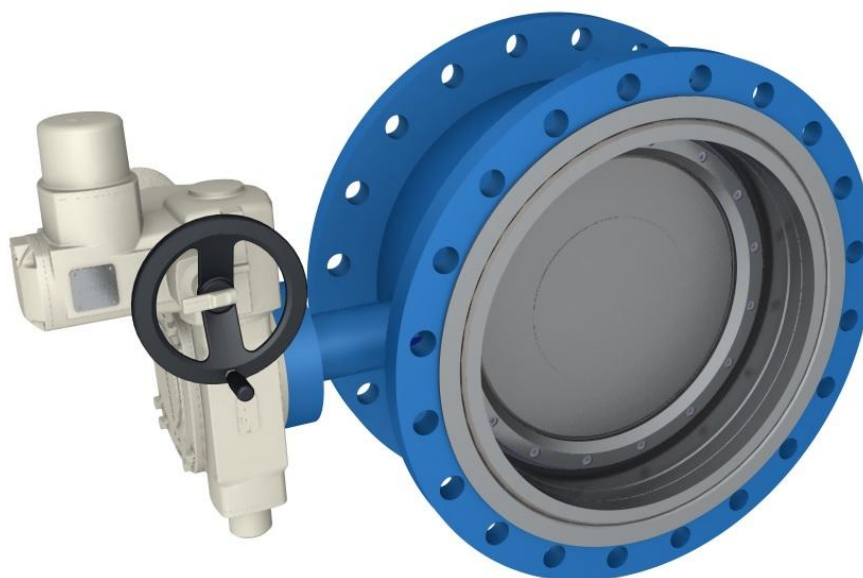


## BUTTERFLY VALVE of carbon steel with flanges **315 -series**




### Description

Edition 30-03-2015

The welded butterfly valve 315 with flanges is used for example in district heating, district cooling and industry. It can be used as an on-off or control valve. Högfors butterfly valve is tight in both flow directions.

The body of the butterfly valve with flanges is carbon steel. The eccentric disc and shafts are made of stainless steel. Replaceable seat ring is hard chrome plated stainless steel. The shaft packing box is a combination of graphite rings and O-rings which are possible to tighten while in pipeline and are also replaceable.

|  |  |  |
|--|--|--|
| Nominal dimensions *   | DN 200 - 1200  | DN 200 – 700   |
| Nominal pressure   | PN 25 bar  | PN 25 bar  |
| Disk seal  | Stainless steel (CS)   | PTFE+C (TS)  |
| Closing pressure ( $\Delta P$ )  | $\Delta P$ 16 bar or 25 bar  | $\Delta P$ 16 bar or 25 bar  |
| Tightness class ISO 5208, EN 12266-1   | Rate B – standard<br>Rate A – option   | Rate A   |
| ** Working temperature of liquid media<br>(version for steam also available) | max +260°C/ min -40°C  | max 180°C / min -40°C  |
| Face-to-face length according to EN 558-1                                    | series 14  |  |
| Connection   | flanges: EN1092-1 Type B, PN 25, PN 16 and PN 10 ANSI CLASS 150  |  |
| Safety   | Conform to the requirements of the Council Directive 97/23/EC on Pressure Equipment, marking: Class: gas, group 1. |  0496 |

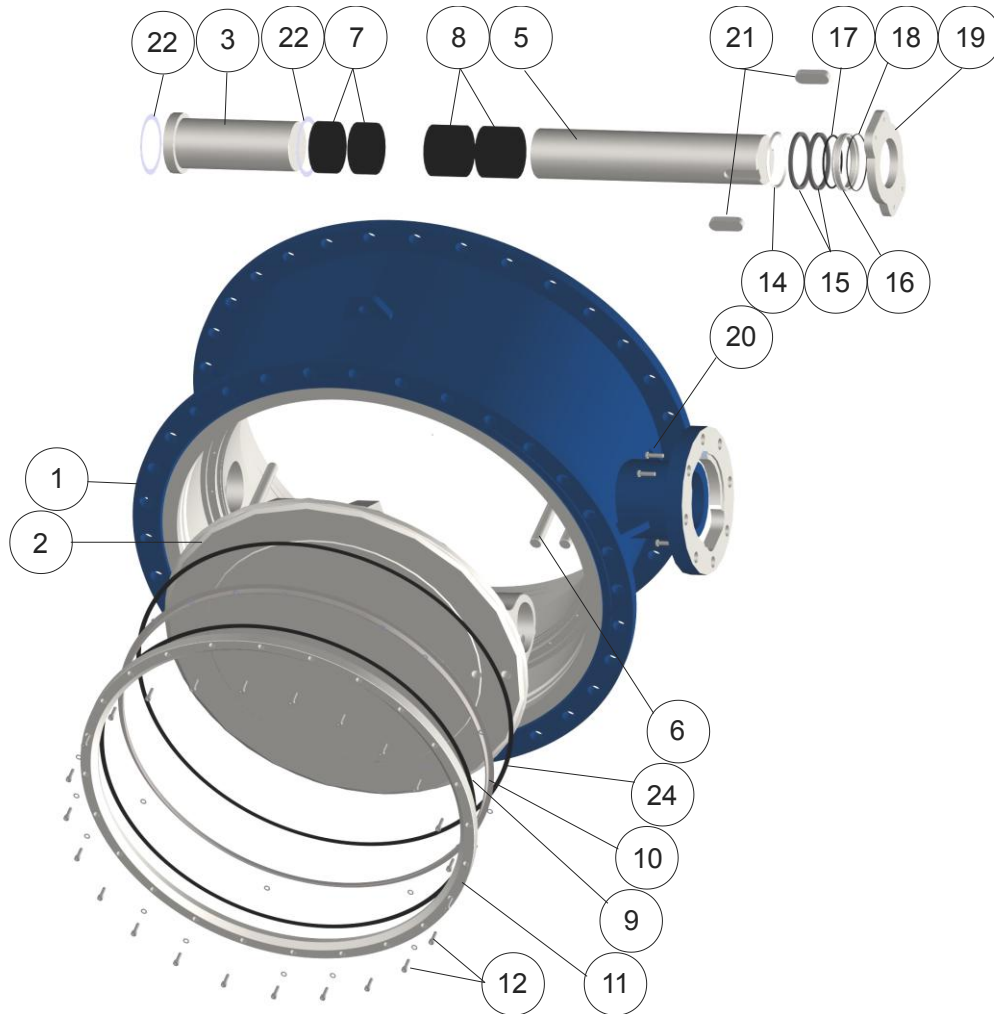
\*) Valves fulfill the structural integrity requirements of the EN488:2011.

\*\*) Wider temperature range is available.

Consult factory for details.



**Exploded view**

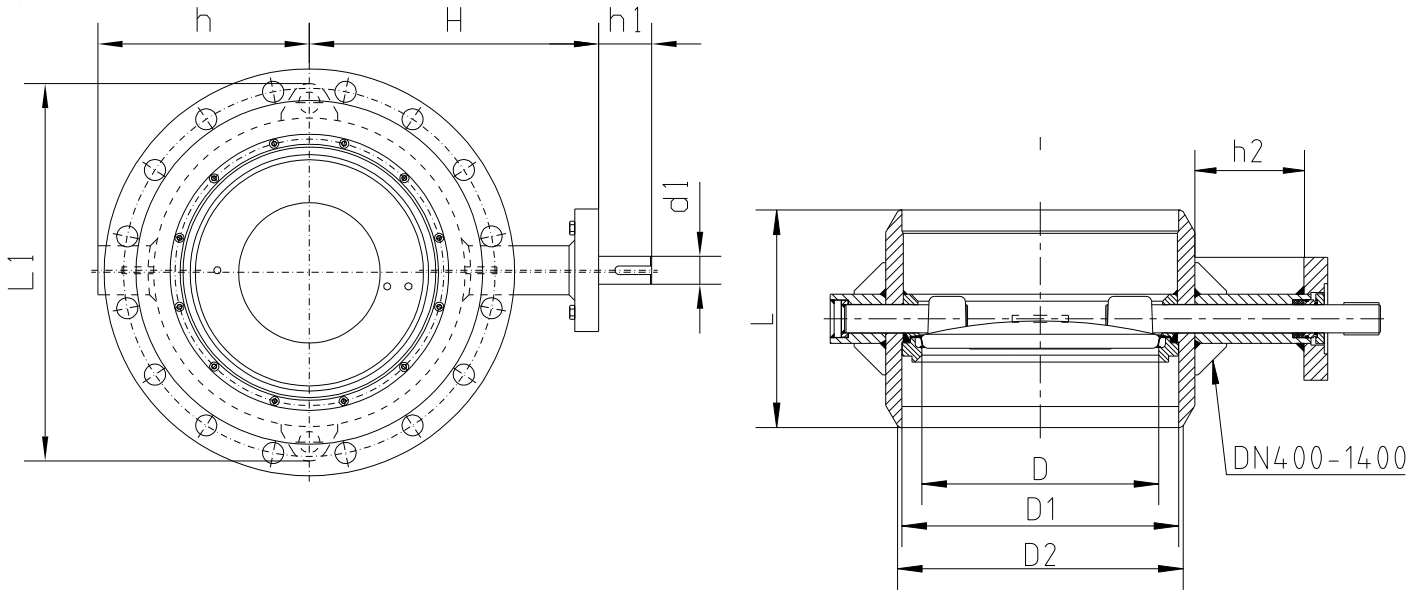


**Parts list and standard materials**

| Part  | Material           |  |                              |
|-------|--------------------|--|------------------------------|
| 1     | Body               | Carbon steel EN10028-2 P265GH                          |                              |
| 2     | Disk               | Stainless steel EN10213 1.4408, ASTM A351 CF8M, SS2324 |                              |
| 3     | Subshaft           | Stainless steel EN10088-3 1.4460 / 1.4418+QT900        |                              |
| 5     | Main shaft         | Stainless steel EN10088-3 1.4460 / 1.4418+QT900        |                              |
| 6     | Pin                | Stainless steel EN10088-3 1.4462 / 1.4418+QT900        |                              |
| 7     | Subshaft bearing   | PTFE on stainless steel net                            |                              |
| 8     | Stem bearing       | PTFE on stainless steel net                            |                              |
| 9,24  | Shim               | Carbon Fiber / Graphite                                | Graphite for steam version   |
| 10    | Seat ring          | Harm chrome plated stainless steel AISI 316L or PTFE+C | Special material by request  |
| 11    | Retaining ring     | Carbon steel EN10028-2 P265GH                          |                              |
| 12    | Socket screw       | Stainless steel ISO 3506 A4-80                         |                              |
| 13    | Washer             | Stainless steel  |                              |
| 14    | Back-up-ring       | Stainless steel EN10216-5 1.4404                       |                              |
| 15    | Box packing        | Graphite   |                              |
| 16    | Shaft seal bushing | Stainless steel EN10216-5 1.4404                       |                              |
| 17,18 | O-ring             | EPDM / FPM   | Not fitted for steam version |
| 19    | Gland              | Stainless steel EN10028-7 1.4436 / 1.4404              |                              |
| 20    | Hexagonal screw    | Stainless steel ISO 3506 A4-80                         |                              |
| 21    | Key                | Carbon steel 1.0503 DIN 6885A                          |                              |
| 22    | Bearing plate      | PTFE on stainless steel net                            |                              |



### Dimensions



| DN   | L   | D     | D1    | h   | H   | h1  | d1  | h2  | L1   | Flange ISO5211 | Weight, kg |
|------|-----|-------|-------|-----|-----|-----|-----|-----|------|----------------|------------|
| 200  | 230 | 137.5 | 210.1 | 154 | 259 | 58  | 25  | 115 | 233  | F10            | 67         |
| 250  | 250 | 187   | 263.0 | 193 | 298 | 63  | 30  | 125 | 385  | F12            | 83         |
| 300  | 270 | 238   | 312.7 | 229 | 323 | 69  | 35  | 125 | 435  | F12            | 101        |
| 350  | 290 | 286   | 344.4 | 255 | 352 | 75  | 40  | 125 | 465  | F14            | 145        |
| 400  | 310 | 337   | 393.8 | 300 | 409 | 75  | 40  | 155 | 540  | F14            | 179        |
| 450  | 330 | 386   | 444.4 | 326 | 445 | 86  | 50  | 149 | 590  | F16            | 237        |
| 500  | 350 | 437   | 495.4 | 351 | 470 | 86  | 50  | 149 | 660  | F16            | 295        |
| 600  | 390 | 483   | 593.6 | 376 | 548 | 103 | 60  | 178 | 760  | F16            | 468        |
| 700  | 430 | 582   | 693.6 | 440 | 601 | 119 | 70  | 181 | 860  | F25            | 571        |
| 800  | 470 | 682   | 795.2 | 490 | 651 | 119 | 70  | 183 | 955  | F30            | 701        |
| 900  | 510 | 775   | 894.4 | 575 | 718 | 125 | 90  | 194 | 1070 | F30            | 1,189      |
| 1000 | 550 | 855   | 994.0 | 636 | 764 | 130 | 100 | 183 | 1200 | F30            | 1,584      |
| 1200 | 630 | 1054  | 1195  | 755 | 873 | 160 | 140 | 183 | 1440 | F35            | 2,321      |

### Operation

Högfors valves can be equipped with an actuator to your specification.

- manual gear,
- electric actuator,
- pneumatic or hydraulic actuator.



## Operation torque

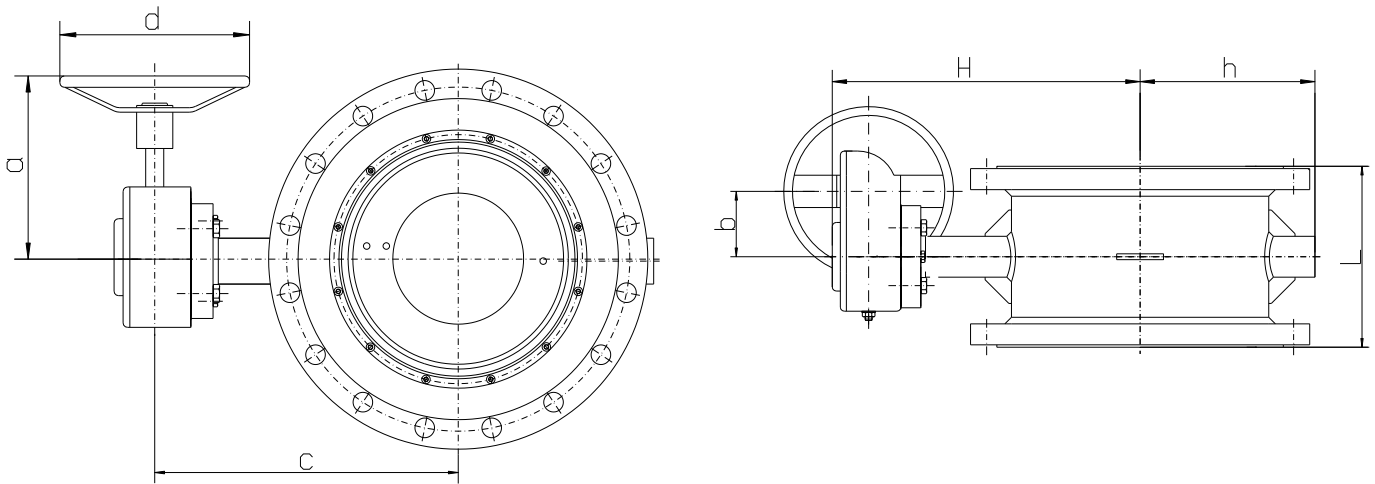
| DN | 200 | 250 | 300 | 350 | 400   | 450   | 500   | 600   | 700   | 800   | 900    | 1000   | 1200   | 1400   |        |
|----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| Nm | CS  | 240 | 400 | 700 | 1'100 | 1'600 | 2'200 | 3'000 | 4'200 | 6'800 | 10'000 | 13'000 | 16'000 | 24'000 | 34'000 |
|    | TS  | 190 | 320 | 550 | 850   | 1'300 | 1'800 | 2'400 | 3'400 | 5'500 | –      | –      |        |        |        |

\*) for steam duty use the next size up

## Manual gear

Opening and closing of the valves from the handwheel.

The position of disc can be seen on a position indicator on top of the gear.



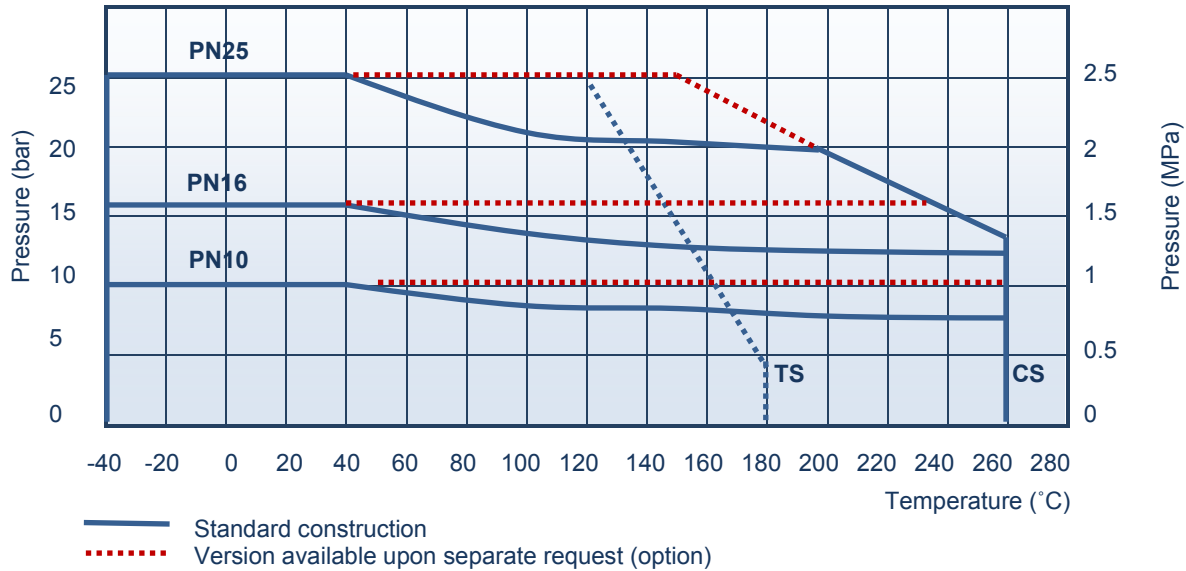
| DN   | Rotork gear | H    | h   | a   | b   | c   | d   | Weight*,<br>kg |
|------|-------------|------|-----|-----|-----|-----|-----|----------------|
| 200  | AB550N      | 346  | 154 | 220 | 71  | 300 | 200 | 76             |
| 250  | AB550N      | 385  | 193 | 255 | 71  | 339 | 300 | 92             |
| 300  | AB550N      | 410  | 229 | 255 | 71  | 363 | 300 | 110            |
| 350  | AB880N      | 442  | 255 | 291 | 86  | 394 | 400 | 159            |
| 400  | AB880N      | 499  | 300 | 291 | 86  | 451 | 400 | 180            |
| 450  | AB1950N     | 566  | 326 | 387 | 130 | 500 | 500 | 269            |
| 500  | AB1950N     | 591  | 351 | 387 | 130 | 525 | 500 | 327            |
| 600  | AB2000N     | 678  | 376 | 382 | 53  | 608 | 500 | 347            |
| 700  | AB6800N/SP4 | 760  | 440 | 500 | 263 | 660 | 500 | 641            |
| 800  | AB6800N/SP4 | 810  | 490 | 500 | 263 | 710 | 500 | 771            |
| 900  | AB6800N/SP6 | 877  | 575 | 546 | 278 | 777 | 500 | 1270           |
| 1000 | A200/SP9    | 942  | 636 | 571 | 384 | 864 | 500 | 1724           |
| 1200 | A200/SP9    | 1051 | 755 | 571 | 384 | 973 | 600 | 2461           |

\* weight of hand wheel is not included



## Pressure / Temperature Rating

The maximum working pressure ratings of the valve body. Rating according to EN1092-1 (CE).



| Temperature °C |          | RT                            | 100  | 150  | 200  | 250  | 300  |
|----------------|----------|-------------------------------|------|------|------|------|------|
|                |          | Max. allowable pressure (bar) |      |      |      |      |      |
| PN10           | DN ≤ 700 | 10.0                          | 9.2  | 8.8  | 8.3  | 7.6  | 6.9  |
|                | DN > 700 | 10.0                          | 8.5  | 8.3  | 7.7  | 7.0  | 6.4  |
| PN16           | DN ≤ 500 | 16.0                          | 14.8 | 14.0 | 13.3 | 12.1 | 11.0 |
|                | DN > 500 | 16.0                          | 13.7 | 13.3 | 12.4 | 11.3 | 10.2 |
| PN25           | DN ≤ 400 | 25.0                          | 23.2 | 22.0 | 20.8 | 19.0 | 17.2 |
|                | DN > 400 | 25.0                          | 21.4 | 20.8 | 19.4 | 17.7 | 16.0 |

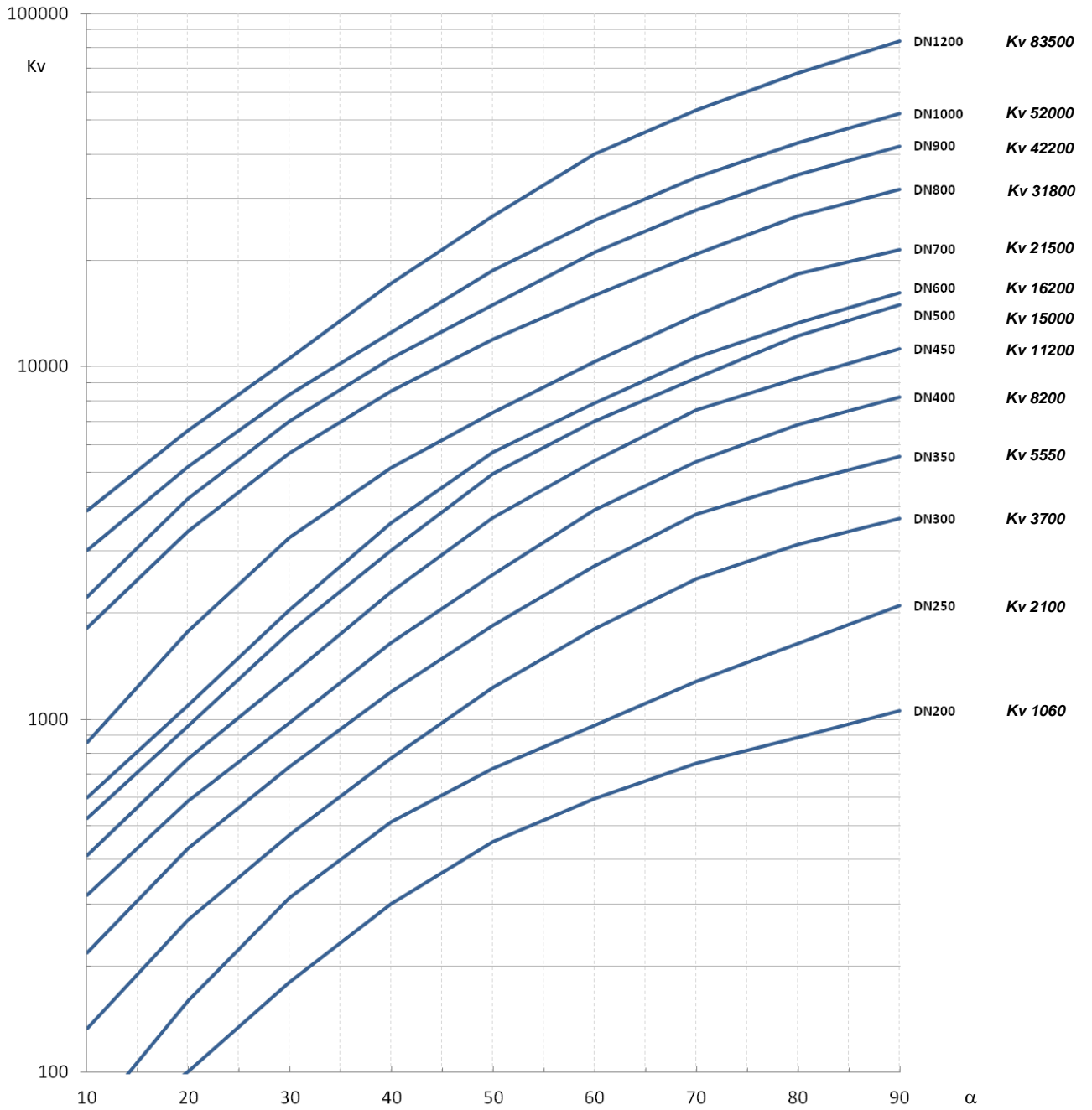
## How to order

|                 |   |   |   |   |    |    |     |   |   |
|-----------------|---|---|---|---|----|----|-----|---|---|
|                 |   | 3 | 1 | 5 | 00 | CS | 800 | M | 5 |
| Body material:  | 3 – Carbon steel  |   |   |   |    |    |     |   |   |
| Valve type:     | 1 - butterfly valve,  |   |   |   |    |    |     |   |   |
| Connection:     | 0, 1, 2 – wafer type,<br>3 - welded end,<br>5 – flanged,            |   |   |   |    |    |     |   |   |
| Design options: | 00 – Standard,<br>01 - For steam                                    |   |   |   |    |    |     |   |   |
| Main seal       | (CS) - Stainless steel<br>(TS) – PTFE+C                             |   |   |   |    |    |     |   |   |
| Size DN         |   |   |   |   |    |    |     |   |   |
| Operation:      | (Z) - bare shaft,<br>(M) - manual gear<br>(MF) – universal actuator |   |   |   |    |    |     |   |   |
| Options         | (5) – ΔP = 25 bar<br>(G) – compatibility with GOST flanges          |   |   |   |    |    |     |   |   |



### Flow curves

Indicating typical Kv value.



**WATER:**

Volume flow:

$$Q = K_v \sqrt{\frac{\Delta p}{\rho}}$$

$K_v$  = KV value – Capacity factor

DN = nominal valve size, mm

$\alpha$  = disc opening angle

$\Delta p$  = pressure difference, bar

$\rho$  = density of liquid, kg/dm<sup>3</sup>

V = flow velocity, m/s

Q = volume flow, m<sup>3</sup>/h

Flow velocity:

$$V = 354 \frac{Q}{DN^2}$$