

Frese SPERAMAX

Underground-series

Application

Underground Ball Valves are designed for district heating systems and other closed loop water systems where the water is treated to avoid internal corrosion.

Having a fully welded body, the valves meet the requirements for valves used in district heating and district cooling systems and offer the highest degree of security.



Benefits

- Ideal for underground installation
- Floating ball suspended at the top and at gaskets that moves when pressure is applied and is not affected by axial force
- Low “break-loose” force due to stem and body design
- The valve design ensures lower turbulence, which requires lower pump power, thus reducing CO2 emissions
- The pressure drop is low, which results in big savings in operating costs
- Flexible design allows for individual customer requirements
- The stuffing box gasket can be tightened under pressure,
- Lowest required torque on the market for free floating ball valve
- Maintenance free

Features

The valve design makes them ideal for underground installation due to:

- Dimensions DN20 - DN600
- Single pipe valves high pressure-tested
- 3.1 certificate – and welding certification
- All welds are completed before high pressure testing
- Reduced material consumption
- Valves can be adjusted in height according to customer requirements

Approvals

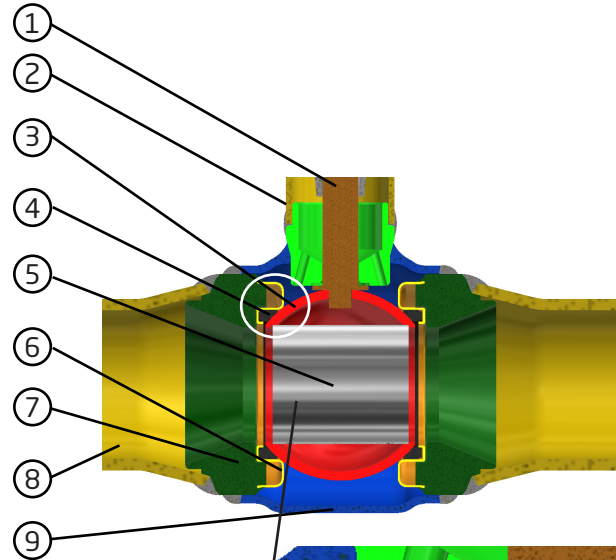
- 100% final inspection. Leak and shell test as well as dimension and functionally test is performed on each valve according to applicable standard (EN12266 part 1 P10-P11-P12 & part 2 F20)
- Designed, produced and tested according to EUROHEAT & POWER and EN488:2015
- Production quality according to ISO 9001

Frese SPERAMAX

Underground-series

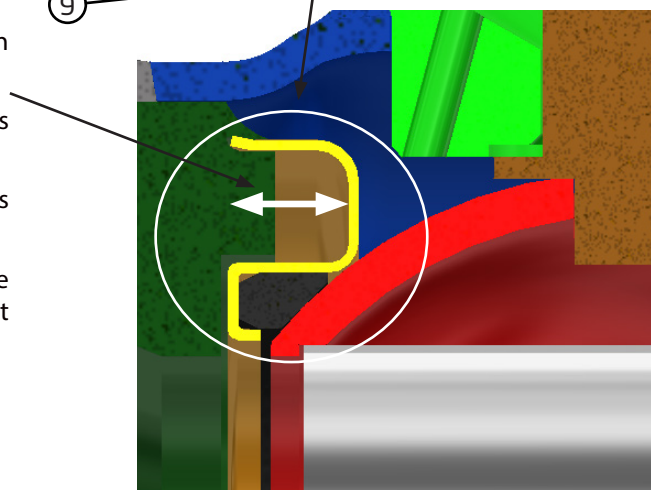
Ball Valve design

1. Stem
2. Extended stem
3. Ball
4. Gasket, carbon reinforced PTFE
5. Ball inner lining
6. Stainless steel spring
7. Inlet and outlet cone
8. Connection pipes
9. Valve housing



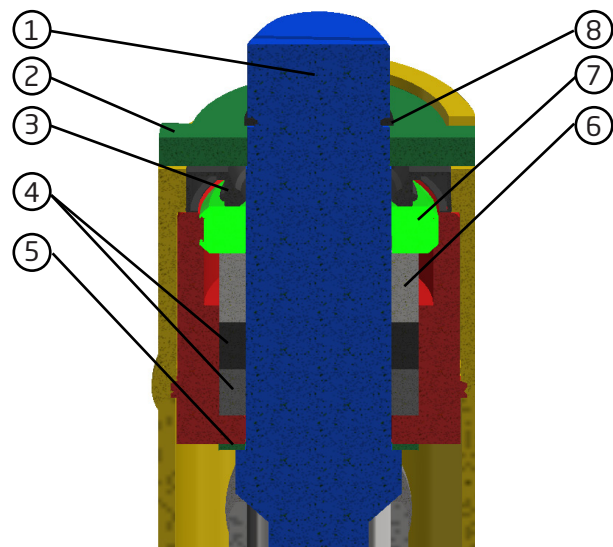
Gasket sealing design

- The gasket is mounted in a flexible spring suspension without movable sealing surfaces
- The seat gaskets are protected against dirt and deposits - even when the valve is open
- At low differential pressure (<approx. 4 bar) the valve is double sealing
- At high differential pressure, the valve, by virtue of the floating ball and water pressure, closes to the rear seat gasket
- Low break loose forces



Stuffing box design

1. Hexagon
2. Stop sector
3. Shaft seal
4. Gasket carbon reinforced PTFE
5. PTFE safety washer
6. Compression ring
7. Compression nut
8. Lock ring

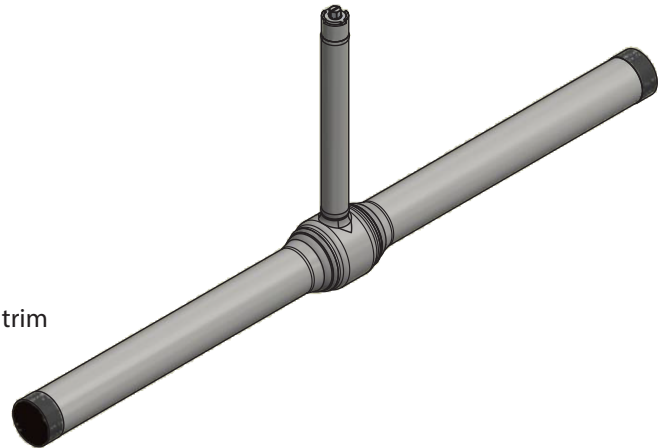


Frese SPERAMAX

Underground-series

Technical data

| | |
|--------------------------------------|-------------------------------------|
| Shell (Valve body): | Carbon steel P235GH |
| Welding ends: | Carbon steel P235GH |
| Valve Stem: | Stainless steel AISI 316L |
| Stem extension pipe: | Stainless steel AISI 316L |
| Ball: | Stainless steel AISI 304 |
| Seat gasket rings: | Carbon reinforced PTFE |
| Stem gasket: | Carbon reinforced PTFE |
| Gear Box: | Cast iron with stainless steel trim |
| Pressure class: | PN25 |
| Min. storage/transport temp.: | -40°C |



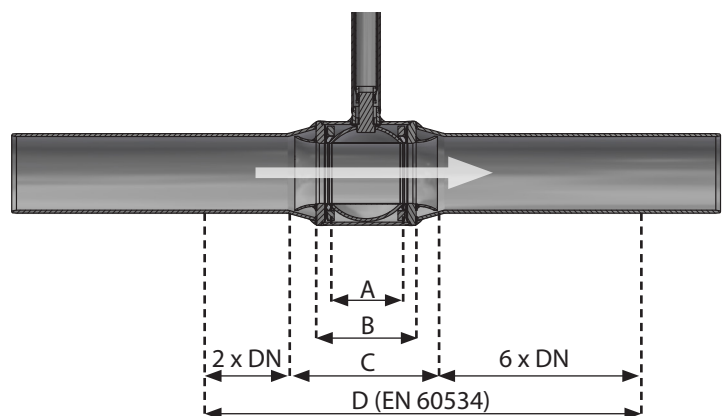
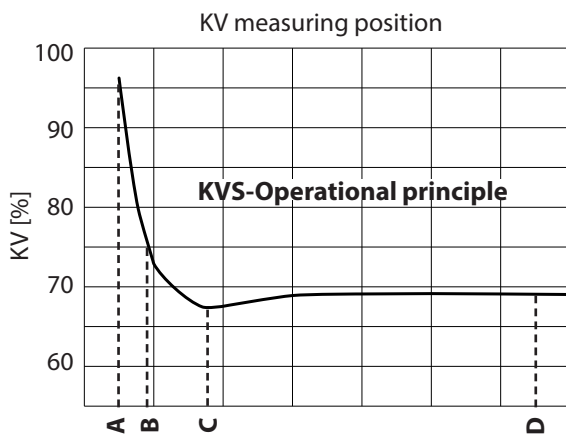
KVs and Axial Load Reduced Bore

| Dimension [DN] | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350** | 400 | 450 | 500 | 600** |
|---|--|----|----|----|-----|-----|-----|-----|------|------|------|------|------|-------|-------|-------|-------|-------|
| KVs Value [m ³ /h] Ball Valve (B) | 15 | 34 | 52 | 96 | 184 | 200 | 470 | 640 | 1080 | 1900 | 2300 | 5100 | 9100 | 7000 | 10400 | 26300 | 23700 | 14300 |
| KVs Value [m ³ /h] * (EN60534) (D) | 14 | 31 | 48 | 79 | 120 | 190 | 350 | 530 | 870 | 1400 | 2160 | 3590 | 5390 | 5450 | 7640 | 13500 | 14700 | 13700 |
| Max. allowed torque [Nm] | 50 | 50 | 50 | 50 | 60 | 100 | 140 | 250 | 400 | 540 | 800 | 2000 | 4000 | 4000 | 8000 | 16000 | 16000 | 16000 |
| Pressure class [Bar] | PN25 | | | | | | | | | | | | | | | | | |
| Temp. Range [°C] | 0°C - 180°C | | | | | | | | | | | | | | | | | |
| Medium | Circulation water / Glycolic water up to 50% | | | | | | | | | | | | | | | | | |

* KVs-values are based on EN60534 test methodology using CFD

** Double reduced valves

Valve Measuring Position and KV-dependency Reduced Bore

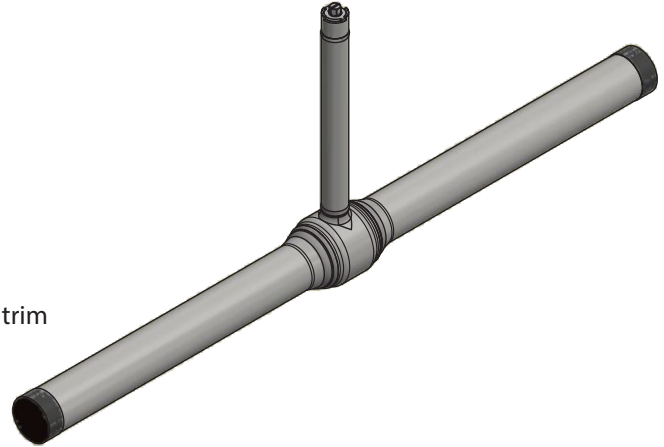


Frese SPERAMAX

Underground-series

Technical data

| | |
|--------------------------------------|-------------------------------------|
| Shell (Valve body): | Carbon steel P235GH |
| Welding ends: | Carbon steel P235GH |
| Valve Stem: | Stainless steel AISI 316L |
| Stem extension pipe: | Stainless steel AISI 316L |
| Ball: | Stainless steel AISI 304 |
| Seat gasket rings: | Carbon reinforced PTFE |
| Stem gasket: | Carbon reinforced PTFE |
| Gear Box: | Cast iron with stainless steel trim |
| Pressure class: | PN25 |
| Min. storage/transport temp.: | -40°C |

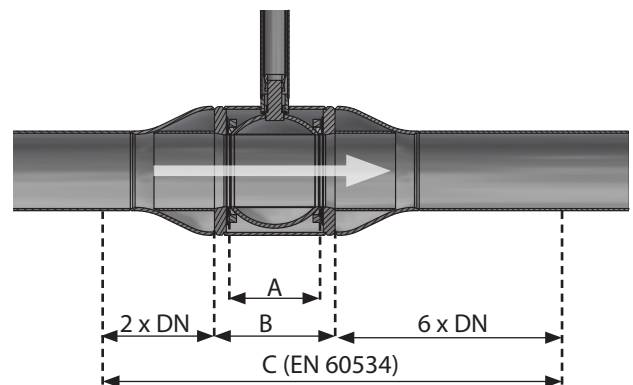
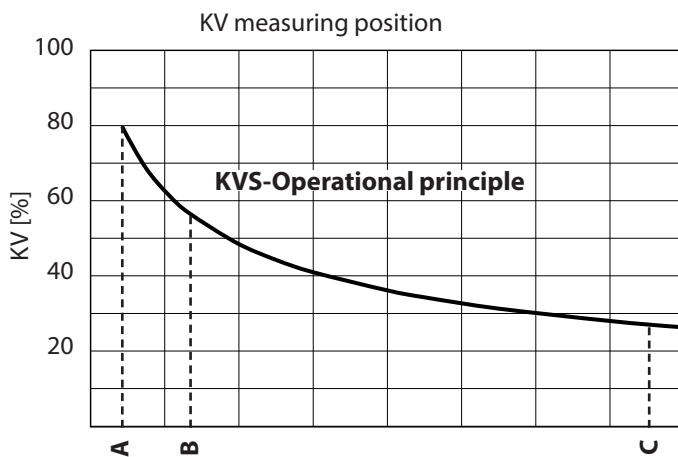


KVs and Axial Load Full Bore

| Dimension [DN] | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 400 |
|---|--|-----|-----|-----|-----|------|------|------|------|-------|-------|-------|-------|
| KVs Value [m ³ /h] Ball Valve (B) | 90 | 160 | 235 | 395 | 820 | 1100 | 2300 | 3700 | 6100 | 11000 | 17500 | 24000 | 37500 |
| KVs Value [m ³ /h] * (EN60534) (C) | 44 | 78 | 100 | 190 | 360 | 490 | 870 | 1160 | 1750 | 3600 | 4770 | 6580 | 12600 |
| Max. allowed torque [Nm] | 50 | 50 | 60 | 100 | 140 | 250 | 400 | 540 | 800 | 2000 | 4000 | 8000 | 16000 |
| Pressure class [Bar] | PN25 | | | | | | | | | | | | |
| Temp. Range [°C] | 0°C - 180°C | | | | | | | | | | | | |
| Medium | Circulation water / Glycolic water up to 50% | | | | | | | | | | | | |

* KVs-values are based on EN60534 test methodology using CFD

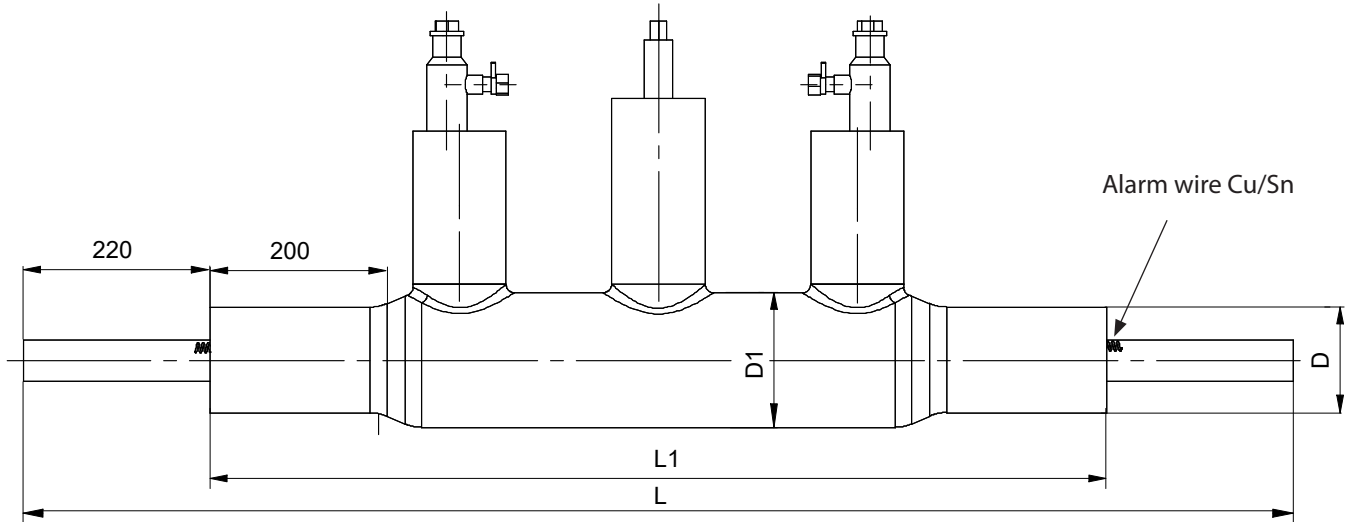
Valve Measuring Position and KV-dependency Full Bore



Frese SPERAMAX

Underground-series

Insulated single pipe reduced bore valve solution



Technical data insulation

Insulation:

Material: PUR (Polyurethan)
Density: 65 kg/m³
Lambda-value [W/m · K]: 0,027

Outer cover:

Shrink plastic: PE-HD PE100 (Polyethylene)
Thickness: 3.6 - 4.3 mm

Dimensions single pipe reduced bore valve solution with 2 service valves

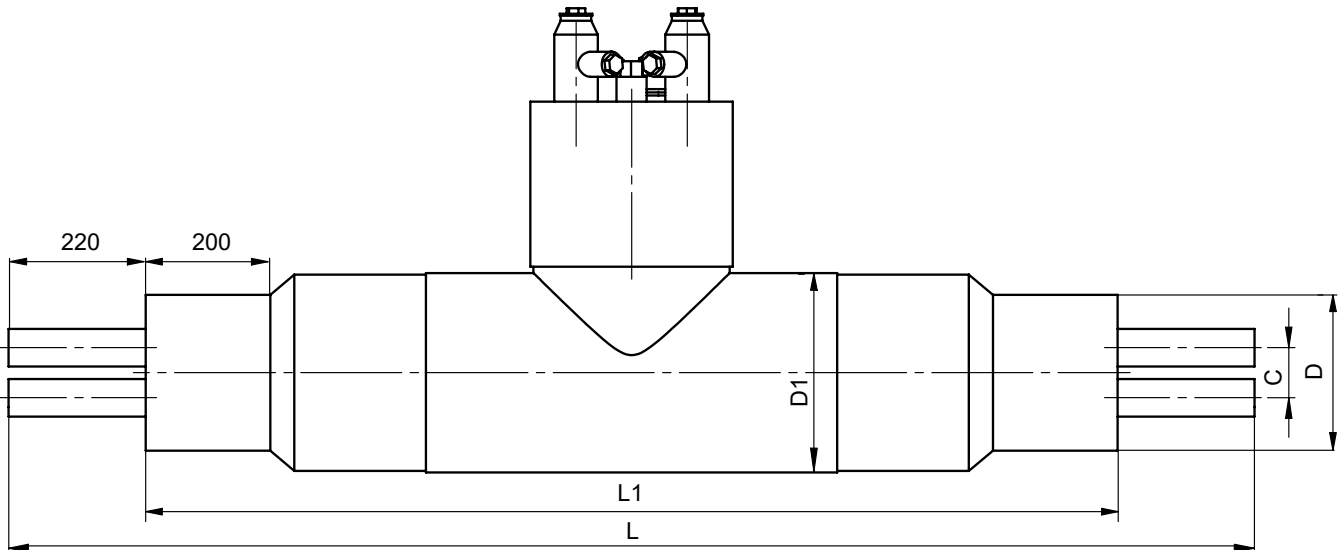
| DN | Dimensions [mm] | | | |
|-----|-----------------|------|-----|-----|
| | L | L1 | øD | øD1 |
| 32 | 1500 | 1060 | 110 | 140 |
| 40 | 1500 | 1060 | 110 | 140 |
| 50 | 1500 | 1060 | 125 | 160 |
| 65 | 1500 | 1060 | 140 | 180 |
| 80 | 1500 | 1060 | 160 | 200 |
| 100 | 1500 | 1060 | 200 | 250 |
| 125 | 1500 | 1060 | 225 | 280 |
| 150 | 1500 | 1060 | 250 | 315 |
| 200 | 1500 | 1060 | 315 | 400 |
| 250 | 1500 | 1060 | 400 | 500 |
| 300 | 1800 | 1360 | 450 | 560 |

For further details please see the individual valve specifications

Frese SPERAMAX

Underground-series

Insulated twin pipe reduced bore valve solution



Technical data insulation

Insulation:

| | |
|--------------------------------|----------------------|
| Material | PUR (Polyurethan) |
| Density | 65 kg/m ³ |
| Lambda-value [W/m · K]: | 0,027 |

Outer cover:

| | |
|------------------------|----------------------------|
| Shrink plastic: | PE-HD PE100 (Polyethylene) |
| Thickness: | 3.6 - 4.3 mm |

Dimensions twin pipe reduced bore valve solution with 2 service valves

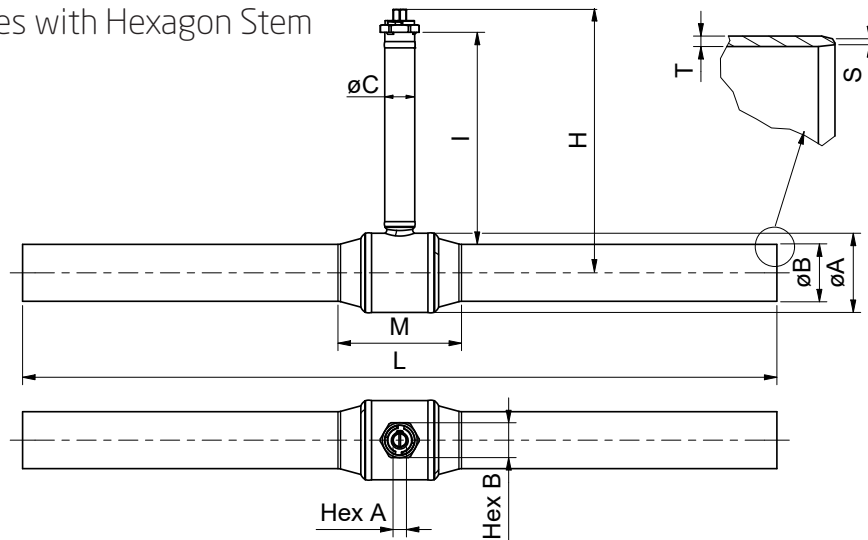
| DN | Dimensions [mm] | | | | |
|-----|-----------------|------|-----|-----|-----|
| | L | L1 | C | øD | øD1 |
| 32 | 2000 | 1560 | 61 | 160 | 315 |
| 40 | 2000 | 1560 | 67 | 160 | 315 |
| 50 | 2000 | 1560 | 80 | 200 | 315 |
| 65 | 2000 | 1560 | 96 | 225 | 355 |
| 80 | 2000 | 1560 | 114 | 250 | 400 |
| 100 | 2400 | 1960 | 139 | 315 | 450 |
| 125 | 2600 | 2160 | 170 | 400 | 500 |
| 150 | 3000 | 2560 | 208 | 450 | 630 |

For further details please see the individual valve specifications

Frese SPERAMAX

Underground-series

Reduced bore valves with Hexagon Stem



Dimensions reduced bore - Hexagon Stem

| DN | Dimensions [mm] | | | | | | | | | |
|-----|-----------------|-------|-------|-----|-----|-----|-----|-------|-------|-------|
| | M | øA | øB | T | S | H | I | øC | Hex A | Hex B |
| 25 | 90 | 48.3 | 33.7 | 4 | 3.2 | 480 | 435 | 48.3 | 19 | - |
| 32 | 100 | 60.3 | 42.4 | 4.5 | 3.2 | 485 | 430 | 48.3 | 19 | - |
| 40 | 110 | 76.1 | 48.3 | 5 | 3.2 | 495 | 435 | 48.3 | 19 | - |
| 50 | 120 | 88.9 | 60.3 | 5 | 3.2 | 500 | 435 | 48.3 | 19 | - |
| 65 | 150 | 114.3 | 76.1 | 5 | 3.2 | 505 | 430 | 48.3 | 19 | - |
| 80 | 180 | 133 | 88.9 | 5.6 | 3.2 | 515 | 430 | 48.3 | 19 | - |
| 100 | 250 | 159 | 114.3 | 6.3 | 3.6 | 525 | 400 | 60.3 | 27 | 70 |
| 125 | 270 | 193.7 | 139.7 | 6.3 | 4 | 545 | 395 | 60.3 | 27 | 70 |
| 150 | 290 | 219.1 | 168.3 | 7.1 | 4.5 | 565 | 410 | 60.3 | 27 | 70 |
| 200 | 340 | 273 | 219.1 | 8 | 4.5 | 585 | 395 | 60.3 | 50 | 90 |
| 250 | 480 | 355.6 | 273 | 8 | 5 | 625 | 375 | 88.9 | 50 | 90 |
| 300 | 610 | 457 | 323.9 | 8 | 5.6 | 665 | 350 | 101.6 | 50 | 90 |

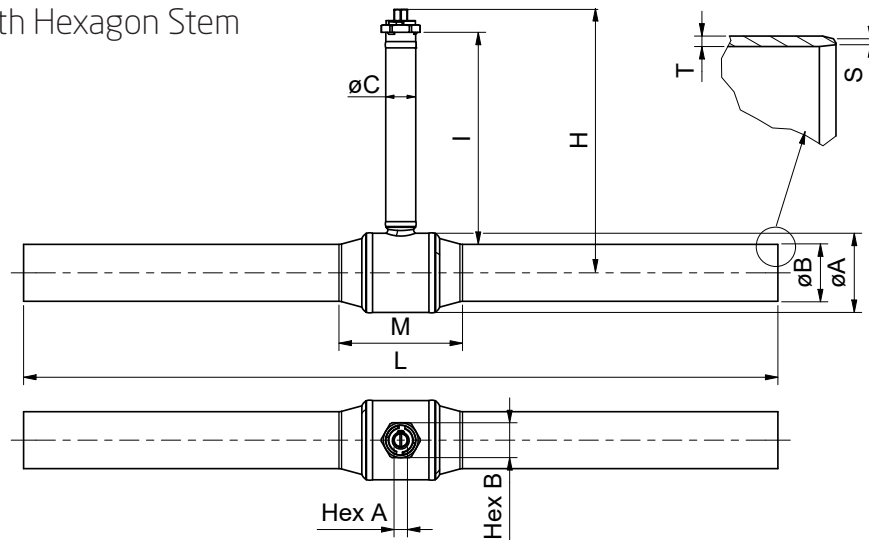
Product programme reduced bore - Hexagon Stem

| DN | Short | | | Long | | |
|-----|-------------|---------------|-------------|-------------|---------------|-------------|
| | Item number | Length L [mm] | Weight [kg] | Item number | Length L [mm] | Weight [kg] |
| 25 | 90025534 | 230 | 3.4 | 90025584 | 1500 | 7.5 |
| 32 | 90032534 | 260 | 4.5 | 90032584 | 1500 | 9.5 |
| 40 | 90040534 | 260 | 5.4 | 90040584 | 1500 | 11.4 |
| 50 | 90050534 | 300 | 6.3 | 90050584 | 1500 | 16 |
| 65 | 90065534 | 300 | 8.1 | 90065584 | 1500 | 19.6 |
| 80 | 90080534 | 300 | 9.8 | 90080584 | 1500 | 23.6 |
| 100 | 90100534 | 290 | 15.6 | 90100584 | 1500 | 36.1 |
| 125 | 90125534 | 315 | 22.7 | 90125584 | 1500 | 46.2 |
| 150 | 90150534 | 340 | 34 | 90150584 | 1500 | 63.9 |
| 200 | 90200534 | 390 | 49 | 90200584 | 1500 | 70.5 |
| 250 | 90250534 | 530 | 110 | 90250584 | 1500 | 165 |
| 300 | 90300534 | 660 | 198 | 90300584 | 1800 | 269 |

Frese SPERAMAX

Underground-series

Full bore valves with Hexagon Stem



Dimensions full bore - Hexagon Stem

| DN | Dimensions [mm] | | | | | | | | | |
|-----|-----------------|-------|-------|-----|-----|-----|-----|-------|-------|-------|
| | M | øA | øB | T | S | H | I | øC | Hex A | Hex B |
| 20 | 90 | 48.3 | 26.9 | 4 | 2.6 | 480 | 435 | 48.3 | 19 | - |
| 25 | 125 | 60.3 | 33.7 | 4 | 2.6 | 485 | 430 | 48.3 | 19 | - |
| 32 | 135 | 76.1 | 42.4 | 4.5 | 2.6 | 495 | 430 | 48.3 | 19 | - |
| 40 | 140 | 88.9 | 48.3 | 5 | 2.6 | 500 | 430 | 48.3 | 19 | - |
| 50 | 150 | 114.3 | 60.3 | 5 | 2.9 | 505 | 430 | 48.3 | 19 | - |
| 65 | 180 | 133 | 76.1 | 5 | 2.9 | 515 | 425 | 48.3 | 19 | - |
| 80 | 200 | 159 | 88.9 | 5.6 | 3.2 | 525 | 400 | 60.3 | 27 | 70 |
| 100 | 455 | 193.7 | 114.3 | - | 3.6 | 545 | 395 | 60.3 | 27 | 70 |
| 125 | 515 | 219.1 | 139.7 | - | 4 | 565 | 405 | 60.3 | 27 | 70 |
| 150 | 610 | 273 | 168.3 | - | 4.5 | 585 | 400 | 60.3 | 27 | 70 |
| 200 | 745 | 355.6 | 219.1 | - | 4.5 | 625 | 375 | 88.9 | 50 | 90 |
| 250 | 1100 | 457 | 273 | - | 5 | 665 | 345 | 101.6 | 50 | 90 |

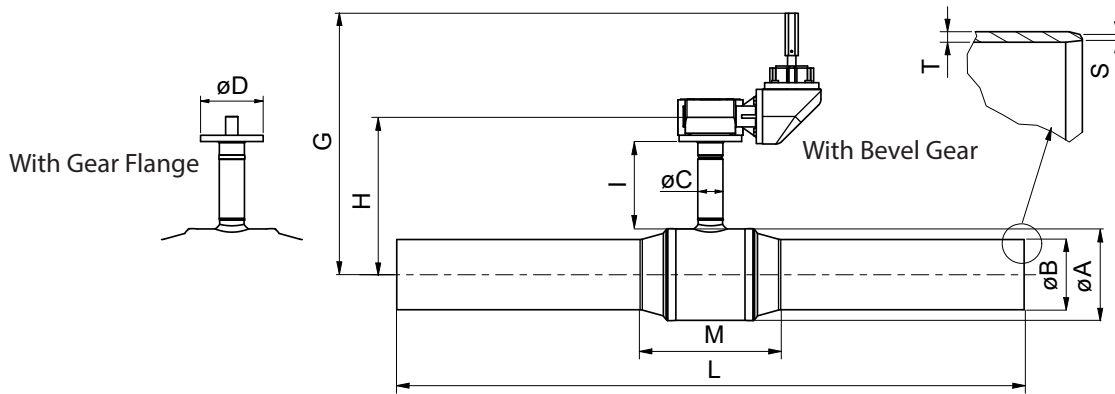
Product programme full bore - Hexagon Stem

| DN | Long | | |
|-----|-------------|---------------|-------------|
| | Item number | Length L [mm] | Weight [kg] |
| 20 | 70020584 | 1500 | 6.5 |
| 25 | 70025584 | 1500 | 8 |
| 32 | 70032584 | 1500 | 9 |
| 40 | 70040584 | 1500 | 11 |
| 50 | 70050584 | 1520 | 16 |
| 65 | 70065584 | 1525 | 20 |
| 80 | 70080584 | 1560 | 32 |
| 100 | 70100515 | 1500 | 36 |
| 125 | 70125515 | 1500 | 52 |
| 150 | 70150515 | 1500 | 75 |
| 200 | 70200515 | 1500 | 151 |
| 250 | 70250518 | 1800 | 260 |

Frese SPERAMAX

Underground-series

Reduced bore valves with Gear flange & Bevel gear



Dimensions reduced bore - Gear flange & Bevel gear

| DN | Dimensions [mm] | | | | | | | | | |
|-----|-----------------|-------|-------|------|-----|-----|-----|-----|-------|-----|
| | M | øA | øB | T | S | H | G | I | øC | øD |
| 125 | 270 | 193.7 | 139.7 | 6.3 | 3.6 | 375 | 545 | 220 | 60.3 | 150 |
| 150 | 290 | 219.1 | 168.3 | 7.1 | 4 | 395 | 565 | 225 | 60.3 | 150 |
| 200 | 340 | 273 | 219.1 | 8 | 4.5 | 455 | 625 | 260 | 60.3 | 150 |
| 250 | 480 | 355.6 | 273 | 8 | 5 | 525 | 690 | 275 | 88.9 | 200 |
| 300 | 610 | 457 | 323.9 | 8 | 5.6 | 600 | 765 | 295 | 101.6 | 200 |
| 350 | 525 | 457 | 355.6 | 8 | 5.6 | 600 | 765 | 295 | 101.6 | 200 |
| 400 | 715 | 521 | 406.4 | 8.8 | 6.3 | 645 | 800 | 300 | 139.7 | 300 |
| 450 | 1130 | 711 | 457 | 10 | 6.3 | 780 | 905 | 305 | 168.3 | 300 |
| 500 | 1130 | 711 | 508 | 11 | 6.3 | 780 | 905 | 305 | 168.3 | 300 |
| 600 | 1130 | 711 | 610 | 12.5 | 7.1 | 780 | 905 | 305 | 168.3 | 300 |

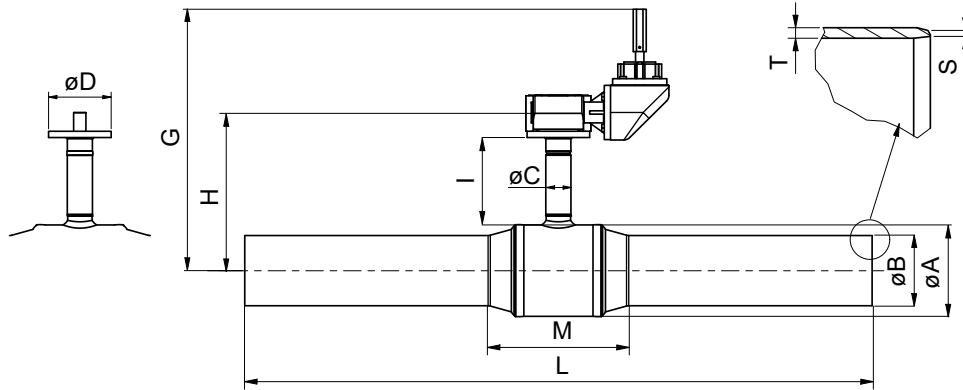
Product programme reduced bore - Gear flange & Bevel gear

| DN | Short | | | | Long | | | |
|-----|-------------|-------------|---------------|-------------|-------------|-------------|---------------|-------------|
| | Item number | | Length L [mm] | Weight [kg] | Item number | | Length L [mm] | Weight [kg] |
| | Bevel gear | Gear flange | | | Bevel gear | Gear flange | | |
| 125 | - | - | - | - | 90125884 | 90125084 | 1500 | 72 |
| 150 | - | - | - | - | 90150884 | 90150084 | 1500 | 90 |
| 200 | - | - | - | - | 90200884 | 90200084 | 1500 | 97 |
| 250 | - | - | - | - | 90250884 | 90250084 | 1500 | 191 |
| 300 | - | - | - | - | 90300884 | 90300084 | 1800 | 315 |
| 350 | 90350834 | 90350034 | 760 | 245 | 90350884 | 90350084 | 2200 | 300 |
| 400 | 90400834 | 90400034 | 820 | 355 | 90400884 | 90400084 | 2200 | 420 |
| 450 | 90450834 | 90450034 | 1225 | 800 | 90450884 | 90450084 | 2200 | 900 |
| 500 | 90500834 | 90500034 | 1220 | 815 | 90500884 | 90500084 | 2200 | 895 |
| 600 | 90600834 | 90600034 | 1500 | 910 | 90600884 | 90600084 | 2200 | 985 |

Frese SPERAMAX

Underground-series

Full bore valves with Bevel gear



Dimensions full bore - Bevel gear

| DN | Dimensions [mm] | | | | | | | | | |
|-----|-----------------|-------|-------|-----|-----|-----|-----|-------|-----|-----|
| | M | øA | øB | T | S | H | I | øC | G | øD |
| 125 | 515 | 219.1 | 139.7 | - | 4 | 400 | 230 | 60.3 | 565 | 150 |
| 150 | 610 | 273 | 168.3 | - | 4.5 | 460 | 265 | 60.3 | 625 | 150 |
| 200 | 745 | 355.6 | 219.1 | - | 4.5 | 525 | 285 | 88.9 | 690 | 150 |
| 250 | 1110 | 457 | 273 | - | 5 | 600 | 295 | 101.6 | 765 | 200 |
| 300 | 1235 | 521 | 323.9 | - | 5.6 | 645 | 295 | 139.7 | 800 | 200 |
| 400 | 695 | 711 | 406.4 | 8.8 | 6.3 | 780 | 305 | 168.3 | 905 | 300 |

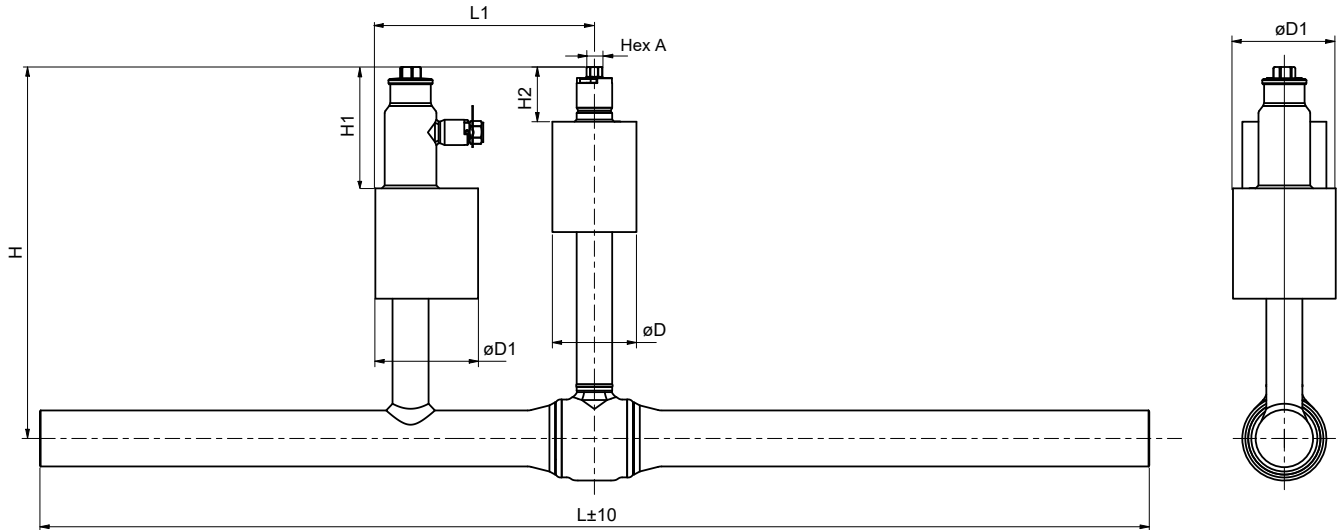
Product programme full bore - Bevel gear

| DN | Long | | |
|-----|-------------|---------------|-------------|
| | Item number | Length L [mm] | Weight [kg] |
| 125 | 70125815 | 1500 | 81 |
| 150 | 70150815 | 1500 | 105 |
| 200 | 70200815 | 1500 | 177 |
| 250 | 70250818 | 1800 | 304 |
| 300 | 70300818 | 1800 | 426 |
| 400 | 70400817 | 1705 | 895 |

Frese SPERAMAX

Underground-series

Single pipe reduced bore valve solution with 1 service valve



Dimensions single pipe reduced bore valve solution with 1 service valve

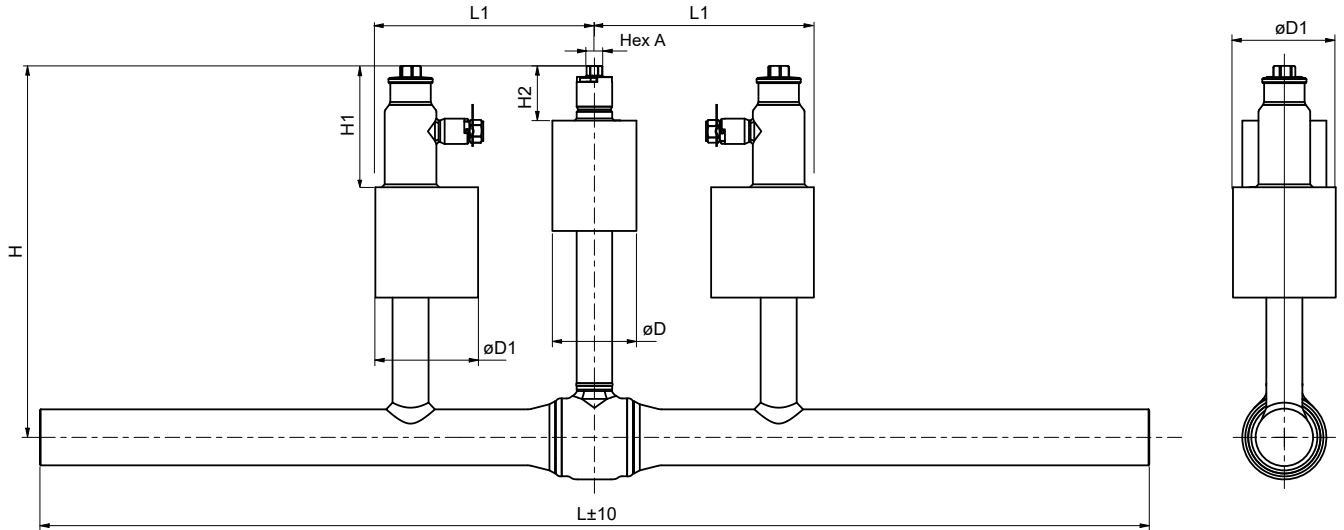
| DN | Item number | Service valve dim. DN | Dimensions [mm] | | | | | | | | Weight [kg] |
|-----|-------------|-----------------------|-----------------|-----|-----|-----|-----|-------|-------|-------|-------------|
| | | | L | H | H1 | H2 | L1 | øD | øD1 | Hex A | |
| 32 | 96032415 | 25 | 1500 | 485 | 130 | 85 | 293 | 114.3 | 114.3 | 19 | 14 |
| 40 | 96040415 | 25 | 1500 | 495 | 165 | 85 | 293 | 114.3 | 114.3 | 19 | 16 |
| 50 | 96050415 | 40 | 1500 | 500 | 165 | 85 | 298 | 114.3 | 139.7 | 19 | 21 |
| 65 | 96065415 | 40 | 1500 | 505 | 165 | 85 | 298 | 114.3 | 139.7 | 19 | 25 |
| 80 | 96080415 | 40 | 1500 | 515 | 165 | 85 | 298 | 114.3 | 139.7 | 27 | 30 |
| 100 | 96100415 | 40 | 1500 | 525 | 165 | 100 | 298 | 139.7 | 139.7 | 27 | 42 |
| 125 | 96125415 | 40 | 1500 | 545 | 165 | 100 | 298 | 139.7 | 139.7 | 27 | 55 |
| 150 | 96150415 | 40 | 1500 | 567 | 165 | 100 | 298 | 139.7 | 139.7 | 27 | 67 |
| 200 | 96200415 | 40 | 1500 | 585 | 165 | 100 | 298 | 139.7 | 139.7 | 50 | 104 |
| 250 | 96250415 | 50 | 1500 | 625 | 165 | 120 | 359 | 154 | 154 | 50 | 172 |
| 300 | 96300418 | 50 | 1800 | 665 | 165 | 120 | 399 | 204 | 154 | 50 | 270 |

For further details please see the individual valve specifications

Frese SPERAMAX

Underground-series

Single pipe reduced bore valve solution with 2 service valves



Dimensions single pipe reduced bore valve solution with 2 service valves

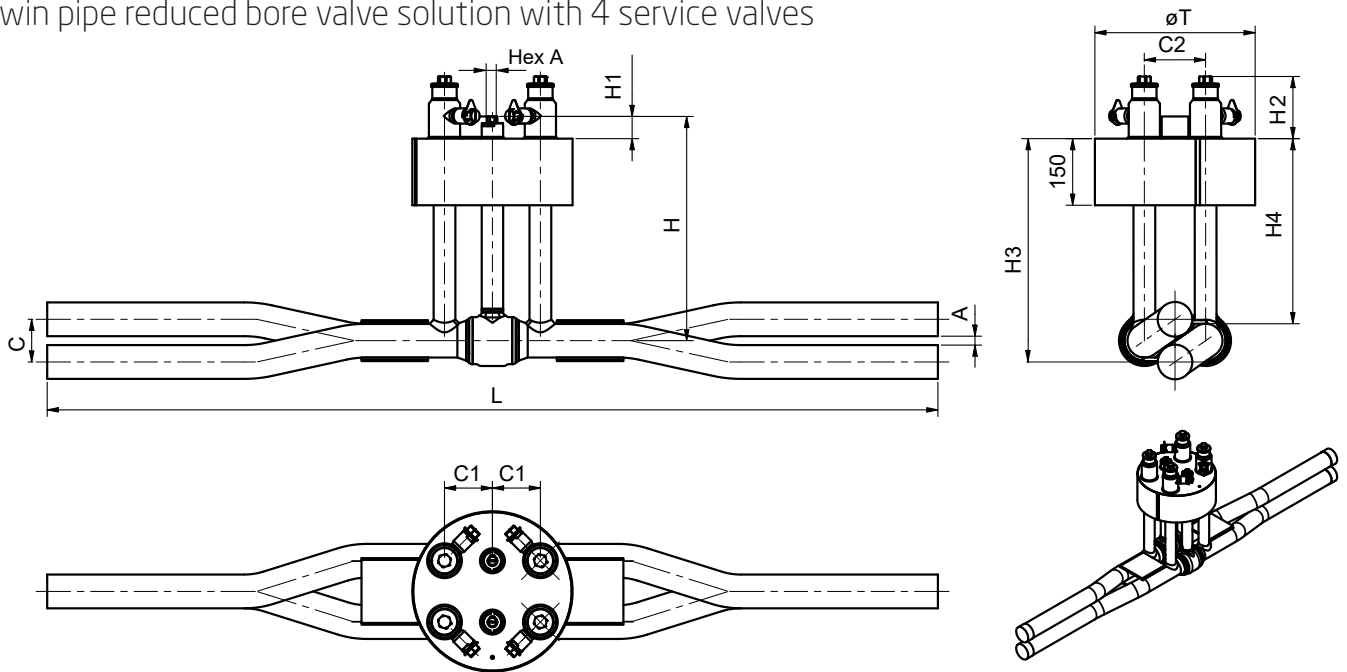
| DN | Item number | Service valve dim. DN | Dimensions [mm] | | | | | | | | Weight [kg] |
|-----|-------------|-----------------------|-----------------|-----|-----|-----|-----|-------|-------|-------|-------------|
| | | | L | H | H1 | H2 | L1 | øD | øD1 | Hex A | |
| 32 | 96032515 | 25 | 1500 | 485 | 130 | 85 | 293 | 114.3 | 114.3 | 19 | 17 |
| 40 | 96040515 | 25 | 1500 | 495 | 165 | 85 | 293 | 114.3 | 114.3 | 19 | 19 |
| 50 | 96050515 | 40 | 1500 | 500 | 165 | 85 | 298 | 114.3 | 139.7 | 19 | 25 |
| 65 | 96065515 | 40 | 1500 | 505 | 165 | 85 | 298 | 114.3 | 139.7 | 19 | 29 |
| 80 | 96080515 | 40 | 1500 | 515 | 165 | 85 | 298 | 114.3 | 139.7 | 27 | 35 |
| 100 | 96100515 | 40 | 1500 | 525 | 165 | 100 | 298 | 139.7 | 139.7 | 27 | 47 |
| 125 | 96125515 | 40 | 1500 | 545 | 165 | 100 | 298 | 139.7 | 139.7 | 27 | 60 |
| 150 | 96150515 | 40 | 1500 | 567 | 165 | 100 | 298 | 139.7 | 139.7 | 27 | 75 |
| 200 | 96200515 | 40 | 1500 | 585 | 165 | 100 | 298 | 139.7 | 139.7 | 50 | 109 |
| 250 | 96250515 | 50 | 1500 | 625 | 165 | 120 | 359 | 154 | 154 | 50 | 179 |
| 300 | 96300518 | 50 | 1800 | 665 | 165 | 120 | 399 | 204 | 154 | 50 | 296 |

For further details please see the individual valve specifications

Frese SPERAMAX

Underground-series

Twin pipe reduced bore valve solution with 4 service valves



Dimensions twin pipe reduced bore valve solution with 4 service valves

| DN | Dimensions [mm] | | | | | | | | | | |
|-----|-----------------|-----|----|-----|----------|-----|----|-----|-----|-----|-----|
| | L | H | H1 | H2 | ϕT | C | A | C1 | C2 | H3 | H4 |
| 32 | 2000 | 485 | 50 | 120 | 319 | 61 | 19 | 89 | 138 | 465 | 404 |
| 40 | 2000 | 495 | 50 | 120 | 319 | 67 | 19 | 89 | 138 | 478 | 411 |
| 50 | 2000 | 500 | 50 | 150 | 319 | 80 | 20 | 89 | 138 | 490 | 410 |
| 65 | 2000 | 505 | 50 | 150 | 361 | 96 | 20 | 108 | 138 | 505 | 409 |
| 80 | 2000 | 515 | 50 | 150 | 361 | 114 | 25 | 108 | 164 | 522 | 408 |
| 100 | 2400 | 530 | 65 | 150 | 457 | 139 | 25 | 150 | 208 | 533 | 395 |
| 125 | 2600 | 545 | 65 | 150 | 509 | 170 | 30 | 165 | 258 | 572 | 403 |
| 150 | 3000 | 565 | 65 | 150 | 576 | 208 | 40 | 180 | 318 | 609 | 401 |

Product programme twin pipe reduced bore valve solution with 4 service valves

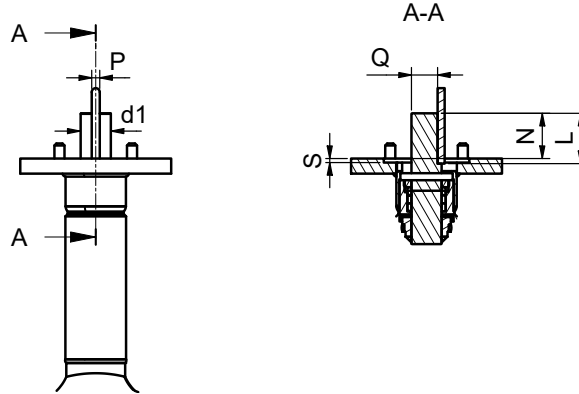
| DN | Item number | Service valve dim. DN | Hex A [mm] | Weight [kg] |
|-----|-------------|-----------------------|------------|-------------|
| 32 | 98032221 | 25 | 19 | 38 |
| 40 | 98040221 | 25 | 19 | 42 |
| 50 | 98050221 | 40 | 19 | 52 |
| 65 | 98065221 | 40 | 19 | 62 |
| 80 | 98080221 | 40 | 19 | 67 |
| 100 | 98100221 | 40 | 27 | 105 |
| 125 | 98125221 | 40 | 27 | 138 |
| 150 | 98150221 | 40 | 27 | 196 |

For further details please see the individual valve specifications

Frese SPERAMAX

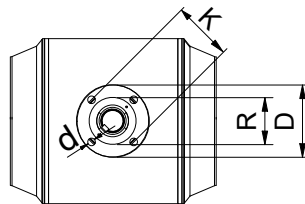
Underground-series

Gear flanges



Dimensions gear flange

| DN | Gear flange | Dimensions [mm] | | | | | | | | | | | | |
|-----|-------------|-----------------|-----|----|----|------|---|-------------|-----|-----|----|----|------|------|
| | | Reduced bore | | | | | | Full bore | | | | | | |
| | | L | d1 | N | P | Q | S | L | d1 | N | P | Q | S | |
| 125 | F10/ F12 | 50 | 30 | 46 | 8 | 26 | 4 | F10/ F12 | 50 | 30 | 46 | 8 | 26 | 4 |
| 150 | | 50 | 30 | 46 | 8 | 26 | 4 | | 50 | 30 | 46 | 8 | 26 | 4 |
| 200 | | 50 | 30 | 46 | 8 | 26 | 4 | | F16 | 60 | 50 | 48 | 14 | 44.5 |
| 250 | F16 | 60 | 50 | 48 | 14 | 44.5 | 5 | 65 | | 60 | 51 | 18 | 53.2 | 5 |
| 300 | | 65 | 60 | 51 | 18 | 53.2 | 6 | 75 | | 75 | 60 | 20 | 60 | 6 |
| 350 | | 65 | 60 | 51 | 18 | 53.2 | 6 | F25 | - | - | - | - | - | - |
| 400 | F25 | 75 | 75 | 60 | 20 | 60 | 6 | | 115 | 100 | 91 | 28 | 80 | 6 |
| 450 | | 115 | 100 | 91 | 28 | 80 | 6 | | - | - | - | - | - | - |
| 500 | | 115 | 100 | 91 | 28 | 80 | 6 | - | - | - | - | - | - | |
| 600 | - | 115 | 100 | 91 | 28 | 80 | 6 | - | - | - | - | - | - | |



Gear flange connection acc. to ISO 5211

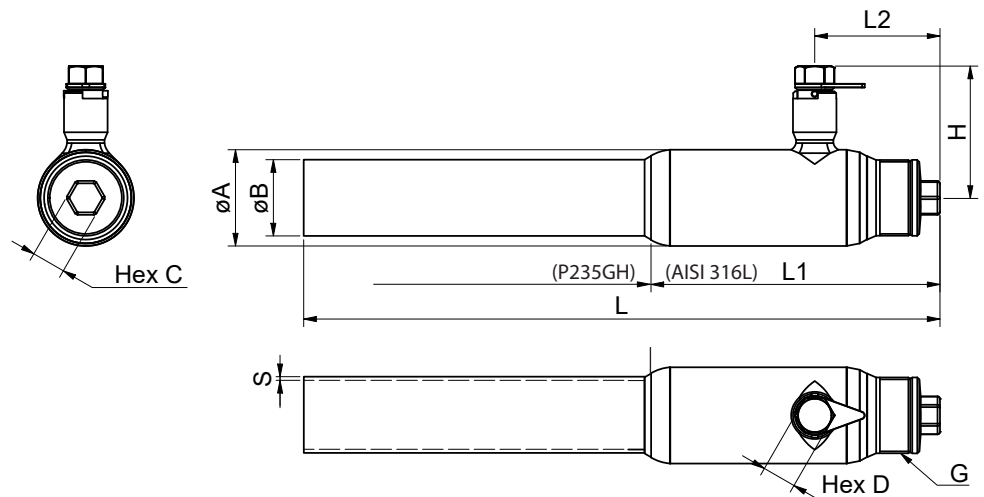
| Gear flange | d [mm] x (number) | Dimensions [mm] | | |
|-------------|----------------------|-----------------|-----|-----|
| | | D | K | R |
| F10 | 11 x (4) | 125 | 102 | 70 |
| F12 | 13 x (4) | 150 | 125 | 85 |
| F16 | 21 x (4) | 210 | 165 | 130 |
| F25 | 17 x (8) | 300 | 254 | 200 |

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Underground-series

Technical data: Service & Air vent valves

| | |
|------------------------------------|---------------------------|
| Valve body (Upper part L1): | Stainless steel AISI 316L |
| Welding ends: | Carbon steel P235GH |
| Valve Stem: | Stainless steel AISI 316L |
| Ball: | Stainless steel AISI 304 |
| Seat gasket rings: | Carbon reinforced PTFE |
| Stem gasket: | Carbon reinforced PTFE |
| Safety closure: | DZR Brass CW602N |
| Pressure class: | PN25 |
| Temperatur range: | 0°C - 180°C |



Dimensions Service valves

| DN | Dimensions [mm] | | | | | | | | | |
|-----|-----------------|-----|-----|-----------------|-----------------|-----|-----|----------|-------|-------|
| | L | L1 | L2 | $\varnothing A$ | $\varnothing B$ | S | H | G | Hex C | Hex D |
| 20 | 500 | 195 | 65 | 42.4 | 26.9 | 2.6 | 55 | - | 19 | 19 |
| 25 | 500 | 190 | 70 | 48.3 | 33.7 | 2.6 | 60 | - | 19 | 19 |
| 32 | 500 | 195 | 70 | 51 | 42.4 | 2.6 | 65 | G 1-1/4" | 19 | 19 |
| 40 | 500 | 225 | 90 | 70 | 48.3 | 2.6 | 100 | - | 27 | 27 |
| 50 | 500 | 230 | 100 | 76.1 | 60.3 | 2.9 | 105 | G 2" | 27 | 27 |
| 65 | 500 | 280 | 105 | 114.3 | 76.1 | 2.9 | 115 | - | 19 | 19 |
| 80 | 500 | 310 | 130 | 133 | 88.9 | 3.2 | 125 | - | 19 | 19 |
| 100 | 500 | 330 | 140 | 168.3 | 114.3 | 3.6 | 140 | - | 19 | 19 |

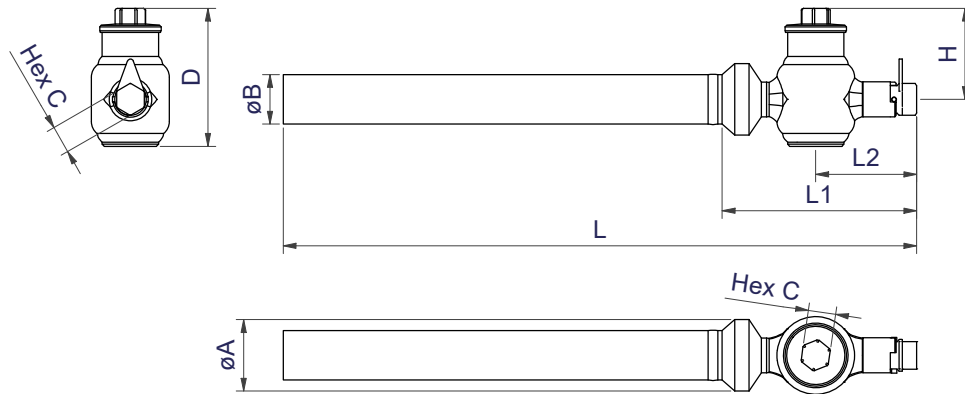
Product programme Service valves

| DN | Item number | Weight [kg] |
|-----|-------------|-------------|
| 20 | 97020079 | 2.1 |
| 25 | 97025079 | 1.9 |
| 32 | 97032079 | 2.3 |
| 40 | 97040079 | 3.4 |
| 50 | 97050079 | 4.1 |
| 65 | 97065079 | 6.5 |
| 80 | 97080079 | 8.6 |
| 100 | 97100079 | 14.5 |

Frese SPERAMAX

Underground-series

Service & Air vent valve angle



Dimensions Service valves angle

| DN | Dimensions [mm] | | | | | | | | |
|----|-----------------|-----|----|----|------|-----|----|-------|-----|
| | L | L1 | L2 | øA | øB | S | H | Hex C | D |
| 40 | 619 | 190 | 99 | 70 | 48.3 | 2.6 | 89 | 27 | 135 |

Product programme Service valves angle

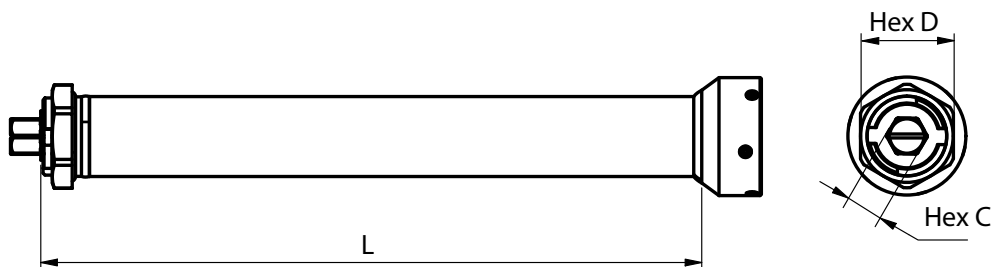
| DN | Item number | Weight [kg] |
|----|-------------|-------------|
| 40 | 97040178 | 4,0 |

Frese SPERAMAX

Underground-series

Technical data: Stem Extension

| | |
|--|---------------------------|
| Shell body: | Stainless steel AISI 316L |
| Internal tube and counter hold: | Carbon steel P235GH |
| Extension top: | Stainless steel AISI 316L |
| Shaft seal: | Rubber |



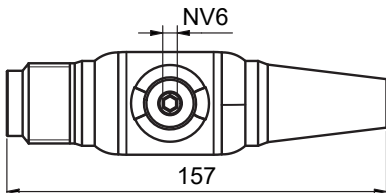
Product programme Stem extensions

| For valve size | Item number | L | Hex C | Hex D Counterhold | Weight [kg] |
|-------------------------------|-------------|--------------|---------|-------------------|-------------|
| Reduced Bore DN20 - DN80 | 80080242 | 250 | 19 | - | 1.7 |
| | 80080542 | 500 | | | 2.8 |
| | 80080742 | 750 | | | 3.9 |
| Full Bore DN20 - DN65 | 80080142 | 1.000 | - | - | 5.1 |
| | 81080042 | X (max 1000) | | | - |
| Reduced Bore DN100 - DN150 | 80200242 | 250 | 27 | 70 | 3.6 |
| | 80200542 | 500 | | | 5.4 |
| | 80200742 | 750 | | | 7.2 |
| Full Bore DN80 - DN125 | 80200142 | 1.000 | - | - | 9.0 |
| | 81200042 | X (max 1000) | | | - |
| Reduced Bore DN200 | 89200242 | 250 | 50 (27) | 90 | 4.2 |
| | 89200542 | 500 | | | 6.0 |
| | 89200742 | 750 | | | 7.8 |
| Full Bore DN150 | 89200142 | 1.000 | - | - | 9.6 |
| | 89200042 | X (max 1000) | | | - |
| Reduced Bore DN250 | 80250242 | 250 | 50 (36) | 90 | 7.4 |
| | 80250542 | 500 | | | 11.4 |
| | 80250742 | 750 | | | 15.5 |
| Full Bore DN200 | 80250142 | 1.000 | - | - | 19.5 |
| | 81250042 | X (max 1000) | | | - |
| Reduced Bore DN300 | 80300242 | 250 | 50 | 90 | 10.5 |
| | 80300542 | 500 | | | 17.1 |
| | 80300742 | 750 | | | 23.6 |
| Full Bore DN250 | 80300142 | 1.000 | - | - | 30.1 |
| | 81300042 | X (max 1000) | | | - |

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Underground-series

Accessories



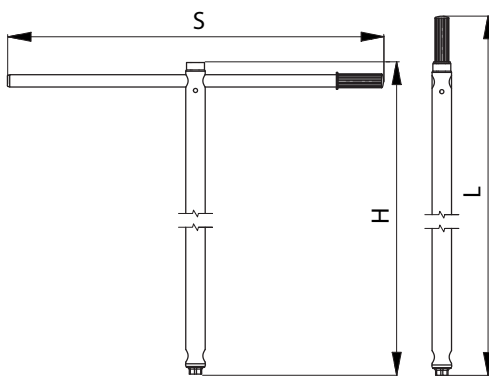
Product programme repair connection pipe

| DN | Item number | Pipe |
|-------|-------------|------|
| 15 | 90015438 | 14 |
| 20/25 | 90025438 | 20 |



Product programme repair connection pipe toolbox

| DN | Item number |
|----|-------------|
| - | 80025096 |



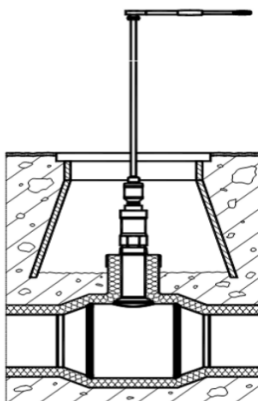
Product programme T-key

Description

For operation of DE Valves ball valves for underground installation with hexagon stem. The T-key has a 19mm hexagon connection on one side and 27mm hexagon connection on the other side. It is used for operation of underground ball valves with hexagon stem up to DN200 reduced bore or DN150 full bore. It is also used to operate worm bevel gears.

| Item number | L [mm] | H [mm] | S [mm] |
|-------------|--------|--------|--------|
| 80200143 | 1140 | 1040 | 820 |
| 80200543 | 1640 | 1540 | |

Product programme Mobile gear

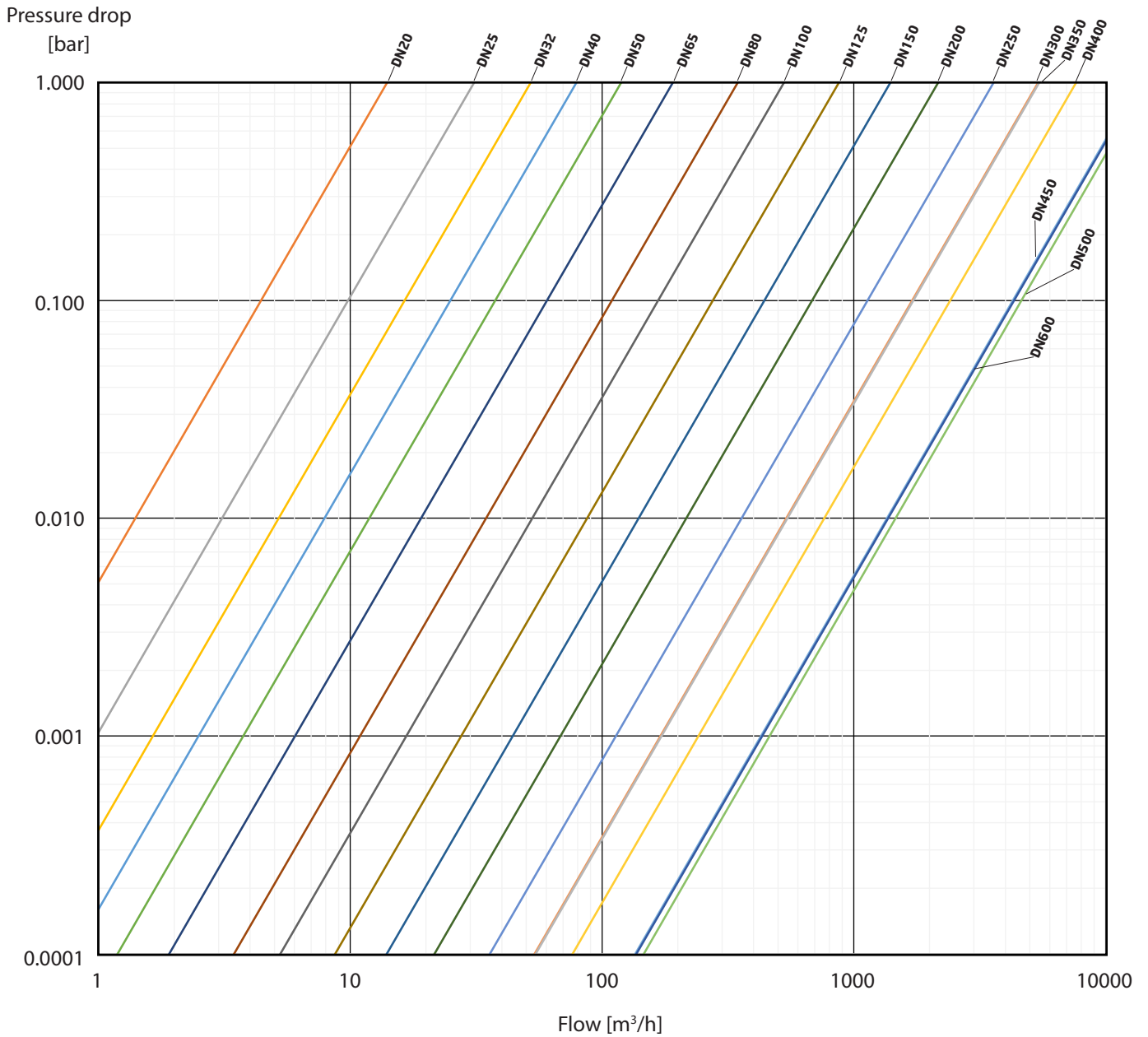


| Item number | Description |
|-------------|--|
| 80300096 | Mobile gear (torque reduction) for operation of DN 100 - DN300 RB (DN80 - DN 250 FB) valves with hexagon stem. Delivered in steel case with all accessories included. Weight approx. 16 kg |
| 80300043 | Extension for mobile gear making it more comfortable to operate valves installed deep in the ground. |

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Underground-series

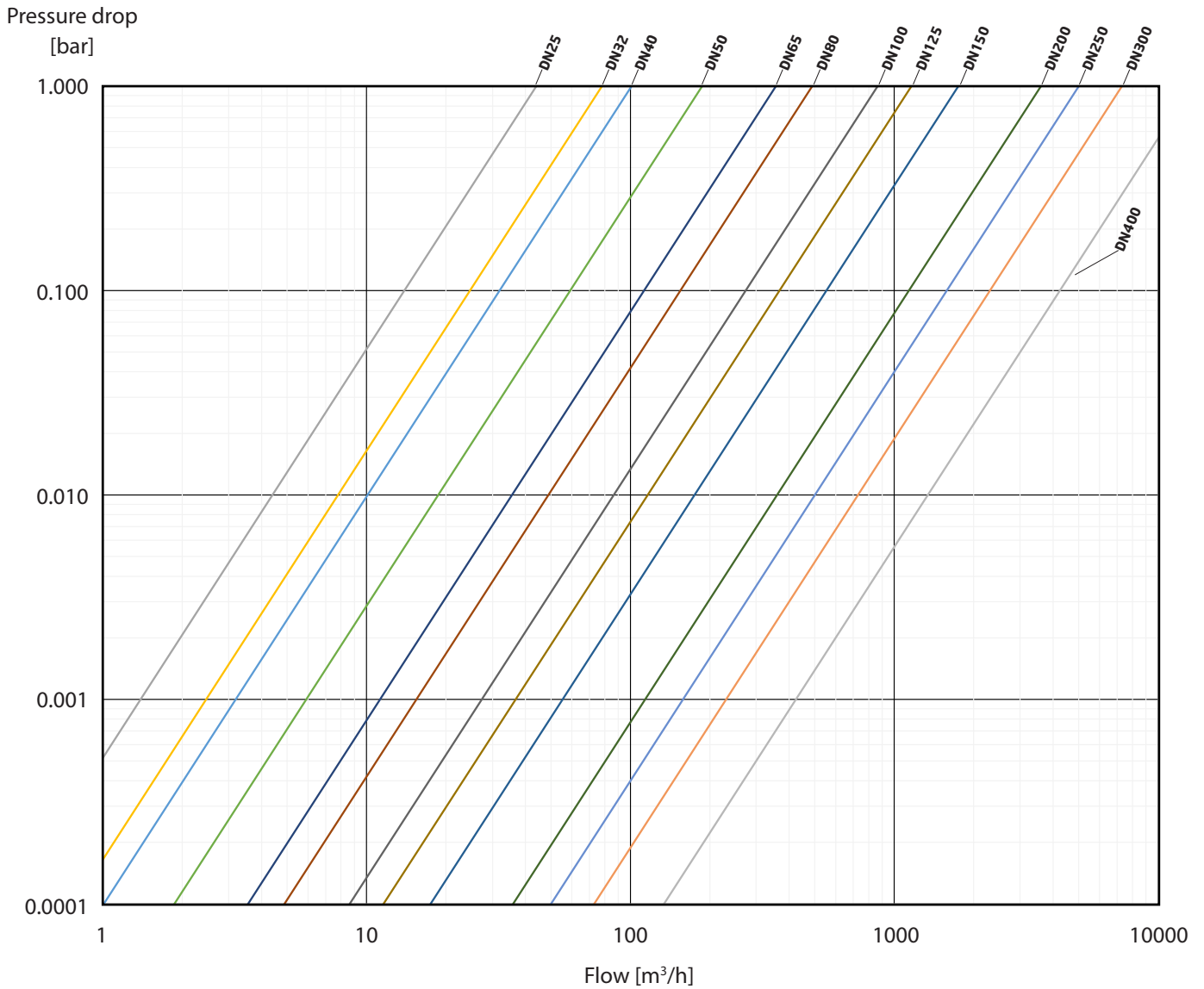
Flow/Pressure drop Diagramme reduced bore (Measured at position D acc. to EN60534)



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Underground-series

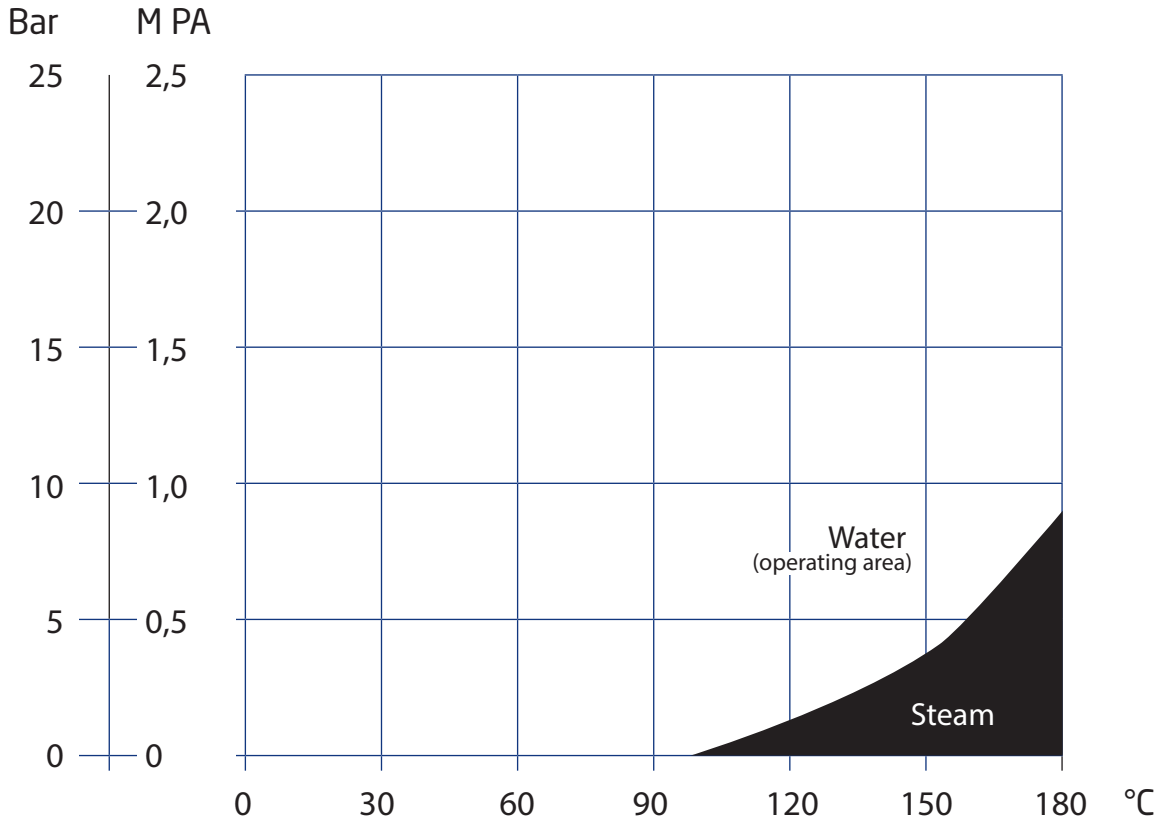
Flow/Pressure drop Diagramme full bore (Measured at position C acc. to EN60534)



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Underground-series

Pressure/Temperature Diagramme



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Underground-series

Specification Texts

Materials

- The valve housing shall be made from Carbon steel P235GH
- The valve stem and the extended stuffing box shall be made of stainless steel AISI 316L
- The ball shall be made of stainless steel AISI 304

Gaskets

- The seat rings and the stem sealings shall be made of graphite reinforced PTFE
- The seat rings shall be static and be fully protected from dirt and debris circulating in the fluid when in the open position
- The valve stem seal must be fully accessible from the outside and consist of lifetime-resistant graphite-reinforced PTFE O-rings or similar with reduced lifetime, replaceable or not may, not be used

Pressure and temperature

- The valve shall be PN25 rated
- The valve shall be able to operate up to a temperature of 180°C

Test and Design

- The valve must be subjected to a 100% final inspection with tests of internal and external leaks and inspection of dimensions and features. Leak test must be performed according to the applicable standard (EN12266 Part 1 P10-P11-P12 and Part 2 F20)
- The valve must be designed, manufactured and tested in accordance with EUROHEAT & POWER and EN488: 2015
- The valve must be provided with a position indicator that identifies the position of the ball in the housing
- The valve seats must be spring-loaded to allow a tight, double seal at low pressures. The valve body must be self-relieving
- The valve must be designed for as high KV value as possible to achieve as low a pressure drop as possible. Hereby the pump energy and CO² footprint can be lowered.
- The drive mechanism of the valve must have an asymmetrical design to minimize the break loose forces
- The valve must be fitted with a ball inner lining to ensure an optimal KV value (not hollow ball)
- If the valve has a reduced bore, it must have a conical inlet and outlet to minimize turbulence and achieve optimal KV value (low pressure drop)

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