

Triple eccentric butterfly valve TYPE AK13 and AK14



Description:

Triple-eccentric butterfly valves are used in pipelines to regulate or shut off the flow of media. They are characterised by their special design with three eccentric axes. This enables improved performance and tightness, especially at high pressures and temperatures.

Product features:

- Suitable for neutral / non-neutral **gaseous & liquid media**
- Split stem allows higher Kv/Cv values
- Top flange according to ISO 5211
- Consider flow direction (see arrow)!

Connection:
DN80 to DN500

Temperature:
-50°C to +320°C
depending on version; consider the pressure-temperature-diagram

Pressure:
max. 50,0 bar
depending on version

Design: Triple eccentric butterfly valve WAFER (AK13) or LUG type (AK14)
Body: Carbon steel 1.0625 (A216WCB) | Stainless steel 1.4408 (CF8M)
Coating: Celerol® coating black, top coat 962-15, min. thickness 60-80 µm
Disc: Stainless steel 1.4408 (CF8M) / 1.4027 (CA40) – depending on version, see part list page 5
Seat material: Lamellar – stainless steel 1.4401 (AISI 316) + graphite
Stem: Split sealed stem, stainless steel / duplex – depending on version, see part list page 5
Max. pressure: DN80-DN125: 50 bar | DN150-DN200: 40 bar | DN250-DN500: 25 bar
Temperature: Carbon steel: -29°C to 320°C (up to +420°C on request)
 Stainless steel: -50°C to 320°C (up to +550°C on request)

Design standard: EN 593 / ASME B16.34
Flange connection*: Type B, EN1092-1 PN10/16/25/40
 Raised face, ASME B16.5 Class150 and Class300
Leak test: Uni-directional tightness, please consider direction of flow!!
 EN 12266-1, Class A/B (A: liquids, B: gas)
 ISO 5208, Class A/B (A: liquids, B: gas)
 API 598
 ANSI/FCI 70-2, Class IV
Face-to-face: EN 558-2, series 20 (ISO 5752-20) – series 25 for size DN350
 API 609, category B, Class 150
Fire-Safe: EN ISO 10497
 API 607

* Types AK13 and AK14 have a multi-flange connection according to EN1092 PN10-PN16-PN25-PN40 as well as ANSI150-ANSI300. Starting DN350, the flange is according to PN16-PN25-PN40-ANSI150. The holes are drilled accordingly the PN/ANSI stage ordered (See article number system on the last page) for LUG type AK14.

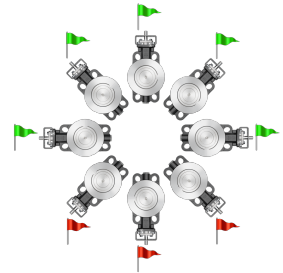
Working medium:

- | | | |
|-----------------------|---|--------------|
| - Crude Oil | - Pulp | - Steam |
| - Petroleum products | - Potable/Waste/Hot/Industrial/Supply water | - Condensate |
| - Fuel | - Paper stock | - Air |
| - Oil&Oil derivatives | - Natural/Coke/Oven Stack Gas | - Bitumen |
| - etc. | | |

Installation position:

- Actuation/Stem upwards!
- Consider the direction of flow! The correct flow direction is indicated by an arrow on the housing.

The tightness of the butterfly valve is only guaranteed if the flow direction is correct.



Valve designs:

AK13 – Butterfly valve WAFER type with through holes

DN80 – DN125



DN150 – DN200

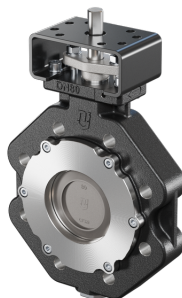


DN250 – DN400



AK14 – Butterfly valve LUG type with threaded holes

DN80



DN100 – DN125



DN150 – DN400 *



* The number of holes may differ from the illustration depending on the selected nominal diameter and PN/ANSI class. Number of holes according to standard.

Operating torques (Nm) vs. working pressure – operating torques are mentioned without safety factor

DN NPS	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"	DN350 14"	DN400 16"	DN500 20"
10 bar	55	65	85	110	280	283	600	1100	1600	2490
16 bar	70	70	95	140	330	418	900	1500	2270	4100
20 bar	80	70	110	190	370	460	1030	1900	2430	5200
25 bar	90	85	130	210	490	656	1150	2500	3100	6500
30 bar	100	100	150	261	530	--	--	--	--	--
40 bar	110	125	170	350	630	--	--	--	--	--
50 bar	125	150	200	--	--	--	--	--	--	--

Closing torques (Nm) – closing torques are mentioned without safety factor

DN NPS	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"	DN350 14"	DN400 16"	DN500 20"
Closing torque water	105	140	175	220	450	420	400	450	500	1750
Closing torque air	105	140	175	220	450	565	550	1000	1300	3590
Max. shaft torque carbon steel	183	327	327	635	635	767	1747	2800	5078	9190
Max. shaft torque stainless steel	183	327	327	635	635	822	1300	2300	3800	6877

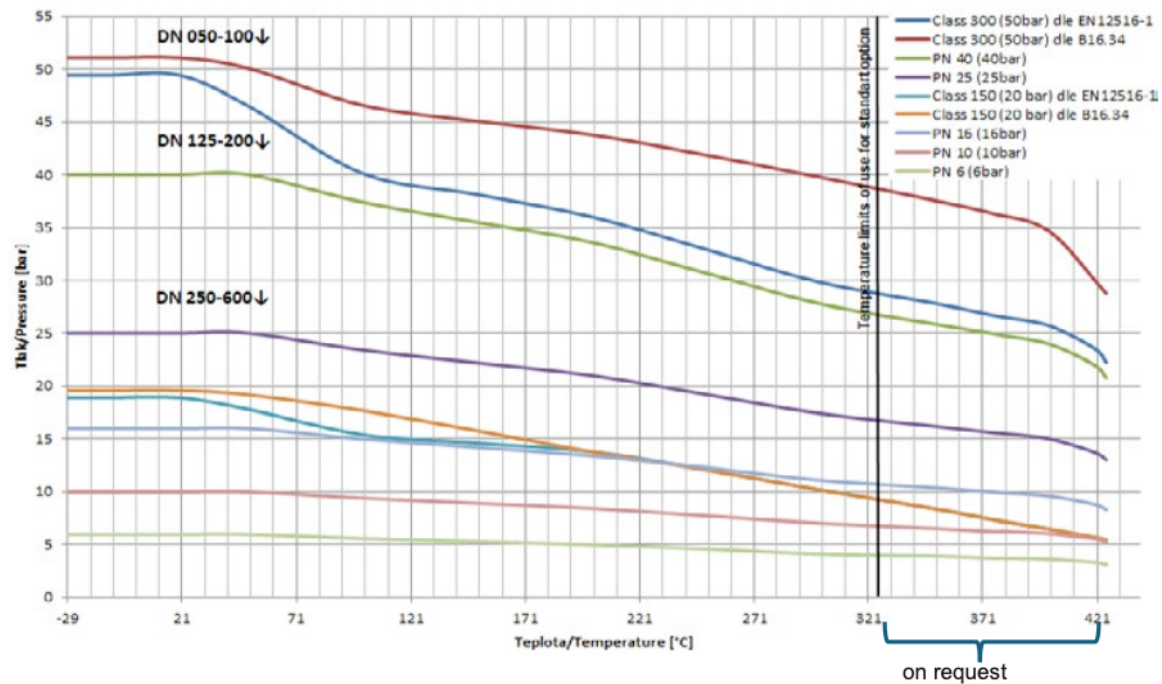
KV-values (m³/h):

	Open angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN80	16	34	57	80	105	138	186	223	230
DN100	25	54	84	115	166	231	300	355	356
DN125	36	80	133	189	280	399	518	601	613
DN150	45	92	165	252	361	484	610	715	755
DN200	80	162	279	442	659	939	1292	1580	1658
DN250	150	307	514	784	1143	1617	2169	2551	2677
DN300	200	431	708	1068	1553	2175	2954	3600	3710
DN350	220	514	838	1289	1925	2787	3927	4825	4982
DN400	250	590	1017	1589	2444	3657	5291	7068	7704
DN500	360	740	1403	2398	3791	5747	8378	11347	12679

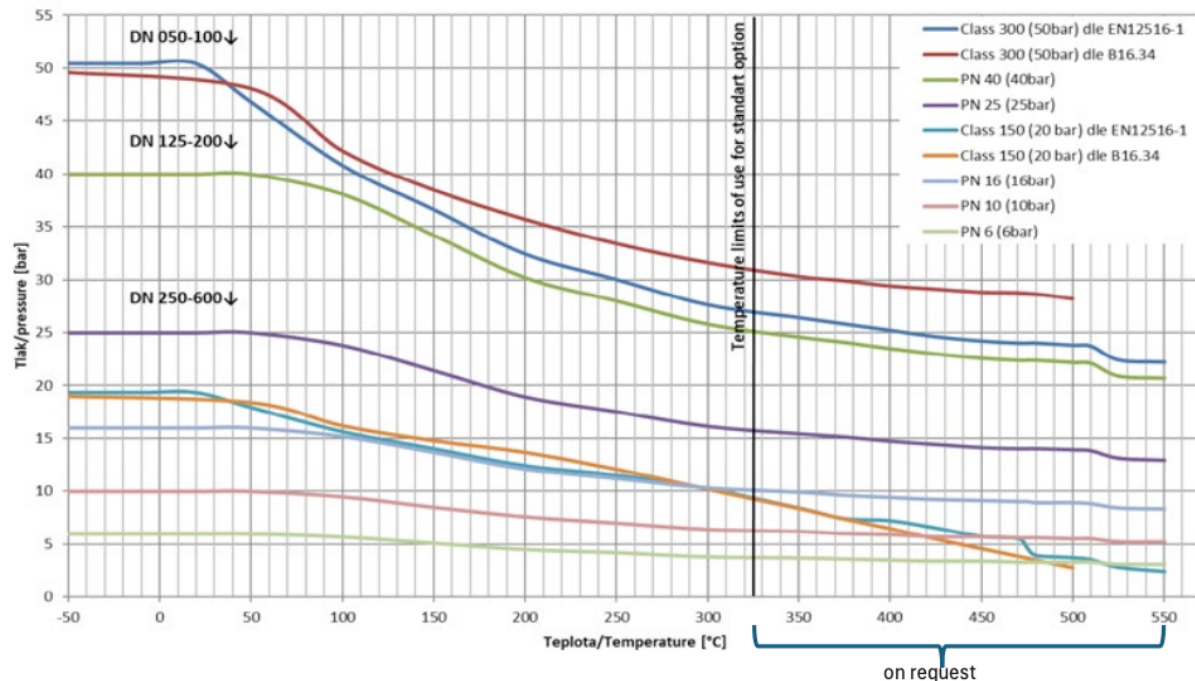
Pressure-temperature diagram:

Maximum temperatures are only permissible for certain media, pressures and short-term use. Please contact our sales team.

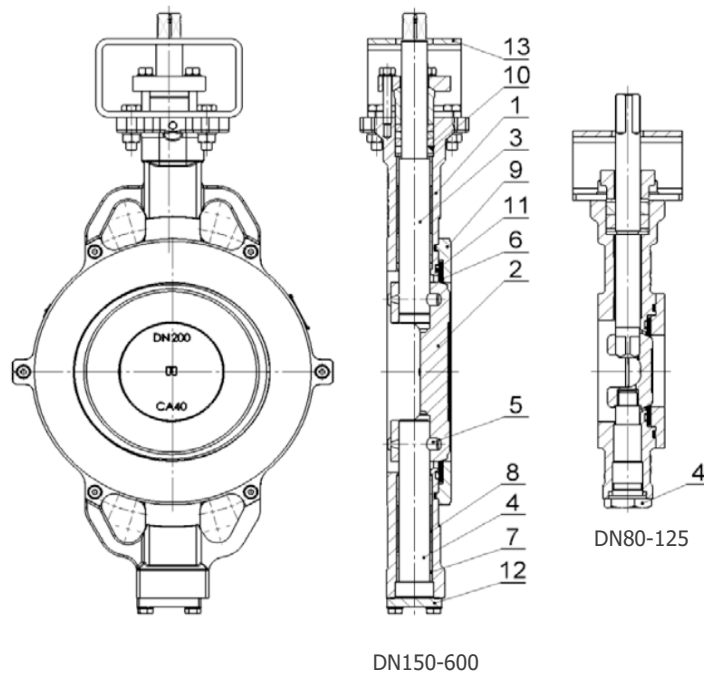
Body: Carbon steel 1.0625 (A216WCB)



Body: stainless steel 1.4408 (CF8M)



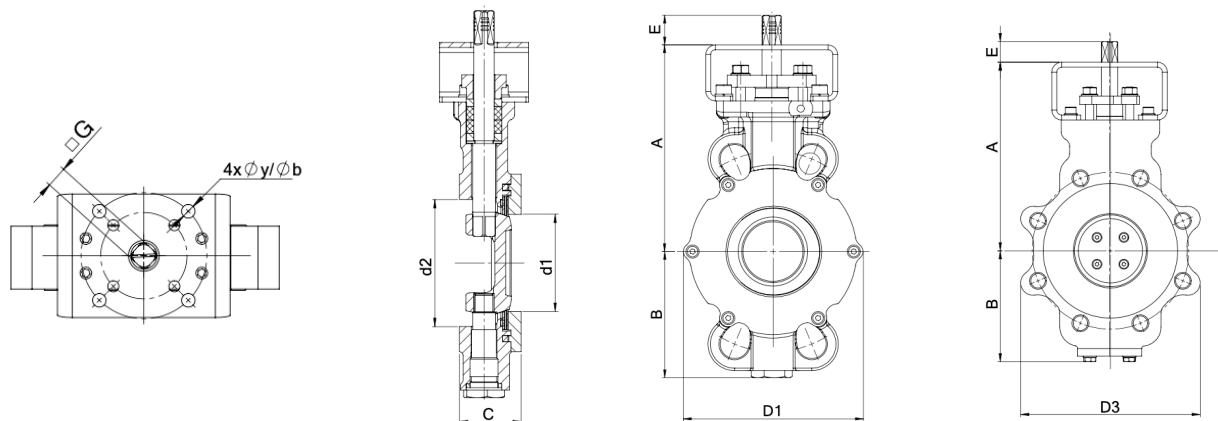
Parts list and material:



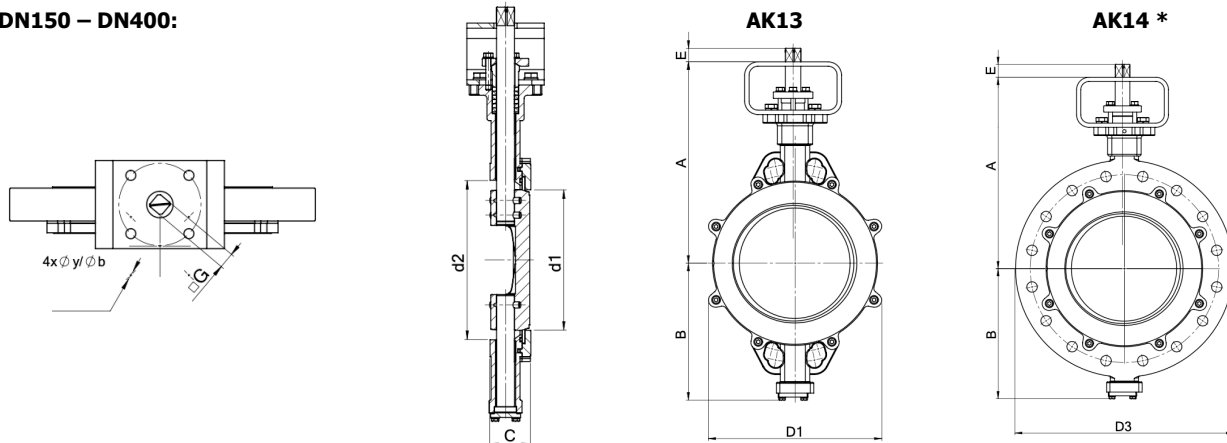
Pos.	Item	Material	
		Body: Carbon steel	Body: Stainless steel
1	Body	Carbon steel 1.0625 (A216 WC8)	Stainless steel 1.4408 (A351 CF8M)
2	Disc	DN80-125: Stainless steel 1.4408 (CF8M) nitrided DN150-500: Stainless steel 1.4027 (ASTM CA-40) nitrided	Stainless steel 1.4408 (CF8M) nitrided
3	Shaft	DN80-125: Stainless steel 1.4542 (AISI 630) DN150-500: Stainless steel 1.4021 (AISI 420)	DN80-125: Stainless steel 1.4542 (AISI 630) DN150-500: Duplex Stahl 1.4462 (AISI 2205)
4	Pivot	DN80-125: Stainless steel 1.4404 (AISI 316L) DN150-500: Stainless steel 1.4021 (AISI 420)	DN80-125: Stainless steel 1.4404 (AISI 316L) DN150-500: Duplex stainless steel 1.4462 (AISI 2205)
5	Pin (DN150-500)	Stainless steel 1.4021 (AISI 420)	Duplex stainless steel 1.4462 (AISI 2205)
6	Seat	Stainless steel 1.4401 (AISI 316) + graphite	
7	Bearing	Stainless steel 1.4404 (AISI 316L) + Ni	
8	Bushing	Stainless steel 1.4404 (AISI 316L)	
9	Ring flange	Carbon steel 1.0425 + Zn	Stainless steel 1.4404 (AISI 316L)
10	Packing	Graphite	
11	Spiral seal	Stainless steel 1.4541 (AISI 321) + graphite	
12	Cover (DN150-500)	Carbon steel 1.0425	Stainless steel 1.4404 (AISI 316L)
13	Bracket	Carbon steel	
	Fastener material	A4	

Dimensions TYPE AK13 / AK14:

DN80 – DN125:



DN150 – DN400:



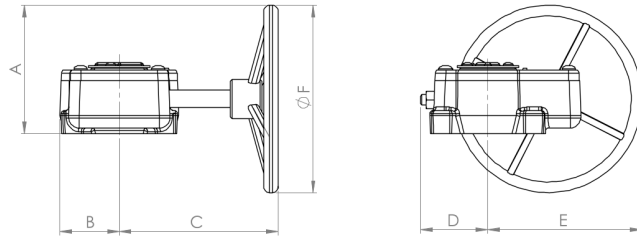
DN NPS	80 3"	100 4"	125 5"	150 6"	200 8"	250 10"	300 12"	350 14"	400 16"	500 20"
d1	77	90	110	146	194	238	287	323	385	451
d2	100	123,5	146	155	204	259	309	342	405	502
A	173,5	205,5	215	307	338,5	395	459,5	508	556	625
B	106	122,5	137	214	245,5	274	312	354	401	428
C	48,5	53	56	57	61	69	79	92	103	127,5
D1	150	192	217	253	307	352	394	448	542	623
D3	195	225	259	318	381	450	521	577	657	707
E	25	25	25	25	31	31	31	45	58	100
G / M / N	14	14	14	17	22	22	27	27	36	64 / 18 / 72,4
ISO 5211 flange	F07	F07	F07	F07/F10	F10	F12	F14	F16	F16	F25
y	9	9	9	9/11	11	13	17	22	22	18
b	70	70	70	70/102	102	125	140	165	165	254
Weight AK13 (kg)	6	9	12	21	29	46	67	100	130	240
Weight AK14 (kg)	10	13	16	32	46	70	104	149	206	280
Weight Gearbox (kg)	2,9	2,9	2,9	5,5	5,5	7	9,5	26	38	40

* The number of holes may differ from the illustration depending on the selected nominal diameter and PN/ANSI class. Number of holes according to standard.

Actuation:

Manual gearbox housing is made from cast iron with suitable surface treatment and protection degree class IP 67. Self-locking design of the worm gear enables both to adjust basic positions open/shut and to control (throttle) media flow. End-limit positions of the gearbox are set by means of stop screws.

The gearbox optionally can be equipped with a lockable system secured by a padlock, used with a chain or equipped with end-limit position sensors.



	DN	80 3"	100 4"	125 5"	150 6"	200 8"	250 10"	300 12"	350 14"	400 16"	500 20"
Gearbox	A	127,5	127,5	127,5	183,5	183,5	187,5	241,5	448	455	363,3
	B	47	47	47	58	58	67	78	110	142,5	175
	C	138	138	138	209	209	240	265	346	386,5	429,5
	D	59	59	59	95	95	81	118	295,5	270	175
	E	140	140	140	205	205	219	281	504,5	530	440
	F	200	200	200	300	300	300	400	800	800	500
	Weight gearbox	2,9	2,9	2,9	5,5	5,5	7	9,5	26	38	40

Options (on request):

- Size DN600
- Higher temperatures
- Different body, disc and seat materials
- Body / disc coatings
- TA-Luft sealed valve
- SIL2 / SIL3 certification
- ANSI300
- Double flanged design
- End-limit position sensors
- ATEX
- Vacuum
- Automation with electric or pneumatic actuators, please also refer to our [actuator configurator](#)

Article number:

AK13:

Type	Housing bore*	Body material	Seat	Actuation	Size
AK13 – WAFER type	1 – PN10/16/25/40, ANSI150, ANSI300	0 – Carbon steel 1 – Stainless steel	0 – Lamellar	1 – Gearbox 6 – Bare safe	10 – DN80 11 – DN100 12 – DN125 13 – DN150 14 – DN200 15 – DN250 16 – DN300

Type	Housing bore*	Body material	Seat	Actuation	Size
AK13 – WAFER type	1 – PN10/16/25/40, ANSI150	0 – Carbon steel 1 – Stainless steel	0 – Lamellar	1 – Gearbox 6 – Bare safe	17 – DN350 18 – DN400 20 – DN500

AK14:

Type	Housing bore*	Body material	Seat	Actuation	Size
AK14 – LUG type	1 – PN10/16/25/40, ANSI150	0 – Carbon steel 1 – Stainless steel	0 – Lamellar	1 – Gearbox 6 – Bare safe	10 – DN80

Type	Housing bore*	Body material	Seat	Actuation	Size
AK14 – LUG type	1 – PN10/16 3 – PN25/40 4 – ANSI150	0 – Carbon steel 1 – Stainless steel	0 – Lamellar	1 – Gearbox 6 – Bare safe	11 – DN100 12 – DN125 13 – DN150

Type	Housing bore*	Body material	Seat	Actuation	Size
AK14 – LUG type	0 – PN10 1 – PN16 2 – PN25 3 – PN40 4 – ANSI150	0 – Carbon steel 1 – Stainless steel	0 – Lamellar	1 – Gearbox 6 – Bare safe	14 – DN200 15 – DN250 16 – DN300

Type	Housing bore*	Body material	Seat	Actuation	Size
AK14 – LUG type	0 – PN10 (ON REQUEST) 1 – PN16 2 – PN25 3 – PN40 4 – ANSI150	0 – Carbon steel 1 – Stainless steel	0 – Lamellar	1 – Gearbox 6 – Bare safe	17 – DN350 18 – DN400 20 – DN500

Example no. AK14100113:

AK14	1	0	0	1	13
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Article no. AK14100113

Triple-eccentric butterfly valve LUG type

Housing bore: PN10/16

Body: Carbon steel

Seat: Lamellar (Stainless steel + graphite)

Actuation: Gearbox

Size: DN150

* Body in general acc. to PN10-16-25-40, ANSI150 and, up to including DN300, ANSI300. For LUG type body differs acc to housing bore; AK14: bore acc to ANSI300 on request

Illustration similar, subject to technical and dimensional changes.