ABO valve

ABsOlute flow control

DN 50 - DN 500 (2“ - 20“)
- 100°C + 500°C
// Oil & Gas
// Power Generation
// Petrochemical Industry

CE

DOUBLE OFFSET BUTTERFLY VALVES
SERIES 2E-5

WWW.ABOVALVE.COM

GENERAL INFORMATION - SERIES 2E-5

GENERAL CHARACTERISTICS

- DN 50 – DN 500 (2“ - 20“)
- Double offset design
- Shut-off and regulating device
- Splitted shaft
- High opening & closing performance
- More strength with less weight
- Easy repair & maintenance
- Easy installation & mounting
- Vacuum max 0,01 bar (R-PTFE version)
- Top flange acc. to ISO 5211 allows connection with various kinds of actuators (electric, pneumatic, hydraulic etc.)

APPLICATIONS

High performance butterfly valves Series 2E-5 are designed to work in demanding conditions in industries such as:

- Oil & Gas
- Power Generation
- District Heating
- Heavy Industry
- Steam and Vacuum Services
- Potable Water
- Chemistry & Petrochemistry
- Hydrocarbon Processing
- Airport Refueling
- Purified Gas

STANDARDS

LEAK TEST - PTFE & FIRE SAFE VERSION:
- EN 12266-1, CLASS A*
- ISO 5208, CLASS A
- API 598, TAB.5

LEAK TEST - VERSION METAL-METAL:
- DN 50-125: EN 12266-1, CLASS C
- ISO 5208, CLASS A
- API 598, TAB.5

FACE TO FACE ACC.:
- EN 558, SERIES 20
- ISO 5752, SERIES 20
- API 609, TAB.3

ATEX OPTION:
- VERSION ACCORDING TO ATEX 94/9/EC
- ZONE 1 AND 21 – GR II, CAT. 2 G/D

TOP FLANGE:
- EN ISO 5211

MARKING
- EN19

CONNECTION BETWEEN FLANGES:
- EN 1092-1, 2
- DIN 2631-35
- ASME B16.5

WORKING STANDARD:
- EN 593 + A1

* Standard tightness from not-preferential side is 10 bar. State your requirement on higher pressure in your inquiry.

TYPE DESIGNATION

2E-5 5 9 0 B 100

DN

Version of body
B = wafer
T = lug

Material of disc
7 - Stainless steel 1.4539 (Uranus B6)
5 - Carbon steel 1.0446, 1.0619, 1.0625 (A216 WCB)
1 - Aluminium bronze 2.0966
0 - Stainless steel 1.4404 (AISI 316L), 1.4401 (AISI 316), 1.4408 (CF8M) / Stainless steel 1.4021 (AISI 420)

Material of seat
9 – R-PTFE reinforced by 25% glass fibre
8 - FIRE SAFE (R-PTFE + INCONEL)
7 - 2.4668 INCONEL 718 / Stainless steel 1.4401 (AISI 316) + graphite

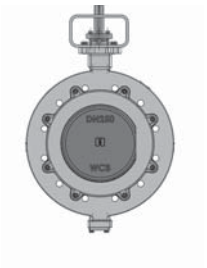
Material of body
7 - Stainless steel 1.4539 (Uranus B6)
6 - Low carbon content steel 1.1156 (A352 LCC)
5 - Carbon steel 1.0625 (A216 WCB)
4 - Stainless steel 1.4408 (A351 CF8M)
1 – Aluminium bronze 2.0966

Series name
Series 2E-5

Models

Wafer type (B)

Lug type (T)



PRODUCT QUALITY AND CONTROL

- ABO production facilities are certified in accordance with ISO 9001 quality system
- Test procedures are established according to: EN 12266-1, ISO 5208, API 598, ANSI/FCI 70-2
- Manufacture according to the requirements of the European Directive 97/23/CE – Equipment under pressure (Category III, modul B)
- All ABO valves pass pressure tests to 110% of rated pressure to ensure bubble tight shutoff
- All actuators are calibrated and cycle tested before shipment
- Material Traceability Rule – Certification is provided for all supplied valves as per customer’s request
- Positive Material Identification – All materials are subjected to PMI testing in order to verify Material Traceability Certificate
- Certificates – e.g.: EC certificate, TA Luft, ABS, etc., complete list of certificates can be found on www.abovalve.com

DESIGN BENEFITS

1) SHAFT DESIGN

a) 2-PIECED SHAFT

Splitted shaft design ensures high Kv (Cv) value and lower pressure drop. ABO splitted shaft system also offers bigger cross section area comparing to single-pieced shaft versions. Taper pins are precision fit into reamed holes.

b) SELF-LOADED STUFFING BOX AS OPTION

Perfect tightness of shaft, no up-movement of shaft as well as reduced torque for low pressure applications is guaranteed by self-loaded stuffing box in the body neck.

c) GRAPHITE PACKING

As standard, a graphite packing is installed around the upper shaft providing additional safety in case of medium overheating.

d) ADJUSTABLE SHAFT PACKING

ABO shaft packing system allows for easy access to adjusting the hex head nuts without requiring removal of the actuator.

e) BLOW-OUT PROOF STEM

A retaining ring is installed between the machined shaft groove and gland retainer step.

f) SHAFT BEARINGS

Top and bottom bearing consisting of TP Igus fabric liner providing for excellent resistance to distortion, high temperatures and mechanical loading forces.

g) EXTENDED NECK

Extended neck ensures pipe insulation.

2) INTERNATIONAL STANDARD COMPATIBILITY

Top flange according to Standard ISO 5211 enables direct mounting of manual operators and power actuators.

3) DISC DESIGN

Disc has been engineered to maximize flow and minimize resistance providing a high Kv/Cv. Stainless steel material selection is standard.

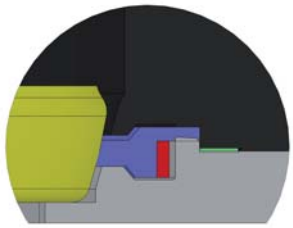
4) SEAT DESIGN

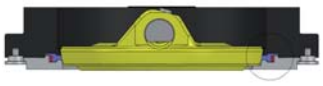
a) R-PTFE VERSION

Perfectly profiled seat ring ensures total tightness and also high number of cycles. PTFE seat is reinforced by 25% glass fibre which decreases wear and increases temperature resistance of the valve. The seat does not rely on any secondary support components to hold it in place which allows for longer service life with less maintenance required.

b) OVER-TRAVEL STOP

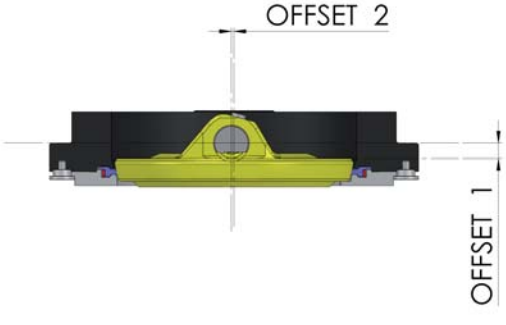
Over-travel stop is designed to prevent over-travel of the disc and minimize possible seat damage, thus provide for extended service life of the seat.





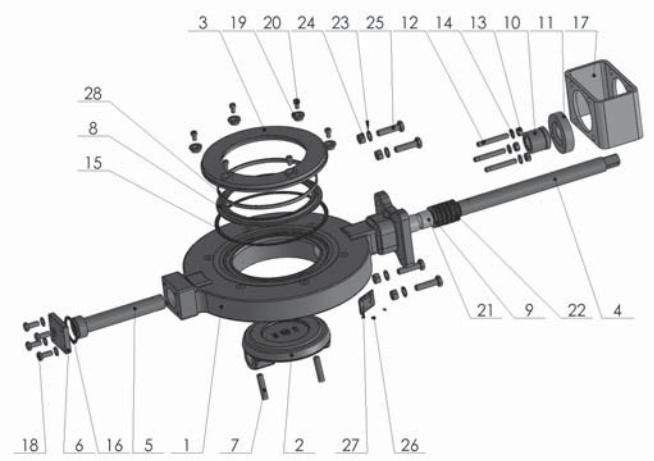
5) DOUBLE OFFSET DESIGN

Double offset design ensures safe function and tightness even in case of changing temperatures or in case of pressure peak. ABO double offset design reduces seat wear and secures zero leakage shut off throughout the full pressure range. To allow displacement of the seat, the shaft is offset from the center line of the disc seat and body seal (offset one), and the center line of the bore (offset two). The offset disc produces a cam–like action, pulling the disc from the seat resulting in friction during the first 10 degrees of opening and final 10 degrees of closing. While in open position, the disc is not in contact with the sealing, thus seat service life is increased and operating torques are reduced. As the valve closes, the cam–like action transforms the revolving motion of the disc to a linear one, and effectively pushes the disc into the valve seat. ABO double offset design further prevents undesirable build-up of material from slurries and suspended solids, via “wiping” action of the offset disc against the seat.

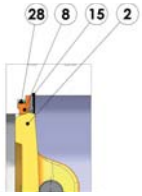


MATERIALS & TECHNICAL INFORMATION

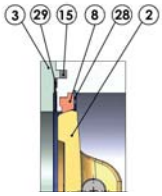
DRAWING (FOR PTFE VERSION) & MATERIALS



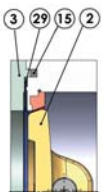
Detail of PTFE seat



Detail of Fire safe seat



Detail of Metal-Metal seat



Pos.	Name	Material
1	Body	4 - Stainless steel 1.4408 (CF8M) 5 - Carbon steel 1.0625 (A216 WCB) 6 - Low carbon content steel 1.1156 (A352 LCC)
2	Disc	DN 50 - DN 125: Stainless steel 1.4404 (AISI 316L) DN 150 - DN300: Stainless steel 1.4021 (AISI 420) / 1.4401 (AISI 316) DN 350 - DN 500: Stainless steel 1.4021 (AISI 420) / 1.4408 (CF8M)
3	Ring flange	Stainless steel 1.0553 (A441) / 1.4404 (AISI 316L)
4	Shaft	54XX, 56XX - Stainless steel 1.4462 55XX - Stainless steel 1.4021 (AISI 420)
5	Pivot	55XX - Stainless steel 1.4021 (AISI 420) 54XX - DN 50 - DN 125: Stainless steel 1.4404 (AISI 316L), DN 150 - DN 500: Stainless steel 1.4462 56XX - DN 50 - DN 125: Stainless steel 1.4404 (AISI 316L), DN 150 - 500: Stainless steel 1.4462
6	Cover	DN 50 - 125: - DN 150 - DN 500: Stainless steel 1.0553 (A441) / 1.4401 (AISI 316)
7	Pin	DN 50 - 125: - 55XX, 56XX - DN 150 - DN 500: Stainless steel 1.4021 (AISI 420) 54XX - DN 150 - DN 500: Stainless steel 1.4462
8	Seat	XX90 – R-PTFE reinforced by 25% glass fibre PTFE XX80 – FIRE SAFE (R-PTFE + INCONEL) XX70 - DN 50 - DN 125: M/M: 2.4668 INCONEL 718, DN 150 - DN 500: M/M: Stainless steel 1.4401 (AISI 316) + graphite
9	Lock washer	Stainless steel 1.4404 (AISI 316L)
10	Packing gland	DN 50 - 125: - 55XX, 54XX - DN 150 - 500: Stainless steel 1.4401 (AISI 316) 56XX - DN 150-300: Stainless steel 1.4401 (AISI 316), DN 350-500: Stainless steel 1.4404 (AISI 316L)

Pos.	Name	Material
11	Gland flange	DN 50 - DN 125: 55XX, 54XX: Stainless steel 1.4404 (AISI 316L), 56XX: 1.4301 (AISI 304) DN 150 - DN 300: Stainless steel 1.4301 (AISI 304) DN 350 - DN 500: 55XX, 54XX - Stianless stell 1.4301 (AISI 304), 56XX: 1.4301 (AISI 304)
12	Stud	Stainless steel A4
13	Hex nut	Stainless steel A4
14	Washer	Stainless steel A4
15	Flange seal	Graphite min 98%
16	Cover seal	Graphite
17	Bracket	Stainless steel 1.0553 (A441)
18	Bolt	Stainless steel A4
19	Retaining sleeve	Stainless steel 1.4401 (AISI 316)
20	Screw	Stainless steel A4
21	Sleeve	XX90 - TP IGUS XX70, XX80 - Stainless steel 1.4404 (AISI 316L) + Ni
22	Packing	Graphite min 98%
23	Lock washer	Stainless steel A4
24	Hex nut	Stainless steel A4
25	Bolt	Stainless steel A4
26	Rivet	Stainless steel A4
27	Name plate	Graphite min. 98%
28	Bandage	Stainless steel 1.4404 (AISI 316L) - for R-PTFE and Fire Safe version only
29	Seat	Inconel - for Metal and Fire Safe version only

Execution in other material types can be provided upon request. Choice of the seat and disc materials for various media will be recommended upon specific enquiry. Max. temperatures for each material of seat are accepted only for a specific medium and short time exposure.

WORKING CONDITIONS

- Maximum working pressure: 50 bar
- Temperature range (depending on material execution) – max: - 100°C + 500 °C (- 148 °F + 932 °F)
- Standard tightness from not-preferential side is 10 bar

PAINTING OPTIONS

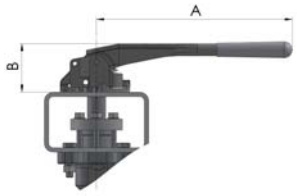
- High temperature resistant painting RAL 9005 (up to 600 °C): 50-60 µm
- Based on customer's request, higher degree of painting can be provided

ACTUATION & TORQUES & TECHNICAL INFORMATION

ACTUATION POSSIBILITIES

All ABO handles, manual gear operators, pneumatic and electric actuators can be mounted directly to ABO butterfly valves, which ensures compatibility between the actuator and the valve. This allows for simple installation in the field, minimizes possible misalignment and decreases overall height.

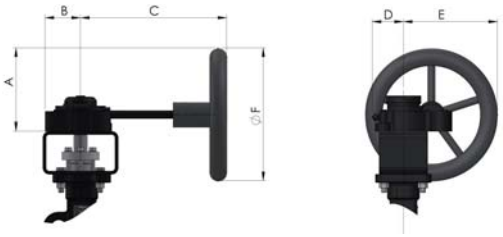
MANUAL ACTUATION: HANDLEVER



DN	50-100	125	150-200
A	270	270	362
B	75	80	90
Weight	1,26	1,26	1,4

Dimensions mentioned in mm, weight in kg.

MANUAL GEARBOX WITH HANDWHEEL



DN	150	200	250	300	350	400	500
A	155	213	213	213	275	275	275
B	66	83	83	83	99	126	157,5
C	272	345	345	345	285	337	362
D	59	70	70	70	86	114	145
E	177	242	242	242	315	348	370
F	250	350	350	350	450	450	450
Weight	3,7	6,6	6,6	6,6	14,5	27,2	42

Dimensions mentioned in mm, weight in kg. Weight is approximate, and is dependent on the customers' selection of gearbox.

ACTUATORS

- PNEUMATIC ACTUATORS - ABO pneumatic actuators Series 95 are rack and pinion, opposed-piston actuators available in two versions: single acting & double acting
- ELECTRIC ACTUATORS - ABO Series 97 electric actuators are designated for quarter turn operating application. Electric actuators of 24V, 230V and 400V can be installed on ABO butterfly valves.

OPERATING TORQUES UPON WORKING PRESSURE (NM)*

1) PTFE SEAT

DN	50	65	80	100	125	150	200	250	300	350	400	500
16 bar	19	35	50	77	90	165	280	567	795	920	1 215	3 551
25 bar	22	45	58	79	106	260	450	732	1 020	1 150	2 511	4 985
40 bar	32	53	62	90	131	310	485	-	-	-	-	-
50 bar	35	60	65	105	-	-	-	-	-	-	-	-

Operating torques are mentioned without safety reserve.

2) METAL / METAL SEAT - FIRE SAFE SEAT

DN	50	65	80	100	125
16 bar	50	70	100	150	220
25 bar	50	70	100	150	220

Operating torques are mentioned without safety reserve.

INSTALLATION BETWEEN FLANGES (DN 50-400) TYPE B

DN	50	65	80	100	125	150	200	250	300	350	400	500
INCH	2“	2“ 1/2	3“	4“	5“	6“	8“	10“	12“	14“	16“	20“
ISO PN 6	•	•		•	•	•	•	•	•	•	•	x
ISO PN 10										•	•	x
ISO PN 16												
ISO PN 25												
ISO PN 40												
ANSI 150												
ANSI 300										x	x	
JIS 10K			•		•		•		•	•	•	
JIS 16K		•	•			•						

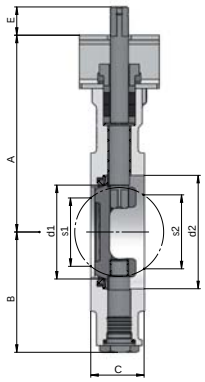
standard

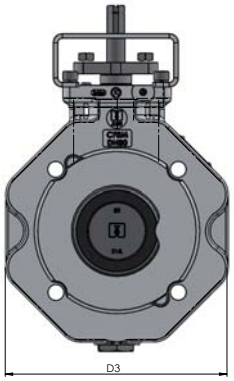
• suitable with additional machining

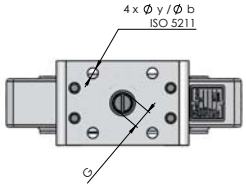
x not suitable

For lug type (T) installation, please specify in the inquiry.

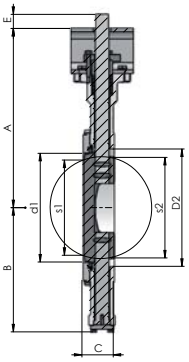
DIMENSIONS DN 50 - 500 (2“ - 20“), PN 10/16

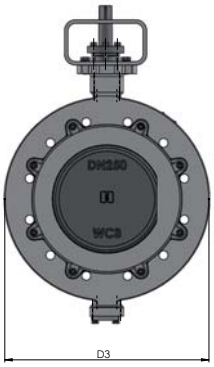


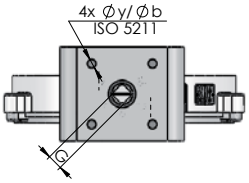




DN	d1	d2	A	B	C	D1	D3	S1	S2	E	□G	ISO 5211	y	b	WAFER – kg	LUG – kg
50	49	68	163	93	44	104	154	12	37	25	14	F07	9	70	5,1	7,3
65	65	82	170	100	47	123	178	39	55	25	14	F07	9	70	5,8	9
80	81	100	174	106	47	140	196	65	72	25	14	F07	9	70	6,8	10,1
100	100	123	206	123	53	163	225	85	91	25	14	F07	9	70	8,5	12,2
125	123	146	215	137	57	193	260	113	110	25	14	F07	9	70	11,8	16,5







DN	d1	d2	A	B	C	D1	D3	S1	S2	E	□G	ISO 5211	y	b	WAFER – kg	LUG – kg
150	146	155	307	214	57	252	318	136	143	25	17	F10	11	102	21	28
200	194	204	339	246	61	307	381	185	193	25	17	F10	11	102	29	41
250	240	259	395	275	69	349	450	224	236	31	22	F12	13	125	46	70
300	287	309	460	313	79	393	521	270	284	31	27	F14	17	140	67	105
350	313	342	508	355	92	448	577	300	308	45	27	F16	22	165	91	140
400	364	405	556	402	103	542	657	342	360	58	36	F16	22	165	132	211
500	500	450,6	625	431,5	127	593	-	427	438	47	46	F25	17	254	240,5	-

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30. 11. 2015

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