

BI-DIRECTIONAL KNIFE GATE VALVE

The **EB** model knife gate is a bi-directional valve designed for general industrial service applications. The design of the body and seat assures non-clogging shut off on suspended solids in industries such as:

- Wastewater treatment plants
- Food and Beverage
- Chemical plants
- etc.

Sizes: DN 50 to DN 1200 (larger diameters on request)

Working pressure: DN 50 to DN 250: 10 kg/cm²
 DN 300 to DN 400: 6 kg/cm²
 DN 450: 5 kg/cm²
 DN 500 to DN 600: 4 kg/cm²
 DN 700 to DN 1200: 2 kg/cm²

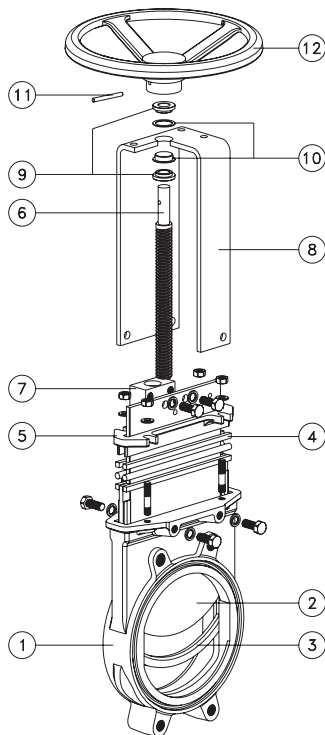
Standard flange connection: DIN PN 10

Other flange connections: on request

Directives: DIR 98/37/CE (MACHINES)
 DIR 97/23/CE (PED)
 DIR 94/9/CE (ATEX)

Face to face dimensions acc. to K1 DIN 3202 up to DN 300.

All valves are tested prior to shipping in accordance with the standard developed by the Quality Control Department at ORBINOX.



STANDARD PARTS LIST

| Part: | Cast Iron: |
|-----------------------|--|
| 1- Body | GJL (GG25) |
| 2- Gate | AISI 316 Ti |
| 3- Seat | EPDM / Nitrile |
| 4- Packing | PTFE Impreg. Synth. Fibre (ST) |
| 5- Gland Follower | $\phi \leq 300$: Ductile Iron / $\phi \geq 350$: Aluminium |
| 6- Stem | AISI 303 |
| 7- Stem Nut | Brass |
| 8- Yoke | Carbon Steel - Epoxy Coated |
| 9- Collar | Brass |
| 10- Collar and washer | Nylon |
| 11- Spring Pin | Steel DIN 1481 |
| 12- Handwheel | $\phi < 310$: Ductile Iron / $\phi > 410$: GJL 250 (GG25) |

MODEL

EB

EUROMIX

DESIGN FEATURES

BODY:

Wafer style cast **monoblock** design up to DN 700 with reinforced ribs in larger diameters for extra body strength.

Two-part bolted body, internally machined, from DN 800.

Full port design for greater flow capacity and minimal pressure drop.

Gate guides on full stroke ensure bi-directional shutoff.

Internal design avoids any build up of solids that would prevent valve from closing.

Full flange connection from DN 50 to DN 300.

Standard EPDM o-ring on flange connection of the valve for sealing.

GATE:

Stainless steel gate, as standard.

Gate is polished on both sides for a greater seal between the gate with both packing and seat.

Gate is fully guided in the body allowing for bi-directional service.

PACKING:

Standard braided cotton with EPDM o-ring for better shut-off.

Long-life braided packing is available in a wide range of materials.

NON RISING STEM:

The standard stainless steel stem offers a high and long corrosion resistant life.

ACTUATORS:

All actuators supplied by **ORBINOX** are interchangeable, and supplied with an standard mounting kit for easy installation on site.

YOKE or ACTUATOR SUPPORT:

Made of EPOXY coated steel (stainless steel available on request).

Compact design makes it extremely robust even under the most severe conditions.

EPOXY COATING:

The epoxy coating on all **ORBINOX** cast iron and carbon steel valve bodies and components is electrostatically applied making the valves to be corrosion resistant with a high quality finished product.

The **ORBINOX** standard colour is RAL-5015 blue.

GATE SAFETY PROTECTION:

ORBINOX automated valves are provided with gate guards in accordance with EU Safety Standards.

The design feature prevents any objects from being caught accidentally while the gate is moving.

OTHER MATERIALS

On request, following materials can be also supplied:

Body:

- Ductile Iron (GGG-40)
- CF8M on some sizes

Slide:

- AISI 316 or 304

Stem:

- AISI 316 or 316 Ti



ACTUATOR TYPES

Manual:

Handwheel (non-rising stem)
 Chainwheel (non-rising stem)
 Lever
 Bevel Gear (non-rising stem)
 Handwheel (rising stem)
 Others (square nut...)

Automatic:

Double Acting Pneumatic
 Electric (rising or non-rising stem)
 Single Acting Pneumatic
 Hydraulic

All actuators supplied by ORBINOX are interchangeable.

FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

SINGLE ACTING / SPRING RETURN

Available from DN 50 to DN 200

Options:

- Fail open
- Fail closed

SINGLE ACTING / VOLUME TANK

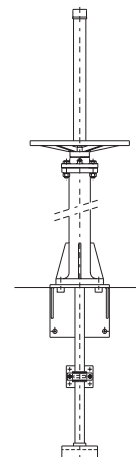
Available for all sizes (DN>200)

Options:

- Pneumatic Failsafe
- Pneumatic or Electric Failsafe

ACCESSORIES

Mechanical stops
 Locking device
 Manual override
 Solenoid valves
 Positioners
 Limit switches
 Proximity switches
 Floor stands
 Stem extensions



Wide range of valve extensions available.

For further information about fail safe systems and valve extensions, please see EX chapter.

We recommend consultation with our technical department.

TEMPERATURE CHART

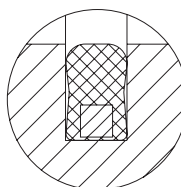
| SEAT / SEALS | | | PACKING | | |
|--|---------------|--|--|-----------------|--------|
| Material | Max.Temp.(°C) | Applications | Material | Max. Temp. (°C) | pH |
| EPDM (E) | 120 | Acid and non mineral oils. | Tallowed cotton (AH) | 50 | 6 - 8 |
| Nitrile (N) | 120 | Resistance to petroleum products. | Dry cotton (AS) | 50 | 6 - 8 |
| On request: | | | PTFE impregn.synth fibre (ST) | 240 | 2 - 13 |
| Viton (V) | 200 | General chemical service High temperature | Braided PTFE (TH) | 260 | 0 - 14 |
| More details and other materials on request. | | | NOTE: All types include an elastomere O-ring (same material as seal), excluding TH. Standard packing: ST | | |

SEAT TYPES

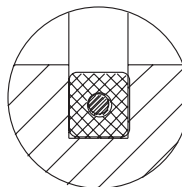
RESILIENT SEAT

This is the standard seat. The joint is seated on the body, fitted with a metallic core, in contact with the gate all over its perimeter. This layout provide an adequate watertightness and seamless liquid flow on both ways, avoiding at the same time any build-up of solids that would prevent the valve from closing. The o-ring is protected by the body itself.

* DN50-300: Moulded seal with an internal steel core.

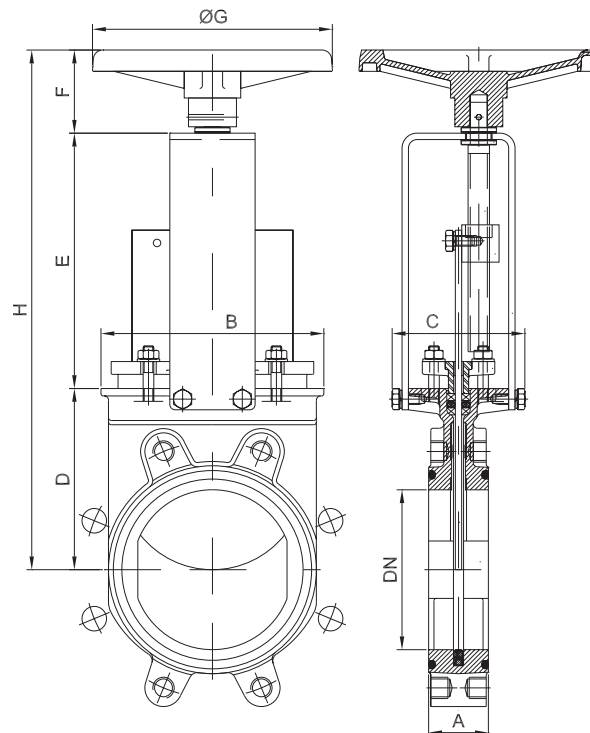


* DN350-600: Extruded seal with an internal steel wire.



HANDWHEEL (non-rising stem)

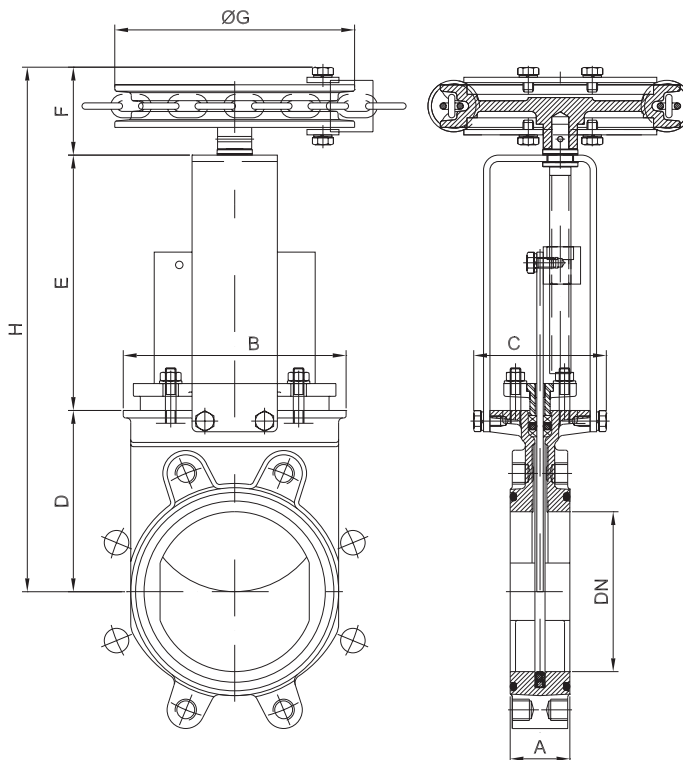
- Standard handwheel actuator.
- Consists on:
 - Handwheel: Epoxy coated Cast Iron
 - Stem
 - Yoke bushing
 - Stem nut fixed to the gate
- Available from DN 50 to DN 1000
- Options:
 - Locking Device
 - Extension
 - Square Nut Drive



| DN | A | B | C | D | E | F | ØG | H | Weight (kg.) |
|------|-----|------|-----|------|------|-----|-----|------|--------------|
| 50 | 43 | 113 | 124 | 105 | 132 | 78 | 225 | 315 | 8 |
| 65 | 46 | 128 | 124 | 115 | 149 | 78 | 225 | 342 | 9 |
| 80 | 46 | 143 | 124 | 124 | 165 | 78 | 225 | 367 | 10 |
| 100 | 52 | 162 | 124 | 140 | 190 | 78 | 225 | 408 | 12 |
| 125 | 56 | 181 | 124 | 150 | 214 | 78 | 225 | 442 | 15 |
| 150 | 56 | 209 | 124 | 170 | 240 | 78 | 225 | 488 | 17 |
| 200 | 60 | 263 | 142 | 205 | 305 | 92 | 310 | 602 | 30 |
| 250 | 68 | 315 | 142 | 250 | 360 | 92 | 310 | 702 | 42 |
| 300 | 78 | 370 | 142 | 290 | 410 | 92 | 310 | 792 | 60 |
| 350 | 80 | 423 | 193 | 315 | 553 | 82 | 410 | 950 | 90 |
| 400 | 80 | 480 | 193 | 350 | 603 | 82 | 410 | 1035 | 140 |
| 450 | 90 | 530 | 197 | 505 | 653 | 82 | 550 | 1240 | 185 |
| 500 | 90 | 595 | 197 | 450 | 713 | 82 | 550 | 1245 | 204 |
| 600 | 100 | 700 | 197 | 510 | 813 | 82 | 550 | 1405 | 230 |
| 700 | 110 | 890 | 398 | 610 | 979 | 147 | 800 | 1736 | 380 |
| 800 | 110 | 1012 | 320 | 700 | 1076 | 147 | 800 | 1923 | 550 |
| 900 | 110 | 1112 | 320 | 785 | 1115 | 147 | 800 | 2047 | 680 |
| 1000 | 110 | 1240 | 320 | 1120 | 1220 | 147 | 800 | 2487 | 800 |

CHAINWHEEL

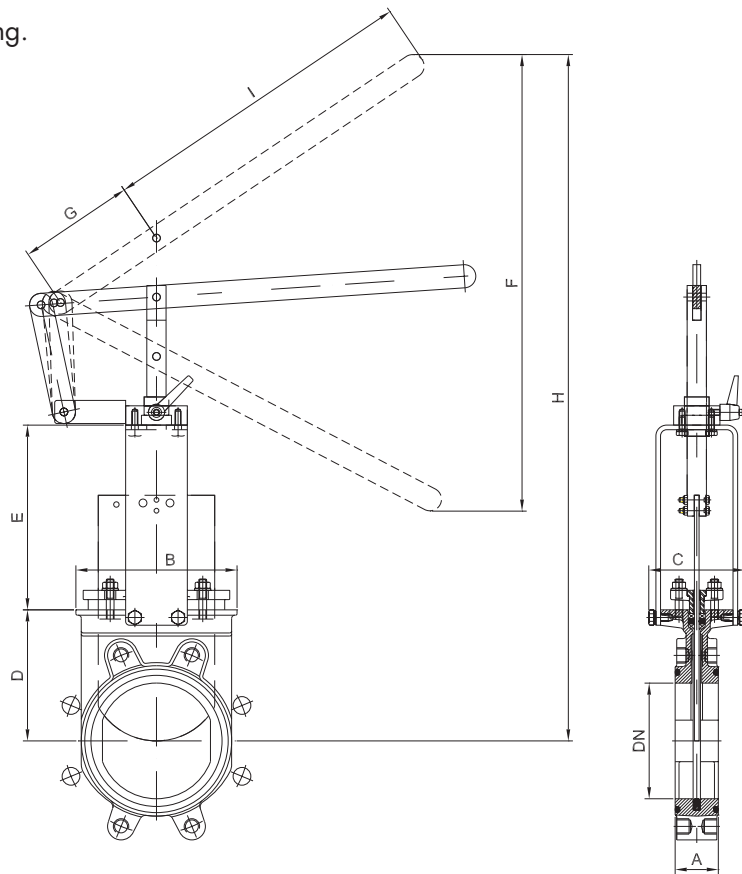
- Recommended for elevated installations.
- Consists on:
 - Chainwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Grease nipple
- Available from DN 50 to DN 600
- Options (on request):
 - Locking Device
 - Extensions and floor stand



| DN | A | B | C | D | E | F | ØG | H |
|-----|-----|-----|-----|-----|-----|----|-----|------|
| 50 | 43 | 113 | 124 | 105 | 132 | 82 | 225 | 319 |
| 65 | 46 | 128 | 124 | 115 | 149 | 82 | 225 | 346 |
| 80 | 46 | 143 | 124 | 124 | 165 | 82 | 225 | 371 |
| 100 | 52 | 162 | 124 | 140 | 190 | 82 | 225 | 412 |
| 125 | 56 | 181 | 124 | 150 | 214 | 82 | 225 | 446 |
| 150 | 56 | 209 | 124 | 170 | 240 | 82 | 225 | 492 |
| 200 | 60 | 263 | 142 | 205 | 305 | 88 | 300 | 598 |
| 250 | 68 | 315 | 142 | 250 | 360 | 88 | 300 | 698 |
| 300 | 78 | 370 | 142 | 290 | 410 | 88 | 300 | 788 |
| 350 | 80 | 423 | 193 | 315 | 553 | 75 | 454 | 943 |
| 400 | 80 | 480 | 193 | 350 | 603 | 75 | 454 | 1028 |
| 450 | 90 | 530 | 197 | 505 | 653 | 75 | 454 | 1233 |
| 500 | 90 | 595 | 197 | 450 | 713 | 75 | 454 | 1238 |
| 600 | 100 | 700 | 197 | 510 | 813 | 75 | 454 | 1398 |

LEVER

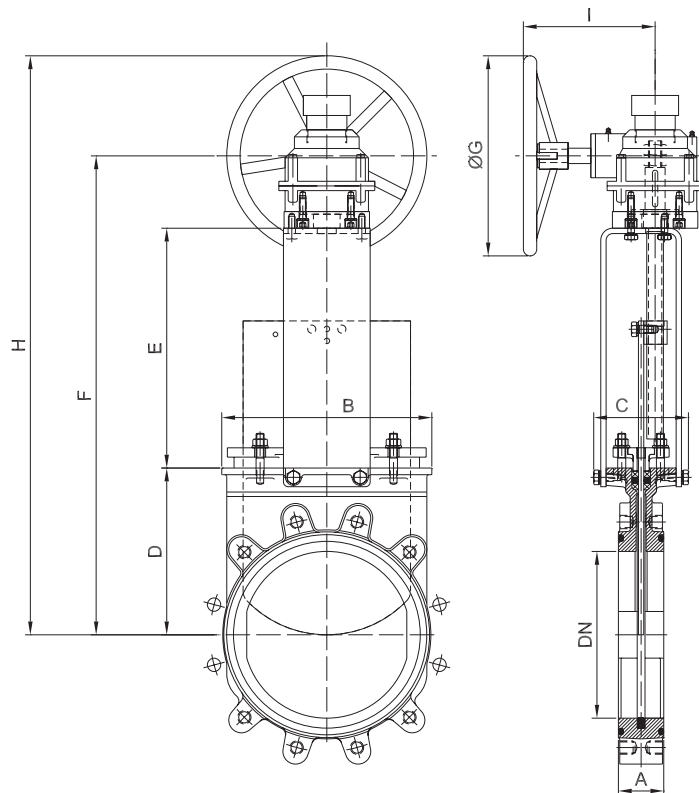
- Recommended for quick opening and closing.
- Consists on:
 - Lever
 - Stem
 - Yoke sleeve
 - Lever lock
- Available from DN 50 to DN 150



| DN | A | B | C | D | E | F | G | H | I |
|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 | 43 | 113 | 124 | 105 | 132 | 242 | 150 | 410 | 315 |
| 65 | 46 | 128 | 124 | 115 | 149 | 245 | 150 | 437 | 315 |
| 80 | 46 | 143 | 124 | 124 | 165 | 287 | 150 | 510 | 315 |
| 100 | 52 | 162 | 124 | 140 | 190 | 415 | 150 | 633 | 415 |
| 125 | 56 | 181 | 124 | 150 | 214 | 503 | 150 | 755 | 415 |
| 150 | 56 | 209 | 124 | 170 | 240 | 592 | 150 | 890 | 415 |

GEAR, non-rising stem

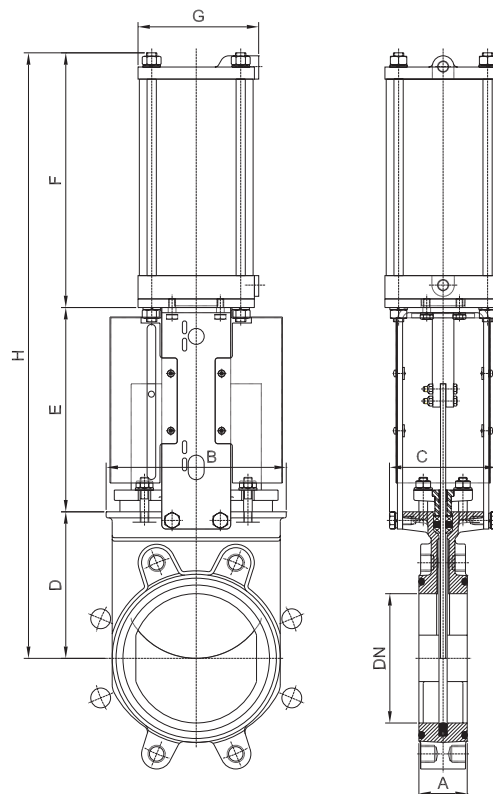
- Recommended for valves larger than DN 350 and working pressures greater than 3.5 kg/cm²
- Consists of:
 - Stem
 - Yoke
 - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200 to DN 1200
- Options:
 - Locking device
 - Extensions
 - Chainwheel
 - Rising stem



| DN | A | B | C | D | E | F | ØG | H | I |
|------|-----|------|-----|------|------|------|-----|------|-----|
| 200 | 60 | 263 | 142 | 205 | 305 | 618 | 300 | 768 | 198 |
| 250 | 68 | 315 | 142 | 250 | 360 | 718 | 300 | 868 | 198 |
| 300 | 78 | 370 | 142 | 290 | 410 | 808 | 300 | 958 | 198 |
| 350 | 80 | 423 | 193 | 315 | 553 | 1040 | 450 | 1265 | 250 |
| 400 | 80 | 480 | 193 | 350 | 603 | 1125 | 450 | 1350 | 250 |
| 450 | 90 | 530 | 197 | 505 | 653 | 1330 | 450 | 1555 | 250 |
| 500 | 90 | 595 | 197 | 450 | 713 | 1335 | 450 | 1560 | 250 |
| 600 | 100 | 700 | 197 | 510 | 813 | 1495 | 450 | 1720 | 250 |
| 700 | 110 | 890 | 398 | 610 | 979 | 1765 | 450 | 1990 | 250 |
| 800 | 110 | 1012 | 320 | 700 | 1076 | 1950 | 650 | 2275 | 250 |
| 900 | 110 | 1112 | 320 | 785 | 1115 | 2075 | 650 | 2400 | 250 |
| 1000 | 110 | 1240 | 320 | 1120 | 1220 | 2515 | 650 | 2840 | 250 |
| 1200 | 150 | 1470 | 450 | 1340 | 1455 | 3005 | 800 | 3405 | 250 |

PNEUMATIC CYLINDER

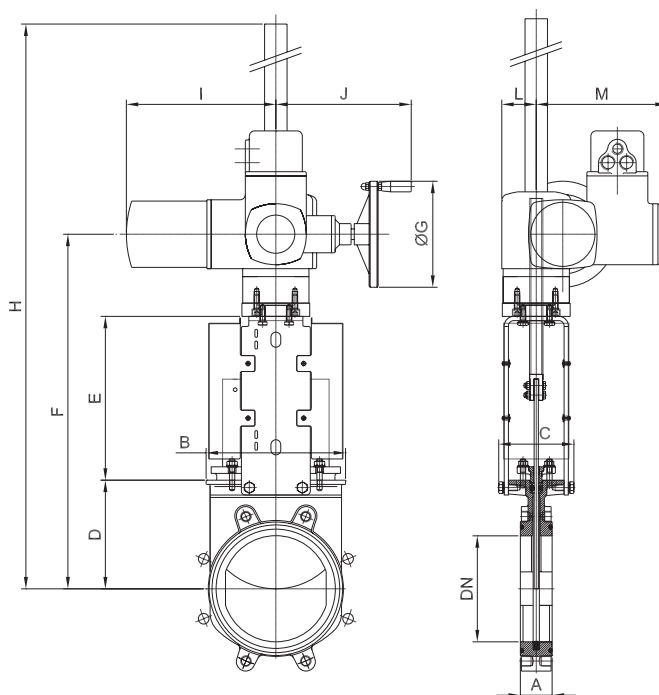
- The standard pneumatic actuator (double acting on-off cylinder) consists of:
 - Aluminium jacket and covers
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available from DN 50 to DN 800
- Supply Pressure: minimum 3.5 kg/cm² - maximum 10 kg/cm²
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options (on request):
 - Hard anodized jacket and covers
 - Over / Undersized cylinder
 - Stainless Steel jacket and covers
 - Manual override
 - Fail safe system
 - Travel stops
- Instrumentation (on request):
 - Positioners
 - Solenoid valves
 - Flow regulators
 - Air preparation units



| DN | A | B | C | D | E | F | G | H | Weight (kg.) | Standard Cyl | Connect. |
|-----|-----|------|-----|-----|------|------|-----|------|--------------|--------------|----------|
| 50 | 43 | 113 | 124 | 105 | 129 | 178 | 95 | 412 | 9 | C100/62 | 1/4" G |
| 65 | 46 | 128 | 124 | 115 | 146 | 193 | 95 | 454 | 10 | C100/77 | 1/4" G |
| 80 | 46 | 143 | 124 | 124 | 162 | 211 | 95 | 497 | 11 | C100/95 | 1/4" G |
| 100 | 52 | 162 | 124 | 140 | 187 | 231 | 115 | 558 | 13.5 | C100/115 | 1/4" G |
| 125 | 56 | 181 | 124 | 150 | 214 | 270 | 140 | 634 | 19 | C125/143 | 1/4" G |
| 150 | 56 | 209 | 124 | 170 | 237 | 296 | 140 | 703 | 22 | C125/168 | 1/4" G |
| 200 | 60 | 263 | 142 | 205 | 305 | 362 | 175 | 872 | 47 | C160/220 | 1/4" G |
| 250 | 68 | 315 | 142 | 250 | 364 | 428 | 220 | 1042 | 58 | C200/270 | 3/8" G |
| 300 | 78 | 370 | 142 | 290 | 414 | 478 | 220 | 1182 | 84 | C200/320 | 3/8" G |
| 350 | 80 | 423 | 193 | 315 | 553 | 519 | 277 | 1387 | 130 | C250/353 | 3/8" G |
| 400 | 80 | 480 | 193 | 350 | 603 | 569 | 277 | 1522 | 181 | C250/403 | 3/8" G |
| 450 | 90 | 530 | 270 | 505 | 653 | 647 | 382 | 1805 | 235 | C300/453 | 1/2" G |
| 500 | 90 | 595 | 270 | 450 | 713 | 697 | 382 | 1860 | 302 | C300/503 | 1/2" G |
| 600 | 100 | 700 | 270 | 510 | 813 | 797 | 382 | 2120 | 315 | C300/603 | 1/2" G |
| 700 | 110 | 890 | 380 | 610 | 979 | 943 | 444 | 2532 | 480 | C350/703 | 3/4" G |
| 800 | 110 | 1012 | 320 | 700 | 1076 | 1043 | 444 | 2819 | 585 | C350/803 | 3/4" G |

ELECTRIC ACTUATOR (rising stem)

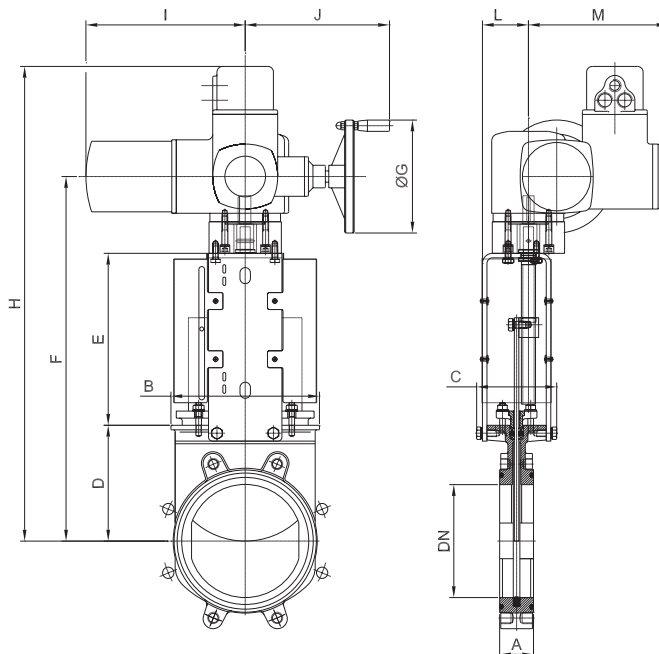
- Consists on:
 - Electric motor
 - Rising stem
 - Motor support yoke flange (Acc. to ISO 5210 / DIN 3338)
- The standard electric motor is equipped with:
 - Manual emergency operation
 - Limit switches (open/closed)
 - Torque switches
- Available from DN 50 to DN 1200
- Wide range of types and marks available to meet customer's needs.



| DN | A | B | C | D | E | F | ØG | H | I | J | L | M | StemØxpitch | Torque(Nm) |
|------|-----|------|-----|------|------|------|-----|------|-----|-----|-----|-----|-------------|------------|
| 50 | 43 | 113 | 124 | 105 | 129 | 377 | 140 | 547 | 265 | 234 | 63 | 237 | 20 x 4 | 20 |
| 65 | 46 | 128 | 124 | 115 | 146 | 404 | 140 | 574 | 265 | 234 | 63 | 237 | 20 x 4 | 25 |
| 80 | 46 | 143 | 124 | 124 | 162 | 429 | 140 | 600 | 265 | 234 | 63 | 237 | 20 x 4 | 30 |
| 100 | 52 | 162 | 124 | 140 | 189 | 472 | 160 | 667 | 265 | 250 | 63 | 237 | 20 x 4 | 40 |
| 125 | 56 | 181 | 124 | 150 | 214 | 506 | 160 | 702 | 265 | 250 | 63 | 237 | 20 x 4 | 50 |
| 150 | 56 | 209 | 124 | 170 | 237 | 550 | 160 | 1120 | 265 | 250 | 63 | 237 | 20 x 4 | 60 |
| 200 | 60 | 263 | 142 | 205 | 309 | 669 | 200 | 1250 | 282 | 256 | 65 | 247 | 25 x 5 | 70 |
| 250 | 68 | 315 | 142 | 250 | 364 | 769 | 200 | 1350 | 282 | 256 | 65 | 247 | 25 x 5 | 80 |
| 300 | 78 | 370 | 142 | 290 | 414 | 859 | 200 | 1440 | 282 | 256 | 65 | 247 | 25 x 5 | 90 |
| 350 | 80 | 423 | 193 | 315 | 553 | 1087 | 200 | 1742 | 282 | 256 | 128 | 247 | 35 x 6 | 105 |
| 400 | 80 | 480 | 193 | 350 | 603 | 1170 | 200 | 1827 | 282 | 256 | 128 | 247 | 35 x 6 | 120 |
| 450 | 90 | 530 | 270 | 505 | 653 | 1403 | 315 | 2087 | 385 | 325 | 130 | 285 | 35 x 6 | 160 |
| 500 | 90 | 595 | 270 | 450 | 713 | 1408 | 315 | 2092 | 385 | 325 | 130 | 285 | 35 x 6 | 180 |
| 600 | 100 | 700 | 270 | 510 | 813 | 1568 | 315 | 2252 | 385 | 325 | 130 | 285 | 35 x 6 | 210 |
| 700 | 110 | 890 | 380 | 610 | 979 | 1838 | 315 | 2918 | 385 | 325 | 202 | 285 | 40 x 7 | 250 |
| 800 | 110 | 1012 | 320 | 700 | 1076 | 2025 | 400 | 3041 | 385 | 332 | 202 | 285 | 50 x 8 | 400 |
| 900 | 110 | 1112 | 320 | 785 | 1115 | 2129 | 400 | 3165 | 385 | 332 | 202 | 285 | 50 x 8 | 450 |
| 1000 | 110 | 1240 | 320 | 1120 | 1220 | 2564 | 400 | 3605 | 385 | 332 | 202 | 285 | 50 x 8 | 500 |
| 1200 | 150 | 1470 | 450 | 1340 | 1455 | 3079 | 500 | 4390 | 510 | 355 | 284 | 307 | 50 x 8 | 700 |

ELECTRIC ACTUATOR (non-rising stem)



- Consists on:
 - Electric motor
 - Non rising stem
 - Motor support yoke flange
(Acc. to ISO 5210 / DIN 3338)
- The standard electric motor is equipped with:
 - Manual emergency operation
 - Limit switches (open/closed)
 - Torque switches
- Available from DN 50 to DN 1200
- Wide range of types and marks available to meet customer's needs.

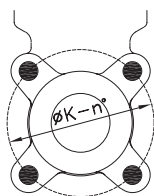


| DN | A | B | C | D | E | F | ØG | H | I | J | L | M | StemØ | pitch | Torque(Nm) |
|------|-----|------|-----|------|------|------|-----|------|-----|-----|-----|-----|--------|-------|------------|
| 50 | 43 | 113 | 124 | 105 | 132 | 359 | 140 | 530 | 265 | 234 | 72 | 237 | 20 x 4 | 20 | |
| 65 | 46 | 128 | 124 | 115 | 149 | 386 | 140 | 557 | 265 | 234 | 72 | 237 | 20 x 4 | 25 | |
| 80 | 46 | 143 | 124 | 124 | 165 | 411 | 140 | 582 | 265 | 234 | 72 | 237 | 20 x 4 | 30 | |
| 100 | 52 | 162 | 124 | 140 | 190 | 452 | 160 | 648 | 265 | 250 | 72 | 237 | 20 x 4 | 40 | |
| 125 | 56 | 181 | 124 | 150 | 214 | 486 | 160 | 682 | 265 | 250 | 72 | 237 | 20 x 4 | 50 | |
| 150 | 56 | 209 | 124 | 170 | 240 | 532 | 160 | 728 | 265 | 250 | 72 | 237 | 20 x 4 | 60 | |
| 200 | 60 | 263 | 142 | 205 | 335 | 645 | 200 | 841 | 282 | 256 | 82 | 247 | 25 x 5 | 70 | |
| 250 | 68 | 315 | 142 | 250 | 360 | 745 | 200 | 941 | 282 | 256 | 82 | 247 | 25 x 5 | 80 | |
| 300 | 78 | 370 | 142 | 290 | 410 | 835 | 200 | 1031 | 282 | 256 | 82 | 247 | 25 x 5 | 90 | |
| 350 | 80 | 423 | 193 | 315 | 553 | 1068 | 200 | 1238 | 282 | 256 | 128 | 247 | 35 x 6 | 105 | |
| 400 | 80 | 480 | 193 | 350 | 603 | 1151 | 200 | 1321 | 282 | 256 | 128 | 247 | 35 x 6 | 120 | |
| 450 | 90 | 530 | 270 | 505 | 653 | 1403 | 315 | 1583 | 385 | 325 | 130 | 285 | 35 x 6 | 160 | |
| 500 | 90 | 595 | 270 | 450 | 713 | 1408 | 315 | 1588 | 385 | 325 | 130 | 285 | 35 x 6 | 180 | |
| 600 | 100 | 700 | 270 | 510 | 813 | 1568 | 315 | 1748 | 385 | 325 | 130 | 285 | 35 x 6 | 210 | |
| 700 | 110 | 890 | 380 | 610 | 979 | 1838 | 315 | 2038 | 385 | 325 | 202 | 285 | 40 x 7 | 250 | |
| 800 | 110 | 1012 | 320 | 700 | 1076 | 2025 | 400 | 2225 | 385 | 332 | 202 | 285 | 50 x 8 | 400 | |
| 900 | 110 | 1112 | 320 | 785 | 1115 | 2129 | 400 | 2329 | 385 | 332 | 202 | 285 | 50 x 8 | 450 | |
| 1000 | 110 | 1240 | 320 | 1120 | 1220 | 2564 | 400 | 2764 | 385 | 332 | 202 | 285 | 50 x 8 | 500 | |
| 1200 | 150 | 1470 | 450 | 1340 | 1455 | 3079 | 500 | 3329 | 510 | 355 | 284 | 307 | 60 x 9 | 700 | |

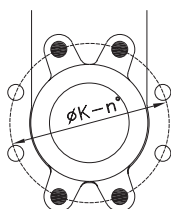
FLANGE AND BOLTING DETAILS

DIN PN10

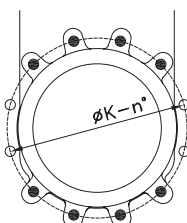
| DN | K | n° | M | T |   |
|------|------|----|------|----|---|
| 50 | 125 | 4 | M-16 | 10 | 2 - 2 |
| 65 | 145 | 4 | M-16 | 10 | 2 - 2 |
| 80 | 160 | 8 | M-16 | 12 | 2 - 6 |
| 100 | 180 | 8 | M-16 | 12 | 2 - 6 |
| 125 | 210 | 8 | M-16 | 12 | 2 - 6 |
| 150 | 240 | 8 | M-20 | 14 | 2 - 6 |
| 200 | 295 | 8 | M-20 | 14 | 2 - 6 |
| 250 | 350 | 12 | M-20 | 18 | 4 - 8 |
| 300 | 400 | 12 | M-20 | 18 | 4 - 8 |
| 350 | 460 | 16 | M-20 | 18 | 8 - 8 |
| 400 | 515 | 16 | M-24 | 18 | 8 - 8 |
| 450 | 565 | 20 | M-24 | 20 | 12 - 8 |
| 500 | 620 | 20 | M-24 | 20 | 12 - 8 |
| 600 | 725 | 20 | M-27 | 20 | 12 - 8 |
| 700 | 840 | 24 | M-27 | 20 | 16 - 8 |
| 800 | 950 | 24 | M-30 | 20 | 16 - 8 |
| 900 | 1050 | 28 | M-30 | 20 | 20 - 8 |
| 1000 | 1160 | 28 | M-33 | 20 | 20 - 8 |
| 1200 | 1380 | 32 | M-36 | 35 | 22 - 10 |



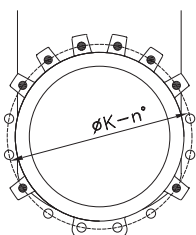
DN 50-65



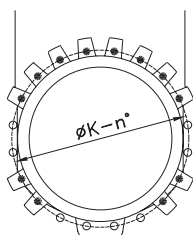
DN 80-200



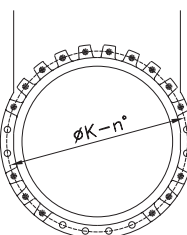
DN 250-300



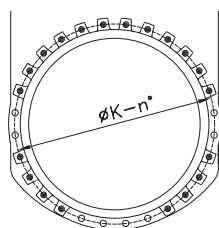
DN 350-400



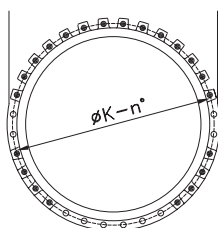
DN 450-600



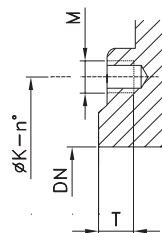
DN 700-800





DN 900-1000



DN 1200



-  BLIND TAPPED BOLTS
-  THROUGH BOLTS