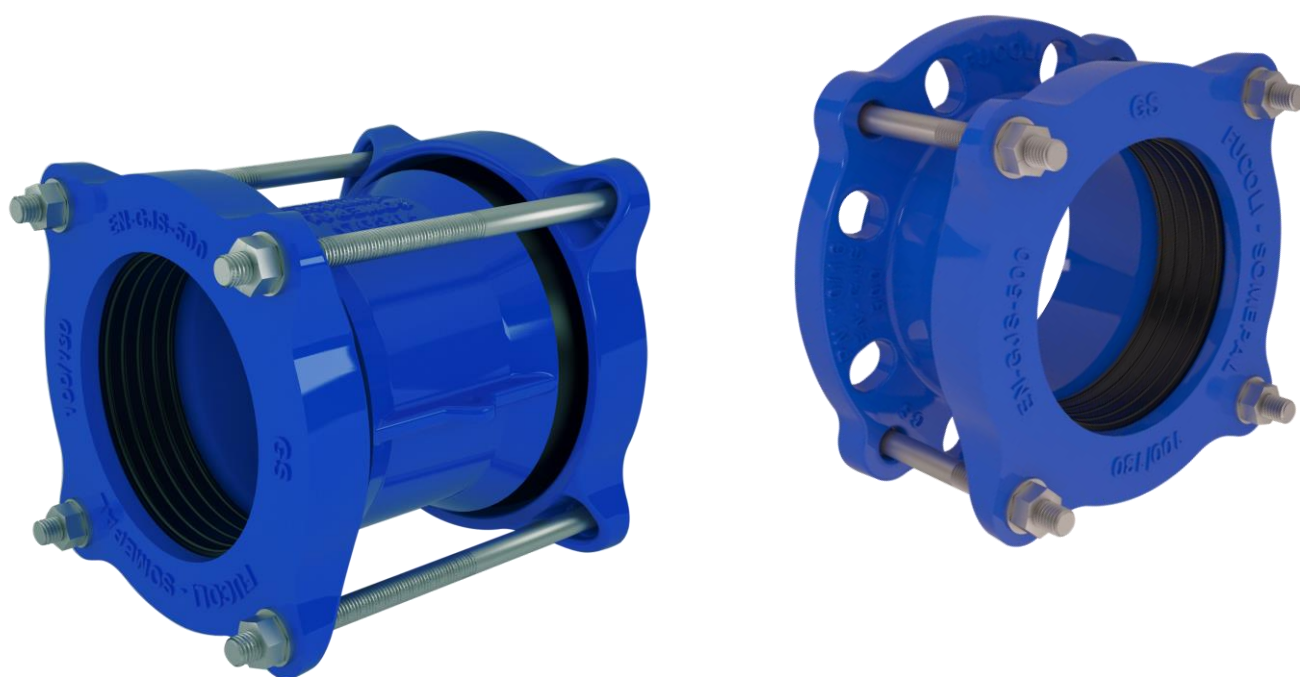




Fucoli Somepal
FUNDIÇÃO DE FERRO, S.A.

DESDE
SINCE 1946

OPERATION MANUAL



LARGE TOLERANCE MULTIMATERIAL COUPLING LARGE TOLERANCE MULTIMATERIAL COUPLING FLANGE ADAPTOR



Headquarter: Branch office:

| | |
|---|---|
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|---|---|

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1. DESCRIPTION

The **MULTIMATERIAL COUPLING** provides a connection of different external dimension and/or different materials.

The coupling can be used in connection of conduits above or below the surface, without necessarily need to change any of its components.

It allows the connection between pipes with different external diameters and different material (e.g. PVC, cast iron, steel and cement pipes). It has two sealing rings, with incorporated orings, which ensures an extremely effective seal.

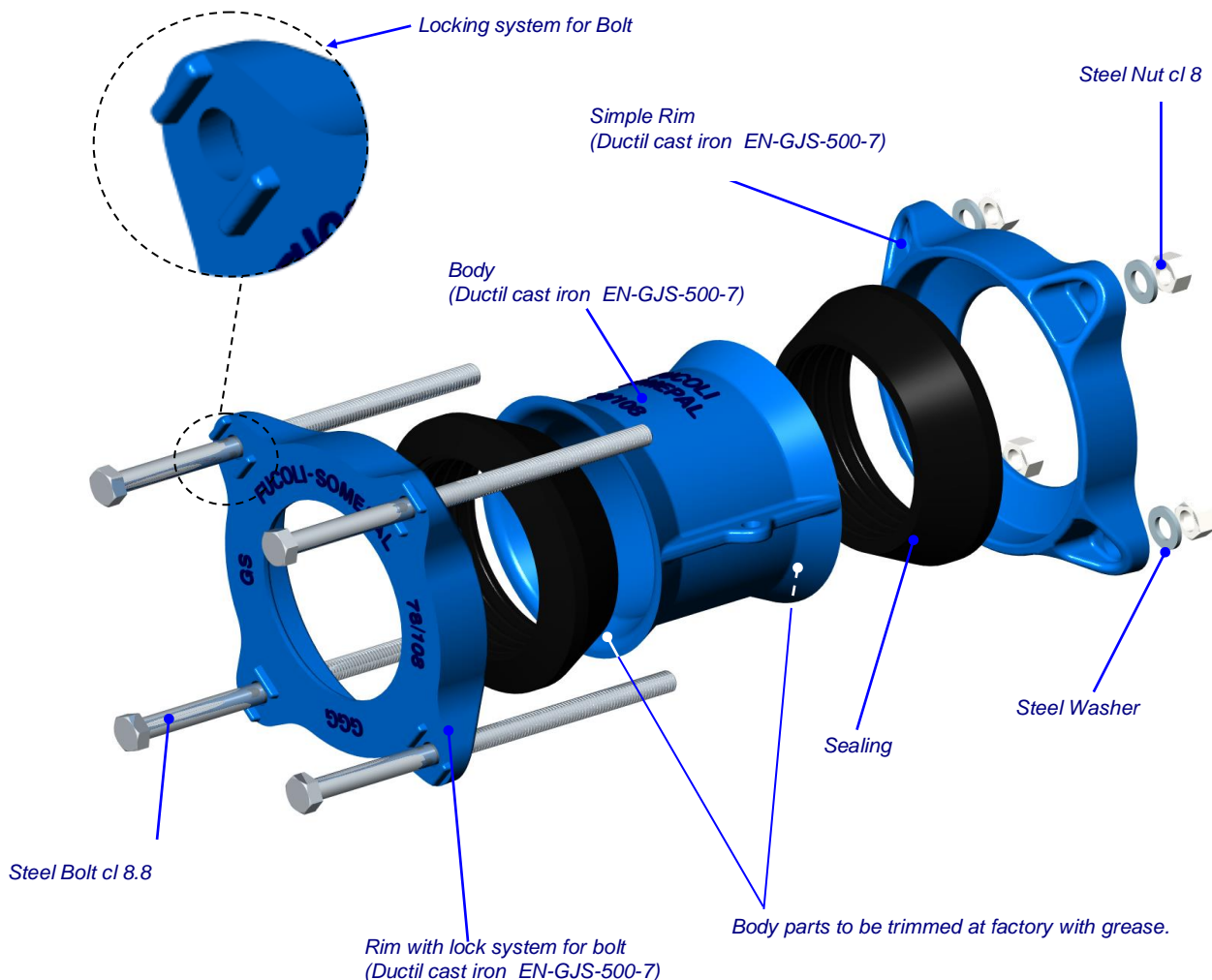
2. MATERIALS

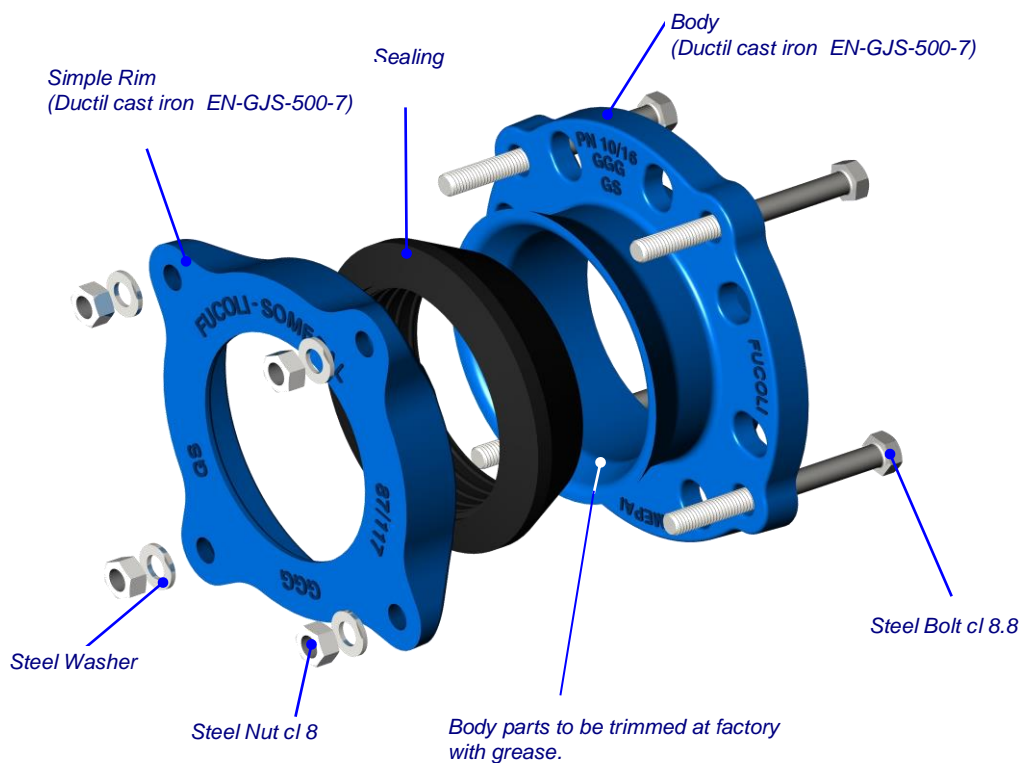
EPDM elastomer seals approved for drinking water, complying with the specifications of the standard EN 681-1 and Annex ZA with CE marking.

Rims and body in EN-GJS-500-7 Ductile Cast Iron according to the standard EN 1563.

Bolts in steel cl.8.8, nuts in cl 8 and washers in steel. Fastenings with Geomet coating.

The epoxy coating is applied according to DIN 30677 and approved by GSK (GSK-ID: 1247) according to the specification RAL-GZ662 and with the with thicken not less than 250 microns.





Other features:

MOP (Maximum operating pressure)

PN 10 (10 bar)

PN 16 (16 bar)

Operating temperature:

From 0°C to 70°C

3. POTENTIAL RISK IDENTIFICATION

There were not identified any potential use risks during its development. Its commercialization and after-sales service is not associated or realize any assembly or operational risks, however should be observed the follow situations:



DANGER OF INJURY HANDSOME DUE TO THE INTRODUCTION OF HANDS

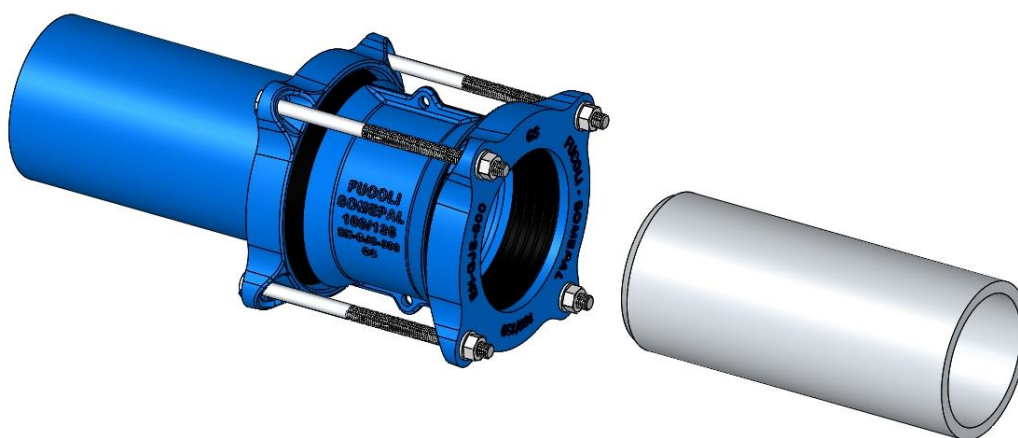
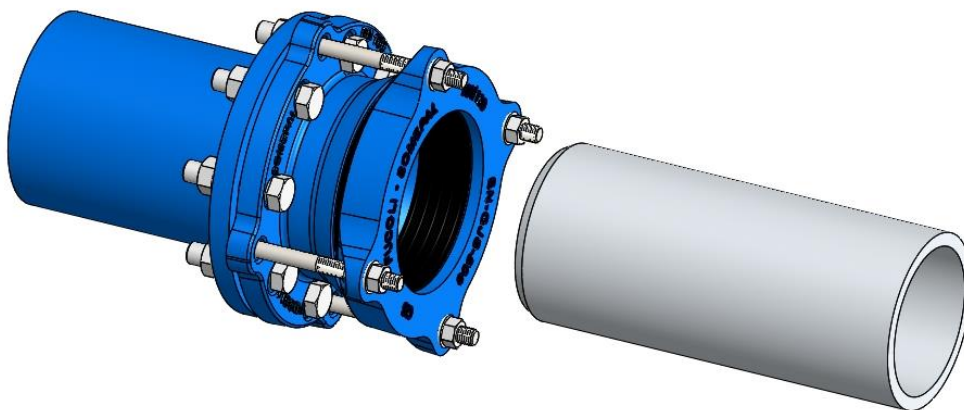
While tightening, protect your hands to nor threshed that.

4. INSTALLATION/HANDLING

Knowing the size and type of pipe to be connected, select the joint with the most suitable range.

Check the condition of the pipe ends to be connected, ensure that they are clean and free of any defects that may affect the gasket seal such as waste, cuts, burrs, etc.

The pipes should be placed within the aligned joint with each other and concentric with the ends.

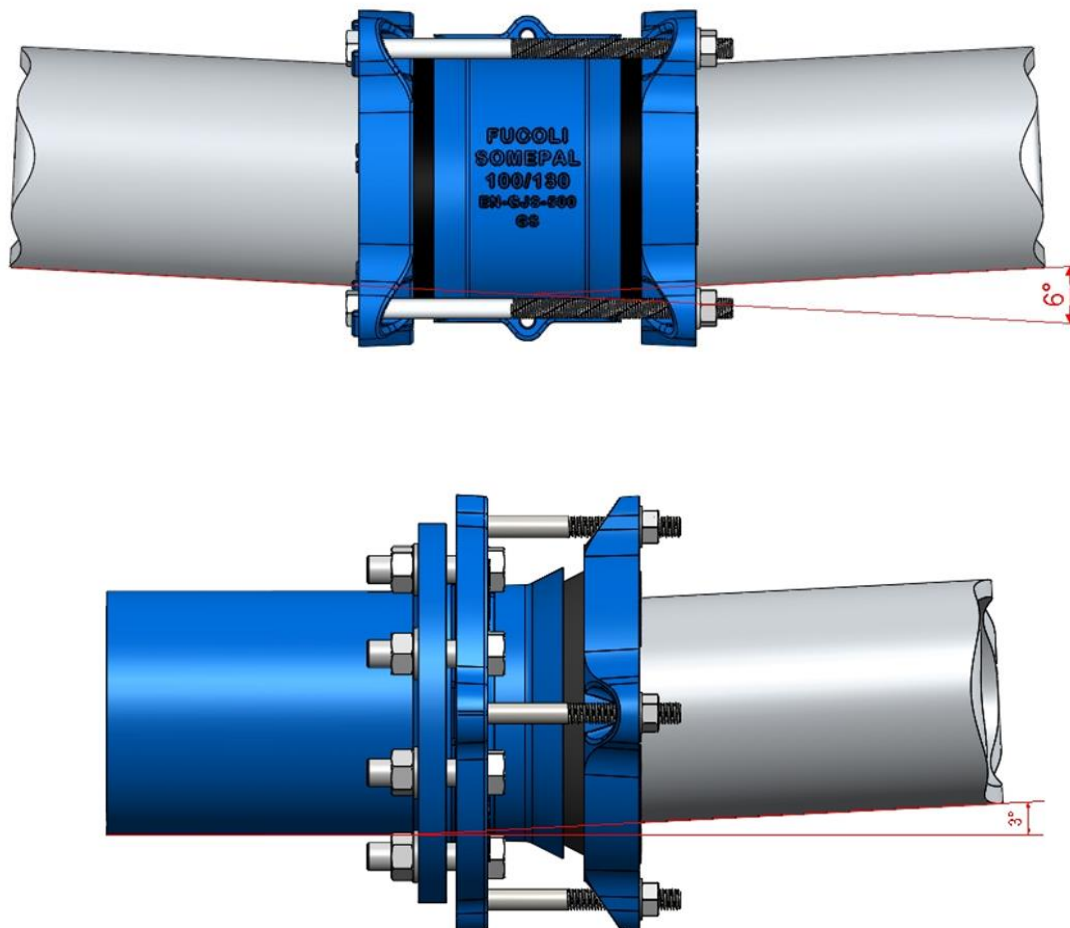


The tightening of the screws should be made in accordance with the torques on the below table, with the grip being made diametrically opposite to each other, giving each nut one or two turns at a time to ensure that the sealing system and fixing is tightened evenly.

| REFERENCE | BOLT | BINARY (Nm) |
|-----------|------|-------------|
| 25/55 | M 12 | 60 – 80 |
| 39/69 | | |
| 46/76 | | |
| 48/78 | | |
| 57/87 | | |
| 63/93 | | |
| 78/108 | | |
| 87/117 | | |
| 100/130 | | |
| 108/138 | | |
| 117/147 | | |
| 129/159 | | |
| 138/168 | | |
| 152/182 | M 16 | 100 – 140 |
| 159/189 | | |
| 172/202 | | |
| 186/216 | | |
| 198/228 | | |
| 218/253 | | |
| 245/280 | | |
| 266/301 | | |
| 297/332 | | |
| 314/349 | | |
| 343/378 | | |
| 375/410 | | |
| 396/431 | | |
| 420/455 | | |
| 457/492 | | |
| 497/532 | | |
| 525/560 | | |
| 533/568 | | |
| 575/610 | | |
| 625/695 | | |
| 710/745 | | |
| 724/765 | | |
| 810/845 | | |
| 829/870 | | |
| 934/975 | M 20 | 160 - 200 |
| 1034/1075 | | |
| 1219/1260 | | |

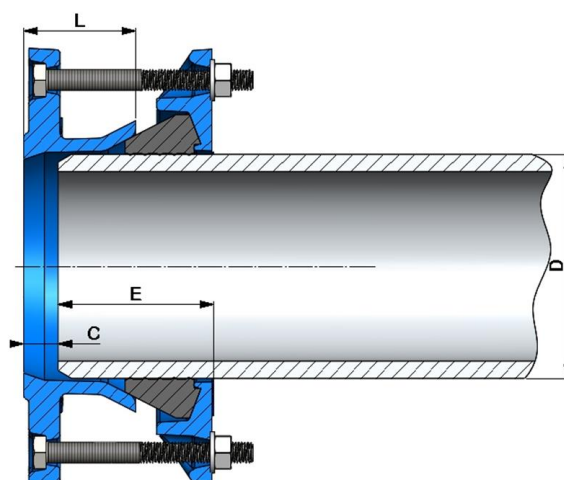
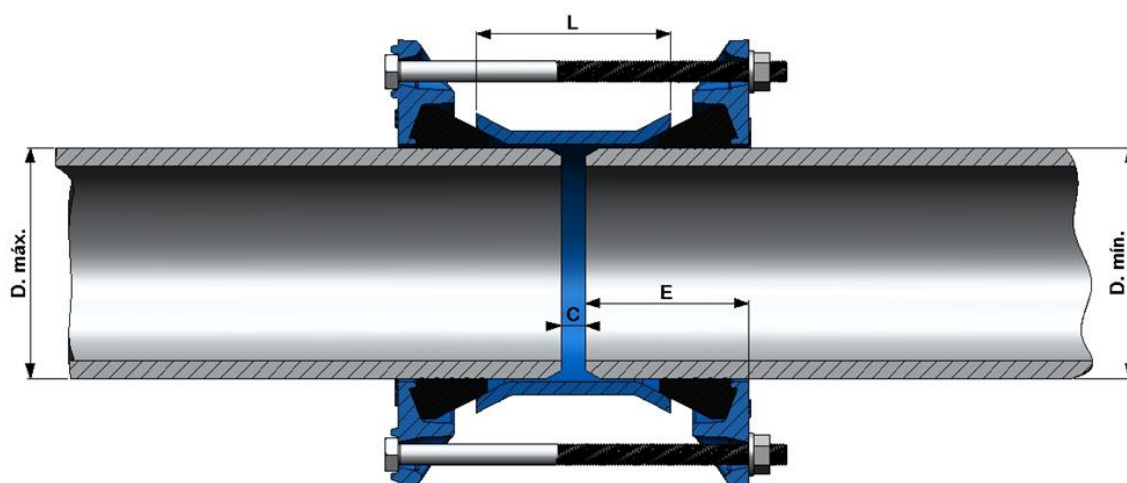
Pipe deflection angle:

The **MULTIMATERIAL COUPLINGS**, in addition to allowing the pipe coupling of different material and diameters, also allows a maximum deflection on the axis of symmetry, which may go up to 6° if the are assembled pipes of maximum diameter of the coupling.



To facilitate the installation shall be marked the minimum and maximum depths of the pipe ends in accordance with the amounts as shown in the table "E".

The pipes must be inserted into the coupling to a depth comprised between the minimum and maximum range as shown in the table.



| D min./máx. | code | L | E | | C | PVC | ductile iron | | steel | fibrociment (Ø ext. pipe) | | | | | |
|----------------|----------|-----|------|--------|----|----------------|----------------|----------------|------------------------|------------------------------|------------|------------|------------|--------------|------------|
| | | | min. | min./m | | (Ø ext. pipe) | DN | (Ø ext. pipe) | (Ø ext. pipe) | class DN | 6 | 12 | 18 | 24 | 30 |
| 25/55 | 10900000 | 110 | 87 | 92 | 15 | 25 32 50 | - - - | - - - | 42.4 48.3 | - | - | - | - | - | - |
| 39/69 | 10900010 | 110 | 87 | 92 | 15 | 50 63 | 40 50 | 56 66 | 42.4 48.3 60.3 | 50 | 66 | 66 | 66 | 66 | 66 |
| 46/76 | 10900020 | 110 | 87 | 92 | 15 | 63 75 | 40 50 | 56 66 | 48.3 60.3 | 50 60 | 66 76 | 66 76 | 66 76 | 66 76 | 66 - |
| 48/78 | 10900021 | 110 | 88 | 93 | 15 | 63 75 | 40 50 60 | 56 66 77 | 48.3 60.3 76.1 | 50 60 | 66 76 | 66 76 | 66 76 | 66 76 | 66 78 |
| 57/87 | 10900030 | 110 | 88 | 93 | 15 | 63 75 | 50 60 65 | 66 77 82 | 60.3 76.1 | 50 60 | 66 76 | 66 76 | 66 76 | 66 76 | 66 78 |
| 63/93 | 10900031 | 110 | 88 | 93 | 15 | 63 75 90 | 50 60 65 | 66 77 82 | 76.1 88.9 | 50 60 | 66 76 | 66 76 | 66 76 | 66 76 | 66 78 |
| 78/108 | 10900040 | 110 | 86 | 91 | 15 | 90 | 65 80 | 82 98 | 88.9 101.6 | 60 80 | - 96 | - 96 | - 96 | - 98 | 78 104 |
| 87/117 | 10900050 | 110 | 86 | 91 | 15 | 90 110 | 80 | 98 | 88.9 101.6 114.3 | 80 100 | 96 116 | 96 116 | 96 - | 98 - | 104 - |
| 100/130 | 10900055 | 110 | 87 | 92 | 15 | 110 125 | 100 | 118 | 101.6 114.3 | 80 100 | - 116 | - 116 | - 118 | - 122 | 104 128 |
| 108/138 | 10900056 | 110 | 89 | 94 | 15 | 110 125 | 100 | 118 | 114.3 | 100 | 116 | 116 | 118 | 122 | 128 |
| 117/147 | 10900060 | 120 | 92 | 97 | 15 | 125 140 | 100 125 | 118 144 | 139.7 | 100 125 | - 141 | - 141 | 118 145 | 122 - | 128 - |
| 129/159 | 10900070 | 120 | 92 | 97 | 15 | 140 | 125 | 144 | 139.7 | 125 | 141 | 141 | 145 | 151 | 157 |
| 138/168 | 10900080 | 120 | 92 | 97 | 15 | 140 160 | 125 | 144 | 139.7 | 125 150 | 141 168 | 141 168 | 145 - | 151 - | 157 - |
| 152/182 | 10900090 | 120 | 92 | 97 | 15 | 160 180 | 150 | 170 | 168.3 177.8 | 125 150 | - 168 | - 168 | - 174 | - 180 | 157 - |
| 159/189 | 10900091 | 120 | 94 | 99 | 15 | 160 180 | 150 | 170 | 168.3 177.8 | 150 | 168 | 168 | 174 | 180 | 188 |
| 172/202 | 10900095 | 120 | 92 | 97 | 15 | 180 200 | - | - | 177.8 193.7 | 150 | - | - | 174 | 180 | 188 |
| 186/216 | 10900100 | 120 | 92 | 97 | 15 | 200 | - | - | 193.7 | 150 | - | - | - | - | 188 |
| 198/228 | 10900110 | 120 | 92 | 97 | 15 | 200 225 | 200 | 222 | 219.1 | 200 | 220 | 222 | 228 | - | - |
| 218/253 | 10900120 | 130 | 102 | 107 | 20 | 225 250 | 200 | 222 | 219.1 244.5 | 200 | 220 | 222 | 228 | 238 | 250 |
| 245/280 | 10900130 | 130 | 102 | 107 | 20 | 250 280 | 250 | 274 | 273 | 200 250 | - 272 | - 276 | - - | - - | 250 - |
| 266/301 | 10900140 | 150 | 102 | 107 | 20 | 280 | 250 | 274 | 273 | 250 | 272 | 276 | 282 | 294 | - |
| 297/332 | 10900143 | 150 | 115 | 120 | 20 | 315 | 300 | 326 | 323.9 | 250 300 | - 324 | - 330 | - - | - - | 306 - |
| 314/349 | 10900150 | 150 | 115 | 120 | 20 | 315 | 300 | 326 | 323.9 | 300 | 324 | 330 | 338 | - | - |
| 343/378 | 10900151 | 150 | 117 | 122 | 20 | 355 | 350 | 378 | 355.6 | 300 350 | - 376 | - - | - - | 352 - | 366 - |
| 375/410 | 10900152 | 150 | 118 | 123 | 20 | 400 | 350 | 378 | 406.4 | 350 | 376 | 384 | 396 | 410 | - |
| 396/431 | 10900153 | 200 | 138 | 143 | 30 | 400 | 400 | 429 | 406.4 | 350 400 | - 428 | - - | - - | - - | 426 - |
| 420/455 | 10900154 | 200 | 144 | 149 | 30 | - | 400 | 429 | - | 400 | - | 438 | 452 | - | - |
| 449/484 | 10900163 | 200 | 144 | 149 | 30 | - | 450 | 480 | 457.0 | 400 450 | - 482 | - - | - - | 470 - | 488 - |
| 457/492 | 10900155 | 200 | 144 | 149 | 30 | - | 450 | 480 | 457.0 | 400 450 | - 482 | - 492 | - - | 470 - | 488 - |
| 497/532 | 10900156 | 200 | 144 | 149 | 30 | 500 | 500 | 532 | 508 | 450 | - | - | 512 | 532 | - |
| 501/540 | 10900165 | 200 | 164 | 169 | 30 | - | 500 | 532 | 508 | 500 | 536 | - | - | - | - |
| 525/560 | 10900149 | 200 | 144 | 149 | 30 | 560 | 500 | 532 | 559 | 450 500 | - 536 | - 548 | - - | - - | 548 - |
| 533/568 | 10900157 | 200 | 144 | 149 | 30 | 560 | - | - | 559 | 500 | 536 | 548 | 568 | - | - |
| 575/610 | 10900158 | 200 | 144 | 149 | 30 | - | - | - | 610 | 500 | - | - | - | 590 | 608 |
| 625/660 | 10900159 | 200 | 144 | 149 | 30 | 630 | 600 | 635 | 660 | 600 | 644 | 660 | - | - | - |
| 660/695 | 10900160 | 200 | 149 | 154 | 30 | - | - | - | 660 | 600 | - | - | 674 | 694 | - |
| 710/745 | 10900166 | 200 | 163 | 168 | 30 | 710 | 700 | 738 | 711.0 | 600 | - | - | - | - | 714 |
| 724/765 | 10900168 | 200 | 163 | 168 | 30 | - | 700 | 738 | 762.0 | 700 | 754 | - | - | - | - |
| 810/845 | 10900173 | 200 | 166 | 171 | 30 | - | 800 | 842 | 813.0 | 700 | - | - | - | - | 828 |
| 829/870 | 10900175 | 200 | 163 | 168 | 30 | - | 800 | 842 | 864.0 | 800 | 852 | - | - | - | - |
| 905/946 | 10900178 | 250 | 189 | 194 | 35 | - | 900 | 945 | - | 800 | - | - | - | - | 946 |
| 934/975 | 10900183 | 250 | 188 | 193 | 35 | - | 900 | 945 | - | 800 900 | - 960 | - - | - - | - - | 946 - |
| 1034/1075 | 10900189 | 250 | 188 | 193 | 35 | - | 1000 | 1048 | 1067.0 | 900 1000 | - - | - - | - - | 1050 1066 | - |
| 1219/1260 | 10900191 | 250 | 188 | 193 | 35 | - | 1200 | 1255 | 1219.0 | - | - | - | - | - | - |

| DN | D min./máx. | code | | L | E | | C | PVC | ductile iron | | steel | fibrociment | | | | | |
|---------|----------------|----------|----------|-----|------|--------|----|----------------|----------------|----------------|------------------------|-------------|---------------|-----------|------------|--------------|------------|
| | | PN 10 | PN16 | | min. | min./m | | (Ø ext. pipe) | DN | (Ø ext. pipe) | (Ø ext. pipe) | class | (Ø ext. pipe) | | | | |
| | | | | | | | | | | | | DN | 6 | 12 | 18 | 24 | 30 |
| 40 | 25/55 | 10900200 | 10900200 | 65 | 87 | 92 | 15 | 25 32 50 | - - - | - - - | 42.4 48.3 | - | - | - | - | - | - |
| 50 | 39/69 | 10900201 | 10900201 | 65 | 87 | 92 | 15 | 50 63 | 40 50 | 56 66 | 42.4 48.3 60.3 | 50 | 66 | 66 | 66 | 66 | 66 |
| 50 | 46/76 | 10900202 | 10900202 | 65 | 87 | 92 | 15 | 63 75 | 40 50 | 56 66 | 48.3 60.3 | 50 60 | 66 76 | 66 76 | 66 76 | 66 76 | 66 - |
| 60/65 | 57/87 | 10900203 | 10900203 | 65 | 88 | 93 | 15 | 63 75 | 50 60 65 | 66 77 82 | 60.3 76.1 | 50 60 | 66 76 | 66 76 | 66 76 | 66 76 | 66 78 |
| 80 | 78/108 | 10900204 | 10900204 | 65 | 86 | 91 | 15 | 90 | 65 80 | 82 98 | 88.9 101.6 | 60 80 | - 96 | - 96 | - 96 | - 98 | 78 104 |
| 80/100 | 87/117 | 10900209 | 10900209 | 65 | 86 | 91 | 15 | 90 110 | 80 | 98 | 88.9 101.6 114.3 | 80 100 | 96 116 | 96 116 | 96 - | 98 - | 104 - |
| 100 | 87/117 | 10900205 | 10900205 | 65 | 86 | 91 | 15 | 90 110 | 80 | 98 | 88.9 101.6 114.3 | 80 100 | 96 116 | 96 116 | 96 - | 98 - | 104 - |
| 100 | 100/130 | 10900206 | 10900206 | 65 | 87 | 92 | 15 | 110 125 | 100 | 118 | 101.6 114.3 | 80 100 | - 116 | - 116 | - 118 | - 122 | 104 128 |
| 100 | 108/138 | 10900211 | 10900211 | 65 | 89 | 94 | 15 | 110 125 | 100 | 118 | 114.3 | 100 | 116 | 116 | 118 | 122 | 128 |
| 125 | 117/147 | 10900207 | 10900207 | 70 | 92 | 97 | 15 | 125 140 | 100 125 | 118 144 | 139.7 | 100 125 | - 141 | - 141 | 118 145 | 122 - | 128 - |
| 125/150 | 129/159 | 10900208 | 10900208 | 70 | 92 | 97 | 15 | 140 | 125 | 144 | 139.7 | 125 | 141 | 141 | 145 | 151 | 157 |
| 150 | 152/182 | 10900210 | 10900210 | 75 | 92 | 97 | 15 | 160 180 | 150 | 170 | 168.3 177.8 | 125 150 | - 168 | - 168 | - 174 | - 180 | 157 - |
| 200 | 186/216 | 10900212 | 10900212 | 75 | 92 | 97 | 15 | 200 | - | - | 193.7 | 150 | - | - | - | - | 188 |
| 200 | 198/228 | 10900213 | 10900213 | 75 | 92 | 97 | 15 | 200 225 | 200 | 222 | 219.1 | 200 | 220 | 222 | 228 | - | - |
| 250 | 245/280 | 10900215 | 10900215 | 85 | 102 | 107 | 20 | 250 280 | 250 | 274 | 273 | 200 250 | - 272 | - 276 | - - | - - | 250 - |
| 250 | 266/301 | 10900216 | 10900216 | 90 | 102 | 107 | 20 | 280 | 250 | 274 | 273 | 250 | 272 | 276 | 282 | 294 | - |
| 300 | 314/349 | 10900217 | 10900217 | 90 | 115 | 120 | 20 | 315 | 300 | 326 | 323.9 | 300 | 324 | 330 | 338 | - | - |
| 350 | 343/378 | 10900218 | 10900218 | 90 | 117 | 122 | 20 | 355 | 350 | 378 | 355.6 | 300 350 | - 376 | - - | - - | 352 - | 366 - |
| 350 | 375/410 | 10900219 | 10900219 | 127 | 118 | 123 | 20 | 400 | 350 | 378 | 406.4 | 350 | 376 | 384 | 396 | 410 | - |
| 400 | 396/431 | 10900221 | 10900222 | 127 | 138 | 143 | 30 | 400 | 400 | 429 | 406.4 | 350 400 | - 428 | - - | - - | - - | 426 - |
| 400 | 420/455 | 10900223 | 10900224 | 127 | 144 | 149 | 30 | - | 400 | 429 | - | 400 | - | 438 | 452 | - | - |
| 450 | 457/492 | 10900225 | 10900226 | 127 | 144 | 149 | 30 | - | 450 | 480 | 457.0 | 400 450 | - 482 | - 492 | - - | 470 - | 488 - |
| 500 | 497/532 | 10900227 | 10900228 | 127 | 144 | 149 | 30 | 500 | 500 | 532 | 508 | 450 | - | - | 512 | 532 | - |
| 500 | 533/568 | 10900229 | 10900230 | 127 | 144 | 149 | 30 | 560 | - | - | 559 | 500 | 536 | 548 | 568 | - | - |
| 600 | 625/660 | 10900233 | 10900234 | 130 | 144 | 149 | 30 | 630 | 600 | 635 | 660 | 600 | 644 | 660 | - | - | - |
| 700 | 710/745 | 10900239 | 10900240 | 160 | 163 | 168 | 30 | 710 | 700 | 738 | 711.0 | 600 | - | - | - | - | 714 |
| 800 | 810/845 | 10900241 | 10900242 | 160 | 166 | 171 | 30 | - | 800 | 842 | 813.0 | 700 | - | - | - | - | 828 |
| 900 | 934/975 | 10900235 | 10900236 | 160 | 188 | 193 | 35 | - | 900 | 945 | - | 800 900 | - 960 | - - | - - | - - | 946 - |
| 1000 | 1034/1075 | 10900243 | 10900244 | 160 | 188 | 193 | 35 | - | 1000 | 1048 | 1067.0 | 900 1000 | - - | - - | - - | 1050 1066 | - - |
| 1200 | 1219/1260 | 10900245 | 10900246 | 160 | 188 | 193 | 35 | - | 1200 | 1255 | 1219.0 | - | - | - | - | - | - |

5. MAINTENANCE

The **MULTIMATERIAL COUPLING** is maintenance free.

6. TROUBLESHOOTING

| PROBLEM | POSSIBLE CAUSE | RESOLUTION |
|---|---------------------------|--|
| Lack of sealing | Lack of tightening screws | Tighten the bolts with the specified torque |
| | Seal damaged | Check the sealing condition and replace that if necessary |
| Is applied the indicated torques but continues to exist a lack of sealing | Gasket bad dimensioned | Check if the selected gasket is suitable for the material and if the outside diameter of the pipe is within the tolerance of the selected joint. |