

CENTERLINE

Butterfly Valves Series 200



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Series 200

Butterfly Valves for General Applications

Crane Process Flow Technologies being a member of Crane Valve Group belong to the largest valve manufacturers worldwide. Decades of experience in valve manufacturing ensure our customers matured products and reliable supply of valves which are manufactured and tested according to the highest quality standard.

The Crane Butterfly Valve Programme now offers valves for most industrial applications ranging from the simplest in building engineering up to the highest demands in power stations, chemical or petrochemical plants.

In line with world-wide demands, our butterfly valves are manufactured according to several international standards and regulations. An extensive distribution and service network offers our customers continuous security while using Crane armatures.

CENTERLINE Butterfly Valves Series 200 for Shut Off and Control in Gas and Liquid Lines up to 16 bar and Temperatures up to 120°C.

- DN 50 - 1200
- PN 10, 16, ANSI 150
- -20°C to +120°C
- Leakage rate 1 according to EN 12266-1 to 16 bar
- For ON/OFF and control operation
- Overall length according to EN 558-1 Series 20
- Insulation possible according to heating plant regulation
- Quality assurance according to ISO 9001
- "ABS approval" for equipping ships

Ranges of Application

CENTERLINE Butterfly Valves Series 200

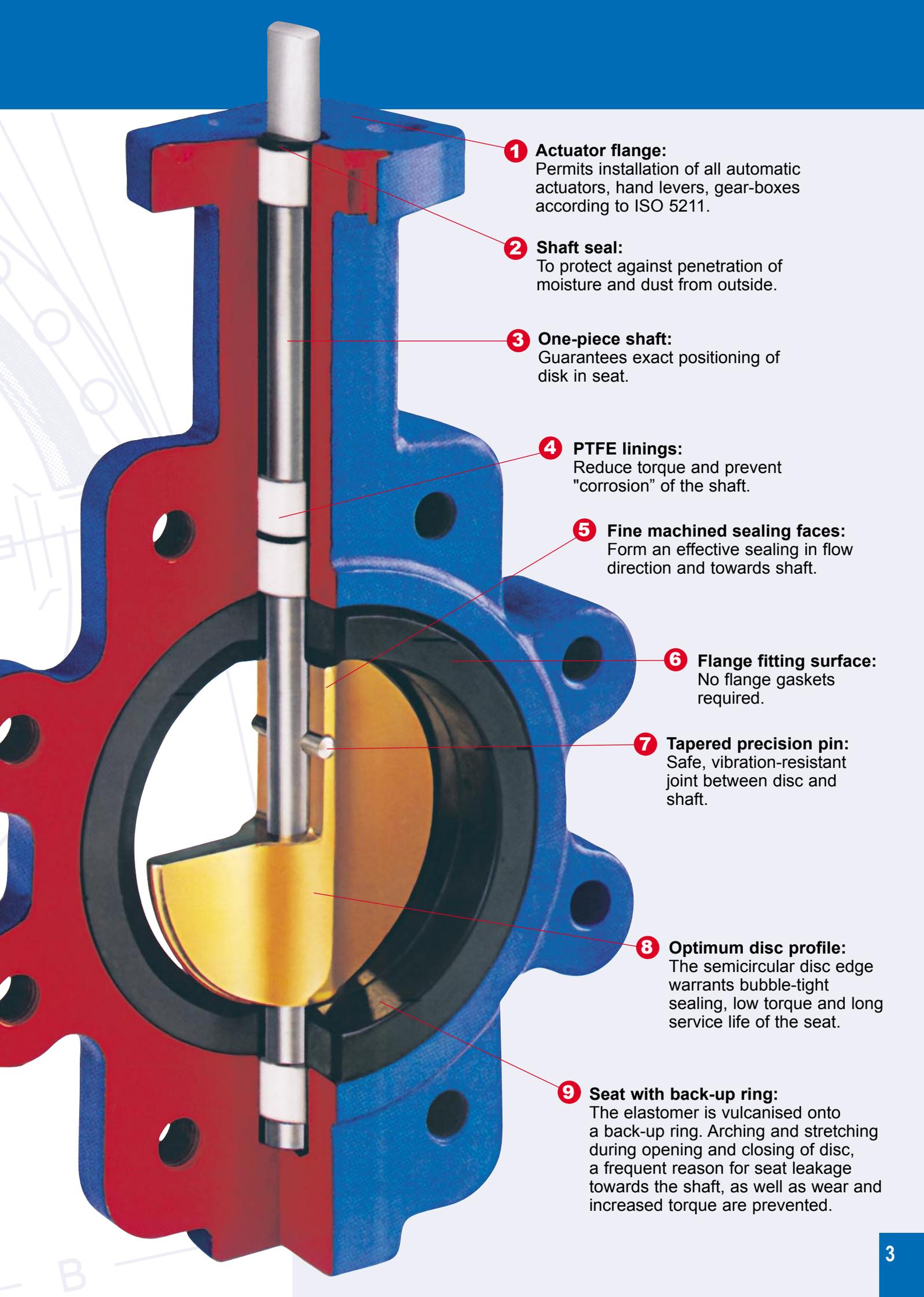
Valves of the Series 200 can be used wherever pressures of 16 bar and temperatures of 120°C are not exceeded or where the available elastomer liners and discs are resistant against the medium.

Typical Applications are:

- Water
- Cooling water
- Sewage water
- Compressed air
- Hot water plants up to 120°C

Available Versions

- Wafer body made of cast iron and nodular cast iron, lug type and double flange body made of nodular cast iron
- Liners: EPDM or NBR
- Disc: High-grade steel or aluminium-bronze
- Actuation: hand lever, gear-box or automatic actuator



1 Actuator flange:
Permits installation of all automatic actuators, hand levers, gear-boxes according to ISO 5211.

2 Shaft seal:
To protect against penetration of moisture and dust from outside.

3 One-piece shaft:
Guarantees exact positioning of disk in seat.

4 PTFE linings:
Reduce torque and prevent "corrosion" of the shaft.

5 Fine machined sealing faces:
Form an effective sealing in flow direction and towards shaft.

6 Flange fitting surface:
No flange gaskets required.

7 Tapered precision pin:
Safe, vibration-resistant joint between disc and shaft.

8 Optimum disc profile:
The semicircular disc edge warrants bubble-tight sealing, low torque and long service life of the seat.

9 Seat with back-up ring:
The elastomer is vulcanised onto a back-up ring. Arching and stretching during opening and closing of disc, a frequent reason for seat leakage towards the shaft, as well as wear and increased torque are prevented.



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CENTERLINE-Butterfly Valves Series 200

Model Numbers DN50-300

CL1	02	T	1	0	4	1	3	1	H	00
1-3	4+5	6	7	8	9	10	11	12	13	14+15

1-3. Type and Series:
CL1 = Series 200

4+5. Size:	DN	Inch
02 =	50	2"
25 =	65	2,5"
03 =	80	3"
04 =	100	4"
05 =	125	5"
06 =	150	6"
08 =	200	8"
10 =	250	10"
12 =	300	12"

6. Design/ Pressure Class:
T = DN 50-300 Wafer body PN 10/16, ANSI 150
U = DN 50-150 Lug body PN 10/16
DN 200-300 Lug body PN 16
8 = DN 200-300 Lug body PN 10

7. Body Material:
1 = Grey iron (only wafer body)
2 = Ductile iron (wafer body and lug body)

8. Shutoff Pressure: (max. operating pressure)
0 = 14 bar (only for ANSI 150)
1 = 16 bar 16 bar (only for PN 10/16)

9. Disc Material:
4 = Stainless steel
6 = Aluminium bronze

10. Shaft Material:
1 = Chromium steel

11. Bushing Material:
3 = PTFE

12. Body Liner Material:
1 = NBR (Buna-N)
5 = EPDM

13. Actuation ¹⁾:
F = Bare shaft end
H = Hand lever with 10 positions
G = Gear operator with hand wheel

14+15. Version:
00 = Standard

¹⁾ further versions available on request

See also next page

Ordering example:

CENTERLINE Butterfly Valve Series 200 DN 80, wafer body PN 10/16 made of grey iron, shutoff pressure of 16 bar, stainless steel disc, shaft made of chromium steel, PTFE bushing, NBR body liner, hand lever with 10 positions:

CL1 03 T 1 1 4 1 3 1 H 00

CL-200/DB-0002-GB/09.01/GP

Model Numbers for Hand Lever and Gear Operator

Valves size	Model number Hand lever, 10 positions ¹⁾	Model number Gear operator ²⁾
50-80	CL301-44461-01	CL302-20014-00
100	CL301-44461-02	CL302-20015-00
125-150	CL301-44461-03	CL302-20016-00
200	CL301-44464-01	CL302-20017-00
250	CL301-44464-02	CL302-20018-00
300	CL301-44464-03	CL302-20019-00

¹⁾ Hand lever kit consisting of:
hand lever, notch plate with 10 positions, fastening bolts and nuts

²⁾ Gear operator kit consisting of:
gear operator, hand wheel, fastening bolts and nuts

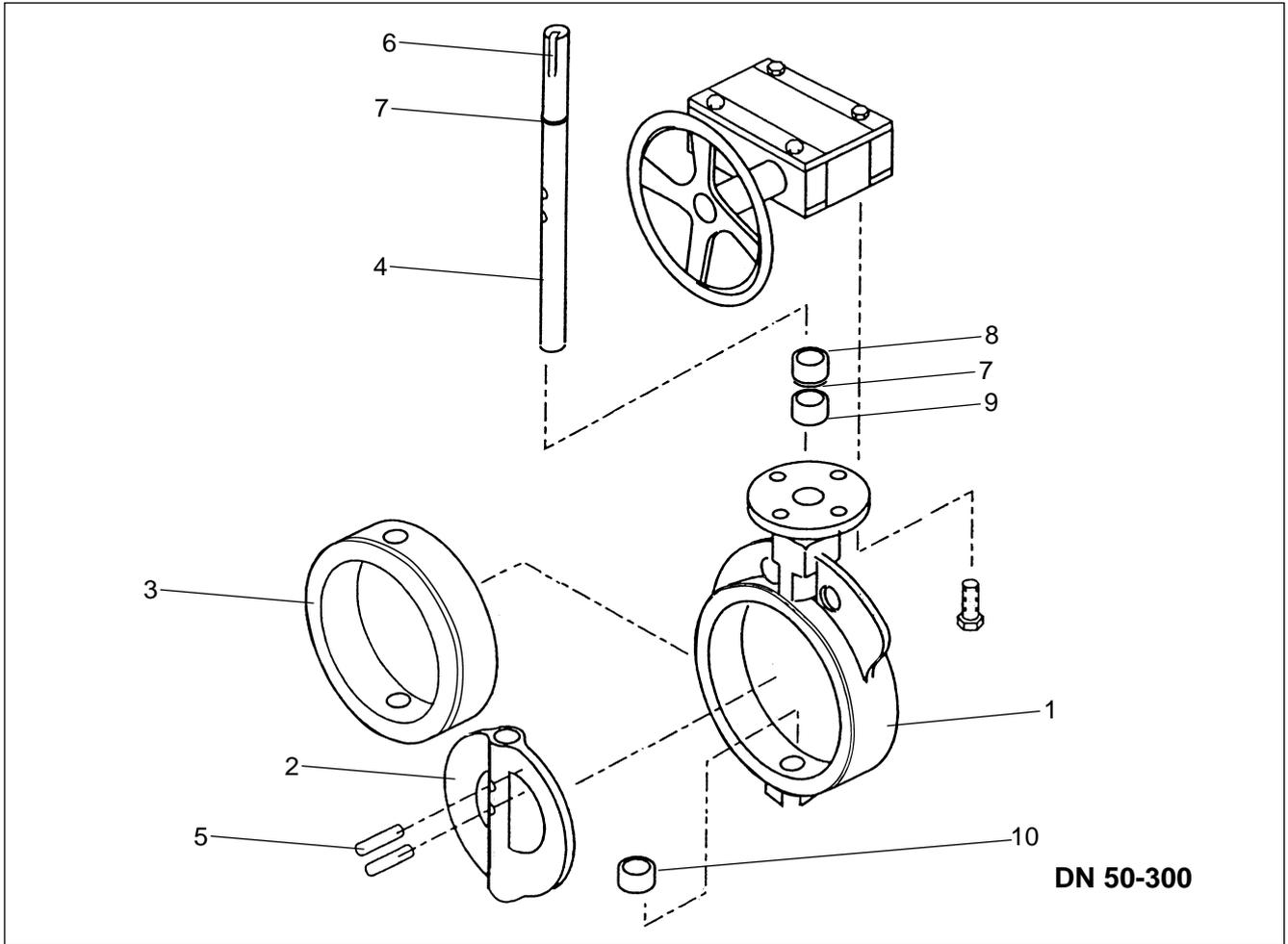
Note:
Individual parts from the kits are not available!



CENTERLINE-Butterfly Valves Series 200

Material Selection/Temperature Range

CL-200/DB-0004-GB/09.01/GP



	Component	Material	Temperature range*
Parts not in contact with the medium	Wafer body (1)	Grey cast iron/ ductile iron	-10°C/-20°C to +120°C
	Lug body (1)	Ductile iron	-20°C to +120°C
	Shaft (4)	Chromium steel	
	Key (6)	Steel	
	O-ring (7)	NBR	
	Bushing (8, 9,10)	PTFE	
Parts in contact with the medium	Disc (2)	Stainless steel	
		Aluminium bronze	
	Body liner (3)	EPDM	-20°C to +120°C
		NBR	-10°C to +80°C
	Tapered pin (5)	Stainless steel	

* the temperature range is determined by the materials used

To be continued on the next page

Chemical Resistance

The material specifications are recommendations based on practical experience. However, it has to be considered that the temperature range stated does not fully apply to all indicated media. Besides, the resistance can be influenced by

concentration, pressure, flow rate or aeration of the medium. Thus no warranty claims can be derived from this table. If in doubt, the suitability is to be checked by tests under operating conditions.

Body lining	Resistant to	Temperature range
NBR	Kerosene, fats, alcohol, glycol, propane,	-10°C to +80°C
	Butane, diesel oil and many other media	
EPDM	Ozone, phosphates, ester, ketones, alcohols,	-20°C to +120°C
	glycols, 20% bleach, alkaline solvents, in	
	general processed water, (with caustic soda,	
	sodium sulphite, chlorine), hot water and	
	steam. (It is attacked by hydrocarbonated	
	solvents and oils, chlorinated hydrocarbons,	
turpentine and all other oils on kerosene		
	basis)	



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Valve and Actuator Sizing

Valve Sizing

If valves are used for control purposes, their size should not be selected according to the pipe size but should be determined based on the operating conditions. Thus a good control performance can be achieved. Butterfly valves of the series 200 have a characteristic curve of almost equal percentage over an opening angle of approx. 60°.

When determining the size of a control valve only this opening angle is to be considered. In order to determine the valve size first the k_v value is calculated according to the following formulas:

$$\text{a) for liquids } k_v = Q \cdot \sqrt{\frac{\gamma}{\Delta p}}$$

$$\text{b) for gases } k_v = \frac{V_N \cdot T}{514} \sqrt{\frac{G \cdot T}{\Delta p \cdot p_2}}$$

The following symbols mean:

k_v = flow coefficient

Δp = pressure drop in bar

T = abs. temperature in °K

Q = max. flow rate in m³/h

V_N = max. flow rate in Nm³/h

p_1 = abs. pressure before the valve in bar

γ = spec. weight in kg/dm³

G = spec. weight in

in kg/Nm³

p_2 = abs. pressure after the valve in bar

F = pipe cross-section in cm²

With the calculated k_v value the valve nominal diameter can now be determined from the table below.

Size		Pipe cross-section F in cm ²	Opening angle							
DN	Zoll		20°	30°	40°	50°	60°	70°	80°	90°
50	2"	19,6	3	6	13	23	38	60	91	99
65	2,5"	33,2	5	10	22	39	65	103	153	169
80	3"	50,3	8	16	34	60	100	158	237	260
100	4"	78,5	15	31	67	120	198	314	471	517
125	5"	123	25	53	115	204	338	534	802	881
150	6"	177	39	82	177	316	522	826	1.239	1.361
200	8"	314	77	162	352	627	1.036	1.641	2.460	2.703
250	10"	491	130	276	598	1.066	1.765	2.793	4.189	4.603
300	12"	707	202	427	924	1.647	2.726	4.315	6.472	7.112

In order to avoid any noise, vibration and cavitation the following flow velocities must not be exceeded:

a) with liquids:

b) with gases:

These velocities are controlled according to the formulas:

$$\text{a) for liquids: } C = \frac{Q}{F \cdot 0,36} \text{ in m/sec.}$$

$$\text{b) for gases } C = \frac{V_N \cdot T}{F \cdot p_1 \cdot 98,28} \text{ in m/sec.}$$

Actuator Sizing

In order to determine the size of automatic actuators to be mounted on butterfly valves of the series 200 the required actuating torque can be taken from the table below.

DN	50 2"	65 2,5"	80 3"	100 4"	125 5"	150 6"	200 8"	250 10"	300 12"
Torque in Nm*	17	28	37	58	89	129	211	335	479

The torques apply to liquid and most media. For dry gases they are to be multiplied by 1.5.
They are stated in Nm. The actuator has to provide the torque indicated in the table over the entire travel angle.

The closing time of actuators is to be chosen or adjusted in such a way that water hammer is avoided.
With pneumatic and hydraulic actuators the closing time can be adjusted by a throttle in the supply line (adjustable throttle can be delivered together with the actuator).
Electric actuators are to be designed according to the respective closing time by selecting a corresponding gear.

* relating to a shutoff pressure $p = 16$ bar





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