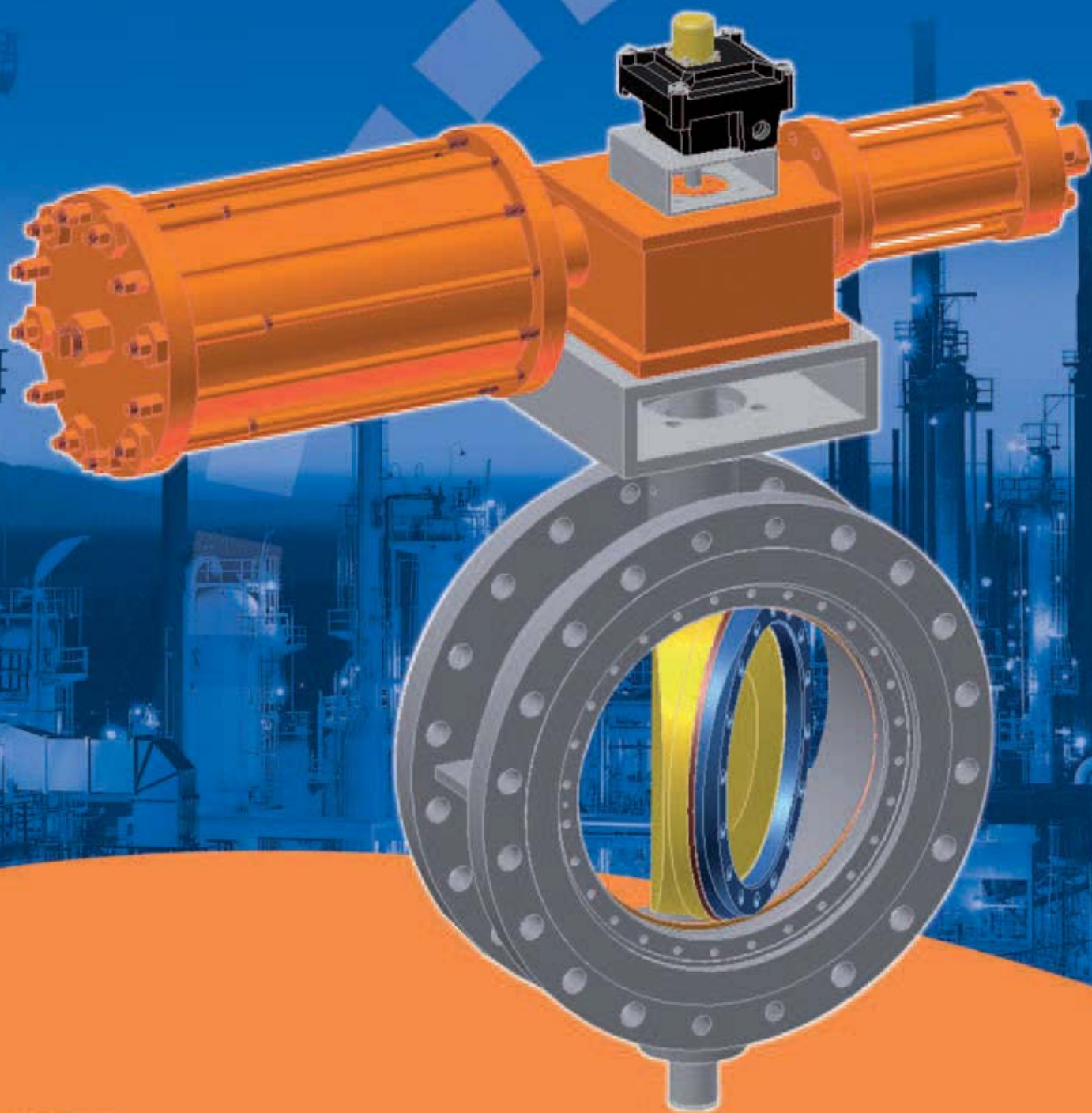


Butterfly Valves



ITALVALV®
INDUSTRIAL VALVES

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Technical features

and Data of the control valves

Design

ANSI B 16.34 - AWWA C 504
ASME sec. III - ASME sec. VIII
P.E.D. 97/23/CE
FIRE SAFE Acc.to API 6FA
and BS6775
SIL IEC 61508
ISO 15848 Fugitive Emission

Face to face

ISO 5752 - short and long body
API 609 - ASME B 16.10
AWWA C504 - EN 558

Ratings

Series:	Class:
WK	ANSI 150 - 300 - 600 - 900
WLK	ANSI 150 - 300 - 600 - 900
WFK	ANSI 150 - 300 - 600 - 900
FK	ANSI 150 - 300 - 600 - 900
FY	ANSI 150 - 300 - 600 - 900 - 1500
BW	ANSI 150 - 300 - 600

Service

- On - Off
- Control
- Anti-noise / Anti-cavitation trim design

Ends

- Wafer - Lug
- Flanged
- Buttwelding

Seats

- Soft
- Flexible metal
- Metal
- Solid metal ring
- Lamellar

Coupling to flanges

UNI EN 1092 - ANSI B16.5 - EN 558
ANSI B16.47
AWWA C207 - MSS SP44

Size

From 3 inches to 112 inches

Testing

MSS-SP61 - FCI 70.2 - IEC 534
API 6D - API 598 - UNI EN 12266
Special testing on request

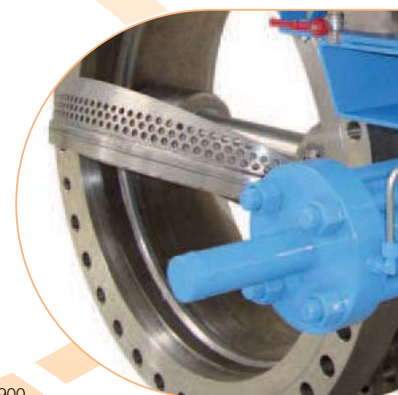
Coupling to actuators

ISO 5211
Other on request

Leakage class

Soft seat	VI Class (FCI 70.2)
Flexible metal seat	IV-V Class (FCI 70.2)
Metal seat	II-III Class (FCI 70.2)
Lamellar	V-VI Class (FCI 70.2)
Solid metal seat	V-VI Class (FCI 70.2)

Company with Quality System certified
UNI EN ISO 9001-2008



Description

ON/OFF and Control Butterfly valves

ITALVALV'S high performance butterfly valves are available in wafer, lugged and flanged design for UNI-EN, ANSI and AWWA flanges.

The butterfly valves are available in a large range of materials and seal seat type combinations suitable for many different pressure classes and applications.

Valve body

The valve body can be supplied wafer, lugged, flanged or butt-welding ends type in a wide range of sizes (from 2" to 112").

Casted or electric welded execution, the body is supplied in the following materials; carbon steel, stainless steel, bronze or aluminium /bronze duplex, superduplex, monel as standard.

Seal seat

The seal ring in synthetic material ensures a perfect bubble-tight shut-off at the maximum rated differential pressure.

The design of the ITV sealing allows replacement of the seat ring without removing the disc; in addition, this operation does not require an expert.

For special uses (food-stuffs, aggressive or corrosive fluids etc.) a special sealing can be applied, which, as may be seen from the illustration, is composed of an outer teflon sheath which comes into contact with the fluid, and an inner elastic ring, performing the sealing action.

Standard materials normally used for seal seats

EPDM / NBR

VITON

PTFE / FILLED PTFE

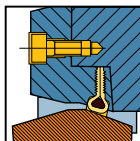
AISI 316

INCOLOY 825

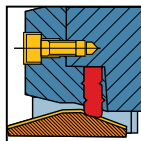
DUPLEX UNS S32750

UNS S90210 (XM 19)

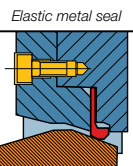
Soft seal seat



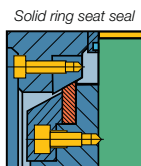
PTFE



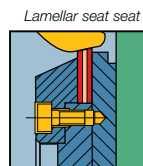
ELASTOMER



Elastic metal seal



Solid ring seat seal



Lamellar seat seal

Stem

The stem is very smoothly machined in order to ensure perfect rotation by means of bearings and a perfect sealing of the packing gland. The stem is solidly connected to the disc by means of calibrated pins.

Standard materials normally used for stem

AISI 304

AISI 316

AISI 420B

17-4-PH

MONEL K400

NITRONIC 50 (XM 19)

Stem seal

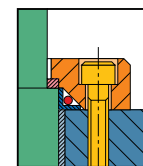
The stem seal is of the self-adjustable type and composed by two elements: a PTFE collar in contact with the process fluid, and an internal elastic ring which ensured the sealing action both at low and high pressures.

Standard materials normally used for stem seal

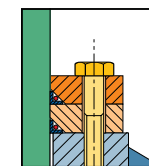
PTFE + NBR / Viton / Silicone / Kalrez

Carbographite + Viton / Silicone / Kalrez

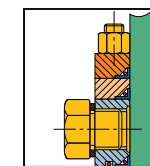
Graphoil



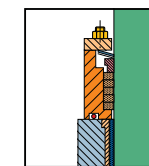
Class 150



Class 300 / 900



Class 150 / 900



Class 300 / 1500

Bushing

The stem bushing consist of an outer plate in cadmium plated steel, and an inner PTFE layer. Therefore, since the bearings are self-lubricating, no further lubrication is required.

Disc

Double or triple eccentric design shape that ensure a particularly smooth modulating and ON/OFF operations.

The results is a torque characteristic which avoids any fluttering.

Seal retaining ring

The seat seal retaining ring has the sole purpose of retaining the seat ring in its place, in the correct position.

The outer face of the seat retaining ring is machined to phonographic ruling in order to ensure sealing by means of a gasket between the valve raised face and the pipe flanges.

Wafer butterfly valve WK1 series



Tests

Inspection and testing

ITV valves are 100% tested in conformity with the following standards:

Applicable standard	Hydraulic Body test				Hydraulic SEAT test			
	Class	Test Pressure (Bar)	Valve Size	Test Duration	Class	Test Pressure (Bar)	Valve Size	Test Duration
EN 12266-1	PN 2,5	4			PN 2,5	2,8		
	PN 6	9			PN 6	6,6		
	PN 10	15			PN 10	11		
	PN 16	24	NPS ≤ 2"	15 sec.	PN 16	17,6	NPS ≤ 2"	15 sec.
	PN 25	38	2 1/2" ≤ NPS ≤ 8"	60 sec.	PN 25	27,5	2 1/2" ≤ NPS ≤ 8"	15 sec.
	PN 40	60	NPS ≥ 10"	180 sec.	PN 40	44	10" ≤ NPS ≤ 18"	30 sec.
	PN 64	96			PN 64	70,4	NPS ≥ 20"	60 sec.
	PN 100	150			PN 100	110		
	PN 150	225			PN 150	165		
	PN 250	375			PN 250	275		
ANSI B16.34	PN 420	630			PN 420	462		
	ANSI 150	30			ANSI 150	22		
	ANSI 300	78			ANSI 300	57		
	ANSI 600	156	1/2" + 4"	2 min.	ANSI 600	114	1/2" + 4"	2 min.
	ANSI 900	233	6" + 10"	5 min.	ANSI 900	171	≥ 6"	5 min.
	ANSI 1500	388	12" + 18"	15 min.	ANSI 1500	285		
	ANSI 2500	647	≥ 20"	30 min.	ANSI 2500	474		

Details

Construction Materials Standard

Body	Disc	Stem Pins	Bushings	Stem seal	Stem seal
Carbon steel	Carbon steel	High strenght S.S.	Stainless steel chromium plated	Graphited base	Nitrile rubber
Low temperature cast steel	Low temperature cast steel	High alloy steels	Stainless steel nickel plated	Grafoil	Dutral
Alluminium/Bronze	Bronze	Special alloys	Hardened stainless steel	Teflon	Viton
Stainless steels	Stainless steels	Duplex	Stellite overlay	Special Customer requirements	P.T.F.E. teflon
Special alloys	Special alloys	Monel K	P.T.F.E. coated		Stainless steels
Duplex	Duplex	Duplex	Carbon		Special Customer requirements
Special Customer requirements	Monel K	Special Customer requirements	Bronze		
	Special Customer requirements		Special Customer requirements		

Selection chart for seat ring material

Name	ASTM code	Temperature range	Main service
Nitrile rubber BUNAN	NBR	-30° C / +90° C	Water, steam, hydrocarbons, mineral oil, vegetable oil, gas
Dutral-CO	EPM	-50° C / +150° C	Ketone, alcohols, acetit acid, strong mineral acid, sea water, water atmospheric agents
VITON	FPM	-15° C / +200° C	Hot water, steam, sea water, strong mineral acid, water atmospheric agents
PTFE Reinforced PTFE	-	-250° C / +280° C	Low temperature application (almost all products)
430 St. steel	ASTM A240 430	-28° C / +530° C	Water, air, steam
316 St. steel	ASTM A240 316	-28° C / +530° C	Hot water, steam, sea water, strong mineral acid, gas, etc.
INCOLOY	ASTM B424	-198° C / +650° C	Excellent resistance for a most of corrosive fluids
SUPERDUPLEX UNS S32750	ASTM A240	-195° C / +400° C	Excellent resistance to stress corrosion cracking (SCC) in chloride-bearing environments High resistance to general corrosion

Maximum allowed seat leakage according to FCI 70.2

Leakage class	Fluid	Procedure FCI.70.2	Maximum seat leakage
Class I	None	None	As agreed between manufacturer and Customer No test required
Class II	Air or water	Proc. A	0.5% of valve CV
Class III	Air or water	Proc. A	0.1% of valve CV
Class IV	Air or water	Proc. A	0.01% of valve CV
Class V	Water	Proc. B	5x10 ⁻⁴ ml/min of water x ϕ internal (inches) x Δp (psi)
	Water	Proc. B	5x10 ⁻¹² m ³ /s of water x ϕ internal (mm) x Δp (Bar)
	Air or nitrogen	Proc. B1	ml/min of air x every inch of bore diameter
	Air or nitrogen	Proc. B1	11.1 x 10 ⁻⁶ m ³ /hour of air x every mm of bore diameter
Class VI for valves with soft seal	Air or nitrogen	Proc. C	ml/min as table G or bubbles per minutes

Hydraulic tests are performed using pure water at room temperature.

The **body hydraulic test** are done with the disc in open position and both ends of the valve closed. During testing no leakages are allowed.

The **hydraulic and pneumatic seat test** are effected putting pressure on the shaft side and with the disc closed. The opposite side is left free in order to test for leakages. For the pneumatic test, the side of the disc used for controlling is covered with soap to show up possible leakages.

Hydraulic body test



Fire safe test



Fugitive Emission Test



Cryogenic test



Valve flow coefficient = Cv

The **Cv** (see Table below) expresses the flow capacity of a valve at fully open position.

It is, in Imperial units, the flow rate of water, in U.S. gallons per minute, which passes through the valve causing a pressure drop of 1 psi at a temperature of 60° F.

In the metric system the coefficient **Cv** is called **Kv** and expresses the flow rate of water, in cubic metres per hour, which passes through the valve causing a pressure drop of 1 Kg/cm² at a temperature of 15° C.

$$Q = C_v \sqrt{\frac{\Delta P}{\rho}} \quad \text{or} \quad Q = K_v \sqrt{\frac{\Delta P}{\rho}}$$

Q Flow rate
ΔP Pressure drop
ρ Specific gravity of the medium

The equation showing the relationship between **Cv** and **Kv** measured in the above specified units is:

$$C_v = 1.167 \cdot K_v$$

Cv value shown in this table is referred to full bore valves with standard trim.

Valve flow coefficient

Valve size			Class			Valve size			Class		
Inch	150	300	600	Inch	150	300	600	Inch	150	300	600
3"	315	270	225	28"	28.215	26.870	21.560				
4"	555	495	412	30"	34.440	31.930					
5"	860	760	656	32"	39.625	35.840					
6"	1.270	1.035	1.017	36"	51.345	45.360					
8"	2.280	2.118	1.895	40"	59.070	56.000					
10"	3.865	3.670	3.120	42"	68.700	61.740					
12"	5.290	5.105	4.390	48"	90.580	80.640					
14"	6.315	5.835	5.065	60"	140.400						
16"	8.405	7.890	6.585	72"	202.170						
18"	11.585	10.425	9.080	80"	249.600						
20"	14.310	12.880	11.065	88"	304.500						
24"	20.660	18.950	15.840	96"	362.320						
				112"	493.000						

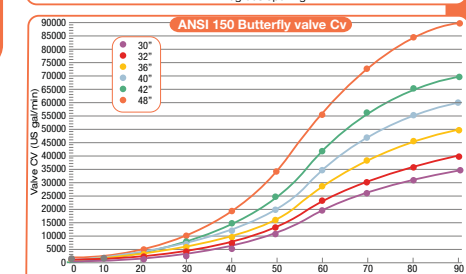
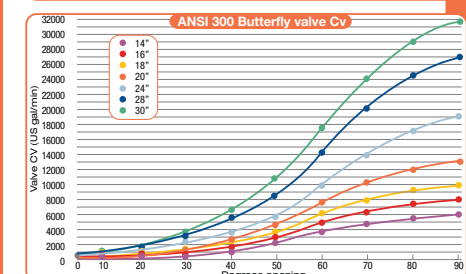
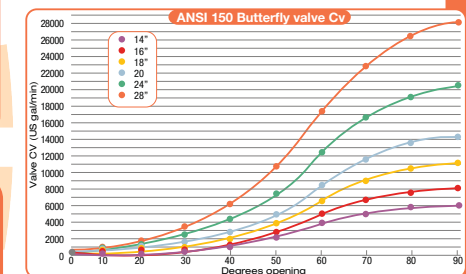
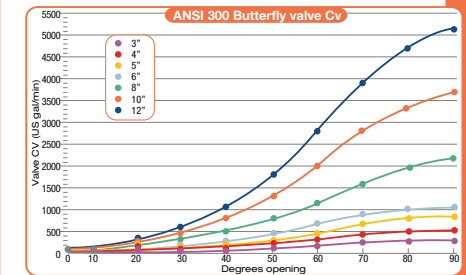
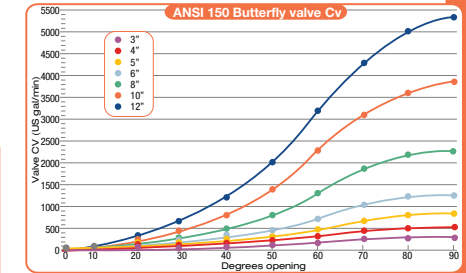
Butterfly Control Valves

ANSI 150 Cv values for degrees opening

Valve size		Degrees opening									
Inch	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°	
3	80	9	22	38	69	120	189	225	296	315	
4	100	17	39	67	122	211	333	450	522	555	
5	125	26	60	103	189	327	516	697	808	860	
6	150	38	89	152	279	483	762	1029	1194	1270	
8	200	68	160	274	502	866	1368	1847	2143	2280	
10	250	116	271	464	850	1469	2319	3131	3633	3865	
12	300	159	370	635	1164	2010	3174	4285	4973	5290	
14	350	189	442	758	1389	2400	3789	5115	5936	6315	
16	400	252	588	1009	1849	3194	5043	6808	7901	8405	
18	450	348	811	1390	2549	4402	6951	9384	10890	11585	
20	500	429	1002	1717	3148	5438	8586	11591	13451	14310	
24	600	620	1446	2479	4545	7851	12396	16735	19420	20660	
28	700	846	1975	3386	6207	10722	16929	22854	26522	28215	
30	750	1033	2411	4133	7577	13087	20664	27896	32374	34440	
32	800	1189	2774	4755	8718	15058	23775	32096	37248	39625	
36	900	1540	3564	6161	11296	19511	30807	41589	48264	51345	
40	1000	1772	4135	7088	12995	22447	35442	47847	55526	59070	
42	1050	2061	4809	8244	15114	26106	41220	55647	64578	68700	
48	1200	2717	6341	10870	19928	34420	54348	73370	85145	90580	

ANSI 300 Cv values for degrees opening

Valve size		Degrees opening									
Inch	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°	
3	80	7	15	28	51	89	143	203	248	270	
4	100	12	27	52	94	163	262	371	455	495	
5	125	19	42	80	144	251	403	570	699	760	
6	150	26	57	109	197	342	549	776	952	1035	
8	200	53	116	222	402	699	1123	1589	1949	2118	
10	250	92	202	385	697	1211	1945	2753	3376	3670	
12	300	128	281	536	970	1685	2706	3829	4697	5105	
14	350	146	321	613	1109	1926	3093	4376	5368	5835	
16	400	197	434	828	1499	2604	4182	5918	7259	7890	
18	450	261	573	1095	1981	3440	5525	7819	9591	10425	
20	500	322	708	1352	2447	4250	6826	9660	11850	12880	
24	600	474	1042	1990	3601	6254	10044	14213	174434	18950	
28	700	672	1478	2821	5105	8867	14241	20153	24720	26870	
30	750	798	1756	3353	6067	10537	16923	23948	29376	31930	



W/R
Series

Wafer
Butterfly valves
Centric type
UNI PN 2,5-PN 6-PN 10-PN 16-ANSI 150 Class

SERIES

W1/R

W1/R/BM

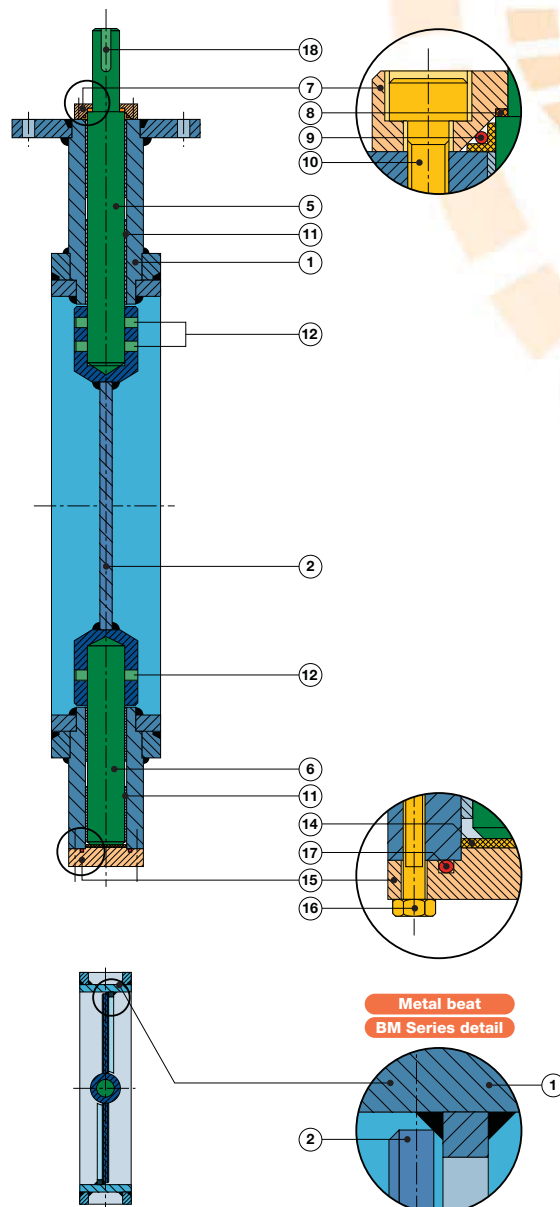
Identification

of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Disc	1
3	-	-
4	-	-
5	Upper stem	1
6	Lower stem	1
7	Gland	1
*8	Thrust washer	1
*9	Stem seal	1
10	Screw	o
11	Bushing	o
12	Pin	3
13	-	-
*14	Thrust washer	1
15	Cap	1
16	Screw	o
*17	O-ring	1
18	Feather	1

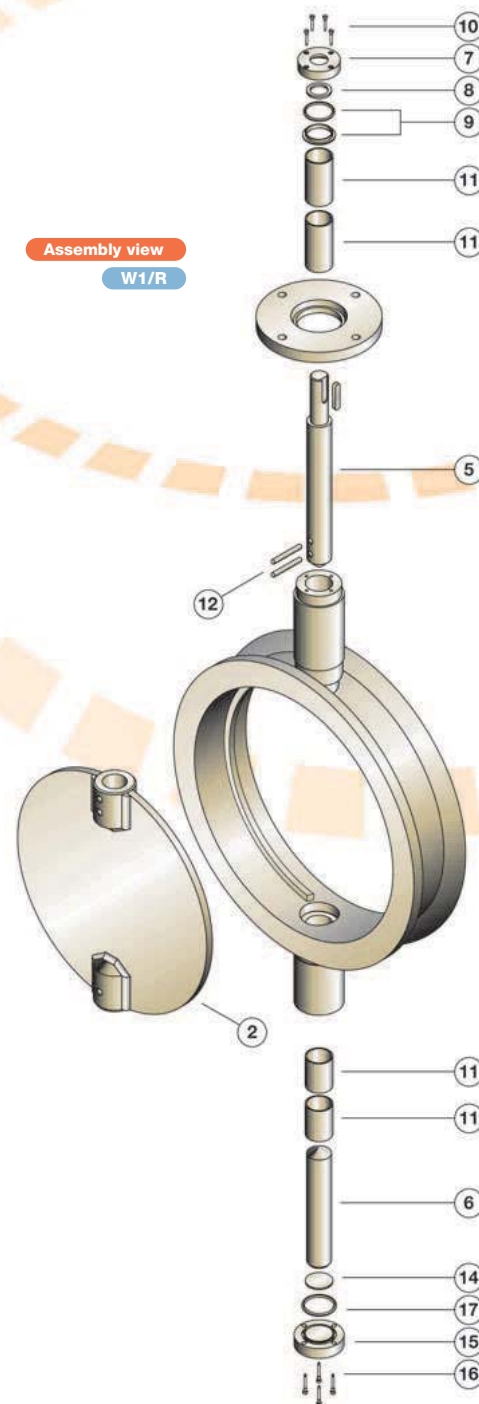
(*) Normally recommended spare parts
(o) Q.ty according to valve size

Section view



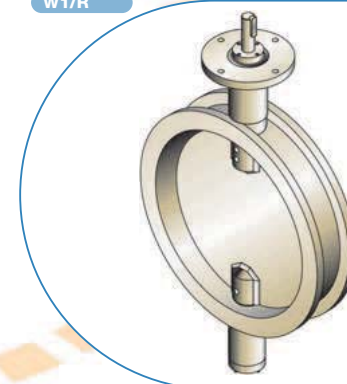
Assembly view

W1/R



Assembled view

W1/R



WK/R Series

Wafer
Butterfly valves
Double eccentric type
150-300-600 class

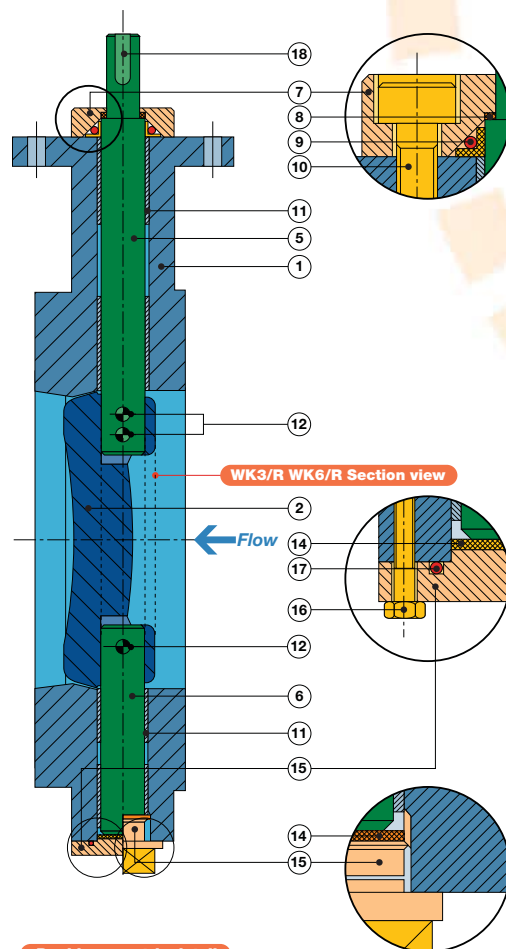
SERIES **WK1/R**
WK3/R
WK6/R

Identification of the valve parts

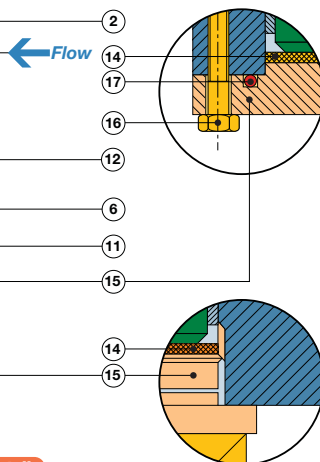
Pos.	Description	Q.ty
1	Body	1
2	Disc	1
3	-	-
4	-	-
5	Upper stem	1
6	Lower stem	1
7	Gland	1
*8	Thrust washer	1
*9	Stem seal	1
10	Screw	o
11	Bushing	o
12	Pin	3
13	-	-
*14	Thrust washer	1
15	Cap	1
16	Screw	o
*17	Gasket	1
18	Feather	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

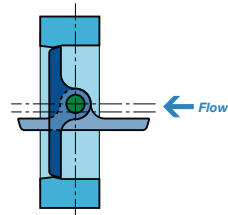
WK1/R Section view



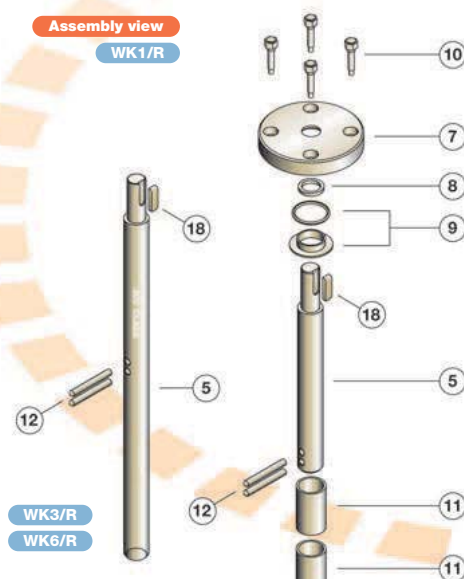
WK3/R WK6/R Section view



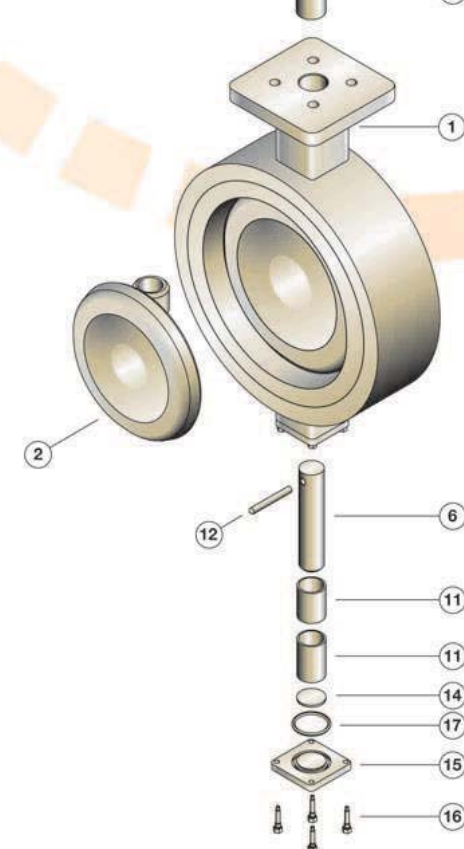
Double eccentric detail



Assembly view
WK1/R

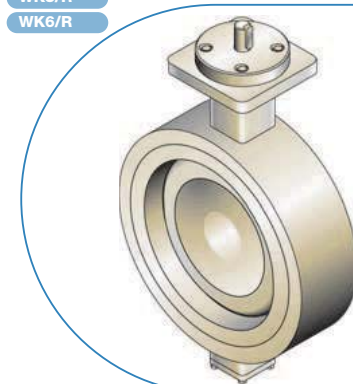


WK3/R
WK6/R



Assembled view

WK1/R
WK3/R
WK6/R



WK/WLK WFK Series

Wafer/Lug/Flanged
Butterfly valves
150 Class

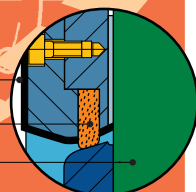
Identification

of the valve parts

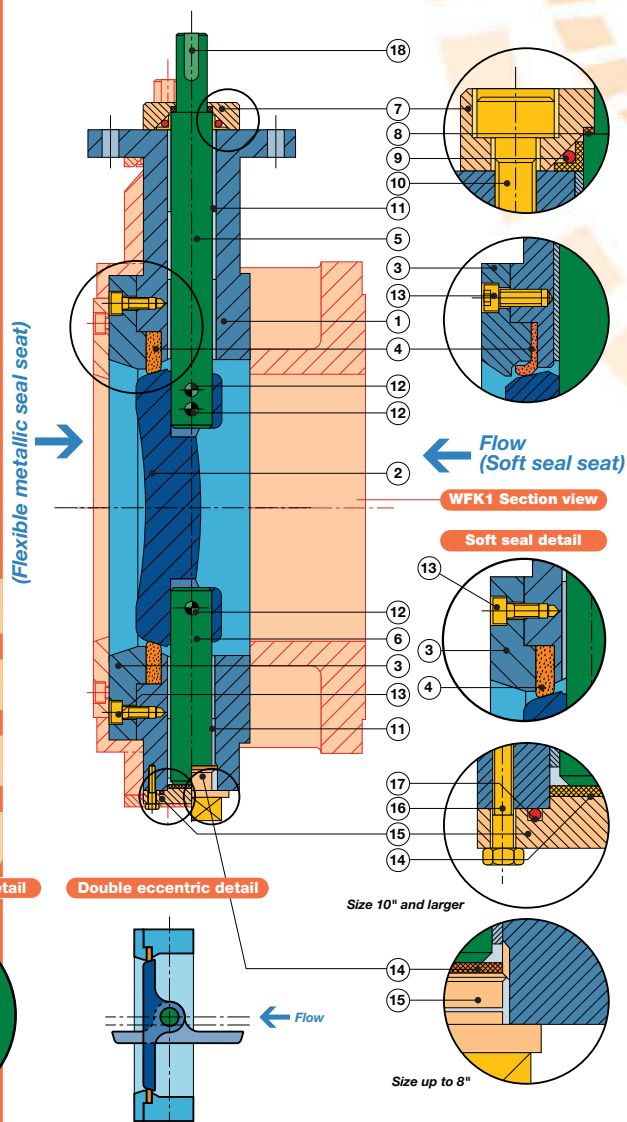
Pos.	Description	Q.ty
1	Body	1
2	Disc	1
3	Seal seat retainer	1
*4	Seal seat	1
5	Upper stem	1
6	Lower stem	1
7	Gland	1
*8	Thrust washer	1
*9	Stem seal	1
10	Screw	o
11	Bushing	o
12	Pin	3
13	Screw	o
*14	Thrust washer	1
15	Cap	1
16	Screw	o
*17	Gasket	1
18	Feather	1
19	Body rubber liner (option)	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

Option body rubber line detail



WK1 Section view



SERIES

WK1

WK1/M-WK1/IM

WLK1

WLK1/M-WLK1/IM

WFK1

WFK1/M-WFK1/IM

Assembly view

WK1

WK1/IM

Assembled views

Wafer type

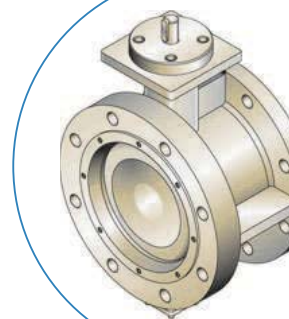
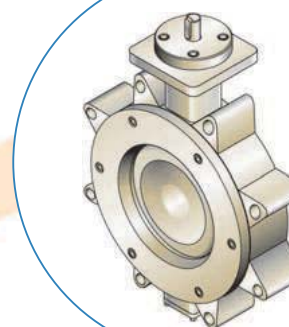
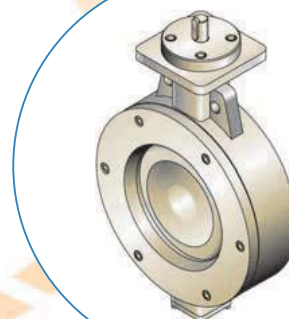
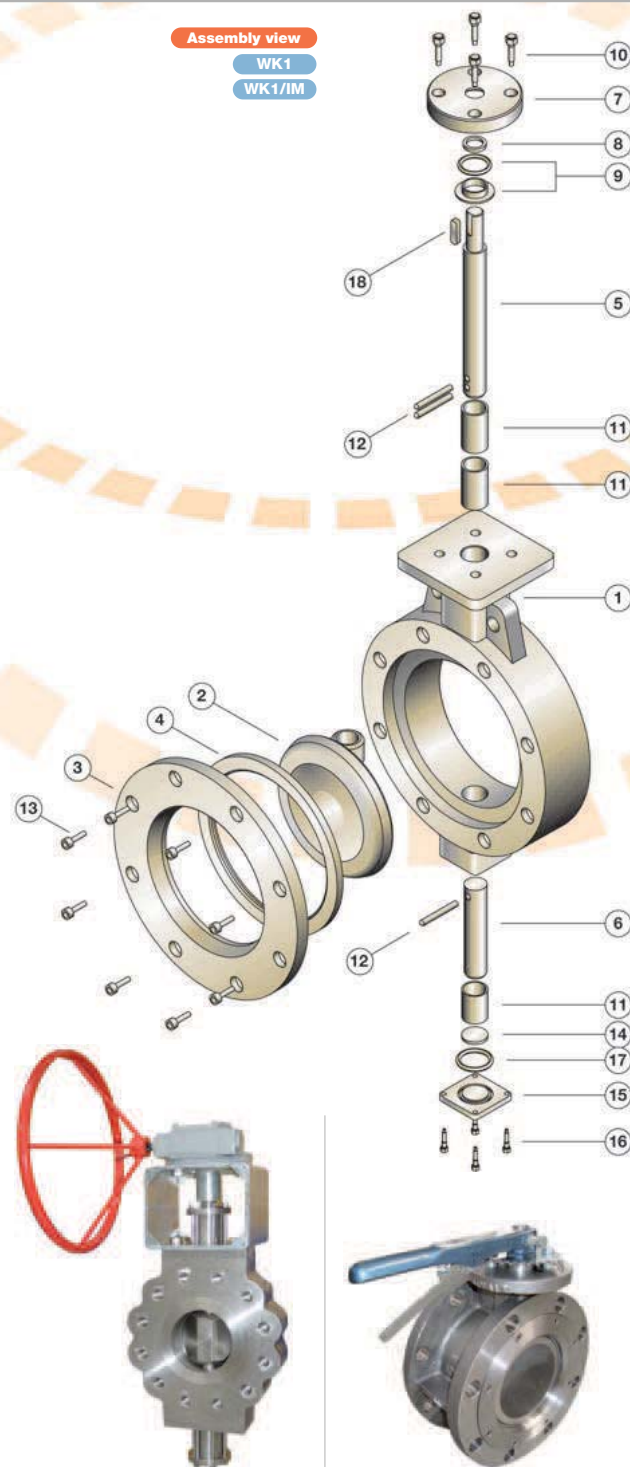
WK1-WK1/IM

Lug type

WLK1/M-WLK1/IM

Flanged type

WFK1/M-WFK1/IM



WK/WLK Series

Wafer/Lug
Butterfly valves
300-600 Class

Identification

of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Disc	1
3	Seal seat retainer	1
*4	Seal seat	1
5	Stem	1
6	-	-
7	Gland	2
8	Thrust washer	1
*9	Stem seal	2
10	Gland screw	o
11	Bushing	o
12	Pins	*
13	Seal seat retainer screw	o
14	Thrust washer	1
*17	Seal seat gasket	1
18	Feather	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

SERIES

WK3

WK3/IM

WLK3

WLK3/IM

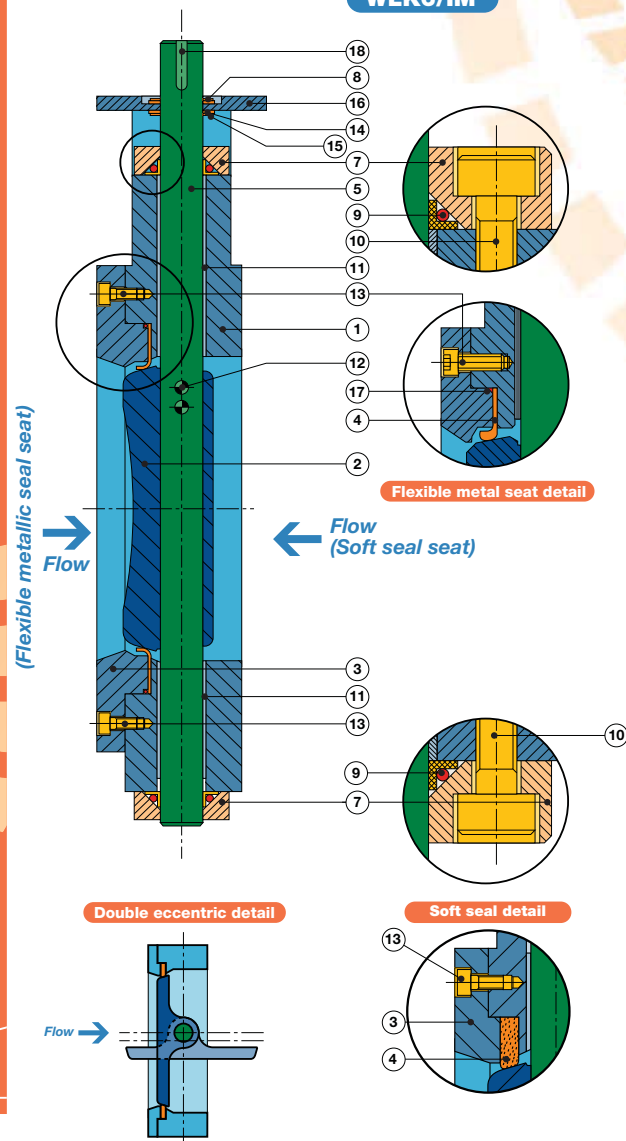
WK6

WK6/IM

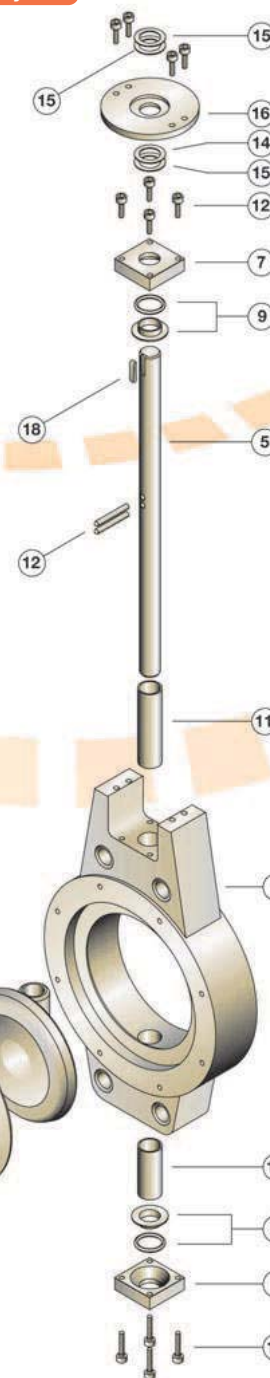
WLK6

WLK6/IM

WK/M Section view



Assembly view

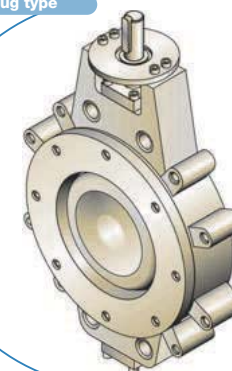


Assembled views

Wafer type



Lug type



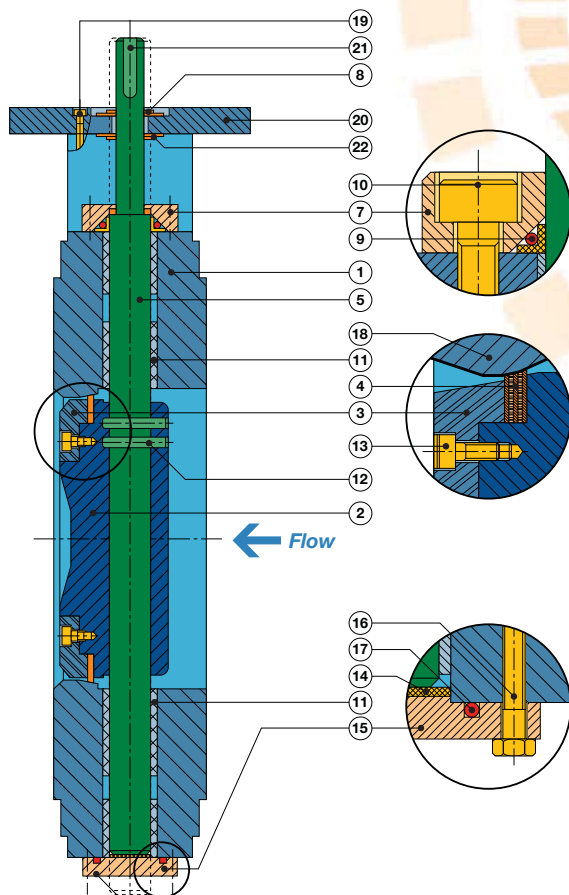
Identification

of the valve parts

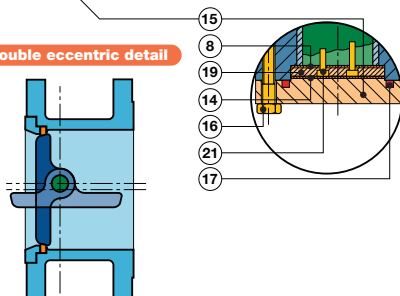
Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal seat retainer	1
*4	Seal seat	1
5	Stem	1
6	-	-
7	Gland	1
8	Thrust washer	2
*9	Stem seal	1
10	Screws	o
11	Bushing	o
12	Pins	2
13	Screws	o
14	Thrust washer	1
15	Cap	1
16	Screw	o
*17	Gasket	1
18	Seal surface	1
19	Screws	o
20	Flange	1
21	Coupling flange	1
22	Seeger	2

(*) Normally recommended spare parts
(o) Q.ty according to valve size

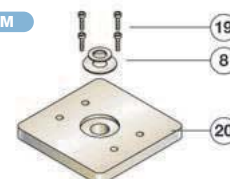
WK3/LM Section view



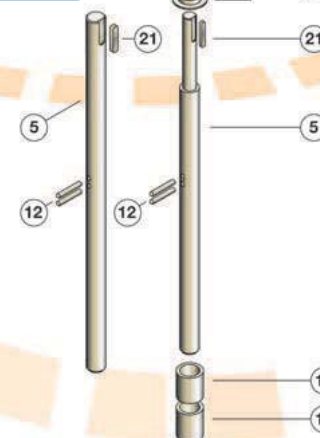
Double eccentric detail



WK3/LM

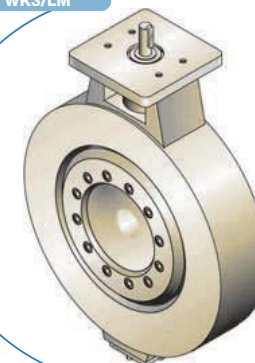


WK6/LM



Assembled view

WK3/LM



600 Class

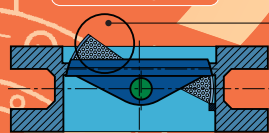
300 Class

Identification of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Disc	1
3	Seal seat retainer	1
4	Seal seat	1
5	Stem	1
6	-	1
7	Gland	1
8	Upper thrust washer	1
9	Stem seal	1
10	Gland screw	0
11	Bushing	0
12	Pins	2
12A	Nuts	2
12B	Washer	2
13	Seal seat retainer screw	0
*14	Lower thrust washer	1
15	Cap	1
16	Cap screw	0
*17	Cap gasket	1
18	Feather	1
19	Stem flange	1
20	Trim An/Ac	1
21	Stem flange screw	1
22	Baffle disc	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

Special execution option AN TRIM - AC TRIM



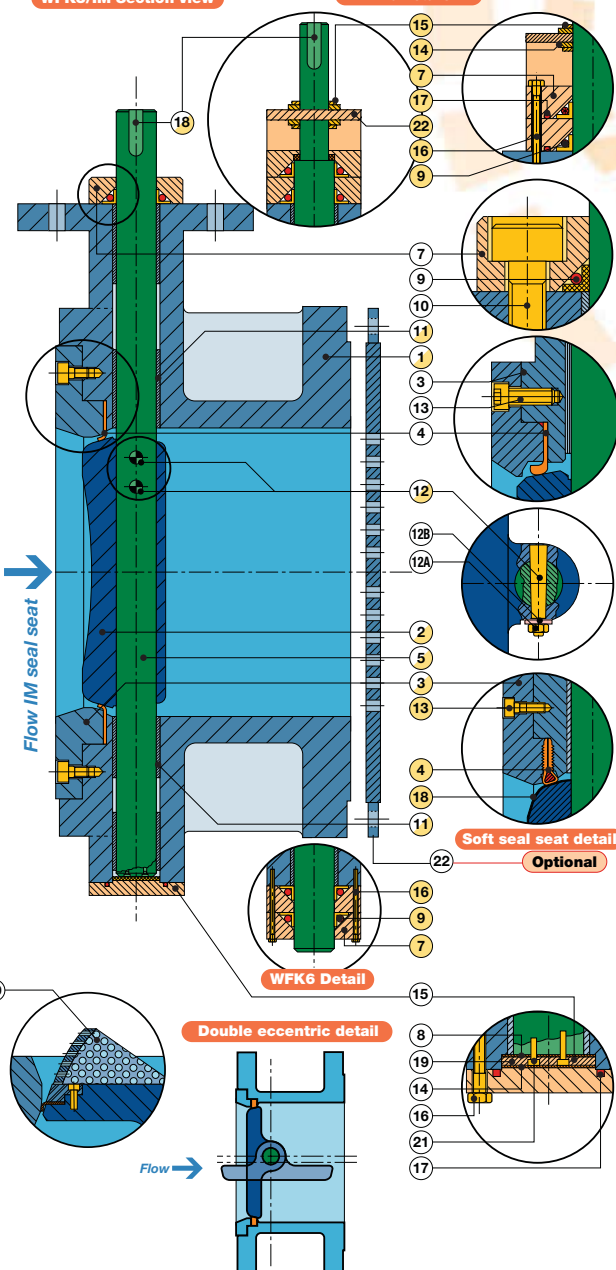
AN = Antinoise Trim
AC = Anticavitation Trim

SERIES
WFK3
WFK6
WFK3/IM
WFK6/IM

WFK6 + Trim Anticavitation/Antinoise **Optional**

WFK3/IM Section view

WFK6 Details



Identification

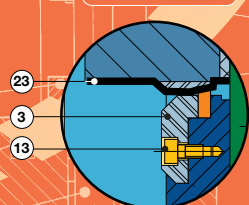
of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal seat retainer	1
*4	Seal seat	1
5	Upper stem	1
6	Lower stem	1
7	Gland	1
*8	Thrust washer	1
*9	Stem seal	1
10	Gland screws	o
11	Bushing	o
12	Pins	3
13	Screws	o
*14	Thrust washer	1
15	Cap	1
16	Cap screw	o
*17	Gasket	1
18	-	-
19	Stem flange	1
20	Stem flange screws	o
21	Feather	1
22	Seal surface	1
23	Rubber line (option)	1

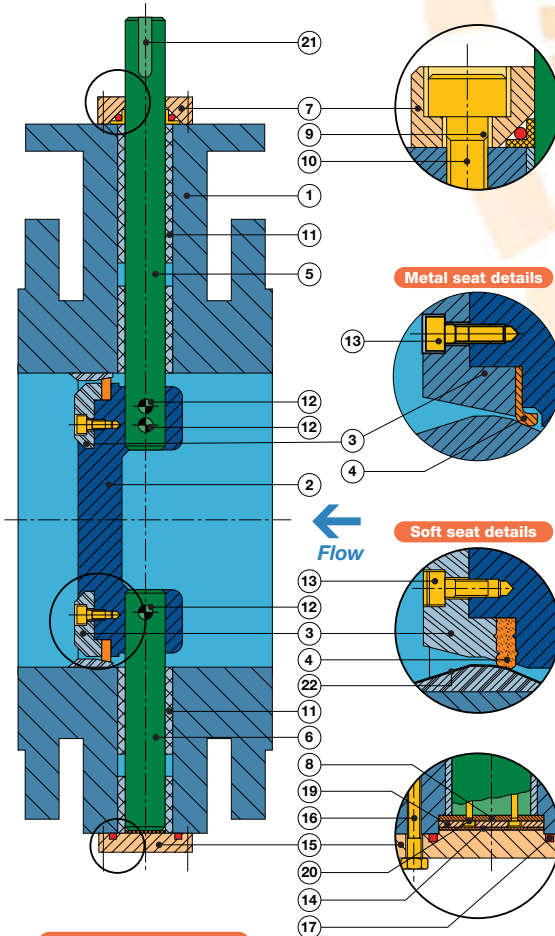
(*) Normally recommended spare parts
(o) Q.ty according to valve size

Option

Rubber line detail



Section view



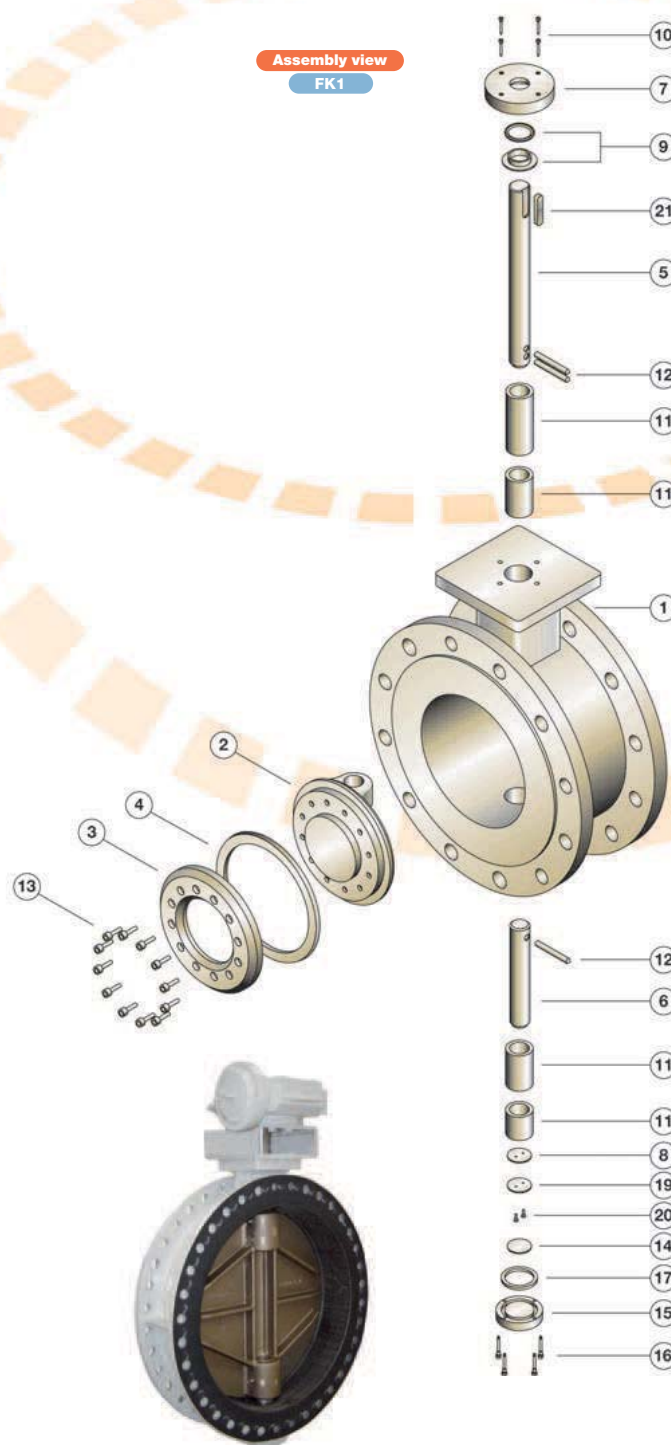
Metal seat details

Soft seat details

Double eccentric detail

Assembly view

FK1



Assembled view



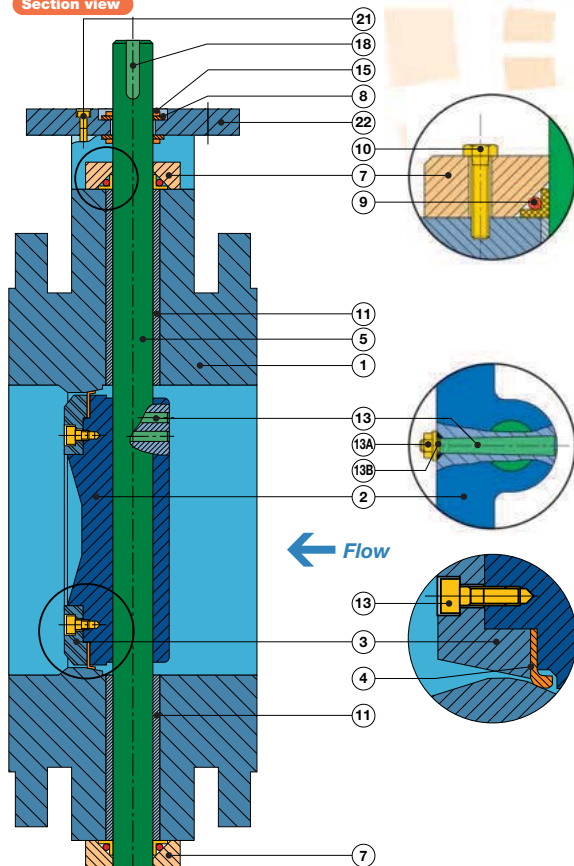
Identification

of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal seat retainer	1
*4	Seal seat	1
5	Stem	1
6	-	-
7	Gland	2
8	Thrust washer	1
*9	Stem seal	2
10	Gland screws	4
11	Bushing	o
12	-	-
13	Pins	2
13A	Nut / Washer	2
13B	Gasket	o
14	Seal seat retainer screws	o
15	Seeger ring	2
16	-	-
*17	Gasket	1
18	Feather	1
19	Coupling flange	1
20	Trim AN/AC (option)	o
21	Screws	o

(*) Normally recommended spare parts
(o) Q.ty according to valve size

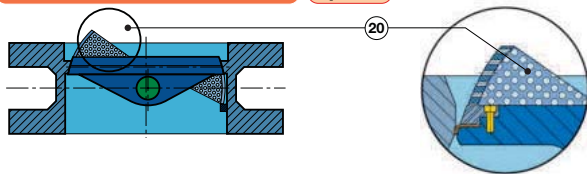
Section view



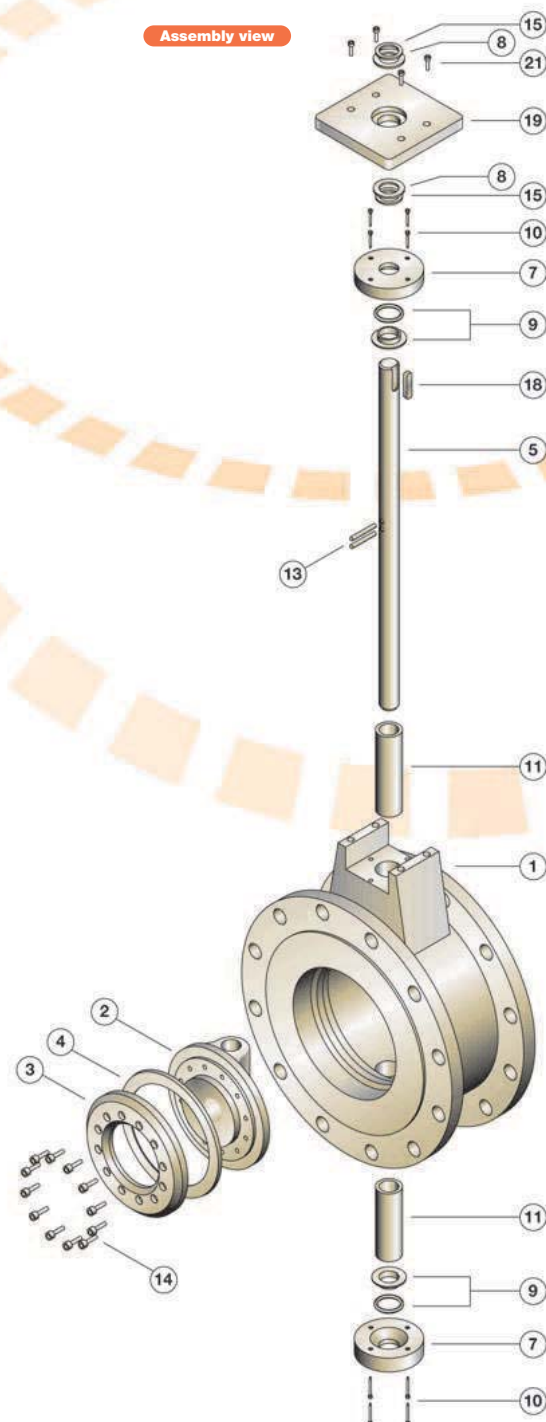
Flow

Antinoise/Anticavitation Trim detail

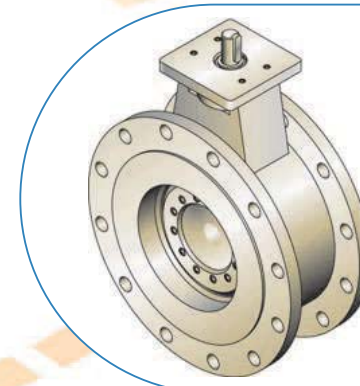
Optional



Assembly view



Assembled view



FK/LM Series

Flanged
Lamellar seat
Butterfly valves
150-300 Class

SERIES **FK1/LM**

FK3/LM

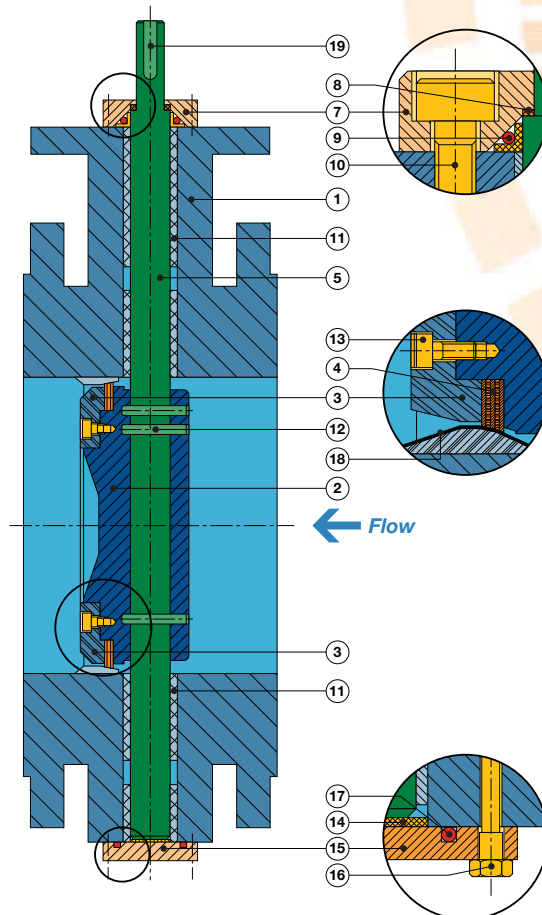
Identification

of the valve parts

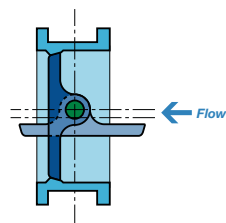
Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal retainer	1
*4	Seal seat	1
5	Stem	1
6	-	-
7	Gland	1
*8	Thrust washer	1
*9	Stem seal	1
10	Gland screws	o
11	Bushing	o
12	Pins	2
13	Seal retainer screws	o
*14	Lower thrust washer	1
15	Cap	1
16	Cap screws	o
*17	Gasket	1
18	Seal surface	1
19	Feather	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

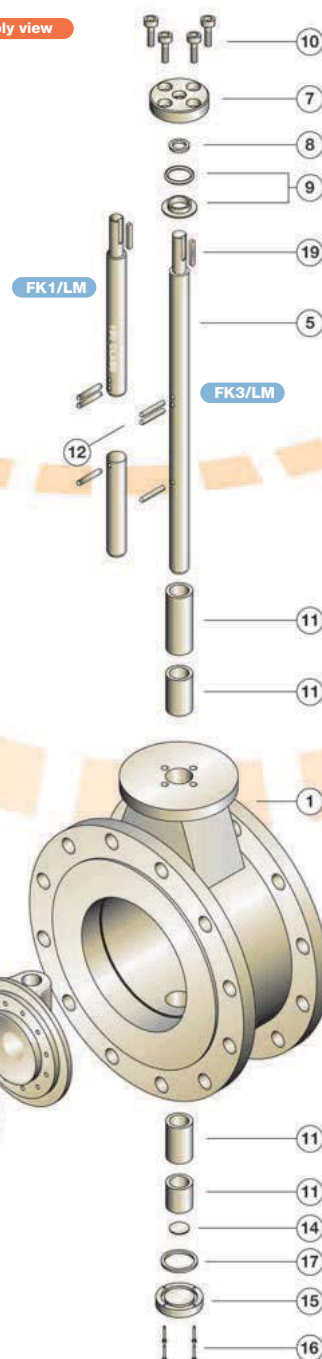
Section view



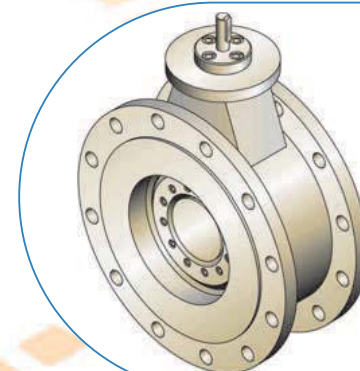
Double eccentric detail



Assembly view



Assembled view



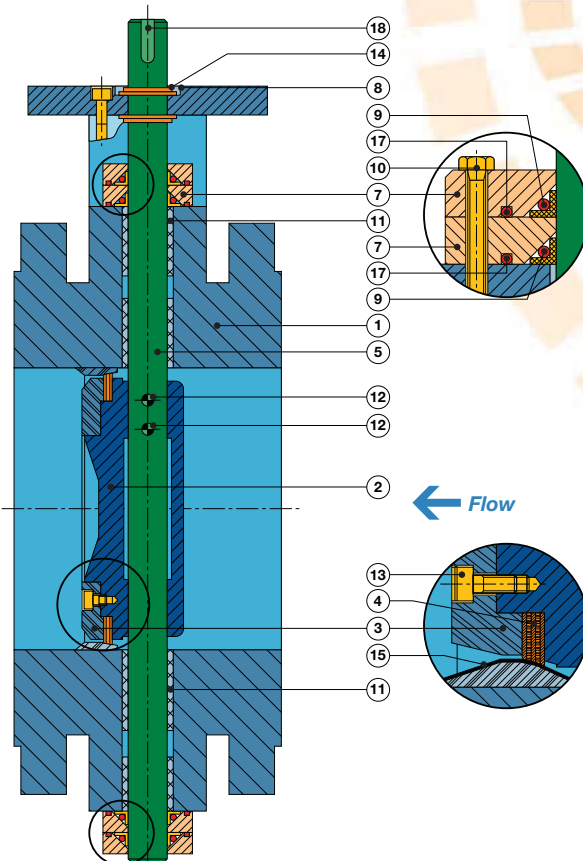
Identification

of the valve parts

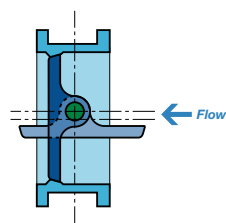
Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal retainer	1
*4	Seal seat	1
5	Stem	1
6	-	-
7	Gland	4
8	Thrust washer	2
*9	Stem seal	4
10	Gland screws	-
11	Bushing	-
12	Pins	2
13	Screws	-
14	Seeger ring	2
15	Seal surface	1
16	Screws	-
*17	Gasket	1
18	Feather	1
19	Flange	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

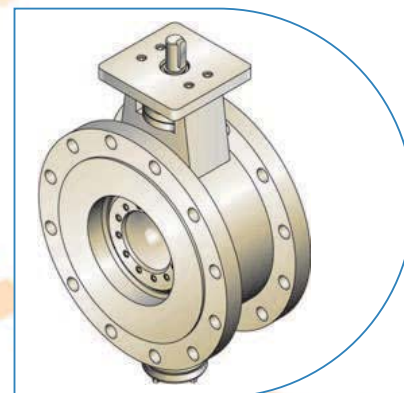
Section view



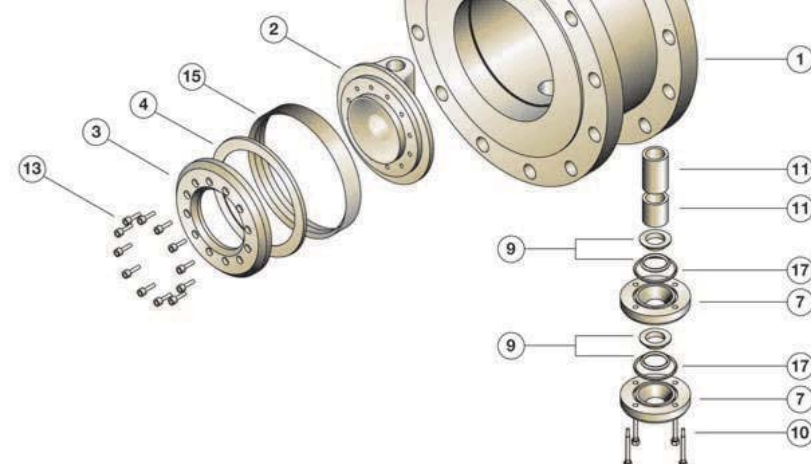
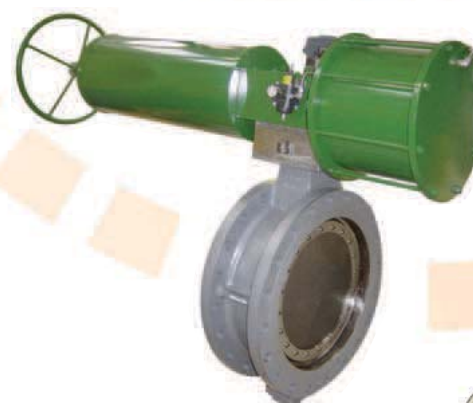
Double eccentric detail



Assembled view



Assembly view



FY/WY/WLY

Series
Triple offset

Butterfly valve
Flanged-Wafer-Lug
150-300-600-900 Class

SERIES

FY

WY

WLY

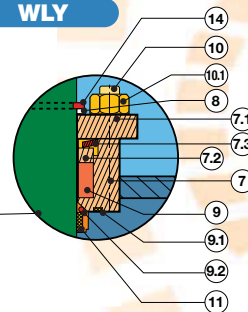
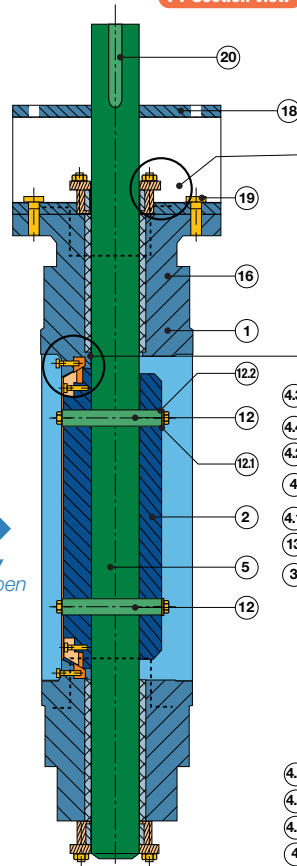
Identification

of the valve parts

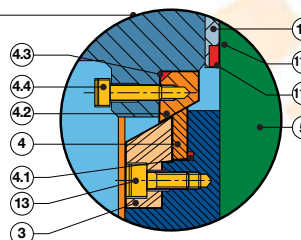
Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal seat retainer	1
*4	Solid ring	1
*4.1	Gasket	1
4.2	Seal surface	1
4.3	Gasket	1
4.4	Screws	o
5	Stem	1
6	-	-
*7	Gland packing	2
7.1	Packing flange	2
*7.2	Compressor ring	2
7.3	Springs	o
8	Thrust washer	2
*9	Stem seal	2
*9.1	Gasket	2
*9.2	Gasket	2
10	Stud	o
10.1	Nuts	o
11	Bushing	2
11.1	Stem protection (option)	2
11.2	Stem protection (option)	2
12	Pins	2
12.1	Washer	4
12.2	Gasket	4
13	Screws	o
14	Seeger ring	2
15	-	-
16	-	-
17	-	-
18	Yoke	1
19	Screws	o
20	Feather	1
21	Greaser	2

(*) Normally recommended spare parts
(o) Q.ty according to valve size

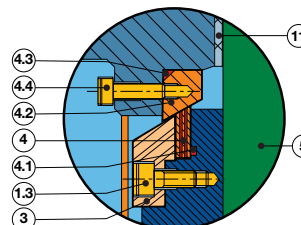
FY Section view



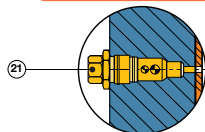
Solid ring seal seat detail
Modular service



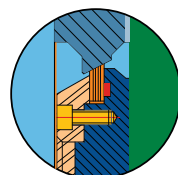
Lamellar ring seal seat detail
ON-OFF service



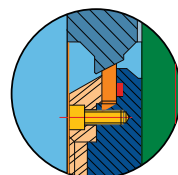
Stem fluxing system option



Solid ring seal seat detail
Modular service

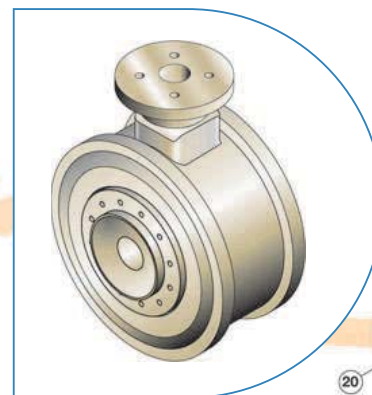


Solid ring seal seat detail
Interception service

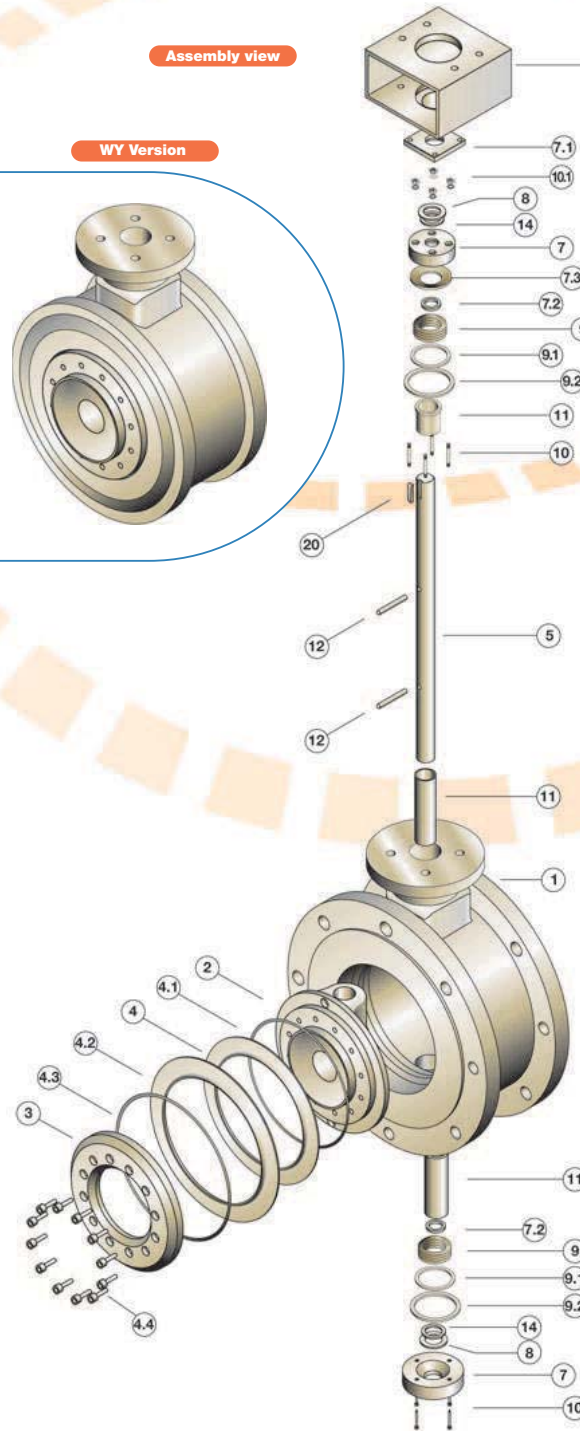
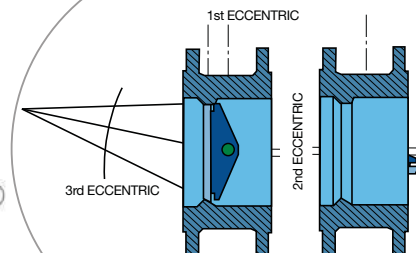


Assembly view

WY Version



Triple offset detail



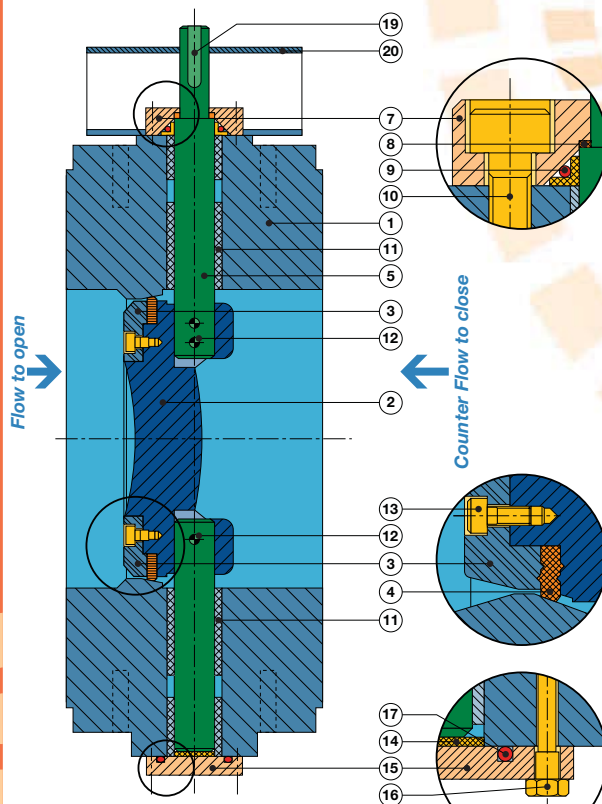
Identification

of the valve parts

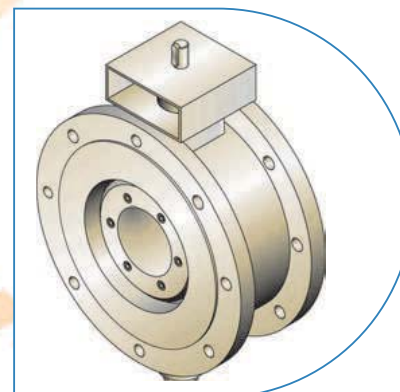
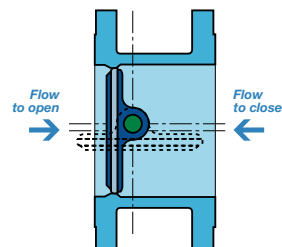
Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal retainer	1
*4	Seal seat	1
5	Upper stem	1
6	Lower stem	1
7	Gland	1
*8	Thrust washer	1
*9	Stem seal	1
10	Gland screws	o
11	Bushing	o
12	Pins	3
13	Screws	o
*14	Lower thrust washer	1
15	Cap	1
16	Screws	o
*17	Gasket	1
18	-	-
19	Feather	1
20	Yoke	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

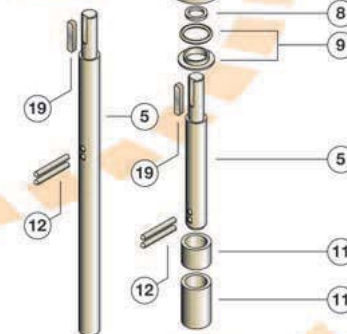
CFK1 Section view



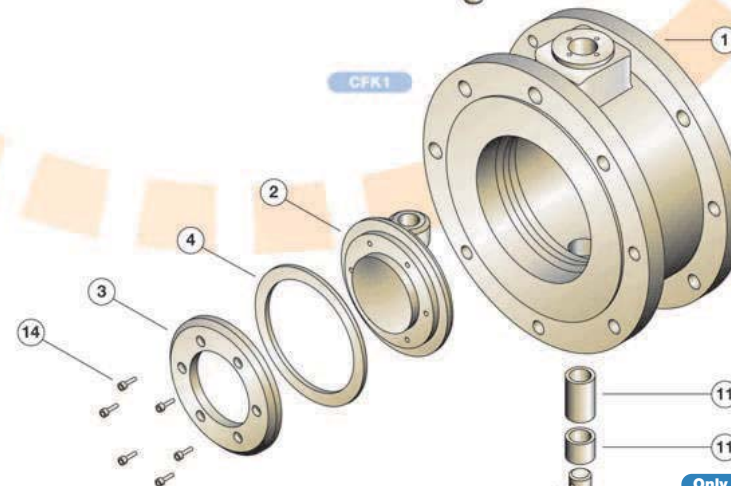
Double eccentric detail



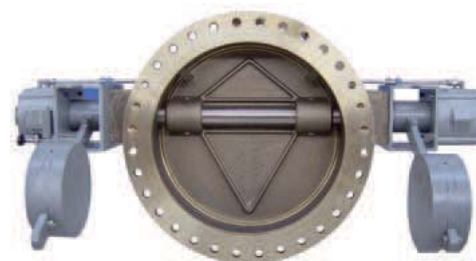
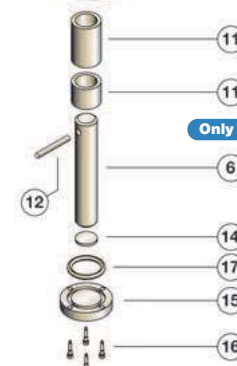
CFK3



CFK1



Only CFK1

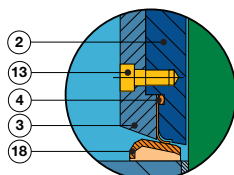
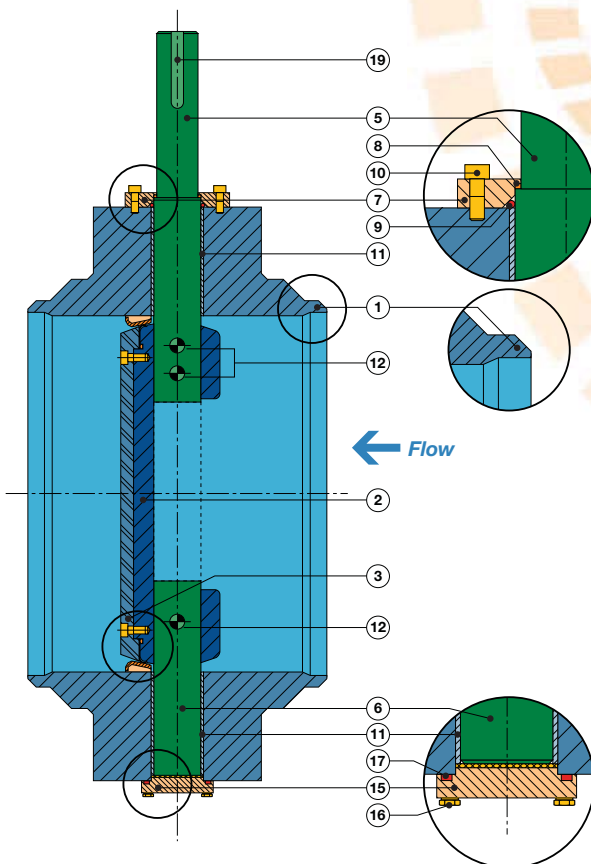


Identification of the valve parts

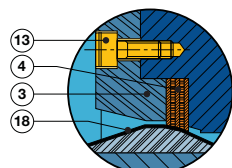
Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal retainer	1
4	Seal seat	1
5	Upper stem	1
6	Lower stem	1
7	Gland	1
8	Thrust washer	1
9	Stem seal	1
10	Gland screws	o
11	Bushing	o
12	Pins	3
13	Seal seat retainer screws	o
14	Lower thrust washer	1
15	Cap	1
16	Cap screws	o
17	Gasket	1
18	Seal surface	1

(*) Normally recommended spare parts
(o) Q.ty according to valve size

Section view

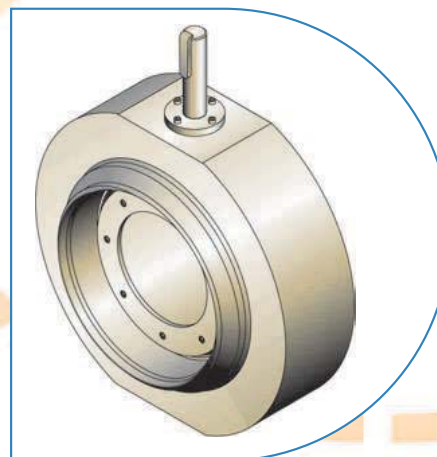


Flexible metal seat detail



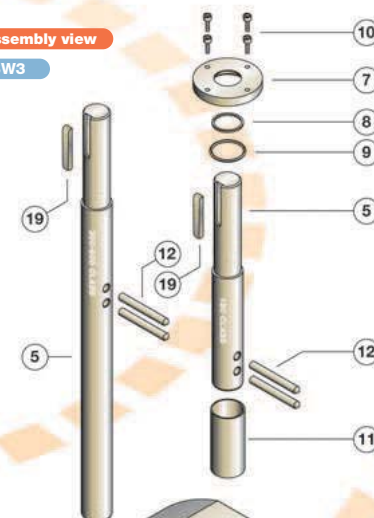
Lamellar metallic seat detail

Assembled view

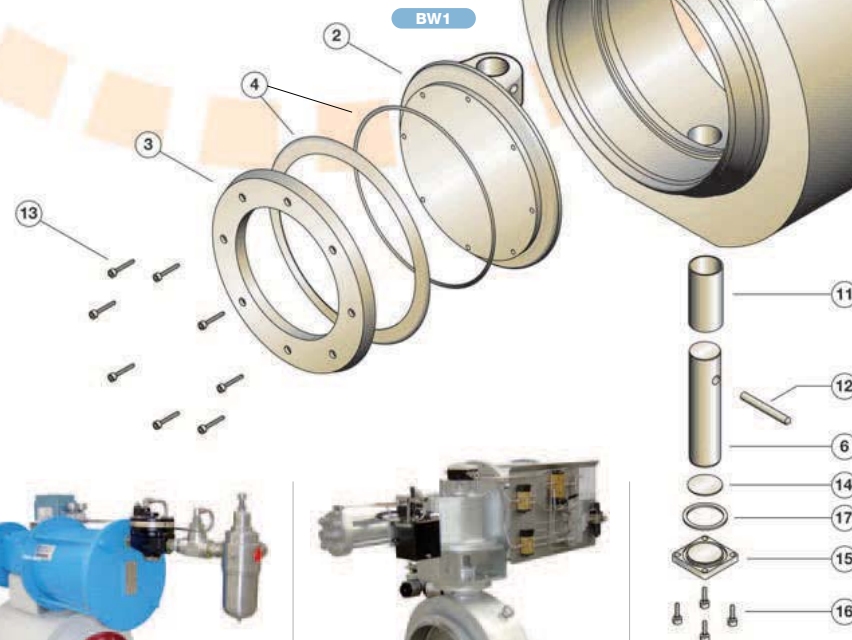


Assembly view

BW3



BW1



CRYOGENIC SERVICE SPECIAL EXECUTIONS

150-300-600 CLASS

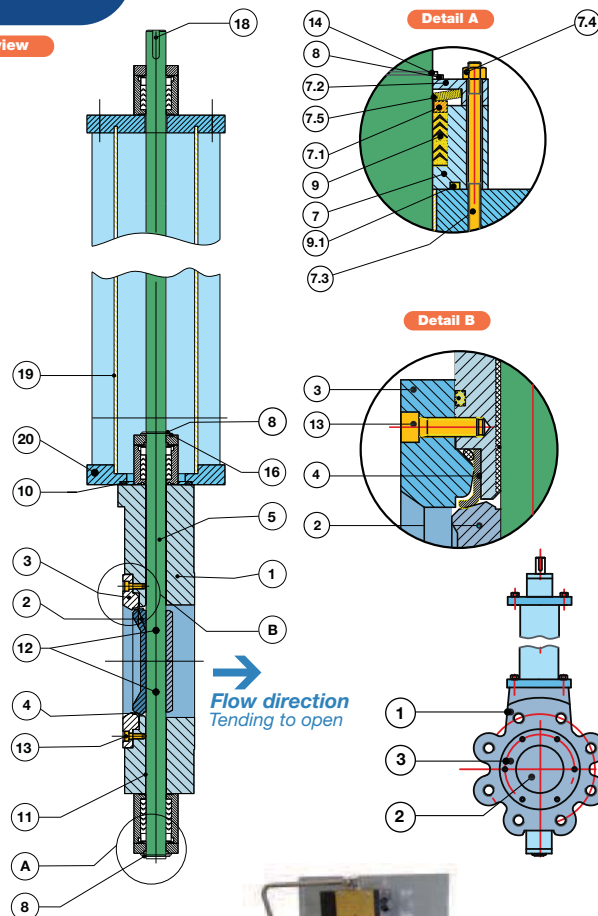
Section view

Identification

of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal seat retainer	1
4*	Seal seat	1
5	Stem	1
6	-	1
7	Gland packing	3
7.1	Compressor ring	3
7.2	Gland flange	3
7.3	Stud	18
7.4	Nut	18
7.5	Spring	15
8	Upper thrust washer	2
9*	Stem seal	3
9.1*	Gasket	3
10*	Gasket	1
11	Bushing	2
12	Pins	2
13	Seal retainer screw	6
14	Seeger ring	2
15	-	-
16	-	-
17*	Gasket	1
18	Feather	2
19	Extension	1

(*) Suggested spare parts



STOP FIRE VALVES SPECIAL EXECUTIONS

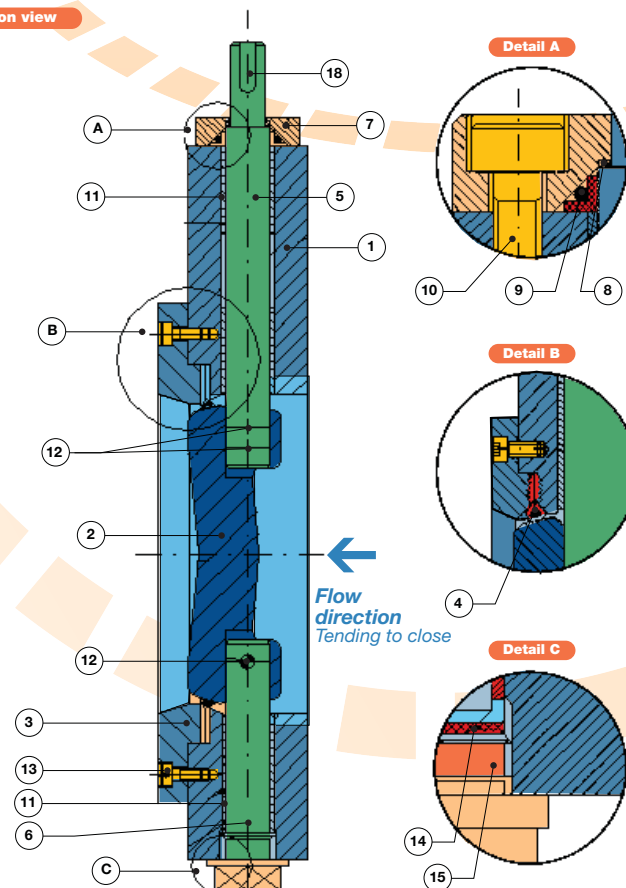
Section view

Identification

of the valve parts

Pos.	Description	Q.ty
1	Body	1
2	Butterfly	1
3	Seal seat retainer	1
4*	Seal seat	1
5	Upper stem	1
6	Lower stem	1
7	Gland	1
8	Upper thrust washer	1
9*	Stem seal	1
10	Gland screws	4
11	Bushing	3
12	Pins	3
13	Screws	4
14*	Lower thrust washer	1
15	Cap	1
17	-	-
18	Feather	1

(*) Suggested spare parts



Remark
Valves type, class and size according
to customer's requirements

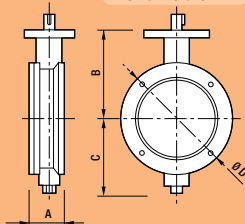
Remark
Valves type, class and size according
to customer's requirements

Dimensions and Weight of the valves

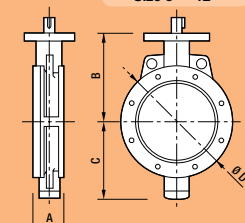
WK1/WLK1 Serie

Wafer/Lug Butterfly valves

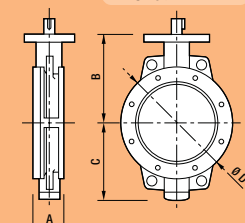
Size 2" / 3" / 4"



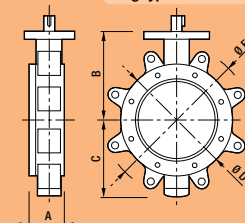
Size 5" ÷ 12"



Size > 14"



Lug type - All size



Class 150

Water

Series

WK1

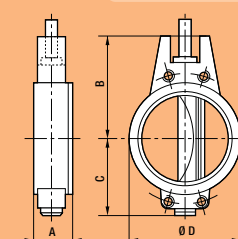
WLK1

Valve size		Dimensions					Weight (Kg)	
mm	Inch	A	B	C	D	E	WK1	WLK1
50	2	46	115	90	92	152	2,5	4
65	2 1/2	50	115	90	110	178	3	5
80	3	50	130	93	130	200	4	7
100	4	51	145	105	150	228	6	10
125	5	55	160	120	180	254	7	16
150	6	60	180	140	205	285	10,5	21
200	8	65	200	155	260	343	17	33
250	10	80	240	190	315	406	29	66
300	12	85	280	220	370	482	40	80
350	14	95	320	285	420	533	59	120
400	16	115	360	310	470	597	75	155
450	18	125	380	350	540	640	118	180
500	20	140	400	380	595	715	140	290
550	22	145	470	410	625	750	250	320
600	24	152	550	450	690	840	290	416
650	26	155	495	465	750	870	310	495
700	28	179	580	520	780	910	370	560
750	30	175	625	545	830	984	450	610
800	32	190	605	560	890	1025	490	650
850	34	190	625	575	950	1110	510	710
900	36	205	650	605	990	1168	530	780
1000	40	220	690	660	1110	1230	630	950
1100	44	235	800	735	1200	1340	760	1120
1200	48	250	830	780	1300	1455	900	1350
1500	60	381	1000	1050	1730	-	2340	-

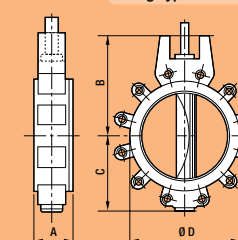
WK3/WLK3 Serie

Wafer/Lug Butterfly valves

Wafer Type



Lug Type



Class 300

Water

Series

WK3

WLK3

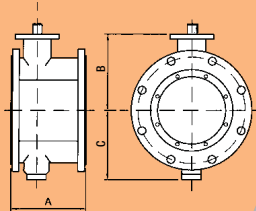
Valve size		Dimensions					Weight (Kg)	
mm	Inch	A	B	C	D	E	WK3	WLK3
50	2	46	120	70	92	152	5	6
65	2 1/2	50	125	80	105	178	6	5
80	3	50	145	90	127	200	8	7
100	4	50	195	135	157	228	15	10
125	5	55	220	155	185	254	20	16
150	6	60	235	165	216	285	22	21
200	8	65	255	205	270	343	37	50
250	10	80	310	250	324	406	59	77
300	12	85	360	290	381	482	90	125
350	14	95	390	310	413	533	115	160
400	16	115	425	330	470	597	180	218
450	18	125	460	385	533	640	210	320
500	20	140	495	410	584	715	320	400
550	22	145	545	445	641	750	370	320
600	24	152	595	470	692	840	415	416
650	26	155	610	515	749	870	310	495
700	28	179	625	560	794	910	370	560
750	30	175	680	600	857	984	450	610
800	32	190	710	635	914	1025	490	650
850	34	190	725	660	965	1110	510	710
900	36	205	755	690	1022	1168	530	780
1000	40	220	785	710	1155	1230	630	950
1100	44	235	810	750	1264	1340	760	1120
1200	48	250	860	800	1371	1455	900	1350



Dimensions and Weight of the valves

WFK1/WFK3

Flanged Butterfly valves



Class 150/300

Water

Series

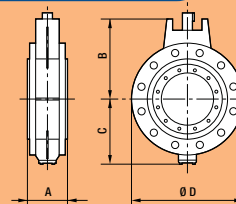
WFK1

WFK3

Valve size		A								Weight (Kg)	
mm	Inch	Short				Long				B	C
										WFK1	WFK3
65	2 1/2	46	178	181	-	263	266	110	130	6	11
80	3	49	191	194	-	283	286	125	140	9	15
100	4	127	203	207	-	303	306	140	145	21	40
150	6	140	229	232	-	323	326	170	150	32	60
200	8	152	235	238	-	343	346	255	215	55	143
250	10	165	242	245	250	363	369	320	240	90	150
300	12	178	258	261	270	383	389	350	280	145	170
350	14	190	283	286	290	403	412	395	310	160	225
400	16	216	-	314	310	423	432	420	330	200	350
450	18	222	-	-	330	-	455	450	370	270	416
500	20	229	-	-	350	-	-	500	420	301	558
550	22	-	-	-	370	-	-	520	450	370	690
600	24	267	-	-	390	-	-	540	470	428	750
650	26	292	-	-	410	-	-	570	485	490	800
700	28	292	-	-	430	-	-	620	495	510	860
750	30	318	-	-	450	-	-	645	535	800	-
800	32	318	-	-	470	-	-	705	585	900	-
900	36	330	-	-	510	-	-	755	630	1050	-
1000	40	410	-	-	550	-	-	795	685	1450	-
1100	44	440	-	-	590	-	-	895	760	1600	-
1200	48	470	-	-	630	-	-	935	805	1900	-
1500	60	565	-	-	750	-	-	1000	950	3350	-

FY1/FY3 FK1/FK3

Flanged Butterfly valves



Class 150 300

Water

Series

FY1/FK1

FY3/FK3

Valve size		A								Weight (Kg)			
mm	Inch	Short				Long				B	C	FK1	FK3
		RF	RJ	RF	RJ	RF	RJ	RF	RJ				
		CL150	CL300	CL150	CL300	CL150	CL300	CL150	CL300				
250	10	165	178	181	250	263	266	320	240	90	150		
300	12	178	191	194	270	283	286	350	280	145	170		
350	14	190	203	207	290	303	306	395	310	160	225		
400	16	216	229	232	310	323	326	420	330	200	350		
450	18	222	235	238	330	343	346	450	370	277	416		
500	20	229	242	245	350	363	369	500	420	301	558		
550	22	245	258	261	370	383	389	520	450	370	690		
600	24	267	283	286	390	403	412	540	470	428	750		
650	26	292	-	314	410	423	432	570	485	490	800		
700	28	292	-	-	430	-	455	620	495	510	860		
750	30	318	-	-	450	-	-	645	535	800	950		
800	32	318	-	-	470	-	-	705	585	900	1030		
850	34	330	-	-	490	-	-	725	605	950	1120		
900	36	330	-	-	510	-	-	755	630	1050	1300		
1000	40	410	-	-	550	-	-	795	685	1450	2100		
1100	44	440	-	-	590	-	-	895	760	1600	2300		
1200	48	470	-	-	630	-	-	935	805	1900	-		
1400	56	530	-	-	710	-	-	950	920	2700	-		
1500	60	565	-	-	-	-	-	1050	1020	3350	-		
1600	64	600	-	-	790	-	-	1100	1060	3900	-		
1800	72	670	-	-	870	-	-	1120	1120	5500	-		
2000	80	760	-	-	950	-	-	1350	1350	7300	-		
2200	88	770	-	-	1030	-	-	1700	1600	-	-		
2400	96	770	-	-	1110	-	-	1900	1800	-	-		
2800	112	780	-	-	1090	-	-	2100	2000	-	-		



Temperatures limitations

Applicable ASTM specifications

Notes

Permissible but not recommended for prolonged use of temperatures higher than about:

a	425° C - 800° F
b	455° C - 850° F
c	593° C - 1100° F

Not to be used for temperatures higher than:

d	343° C - 650° F
f	425° C - 800° F
g	455° C - 850° F
h	540° C - 1000° F
i	566° C - 1050° F
l	593° C - 1100° F

For service temperature 1050° F and higher, assurance must be provided that grain size is not finer than **ASTM No. 6**.

See **List of Materials** for additional informations and notes relating to specific materials.

Mat. Group	Materials (Spec. grade)	See Notes	
1.1	A 105, A 181-II, A 216 WCB, A 515-70	a	h
	A 516-70	a	g
	A 350-LF2, A 537-C1.1	d	
1.2	A 203-B, A 203-E, A 216-WCC	a	h
	A 350-LF3, A 352-LC2, A 352-LC3	d	
1.4	A 181-I, A 515-60	a	h
	A 516-60	a	g
	A 350-LF1	d	
1.5	A 182-F1, A 204-A, A 204-B, A 217-WC1	b	h
	A 352-LC1	d	
1.7	A 204-C	g	
	A 182-F2, A 217-WC4	h	
	A 217-WC5	i	
1.9	A 182-F11, A 182-F12, A 387-11, C1.2	c	
	A 217-WC6	l	
1.10	A 182-F22, A 387-22, C1.2	c	
	A 217-WC9	l	
1.13	A 182-F5a, A 217-C5	-	
1.14	A 182-F9, A 217-C12	-	
2.1	A 182-F304, A 182-F304H	-	
	A 240-304, A 351-CF8	-	
	A 351-CF3	f	
2.2	A 182-F316, A 182-F316H, A 240-316	-	
	A 240-317, A 351-CF8M	-	
	A 351-CF3M	g	
2.3	A 182-F304L, A 240-304L	f	
	A 182-F316L, A 240-316L	g	
2.4	A 182-F321, A 240-321	h	
	A 182-F321H, A 240-321H	-	
2.5	A 182-F347, A 240-347	h	
	A 182-F347H, A 240-347H, A 351-CF8C	-	
	A 182-F348, A 240-348	h	
	A 182-F348H, A 240-348H	-	
	A 240-309S, A 351-CH8, A 351-CH20	-	
2.6	A 182-F310, A 240-310S	k	
2.7	A 351-CK20	-	

List of Materials

According to ASTM specifications

Materials group		Product forms			
Group	Nominal designation steel	Forgings		Castings	
		Spec. Gr.	Notes	Spec. Gr.	Notes
1.1	Carbon	A105	(1) (3)	A216-WC8	(1)
		A181-II	(1) (3)		A515-70 (1)
			(10)		A516-70 (1)
		A350 LF2			
		C-Mn Si			A537-C1.1
1.2	Carbon			A216-WCC	(1)
	2-1/2 Ni			A352-LC2	
	3-1/2 Ni	A350 LF3		A352-LC3	(1) (2)
1.4	Carbon	A181-I	(1) (3)		A515-60 (1)
			(10)		
		A350-LF1			A516-60
1.5	C-1/2 Mo	A182-F1	(2)	A217-Wc1	(2) (4)
				A352-LC1	
1.7	C-1/2 Mo				A204-A (2)
	1/2 Cr-1/2 Mo	A182-F2			A204-B (2)
	Ni-Cr-1/2 Mo			A217-WC4	(4)
1.9	1 Cr-1/2 Mo	A182-F12	(4)		A217-WC5 (4)
	1-1/4 Cr-1/2 Mo	A182-F11	(4)	A317-WC6	(4)
	2-1/4 Cr-1 Mo	A182-F22		A217-WC9	(4)
1.10					A387-22 C1.2
		5 Cr-1/2 Mo		A182-F5a	A217-C5 (4)
1.13					
	9 Cr-1 Mo	A182-F9		A217-C12	(4)
1.14					
	18 Cr-8 Ni				A240-304 (5) (7)
		A182-F304	(5)		
2.1	18 Cr-8 Ni	A182-F304H		A351-CF3	
				A351-CF8	(5)
2.2	16 Cr-12 Ni-2 Mo	A182-F316	(5)		A240-316 (5) (7)
		A182-F316H			
	18 Cr-13 Ni-3 Mo				A240-317 (5) (7)
2.3	18 Cr-9 Ni-2 Mo			A351-CF3M	
				A351-CF8M	(6)
2.4	18 Cr-8 Ni	A182-F304L			A240-304L
	16 Cr-12 Ni-2 Mo	A182-F316L			A240-316L
	18 Cr-10 Ni-Ti	A182-F321	(5)		A204-321 (5) (7)
2.5		A182-F321H			A240-321H (7)
	18 Cr-10 Ni-Cb	A182-F347	(5)	A351-CF8C	(5)
		A182-F347H			A240-347 (5) (7)
2.6		A182-F348	(5)		A240-347H (7)
		A182-F348H			A240-348 (5) (7)
					A240-348H (7)
2.7	25 Cr-12 Ni			A351-CH8	(5)
	23 Cr-12 Ni			A351-CH20	(5)
					A240-309S (5) (7)
2.7	25 Cr-20 Ni	A182-F310	(5) (9)	A351-CH20	(5)
					A240-310S (5) (9)

General notes

- Materials shall not be used beyond the limits specified by the governing code.
- For temperature limitations see footnotes at Table 1.
- Plate materials are listed only for use as blind flanges.

Notes

- Upon prolonged exposure to temperatures above about 800° F (425° C), the carbide phase of carbon steel may be converted to graphite.
- Upon prolonged exposure to temperatures above about 875° F (470° C), the carbide phase of carbon molybdenum steel may be converted to graphite.
- Only killed steel shall be used above 850° F (455° C).
- Use normalized and tempered material only.

Notes

- For temperatures higher than 1000° F (540° C), use only when the carbon content is 0,04 percent or higher.
- For temperatures higher than 800° F (425° C), use only when the carbon content is 0,04 percent or higher.
- For temperatures higher than 1000° F (540° C), use only if the material is heat treated by heating it to a temperature of at least 1900° F (1040° C) and quenching in water or rapidly cooling by other means.
- For service temperatures higher than 850° F (455° C), it is recommended to use killed steel containing not less than 0,10 percent residual silicon.
- For service temperatures of 1050° F (566° C) and higher, assurance must be provided that grain size is not finer than ASTM No. 6
- To be used only for class 150 and class 300 flanges.

Stud & Nuts

Valve piping assembly

WAFFER BUTTERFLY VALVES WK1 & WK3 SERIES

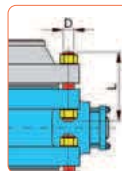
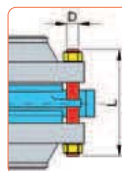
UNI EN 1092-1 - 2007										ANSI B16.5											
Valve size		PN 6			PN 10			PN 16			# 150			# 300							
mm	Inch	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D				
50	2"	4	M12	125	8-M12	4	M16	140	8-M16	4	M16	140	8-M16	4	5/8"	145	8-5/8"	8	5/8"	150	16-5/8"
65	2 1/2"	4	M12	130	8-M12	8	M16	145	16-M16	8	M16	145	16-M16	4	5/8"	155	8-5/8"	8	3/4"	165	16-3/4"
80	3"	4	M16	140	8-M16	8	M16	148	16-M16	8	M16	148	16-M16	4	5/8"	155	8-5/8"	8	3/4"	172	16-3/4"
100	4"	4	M16	140	8-M16	8	M16	150	16-M16	8	M16	150	16-M16	8	5/8"	160	16-5/8"	8	3/4"	180	16-3/4"
125	5"	8	M16	150	16-M16	8	M16	160	16-M16	8	M16	160	16-M16	8	3/4"	165	16-3/4"	8	3/4"	190	16-3/4"
150	6"	8	M16	155	16-M16	8	M20	180	16-M20	8	M20	180	16-M20	8	3/4"	180	16-3/4"	12	3/4"	200	24-3/4"
200	8"	8	M16	165	16-M16	8	M20	190	16-M20	12	M20	190	24-M20	8	3/4"	190	16-3/4"	12	7/8"	230	24-7/8"
250	10"	12	M16	185	24-M16	12	M20	210	24-M20	12	M24	225	24-M24	12	7/8"	220	24-7/8"	16	1"	265	32-1"
300	12"	12	M20	205	24-M20	12	M20	215	24-M20	12	M24	235	24-M24	12	7/8"	230	24-7/8"	16	1 1/8"	290	32-1 1/8"
350	14"	12	M20	215	24-M20	16	M20	225	32-M20	16	M24	250	32-M24	12	1"	252	24-1"	20	1 1/8"	310	40-1 1/8"
400	16"	16	M20	235	32-M20	16	M24	260	32-M24	16	M27	285	32-M27	16	1"	280	32-1"	20	1 1/4"	340	40-1 1/4"
450	18"	16	M20	245	32-M20	20	M24	275	40-M24	20	M27	295	40-M27	16	1 1/8"	310	32-1 1/8"	24	1 1/4"	356	48-1 1/4"
500	20"	20	M20	265	40-M20	20	M24	290	40-M24	20	M30	330	40-M30	20	1 1/8"	330	40-1 1/8"	24	1 1/4"	380	48-1 1/4"
600	24"	20	M24	305	40-M24	20	M27	315	40-M27	20	M33	355	40-M33	20	1 1/4"	365	40-1 1/4"	24	1 1/2"	430	48-1 1/2"

										ASME B16.47 SERIES "A"									
										# 150					# 300				
650	26"	-	-	-	-	-	-	-	-	24	1 1/4"	415	48-1 1/4"	28	1 5/8"	475	56-1 5/8"		
700	28"	24	M24	335	48-M24	24	M27	355	48-M27	24	M33	380	48-M33	28	1 1/4"	445	56-1 1/4"		
750	30"	-	-	-	-	-	-	-	-	28	1 1/4"	448	56-1 1/4"	28	1 3/4"	530	56-1 3/4"		
800	32"	24	M27	355	48-M27	24	M30	385	48-M30	24	M36	410	48-M36	28	1 1/2"	490	56-1 1/2"		
850	34"	-	-	-	-	-	-	-	-	32	1 1/2"	500	64-1 1/2"	28	1 7/8"	575	56-1 7/8"		
900	36"	24	M27	380	48-M27	28	M30	400	56-M30	28	M36	440	56-M36	32	2"	605	64-2"		
1000	40"	28	M27	405	56-M27	28	M33	435	56-M33	28	M39	495	56-M39	36	1 1/2"	550	72-1 1/2"		
1100	44"	-	-	-	-	-	-	-	-	40	1 1/2"	585	80-1 1/2"	32	1 3/4"	660	64-1 3/4"		
1200	48"	32	M30	455	64-M30	32	M36	490	64-M36	32	M45	580	64-M45	44	1 1/2"	615	88-1 1/2"		
1500	60"	-	-	-	-	-	-	-	-	52	1 3/4"	825	104-1 3/4"	32	2 1/4"	930	64-2 1/4"		

FLANGED BUTTERFLY VALVES FK1/FY1 & FK3/FY3 SERIES

UNI EN 1092-1 - 2007										ANSI B16.5											
Valve size		PN 6			PN 10			PN 16			# 150			# 300							
mm	Inch	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D	N°	D	L	NUTS N°-D
50	2"	8	M12	75	16-M12	8	M16	90	16-M16	8	M16	90	16-M16	8	5/8"	95	16-5/8"	16	5/8"	100	32-5/8"
65	2 1/2"	8	M12	75	16-M12	16	M16	90	32-M16	16	M16	90	32-M16	8	5/8"	100	16-5/8"	16	3/4"	115	32-3/4"
80	3"	8	M16	90	16-M16	16	M16	95	32-M16	16	M16	95	32-M16	8	5/8"	105	16-5/8"	16	3/4"	120	32-3/4"
100	4"	8	M16	90	16-M16	16	M16	95	32-M16	16	M16	95	32-M16	16	5/8"	105	32-5/8"	16	3/4"	125	32-3/4"
125	5"	16	M16	90	32-M16	16	M16	100	32-M16	16	M16	100	32-M16	16	3/4"	110	32-3/4"	16	3/4"	132	32-3/4"
150	6"	16	M16	90	32-M16	16	M20	110	32-M20	16	M20	110	32-M20	16	3/4"	115	32-3/4"	24	3/4"	135	48-3/4"
200	8"	16	M16	95	32-M16	16	M20	115	32-M20	24	M20	115	48-M20	16	3/4"	120	32-3/4"	24	7/8"	155	48-7/8"
250	10"	24	M16	100	48-M16	24	M20	115	48-M20	24	M24	135	48-M24	24	7/8"	135	48-7/8"	32	1"	180	64-1"
300	12"	24	M20	110	48-M20	24	M20	115	48-M20	24	M24	140	48-M24	24	7/8"	140	48-7/8"	32	1 1/8"	195	64-1 1/8"
350	14"	24	M20	110	48-M20	32	M20	115	64-M20	32	M24	145	64-M24	24	1"	155	48-1"	40	1 1/8"	200	80-1 1/8"
400	16"	32	M20	115	64-M20	32	M24	135	64-M24	32	M27	160	64-M27	32	1"	160	64-1"	40	1 1/4"	225	80-1 1/4"
450	18"	32	M20	115	64-M20	40	M24	140	80-M24	40	M27	165	80-M27	32	1 1/8"	170	64-1 1/8"	48	1 1/4"	230	96-1 1/4"
500	20"	40	M20	120	80-M20	40	M24	140	80-M24	40	M30	185	80-M30	40	1 1/8"	180	80-1 1/8"	48	1 1/4"	235	96-1 1/4"
600	24"	40	M24	140	80-M24	40	M27	160	80-M27	40	M33	200	80-M33	40	1 1/4"	205	80-1 1/4"	48	1 1/2"	270	96-1 1/2"

												ASME B16.47 SERIES "A"											
												# 150						# 300					
650	26"	-	-	-	-	-	-	-	-	-	-	48	1 1/4"	245	72-1 1/4"	56	1 5/8"	305	112-1 5/8"				
700	28"	48	M24	140	96-M24	48	M27	170	96-M27	48	M33	200	96-M33	56	1 1/4"	250	112-1 1/4"	56	1 5/8"	320	112-1 5/8"		
750	30"	-	-	-	-	-	-	-	-	-	-	56	1 1/4"	260	112-1 1/4"	56	1 3/4"	335	112-1 3/4"				
800	32"	48	M27	160	96-M27	48	M30	190	96-M30	48	M36	210	96-M36	56	1 1/2"	290	112-1 1/2"	56	1 7/8"	365	112-1 7/8"		
850	34"	-	-	-	-	-	-	-	-	-	-	64	1 1/2"	295	128-1 1/2"	56	1 7/8"	370	112-1 7/8"				
900	36"	48	M27	165	96-M27	56	M30	190	112-M30	56	M36	225	112-M36	64	1 1/2"	310	128-1 1/2"	64	2"	385	128-1"		
1000	40"	56	M27	180	112-M27	56	M33	210	112-M33	56	M39	250	112-M39	72	1 1/2"	315	144-1 1/2"	64	1 5/8"	380	128-1 5/8"		
1100	44"	-	-	-	-	-	-	-	-	-	-	80	1 1/2"	335	160-1 1/2"	64	1 3/4"	400	128-1 3/4"				
1200	48"	64	M30	200	128-M30	64	M36	240	128-M36	64	M45	310	128-M45	88	1 1/2"	350	176-1 1/2"	64	1 7/8"	440	128-1 7/8"		
1500	60"	-	-	-	-	-	-	-	-	-	-	104	1 3/4"	420	208-1 3/4"	64	2 1/4"	530	128-2 1/4"				



Valves operation

Togheter with valves, ITV is able to supply a complete range of operating systems and devices:

Manual lever

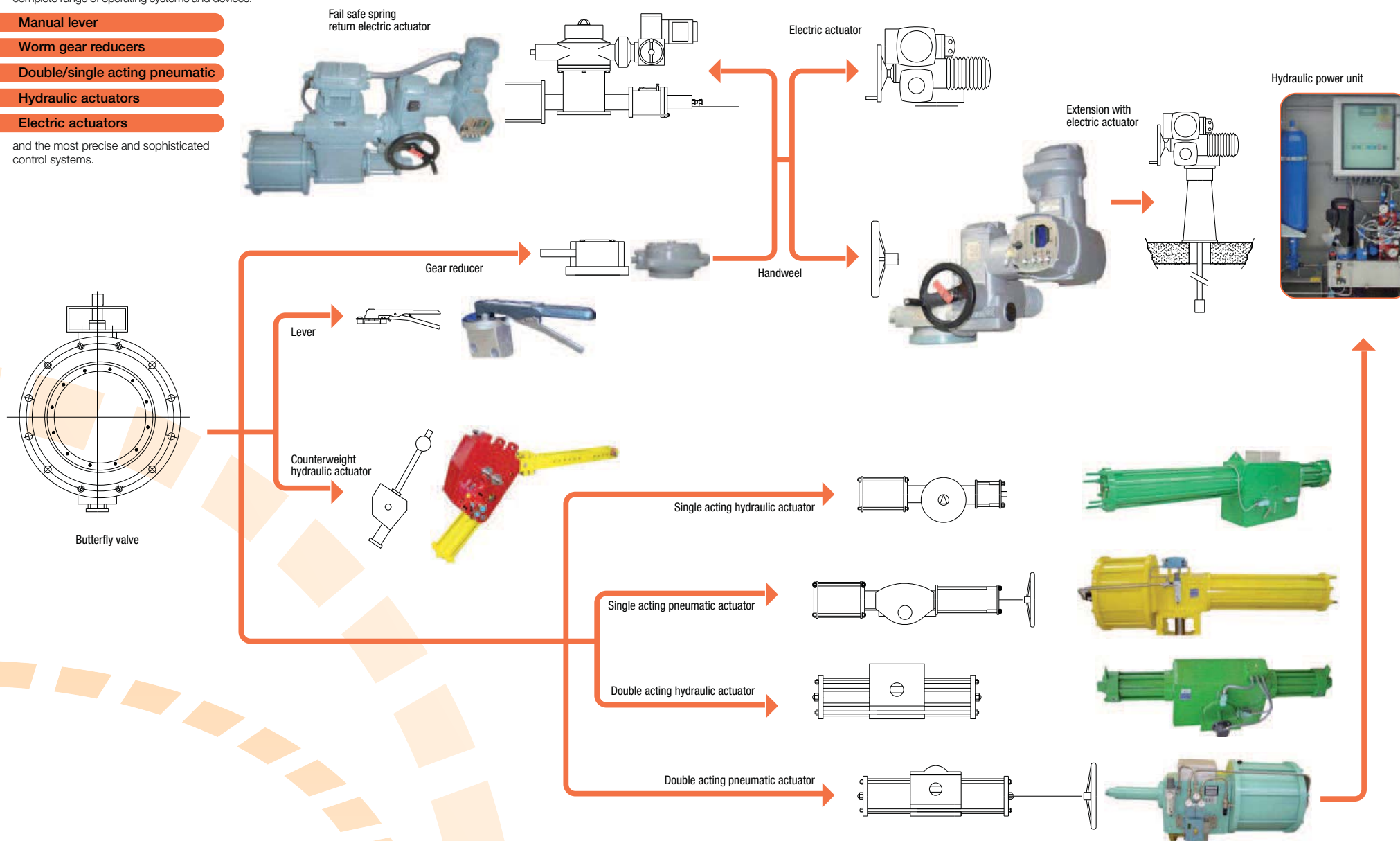
Worm gear reducers

Double/single acting pneumatic

Hydraulic actuators

Electric actuators

and the most precise and sophisticated control systems.



Instructions for storage and conservation

Storage and conservation of valves

The packaging provided by ITALVALV at the time of shipment of valves-actuator, hydraulic power unit, components and spare parts (when required) is suitable for short-term storage (i.e. until 6 month approx) into an "indoor unheated environment". All packages should be placed on shelters or pallets in order to ensure good ventilation.

If the packaging has been opened or broken open, the content shall be checked; if there appears to be any damage to the component wrapping, remove it, visually inspect the component, record and repair eventual damages and, finally, re-pack the component as the original package.

If the components will be stored in a place having high dampness, salty fogs or other atmosphere agents, it is necessary to cover the material by pressurization of the package obtained by dry nitrogen pressurization systems. For long-term storage, all parts should be stored in a fireproof, waterproof and ventilated building. The floor must be protected and correctly drained.

In case of a longer time storage is foreseen before installation, it is advisable to proceed as following indicated.

Valve-actuator assembly

- Remove the wrapping

- Remove the protection plugs located on the body inlet and outlet

- Apply a layer of lubricant grease on the internal parts of the valve as seal seat and seal seat retainer (see valve instruction manual for type of lubricant suggested)

- Re-assemble the protector plugs on the valve body ends and restore the wrapping

- Do not remove the valve ports protectors plugs until the valve is installed

Periodical visual inspections must be performed to check and restore, if necessary, the valve-assembly integrity and protection conditions.

Records for inspections and results/actions are suggested.

The frequency of inspections should be on a monthly base; however the Customer may choose more frequent inspections depending on actual storage conditions and environment.

About any other information on electrical and pneumatic components suggested checks, please refer to the pertaining Instructions and Maintenance Manual.

Storage of spare parts

The spare parts have to be stored in waterproof and ventilated building, using the wrapping and packaging supplied by ITALVALV at the time of shipping; parts should be placed on shelters or pallets in order to ensure good ventilation. In particular the gaskets and the "o" rings and other similar elastomeric material items must be stored in a dry, fresh and dark place (i.e. protected from the incidence of the solar radiation and of heat source) at the max. environment temperature of 40 °C.

Storage of electric/electronic equipment

Regarding the storage and preservation of electrical and electronic components, please refer to the specific manuals for equipment supplied.

General safety prescriptions

Safety indications

Please read these safety warnings, cautions, and instructions carefully before using the product.

These instructions cannot cover every installation and situation. No person may install, operate, or maintain this product without being fully trained and qualified in valve, actuator and accessory installation, operation and maintenance, and heaving carefully reading and understanding the contents of this instruction manual.

This product was intended for a specific range of service conditions- pressure, pressure drop, process and ambient temperature, temperature variations, process fluid, and possibly other specifications.

Do not expose the product to service conditions or variables other than those for which the product was designed and manufactured!

• To avoid personal injury, always wear protective gloves, clothing, and eyewear when performing any installation operations.

• If hoisting the valve, use a nylon sling to protect the surfaces. Carefully position the sling to prevent damage to the actuator tubing and any accessories. Also, take care to prevent people from being injured in case the hoist or rigging might slip. Be sure to use adequately sized hoists and chains or slings to handle the valve.

Maintenance checks and schedule

All products must be inspected periodically and maintained as needed. The schedule for inspection can only be determined based on the severity of your service conditions. Your installation might also be subject to inspection schedules set by applicable governmental codes and regulations, industry standards, company standards, or plant standards.

• Personal injury or equipment damage caused by sudden release of pressure or bursting of parts may result if the valve assembly is installed where service conditions could exceed the limits given in the applicable product literature, the limits on the appropriate nameplates, or the mating pipe flange rating. Use pressure-relieving devices as required by government or relevant industry codes and good engineering practices.

• Check with your process or safety engineer for any additional measures that must be taken to protect against process media. Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

• Always wear protective gloves, clothing, and eyewear

• Always read the component instructions manual

Installation / instructions

of Butterfly valves

Butterfly Valves series

WK1

WK1/M

WLK1

WLK1/M

Installation (Wafer type)

ITALVALV valves WK1 - WLK1 - WK1/M - WLK1/M series are fit for installation between the following flanges: UNI PN6 - PN10 - PN16 - ANSI 150.

In order to obtain a correct operation of the valve you are recommended of what follows:

- the pipe should be cleaned before inserting the valve.
- the valve should be removed from its packing only at installation time.
- the inside of the body valve and in particular the seal seat should be checked for perfect cleanliness.

Valve usually require no lubrication, neither during installation nor during their use. Specialized personnel is not required for their installation but it's necessary to allow some recommendations such as:

- ITALVALV valves may be horizontally or vertically installed, or in any other position up to 24" size; for larger diameters, installation on a horizontal axis is recommended.
- before inserting the valve, flanges should be parallel.
- correct centering of the valve as to the pipe is guaranteed by the holes existing on the body valve.
- check the correct valve locking in order to avoid damages to the disc seal surface and to the seal seat.
- the valve should be inserted keeping in mind the direction of the flow indicated on the body valve; fitting bolts should be assembled in correspondence with the centering holes of the valve, the gaskets must be perfectly aligned and then the valve can be fixed in place, but without blocking tight.
- the valve should be opened and closed a few times to make sure that nothing prevents rotation.
- assemble all the bolts locking them tightly working in cross.

Butterfly Valves series

FK1

FK1/M

FK1/LM

Installation (Flanged type)

ITALVALV valves FK3 - FK3/M - FK6 - FK6/M series are fit for installation between the following flanges: UNI PN25 - PN40 - PN64 - ANSI 300 - ANSI 600.

In order to obtain a correct operation of the valve you are recommended of what follows:

- the pipe should be cleaned before inserting the valve.
- the valve should be removed from its packing only at installation time.
- the inside of the body valve and in particular the seal seat should be checked for perfect cleanliness.

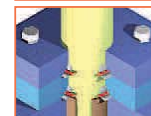
Valve usually require no lubrication, neither during installation nor during their use. Specialized personnel is not required for their installation but it's necessary to allow some recommendations such as:

- ITALVALV valves may be horizontally or vertically installed, or in any other position up to 24" size; for larger diameters, installation on a horizontal axis is recommended.
- before inserting the valve, flanges should be parallel.
- correct centering of the valve as to the pipe is guaranteed by the holes existing on the flanges.
- the valve should be inserted keeping in mind the direction of the flow indicated on the body valve
- Fitting bolts should be assembled in correspondence with the centering holes of the valve, the gaskets must be perfectly aligned and then the valve can be fixed in place, but without blocking tight.
- the valve should be opened and closed a few times to make sure that nothing prevents rotation.
- check the correct valve locking in order to avoid damages to the disc seal surface and to the seal seat.
- Assemble all the bolts locking them tightly working in cross.



CLASS 150 STANDARD PACKING

Stem seal composed by a "U" section ring in PTFE or in filled PTFE and by an external rubber ring suitable to grant the correct load to the gasket, without the need periodical registration (self-adjustable).



CLASS 300 - 900 PACKING

Stem seal composed by one or more than one section "L" rings in PTFE or in filled PTFE and by external rubber rings suitable to grant the correct load to the gasket, without the need of periodical registrations (self-adjustable).



CLASS 150 - 1500 STANDARD PACKING FOR LOW AND HIGH TEMPERATURE

Stem seal composed by a series of PTFE (for low temperature) or graphite (graphite type high temperature) over-lapped and pressed by a series of springs suitable to grant the correct work load of seal screw, without the need of periodical registration (self-adjustable). Moreover a packing seal gasket in PTFE or graphoil is assembled between the packing seal and the body valve.

Maintenance instructions

of Butterfly valves

ITALVALV valves do not require particular maintenance even after working in unfavourable conditions. Anyway the following operation are necessary:

- if the valve is already installed but not operative, please carry out some open/close manoeuvres.
- if the valve is installed and operative, please periodically clean some valve parts as seal ring, shaft seal and any possible coupling clearance valve-actuator.

1. Replacement of stem seal

This operation can be carried out without removing the valve from the pipe. After the hand, the gear or the actuator installed has been removed, it is necessary to remove the packing gland unscrewing the relevant screws. Then removing the stem seal gasket check that the stem has been damaged in correspondence with the seal. After cleaning carefully the stem and the seat ring on the packing gland, it occurs to put a new stem seal.

Reassemble the packing gland and the screws in reverse order.

2. Replacement of seal seat

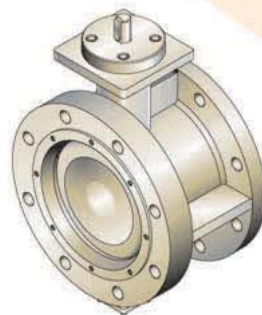
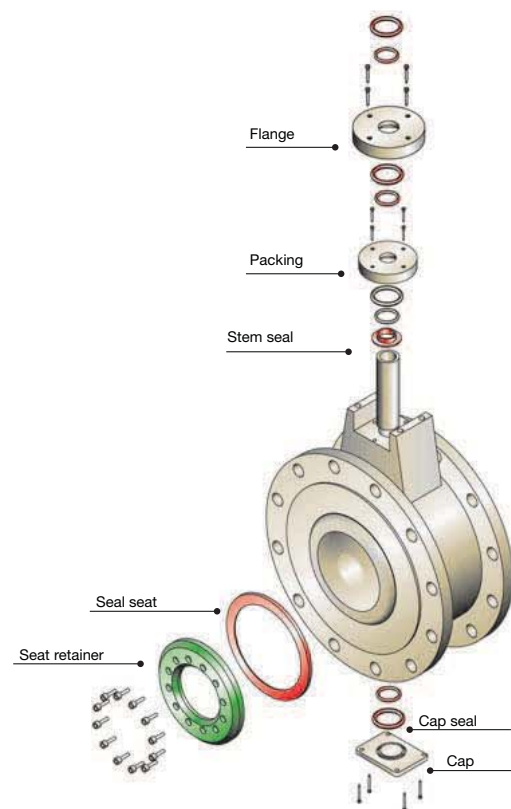
Remove the valve from the pipe, after checking that the disc is in a "close" position, in order to avoid damages; remove after having the screws fixing the seat ring, and take out the ring itself. After move the valve to the "open" position and remove the seal ring from its place. Clean the disc, the inside of the body, the seat retaining and the seat carefully. The place the new gasket and reassemble the valve following the above instructions in reverse order.

3. Replacement of the seal cap

This operation can be carried out without removing the valve from the pipe. Please, move the cap unscrewing the relevant screws. Moving the seal cap gasket that there are no damages or corrosion in the seal; clean the seal cap housing carefully. After having insert the new spare part gasket, reassemble in reverse order.

Butterfly Valves Series

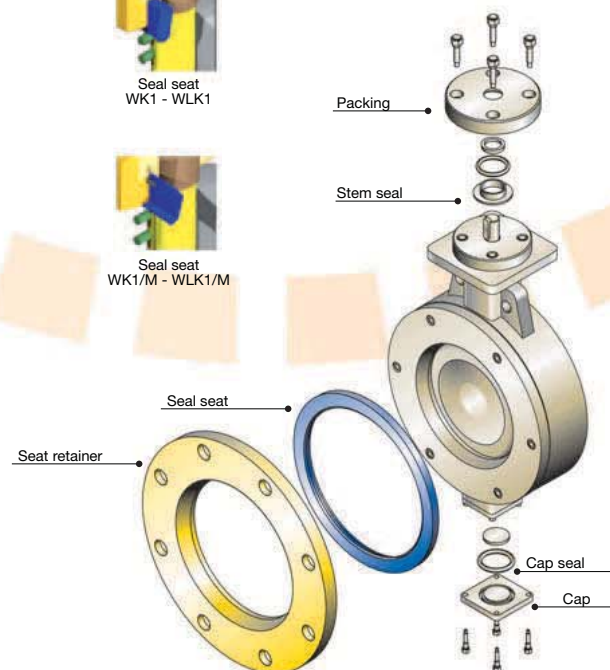
FK1 - WK1/IM



Valve Series FK1 - FK1M

Butterfly Valves Series

WK1 - WK1/FK1 - WK1/IM
WLK1 - WLK1/IM - WFK1 - WFK1/3



Valves Series WK1 - WK1M



Valve Series WLK1 - WLK1M

Failure resolutions

of Butterfly valves

Packing leakages

Turned screws or fixing stud-bolts out:	tighten again screws or fixing sut-bolts.
Old and/or damaged stem seal gasket:	stem seal gasket replacement (in spring packings replace the same springs).
Stem damaged in the seat:	replace the stem.

Cap leakages:

Turned screws or fixing stud-bolts out:	tighten again screws or fixing sut-bolts.
Old and/or damaged stem seal gasket:	stem seal gasket replacement (in spring packings replace the same springs).

The valve leaks in close position

Butterfly stays in open position for some degrees:	set again mechanical limit-switches of the actuator.
Old and/or damaged seal seat:	replace the seal seat.

When the valve is locked

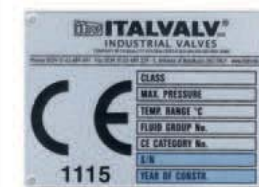
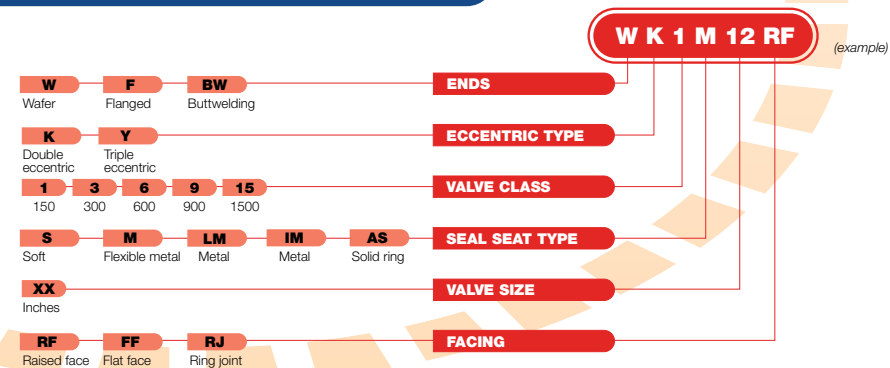
The actuators does not work:	verify the presence of feed and/or signal drive.
When the actuator is damaged:	refer to "Use and Maintenance Actuator Instructions".
The stem does not wheel because it is locked by dirtiness and/or corrosion inside bushings:	revise cpmpletely the valve replacing bushings and stems (if damaged).

Remarks

The above mentioned instructions must be severely respected; they allow a peak efficiency of the valve. ITALVALV disclaims all responsibility in case of improper assembly and/or storage of materials, or if the valve is not used according to its class prscriptions.

ITALVALV RESERVES THE RIGHT TO CHANGE THE CONTENT OF THIS CATALOG WITHOUT NOTICE.

Valves identification code



The Customer's request of spare parts should always contains the following minimum informations detectable from the identification plate:

Valve
Size
Series
S/N
Comm



MAIN TARGET
CUSTOMER'S SATISFACTION



ITALVALV



**ITALVALV'S
CERTIFICATIONS**



Butterfly Valves

Edited 2012

RENATO VACOTTI
grafica & web design

Series

W

WK

WLK

WFK

FK

FY

CFK

BW



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