Butterfly Valve

# BOAX-B

PS 10 bar: DN 40 - 1000
PS 16 bar: DN 40 - 600

## Type Series Booklet

## Legal information/Copyright

Type Series Booklet BOAX-B

# Contents

# Butterfly Valves

## Centred-disc Butterfly Valves

# BOAX-B

### Main applications

- Spray irrigation systems
- Domestic water supply
- Water extraction
- Hot-water heating systems
- Air-conditioning
- Washing plants
- Paint shops
- General irrigation systems
- Swimming pools
- Pressure boosting
- Water treatment
- Rainwater harvesting

### Fluids handled

- Heating water
- Cooling water
- Drinking water
- Waste water without faeces
- Fluids containing mineral oils
- Oil

### Operating data

**Table 1:** Operating properties

| Characteristic | Value |
|---|---|
| Pressure class | PN 10/16 |
| Nominal size | DN 40 - 1000 |
| Max. permissible pressure [bar] | 16 (DN 40 - 600) / 10 (DN 40 - 1000)<br>at ambient temperature |
| Min. permissible temperature [°C] | ≥ -10 |
| Max. permissible temperature [°C] | ≤ +110 (see below) |
| Valve for lubricating fluids | Max. reference velocity: 3 m/s |
| Temperature with<br>▪ XC liner<br>▪ XU liner<br>▪ K liner | <br>▪ -10 °C to +110 °C<br>▪ -10 °C to +130 °C<br>▪ -5 °C to +90 °C |

### Designation

**Table 2:** Designation key

| Code | Description | |
|---|---|---|
| BOAX-B | Type series | |
| Mat P | Pneumatic actuator | |
| | -da | Double-acting pneumatic quarter-turn actuator of the ACTAIR NG type series |
| | -sa | Single-acting pneumatic quarter-turn actuator of the DYNACTAIR NG type series |
| Mat E | Electric actuator | |
| | | Electric quarter-turn actuator, make: BERNARD controls |
| DVGW | DVGW-approval is valid for drinking water applications. | |

### Design details

### Design

- Wafer-type body with flat faces - T1: DN 650 - 1000
- Semi-lug body - T2: DN 40 - 600
- Full-lug body with raised faces - T4: DN 40 - 600
- Flanged body with flat faces - T5: DN 650 to 1000 (DN 150 to 600 on request)
- Dead-end service and downstream dismantling possible with body types T2, T4 and T5
- Elastomer liner: thicker elastomer in the area of the shaft passage ensures leak-proof sealing to atmosphere
- The spherically machined valve disc ensures perfectly tight shut-off: no leakage visible to the naked eye
- Heat barrier between valve and lever
- Face-to-face length to ISO 5752-20 and EN 558-1-20
- EN, ASME connections
- Top flange to ISO 5211
- Marking in accordance with EN 19
- Absolutely tight shut-off (no leakage visible to the naked eye) in either direction of flow in accordance with EN 12266-1, leakage rate A, and ISO 5208, category A.
- Design to EN 593 and ISO 10631

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- Body with polyurethane coating, thickness 80 µm, colour: RAL 5012 (light blue), in compliance with water specifications.
- Valve disc made of nodular cast iron, epoxy-coated, thickness 80 µm, colour: RAL 8012 (brown), suitable for drinking water
- The valves can be installed between all commercial mating flanges and line connections without requiring any flange gaskets. The elastomer liner alone provides a tight seal at the flange connections.
- Standard manual actuation:
  - CR / CM quarter-turn levers
  - MN / MR manual gearboxes

### Variants

- BOAX-B Mat E: valve with electric actuator, make: BERNARD Controls
  - DN 40 - 100: type series AQL, size AQ7L
  - DN 40 - 300: type series AQ, sizes AQ5 to AQ50
- BOAX-B Mat P : Valve with double-acting pneumatic quarter-turn actuator of the ACTAIR NG type series or single-acting pneumatic quarter-turn actuator of the DYNACTAIR NG type series.

### Actuator variants

- Electric actuators (BOAX-B Mat E unit)
- ACTAIR NG / DYNACTAIR NG pneumatic actuators (BOAX-B Mat P unit)

### Automation options

- AMTROBOX for open/closed position signalling
- AMTRONIC position signalling and control air supply
- SMARTRONIC positioner and process controller

### Valve body materials

**Table 3:** Overview of available materials

| Material | Material number | Body | DN | KSB code |
|---|---|---|---|---|
| EN-GJS-400-15 | JS 1030 / ASTM A536 Gr. 60.40.18 | T1 | DN 650 - 1000 | 3g |
| EN-GJS-400-15 | 5.3106 | T2 | DN 40 - 600 | 3g |
| EN-GJS-400-15 | 5.3106 | T4 | DN 40 - 600 | 3g |
| EN-GJS-400-15 | JS 1030 / ASTM A536 Gr. 60.40.18 | T5 | DN 650 - 1000 | 3g |

### Product benefits

- Spherically machined disc with rounded sealing contour
  - ensures durable and permanently tight shut-off
- Splined or keyed connection without play between shaft and valve disc
  - Dry shaft, no contact with fluid handled
- Sealing to atmosphere is ensured,
  - even when the actuator has been removed
- Marking indicates position of valve disc
- Shaft in anti-blow-out design
  - Shaft is retained in the body.
- Valve equipped with stainless steel bearing bushes with reinforced PTFE coating
- The elastomer liner provides tight sealing at the flanged line connections, eliminating the need for an extra gasket.
- Valve certified to
  - ACS, DVGW, ÖVGW, WRAS and BELGAQUA for drinking water applications, with EPDM elastomer liner
  - Suitable for foodstuffs in accordance with FDA / EN 1935, with EPDM liner
- Valve actuation options
  - Manual
  - Electric
  - Pneumatic
- Leak-proof shaft passage ensured by spherically machined valve disc and thicker elastomer liner in the area of the shaft passage
- Heat barrier between valve and lever stop plate

### Product information

#### Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

#### EC Machinery Directive 2006/42/EC

Valves with actuators can meet the requirements of the 2006/42/EC Machinery Directive for partly completed machinery.

#### Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see https://www.ksb.com/ksb-en/About-KSB/Corporate-responsibility/reach/ .

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## Certifications

**Table 4:** Overview

| Label | Effective in: | Comment |
|---|---|---|
| | Worldwide | |
| | Germany | Approved in accordance with the German drinking water regulation |
| | Austria | Approved in accordance with the Austrian drinking water regulation |
| | Belgium | Approved in accordance with the Belgian drinking water regulation |
| | France | Approved in accordance with the French drinking water regulation |
| | United Kingdom | Approved in accordance with the UK drinking water regulation |
| | Worldwide | Elastomeric parts meet FDA standards. |

## Related documents

**Table 5:** Information/documents

| Document | Reference number |
|---|---|
| Actuator selection | 8450.11 |
| Operating manual | 8411.801 |

## Purchase order specifications

1. Type
2. Nominal pressure
3. Nominal size
4. Fluid handled
5. Flow rate / flow velocity
6. Operating temperature
7. Materials (body, valve disc, seat)
8. Line connection, flange facing and flange surface quality
9. Actuator / automation
10. Reference number

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## Technical data

### Technical data of butterfly valve

### Vacuum resistance

**Table 6:** Table: vacuum resistance data

| DN | NPS | Liner mounting method | Min. pressure | Max. temperature [°C] |
|---|---|---|---|---|
| | [inch] | | [bar absolute] | |
| 40 - 300 | 1½-12 | Non-glued (standard) | 1,33 . $10^{-5}$ ($10^{-2}$torr) | 90 |
| 350 - 1000 | 14-40 | Non-glued (standard) | 0,3 | 90 |

### Hydraulic characteristics of butterfly valve

**Table 7:** Table: Kv0 and Cv0

| DN | NPS | Flow coefficient with valve disc fully open | | Zeta |
|---|---|---|---|---|
| | [inch] | Kvo | Cvo | |
| 40 | 1½ | 53 | 62 | 1,46 |
| 50 | 2 | 133 | 154 | 0,56 |
| 65 | 2½ | 240 | 280 | 0,49 |
| 80 | 3 | 410 | 475 | 0,39 |
| 100 | 4 | 655 | 760 | 0,37 |
| 125 | 5 | 900 | 1044 | 0,48 |
| 150 | 6 | 1800 | 2090 | 0,25 |
| 200 | 8 | 3550 | 4120 | 0,20 |
| 250 | 10 | 7350 | 8453 | 0,12 |
| 300 | 12 | 9100 | 10465 | 0,16 |
| 350 | 14 | 11200 | 12880 | 0,19 |
| 400 | 16 | 14800 | 17020 | 0,19 |
| 450 | 18 | 19700 | 22655 | 0,17 |
| 500 | 20 | 25000 | 28750 | 0,16 |
| 600 | 24 | 36400 | 41860 | 0,16 |
| 650 | 26 | 37700 | 43730 | 0,20 |
| 700 | 28 | 47500 | 55100 | 0,17 |
| 750 | 30 | 51500 | 59740 | 0,19 |
| 800 | 32 | 63500 | 73660 | 0,16 |
| 900 | 36 | 84700 | 98250 | 0,15 |
| 1000 | 40 | 108500 | 125860 | 0,14 |

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### Actuating torques

A safety coefficient has already been included in the actuating torques for actuator selection.

**Table 8:** Table: actuating torques [Nm]

| DN | NPS | Actuating torques | | |
|---|---|---|---|---|
| | [inch] | 10 bar (lubricating) | 10 bar (non-lubricating) | 16 bar (lubricating) |
| 40 | 1½ | 8 | 16 | 16 |
| 50 | 2 | 16 | 24 | 24 |
| 65 | 2½ | 24 | 32 | 32 |
| 80 | 3 | 32 | 40 | 40 |
| 100 | 4 | 48 | 56 | 56 |
| 125 | 5 | 64 | 80 | 80 |
| 150 | 6 | 104 | 112 | 112 |
| 200 | 8 | 136 | 168 | 168 |
| 250 | 10 | 198 | 297 | 297 |
| 300 | 12 | 342 | 468 | 468 |
| 350 | 14 | 450 | 648 | 648 |
| 400 | 16 | 585 | 882 | 882 |
| 450 | 18 | 720 | 1080 | 1080 |
| 500 | 20 | 900 | 1350 | 1350 |
| 600 | 24 | 1260 | 1890 | 1890 |
| 650 | 26 | 1700 | 2600 | - |
| 700 | 28 | 2000 | 3000 | - |
| 750 | 30 | 2300 | 3500 | - |
| 800 | 32 | 2600 | 4000 | - |
| 900 | 36 | 3400 | 5000 | - |
| 1000 | 40 | 4100 | 6000 | - |

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## Technical data of pneumatic actuators

### Technical data of double-acting pneumatic actuators

**Valve with double-acting pneumatic quarter-turn actuator of the ACTAIR NG type series**

**Control pressure: 4 to 6 bar**

Specially designed for actuating valves of the BOAX-B type series, this pneumatic scotch-yoke actuator develops a variable torque which reaches its maximum upon butterfly valve closure.

The translatory movement caused by the control pressure results in a clockwise quarter turn of the pinion and, consequently, of the valve shaft.

The operating medium is air or any neutral gas, lubricated, filtered and compressed to 4, 5 or 6 bar:

- Filtration: 40 µm
- At maximum operating pressure, the dew point must be 5 °C below the minimum application temperature.

Valves for 10 bar: lubricating and non-lubricating fluids

Valves for 16 bar: lubricating fluids only

Valves for lubricating fluids: max. reference velocity: 3 m/s

Valves for non-lubricating fluids: max. reference velocity: 50 m/s

### Technical data of single-acting pneumatic actuators

**Valve with pneumatic quarter-turn actuator of the DYNACTAIR NG type series**

**Control pressure: 4 to 6 bar**

Specially designed for actuating valves of the BOAX-B type series, this pneumatic scotch-yoke actuator develops a variable torque.

The translatory movement caused by the control pressure results in a clockwise quarter turn of the pinion and, consequently, of the valve shaft.

On loss of control pressure, the valve is closed by the spring-return mechanism.

The operating medium is air or any neutral gas, lubricated, filtered and compressed to 4, 5 or 6 bar:

- Filtration: 40 µm
- At maximum operating pressure, the dew point must be 5 °C below the minimum application temperature.

Valves for 10 bar: lubricating and non-lubricating fluids

Valves for 16 bar: lubricating fluids only

Valves for lubricating fluids: max. reference velocity: 3 m/s

Valves for non-lubricating fluids: max. reference velocity: 50 m/s

### Compressed air supply

- Pilot valves with NAMUR interface, 5/2 monostable or 5/2 bistable
- Power supply: 230 V AC / 50 Hz or 24 V AC (other voltages on request)
- Operating temperature: -20°C

### Electro-pneumatic positioner

- On request

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## Technical data of electric actuators

**BOAX-B Mat E unit**

**Valve with electric quarter-turn actuator, make: BERNARD Controls (www.bernardcontrols.com)**

## Main electrical components

**Table 9:** Standard electrical equipment

| Parameter | Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | AQ7L | AQ5 | AQ10 | AQ15 | AQ25 | AQ30 | AQ50 |
| Limit switches for OPEN and CLOSED positions | 4 SPDT | | | | | | |
| Adjustable mechanical limit switches | Standard | | | | | | |
| Torque switches for OPEN and CLOSED positions | Fail-safe position only | No | | | Standard | | |
| Protection by temperature switch | No | Standard (except 24 V DC) | | | | | |
| Manual override | Standard | | | | | | |
| Position indicator | Standard | | | | | | |
| Heating resistor | Electronic | Integrated | | | | | |
| Enclosure | IP68 | | | | | | |
| Frequency of starts | S4-30 % | | | | | | |
| Operating temperature | -20 °C to +60 °C | | | | | | |

**Table 10:** Special electrical equipment for 24 V AC

| Parameter | Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | AQ7L | AQ5 | AQ10 | AQ15 | AQ25 | AQ30 | AQ50 |
| Nominal torque [Nm] | 70 | 50 | 100 | 150 | 250 | 300 | 500 |
| Actuating time for on/off duty [sec] | 15 | 16/13 | 25/21 | 30/25 | 30/25 | 35/30 | 35/30 |
| Limit switches for OPEN and CLOSED positions | Yes | | | | | | |
| Adjustable mechanical limit switches | Standard | | | | | | |
| Power supply | 1x85-260 V AC 50/60 Hz | 1 x 220-230 V AC 50/60 Hz | | | | | |

**Table 11:** Special electrical equipment for three-phase alternating current

| Parameter | Type | | | | | |
|---|---|---|---|---|---|---|
| | AQ5 | AQ10 | AQ15 | AQ25 | AQ30 | AQ50 |
| Nominal torque [Nm] | 50 | 100 | 150 | 250 | 300 | 500 |
| Actuating time for positioning [sec] | 16 | 25 | 30 | 30 | 35 | 35 |
| Limit switches for OPEN and CLOSED positions | Yes | | | | | |
| Adjustable mechanical limit switches | Standard | | | | | |
| Power supply | 3 x 380-415 V AC 50 Hz | | | | | |

**Table 12:** Special electrical equipment for direct current 24 V DC

| Parameter | Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | AQ7L | AQ5 | AQ10 | AQ15 | AQ25 | AQ30 | AQ50 |
| Nominal torque [Nm] | 70 | 50 | 100 | 150 | 250 | 300 | 500 |
| Actuating time for positioning [sec] | 15 | 13 | 21 | 25 | 25 | 35 | 60 |
| Limit switches for OPEN and CLOSED positions | Yes | | | | | | |
| Adjustable mechanical limit switches | Standard | | | | | | |
| Power supply | 24 V DC | | | | | | |

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## Electrical data for standard actuating time

**Table 13: Single-phase alternating current 85-260 V AC, 50/60 Hz**

| Parameter | Type |
|---|---|
| | AQ7L |
| Nominal current [A] | 0,4 |
| Starting current [A] | 1,0 |
| Power [W] | 20 |

**Table 14: Single-phase alternating current 220-230 V AC, 50/60 Hz**

| Parameter | Type | | | | | |
|---|---|---|---|---|---|---|
| | AQ5 | AQ10 | AQ15 | AQ25 | AQ30 | AQ50 |
| Nominal current [A] | 0,6 | 0,6 | 0,8 | 1,1 | 1,1 | 1,2 |
| Starting current [A] | 0,7 | 0,7 | 1,1 | 1,4 | 1,4 | 1,7 |
| Power [W] | 15 | 15 | 30 | 40 | 40 | 60 |

**Table 15: Three-phase alternating current 380-415 V AC, 50 Hz**

| Parameter | Type | | | | | |
|---|---|---|---|---|---|---|
| | AQ5 | AQ10 | AQ15 | AQ25 | AQ30 | AQ50 |
| Nominal current [A] | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 |
| Starting current [A] | 0,5 | 0,5 | 0,5 | 0,5 | 0,7 | 0,8 |
| Power [W] | 30 | 30 | 30 | 30 | 40 | 70 |

**Table 16: Direct current 24 V DC**

| Parameter | Type | | | | |
|---|---|---|---|---|---|
| | AQ7L | AQ5 | AQ10 | AQ15 | AQ25 |
| Nominal current [A] | 0,5 | 2,5 | 2,5 | 2,5 | 3,5 |
| Starting current [A] | 6,0 | 8,0 | 8,0 | 8,0 | 10,0 |
| Power [W] | 20 | 30 | 30 | 30 | 50 |

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## Actuator selection - liquid fluids

**Table 17: Single-phase alternating current 85-260 V AC, 50 Hz and direct current 24 V DC**

| DN | Type | Standard actuating time [sec] |
|---|---|---|
| 40 | AQ7L | 15 |
| 50 | | |
| 65 | | |
| 80 | | |
| 100 | | |

**Table 18: Single-phase alternating current 230 V AC, 50/60 Hz**

| DN | Type | Standard actuating time [sec] | |
|---|---|---|---|
| | | For 50 Hz | For 60 Hz |
| 40 | AQ5 | 16 | 13 |
| 50 | | | |
| 65 | | | |
| 80 | | | |
| 100 | AQ10 | 25 | 21 |
| 125 | | | |
| 150 | AQ15 | 30 | 25 |
| 200 | AQ25 | 30 | 25 |
| 250 | | | |
| 300 | AQ50 | 35 | 30 |

**Table 19: Direct current 24 V DC**

| DN | Type | Standard actuating time [sec] |
|---|---|---|
| 40 | AQ5 | 13 |
| 50 | | |
| 65 | | |
| 80 | | |
| 100 | AQ10 | 21 |
| 125 | | |
| 150 | AQ15 | 25 |
| 200 | AQ25 | 25 |
| 250 | | |

**Table 20: Three-phase alternating current 400 V AC, 50 Hz**

| DN | Type | Standard actuating time [sec] |
|---|---|---|
| 40 | AQ5 | 16 |
| 50 | | |
| 65 | | |
| 80 | | |
| 100 | AQ10 | 25 |
| 125 | | |
| 150 | AQ15 | 30 |
| 200 | AQ25 | 30 |
| 250 | | |
| 300 | AQ50 | 35 |

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### Characteristics for AQL electric actuators

The electric actuators are based on an electric quarter-turn actuator with ISO 5211 interface.

**Table 21:** Table Shaft end dimensions [mm]

| Type | Nominal output torque [Nm] | Valve/actuator interface ISO 5211[1)] | Shaft end dimensions [mm] | | |
|---|---|---|---|---|---|
| | | | Depth | Square end | Flat end[2)] |
| AQ7L on/off duty / positioning | 70 | F05 and F07 | 25 | 22 | 11 and 14 |

**Table 22:** On/off duty

| Parameter | Type |
|---|---|
| | AQ7L |
| Nominal torque [Nm] | 70 |
| Actuating time [sec] | 15 |
| Nominal power [W] | 20 |
| **Standard equipment** | |
| Control unit | Prewired |
| Torque switch | Fail-safe position only - blocking detection |
| Motor tripping | Electronic switch |
| Adjustable mechanical limit switches | Yes |
| Adjustable limit switches for signalling | Yes |
| Anti-condensation heater | Integrated as standard |
| Manual override | Yes - hexagon head bolt 10 mm |
| **Power supply** | |
| 230 V AC ~, 50 Hz | Yes - same motor |
| 230 V AC ~, 60 Hz | Yes - same motor |
| 24 V AC/DC | Yes - same motor |
| Connection | 2 x ISO M20 |
| Max. cable cross-section | Cable gland not included |

**Table 23:** Positioning

| Parameter | Type |
|---|---|
| | AQ7L |
| Nominal torque [Nm] | 70 |
| Actuating time [sec] | 15 |
| Nominal power [W] | 20 |
| **Standard equipment** | |
| Control unit | 4 - 20 mA |
| Torque switch | Fail-safe position only - blocking detection |
| Motor tripping | Electronic switch (1/Open, 1/Closed) |
| Adjustable mechanical limit switches | Yes |
| Adjustable limit switches for signalling | Yes |
| Anti-condensation heater | Integrated as standard |
| Manual override | Yes - hexagon head bolt 10 mm |
| **Power supply** | |
| 230 V AC ~, 50 Hz | Yes - same motor |
| 230 V AC ~, 60 Hz | Yes - same motor |
| 24 V AC/DC | Yes - same motor |
| Connection | 2 x ISO M20 |
| Max. cable cross-section | Cable gland not included |

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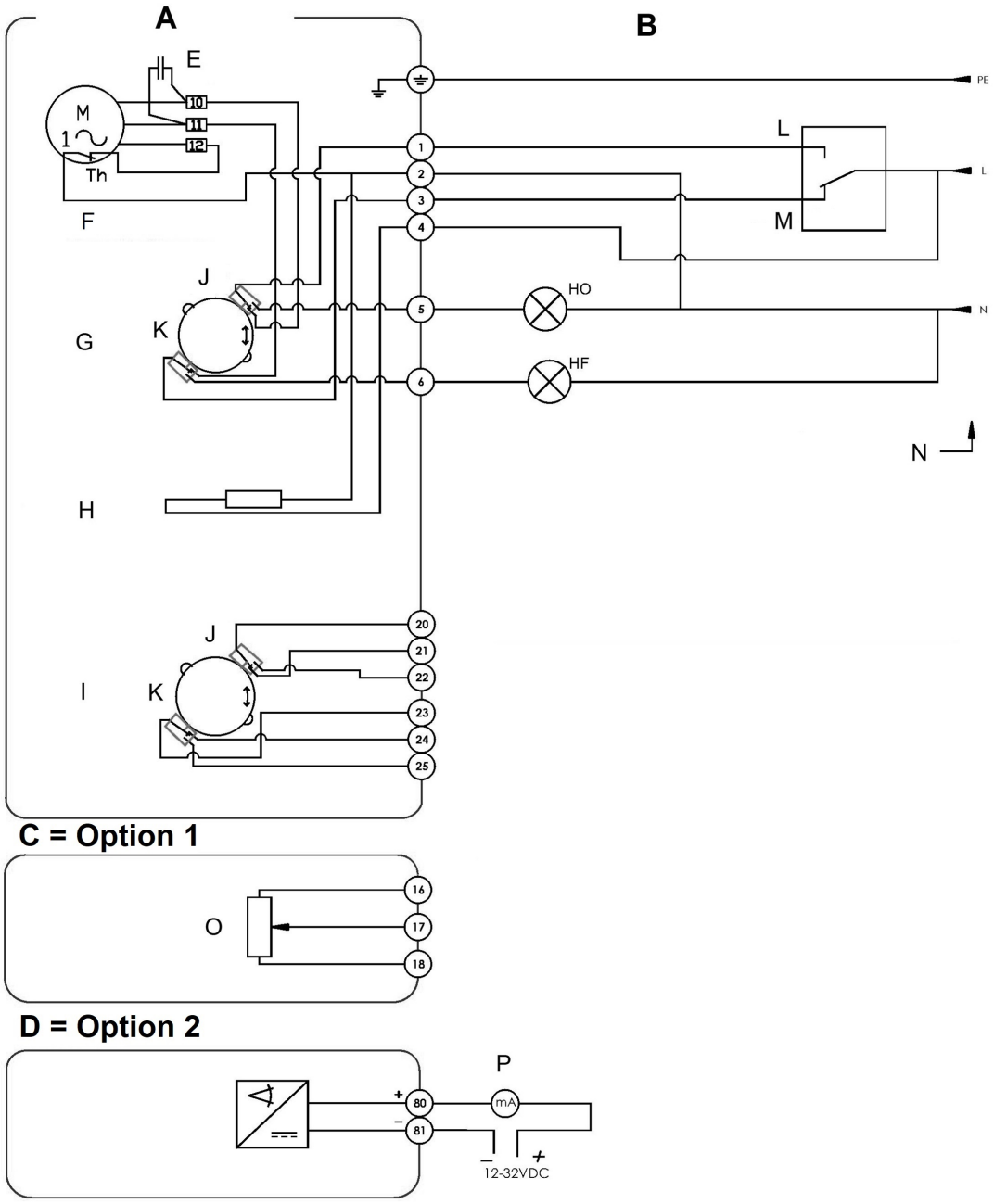
1 Direct mounting in the case of identical interfaces
2 On request

**Circuit diagram AQ 5/10/15, single-phase, prewired**




Circuit diagram AQ 5/10/15, single-phase, prewired

**Table 24:** Key

| | | | |
|---|---|---|---|
| A | Actuator | J | Open |
| B | Recommended customer-supplied wiring | K | Closed |
| C | Option 1: potentiometer | L | Opening control contact |
| D | Option 2: positioner | M | Closing control contact |
| E | Capacitor | N | Single-phase alternating current |
| F | th: thermal motor protection | O | Potentiometer |
| G | Limit switch | P | Positioner 4-20 mA |
| H | Heating resistor | HO | Open-position signalling |
| I | Additional limit switch | HF | Closed-position signalling |

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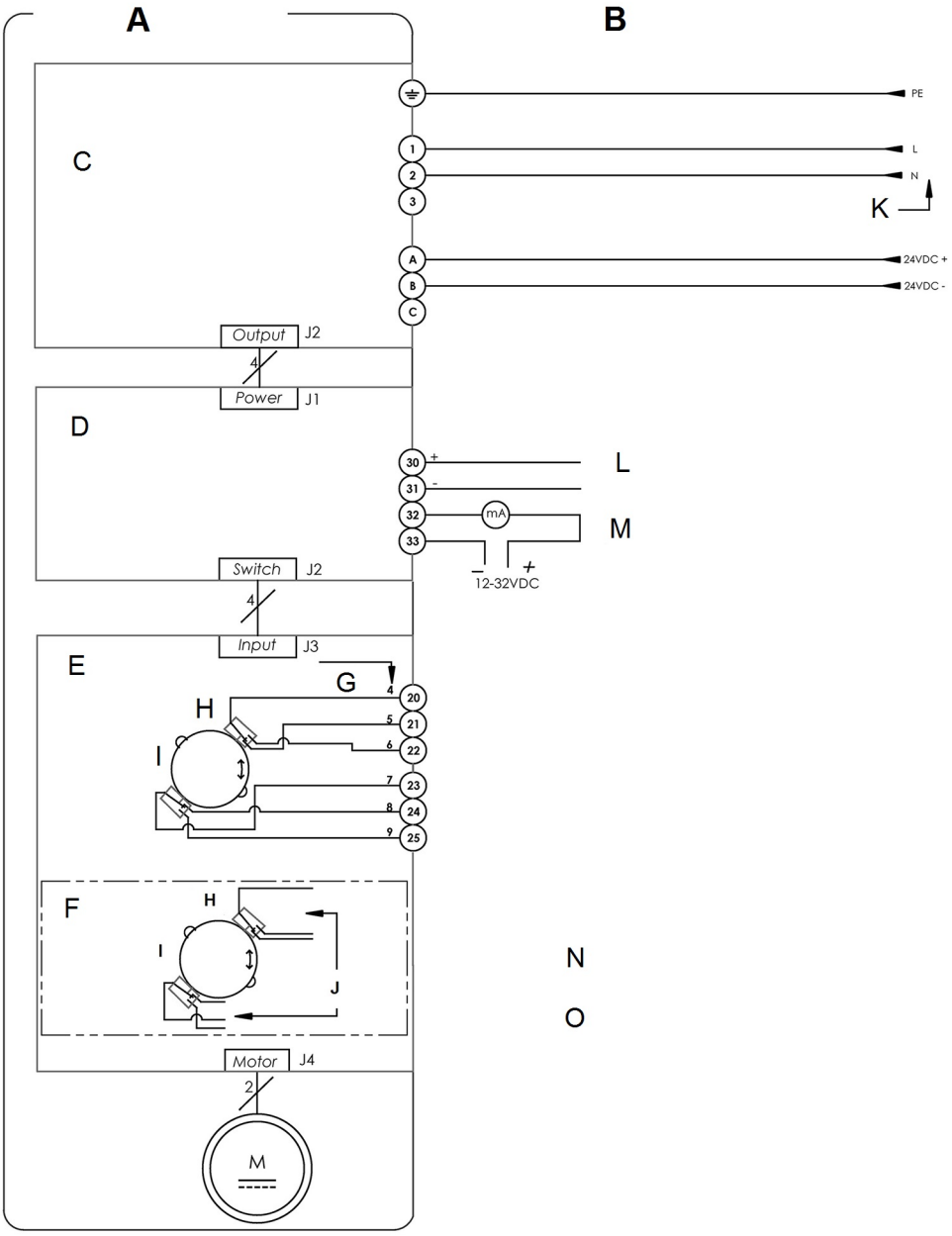
## Circuit diagram AQL, standard version

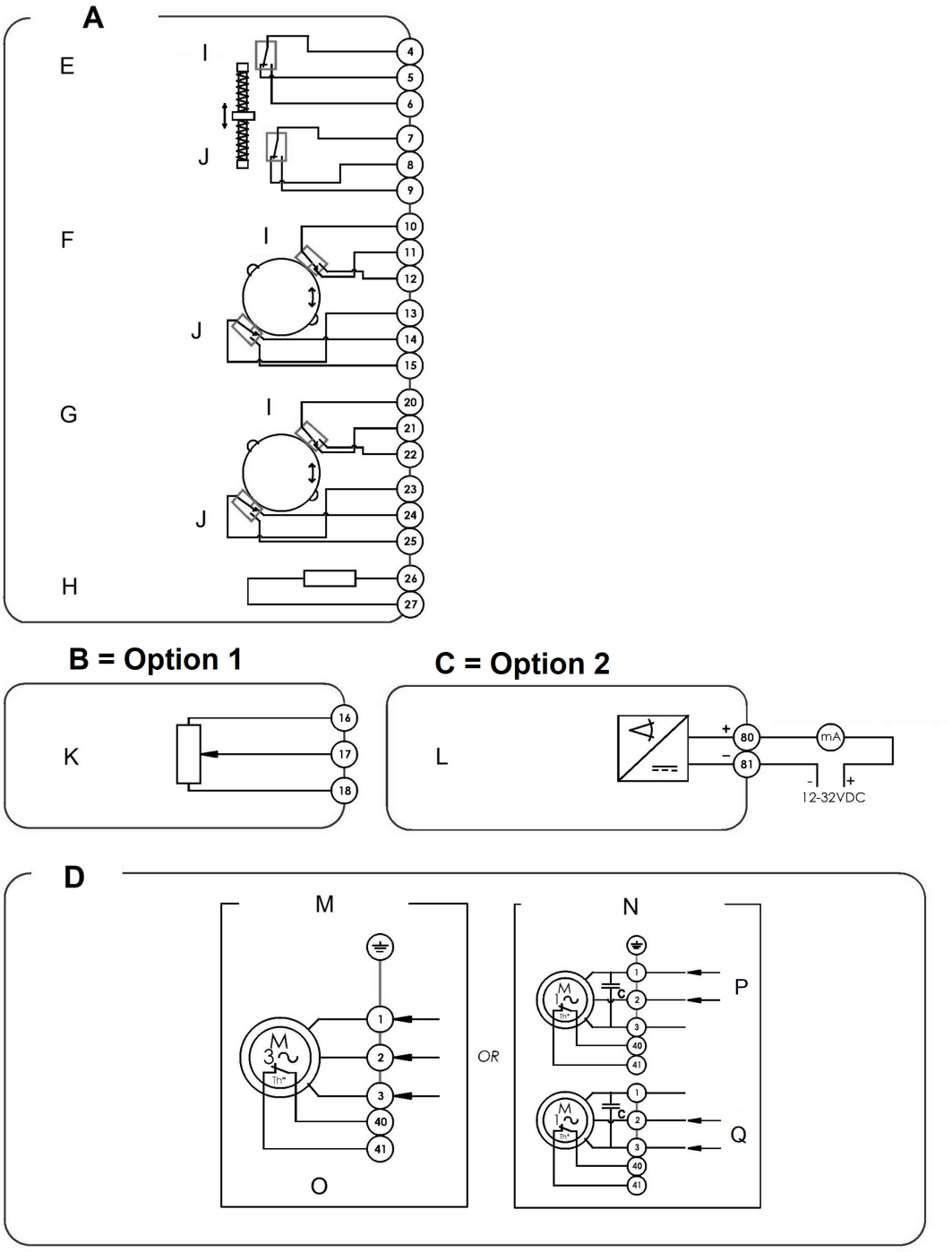



Circuit diagram AQL, standard version

**Table 25:** Symbols key

| | | | |
|---|---|---|---|
| A | Actuator | I | Closed |
| B | Recommended customer-supplied wiring | J | Internal connection |
| C | Power PCB | K | Single-phase power supply |
| D | Positioner PCB | L | 4-20 mA input signal |
| E | Additional limit switch | M | Actual-position feedback via 4-20 mA signal |
| F | Limit switch | N | Power supply 85-260 V AC, 50/60 Hz or 24 V DC |
| G | On PCB | O | No simultaneous single-phase alternating current and direct current power supply |
| H | Open | | |

**Circuit diagram AQ 25/30/50, standard**




Circuit diagram AQ 25/30/50, standard

**Table 26:** Symbols key

| | | | |
|---|---|---|---|
| A | Standard | J | Closed |
| B | Option 1 | K | Potentiometer |
| C | Option 2 | L | Position transmitter |
| D | Actuator | M | Position transmitter 4-20 mA |
| E | Torque switch | N | Three-phase actuator |
| F | Limit switch | O | Single-phase actuator |
| G | Additional limit switch | P | Open |
| H | Heating resistor | Q | Close |
| I | Open | R | or |

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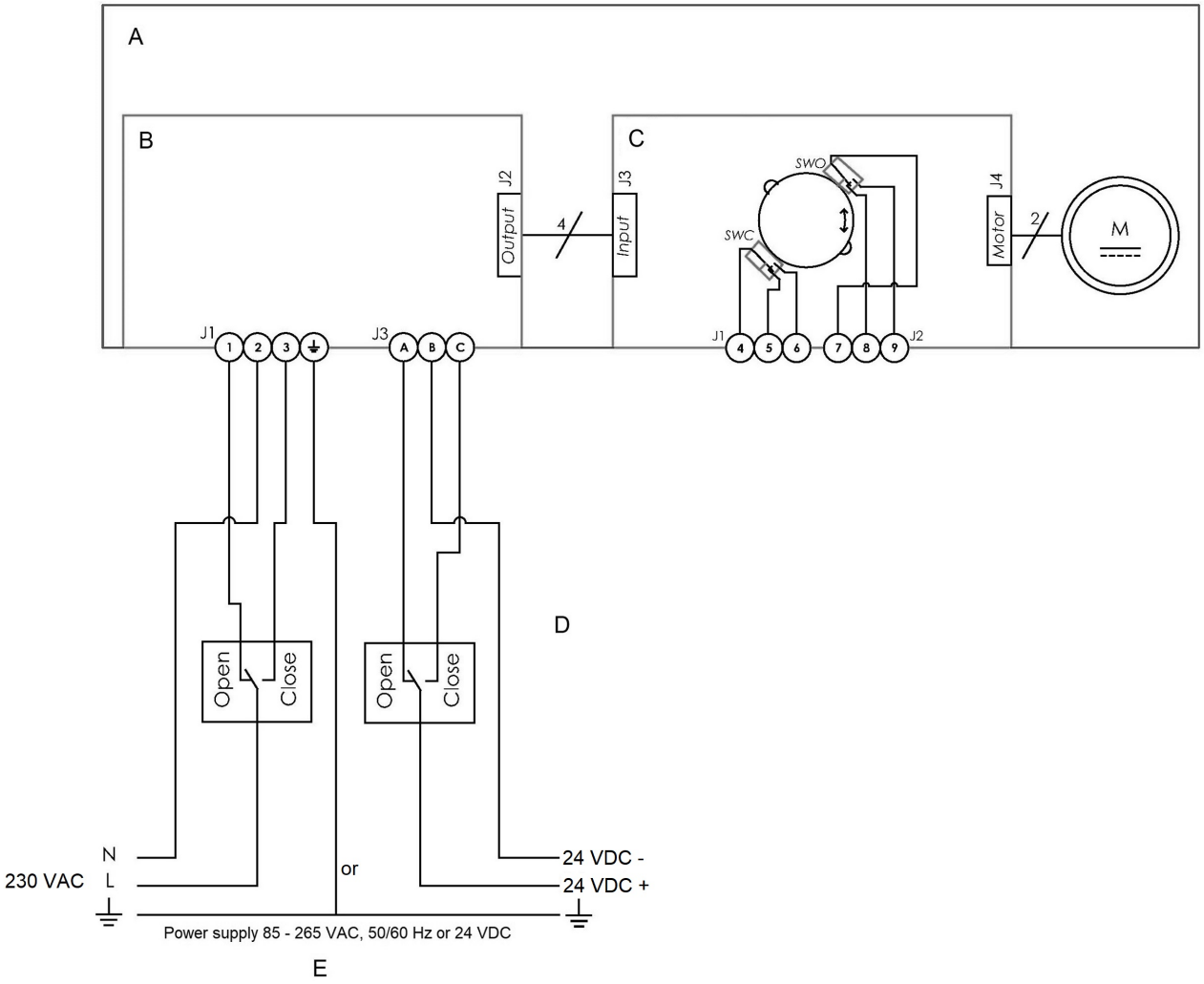
## Circuit diagram AQL

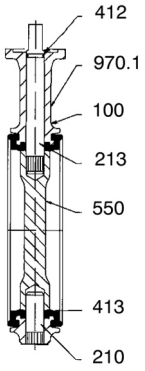



Circuit diagram AQL

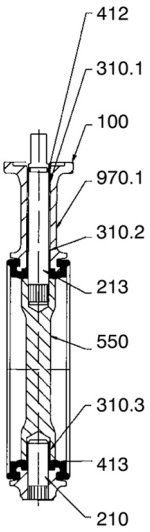
**Table 27:** Symbols key

| | | | |
|---|---|---|---|
| A | Actuator wiring | D | Connection by customer |
| B | Power PCB | E | No simultaneous alternating current (V AC) and direct current (V DC) power supply |
| C | Switch PCB | | |

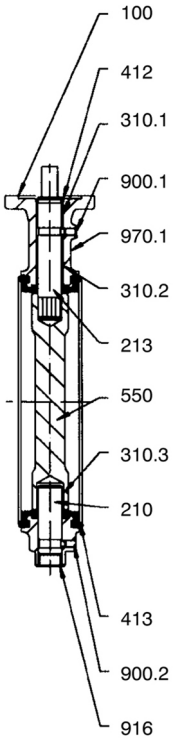
## Materials



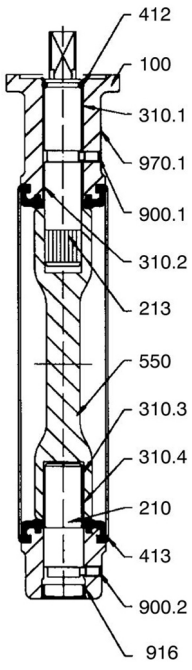

DN 40 - 150



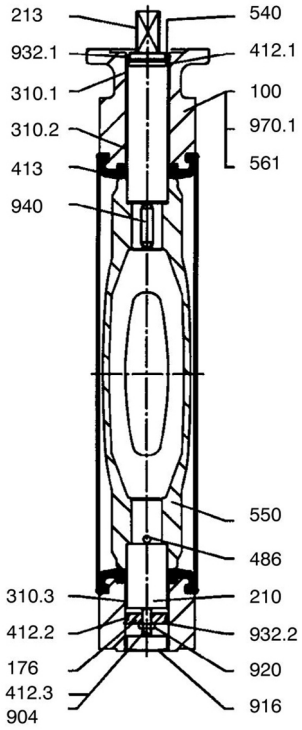

DN 200




DN 250 - 300




DN 350 - 600




DN 650 - 1000

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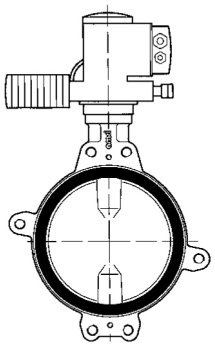
**Table 28:** List of components

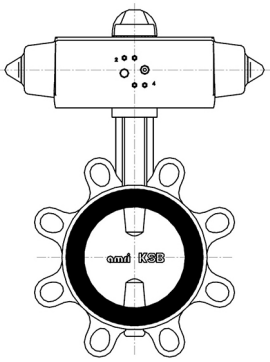
| Part No. | Description | DN | Materials | KSB code |
|---|---|---|---|---|
| 100 | Body T1 | 650 - 1000 | Nodular cast iron 5.3106 / ASTM A536 Gr. 60.40.18 | 3g |
| 100 | Body T2 | 40 - 600 | Nodular cast iron 5.3106 | 3g |
| 100 | Body T4 | 40 - 600 | Nodular cast iron 5.3106 | 3g |
| 100 | Body T5 | 650 - 1000[3)] | Nodular cast iron 5.3106 / ASTM A536 Gr. 60.40.18 | 3g |
| 176 | Bottom | 40 - 1000 | Steel | |
| 210[4)] | Shaft | 40 - 600 | Stainless steel 1.4029 (13 % Cr) | 6k |
| 213[4)] | Actuating shaft | 40 - 1000 | Stainless steel 1.4029 (13 % Cr) | 6k |
| 310.1[4)] | Plain bearing | 200 - 1000 | Steel with reinforced PTFE coating | |
| 310.2[4)] | Plain bearing | 200 - 1000 | Steel with reinforced PTFE coating | |
| 310.3[4)5)] | Plain bearing | 200 - 1000 | Steel with reinforced PTFE coating | |
| 310.4[4)5)] | Plain bearing | 350 - 600 | Steel with reinforced PTFE coating | |
| 412[4)5)6)] | O-ring | 40 - 600 | Nitrile | |
| 412.1[4)5)6)] | O-ring | 650 - 1000 | Nitrile | |
| 412.2[4)5)6)] | O-ring | 650 - 1000 | Nitrile | |
| 412.3[4)5)6)] | O-ring | 650 - 1000 | Nitrile | |
| 413[6)] | Liner | 40 - 1000 | EPDM | XC |
| | | 40 - 1000 | EPDM | XU |
| | | 40 - 1000 | High-grade nitrile | K |
| 486[4)] | Ball | 650 - 1000 | Stainless steel | |
| 540[4)5)6)] | Bush | 650 - 1000 | Acetal | |
| 550[5)] | Valve disc | 40 - 1000 | Nodular cast iron 5.3106 | 3g |
| | | 40 - 1000 | Stainless steel 1.4408 / ASTM A351 Gr. CF8M | 6[7)] |
| 561 | Half round head grooved pin | 650 - 1000 | Stainless steel | |
| 900.1[4)5)6)] | Shaft anti-blow out device (screw) | 250- 600 | Stainless steel | |
| 900.2[4)5)6)] | Shaft anti-blow out device (screw) | 250 - 600 | Stainless steel | |
| 904[4)] | Adjusting screw | 650 - 1000 | Steel | |
| 916[4)5)6)] | Plug | 250 - 1000 | Polyethylene | |
| 920[4)] | Nut | 650 - 1000 | Steel | |
| 932[4)5)6)] | Serrated washer | 40 - 200 | Steel | |
| 932.1[4)5)6)] | Circlip | 650 - 1000 | Steel | |
| 932.2[4)5)6)] | Circlip | 650 - 1000 | Steel | |
| 940[4)] | Key | 650 - 1000 | Steel | |
| 970.1 | Name plate | 40 - 600 | Adhesive polyester | |
| 970.1 | Name plate | 650 - 1000 | Stainless steel | |

3 DN 150 to 600 on request only
4 Part from shaft spare parts kit: (available for DN 250 and above)
5 Part from valve disc spare parts kit (available for DN 250 and above)
6 Part from liner spare parts kit (available for DN 250 and above)
7 Variant made of stainless steel 1.4308 (6g) (available on request only)

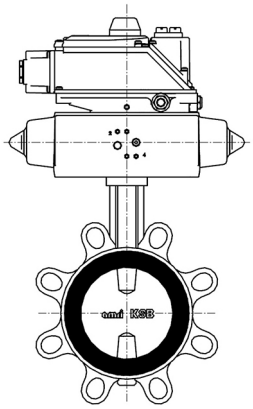
## Variants



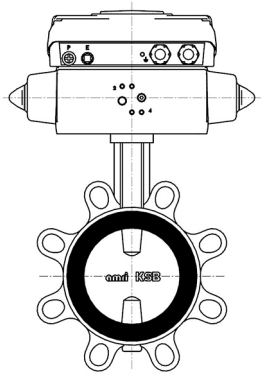
Electric actuator



ACTAIR NG / DYNACTAIR NG pneumatic actuator



AMTRONIC / SMARTRONIC compressed air supply, positioner



Limit switch box AMTROBOX, AMTROBOX S, AMTROBOX R, AMTROBOX EEx-ed, AMTROBOX EEx-ia

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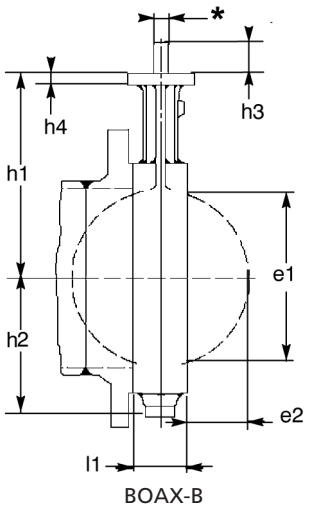
## Dimensions and weights

### Dimensions of BOAX-B



BOAX-B

* Flat end s in Ø z or ⍁ s

**Table 29:** Dimensions [mm]

| DN | NPS | l1 | h1 | h2 | Top flange to ISO 5211 | | Shaft end Flat end | | | Shaft end Square end | | Valve disc | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | | | | No. | h4 | s | Ø z | h3 | ⍁s | h3 | e1 | e2 |
| 40 | 1½ | 33 | 105 | 51 | F05 | 10 | 11 | 14 | 24 | - | - | 32 | 4 |
| 50 | 2 | 43 | 109 | 55 | F05 | 10 | 11 | 14 | 24 | - | - | 33 | 4 |
| 65 | 2½ | 46 | 136 | 67 | F05 | 10 | 11 | 14 | 24 | - | - | 55 | 11 |
| 80 | 3 | 46 | 142 | 73 | F05 | 10 | 11 | 14 | 24 | - | - | 71 | 17 |
| 100 | 4 | 52 | 163 | 92 | F05 | 10 | 14 | 18 | 24 | - | - | 90 | 23 |
| 125 | 5 | 56 | 176 | 105 | F05 | 10 | 14 | 18 | 30 | - | - | 119 | 35 |
| 150 | 6 | 56 | 194 | 120 | F07 | 12 | 14 | 18 | 30 | - | - | 144 | 46 |
| 200 | 8 | 60 | 222 | 150 | F07 | 12 | 19 | 25 | 35 | - | - | 196 | 69 |
| 250 | 10 | 68 | 255 | 194 | F10 | 15 | 19 | 25 | 35 | - | - | 249 | 92 |
| 300 | 12 | 78 | 282 | 226 | F12 | 18 | 22 | 28 | 40 | - | - | 297 | 111 |
| 350 | 14 | 78 | 335 | 269 | F12 | 23 | - | - | - | 25 | 45 | 326 | 127 |
| 400 | 16 | 102 | 380 | 298 | F14 | 23 | - | - | - | 36 | 55 | 370 | 140 |
| 450 | 18 | 114 | 410 | 329 | F14 | 23 | - | - | - | 36 | 55 | 422 | 160 |
| 500 | 20 | 127 | 440 | 359 | F14 | 27 | - | - | - | 36 | 55 | 470 | 178 |
| 600 | 22 | 154 | 495 | 439 | F16 | 27 | - | - | - | 50 | 65 | 566 | 215 |
| 650 | 26 | 165 | 535 | 451 | F16 | 26 | - | - | - | 50 | 65 | 620 | 235 |
| 700 | 28 | 165 | 560 | 482 | F16 | 26 | - | - | - | 50 | 65 | 671 | 260 |
| 750 | 30 | 190 | 590 | 513 | F16 | 26 | - | - | - | 50 | 65 | 717 | 273 |
| 800 | 32 | 190 | 615 | 546 | F16 | 26 | - | - | - | 50 | 65 | 769 | 298 |
| 900 | 36 | 203 | 665 | 588 | F25 | 30 | - | - | - | 60 | 80 | 869 | 341 |
| 1000 | 40 | 216 | 735 | 646 | F25 | 30 | - | - | - | 60 | 80 | 970 | 385 |

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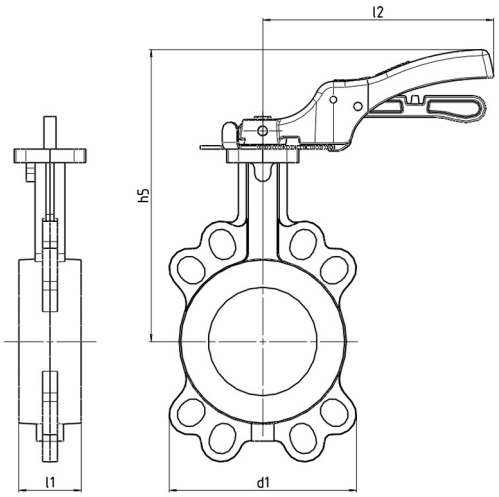
### Dimensions and weights of BOAX-B + CR/CM lever




Unit comprising BOAX-B + CR/CM lever

**Table 30:** Actuation via CR/CM lever [mm]

| DN | NPS [inch] | d1 | h5 | l1 | l2 | [kg] [8] |
|---|---|---|---|---|---|---|
| 40 | 1½ | 108 | 175 | 33 | CR165 | 0,8 |
| 50 | 2 | 118 | 179 | 43 | CR165 | 0,8 |
| 65 | 2½ | 132 | 206 | 46 | CR165 | 0,8 |
| 80 | 3 | 138 | 212 | 46 | CR165 | 0,8 |
| 100 | 4 | 150 | 246 | 52 | CR230 | 1,2 |
| 125 | 5 | 234 | 272 | 56 | CR300 | 1,7 |
| 150 | 6 | 260 | 290 | 56 | CR300 | 1,7 |
| 200 | 8 | 322 | 332 | 60 | CR510[9] | 3,1 |
| 250 | 10 | 394 | 365 | 68 | CR510[9] | 3,1 |
| 300 | 12 | 462 | 392 | 78 | CR510[9] | 3,1 |

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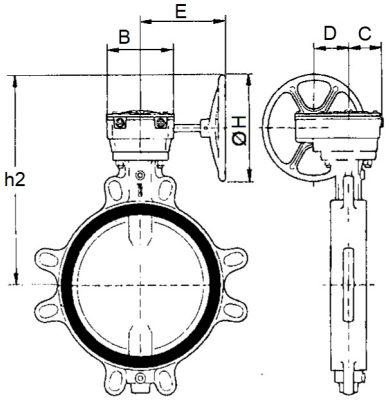
8 The weights given refer to the actuating element.
9 * With lubricating fluids only

## Dimensions and weights of BOAX-B + MN/MR manual gearbox




Unit comprising BOAX-B + MR manual gearbox

**Table 31:** Actuation via MN or MR manual gearboxes - 10 bar version [mm]

| DN | NPS | Max. velocity | Type | B | C | D | E | H | h2 | [kg][10)] |
|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | [m/s] | | | | | | | | |
| Lubricating fluid | | | | | | | | | | |
| 250 | 10 | 3,0 | MN25 | 92 | 38 | 41 | 144 | 200 | 196 | 1,9 |
| 300 | 12 | 3,0 | MR50 | 134 | 63 | 66 | 189 | 225 | 434 | 7,5 |
| 350 | 14 | 3,0 | MR50 | 134 | 63 | 66 | 189 | 225 | 487 | 7,5 |
| 400 | 16 | 3,0 | MR100 | 165 | 79 | 78 | 243 | 350 | 598 | 14 |
| 450 | 18 | 2,5 | MR100 | 165 | 79 | 78 | 243 | 350 | 617 | 14 |
| 500 | 20 | 2,5 | MR100 | 165 | 79 | 78 | 243 | 350 | 677 | 14 |
| 600 | 24 | 2,5 | MR200 | 240 | 90 | 116 | 263 | 350 | 743 | 21,5 |
| 650 | 26 | 2,0 | MR200 | 240 | 90 | 116 | 263 | 350 | 783 | 21,5 |
| 700 | 28 | 2,0 | MR200 | 240 | 90 | 116 | 263 | 350 | 808 | 21,5 |
| 750 | 30 | 2,0 | MR400 | 459 | 115 | 125 | 332 | 350 | 860 | 58,0 |
| 800 | 32 | 2,0 | MR400 | 459 | 115 | 125 | 332 | 350 | 885 | 58,0 |
| 900 | 36 | 1,5 | MR400 | 459 | 115 | 125 | 332 | 350 | 898 | 58,0 |
| 1000 | 40 | 1,5 | MR400 | 459 | 115 | 125 | 332 | 350 | 1005 | 58,0 |
| Non-lubricating fluid | | | | | | | | | | |
| 250 | 10 | 3,0 | MR50 | 134 | 63 | 66 | 189 | 225 | 407 | 7,5 |
| 300 | 12 | 3,0 | MR50 | 134 | 63 | 66 | 189 | 225 | 434 | 7,5 |
| 350 | 14 | 3,0 | MR100 | 165 | 79 | 78 | 243 | 350 | 553 | 14 |
| 400 | 16 | 3,0 | MR100 | 165 | 79 | 78 | 243 | 350 | 617 | 14 |
| 450 | 18 | 2,5 | MR200 | 240 | 90 | 116 | 263 | 350 | 658 | 21,5 |
| 500 | 20 | 2,5 | MR200 | 240 | 90 | 116 | 263 | 350 | 688 | 21,5 |
| 600 | 24 | 2,5 | MR200 | 240 | 90 | 116 | 263 | 350 | 743 | 21,5 |
| 650 | 26 | 2,0 | MR400 | 459 | 115 | 125 | 332 | 350 | 805 | 58,0 |
| 700 | 28 | 2,0 | MR400 | 459 | 115 | 125 | 332 | 350 | 830 | 58,0 |
| 750 | 30 | 2,0 | MR400 | 459 | 115 | 125 | 332 | 350 | 860 | 58,0 |
| 800 | 32 | 2,0 | MR400 | 459 | 115 | 125 | 332 | 350 | 885 | 58,0 |
| 900 | 36 | 1,5 | MR600 | 546 | 155 | 140 | 511 | 600 | 1074 | 105,0 |
| 1000 | 40 | 1,5 | MR600 | 546 | 155 | 140 | 511 | 600 | 1144 | 105,0 |

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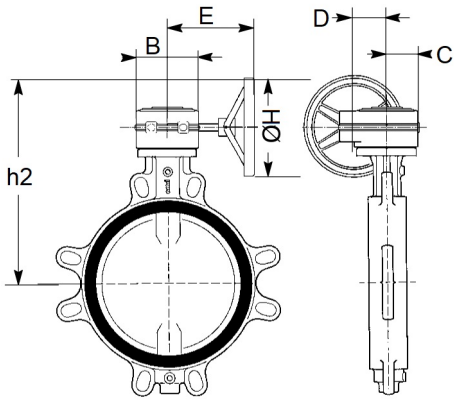
10 The weights given refer to the actuating element.




Unit comprising BOAX-B + MN manual gearbox

**Table 32:** Actuation via MN manual gearbox - 16 bar version [mm]

| DN | NPS | Max. velocity | Type | B | C | D | E | H | h2 | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | [m/s] | | | | | | | | |
| 40 | 1½ | 3,0 | MN12 | 68 | 30 | 34 | 85 | 100 | 103 | 1,0 |
| 50 | 2 | 3,0 | MN12 | 68 | 30 | 34 | 85 | 100 | 113 | 1,0 |
| 65 | 2½ | 3,0 | MN12 | 68 | 30 | 34 | 85 | 100 | 116 | 1,0 |
| 80 | 3 | 3,0 | MN12 | 68 | 30 | 34 | 85 | 100 | 116 | 1,0 |
| 100 | 4 | 3,0 | MN12 | 68 | 30 | 34 | 85 | 100 | 122 | 1,0 |
| 125 | 5 | 3,0 | MN12 | 68 | 30 | 34 | 85 | 100 | 126 | 1,0 |
| 150 | 6 | 3,0 | MN25 | 92 | 38 | 41 | 144 | 200 | 184 | 1,9 |
| 200 | 8 | 3,0 | MN25 | 92 | 38 | 41 | 144 | 200 | 188 | 1,9 |

Note: 50 [m/s] with non-lubricating fluid

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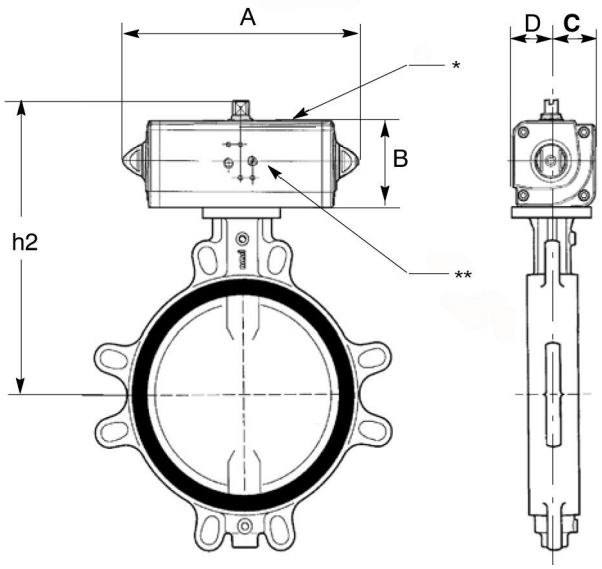
### Dimensions and weights of BOAX-B Mat P-da




BOAX-B Mat P-da unit

**Table 33:** Key

| | |
|---|---|
| * | NAMUR VDI/VDE 3845 interface |
| ** | NAMUR-compatible interface |
| Note: | We have:<br>- 2 threaded holes G 1/8 gas-threaded for ACTAIR NG 2 to 20<br>- 2 threaded holes G 1/4 gas-threaded for ACTAIR NG 40 |

**Table 34:** Dimensions (mm) and weights (kg)

| DN | NPS | PS | Type | A | B | C | D | h2 | [kg][11] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | [bar] | | | | | | | ACTAIR NG + T2 | ACTAIR NG + T4 |
| **On/off duty at a control pressure of 5 bar*** | | | | | | | | | | |
| 40 | 1½ | 10/16 | ACTAIR NG 2 | 174,3 | 27,7 | 31,5 | 31,5 | 198,2 | 2,1 | 3,0 |
| 50 | 2 | 10/16 | ACTAIR NG 2 | 174,3 | 27,7 | 31,5 | 31,5 | 202,2 | 2,3 | 3,5 |
| 65 | 2½ | 10/16 | ACTAIR NG 5 | 198,1 | 32,7 | 37,7 | 37,7 | 234,4 | 3,5 | 4,6 |
| 80 | 3 | 10/16 | ACTAIR NG 5 | 198,1 | 32,7 | 37,7 | 37,7 | 246,4 | 4,1 | 6,1 |
| 100 | 4 | 10/16 | ACTAIR NG 10 | 237,1 | 38,5 | 44,8 | 44,8 | 274,3 | 6,4 | 8,0 |
| 125 | 5 | 10/16 | ACTAIR NG 10 | 237,1 | 38,5 | 44,8 | 44,8 | 293,3 | 7,2 | 11,5 |
| 150 | 6 | 10/16 | ACTAIR NG 15 | 289,9 | 51,0 | 56,5 | 56,5 | 329,5 | 11,5 | 15,6 |
| 200 | 8 | 10/16 | ACTAIR NG 20 | 313,6 | 51,0 | 60,1 | 60,1 | 361,1 | 15,9 | 29,4 |
| 250 | 10 | 10 | ACTAIR NG 20 | 313,6 | 51,0 | 60,1 | 60,1 | 398,1 | 21,8 | 44,4 |
| 300 | 12 | 10 | ACTAIR NG 40 | 387,7 | 62,0 | 72,9 | 72,9 | 458,9 | 39,6 | 55,6 |

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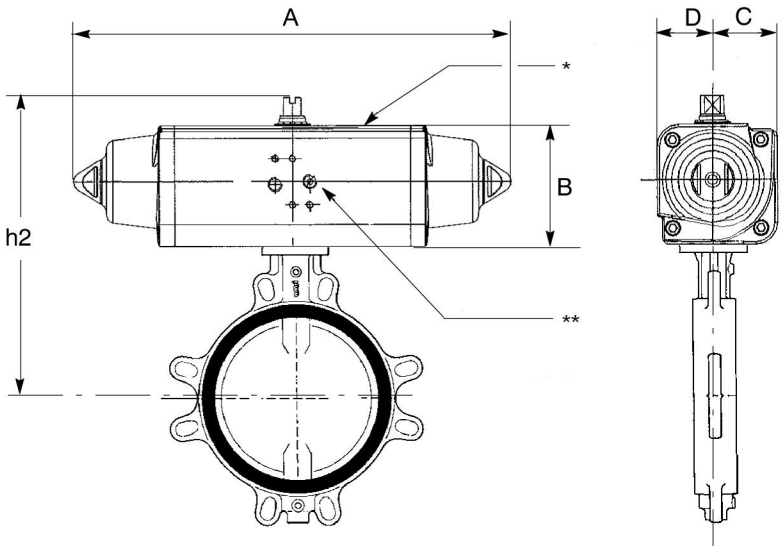
11 The weights given refer to the valve + actuating element.

### Dimensions and weights of BOAX-B Mat P-sa




BOAX-B Mat P-sa unit

**Table 35:** Key

| | |
|---|---|
| * | NAMUR VDI/VDE 3845 interface |
| ** | NAMUR-compatible interface |
| Note: | We have:<br>- 2 threaded holes G 1/8 gas-threaded for DYNACTAIR NG 1 to 12<br>- 2 threaded holes G 1/4 gas-threaded for DYNACTAIR NG 16 to 35 |

**Table 36:** Dimensions (mm) and weights (kg)

| DN | NPS | PS | Type | A | B | C | D | h2 | [kg][12)] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | [bar] | | | | | | | DYNACTAIR-NG + T2 | DYNACTAIR-NG + T4 |
| **On/off duty at a control pressure of 5 bar*** | | | | | | | | | | |
| 40 | 1½ | 10/16 | DYNACTAIR NG 2 | 259,0 | 32,7 | 37,7 | 37,7 | 203,4 | 3,1 | 4,0 |
| 50 | 2 | 10/16 | DYNACTAIR NG 2 | 259,0 | 32,7 | 37,7 | 37,7 | 207,4 | 3,3 | 4,5 |
| 65 | 2½ | 10/16 | DYNACTAIR NG 4 | 304,3 | 38,5 | 44,8 | 44,8 | 247,3 | 4,9 | 6,0 |
| 80 | 3 | 10/16 | DYNACTAIR NG 4 | 304,3 | 38,5 | 44,8 | 44,8 | 253,3 | 5,5 | 7,5 |
| 100 | 4 | 10/16 | DYNACTAIR NG 6 | 393,7 | 51,0 | 56,5 | 56,5 | 296,5 | 9,8 | 11,4 |
| 125 | 5 | 10/16 | DYNACTAIR NG 8 | 409,6 | 51,0 | 60,1 | 60,1 | 313,1 | 11,5 | 15,8 |
| 150 | 6 | 10/16 | DYNACTAIR NG 12 | 474,0 | 56,0 | 62,0 | 62,0 | 350,0 | 15,8 | 19,9 |
| 200 | 8 | 10/16 | DYNACTAIR NG 16 | 520,5 | 62,0 | 72,9 | 72,9 | 395,9 | 22,3 | 36,8 |
| 250 | 10 | 10 | DYNACTAIR NG 16/4 | 520,5 | 62,0 | 72,9 | 72,9 | 427,9 | 28,2 | 50,8 |
| 300 | 12 | 10 | DYNACTAIR NG 35 | 648,2 | 74,5 | 93,5 | 93,5 | 498 | 52,7 | 68,7 |

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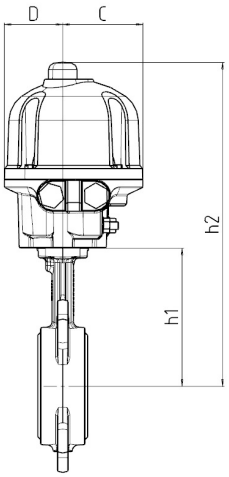
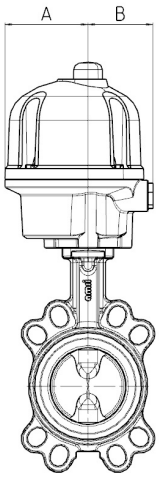
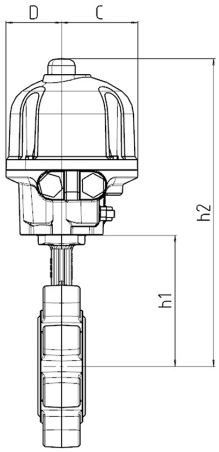
12 The weights given refer to the valve + actuating element.

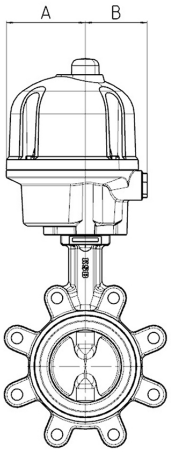
## Dimensions and weights of BOAX-B Mat E




BOAX-B T2 + AQL




BOAX-B T4 + AQL

**Table 37:** Dimensions [mm] and weights [kg] for on/off duty and positioning - with AQL electric actuators

| DN | NPS | PS | Type | A (230V) | B | C | D | E | h1 | h2 | [kg][13)] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | [bar] | | | | | | | | | With T2 | With T4 |
| 40 | 1½ | 10/16 | AQ7L | 67 | 85 | 83 | 60 | - | 105 | 296 | 4,6 | 5,5 |
| 50 | 2 | 10/16 | AQ7L | 67 | 85 | 83 | 60 | - | 109 | 300 | 4,8 | 6,0 |
| 65 | 2½ | 10/16 | AQ7L | 67 | 85 | 83 | 60 | - | 136 | 327 | 5,4 | 6,5 |
| 80 | 3 | 10/16 | AQ7L | 67 | 85 | 83 | 60 | - | 1142 | 333 | 6,0 | 8,0 |
| 100 | 4 | 10/16 | AQ7L | 67 | 85 | 83 | 60 | - | 163 | 354 | 7,4 | 9,0 |

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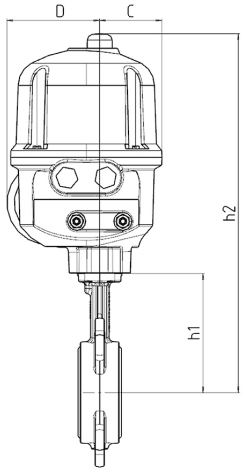
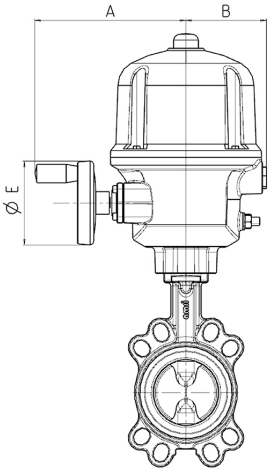
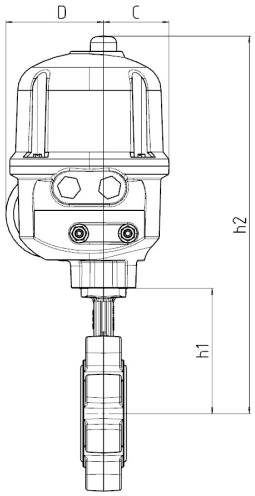
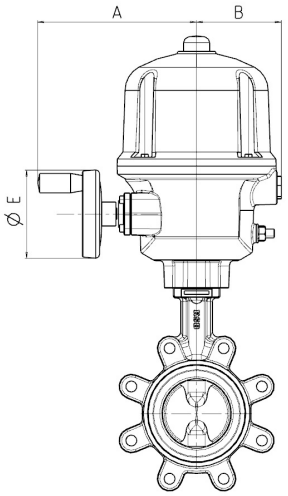
13 The weights given refer to the valve + actuating element.




BOAX-B T2 + AQ




BOAX-B T4 + AQ

**Table 38:** Dimensions [mm] and weights [kg] for on/off duty and positioning - with AQ electric actuators

| DN | NPS | PS | Type | A (230V) | B | C | D | E | h1 | h2 | [kg][13)] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [inch] | [bar] | | | | | | | | | With T2 | With T4 |
| 40 | 1½ | 10/16 | AQ5 | 180 | 96 | 74 | 110 | 100 | 105 | 391 | 11,1 | 12,0 |
| 50 | 2 | 10/16 | AQ5 | 180 | 96 | 74 | 110 | 100 | 109 | 395 | 11,3 | 12,5 |
| 65 | 2½ | 10/16 | AQ5 | 180 | 96 | 74 | 110 | 100 | 136 | 422 | 11,9 | 13,0 |
| 80 | 3 | 10/16 | AQ5 | 180 | 96 | 74 | 110 | 100 | 142 | 428 | 12,5 | 14,5 |
| 100 | 4 | 10/16 | AQ10 | 180 | 96 | 74 | 110 | 100 | 136 | 422 | 13,9 | 15,5 |
| 125 | 5 | 10/16 | AQ10 | 180 | 96 | 74 | 110 | 100 | 176 | 462 | 14,7 | 19,0 |
| 150 | 6 | 10/16 | AQ15 | 180 | 96 | 74 | 110 | 100 | 194 | 480 | 16,9 | 21,0 |
| 200 | 8 | 10/16 | AQ25 | 248 | 117 | 86 | 138 | 100 | 222 | 539 | 23,5 | 38,0 |
| 250 | 10 | 10 | AQ25 | 248 | 117 | 86 | 138 | 100 | 255 | 583 | 29,4 | 52,0 |
| 300 | 12 | 10 | AQ50 | 310 | 117 | 86 | 174 | 200 | 282 | 610 | 45,0 | 61,0 |

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## Valve connections

**Table 39:** Wafer-type body - T1

| DN | NPS [inch] | EN 1092 PN 10 | EN 1092 PN 16 | ASME B16.1 Class 125 | ASME B16.47 Class 150 Serie A |
|---|---|---|---|---|---|
| 650 | 26 | • | • | • | ✓▌ |
| 700 | 28 | ✓▌ | ✓▌ | • | ✓▌ |
| 750 | 30 | • | • | ✓▌ | ✓▌ |
| 800 | 32 | ✓▌ | ✓▌ | • | ✓▌ |
| 900 | 36 | ✓▌ | ✓▌ | ✓▌ | ✓▌ |
| 1000 | 40 | ✓▌ | ✓▌ | • | ✓▌ |

**Table 40:** Semi-lug body - T2[14)]

| DN | NPS [inch] | EN 1092 PN 10 | EN 1092 PN 16 |
|---|---|---|---|
| 40 | 1½ | ✓ | ✓ |
| 50 | 2 | ✓ | ✓ |
| 65 | 2½ | ✓ | ✓ |
| 80 | 3 | ✓ | ✓ |
| 100 | 4 | ✓ | ✓ |
| 125 | 5 | ✓ | ✓ |
| 150 | 6 | ✓ | ✓ |
| 200 | 8 | ✓▲ | ✓ |
| 250 | 10 | ✓▲ | ✓ |
| 300 | 12 | ✓ | ✓ |
| 350 | 14 | ✓ | ✓ |
| 400 | 16 | ✓ | ✓ |
| 450 | 18 | ✓ | ✓ |
| 500 | 20 | ✓ | ✓ |
| 600 | 24 | ✓ | ✓ |

**Table 41:** Full-lug body with raised faces - T4[14)]

| DN | NPS [inch] | EN 1092 PN 10 | EN 1092 PN 16 |
|---|---|---|---|
| 40 | 1½ | ✓ | ✓ |
| 50 | 2 | ✓ | ✓ |
| 65 | 2½ | ✓ | ✓ |
| 80 | 3 | ✓ | ✓ |
| 100 | 4 | ✓ | ✓ |
| 125 | 5 | ✓ | ✓ |
| 150 | 6 | ✓ | ✓ |
| 200 | 8 | ✓ | ✓ |
| 250 | 10 | ✓ | ✓ |
| 300 | 12 | ✓ | ✓ |
| 350 | 14 | ✓ | ✓ |
| 400 | 16 | ✓ | ✓ |
| 450 | 18 | ✓ | ✓ |
| 500 | 20 | ✓ | ✓ |
| 600 | 24 | ✓ | ✓ |

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14 Connections to ASME, tables on request

**Table 42:** Flanged body with flat faces - T5[15)]

| DN | NPS [inch] | EN 1092 PN 10 | EN 1092 PN 16 | ASME B16 Class 125 | ASME B16.47 Class 150 Serie A | ASME B16.5 Class 150 |
|---|---|---|---|---|---|---|
| 650 | 26 | • | • | • | ✓▮ | • |
| 700 | 28 | ✓▮ | ✓▮ | • | ✓▮ | • |
| 750 | 30 | • | • | ✓▮ | ✓▮ | • |
| 800 | 32 | ✓▮ | ✓▮ | • | ✓▮ | • |
| 900 | 36 | ✓▮ | ✓▮ | ✓▮ | ✓▮ | • |
| 1000 | 40 | ✓▮ | ✓▮ | • | ✓▮ | • |

**Table 43:** Key

| Symbol | Description | Symbol | Description |
|---|---|---|---|
| ✓ | Installation possible | • | Non-standardised connection |
| ▮ | Flanged installation possible | ▲ | Fit washer between nut and body |

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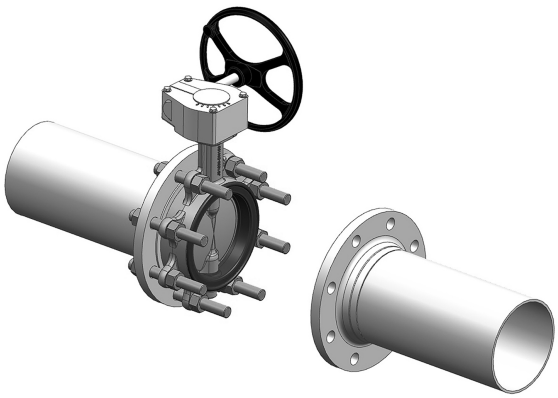
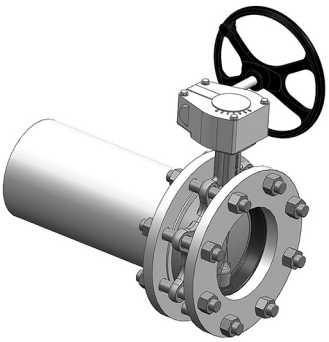
15 Variant DN 150 to 600, table on request only

## Installation information

### Dead-end service and downstream dismantling



**Downstream dismantling**

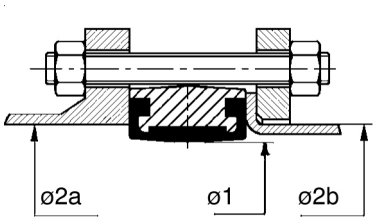


**Dead-end service**

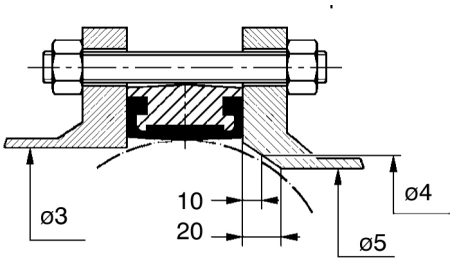
For downstream dismantling,
successively loosen diagonally opposed tie rods.

## Flange dimensions

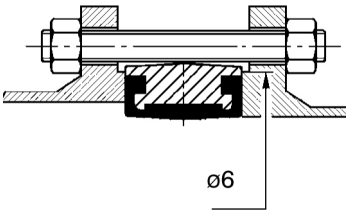
Please verify that the connection meets the requirements given below.
The flange dimensions indicated in the table apply to all body types.




Drawing A




Drawing B

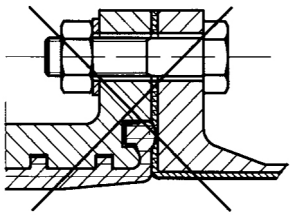



Drawing C

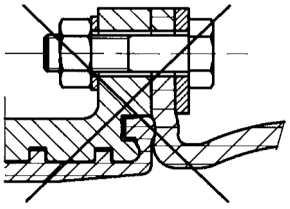
**Table 44:** Dimensions table [mm]

| DN | NPS | Optimum Ø | Max. permissible Ø | | Min. permissible Ø of flange face | Min. Ø at a distance of 10 mm from the flange face | Min. Ø at a distance of 20 mm from the flange face | Min. permissible raised face Ø of flanges with raised faces |
|---|---|---|---|---|---|---|---|---|
| | | Ø1 | Ø2a[16] | Ø2b[17] | Ø3[16] | Ø4 | Ø5 | Ø6 |
| 40 | 1½ | 40 | 54 | 49 | 32 | - | - | 77 |
| 50 | 2 | 49 | 63 | 61 | 33 | - | - | 86 |
| 65 | 2½ | 65 | 80 | 77 | 55 | 13 | - | 107 |
| 80 | 3 | 77 | 93 | 89 | 71 | 50 | - | 121 |
| 100 | 4 | 96 | 116 | 115 | 90 | 74 | 40 | 141 |
| 125 | 5 | 123 | 141,5 | 140 | 119 | 107 | 87 | 171 |
| 150 | 6 | 146 | 170,5[18] | 169 | 144 | 134 | 120 | 196 |
| 200 | 8 | 196 | 222[18] | 220 | 196 | 189 | 178 | 250 |
| 250 | 10 | 249 | 276,5[18] | 273 | 249 | 243 | 234 | 306 |
| 300 | 12 | 298 | 327,5[18] | 324 | 297 | 291 | 283 | 358 |
| 350 | 14 | 330 | 361 | 356 | 326 | 321 | 314 | 399 |
| 400 | 16 | 380 | 412 | 407 | 370 | 366 | 358 | 452 |
| 450 | 18 | 430 | 463 | 457 | 422 | 416 | 409 | 505 |
| 500 | 20 | 480 | 515 | 508 | 470 | 464 | 457 | 558 |
| 550 | 22 | 540 | 568 | 561 | 522 | 516 | 509 | 625 |
| 600 | 24 | 580 | 617 | 610 | 566 | 560 | 554 | 664 |
| 650 | 26 | 630 | 668 | - | 620 | 614 | 608 | 723 |
| 700 | 28 | 680 | 718 | - | 671 | 666 | 660 | 773 |
| 750 | 30 | 730 | 770 | - | 717 | 711 | 705 | 830 |
| 800 | 32 | 780 | 820 | - | 769 | 764 | 758 | 880 |
| 900 | 36 | 880 | 924 | - | 869 | 864 | 859 | 987 |
| 1000 | 40 | 980 | 1027 | - | 970 | 965 | 960 | 1094 |

## Coated flange



Flange with rubber coating



Expansion bellows

N.B.: Direct installation between rubber-coated flanges or with expansion bellows is not permitted. Please contact us.

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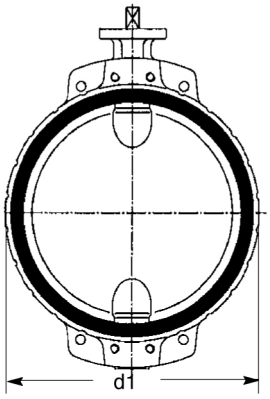
16 Flange face diameter
17 Pipe OD with loose plate flange to DIN 2642 and NF E 29-251
18 Verify that body is correctly centred between the tie rods.

## Bolting and weights

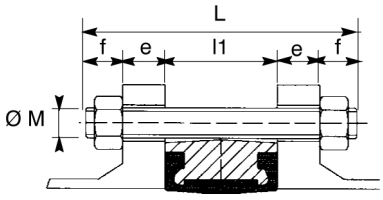
### Bolting and weights for wafer-type body - T1




Drawing BOAX-B - T1 DN 650

The drawings do not indicate the exact product design
(number of tapped lugs/clearance holes).

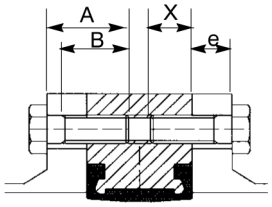
**N.B.: Bolting is not included in our standard scope of supply.**




Length of tie rod for wafer-type body - T1

**L = l1 + 2e + 2f**

L: minimum length of tie rods
l1: face-to-face length of valve
e: flange thickness (customer-specific)
f: thickness of nut + standardised overhang of tie rod




Length of bolt at shaft passage for wafer-type body - T1

**A = e + X**

A: max. bolt length
X: max. thread engagement depth
e: flange thickness (customer-specific)
B: min. thread length > A-e

**Table 45:** Dimensions [mm] and weights [kg] for wafer-type body T1 - connections PN 10 and PN 16

| DN | NPS | d1 | l1 | EN 1092-1 PN 10 | | | | | EN 1092-1 PN 16 | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ø M | Tie rod[19] | | Bolt | | Ø M | Tie rod[19] | | Bolt | | |
| | [inch] | | | | f | Qty[20] | X | Qty[20] | | f | Qty[20] | X | Qty[20] | |
| 650 | 26 | 745 | 165 | - | - | - | - | - | - | - | - | - | - | 270 |
| 700 | 28 | 795 | 165 | M27 | 32 | 20 | 30 | 4 | M33 | 38 | 20 | 25 | 4 | 315 |
| 750 | 30 | 853 | 190 | - | - | - | - | - | - | - | - | - | - | 380 |
| 800 | 32 | 903 | 190 | M30 | 35 | 20 | 33 | 4 | M36 | 42 | 20 | 36 | 4 | 475 |
| 900 | 36 | 1111 | 203 | M30 | 35 | 24 | 33 | 4 | M36 | 42 | 24 | 36 | 4 | 545 |
| 1000 | 40 | 1118 | 216 | M33 | 38 | 24 | 36 | 4 | M39 | 45 | 24 | 29 | 4 | 670 |

**Table 46:** Dimensions [mm] and weights [kg] for wafer-type body T1 - connections Class 125 and Class 150

| DN | NPS | d1 | l1 | ASME B16.1 Class 125 | | | | | ASME B16.47 Class 150 Serie A | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | UNC | Tie rod[19] | | Bolt | | UNC | Tie rod[19] | | Bolt | | |
| | [inch] | | | [inch] | f | Qty[20] | X | Qty[20] | [inch] | f | Qty[20] | X | Qty[20] | |
| 650 | 26 | 745 | 165 | 1 1/4 | 38 | 20 | 25 | 4 | 1 1/4 | 38 | 20 | 25 | 4 | 270 |
| 700 | 28 | 795 | 165 | 1 1/4 | 38 | 24 | 25 | 4 | 1 1/4 | 38 | 24 | 25 | 4 | 315 |
| 750 | 30 | 853 | 190 | 1 1/4 | 38 | 24 | 33 | 4 | 1 1/4 | 38 | 24 | 33 | 4 | 380 |

19 Quantity of nuts = quantity of tie rods x 2
20 Number of bolts per side

| DN | NPS | d1 | l1 | ASME B16.1 Class 125 | | | | | ASME B16.47 Class 150 Serie A | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | UNC | Tie rod[19] | | Bolt | | UNC | Tie rod[19] | | Bolt | | |
| | [inch] | | | [inch] | f | Qty[20] | X | Qty[20] | [inch] | f | Qty[20] | X | Qty[20] | |
| 800 | 32 | 903 | 190 | 1 1/2 | 45 | 24 | 29 | 4 | 1 1/2 | 45 | 24 | 29 | 4 | 475 |
| 900 | 36 | 1111 | 203 | 1 1/2 | 45 | 28 | 29 | 4 | 1 1/2 | 45 | 28 | 29 | 4 | 545 |
| 1000 | 40 | 1118 | 216 | 1 1/2 | 45 | 32 | 35 | 4 | 1 1/2 | 45 | 32 | 35 | 4 | 670 |

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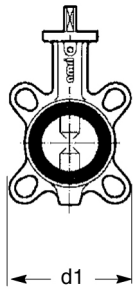
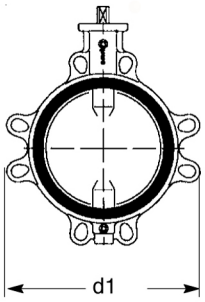
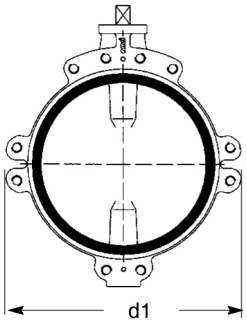
## Bolting and weights for semi-lug body - T2




Drawing BOAX-B - T2 DN 65



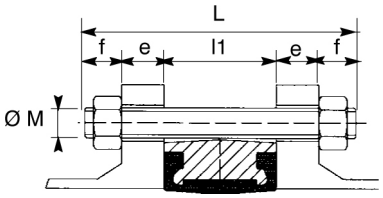

Drawing BOAX-B - T2 DN 250




Drawing BOAX-B - T2 DN 600

The drawings do not indicate the exact product design
(number of tapped lugs/clearance holes)

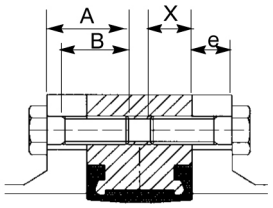
**N.B.: Bolting is not included in our standard scope of supply.**




Length of tie rod for semi-lug body - T2

**L = l1 + 2e + 2f**

L: minimum length of tie rods
l1: face-to-face length of valve
e: flange thickness (customer-specific)
f: thickness of nut + standardised overhang of tie rod




Length of bolt at shaft passage for semi-lug body - T2

**A = e + X**

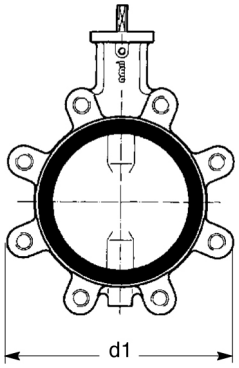
A: max. bolt length
X: max. thread engagement depth
e: flange thickness (customer-specific)
B: min. thread length > A-e

**Table 47:** Dimensions [mm] and weights [kg] for semi-lug body T2 - connections PN 10 and PN 16[21)]

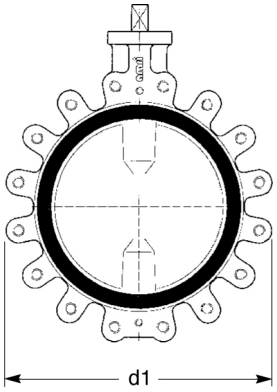
| DN | NPS | d1 | l1 | EN 1092-1 PN 10 | | | | | EN 1092-1 PN 16 | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ø M | Tie rod[22)] | | Bolt | | Ø M | Tie rod[22)] | | Bolt | | |
| | [inch] | | | | f | Qty[23)] | X | Qty[23)] | | f | Qty[23)] | X | Qty[23)] | |
| 40 | 1½ | 108 | 33 | M16 | 20 | 4 | - | - | M16 | 20 | 4 | - | - | 1,1 |
| 50 | 2 | 118 | 43 | M16 | 20 | 4 | - | - | M16 | 20 | 4 | - | - | 1,3 |
| 65 | 2½ | 132 | 46 | M16 | 20 | 4 | - | - | M16 | 20 | 4 | - | - | 1,9 |
| 80 | 3 | 138 | 46 | M16 | 20 | 8 | - | - | M16 | 20 | 8 | - | - | 2,5 |
| 100 | 4 | 150 | 52 | M16 | 20 | 8 | - | - | M16 | 20 | 8 | - | - | 3,9 |
| 125 | 5 | 234 | 56 | M16 | 20 | 8 | - | - | M16 | 20 | 8 | - | - | 4,7 |
| 150 | 6 | 260 | 56 | M20 | 24 | 8 | - | - | M20 | 24 | 8 | - | - | 6,9 |
| 200 | 8 | 322 | 60 | M20 | 24 | 8 | - | - | M20 | 24 | 12 | - | - | 10,5 |
| 250 | 10 | 394 | 68 | M20 | 24 | 12 | - | - | M24 | 29 | 12 | - | - | 16,4 |
| 300 | 12 | 462 | 78 | M20 | 24 | 12 | - | - | M24 | 29 | 12 | - | - | 30 |
| 350 | 14 | 538 | 78 | M20 | 24 | 10 | 20 | 6 | M24 | 29 | 10 | 24 | 6 | 60 |
| 400 | 16 | 604 | 102 | M24 | 29 | 10 | 24 | 6 | M27 | 32 | 10 | 27 | 6 | 80 |
| 450 | 18 | 656 | 114 | M24 | 29 | 14 | 24 | 6 | M27 | 32 | 14 | 27 | 6 | 110 |
| 500 | 20 | 716 | 127 | M24 | 29 | 12 | 24 | 8 | M30 | 35 | 12 | 30 | 8 | 145 |
| 600 | 24 | 836 | 154 | M27 | 32 | 10 | 27 | 10 | M33 | 38 | 10 | 33 | 10 | 220 |

21 Connections Class 125 and Class 150 on request
22 Quantity of nuts = quantity of tie rods x 2
23 Number of bolts per side

## Bolting and weights for full-lug body - T4



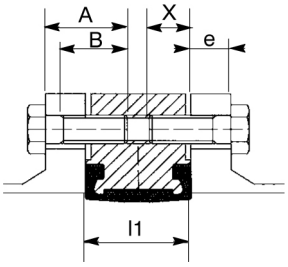

Drawing BOAX-B - T4 DN 150




Drawing BOAX-B - T4 DN 600

The drawings do not indicate the exact product design (number of lugs).

**N.B.: Bolting is not included in our standard scope of supply.**




Length of bolt at shaft passage for full-lug body - T4

**A = e + X**

A: max. bolt length
X: max. thread engagement depth
e: flange thickness (customer-specific)
B: min. thread length > A-e
l1: flange thickness

**Table 48:** Dimensions [mm] and weights [kg] for full-lug body T4 - connections PN 10 and PN 16[24)]

| DN | NPS | d1 | l1 | EN 1092-1 PN 10 | | | | | EN 1092-1 PN 16 | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ø M | Tie rod[25)] | | Bolt | | Ø M | Tie rod[25)] | | Bolt | | |
| | [inch] | | | | f | Qty[26)] | X | Qty[26)] | | f | Qty[26)] | X | Qty[26)] | |
| 40 | 1½ | 108 | 33 | M16 | - | - | 14 | 4 | M16 | - | - | 14 | 4 | 2,0 |
| 50 | 2 | 120 | 43 | M16 | - | - | 18 | 4 | M16 | - | - | 18 | 4 | 2,5 |
| 65 | 2½ | 134 | 46 | M16 | - | - | 20 | 4 | M16 | - | - | 20 | 4 | 3,0 |
| 80 | 3 | 140 | 46 | - | - | - | - | - | - | - | - | - | - | 4,0 |
| 80 | 3 | 178 | 46 | M16 | - | - | 20 | 8 | M16 | - | - | 20 | 8 | 4,5 |
| 100 | 4 | 210 | 52 | M16 | - | - | 22 | 8 | M16 | - | - | 22 | 8 | 5,5 |
| 125 | 5 | 236 | 56 | M16 | - | - | 22 | 8 | M16 | - | - | 22 | 8 | 9 |
| 150 | 6 | 260 | 56 | M20 | - | - | 26 | 8 | M20 | - | - | 26 | 8 | 11 |
| 200 | 8 | 312 | 60 | M20 | - | - | 26 | 8 | - | - | - | - | - | 24 |
| 200 | 8 | 322 | 60 | - | - | - | - | - | M20 | - | - | 26 | 12 | 25 |
| 250 | 10 | 396 | 68 | M20 | - | - | 26 | 12 | M24 | - | - | 29 | 12 | 39 |
| 300 | 12 | 466 | 78 | M20 | - | - | 26 | 12 | M24 | - | - | 30 | 12 | 46 |
| 350 | 14 | 510 | 78 | - | - | - | - | - | - | - | - | - | - | 62 |
| 350 | 14 | 530 | 78 | M20 | - | - | 26 | 16 | M24 | - | - | 30 | 16 | 70 |
| 400 | 16 | 598 | 102 | M24 | - | - | 31 | 16 | M27 | - | - | 34 | 16 | 101 |
| 450 | 18 | 622 | 114 | - | - | - | - | - | - | - | - | - | - | 122 |
| 450 | 18 | 654 | 114 | M24 | - | - | 31 | 20 | M27 | - | - | 34 | 20 | 139 |
| 500 | 20 | 708 | 127 | M24 | - | - | 31 | 20 | M30 | - | - | 37 | 20 | 179 |
| 600 | 24 | 822 | 154 | M27 | - | - | 36 | 20 | M33 | - | - | 42 | 20 | 256 |

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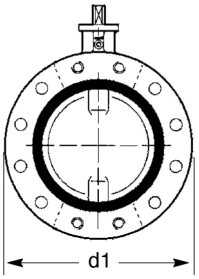
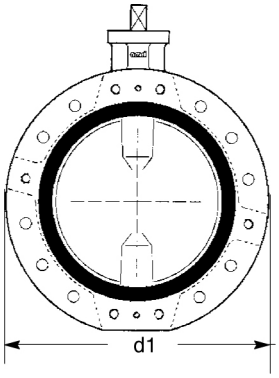
24 Connections Class 125 and Class 150 on request
25 Quantity of nuts = quantity of tie rods x 2
26 Number of bolts per side

## Bolting/weights for flanged body with flat faces - T5 DN 650-1000 (DN 150-600 on request)

**Flanged installation is permitted up to a max. differential pressure of 10 bar**




Drawing BOAX-B - T5 DN 650

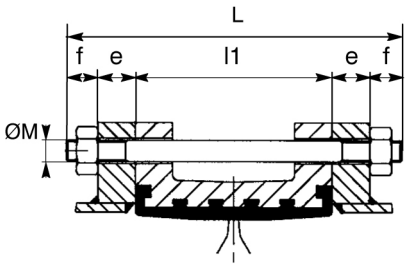



Drawing BOAX-B - T5 DN 800

The drawings do not indicate the exact product design (number of tapped holes/clearance holes).

**N.B.: Bolting is not included in our standard scope of supply.**

**Wafer-type (flange-supported) installation**




Length of tie rod for flanged body with flat faces - T5 DN 150 - 600

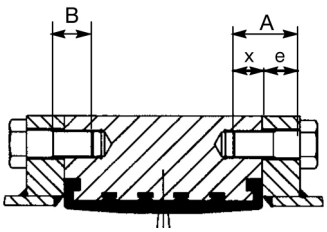
**L = l1 + 2e + 2f**

L: minimum length of tie rods

l1: face-to-face length of valve

e: flange thickness (customer-specific)

f: thickness of nut + standardised overhang of tie rod




Length of bolt at shaft passage for flanged body with flat faces - T5 DN 650 - 1000

**A = e + X**

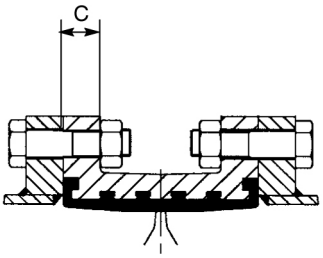
A: max. bolt length

X: max. thread engagement depth

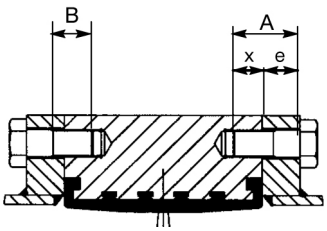
e: flange thickness (customer-specific)

B: min. thread length > A-e

**Flanged installation**




Length of tie rod for flanged body with flat faces - T5 DN 150 - 600




Length of bolt at shaft passage for flanged body with flat faces - T5 DN 650 - 1000

Information on fasteners available on request

**Table 49:** Dimensions [mm] and weights [kg] for flanged body with flat faces - T5 DN 650 - 1000[27] - connections PN 10 and PN 16

| DN | NPS | d1 | l1 | C | EN 1092-1 PN 10 | | | | | EN 1092-1 PN 16 | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ø M | Tie rod[28] | | Bolt | | Ø M | Tie rod[28] | | Bolt | | |
| | [inch] | | | | | f | Qty[29] | X | Qty[29] | | f | Qty[29] | X | Qty[29] | |
| 650 | 26 | 869 | 165 | 31,0 | - | - | - | - | - | - | - | - | - | - | 305 |
| 700 | 28 | 895 | 165 | 32,5 | M27 | 32 | 20 | 27 | 4 | - | - | - | - | - | 330 |
| 700 | 28 | 925 | 165 | 32,5 | - | - | - | - | - | M33 | 38 | 20 | 25 | 4 | 350 |
| 750 | 30 | 985 | 190 | 33,5 | - | - | - | - | - | - | - | - | - | - | 350 |
| 800 | 32 | 1015 | 190 | 35,0 | M30 | 35 | 20 | 30 | 4 | - | - | - | - | - | 505 |
| 800 | 32 | 1075 | 190 | 35,0 | - | - | - | - | - | M36 | 42 | 20 | 36 | 4 | 525 |
| 900 | 36 | 1115 | 203 | 37,5 | M30 | 35 | 24 | 30 | 4 | - | - | - | - | - | 590 |
| 900 | 36 | 1160 | 203 | 37,5 | - | - | - | - | - | M36 | 42 | 24 | 36 | 4 | 620 |
| 1000 | 40 | 1230 | 216 | 40,0 | M33 | 38 | 24 | 33 | 4 | - | - | - | - | - | 740 |
| 1000 | 40 | 1275 | 216 | 40,0 | - | - | - | - | - | M39 | 45 | 24 | 29 | 4 | 780 |

**Table 50:** Dimensions [mm] and weights [kg] for flanged body with flat faces - T5 DN 650 - 1000[27] - connections Class 125 and Class 150

| DN | NPS | d1 | L1 | C | ASME B16.1 Class 125 | | | | | ASME B16.47 Class 150 Serie A | | | | | [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | UNC | Tie rod[28] | | Bolt | | UNC | Tie rod[28] | | Bolt | | |
| | [inch] | | | | [inch] | f | Qty[29] | X | Qty[29] | [inch] | f | Qty[29] | X | Qty[29] | |
| 650 | 26 | 869 | 165 | 31,0 | 1 1/4 | 38 | 20 | 25 | 4 | 1 1/4 | 38 | 20 | 25 | 4 | 305 |
| 700 | 28 | 895 | 165 | 32,5 | - | - | - | - | - | - | - | - | - | - | 330 |
| 700 | 28 | 925 | 165 | 32,5 | 1 1/4 | 38 | 24 | 25 | 4 | 1 1/4 | 38 | 24 | 25 | 4 | 350 |
| 750 | 30 | 985 | 190 | 33,5 | 1 1/4 | 38 | 24 | 33 | 4 | 1 1/4 | 38 | 24 | 33 | 4 | 350 |
| 800 | 32 | 1015 | 190 | 35,0 | - | - | - | - | - | - | - | - | - | - | 505 |
| 800 | 32 | 1075 | 190 | 35,0 | 1 1/2 | 45 | 24 | 29 | 4 | 1 1/2 | 45 | 24 | 29 | 4 | 525 |
| 900 | 36 | 1115 | 203 | 37,5 | - | - | - | - | - | - | - | - | - | - | 590 |
| 900 | 36 | 1160 | 203 | 37,5 | 1 1/2 | 45 | 28 | 29 | 4 | 1 1/2 | 45 | 28 | 29 | 4 | 620 |
| 1000 | 40 | 1230 | 216 | 40,0 | - | - | - | - | - | - | - | - | - | - | 740 |
| 1000 | 40 | 1275 | 216 | 40,0 | 1 1/2 | 45 | 32 | 35 | 4 | 1 1/2 | 45 | 32 | 35 | 4 | 780 |

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27 DN 150 to 600 on request
28 Quantity of nuts = quantity of tie rods x 2
29 Number of bolts per side

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