

# BUTTERFLY VALVE

## AL 45M-44

### Four offset design

### Description

AL 45M-44 is a butterfly valve for demanding conditions, with very high pressures and temperatures. Four offset butterfly valve having either a wafer or lug type body, double flange type body or butt-welded ends type body for connection to flanges/piping of adjacent pipework components.

The valve is designed and made as a pressure equipment in conformity with requirements of the Pressure Equipment Directive 97/23/EC, module B+D. The valves is intended to be used as a shut off or control (regulating) designed according to EN 593.

The valves is designed for full bidirectional tightness with preferential flow of the fluid for:

- Shut off mode of operation, fluid pressure from the side of the shaft.
- Control mode of operation, opposite direction to that for shut off mode.

The shaft is made in anti-blow out design according to EN 736-3. The four offset design eliminate any friction of the seating surface in service, which results in long service and long life of the valve and fulfilled characteristics of a tight closure.

The disc seal is replaceable. The seat in the body is replaceable only to special request.

Location of the valve at the end of the pipeline and dismantling of the pipeline system downstream of the valve are safe provided that:

- The valve is designed to be used in the shut off mode of operation.
- P20 test on special request, see section Pressure tests.

Standard coating Termo black on base the silicone, min. thickness 50 microns. Durability up to 400°C.

### Operation

The valve is designed for operation with EN ISO 5211 attachment: Manual gearbox, electric actuator, pneumatic actuator, etc. All upon request of customer.

### Applications

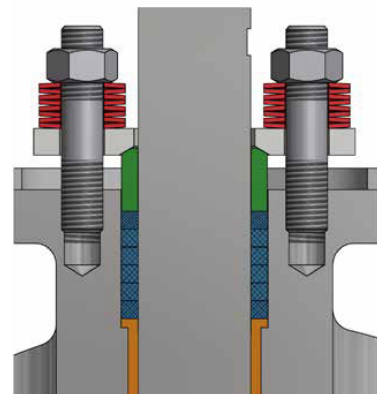
The range of application depends directly on materials, properties and temperature of the fluid. The most frequent applications:

- Steam and hot water systems.
- Flue gas systems.
- Chemical and petrochemical industries.
- Vacuum systems.



### Stem seal

#### STANDARD LIVE LOADING



Stuffing box for long periods of time without maintenance

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### Valve materials

Material selection depends on valve application, the most common materials are specified in section Materials used for main valve parts. Other materials upon request.

### Pressure tests

All pressure tests are provided according to EN 12266-1 and EN12266-2.

EN12266-1 include the tests P10, P11 and P12.

EN12266-2 include the tests F20, P20 (upon request).

Other pressure tests upon request.

### Connection

The valves are made in size DN 65-2500.

#### Connection dimensions of flanges as required:

- EN 1092-1 ... PN 2,5 up to 160
- EN1759-1 ... Class 150 up to 900
- EN12627 ... Butt-welding ends, PS up to 100 bar
- Other upon request

#### Face-to-face dimension:

According to EN558, DIN, ASME/ANSI, BS or others upon request.

### Working parameters

#### Fluid temperature:

TS -200°C up to 830°C, according to material used.

#### Nominal pressure:

PN 2,5 up to PN 160.

#### Working pressure:

PS -1 up to 155 bar.

#### Differential press. At closing:

$\Delta p = PS$ , unless otherwise indicated.

#### Velocity of flow:

According to EN593, Table 1.

#### Vacuum:

Standard design 0,2 bar abs., other upon request.

#### Seat leakage rate:

Metal-to-metal contact according to EN12266-1, leakage rate A for liquids, for gases upon request.

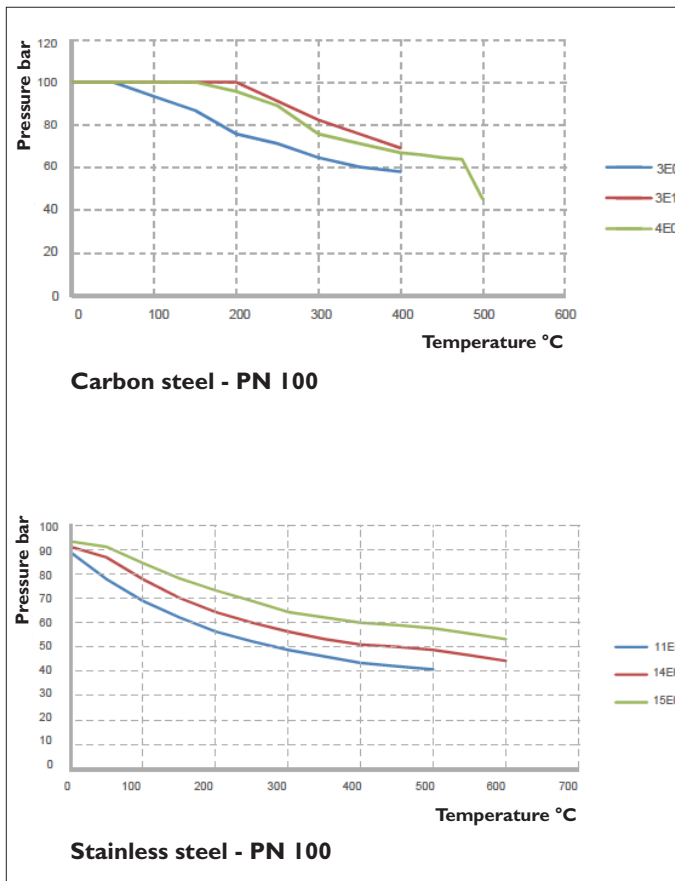
Metal-to-PTFE contact according to EN12266-1. Leakage rate A for both liquids and gases.

Metal-to-metal contact according to EN1349, leakage rate V for gases. Rate VI upon request.

### Kv-value

DN	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000
Kv	38	115	251	418	652	1425	2451	3718	5120	7290	9986	12090	19251	23078	33341	43214	51396

### Pressure / Temperature



### Torque

DN	100	150	200	300
Nm	500	950	1900	4200

Refers to torque without safety factor.

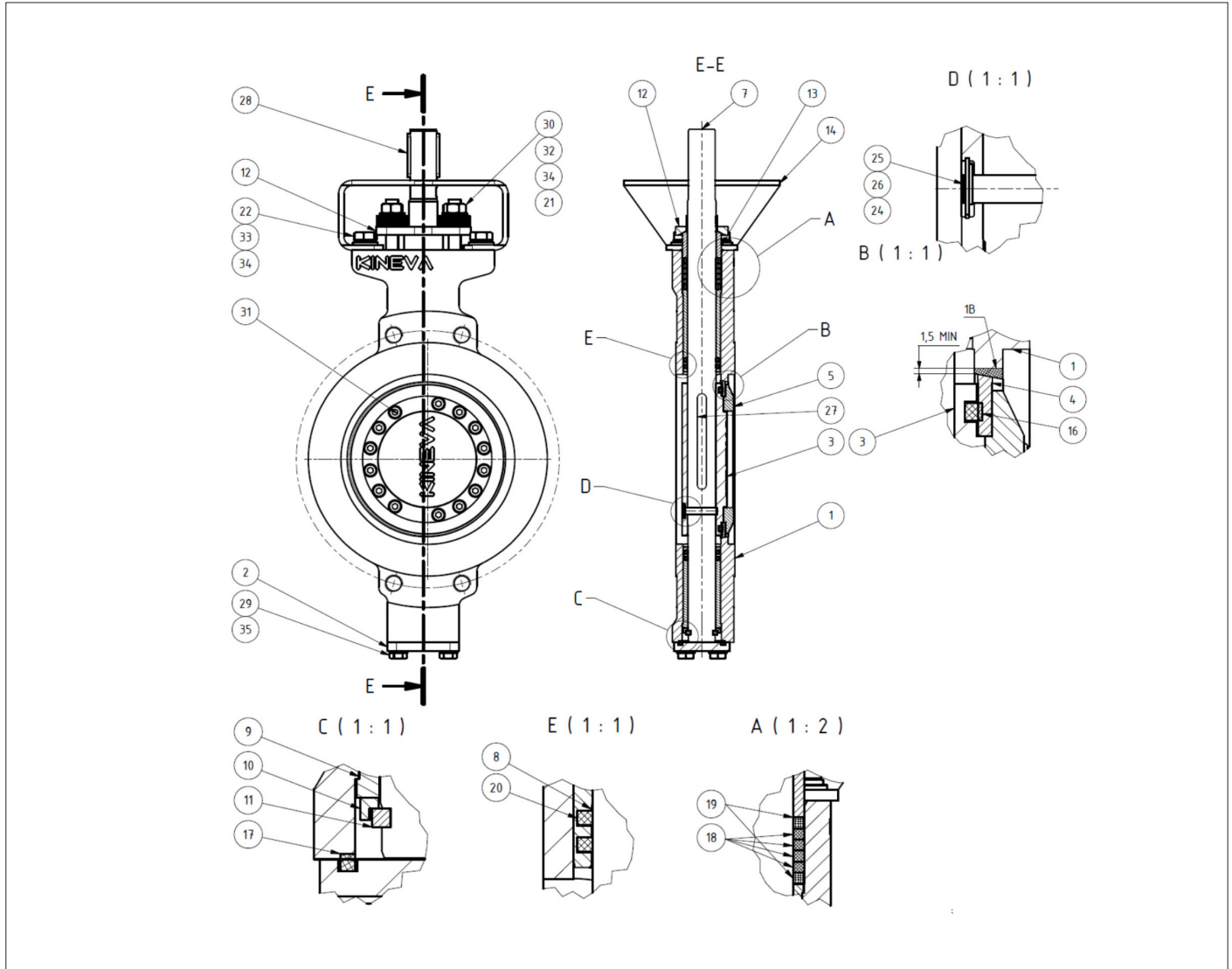
For torque on other dimensions, contact us.

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### Material specification



No	Part	Material	Standard	Cert
1	Body	P265GH	EN10028-2	3.1
1B	Seat welded overlay	ER309L (Stainless steel)	AWS A5.9	2.1
2	Cover	1.4571	EN10088-1	3.1
3	Disc	P265GH	EN10028-2	3.1
4	Seal	PTFE	EN10088-1	3.1
5	Counter flange	1.4571	EN10088-1	3.1
7	Shaft	17-4PH	EN10088-1 / 1.4552	3.1
8	Bearing	Aluminium bronze	CuAl10NiFe5	2.1
9	Bearing	Aluminium bronze	CuAl10NiFe5	2.1
10	Trust bearing	1.4571	EN10088-1	2.1
11	Ring of trust bearing	1.4571	EN10088-1	2.1
12	Packing flange	1.4571	EN10088-1	2.1
13	Spacer	1.4571	EN10088-1	2.1
14	Bracket	S235 + Zinc	EN10025-2	2.1
16	Seal ring	PTFE		2.1
17	Spiral seal gasket	Spiral seal gasket	Spiraterm SS + PTFE	2.1

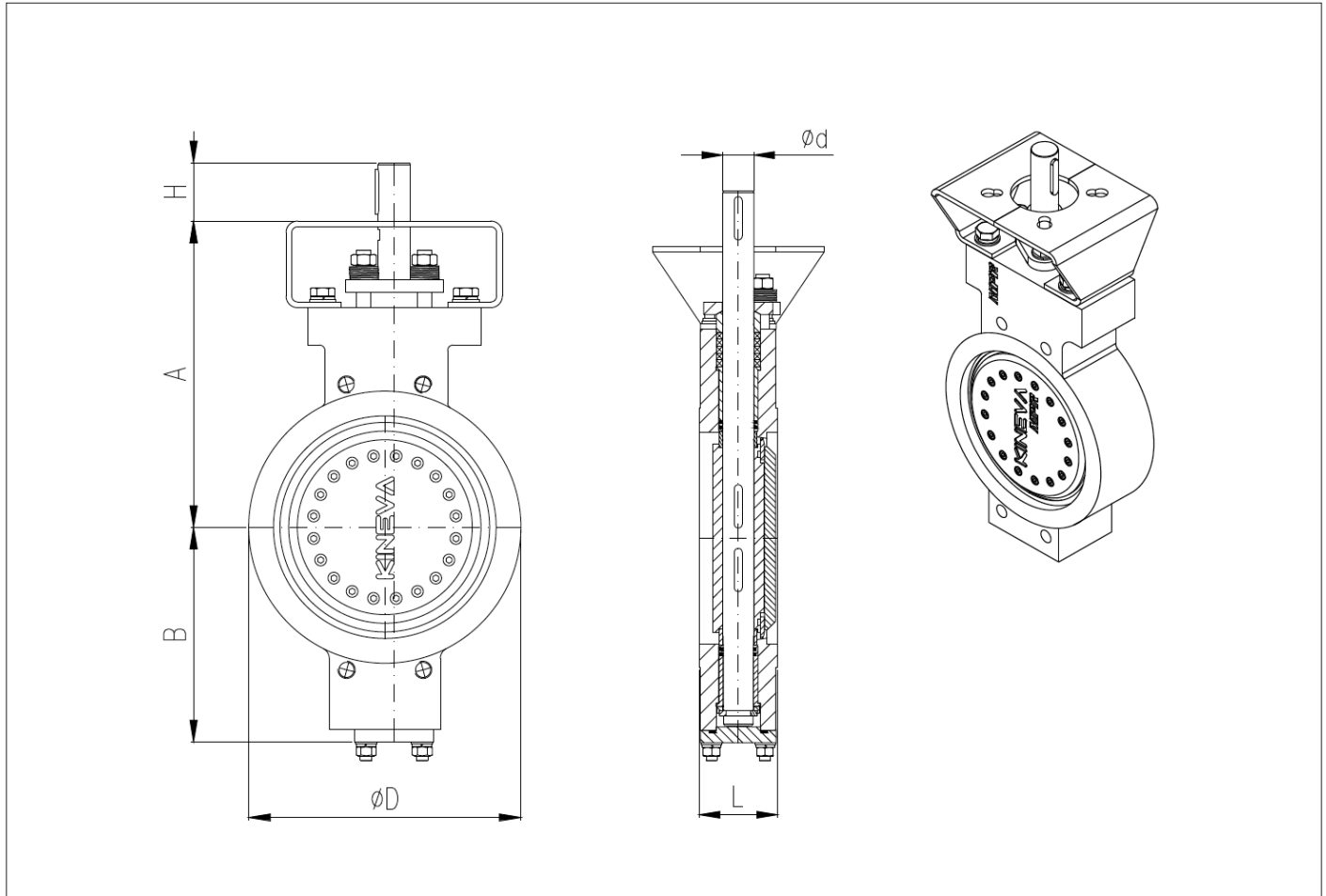
No	Part	Material	Standard	Cert
17	Packing	Graphite	TEMPAC 6100	2.1
18	Packing	Graphite	POWERpack 1110	2.1
19	Duster	Graphite	POWERpack 1110	2.1
20	Plate ring	SS	DIN 2093A	2.1
21	Screw	A2-80	DIN 933	2.1
22	Lock washer	A2	DIN 472	2.1
24	Pin	1.4571	EN10088-1	2.1
25	Flexible lock ring	A2	DIN 6799	2.1
26	Key	A2	DIN 6885	2.1
27	Key	A2	DIN 6885	2.1
28	Screw	A2-80	DIN 933	2.1
29	Nut	A2	DIN 934	2.1
30	Hex head cap screw	A2-80	DIN 921	2.1
31	Bolt	A2-80	DIN 976	2.1
32	Spring washer	A2	DIN 127	2.1
33	Washer	A2	DIN 125	2.1
34	Washer	A2	DIN 125	2.1
35	Washer	A2	DIN 125	2.1

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### Dimensions



DN	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	
A	210	210	245	285	305	350	390	420	500	520	530	580	660	810	880	1010	1100	
B	130	130	158	186	204	241	281	307	333	383	403	441	541	635	710	840	930	
PN 10	D	110	138	158	188	212	268	320	370	430	482	532	585	685	800	905	1005	1110
PN 16		122	138	158	188	212	268	320	378	438	490	550	610	725	795	900	1000	1115
PN 25		122	138	162	188	218	278	335	395	450	505	555	615	720	820	930	1030	1140
PN 40		122	138	162	188	218	285	345	410	465	535	560	615	735	-	-	-	-
PN 63		122	138	162	188	218	285	345	410	465	535	560	615	735	840	960	1070	1180
PN 100	122	138	162	188	218	285	345	410	465	535	560	615	-	-	-	-	-	
ISO 5211	F	F10	F10	F10	F12/14	F12/14	F12/14	F14/16	F16/25	F16/25	F25/30	F25/30	F25/30	F30/35	F40	F40/48	F48/60	F48/60
H	40	40	40	50	60	60	70	80	110	110	110	130	160	180	200	230	250	
Δ p 20 bar max	Ød	20	20	20	22	28	28	32	40	45	50	55	60	70	80	100	110	120
Δ p 50 bar max	Ød	20	20	20	22	32	32	40	45	55	65	70	75	90	110	130	150	160
H	40	40	40	50	65	80	110	140	140	160	160	200	220	-	-	-	-	
Δ p 100 bar max	Ød	22	22	28	32	40	45	55	65	75	80	90	100	120	-	-	-	-
PN 6 to PN 63	L	64	64	64	70	76	89	114	114	127	140	152	152	178	229	241	241	300
Weight kg		18	18	22	34	39	68	128	150	221	319	349	457	715	1017	1336	1744	2467

☐ = Standard version

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