	39.7	577.8	16	635	265	1 ½"UN	16	1 ½"UN	32				90	1 ½"UN	32						
500	20"	126	42.9	635	20	698.5	285	1 ½"UN	20	1 ½"UN	40				100	1 ½"UN	40						
600	24"	146	47.6	749.3	20	812.8	305	1 ¼"UN	16	1 ¼" UN	32				90	1 ¼" UN	8	90	1 ¼"UN	8	110	1 ¼"UN	32

### ASME B16.47 CLASE-150 Lbs STANDARD A-SERIES

650	26"	175	68	806.45	24	869.9	380	1 ¼"UN	20	1 ¼"UN	40	110	1 ¼"UN	8			
700	28"	175	71.4	863.6	28	927.1	390	1 ¼"UN	24	1 ¼"UN	48	115	1 ¼"UN	8			
750	30"	176	74.6	914.4	28	984.2	400	1 ¼"UN	24	1 ¼"UN	48	120	1 ¼"UN	8			
800	32"	215	81	977.9	28	1060.4	460	1 ½"UN	24	1 ½"UN	48	135	1 ½"UN	8			
900	36"	246	90.5	1085.8	32	1168.4	510	1 ½"UN	28	1 ½"UN	56	140	1 ½"UN	8			
1000	40"	280	90.5	1200.1	36	1289	545	1 ½"UN	32	1 ½"UN	64	145	1 ½"UN	8			
1050	42"	280	96.8	1257.3	36	1346.2	570	1 ½"UN	32	1 ½"UN	64	155	1 ½"UN	8			
1100	44"	280	101.6	1314.5	40	1403.4	580	1 ½"UN	36	1 ½"UN	72	160	1 ½"UN	8			
1200	48"	360	108	1422.4	44	1511.3	670	1 ½"UN	40	1 ½"UN	80	165	1 ½"UN	8			

For DN >1200, please consult

# Key Figures

Fig



BODY TYPE		
1	2	5
WAFER	FLANGED	LUG

BODY MATERIALS			
GENERIC	ASTM STANDARD	DIN / EN STANDARD	COATING
1. Ductile Iron	A 395 M:88	EN-JS 1020 EN 1563	RILSÁN-EPOXY (1)
2. Cast Steel	A 216-93 WCB	1.0619 EN 10213-2	RILSÁN-EPOXY (1)
3. Aluminium Bronze	B 148-92 C95800	EN 1982-99 CC333G	NO COATING
4. Stainless Steel 18/8	A 351-94 CF8	1.4308 EN 10213-4	NO COATING
5. Stainless Steel 18/8/2	A 351-94 CF8M	1.4408 EN 10213-4	NO COATING
6. Aluminium	B 179 S12C	1706 AC44100	RILSÁN
9. Bronze	B 62-93 C83600	CC491K EN1982	NO COATING

(1): Rilsan® DN 50 to 300 and Epoxy as from DN 350.

DISC MATERIALS			
GENERIC	ASTM STANDARD	DIN / EN STANDARD	COATING
1. Ductile Iron	A 395 M:88	EN-JS 1020 EN 1563	EPOXY
2. Cast Steel	A 216-93 WCB	1.0619 EN 10213-2	EPOXY
3. Aluminium Bronze	B 148-92 C95800	EN 1982-99 CC333G	NO COATING
4. Stainless Steel 18/8	A 351-94 CF8	1.4308 EN 10213-4	NO COATING
5. Stainless Steel 18/8/2	A 351-94 CF8M	1.4408 EN 10213-4	NO COATING
6. Ductile Iron	A 395 M:88	EN-JS 1020 EN 1563	(2)
7. Ductile Iron	A 395 M:88	EN-JS 1020 EN 1563	RILSAN
8. Cast Steel	A 216-93 WCB	1.0619 EN 10213-2	RILSAN
9. Bronze	B 62-93 C83600	CC491K EN1982	NO COATING

(2): Special coatings required by customer.

ACTUATORS							
P	RS	MF	ND	NS	SE	HD	HS
Lever	Gearbox	Tee square operator	Double acting pneumatic actuator	Spring return pneumatic actuator	Electric actuator	Double acting hydraulic actuator	Spring return hydraulic actuator

SEAT MATERIALS												
B	E	H	N	NA	NE	S	V	NB	CB	CA	EC	EA
Butyl	EPDM	Hypalon	NBR	Natural rubber	Neoprene	Silicon	Viton®	White NBR	Natural rubber food-grade	Anti-abrasive natural rubber	High temperature EPDM	Non toxic EPDM

NOTE: For materials, coatings or actuators other than those listed above, please contact our Technical Department