

## Steel pipes - single - series 1

5.1



### Steel pipes - single - series 1

| Steel pipes - single - series 1 |              |                   |              |                   |        |                |            |
|---------------------------------|--------------|-------------------|--------------|-------------------|--------|----------------|------------|
| Steel pipe                      |              |                   | Jacket pipe  |                   | Weight | Water quantity | Std length |
| DN                              | d outside mm | Wall thickness mm | D outside mm | Wall thickness mm | kg/m   | kg/m           | L m        |
| 20                              | 26,9         | 2,6               | 90           | 3,0               | 2,7    | 0,37           | 6          |
| 25                              | 33,7         | 3,2               | 90           | 3,0               | 3,6    | 0,59           | 6          |
| 32                              | 42,4         | 3,2               | 110          | 3,0               | 4,6    | 1,02           | 6/12       |
| 40                              | 48,3         | 3,2               | 110          | 3,0               | 5,1    | 1,38           | 6/12       |
| 50                              | 60,3         | 3,2               | 125          | 3,0               | 6,3    | 2,28           | 6/12       |
| 65                              | 76,1         | 3,2               | 140          | 3,0               | 7,7    | 3,82           | 6/12       |
| 80                              | 88,9         | 3,2               | 160          | 3,0               | 9,2    | 5,35           | 6/12       |
| 100                             | 114,3        | 3,6               | 200          | 3,2               | 13,2   | 9,01           | 12/16      |
| 125                             | 139,7        | 3,6               | 225          | 3,4               | 16,1   | 13,79          | 12/16      |
| 150                             | 168,3        | 4,0               | 250          | 3,6               | 20,8   | 20,18          | 12/16      |
| 200                             | 219,1        | 4,5               | 315          | 4,1               | 30,6   | 34,67          | 12/16      |
| 250                             | 273,0        | 5,0               | 400          | 4,8               | 43,6   | 54,33          | 12/16      |
| 300                             | 323,9        | 5,6               | 450          | 5,2               | 56,4   | 76,80          | 12/16      |
| 350                             | 355,6        | 5,6               | 500          | 5,6               | 63,6   | 93,16          | 12/16      |
| 400                             | 406,4        | 6,3               | 560          | 6,0               | 80,5   | 121,80         | 12/16      |
| 450                             | 457,2        | 6,3               | 630          | 6,6               | 93,1   | 155,25         | 12/16      |
| 500                             | 508,0        | 6,3               | 710          | 7,2               | 107,2  | 192,75         | 12/16      |
| 600                             | 610,0        | 7,1               | 800          | 7,9               | 139,5  | 278,80         | 12/16      |

Larger dimensions are also available.

All pipes are available with alarm wires.

Continuously produced pipe of 6 m not supplied as standard.

Series 1 pipes are normally supplied as traditionally produced pipes without an inserted diffusion barrier. However, dimensions with jacket pipes  $\leq \varnothing 355$  mm can be supplied as a special delivery.

## Steel pipes - single - series 2

## 5.1.1



### Steel pipes - single - series 2

| Steel pipe |              |                   | Jacket pipe  |                   | Weight | Water quantity | Std length |
|------------|--------------|-------------------|--------------|-------------------|--------|----------------|------------|
| DN         | d outside mm | Wall thickness mm | D outside mm | Wall thickness mm | kg/m   | l/m            | L m        |
| 20         | 26,9         | 2,6               | 110          | 3,0               | 3,2    | 0,37           | 6          |
| 25         | 33,7         | 3,2               | 110          | 3,0               | 4,0    | 0,59           | 6/12       |
| 32         | 42,4         | 3,2               | 125          | 3,0               | 5,0    | 1,02           | 6/12       |
| 40         | 48,3         | 3,2               | 125          | 3,0               | 5,4    | 1,38           | 6/12       |
| 50         | 60,3         | 3,2               | 140          | 3,0               | 6,6    | 2,28           | 6/12       |
| 65         | 76,1         | 3,2               | 160          | 3,0               | 8,3    | 3,82           | 6/12       |
| 80         | 88,9         | 3,2               | 180          | 3,0               | 9,8    | 5,35           | 6/12       |
| 100        | 114,3        | 3,6               | 225          | 3,4               | 14,4   | 9,01           | 12/16      |
| 125        | 139,7        | 3,6               | 250          | 3,6               | 17,2   | 13,79          | 12/16      |
| 150        | 168,3        | 4,0               | 280          | 3,9               | 22,3   | 20,18          | 12/16      |
| 200        | 219,1        | 4,5               | 355          | 4,5               | 33,0   | 34,67          | 12/16      |
| 250        | 273,0        | 5,0               | 450          | 5,2               | 47,4   | 54,33          | 12/16      |
| 300        | 323,9        | 5,6               | 500          | 5,6               | 60,6   | 76,80          | 12/16      |
| 350        | 355,6        | 5,6               | 560          | 6,0               | 69,2   | 93,16          | 12/16      |
| 400        | 406,4        | 6,3               | 630          | 6,6               | 88,0   | 121,80         | 12/16      |
| 450        | 457,2        | 6,3               | 710          | 7,2               | 102,4  | 155,25         | 12/16      |
| 500        | 508,0        | 6,3               | 800          | 7,9               | 119,0  | 192,75         | 12/16      |
| 600        | 610,0        | 7,1               | 900          | 8,7               | 154,3  | 278,42         | 12/16      |

Larger dimensions are also available.

All pipes are available with alarm wires.

Continuously produced pipe of 6 m not supplied as standard.

#### Diffusion barrier

isoplus can produce pipes with jacket pipes in jacket pipe dimensions of  $\leq \varnothing 355$  mm as energy-saving, continuously produced pipes with a diffusion barrier inserted between the jacket pipe and the polyurethane foam. For pipes with jacket pipes in dimension of  $> \varnothing 355$  mm, the jacket pipe functions as a diffusion barrier due to its thickness. The diffusion barrier secures isoplus pre-insulated pipes against ageing, and the heat loss is therefore constant throughout the pipe's technical service life.

## Steel pipes - single - series 3

5.1.2



### Steel pipes - single - series 3

| Steel pipe |              |                   | Jacket pipe  |                   | Weight | Water quantity | Std length |
|------------|--------------|-------------------|--------------|-------------------|--------|----------------|------------|
| DN         | d outside mm | Wall thickness mm | D outside mm | Wall thickness mm | kg/m   | l/m            | L m        |
| 20         | 26,9         | 2,6               | 125          | 3,0               | 3,5    | 0,37           | 6          |
| 25         | 33,7         | 3,2               | 125          | 3,0               | 4,3    | 0,59           | 6/12       |
| 32         | 42,4         | 3,2               | 140          | 3,0               | 5,3    | 1,02           | 6/12       |
| 40         | 48,3         | 3,2               | 140          | 3,0               | 5,8    | 1,38           | 6/12       |
| 50         | 60,3         | 3,2               | 160          | 3,0               | 7,2    | 2,28           | 6/12       |
| 65         | 76,1         | 3,2               | 180          | 3,0               | 8,9    | 3,82           | 6/12       |
| 80         | 88,9         | 3,2               | 200          | 3,2               | 10,5   | 5,35           | 6/12       |
| 100        | 114,3        | 3,6               | 250          | 3,6               | 15,4   | 9,01           | 12/16      |
| 125        | 139,7        | 3,6               | 280          | 3,9               | 18,7   | 13,79          | 12/16      |
| 150        | 168,3        | 4,0               | 315          | 4,1               | 24,1   | 20,18          | 12/16      |
| 200        | 219,1        | 4,5               | 400          | 4,8               | 36,0   | 34,67          | 12/16      |
| 250        | 273,0        | 5,0               | 500          | 5,6               | 51,6   | 54,33          | 12/16      |
| 300        | 323,9        | 5,6               | 560          | 6,0               | 66,2   | 76,80          | 12/16      |
| 350        | 355,6        | 5,6               | 630          | 6,6               | 76,6   | 93,16          | 12/16      |
| 400        | 406,4        | 6,3               | 710          | 7,2               | 97,3   | 121,80         | 12/16      |
| 450        | 457,2        | 6,3               | 800          | 7,9               | 114,2  | 155,25         | 12/16      |
| 500        | 508,0        | 6,3               | 900          | 8,7               | 133,8  | 192,75         | 12/16      |
| 600        | 610,0        | 7,1               | 1000         | 9,4               | 170,5  | 278,42         | 12/16      |

Larger dimensions are also available.

All pipes are available with alarm wires.

Continuously produced pipe of 6 m not supplied as standard.

#### Diffusion barrier

isoplus can produce pipes with jacket pipes in jacket pipe dimensions of  $\leq \varnothing 355$  mm as energy-saving, continuously produced pipes with a diffusion barrier inserted between the jacket pipe and the polyurethane foam. For pipes with jacket pipes in dimension of  $> \varnothing 355$  mm, the jacket pipe functions as a diffusion barrier due to its thickness. The diffusion barrier secures isoplus pre-insulated pipes against ageing, and the heat loss is therefore constant throughout the pipe's technical service life.

## Curved pipes - single

5.2



### Curved pipes - single

| Steel pipe |              | Design radius           |                  | Max. permissible angle $\alpha^\circ$ | Max. permissible angle $\alpha^\circ$ | Max. permissible angle $\alpha^\circ$ |
|------------|--------------|-------------------------|------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| DN         | d outside mm | r [M]                   | 6 m pipe lengths | 12 m pipe lengths                     | 16 m pipe lengths                     |                                       |
| 20         | 26,9         | 8,4                     | 41°              | -                                     | -                                     | For on-site bending                   |
| 25         | 33,7         | 12,8                    | 27°              | -                                     | -                                     |                                       |
| 32         | 42,4         | 13,4                    | 26°              | 52°                                   | -                                     |                                       |
| 40         | 48,3         | 15,4                    | 22°              | 44°                                   | -                                     |                                       |
| 50         | 60,3         | 17,2                    | 20°              | 40°                                   | -                                     |                                       |
| 65         | 76,1         | 19,6                    | 18°              | 36°                                   | -                                     |                                       |
| 80         | 88,9         | 20,2                    | 17°              | 34°                                   | -                                     |                                       |
| 100        | 114,3        | 22,9 (12m) 20,8 (16m)   | -                | 30°                                   | 44°                                   | Pre-bent                              |
| 125        | 139,7        | 22,9 (12m) 20,8 (16m)   | -                | 30°                                   | 44°                                   |                                       |
| 150        | 168,3        | 25,5 (12m) 22,9 (16m)   | -                | 27°                                   | 40°                                   |                                       |
| 200        | 219,1        | 28,6 (12m) 26,2 (16m)   | -                | 24°                                   | 35°                                   |                                       |
| 250        | 273          | 32,7 (12m) 29,6 (16m)   | -                | 21°                                   | 31°                                   |                                       |
| 300        | 323,9        | 36,2 (12m) 32,7 (16m)   | -                | 19°                                   | 28°                                   |                                       |
| 350        | 355,6        | 68,8 (12m) 65,5 (16m)   | -                | 10°                                   | 14°                                   |                                       |
| 400        | 406,4        | 76,4 (12m) 70,5 (16m)   | -                | 9° (S1)                               | 13° (S1)                              |                                       |
| 400        | 406,4        | 105,8 (12m) 87,3 (16m)  | -                | 6,5° (S2+S3)                          | 10,5° (S2+S3)                         |                                       |
| 450        | 457,2        | 137,5 (12m) 114,6 (16m) | -                | 5°                                    | 8°                                    |                                       |
| 500        | 508          | 171,9 (12m) 152,8 (16m) | -                | 4° (S1+S2)                            | 6° (S1+S2)                            |                                       |

Pre-bent pipes Ø560 jacket bends with 1.5 m straight end lengths.  
Larger jacket dimensions bends with 3 m straight end lengths.

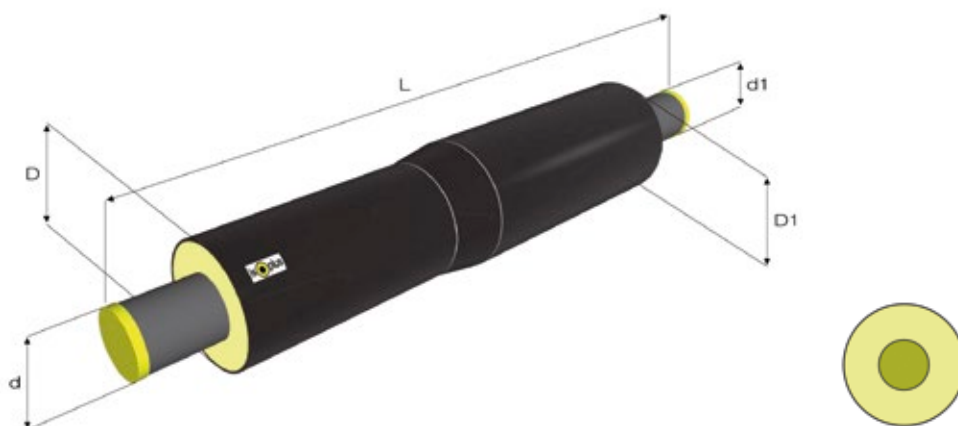
16 m lengths are available to order.  
Curved pipes with jacket diameters greater than 710 mm are available to order.

When ordering curved pipes, please state the angle  $\alpha$  or radius  $r$ . The direction of the curve, left/right/upwards/downwards, must also be stated on account of the alarm wires.

DN 20 - DN 80 pipes are bent on site. Bending tool must be used.

## Reducers - single

5.3



| Reducers - single |               |              |               |              |               |              |               |        |
|-------------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------|
|                   |               | Series 1     |               | Series 2     |               | Series 3     |               |        |
| Steel pipe        | Steel pipe    | Jacket pipe  | Jacket pipe   | Jacket pipe  | Jacket pipe   | Jacket pipe  | Jacket pipe   | Length |
| d outside mm      | d1 outside mm | d outside mm | d1 outside mm | d outside mm | d1 outside mm | d outside mm | d1 outside mm | L mm   |
| 26,9              | 33,7          | 90           | 90            | 110          | 110           | 125          | 125           | 1500   |
| 26,9              | 42,4          | 90           | 110           | 110          | 125           | 125          | 140           | 1500   |
| 33,7              | 42,4          | 90           | 110           | 110          | 125           | 125          | 140           | 1500   |
| 33,7              | 48,3          | 90           | 110           | 110          | 125           | 125          | 140           | 1500   |
| 42,4              | 48,3          | 110          | 110           | 125          | 125           | 140          | 140           | 1500   |
| 42,4              | 60,3          | 110          | 125           | 125          | 140           | 140          | 160           | 1500   |
| 48,3              | 60,3          | 110          | 125           | 125          | 140           | 140          | 160           | 1500   |
| 48,3              | 76,1          | 110          | 140           | 125          | 160           | 140          | 180           | 1500   |
| 60,3              | 76,1          | 125          | 140           | 140          | 160           | 160          | 180           | 1500   |
| 60,3              | 88,9          | 125          | 160           | 140          | 180           | 160          | 200           | 1500   |
| 76,1              | 88,9          | 140          | 160           | 160          | 180           | 180          | 200           | 1500   |
| 76,1              | 114,3         | 140          | 200           | 160          | 225           | 180          | 250           | 1500   |
| 88,9              | 114,3         | 160          | 200           | 180          | 225           | 200          | 250           | 1500   |
| 88,9              | 139,7         | 160          | 225           | 180          | 250           | 200          | 280           | 1500   |
| 114,3             | 139,7         | 200          | 225           | 225          | 250           | 250          | 280           | 1500   |
| 114,3             | 168,3         | 200          | 250           | 225          | 280           | 250          | 315           | 1500   |
| 139,7             | 168,3         | 225          | 250           | 250          | 280           | 280          | 315           | 1500   |
| 139,7             | 219,1         | 225          | 315           | 250          | 355           | 280          | 400           | 1500   |
| 168,3             | 219,1         | 250          | 315           | 280          | 355           | 315          | 400           | 1500   |
| 168,3             | 273,0         | 250          | 400           | 280          | 450           | 315          | 500           | 1500   |
| 219,1             | 273,0         | 315          | 400           | 355          | 450           | 400          | 500           | 1500   |
| 219,1             | 323,9         | 315          | 450           | 355          | 500           | 400          | 560           | 1500   |
| 273,0             | 323,9         | 400          | 450           | 450          | 500           | 500          | 560           | 1500   |

Reducers are also available in larger dimensions and with a greater number of steps.

## Bends 45°/90° - single

5.4



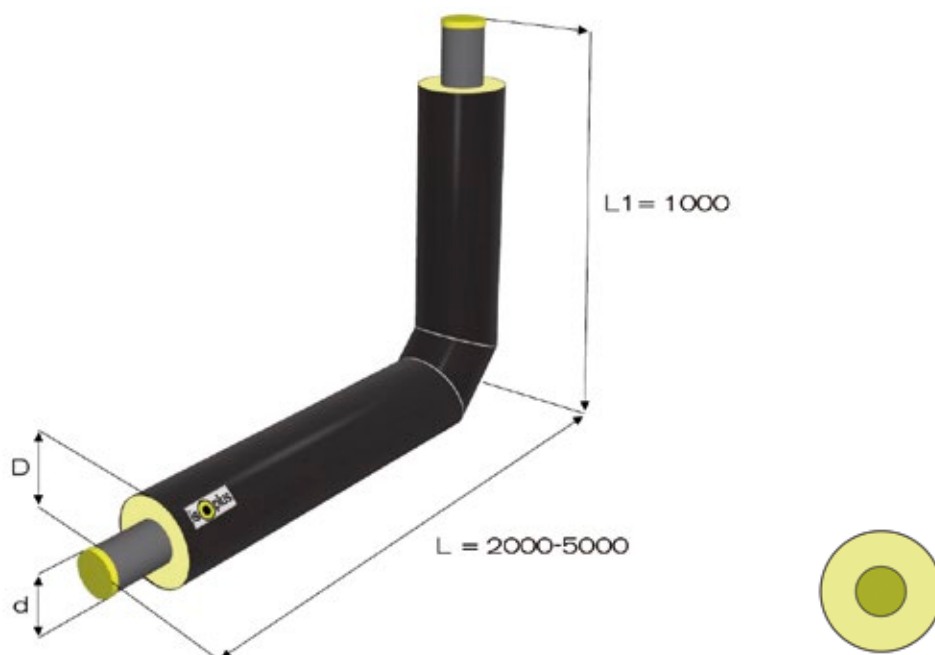
### Bends 45°/90° - single

|              | Series 1     | Series 2     | Series 3     |                  |                     |
|--------------|--------------|--------------|--------------|------------------|---------------------|
| Steel pipe   | Jacket pipe  | Jacket pipe  | Jacket pipe  | Short leg length | Standard leg length |
| d outside mm | D outside mm | D outside mm | D outside mm | L mm             | L mm                |
| 26,9         | 90           | 110          | 125          | 600 x 600        | 1000 x 1000         |
| 33,7         | 90           | 110          | 125          | 600 x 600        | 1000 x 1000         |
| 42,4         | 110          | 125          | 140          | 600 x 600        | 1000 x 1000         |
| 48,3         | 110          | 125          | 140          | 600 x 600        | 1000 x 1000         |
| 60,3         | 125          | 140          | 160          | 600 x 600        | 1000 x 1000         |
| 76,1         | 140          | 160          | 180          | 600 x 600        | 1000 x 1000         |
| 88,9         | 160          | 180          | 200          | 600 x 600        | 1000 x 1000         |
| 114,3        | 200          | 225          | 250          | 700 x 700        | 1000 x 1000         |
| 139,7        | 225          | 250          | 280          | 750 x 750        | 1000 x 1000         |
| 168,3        | 250          | 280          | 315          | 800 x 800        | 1000 x 1000         |
| 219,1        | 315          | 355          | 400          | -                | 1000 x 1000         |
| 273,0        | 400          | 450          | 500          | -                | 1000 x 1000         |
| 323,9        | 450          | 500          | 560          | -                | 1000 x 1000         |
| 355,6        | 500          | 560          | 630          | -                | 1000 x 1000         |
| 406,4        | 560          | 630          | 710          | -                | 1000 x 1000         |
| 457,2        | 630          | 710          | 800          | -                | 1100 x 1100         |
| 508,0        | 710          | 800          | 900          | -                | 1200 x 1200         |
| 610,0        | 800          | 900          | 1000         | -                | 1300 x 1300         |

Bends are also available with other angles and leg lengths.

## House entry pipe - single

5.5

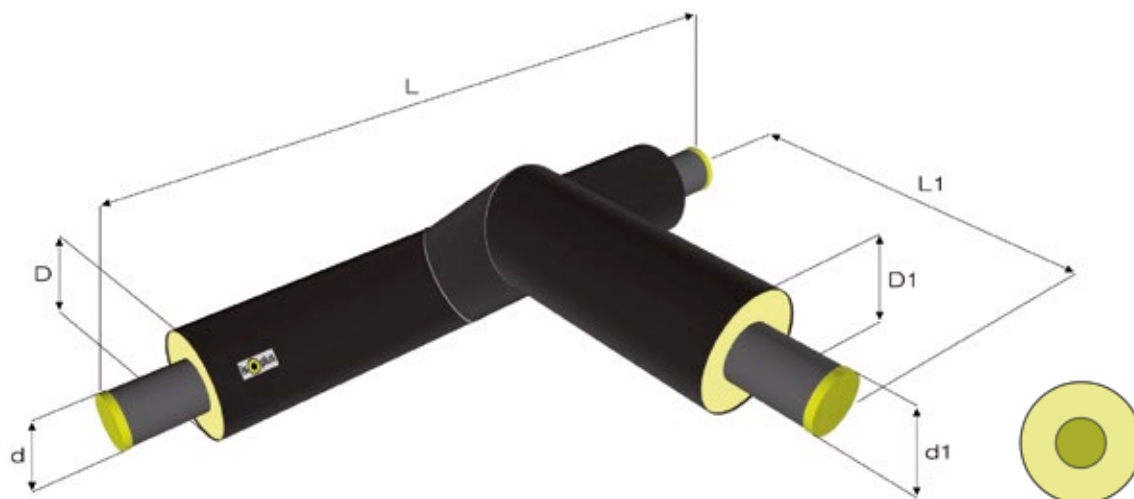


| House entry pipe - single |              |              |              |
|---------------------------|--------------|--------------|--------------|
|                           | Series 1     | Series 2     | Series 3     |
| Steel pipe                | Jacket pipe  | Jacket pipe  | Jacket pipe  |
| d outside mm              | D outside mm | D outside mm | D outside mm |
| 26,9                      | 90           | 110          | 125          |
| 33,7                      | 90           | 110          | 125          |
| 42,4                      | 110          | 125          | 140          |
| 48,3                      | 110          | 125          | 140          |
| 60,3                      | 125          | 140          | 160          |
| 76,1                      | 140          | 160          | 180          |
| 88,9                      | 160          | 180          | 200          |
| 114,3                     | 200          | 225          | 250          |
| 139,7                     | 225          | 250          | 280          |
| 168,3                     | 250          | 280          | 315          |

House entry pipes are also available with other angles and leg lengths.

## Branches with 45° - single

5.6



### Branches with 45° - single - series 1

|          |         | d (mm)  | 26,9                 | 33,7     | 42,4     | 48,3     | 60,3     | 76,1     | 88,9     | 114,3    | 139,7    | 168,3    | 219,1    | 273,0     | 323,9     | 355,6     | 406,4     |
|----------|---------|---------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|
|          |         | D (mm)  | 90                   | 90       | 110      | 110      | 125      | 140      | 160      | 200      | 225      | 250      | 315      | 400       | 450       | 500       | 560       |
| d1<br>mm | D1<br>m | s<br>mm | Run pipe/Branch L/L1 |          |          |          |          |          |          |          |          |          |          |           |           |           |           |
| 26,9     | 90      | 70      | 1100/695             | 1100/695 | 1100/705 | 1100/705 | 1100/710 | 1100/720 | 1100/730 | 1100/750 | 1100/760 | 1100/775 | 1100/805 | 1100/850  | 1100/875  | 1100/900  | 1100/930  |
| 33,7     | 90      | 70      |                      | 1100/695 | 1100/705 | 1100/705 | 1100/710 | 1100/720 | 1100/730 | 1100/750 | 1100/760 | 1100/775 | 1100/805 | 1100/850  | 1100/875  | 1100/900  | 1100/930  |
| 42,4     | 110     | 70      |                      |          | 1100/715 | 1100/715 | 1100/720 | 1100/730 | 1100/740 | 1100/760 | 1100/770 | 1100/785 | 1100/815 | 1100/860  | 1100/885  | 1100/910  | 1100/940  |
| 48,3     | 110     | 70      |                      |          |          | 1100/715 | 1100/720 | 1100/730 | 1100/740 | 1100/760 | 1100/770 | 1100/785 | 1100/815 | 1100/860  | 1100/885  | 1100/910  | 1100/940  |
| 60,3     | 125     | 70      |                      |          |          |          | 1100/730 | 1100/735 | 1100/745 | 1100/765 | 1100/780 | 1100/790 | 1100/825 | 1100/865  | 1100/890  | 1100/915  | 1100/945  |
| 76,1     | 140     | 70      |                      |          |          |          |          | 1100/745 | 1100/745 | 1100/775 | 1100/785 | 1100/800 | 1100/830 | 1100/875  | 1100/900  | 1100/925  | 1100/955  |
| 88,9     | 160     | 70      |                      |          |          |          |          |          | 1200/800 | 1200/800 | 1200/800 | 1200/800 | 1100/850 | 1100/900  | 1200/900  | 1200/950  | 1200/950  |
| 114,3    | 200     | 70      |                      |          |          |          |          |          |          | 1200/800 | 1200/800 | 1200/800 | 1200/850 | 1200/900  | 1200/950  | 1200/950  | 1200/1000 |
| 139,7    | 225     | 70      |                      |          |          |          |          |          |          |          | 1300/850 | 1300/850 | 1300/850 | 1300/900  | 1300/950  | 1300/950  | 1300/1000 |
| 168,3    | 250     | 70      |                      |          |          |          |          |          |          |          |          | 1300/850 | 1300/850 | 1300/950  | 1300/950  | 1300/1000 | 1300/1000 |
| 219,1    | 315     | 70      |                      |          |          |          |          |          |          |          |          |          | 1400/950 | 1400/1000 | 1400/1000 | 1400/1050 | 1400/1050 |
| 273,0    | 400     | 70      |                      |          |          |          |          |          |          |          |          |          |          | 1500/1050 | 1500/1050 | 1500/1100 | 1500/1100 |
| 323,9    | 450     | 70      |                      |          |          |          |          |          |          |          |          |          |          |           | 1600/1100 | 1600/1150 | 1600/1150 |
| 355,6    | 500     | 70      |                      |          |          |          |          |          |          |          |          |          |          |           |           | 1700/1200 | 1700/1200 |
| 406,4    | 560     | 70      |                      |          |          |          |          |          |          |          |          |          |          |           |           |           | 1700/1250 |

Branches are also available with other angles and leg lengths.



## Branches with 45° - single

5.6.1

### Branches with 45° - single - series 2

|          |         | d (mm)  | 26,9                 | 33,7     | 42,4     | 48,3     | 60,3     | 76,1     | 88,9     | 114,3    | 139,7    | 168,3    | 219,1     | 273,0     | 323,9     | 355,6     | 406,4     |
|----------|---------|---------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
|          |         | D (mm)  | 110                  | 110      | 125      | 125      | 140      | 160      | 180      | 225      | 250      | 280      | 355       | 450       | 500       | 560       | 630       |
| d1<br>mm | D1<br>m | s<br>mm | Run pipe/Branch L/L1 |          |          |          |          |          |          |          |          |          |           |           |           |           |           |
| 26,9     | 110     | 70      | 1100/712             | 1100/715 | 1100/720 | 1100/720 | 1100/730 | 1100/740 | 1100/750 | 1100/770 | 1100/785 | 1100/800 | 1100/835  | 1100/885  | 1100/910  | 1100/940  | 1100/975  |
| 33,7     | 110     | 70      |                      | 1100/715 | 1100/720 | 1100/720 | 1100/730 | 1100/740 | 1100/750 | 1100/770 | 1100/785 | 1100/800 | 1100/835  | 1100/885  | 1100/910  | 1100/940  | 1100/975  |
| 42,4     | 125     | 70      |                      |          | 1100/730 | 1100/730 | 1100/735 | 1100/745 | 1100/755 | 1100/780 | 1100/790 | 1100/805 | 1100/845  | 1100/890  | 1100/915  | 1100/945  | 1100/980  |
| 48,3     | 125     | 70      |                      |          |          | 1100/730 | 1100/735 | 1100/745 | 1100/755 | 1100/780 | 1100/790 | 1100/805 | 1100/845  | 1100/890  | 1100/915  | 1100/945  | 1100/980  |
| 60,3     | 140     | 70      |                      |          |          |          | 1100/745 | 1100/755 | 1100/765 | 1100/785 | 1100/800 | 1100/815 | 1100/850  | 1100/900  | 1100/925  | 1100/955  | 1100/990  |
| 76,1     | 160     | 70      |                      |          |          |          |          | 1100/765 | 1100/775 | 1100/795 | 1100/810 | 1100/825 | 1100/860  | 1100/910  | 1100/935  | 1100/965  | 1100/1000 |
| 88,9     | 180     | 70      |                      |          |          |          |          |          | 1200/800 | 1200/800 | 1200/800 | 1200/850 | 1200/850  | 1200/900  | 1200/950  | 1100/950  | 1200/1000 |
| 114,3    | 225     | 70      |                      |          |          |          |          |          |          | 1200/850 | 1200/850 | 1200/850 | 1200/900  | 1200/950  | 1200/950  | 1200/1000 | 1200/1050 |
| 139,7    | 250     | 70      |                      |          |          |          |          |          |          |          | 1300/850 | 1300/850 | 1300/900  | 1300/950  | 1300/1000 | 1200/1000 | 1300/1050 |
| 168,3    | 280     | 70      |                      |          |          |          |          |          |          |          |          | 1300/900 | 1300/950  | 1300/1000 | 1300/1000 | 1200/1050 | 1300/1100 |
| 219,1    | 355     | 70      |                      |          |          |          |          |          |          |          |          |          | 1400/1000 | 1400/1050 | 1400/1050 | 1400/1100 | 1400/1150 |
| 273,0    | 450     | 70      |                      |          |          |          |          |          |          |          |          |          |           | 1500/1100 | 1500/1100 | 1500/1150 | 1500/1200 |
| 323,9    | 500     | 70      |                      |          |          |          |          |          |          |          |          |          |           |           | 1600/1150 | 1600/1200 | 1600/1250 |
| 355,6    | 560     | 70      |                      |          |          |          |          |          |          |          |          |          |           |           |           | 1700/1250 | 1700/1300 |
| 406,4    | 630     | 70      |                      |          |          |          |          |          |          |          |          |          |           |           |           |           | 1700/1350 |

Branches are also available with other angles and leg lengths.

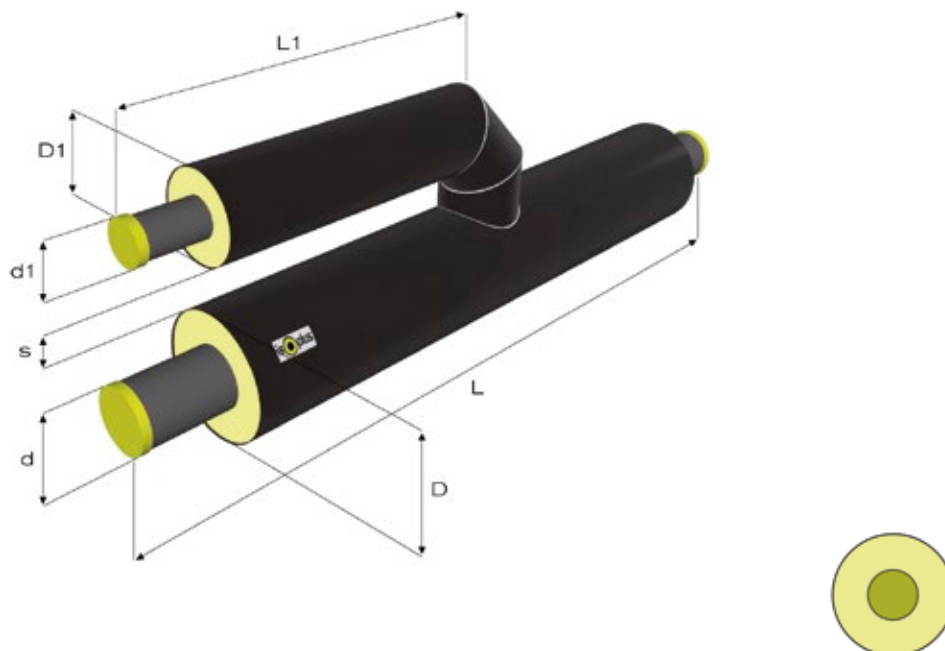
### Branches with 45° - single - series 3

|          |         | d (mm)  | 26,9                 | 33,7     | 42,4     | 48,3     | 60,3     | 76,1     | 88,9     | 114,3    | 139,7    | 168,3    | 219,1     | 273,0     | 323,9     | 355,6     | 406,4     |
|----------|---------|---------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
|          |         | D (mm)  | 125                  | 125      | 140      | 140      | 160      | 180      | 200      | 250      | 280      | 315      | 400       | 500       | 560       | 630       | 710       |
| d1<br>mm | D1<br>m | s<br>mm | Run pipe/Branch L/L1 |          |          |          |          |          |          |          |          |          |           |           |           |           |           |
| 26,9     | 125     | 70      | 1100/700             | 110/730  | 1100/735 | 1100/735 | 1100/745 | 1100/755 | 1100/765 | 1100/790 | 1100/805 | 1100/825 | 1100/865  | 1100/915  | 1100/945  | 1100/980  | 1100/1000 |
| 33,7     | 125     | 70      |                      | 1100/730 | 1100/735 | 1100/735 | 1100/745 | 1100/755 | 1100/765 | 1100/790 | 1100/805 | 1100/825 | 1100/865  | 1100/915  | 1100/945  | 1100/980  | 1100/1000 |
| 42,4     | 140     | 70      |                      |          | 1100/745 | 1100/745 | 1100/755 | 1100/765 | 1100/775 | 1100/800 | 1100/815 | 1100/830 | 1100/875  | 1100/925  | 1100/955  | 1100/990  | 1100/1010 |
| 48,3     | 140     | 70      |                      |          |          | 1100/745 | 1100/755 | 1100/765 | 1100/775 | 1100/800 | 1100/815 | 1100/830 | 1100/875  | 1100/925  | 1100/955  | 1100/990  | 1100/1010 |
| 60,3     | 160     | 70      |                      |          |          |          | 1100/765 | 1100/775 | 1100/785 | 1100/810 | 1100/825 | 1100/840 | 1100/885  | 1100/935  | 1100/965  | 1100/1000 | 1100/1020 |
| 76,1     | 180     | 70      |                      |          |          |          |          | 1100/785 | 1100/795 | 1100/820 | 1100/835 | 1100/850 | 1100/895  | 1100/945  | 1100/965  | 1100/1010 | 1100/1030 |
| 88,9     | 200     | 70      |                      |          |          |          |          |          | 1200/800 | 1200/850 | 1200/850 | 1200/850 | 1200/950  | 1200/1000 | 1200/1000 | 1200/1050 | 1200/1050 |
| 114,3    | 250     | 70      |                      |          |          |          |          |          |          | 1200/850 | 1200/900 | 1200/900 | 1200/950  | 1200/1000 | 1200/1000 | 1200/1050 | 1200/1100 |
| 139,7    | 280     | 70      |                      |          |          |          |          |          |          |          | 1300/900 | 1300/950 | 1300/1000 | 1300/1050 | 1300/1050 | 1300/1100 | 1300/1100 |
| 168,3    | 315     | 70      |                      |          |          |          |          |          |          |          |          | 1300/950 | 1300/1000 | 1300/1050 | 1300/1050 | 1300/1100 | 1300/1150 |
| 219,1    | 400     | 70      |                      |          |          |          |          |          |          |          |          |          | 1400/1050 | 1400/1100 | 1400/1150 | 1400/1150 | 1400/1200 |
| 273,0    | 500     | 70      |                      |          |          |          |          |          |          |          |          |          |           | 1500/1200 | 1500/1200 | 1500/1250 | 1500/1250 |
| 323,9    | 560     | 70      |                      |          |          |          |          |          |          |          |          |          |           |           | 1600/1250 | 1600/1300 | 1600/1300 |
| 355,6    | 630     | 70      |                      |          |          |          |          |          |          |          |          |          |           |           |           | 1700/1350 | 1700/1350 |
| 406,4    | 710     | 70      |                      |          |          |          |          |          |          |          |          |          |           |           |           |           | 1700/1400 |

Branches are also available with other angles and leg lengths.

## Branches - parallel - single

5.6.2



### Branches - parallel - single - series 1

|          |         | d (mm)  | 26,9                 | 33,7     | 42,4     | 48,3     | 60,3     | 76,1     | 88,9     | 114,3    | 139,7    | 168,3    | 219,1    | 273,0    | 323,9    | 355,6    | 406,4     |
|----------|---------|---------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|          |         | D (mm)  | 90                   | 90       | 110      | 110      | 125      | 140      | 160      | 200      | 225      | 250      | 315      | 400      | 450      | 500      | 560       |
| d1<br>mm | D1<br>m | s<br>mm | Run pipe/Branch L/L1 |          |          |          |          |          |          |          |          |          |          |          |          |          |           |
| 26,9     | 90      | 120     | 1100/600             | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 33,7     | 90      | 120     |                      | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 42,4     | 110     | 120     |                      |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 48,3     | 110     | 120     |                      |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 60,3     | 125     | 120     |                      |          |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 76,1     | 140     | 120     |                      |          |          |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 88,9     | 160     | 120     |                      |          |          |          |          |          | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600  |
| 114,3    | 200     | 120     |                      |          |          |          |          |          |          | 1200/550 | 1200/550 | 1200/550 | 1200/550 | 1200/550 | 1200/550 | 1200/550 | 1200/550  |
| 139,7    | 225     | 120     |                      |          |          |          |          |          |          |          | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600  |
| 168,3    | 250     | 120     |                      |          |          |          |          |          |          |          |          | 1300/650 | 1300/650 | 1300/650 | 1300/650 | 1300/650 | 1300/650  |
| 219,1    | 315     | 120     |                      |          |          |          |          |          |          |          |          |          | 1400/700 | 1400/700 | 1400/700 | 1400/700 | 1400/750  |
| 273,0    | 400     | 120     |                      |          |          |          |          |          |          |          |          |          |          | 1500/800 | 1500/800 | 1500/800 | 1500/800  |
| 323,9    | 450     | 120     |                      |          |          |          |          |          |          |          |          |          |          |          | 1600/850 | 1600/850 | 1600/850  |
| 355,6    | 500     | 120     |                      |          |          |          |          |          |          |          |          |          |          |          |          | 1700/900 | 1700/900  |
| 406,4    | 560     | 120     |                      |          |          |          |          |          |          |          |          |          |          |          |          |          | 1700/1000 |

Branches are also available with other angles and leg lengths.

## Branches - parallel - single

5.6.3

### Branches - parallel - single - series 2

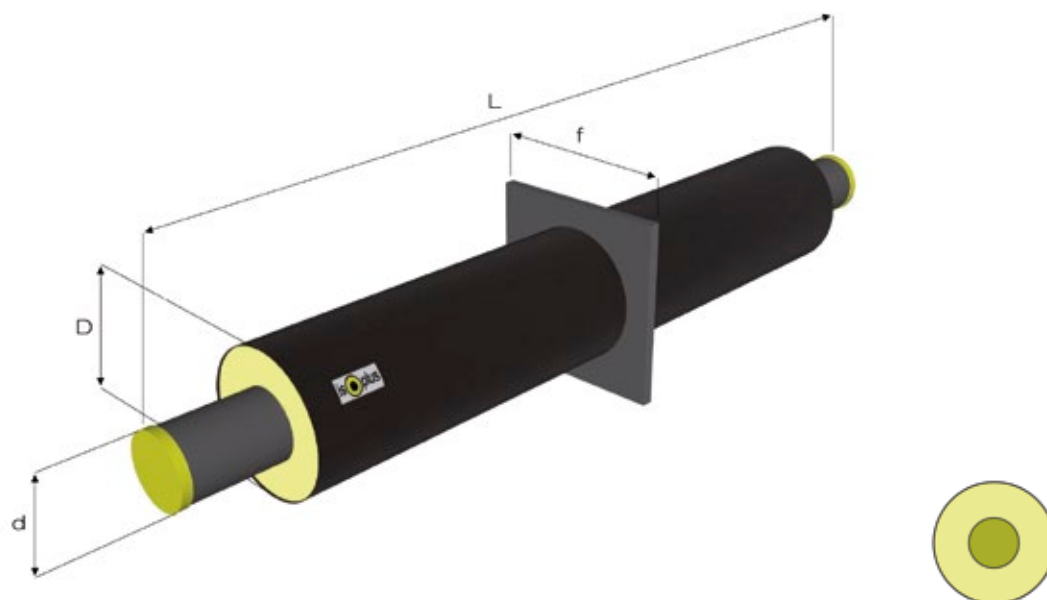
|          |         | d (mm)  | 26,9                 | 33,7     | 42,4     | 48,3     | 60,3     | 76,1     | 88,9     | 114,3    | 139,7    | 168,3    | 219,1    | 273,0    | 323,9    | 355,6    | 406,4     |
|----------|---------|---------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|          |         | D (mm)  | 110                  | 100      | 125      | 125      | 140      | 160      | 180      | 225      | 250      | 280      | 355      | 450      | 500      | 560      | 630       |
| d1<br>mm | D1<br>m | s<br>mm | Run pipe/Branch L/L1 |          |          |          |          |          |          |          |          |          |          |          |          |          |           |
| 26,9     | 110     | 120     | 1100/600             | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 33,7     | 110     | 120     |                      | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 42,4     | 125     | 120     |                      |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 48,3     | 125     | 120     |                      |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 60,3     | 140     | 120     |                      |          |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 76,1     | 160     | 120     |                      |          |          |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 88,9     | 180     | 120     |                      |          |          |          |          |          | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600  |
| 114,3    | 225     | 120     |                      |          |          |          |          |          |          | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600  |
| 139,7    | 250     | 120     |                      |          |          |          |          |          |          |          | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600  |
| 168,3    | 280     | 140     |                      |          |          |          |          |          |          |          |          | 1300/650 | 1300/650 | 1300/650 | 1300/650 | 1300/650 | 1300/650  |
| 219,1    | 355     | 128-160 |                      |          |          |          |          |          |          |          |          |          | 1400/750 | 1400/750 | 1400/750 | 1400/750 | 1400/750  |
| 273,0    | 450     | 147-180 |                      |          |          |          |          |          |          |          |          |          |          | 1500/800 | 1500/800 | 1500/800 | 1500/800  |
| 323,9    | 500     | 193-237 |                      |          |          |          |          |          |          |          |          |          |          |          | 1600/850 | 1600/850 | 1600/850  |
| 355,6    | 560     | 243-260 |                      |          |          |          |          |          |          |          |          |          |          |          |          | 1700/900 | 1700/900  |
| 406,4    | 630     | 285-300 |                      |          |          |          |          |          |          |          |          |          |          |          |          |          | 1700/1000 |

Branches are also available with other angles and leg lengths.

### Branches - parallel - single - series 3

|          |         | d (mm)  | 26,9                 | 33,7     | 42,4     | 48,3     | 60,3     | 76,1     | 88,9     | 114,3    | 139,7    | 168,3    | 219,1    | 273,0    | 323,9    | 355,6    | 406,4     |
|----------|---------|---------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|          |         | D (mm)  | 110                  | 100      | 125      | 125      | 140      | 160      | 180      | 225      | 250      | 280      | 355      | 450      | 500      | 560      | 630       |
| d1<br>mm | D1<br>m | s<br>mm | Run pipe/Branch L/L1 |          |          |          |          |          |          |          |          |          |          |          |          |          |           |
| 26,9     | 125     | 120     | 1100/600             | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 33,7     | 125     | 120     |                      | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 42,4     | 140     | 120     |                      |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 48,3     | 140     | 120     |                      |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 60,3     | 160     | 120     |                      |          |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 76,1     | 180     | 120     |                      |          |          |          |          | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600 | 1100/600  |
| 88,9     | 200     | 120     |                      |          |          |          |          |          | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600  |
| 114,3    | 250     | 120     |                      |          |          |          |          |          |          | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600 | 1200/600  |
| 139,7    | 280     | 120     |                      |          |          |          |          |          |          |          | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600 | 1300/600  |
| 168,3    | 315     | 120     |                      |          |          |          |          |          |          |          |          | 1300/650 | 1300/650 | 1300/650 | 1300/650 | 1300/650 | 1300/650  |
| 219,1    | 400     | 120-140 |                      |          |          |          |          |          |          |          |          |          | 1400/750 | 1400/750 | 1400/750 | 1400/750 | 1400/750  |
| 273,0    | 500     | 120-150 |                      |          |          |          |          |          |          |          |          |          |          | 1500/800 | 1500/800 | 1500/800 | 1500/800  |
| 323,9    | 560     | 150-195 |                      |          |          |          |          |          |          |          |          |          |          |          | 1600/850 | 1600/850 | 1600/850  |
| 355,6    | 630     | 180-245 |                      |          |          |          |          |          |          |          |          |          |          |          |          | 1700/900 | 1700/900  |
| 406,4    | 710     | 230-250 |                      |          |          |          |          |          |          |          |          |          |          |          |          |          | 1700/1000 |

Branches are also available with other angles and leg lengths.



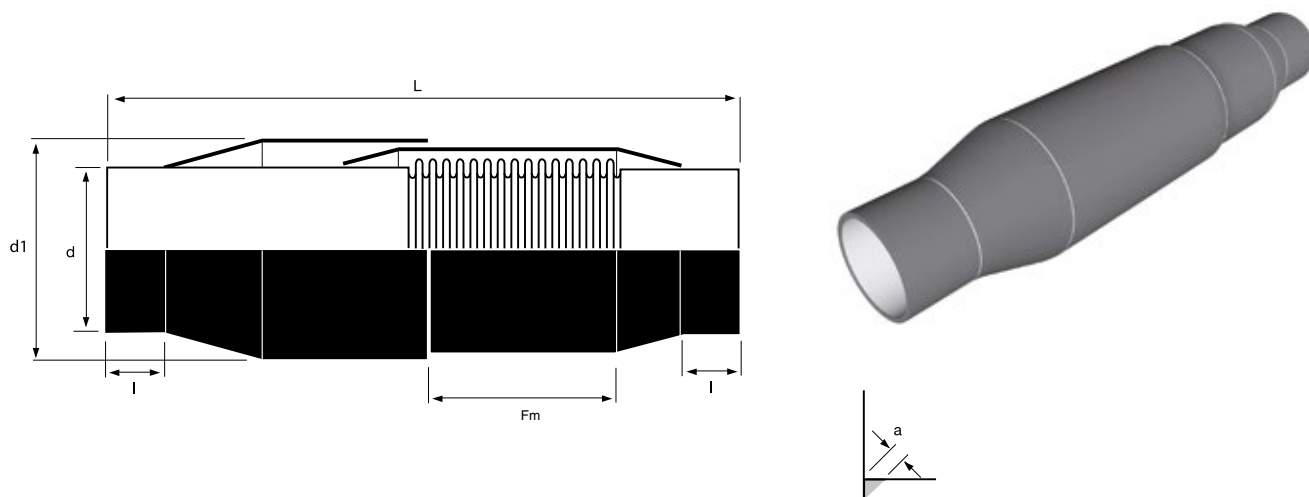
## Anchors - single

|              | Series 1     | Series 2     | Series 3     |           |            |           |
|--------------|--------------|--------------|--------------|-----------|------------|-----------|
| Steel pipe   | Jacket pipe  | Jacket pipe  | Jacket pipe  | Stålfläns |            | Bygglängd |
| d outside mm | D outside mm | D outside mm | D outside mm | f mm      | Godstj. mm | L mm      |
| 26,9         | 90           | 110          | 125          | 200       | 15         | 2000      |
| 33,7         | 90           | 110          | 125          | 200       | 15         | 2000      |
| 42,4         | 110          | 125          | 140          | 200       | 15         | 2000      |
| 48,3         | 110          | 125          | 140          | 200       | 15         | 2000      |
| 60,3         | 125          | 140          | 160          | 250       | 20         | 2000      |
| 76,1         | 140          | 160          | 180          | 250       | 20         | 2000      |
| 88,9         | 160          | 180          | 200          | 250       | 20         | 2000      |
| 114,3        | 200          | 225          | 250          | 330       | 25         | 2000      |
| 139,7        | 225          | 250          | 280          | 330       | 25         | 2000      |
| 168,3        | 250          | 280          | 315          | 380       | 25         | 2000      |
| 219,1        | 315          | 355          | 400          | 500       | 25         | 2000      |
| 273,0        | 400          | 450          | 500          | 600       | 30         | 2000      |
| 323,9        | 450          | 500          | 560          | 700       | 30         | 2000      |

Anchors are also available with other angles and leg lengths.

## Prestressing elements

5.8



### Prestressing elements

| Steel pipe   |                   |               | Length | Max. expansion | Min. weld size | Weld end |
|--------------|-------------------|---------------|--------|----------------|----------------|----------|
| d outside mm | Wall thickness mm | d1 outside mm | L mm   | Fm mm          | a mm           | l mm     |
| 33,7         | 3,2               | 56,0          | 275    | 50             | 1,9            | 33       |
| 42,4         | 3,2               | 73,0          | 275    | 50             | 2,1            | 33       |
| 48,3         | 3,2               | 73,0          | 275    | 50             | 2,1            | 33       |
| 60,3         | 3,2               | 86,0          | 275    | 50             | 2,1            | 33       |
| 76,1         | 3,2               | 106,0         | 335    | 70             | 2,3            | 35       |
| 88,9         | 3,2               | 122,0         | 345    | 70             | 2,5            | 37       |
| 114,3        | 3,6               | 139,7         | 390    | 80             | 2,5            | 30       |
| 139,7        | 3,6               | 168,3         | 400    | 80             | 2,8            | 31       |
| 168,3        | 4,0               | 193,7         | 475    | 100            | 2,8            | 33       |
| 219,1        | 4,5               | 268,0         | 515    | 120            | 3,2            | 40       |
| 273,0        | 5,0               | 323,9         | 515    | 120            | 4,0            | 40       |
| 323,9        | 5,6               | 355,6         | 660    | 140            | 4,0            | 40       |
| 355,6        | 5,6               | 406,4         | 650    | 140            | 4,2            | 60       |
| 406,4        | 6,3               | 457,2         | 650    | 140            | 4,5            | 50       |
| 457,2        | 6,3               | 508,0         | 660    | 150            | 5,7            | 50       |
| 508,0        | 6,3               | 560,0         | 660    | 150            | 5,7            | 50       |

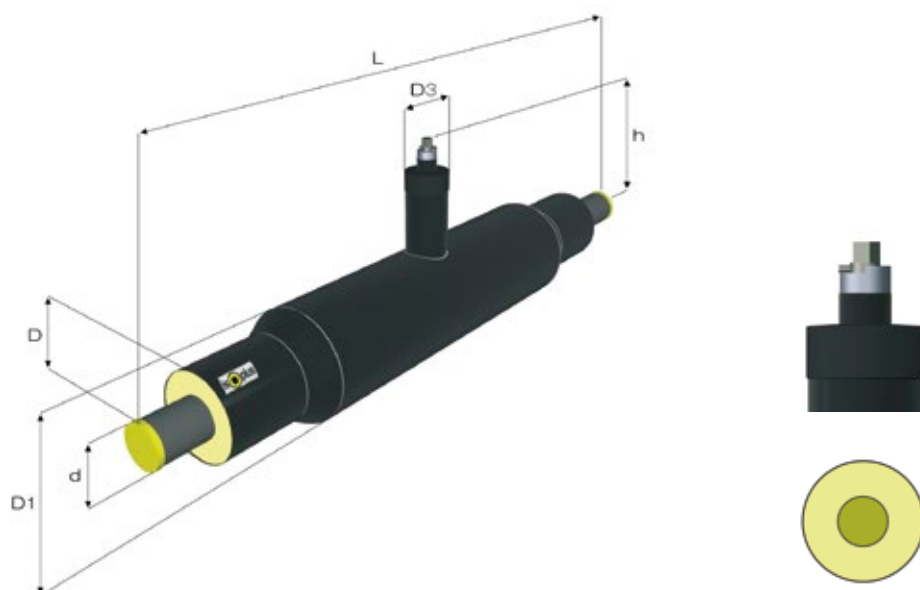
Operating pressure max. 16 bar.  
 Test pressure max. 24 bar at 20°C.  
 25 bar available to order.  
 Can be supplied prestressed.

#### Important:

Remember to use long joint casings where prestressing elements are used.

## Shut-off valves - single

5.9



### Shut-off valves - single

|              | Series 1     |              | Series 2     |              | Series 3     |              |            |      |                     |        |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|------|---------------------|--------|
| Steel pipe   | Jacket pipe  | Jacket pipe  | Jacket pipe  | Jacket pipe  | Jacket pipe  | Jacket pipe  | Valve stem |      |                     | Length |
| d outside mm | d outside mm | d outside mm | d outside mm | d outside mm | d outside mm | d outside mm | D3 mm      | h mm | hex. valve top mm   | L mm   |
| 26,9         | 90           | 110          | 110          | 110          | 125          | 125          | 110        | 480  | 19                  | 1510   |
| 33,7         | 90           | 110          | 110          | 110          | 125          | 125          | 110        | 480  | 19                  | 1510   |
| 42,4         | 110          | 125          | 125          | 125          | 140          | 140          | 110        | 485  | 19                  | 1510   |
| 48,3         | 110          | 125          | 125          | 125          | 140          | 140          | 110        | 494  | 19                  | 1510   |
| 60,3         | 125          | 140          | 140          | 140          | 160          | 160          | 110        | 500  | 19                  | 1510   |
| 76,1         | 140          | 160          | 160          | 180          | 180          | 180          | 110        | 505  | 19                  | 1510   |
| 88,9         | 160          | 180          | 180          | 200          | 200          | 200          | 110        | 515  | 19                  | 1510   |
| 114,3        | 200          | 225          | 225          | 225          | 250          | 250          | 140        | 525  | <sup>1)</sup> 27/70 | 1510   |
| 139,7        | 225          | 250          | 250          | 280          | 280          | 280          | 140        | 545  | <sup>1)</sup> 27/70 | 1510   |
| 168,3        | 250          | 280          | 280          | 280          | 315          | 315          | 140        | 565  | <sup>1)</sup> 27/70 | 1510   |
| 219,1        | 315          | 355          | 355          | 355          | 400          | 400          | 140        | 585  | <sup>2)</sup> 50/90 | 1510   |
| 273,0        | 400          | 450          | 450          | 450          | 500          | 500          | 180        | 614  | <sup>2)</sup> 50/90 | 1510   |
| 323,9        | 450          | 560          | 500          | 560          | 560          | 560          | 180        | 664  | <sup>2)</sup> 50/90 | 1810   |

<sup>1)</sup> Backstop can be used here. Backstops are supplied separately, depending on the supplier.

<sup>2)</sup> Backstop must be used here.

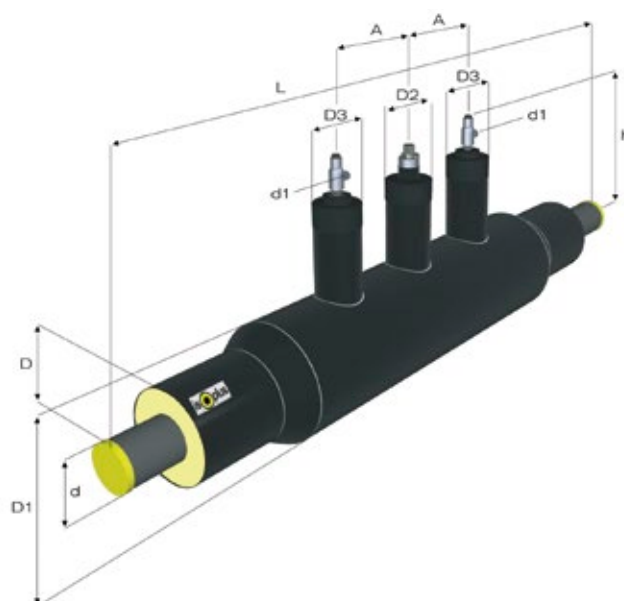
**Important:** Shut-off valves must be open during welding.

Pre-insulated shut-off valves are produced in accordance with DS/EN 13941-1. Pre-insulated shut-off valves are maintenance-free ball valves with polished stainless ball, spring-loaded teflon seats and fully welded housing. Shut-off valves have a reduced through conduit. The stem top is made of stainless steel. Valves are available with larger dimensions and other stem heights (h). Hydraulically operated valves are available. High-stress valves supplied as standard.

D1, L and h may vary depending on make.

## Shut-off valves with 2 vent/drain valves - single

5.9.1



### Shut-off valves with 2 vent/drain valves - single

|              | Series 1     |               | Series 2     |               | Series 3     |               |                       |       |       |      |      |                     |        |
|--------------|--------------|---------------|--------------|---------------|--------------|---------------|-----------------------|-------|-------|------|------|---------------------|--------|
| Steel pipe   | Jacket pipe  | Jacket pipe   | Jacket pipe  | Jacket pipe   | Jacket pipe  | Jacket pipe   | Valve stem/vent/drain |       |       |      |      |                     | Length |
| d outside mm | D outside mm | D1 outside mm | D outside mm | D1 outside mm | D outside mm | D1 outside mm | D2 mm                 | D3 mm | d1 mm | h mm | A mm | hex. valve top mm   | L mm   |
| 26,9         | 90           | 110           | 110          | 110           | 125          | 125           | 110                   | 110   | 33,7  | 480  | 250  | 19                  | 1510   |
| 33,7         | 90           | 110           | 110          | 110           | 125          | 125           | 110                   | 110   | 33,7  | 480  | 250  | 19                  | 1510   |
| 42,4         | 110          | 125           | 125          | 125           | 140          | 140           | 110                   | 110   | 33,7  | 485  | 250  | 19                  | 1510   |
| 48,3         | 110          | 125           | 125          | 125           | 140          | 140           | 110                   | 125   | 48,3  | 494  | 250  | 19                  | 1510   |
| 60,3         | 125          | 140           | 140          | 140           | 160          | 160           | 110                   | 125   | 48,3  | 500  | 250  | 19                  | 1510   |
| 76,1         | 140          | 160           | 160          | 180           | 180          | 180           | 110                   | 125   | 48,3  | 505  | 250  | 19                  | 1510   |
| 88,9         | 160          | 180           | 180          | 200           | 200          | 200           | 110                   | 125   | 48,3  | 515  | 250  | 19                  | 1510   |
| 114,3        | 200          | 225           | 225          | 225           | 250          | 250           | 140                   | 140   | 60,3  | 525  | 250  | <sup>1)</sup> 27/70 | 1510   |
| 139,7        | 225          | 250           | 250          | 280           | 280          | 280           | 140                   | 140   | 60,3  | 545  | 250  | <sup>1)</sup> 27/70 | 1510   |
| 168,3        | 250          | 280           | 280          | 280           | 315          | 315           | 140                   | 140   | 60,3  | 565  | 250  | <sup>1)</sup> 27/70 | 1510   |
| 219,1        | 315          | 355           | 355          | 355           | 400          | 400           | 140                   | 140   | 60,3  | 585  | 250  | <sup>2)</sup> 50/90 | 1510   |
| 273,0        | 400          | 450           | 450          | 450           | 500          | 500           | 180                   | 140   | 60,3  | 614  | 305  | <sup>2)</sup> 50/90 | 1510   |
| 323,9        | 450          | 560           | 500          | 560           | 560          | 560           | 180                   | 140   | 60,3  | 664  | 370  | <sup>2)</sup> 50/90 | 1810   |

<sup>1)</sup> Backstop can be used here. Backstops are supplied separately, depending on the supplier.

<sup>2)</sup> Backstop must be used here.

**Important:** Shut-off valves must be open during welding.

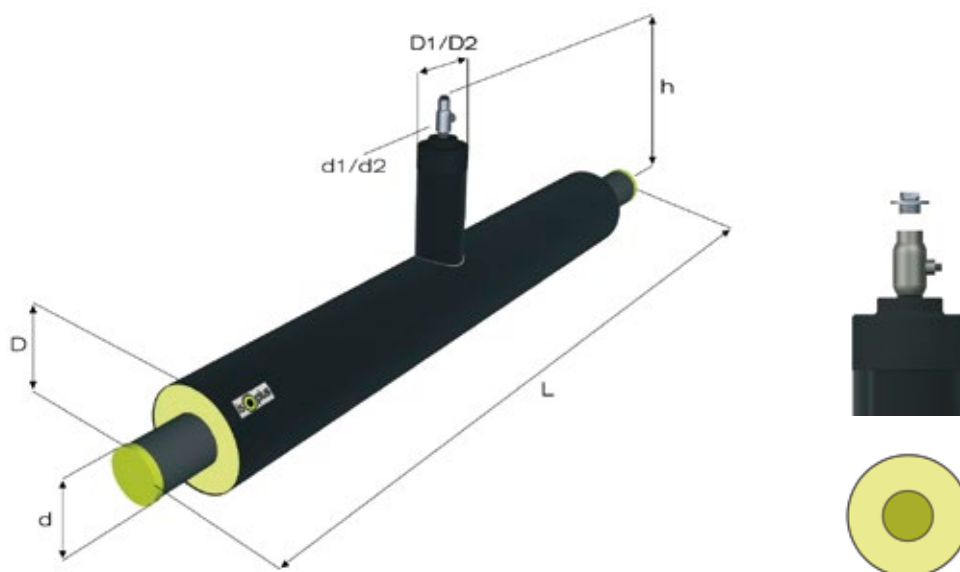
Pre-insulated shut-off valves are produced in accordance with DS/EN 13941-1. Pre-insulated shut-off valves are maintenance-free ball valves with polished stainless ball, spring-loaded teflon seats and fully welded housing. Shut-off valves have a reduced through conduit. The stem top is made of stainless steel. Valves are available with larger dimensions and other stem heights (h). Also available with 1 vent/drain valve. High-stress valves supplied as standard. D1, A, h and L may vary depending on make.

Service valves are stainless with inside pipe thread.

Ø 33,7 - 1"

Ø 48.3 - 1 1/2"

Ø 60.3 - 2"



## Vent/drain valves - single

|              | Series 1     | Series 2     | Series 3     |       |       |             |       |            |        |
|--------------|--------------|--------------|--------------|-------|-------|-------------|-------|------------|--------|
| Steel pipe   | Jacket pipe  | Jacket pipe  | Jacket pipe  | Vent  | Drain | Jacket pipe |       | Vent/drain | Length |
| d outside mm | D outside mm | D outside mm | D outside mm | d1 mm | d2 mm | D1 mm       | D2 mm | h mm       | L mm   |
| 26,9         | 90           | 110          | 125          | 26,9  | 26,9  | 110         | 110   | 500        | 1000   |
| 33,7         | 90           | 110          | 125          | 33,7  | 33,7  | 110         | 110   | 500        | 1000   |
| 42,4         | 110          | 125          | 140          | 33,7  | 42,4  | 110         | 110   | 500        | 1000   |
| 48,3         | 110          | 125          | 140          | 33,7  | 48,3  | 110         | 125   | 500        | 1000   |
| 60,3         | 125          | 140          | 160          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 76,1         | 140          | 160          | 180          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 88,9         | 160          | 180          | 200          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 114,3        | 200          | 225          | 250          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 139,7        | 225          | 250          | 280          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 168,3        | 250          | 280          | 315          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 219,1        | 315          | 355          | 400          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 273,0        | 400          | 450          | 500          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |
| 323,9        | 450          | 500          | 560          | 33,7  | 60,3  | 110         | 140   | 500        | 1000   |

Vent/drain valves are also available with other angles and leg lengths.