

Butterfly Valve

## BOAX-S/SF

PN 6/10/16 (BOAX-S)  
PN 10/16 (BOAX-SF)  
DN 20 - 600

### Type Series Booklet



## **Legal information/Copyright**

Type Series Booklet BOAX-S/SF

All rights reserved. The contents provided herein must neither be distributed, copied, reproduced, edited or processed for any other purpose, nor otherwise transmitted, published or made available to a third party without the manufacturer's express written consent.

Subject to technical modification without prior notice.

© KSB S.A.S, Gennevilliers (Paris), France 2023-05-30

## Contents

|   |          |
|---|----------|
| <b>Butterfly Valves.....</b>  | <b>4</b> |
| Centred-disc Butterfly Valves .....   | 4        |
| BOAX-S/SF .....   | 4        |
| Main applications.....  | 4        |
| Fluids handled .....  | 4        |
| Operating data.....   | 4        |
| Design details.....   | 4        |
| Valve body materials.....   | 5        |
| Product benefits.....   | 5        |
| Product information .....   | 5        |
| Product information as per Pressure Equipment Directive 2014/68/EU (PED).....   | 5        |
| Product information as per UK Pressure Equipment (Safety) Regulations 2016..... | 5        |
| Product information as per Regulation No. 1907/2006 (REACH) .....               | 5        |
| Certifications .....  | 5        |
| Related documents .....   | 5        |
| Purchase order specifications .....   | 5        |
| Technical data .....  | 6        |
| Hydraulic data of the butterfly valve.....                                      | 6        |
| Materials.....  | 7        |
| Variants.....   | 10       |
| Locking by chain.....   | 10       |
| AMTROBOX limit switch box.....  | 10       |
| Dimensions and weights.....   | 11       |
| Dimensions and weights of BOAX-S .....  | 11       |
| Connection in acc. with EN 1092-1 for BOAX-S.....                               | 13       |
| Dimensions and weights of BOAX-SF .....   | 14       |
| Connection in acc. with EN 1092-1 for BOAX-SF.....                              | 16       |
| Dimensions and weights of BOAX-S/SF + LP lever .....                            | 17       |
| Dimensions and weights of BOAX-S/SF + MA manual gearbox .....                   | 18       |
| Dimensions and weights of BOAX-S/SF + MS manual gearbox.....                    | 19       |
| Dimensions and weights of BOAX-S and BOAX-SF with electric actuator .....       | 20       |
| Installation information.....   | 22       |
| Dead-end service and downstream dismantling of BOAX-S and BOAX-SF .....         | 22       |
| Flange connection bolts.....  | 23       |
| Insulation dimensions .....   | 25       |
| Notes on commissioning/start-up.....  | 25       |

## Butterfly Valves

### Centred-disc Butterfly Valves

## BOAX-S/SF



#### Main applications

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

#### Fluids handled

- Drinking water
- Heating water
- Fresh water
- Cooling water
- Water/glycol mixtures

#### Operating data

Table 1: Characteristics

| Characteristic   | Value   |             |
|--|---|-------------|
|  | BOAX-S  | BOAX-SF     |
| Body design  | T2  | T4          |
| Nominal pressure   | PN 6/10/16  | PN 10/16    |
| Nominal size   | DN 20 - 600   | DN 20 - 600 |
| Max. permissible pressure [bar]  | 16  | 16          |
| Min. permissible temperature [°C]  | ≥ -10   | ≥ -10       |
| Max. permissible temperature [°C]  | ≤ +130  | ≤ +130      |
| Temperature with <ul style="list-style-type: none"> <li>▪ XU liner</li> <li>▪ K liner</li> </ul>                           | <ul style="list-style-type: none"> <li>▪ -10 °C to +130 °C</li> <li>▪ -10 °C to +90 °C</li> </ul> |             |
| Actuation at ΔP at ambient temperature <ul style="list-style-type: none"> <li>▪ DN 20-200</li> <li>▪ DN 250-600</li> </ul> | <ul style="list-style-type: none"> <li>▪ 16 bar max.</li> <li>▪ 10 bar max.</li> </ul>            |             |
| Vacuum operation down to   | 0.2 bar absolute  |             |
| Max. permissible flow velocity at operating pressure   | 4 m/s (max.) for water  |             |
| Flanged ends to EN ISO   | PN 6/10/16  | PN 10/16    |
| Downstream dismantling and dead-end service  | Permissible   |             |
| Shaft end  | DN < 300 = flat end and square end<br>DN ≥ 350 = square end ISO 5211                              |             |

#### Design details

##### Design

- Semi-lug body - T2 (BOAX-S)
- Full-lug body with raised faces - T4 (BOAX-SF)
- Suitable for downstream dismantling and as dead-end valve (BOAX-S/SF)
- Extended neck allows insulation (in acc. with applicable German energy-saving regulation, for DN 20 to 200)
- Thermal barrier enables straightforward fastening of insulation at the top flange skirt.
- 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.
- Shell and leak test to EN 12266-1, leakage rate A, and ISO 5208, category A
- Face-to-face length to ISO 5752-20 and EN 558-1-20
- Top flange and square valve shaft end to ISO 5211
- Marking in accordance with EN 19
- Valves manufactured without paint wetting impairment substances
- Body coating: polyurethane, 80 µm, RAL 2002 (orange)

##### Variants

- BOAX-S/SF THERMAX  
The thermometer of BOAX-S/SF with lever can measure temperatures from 0 °C to +140 °C in heating systems and temperatures from -20 °C to +60 °C in cooling systems. DN 20-250, accuracy class 1.

### Actuator variants

- Data of LP levers:
  - 4 handle lengths: 165 mm, 260 mm, 330 mm and 460 mm
  - Made of aluminium alloy
  - Coating:
    - Handle: polyurethane, thickness 80 µm, colour: RAL 9011, black
    - Toggle lever: polyurethane, thickness 80 µm, colour: RAL 2002, orange
  - Cannot be removed
  - Can be locked in 13 positions (2 limit positions and 11 intermediate positions)
- MA manual gearbox
- MS manual gearbox
- Electric actuators

### Automation options

- AMTROBOX M limit switch box with MA manual gearbox

### Valve body materials

**Table 2:** Overview of available materials

| Material      | Material number | KSB code |
|---------------|-----------------|----------|
| EN-GJS-400-15 | 5.3106          | 3g       |

### Product benefits

- Thermometer of accuracy class 1 (optional). Please indicate when ordering the valve.
- Valve certified to
  - DVGW, ÖVGW, SVGW and BELGAQUA for drinking water applications, with EPDM elastomer liner, approved by KTW, ILP Nancy
- The spherical contact between valve disc and liner ensures durable and permanently tight shut-off.
- The extended neck between actuator and valve body enables insulation of the piping.
- Semi-lug or full-lug bodies with raised faces enable downstream dismantling.
- Actuation via padlockable or lead-sealable lever (DN 20-250)

### 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.

#### Product information as per UK Pressure Equipment (Safety) Regulations 2016

The valves satisfy the safety requirements of the UK Pressure Equipment (Safety) Regulations 2016 (PER) for fluids in Groups 1 and 2.

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

### Certifications

**Table 3:** 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 |
|       | Switzerland    | Approved in accordance with Swiss 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       |

### Related documents

**Table 4:** Information/documents

| Document                       | Reference number |
|--------------------------------|------------------|
| Operating manual               | 8417.8           |
| AMTROBOX M type series booklet | 8523.1           |

### 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

Technical data

Hydraulic data of the butterfly valve

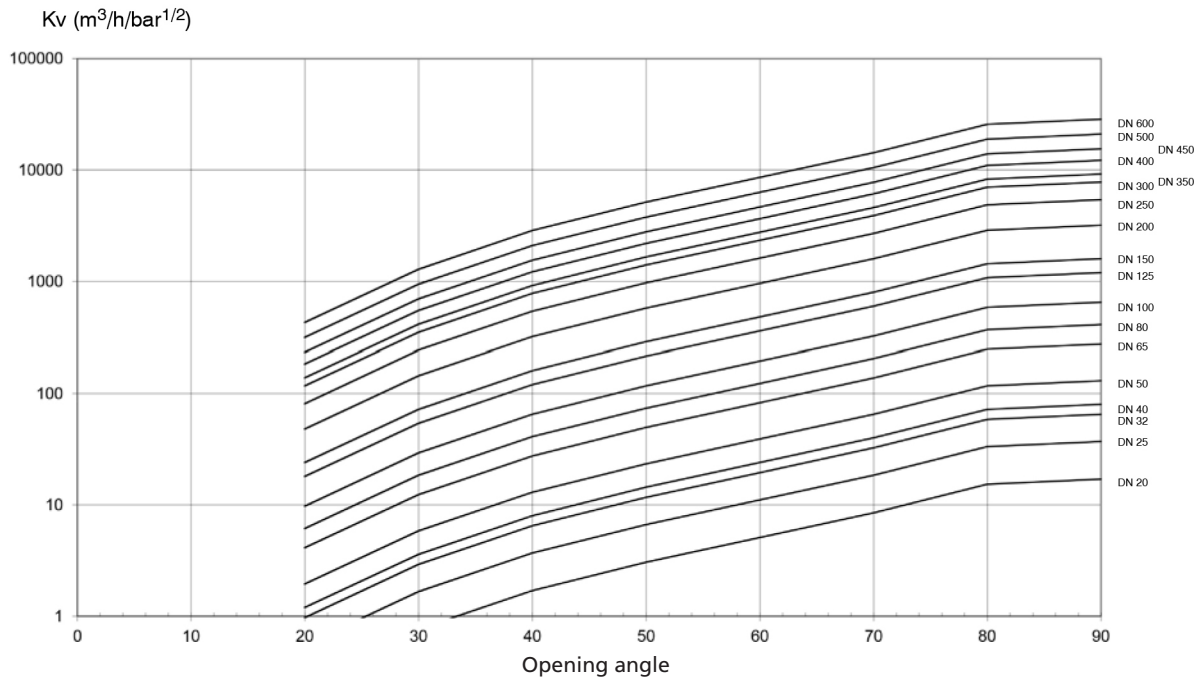


Illustration of hydraulic data

Table 5: Table of coefficients Kv [mm] and Zeta

| DN                  | Kv as a function of opening angle |       |      |      |      |      |       |       |       | Zeta |
|---------------------|-----------------------------------|-------|------|------|------|------|-------|-------|-------|------|
|                     | 10 °                              | 20 °  | 30 ° | 40 ° | 50 ° | 60 ° | 70 °  | 80 °  | 90 °  |      |
| 20/25 <sup>1)</sup> | 0                                 | 0,6   | 1,7  | 4    | 6,7  | 11   | 19    | 33    | 37    | 0,46 |
| 20 <sup>2)</sup>    | 0                                 | 0,26  | 0,77 | 1,7  | 3,1  | 5,1  | 8,5   | 15,3  | 17    | 0,88 |
| 25 <sup>2)</sup>    | 0                                 | 0,6   | 1,7  | 4    | 6,7  | 11   | 19    | 33    | 37    | 0,46 |
| 32                  | 0                                 | 1,0   | 2,9  | 6,5  | 11,7 | 19,5 | 32,5  | 58,5  | 65    | 0,40 |
| 40                  | 0                                 | 1,2   | 3,6  | 8,0  | 14,4 | 24   | 40    | 72    | 80    | 0,64 |
| 50                  | 0,1                               | 2     | 5,9  | 13   | 23,4 | 39   | 65    | 117   | 130   | 0,59 |
| 65                  | 0,3                               | 4,1   | 12,4 | 27,5 | 49,5 | 82,5 | 137,5 | 247,5 | 275   | 0,38 |
| 80                  | 0,4                               | 6,2   | 18,5 | 41   | 74   | 123  | 205   | 369   | 410   | 0,39 |
| 100                 | 0,7                               | 9,8   | 29,3 | 65   | 117  | 195  | 325   | 585   | 650   | 0,38 |
| 125                 | 1,2                               | 18    | 54   | 120  | 216  | 360  | 600   | 1080  | 1200  | 0,27 |
| 150                 | 1,6                               | 24    | 72   | 160  | 288  | 480  | 800   | 1440  | 1600  | 0,32 |
| 200                 | 3,2                               | 48    | 144  | 320  | 576  | 960  | 1600  | 2880  | 3200  | 0,25 |
| 250                 | 5,4                               | 81    | 243  | 540  | 972  | 1620 | 2700  | 4860  | 5400  | 0,21 |
| 300                 | 7,8                               | 117   | 351  | 780  | 1404 | 2340 | 3900  | 7020  | 7800  | 0,21 |
| 350                 | 9,2                               | 138   | 414  | 920  | 1656 | 2760 | 4600  | 8280  | 9200  | 0,28 |
| 400                 | 12,2                              | 183   | 549  | 1220 | 2196 | 3660 | 6100  | 10980 | 12200 | 0,27 |
| 450                 | 15,5                              | 232,5 | 698  | 1550 | 2790 | 4650 | 7750  | 13950 | 15500 | 0,27 |
| 500                 | 21                                | 315   | 945  | 2100 | 3780 | 6300 | 10500 | 18900 | 21000 | 0,23 |
| 600                 | 28,6                              | 429   | 1287 | 2860 | 5148 | 8580 | 14300 | 25740 | 28600 | 0,25 |

<sup>1</sup> BOAX-S  
<sup>2</sup> BOAX-SF

Materials

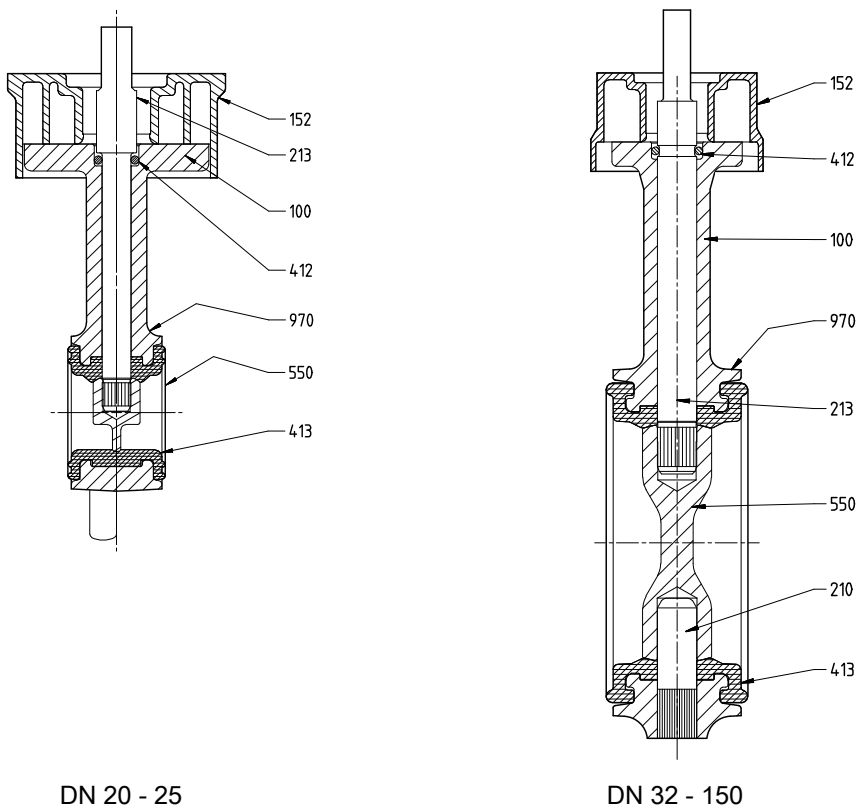


Fig. 1: Sectional drawings of BOAX-S/SF DN 20 to DN 150

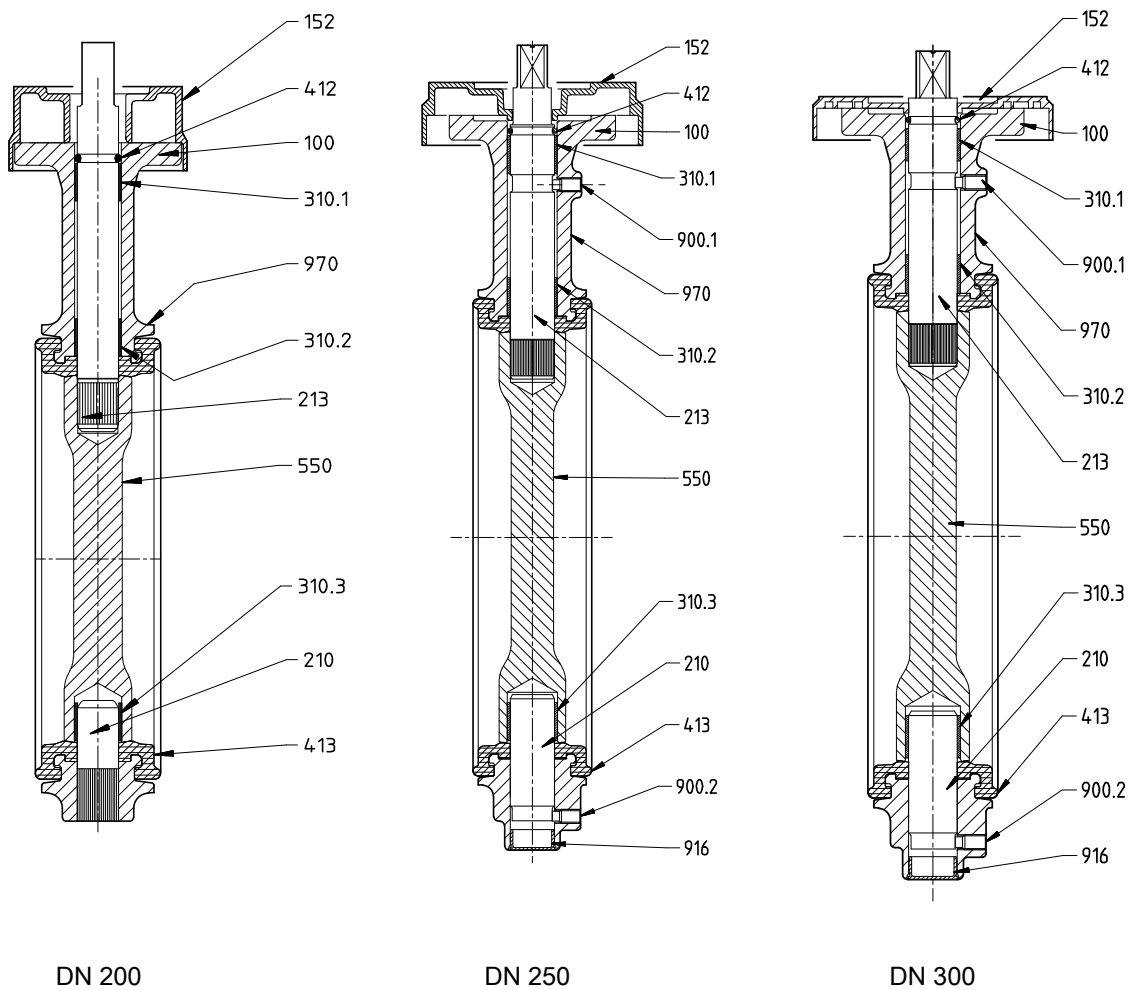
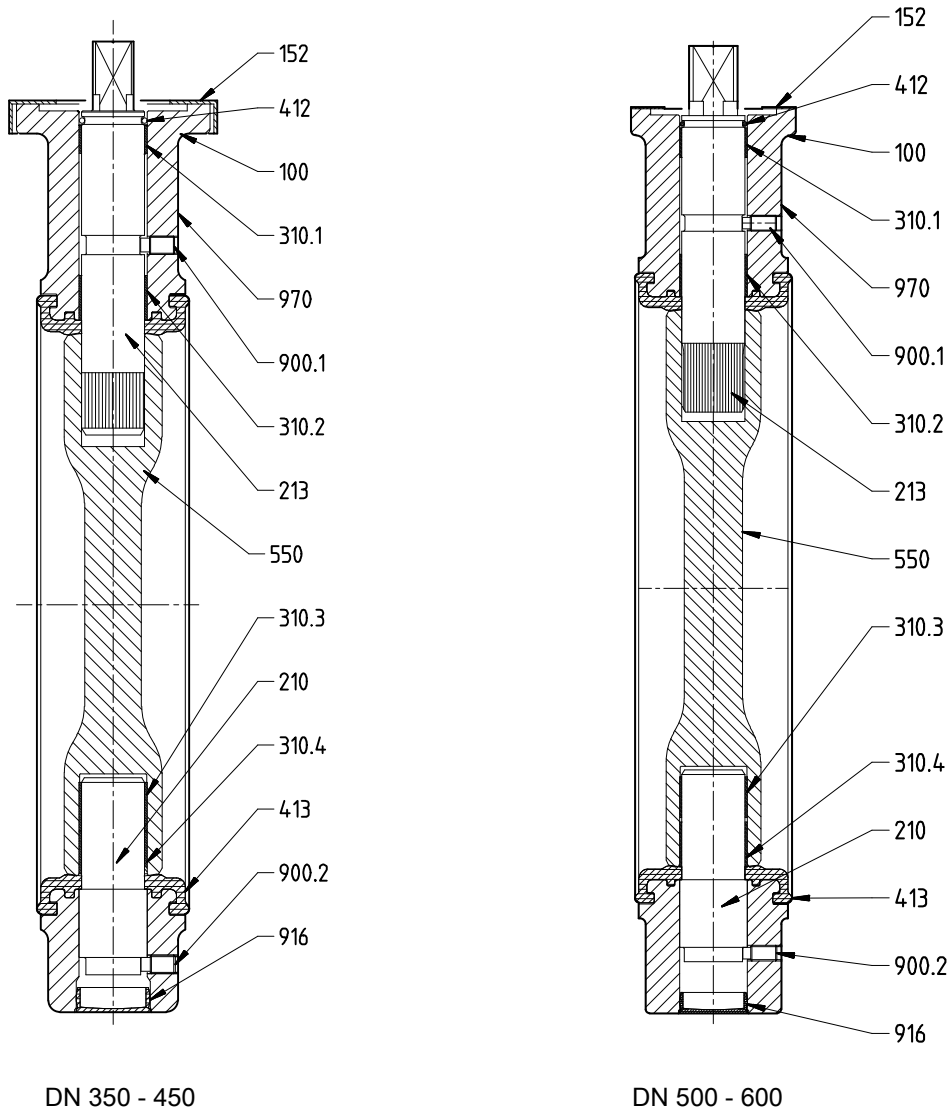


Fig. 2: Sectional drawings of BOAX-S/SF DN 200 to DN 300





DN 350 - 450

DN 500 - 600

Fig. 3: Sectional drawings of BOAX-S/SF DN 350 to DN 600

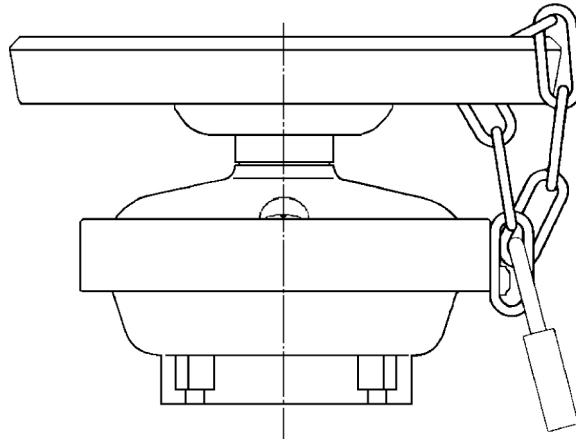
Table 6: List of components

| Part No. | Description     | DN        | Materials                              | KSB code |
|----------|-----------------|-----------|--|----------|
| 100      | Body            | 20 - 600  | Nodular cast iron JS1030               | 3g       |
| 152      | Thermal barrier | 20 - 450  | Polyamide, glass-fibre reinforced      |          |
| 210      | Shaft           | 20 - 600  | Stainless steel (13 % chrome) - 1.4029 | 6k       |
| 213      | Actuating shaft | 20 - 600  | Stainless steel (13 % chrome) - 1.4029 | 6k       |
| 310.1    | Plain bearing   | 200 - 600 | Steel with reinforced PTFE coating     |          |
| 310.2    | Plain bearing   | 200 - 600 | Steel with reinforced PTFE coating     |          |
| 310.3    | Plain bearing   | 200 - 600 | Steel with reinforced PTFE coating     |          |
| 310.4    | Plain bearing   | 350 - 600 | Steel with reinforced PTFE coating     |          |
| 400      | Gasket          | 500 - 600 | Polypropylene                          |          |
| 412      | O-ring          | 250 - 600 | EPDM                                   |          |
| 413      | Liner           | 20 - 600  | EPDM                                   | XU       |
|          |                 | 20 - 600  | High-grade nitrile                     | K        |
| 550      | Valve disc      | 20 - 600  | Stainless steel 1.4301/1.4308 (18-10)  | 6g       |
| 901.1    | Bolt            | 250 - 600 | Stainless steel                        |          |
| 901.2    | Bolt            | 250 - 600 | Stainless steel                        |          |
| 916      | Plug            | 250 - 600 | Polyethylene                           |          |
| 970      | Name plate      | 20 - 600  | Adhesive label, polyester-coated       |          |

8408.12/09-EN

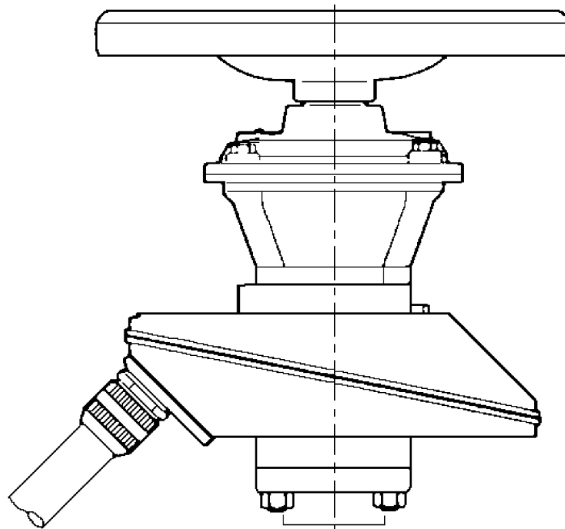
Variants

Locking by chain



Locking arrangement of MA manual gearbox (chain and padlock)

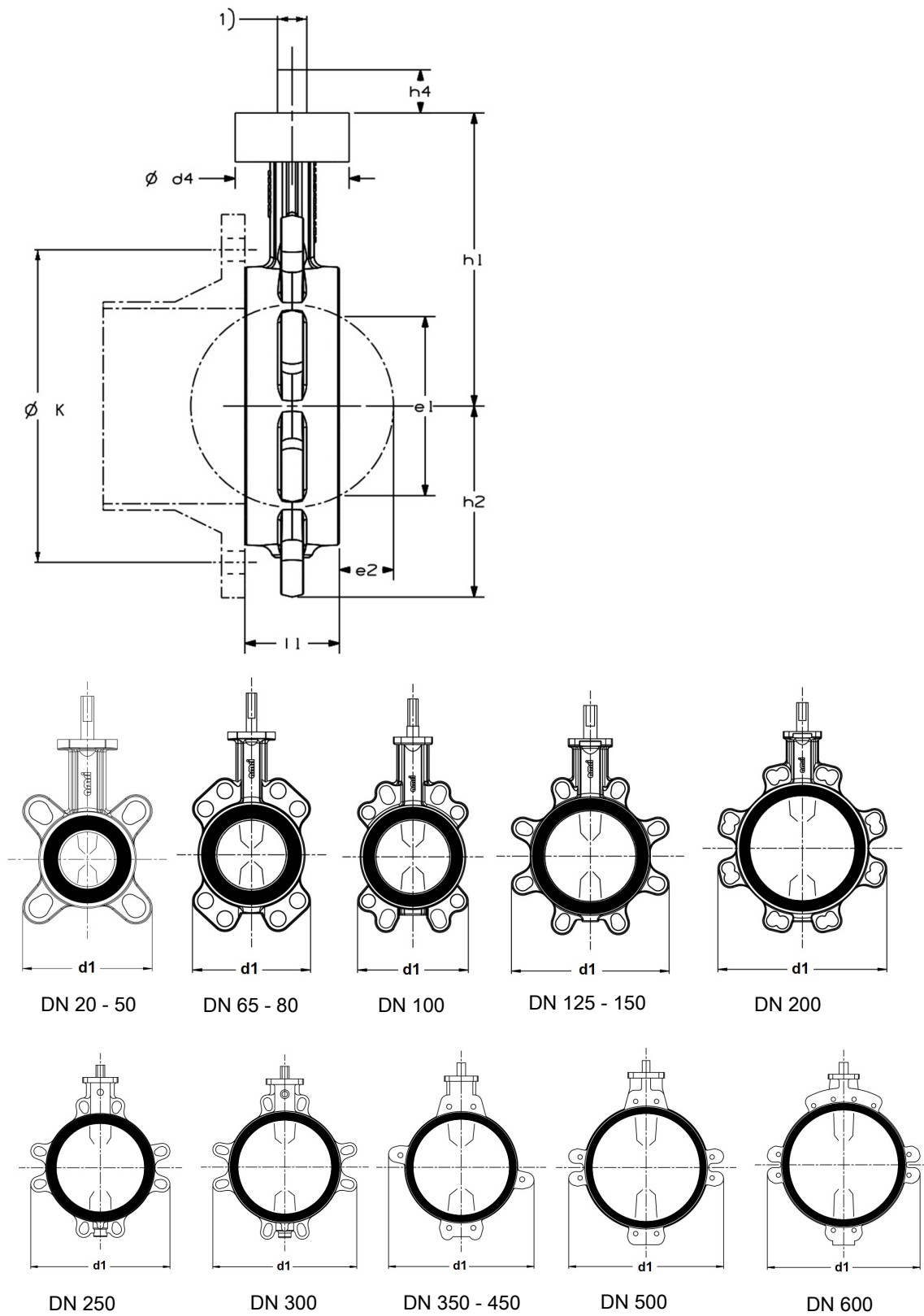
AMTROBOX limit switch box



AMTROBOX M limit switch box for MA manual gearbox

Dimensions and weights

Dimensions and weights of BOAX-S



8408.12/09-EN

Fig. 4: Sectional drawings of BOAX-S

**Table 7: Dimensions and weights**

| DN    | l1  | d1  | d4  | h1    | h2    | Top flange to ISO 5211 |      | Flat shaft end |      |      | Square shaft end to ISO 5211 |      | Valve disc |      | [kg]  |
|-------|-----|-----|-----|-------|-------|------------------------|------|----------------|------|------|------------------------------|------|------------|------|-------|
|       |     |     |     |       |       | No.                    | h4   | ∅ s            | ∅ z  | h3   | ∅ s                          | h3   | e1         | e2   |       |
|       |     |     |     |       |       | [mm]                   | [mm] | [mm]           | [mm] | [mm] | [mm]                         | [mm] | [mm]       | [mm] |       |
| 20/25 | 27  | 84  | 70  | 111   | 41,5  | F05                    | 40   | H9             | 12   | 11   | -                            | -    | 15         | 2    | 0,6   |
| 32    | 27  | 101 | 70  | 115   | 50,3  | F05                    | 40   | H9             | 12   | 11   | -                            | -    | 31         | 5    | 0,9   |
| 40    | 33  | 108 | 70  | 133   | 53,9  | F05                    | 40   | H9             | 12   | 15   | -                            | -    | 32         | 4    | 1,2   |
| 50    | 43  | 118 | 70  | 137,5 | 58,8  | F05                    | 40   | H9             | 12   | 15   | -                            | -    | 33         | 4    | 1,5   |
| 65    | 46  | 132 | 70  | 164   | 82    | F05                    | 40   | H9             | 12   | 21   | -                            | -    | 55         | 11   | 2,2   |
| 80    | 46  | 138 | 70  | 170   | 88,9  | F05                    | 40   | H9             | 12   | 21   | -                            | -    | 71         | 17   | 2,8   |
| 100   | 52  | 150 | 70  | 191   | 103   | F05                    | 40   | H11            | 14   | 24   | -                            | -    | 90         | 23   | 4,4   |
| 125   | 56  | 234 | 70  | 204,5 | 117,3 | F05                    | 40   | H11            | 14   | 24   | -                            | -    | 119        | 35   | 5,6   |
| 150   | 56  | 260 | 95  | 224   | 130   | F07                    | 42   | H17            | 22   | 25   | -                            | -    | 144        | 46   | 7,8   |
| 200   | 60  | 322 | 95  | 252   | 161   | F07                    | 42   | H17            | 22   | 25   | -                            | -    | 196        | 69   | 11,9  |
| 250   | 68  | 394 | 133 | 275   | 197   | F10                    | 38   | -              | -    | -    | L19 <sup>3)</sup>            | 25   | 249        | 92   | 17,8  |
| 300   | 78  | 462 | 158 | 290   | 231   | F12                    | 28,5 | -              | -    | -    | L22 <sup>3)</sup>            | 29   | 297        | 111  | 32,0  |
| 350   | 78  | 538 | 183 | 338   | 269   | F12                    | 29   | -              | -    | -    | L27                          | 29   | 326        | 127  | 60,0  |
| 400   | 102 | 604 | 183 | 383   | 302   | F14                    | 29   | -              | -    | -    | L36                          | 38   | 370        | 140  | 80,0  |
| 450   | 114 | 656 | 183 | 413   | 329   | F14                    | 29   | -              | -    | -    | L36                          | 38   | 422        | 160  | 110,0 |
| 500   | 127 | 716 | -   | 440   | 359   | F14                    | 29   | -              | -    | -    | L36                          | 38   | 478        | 178  | 145,0 |
| 600   | 154 | 836 | -   | 495   | 439   | F16                    | 29   | -              | -    | -    | L46                          | 48   | 566        | 215  | 220,0 |

<sup>3</sup> Square shaft end not to ISO 5211

Connection in acc. with EN 1092-1 for BOAX-S

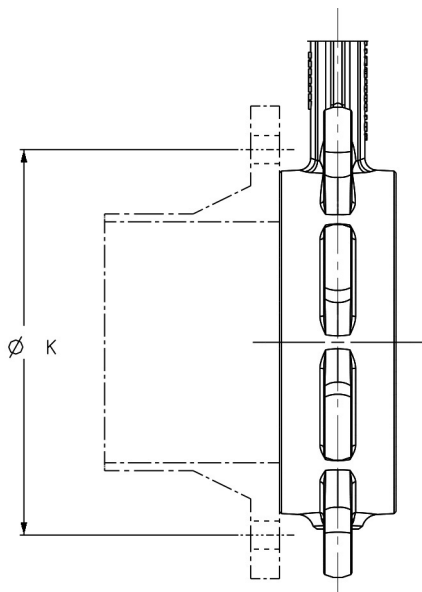


Fig. 5: Connection for BOAX-S

Table 8: Bolt circle diameter [mm]

| DN    | Bolt circle diameter $\varnothing K$ |       |       |
|-------|--------------------------------------|-------|-------|
|       | PN 6                                 | PN 10 | PN 16 |
| 20/25 | 75                                   | 85    | 85    |
| 32    | 90                                   | 100   | 100   |
| 40    | 100                                  | 110   | 110   |
| 50    | 110                                  | 125   | 125   |
| 65    | 130                                  | 145   | 145   |
| 80    | 150                                  | 160   | 160   |
| 100   | 170                                  | 180   | 180   |
| 125   | 200                                  | 210   | 210   |
| 150   | 225                                  | 240   | 240   |
| 200   | 280                                  | 295   | 295   |
| 250   | 335                                  | 350   | 355   |
| 300   | 395                                  | 400   | 410   |
| 350   | -                                    | 460   | 470   |
| 400   | -                                    | 515   | 525   |
| 450   | -                                    | 565   | 585   |
| 500   | -                                    | 620   | 650   |
| 600   | -                                    | 725   | 770   |

Dimensions and weights of BOAX-SF

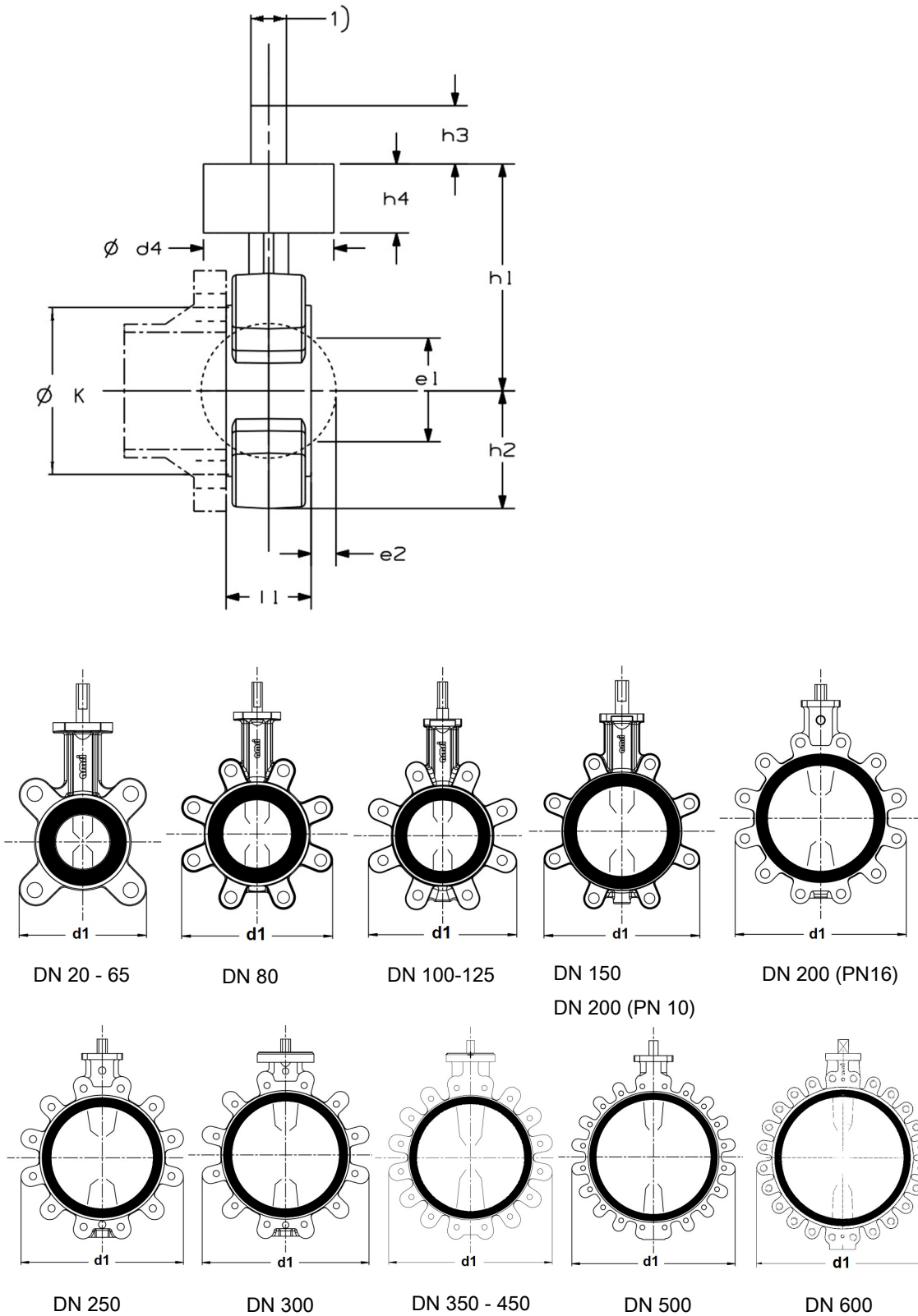


Fig. 6: Sectional drawings of BOAX-SF

**Table 9: Dimensions and weights**

| DN  | PN    | l1  | d1  | d4  | h1    | h2    | Top flange to ISO 5211 |      | Flat shaft end |     |    |                   | Square shaft end to ISO 5211 |     | Valve disc |       | [kg] |
|-----|-------|-----|-----|-----|-------|-------|------------------------|------|----------------|-----|----|-------------------|------------------------------|-----|------------|-------|------|
|     |       |     |     |     |       |       | No.                    | h4   | ∅ s            | Ø z | h3 | ∅ s               | h3                           | e1  | e2         |       |      |
|     |       |     |     |     |       |       |                        |      |                |     |    |                   |                              |     |            | [mm]  |      |
| 20  | 10/16 | 27  | 88  | 70  | 111   | 41,5  | F05                    | 40   | H9             | 12  | 11 | -                 | -                            | 15  | 2          | 1,0   |      |
| 25  | 10/16 | 27  | 88  | 70  | 111   | 41,5  | F05                    | 40   | H9             | 12  | 11 | -                 | -                            | 15  | 2          | 1,0   |      |
| 32  | 10/16 | 33  | 108 | 70  | 133   | 50,3  | F05                    | 40   | H9             | 12  | 11 | -                 | -                            | 31  | 5          | 2,0   |      |
| 40  | 10/16 | 33  | 108 | 70  | 133   | 53,9  | F05                    | 40   | H9             | 12  | 15 | -                 | -                            | 32  | 4          | 2,0   |      |
| 50  | 10/16 | 43  | 120 | 70  | 137,5 | 58,8  | F05                    | 40   | H9             | 12  | 15 | -                 | -                            | 33  | 4          | 2,5   |      |
| 65  | 10/16 | 46  | 134 | 70  | 164   | 82    | F05                    | 40   | H9             | 12  | 21 | -                 | -                            | 55  | 11         | 3,0   |      |
| 80  | 10/16 | 46  | 178 | 70  | 170   | 88,9  | F05                    | 40   | H9             | 12  | 21 | -                 | -                            | 71  | 17         | 4,5   |      |
| 100 | 10/16 | 52  | 210 | 70  | 191   | 103   | F05                    | 40   | H11            | 14  | 24 | -                 | -                            | 90  | 23         | 5,5   |      |
| 125 | 10/16 | 56  | 236 | 70  | 204,5 | 117,3 | F05                    | 40   | H11            | 14  | 24 | -                 | -                            | 119 | 35         | 9,0   |      |
| 150 | 10/16 | 56  | 260 | 95  | 224   | 130   | F07                    | 42   | H17            | 22  | 25 | -                 | -                            | 144 | 46         | 11,0  |      |
| 200 | 10    | 60  | 312 | 95  | 252   | 156   | F07                    | 42   | H17            | 22  | 25 | -                 | -                            | 196 | 69         | 24,0  |      |
| 200 | 16    | 60  | 322 | 95  | 252   | 161   | F07                    | 42   | H17            | 22  | 25 | -                 | -                            | 196 | 69         | 25,0  |      |
| 250 | 10    | 68  | 396 | 133 | 275   | 198   | F10                    | 38   | -              | -   | -  | L19 <sup>4)</sup> | 25                           | 249 | 92         | 39,0  |      |
| 300 | 10    | 78  | 466 | 158 | 290   | 233   | F12                    | 28,5 | -              | -   | -  | L22 <sup>4)</sup> | 29                           | 297 | 111        | 46,0  |      |
| 350 | 10    | 78  | 530 | 183 | 338   | 265   | F12                    | 29   | -              | -   | -  | L27               | 29                           | 326 | 127        | 70,0  |      |
| 400 | 10    | 102 | 598 | 183 | 383   | 296   | F14                    | 29   | -              | -   | -  | L36               | 38                           | 370 | 140        | 101,0 |      |
| 450 | 10    | 114 | 656 | 183 | 413   | 329   | F14                    | 29   | -              | -   | -  | L36               | 38                           | 422 | 160        | 160,0 |      |
| 500 | 10    | 127 | 708 | -   | 440   | 359   | F14                    | 27   | -              | -   | -  | L36               | 38                           | 478 | 178        | 179,0 |      |
| 600 | 10    | 154 | 822 | -   | 495   | 439   | F16                    | 27   | -              | -   | -  | L46               | 48                           | 566 | 215        | 256,0 |      |

<sup>4</sup> Square shaft end not to ISO 5211

Connection in acc. with EN 1092-1 for BOAX-SF

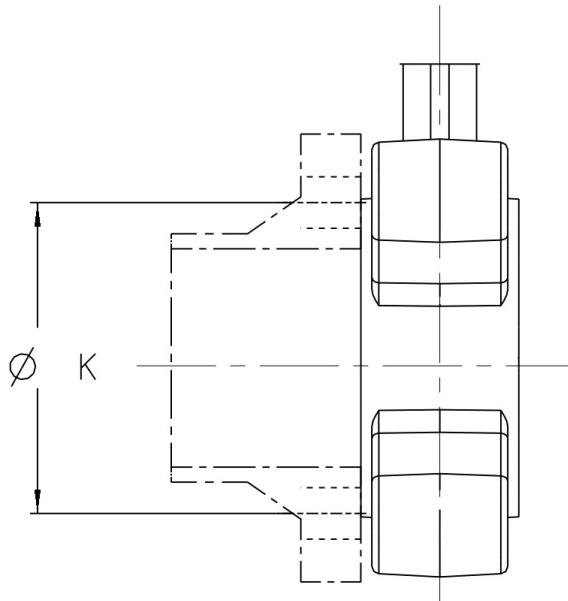


Fig. 7: Connection for BOAX-SF

Table 10: Bolt circle diameter  $\varnothing K$

| DN  | PN 10 | PN 16 |
|-----|-------|-------|
| 20  | 75    | 75    |
| 25  | 85    | 85    |
| 32  | 100   | 100   |
| 40  | 110   | 110   |
| 50  | 125   | 125   |
| 65  | 145   | 145   |
| 80  | 160   | 160   |
| 100 | 180   | 180   |
| 125 | 210   | 210   |
| 150 | 240   | 240   |
| 200 | 295   | 295   |
| 250 | 350   | 355   |
| 300 | 400   | 410   |
| 350 | 460   | 470   |
| 400 | 515   | 525   |
| 450 | 565   | 585   |
| 500 | 620   | 650   |
| 600 | 725   | 770   |



Dimensions and weights of BOAX-S/SF + LP lever

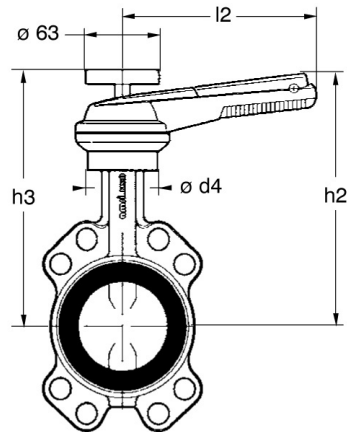


Fig. 8: Unit comprising BOAX-S + LP lever

Table 11: Dimensions and weights of BOAX-S/SF + LP lever

| DN    | l2   | h2    | h3   | d4   | BOAX-S             | BOAX-SF            |
|-------|------|-------|------|------|--------------------|--------------------|
|       | [mm] | [mm]  | [mm] | [mm] | [kg] <sup>5)</sup> | [kg] <sup>5)</sup> |
| 20/25 | 165  | 163,1 | 156  | 70   | 1,1                | -                  |
| 20    | 165  | 163,1 | 156  | 70   | -                  | 1,3                |
| 25    | 165  | 163,1 | 156  | 70   | -                  | 1,3                |
| 32    | 165  | 167,1 | 178  | 70   | 1,5                | 2,6                |
| 40    | 165  | 185,1 | 178  | 70   | 1,8                | 2,6                |
| 50    | 165  | 189,6 | 183  | 70   | 2,1                | 3,1                |
| 65    | 165  | 216,1 | 209  | 70   | 2,8                | 3,6                |
| 80    | 165  | 222,1 | 215  | 70   | 3,4                | 5,1                |
| 100   | 230  | 253   | 253  | 70   | 5,2                | 6,3                |
| 125   | 230  | 256   | 266  | 70   | 6,2                | 9,8                |
| 150   | 330  | 298   | 298  | 95   | 9,1                | 12,3               |
| 200   | 330  | 326   | 326  | 95   | 13,2               | 25,3               |
| 250   | 460  | 374   | 374  | 133  | 20,1               | 41,3               |

<sup>5)</sup> The weights given refer to the valve + actuating element.

Dimensions and weights of BOAX-S/SF + MA manual gearbox

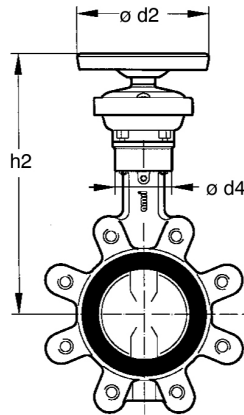


Fig. 9: Unit comprising BOAX-SF + MA manual gearbox

Table 12: Dimensions and weights of BOAX-S/SF with MA manual gearbox – DN 20 - 250

| DN    | Type | d2   | h2   | d4   | BOAX-S             | BOAX-SF            |
|-------|------|------|------|------|--------------------|--------------------|
|       |      | [mm] | [mm] | [mm] | [kg] <sup>6)</sup> | [kg] <sup>6)</sup> |
| 20/25 | MA12 | 140  | 198  | 60   | 2,1                | -                  |
| 20    | MA12 | 140  | 195  | 60   | -                  | 2,5                |
| 25    | MA12 | 140  | 198  | 60   | -                  | 2,5                |
| 32    | MA12 | 140  | 202  | 60   | 2,4                | 3,5                |
| 40    | MA12 | 140  | 220  | 60   | 2,7                | 3,5                |
| 50    | MA12 | 140  | 225  | 60   | 3,0                | 4,0                |
| 65    | MA12 | 140  | 251  | 60   | 3,7                | 4,5                |
| 80    | MA12 | 140  | 257  | 60   | 4,3                | 6,0                |
| 100   | MA12 | 140  | 285  | 70   | 5,9                | 7,0                |
| 125   | MA12 | 140  | 299  | 70   | 7,1                | 10,5               |
| 150   | MA25 | 225  | 355  | 95   | 10,8               | 14,0               |
| 200   | MA25 | 225  | 383  | 95   | 14,9               | 27,0               |
| 250   | MA25 | 225  | 406  | 133  | 20,8               | 42,0               |

<sup>6)</sup> The weights given refer to the valve + actuating element.

Dimensions and weights of BOAX-S/SF + MS manual gearbox

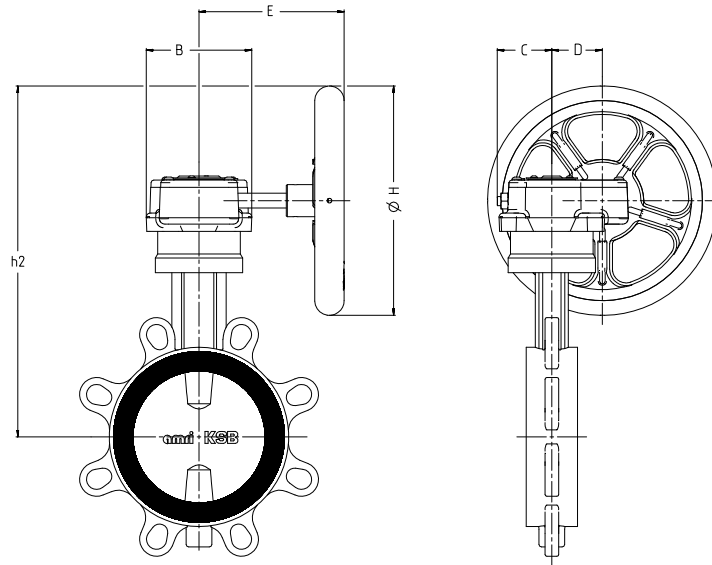


Fig. 10: Unit comprising BOAX-S + MS manual gearbox

Table 13: Dimensions and weights of BOAX-S/SF with MS manual gearbox – DN 150 - 600

| DN  | Type  | B     | C    | D     | E    | ØH   | h2    | BOAX-S             | BOAX-SF            |
|-----|-------|-------|------|-------|------|------|-------|--------------------|--------------------|
|     |       | [mm]  | [mm] | [mm]  | [mm] | [mm] | [mm]  | [kg] <sup>7)</sup> | [kg] <sup>7)</sup> |
| 150 | MS50  | 110,5 | 57   | 55    | 245  | 250  | 382,5 | 13,2               | 16,5               |
| 200 | MS50  | 110,5 | 57   | 55    | 245  | 250  | 410,5 | 17,3               | 29,5               |
| 250 | MS50  | 110,5 | 57   | 55    | 245  | 250  | 433,5 | 23,2               | 44,5               |
| 300 | MS50  | 110,5 | 57   | 55    | 245  | 250  | 448,5 | 37,5               | 51,5               |
| 350 | MS50  | 110,5 | 57   | 55    | 245  | 250  | 496,5 | 65,5               | 75,5               |
| 400 | MS100 | 135   | 66,4 | 68,8  | 298  | 400  | 620,5 | 89                 | 110                |
| 450 | MS100 | 135   | 66,4 | 68,8  | 298  | 400  | 650,5 | 119                | 169                |
| 500 | MS100 | 135   | 66,4 | 68,8  | 298  | 400  | 677,5 | 154                | 188                |
| 600 | MS200 | 156   | 77   | 81,03 | 276  | 500  | 797,5 | 233                | 269                |

<sup>7)</sup> The weights given refer to the valve + actuating element.

Dimensions and weights of BOAX-S and BOAX-SF with electric actuator

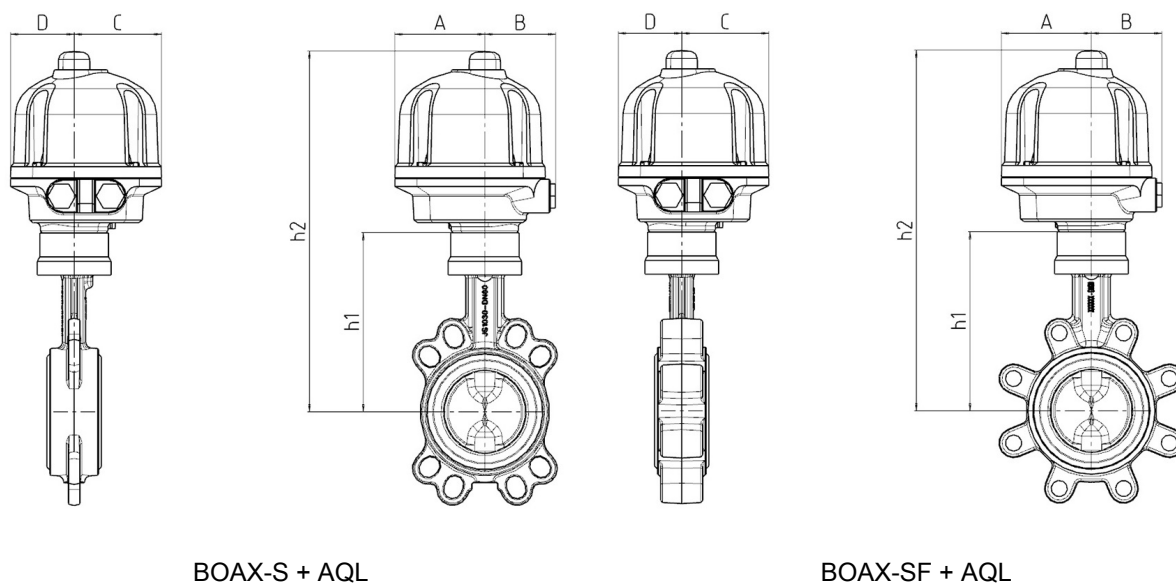


Fig. 11: Sectional drawings of BOAX-S/SF with AQL

Table 14: Dimensions and weights of BOAX-S/SF with AQL

| DN    | PS<br>[bar] | Type        | A (230V) |      | C<br>[mm] | D<br>[mm] | h1<br>[mm] | h2<br>[mm] | BOAX-S<br>[kg] <sup>8)</sup> | BOAX-SF<br>[kg] <sup>8)</sup> |
|-------|-------------|-------------|----------|------|-----------|-----------|------------|------------|------------------------------|-------------------------------|
|       |             |             | [mm]     | [mm] |           |           |            |            |                              |                               |
| 20/25 | 10/16       | AQ1L        | 67       | 85   | 83        | 60        | 104        | 277        | 3,1                          | -                             |
| 20    | 10/16       | AQ1L        | 67       | 85   | 83        | 60        | 104        | 277        | -                            | 3,5                           |
| 25    | 10/16       | AQ1L        | 67       | 85   | 83        | 60        | 104        | 277        | -                            | 3,5                           |
| 32    | 10/16       | AQ1L        | 67       | 85   | 83        | 60        | 108        | 281        | 3,4                          | 4,5                           |
| 40    | 10/16       | AQ1L        | 67       | 85   | 83        | 60        | 126        | 299        | 3,7                          | 4,5                           |
| 50    | 10/16       | AQ3L        | 67       | 85   | 83        | 60        | 131        | 304        | 4,0                          | 5,0                           |
| 65    | 10/16       | AQ3L        | 67       | 85   | 83        | 60        | 157        | 330        | 4,7                          | 5,5                           |
| 80    | 10/16       | AQ7L        | 67       | 85   | 83        | 60        | 163        | 354        | 5,8                          | 7,5                           |
| 100   | 10/16       | AQ7L        | 67       | 85   | 83        | 60        | 191        | 382        | 7,4                          | 8,5                           |
| 125   | 10/16       | Contact us. |          |      |           |           |            |            |                              |                               |

<sup>8)</sup> The weights given refer to the valve + actuating element.

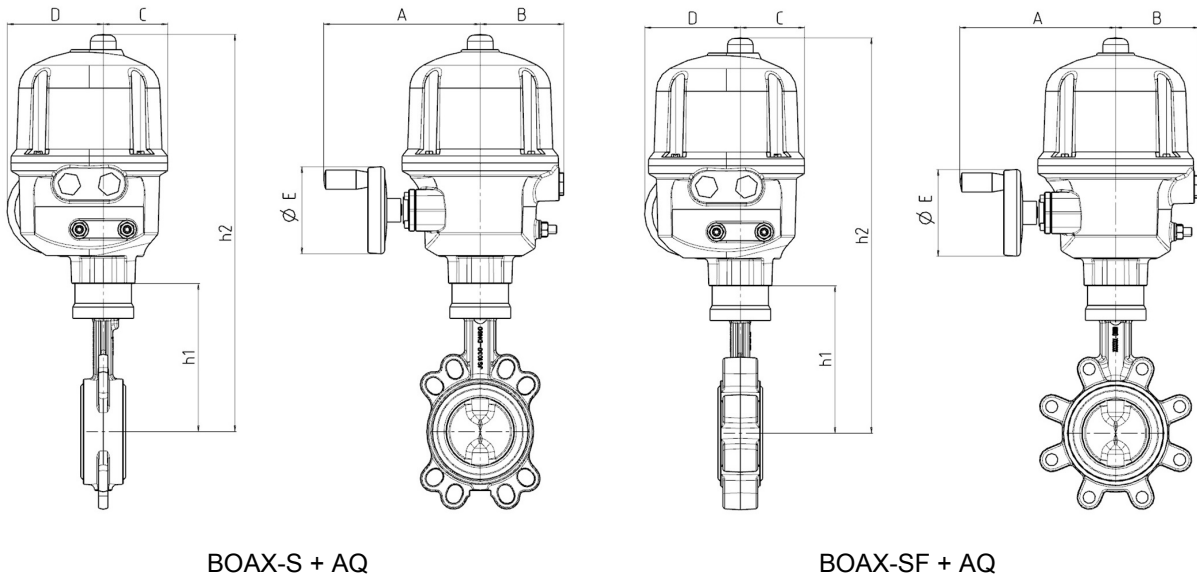


Fig. 12: Sectional drawings of BOAX-S/SF with AQ

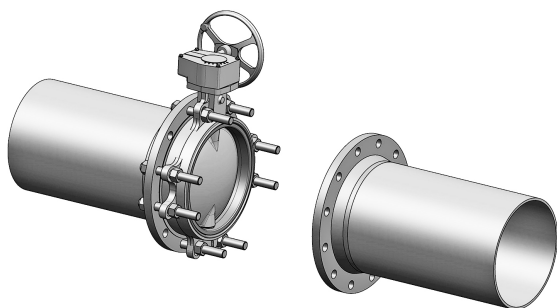
Table 15: Dimensions and weights of BOAX-S/SF with AQ

| DN    | PS<br>[bar] | Type  | A<br>[mm] | B<br>[mm] | C<br>[mm] | D<br>[mm] | E<br>[mm] | h1<br>[mm] | h2<br>[mm] | BOAX-S<br>[kg] <sup>8)</sup> | BOAX-SF<br>[kg] <sup>8)</sup> |
|-------|-------------|-------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------------------|-------------------------------|
| 20/25 | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 104        | 390        | 10,6                         | -                             |
| 20    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 104        | 390        | -                            | 11,0                          |
| 25    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 104        | 390        | -                            | 11,0                          |
| 32    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 108        | 394        | 10,9                         | 12,0                          |
| 40    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 126        | 412        | 11,2                         | 12,0                          |
| 50    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 131        | 417        | 11,5                         | 12,5                          |
| 65    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 157        | 443        | 12,2                         | 13,0                          |
| 80    | 10/16       | AQ5   | 180       | 96        | 74        | 110       | 100       | 163        | 449        | 12,8                         | 14,5                          |
| 100   | 10/16       | AQ10  | 180       | 96        | 74        | 110       | 100       | 191        | 477        | 14,4                         | 15,5                          |
| 125   | 10/16       | AQ10  | 180       | 96        | 74        | 110       | 100       | 205        | 491        | 15,6                         | 19,0                          |
| 150   | 10/16       | AQ15  | 180       | 96        | 74        | 110       | 100       | 224        | 510        | 17,8                         | 21,0                          |
| 200   | 10/16       | AQ15  | 248       | 117       | 86        | 138       | 100       | 252        | 569        | 24,9                         | 37,0                          |
| 250   | 10          | AQ25  | 248       | 117       | 86        | 138       | 100       | 275        | 603        | 30,8                         | 52,0                          |
| 300   | 10          | AQ50  | 248       | 117       | 86        | 138       | 100       | 290        | 618        | 47,0                         | 61,0                          |
| 350   | 10          | AQ50  | 310       | 117       | 86        | 174       | 200       | 338        | 666        | 75,0                         | 85,0                          |
| 400   | 10          | AQ80  | 310       | 117       | 86        | 200       | 250       | 383        | 748        | 98,0                         | 119,0                         |
| 450   | 10          | AQ80  | 310       | 117       | 86        | 200       | 250       | 413        | 778        | 128,0                        | 178,0                         |
| 500   | 10          | AQ100 | 310       | 117       | 86        | 200       | 250       | 440        | 805        | 238,0                        | 197,0                         |

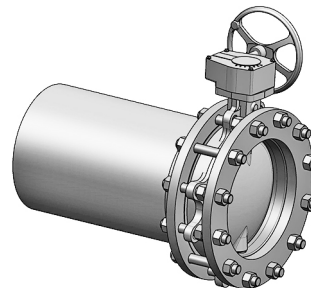
Installation information

Dead-end service and downstream dismantling of BOAX-S and BOAX-SF

BOAX-S

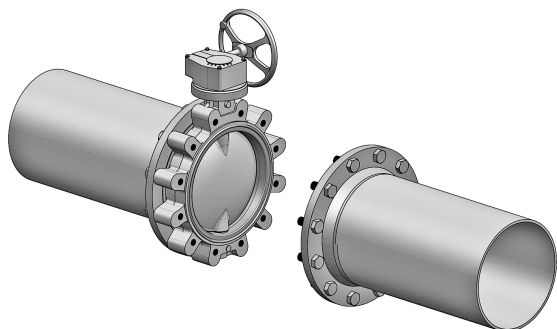


Downstream dismantling

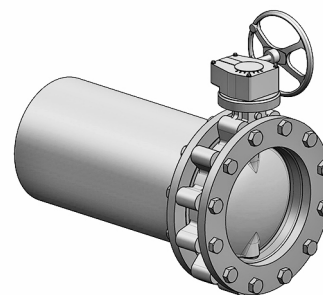


Dead-end service

BOAX-SF



Downstream dismantling



Dead-end service

Flange connection bolts

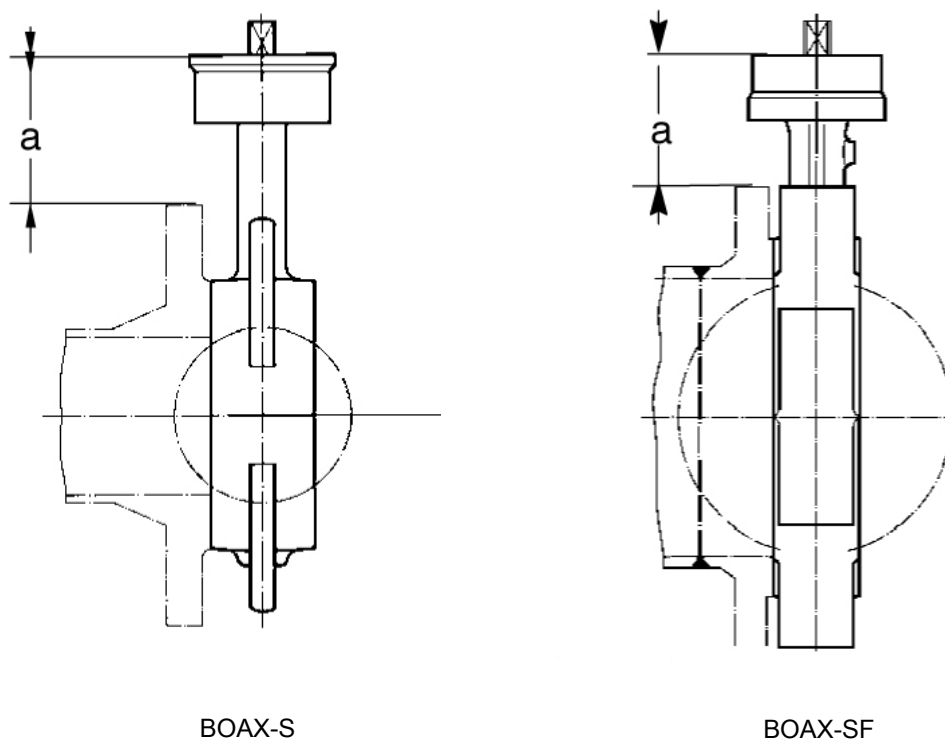


Fig. 13: Flange connection for BOAX-S and BOAX-SF

Table 16: BOAX-S – Dimensions [mm]

| DN  | EN 1092 PN 6 Type 11 |                | EN 1092 PN 10 Type 11 |                                       | EN 1092 PN 16 Type 11 |                                       |
|---|----------------------|----------------|-----------------------|---------------------------------------|-----------------------|---------------------------------------|
|   | a                    | Bolt size      | a                     | Bolt size                             | a                     | Bolt size                             |
| <b>Bolt/Nut</b>   |                      |                |                       |                                       |                       |                                       |
| 20/25   | 54,0                 | 4 x M10 x 75   | 46,5                  | 4 x M12 x 80                          | 46,5                  | 4 x M12 x 80                          |
| 32  | 48,0                 | 4 x M12 x 80   | 38,0                  | 4 x M16 x 85                          | 38,0                  | 4 x M16 x 85                          |
| 40  | 61,0                 | 4 x M12 x 80   | 51,0                  | 4 x M16 x 85                          | 51,0                  | 4 x M16 x 85                          |
| 50  | 60,5                 | 4 x M12 x 90   | 48,0                  | 4 x M16 x 100                         | 48,0                  | 4 x M16 x 100                         |
| 65  | 77,0                 | 4 x M12 x 90   | 64,5                  | 8 x M16 x 100                         | 64,5                  | 8 x M16 x 100                         |
| 80  | 68,0                 | 4 x M16 x 100  | 63,0                  | 8 x M16 x 110                         | 63,0                  | 8 x M16 x 110                         |
| 100   | 86,0                 | 4 x M16 x 110  | 81,0                  | 8 x M16 x 110                         | 81,0                  | 8 x M16 x 110                         |
| 125   | 84,5                 | 8 x M16 x 115  | 79,5                  | 8 x M16 x 120                         | 79,5                  | 8 x M16 x 120                         |
| 150   | 91,5                 | 8 x M16 x 115  | 81,5                  | 8 x M20 x 130                         | 81,5                  | 8 x M20 x 120                         |
| 200   | 92,0                 | 8 x M16 x 125  | 82,0                  | 8 x M20 x 130                         | 82,0                  | 12 x M20 x 130                        |
| 250   | 87,5                 | 12 x M16 x 135 | 77,5                  | 12 x M20 x 150                        | 72,5                  | 12 x M24 x 150                        |
| 300   | 69,5                 | 12 x M20 x 150 | 67,0                  | 12 x M20 x 160                        | 59,5                  | 12 x M24 x 160                        |
| <b>Threaded rods</b>  |                      |                |                       |                                       |                       |                                       |
| 350   | -                    | -              | 90,0                  | (10 x M20 x 180) +<br>(12 x M20 x 50) | 82,5                  | (10 x M24 x 195) +<br>(12 x M24 x 55) |
| 400   | -                    | -              | 100,5                 | (10 x M24 x 210) +<br>(12 x M24 x 50) | 93,0                  | (10 x M27 x 230) +<br>(12 x M27 x 60) |
| 450   | -                    | -              | 105,5                 | (12 x M24 x 230) +<br>(16 x M24 x 55) | 93,0                  | (12 x M27 x 260) +<br>(16 x M27 x 70) |
| 500   | -                    | -              | 108,0                 | (12 x M24 x 240) +<br>(16 x M24 x 55) | 85,5                  | (12 x M30 x 285) +<br>(16 x M30 x 75) |
| 600   | -                    | -              | 107,0                 | (10 x M27 x 290) +<br>(20 x M27 x 60) | 77,0                  | (10 x M33 x 340) +<br>(20 x M33 x 90) |
| When threaded rods or fully threaded studs are used, at least 1 nut height must be added to the above bolt lengths. |                      |                |                       |                                       |                       |                                       |

Table 17: BOAX-SF – Dimensions [mm]

| DN                   | EN 1092 PN 10 Type 11 |               | EN 1092 PN 16 Type 11 |               |
|----------------------|-----------------------|---------------|-----------------------|---------------|
|                      | a                     | Bolt size     | a                     | Bolt size     |
| <b>Bolt/Nut</b>      |                       |               |                       |               |
| 20                   | 51,5                  | 8 x M12 x 30  | 51,5                  | 8 x M12 x 30  |
| 25                   | 46,5                  | 8 x M12 x 30  | 46,5                  | 8 x M12 x 30  |
| 32                   | 38,0                  | 8 x M16 x 30  | 38,0                  | 8 x M16 x 30  |
| 40                   | 51,0                  | 8 x M16 x 30  | 51,0                  | 8 x M16 x 30  |
| 50                   | 48,0                  | 8 x M16 x 35  | 48,0                  | 8 x M16 x 35  |
| 65                   | 64,5                  | 8 x M16 x 35  | 64,5                  | 16 x M16 x 35 |
| 80                   | 63,0                  | 16 x M16 x 40 | 63,0                  | 16 x M16 x 40 |
| 100                  | 81,0                  | 16 x M16 x 40 | 81,0                  | 16 x M16 x 40 |
| 125                  | 79,5                  | 16 x M16 x 40 | 79,5                  | 16 x M16 x 40 |
| 150                  | 81,5                  | 16 x M20 x 45 | 81,5                  | 16 x M20 x 45 |
| 200                  | 82,0                  | 16 x M20 x 50 | 82,0                  | 24 x M20 x 50 |
| 250                  | 77,5                  | 24 x M20 x 50 | 72,5                  | 24 x M24 x 50 |
| 300                  | 67,0                  | 24 x M20 x 50 | 59,5                  | 24 x M24 x 50 |
| <b>Threaded rods</b> |                       |               |                       |               |
| 350                  | 90,0                  | 32 x M20 x 55 | 82,5                  | 32 x M24 x 60 |
| 400                  | 100,5                 | 32 x M24 x 60 | 93,0                  | 32 x M27 x 70 |
| 450                  | 105,5                 | 40 x M24 x 60 | 93,0                  | 40 x M27 x 70 |
| 500                  | 108,0                 | 40 x M24 x 60 | 85,5                  | 40 x M30 x 80 |
| 600                  | 107,0                 | 40 x M27 x 70 | 77,0                  | 40 x M33 x 90 |

When threaded rods or fully threaded studs are used, at least 1 nut height must be added to the above bolt lengths.



Insulation dimensions

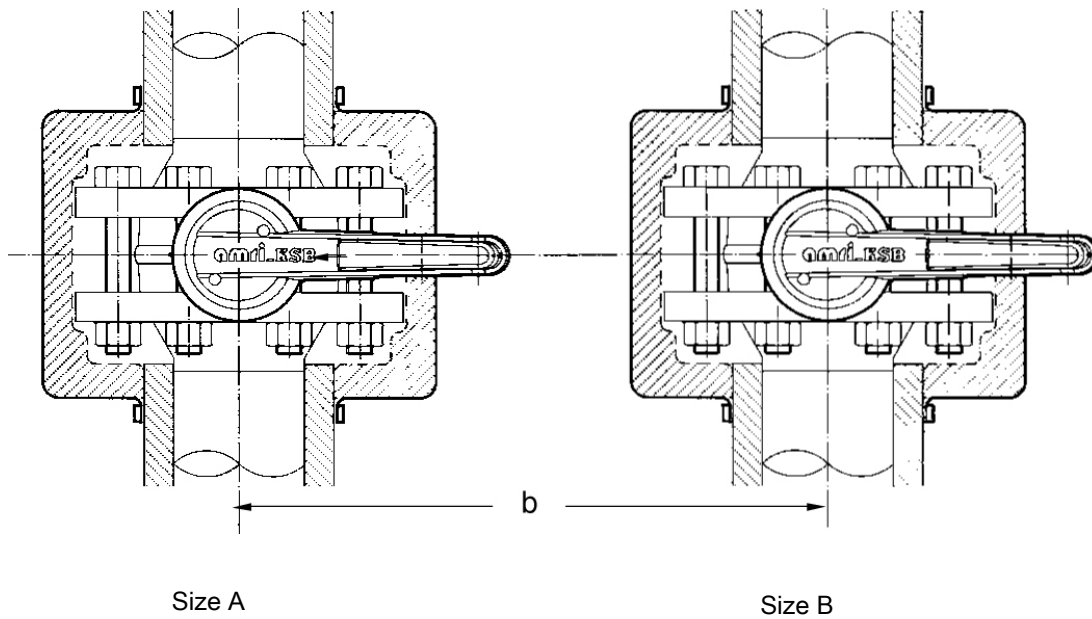


Fig. 14: Minimum spacing b between manifold branches

**i** The minimum spacings b between the manifold branches must be provided as defined by heating system regulations, irrespective of the levers or manual gearboxes used.

Table 18: Minimum spacings b [mm]

| Size             | DN    | BOAX-S/SF size A |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |
|------------------|-------|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|                  |       | 20/25            | 20  | 25  | 32  | 40  | 50  | 65  | 80  | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500  | 600  |
| BOAX-S/SF size B | 20/25 | 245              | -   | -   | 250 | 265 | 270 | 295 | 305 | 310 | 325 | 340 | 370 | 410 | 430 | 487 | 532 | 572 | 612  | 672  |
|                  | 20    | -                | 240 | 240 | 245 | 265 | 270 | 295 | 300 | 310 | 325 | 340 | 370 | 405 | 430 | 484 | 530 | 570 | 610  | 670  |
|                  | 25    | -                | -   | 245 | 250 | 265 | 270 | 295 | 305 | 310 | 325 | 340 | 370 | 410 | 430 | 487 | 532 | 572 | 612  | 672  |
|                  | 32    | -                | -   | -   | 255 | 270 | 275 | 300 | 305 | 315 | 330 | 345 | 370 | 415 | 435 | 491 | 536 | 576 | 618  | 678  |
|                  | 40    | -                | -   | -   | -   | 290 | 295 | 320 | 325 | 335 | 345 | 365 | 390 | 430 | 455 | 510 | 554 | 594 | 635  | 695  |
|                  | 50    | -                | -   | -   | -   | -   | 300 | 325 | 330 | 340 | 350 | 370 | 400 | 435 | 460 | 514 | 560 | 600 | 640  | 700  |
|                  | 65    | -                | -   | -   | -   | -   | -   | 350 | 355 | 365 | 380 | 395 | 425 | 460 | 485 | 540 | 585 | 625 | 665  | 725  |
|                  | 80    | -                | -   | -   | -   | -   | -   | -   | 365 | 370 | 385 | 400 | 430 | 470 | 490 | 546 | 591 | 631 | 673  | 733  |
|                  | 100   | -                | -   | -   | -   | -   | -   | -   | -   | 380 | 395 | 410 | 440 | 475 | 500 | 554 | 600 | 640 | 680  | 740  |
|                  | 125   | -                | -   | -   | -   | -   | -   | -   | -   | -   | 410 | 425 | 450 | 490 | 515 | 570 | 614 | 654 | 695  | 755  |
|                  | 150   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | 440 | 470 | 510 | 530 | 585 | 630 | 670 | 710  | 770  |
|                  | 200   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 500 | 540 | 560 | 619 | 658 | 700 | 740  | 800  |
|                  | 250   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 575 | 600 | 651 | 696 | 736 | 778  | 838  |
|                  | 300   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 620 | 675 | 720 | 760 | 800  | 860  |
|                  | 350   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 730 | 775 | 815 | 855  | 915  |
|                  | 400   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 820 | 860 | 900  | 960  |
|                  | 450   | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 900 | 940  | 1000 |
| 500              | -     | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 980 | 1040 |      |
| 600              | -     | -                | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | -   | 1100 |      |

Notes on commissioning/start-up

The butterfly valves are set and tested at the factory.

Prior to any actuation, run the valve disc to the middle position and check the direction of rotation and the correct function of the travel stops.

BERNARD operating manuals and wiring diagrams are supplied with the product.

Full motor protection is only assured if the temperature switch mounted in the winding has been connected correctly.

The actuators are stopped by means of the travel stops.

The torque switches of the actuators act as safety trips. They trip the actuator via the control unit in the event of a fault and simultaneously signal the fault.

The torque switches are momentary-contact switches.





**KSB S.A.S.**  
4, allée des Barbanniers • 92635 Gennevilliers Cedex (France)  
Tél. 09 69 39 29 79  
[www.ksb.com/fr-fr](http://www.ksb.com/fr-fr)