



**JINAN MEIDE CASTING CO., LTD.**

LPCB ©  03



FM

VdS



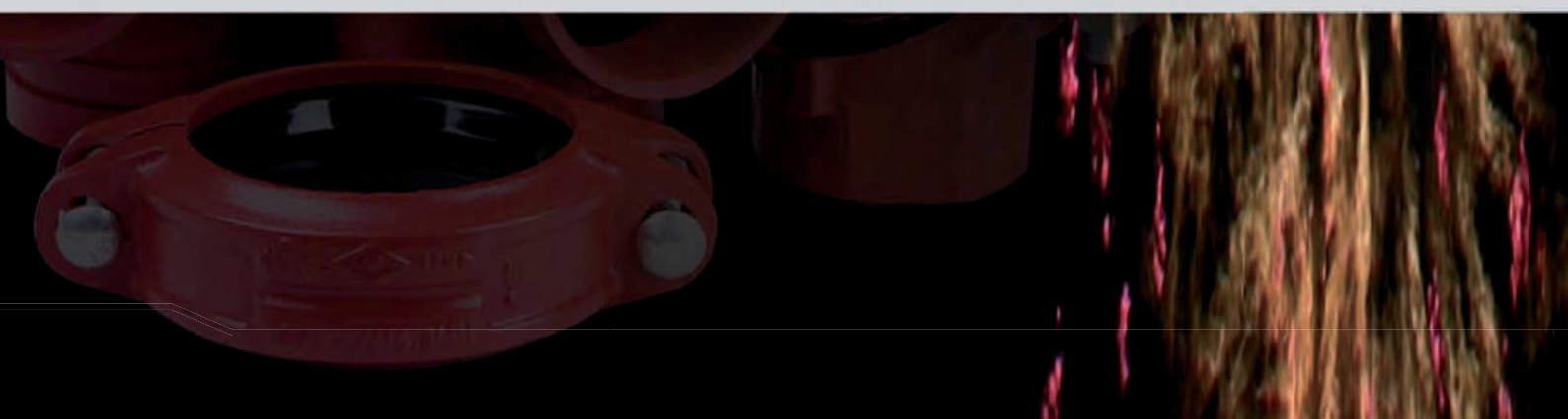
# A

## Company profile

For more than 50 years, Jinan Meide Casting Co., Ltd. Has worked in the plumbing industrial with providing various kinds of plumbing products with 200,000 metric tons annual output. Our Malleable iron pipe fittings' output is listed No.1 in the world, Grooved Fittings and Steel Pipe Nipples output is listed No.1 in China. "Mech" brand is the only China Well-known Trademark in the plumbing lines in China and has been registered over 80 countries.

Jinan Meide Casting Co, Ltd. Took the lead in getting the certificate with ISO9001 quality system and ISO14001 Environmental management system. The "Mech" brand products has been successively approved by National Ode Examination, UL/FM/NSF (USA), CSA/ULC (Canada), DVGW/TUV/VDS (Germany) KS (Korea), TSE (Turkey), JIS (Japan), BSI/LPCB (England), SII (Israel) and ABNT (Brazil).

Jinan Meide Casting Co., Ltd. Mainly manufacture the "Mech" brand Malleable Iron Pipe Fittings, Ductile Iron Grooved Fittings, Steel Pipe Nipples etc., widely used in pipe connections to





convey water, oil, gas and so on. The Products enjoy high prestige in both domestic and international market along with higher market share. “Mech” brand products has been listed and approved by government and important projects. Among them, the Malleable Iron Pipe Fittings have 100,000 metric ton capacity with BS, ANSI/ASME#, DIN and JIS standards serious covering all items and sizes from 1/8” to 6”. The Ductile Iron Grooved Fittings have 40,000 metric tons capacity with sizes from DN 25 to DN530.

In order to meet the requirement from customer and market demand, we have fully comprehensive serious of relative products, including DI threaded fittings, CI threaded fitting, Bronze threaded fittings, Pipe Clamps, hangers and rollers, MI Pipe Clamps, Handle wheels, Electrical connectors, Conduits bodies, Insulator Caps (in MI, DI and CI) and much more. And we are able to develop OEM products with MI, DI and CI material according to customer’s requirement as additional benefit.

Jinan Meide Casting Co., Ltd will continuously inherit traditional aim of “High quality products to win customers to provide a quick and thoughtful service to return customers” and distribute itself to the plumbing connections with 50 years’ experience and professional production technology.



# B

## State of the art equipment

Our company has the state of the art equipment for both production and inspection. We equipped with Denmark DISA automation molding line, China 416 automation molding line, Eirich automation sand mixing line, Induct Electrical furnace, Vertical Machining center, CNC lathe, Proprietary automatic thread machine, automatic box sealing line.





C

Reliable quality assurance



Our laboratory is honored as the Provincial Enterprise Technical Center and conduct full serious of testing and inspection as Leak testing, raw materials receiving inspection, batch chemical composition inspection, Microstructure testing, dimension inspection, first article inspection, in-process inspection and final visual inspection.





For more info

MECH

MEIDE CASTING





# Certificates



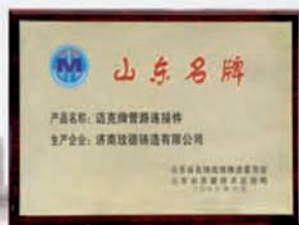




# E The qualification of MECH

Mech Brand has been the national famous brand in china and the Chinese pipe fittings customer satisfaction brand. It was the first choice brand in many overseas markets.

Jinan Meide Casting Co., Ltd. has won the National Excellent Enterprise, the county exported casting leading enterprises Chinese enterprises operating in good faith demonstration unit. China Malleable Iron Pipe Fittings production basis honor etc.





## Technology improvement and sustainable developments

Our company invests in the information technology, standardization, mechanization and automation process, achieved the fundamental change of the mode of production from labor-intensive to technology-intensive.

Company adheres to the sustainable development. We include energy saving and emission reduction the most important task, various environmental indicators all meet the national standards.





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## Ductile iron grooved fitting

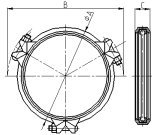
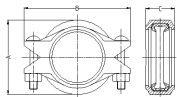
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|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>1N</b><br/>Flexible Coupling</p>           |  <p><b>1NS</b><br/>Light-duty Flexible Coupling</p> |  <p><b>1N</b><br/>Reducing Flexible Coupling</p> |  <p><b>1NS/1NH</b><br/>Light-duty Reducing Flexible Coupling<br/>Extra Heavy Duty Flexible Coupling</p> |  <p><b>1G</b><br/>Rigid Coupling</p>                                                                   |
|  <p><b>1GS</b><br/>Light-duty Rigid Coupling</p> |  <p><b>90</b><br/>90° Elbow</p>                    |  <p><b>90S</b><br/>Light-duty 90° Elbow</p>     |  <p><b>90R</b><br/>90° Reducing Elbow</p>                                                             |  <p><b>105</b><br/>11.25° Elbow</p>                                                                   |
|  <p><b>110</b><br/>22.5° Elbow</p>              |  <p><b>120</b><br/>45° Elbow</p>                  |  <p><b>130</b><br/>Tee</p>                     |  <p><b>130S</b><br/>Light-duty Tee</p>                                                               |  <p><b>130R</b><br/>Reducing Tee</p>                                                                 |
|  <p><b>131R1</b><br/>Reducing Tee</p>           |  <p><b>180</b><br/>Cross</p>                      |  <p><b>180R</b><br/>Reducing Cross</p>         |  <p><b>181</b><br/>Reducing Cross</p>                                                                |  <p><b>3G/3GS</b><br/>Mechanical Tee Grooved Outlet<br/>Light Duty Mechanical Tee Grooved Outlet</p> |

P: Painting      E: Electroplate      B: Black  
S: Epoxy          G: Galvanization      J: Galvanization+Epoxy

|                                                                                                                                                                                         |                                                                                                                                     |                                                                                                                                                                           |                                                                                                                                                                             |                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>3J/3JS</b><br/>Mechanical Tee Threaded Outlet<br/>Light Duty Mechanical Tee Threaded Outlet</p> |  <p><b>3L</b><br/>U-Bolt Mechanical Tee</p>        |  <p><b>4G/4GS</b><br/>Heavy Duty / Standard Duty<br/>Mechanical Cross Grooved Outlet</p> |  <p><b>4J/4JS</b><br/>Heavy Duty / Standard Duty<br/>Mechanical Cross Threaded Outlet</p> |  <p><b>230</b><br/>Grooved Eccentric Reducer</p> |
|  <p><b>230N</b><br/>Grooved Eccentric Reducer<br/>With Female Thread</p>                              |  <p><b>240</b><br/>Grooved Concentric Reducer</p> |  <p><b>240N</b><br/>Grooved Concentric Reducer<br/>With Female Thread</p>               |  <p><b>240W</b><br/>Grooved Concentric Reducer<br/>With Male Thread</p>                  |  <p><b>300</b><br/>Cap</p>                      |
|  <p><b>300</b><br/>Cap</p>                                                                            |  <p><b>300PX</b><br/>Cap</p>                     |  <p><b>321</b><br/>Grooved Flange</p>                                                  |  <p><b>321G</b><br/>Adaptor Flange</p>                                                  |  <p><b>321S</b><br/>Grooved Flange</p>         |
|  <p><b>Blue</b></p>                                                                                  |  <p><b>Galvanized</b></p>                        |  <p><b>Orange</b></p>                                                                  |  <p><b>White</b></p>                                                                    |  <p><b>Red</b></p>                             |

# 1N

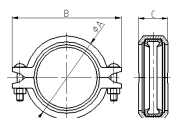
## Flexible Coupling



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions   |              |              | Bolt Size<br>No.-Size<br>mm | Certificate       |
|-----------------------|-------------------|-----------------------------|--------------|--------------|--------------|-----------------------------|-------------------|
|                       |                   |                             | A<br>mm/in   | B<br>mm/in   | C<br>mm/in   |                             |                   |
| 25<br>1               | 33.7<br>1.327     | 500<br>3.45                 | 55<br>2.16   | 92<br>3.62   | 42<br>1.65   | 3/8X55-2                    | UL FM<br>VdS LPCB |
| 32<br>1¼              | 42.4<br>1.669     | 500<br>3.45                 | 65<br>2.56   | 104<br>4.14  | 44<br>1.74   | 3/8X55-2                    | UL FM<br>VdS LPCB |
| 40<br>1½              | 48.3<br>1.900     | 500<br>3.45                 | 70<br>2.75   | 110<br>4.33  | 44<br>1.74   | 3/8X55-2                    | UL FM<br>VdS LPCB |
| 50<br>2               | 60.3<br>2.375     | 500<br>3.45                 | 83<br>3.27   | 124<br>4.88  | 44<br>1.74   | 3/8X55-2                    | UL FM<br>VdS LPCB |
| 65<br>2½              | 73.0<br>2.875     | 500<br>3.45                 | 96<br>3.78   | 143<br>5.63  | 45<br>1.78   | 3/8X55-2                    | UL FM<br>LPCB     |
| 65<br>2½              | 76.1<br>3.000     | 500<br>3.45                 | 100<br>3.94  | 145<br>5.71  | 45<br>1.78   | 3/8X55-2                    | UL FM<br>VdS LPCB |
| 80<br>3               | 88.9<br>3.500     | 500<br>3.45                 | 115<br>4.53  | 160<br>6.30  | 45<br>1.78   | 1/2X70-2                    | UL FM<br>VdS LPCB |
| 100<br>4              | 108.0<br>4.250    | 500<br>3.45                 | 138<br>5.43  | 190<br>7.48  | 50<br>1.97   | 1/2X70-2                    | UL FM<br>LPCB     |
| 100<br>4              | 114.3<br>4.500    | 500<br>3.45                 | 145<br>5.71  | 198<br>7.80  | 50<br>1.97   | 1/2X70-2                    | UL FM<br>VdS LPCB |
| 125<br>5              | 133<br>5.250      | 450<br>3.10                 | 162<br>6.38  | 225<br>8.86  | 51.0<br>2.01 | 5/8X80-2                    | UL FM<br>LPCB     |
| 125<br>5              | 139.7<br>5.500    | 450<br>3.10                 | 169<br>6.65  | 230<br>9.06  | 52<br>2.05   | 5/8X80-2                    | UL FM<br>VdS LPCB |
| 125<br>5              | 141.3<br>5.563    | 450<br>3.10                 | 170<br>6.69  | 232<br>9.13  | 51<br>2.01   | 5/8X80-2                    | UL FM<br>LPCB     |
| 150<br>6              | 159.0<br>6.250    | 450<br>3.10                 | 190<br>7.48  | 254<br>10.00 | 52<br>2.05   | 5/8X85-2                    | UL FM<br>LPCB     |
| 150<br>6              | 165.1<br>6.500    | 450<br>3.10                 | 196<br>7.72  | 260<br>10.24 | 52<br>2.05   | 5/8X85-2                    | UL FM<br>LPCB     |
| 150<br>6              | 168.3<br>6.625    | 450<br>3.10                 | 200<br>7.87  | 265<br>10.43 | 52<br>2.05   | 5/8X85-2                    | UL FM<br>VdS LPCB |
| 200<br>8              | 219.1<br>8.625    | 450<br>3.10                 | 258<br>10.24 | 350<br>13.78 | 60<br>2.37   | 3/4X115-2                   | UL FM<br>VdS LPCB |
| 250<br>10             | 273.0<br>10.750   | 300<br>2.07                 | 337<br>13.27 | 406<br>16.00 | 65<br>2.56   | 7/8X140-2                   | UL FM<br>VdS      |
| 300<br>12             | 323.9<br>12.750   | 300<br>2.07                 | 372<br>14.65 | 460<br>18.11 | 64<br>2.52   | 7/8X140-2                   | UL FM             |
| 350<br>14             | 377.0<br>14.842   | 225<br>1.6                  | 428<br>16.85 | 520<br>20.45 | 72<br>2.85   | 7/8X140-3                   | UL FM             |
| 400<br>16             | 426.0<br>16.772   | 225<br>1.6                  | 476<br>18.74 | 570<br>22.45 | 73<br>2.87   | 7/8X140-3                   | UL FM             |

# 1NS

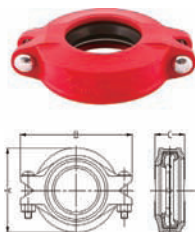
## Light-duty Flexible Coupling



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions   |                |            | Bolt Size<br>No.-Size<br>mm | Certificate |
|-----------------------|-------------------|-----------------------------|--------------|----------------|------------|-----------------------------|-------------|
|                       |                   |                             | A<br>mm/in   | B<br>mm/in     | C<br>mm/in |                             |             |
| 125<br>5              | 139.7<br>5.500    | 450<br>3.10                 | 168<br>6.61  | 228<br>8.98    | 51<br>2.01 | 5/8X80-2                    | UL FM       |
| 165<br>6              | 168.3<br>6.625    | 450<br>3.10                 | 200<br>7.87  | 265<br>10.43   | 52<br>2.05 | 5/8X85-2                    | UL FM       |
| 250<br>10             | 273.0<br>10.750   | 300<br>2.07                 | 320<br>12.60 | 395.0<br>15.55 | 64<br>2.52 | 3/4X120-2                   | UL FM       |

## 1N

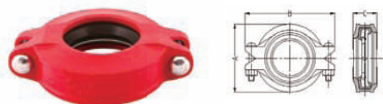
Reducing Flexible Coupling



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in            | Working Pressure<br>PSI/MPa | Dimensions    |              |              | Bolt Size<br>No.-Size<br>mm | Certificate       |
|-----------------------|------------------------------|-----------------------------|---------------|--------------|--------------|-----------------------------|-------------------|
|                       |                              |                             | A<br>mm/in    | B<br>mm/in   | C<br>mm/in   |                             |                   |
| 50X40<br>2X1½         | 60.3X48.3<br>2.375X1.900     | 300<br>2.07                 | 86<br>3.39    | 125<br>4.93  | 44<br>1.74   | 3/8X55-2                    | UL FM<br>LPCB     |
| 65x 25<br>2½x 1       | 73.0X33.7<br>2.875x 1.327    | 300<br>2.07                 | 100<br>3.94   | 138<br>5.44  | 45<br>1.78   | 3/8X55-2                    | UL FM             |
| 65x 50<br>2½x 2       | 73.0X60.3<br>2.875x 2.375    | 300<br>2.07                 | 100<br>3.94   | 138<br>5.43  | 45<br>1.78   | 3/8X55-2                    | UL FM<br>LPCB     |
| 65x 25<br>2½x 1       | 76.1X33.7<br>3.000x 1.327    | 300<br>2.07                 | 102<br>4.02   | 140<br>5.51  | 45<br>1.78   | 3/8X55-2                    | UL FM             |
| 65x 40<br>2½x 1½      | 76.1X48.3<br>3.000x 1.900    | 300<br>2.07                 | 102<br>4.02   | 140<br>5.51  | 45<br>1.78   | 3/8X55-2                    | UL FM<br>VdS LPCB |
| 65x 50<br>2½x 2       | 76.1X60.3<br>3.000x 2.375    | 300<br>2.07                 | 102<br>4.02   | 140<br>5.51  | 45<br>1.78   | 3/8X55-2                    | UL FM<br>LPCB     |
| 80x 25<br>3x 1        | 88.9X33.7<br>3.500x 1.327    | 300<br>2.07                 | 115<br>4.53   | 168<br>6.61  | 46<br>1.81   | 1/2X70-2                    | UL FM             |
| 80x 50<br>3x 2        | 88.9X60.3<br>3.500x 2.375    | 300<br>2.07                 | 115<br>4.53   | 168<br>6.61  | 46<br>1.81   | 1/2X70-2                    | UL FM<br>VdS LPCB |
| 80x 65<br>3x 2½       | 88.9X73.0<br>3.500x 2.875    | 300<br>2.07                 | 115<br>4.53   | 168<br>6.61  | 46<br>1.81   | 1/2X70-2                    | UL FM<br>LPCB     |
| 80x 65<br>3x 2½       | 88.9X76.1<br>3.500x 3.000    | 300<br>2.07                 | 115<br>4.53   | 168<br>6.61  | 46<br>1.81   | 1/2X70-2                    | UL FM<br>VdS LPCB |
| 100x 25<br>4x 1       | 114.3x 33.7<br>4.500x 1.327  | 300<br>2.07                 | 144<br>5.67   | 198<br>7.80  | 50<br>1.97   | 1/2X70-2                    | UL FM             |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375  | 300<br>2.07                 | 144<br>5.67   | 198<br>7.80  | 50<br>1.97   | 1/2X70-2                    | UL FM<br>VdS LPCB |
| 100x 65<br>4x 2½      | 114.3x 73.0<br>4.500x 2.875  | 300<br>2.07                 | 144<br>5.67   | 198<br>7.80  | 50<br>1.97   | 1/2X70-2                    | UL FM<br>LPCB     |
| 100x 65<br>4x 2½      | 114.3x 76.1<br>4.500x 3.000  | 300<br>2.07                 | 144<br>5.67   | 198<br>7.80  | 50<br>1.97   | 1/2X70                      | UL FM<br>VdS LPCB |
| 100x 80<br>4x 3       | 114.3x 88.9<br>4.500x 3.500  | 300<br>2.07                 | 148<br>5.83   | 198<br>7.80  | 50<br>1.97   | 1/2X70                      | UL FM<br>VdS LPCB |
| 150x 100<br>6x 4      | 165.1x 114.3<br>6.500x 4.500 | 300<br>2.07                 | 197<br>7.75   | 260<br>10.24 | 51<br>2.01   | 5/8X85-2                    | UL FM<br>LPCB     |
| 150x 80<br>6x 3       | 168.3x 88.9<br>6.625x 3.500  | 300<br>2.07                 | 200<br>7.87   | 268<br>10.55 | 51<br>2.01   | 5/8X85-2                    | UL FM<br>VdS LPCB |
| 150x 100<br>6x 4      | 168.3x 114.3<br>6.625x 4.500 | 300<br>2.07                 | 202.5<br>7.97 | 268<br>10.55 | 52.5<br>2.07 | 5/8X85-2                    | UL FM<br>VdS LPCB |
| 200x 150<br>8x 6      | 219.1x 165.1<br>8.625x 6.500 | 300<br>2.07                 | 257<br>10.12  | 335<br>13.19 | 60<br>2.36   | 3/4X115-2                   | UL FM<br>LPCB     |
| 200x 150<br>8x 6      | 219.1x 168.3<br>8.625x 6.625 | 300<br>2.07                 | 257<br>10.12  | 335<br>13.19 | 60<br>2.36   | 3/4X115-2                   | UL FM<br>LPCB     |

## 1NS

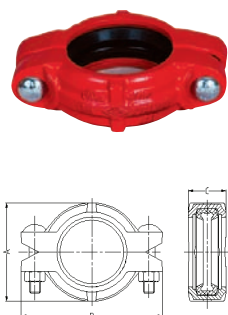
Light-duty Reducing Coupling



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in            | Working Pressure<br>PSI/MPa | Dimensions  |              |            | Bolt Size<br>No.-Size<br>mm | Certificate |
|-----------------------|------------------------------|-----------------------------|-------------|--------------|------------|-----------------------------|-------------|
|                       |                              |                             | A<br>mm/in  | B<br>mm/in   | C<br>mm/in |                             |             |
| 150x 100<br>6x 4      | 168.3x 114.3<br>6.625x 4.500 | 300<br>2.07                 | 200<br>7.87 | 268<br>10.55 | 51<br>2.01 | 5/8X85-2                    | UL FM       |

## 1NH

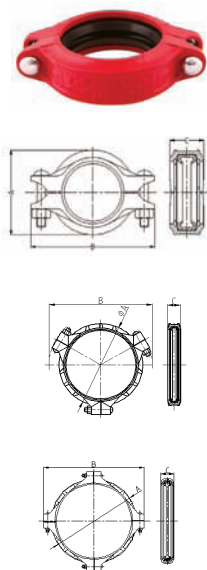
Extra Heavy Duty Flexible Coupling



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions   |              |            | Bolt/Nut<br>No.-Size<br>mm |
|-----------------------|-------------------|-----------------------------|--------------|--------------|------------|----------------------------|
|                       |                   |                             | A<br>mm/in   | B<br>mm/in   | C<br>mm/in |                            |
| 50<br>2               | 60.3<br>2.375     | 750<br>5.18                 | 90<br>3.54   | 134<br>5.28  | 45<br>1.77 | 2-1/2X75                   |
| 65<br>2½              | 73.0<br>2.875     | 750<br>5.18                 | 100<br>3.94  | 150<br>5.91  | 45<br>1.77 | 2-1/2X75                   |
| 65<br>2½              | 76.1<br>3.000     | 750<br>5.18                 | 102<br>4.02  | 154<br>6.06  | 45<br>1.77 | 2-1/2X75                   |
| 80<br>3               | 88.9<br>3.500     | 750<br>5.18                 | 121<br>4.76  | 172<br>6.78  | 45<br>1.77 | 2-1/2X75                   |
| 100<br>4              | 114.3<br>4.500    | 750<br>5.18                 | 151<br>5.95  | 214<br>8.43  | 50<br>1.97 | 2-5/8X85                   |
| 125<br>5              | 141.3<br>5.563    | 700<br>4.83                 | 180<br>7.09  | 248<br>9.76  | 51<br>2.00 | 2-3/4X115                  |
| 150<br>6              | 165.1<br>6.500    | 700<br>4.83                 | 205<br>8.07  | 278<br>10.95 | 51<br>2.00 | 2-3/4X115                  |
| 150<br>6              | 168.3<br>6.625    | 700<br>4.83                 | 208<br>8.20  | 284<br>11.18 | 51<br>2.00 | 2-3/4X115                  |
| 200<br>8              | 219.1<br>8.625    | 600<br>4.14                 | 268<br>10.56 | 354<br>13.94 | 61<br>2.40 | 2-7/8X140                  |

# 1G

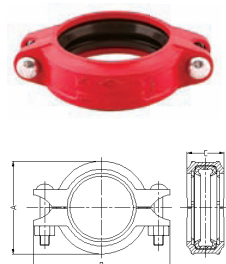
## Rigid Coupling



| Nominal Size<br>mm/in | Pipe<br>D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions |            |            | Bolt Size<br>No.-Size<br>mm | Certificate |
|-----------------------|--------------------|-----------------------------|------------|------------|------------|-----------------------------|-------------|
|                       |                    |                             | A<br>mm/in | B<br>mm/in | C<br>mm/in |                             |             |
| 25                    | 33.7               | 500                         | 59         | 100        | 44         | 3/8X55-2                    | UL FM       |
| 1                     | 1.327              | 3.45                        | 2.33       | 3.94       | 1.74       |                             | VdS LPCB    |
| 32                    | 42.4               | 500                         | 66         | 105        | 45         | 3/8X55-2                    | UL FM       |
| 1 1/4                 | 1.669              | 3.45                        | 2.60       | 4.13       | 1.78       |                             | VdS LPCB    |
| 40                    | 48.3               | 500                         | 72         | 112        | 45         | 3/8X55-2                    | UL FM       |
| 1 1/2                 | 1.900              | 3.45                        | 2.84       | 4.41       | 1.78       |                             | VdS LPCB    |
| 50                    | 60.3               | 500                         | 85         | 130        | 45         | 3/8X55-2                    | UL FM       |
| 2                     | 2.375              | 3.45                        | 3.35       | 5.12       | 1.78       |                             | VdS LPCB    |
| 65                    | 73.0               | 500                         | 98         | 140        | 45         | 3/8X55-2                    | UL FM       |
| 2 1/2                 | 2.875              | 3.45                        | 3.86       | 5.52       | 1.78       |                             | LPCB        |
| 65                    | 76.1               | 500                         | 101        | 145        | 45         | 3/8X55-2                    | UL FM       |
| 2 1/2                 | 3.000              | 3.45                        | 3.98       | 5.71       | 1.77       |                             | VdS LPCB    |
| 80                    | 88.9               | 500                         | 115.0      | 168        | 46         | 1/2X70-2                    | UL FM       |
| 3                     | 3.500              | 3.45                        | 4.53       | 6.62       | 1.82       |                             | VdS LPCB    |
| 100                   | 108.0              | 500                         | 140        | 197        | 52         | 1/2X70-2                    | UL FM       |
| 4                     | 4.250              | 3.45                        | 5.51       | 7.76       | 2.05       |                             | LPCB        |
| 100                   | 114.3              | 500                         | 146        | 200        | 52         | 1/2X70-2                    | UL FM       |
| 4                     | 4.500              | 3.45                        | 5.75       | 7.88       | 2.05       |                             | VdS LPCB    |
| 125                   | 133                | 450                         | 165        | 226        | 52         | 5/8X85-2                    | UL FM       |
| 5                     | 5.250              | 3.10                        | 6.50       | 8.90       | 2.05       |                             | LPCB        |
| 125                   | 139.7              | 450                         | 170        | 235        | 52         | 5/8X85-2                    | UL FM       |
| 5                     | 5.500              | 3.10                        | 6.69       | 9.25       | 2.05       |                             | VdS LPCB    |
| 125                   | 141.3              | 450                         | 172        | 235        | 52         | 5/8X85-2                    | UL FM       |
| 5                     | 5.563              | 3.10                        | 6.77       | 9.25       | 2.05       |                             | LPCB        |
| 150                   | 159.0              | 450                         | 190        | 267        | 52         | 5/8X85-2                    | UL FM       |
| 6                     | 6.250              | 3.10                        | 7.48       | 10.51      | 2.05       |                             | LPCB        |
| 150                   | 165.1              | 450                         | 198        | 262        | 52         | 5/8X85-2                    | UL FM       |
| 6                     | 6.500              | 3.10                        | 7.80       | 10.32      | 2.05       |                             | LPCB        |
| 150                   | 168.3              | 450                         | 202.0      | 265        | 52         | 5/8X85-2                    | UL FM       |
| 6                     | 6.625              | 3.10                        | 7.95       | 10.43      | 2.05       |                             | VdS LPCB    |
| 200                   | 219.1              | 450                         | 260.0      | 342        | 62         | 3/4X115-2                   | UL FM       |
| 8                     | 8.625              | 3.10                        | 10.24      | 13.45      | 2.44       |                             | VdS LPCB    |
| 250A                  | 267.4              | 300                         | 318        | 396        | 63         | 3/4X120-2                   | UL FM       |
| 10                    | 10.528             | 2.07                        | 12.52      | 15.60      | 2.48       |                             |             |
| 250                   | 273.0              | 300                         | 327        | 420        | 63         | 7/8X125-2                   | UL FM       |
| 10                    | 10.750             | 2.07                        | 12.88      | 16.54      | 2.48       |                             | LPCB        |
| 300A                  | 318.5              | 300                         | 364        | 456        | 63         | 7/8X140-2                   | UL FM       |
| 12                    | 12.539             | 2.07                        | 14.33      | 17.95      | 2.48       |                             |             |
| 300                   | 323.9              | 300                         | 370        | 465        | 63         | 7/8X140-2                   | UL FM       |
| 12                    | 12.750             | 2.07                        | 14.57      | 18.30      | 2.48       |                             |             |
| 350                   | 355.6              | 300                         | 415        | 510        | 72         | 7/8X140-3                   | UL FM       |
| 14                    | 14.000             | 2.07                        | 16.34      | 20.08      | 2.84       |                             |             |
| 350                   | 377.0              | 225                         | 435        | 535        | 72         | 7/8X140-3                   | FM          |
| 14                    | 14.842             | 1.6                         | 17.13      | 21.05      | 2.84       |                             |             |
| 400                   | 406.4              | 300                         | 468        | 575        | 72         | 7/8X140-3                   | UL FM       |
| 16                    | 16.000             | 2.07                        | 18.43      | 22.64      | 2.84       |                             |             |
| 400                   | 426.0              | 225                         | 490        | 592        | 72         | 7/8X140-4                   | FM          |
| 16                    | 16.772             | 1.6                         | 19.29      | 23.30      | 2.84       |                             |             |
| 500                   | 529.0              | 225                         | 595        | 700        | 76         | 7/8X140-4                   |             |
| 20                    | 20.827             | 1.6                         | 23.43      | 27.56      | 3.00       |                             |             |

# 1GS

## Light-duty Rigid Coupling



| Nominal Size<br>mm/in | Pipe<br>D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions |            |            | Bolt Size<br>No.-Size<br>mm | Certificate |
|-----------------------|--------------------|-----------------------------|------------|------------|------------|-----------------------------|-------------|
|                       |                    |                             | A<br>mm/in | B<br>mm/in | C<br>mm/in |                             |             |
| 65                    | 76.1               | 300                         | 100        | 140        | 45         | 3/8X55-2                    | UL FM       |
| 2 1/2                 | 3.000              | 2.07                        | 3.94       | 5.52       | 1.77       |                             |             |
| 80                    | 88.9               | 300                         | 114        | 160        | 45         | 3/8X55-2                    | UL FM       |
| 3                     | 3.500              | 2.07                        | 4.50       | 6.30       | 1.78       |                             |             |
| 100                   | 108.0              | 300                         | 135        | 185        | 50         | 1/2X70-2                    | UL FM       |
| 4                     | 4.250              | 2.07                        | 5.30       | 7.28       | 1.97       |                             |             |
| 100                   | 114.3              | 300                         | 140        | 187        | 50         | 1/2X70-2                    | UL FM       |
| 4                     | 4.500              | 2.07                        | 5.51       | 7.36       | 1.97       |                             |             |
| 125                   | 139.7              | 300                         | 168        | 225        | 50         | 1/2X75-2                    | UL FM       |
| 5                     | 5.500              | 2.07                        | 6.62       | 8.86       | 1.97       |                             |             |
| 125                   | 141.3              | 300                         | 170        | 225        | 50         | 1/2X75-2                    | UL FM       |
| 5                     | 5.563              | 2.07                        | 6.69       | 8.86       | 1.97       |                             |             |
| 150                   | 159.0              | 300                         | 190        | 252        | 50         | 5/8X80-2                    | UL FM       |
| 6                     | 6.250              | 2.07                        | 7.48       | 9.92       | 1.97       |                             |             |
| 150                   | 165.1              | 300                         | 195        | 250        | 50         | 1/2X75-2                    | UL FM       |
| 6                     | 6.500              | 2.07                        | 7.68       | 9.84       | 1.97       |                             |             |
| 150                   | 168.3              | 300                         | 200        | 255        | 50         | 1/2X75-2                    | UL FM       |
| 6                     | 6.625              | 2.07                        | 7.87       | 10.04      | 1.97       |                             |             |
| 200A                  | 216.3              | 300                         | 255        | 320        | 58         | 5/8X85-2                    | UL FM       |
| 8                     | 8.516              | 2.07                        | 10.04      | 12.60      | 2.28       |                             |             |
| 200                   | 219.1              | 300                         | 255        | 322        | 58         | 5/8X85-2                    | UL FM       |
| 8                     | 8.625              | 2.07                        | 10.05      | 12.68      | 2.28       |                             |             |
| 250                   | 273.0              | 300                         | 318        | 410        | 63         | 3/4X120-2                   | UL FM       |
| 10                    | 10.750             | 2.07                        | 12.52      | 16.14      | 2.48       |                             |             |

## 90

90° Elbow



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|--------------------|-----------------------------|--------------------------|--------------|
| 25<br>1               | 33.7<br>1.315      | 500<br>3.45                 | 57<br>2.24               | UL FM<br>VdS |
| 32<br>1¼              | 42.4<br>1.660      | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 40<br>1½              | 48.3<br>1.900      | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 50<br>2               | 60.3<br>2.375      | 500<br>3.45                 | 82.5<br>3.25             | UL FM<br>VdS |
| 65<br>2½              | 73.0<br>2.875      | 500<br>3.45                 | 95<br>3.74               | UL FM        |
| 65<br>2½              | 76.1<br>3.000      | 500<br>3.45                 | 95<br>3.74               | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500      | 500<br>3.45                 | 108<br>4.25              | UL FM<br>VdS |
| 100<br>4              | 114.3<br>4.500     | 500<br>3.45                 | 127<br>5.00              | UL FM<br>VdS |
| 125<br>5              | 133.0<br>5.250     | 500<br>3.45                 | 122<br>4.80              | UL FM        |
| 125<br>5              | 139.7<br>5.500     | 500<br>3.45                 | 140<br>5.50              | UL FM<br>VdS |
| 125<br>5              | 141.3<br>5.563     | 500<br>3.45                 | 140<br>5.50              | UL FM        |
| 150<br>6              | 165.1<br>6.500     | 500<br>3.45                 | 165<br>6.50              | UL FM        |
| 150<br>6              | 168.3<br>6.625     | 500<br>3.45                 | 165<br>6.50              | UL FM<br>VdS |
| 200<br>8              | 219.1<br>8.625     | 500<br>3.45                 | 197<br>7.75              | UL FM<br>VdS |
| 250<br>10             | 267.4<br>10.528    | 500<br>3.45                 | 229<br>9.00              | UL FM        |
| 250<br>10             | 273.0<br>10.750    | 500<br>3.45                 | 229<br>9.00              | UL FM<br>VdS |
| 300<br>12             | 318.5<br>12.539    | 500<br>3.45                 | 254<br>10.00             | UL FM        |
| 300<br>12             | 323.9<br>12.750    | 500<br>3.45                 | 254<br>10.00             | UL FM<br>VdS |
| 350<br>14             | 377.0<br>14.84     | 300<br>2.07                 | 279<br>10.98             | UL FM        |
| 400<br>16             | 426.0<br>16.77     | 300<br>2.07                 | 305<br>12.00             | UL FM        |

## 90S

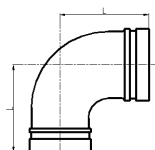
Light-duty 90° Elbow



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|--------------------|-----------------------------|--------------------------|-------------|
| 50<br>2               | 60.3<br>2.375      | 300<br>2.07                 | 70<br>2.75               | UL FM VdS   |
| 65<br>2½              | 73.0<br>2.875      | 300<br>2.07                 | 76<br>3.00               | UL FM       |
| 65<br>2½              | 76.1<br>3.000      | 300<br>2.07                 | 76<br>3.00               | UL FM VdS   |
| 80<br>3               | 88.9<br>3.500      | 300<br>2.07                 | 85.5<br>3.37             | UL FM VdS   |
| 100<br>4              | 108.0<br>4.500     | 300<br>2.07                 | 101<br>3.98              | UL FM       |
| 100<br>4              | 114.3<br>4.500     | 300<br>2.07                 | 101<br>3.98              | UL FM VdS   |
| 125<br>5              | 139.7<br>5.500     | 300<br>2.07                 | 124<br>4.88              | UL FM VdS   |
| 150<br>6              | 159.0<br>6.500     | 300<br>2.07                 | 140<br>5.50              | UL FM VdS   |
| 150<br>6              | 165.1<br>6.500     | 300<br>2.07                 | 140<br>5.50              | UL FM       |
| 150<br>6              | 168.3<br>6.625     | 500<br>3.45                 | 140<br>5.50              | UL FM VdS   |
| 200<br>8              | 216.3<br>8.625     | 300<br>2.07                 | 175<br>6.89              | UL FM       |
| 200<br>8              | 219.1<br>8.625     | 300<br>2.07                 | 165<br>6.50              | UL FM VdS   |

## 90R

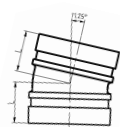
90° Reducing Elbow



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in         | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|----------------------------|-----------------------------|--------------------------|-------------|
| 80X65<br>3X2½         | 88.9X76.1<br>3.500X3.000   | 500<br>3.45                 | 108<br>4.25              | UL FM       |
| 100X65<br>4X2½        | 114.3X76.1<br>4.500X3.000  | 500<br>3.45                 | 127<br>5.00              | UL FM       |
| 100X80<br>4X3         | 114.3X88.9<br>4.500X3.500  | 500<br>3.45                 | 127<br>5.00              | UL FM       |
| 150X100<br>6X4        | 165.1X114.3<br>6.500X4.500 | 500<br>3.45                 | 165<br>6.50              | UL FM       |
| 150X100<br>6X4        | 168.3X114.3<br>6.625X4.500 | 500<br>3.45                 | 165<br>6.50              | UL FM       |

## 105

11.25° Elbow



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|--------------------|-----------------------------|--------------------------|--------------|
| 32<br>1¼              | 42.4<br>1.660      | 500<br>3.45                 | 35<br>1.38               | UL FM        |
| 40<br>1½              | 48.3<br>1.900      | 500<br>3.45                 | 35<br>1.38               | UL FM        |
| 50<br>2               | 60.3<br>2.375      | 500<br>3.45                 | 35<br>1.38               | UL FM<br>VdS |
| 65<br>2½              | 76.1<br>3.000      | 500<br>3.45                 | 38<br>1.506              | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500      | 500<br>3.45                 | 38<br>1.50               | UL FM<br>VdS |
| 100<br>4              | 108.0<br>4.250     | 500<br>3.45                 | 44<br>1.73               | UL FM        |
| 100<br>4              | 114.3<br>4.500     | 500<br>3.45                 | 44<br>1.73               | UL FM<br>VdS |
| 125<br>5              | 139.7<br>5.500     | 500<br>3.45                 | 51<br>2.00               | UL FM<br>VdS |
| 150<br>6              | 159.0<br>6.250     | 500<br>3.45                 | 51<br>2.00               | UL FM        |
| 150<br>6              | 165.1<br>6.500     | 500<br>3.45                 | 51<br>2.00               | UL FM        |
| 150<br>6              | 168.3<br>6.625     | 500<br>3.45                 | 51<br>2.00               | UL FM        |
| 200<br>8              | 219.1<br>8.625     | 500<br>3.45                 | 51<br>2.00               | UL FM<br>VdS |

# 110

22.5° Elbow



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|-------------------|-----------------------------|--------------------------|--------------|
| 32<br>1¼              | 42.4<br>1.660     | 500<br>3.45                 | 45<br>1.77               | UL FM        |
| 40<br>1½              | 48.3<br>1.900     | 500<br>3.45                 | 45<br>1.77               | UL FM        |
| 50<br>2               | 60.3<br>2.375     | 500<br>3.45                 | 48<br>1.89               | UL FM        |
| 65<br>2½              | 73.0<br>2.875     | 500<br>3.45                 | 51<br>2.00               | UL FM        |
| 65<br>2½              | 76.1<br>3.000     | 500<br>3.45                 | 51<br>2.00               | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500     | 500<br>3.45                 | 57<br>2.24               | UL FM<br>VdS |
| 100<br>4              | 108.0<br>4.250    | 500<br>3.45                 | 73<br>2.87               | UL FM        |
| 100<br>4              | 114.3<br>4.500    | 500<br>3.45                 | 73<br>2.87               | UL FM<br>VdS |
| 125<br>5              | 139.7<br>5.500    | 500<br>3.45                 | 73<br>2.87               | UL FM<br>VdS |
| 150<br>6              | 159.0<br>6.250    | 500<br>3.45                 | 79<br>3.11               | UL FM        |
| 150<br>6              | 165.1<br>6.500    | 500<br>3.45                 | 79<br>3.11               | UL FM        |
| 150<br>6              | 168.3<br>6.625    | 500<br>3.45                 | 79<br>3.11               | UL FM        |
| 200<br>8              | 219.1<br>8.625    | 500<br>3.45                 | 98<br>3.86               | UL FM<br>VdS |

# 120

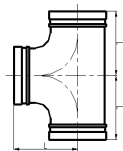
45° Elbow



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|-------------------|-----------------------------|--------------------------|--------------|
| 25<br>1               | 33.7<br>1.315     | 500<br>3.45                 | 44.5<br>1.75             | UL FM<br>VdS |
| 32<br>1¼              | 42.4<br>1.660     | 500<br>3.45                 | 44.5<br>1.75             | UL FM<br>VdS |
| 40<br>1½              | 48.3<br>1.900     | 500<br>3.45                 | 44.5<br>1.75             | UL FM<br>VdS |
| 50<br>2               | 60.3<br>2.375     | 500<br>3.45                 | 51<br>2.00               | UL FM<br>VdS |
| 65<br>2½              | 73.0<br>2.875     | 500<br>3.45                 | 57<br>2.24               | UL FM        |
| 65<br>2½              | 76.1<br>3.000     | 500<br>3.45                 | 57<br>2.24               | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500     | 500<br>3.45                 | 63.5<br>2.50             | UL FM<br>VdS |
| 100<br>4              | 108.0<br>4.250    | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 100<br>4              | 114.3<br>4.500    | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 125<br>5              | 133.0<br>5.250    | 500<br>3.45                 | 82.5<br>3.25             | UL FM        |
| 125<br>5              | 139.7<br>5.500    | 500<br>3.45                 | 82.5<br>3.25             | UL FM<br>VdS |
| 125<br>5              | 141.3<br>5.563    | 500<br>3.45                 | 82.5<br>3.25             | UL FM        |
| 150<br>6              | 159.0<br>6.250    | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 150<br>6              | 165.1<br>6.500    | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 150<br>6              | 168.3<br>6.625    | 500<br>3.45                 | 89<br>3.50               | UL FM<br>VdS |
| 200<br>8              | 216.3<br>8.516    | 500<br>3.45                 | 108<br>4.25              | UL FM        |
| 200<br>8              | 219.1<br>8.625    | 500<br>3.45                 | 108<br>4.25              | UL FM<br>VdS |
| 250<br>10             | 267.4<br>10.528   | 500<br>3.45                 | 120.5<br>4.75            | UL FM        |
| 250<br>10             | 273.0<br>10.750   | 500<br>3.45                 | 120.5<br>4.75            | UL FM<br>VdS |
| 300<br>12             | 318.5<br>12.750   | 500<br>3.45                 | 133<br>5.25              | UL FM        |
| 300<br>12             | 323.9<br>12.750   | 500<br>3.45                 | 133<br>5.25              | UL FM<br>VdS |
| 300<br>12             | 377<br>12.750     | 300<br>2.07                 | 122<br>4.80              |              |

# 130

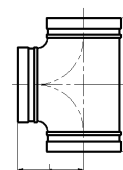
Tee



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|--------------------|-----------------------------|--------------------------|--------------|
| 25<br>1               | 33.7<br>1.315      | 500<br>3.45                 | 57<br>2.24               | UL FM<br>VdS |
| 32<br>1¼              | 42.4<br>1.660      | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 40<br>1½              | 48.3<br>1.900      | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 50<br>2               | 60.3<br>2.375      | 500<br>3.45                 | 82.5<br>3.25             | UL FM<br>VdS |
| 65<br>2½              | 73.0<br>2.875      | 500<br>3.45                 | 95<br>3.74               | UL FM        |
| 65<br>2½              | 76.1<br>3.000      | 500<br>3.45                 | 95<br>3.74               | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500      | 500<br>3.45                 | 108<br>4.25              | UL FM<br>VdS |
| 100<br>4              | 114.3<br>4.500     | 500<br>3.45                 | 127<br>5.00              | UL FM<br>VdS |
| 125<br>5              | 133.0<br>5.250     | 500<br>3.45                 | 122<br>4.80              | UL FM        |
| 125<br>5              | 139.7<br>5.500     | 500<br>3.45                 | 140<br>5.50              | UL FM<br>VdS |
| 125<br>5              | 141.3<br>5.563     | 500<br>3.45                 | 140<br>5.50              | UL FM        |
| 150<br>6              | 165.1<br>6.500     | 500<br>3.45                 | 165<br>6.50              | UL FM        |
| 150<br>6              | 168.3<br>6.625     | 500<br>3.45                 | 165<br>6.50              | UL FM<br>VdS |
| 200<br>8              | 219.1<br>8.625     | 500<br>3.45                 | 197<br>7.75              | UL FM<br>VdS |
| 250<br>10             | 267.4<br>10.528    | 500<br>3.45                 | 229<br>9.00              | UL FM        |
| 250<br>10             | 273.0<br>10.750    | 500<br>3.45                 | 229<br>9.00              | UL FM<br>VdS |
| 300<br>12             | 318.5<br>12.539    | 500<br>3.45                 | 254<br>10.00             | UL FM        |
| 300<br>12             | 323.9<br>12.750    | 500<br>3.45                 | 254<br>10.00             | UL FM<br>VdS |
| 350<br>14             | 377.0<br>14.84     | 300<br>2.07                 | 279<br>10.98             | UL FM        |
| 400<br>16             | 426.0<br>16.77     | 300<br>2.07                 | 305<br>12.00             | UL FM        |

# 130S

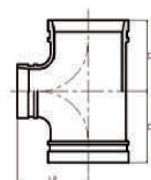
Light-duty Tee



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|--------------------|-----------------------------|--------------------------|-------------|
| 50<br>2               | 60.3<br>2.375      | 300<br>2.07                 | 70<br>2.75               | UL FM VdS   |
| 65<br>2½              | 73.0<br>2.875      | 300<br>2.07                 | 76<br>3.00               | UL FM       |
| 65<br>2½              | 76.1<br>3.000      | 300<br>2.07                 | 76<br>3.00               | UL FM VdS   |
| 80<br>3               | 88.9<br>3.500      | 300<br>2.07                 | 85.5<br>3.37             | UL FM VdS   |
| 100<br>4              | 108.0<br>4.500     | 300<br>2.07                 | 101<br>3.98              | UL FM       |
| 100<br>4              | 114.3<br>4.500     | 300<br>2.07                 | 101<br>3.98              | UL FM VdS   |
| 125<br>5              | 139.7<br>5.500     | 300<br>2.07                 | 124<br>4.88              | UL FM VdS   |
| 150<br>6              | 159.0<br>6.500     | 300<br>2.07                 | 140<br>5.50              | UL FM VdS   |
| 150<br>6              | 165.1<br>6.500     | 300<br>2.07                 | 140<br>5.50              | UL FM       |
| 150<br>6              | 168.3<br>6.625     | 500<br>3.45                 | 140<br>5.50              | UL FM VdS   |
| 200<br>8              | 216.3<br>8.625     | 300<br>2.07                 | 175<br>6.89              | UL FM       |
| 200<br>8              | 219.1<br>8.625     | 300<br>2.07                 | 175<br>6.89              | UL FM VdS   |

# 130R

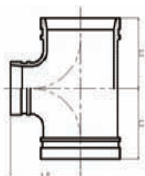
## Reducing Tee



| Nominal Size<br>mm/in | Pipe<br>O.D<br>mm/in         | Working<br>Pressure<br>PSI/MPa | Dimensions<br>L1<br>mm/in | Dimensions<br>L2<br>mm/in | Certificate  |
|-----------------------|------------------------------|--------------------------------|---------------------------|---------------------------|--------------|
| 50X25<br>2X1          | 60.3X33.7<br>2.375X1.315     | 500<br>3.45                    | 70<br>2.75                | 70<br>2.75                | UL FM<br>VdS |
| 50x 40<br>2x 1½       | 60.3x 48.3<br>2.375x 1.900   | 500<br>3.45                    | 70<br>2.75                | 70<br>2.75                | UL FM<br>VdS |
| 65x 40<br>2½x 1½      | 73.0x 48.3<br>2.875x 1.900   | 500<br>3.45                    | 76<br>3.00                | 76<br>3.00                | UL FM        |
| 65x 50<br>2½x 2       | 73.0x 60.3<br>3.000x 2.375   | 500<br>3.45                    | 76<br>3.00                | 76<br>3.00                | UL FM        |
| 65x 32<br>2½x 1¼      | 76.1x 42.4<br>3.000x 1.660   | 500<br>3.45                    | 76<br>3.00                | 76<br>3.00                | UL FM        |
| 65x 40<br>2½x 1½      | 76.1x 48.3<br>3.000x 1.900   | 500<br>3.45                    | 76<br>3.00                | 76<br>3.00                | UL FM<br>VdS |
| 65x 50<br>2½x 2       | 76.1x 60.3<br>3.000x 2.375   | 500<br>3.45                    | 76<br>3.00                | 76<br>3.00                | UL FM<br>VdS |
| 80X32<br>3X1          | 88.9X33.7<br>3.500X1.315     | 500<br>3.45                    | 108<br>4.25               | 108<br>4.25               | UL FM<br>VdS |
| 80X32<br>3X1¼         | 88.9X42.4<br>3.500X1.660     | 500<br>3.45                    | 85.5<br>3.37              | 85.5<br>3.37              | UL FM        |
| 80X40<br>3X1½         | 88.9X48.3<br>3.500X1.900     | 500<br>3.45                    | 85.5<br>3.37              | 85.5<br>3.37              | UL FM<br>VdS |
| 80x 50<br>3x 2        | 88.9x 60.3<br>3.500x 2.375   | 500<br>3.45                    | 85.5<br>3.37              | 85.5<br>3.37              | UL FM<br>VdS |
| 80X65<br>3X2½         | 88.9X73.0<br>3.500X2.875     | 500<br>3.45                    | 85.5<br>3.37              | 85.5<br>3.37              | UL FM        |
| 80x 65<br>3x 2½       | 88.9x 76.1<br>3.500x 3.000   | 500<br>3.45                    | 85.5<br>3.37              | 85.5<br>3.37              | UL FM<br>VdS |
| 100x 50<br>4x 2       | 108.0x 60.3<br>4.250x 2.375  | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM        |
| 100x 80<br>4x 3       | 108.0x 88.9<br>4.250x 3.500  | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM        |
| 100x 25<br>4x 1       | 114.3x 33.7<br>4.500x 1.315  | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM<br>VdS |
| 100X40<br>4X1½        | 114.3X48.3<br>4.500X1.900    | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM<br>VdS |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375  | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM<br>VdS |
| 100X65<br>4X2½        | 114.3X73.0<br>4.500X2.875    | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM        |
| 100x 65<br>4x 2½      | 114.3x 76.1<br>4.500x 3.000  | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM<br>VdS |
| 100x 80<br>4x 3       | 114.3x 88.9<br>4.500x 3.500  | 500<br>3.45                    | 101<br>3.98               | 101<br>3.98               | UL FM<br>VdS |
| 125X50<br>5X2         | 133.0X60.3<br>5.250X2.375    | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125X65<br>5X2½        | 133.0X76.1<br>5.250X3.000    | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125X100<br>5X4        | 133.0X108.0<br>5.250X4.250   | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125X100<br>5X4        | 133.0X114.3<br>5.250X4.500   | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125x 40<br>5x 1½      | 139.7x 48.3<br>5.500x 1.900  | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 125x 50<br>5x 2       | 139.7x 60.3<br>5.500x 2.375  | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125x 65<br>5x 2½      | 139.7x 76.1<br>5.500x 3.000  | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125x 80<br>5x 3       | 139.7x 88.9<br>5.500x 3.500  | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM        |
| 125x 100<br>5x 4      | 139.7x 114.3<br>5.500x 4.500 | 500<br>3.45                    | 124<br>4.88               | 124<br>4.88               | UL FM<br>VdS |
| 150X60<br>6X2         | 159.0X60.3<br>6.250X2.375    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150X65<br>6X2½        | 159.0X76.1<br>6.250X3.000    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150X80<br>6X3         | 159.0X88.9<br>6.250X3.500    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |

# 130R

## Reducing Tee



| Nominal Size<br>mm/in | Pipe<br>O.D<br>mm/in           | Working<br>Pressure<br>PSI/MPa | Dimensions<br>L1<br>mm/in | Dimensions<br>L2<br>mm/in | Certificate  |
|-----------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|--------------|
| 150X100<br>6X4        | 159.0X108.0<br>6.250X4.250     | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 100<br>6x 4      | 159.0x 114.3<br>6.250x 4.500   | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 125<br>6x 5      | 159.0x 133.0<br>6.250x 5.250   | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM<br>VdS |
| 150x 50<br>6x 2       | 165.1x 60.3<br>6.500x 2.375    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 65<br>6x 2½      | 165.1x 76.1<br>6.500x 3.000    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 80<br>6x 3       | 165.1x 88.9<br>6.500x 3.500    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 100<br>6x 4      | 165.1x 114.3<br>6.500x 4.500   | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 125<br>6x 5      | 165.1x 139.7<br>6.500x 5.500   | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150X50<br>6X2         | 168.3X60.3<br>6.625X2.375      | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 65<br>6x 2½      | 168.3x 73.0<br>6.625x 2.875    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150x 65<br>6x 2½      | 168.3x 76.1<br>6.625x 3.000    | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM        |
| 150X80<br>6X3         | 168.3X88.9<br>6.625X3.500      | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM<br>VdS |
| 150x 100<br>6x 4      | 168.3x 114.3<br>6.625x 4.500   | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM<br>VdS |
| 150x 125<br>6x 5      | 168.3x 141.3<br>6.625x 5.563   | 500<br>3.45                    | 140<br>5.50               | 140<br>5.50               | UL FM<br>VdS |
| 200x 150<br>8x 6      | 216.3x 165.1<br>8.516x 6.500   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 50<br>8x 2       | 219.1x 60.3<br>8.625x 2.375    | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 65<br>8x 2½      | 219.1x 76.1<br>8.625x 3.000    | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 80<br>8x 3       | 219.1x 88.9<br>8.625x 3.500    | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 100<br>8x 4      | 219.1x 108.0<br>8.625x 4.250   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 100<br>8x 4      | 219.1x 114.3<br>8.625x 4.500   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 125<br>8x 5      | 219.1x 133.0<br>8.625x 5.250   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 125<br>8x 5      | 219.1x 139.7<br>8.625x 5.500   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 150<br>8x 6      | 219.1x 159.0<br>8.625x 6.250   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 150<br>8x 6      | 219.1x 165.1<br>8.625x 6.500   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 200x 150<br>8x 6      | 219.1x 168.3<br>8.625x 6.625   | 500<br>3.45                    | 175<br>6.89               | 175<br>6.89               | UL FM<br>VdS |
| 250x 150<br>10x 6     | 273.0x 159.0<br>10.750x 6.250  | 500<br>3.45                    | 229<br>9.00               | 229<br>9.00               | UL FM<br>VdS |
| 250x 150<br>10x 6     | 273.0x 165.1<br>10.750x 6.500  | 500<br>3.45                    | 229<br>9.00               | 229<br>9.00               | UL FM<br>VdS |
| 250x 200<br>10x 8     | 273.0x 219.1<br>10.750x 8.625  | 500<br>3.45                    | 229<br>9.00               | 229<br>9.00               | UL FM<br>VdS |
| 300x 150<br>12x 6     | 323.9x 165.1<br>12.750x 6.500  | 500<br>3.45                    | 254<br>10                 | 254<br>10                 | UL FM<br>VdS |
| 300x 200<br>12x 8     | 323.9x 219.1<br>12.750x 8.625  | 500<br>3.45                    | 254<br>10                 | 254<br>10                 | UL FM<br>VdS |
| 300x 250<br>12x 10    | 323.9x 273.0<br>12.750x 10.750 | 500<br>3.45                    | 254<br>10                 | 254<br>10                 | UL FM<br>VdS |

## 131R-1

Reducing Tee



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in           | Working Pressure<br>PSI/MPa | Dimensions L1<br>mm/in | Dimensions L2<br>mm/in | Certificate |
|-----------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------|
| 50x 25<br>2x 1        | 60.3x 33.7<br>2.375x 1.315  | 300<br>2.07                 | 70<br>2.75             | 70<br>2.75             | UL FM       |
| 50x 32<br>2x 1¼       | 60.3x 42.4<br>2.375x 1.660  | 300<br>2.07                 | 70<br>2.75             | 70<br>2.75             | UL FM       |
| 50x 40<br>2x 1½       | 60.3x 48.3<br>2.375x 1.900  | 300<br>2.07                 | 70<br>2.75             | 70<br>2.75             | UL FM       |
| 65x 25<br>2½x 1       | 73.0x 33.7<br>2.875x 1.315  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 65x 32<br>2½x 1¼      | 73.0x 42.4<br>2.875x 1.660  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 65x 25<br>2½x 1       | 76.1x 33.7<br>3.000x 1.315  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 65x 32<br>2½x 1¼      | 76.1x 42.4<br>3.000x 1.660  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 65x 40<br>2½x 1½      | 76.1x 48.3<br>3.000x 1.900  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 65x 50<br>2½x 2       | 76.1x 60.3<br>3.000x 2.375  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 80x 25<br>3x 1        | 88.9x 33.7<br>3.500x 1.315  | 300<br>2.07                 | 85.5<br>3.37           | 85.5<br>3.37           | UL FM       |
| 80x 32<br>3x 1¼       | 88.9x 42.4<br>3.500x 1.660  | 300<br>2.07                 | 85.5<br>3.37           | 85.5<br>3.37           | UL FM       |
| 80x 40<br>3x 1½       | 88.9x 48.3<br>3.500x 1.900  | 300<br>2.07                 | 85.5<br>3.37           | 85.5<br>3.37           | UL FM       |
| 80x 50<br>3x 2        | 88.9x 60.3<br>3.500x 2.375  | 300<br>2.07                 | 85.5<br>3.37           | 85.5<br>3.37           | UL FM       |
| 80x 65<br>3x 2½       | 88.9x 76.1<br>3.500x 3.000  | 300<br>2.07                 | 85.5<br>3.37           | 85.5<br>3.37           | UL FM       |
| 100x 65<br>4x 2½      | 108.0x 76.1<br>4.250x 3.000 | 300<br>2.07                 | 100<br>3.94            | 96<br>3.78             | UL FM       |
| 100x 80<br>4x 3       | 108.0x 88.9<br>4.250x 3.500 | 300<br>2.07                 | 100<br>3.94            | 96<br>3.78             | UL FM       |
| 100x 65<br>4x 2½      | 114.3x 76.1<br>4.500x 3.000 | 300<br>2.07                 | 100<br>3.94            | 96<br>3.78             | UL FM       |
| 100x 80<br>4x 3       | 114.3x 88.9<br>4.500x 3.500 | 300<br>2.07                 | 100<br>3.94            | 96<br>3.78             | UL FM       |
| 200x 50<br>8x 2       | 219.1x 60.3<br>8.625x 2.375 | 300<br>2.07                 | 175<br>6.89            | 175<br>6.89            | FM          |
| 200x 65<br>8x 2½      | 219.1x 76.1<br>8.625x 3.000 | 300<br>2.07                 | 175<br>6.89            | 175<br>6.89            | FM          |
| 200x 80<br>8x 3       | 219.1x 88.9<br>8.625x 3.500 | 300<br>2.07                 | 175<br>6.89            | 175<br>6.89            | FM          |

## 131R-2

Reducing Tee



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in           | Working Pressure<br>PSI/MPa | Dimensions L1<br>mm/in | Dimensions L2<br>mm/in | Certificate |
|-----------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------|
| 100x 25<br>4x 1       | 114.3x 33.7<br>4.500x 1.315 | 300<br>2.07                 | 76<br>2.99             | 88<br>3.47             | UL FM       |
| 100x 32<br>4x 1¼      | 114.3x 42.4<br>4.500x 1.660 | 300<br>2.07                 | 76<br>2.99             | 88<br>3.47             | UL FM       |
| 100x 40<br>4x 1½      | 114.3x 48.3<br>4.500x 1.900 | 300<br>2.07                 | 85<br>3.35             | 91<br>3.58             | UL FM       |
| 100x 50<br>4x 2       | 108.0x 60.3<br>4.250x 2.375 | 300<br>2.07                 | 85<br>3.35             | 91<br>3.58             | UL FM       |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375 | 300<br>2.07                 | 85<br>3.35             | 91<br>3.58             | UL FM       |
| 125x 50<br>5x 2       | 133.0x 60.3<br>5.250x 2.375 | 300<br>2.07                 | 86<br>3.39             | 106<br>4.17            | UL FM       |
| 125x 65<br>5x 2½      | 133.0x 76.1<br>5.250x 3.000 | 300<br>2.07                 | 102<br>4.02            | 111<br>4.37            | UL FM       |
| 125x 80<br>5x 3       | 133.0x 88.9<br>5.250x 3.500 | 300<br>2.07                 | 102<br>4.02            | 111<br>4.37            | UL FM       |
| 125x 25<br>5x 1       | 139.7x 33.7<br>5.500x 1.315 | 300<br>2.07                 | 78<br>3.07             | 103<br>4.06            | UL FM       |
| 125x 32<br>5x 1¼      | 139.7x 42.4<br>5.500x 1.660 | 300<br>2.07                 | 78<br>3.07             | 103<br>4.06            | UL FM       |
| 125x 40<br>5x 1½      | 139.7x 48.3<br>5.500x 1.900 | 300<br>2.07                 | 86<br>3.39             | 106<br>4.17            | UL FM       |
| 125x 50<br>5x 2       | 139.7x 60.3<br>5.500x 2.375 | 300<br>2.07                 | 86<br>3.39             | 106<br>4.17            | UL FM       |

## 131R

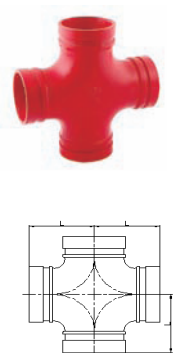
Reducing Tee



| Nominal Size<br>mm/in | Pipe<br>O.D<br>mm/in         | Working<br>Pressure<br>PSI/MPa | Dimensions<br>L1<br>mm/in | Dimensions<br>L2<br>mm/in | Certificate |
|-----------------------|------------------------------|--------------------------------|---------------------------|---------------------------|-------------|
| 125× 65<br>5× 2½      | 139.7× 76.1<br>5.500× 3.000  | 300<br>2.07                    | 102<br>4.02               | 111<br>4.37               | UL FM       |
| 125× 80<br>5× 3       | 139.7× 88.9<br>5.500× 3.500  | 300<br>2.07                    | 102<br>4.02               | 111<br>4.37               | UL FM       |
| 150× 60<br>6× 2       | 159.0× 60.3<br>6.250× 2.375  | 300<br>2.07                    | 92<br>3.62                | 124<br>4.88               | UL FM       |
| 150× 65<br>6× 2½      | 159.0× 76.1<br>6.250× 3.000  | 300<br>2.07                    | 107<br>4.21               | 129<br>5.08               | UL FM       |
| 150× 80<br>6× 3       | 159.0× 88.9<br>6.250× 3.500  | 300<br>2.07                    | 107<br>4.21               | 129<br>5.08               | UL FM       |
| 150× 25<br>6× 1       | 165.1× 33.7<br>6.500× 1.315  | 300<br>2.07                    | 83<br>3.27                | 121<br>4.76               | UL FM       |
| 150× 32<br>6× 1¼      | 165.1× 42.4<br>6.500× 1.660  | 300<br>2.07                    | 83<br>3.27                | 121<br>4.76               | UL FM       |
| 150× 40<br>6× 1½      | 165.1× 48.3<br>6.500× 1.900  | 300<br>2.07                    | 92<br>3.62                | 124<br>4.88               | UL FM       |
| 150× 50<br>6× 2       | 165.1× 60.3<br>6.500× 2.375  | 300<br>2.07                    | 92<br>3.62                | 124<br>4.88               | UL FM       |
| 150× 65<br>6× 2½      | 165.1× 76.1<br>6.500× 3.000  | 300<br>2.07                    | 107<br>4.21               | 129<br>5.08               | UL FM       |
| 150× 80<br>6× 3       | 165.1× 88.9<br>6.500× 3.500  | 300<br>2.07                    | 107<br>4.21               | 129<br>5.08               | UL FM       |
| 150× 100<br>6× 4      | 165.1× 114.3<br>6.500× 4.500 | 300<br>2.07                    | 121<br>4.76               | 132<br>5.20               | UL FM       |
| 150× 50<br>6× 2       | 168.3× 60.3<br>6.625× 2.375  | 300<br>2.07                    | 92<br>3.62                | 124<br>4.88               | UL FM       |
| 150× 65<br>6× 2½      | 168.3× 76.1<br>6.625× 3.000  | 300<br>2.07                    | 107<br>4.21               | 129<br>5.08               | UL FM       |

## 180

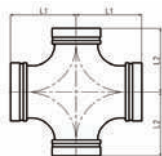
Cross



| Nominal Size<br>mm/in | Pipe<br>O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|----------------------|-----------------------------|--------------------------|--------------|
| 32<br>1¼              | 42.4<br>1.660        | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 40<br>1½              | 48.3<br>1.900        | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 50<br>2               | 60.3<br>2.375        | 500<br>3.45                 | 70<br>2.75               | UL FM<br>VdS |
| 65<br>2½              | 73.0<br>2.875        | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 65<br>2½              | 76.1<br>3.000        | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500        | 500<br>3.45                 | 85.5<br>3.37             | UL FM<br>VdS |
| 100<br>4              | 108.0<br>4.250       | 500<br>3.45                 | 101<br>3.98              | UL FM        |
| 100<br>4              | 114.3<br>4.500       | 500<br>3.45                 | 101<br>3.98              | UL FM<br>VdS |
| 125<br>5              | 139.7<br>5.500       | 500<br>3.45                 | 124<br>4.88              | UL FM<br>VdS |
| 125<br>5              | 141.3<br>5.563       | 500<br>3.45                 | 124<br>4.88              | UL FM        |
| 150<br>6              | 159.0<br>6.250       | 500<br>3.45                 | 140<br>5.50              | UL FM        |
| 150<br>6              | 165.1<br>6.500       | 500<br>3.45                 | 140<br>5.50              | UL FM        |
| 150<br>6              | 168.3<br>6.625       | 500<br>3.45                 | 140<br>5.50              | UL FM<br>VdS |
| 200<br>8              | 219.1<br>8.625       | 500<br>3.45                 | 175<br>6.89              | UL FM<br>VdS |
| 250<br>10             | 273.0<br>10.750      | 500<br>3.45                 | 229<br>9.00              | UL FM<br>VdS |
| 300<br>12             | 323.9<br>12.750      | 500<br>3.45                 | 254<br>10.00             | UL FM<br>VdS |

# 180R

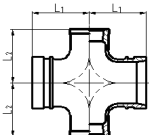
Reducing Cross



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in            | Working Pressure<br>PSI/MPa | Dimensions L1<br>mm/in | Dimensions L2<br>mm/in | Certificate |
|-----------------------|------------------------------|-----------------------------|------------------------|------------------------|-------------|
| 65x 50<br>2½x 2       | 76.1x 60.3<br>3.000x 2.375   | 500<br>3.45                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 80x 50<br>3x 2        | 88.9x 60.3<br>3.500x 2.375   | 500<br>3.45                 | 108<br>4.25            | 108<br>4.25            | UL FM       |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375  | 500<br>3.45                 | 101<br>3.98            | 101<br>3.98            | UL FM       |
| 100x 80<br>4x 3       | 114.3x 88.9<br>4.500x 3.500  | 500<br>3.45                 | 127<br>5.00            | 127<br>5.00            | UL FM       |
| 125x 100<br>5x 4      | 139.7x 114.3<br>5.500x 4.500 | 500<br>3.45                 | 124<br>4.88            | 124<br>4.88            | UL FM       |
| 150x 50<br>6x 2       | 165.1x 60.3<br>6.500x 2.375  | 500<br>3.45                 | 140<br>5.50            | 140<br>5.50            | UL FM       |
| 150x 65<br>6x 2½      | 165.1x 76.1<br>6.500x 3.000  | 500<br>3.45                 | 165<br>6.50            | 165<br>6.50            | UL FM       |
| 150x 80<br>6x 3       | 165.1x 88.9<br>6.500x 3.500  | 500<br>3.45                 | 140<br>5.50            | 140<br>5.50            | UL FM       |
| 150x 100<br>6x 4      | 165.1x 114.3<br>6.500x 4.500 | 500<br>3.45                 | 140<br>5.50            | 140<br>5.50            | UL FM       |
| 200x 50<br>8x 2       | 219.1x 60.3<br>8.625x 2.375  | 500<br>3.45                 | 197<br>7.75            | 197<br>7.75            | UL FM       |
| 200x 50<br>8x 4       | 219.1x 114.3<br>8.625x 4.500 | 500<br>3.45                 | 175<br>6.89            | 175<br>6.89            | UL FM       |
| 200x 100<br>8x 4      | 219.1x 114.3<br>8.625x 4.500 | 500<br>3.45                 | 175<br>6.89            | 175<br>6.89            | UL FM       |
| 200x 125<br>8x 5      | 219.1x 139.7<br>8.625x 5.500 | 500<br>3.45                 | 175<br>6.89            | 175<br>6.89            | UL FM       |
| 200x 150<br>8x 6      | 219.1x 159.0<br>8.625x 6.250 | 500<br>3.45                 | 175<br>6.89            | 175<br>6.89            | UL FM       |
| 200x 150<br>8x 6      | 219.1x 165.1<br>8.625x 6.500 | 500<br>3.45                 | 175<br>6.89            | 175<br>6.89            | UL FM       |

# 181

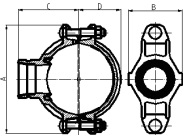
Reducing Cross



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in           | Working Pressure<br>PSI/MPa | Dimensions L1<br>mm/in | Dimensions L2<br>mm/in | Certificate |
|-----------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------|
| 65x 50<br>2½x 2       | 76.1x 60.3<br>3.000x 2.375  | 300<br>2.07                 | 76<br>3.00             | 76<br>3.00             | UL FM       |
| 80x 32<br>3x 1¼       | 88.9x 42.4<br>3.500x 1.660  | 300<br>2.07                 | 108<br>4.25            | 108<br>4.25            | UL FM       |
| 80x 40<br>3x 1½       | 88.9x 48.3<br>3.500x 1.900  | 300<br>2.07                 | 108<br>4.25            | 108<br>4.25            | UL FM       |
| 80x 50<br>3x 2        | 88.9x 60.3<br>3.500x 2.375  | 300<br>2.07                 | 85.5<br>3.37           | 85.5<br>3.37           | UL FM       |
| 100x 25<br>4x 1       | 114.3x 33.7<br>4.500x 1.315 | 300<br>2.07                 | 76<br>2.99             | 88<br>3.47             | UL FM       |
| 100x 32<br>4x 1¼      | 114.3x 42.4<br>4.500x 1.660 | 300<br>2.07                 | 76<br>2.99             | 88<br>3.47             | UL FM       |
| 100x 40<br>4x 1½      | 114.3x 48.3<br>4.500x 1.900 | 300<br>2.07                 | 85<br>3.35             | 91<br>3.58             | UL FM       |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375 | 300<br>2.07                 | 85<br>3.35             | 91<br>3.58             | UL FM       |
| 100x 65<br>4x 2½      | 114.3x 76.1<br>4.500x 3.000 | 300<br>2.07                 | 101<br>3.98            | 101<br>3.98            | UL FM       |
| 100x 80<br>4x 3       | 114.3x 88.9<br>4.500x 3.500 | 300<br>2.07                 | 101<br>3.98            | 101<br>3.98            | UL FM       |
| 150x 32<br>6x 1¼      | 165.1x 42.4<br>6.500x 1.660 | 300<br>2.07                 | 142<br>5.59            | 142<br>5.59            | UL FM       |
| 150x 40<br>6x 1½      | 165.1x 48.3<br>6.500x 1.900 | 300<br>2.07                 | 142<br>5.59            | 142<br>5.59            | UL FM       |
| 150x 50<br>6x 2       | 165.1x 60.3<br>6.500x 2.375 | 300<br>2.07                 | 142<br>5.59            | 142<br>5.59            | UL FM       |
| 150x 80<br>6x 3       | 165.1x 88.9<br>6.500x 3.500 | 300<br>2.07                 | 140<br>5.50            | 140<br>5.50            | UL FM       |

## 3G

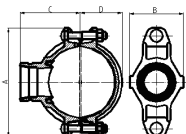
### Mechanical Tee Grooved Outlet



| Nominal Size<br>mm/in     | Pipe<br>O.D<br>mm/in          | Working<br>Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/<br>+0.063,0 | Dimensions<br>mm/in |               |               |              | Bolt Size | Certificate |
|---------------------------|-------------------------------|--------------------------------|------------------------------------------|---------------------|---------------|---------------|--------------|-----------|-------------|
|                           |                               |                                |                                          | A                   | B             | C             | D            |           |             |
| 50x 32<br>2x 1 1/4        | 60.3x 42.4<br>2.375x 1.660    | 300<br>2.07                    | 45<br>1.75                               | 116<br>4.57         | 76<br>2.99    | 69.5<br>2.74  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 50x 40<br>2x 1 1/2        | 60.3x 48.3<br>2.375x 1.900    | 300<br>2.07                    | 45<br>1.75                               | 116<br>4.57         | 76<br>2.99    | 69.5<br>2.74  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 65x 32<br>2 1/2x 1 1/4    | 73.0x 42.4<br>2.875x 1.660    | 300<br>2.07                    | 51<br>2.00                               | 144<br>5.67         | 84.5<br>3.33  | 75<br>2.95    | 49<br>1.93   | 1/2x 70   | UL FM       |
| 65x 25<br>76.1x 1         | 76.1x 33.7<br>3.000x 1.315    | 300<br>2.07                    | 38<br>1.50                               | 137<br>5.39         | 71<br>2.80    | 78<br>3.07    | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 65x 32<br>76.1x 1 1/4     | 76.1x 42.4<br>3.000x 1.660    | 300<br>2.07                    | 51<br>2.00                               | 137<br>5.39         | 84.5<br>3.33  | 78<br>3.07    | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 65x 40<br>76.1x 1 1/2     | 76.1x 48.3<br>3.000x 1.900    | 300<br>2.07                    | 51<br>2.00                               | 137<br>5.39         | 84.5<br>3.33  | 78<br>3.07    | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 80x 25<br>3x 1            | 88.9x 33.7<br>3.500x 1.315    | 300<br>2.07                    | 38<br>1.50                               | 152<br>5.98         | 72.5<br>2.85  | 84.5<br>3.33  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 32<br>3x 1 1/4        | 88.9x 42.4<br>3.500x 1.660    | 300<br>2.07                    | 51<br>2.00                               | 152<br>5.98         | 85.5<br>3.37  | 84.5<br>3.33  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 40<br>3x 1 1/2        | 88.9x 48.3<br>3.500x 1.900    | 300<br>2.07                    | 51<br>2.00                               | 152<br>5.98         | 85.5<br>3.37  | 84.5<br>3.33  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 50<br>3x 2            | 88.9x 60.3<br>3.500x 2.375    | 300<br>2.07                    | 64<br>2.50                               | 152<br>5.98         | 98<br>3.86    | 84.5<br>3.33  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 100x 25<br>4x 1           | 114.3x 33.7<br>4.500x 1.315   | 300<br>2.07                    | 38<br>1.50                               | 188<br>7.40         | 78.4<br>3.09  | 102<br>4.02   | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 40<br>4x 1 1/2       | 114.3x 48.3<br>4.500x 1.900   | 300<br>2.07                    | 51<br>2.00                               | 188<br>7.40         | 89<br>3.50    | 102<br>4.02   | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 50<br>4x 2           | 114.3x 60.3<br>4.500x 2.375   | 300<br>2.07                    | 64<br>2.50                               | 188<br>7.40         | 104.5<br>4.11 | 102<br>4.02   | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 65<br>4x 2 1/2       | 114.3x 73.0<br>4.500x 2.875   | 300<br>2.07                    | 70<br>2.75                               | 188<br>7.40         | 104.5<br>4.11 | 102<br>4.02   | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 65<br>4x 76.1        | 114.3x 76.1<br>4.500x 3.000   | 300<br>2.07                    | 70<br>2.75                               | 188<br>7.40         | 104.5<br>4.11 | 102<br>4.02   | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 80<br>4x 3           | 114.3x 88.9<br>4.500x 3.500   | 300<br>2.07                    | 89<br>3.50                               | 188<br>7.40         | 124<br>4.88   | 102<br>4.02   | 70<br>2.76   | 1/2x 75   | UL FM       |
| 125x 80<br>133.0x 3       | 133.0x 88.9<br>5.250x 3.500   | 300<br>2.07                    | 89<br>3.50                               | 209<br>8.23         | 132<br>5.20   | 109.5<br>4.31 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 50<br>139.7x 2       | 139.7x 60.3<br>5.500x 2.375   | 300<br>2.07                    | 64<br>2.50                               | 221.5<br>8.72       | 112.5<br>4.43 | 118<br>4.65   | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 65<br>139.7x 76.1    | 139.7x 76.1<br>5.500x 3.000   | 300<br>2.07                    | 70<br>2.75                               | 221.5<br>8.72       | 112.5<br>4.43 | 118<br>4.65   | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 80<br>139.7x 3       | 139.7x 88.9<br>5.500x 3.500   | 300<br>2.07                    | 89<br>3.50                               | 221.5<br>8.720      | 136<br>5.35   | 122<br>4.80   | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 100<br>139.7x 4      | 139.7x 114.3<br>5.500x 4.500  | 300<br>2.07                    | 114<br>4.50                              | 221.5<br>8.720      | 160<br>6.30   | 125<br>4.92   | 84<br>3.31   | 5/8x 85   | UL FM       |
| 150x 100<br>159.0x 108.0  | 159.1x 108.0<br>6.250x 4.250  | 300<br>2.07                    | 114<br>4.50                              | 244<br>9.60         | 154<br>6.06   | 133<br>5.24   | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 100<br>159.0x 4      | 159.1x 114.3<br>6.250x 4.500  | 300<br>2.07                    | 114<br>4.50                              | 244<br>9.60         | 159<br>6.26   | 125<br>4.92   | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 50<br>165.1x 2       | 165.1x 60.3<br>6.500x 2.375   | 300<br>2.07                    | 64<br>2.50                               | 244<br>9.60         | 112.5<br>4.43 | 127<br>5.00   | 97.5<br>3.84 | 5/8x 105  | UL FM       |
| 150x 65<br>165.1x 76.1    | 165.1x 76.1<br>6.500x 3.000   | 300<br>2.07                    | 70<br>2.75                               | 244<br>9.60         | 112.5<br>4.43 | 127<br>5.00   | 97.5<br>3.84 | 5/8x 105  | UL FM       |
| 150x 80<br>6 1/2 O.D x 3  | 165.1x 88.9<br>6.500x 3.500   | 300<br>2.07                    | 89<br>3.50                               | 244<br>9.60         | 132<br>5.20   | 141<br>5.55   | 97.5<br>3.84 | 5/8x 105  | UL FM       |
| 150x 100<br>6 1/2 O.D x 4 | 165.1x 114.3<br>6.500x 4.500  | 300<br>2.07                    | 114<br>4.50                              | 244<br>9.60         | 154<br>6.06   | 135<br>5.32   | 97.5<br>3.84 | 5/8x 105  | UL FM       |
| 150x 40<br>6x 1 1/2       | 168.3x 48.3<br>6.500x 1.900   | 300<br>2.07                    | 51<br>2.00                               | 247<br>9.72         | 95<br>3.74    | 128<br>5.04   | 98.5<br>3.88 | 5/8x 105  | UL FM       |
| 150x 50<br>6x 2           | 168.3x 60.3<br>6.625x 2.375   | 300<br>2.07                    | 64<br>2.50                               | 247<br>9.72         | 114<br>4.49   | 134<br>5.28   | 98.5<br>3.88 | 5/8x 105  | UL FM       |
| 150x 65<br>6x 2 1/2       | 168.3x 73.0<br>6.625x 2.875   | 300<br>2.07                    | 70<br>2.75                               | 247<br>9.72         | 115<br>4.53   | 134<br>5.28   | 98.5<br>3.88 | 5/8x 105  | UL FM       |
| 150x 80<br>6x 3           | 168.3x 88.9<br>6.625x 3.500   | 300<br>2.07                    | 89<br>3.50                               | 247<br>9.72         | 132<br>5.20   | 141<br>5.55   | 98.5<br>3.88 | 5/8x 105  | UL FM       |
| 150x 100<br>6x 4          | 168.3x 114.3<br>6.625x 4.500  | 300<br>2.07                    | 114<br>4.50                              | 247<br>9.72         | 156.5<br>6.16 | 138<br>5.43   | 98.5<br>3.88 | 5/8x 105  | UL FM       |
| 200x 50<br>8x 2           | 219.1x 60.3<br>8.625x 2.375   | 300<br>2.07                    | 64<br>2.50                               | 322<br>12.68        | 118<br>4.65   | 158<br>6.22   | 125<br>4.92  | 3/4x 115  | UL FM       |
| 200x 65<br>8x 76.1        | 219.1x 76.1<br>8.625x 3.000   | 300<br>2.07                    | 70<br>2.75                               | 322<br>12.68        | 118<br>4.65   | 158<br>6.22   | 125<br>4.92  | 3/4x 115  | UL FM       |
| 200x 80<br>8x 3           | 219.1x 88.9<br>8.625x 3.500   | 300<br>2.07                    | 89<br>3.50                               | 322<br>12.68        | 136.5<br>5.37 | 161<br>6.34   | 125<br>4.92  | 3/4x 115  | UL FM       |
| 200x 100<br>8x 4          | 219.1x 114.3<br>8.625x 4.500  | 300<br>2.07                    | 114<br>4.50                              | 322<br>12.68        | 164<br>6.46   | 161<br>6.34   | 125<br>4.92  | 3/4x 115  | UL FM       |
| 250x 100<br>10x 4         | 273.0x 114.3<br>10.750x 4.500 | 300<br>2.07                    | 114<br>4.50                              | 376<br>14.80        | 164<br>6.46   | 189<br>7.44   | 155<br>6.10  | 3/4x 120  | UL FM       |

## 3GS

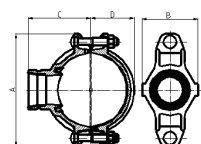
Light-duty Mechanical  
Tee Grooved Outlet



| Nominal Size<br>mm/in    | Pipe O.D<br>mm/in            | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>mm/in |               |               |              | Bolt Size | Certificate |
|--------------------------|------------------------------|-----------------------------|--------------------------------------|---------------------|---------------|---------------|--------------|-----------|-------------|
|                          |                              |                             |                                      | A                   | B             | C             | D            |           |             |
| 65× 25<br>76.1× 1        | 76.1× 33.7<br>3.000× 1.315   | 300<br>2.07                 | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 78<br>3.07    | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 65× 32<br>76.1× 1¼       | 76.1× 42.4<br>3.000× 1.660   | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39         | 84.5<br>3.33  | 78<br>3.07    | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 65× 40<br>76.1× 1½       | 76.1× 48.3<br>3.000× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39         | 84.5<br>3.33  | 78<br>3.07    | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 80× 25<br>3× 1           | 88.9× 33.7<br>3.500× 1.315   | 300<br>2.07                 | 38<br>1.50                           | 150<br>5.91         | 71.0<br>2.80  | 84<br>3.31    | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 32<br>3× 1¼          | 88.9× 42.4<br>3.500× 1.660   | 300<br>2.07                 | 51<br>2.00                           | 150<br>5.91         | 84.5<br>3.33  | 84<br>3.31    | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 40<br>3× 1½          | 88.9× 48.3<br>3.500× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 150<br>5.91         | 84.5<br>3.33  | 84<br>3.31    | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 50<br>3× 2           | 88.9× 60.3<br>3.500× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 150<br>5.91         | 98<br>3.86    | 84<br>3.31    | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 100× 25<br>4× 1          | 114.3× 33.7<br>4.500× 1.315  | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01         | 77.5<br>3.05  | 98<br>3.86    | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 40<br>4× 1½         | 114.3× 48.3<br>4.500× 1.900  | 300<br>2.07                 | 51<br>2.00                           | 178<br>7.01         | 88<br>3.46    | 98<br>3.86    | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 50<br>4× 2          | 114.3× 60.3<br>4.500× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 178<br>7.01         | 88<br>3.46    | 98<br>3.86    | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 65<br>4× 2½         | 114.3× 73.0<br>4.500× 2.875  | 300<br>2.07                 | 70<br>2.75                           | 178<br>7.01         | 103.5<br>4.07 | 98<br>3.86    | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 65<br>4× 76.1       | 114.3× 76.1<br>4.500× 3.000  | 300<br>2.07                 | 70<br>2.75                           | 178<br>7.01         | 103.5<br>4.07 | 98<br>3.86    | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 80<br>4× 3          | 114.3× 88.9<br>4.500× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 178<br>7.01         | 103.5<br>4.07 | 98<br>3.86    | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 125× 80<br>133.0× 3      | 133.0× 88.9<br>5.250× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 203<br>7.99         | 132<br>5.12   | 110<br>4.33   | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 50<br>139.7× 2      | 139.7× 60.3<br>5.500× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 210<br>8.27         | 110<br>4.33   | 113<br>4.45   | 82<br>3.23   | 5/8× 85   | UL FM       |
| 125× 65<br>139.7× 76.1   | 139.7× 76.1<br>5.500× 3.000  | 300<br>2.07                 | 70<br>2.75                           | 210<br>8.27         | 110<br>4.33   | 113<br>4.45   | 82<br>3.23   | 5/8× 85   | UL FM       |
| 125× 80<br>139.7× 3      | 139.7× 88.9<br>5.500× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 210<br>8.27         | 130<br>5.12   | 113<br>4.45   | 82<br>3.23   | 5/8× 85   | UL FM       |
| 125× 100<br>139.7× 4     | 139.7× 114.3<br>5.500× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 210<br>8.27         | 153<br>6.02   | 115<br>4.52   | 82<br>3.23   | 5/8× 85   | UL FM       |
| 150× 100<br>159.0× 108.0 | 159.1× 108.0<br>6.250× 4.250 | 300<br>2.07                 | 114<br>4.50                          | 227<br>8.94         | 155<br>6.10   | 122.5<br>4.83 | 91<br>3.58   | 5/8× 105  | UL FM       |
| 150× 100<br>159.0× 4     | 159.1× 114.3<br>6.250× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 227<br>8.94         | 155<br>6.10   | 122.5<br>4.83 | 91<br>3.58   | 5/8× 105  | UL FM       |
| 150× 50<br>165.1× 2      | 165.1× 60.3<br>6.500× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 235<br>9.25         | 110<br>4.33   | 124.5<br>4.90 | 94.5<br>3.72 | 5/8× 105  | UL FM       |
| 150× 65<br>165.1× 76.1   | 165.1× 76.1<br>6.500× 3.000  | 300<br>2.07                 | 70<br>2.75                           | 235<br>9.25         | 110<br>4.33   | 124.5<br>4.90 | 94.5<br>3.72 | 5/8× 105  | UL FM       |
| 150× 80<br>165.1× 3      | 165.1× 88.9<br>6.500× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 235<br>9.25         | 130<br>5.12   | 124.5<br>4.90 | 94.5<br>3.72 | 5/8× 105  | UL FM       |
| 150× 100<br>165.1× 4     | 165.1× 114.3<br>6.500× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 235<br>9.25         | 155<br>6.10   | 126<br>4.96   | 94.5<br>3.72 | 5/8× 105  | UL FM       |
| 150× 32<br>6× 1¼         | 168.3× 42.4<br>6.500× 1.660  | 300<br>2.07                 | 51<br>2.00                           | 240<br>9.45         | 92.5<br>3.64  | 126<br>4.96   | 96.5<br>3.80 | 5/8× 105  | UL FM       |
| 150× 40<br>6× 1½         | 168.3× 48.3<br>6.500× 1.900  | 300<br>2.07                 | 51<br>2.00                           | 240<br>9.45         | 92.5<br>3.64  | 126<br>4.96   | 96.5<br>3.80 | 5/8× 105  | UL FM       |
| 150× 50<br>6× 2          | 168.3× 60.3<br>6.625× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 240<br>9.45         | 110<br>4.33   | 126<br>4.96   | 96.5<br>3.80 | 5/8× 105  | UL FM       |
| 150× 65<br>6× 2½         | 168.3× 73.0<br>6.625× 2.875  | 300<br>2.07                 | 70<br>2.75                           | 240<br>9.45         | 110<br>4.33   | 126<br>4.96   | 96.5<br>3.80 | 5/8× 105  | UL FM       |
| 150× 80<br>6× 3          | 168.3× 88.9<br>6.625× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 240<br>9.45         | 130<br>5.12   | 126<br>4.96   | 96.5<br>3.80 | 5/8× 105  | UL FM       |
| 150× 100<br>6× 4         | 168.3× 114.3<br>6.625× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 240<br>9.45         | 155<br>6.10   | 128<br>5.04   | 96.5<br>3.80 | 5/8× 105  | UL FM       |
| 200× 50<br>8× 2          | 219.1× 60.3<br>8.625× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 300<br>11.81        | 115<br>4.53   | 155<br>6.10   | 123<br>4.84  | 5/8× 105  | UL FM       |
| 200× 65<br>8× 76.1       | 219.1× 76.1<br>8.625× 3.000  | 300<br>2.07                 | 70<br>2.75                           | 300<br>11.81        | 115<br>4.53   | 155<br>6.10   | 123<br>4.84  | 5/8× 105  | UL FM       |
| 200× 80<br>8× 3          | 219.1× 88.9<br>8.625× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 300<br>11.81        | 133.5<br>5.25 | 155<br>6.10   | 123<br>4.84  | 5/8× 105  | UL FM       |
| 200× 100<br>8× 4         | 219.1× 114.3<br>8.625× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 300<br>11.81        | 159.5<br>6.29 | 160<br>6.30   | 123<br>4.84  | 5/8× 105  | UL FM       |

# 3J

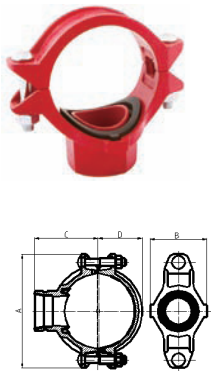
## Mechanical Tee Threaded Outlet



| Nominal Size<br>mm/in   | Pipe<br>O.D<br>mm/in        | Working<br>Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>mm/in |               |             |              | Bolt Size | Certificate |
|-------------------------|-----------------------------|--------------------------------|--------------------------------------|---------------------|---------------|-------------|--------------|-----------|-------------|
|                         |                             |                                |                                      | A                   | B             | C           | D            |           |             |
| 50x 15<br>2x 1/2        | 60.3x 21.3<br>2.375x 0.825  | 300<br>2.07                    | 38<br>1.50                           | 116<br>4.57         | 68<br>2.68    | 60<br>2.36  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 50x 20<br>2x 3/4        | 60.3x 26.9<br>2.375x 1.050  | 300<br>2.07                    | 38<br>1.50                           | 116<br>4.57         | 68<br>2.68    | 60<br>2.36  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 50x 25<br>2x 1          | 60.3x 33.7<br>2.375x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 116<br>4.57         | 68<br>2.68    | 60<br>2.36  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 50x 32<br>2x 1 1/4      | 60.3x 42.4<br>2.375x 1.660  | 300<br>2.07                    | 45<br>1.75                           | 116<br>4.57         | 76<br>2.99    | 65<br>2.56  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 50x 40<br>2x 1 1/2      | 60.3x 48.3<br>2.375x 1.900  | 300<br>2.07                    | 45<br>1.75                           | 116<br>4.57         | 76<br>2.99    | 65<br>2.56  | 39<br>1.54   | 3/8x 55   | UL FM       |
| 65x 20<br>2 1/2x 3/4    | 73.0x 26.9<br>2.875x 1.050  | 300<br>2.07                    | 38<br>1.50                           | 144<br>5.67         | 71<br>2.76    | 75<br>2.72  | 49<br>1.93   | 1/2x 70   | UL FM       |
| 65x 25<br>2 1/2x 1      | 73.0x 33.7<br>2.875x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 144<br>5.67         | 70<br>2.76    | 69<br>2.72  | 49<br>1.93   | 1/2x 70   | UL FM       |
| 65x 32<br>2 1/2x 1 1/4  | 73.0x 42.4<br>2.875x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 144<br>5.67         | 84.5<br>3.33  | 73<br>2.87  | 49<br>1.93   | 1/2x 70   | UL FM       |
| 65x 40<br>2 1/2x 1 1/2  | 73.0x 48.3<br>2.875x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 144<br>5.67         | 84.5<br>3.33  | 73<br>2.87  | 49<br>1.93   | 1/2x 70   | UL FM       |
| 65x 15<br>76.1x 1/2     | 76.1x 21.3<br>3.000x 0.825  | 300<br>2.07                    | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 75<br>3.05  | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 65x 20<br>76.1x 3/4     | 76.1x 26.9<br>3.000x 1.050  | 300<br>2.07                    | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 75<br>3.05  | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 65x 25<br>76.1x 1       | 76.1x 33.7<br>3.000x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 75<br>3.05  | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 65x 32<br>76.1x 1 1/4   | 76.1x 42.4<br>3.000x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 137<br>5.39         | 84.5<br>3.33  | 75<br>3.05  | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 65x 40<br>76.1x 1 1/2   | 76.1x 48.3<br>3.000x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 137<br>5.39         | 84.5<br>3.33  | 75<br>3.05  | 49.5<br>1.95 | 1/2x 70   | UL FM       |
| 80x 25<br>3x 1/2        | 88.9x 21.3<br>3.500x 0.825  | 300<br>2.07                    | 38<br>1.50                           | 152<br>5.98         | 72.5<br>2.85  | 80<br>3.15  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 3x 3/4                  | 88.9x 26.9<br>3.500x 1.050  | 300<br>2.07                    | 38<br>1.50                           | 152<br>5.98         | 72.5<br>2.85  | 80<br>3.15  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 25<br>3x 1          | 88.9x 33.7<br>3.500x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 152<br>5.98         | 72.5<br>2.85  | 80<br>3.15  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 32<br>3x 1 1/4      | 88.9x 42.4<br>3.500x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 152<br>5.98         | 85.5<br>3.37  | 80<br>3.15  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 40<br>3x 1 1/2      | 88.9x 48.3<br>3.500x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 152<br>5.98         | 85.5<br>3.37  | 80<br>3.15  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 80x 50<br>3x 2          | 88.9x 60.3<br>3.500x 2.375  | 300<br>2.07                    | 64<br>2.50                           | 152<br>5.98         | 98<br>3.86    | 80<br>3.15  | 56.5<br>2.22 | 1/2x 75   | UL FM       |
| 100x 25<br>108.0x 1     | 108.1x 33.7<br>4.250x 1.315 | 300<br>2.07                    | 38<br>1.50                           | 172<br>6.77         | 78.5<br>3.09  | 87<br>3.43  | 64.5<br>2.54 | 1/2x 75   | UL FM       |
| 100x 32<br>108.0x 1 1/4 | 108.1x 42.4<br>4.250x 1.660 | 300<br>2.07                    | 51<br>2.00                           | 172<br>6.77         | 89<br>3.50    | 87<br>3.43  | 64.5<br>2.54 | 1/2x 75   | UL FM       |
| 100x 40<br>108.0x 1 1/2 | 108.0x 48.3<br>4.250x 1.900 | 300<br>2.07                    | 51<br>2.00                           | 172<br>6.77         | 89<br>3.50    | 87<br>3.43  | 64.5<br>2.54 | 1/2x 75   | UL FM       |
| 100x 50<br>4x 2         | 114.3x 60.3<br>4.500x 2.375 | 300<br>2.07                    | 64<br>2.50                           | 188<br>7.40         | 104.5<br>4.11 | 100<br>3.94 | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 65<br>108.0x 76.1  | 108.0x 76.1<br>4.250x 3.000 | 300<br>2.07                    | 70<br>2.75                           | 172<br>6.77         | 106.5<br>4.19 | 100<br>3.94 | 64.5<br>2.54 | 1/2x 75   | UL FM       |
| 100x 15<br>4x 1/2       | 114.3x 21.3<br>4.500x 0.825 | 300<br>2.07                    | 38<br>1.50                           | 188<br>7.40         | 78.5<br>3.09  | 90<br>3.54  | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 20<br>4x 3/4       | 114.3x 26.9<br>4.500x 1.050 | 300<br>2.07                    | 38<br>1.50                           | 188<br>7.40         | 78.5<br>3.09  | 90<br>3.54  | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 25<br>4x 1         | 114.3x 33.7<br>4.500x 1.315 | 300<br>2.07                    | 38<br>1.50                           | 188<br>7.40         | 78.5<br>3.09  | 93<br>3.66  | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 32<br>4x 1 1/4     | 114.3x 42.4<br>4.500x 1.660 | 300<br>2.07                    | 51<br>2.00                           | 188<br>7.40         | 89<br>3.50    | 95<br>3.74  | 70<br>2.76   | 1/2x 75   | UL FM       |

# 3J

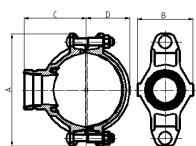
## Mechanical Tee Threaded Outlet



| Nominal Size<br>mm/in  | Pipe O.D<br>mm/in            | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>mm/in |               |             |              | Bolt Size | Certificate |
|------------------------|------------------------------|-----------------------------|--------------------------------------|---------------------|---------------|-------------|--------------|-----------|-------------|
|                        |                              |                             |                                      | A                   | B             | C           | D            |           |             |
| 100x 40<br>4x 1½       | 114.3x 48.3<br>4.500x 1.900  | 300<br>2.07                 | 51<br>2.00                           | 188<br>7.40         | 89<br>3.50    | 97<br>3.82  | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 50<br>4x 2        | 108.0x 60.3<br>4.250x 2.375  | 300<br>2.07                 | 64<br>2.50                           | 172<br>6.77         | 106.5<br>4.19 | 92<br>3.62  | 64.5<br>2.54 | 1/2x 75   | UL FM       |
| 100x 65<br>4x 2½       | 114.3x 73.0<br>4.500x 2.875  | 300<br>2.07                 | 70<br>2.75                           | 188<br>7.40         | 104.5<br>4.11 | 102<br>4.02 | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 65<br>4x 76.1     | 114.3x 76.1<br>4.500x 3.000  | 300<br>2.07                 | 70<br>2.75                           | 188<br>7.40         | 104.5<br>4.11 | 102<br>4.02 | 70<br>2.76   | 1/2x 75   | UL FM       |
| 100x 80<br>4x 3        | 114.3x 88.9<br>4.500x 3.500  | 300<br>2.07                 | 89<br>3.50                           | 188<br>7.40         | 124<br>4.88   | 102<br>4.02 | 70<br>2.76   | 1/2x 75   | UL FM       |
| 125x 25<br>133.0x 1    | 133.0x 33.7<br>5.250x 1.315  | 300<br>2.07                 | 38<br>1.50                           | 209<br>8.23         | 78<br>3.07    | 105<br>4.13 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 32<br>133.0x 1.25 | 133.0x 42.4<br>5.250x 1.660  | 300<br>2.07                 | 51<br>2.00                           | 209<br>8.23         | 93<br>3.66    | 105<br>4.13 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 40<br>133.0x 1½   | 133.0x 48.3<br>5.250x 1.900  | 300<br>2.07                 | 51<br>2.00                           | 209<br>8.23         | 93<br>3.66    | 105<br>4.13 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 50<br>133.0x 2    | 133.0x 60.3<br>5.250x 2.375  | 300<br>2.07                 | 64<br>2.50                           | 209<br>8.23         | 112.5<br>4.43 | 110<br>4.33 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 65<br>133.0x 76.1 | 133.0x 76.1<br>5.250x 3.000  | 300<br>2.07                 | 70<br>2.75                           | 209<br>8.23         | 112.5<br>4.43 | 115<br>4.53 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 80<br>133.0x 3    | 133.0x 88.9<br>5.250x 3.500  | 300<br>2.07                 | 89<br>3.50                           | 209<br>8.23         | 132<br>5.20   | 118<br>4.65 | 77<br>3.03   | 5/8x 85   | UL FM       |
| 125x 25<br>139.7x 1    | 139.7x 33.7<br>5.500x 1.315  | 300<br>2.07                 | 38<br>1.50                           | 221.5<br>8.72       | 78<br>3.07    | 110<br>4.33 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 32<br>139.7x 1¼   | 139.7x 42.4<br>5.500x 1.660  | 300<br>2.07                 | 51<br>2.00                           | 221.5<br>8.72       | 93<br>3.66    | 112<br>4.41 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 40<br>139.7x 1½   | 139.7x 48.3<br>5.500x 1.900  | 300<br>2.07                 | 51<br>2.00                           | 221.5<br>8.72       | 93<br>3.66    | 112<br>4.41 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 50<br>139.7x 2    | 139.7x 60.3<br>5.500x 2.375  | 300<br>2.07                 | 64<br>2.50                           | 221.5<br>8.72       | 112.5<br>4.43 | 115<br>4.53 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 65<br>139.7x 76.1 | 139.7x 76.1<br>5.500x 3.000  | 300<br>2.07                 | 70<br>2.75                           | 221.5<br>8.72       | 112.5<br>4.43 | 115<br>4.53 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 80<br>139.7x 3    | 139.7x 88.9<br>5.500x 3.500  | 300<br>2.07                 | 89<br>3.50                           | 221.5<br>8.72       | 132<br>5.20   | 120<br>4.72 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 125x 100<br>139.7x 4   | 139.7x 114.3<br>5.500x 4.500 | 300<br>2.07                 | 114<br>4.50                          | 221.5<br>8.72       | 156<br>6.30   | 125<br>4.92 | 84<br>3.31   | 5/8x 85   | UL FM       |
| 150x 25<br>159.0x 1    | 159.0x 33.7<br>6.250x 1.315  | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60         | 78<br>3.07    | 116<br>4.57 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 32<br>159.0x 1¼   | 159.0x 42.4<br>6.250x 1.660  | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60         | 93<br>3.66    | 118<br>4.65 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 40<br>159.0x 1½   | 159.0x 48.3<br>6.250x 1.900  | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60         | 93<br>3.66    | 118<br>4.65 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 50<br>159.0x 2    | 159.0x 60.3<br>6.250x 2.375  | 300<br>2.07                 | 64<br>2.50                           | 244<br>9.60         | 112.5<br>4.43 | 115<br>4.92 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 65<br>159.0x 76.1 | 159.0x 76.1<br>6.250x 3.000  | 300<br>2.07                 | 70<br>2.75                           | 244<br>9.60         | 112.5<br>4.43 | 125<br>4.92 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 80<br>159.0x 3    | 159.0x 88.9<br>6.250x 3.500  | 300<br>2.07                 | 89<br>3.50                           | 244<br>9.60         | 133<br>5.20   | 125<br>4.92 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 100<br>159.0x 4   | 159.1x 114.3<br>6.250x 4.500 | 300<br>2.07                 | 114<br>4.50                          | 244<br>9.60         | 156.5<br>6.16 | 130<br>5.12 | 94<br>3.70   | 5/8x 105  | UL FM       |
| 150x 15<br>165.1x ½    | 165.1x 21.3<br>6.500x 0.825  | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60         | 78<br>3.07    | 115<br>4.53 | 97.5<br>3.84 | 5/8x 105  | UL FM       |

## 3J

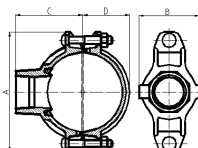
### Mechanical Tee Threaded Outlet



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in             | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>mm/in |               |               |              | Bolt Size | Certificate |
|-----------------------|-------------------------------|-----------------------------|--------------------------------------|---------------------|---------------|---------------|--------------|-----------|-------------|
|                       |                               |                             |                                      | A                   | B             | C             | D            |           |             |
| 125× 20<br>165.1× ¾   | 165.1× 26.9<br>6.500× 1.050   | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60         | 78<br>3.07    | 115<br>4.53   | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 25<br>165.1× 1   | 165.1× 33.7<br>6.500× 1.315   | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60         | 78<br>3.07    | 118<br>4.65   | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 32<br>165.1× 1¼  | 165.1× 42.4<br>6.500× 1.660   | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60         | 93<br>3.66    | 118<br>4.65   | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 40<br>165.1× 1½  | 165.1× 48.3<br>6.500× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60         | 93<br>3.66    | 118<br>4.65   | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 50<br>165.1× 2   | 165.1× 60.3<br>6.500× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 244<br>9.60         | 112.5<br>4.43 | 128.5<br>5.43 | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 65<br>165.1× 2½  | 165.1× 76.1<br>6.500× 3.000   | 300<br>2.07                 | 70<br>2.75                           | 244<br>9.60         | 112.5<br>4.43 | 128.5<br>5.43 | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 80<br>165.1× 3   | 165.1× 88.9<br>6.500× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 244<br>9.60         | 132<br>5.20   | 128.5<br>5.06 | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 100<br>165.1× 4  | 165.1× 114.3<br>6.500× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 244<br>9.60         | 154<br>6.18   | 135<br>5.32   | 97.5<br>3.84 | 5/8× 105  | UL FM       |
| 150× 32<br>6× 1¼      | 168.3× 42.4<br>6.500× 1.660   | 300<br>2.07                 | 51<br>2.00                           | 247<br>9.72         | 95<br>3.74    | 130<br>5.12   | 98.5<br>3.88 | 5/8× 105  | UL FM       |
| 150× 40<br>6× 1½      | 168.3× 48.3<br>6.500× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 247<br>9.72         | 95<br>3.74    | 122<br>4.80   | 98.5<br>3.88 | 5/8× 105  | UL FM       |
| 150× 50<br>6× 2       | 168.3× 60.3<br>6.625× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 247<br>9.72         | 112.5<br>4.43 | 132<br>5.20   | 98.5<br>3.88 | 5/8× 105  | UL FM       |
| 150× 65<br>6× 2½      | 168.3× 73.0<br>6.625× 2.875   | 300<br>2.07                 | 70<br>2.75                           | 247<br>9.72         | 112.5<br>4.43 | 132<br>5.20   | 98.5<br>3.88 | 5/8× 105  | UL FM       |
| 150× 80<br>6× 3       | 168.3× 88.9<br>6.625× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 247<br>9.72         | 132<br>5.20   | 140<br>5.51   | 98.5<br>3.88 | 5/8× 105  | UL FM       |
| 150× 100<br>6× 4      | 168.3× 114.3<br>6.625× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 247<br>9.72         | 156.5<br>6.16 | 140<br>5.51   | 98.5<br>3.88 | 5/8× 105  | UL FM       |
| 200× 25<br>8× 1       | 219.0× 33.7<br>8.625× 1.315   | 300<br>2.07                 | 38<br>1.50                           | 322<br>12.68        | 79.5<br>3.13  | 150<br>5.91   | 125<br>4.92  | 3/4× 115  | UL FM       |
| 200× 32<br>8× 1¼      | 219.1× 42.4<br>8.625× 1.660   | 300<br>2.07                 | 51<br>2.00                           | 322<br>12.68        | 96.5<br>3.80  | 150<br>5.91   | 125<br>4.92  | 3/4× 115  | UL FM       |
| 200× 40<br>8× 1½      | 219.1× 48.3<br>8.625× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 322<br>12.68        | 96.5<br>3.80  | 150<br>5.91   | 125<br>4.92  | 3/4× 115  | UL FM       |
| 200× 50<br>8× 2       | 219.1× 60.3<br>8.625× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 322<br>12.68        | 117<br>4.61   | 160<br>6.30   | 125<br>4.92  | 3/4× 115  | UL FM       |
| 200× 65<br>8× 2½      | 219.1× 76.1<br>8.625× 3.000   | 300<br>2.07                 | 70<br>2.75                           | 322<br>12.68        | 118<br>4.65   | 158.5<br>6.24 | 125<br>4.92  | 3/4× 115  | UL FM       |
| 200× 80<br>8× 3       | 219.1× 88.9<br>8.625× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 322<br>12.68        | 136.5<br>5.37 | 160<br>6.30   | 125<br>4.92  | 3/4× 115  | UL FM       |
| 200× 100<br>8× 4      | 219.1× 114.3<br>8.625× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 322<br>12.68        | 164<br>6.46   | 160<br>6.30   | 125<br>4.92  | 3/4× 115  | UL FM       |
| 250× 40<br>10× 1½     | 273.0× 48.3<br>10.750× 1.900  | 300<br>2.07                 | 51<br>2.00                           | 376<br>14.80        | 95.5<br>3.76  | 180<br>7.09   | 155<br>6.10  | 3/4× 120  | UL FM       |
| 250× 50<br>10× 2      | 273.0× 60.3<br>10.750× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 376<br>14.80        | 118<br>4.65   | 185<br>7.28   | 155<br>6.10  | 3/4× 120  | UL FM       |
| 250× 65<br>10× 2½     | 273.0× 76.1<br>10.750× 3.000  | 300<br>2.07                 | 70<br>2.75                           | 376<br>14.80        | 118<br>4.65   | 190<br>7.48   | 155<br>6.10  | 3/4× 120  | UL FM       |
| 250× 80<br>10× 3      | 273.0× 88.9<br>10.750× 3.500  | 300<br>2.07                 | 89<br>3.50                           | 376<br>14.80        | 136.5<br>5.37 | 190<br>7.48   | 155<br>6.10  | 3/4× 120  | UL FM       |
| 250× 100<br>10× 4     | 273.0× 114.3<br>10.750× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 376<br>14.80        | 164<br>6.46   | 190<br>7.48   | 155<br>6.10  | 3/4× 120  | UL FM       |

# 3JS

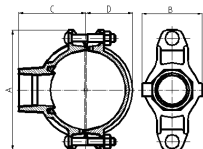
Light-duty Mechanical Tee  
Threaded Outlet



| Nominal Size<br>mm/in  | Pipe O.D<br>mm/in           | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>mm/in |               |              |              | Bolt Size | Certificate |
|------------------------|-----------------------------|-----------------------------|--------------------------------------|---------------------|---------------|--------------|--------------|-----------|-------------|
|                        |                             |                             |                                      | A                   | B             | C            | D            |           |             |
| 65× 15<br>76.1× ½      | 76.1× 21.3<br>3.000× 0.825  | 300<br>2.07                 | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 75<br>3.05   | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 65× 20<br>76.1× ¾      | 76.1× 26.9<br>3.000× 1.050  | 300<br>2.07                 | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 75<br>3.05   | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 65× 25<br>76.1× 1      | 76.1× 33.7<br>3.000× 1.315  | 300<br>2.07                 | 38<br>1.50                           | 137<br>5.39         | 71<br>2.80    | 75<br>3.05   | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 65× 32<br>76.1× 1¼     | 76.1× 42.4<br>3.000× 1.660  | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39         | 84.5<br>3.33  | 75<br>3.05   | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 65× 40<br>76.1× 1½     | 76.1× 48.3<br>3.000× 1.900  | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39         | 84.5<br>3.33  | 75<br>3.05   | 49.5<br>1.95 | 1/2× 70   | UL FM       |
| 80× 15<br>3× ½         | 88.9× 21.3<br>3.500× 0.825  | 300<br>2.07                 | 38<br>1.50                           | 150<br>5.91         | 71.0<br>2.80  | 68<br>2.68   | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 20<br>3× ¾         | 88.9× 26.9<br>3.500× 1.050  | 300<br>2.07                 | 38<br>1.50                           | 150<br>5.91         | 71.0<br>2.80  | 68<br>2.68   | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 25<br>3× 1         | 88.9× 33.7<br>3.500× 1.315  | 300<br>2.07                 | 38<br>1.50                           | 150<br>5.91         | 71.0<br>2.80  | 68<br>2.68   | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 32<br>3× 1¼        | 88.9× 42.4<br>3.500× 1.660  | 300<br>2.07                 | 51<br>2.00                           | 150<br>5.91         | 84.5<br>3.33  | 74<br>2.91   | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 40<br>3× 1½        | 88.9× 48.3<br>3.500× 1.900  | 300<br>2.07                 | 51<br>2.00                           | 150<br>5.91         | 84.5<br>3.33  | 74<br>2.91   | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 80× 50<br>3× 2         | 88.9× 60.3<br>3.500× 2.375  | 300<br>2.07                 | 64<br>2.50                           | 150<br>5.91         | 98<br>3.86    | 77<br>3.03   | 55.5<br>2.19 | 1/2× 75   | UL FM       |
| 100× 25<br>108.0× 1    | 108.1× 33.7<br>4.250× 1.315 | 300<br>2.07                 | 38<br>1.50                           | 172<br>6.77         | 77.5<br>3.05  | 85<br>3.35   | 64.5<br>2.54 | 1/2× 75   | UL FM       |
| 100× 32<br>108.0× 1¼   | 108.1× 42.4<br>4.250× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77         | 88<br>3.46    | 85<br>3.35   | 64.5<br>2.54 | 1/2× 75   | UL FM       |
| 100× 40<br>108.0× 1½   | 108.0× 48.3<br>4.250× 1.900 | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77         | 88<br>3.46    | 85<br>3.35   | 64.5<br>2.54 | 1/2× 75   | UL FM       |
| 100× 50<br>108.0× 2    | 108.0× 60.3<br>4.250× 2.375 | 300<br>2.07                 | 64<br>2.50                           | 172<br>6.77         | 103.5<br>4.19 | 89<br>3.50   | 64.5<br>2.54 | 1/2× 75   | UL FM       |
| 100× 65<br>108.0× 76.1 | 108.0× 76.1<br>4.250× 3.000 | 300<br>2.07                 | 70<br>2.75                           | 172<br>6.77         | 103.5<br>4.07 | 96<br>3.78   | 64.5<br>2.54 | 1/2× 75   | UL FM       |
| 100× 15<br>4× ½        | 114.3× 21.3<br>4.500× 0.825 | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01         | 77.5<br>3.05  | 82<br>3.23   | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 20<br>4× ¾        | 114.3× 26.9<br>4.500× 1.050 | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01         | 77.5<br>3.05  | 82<br>3.23   | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 25<br>4× 1        | 114.3× 33.7<br>4.500× 1.315 | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01         | 77.5<br>3.05  | 82<br>3.23   | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 32<br>4× 1¼       | 114.3× 42.4<br>4.500× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 178<br>7.01         | 88<br>3.46    | 89.5<br>3.53 | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 40<br>4× 1½       | 114.3× 48.3<br>4.500× 1.900 | 300<br>2.07                 | 51<br>2.00                           | 178<br>7.01         | 88<br>3.46    | 89.5<br>3.53 | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 50<br>4× 2        | 114.3× 60.3<br>4.500× 2.375 | 300<br>2.07                 | 64<br>2.50                           | 178<br>7.01         | 103.5<br>4.07 | 92<br>3.62   | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 65<br>4× 2½       | 114.3× 73.0<br>4.500× 2.875 | 300<br>2.07                 | 70<br>2.75                           | 178<br>7.01         | 103.5<br>4.07 | 98<br>3.86   | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 65<br>4× 76.1     | 114.3× 76.1<br>4.500× 3.000 | 300<br>2.07                 | 70<br>2.75                           | 178<br>7.01         | 103.5<br>4.07 | 98<br>3.86   | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 100× 80<br>4× 3        | 114.3× 88.9<br>4.500× 3.500 | 300<br>2.07                 | 89<br>3.50                           | 178<br>7.01         | 124<br>4.88   | 100<br>3.94  | 67.5<br>2.66 | 1/2× 75   | UL FM       |
| 125× 25<br>133.0× 1    | 133.0× 33.7<br>5.250× 1.315 | 300<br>2.07                 | 38<br>1.50                           | 203<br>7.99         | 77<br>3.03    | 98<br>3.86   | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 32<br>133.0× 1.25 | 133.0× 42.4<br>5.250× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 203<br>7.99         | 91<br>3.58    | 102<br>4.01  | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 40<br>133.0× 1½   | 133.0× 48.3<br>5.250× 1.900 | 300<br>2.07                 | 51<br>2.00                           | 203<br>7.99         | 91<br>3.58    | 102<br>4.01  | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 50<br>133.0× 2    | 133.0× 60.3<br>5.250× 2.375 | 300<br>2.07                 | 64<br>2.50                           | 203<br>7.99         | 110<br>4.33   | 105<br>4.13  | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 65<br>133.0× 76.1 | 133.0× 76.1<br>5.250× 3.000 | 300<br>2.07                 | 70<br>2.75                           | 203<br>7.99         | 110<br>4.33   | 110<br>4.33  | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 80<br>133.0× 3    | 133.0× 88.9<br>5.250× 3.500 | 300<br>2.07                 | 89<br>3.50                           | 203<br>7.99         | 132<br>5.12   | 110<br>4.33  | 77.5<br>3.05 | 5/8× 85   | UL FM       |
| 125× 25<br>139.7× 1    | 139.7× 33.7<br>5.500× 1.315 | 300<br>2.07                 | 38<br>1.50                           | 210<br>8.27         | 77<br>3.03    | 100<br>3.94  | 82<br>3.23   | 5/8× 85   | UL FM       |
| 125× 32<br>139.7× 1¼   | 139.7× 42.4<br>5.500× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 210<br>8.27         | 91<br>3.58    | 105<br>4.13  | 82<br>3.23   | 5/8× 85   | UL FM       |

## 3JS

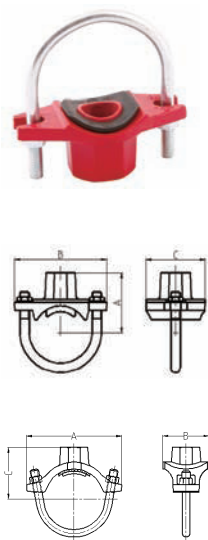
Light-duty Mechanical Tee  
Threaded Outlet



| Nominal<br>Size<br>mm/in | Pipe<br>O.D<br>mm/in         | Working<br>Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>mm/in |               |               |              | Bolt Size | Certificate |
|--------------------------|------------------------------|--------------------------------|--------------------------------------|---------------------|---------------|---------------|--------------|-----------|-------------|
|                          |                              |                                |                                      | A                   | B             | C             | D            |           |             |
| 125x 40<br>139.7x 1½     | 139.7x 48.3<br>5.500x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 210<br>8.27         | 91<br>3.58    | 105<br>4.13   | 82<br>3.23   | 5/8x 85   | UL FM       |
| 125x 50<br>139.7x 2      | 139.7x 60.3<br>5.500x 2.375  | 300<br>2.07                    | 64<br>2.50                           | 210<br>8.27         | 110<br>4.33   | 108<br>4.25   | 82<br>3.23   | 5/8x 85   | UL FM       |
| 125x 65<br>139.7x 2½     | 139.7x 76.1<br>5.500x 3.000  | 300<br>2.07                    | 70<br>2.75                           | 210<br>8.27         | 110<br>4.33   | 115<br>4.53   | 82<br>3.23   | 5/8x 85   | UL FM       |
| 125x 80<br>139.7x 3      | 139.7x 88.9<br>5.500x 3.500  | 300<br>2.07                    | 89<br>3.50                           | 210<br>8.27         | 130<br>5.12   | 115<br>4.53   | 82<br>3.23   | 5/8x 85   | UL FM       |
| 125x 100<br>139.7x 4     | 139.7x 114.3<br>5.500x 4.500 | 300<br>2.07                    | 114<br>4.50                          | 210<br>8.27         | 153<br>6.02   | 118<br>4.65   | 82<br>3.23   | 5/8x 85   | UL FM       |
| 150x 25<br>159.0x 1      | 159.0x 33.7<br>6.250x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 227<br>8.94         | 77<br>3.03    | 110<br>4.33   | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 32<br>159.0x 1¼     | 159.0x 42.4<br>6.250x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 227<br>8.94         | 92.5<br>3.64  | 112<br>4.41   | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 40<br>159.0x 1½     | 159.0x 48.3<br>6.250x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 227<br>8.94         | 92.5<br>3.64  | 112<br>4.41   | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 50<br>159.0x 2      | 159.0x 60.3<br>6.250x 2.375  | 300<br>2.07                    | 64<br>2.50                           | 227<br>8.94         | 110<br>4.33   | 116.5<br>4.59 | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 65<br>159.0x 2½     | 159.0x 76.1<br>6.250x 3.000  | 300<br>2.07                    | 70<br>2.75                           | 227<br>8.94         | 110<br>4.33   | 121.5<br>4.78 | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 80<br>159.0x 3      | 159.0x 88.9<br>6.250x 3.500  | 300<br>2.07                    | 89<br>3.50                           | 227<br>8.94         | 130<br>5.12   | 123.5<br>4.86 | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 100<br>159.0x 4     | 159.1x 114.3<br>6.250x 4.500 | 300<br>2.07                    | 114<br>4.50                          | 227<br>8.94         | 155<br>6.10   | 127<br>5.00   | 91<br>3.58   | 5/8x 105  | UL FM       |
| 150x 15<br>165.1x ½      | 165.1x 21.3<br>6.500x 0.825  | 300<br>2.07                    | 38<br>1.50                           | 235<br>9.25         | 77<br>3.03    | 115<br>4.53   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 125x 20<br>165.1x ¾      | 165.1x 26.9<br>6.500x 1.050  | 300<br>2.07                    | 38<br>1.50                           | 235<br>9.25         | 77<br>3.03    | 115<br>4.53   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 25<br>165.1x 1      | 165.1x 33.7<br>6.500x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 235<br>9.25         | 77<br>3.03    | 115<br>4.53   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 32<br>165.1x 1¼     | 165.1x 42.4<br>6.500x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 235<br>9.25         | 92.5<br>3.64  | 115<br>4.53   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 40<br>165.1x 1½     | 165.1x 48.3<br>6.500x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 235<br>9.25         | 92.5<br>3.64  | 115<br>4.53   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 50<br>165.1x 2      | 165.1x 60.3<br>6.500x 2.375  | 300<br>2.07                    | 64<br>2.50                           | 235<br>9.25         | 110<br>4.33   | 120<br>4.72   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 65<br>165.1x 2½     | 165.1x 76.1<br>6.500x 3.000  | 300<br>2.07                    | 70<br>2.75                           | 235<br>9.25         | 110<br>4.33   | 125<br>4.92   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 80<br>165.1x 3      | 165.1x 88.9<br>6.500x 3.500  | 300<br>2.07                    | 89<br>3.50                           | 235<br>9.25         | 130<br>5.12   | 125<br>4.92   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 100<br>165.1x 4     | 165.1x 114.3<br>6.500x 4.500 | 300<br>2.07                    | 114<br>4.50                          | 240<br>9.45         | 155<br>6.10   | 130<br>5.12   | 94.5<br>3.72 | 5/8x 105  | UL FM       |
| 150x 25<br>6x 1          | 168.3x 33.7<br>6.500x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 240<br>9.45         | 77<br>3.03    | 115<br>4.53   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 150x 32<br>6x 1¼         | 168.3x 42.4<br>6.500x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 240<br>9.45         | 92.5<br>3.64  | 115<br>4.53   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 150x 40<br>6x 1½         | 168.3x 48.3<br>6.500x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 240<br>9.45         | 92.5<br>3.64  | 115<br>4.53   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 150x 50<br>6x 2          | 168.3x 60.3<br>6.625x 2.375  | 300<br>2.07                    | 64<br>2.50                           | 240<br>9.45         | 110<br>4.33   | 121<br>4.76   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 150x 65<br>6x 2½         | 168.3x 73.0<br>6.625x 2.875  | 300<br>2.07                    | 70<br>2.75                           | 240<br>9.45         | 110<br>4.33   | 127<br>5.00   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 150x 80<br>6x 3          | 168.3x 88.9<br>6.625x 3.500  | 300<br>2.07                    | 89<br>3.50                           | 240<br>9.45         | 130<br>5.12   | 127<br>5.00   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 150x 100<br>6x 4         | 168.3x 114.3<br>6.625x 4.500 | 300<br>2.07                    | 114<br>4.50                          | 240<br>9.45         | 155<br>6.10   | 143<br>5.12   | 96.5<br>3.80 | 5/8x 105  | UL FM       |
| 200x 25<br>8x 1          | 219.0x 33.7<br>8.625x 1.315  | 300<br>2.07                    | 38<br>1.50                           | 300<br>11.81        | 78<br>3.07    | 140<br>5.51   | 123<br>4.84  | 5/8x 105  | UL FM       |
| 200x 32<br>8x 1¼         | 219.1x 42.4<br>8.625x 1.660  | 300<br>2.07                    | 51<br>2.00                           | 300<br>11.81        | 93<br>3.66    | 140<br>5.51   | 123<br>4.84  | 5/8x 105  | UL FM       |
| 200x 40<br>8x 1½         | 219.1x 48.3<br>8.625x 1.900  | 300<br>2.07                    | 51<br>2.00                           | 300<br>11.81        | 93<br>3.66    | 143<br>5.63   | 123<br>4.84  | 5/8x 105  | UL FM       |
| 200x 50<br>8x 2          | 219.1x 60.3<br>8.625x 2.375  | 300<br>2.07                    | 64<br>2.50                           | 300<br>11.81        | 115<br>4.53   | 149<br>5.87   | 123<br>4.84  | 5/8x 105  | UL FM       |
| 200x 65<br>8x 2½         | 219.1x 76.1<br>8.625x 3.000  | 300<br>2.07                    | 70<br>2.75                           | 300<br>11.81        | 115<br>4.53   | 155<br>6.10   | 123<br>4.84  | 5/8x 105  | UL FM       |
| 200x 80<br>8x 3          | 219.1x 88.9<br>8.625x 3.500  | 300<br>2.07                    | 89<br>3.50                           | 300<br>11.81        | 133.5<br>5.25 | 155<br>6.10   | 123<br>4.84  | 5/8x 105  | UL FM       |
| 200x 100<br>8x 4         | 219.1x 114.3<br>8.625x 4.500 | 300<br>2.07                    | 114<br>4.50                          | 300<br>11.81        | 159.5<br>6.29 | 160<br>6.30   | 123<br>4.84  | 5/8x 105  | UL FM       |

# 3L

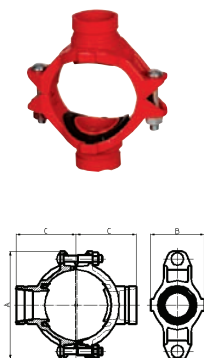
## U-Bolt Mechanical Tee



| Nominal Size<br>mm/in | Hole Dia<br>+1.6, 0/+0.063, 0<br>mm/in | Working<br>Pressure<br>PSI/Mpa | Dimensions   |               |               | U Bolt Size<br>in | Certificate |
|-----------------------|----------------------------------------|--------------------------------|--------------|---------------|---------------|-------------------|-------------|
|                       |                                        |                                | A<br>mm/in   | B<br>mm/in    | C<br>mm/in    |                   |             |
| 32X15<br>1¼X1/2       | 30<br>1.18                             | 300<br>2.07                    | 54.4<br>2.14 | 88.9<br>3.50  | 57.2<br>2.25  | 3/8X73            | UL FM       |
| 32X20<br>1¼X3/4       | 30<br>1.18                             | 300<br>2.07                    | 54.4<br>2.14 | 88.9<br>3.50  | 57.2<br>2.25  | 3/8X73            | UL FM       |
| 32X25<br>1¼X1         | 30<br>1.18                             | 300<br>2.07                    | 57.7<br>2.27 | 88.9<br>3.50  | 57.2<br>2.25  | 3/8X73            | UL FM       |
| 40X15<br>1½X1/2       | 30<br>1.18                             | 300<br>2.07                    | 57.4<br>2.26 | 88.9<br>3.50  | 57.2<br>2.25  | 3/8X73            | UL FM       |
| 40X20<br>1½X3/4       | 30<br>1.18                             | 300<br>2.07                    | 57.4<br>2.26 | 88.9<br>3.50  | 57.2<br>2.25  | 3/8X73            | UL FM       |
| 40X25<br>1½X1         | 30<br>1.18                             | 300<br>2.07                    | 60.8<br>2.39 | 88.9<br>3.50  | 57.2<br>2.25  | 3/8X73            | UL FM       |
| 50X15<br>2X1/2        | 30<br>1.18                             | 300<br>2.07                    | 63.3<br>2.49 | 95.3<br>3.75  | 57.2<br>2.25  | 3/8X90            | UL FM       |
| 50X20<br>2X3/4        | 30<br>1.18                             | 300<br>2.07                    | 63.3<br>2.49 | 95.3<br>3.75  | 57.2<br>2.25  | 3/8X90            | UL FM       |
| 50X25<br>2X1          | 30<br>1.18                             | 300<br>2.07                    | 66.6<br>2.62 | 95.3<br>3.75  | 57.2<br>2.25  | 3/8X90            | UL FM       |
| 65X15<br>2½X1/2       | 30<br>1.18                             | 300<br>2.07                    | 69.9<br>2.75 | 108.0<br>4.25 | 57.2<br>2.250 | 3/8X105           | UL FM       |
| 65X20<br>2½X3/4       | 30<br>1.18                             | 300<br>2.07                    | 69.9<br>2.75 | 108.0<br>4.25 | 57.2<br>2.250 | 3/8X105           | UL FM       |
| 65X25<br>2½X1         | 30<br>1.18                             | 300<br>2.07                    | 73.2<br>2.88 | 108.0<br>4.25 | 57.2<br>2.25  | 3/8X105           | UL FM       |
| 65X15<br>76.1X1/2     | 30<br>1.18                             | 300<br>2.07                    | 69.9<br>2.75 | 108.0<br>4.25 | 57.2<br>2.250 | 3/8X105           | UL FM       |
| 65X20<br>76.1X3/4     | 30<br>1.18                             | 300<br>2.07                    | 69.9<br>2.75 | 108.0<br>4.25 | 57.2<br>2.250 | 3/8X105           | UL FM       |
| 65X25<br>76.1X1       | 30<br>1.18                             | 300<br>2.07                    | 73.2<br>2.88 | 108.0<br>4.25 | 57.2<br>2.25  | 3/8X105           | UL FM       |
| 80X25<br>3X1          | 38<br>1.5                              | 300<br>2.07                    | 145<br>5.71  | 73<br>2.87    | 79<br>3.11    | 1/2X105           | UL FM       |
| 100X25<br>4X1         | 38<br>1.5                              | 300<br>2.07                    | 185<br>7.28  | 72<br>2.83    | 89<br>3.50    | 1/2X125           | UL FM       |
| 100X32<br>4X1¼        | 51<br>2.0                              | 300<br>2.07                    | 185<br>7.28  | 85<br>3.35    | 95<br>3.74    | 1/2X125           | UL FM       |
| 100X40<br>4X1½        | 51<br>2.0                              | 300<br>2.07                    | 185<br>7.28  | 85<br>3.35    | 95<br>3.74    | 1/2X125           | UL FM       |
| 150X25<br>6X1         | 38<br>1.5                              | 300<br>2.07                    | 254<br>10.00 | 75<br>2.95    | 120<br>4.72   | 5/8X173           | UL FM       |
| 150X32<br>6X1¼        | 51<br>2.0                              | 300<br>2.07                    | 254<br>10.00 | 88<br>3.46    | 120<br>4.72   | 5/8X173           | UL FM       |
| 150X40<br>6X1½        | 51<br>2.0                              | 300<br>2.07                    | 254<br>10.00 | 88<br>3.46    | 120<br>4.72   | 5/8X173           | UL FM       |

## 4G

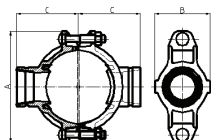
Mechanical Cross Grooved Outlet



| Nominal Size<br>mm/in    | Pipe O.D<br>mm/in             | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |               | Bolt Size |
|--------------------------|-------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|---------------|-----------|
|                          |                               |                             |                                      | A                        | B             | C             |           |
| 65× 25<br>76.1× 1        | 76.1× 33.7<br>3.000× 1.315    | 300<br>2.07                 | 38<br>1.50                           | 137<br>5.39              | 71<br>2.80    | 78<br>3.07    | 1/2× 70   |
| 65× 32<br>76.1× 1¼       | 76.1× 42.4<br>3.000× 1.660    | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33  | 78<br>3.07    | 1/2× 70   |
| 65× 40<br>76.1× 1½       | 76.1× 48.3<br>3.000× 1.900    | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33  | 78<br>3.07    | 1/2× 70   |
| 80× 25<br>3× 1           | 88.9× 33.7<br>3.500× 1.315    | 300<br>2.07                 | 38<br>1.50                           | 152<br>5.98              | 72.5<br>2.85  | 84.5<br>3.33  | 1/2× 75   |
| 80× 32<br>3× 1¼          | 88.9× 42.4<br>3.500× 1.660    | 300<br>2.07                 | 51<br>2.00                           | 152<br>5.98              | 85.5<br>3.37  | 84.5<br>3.33  | 1/2× 75   |
| 80× 40<br>3× 1½          | 88.9× 48.3<br>3.500× 1.900    | 300<br>2.07                 | 51<br>2.00                           | 152<br>5.98              | 85.5<br>3.37  | 84.5<br>3.33  | 1/2× 75   |
| 80× 50<br>3× 2           | 88.9× 60.3<br>3.500× 2.375    | 300<br>2.07                 | 64<br>2.50                           | 152<br>5.98              | 98<br>3.86    | 84.5<br>3.33  | 1/2× 75   |
| 100× 25<br>4× 1          | 114.3× 33.7<br>4.500× 1.315   | 300<br>2.07                 | 38<br>1.50                           | 188<br>7.40              | 78.5<br>3.09  | 101.5<br>4.00 | 1/2× 75   |
| 100× 32<br>4× 1¼         | 114.3× 42.4<br>4.500× 1.660   | 300<br>2.07                 | 51<br>2.00                           | 188<br>7.40              | 89<br>3.50    | 101.5<br>4.00 | 1/2× 75   |
| 100× 40<br>4× 1½         | 114.3× 48.3<br>4.500× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 188<br>7.40              | 89<br>3.50    | 101.5<br>4.00 | 1/2× 75   |
| 100× 50<br>4× 2          | 114.3× 60.3<br>4.500× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 188<br>7.40              | 104.5<br>4.11 | 101.5<br>4.00 | 1/2× 75   |
| 100× 65<br>4× 2½         | 114.3× 73.0<br>4.500× 2.875   | 300<br>2.07                 | 70<br>2.75                           | 188<br>7.40              | 104.5<br>4.11 | 101.5<br>4.00 | 1/2× 75   |
| 100× 65<br>4× 76.1       | 114.3× 76.1<br>4.500× 3.000   | 300<br>2.07                 | 70<br>2.75                           | 188<br>7.40              | 104.5<br>4.11 | 101.5<br>4.00 | 1/2× 75   |
| 125× 80<br>133.0× 3      | 133.0× 88.9<br>5.250× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 209<br>8.23              | 132<br>5.20   | 109.5<br>4.31 | 5/8× 85   |
| 125× 50<br>139.7× 2      | 139.7× 60.3<br>5.500× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 221.5<br>8.70            | 112.5<br>4.43 | 118<br>4.65   | 5/8× 85   |
| 125× 65<br>139.7× 76.1   | 139.7× 76.1<br>5.500× 3.000   | 300<br>2.07                 | 70<br>2.75                           | 221.5<br>8.70            | 112.5<br>4.43 | 118<br>4.65   | 5/8× 85   |
| 125× 80<br>139.7× 3      | 139.7× 88.9<br>5.500× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 221.5<br>8.70            | 136<br>5.35   | 122<br>4.80   | 5/8× 85   |
| 150× 100<br>159.0× 108.0 | 159.1× 108.0<br>6.250× 4.250  | 300<br>2.07                 | 114<br>4.50                          | 244<br>9.60              | 154<br>6.06   | 133<br>5.24   | 5/8× 105  |
| 150× 100<br>159.0× 4     | 159.1× 114.3<br>6.250× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 244<br>9.60              | 159<br>6.26   | 125<br>4.92   | 5/8× 105  |
| 150× 50<br>165.1× 2      | 165.1× 60.3<br>6.500× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 244<br>9.60              | 112.5<br>4.43 | 128<br>5.04   | 5/8× 105  |
| 150× 65<br>165.1× 76.1   | 165.1× 76.1<br>6.500× 3.000   | 300<br>2.07                 | 70<br>2.75                           | 244<br>9.60              | 112.5<br>4.43 | 128<br>5.04   | 5/8× 105  |
| 150× 80<br>6½O.D× 3      | 165.1× 88.9<br>6.500× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 244<br>9.60              | 132<br>5.20   | 141<br>5.55   | 5/8× 105  |
| 150× 100<br>6½O.D× 4     | 165.1× 114.3<br>6.500× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 244<br>9.60              | 154<br>6.06   | 135<br>5.32   | 5/8× 105  |
| 150× 40<br>6× 1½         | 168.3× 48.3<br>6.500× 1.900   | 300<br>2.07                 | 51<br>2.00                           | 247<br>9.72              | 95<br>3.74    | 128<br>5.04   | 5/8× 105  |
| 150× 50<br>6× 2          | 168.3× 60.3<br>6.625× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 247<br>9.72              | 114<br>4.49   | 134<br>5.28   | 5/8× 105  |
| 150× 65<br>6× 2½         | 168.3× 73.0<br>6.625× 2.875   | 300<br>2.07                 | 70<br>2.75                           | 247<br>9.72              | 115<br>4.53   | 134<br>5.28   | 5/8× 105  |
| 150× 80<br>6× 3          | 168.3× 88.9<br>6.625× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 247<br>9.72              | 132<br>5.20   | 141<br>5.55   | 5/8× 105  |
| 150× 100<br>6× 4         | 168.3× 114.3<br>6.625× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 247<br>9.72              | 156.5<br>6.16 | 138<br>5.43   | 5/8× 105  |
| 200× 50<br>8× 2          | 219.1× 60.3<br>8.625× 2.375   | 300<br>2.07                 | 64<br>2.50                           | 322<br>12.68             | 118<br>4.65   | 158<br>6.22   | 3/4× 115  |
| 200× 65<br>8× 76.1       | 219.1× 76.1<br>8.625× 3.000   | 300<br>2.07                 | 70<br>2.75                           | 322<br>12.68             | 118<br>4.65   | 158<br>6.22   | 3/4× 115  |
| 200× 80<br>8× 3          | 219.1× 88.9<br>8.625× 3.500   | 300<br>2.07                 | 89<br>3.50                           | 322<br>12.68             | 136.5<br>5.37 | 161<br>6.34   | 3/4× 115  |
| 200× 100<br>8× 4         | 219.1× 114.3<br>8.625× 4.500  | 300<br>2.07                 | 114<br>4.50                          | 322<br>12.68             | 164<br>6.46   | 161<br>6.34   | 3/4× 115  |
| 250× 100<br>10× 4        | 273.0× 114.3<br>10.750× 4.500 | 300<br>2.07                 | 114<br>4.50                          | 376<br>14.80             | 164<br>6.46   | 189<br>7.44   | 3/4× 120  |

# 4GS

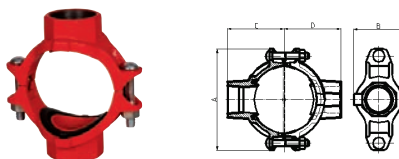
Mechanical Cross Grooved Outlet



| Nominal Size<br>mm/in    | Pipe O.D<br>mm/in             | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/<br>+0.063,0 | Dimensions<br>L<br>mm/in |               |               | Bolt Size |
|--------------------------|-------------------------------|-----------------------------|------------------------------------------|--------------------------|---------------|---------------|-----------|
|                          |                               |                             |                                          | A                        | B             | C             |           |
| 65× 25<br>76.1× 1        | 76.1× 33.7<br>3.000× 1.315    | 300<br>2.07                 | 38<br>1.50                               | 137<br>5.39              | 71<br>2.80    | 78<br>3.07    | 1/2× 70   |
| 65× 32<br>76.1× 1¼       | 76.1× 42.4<br>3.000× 1.660    | 300<br>2.07                 | 51<br>2.00                               | 137<br>5.39              | 84.5<br>3.33  | 78<br>3.07    | 1/2× 70   |
| 65× 40<br>76.1× 1½       | 76.1× 48.3<br>3.000× 1.900    | 300<br>2.07                 | 51<br>2.00                               | 137<br>5.39              | 84.5<br>3.33  | 78<br>3.07    | 1/2× 70   |
| 80× 25<br>3× 1           | 88.9× 33.7<br>3.500× 1.315    | 300<br>2.07                 | 38<br>1.50                               | 150<br>5.91              | 71.0<br>2.80  | 84<br>3.31    | 1/2× 75   |
| 80× 32<br>3× 1¼          | 88.9× 42.4<br>3.500× 1.660    | 300<br>2.07                 | 51<br>2.00                               | 150<br>5.91              | 84.5<br>3.33  | 84<br>3.31    | 1/2× 75   |
| 80× 40<br>3× 1½          | 88.9× 48.3<br>3.500× 1.900    | 300<br>2.07                 | 51<br>2.00                               | 150<br>5.91              | 84.5<br>3.33  | 84<br>3.31    | 1/2× 75   |
| 80× 50<br>3× 2           | 88.9× 60.3<br>3.500× 2.375    | 300<br>2.07                 | 64<br>2.50                               | 150<br>5.91              | 98<br>3.86    | 84<br>3.31    | 1/2× 75   |
| 100× 25<br>4× 1          | 114.3× 33.7<br>4.500× 1.315   | 300<br>2.07                 | 38<br>1.50                               | 178<br>7.01              | 77.5<br>3.05  | 98<br>3.86    | 1/2× 75   |
| 100× 32<br>4× 1¼         | 114.3× 42.4<br>4.500× 1.660   | 300<br>2.07                 | 51<br>2.00                               | 178<br>7.01              | 88<br>3.46    | 98<br>3.86    | 1/2× 75   |
| 100× 40<br>4× 1½         | 114.3× 48.3<br>4.500× 1.900   | 300<br>2.07                 | 51<br>2.00                               | 178<br>7.01              | 88<br>3.46    | 98<br>3.86    | 1/2× 75   |
| 100× 50<br>4× 2          | 114.3× 60.3<br>4.500× 2.375   | 300<br>2.07                 | 64<br>2.50                               | 178<br>7.01              | 88<br>3.46    | 98<br>3.86    | 1/2× 75   |
| 100× 65<br>4× 2½         | 114.3× 73.0<br>4.500× 2.875   | 300<br>2.07                 | 70<br>2.75                               | 178<br>7.01              | 103.5<br>4.07 | 98<br>3.86    | 1/2× 75   |
| 100× 65<br>4× 76.1       | 114.3× 76.1<br>4.500× 3.000   | 300<br>2.07                 | 70<br>2.75                               | 178<br>7.01              | 103.5<br>4.07 | 98<br>3.86    | 1/2× 75   |
| 125× 80<br>133.0× 3      | 133.0× 88.9<br>5.250× 3.500   | 300<br>2.07                 | 89<br>3.50                               | 203<br>7.99              | 132<br>5.12   | 110<br>4.33   | 5/8× 85   |
| 125× 50<br>139.7× 2      | 139.7× 60.3<br>5.500× 2.375   | 300<br>2.07                 | 64<br>2.50                               | 210<br>8.27              | 110<br>4.33   | 113<br>4.45   | 5/8× 85   |
| 125× 65<br>139.7× 76.1   | 139.7× 76.1<br>5.500× 3.000   | 300<br>2.07                 | 70<br>2.75                               | 210<br>8.27              | 110<br>4.33   | 113<br>4.45   | 5/8× 85   |
| 125× 80<br>139.7× 3      | 139.7× 88.9<br>5.500× 3.500   | 300<br>2.07                 | 89<br>3.50                               | 210<br>8.27              | 130<br>5.12   | 113<br>4.45   | 5/8× 85   |
| 150× 100<br>159.0× 108.0 | 159.1× 108.0<br>6.250× 4.250  | 300<br>2.07                 | 114<br>4.50                              | 227<br>8.94              | 155<br>6.10   | 122.5<br>4.83 | 5/8× 105  |
| 150× 100<br>159.0× 4     | 159.1× 114.3<br>6.250× 4.500  | 300<br>2.07                 | 114<br>4.50                              | 227<br>8.94              | 155<br>6.10   | 122.5<br>4.83 | 5/8× 105  |
| 150× 50<br>165.1× 2      | 165.1× 60.3<br>6.500× 2.375   | 300<br>2.07                 | 64<br>2.50                               | 235<br>9.25              | 110<br>4.33   | 124.5<br>4.90 | 5/8× 105  |
| 150× 65<br>165.1× 76.1   | 165.1× 76.1<br>6.500× 3.000   | 300<br>2.07                 | 70<br>2.75                               | 235<br>9.25              | 110<br>4.33   | 124.5<br>4.90 | 5/8× 105  |
| 150× 80<br>165.1× 3      | 165.1× 88.9<br>6.500× 3.500   | 300<br>2.07                 | 89<br>3.50                               | 235<br>9.25              | 130<br>5.12   | 124.5<br>4.90 | 5/8× 105  |
| 150× 100<br>165.1× 4     | 165.1× 114.3<br>6.500× 4.500  | 300<br>2.07                 | 114<br>4.50                              | 235<br>9.25              | 155<br>6.10   | 126<br>4.96   | 5/8× 105  |
| 150× 40<br>6× 1½         | 168.3× 48.3<br>6.500× 1.900   | 300<br>2.07                 | 51<br>2.00                               | 240<br>9.45              | 92.5<br>3.64  | 126<br>4.96   | 5/8× 105  |
| 150× 50<br>6× 2          | 168.3× 60.3<br>6.625× 2.375   | 300<br>2.07                 | 64<br>2.50                               | 240<br>9.45              | 110<br>4.33   | 126<br>4.96   | 5/8× 105  |
| 150× 65<br>6× 2½         | 168.3× 73.0<br>6.625× 2.875   | 300<br>2.07                 | 70<br>2.75                               | 240<br>9.45              | 110<br>4.33   | 126<br>4.96   | 5/8× 105  |
| 150× 80<br>6× 3          | 168.3× 88.9<br>6.625× 3.500   | 300<br>2.07                 | 89<br>3.50                               | 240<br>9.45              | 130<br>5.12   | 126<br>4.96   | 5/8× 105  |
| 150× 100<br>6× 4         | 168.3× 114.3<br>6.625× 4.500  | 300<br>2.07                 | 114<br>4.50                              | 240<br>9.45              | 155<br>6.10   | 128<br>5.04   | 5/8× 105  |
| 200× 50<br>8× 2          | 219.1× 60.3<br>8.625× 2.375   | 300<br>2.07                 | 64<br>2.50                               | 300<br>11.81             | 115<br>4.53   | 155<br>6.10   | 3/4× 115  |
| 200× 65<br>8× 76.1       | 219.1× 76.1<br>8.625× 3.000   | 300<br>2.07                 | 70<br>2.75                               | 300<br>11.81             | 115<br>4.53   | 155<br>6.10   | 3/4× 115  |
| 200× 80<br>8× 3          | 219.1× 88.9<br>8.625× 3.500   | 300<br>2.07                 | 89<br>3.50                               | 300<br>11.81             | 133.5<br>5.25 | 155<br>6.10   | 3/4× 115  |
| 200× 100<br>8× 4         | 219.1× 114.3<br>8.625× 4.500  | 300<br>2.07                 | 114<br>4.50                              | 300<br>11.81             | 159.5<br>6.29 | 160<br>6.30   | 3/4× 115  |
| 250× 100<br>10× 4        | 273.0× 114.3<br>10.750× 4.500 | 300<br>2.07                 | 114<br>4.50                              | 376<br>14.80             | 164<br>6.46   | 189<br>7.44   | 3/4× 120  |

# 4J

## Mechanical Gross Threaded Outlet



| Nominal Size<br>mm/in          | Pipe O.D<br>mm/in                       | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |              |            |            | Bolt Size |
|--------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|--------------------------|--------------|------------|------------|-----------|
|                                |                                         |                             |                                      | A                        | B            | C          | D          |           |
| 50× 25<br>2× 1                 | 60.3× 33.7<br>2.375× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 116<br>4.57              | 68<br>2.68   | 60<br>2.36 | 60<br>2.36 | 3/8× 55   |
| 50× 32<br>2× 1¼                | 60.3× 42.4<br>2.375× 1.660              | 300<br>2.07                 | 45<br>1.75                           | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 65<br>2.56 | 3/8× 55   |
| 50× 32× 25<br>2× 1¼× 1         | 60.3× 42.4× 33.7<br>2.375× 1.660× 1.315 | 300<br>2.07                 | 45/38<br>1.75/1.50                   | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 60<br>2.36 | 3/8× 55   |
| 50× 40<br>2× 1½                | 60.3× 48.3<br>2.375× 1.900              | 300<br>2.07                 | 45<br>1.75                           | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 65<br>2.56 | 3/8× 55   |
| 50× 40× 25<br>2× 1½× 1         | 60.3× 48.3× 33.7<br>2.375× 1.900× 1.315 | 300<br>2.07                 | 45/38<br>1.75/1.50                   | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 60<br>2.36 | 3/8× 55   |
| 65× 25<br>2½× 1                | 73.0× 33.7<br>2.875× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 144<br>5.67              | 70<br>2.76   | 69<br>2.72 | 69<br>2.72 | 1/2× 70   |
| 65× 32<br>2½× 1¼               | 73.0× 42.4<br>2.875× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 144<br>5.67              | 84.5<br>3.33 | 73<br>2.87 | 73<br>2.87 | 1/2× 70   |
| 65× 40<br>2½× 1½               | 73.0× 48.3<br>2.875× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 144<br>5.67              | 84.5<br>3.33 | 73<br>2.87 | 73<br>2.87 | 1/2× 70   |
| 65× 25<br>76.1× 1              | 76.1× 33.7<br>3.000× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 137<br>5.39              | 71<br>2.80   | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 32<br>76.1× 1¼             | 76.1× 42.4<br>3.000× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 32<br>76.1× 1¼             | 76.1× 42.4<br>3.000× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 32× 25<br>76.1× 1¼× 1      | 76.1× 42.4× 33.7<br>3.000× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 40<br>76.1× 1½             | 76.1× 48.3<br>3.000× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 40× 25<br>76.1× 1½× 1      | 76.1× 48.3× 33.7<br>3.000× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 40× 25× 32<br>76.1× 1½× 1¼ | 76.1× 48.3× 42.4<br>3.000× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 3× ¾                           | 88.9× 26.9<br>3.500× 1.050              | 300<br>2.07                 | 38<br>1.50                           | 152<br>5.98              | 72.5<br>2.85 | 80<br>3.15 | 80<br>3.15 | 1/2× 70   |
| 80× 25<br>3× 1                 | 88.9× 33.7<br>3.500× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 152<br>5.98              | 72.5<br>2.85 | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |
| 80× 32<br>3× 1¼                | 88.9× 42.4<br>3.500× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 152<br>5.98              | 85.5<br>3.37 | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |
| 80× 32× 25<br>3× 1¼× 1         | 88.9× 42.4× 33.7<br>3.500× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 152<br>5.98              | 85.5<br>3.37 | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |
| 80× 40<br>3× 1½                | 88.9× 48.3<br>3.500× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 152<br>5.98              | 85.5<br>3.37 | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |
| 80× 40× 25<br>3× 1½× 1         | 88.9× 48.3× 33.7<br>3.500× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 152<br>5.98              | 85.5<br>3.37 | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |
| 80× 40× 32<br>3× 1½× 1¼        | 88.9× 48.3× 42.4<br>3.500× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 152<br>5.98              | 85.5<br>3.37 | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |
| 80× 50<br>3× 2                 | 88.9× 60.3<br>3.500× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 152<br>5.98              | 98<br>3.86   | 80<br>3.15 | 80<br>3.15 | 1/2× 75   |

| Nominal Size<br>mm/in        | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |             |             | Bolt Size |
|------------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|-------------|-------------|-----------|
|                              |                                          |                             |                                      | A                        | B             | C           | D           |           |
| 80× 50× 25<br>3× 2× 1        | 88.9× 60.3× 33.7<br>3.500× 2.375× 1.315  | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 152<br>5.98              | 98<br>3.86    | 80<br>3.15  | 80<br>3.15  | 1/2× 75   |
| 80× 50× 32<br>3× 2× 1¼       | 88.9× 60.3× 42.4<br>3.500× 2.375× 1.660  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 152<br>5.98              | 98<br>3.86    | 80<br>3.15  | 80<br>3.15  | 1/2× 75   |
| 80× 50× 40<br>3× 2× 1½       | 88.9× 60.3× 48.3<br>3.500× 2.375× 1.900  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 152<br>5.98              | 98<br>3.86    | 80<br>3.15  | 80<br>3.15  | 1/2× 75   |
| 100× 25<br>108.0× 1          | 108.1× 33.7<br>4.250× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 172<br>6.77              | 78.5<br>3.09  | 87<br>3.43  | 87<br>3.43  | 1/2× 75   |
| 100× 32<br>108.0× 1¼         | 108.1× 42.4<br>4.250× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77              | 85.4<br>3.36  | 87<br>3.43  | 87<br>3.43  | 1/2× 75   |
| 100× 32× 25<br>108.0× 1¼× 1  | 108.1× 42.4× 33.7<br>4.250× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 172<br>6.77              | 85.4<br>3.36  | 87<br>3.43  | 87<br>3.43  | 1/2× 75   |
| 100× 40<br>108.0× 1½         | 108.0× 48.3<br>4.250× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77              | 85.4<br>3.36  | 89<br>3.50  | 89<br>3.50  | 1/2× 75   |
| 100× 40× 25<br>108.0× 1½× 1  | 108.0× 48.3× 33.7<br>4.250× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 172<br>6.77              | 85.4<br>3.36  | 89<br>3.50  | 87<br>3.43  | 1/2× 75   |
| 100× 40× 32<br>108.0× 1½× 1¼ | 108.0× 48.3× 42.4<br>4.250× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77              | 85.4<br>3.36  | 89<br>3.50  | 87<br>3.43  | 1/2× 75   |
| 100× 50<br>108.0× 2          | 108.0× 60.3<br>4.250× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 172<br>6.77              | 106.5<br>4.19 | 92<br>3.62  | 92<br>3.62  | 1/2× 75   |
| 100× 50× 25<br>108.0× 2× 1   | 108.0× 60.3× 33.7<br>4.250× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 172<br>6.77              | 106.5<br>4.19 | 92<br>3.62  | 87<br>3.43  | 1/2× 75   |
| 100× 50× 32<br>108.0× 2× 1¼  | 108.0× 60.3× 42.4<br>4.250× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 172<br>6.77              | 106.5<br>4.19 | 92<br>3.62  | 87<br>3.43  | 1/2× 75   |
| 100× 50× 40<br>108.0× 2× 1½  | 108.0× 60.3× 48.3<br>4.250× 2.375× 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 172<br>6.77              | 106.5<br>4.19 | 92<br>3.62  | 89<br>3.50  | 1/2× 75   |
| 100× 65<br>108.0× 76.1       | 108.0× 76.1<br>4.250× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 172<br>6.77              | 106.5<br>4.19 | 100<br>3.94 | 100<br>3.94 | 1/2× 75   |
| 100× 15<br>4× ½              | 114.3× 21.3<br>4.500× 0.825              | 300<br>2.07                 | 38<br>1.50                           | 188<br>7.40              | 78.4<br>3.09  | 90<br>3.54  | 90<br>3.54  | 1/2× 75   |
| 100× 20<br>4× ¾              | 114.3× 26.9<br>4.500× 1.050              | 300<br>2.07                 | 38<br>1.50                           | 188<br>7.40              | 78.4<br>3.09  | 90<br>3.54  | 90<br>3.54  | 1/2× 75   |
| 100× 25<br>4× 1              | 114.3× 33.7<br>4.500× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 188<br>7.40              | 78.4<br>3.09  | 93<br>3.66  | 93<br>3.66  | 1/2× 75   |
| 100× 32<br>4× 1¼             | 114.3× 42.4<br>4.500× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 188<br>7.40              | 89<br>3.50    | 95<br>3.74  | 95<br>3.74  | 1/2× 75   |
| 100× 32× 25<br>4× 1¼× 1      | 114.3× 42.4× 33.7<br>4.500× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 188<br>7.40              | 89<br>3.50    | 95<br>3.74  | 93<br>3.66  | 1/2× 75   |
| 100× 40<br>4× 1½             | 114.3× 48.3<br>4.500× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 188<br>7.40              | 89<br>3.50    | 97<br>3.82  | 97<br>3.82  | 1/2× 75   |
| 100× 40× 25<br>4× 1½× 1      | 114.3× 48.3× 33.7<br>4.500× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 188<br>7.40              | 89<br>3.50    | 97<br>3.82  | 93<br>3.66  | 1/2× 75   |
| 100× 40× 32<br>4× 1½× 1¼     | 114.3× 48.3× 42.4<br>4.500× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 188<br>7.40              | 89<br>3.50    | 97<br>3.82  | 95<br>3.74  | 1/2× 75   |
| 100× 50<br>4× 2              | 114.3× 60.3<br>4.500× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 188<br>7.40              | 104.5<br>4.11 | 100<br>3.94 | 100<br>3.94 | 1/2× 75   |
| 100× 50× 25<br>4× 2× 1       | 114.3× 60.3× 33.7<br>4.500× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 188<br>7.40              | 104.5<br>4.11 | 100<br>3.94 | 93<br>3.66  | 1/2× 75   |
| 100× 50× 32<br>4× 2× 1¼      | 114.3× 60.3× 42.4<br>4.500× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 188<br>7.40              | 104.5<br>4.11 | 100<br>3.94 | 95<br>3.74  | 1/2× 75   |
| 100× 65<br>4× 76.1           | 114.3× 76.1<br>4.500× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 188<br>7.40              | 104.5<br>4.11 | 102<br>4.02 | 102<br>4.02 | 1/2× 75   |
| 100× 65× 32<br>4× 76.1× 1¼   | 114.3× 76.1× 42.4<br>4.500× 3.000× 1.660 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 188<br>7.40              | 104.5<br>4.11 | 102<br>4.02 | 95<br>3.74  | 1/2× 75   |
| 100× 65× 40<br>4× 76.1× 1½   | 114.3× 76.1× 48.3<br>4.500× 3.000× 1.900 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 188<br>7.40              | 104.5<br>4.11 | 102<br>4.02 | 97<br>3.82  | 1/2× 75   |

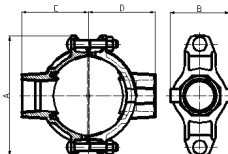
| Nominal Size<br>mm/in              | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |             |             | Bolt Size |
|------------------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|-------------|-------------|-----------|
|                                    |                                          |                             |                                      | A                        | B             | C           | D           |           |
| 100× 65× 50<br>4× 3/4× 2           | 114.3× 76.1× 60.3<br>4.500× 3.000× 2.375 | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 188<br>7.40              | 104.5<br>4.11 | 102<br>4.02 | 100<br>3.94 | 1/2× 75   |
| 100× 80<br>4× 3                    | 114.3× 88.9<br>4.500× 3.500              | 300<br>2.07                 | 89<br>3.50                           | 188<br>7.40              | 124<br>4.88   | 102<br>4.02 | 102<br>4.02 | 1/2× 75   |
| 100× 80× 32<br>4× 3× 1 1/4         | 114.3× 88.9× 42.4<br>4.500× 3.500× 1.660 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 188<br>7.40              | 124<br>4.88   | 102<br>4.02 | 95<br>3.74  | 1/2× 75   |
| 100× 80× 40<br>4× 3× 1 1/2         | 114.3× 88.9× 48.3<br>4.500× 3.500× 1.900 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 188<br>7.40              | 124<br>4.88   | 102<br>4.02 | 97<br>3.82  | 1/2× 75   |
| 100× 80× 50<br>4× 3× 2             | 114.3× 88.9× 60.3<br>4.500× 3.500× 2.375 | 300<br>2.07                 | 89/64<br>3.50/2.50                   | 188<br>7.40              | 124<br>4.88   | 102<br>4.02 | 100<br>3.94 | 1/2× 75   |
| 100× 80× 65<br>4× 3× 2 1/4         | 114.3× 88.9× 76.1<br>4.500× 3.500× 3.000 | 300<br>2.07                 | 89/70<br>3.50/3.75                   | 188<br>7.40              | 124<br>4.88   | 102<br>4.02 | 102<br>4.02 | 1/2× 75   |
| 125× 15<br>133.0× 1/2              | 133.0× 21.3<br>5.250× 0.825              | 300<br>2.07                 | 38<br>1.50                           | 209<br>8.23              | 96.5<br>3.80  | 103<br>4.06 | 103<br>4.06 | 5/8× 85   |
| 125× 20<br>133.0× 3/4              | 133.0× 26.9<br>5.250× 1.050              | 300<br>2.07                 | 38<br>1.50                           | 209<br>8.23              | 96.5<br>3.80  | 103<br>4.06 | 103<br>4.06 | 5/8× 85   |
| 125× 25<br>133.0× 1                | 133.0× 33.7<br>5.250× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 209<br>8.23              | 96.5<br>3.80  | 103<br>4.06 | 103<br>4.06 | 5/8× 85   |
| 125× 32<br>133.0× 1.25             | 133.0× 42.4<br>5.250× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 209<br>8.23              | 96.5<br>3.80  | 106<br>4.17 | 106<br>4.17 | 5/8× 85   |
| 125× 50<br>133.0× 2                | 133.0× 60.3<br>5.250× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 209<br>8.23              | 112.5<br>4.43 | 110<br>4.33 | 110<br>4.33 | 5/8× 85   |
| 125× 25<br>139.7× 1                | 139.7× 33.7<br>5.500× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 221.5<br>8.72            | 78<br>3.07    | 110<br>4.33 | 110<br>4.33 | 5/8× 85   |
| 125× 32<br>139.7× 1 1/4            | 139.7× 42.4<br>5.500× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 221.5<br>8.72            | 94.5<br>3.72  | 112<br>4.41 | 112<br>4.41 | 5/8× 85   |
| 125× 32× 25<br>139.7× 1 1/4× 1     | 139.7× 42.4× 33.7<br>5.500× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 221.5<br>8.72            | 94.5<br>3.72  | 112<br>4.41 | 110<br>4.33 | 5/8× 85   |
| 125× 40<br>139.7× 1 1/2            | 139.7× 48.3<br>5.500× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 221.5<br>8.72            | 94.5<br>3.72  | 112<br>4.41 | 112<br>4.41 | 5/8× 85   |
| 125× 40× 25<br>139.7× 1 1/2× 1     | 139.7× 48.3× 33.7<br>5.500× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 221.5<br>8.72            | 94.5<br>3.72  | 112<br>4.41 | 110<br>4.33 | 5/8× 85   |
| 125× 40× 32<br>139.7× 1 1/2× 1 1/4 | 139.7× 48.3× 42.4<br>5.500× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 221.5<br>8.72            | 94.5<br>3.72  | 112<br>4.41 | 112<br>4.41 | 5/8× 85   |
| 125× 50<br>139.7× 2                | 139.7× 60.3<br>5.500× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 115<br>4.53 | 5/8× 85   |
| 125× 50× 25<br>139.7× 2× 1         | 139.7× 60.3× 33.7<br>5.500× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 110<br>4.33 | 5/8× 85   |
| 125× 50× 32<br>139.7× 2× 1 1/4     | 139.7× 60.3× 42.4<br>5.500× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 112<br>4.41 | 5/8× 85   |
| 125× 50× 40<br>139.7× 2× 1 1/2     | 139.7× 60.3× 48.3<br>5.500× 2.375× 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 112<br>4.41 | 5/8× 85   |
| 125× 65<br>139.7× 2 1/4            | 139.7× 76.1<br>5.500× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 119<br>4.69 | 5/8× 85   |
| 125× 65× 32<br>139.7× 2 1/4× 1 1/4 | 139.7× 76.1× 42.4<br>5.500× 3.000× 1.660 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 112<br>4.41 | 5/8× 85   |
| 125× 65× 40<br>139.7× 2 1/4× 1 1/2 | 139.7× 76.1× 48.3<br>5.500× 3.000× 1.900 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 112<br>4.41 | 5/8× 85   |
| 125× 65× 50<br>139.7× 2 1/4× 2     | 139.7× 76.1× 60.3<br>5.500× 3.000× 2.375 | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 221.5<br>8.72            | 112.5<br>4.43 | 115<br>4.53 | 115<br>4.53 | 5/8× 85   |
| 125× 80<br>139.7× 3                | 139.7× 88.9<br>5.500× 3.500              | 300<br>2.07                 | 89<br>3.50                           | 221.5<br>8.72            | 136<br>5.35   | 120<br>4.72 | 122<br>4.80 | 5/8× 85   |
| 125× 100<br>139.7× 4               | 139.7× 114.3<br>5.500× 4.500             | 300<br>2.07                 | 114<br>4.50                          | 221.5<br>8.72            | 156<br>6.30   | 125<br>4.92 | 125<br>4.92 | 5/8× 85   |
| 150× 25<br>159.0× 1                | 159.0× 33.7<br>6.250× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60              | 78<br>3.07    | 116<br>4.57 | 116<br>4.57 | 5/8× 105  |

| Nominal Size<br>mm/in        | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |             |             | Bolt Size |
|------------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|-------------|-------------|-----------|
|                              |                                          |                             |                                      | A                        | B             | C           | D           |           |
| 150x 32<br>159.0x 1¼         | 159.0x 42.4<br>6.250x 1.660              | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60              | 92<br>3.62    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 32x 25<br>159.0x 1¼x 1  | 159.0x 42.4x 33.7<br>6.250x 1.660x 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 244<br>9.60              | 92<br>3.62    | 118<br>4.65 | 116<br>4.57 | 5/8x 105  |
| 150x 40<br>159.0x 1½         | 159.0x 48.3<br>6.250x 1.900              | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60              | 92<br>3.62    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 40x 25<br>159.0x 1½x 1  | 159.0x 48.3x 33.7<br>6.250x 1.900x 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 244<br>9.60              | 92<br>3.62    | 118<br>4.65 | 116<br>4.57 | 5/8x 105  |
| 150x 40x 32<br>159.0x 1½x 1¼ | 159.0x 48.3x 42.4<br>6.250x 1.900x 1.660 | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60              | 92<br>3.62    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 50<br>159.0x 2          | 159.0x 60.3<br>6.250x 2.375              | 300<br>2.07                 | 64<br>2.50                           | 244<br>9.60              | 112.5<br>4.43 | 125<br>4.92 | 125<br>4.92 | 5/8x 105  |
| 150x 50x 25<br>159.0x 2x 1   | 159.0x 60.3x 33.7<br>6.250x 2.375x 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 244<br>9.60              | 112.5<br>4.43 | 125<br>4.92 | 116<br>4.57 | 5/8x 105  |
| 150x 50x 32<br>159.0x 2x 1¼  | 159.0x 60.3x 42.4<br>6.250x 2.375x 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 244<br>9.60              | 112.5<br>4.43 | 125<br>4.92 | 118<br>4.65 | 5/8x 105  |
| 150x 50x 40<br>159.0x 2x 1½  | 159.0x 60.3x 48.3<br>6.250x 2.375x 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 244<br>9.60              | 112.5<br>4.43 | 125<br>4.92 | 118<br>4.65 | 5/8x 105  |
| 150x 65<br>159.0x 2½         | 159.0x 76.1<br>6.250x 3.000              | 300<br>2.07                 | 70<br>2.75                           | 244<br>9.60              | 112<br>4.41   | 125<br>4.92 | 120<br>4.72 | 5/8x 105  |
| 150x 80<br>159.0x 3          | 159.0x 88.9<br>6.250x 3.500              | 300<br>2.07                 | 89<br>3.50                           | 244<br>9.60              | 136<br>5.35   | 125<br>4.92 | 120<br>4.72 | 5/8x 105  |
| 150x 80x 40<br>159.0x 3x 1½  | 159.0x 88.9x 48.3<br>6.250x 3.500x 1.900 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 244<br>9.60              | 136<br>5.35   | 125<br>4.92 | 118<br>4.65 | 5/8x 105  |
| 150x 15<br>165.1x ½          | 165.1x 21.3<br>6.500x 0.825              | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60              | 78<br>3.07    | 115<br>4.53 | 115<br>4.53 | 5/8x 105  |
| 125x 20<br>165.1x ¾          | 165.1x 26.9<br>6.500x 1.050              | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60              | 78<br>3.07    | 115<br>4.53 | 115<br>4.53 | 5/8x 105  |
| 150x 25<br>165.1x 1          | 165.1x 33.7<br>6.500x 1.315              | 300<br>2.07                 | 38<br>1.50                           | 244<br>9.60              | 78<br>3.07    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 32<br>165.1x 1¼         | 165.1x 42.4<br>6.500x 1.660              | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60              | 93<br>3.66    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 32x 25<br>165.1x 1¼x 1  | 165.1x 42.4x 33.7<br>6.500x 1.660x 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 244<br>9.60              | 93<br>3.66    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 40<br>165.1x 1½         | 165.1x 48.3<br>6.500x 1.900              | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60              | 93<br>3.66    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 40x 25<br>165.1x 1½x 1  | 165.1x 48.3x 33.7<br>6.500x 1.900x 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 244<br>9.60              | 93<br>3.66    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 40x 32<br>165.1x 1½x 1¼ | 165.1x 48.3x 42.4<br>6.500x 1.900x 1.660 | 300<br>2.07                 | 51<br>2.00                           | 244<br>9.60              | 93<br>3.66    | 118<br>4.65 | 118<br>4.65 | 5/8x 105  |
| 150x 50<br>165.1x 2          | 165.1x 60.3<br>6.500x 2.375              | 300<br>2.07                 | 64<br>2.50                           | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 130<br>5.12 | 5/8x 105  |
| 150x 50x 25<br>165.1x 2x 1   | 165.1x 60.3x 33.7<br>6.500x 2.375x 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 118<br>4.65 | 5/8x 105  |
| 150x 50x 32<br>165.1x 2x 1¼  | 165.1x 60.3x 42.4<br>6.500x 2.375x 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 118<br>4.65 | 5/8x 105  |
| 150x 50x 40<br>165.1x 2x 1½  | 165.1x 60.3x 48.3<br>6.500x 2.375x 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 118<br>4.65 | 5/8x 105  |
| 150x 65<br>165.1x 2½         | 165.1x 76.1<br>6.500x 3.000              | 300<br>2.07                 | 70<br>2.75                           | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 130<br>5.12 | 5/8x 105  |
| 150x 65x 25<br>165.1x 2½x 1  | 165.1x 76.1x 33.7<br>6.500x 3.000x 1.315 | 300<br>2.07                 | 70/38<br>2.75/1.50                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 118<br>4.65 | 5/8x 105  |
| 150x 65x 32<br>165.1x 2½x 1¼ | 165.1x 76.1x 42.4<br>6.500x 3.000x 1.660 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 118<br>4.65 | 5/8x 105  |
| 150x 65x 40<br>165.1x 2½x 1½ | 165.1x 76.1x 48.3<br>6.500x 3.000x 1.900 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12 | 118<br>4.65 | 5/8x 105  |

| Nominal Size<br>mm/in         | Pipe O.D<br>mm/in                         | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |               |               | Bolt Size |
|-------------------------------|-------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|---------------|---------------|-----------|
|                               |                                           |                             |                                      | A                        | B             | C             | D             |           |
| 150× 65× 50<br>165.1× 76.1× 2 | 165.1× 76.1× 60.3<br>6.500× 3.000× 2.375  | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 244<br>9.60              | 112.5<br>4.43 | 130<br>5.12   | 130<br>5.12   | 5/8× 105  |
| 150× 80<br>165.1× 3           | 165.1× 88.9<br>6.500× 3.500               | 300<br>2.07                 | 89<br>3.50                           | 244<br>9.60              | 132<br>5.20   | 128.5<br>5.06 | 128.5<br>5.06 | 5/8× 105  |
| 150× 80× 25<br>165.1× 3× 1    | 165.1× 88.9× 33.7<br>6.500× 3.500× 1.315  | 300<br>2.07                 | 89/38<br>3.50/1.50                   | 244<br>9.60              | 132<br>5.20   | 128.5<br>5.06 | 118<br>4.65   | 5/8× 105  |
| 150× 80× 32<br>165.1× 3× 1¼   | 165.1× 88.9× 42.4<br>6.500× 3.500× 1.660  | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 244<br>9.60              | 132<br>5.20   | 128.5<br>5.06 | 118<br>4.65   | 5/8× 105  |
| 150× 80× 40<br>165.1× 3× 1½   | 165.1× 88.9× 48.3<br>6.500× 3.500× 1.900  | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 244<br>9.60              | 132<br>5.20   | 128.5<br>5.06 | 118<br>4.65   | 5/8× 105  |
| 150× 80× 50<br>165.1× 3× 2    | 165.1× 88.9× 60.3<br>6.500× 3.500× 2.375  | 300<br>2.07                 | 89/64<br>3.50/2.50                   | 244<br>9.60              | 132<br>5.20   | 128.5<br>5.06 | 130<br>5.12   | 5/8× 105  |
| 150× 80× 65<br>165.1× 3× 2½   | 165.1× 88.9× 76.1<br>6.500× 3.500× 3.000  | 300<br>2.07                 | 89/70<br>3.50/2.75                   | 244<br>9.60              | 132<br>5.20   | 128.5<br>5.06 | 130<br>5.12   | 5/8× 105  |
| 150× 100<br>165.1× 4          | 165.1× 114.3<br>6.500× 4.500              | 300<br>2.07                 | 114<br>4.50                          | 244<br>9.60              | 154<br>6.06   | 135<br>5.52   | 135<br>5.52   | 5/8× 105  |
| 150× 100× 32<br>165.1× 4× 1¼  | 165.1× 114.3× 42.4<br>6.500× 4.500× 1.660 | 300<br>2.07                 | 114/51<br>4.50/2.00                  | 244<br>9.60              | 154<br>6.06   | 135<br>5.52   | 118<br>4.65   | 5/8× 105  |
| 150× 100× 40<br>165.1× 4× 1½  | 165.1× 114.3× 48.3<br>6.500× 4.500× 1.900 | 300<br>2.07                 | 114/51<br>4.50/2.00                  | 244<br>9.60              | 154<br>6.06   | 135<br>5.52   | 118<br>4.65   | 5/8× 105  |
| 150× 100× 50<br>165.1× 4× 2   | 165.1× 114.3× 60.3<br>6.500× 4.500× 2.375 | 300<br>2.07                 | 114/64<br>4.50/2.50                  | 244<br>9.60              | 154<br>6.06   | 135<br>5.52   | 130<br>5.12   | 5/8× 105  |
| 150× 100× 65<br>165.1× 4× 2½  | 165.1× 114.3× 76.1<br>6.500× 4.500× 3.000 | 300<br>2.07                 | 114/70<br>4.50/2.75                  | 244<br>9.60              | 154<br>6.06   | 135<br>5.52   | 130<br>5.12   | 5/8× 105  |
| 150× 100× 80<br>165.1× 4× 3   | 165.1× 114.3× 88.9<br>6.500× 4.500× 3.500 | 300<br>2.07                 | 114/89<br>4.50/3.50                  | 244<br>9.60              | 154<br>6.06   | 135<br>5.52   | 128.5<br>5.06 | 5/8× 105  |
| 150× 50<br>6× 2               | 168.3× 60.3<br>6.625× 2.375               | 300<br>2.07                 | 64<br>2.50                           | 247<br>9.72              | 114<br>4.49   | 135<br>5.31   | 135<br>5.31   | 5/8× 105  |
| 150× 65<br>6× 2½              | 168.3× 76.1<br>6.625× 3.000               | 300<br>2.07                 | 70<br>2.75                           | 247<br>9.72              | 115<br>4.53   | 134<br>5.28   | 134<br>5.28   | 5/8× 105  |
| 200× 40<br>8× 1½              | 219.1× 48.3<br>8.625× 1.900               | 300<br>2.07                 | 51<br>2.00                           | 322<br>12.68             | 96.5<br>3.80  | 150<br>5.91   | 150<br>5.91   | 3/4× 115  |
| 200× 50<br>8× 2               | 219.1× 60.3<br>8.625× 2.375               | 300<br>2.07                 | 64<br>2.50                           | 322<br>12.68             | 117<br>4.61   | 160<br>6.30   | 160<br>6.30   | 3/4× 115  |
| 200× 50× 25<br>8× 2× 1        | 219.1× 60.3× 33.7<br>8.625× 2.375× 1.315  | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 322<br>12.68             | 117<br>4.61   | 160<br>6.30   | 150<br>5.91   | 3/4× 115  |
| 200× 50× 32<br>8× 2× 1¼       | 219.1× 60.3× 42.4<br>8.625× 2.375× 1.660  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 322<br>12.68             | 117<br>4.61   | 160<br>6.30   | 150<br>5.91   | 3/4× 115  |
| 200× 50× 40<br>8× 2× 1½       | 219.1× 60.3× 48.3<br>8.625× 2.375× 1.900  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 322<br>12.68             | 117<br>4.61   | 160<br>6.30   | 150<br>5.91   | 3/4× 115  |
| 200× 65<br>8× 2½              | 219.1× 76.1<br>8.625× 3.000               | 300<br>2.07                 | 70<br>2.75                           | 322<br>12.68             | 118<br>4.65   | 158.5<br>6.24 | 158.5<br>6.24 | 3/4× 115  |
| 200× 65× 40<br>8× 2½× 1½      | 219.1× 76.1× 48.3<br>8.625× 3.000× 1.900  | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 322<br>12.68             | 118<br>4.65   | 158.5<br>6.24 | 150<br>5.91   | 3/4× 115  |
| 200× 65× 50<br>8× 2½× 2       | 219.1× 76.1× 60.3<br>8.625× 3.000× 2.375  | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 322<br>12.68             | 118<br>4.65   | 158.5<br>6.24 | 160<br>6.30   | 3/4× 115  |
| 200× 80<br>8× 3               | 219.1× 88.9<br>8.625× 3.500               | 300<br>2.07                 | 89<br>3.50                           | 322<br>12.68             | 142<br>5.59   | 160<br>6.30   | 160<br>6.30   | 3/4× 115  |
| 200× 80× 65<br>8× 3× 2½       | 219.1× 88.9× 76.1<br>8.625× 3.500× 3.000  | 300<br>2.07                 | 89/70<br>3.50/2.75                   | 322<br>12.68             | 142<br>5.59   | 160<br>6.30   | 158.5<br>6.24 | 3/4× 115  |
| 200× 100<br>8× 4              | 219.1× 114.3<br>8.625× 4.500              | 300<br>2.07                 | 114<br>4.50                          | 322<br>12.68             | 170<br>6.70   | 170<br>6.70   | 170<br>6.70   | 3/4× 115  |
| 200× 100× 65<br>8× 4× 2½      | 219.1× 114.3× 76.1<br>8.625× 4.500× 3.000 | 300<br>2.07                 | 114/70<br>4.50/2.75                  | 322<br>12.68             | 170<br>6.70   | 170<br>6.70   | 158.5<br>6.24 | 3/4× 115  |
| 200× 100× 80<br>8× 4× 3       | 219.1× 114.3× 88.9<br>8.625× 4.500× 3.500 | 300<br>2.07                 | 114/89<br>4.50/3.50                  | 322<br>12.68             | 170<br>6.70   | 170<br>6.70   | 160<br>6.30   | 3/4× 115  |

## 4JS

Mechanical Gross  
Threaded Outlet



| Nominal<br>Size<br>mm/in       | Pipe<br>O.D<br>mm/in                    | Working<br>Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |              |            |            | Bolt Size |
|--------------------------------|-----------------------------------------|--------------------------------|--------------------------------------|--------------------------|--------------|------------|------------|-----------|
|                                |                                         |                                |                                      | A                        | B            | C          | D          |           |
| 50× 25<br>2× 1                 | 60.3× 33.7<br>2.375× 1.315              | 300<br>2.07                    | 38<br>1.50                           | 116<br>4.57              | 68<br>2.68   | 60<br>2.36 | 60<br>2.36 | 3/8× 55   |
| 50× 32<br>2× 1¼                | 60.3× 42.4<br>2.375× 1.660              | 300<br>2.07                    | 45<br>1.75                           | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 65<br>2.56 | 3/8× 55   |
| 50× 32× 25<br>2× 1¼× 1         | 60.3× 42.4× 33.7<br>2.375× 1.660× 1.315 | 300<br>2.07                    | 45/38<br>1.75/1.50                   | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 60<br>2.36 | 3/8× 55   |
| 50× 40<br>2× 1½                | 60.3× 48.3<br>2.375× 1.900              | 300<br>2.07                    | 45<br>1.75                           | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 65<br>2.56 | 3/8× 55   |
| 50× 40× 25<br>2× 1½× 1         | 60.3× 48.3× 33.7<br>2.375× 1.900× 1.315 | 300<br>2.07                    | 45/38<br>1.75/1.50                   | 116<br>4.57              | 76<br>2.99   | 65<br>2.56 | 60<br>2.36 | 3/8× 55   |
| 65× 25<br>2½× 1                | 73.0× 33.7<br>2.875× 1.315              | 300<br>2.07                    | 38<br>1.50                           | 144<br>5.67              | 70<br>2.76   | 69<br>2.72 | 69<br>2.72 | 1/2× 70   |
| 65× 32<br>2½× 1¼               | 73.0× 42.4<br>2.875× 1.660              | 300<br>2.07                    | 51<br>2.00                           | 144<br>5.67              | 84.5<br>3.33 | 73<br>2.87 | 73<br>2.87 | 1/2× 70   |
| 65× 40<br>2½× 1½               | 73.0× 48.3<br>2.875× 1.900              | 300<br>2.07                    | 51<br>2.00                           | 144<br>5.67              | 84.5<br>3.33 | 73<br>2.87 | 73<br>2.87 | 1/2× 70   |
| 65× 25<br>76.1× 1              | 76.1× 33.7<br>3.000× 1.315              | 300<br>2.07                    | 38<br>1.50                           | 137<br>5.39              | 71<br>2.80   | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 32<br>76.1× 1¼             | 76.1× 42.4<br>3.000× 1.660              | 300<br>2.07                    | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 32<br>76.1× 1¼             | 76.1× 42.4<br>3.000× 1.660              | 300<br>2.07                    | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 32× 25<br>76.1× 1¼× 1      | 76.1× 42.4× 33.7<br>3.000× 1.660× 1.315 | 300<br>2.07                    | 51/38<br>2.00/1.50                   | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 40<br>76.1× 1½             | 76.1× 48.3<br>3.000× 1.900              | 300<br>2.07                    | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 40× 25<br>76.1× 1½× 1      | 76.1× 48.3× 33.7<br>3.000× 1.900× 1.315 | 300<br>2.07                    | 51/38<br>2.00/1.50                   | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 65× 40× 25× 32<br>76.1× 1½× 1¼ | 76.1× 48.3× 42.4<br>3.000× 1.900× 1.660 | 300<br>2.07                    | 51<br>2.00                           | 137<br>5.39              | 84.5<br>3.33 | 75<br>3.05 | 75<br>3.05 | 1/2× 70   |
| 3× ¾                           | 88.9× 26.9<br>3.500× 1.050              | 300<br>2.07                    | 38<br>1.50                           | 150<br>5.91              | 71.0<br>2.80 | 68<br>2.68 | 68<br>2.68 | 1/2× 70   |
| 80× 25<br>3× 1                 | 88.9× 33.7<br>3.500× 1.315              | 300<br>2.07                    | 38<br>1.50                           | 150<br>5.91              | 71.0<br>2.80 | 68<br>2.68 | 68<br>2.68 | 1/2× 75   |
| 80× 32<br>3× 1¼                | 88.9× 42.4<br>3.500× 1.660              | 300<br>2.07                    | 51<br>2.00                           | 150<br>5.91              | 84.5<br>3.33 | 74<br>2.91 | 74<br>2.91 | 1/2× 75   |

| Nominal Size<br>mm/in        | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |              |              | Bolt Size |
|------------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|--------------|--------------|-----------|
|                              |                                          |                             |                                      | A                        | B             | C            | D            |           |
| 80× 32× 25<br>3× 1¼× 1       | 88.9× 42.4× 33.7<br>3.500× 1.660× 1.315  | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 150<br>5.91              | 84.5<br>3.33  | 74<br>2.91   | 68<br>2.68   | 1/2× 75   |
| 80× 40<br>3× 1½              | 88.9× 48.3<br>3.500× 1.900               | 300<br>2.07                 | 51<br>2.00                           | 150<br>5.91              | 84.5<br>3.33  | 74<br>2.91   | 74<br>2.91   | 1/2× 75   |
| 80× 40× 25<br>3× 1½× 1       | 88.9× 48.3× 33.7<br>3.500× 1.900× 1.315  | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 150<br>5.91              | 84.5<br>3.33  | 74<br>2.91   | 68<br>2.68   | 1/2× 75   |
| 80× 40× 32<br>3× 1½× 1¼      | 88.9× 48.3× 42.4<br>3.500× 1.900× 1.660  | 300<br>2.07                 | 51<br>2.00                           | 150<br>5.91              | 84.5<br>3.33  | 74<br>2.91   | 74<br>2.91   | 1/2× 75   |
| 80× 50<br>3× 2               | 88.9× 60.3<br>3.500× 2.375               | 300<br>2.07                 | 64<br>2.50                           | 150<br>5.91              | 98<br>3.86    | 77<br>3.03   | 77<br>3.03   | 1/2× 75   |
| 80× 50× 25<br>3× 2× 1        | 88.9× 60.3× 33.7<br>3.500× 2.375× 1.315  | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 150<br>5.91              | 98<br>3.86    | 77<br>3.03   | 68<br>2.68   | 1/2× 75   |
| 80× 50× 32<br>3× 2× 1¼       | 88.9× 60.3× 42.4<br>3.500× 2.375× 1.660  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 150<br>5.91              | 98<br>3.86    | 77<br>3.03   | 74<br>2.91   | 1/2× 75   |
| 80× 50× 40<br>3× 2× 1½       | 88.9× 60.3× 48.3<br>3.500× 2.375× 1.900  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 150<br>5.91              | 98<br>3.86    | 77<br>3.03   | 74<br>2.91   | 1/2× 75   |
| 100× 25<br>108.0× 1          | 108.1× 33.7<br>4.250× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 172<br>6.77              | 77.5<br>3.05  | 85<br>3.35   | 85<br>3.35   | 1/2× 75   |
| 100× 32<br>108.0× 1¼         | 108.1× 42.4<br>4.250× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77              | 88<br>3.46    | 85<br>3.35   | 85<br>3.35   | 1/2× 75   |
| 100× 32× 25<br>108.0× 1¼× 1  | 108.1× 42.4× 33.7<br>4.250× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 172<br>6.77              | 88<br>3.46    | 85<br>3.35   | 85<br>3.35   | 1/2× 75   |
| 100× 40<br>108.0× 1½         | 108.0× 48.3<br>4.250× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77              | 88<br>3.46    | 85<br>3.35   | 85<br>3.35   | 1/2× 75   |
| 100× 40× 25<br>108.0× 1½× 1  | 108.0× 48.3× 33.7<br>4.250× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 172<br>6.77              | 88<br>3.46    | 85<br>3.35   | 85<br>3.35   | 1/2× 75   |
| 100× 40× 32<br>108.0× 1½× 1¼ | 108.0× 48.3× 42.4<br>4.250× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 172<br>6.77              | 88<br>3.46    | 85<br>3.35   | 85<br>3.35   | 1/2× 75   |
| 100× 50<br>108.0× 2          | 108.0× 60.3<br>4.250× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 172<br>6.77              | 103.5<br>4.19 | 89<br>3.50   | 89<br>3.50   | 1/2× 75   |
| 100× 50× 25<br>108.0× 2× 1   | 108.0× 60.3× 33.7<br>4.250× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 172<br>6.77              | 103.5<br>4.19 | 89<br>3.50   | 85<br>3.35   | 1/2× 75   |
| 100× 50× 32<br>108.0× 2× 1¼  | 108.0× 60.3× 42.4<br>4.250× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 172<br>6.77              | 103.5<br>4.19 | 89<br>3.50   | 85<br>3.35   | 1/2× 75   |
| 100× 50× 40<br>108.0× 2× 1½  | 108.0× 60.3× 48.3<br>4.250× 2.375× 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 172<br>6.77              | 103.5<br>4.19 | 89<br>3.50   | 85<br>3.35   | 1/2× 75   |
| 100× 65<br>108.0× 76.1       | 108.0× 76.1<br>4.250× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 172<br>6.77              | 103.5<br>4.07 | 96<br>3.78   | 96<br>3.78   | 1/2× 75   |
| 100× 15<br>4× ½              | 114.3× 21.3<br>4.500× 0.825              | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01              | 77.5<br>3.05  | 82<br>3.23   | 82<br>3.23   | 1/2× 75   |
| 100× 20<br>4× ¾              | 114.3× 26.9<br>4.500× 1.050              | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01              | 77.5<br>3.05  | 82<br>3.23   | 82<br>3.23   | 1/2× 75   |
| 100× 25<br>4× 1              | 114.3× 33.7<br>4.500× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 178<br>7.01              | 77.5<br>3.05  | 82<br>3.23   | 82<br>3.23   | 1/2× 75   |
| 100× 32<br>4× 1¼             | 114.3× 42.4<br>4.500× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 178<br>7.01              | 88<br>3.46    | 89.5<br>3.53 | 89.5<br>3.53 | 1/2× 75   |

| Nominal Size<br>mm/in    | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |              |              | Bolt Size |
|--------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|--------------|--------------|-----------|
|                          |                                          |                             |                                      | A                        | B             | C            | D            |           |
| 100× 32× 25<br>4× 1¼× 1  | 114.3× 42.4× 33.7<br>4.500× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 178<br>7.01              | 88<br>3.46    | 89.5<br>3.53 | 82<br>3.23   | 1/2× 75   |
| 100× 40<br>4× 1½         | 114.3× 48.3<br>4.500× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 178<br>7.01              | 88<br>3.46    | 89.5<br>3.53 | 89.5<br>3.53 | 1/2× 75   |
| 100× 40× 25<br>4× 1½× 1  | 114.3× 48.3× 33.7<br>4.500× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 178<br>7.01              | 88<br>3.46    | 89.5<br>3.53 | 82<br>3.23   | 1/2× 75   |
| 100× 40× 32<br>4× 1½× 1¼ | 114.3× 48.3× 42.4<br>4.500× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 178<br>7.01              | 88<br>3.46    | 89.5<br>3.53 | 89.5<br>3.53 | 1/2× 75   |
| 100× 50<br>4× 2          | 114.3× 60.3<br>4.500× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 178<br>7.01              | 103.5<br>4.07 | 92<br>3.62   | 92<br>3.62   | 1/2× 75   |
| 100× 50× 25<br>4× 2× 1   | 114.3× 60.3× 33.7<br>4.500× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 178<br>7.01              | 103.5<br>4.07 | 92<br>3.62   | 82<br>3.23   | 1/2× 75   |
| 100× 50× 32<br>4× 2× 1¼  | 114.3× 60.3× 42.4<br>4.500× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 178<br>7.01              | 103.5<br>4.07 | 92<br>3.62   | 89.5<br>3.53 | 1/2× 75   |
| 100× 65<br>4× 2½         | 114.3× 76.1<br>4.500× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 178<br>7.01              | 103.5<br>4.07 | 98<br>3.86   | 98<br>3.86   | 1/2× 75   |
| 100× 65× 32<br>4× 2½× 1¼ | 114.3× 76.1× 42.4<br>4.500× 3.000× 1.660 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 178<br>7.01              | 103.5<br>4.07 | 98<br>3.86   | 89.5<br>3.53 | 1/2× 75   |
| 100× 65× 40<br>4× 2½× 1½ | 114.3× 76.1× 48.3<br>4.500× 3.000× 1.900 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 178<br>7.01              | 103.5<br>4.07 | 98<br>3.86   | 89.5<br>3.53 | 1/2× 75   |
| 100× 65× 50<br>4× 2½× 2  | 114.3× 76.1× 60.3<br>4.500× 3.000× 2.375 | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 178<br>7.01              | 103.5<br>4.07 | 98<br>3.86   | 92<br>3.62   | 1/2× 75   |
| 100× 80<br>4× 3          | 114.3× 88.9<br>4.500× 3.500              | 300<br>2.07                 | 89<br>3.50                           | 178<br>7.01              | 124<br>4.88   | 100<br>3.94  | 100<br>3.94  | 1/2× 75   |
| 100× 80× 32<br>4× 3× 1¼  | 114.3× 88.9× 42.4<br>4.500× 3.500× 1.660 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 178<br>7.01              | 124<br>4.88   | 100<br>3.94  | 89.5<br>3.53 | 1/2× 75   |
| 100× 80× 40<br>4× 3× 1½  | 114.3× 88.9× 48.3<br>4.500× 3.500× 1.900 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 178<br>7.01              | 124<br>4.88   | 100<br>3.94  | 89.5<br>3.53 | 1/2× 75   |
| 100× 80× 50<br>4× 3× 2   | 114.3× 88.9× 60.3<br>4.500× 3.500× 2.375 | 300<br>2.07                 | 89/64<br>3.50/2.50                   | 178<br>7.01              | 124<br>4.88   | 100<br>3.94  | 92<br>3.62   | 1/2× 75   |
| 100× 80× 65<br>4× 3× 2½  | 114.3× 88.9× 76.1<br>4.500× 3.500× 3.000 | 300<br>2.07                 | 89/70<br>3.50/3.75                   | 178<br>7.01              | 124<br>4.88   | 100<br>3.94  | 98<br>3.86   | 1/2× 75   |
| 125× 15<br>133.0× ½      | 133.0× 21.3<br>5.250× 0.825              | 300<br>2.07                 | 38<br>1.50                           | 203<br>7.99              | 77<br>3.03    | 98<br>3.86   | 98<br>3.86   | 5/8× 85   |
| 125× 20<br>133.0× ¾      | 133.0× 26.9<br>5.250× 1.050              | 300<br>2.07                 | 38<br>1.50                           | 203<br>7.99              | 77<br>3.03    | 98<br>3.86   | 98<br>3.86   | 5/8× 85   |
| 125× 25<br>133.0× 1      | 133.0× 33.7<br>5.250× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 203<br>7.99              | 77<br>3.03    | 98<br>3.86   | 98<br>3.86   | 5/8× 85   |
| 125× 32<br>133.0× 1.25   | 133.0× 42.4<br>5.250× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 203<br>7.99              | 91<br>3.58    | 102<br>4.01  | 102<br>4.01  | 5/8× 85   |
| 125× 50<br>133.0× 2      | 133.0× 60.3<br>5.250× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 203<br>7.99              | 110<br>4.33   | 105<br>4.13  | 105<br>4.13  | 5/8× 85   |
| 125× 25<br>139.7× 1      | 139.7× 33.7<br>5.500× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 210<br>8.27              | 77<br>3.03    | 100<br>3.94  | 100<br>3.94  | 5/8× 85   |
| 125× 32<br>139.7× 1¼     | 139.7× 42.4<br>5.500× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 210<br>8.27              | 91<br>3.58    | 105<br>4.13  | 105<br>4.13  | 5/8× 85   |

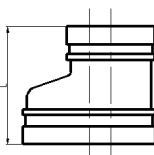
| Nominal Size<br>mm/in          | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |              |               |               | Bolt Size |
|--------------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|--------------|---------------|---------------|-----------|
|                                |                                          |                             |                                      | A                        | B            | C             | D             |           |
| 125× 32× 25<br>139.7× 1¼× 1    | 139.7× 42.4× 33.7<br>5.500× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 210<br>8.27              | 91<br>3.58   | 105<br>4.13   | 100<br>3.94   | 5/8× 85   |
| 125× 40<br>139.7× 1½           | 139.7× 48.3<br>5.500× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 210<br>8.27              | 91<br>3.58   | 105<br>4.13   | 105<br>4.13   | 5/8× 85   |
| 125× 40× 25<br>139.7× 1½× 1    | 139.7× 48.3× 33.7<br>5.500× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 210<br>8.27              | 91<br>3.58   | 105<br>4.13   | 100<br>3.94   | 5/8× 85   |
| 125× 40× 32<br>139.7× 1½× 1¼   | 139.7× 48.3× 42.4<br>5.500× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 210<br>8.27              | 91<br>3.58   | 105<br>4.13   | 105<br>4.13   | 5/8× 85   |
| 125× 50<br>139.7× 2            | 139.7× 60.3<br>5.500× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 210<br>8.27              | 110<br>4.33  | 108<br>4.25   | 108<br>4.25   | 5/8× 85   |
| 125× 50× 25<br>139.7× 2× 1     | 139.7× 60.3× 33.7<br>5.500× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 210<br>8.27              | 110<br>4.33  | 108<br>4.25   | 100<br>3.94   | 5/8× 85   |
| 125× 50× 32<br>139.7× 2× 1¼    | 139.7× 60.3× 42.4<br>5.500× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 210<br>8.27              | 110<br>4.33  | 108<br>4.25   | 105<br>4.13   | 5/8× 85   |
| 125× 50× 40<br>139.7× 2× 1½    | 139.7× 60.3× 48.3<br>5.500× 2.375× 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 210<br>8.27              | 110<br>4.33  | 108<br>4.25   | 105<br>4.13   | 5/8× 85   |
| 125× 65<br>139.7× 76.1         | 139.7× 76.1<br>5.500× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 210<br>8.27              | 110<br>4.33  | 115<br>4.53   | 115<br>4.53   | 5/8× 85   |
| 125× 65× 32<br>139.7× 76.1× 1¼ | 139.7× 76.1× 42.4<br>5.500× 3.000× 1.660 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 210<br>8.27              | 110<br>4.33  | 115<br>4.53   | 109<br>4.13   | 5/8× 85   |
| 125× 65× 40<br>139.7× 76.1× 1½ | 139.7× 76.1× 48.3<br>5.500× 3.000× 1.900 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 210<br>8.27              | 110<br>4.33  | 115<br>4.53   | 105<br>4.13   | 5/8× 85   |
| 125× 65× 50<br>139.7× 76.1× 2  | 139.7× 76.1× 60.3<br>5.500× 3.000× 2.375 | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 210<br>8.27              | 110<br>4.33  | 115<br>4.53   | 108<br>4.25   | 5/8× 85   |
| 125× 80<br>139.7× 3            | 139.7× 88.9<br>5.500× 3.500              | 300<br>2.07                 | 89<br>3.50                           | 210<br>8.27              | 130<br>5.12  | 115<br>4.53   | 115<br>4.53   | 5/8× 85   |
| 125× 100<br>139.7× 4           | 139.7× 114.3<br>5.500× 4.500             | 300<br>2.07                 | 114<br>4.50                          | 210<br>8.27              | 153<br>6.02  | 118<br>4.65   | 118<br>4.65   | 5/8× 85   |
| 150× 25<br>159.0× 1            | 159.0× 33.7<br>6.250× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 227<br>8.94              | 77<br>3.03   | 110<br>4.33   | 110<br>4.33   | 5/8× 105  |
| 150× 32<br>159.0× 1¼           | 159.0× 42.4<br>6.250× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 227<br>8.94              | 92.5<br>3.64 | 112<br>4.41   | 112<br>4.41   | 5/8× 105  |
| 150× 32× 25<br>159.0× 1¼× 1    | 159.0× 42.4× 33.7<br>6.250× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 227<br>8.94              | 77<br>3.03   | 110<br>4.33   | 110<br>4.33   | 5/8× 105  |
| 150× 40<br>159.0× 1½           | 159.0× 48.3<br>6.250× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 227<br>8.94              | 92.5<br>3.64 | 112<br>4.41   | 112<br>4.41   | 5/8× 105  |
| 150× 40× 25<br>159.0× 1½× 1    | 159.0× 48.3× 33.7<br>6.250× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 227<br>8.94              | 92.5<br>3.64 | 112<br>4.41   | 110<br>4.33   | 5/8× 105  |
| 150× 40× 32<br>159.0× 1½× 1¼   | 159.0× 48.3× 42.4<br>6.250× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 227<br>8.94              | 92.5<br>3.64 | 112<br>4.41   | 112<br>4.41   | 5/8× 105  |
| 150× 50<br>159.0× 2            | 159.0× 60.3<br>6.250× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 227<br>8.94              | 110<br>4.33  | 116.5<br>4.59 | 116.5<br>4.59 | 5/8× 105  |
| 150× 50× 25<br>159.0× 2× 1     | 159.0× 60.3× 33.7<br>6.250× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 227<br>8.94              | 110<br>4.33  | 116.5<br>4.59 | 110<br>4.33   | 5/8× 105  |
| 150× 50× 32<br>159.0× 2× 1¼    | 159.0× 60.3× 42.4<br>6.250× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 227<br>8.94              | 110<br>4.33  | 116.5<br>4.59 | 112<br>4.41   | 5/8× 105  |

| Nominal Size<br>mm/in          | Pipe O.D<br>mm/in                        | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |              |               |               | Bolt Size |
|--------------------------------|------------------------------------------|-----------------------------|--------------------------------------|--------------------------|--------------|---------------|---------------|-----------|
|                                |                                          |                             |                                      | A                        | B            | C             | D             |           |
| 150× 50× 40<br>159.0× 2× 1½    | 159.0× 60.3× 48.3<br>6.250× 2.375× 2.375 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 227<br>8.94              | 110<br>4.33  | 116.5<br>4.59 | 112<br>4.41   | 5/8× 105  |
| 150× 65<br>159.0× 76.1         | 159.0× 76.1<br>6.250× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 227<br>8.94              | 110<br>4.33  | 121.5<br>4.78 | 121.5<br>4.78 | 5/8× 105  |
| 150× 80<br>159.0× 3            | 159.0× 88.9<br>6.250× 3.500              | 300<br>2.07                 | 89<br>3.50                           | 227<br>8.94              | 130<br>5.12  | 123.5<br>4.86 | 123.5<br>4.86 | 5/8× 105  |
| 150× 80× 40<br>159.0× 3× 1½    | 159.0× 88.9× 48.3<br>6.250× 3.500× 2.375 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 227<br>8.94              | 130<br>5.12  | 123.5<br>4.86 | 112<br>4.41   | 5/8× 105  |
| 150× 15<br>165.1× ½            | 165.1× 21.3<br>6.500× 0.825              | 300<br>2.07                 | 38<br>1.50                           | 235<br>9.25              | 77<br>3.03   | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 125× 20<br>165.1× ¾            | 165.1× 26.9<br>6.500× 1.050              | 300<br>2.07                 | 38<br>1.50                           | 235<br>9.25              | 77<br>3.03   | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 25<br>165.1× 1            | 165.1× 33.7<br>6.500× 1.315              | 300<br>2.07                 | 38<br>1.50                           | 235<br>9.25              | 77<br>3.03   | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 32<br>165.1× 1¼           | 165.1× 42.4<br>6.500× 1.660              | 300<br>2.07                 | 51<br>2.00                           | 235<br>9.25              | 92.5<br>3.64 | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 32× 25<br>165.1× 1¼× 1    | 165.1× 42.4× 33.7<br>6.500× 1.660× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 235<br>9.25              | 92.5<br>3.64 | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 40<br>165.1× 1½           | 165.1× 48.3<br>6.500× 1.900              | 300<br>2.07                 | 51<br>2.00                           | 235<br>9.25              | 92.5<br>3.64 | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 40× 25<br>165.1× 1½× 1    | 165.1× 48.3× 33.7<br>6.500× 1.900× 1.315 | 300<br>2.07                 | 51/38<br>2.00/1.50                   | 235<br>9.25              | 92.5<br>3.64 | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 40× 32<br>165.1× 1½× 1¼   | 165.1× 48.3× 42.4<br>6.500× 1.900× 1.660 | 300<br>2.07                 | 51<br>2.00                           | 235<br>9.25              | 92.5<br>3.64 | 115<br>4.53   | 115<br>4.53   | 5/8× 105  |
| 150× 50<br>165.1× 2            | 165.1× 60.3<br>6.500× 2.375              | 300<br>2.07                 | 64<br>2.50                           | 235<br>9.25              | 110<br>4.33  | 120<br>4.72   | 120<br>4.72   | 5/8× 105  |
| 150× 50× 25<br>165.1× 2× 1     | 165.1× 60.3× 33.7<br>6.500× 2.375× 1.315 | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 235<br>9.25              | 110<br>4.33  | 120<br>4.72   | 115<br>4.53   | 5/8× 105  |
| 150× 50× 32<br>165.1× 2× 1¼    | 165.1× 60.3× 42.4<br>6.500× 2.375× 1.660 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 235<br>9.25              | 110<br>4.33  | 120<br>4.72   | 115<br>4.53   | 5/8× 105  |
| 150× 50× 40<br>165.1× 2× 1½    | 165.1× 60.3× 48.3<br>6.500× 2.375× 1.900 | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 235<br>9.25              | 110<br>4.33  | 120<br>4.72   | 115<br>4.53   | 5/8× 105  |
| 150× 65<br>165.1× 76.1         | 165.1× 76.1<br>6.500× 3.000              | 300<br>2.07                 | 70<br>2.75                           | 235<br>9.25              | 110<br>4.33  | 125<br>4.92   | 125<br>4.92   | 5/8× 105  |
| 150× 65× 25<br>165.1× 76.1× 1  | 165.1× 76.1× 33.7<br>6.500× 3.000× 1.315 | 300<br>2.07                 | 70/38<br>2.75/1.50                   | 235<br>9.25              | 110<br>4.33  | 125<br>4.92   | 115<br>4.53   | 5/8× 105  |
| 150× 65× 32<br>165.1× 76.1× 1¼ | 165.1× 76.1× 42.4<br>6.500× 3.000× 1.660 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 235<br>9.25              | 110<br>4.33  | 125<br>4.92   | 115<br>4.53   | 5/8× 105  |
| 150× 65× 40<br>165.1× 76.1× 1½ | 165.1× 76.1× 48.3<br>6.500× 3.000× 1.900 | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 235<br>9.25              | 110<br>4.33  | 125<br>4.92   | 115<br>4.53   | 5/8× 105  |
| 150× 65× 50<br>165.1× 76.1× 2  | 165.1× 76.1× 60.3<br>6.500× 3.000× 2.375 | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 235<br>9.25              | 110<br>4.33  | 125<br>4.92   | 120<br>4.72   | 5/8× 105  |
| 150× 80<br>165.1× 3            | 165.1× 88.9<br>6.500× 3.500              | 300<br>2.07                 | 89<br>3.50                           | 235<br>9.25              | 130<br>5.12  | 125<br>4.92   | 125<br>4.92   | 5/8× 105  |
| 150× 80× 25<br>165.1× 3× 1     | 165.1× 88.9× 33.7<br>6.500× 3.500× 1.315 | 300<br>2.07                 | 89/38<br>3.50/1.50                   | 235<br>9.25              | 130<br>5.12  | 125<br>4.92   | 115<br>4.53   | 5/8× 105  |
| 150× 80× 32<br>165.1× 3× 1¼    | 165.1× 88.9× 42.4<br>6.500× 3.500× 1.660 | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 235<br>9.25              | 130<br>5.12  | 125<br>4.92   | 115<br>4.53   | 5/8× 105  |

| Nominal Size<br>mm/in          | Pipe O.D<br>mm/in                         | Working Pressure<br>PSI/MPa | Hole Dia<br>mm/in<br>+1.6,0/+0.063,0 | Dimensions<br>L<br>mm/in |               |             |             | Bolt Size |
|--------------------------------|-------------------------------------------|-----------------------------|--------------------------------------|--------------------------|---------------|-------------|-------------|-----------|
|                                |                                           |                             |                                      | A                        | B             | C           | D           |           |
| 150× 80× 40<br>165.1× 3× 1½    | 165.1× 88.9× 48.3<br>6.500× 3.500× 1.900  | 300<br>2.07                 | 89/51<br>3.50/2.00                   | 235<br>9.25              | 130<br>5.12   | 125<br>4.92 | 115<br>4.53 | 5/8× 105  |
| 150× 80× 50<br>165.1× 3× 2     | 165.1× 88.9× 60.3<br>6.500× 3.500× 2.375  | 300<br>2.07                 | 89/64<br>3.50/2.50                   | 235<br>9.25              | 130<br>5.12   | 125<br>4.92 | 120<br>4.72 | 5/8× 105  |
| 150× 80× 65<br>165.1× 3× 76.1  | 165.1× 88.9× 76.1<br>6.500× 3.500× 3.000  | 300<br>2.07                 | 89/70<br>3.50/2.75                   | 235<br>9.25              | 130<br>5.12   | 125<br>4.92 | 125<br>4.92 | 5/8× 105  |
| 150× 100<br>165.1× 4           | 165.1× 114.3<br>6.500× 4.500              | 300<br>2.07                 | 114<br>4.50                          | 240<br>9.45              | 155<br>6.10   | 130<br>5.12 | 130<br>5.12 | 5/8× 105  |
| 150× 100× 32<br>165.1× 4× 1¼   | 165.1× 114.3× 42.4<br>6.500× 4.500× 1.660 | 300<br>2.07                 | 114/51<br>4.50/2.00                  | 240<br>9.45              | 155<br>6.10   | 130<br>5.12 | 115<br>4.53 | 5/8× 105  |
| 150× 100× 40<br>165.1× 4× 1½   | 165.1× 114.3× 48.3<br>6.500× 4.500× 1.900 | 300<br>2.07                 | 114/51<br>4.50/2.00                  | 240<br>9.45              | 155<br>6.10   | 130<br>5.12 | 115<br>4.53 | 5/8× 105  |
| 150× 100× 50<br>165.1× 4× 2    | 165.1× 114.3× 60.3<br>6.500× 4.500× 2.375 | 300<br>2.07                 | 114/64<br>4.50/2.50                  | 240<br>9.45              | 155<br>6.10   | 130<br>5.12 | 120<br>4.72 | 5/8× 105  |
| 150× 100× 65<br>165.1× 4× 76.1 | 165.1× 114.3× 76.1<br>6.500× 4.500× 3.000 | 300<br>2.07                 | 114/70<br>4.50/2.75                  | 240<br>9.45              | 155<br>6.10   | 130<br>5.12 | 125<br>4.92 | 5/8× 105  |
| 150× 100× 80<br>165.1× 4× 3    | 165.1× 114.3× 88.9<br>6.500× 4.500× 3.500 | 300<br>2.07                 | 114/89<br>4.50/3.50                  | 240<br>9.45              | 155<br>6.10   | 130<br>5.12 | 115<br>4.53 | 5/8× 105  |
| 150× 50<br>6× 2                | 168.3× 60.3<br>6.625× 2.375               | 300<br>2.07                 | 64<br>2.50                           | 240<br>9.45              | 110<br>4.33   | 121<br>4.76 | 121<br>4.76 | 5/8× 105  |
| 150× 65<br>6× 76.1             | 168.3× 76.1<br>6.625× 3.000               | 300<br>2.07                 | 70<br>2.75                           | 240<br>9.45              | 110<br>4.33   | 127<br>5.00 | 127<br>5.00 | 5/8× 105  |
| 200× 40<br>8× 1½               | 219.1× 48.3<br>8.625× 1.900               | 300<br>2.07                 | 51<br>2.00                           | 300<br>11.81             | 93<br>3.66    | 143<br>5.63 | 143<br>5.63 | 5/8× 105  |
| 200× 50<br>8× 2                | 219.1× 60.3<br>8.625× 2.375               | 300<br>2.07                 | 64<br>2.50                           | 300<br>11.81             | 115<br>4.53   | 149<br>5.87 | 149<br>5.87 | 5/8× 105  |
| 200× 50× 25<br>8× 2× 1         | 219.1× 60.3× 33.7<br>8.625× 2.375× 1.315  | 300<br>2.07                 | 64/38<br>2.50/1.50                   | 300<br>11.81             | 115<br>4.53   | 149<br>5.87 | 140<br>5.51 | 5/8× 105  |
| 200× 50× 32<br>8× 2× 1¼        | 219.1× 60.3× 42.4<br>8.625× 2.375× 1.660  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 300<br>11.81             | 115<br>4.53   | 149<br>5.87 | 143<br>5.63 | 5/8× 105  |
| 200× 50× 40<br>8× 2× 1½        | 219.1× 60.3× 48.3<br>8.625× 2.375× 1.900  | 300<br>2.07                 | 64/51<br>2.50/2.00                   | 300<br>11.81             | 115<br>4.53   | 149<br>5.87 | 149<br>5.87 | 5/8× 105  |
| 200× 65<br>8× 76.1             | 219.1× 76.1<br>8.625× 3.000               | 300<br>2.07                 | 70<br>2.75                           | 300<br>11.81             | 115<br>4.53   | 155<br>6.10 | 155<br>6.10 | 5/8× 105  |
| 200× 65× 40<br>8× 76.1× 1½     | 219.1× 76.1× 48.3<br>8.625× 3.000× 1.900  | 300<br>2.07                 | 70/51<br>2.75/2.00                   | 300<br>11.81             | 115<br>4.53   | 155<br>6.10 | 149<br>5.87 | 5/8× 105  |
| 200× 65× 50<br>8× 76.1× 2      | 219.1× 76.1× 60.3<br>8.625× 3.000× 2.375  | 300<br>2.07                 | 70/64<br>2.75/2.50                   | 300<br>11.81             | 115<br>4.53   | 155<br>6.10 | 149<br>5.87 | 5/8× 105  |
| 200× 80<br>8× 3                | 219.1× 88.9<br>8.625× 3.500               | 300<br>2.07                 | 89<br>3.50                           | 300<br>11.81             | 133.5<br>5.25 | 155<br>6.10 | 155<br>6.10 | 5/8× 105  |
| 200× 80× 65<br>8× 3× 76.1      | 219.1× 88.9× 76.1<br>8.625× 3.500× 3.000  | 300<br>2.07                 | 89/70<br>3.50/2.75                   | 300<br>11.81             | 133.5<br>5.25 | 155<br>6.10 | 155<br>6.10 | 5/8× 105  |
| 200× 100<br>8× 4               | 219.1× 114.3<br>8.625× 4.500              | 300<br>2.07                 | 114<br>4.50                          | 300<br>11.81             | 159.5<br>6.29 | 160<br>6.30 | 160<br>6.30 | 5/8× 105  |
| 200× 100× 65<br>8× 4× 76.1     | 219.1× 114.3× 76.1<br>8.625× 4.500× 3.000 | 300<br>2.07                 | 114/70<br>4.50/2.75                  | 300<br>11.81             | 159.5<br>6.29 | 160<br>6.30 | 155<br>6.10 | 5/8× 105  |
| 200× 100× 80<br>8× 4× 3        | 219.1× 114.3× 88.9<br>8.625× 4.500× 3.500 | 300<br>2.07                 | 114/89<br>4.50/3.50                  | 300<br>11.81             | 159.5<br>6.29 | 160<br>6.30 | 155<br>6.10 | 5/8× 105  |

## 230

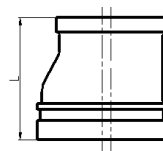
Grooved Eccentric Reducer



| Nominal Size<br>mm/in | Pipe<br>O.D.<br>mm/in       | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|-----------------------------|-----------------------------|--------------------------|-------------|
| 80X50<br>3X2          | 88.9X60.3<br>3.500X2.375    | 500<br>3.45                 | 89<br>3.50               | UL FM       |
| 100X65<br>4X2½        | 108.0X76.1<br>4.250X3.000   | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 100X80<br>4X3         | 108.0X88.9<br>4.250X3.500   | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 100X65<br>4X2½        | 114.3X60.3<br>4.500X2.000   | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 100X65<br>4X2½        | 114.3X76.1<br>4.500X3.000   | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 100X80<br>4X3         | 114.3X88.9<br>4.500X3.500   | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 125X100<br>5X4        | 139.7X114.3<br>5.500X4.500  | 500<br>3.45                 | 127<br>5.00              | UL FM       |
| 150X100<br>6X4        | 159.0X108.0<br>6.250X4.250  | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X100<br>6X4        | 159.0X114.3<br>6.250X4.500  | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X80<br>6X3         | 165.1X88.9<br>6.500X3.500   | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X100<br>6X4        | 165.1X114.3<br>6.500X4.500  | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X125<br>6X5        | 165.1X139.7<br>6.500X5.500  | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X80<br>6X3         | 168.3X88.9<br>6.625X3.500   | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X100<br>6X4        | 168.3X114.3<br>6.625X4.500  | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 150X125<br>6X5        | 168.3X139.7<br>6.625X5.500  | 500<br>3.45                 | 140<br>5.50              | UL FM       |
| 200X100<br>8X4        | 219.1X114.3<br>8.625X4.500  | 500<br>3.45                 | 215<br>8.50              | UL FM       |
| 200X100<br>8X6        | 219.1X165.1<br>8.625X6.500  | 500<br>3.45                 | 215<br>8.50              | UL FM       |
| 200X100<br>8X6        | 219.1X168.3<br>8.625X6.625  | 500<br>3.45                 | 215<br>8.50              | UL FM       |
| 200X100<br>10X8       | 273.0X219.1<br>10.750X8.625 | 500<br>3.45                 | 330<br>13.0              | UL FM       |

## 230N

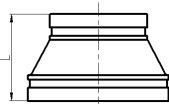
Grooved Eccentric Reducer With Female Thread



| Nominal Size<br>mm/in | Pipe<br>O.D.<br>mm/in     | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|---------------------------|-----------------------------|--------------------------|-------------|
| 100X65<br>108.0X2½    | 108.0X76.1<br>4.250X3.000 | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 100X65<br>4X2½        | 114.3X76.1<br>4.500X3.000 | 500<br>3.45                 | 102<br>4.00              | UL FM       |
| 125X80<br>5X3         | 139.7X88.9<br>5.500X3.500 | 500<br>3.45                 | 127<br>5.00              | UL FM       |
| 150X80<br>6X3         | 165.1X88.9<br>6.500X3.500 | 500<br>3.45                 | 140<br>5.50              | UL FM       |

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### Grooved Concentric Reducer



| Nominal Size<br>mm/in                                                 | Pipe O.D.<br>mm/in         | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------------------------------------------------------|----------------------------|-----------------------------|--------------------------|--------------|
| 32X25<br>1 <sup>1</sup> / <sub>4</sub> X1                             | 42.4X33.7<br>1.660X1.315   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 40X32<br>1 <sup>1</sup> / <sub>2</sub> X1 <sup>1</sup> / <sub>4</sub> | 48.3X42.4<br>1.900X1.660   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 50X32<br>2X1 <sup>1</sup> / <sub>4</sub>                              | 60.3X42.4<br>2.375X1.660   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 50X40<br>2X1 <sup>1</sup> / <sub>2</sub>                              | 60.3X48.3<br>2.375X1.900   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 65X32<br>2 <sup>1</sup> / <sub>2</sub> X1 <sup>1</sup> / <sub>4</sub> | 73.0X42.4<br>2.875X1.660   | 500<br>3.45                 | 64<br>2.50               | UL FM        |
| 65X40<br>2 <sup>1</sup> / <sub>2</sub> X1 <sup>1</sup> / <sub>2</sub> | 73.0X48.3<br>2.875X1.900   | 500<br>3.45                 | 64<br>2.50               | UL FM        |
| 65X50<br>2 <sup>1</sup> / <sub>2</sub> X2                             | 73.0X60.3<br>2.875X2.375   | 500<br>3.45                 | 64<br>2.50               | UL FM        |
| 65X50<br>2 <sup>1</sup> / <sub>2</sub> X1 <sup>1</sup> / <sub>4</sub> | 76.1X42.4<br>3.000X1.660   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 65X40<br>2 <sup>1</sup> / <sub>2</sub> X1 <sup>1</sup> / <sub>2</sub> | 76.1X48.3<br>3.000X1.900   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 65X50<br>2 <sup>1</sup> / <sub>2</sub> X2                             | 76.1X60.3<br>3.000X2.375   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 80X25<br>3X1                                                          | 88.9X33.7<br>3.500X1.315   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 80X40<br>3X1 <sup>1</sup> / <sub>2</sub>                              | 88.9X48.3<br>3.500X1.900   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 80X50<br>3X2                                                          | 88.9X60.3<br>3.500X2.375   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 80X65<br>3X2 <sup>1</sup> / <sub>2</sub>                              | 88.9X73.0<br>3.500X2.875   | 500<br>3.45                 | 64<br>2.50               | UL FM        |
| 80X65<br>3X2 <sup>1</sup> / <sub>2</sub>                              | 88.9X76.1<br>3.500X3.000   | 500<br>3.45                 | 64<br>2.50               | UL FM<br>VdS |
| 100X50<br>4X2                                                         | 108.0X60.3<br>4.250X2.375  | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 100X65<br>4X2 <sup>1</sup> / <sub>2</sub>                             | 108.0X73.0<br>4.250X2.875  | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 100X65<br>4X2 <sup>1</sup> / <sub>2</sub>                             | 108.0X76.1<br>4.250X3.000  | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 100X80<br>4X3                                                         | 108.0X88.9<br>4.250X3.500  | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 100X32<br>4X1 <sup>1</sup> / <sub>4</sub>                             | 114.3X42.4<br>4.500X1.660  | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 100X40<br>4X1 <sup>1</sup> / <sub>2</sub>                             | 114.3X48.3<br>4.500X1.900  | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 100X50<br>4X2                                                         | 114.3X60.3<br>4.500X2.375  | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 100X65<br>4X2 <sup>1</sup> / <sub>2</sub>                             | 114.3X73.0<br>4.500X2.875  | 500<br>3.45                 | 76<br>3.00               | UL FM        |
| 100X65<br>4X2 <sup>1</sup> / <sub>2</sub>                             | 114.3X76.1<br>4.500X3.000  | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 100X80<br>4X3                                                         | 114.3X88.9<br>4.500X3.500  | 500<br>3.45                 | 76<br>3.00               | UL FM<br>VdS |
| 125X100<br>5X4                                                        | 133.0X108.0<br>5.250X4.250 | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 125X100<br>15X4                                                       | 133.0X114.3<br>5.250X4.500 | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 125X50<br>5X2                                                         | 139.7X60.3<br>5.500X2.375  | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 125X65<br>5X2 <sup>1</sup> / <sub>2</sub>                             | 139.7X76.1<br>5.500X3.000  | 500<br>3.45                 | 89<br>3.50               | UL FM<br>VdS |
| 125X80<br>5X3                                                         | 139.7X88.9<br>5.500X3.500  | 500<br>3.45                 | 89<br>3.50               | UL FM<br>VdS |
| 125X100<br>5X4                                                        | 139.7X114.3<br>5.500X4.500 | 500<br>3.45                 | 89<br>3.50               | UL FM<br>VdS |
| 125X65<br>5X2 <sup>1</sup> / <sub>2</sub>                             | 141.3X73.0<br>5.563X2.875  | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 125X80<br>5X3                                                         | 141.3X88.9<br>5.563X3.500  | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 125X100<br>5X4                                                        | 141.3X114.3<br>5.563X4.500 | 500<br>3.45                 | 89<br>3.50               | UL FM        |
| 150X50<br>6X2                                                         | 159.0X60.3<br>6.250X2.375  | 500<br>3.45                 | 102<br>4.00              | UL FM        |

## 240

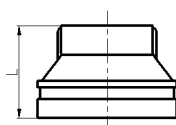
### Grooved Concentric Reducer



| Nominal Size<br>mm/in | Pipe O.D.<br>mm/in           | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|------------------------------|-----------------------------|--------------------------|--------------|
| 150X65<br>159.0X2½    | 159.0X76.1<br>6.250X3.000    | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X80<br>6X3         | 159.0X88.9<br>6.250X3.500    | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X100<br>6X4        | 159.0X108<br>6.250X4.250     | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X100<br>6X4        | 159.0X114.3<br>6.250X4.500   | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X125<br>6X5        | 159.0X133.0<br>6.250X5.250   | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X50<br>6X2         | 165.1X60.3<br>6.500X2.375    | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X65<br>6X2½        | 165.1X76.1<br>6.500X3.000    | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X80<br>6X3         | 165.1X88.9<br>6.500X3.500    | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X100<br>6X4        | 165.1X114.3<br>6.500X4.500   | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X125<br>6X5        | 165.1X139.7<br>6.500X5.500   | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X50<br>6X2         | 168.3X60.3<br>6.625X2.375    | 500<br>3.45                 | 102<br>4.00              | UL FM<br>VdS |
| 150X65<br>6X2½        | 168.3X73.0<br>6.625X2.875    | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 150X65<br>6X2½        | 168.3X76.1<br>6.625X3.000    | 500<br>3.45                 | 102<br>4.00              | UL FM<br>VdS |
| 150X80<br>6X3         | 168.3X88.9<br>6.625X3.500    | 500<br>3.45                 | 102<br>4.00              | UL FM<br>VdS |
| 150X100<br>6X4        | 168.3X114.3<br>6.625X4.500   | 500<br>3.45                 | 102<br>4.00              | UL FM<br>VdS |
| 150X125<br>6X5        | 168.3X139.7<br>6.625X5.500   | 500<br>3.45                 | 102<br>4.00              | UL FM<br>VdS |
| 150X125<br>6X5        | 168.3X141.3<br>6.625X5.563   | 500<br>3.45                 | 102<br>4.00              | UL FM        |
| 200X100<br>8X4        | 216.3X114.3<br>8.516X4.500   | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 200X150<br>8X6        | 216.3X165.1<br>8.516X6.500   | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 200X65<br>8X2½        | 219.1X73.0<br>8.625X2.875    | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 200X80<br>8X3         | 219.1X88.9<br>8.625X3.500    | 500<br>3.45                 | 127<br>5.00              | UL FM<br>VdS |
| 200X100<br>8X4        | 219.1X114.3<br>8.625X4.500   | 500<br>3.45                 | 127<br>5.00              | UL FM<br>VdS |
| 200X125<br>8X5        | 219.1X139.7<br>8.625X5.500   | 500<br>3.45                 | 127<br>5.00              | UL FM<br>VdS |
| 200X125<br>8X5        | 219.1X141.3<br>8.625X5.563   | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 200X150<br>8X6        | 219.1X159.0<br>8.625X6.250   | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 200X150<br>8X6        | 219.1X165.1<br>8.625X6.500   | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 200X150<br>8X6        | 219.1X168.3<br>8.625X6.625   | 500<br>3.45                 | 127<br>5.00              | UL FM<br>VdS |
| 250X150<br>10X6       | 273.0X159.0<br>10.750X6.250  | 500<br>3.45                 | 127<br>5.00              | UL FM        |
| 250X150<br>10X6       | 273.0X165.1<br>10.750X6.500  | 500<br>3.45                 | 152<br>6.00              | UL FM        |
| 250X150<br>10X6       | 273.0X168.3<br>10.750X6.625  | 500<br>3.45                 | 152<br>6.00              | UL FM<br>VdS |
| 250X200<br>10X8       | 273.0X219.1<br>10.750X8.625  | 500<br>3.45                 | 152<br>6.00              | UL FM<br>VdS |
| 300X200<br>12X8       | 323.9X219.1<br>12.750X8.625  | 500<br>3.45                 | 178<br>7.00              | UL FM<br>VdS |
| 300X250<br>12X10      | 323.9X273.0<br>12.750X10.750 | 500<br>3.45                 | 178<br>7.00              | UL FM<br>VdS |
| 350X300<br>14X12      | 377.0X323.9<br>14.850X12.750 | 300<br>2.07                 | 127<br>5.00              | UL FM        |
| 400X350<br>16X14      | 426.0X377.0<br>16.770X14.850 | 300<br>2.07                 | 127<br>5.00              | UL FM        |

## 240N

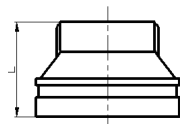
Grooved Concentric  
Reducer With Female Thread



| Nominal Size<br>GroovedXThreaded<br>mm/in | Pipe<br>O.D.<br>mm/in     | Working Pressure<br>PSI/MPa | Dimension<br>L<br>mm/in | Certificate  |
|-------------------------------------------|---------------------------|-----------------------------|-------------------------|--------------|
| 50X15<br>2X1/2                            | 60.3X21.3<br>2.375X0.825  | 500<br>3.45                 | 64<br>2.50              | VdS          |
| 50X20<br>2X3/4                            | 60.3X26.9<br>2.375X1.05   | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 50X25<br>2X1                              | 60.3X33.7<br>2.375X1.315  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 50X32<br>2X1 1/4                          | 60.3X42.4<br>2.375X1.660  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 50X40<br>2X1 1/2                          | 60.3X48.3<br>2.375X1.900  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 65X25<br>2 1/2X1                          | 73.0X33.7<br>2.875X1.315  | 500<br>3.45                 | 64<br>2.50              | UL FM        |
| 65X25<br>2 1/2X1 1/4                      | 73.0X42.4<br>2.875X1.660  | 500<br>3.45                 | 64<br>2.50              | UL FM        |
| 65X40<br>2 1/2X1 1/2                      | 73.0X48.3<br>2.875X1.900  | 500<br>3.45                 | 64<br>2.50              | UL FM        |
| 65X50<br>2 1/2X2                          | 73.0X60.3<br>2.875X2.375  | 500<br>3.45                 | 64<br>2.50              | UL FM        |
| 65X15<br>2 1/2X1/2                        | 76.1X21.3<br>3.000X0.825  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 65X20<br>2 1/2X3/4                        | 76.1X26.9<br>3.000X1.05   | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 65X25<br>2 1/2X1                          | 76.1X33.7<br>3.000X1.315  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 65X32<br>2 1/2X1 1/4                      | 76.1X42.4<br>3.000X1.660  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 65X40<br>2 1/2X1 1/2                      | 76.1X48.3<br>3.000X1.900  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 65X50<br>2 1/2X2                          | 76.1X60.3<br>3.000X2.375  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 80X15<br>3X1/2                            | 88.9X21.3<br>3.500X0.825  | 500<br>3.45                 | 64<br>2.50              | VdS          |
| 80X20<br>3X3/4                            | 88.9X26.9<br>3.500X1.05   | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 80X25<br>3X1                              | 88.9X33.7<br>3.500X1.315  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 80X32<br>3X1 1/4                          | 88.9X42.4<br>3.500X1.660  | 500<br>3.45                 | 64<br>2.50              | VdS          |
| 80X40<br>3X1 1/2                          | 88.9X48.3<br>3.500X1.900  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 80X50<br>3X2                              | 88.9X60.3<br>3.500X2.375  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 80X65<br>3X2 1/2                          | 88.9X73.0<br>3.500X2.875  | 500<br>3.45                 | 64<br>2.50              | UL FM        |
| 80X65<br>3X2 1/2                          | 88.9X76.1<br>3.500X3.000  | 500<br>3.45                 | 64<br>2.50              | UL FM<br>VdS |
| 100X25<br>4X1                             | 108.0X33.7<br>4.250X1.315 | 500<br>3.45                 | 76<br>3.00              | UL FM        |
| 100X32<br>4X1 1/4                         | 108.0X42.4<br>4.250X1.660 | 500<br>3.45                 | 76<br>3.00              | UL FM        |
| 100X40<br>4X1 1/2                         | 108.0X48.3<br>4.250X1.900 | 500<br>3.45                 | 76<br>3.00              | UL FM        |
| 100X50<br>4X2                             | 108.0X60.3<br>4.250X2.375 | 500<br>3.45                 | 76<br>3.00              | UL FM        |
| 100X65<br>4X2 1/2                         | 108.0X76.1<br>4.250X3.000 | 500<br>3.45                 | 76<br>3.00              | UL FM        |
| 100X80<br>4X3                             | 108.0X88.9<br>4.250X3.500 | 500<br>3.45                 | 76<br>3.00              | UL FM        |
| 100X15<br>4X1/2                           | 114.3X21.3<br>4.500X0.825 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X20<br>4X3/4                           | 114.3X26.9<br>4.500X1.05  | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X25<br>4X1                             | 114.3X33.7<br>4.500X1.315 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X32<br>4X1 1/4                         | 114.3X42.4<br>4.500X1.660 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X40<br>4X1 1/2                         | 114.3X48.3<br>4.500X1.900 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X50<br>4X2                             | 114.3X60.3<br>4.500X2.375 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X65<br>4X2 1/2                         | 114.3X76.1<br>4.500X3.000 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |
| 100X80<br>4X3                             | 114.3X88.9<br>4.500X3.500 | 500<br>3.45                 | 76<br>3.00              | UL FM<br>VdS |

## 240N

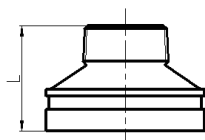
Grooved Concentric  
Reducer With Female Thread



| Nominal Size<br>GroovedXThreaded<br>mm/in | Pipe<br>O.D.<br>mm/in      | Working Pressure<br>PSI/MPa | Dimension<br>L<br>mm/in | Certificate  |
|-------------------------------------------|----------------------------|-----------------------------|-------------------------|--------------|
| 125X40<br>5X1½                            | 133.0X48.3<br>5.250X1.900  | 500<br>3.45                 | 89<br>3.50              | UL FM        |
| 125X40<br>5X2                             | 133.0X60.3<br>5.250X2.375  | 500<br>3.45                 | 89<br>3.50              | UL FM        |
| 125X65<br>5X2½                            | 133.0X76.1<br>5.250X3.000  | 500<br>3.45                 | 89<br>3.50              | UL FM        |
| 125X65<br>5X3                             | 133.0X88.9<br>5.250X3.500  | 500<br>3.45                 | 89<br>3.50              | UL FM        |
| 125X25<br>5X1                             | 139.7X33.7<br>5.500X1.315  | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X32<br>5X1¼                            | 139.7X42.4<br>5.500X1.660  | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X40<br>5X1½                            | 139.7X48.3<br>5.500X1.900  | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X50<br>5X2                             | 139.7X60.3<br>5.500X2.375  | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X65<br>5X2½                            | 139.7X76.1<br>5.500X3.000  | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X80<br>5X3                             | 139.7X88.9<br>5.500X3.500  | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X100<br>5X4                            | 139.7X114.3<br>5.500X4.500 | 500<br>3.45                 | 89<br>3.50              | UL FM<br>VdS |
| 125X100<br>5X4                            | 141.3X114.3<br>5.563X4.500 | 500<br>3.45                 | 89<br>3.50              | UL FM        |
| 150X20<br>6X3/4                           | 159.0X26.9<br>6.250X1.05   | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X25<br>6X1                             | 159.0X33.7<br>6.250X1.315  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X32<br>6X1¼                            | 159.0X42.4<br>6.250X1.660  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X40<br>6X1½                            | 159.0X48.3<br>6.250X1.900  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X50<br>6X2                             | 159.0X60.3<br>6.250X2.375  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X65<br>6X2½                            | 159.0X76.1<br>6.250X3.000  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X80<br>6X3                             | 159.0X88.9<br>6.250X3.500  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X100<br>6X4                            | 159.0X114.3<br>6.250X4.500 | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X15<br>6X1/2                           | 165.1X21.3<br>6.500X0.825  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X20<br>6X3/4                           | 165.1X26.9<br>6.500X1.05   | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X25<br>6X1                             | 165.1X33.7<br>6.500X1.315  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X32<br>6X1¼                            | 165.1X42.4<br>6.500X1.660  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X40<br>6X1½                            | 165.1X48.3<br>6.500X1.900  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X50<br>6X2                             | 165.1X60.3<br>6.500X2.375  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X65<br>6X2½                            | 165.1X76.1<br>6.500X3.000  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X80<br>6X3                             | 165.1X88.9<br>6.500X3.500  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X100<br>6X4                            | 165.1X114.3<br>6.500X4.500 | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X25<br>6X1                             | 168.3X33.7<br>6.625X1.315  | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 150X50<br>6X2                             | 168.3X60.3<br>6.625X2.375  | 500<br>3.45                 | 102<br>4.00             | UL FM<br>VdS |
| 150X125<br>6X5                            | 168.3X141.3<br>6.625X5.563 | 500<br>3.45                 | 102<br>4.00             | UL FM        |
| 200X40<br>8X1½                            | 219.1X48.3<br>8.625X1.900  | 500<br>3.45                 | 127<br>5.00             | UL FM        |
| 200X50<br>8X2                             | 219.1X60.3<br>8.625X2.375  | 500<br>3.45                 | 127<br>5.00             | UL FM<br>VdS |
| 200X65<br>8X2½                            | 219.1X73.0<br>8.625X2.875  | 500<br>3.45                 | 127<br>5.00             | UL FM        |
| 200X65<br>8X2½                            | 219.1X76.1<br>8.625X3.000  | 500<br>3.45                 | 127<br>5.00             | UL FM        |
| 200X80<br>8X3                             | 219.1X88.9<br>8.625X3.500  | 500<br>3.45                 | 127<br>5.00             | UL FM<br>VdS |
| 200X100<br>8X4                            | 219.1X114.3<br>8.625X4.500 | 500<br>3.45                 | 127<br>5.00             | UL FM        |
| 200X100<br>8X6                            | 219.1X168.3<br>8.625X6.625 | 500<br>3.45                 | 127<br>5.00             | UL FM        |

## 240W

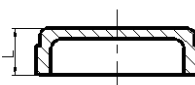
Grooved Concentric Reducer With Male Thread



| Nominal Size<br>mm/in | Pipe<br>O.D.<br>mm/in      | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|----------------------------|-----------------------------|--------------------------|-------------|
| 65X50<br>2½X2         | 73.0X60.3<br>2.875X2.375   | 500<br>3.45                 | 64<br>2.50               | UL FM       |
| 65X50<br>2½X2         | 76.1X60.3<br>3.000X2.375   | 500<br>3.45                 | 64<br>2.50               | UL FM       |
| 80X25<br>3X1          | 88.9X33.7<br>3.500X1.315   | 500<br>3.45                 | 64<br>2.50               | UL FM       |
| 100X50<br>4X2         | 114.3X60.3<br>4.500X2.375  | 500<br>3.45                 | 76<br>3.00               | UL FM       |
| 200X150<br>8X6        | 219.1X168.3<br>8.625X6.625 | 500<br>3.45                 | 127<br>5.00              | UL FM       |

## 300

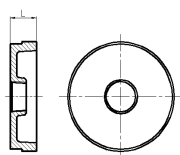
Cap



| Nominal Size<br>mm/in | Pipe<br>O.D.<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|-----------------------|-----------------------------|--------------------------|--------------|
| 25<br>1               | 33.7<br>1.315         | 500<br>3.45                 | 22.1<br>0.87             | UL FM<br>VdS |
| 32<br>1¼              | 42.4<br>1.660         | 500<br>3.45                 | 23.5<br>0.93             | UL FM<br>VdS |
| 40<br>1½              | 48.3<br>1.900         | 500<br>3.45                 | 23.5<br>0.93             | UL FM<br>VdS |
| 50<br>2               | 60.3<br>2.375         | 500<br>3.45                 | 23.5<br>0.93             | UL FM<br>VdS |
| 65<br>2½              | 73.0<br>2.875         | 500<br>3.45                 | 23.5<br>0.93             | UL FM        |
| 65<br>2½              | 76.1<br>3.000         | 500<br>3.45                 | 25.5<br>1.00             | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500         | 500<br>3.45                 | 25.5<br>1.00             | UL FM<br>VdS |
| 100<br>4              | 108.0<br>4.250        | 500<br>3.45                 | 27<br>1.06               | UL FM        |
| 100<br>4              | 114.3<br>4.500        | 500<br>3.45                 | 27<br>1.06               | UL FM<br>VdS |
| 25<br>5               | 133.0<br>5.250        | 500<br>3.45                 | 27<br>1.06               | UL FM        |
| 125<br>5              | 139.7<br>5.500        | 500<br>3.45                 | 27<br>1.06               | UL FM<br>VdS |
| 125<br>5              | 141.3<br>5.563        | 500<br>3.45                 | 27<br>1.06               | UL FM        |
| 150<br>6              | 159.0<br>6.250        | 500<br>3.45                 | 27<br>1.06               | UL FM        |
| 150<br>6              | 165.1<br>6.500        | 300<br>2.07                 | 27<br>1.06               | UL FM        |
| 150<br>6              | 168.3<br>6.625        | 300<br>2.07                 | 24.5<br>0.97             | UL FM<br>VdS |
| 200<br>8              | 216.3<br>8.516        | 300<br>2.07                 | 30.2<br>1.19             | UL FM        |
| 200<br>8              | 219.1<br>8.625        | 300<br>2.07                 | 30.5<br>1.20             | UL FM<br>VdS |
| 250<br>10             | 273.0<br>10.750       | 300<br>2.07                 | 32<br>1.26               | UL FM<br>VdS |
| 300<br>12             | 323.9<br>12.750       | 300<br>2.07                 | 32<br>1.26               | UL FM<br>VdS |

## 300

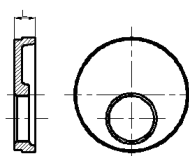
Cap



| Nominal Size<br>mm/in | Pipe<br>O.D<br>mm/in        | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate  |
|-----------------------|-----------------------------|-----------------------------|--------------------------|--------------|
| 65x 40<br>2½x 1½      | 76.1x 48.3<br>3.000x 1.900  | 500<br>3.45                 | 23.5<br>0.925            | UL FM        |
| 80X15<br>3X1½         | 88.9X21.3<br>3.500X0.825    | 500<br>3.45                 | 25.4<br>1.00             | UL FM        |
| 80X25<br>3X1          | 88.9X33.7<br>3.500X1.315    | 500<br>3.45                 | 25.4<br>1.00             | UL FM        |
| 80X40<br>3X1½         | 88.9X48.3<br>3.500X1.900    | 500<br>3.45                 | 23.5<br>0.925            | UL FM        |
| 80x 50<br>3x 2        | 88.9x 60.3<br>3.500x 2.375  | 500<br>3.45                 | 23.5<br>0.925            | UL FM        |
| 100x 15<br>4x 1/2     | 114.3x 21.3<br>4.500x 0.825 | 500<br>3.45                 | 27.0<br>1.06             | UL FM        |
| 100x 25<br>4x 1       | 114.3x 33.7<br>4.500x 1.315 | 500<br>3.45                 | 27.0<br>1.06             | UL FM        |
| 100X40<br>4X1½        | 114.3X48.3<br>4.500X1.900   | 500<br>3.45                 | 25.4<br>1.00             | UL FM        |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375 | 500<br>3.45                 | 25.4<br>1.00             | UL FM        |
| 125x 50<br>5x 2       | 139.7x 60.3<br>5.500x 2.375 | 500<br>3.45                 | 27<br>1.06               | UL FM        |
| 150x 15<br>6x 1/2     | 165.1x 21.3<br>6.500x 0.825 | 300<br>2.07                 | 27<br>1.06               | UL FM<br>VdS |
| 150x 25<br>6x 1       | 165.1x 33.7<br>6.500x 1.315 | 300<br>2.07                 | 27<br>1.06               | UL FM<br>VdS |
| 150x 40<br>6x 1½      | 165.1x 48.3<br>6.500x 1.900 | 300<br>2.07                 | 25.4<br>1.00             | UL FM        |
| 150x 50<br>6x 2       | 165.1x 60.3<br>6.500x 2.375 | 300<br>2.07                 | 27<br>1.06               | UL FM        |
| 150x 50<br>6x 2       | 168.3x 60.3<br>6.625x 2.375 | 300<br>2.07                 | 27<br>1.06               | UL FM        |

## 300PX

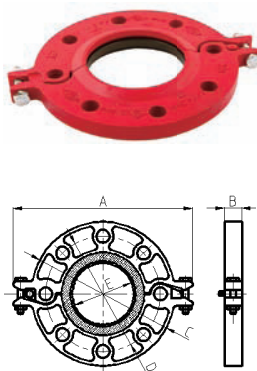
Cap



| Nominal Size<br>mm/in | Pipe<br>O.D<br>mm/in        | Working Pressure<br>PSI/MPa | Dimensions<br>L<br>mm/in | Certificate |
|-----------------------|-----------------------------|-----------------------------|--------------------------|-------------|
| 80X40<br>3X1½         | 88.9X48.3<br>3.500X1.900    | 500<br>3.45                 | 23.5<br>0.925            | UL FM       |
| 80x 50<br>3x 2        | 88.9x 60.3<br>3.500x 2.375  | 500<br>3.45                 | 23.5<br>0.925            | UL FM       |
| 100X40<br>4X1½        | 114.3X48.3<br>4.500X1.900   | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 100x 50<br>4x 2       | 114.3x 60.3<br>4.500x 2.375 | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 125x 40<br>5x 1½      | 139.7x 48.3<br>5.500x 1.900 | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 125x 50<br>5x 2       | 139.7x 60.3<br>5.500x 2.375 | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 150x 40<br>6x 1½      | 165.1x 48.3<br>6.500x 1.900 | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 150x 40<br>6x 1½      | 168.3x 48.3<br>6.625x 1.900 | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 150x 50<br>6x 2       | 168.3X60.3<br>6.625X2.375   | 500<br>3.45                 | 25.4<br>1.00             | UL FM       |
| 200x 40<br>8x 1½      | 219.1x 48.3<br>8.625x 1.900 | 500<br>3.45                 | 30.2<br>1.19             | UL FM       |
| 200x 50<br>8x 2       | 219.1x 60.3<br>8.625x 2.375 | 500<br>3.45                 | 30.2<br>1.19             | UL FM       |

## 321-PN16

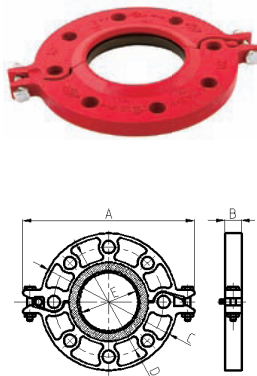
### GROOVED FLANGE



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions     |              |                |              |                | Bolt/Nut       |        | Certificate  |
|-----------------------|-------------------|-----------------------------|----------------|--------------|----------------|--------------|----------------|----------------|--------|--------------|
|                       |                   |                             | A<br>mm/in     | B<br>mm/in   | C<br>mm/in     | D<br>mm/in   | E<br>mm/in     | No.-SIZE<br>mm |        |              |
|                       |                   |                             |                |              |                |              |                |                |        |              |
| 40<br>1½              | 48.3<br>1.900     | 225<br>1.6                  | 195<br>7.68    | 24<br>0.95   | 150<br>5.90    | 110<br>4.33  | 45.4<br>1.78   | M10X50-2       | 4-M16  | UL FM        |
| 50<br>2               | 60.3<br>2.375     | 225<br>1.6                  | 220<br>8.66    | 24<br>0.95   | 165<br>6.50    | 125<br>4.92  | 57.5<br>2.26   | M10X50-2       | 4-M16  | UL FM        |
| 65<br>2½              | 76.1<br>3.000     | 225<br>1.6                  | 235<br>9.25    | 24<br>0.95   | 185<br>7.28    | 145<br>5.71  | 72.7<br>2.86   | M10X50-2       | 4-M16  | UL FM        |
| 80<br>3               | 88.9<br>3.500     | 225<br>1.6                  | 252<br>9.92    | 24<br>0.95   | 200<br>7.87    | 160<br>6.30  | 85.5<br>3.37   | M10X50-2       | 8-M16  | UL FM        |
| 100<br>4              | 108.0<br>4.250    | 225<br>1.6                  | 280<br>11.02   | 25.5<br>1.00 | 220<br>8.66    | 180<br>7.09  | 104.5<br>4.11  | M12X55-2       | 8-M16  | UL FM        |
| 100<br>4              | 114.3<br>4.500    | 225<br>1.6                  | 280<br>11.02   | 25.5<br>1.00 | 229<br>9.00    | 180<br>7.09  | 110.5<br>4.35  | M12X55-2       | 8-M16  | UL FM        |
| 125<br>5              | 133.0<br>5.250    | 225<br>1.6                  | 312<br>12.28   | 25.5<br>1.00 | 250<br>9.84    | 210<br>8.27  | 129.2<br>5.08  | M12X65-2       | 8-M16  | UL FM        |
| 125<br>5              | 139.7<br>5.500    | 225<br>1.6                  | 320<br>12.60   | 25.5<br>1.00 | 254<br>10.00   | 210<br>8.27  | 135.5<br>5.33  | M12X65-2       | 8-M16  | UL FM        |
| 150<br>6              | 159.0<br>6.25     | 225<br>1.6                  | 346<br>13.62   | 25.5<br>1.00 | 280<br>11.00   | 240<br>9.45  | 154.8<br>6.10  | M12X65-2       | 8-M20  | UL FM        |
| 150<br>6              | 165.1<br>6.500    | 225<br>1.6                  | 346<br>13.62   | 25.5<br>1.00 | 280<br>11.00   | 240<br>9.45  | 160.8<br>6.33  | M12X65-2       | 8-M20  | UL FM        |
| 150<br>6              | 168.3<br>6.625    | 225<br>1.6                  | 346<br>13.62   | 25.5<br>1.00 | 280<br>11.00   | 240<br>9.45  | 164.3<br>6.47  | M12X65-2       | 8-M20  | UL FM        |
| 200<br>8              | 219.1<br>8.625    | 225<br>1.6                  | 414.3<br>16.31 | 30<br>1.18   | 341.4<br>13.44 | 295<br>11.61 | 214.9<br>8.46  | 3/8X70-2       | 12-M20 | UL FM<br>VdS |
| 250<br>10             | 273.0<br>10.750   | 225<br>1.6                  | 481.2<br>18.94 | 30.3<br>1.19 | 405.6<br>15.97 | 355<br>13.98 | 268.9<br>10.59 | 3/8X70-2       | 12-M24 | UL FM<br>VdS |
| 300<br>12             | 323.9<br>12.750   | 225<br>1.6                  | 530.5<br>20.88 | 30.3<br>1.19 | 460<br>18.11   | 410<br>16.14 | 318.9<br>12.56 | 3/8X70-2       | 12-M24 | UL FM        |

## 321A-ANSI 125/150

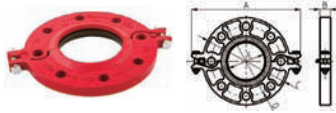
### GROOVED FLANGE



| Nominal<br>Size<br>mm/in | Pipe O.D<br>mm/in | Working<br>Pressure<br>PSI/MPa | Dimensions     |              |                |                 |                | Bolt/Nut       |        | Certificate |
|--------------------------|-------------------|--------------------------------|----------------|--------------|----------------|-----------------|----------------|----------------|--------|-------------|
|                          |                   |                                | A<br>mm/in     | B<br>mm/in   | C<br>mm/in     | D<br>mm/in      | E<br>mm/in     | No.-SIZE<br>mm |        |             |
|                          |                   |                                |                |              |                |                 |                |                |        |             |
| 50<br>2                  | 60.3<br>2.375     | 300<br>2.07                    | 206<br>8.11    | 22<br>0.86   | 152<br>5.98    | 121<br>4.76     | 57.5<br>2.26   | M10X50-2       | 4-5/8  | UL FM       |
| 65<br>2½                 | 73.0<br>2.875     | 300<br>2.07                    | 230<br>9.05    | 22<br>0.86   | 178<br>7.00    | 140<br>5.51     | 69.8<br>2.74   | M10X50-2       | 4-5/8  | UL FM       |
| 80<br>3                  | 88.9<br>3.500     | 300<br>2.07                    | 242<br>9.53    | 24<br>0.95   | 191<br>7.52    | 152<br>5.98     | 85.5<br>3.37   | M10X50-2       | 4-5/8  | UL FM       |
| 100<br>4                 | 114.3<br>4.500    | 300<br>2.07                    | 280<br>11.02   | 24<br>0.95   | 229<br>9.00    | 191<br>7.52     | 110.5<br>4.35  | M12X55-2       | 8-5/8  | UL FM       |
| 125<br>5                 | 141.3<br>5.563    | 300<br>2.07                    | 325<br>12.79   | 24.5<br>0.96 | 254<br>10.00   | 216<br>8.50     | 137.4<br>5.41  | M12X65-2       | 8-3/4  | UL FM       |
| 150<br>6                 | 168.3<br>6.625    | 300<br>2.07                    | 346<br>13.62   | 25.5<br>1.00 | 280<br>11.00   | 241.3<br>9.50   | 164.3<br>6.47  | M12X65-2       | 8-3/4  | UL FM       |
| 200<br>8                 | 219.1<br>8.625    | 300<br>2.07                    | 414.3<br>16.31 | 30<br>1.18   | 341.4<br>13.44 | 298.5<br>11.75  | 214.9<br>8.46  | 3/8X70-2       | 8-3/4  | UL FM       |
| 250<br>10                | 273.0<br>10.750   | 300<br>2.07                    | 481.2<br>18.94 | 30.3<br>1.19 | 405.6<br>15.97 | 361.95<br>14.25 | 268.9<br>10.59 | 3/8X70-2       | 12-7/8 | UL FM       |
| 300<br>12                | 323.9<br>12.750   | 300<br>2.07                    | 553.3<br>21.78 | 30.4<br>1.20 | 482.6<br>19.00 | 431.8<br>17.00  | 318.9<br>12.56 | 3/8X70-2       | 12-7/8 | UL FM       |

## 321H-PN25

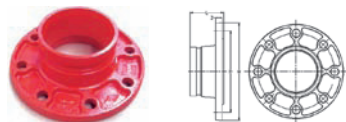
GROOVED FLANGE



| Nominal<br>Size<br>mm/in | Pipe O.D<br>mm/in | Working<br>Pressure<br>PSI/MPa | Dimensions   |              |              |             |               | Bolt/Nut       |       | Certificate |
|--------------------------|-------------------|--------------------------------|--------------|--------------|--------------|-------------|---------------|----------------|-------|-------------|
|                          |                   |                                | A<br>mm/in   | B<br>mm/in   | C<br>mm/in   | D<br>mm/in  | E<br>mm/in    | No.-SIZE<br>mm |       |             |
|                          |                   |                                |              |              |              |             |               |                |       |             |
| 100<br>108.0             | 108.0<br>4.250    | 362<br>2.5                     | 280<br>11.02 | 25.5<br>1.00 | 220<br>8.66  | 180<br>7.09 | 104.5<br>4.11 | 2-M12X55       | 8-M16 | UL FM       |
| 150<br>165.1             | 165.1<br>6.500    | 362<br>2.5                     | 346<br>13.62 | 25.5<br>1.00 | 280<br>11.00 | 240<br>9.45 | 160.8<br>6.33 | 2-M12X65       | 8-M20 | UL FM       |

## 321GL-PN10

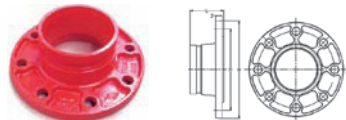
10  
Adaptor Flange



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions  |              |              |            | Bolt/Nut<br>No.-Size<br>mm | Certificate |
|-----------------------|-------------------|-----------------------------|-------------|--------------|--------------|------------|----------------------------|-------------|
|                       |                   |                             | L<br>mm/in  | X<br>mm      | Y<br>mm      | Z<br>mm    |                            |             |
| 200<br>8              | 219.1<br>8.625    | 145<br>1.0                  | 80<br>3.150 | 340<br>13.39 | 295<br>11.61 | 19<br>0.75 | 8-M20                      | UL FM       |
| 250<br>10             | 273.0<br>10.750   | 145<br>1.0                  | 85<br>3.346 | 405<br>15.94 | 350<br>13.78 | 21<br>0.83 | 12-M20                     | UL FM       |
| 300<br>12             | 323.9<br>12.750   | 145<br>1.0                  | 90<br>3.543 | 460<br>18.11 | 400<br>15.75 | 24<br>0.94 | 12-M20                     | UL FM       |

## 321G-PN16

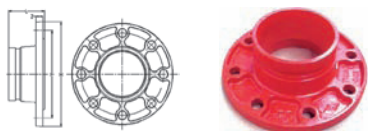
16  
Adaptor Flange



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions    |              |              |            | Bolt/Nut<br>No.-Size<br>mm | Certificate  |
|-----------------------|-------------------|-----------------------------|---------------|--------------|--------------|------------|----------------------------|--------------|
|                       |                   |                             | L<br>mm/in    | X<br>mm      | Y<br>mm      | Z<br>mm    |                            |              |
| 25<br>1               | 33.7<br>1.327     | 225<br>1.6                  | 60.5<br>2.382 | 115<br>4.53  | 80<br>3.15   | 16<br>0.63 | 4-M12                      | UL FM<br>VdS |
| 32<br>1¼              | 42.4<br>1.669     | 225<br>1.6                  | 60.5<br>2.382 | 140<br>5.51  | 100<br>3.94  | 16<br>0.63 | 4-M16                      | UL FM<br>VdS |
| 40<br>1½              | 48.3<br>1.902     | 225<br>1.6                  | 60.5<br>2.382 | 150<br>6.91  | 110<br>4.33  | 16<br>0.63 | 4-M16                      | UL FM<br>VdS |
| 50<br>2               | 60.3<br>2.375     | 225<br>1.6                  | 65<br>2.559   | 165<br>6.50  | 125<br>4.92  | 16<br>0.63 | 4-M16                      | UL FM<br>VdS |
| 65<br>76.1            | 76.1<br>3.000     | 225<br>1.6                  | 65<br>2.559   | 185<br>7.28  | 145<br>5.70  | 16<br>0.63 | 4-M16                      | UL FM<br>VdS |
| 80<br>3               | 88.9<br>3.500     | 225<br>1.6                  | 65<br>2.559   | 200<br>7.87  | 160<br>6.30  | 16<br>0.63 | 8-M16                      | UL FM<br>VdS |
| 100<br>108.0          | 108.0<br>4.250    | 225<br>1.6                  | 70<br>2.756   | 220<br>8.66  | 180<br>7.09  | 16<br>0.63 | 8-M16                      | UL FM        |
| 100<br>4              | 114.3<br>4.500    | 225<br>1.6                  | 70<br>2.756   | 220<br>8.66  | 180<br>7.09  | 16<br>0.63 | 8-M16                      | UL FM<br>VdS |
| 125<br>133.0          | 133<br>5.250      | 225<br>1.6                  | 70<br>2.756   | 250<br>9.84  | 210<br>8.27  | 18<br>0.71 | 8-M16                      | UL FM        |
| 125<br>139.7          | 139.7<br>5.500    | 225<br>1.6                  | 70<br>2.756   | 250<br>9.84  | 210<br>8.27  | 18<br>0.71 | 8-M16                      | UL FM<br>VdS |
| 150<br>159.1          | 159.0<br>6.250    | 225<br>1.6                  | 70<br>2.756   | 285<br>11.22 | 240<br>9.45  | 18<br>0.71 | 8-M20                      | UL FM        |
| 150<br>165.1          | 165.1<br>6.500    | 225<br>1.6                  | 70<br>2.756   | 285<br>11.22 | 240<br>9.45  | 18<br>0.71 | 8-M20                      | UL FM        |
| 150<br>6              | 168.3<br>6.625    | 225<br>1.6                  | 70<br>2.756   | 285<br>11.22 | 240<br>9.45  | 18<br>0.71 | 8-M20                      | UL FM<br>VdS |
| 200<br>8              | 219.1<br>8.625    | 225<br>1.6                  | 80<br>3.150   | 340<br>13.39 | 295<br>11.61 | 19<br>0.75 | 12-M20                     | UL FM<br>VdS |
| 250<br>10             | 273.0<br>10.750   | 225<br>1.6                  | 85<br>3.346   | 405<br>15.94 | 355<br>13.98 | 21<br>0.83 | 12-M24                     | UL FM<br>VdS |
| 300<br>12             | 323.9<br>12.750   | 225<br>1.6                  | 90<br>3.543   | 460<br>18.11 | 410<br>16.14 | 24<br>0.94 | 12-M24                     | UL FM<br>VdS |
| 350<br>14             | 377.0<br>12.843   | 225<br>1.6                  | 100<br>3.937  | 520<br>20.47 | 470<br>18.50 | 25<br>1.00 | 16-M24                     | UL FM        |
| 400<br>16             | 426.0<br>16.772   | 225<br>1.6                  | 110<br>4.331  | 580<br>22.83 | 525<br>20.67 | 27<br>1.06 | 16-M27                     | UL FM        |

## 321GH- PN25

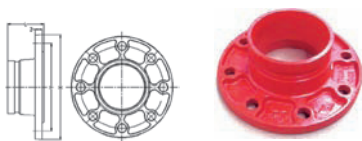
Adaptor Flange



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions  |              |              |            | Bolt/Nut<br>No.-Size<br>mm | Certificate |
|-----------------------|-------------------|-----------------------------|-------------|--------------|--------------|------------|----------------------------|-------------|
|                       |                   |                             | L<br>mm/in  | X<br>mm      | Y<br>mm      | Z<br>mm    |                            |             |
| 100<br>108.0          | 108.0<br>4.250    | 362<br>2.5                  | 70<br>2.756 | 230<br>9.05  | 190<br>7.48  | 18<br>0.71 | 8-M20                      | UL FM       |
| 100<br>4              | 114.3<br>4.500    | 362<br>2.5                  | 70<br>2.756 | 235<br>9.25  | 190<br>7.48  | 16<br>0.63 | 8-M20                      | UL FM       |
| 150<br>159.0          | 159.0<br>6.250    | 362<br>2.5                  | 70<br>2.756 | 300<br>11.80 | 250<br>9.85  | 20<br>0.79 | 8-M24                      | UL FM       |
| 150<br>165.1          | 165.1<br>6.500    | 362<br>2.5                  | 70<br>2.756 | 300<br>11.80 | 250<br>9.84  | 18<br>0.71 | 8-M24                      | UL FM       |
| 200<br>8              | 219.1<br>8.625    | 362<br>2.5                  | 80<br>3.150 | 360<br>14.17 | 310<br>12.20 | 19<br>0.75 | 12-M24                     | UL FM       |

## 321GA - ANSI 125/150

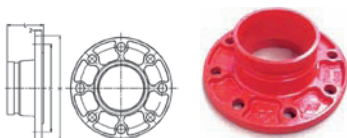
Class 125/150  
Adaptor Flange



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions  |              |                |            | Bolt/Nut<br>No.-Size<br>mm | Certificate |
|-----------------------|-------------------|-----------------------------|-------------|--------------|----------------|------------|----------------------------|-------------|
|                       |                   |                             | L<br>mm/in  | X<br>mm      | Y<br>mm        | Z<br>mm    |                            |             |
| 50<br>2               | 60.3<br>2.375     | 300<br>2.07                 | 65<br>2.559 | 165<br>6.50  | 120.7<br>4.75  | 16<br>0.63 | 4-5/8                      | UL FM       |
| 65<br>2½              | 73.0<br>2.875     | 300<br>2.07                 | 65<br>2.559 | 185<br>7.28  | 139.7<br>5.50  | 16<br>0.63 | 4-5/8                      | UL FM       |
| 80<br>3               | 88.9<br>3.500     | 300<br>2.07                 | 65<br>2.559 | 200<br>7.87  | 152.4<br>6.00  | 16<br>0.63 | 8-5/8                      | UL FM       |
| 100<br>4              | 114.3<br>4.500    | 300<br>2.07                 | 70<br>2.756 | 229<br>9.01  | 190.5<br>7.50  | 16<br>0.63 | 8-5/8                      | UL FM       |
| 150<br>6              | 168.3<br>6.625    | 300<br>2.07                 | 70<br>2.756 | 282<br>11.10 | 241.3<br>9.50  | 18<br>0.71 | 8-3/4                      | UL FM       |
| 200<br>8              | 219.1<br>8.625    | 300<br>2.07                 | 80<br>3.150 | 340<br>13.39 | 298.5<br>11.75 | 19<br>0.75 | 8-3/4                      | UL FM       |

## 321GJ

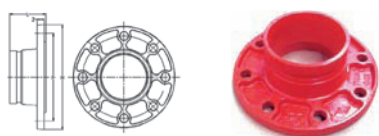
JIS 10K  
Adaptor Flange



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions  |              |             |            | Bolt/Nut<br>No.-Size<br>mm |
|-----------------------|-------------------|-----------------------------|-------------|--------------|-------------|------------|----------------------------|
|                       |                   |                             | L<br>mm/in  | X<br>mm      | Y<br>mm     | Z<br>mm    |                            |
| 65<br>2½              | 76.3<br>3.00      | 10                          | 65<br>2.559 | 175<br>6.89  | 140<br>5.51 | 18<br>0.71 | 4-M16                      |
| 80<br>3               | 89.1<br>3.50      | 10                          | 65<br>2.559 | 185<br>7.28  | 150<br>5.91 | 18<br>0.71 | 8- M16                     |
| 100<br>4              | 114.3<br>4.50     | 10                          | 70<br>2.756 | 210<br>8.27  | 175<br>6.89 | 18<br>0.71 | 8- M16                     |
| 125<br>5              | 139.8<br>5.50     | 10                          | 70<br>2.756 | 250<br>9.84  | 210<br>8.27 | 20<br>0.79 | 8-M20                      |
| 150<br>6              | 165.2<br>6.50     | 10                          | 70<br>2.756 | 280<br>11.02 | 240<br>9.45 | 20<br>0.79 | 8- M20                     |

## 321G-BS. TABLE 'E'

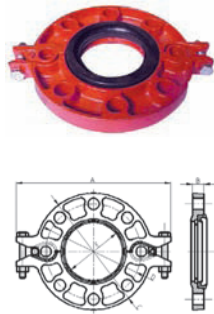
Adaptor Flange



| Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions  |              |              |            | Bolt/Nut<br>No.-Size<br>mm |
|-----------------------|-------------------|-----------------------------|-------------|--------------|--------------|------------|----------------------------|
|                       |                   |                             | L<br>mm/in  | X<br>mm      | Y<br>mm      | Z<br>mm    |                            |
| 65<br>76.1            | 76.1<br>3.000     | 225<br>1.6                  | 70<br>2.756 | 165<br>6.50  | 127<br>5.00  | 16<br>0.63 | 4-M16                      |
| 80<br>3               | 88.9<br>3.500     | 225<br>1.6                  | 70<br>2.756 | 184<br>7.24  | 146<br>5.75  | 16<br>0.63 | 4-M16                      |
| 100<br>4              | 114.3<br>4.500    | 225<br>1.6                  | 70<br>2.756 | 216<br>8.50  | 178<br>7.00  | 16<br>0.63 | 8-M16                      |
| 150<br>165.1          | 165.1<br>6.500    | 225<br>1.6                  | 70<br>2.756 | 280<br>11.02 | 235<br>9.25  | 21<br>0.71 | 8-M20                      |
| 200<br>8              | 219.1<br>8.625    | 225<br>1.6                  | 102<br>4.02 | 337<br>13.27 | 292<br>11.50 | 19<br>0.75 | 12-M20                     |

## 321S-PN16

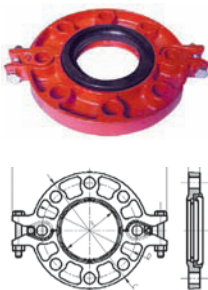
Grooved Flange



| Nominal<br>Size<br>mm/in | Pipe O.D<br>mm/in | Working<br>Pressure<br>PSI/MPa | Dimensions   |            |              |             |               | Bolt/Nut       |       | Certificate |
|--------------------------|-------------------|--------------------------------|--------------|------------|--------------|-------------|---------------|----------------|-------|-------------|
|                          |                   |                                | A<br>mm/in   | B<br>mm/in | C<br>mm/in   | D<br>mm/in  | E<br>mm/in    | No.-SIZE<br>mm |       |             |
|                          |                   |                                |              |            |              |             |               |                |       |             |
| 40<br>1½                 | 48.3<br>1.900     | 225<br>1.6                     | 195<br>7.68  | 19<br>0.75 | 150<br>5.91  | 110<br>4.33 | 45.4<br>1.78  | 2-M10X50       | 4-M16 | UL FM VdS   |
| 50<br>2                  | 60.3<br>2.375     | 225<br>1.6                     | 220<br>8.66  | 19<br>0.75 | 166<br>6.54  | 125<br>4.92 | 57.5<br>2.26  | 2-M10X50       | 4-M16 | UL FM VdS   |
| 65<br>2½                 | 76.1<br>3.000     | 225<br>1.6                     | 235<br>9.25  | 19<br>0.75 | 185<br>7.28  | 145<br>5.71 | 72.7<br>2.86  | 2-M10X50       | 4-M16 | UL FM VdS   |
| 80<br>3                  | 88.9<br>3.500     | 225<br>1.6                     | 252<br>9.72  | 19<br>0.75 | 192<br>7.56  | 160<br>6.30 | 85.5<br>3.37  | 2-M10X50       | 8-M16 | UL FM VdS   |
| 100<br>4                 | 108.0<br>4.250    | 225<br>1.6                     | 277<br>10.91 | 19<br>0.75 | 220<br>8.66  | 180<br>7.09 | 104.5<br>4.11 | 2-M12X55       | 8-M16 | UL FM       |
| 100<br>4                 | 114.3<br>4.500    | 225<br>1.6                     | 277<br>10.91 | 19<br>0.75 | 224<br>8.83  | 180<br>7.09 | 110.5<br>4.35 | 2-M12X55       | 8-M16 | UL FM VdS   |
| 125<br>5                 | 133.0<br>5.250    | 225<br>1.6                     | 312<br>12.28 | 22<br>0.87 | 246<br>9.68  | 210<br>8.27 | 129.2<br>5.08 | 2-M12X65       | 8-M16 | UL FM       |
| 125<br>5                 | 139.7<br>5.500    | 225<br>1.6                     | 318<br>12.52 | 23<br>0.87 | 242<br>9.84  | 210<br>8.27 | 135.5<br>5.33 | 2-M12X65       | 8-M16 | UL FM VdS   |
| 150<br>6                 | 159.0<br>6.250    | 225<br>1.6                     | 346<br>13.62 | 22<br>0.87 | 280<br>11.00 | 240<br>9.45 | 160.8<br>6.33 | 2-M12X65       | 8-M20 | UL FM       |
| 150<br>6                 | 165.1<br>6.500    | 225<br>1.6                     | 346<br>13.62 | 23<br>0.91 | 280<br>11.00 | 240<br>9.45 | 160.8<br>6.33 | 2-M12X65       | 8-M20 | UL FM       |
| 165<br>6½                | 168.3<br>6.625    | 225<br>1.6                     | 346<br>13.62 | 23<br>0.87 | 285<br>11.22 | 240<br>9.45 | 164.3<br>6.47 | 2-M12X65       | 8-M20 | UL FM VdS   |

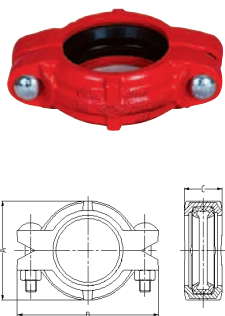
## 321AS-ANSI 125/150

Grooved Flange



| Nominal<br>Size<br>mm/in | Pipe O.D<br>mm/in | Working<br>Pressure<br>PSI/MPa | Dimensions   |            |              |               |               | Bolt/Nut       |       | Certificate |
|--------------------------|-------------------|--------------------------------|--------------|------------|--------------|---------------|---------------|----------------|-------|-------------|
|                          |                   |                                | A<br>mm/in   | B<br>mm/in | C<br>mm/in   | D<br>mm/in    | E<br>mm/in    | No.-SIZE<br>mm |       |             |
|                          |                   |                                |              |            |              |               |               |                |       |             |
| 50<br>2                  | 60.3<br>2.375     | 300<br>2.07                    | 209<br>8.23  | 19<br>0.75 | 153<br>6.02  | 121<br>4.76   | 57.5<br>2.26  | 2-M10X50       | 4-5/8 | UL FM       |
| 65<br>2½                 | 73.0<br>2.875     | 300<br>2.07                    | 232<br>9.13  | 19<br>0.75 | 178<br>7.00  | 140<br>5.51   | 69.8<br>2.74  | 2-M10X50       | 4-5/8 | UL FM       |
| 80<br>3                  | 88.9<br>3.500     | 300<br>2.07                    | 246<br>9.72  | 19<br>0.75 | 192<br>7.56  | 152<br>5.98   | 85.5<br>3.37  | 2-M10X50       | 4-5/8 | UL FM       |
| 100<br>4                 | 114.3<br>4.500    | 300<br>2.07                    | 280<br>11.02 | 19<br>0.75 | 229<br>9.00  | 191<br>7.52   | 110.5<br>4.35 | 2-M12X55       | 8-5/8 | UL FM       |
| 125<br>5                 | 141.3<br>5.563    | 300<br>2.07                    | 321<br>12.64 | 22<br>0.87 | 250<br>9.84  | 216<br>8.50   | 137.4<br>5.41 | 2-M12X65       | 8-3/4 | UL FM       |
| 150<br>6                 | 168.3<br>6.625    | 300<br>2.07                    | 346<br>13.62 | 22<br>0.87 | 285<br>11.22 | 241.3<br>9.50 | 164.3<br>6.47 | 2-M12X65       | 8-3/4 | UL FM       |

## 1GK Bevel Coupling



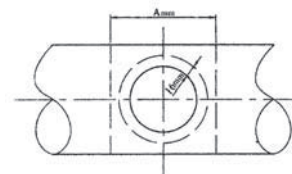
|     | Nominal Size<br>mm/in | Pipe O.D<br>mm/in | Working Pressure<br>PSI/MPa | Dimensions    |              |              | Bolt/Nut<br>No.-Size<br>mm |
|-----|-----------------------|-------------------|-----------------------------|---------------|--------------|--------------|----------------------------|
|     |                       |                   |                             | A<br>mm/in    | B<br>mm/in   | C<br>mm/in   |                            |
| 1GK | 32<br>1¼              | 42.4<br>1.669     | 300<br>2.07                 | 65<br>2.56    | 99<br>3.90   | 46.5<br>1.83 | 2-M20X57                   |
| 1GK | 40<br>1½              | 48.3<br>1.900     | 300<br>2.07                 | 71.5<br>2.81  | 104<br>4.09  | 46.5<br>1.83 | 2-M20X57                   |
| 1GK | 50<br>2               | 60.3<br>2.375     | 300<br>2.07                 | 85<br>3.35    | 121<br>4.76  | 46.5<br>1.83 | 2-M20X57                   |
| 1GK | 65<br>2½              | 76.1<br>3.000     | 300<br>2.07                 | 102.5<br>4.04 | 137<br>5.39  | 47.5<br>1.87 | 2-M20X57                   |
| 1GK | 80<br>3               | 88.9<br>3.500     | 300<br>2.07                 | 115<br>4.53   | 150<br>5.91  | 47.5<br>1.87 | 2-M20X63                   |
| 1GK | 100<br>4              | 114.3<br>4.500    | 300<br>2.07                 | 142<br>5.59   | 180<br>7.09  | 52<br>2.05   | 2-M20X63                   |
| 1GK | 125<br>5              | 139.7<br>5.500    | 300<br>2.07                 | 171<br>6.73   | 213<br>8.39  | 52<br>2.05   | 2-M20X76                   |
| 1GK | 150<br>6              | 165.1<br>6.500    | 300<br>2.07                 | 197<br>7.76   | 244<br>9.61  | 52<br>2.05   | 2-M20X7                    |
| 1GK | 200<br>8              | 219.1<br>8.65     | 300<br>2.07                 | 260<br>10.24  | 331<br>13.03 | 63<br>2.50   | 2-M20X110                  |

## GASKET DATA



| Gasket | Temperature Range         | General Service Recommendations                                                                                                                                                                                                                                                                   | Color Mark   |
|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| E      | -34~+110<br>(-30~+230° F) | Recommended for hot water service within the specified temperature range plus a variety of dilute acids,oil-free air and many chemical services.UL classifi ed in accordance with ANSI/NSF 61or cold+86°F (+30°) and hot+180°F (+82) potable water service.Not recommended for petroleum service. | Green Strip  |
| D      | -29~+82<br>(-20~+180° F)  | (Recommended for petroleum productsair with oil vapors,vegetable and mineral oils within the specified temperature range.Not recommended for hot water services.)                                                                                                                                 | Orange Strip |
| S      | -40~+177<br>(-40~+350° F) | (Recommended for high temperature dry air and some high temperature chemical products.)                                                                                                                                                                                                           | White        |

## Hole Diameter of pipe



Hole-cutting Machine

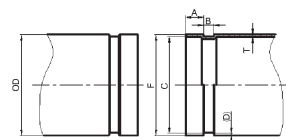
| Run Nominal<br>Sine<br>mm/in | Outlet<br>Nominal Size<br>mm/in | Hole Dia.<br>+3.2,0+0.13,0<br>mm/in | Run Nominal<br>Size<br>mm/in | Outlet<br>Nominal Size<br>mm/in | Hole Dia.<br>+3.2,0+0.13,0<br>mm/in | Run Nominal<br>Size<br>mm/in      | Outlet<br>Nominal Size<br>mm/in     | Hole Dia.<br>+3.2,0+0.13,0<br>mm/in |                |                     |
|------------------------------|---------------------------------|-------------------------------------|------------------------------|---------------------------------|-------------------------------------|-----------------------------------|-------------------------------------|-------------------------------------|----------------|---------------------|
|                              |                                 |                                     |                              |                                 |                                     |                                   |                                     |                                     |                |                     |
| 50<br>2"/60.3                | 15<br>1/2                       | 38<br>1.50<br>A89                   | 100<br>108.0<br>4"/114.3     | 15<br>1/2                       | 38<br>1.50<br>A89                   | 150<br>159.0<br>165.1<br>6"/168.3 | 15<br>1/2                           | 38<br>1.50<br>A89                   |                |                     |
|                              | 20<br>3/4                       |                                     |                              | 20<br>3/4                       |                                     |                                   | 20<br>3/4                           |                                     |                |                     |
|                              | 25<br>1                         |                                     |                              | 25<br>1                         |                                     |                                   | 25<br>1                             |                                     |                |                     |
|                              | 32<br>1¼                        | 45<br>1.75<br>A102                  |                              | 32<br>1¼                        | 51<br>2.00<br>A102                  |                                   | 32<br>1¼                            | 51<br>2.00<br>A102                  |                |                     |
|                              | 40<br>1½                        |                                     |                              | 40<br>1½                        |                                     |                                   | 40<br>1½                            |                                     |                |                     |
| 65<br>2½" /73.0<br>76.1      | 15<br>1/2                       | 38<br>1.50<br>A89                   |                              | 50<br>2                         | 64<br>2.50<br>A114                  |                                   | 200<br>8"/219.1<br>250<br>10"/273.0 | 100<br>108.0/4                      | 50<br>2        | 64<br>2.50<br>A114  |
|                              | 20<br>3/4                       |                                     | 65<br>2½/76.1                | 70<br>2.75<br>A120              | 65<br>2½/76.1                       | 70<br>2.75<br>A120                |                                     |                                     |                |                     |
|                              | 25<br>1                         |                                     | 80<br>3                      | 89<br>3.50<br>A140              | 80<br>3                             | 89<br>3.50<br>A140                |                                     |                                     |                |                     |
|                              | 32<br>1¼                        | 51<br>2.00<br>A102                  |                              | 15<br>1/2                       | 38<br>1.50<br>A89                   |                                   |                                     |                                     | 100<br>108.0/4 | 114<br>4.50<br>A165 |
|                              | 40<br>1½                        |                                     |                              | 20<br>3/4                       |                                     |                                   |                                     |                                     | 25<br>1        | 38<br>1.50<br>A89   |
| 80<br>3"/88.9                | 15<br>1/2                       | 38<br>1.50<br>A89                   |                              | 25<br>1                         |                                     |                                   |                                     |                                     |                |                     |
|                              | 20<br>3/4                       |                                     |                              | 32<br>1¼                        | 51<br>2.00<br>A102                  |                                   | 32<br>1¼                            | 51<br>2.00<br>A102                  |                |                     |
|                              | 25<br>1                         |                                     |                              | 40<br>1½                        |                                     |                                   | 40<br>1½                            |                                     |                |                     |
|                              | 32<br>1¼                        | 51<br>2.00<br>A102                  |                              | 50<br>2                         | 64<br>2.50<br>A114                  | 50<br>2                           | 64<br>2.50<br>A114                  |                                     |                |                     |
|                              | 40<br>1½                        |                                     |                              | 65<br>2½/76.1                   | 70<br>2.75<br>A120                  | 65<br>2½/76.1                     | 70<br>2.75<br>A120                  |                                     |                |                     |
|                              | 50<br>2                         | 64<br>2.50<br>A114                  |                              | 80<br>3                         | 89<br>3.50<br>A140                  |                                   | 80<br>3                             | 89<br>3.50<br>A140                  |                |                     |
|                              |                                 |                                     |                              |                                 |                                     |                                   | 100<br>108.0/4                      | 114<br>4.50<br>A165                 |                |                     |

The outside surface of the pie within 16mm from the hole must be clean and smooth.

## Roll Groove Dimensions



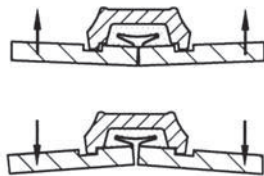
Roll Grooving Machine



| Nominal Size mm/in | Pipe OD         |                 |                 | Gasket seat A<br>$\pm 0.76/\pm 0.03$ mm/in | Groove Width B<br>$\pm 0.76/\pm 0.03$ mm/in | Groove Dia C     |                 | Groove Depth D(ref) mm/in | Max Allow Flare Dia F mm/in | Min. Allow wall thickness T mm/in |
|--------------------|-----------------|-----------------|-----------------|--------------------------------------------|---------------------------------------------|------------------|-----------------|---------------------------|-----------------------------|-----------------------------------|
|                    | Basic mm/in     | Tolerance mm/in |                 |                                            |                                             | Basic mm/in      | Tolerance mm/in |                           |                             |                                   |
| 25<br>1            | 33.7<br>1.327   | +0.41<br>+0.016 | -0.68<br>-0.026 | 15.88<br>0.625                             | 7.14<br>0.281                               | 30.23<br>1.190   | -0.38<br>-0.015 | 1.60<br>0.063             | 34.5<br>1.358               | 1.8<br>0.071                      |
| 32<br>1¼           | 42.4<br>1.669   | +0.50<br>+0.020 | -0.60<br>-0.023 | 15.88<br>0.625                             | 7.14<br>0.281                               | 38.99<br>1.535   | -0.38<br>-0.015 | 1.60<br>0.063             | 43.3<br>1.705               | 1.8<br>0.071                      |
| 40<br>1½           | 48.3<br>1.900   | +0.44<br>+0.017 | -0.52<br>-0.020 | 15.88<br>0.625                             | 7.14<br>0.281                               | 45.09<br>1.779   | -0.38<br>-0.015 | 1.60<br>0.063             | 49.4<br>1.945               | 1.8<br>0.071                      |
| 50<br>2            | 60.3<br>2.375   | +0.61<br>+0.024 | -0.61<br>-0.024 | 15.88<br>0.625                             | 8.74<br>0.344                               | 57.15<br>2.250   | -0.38<br>-0.015 | 1.60<br>0.063             | 62.2<br>2.449               | 1.8<br>0.071                      |
| 65<br>2½           | 73.0<br>2.875   | +0.74<br>+0.029 | -0.74<br>-0.029 | 15.88<br>0.625                             | 8.74<br>0.344                               | 69.09<br>2.720   | -0.46<br>-0.018 | 1.98<br>0.078             | 75.2<br>2.961               | 2.3<br>0.091                      |
| 65<br>2½           | 76.1<br>3.000   | +0.76<br>+0.030 | -0.76<br>-0.030 | 15.88<br>0.625                             | 8.74<br>0.344                               | 72.26<br>2.845   | -0.46<br>-0.018 | 1.99<br>0.078             | 77.7<br>3.059               | 2.3<br>0.091                      |
| 80<br>3            | 88.9<br>3.500   | +0.89<br>+0.035 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 84.94<br>3.344   | -0.46<br>-0.018 | 1.98<br>0.078             | 90.6<br>3.567               | 2.3<br>0.091                      |
| 100<br>4           | 108.0<br>4.250  | +1.07<br>+0.042 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 103.73<br>4.084  | -0.51<br>-0.020 | 2.11<br>0.083             | 109.7<br>4.319              | 2.3<br>0.091                      |
| 100<br>4           | 114.3<br>4.500  | +1.14<br>+0.045 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 110.08<br>4.334  | -0.51<br>-0.020 | 2.11<br>0.083             | 116.2<br>4.575              | 2.3<br>0.091                      |
| 125<br>5           | 133.0<br>5.250  | +1.32<br>+0.052 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 129.13<br>5.084  | -0.51<br>-0.020 | 2.11<br>0.083             | 134.9<br>5.311              | 2.9<br>0.114                      |
| 125<br>5           | 139.7<br>5.500  | +1.40<br>+0.055 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 135.48<br>5.334  | -0.51<br>-0.020 | 2.11<br>0.083             | 141.7<br>5.579              | 2.9<br>0.114                      |
| 125<br>5           | 141.3<br>5.563  | +1.42<br>+0.056 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 137.03<br>5.395  | -0.56<br>-0.022 | 2.13<br>0.084             | 143.5<br>5.650              | 2.9<br>0.114                      |
| 150<br>6           | 159.0<br>6.250  | +1.60<br>+0.063 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 154.50<br>6.083  | -0.56<br>-0.022 | 2.16<br>0.085             | 161.0<br>6.339              | 2.9<br>0.114                      |
| 150<br>6           | 165.1<br>6.500  | +1.60<br>+0.063 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 160.8<br>6.330   | -0.56<br>-0.022 | 2.16<br>0.085             | 167.1<br>6.579              | 2.9<br>0.114                      |
| 150<br>6           | 168.3<br>6.625  | +1.60<br>+0.063 | -0.79<br>-0.031 | 15.88<br>0.625                             | 8.74<br>0.344                               | 163.96<br>6.455  | -0.56<br>-0.022 | 2.16<br>0.085             | 170.7<br>6.720              | 2.9<br>0.114                      |
| 200A<br>8          | 216.3<br>8.516  | +1.60<br>+0.063 | -0.79<br>-0.031 | 19.05<br>0.750                             | 11.91<br>0.469                              | 211.60<br>8.331  | -0.64<br>-0.025 | 2.35<br>0.093             | 219.8<br>8.653              | 2.9<br>0.114                      |
| 200<br>8           | 219.1<br>8.625  | +1.60<br>+0.063 | -0.79<br>-0.031 | 19.05<br>0.750                             | 11.91<br>0.469                              | 214.40<br>8.441  | -0.64<br>-0.025 | 2.34<br>0.092             | 221.5<br>8.720              | 2.9<br>0.114                      |
| 250A<br>10         | 267.4<br>10.528 | +1.60<br>+0.063 | -0.79<br>-0.031 | 19.05<br>0.750                             | 11.91<br>0.469                              | 262.60<br>10.339 | -0.69<br>-0.027 | 2.40<br>0.095             | 270.9<br>10.665             | 3.6<br>0.142                      |
| 250<br>10          | 273.0<br>10.750 | +1.60<br>+0.063 | -0.79<br>-0.031 | 19.05<br>0.750                             | 11.91<br>0.469                              | 268.28<br>10.562 | -0.69<br>-0.027 | 2.39<br>0.094             | 275.4<br>10.842             | 3.6<br>0.142                      |
| 300A<br>12         | 318.5<br>12.539 | +1.60<br>+0.063 | -0.79<br>-0.031 | 19.05<br>0.750                             | 11.91<br>0.469                              | 312.90<br>12.319 | -0.76<br>-0.030 | 2.77<br>0.109             | 322.0<br>12.677             | 4.0<br>0.158                      |
| 300<br>12          | 323.9<br>12.750 | +1.60<br>+0.063 | -0.79<br>-0.031 | 19.05<br>0.750                             | 11.91<br>0.469                              | 318.29<br>12.531 | -0.76<br>-0.030 | 2.77<br>0.109             | 326.2<br>12.842             | 4.0<br>0.158                      |
| 350<br>14          | 377.0<br>14.842 | +1.60<br>+0.063 | -0.79<br>-0.031 | 23.83<br>0.938                             | 11.91<br>0.469                              | 371.44<br>14.623 | -0.76<br>-0.030 | 2.77<br>0.109             | 379.5<br>14.941             | 4.5<br>0.177                      |
| 400<br>16          | 426.0<br>16.772 | +1.60<br>+0.063 | -0.79<br>-0.031 | 23.83<br>0.938                             | 11.91<br>0.469                              | 420.46<br>16.553 | -0.76<br>-0.030 | 2.77<br>0.109             | 428.5<br>16.870             | 4.5<br>0.177                      |
| 500<br>20          | 529.0<br>20.827 | +1.60<br>+0.063 | -0.79<br>-0.031 | 25.40<br>1.000                             | 11.91<br>0.469                              | 523.46<br>20.608 | -0.76<br>-0.030 | 2.77<br>0.109             | 533.0<br>20.984             | 5.0<br>0.197                      |

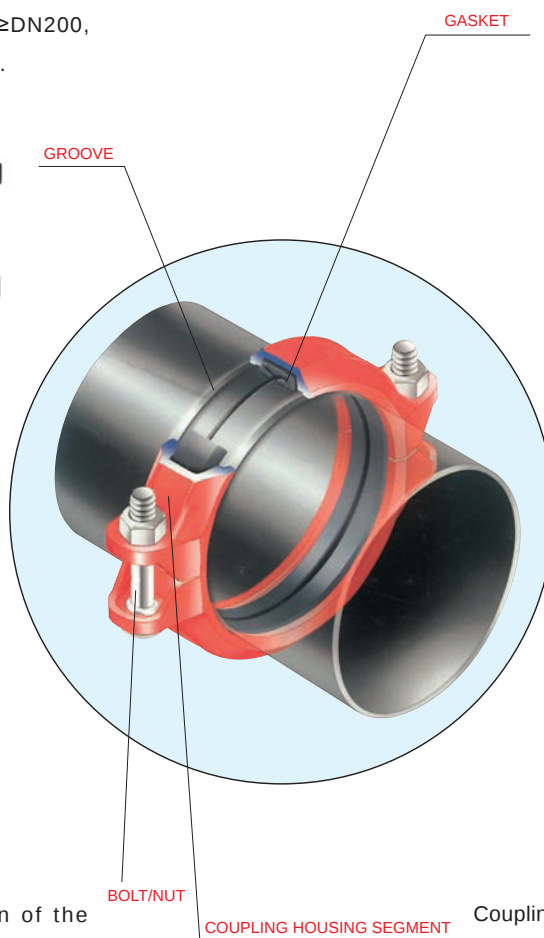
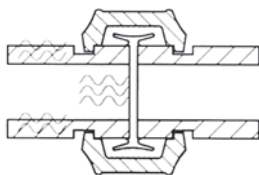
## Flexible Coupling :

A flexible coupling accommodates pipe deflection and or non-alignment as below: If nominal diameter  $< \text{DN}200$ , deflection angle is  $\geq 1^\circ$  ; If nominal diameter  $\geq \text{DN}200$ , deflection angle is  $\geq 0.5^\circ$  but  $< 1^\circ$  .

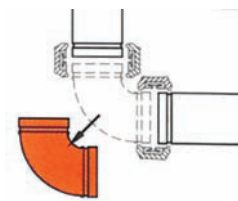


The C-shaped rubber gasket provides excellent self-sealing capabilities in both low and high pressure service as well as under certain vacuum conditions.

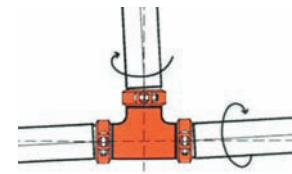
The design and construction of the coupling with elastomeric gaskets can provide significant noise and vibration absorption as well as seismic stress.



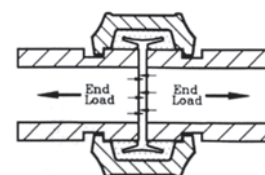
With the removal of just a few bolts you can easily access the system for cleaning, maintenance, changes or system expansion.



Coupling are non-directive and pipe can be rotated  $360^\circ$  during installation.



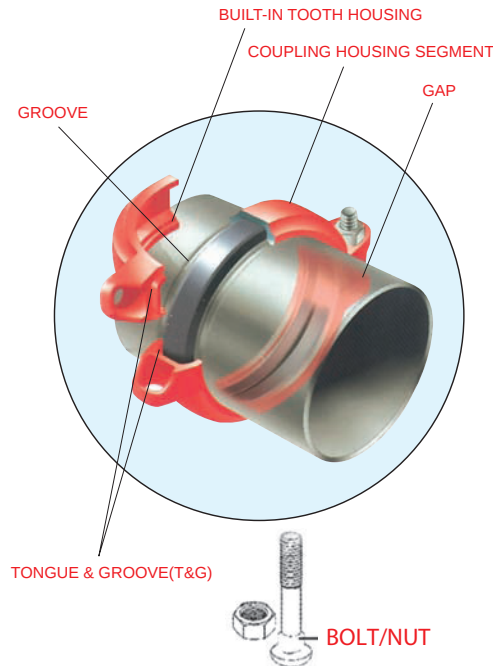
Coupling keys engage the full circumference of the grooves and provide significant pressure and end load restraint against pipe movement from internal and external forces.



## Rigid Coupling :

The T&G mechanism in combination with a slightly shortened key diameter provides a mechanical and frictional interlock resulting in a rigid joint which reduces undesired angular movement.

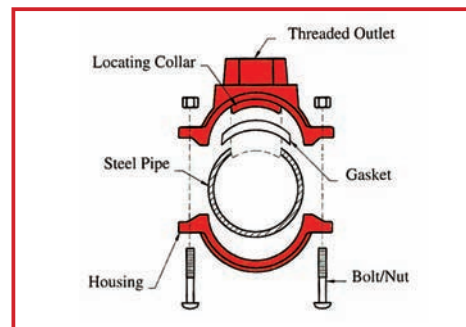
The built-in teeth on the coupling grip the groove shoulder and serve to reduce linear movement.



The T&G mechanism features a slight offset at the foot of the coupling halves which serve to protect the gasket from exposure.

With the T&G style coupling no metal-to-metal contact of the bolt pads is required. You will normally see a 1/16" - 1/8" (1.6mm to 3.2mm) gap between the bolt pads when installed.

The Mechanical Tee (3J, 3G, 3L ) provide for a fast and easy grooved or threaded branch outlet and eliminate the need for welding or the use of a reducing tee and couplings. Simply cut a hole to the specified size at the expected location and fasten the mechanical tee to the pipe with the nuts and bolts provided. As the housing bolts are tightened, the pressure responsive gasket forms a leak-tight seal.



## Pressure Ratings and End Loads for Mech Couplings on Steel Pipe



1G Rigid



1GS L/Duty Rigid



1NR Reducing

| Nom. Size | Pipe O.D | Pipe Sched | Wall Thick. | 1G              |              | 1GS             |              | 1NR             |              |
|-----------|----------|------------|-------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|
|           |          |            |             | Roll Grooved    |              | Roll Grooved    |              | Roll Grooved    |              |
|           |          |            |             | Max.Work Press. | Max.End Load | Max.Work Press. | Max.End Load | Max.Work Press. | Max.End Load |
| DN/in     | mm       | (Sch)      | mm          | Bar/Psi         | kN/Lbs       | Bar/Psi         | kN/Lbs       | Bar/Psi         | kN/Lbs       |
| 25        | 33.7     | 40         | 3.38        | 35/500          | 3.0/680      |                 |              | 20/300          | 1.8/410      |
|           |          | 10         | 2.77        | 35/500          | 3.0/680      |                 |              | 20/300          | 1.8/410      |
| 32        | 42.4     | 40         | 3.56        | 35/500          | 4.8/1080     |                 |              | 20/300          | 2.9/650      |
|           |          | 10         | 2.77        | 35/500          | 4.8/1080     |                 |              | 20/300          | 2.9/650      |
| 40        | 48.3     | 40         | 3.68        | 35/500          | 6.3/1420     |                 |              | 20/300          | 3.8/850      |
|           |          | 10         | 2.77        | 35/500          | 6.3/1420     |                 |              | 20/300          | 3.8/850      |
| 50        | 60.3     | 40         | 3.91        | 35/500          | 9.8/2210     |                 |              | 20/300          | 5.9/1330     |
|           |          | 10         | 2.77        | 35/500          | 9.8/2210     |                 |              | 20/300          | 5.9/1330     |
| 65        | 73       | 40         | 5.16        | 35/500          | 14.4/3240    |                 |              | 20/300          | 8.7/1950     |
|           |          | 10         | 3.05        | 35/500          | 14.4/3240    |                 |              | 20/300          | 8.7/1950     |
| 65        | 76.1     | --         | 6.35        |                 |              |                 |              |                 |              |
|           |          | --         | 5.08        | 35/500          | 15.7/3530    | 20/300          | 9.4/2120     | 20/300          | 9.4/2120     |
|           |          | --         | 3.81        | 35/500          | 15.7/3530    | 20/300          | 9.4/2120     | 20/300          | 9.4/2120     |
| 80        | 88.9     | 40         | 5.49        | 35/500          | 21.4/4800    | 20/300          | 12.8/2885    | 20/300          | 12.8/2885    |
|           |          | 10         | 3.05        | 35/500          | 21.4/4800    | 20/300          | 12.8/2885    | 20/300          | 12.8/2885    |
| 100       | 114.3    | 40         | 6.02        | 35/500          | 35.4/7950    | 20/300          | 21.2/4770    | 20/300          | 21.2/4770    |
|           |          | 10         | 3.05        | 35/500          | 35.4/7950    | 20/300          | 21.2/4770    | 20/300          | 21.2/4770    |
| 125       | 141.3    | 40         | 6.55        | 31/450          | 48.6/10930   | 20/300          | 32.4/7290    | 20/300          | 32.4/7290    |
|           |          | 10         | 3.4         | 31/450          | 48.6/10930   | 20/300          | 32.4/7290    | 20/300          | 32.4/7290    |
| 150       | 165.1    | --         | 6.35        | 31/450          | 66.4/14930   | 20/300          | 44.3/9960    | 20/300          | 44.3/9960    |
|           |          | --         | 5.08        | 31/450          | 66.4/14930   | 20/300          | 44.3/9960    | 20/300          | 44.3/9960    |
| 150       | 168.3    | 40         | 7.11        | 31/450          | 68.9/15500   | 20/300          | 46.0/10340   | 20/300          | 46.0/10340   |
|           |          | 10         | 3.4         | 31/450          | 68.9/15500   | 20/300          | 46.0/10340   | 20/300          | 46.0/10340   |
| 200       | 219.1    | 40         | 8.18        | 31/450          | 116.9/26280  | 20/300          | 77.8/17500   |                 |              |
|           |          | 30         | 7.04        | 31/450          | 116.9/26280  | 20/300          | 77.8/17500   |                 |              |
|           |          | 10         | 4.77        | 20/300          | 77.8/17500   | 20/300          | 77.8/17500   |                 |              |
| 250       | 273      | 40         | 9.27        | 20/300          | 121.0/27210  |                 |              |                 |              |
|           |          | 30         | 7.8         | 20/300          | 121.0/27210  |                 |              |                 |              |
|           |          | 10         | 4.77        | 20/300          | 121.0/27210  |                 |              |                 |              |
| 300       | 323.9    | 40         | 10.31       | 20/300          | 170.3/38280  |                 |              |                 |              |
|           |          | STD        | 9.53        | 20/300          | 170.3/38280  |                 |              |                 |              |
|           |          | 30         | 6.35        | 20/300          | 170.3/38280  |                 |              |                 |              |
|           |          | 10         | 4.77        | 20/300          | 170.3/38280  |                 |              |                 |              |



1N Flexible



1NH Heavy Duty Flexible



321 Flange Adaptor

| Nom. Size | Pipe O.D | Pipe Sched | Wall Thick. | 1N              |              | 1NH             |              | 321             |              |
|-----------|----------|------------|-------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|
|           |          |            |             | Roll Grooved    |              | Roll Grooved    |              | Roll Grooved    |              |
|           |          |            |             | Max.Work Press. | Max.End Load | Max.Work Press. | Max.End Load | Max.Work Press. | Max.End Load |
| DN/in     | mm       | (Sch)      | mm          | Bar/Psi         | kN/Lbs       | Bar/Psi         | kN/Lbs       | Bar/Psi         | kN/Lbs       |
| 25        | 33.7     | 40         | 3.38        | 35/500          | 3.0/680      |                 |              |                 |              |
|           |          | 10         | 2.77        | 35/500          | 3.0/680      |                 |              |                 |              |
| 32        | 42.4     | 40         | 3.56        | 35/500          | 4.8/1080     |                 |              |                 |              |
|           |          | 10         | 2.77        | 35/500          | 4.8/1080     |                 |              |                 |              |
| 40        | 48.3     | 40         | 3.56        | 35/500          | 6.3/1420     |                 |              | 16/225          | 3.2/710      |
|           |          | 10         | 2.77        | 35/500          | 6.3/1420     |                 |              | 16/225          | 3.2/710      |
| 50        | 60.3     | 40         | 3.91        | 35/500          | 9.8/2210     | 52/750          | 14.8/3320    | 16/225          | 4.4/1000     |
|           |          | 10         | 2.77        | 35/500          | 9.8/2210     | 52/750          | 14.8/3320    | 16/225          | 4.4/1000     |
| 65        | 73       | 40         | 5.16        | 35/500          | 14.4/3240    | 52/750          | 21.7/4870    | 20/300          | 5.9/1330     |
|           |          | 10         | 3.05        | 35/500          | 14.4/3240    | 41/600          | 17.3/3900    | 20/300          | 5.9/1330     |
| 65        | 76.1     | --         | 6.35        |                 |              |                 |              |                 |              |
|           |          | --         | 5.08        | 35/500          | 15.7/3530    | 52/750          | 23.6/5300    | 16/225          | 7.1/1590     |
|           |          | --         | 3.81        | 35/500          | 15.7/3530    | 41/600          | 18.9/4240    | 16/225          | 7.1/1590     |
| 80        | 88.9     | 40         | 5.49        | 35/500          | 21.4/4800    | 52/750          | 32.1/7210    | 16/225          | 9.6/2165     |
|           |          | 10         | 3.05        | 35/500          | 21.4/4800    | 41/600          | 25.6/5760    | 16/225          | 9.6/2165     |
| 100       | 114.3    | 40         | 6.02        | 35/500          | 35.4/7950    | 52/750          | 53.0/11920   | 16/225          | 15.9/3580    |
|           |          | 10         | 3.05        | 35/500          | 35.4/7950    | 41/600          | 42.4/9540    | 16/225          | 15.9/3580    |
| 125       | 141.3    | 40         | 6.55        | 31/450          | 48.6/10930   | 48/700          | 75.7/17010   | 20/300          | 31.3/7035    |
|           |          | 10         | 3.4         | 31/450          | 48.6/10930   | 31/450          | 48.6/10930   | 20/300          | 31.3/7035    |
| 150       | 165.1    | --         | 6.35        | 31/450          | 66.4/14930   | 48/700          | 102.7/23090  | 16/225          | 33.2/7460    |
|           |          | --         | 5.08        | 31/450          | 66.4/14930   | 31/450          | 66.4/14930   | 16/225          | 33.2/7460    |
| 150       | 168.3    | 40         | 7.11        | 31/450          | 68.9/15500   | 48/700          | 107.3/24120  | 16/225          | 34.5/7750    |
|           |          | 10         | 3.4         | 31/450          | 68.9/15500   | 31/450          | 68.9/15500   | 16/225          | 34.5/7750    |
| 200       | 219.1    | 40         | 8.18        | 31/450          | 116.9/26280  | 41/600          | 155.7/35000  | 16/225          | 58.4/13140   |
|           |          | 30         | 7.04        | 31/450          | 116.9/26280  | 41/600          | 155.7/35000  | 16/225          | 58.4/13140   |
|           |          | 10         | 3.76        | 20/300          | 77.8/17500   | 20/300          | 77.8/17500   | 16/225          | 58.4/13140   |
| 250       | 273      | 40         | 9.27        | 20/300          | 121.0/27210  |                 |              | 16/225          | 90.8/20410   |
|           |          | 30         | 6.35        | 20/300          | 121.0/27210  |                 |              | 16/225          | 90.8/20410   |
|           |          | 10         | 4.19        | 20/300          | 121.0/27210  |                 |              | 16/225          | 90.8/20410   |
| 300       | 323.9    | 40         | 10.31       | 20/300          | 170.3/38280  |                 |              | 16/225          | 127.7/28710  |
|           |          | STD        | 9.53        | 20/300          | 170.3/38280  |                 |              | 16/225          | 127.7/28710  |
|           |          | 20         | 6.35        | 20/300          | 170.3/38280  |                 |              | 16/225          | 127.7/28710  |
|           |          | 10         | 4.57        | 20/300          | 170.3/38280  |                 |              | 16/225          | 127.7/28710  |

## Installation Instruction For Rigid & Flexible Coupling



Pipe preparation

Check pipe end for proper groove dimensions and to assure that pipe end is free of indentations and projections that would prevent proper sealing.



Lubricate gasket

Check gasket to be sure it's compatible for the intended service. Apply thin lubricant to the outside and sealing lips of the gasket.



Gasket installation

Slip the gasket over one pipe, making sure the gasket lip does not over-hang the pipe end.



Alignment

After aligning two pipe ends together, pull the gasket into position, centering between the grooves on each pipe. The gasket should not extend into the groove on either pipe.



Housing installation

Remove one bolt & nut and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the pipe grooves. Swing the other housing over the gasket and into the grooves on both pipes. Re-insert the bolt and connect two housings.



Tighten nuts

Firstly hand tighten nuts and make sure oval neck bolt completely fits into bolt hole. Then securely tighten nuts alternatively and equally to the specified bolt torque by using spanner.



Assembly completed  
Rigid Coupling

For Rigid Coupling, keep the gaps at bolt pads evenly spaced. Gaskets can't be seen visually.



Assembly completed  
Flexible Coupling

For Flexible Coupling, two housings should be iron to iron connected. Gaskets can't be seen visually.

### Caution

Proper torquing of bolts is required to obtain specified performance.

- Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

### Specified Bolt Torque

| ANSI BOLTS |                       |         |
|------------|-----------------------|---------|
| Bolt Size  | Specified Bolt Torque |         |
| Inch       | Lbs-Ft.               | N·m     |
| 3/8        | 30-45                 | 40-60   |
| 1/2        | 80-100                | 110-135 |
| 5/8        | 100-130               | 135-175 |
| 3/4        | 130-180               | 175-245 |
| 7/8        | 180-240               | 245-325 |

## Installation Instruction For Threaded & Grooved Mechanical Tee



Pipe preparation

Clean the gasket sealing surface within 16mm of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Don't drill the hole on weld line.



Remove burrs

If any burrs or slug exists at the pipe hole, please remove them before assembly, to protect the gasket and avoid leakage.



Gasket installation

Insert the gasket into outlet housing making sure the tab in the gasket line up with the tab recesses in the housing. Align outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



Alignment

Align the strap around the pipe, insert the bolts and tighten the nuts finger tight.



Tighten nuts

Alternatively and evenly tighten the nuts to the specified bolt torque.



Assembly completed

There should be even gaps on two sides between upper and lower housings.

### Caution

Proper torquing of bolts is required to obtain specified performance. - Over torquing the bolts may result in damage to the bolt and/ or casting which could result in pipe joint separation. - Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

### Specified Bolt Torque

| ANSI BOLTS |                       |         |
|------------|-----------------------|---------|
| Bolt Size  | Specified Bolt Torque |         |
| Inch       | Lbs-Ft.               | N.m     |
| 3/8        | 30-45                 | 40-60   |
| 1/2        | 80-100                | 110-135 |
| 5/8        | 100-130               | 135-175 |
| 3/4        | -                     | -       |
| 7/8        | -                     | -       |

## Installation Instruction For U-Bolt Mechanical Tee



Pipe preparation

Clean the gasket sealing surface within 16mm of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Don't drill the hole on weld line.



Remove burrs

If any burrs or slug exists at the pipe hole, please remove them before assembly, to protect the gasket and avoid leakage.



Gasket installation

Insert the gasket into outlet housing properly. Align outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



Alignment

Attach the U-bolt from the other side and tighten the nuts finger tight.



Tighten nuts

Alternatively and evenly tighten the nuts to the specified bolt torque.



Assembly completed

Assembly completed.

### Caution

Proper torquing of bolts is required to obtain specified performance.

- Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

### Specified Bolt Torque

| ANSI BOLTS |                       |         |
|------------|-----------------------|---------|
| Bolt Size  | Specified Bolt Torque |         |
| Inch       | Lbs-Ft.               | N·m     |
| 3/8        | 30-45                 | 40-60   |
| 1/2        | 80-100                | 110-135 |
| 5/8        | 100-130               | 135-175 |
| 3/4        | -                     | -       |
| 7/8        | -                     | -       |

## Installation Instruction For Grooved Flange



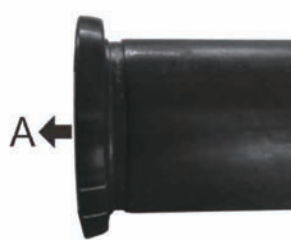
Pipe preparation

Check pipe end for proper groove dimensions and to assure that pipe end is free of indentations and projections that would prevent proper sealing.



Lubricate gasket

Check gasket to be sure it's compatible for the intended service. Apply thin lubricant to the outside and sealing lips of the gasket.



Gasket installation

Slip the gasket over pipe end, with the gasket opening side towards "A". Make sure the gasket sealing lip is even with pipe end.



Housing installation

Remove bolts and nuts, place two housings over the gasket, making sure the housing keys fit into the pipe grooves. Re-insert the bolts and hand tighten the nuts.



Tighten nuts

Securely tighten nuts alternatively and equally to the specified bolt torque by using spanner.



Connect mating flange

Align flange bolt holes with mating flange (or valve) bolt holes. Insert a standard flange bolt through bolt hole and hand tighten a nut. Insert another bolt opposite the first and hand tighten a nut. Continue this until all bolt holes are fitted. Tighten nuts evenly to specified bolt torque, so flange faces remain parallel. Assembly completed.

### Caution

Proper torquing of bolts is required to obtain specified performance.

- Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.

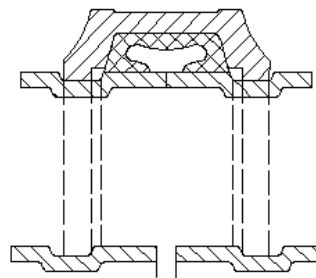
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

### Specified Bolt Torque

| METRIC BOLTS |                       |         |
|--------------|-----------------------|---------|
| Bolt Size    | Specified Bolt Torque |         |
| Inch         | Lbs-Ft.               | N·m     |
| M10          | 30-45                 | 40-60   |
| M12          | 80-100                | 110-135 |
| M16          | -                     | -       |
| M20          | -                     | -       |
| M22          | -                     | -       |
| M24          | -                     | -       |

## Movement

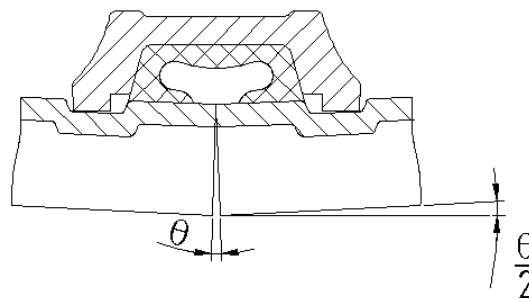
Each flexible design coupling can provide for pipe system movement up to the design maximum for the specific size and type coupling being utilized. Movement is possible in the coupling due to two factors: (1) designed-in clearance between the key of the coupling and the groove diameter and groove width, and (2) the gap between pipe ends joined by the coupling.



### Linear Movement

Linear movement is accommodated within the coupling by allowing the pipe ends to move together or apart in response to pressure thrusts and temperature changes. The available linear movement provided by couplings is shown below:

|          |              |                |
|----------|--------------|----------------|
| size     | 1-1¼ 25-32MM | 1½-12 40-300MM |
| movement | 0-4.0MM      | 0-6.4MM        |



### Angular Movement

Designed-in clearances allow limited deflection of the pipe joint within the coupling, without introducing eccentric loads into the coupling joint.

The maximum available angular movement of coupling joints is shown in the performance data for each coupling type. The amount of angular flexibility varies for each coupling size and type. For design purposes the published figures should be reduced by the below listed factors to account for pipe, groove and coupling tolerances.

|               |               |               |
|---------------|---------------|---------------|
| size          | 1-3 (IN)      | 4-12 (IN)     |
| Design factor | Reduce to 50% | Reduce to 75% |

## Riser Design:

Risers assembled with Flexible couplings are generally installed in either of two ways. In the most common method, the pipe ends are butted together within the coupling joint. Note that when installing risers, the gasket is first placed onto the lower pipe and rolled back away from the pipe end prior to positioning the upper pipe. Anchoring of the riser may be done prior to pressurization with the pipe ends butted or while pressurized, when, due to pressure thrust, the pipe ends will be fully separated.

An alternative method of riser installation is to place a metal spacer of a predetermined thickness, between the pipe ends when an additional length of pipe is added to the riser stack. The upper pipe length is anchored, the spacer removed and the coupling is then installed. This method creates a predetermined gap at each pipe joint which can be utilized in pipe systems where thermal movement is anticipated and in systems with rigid (threaded, welded, flanged) branch connections where shear forces due to pressure thrust could damage the rigid connections.

The following examples illustrate methods of installing commonly encountered riser designs.

### Risers without Branch Connections

Install the riser with the pipe ends butted.

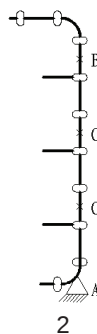
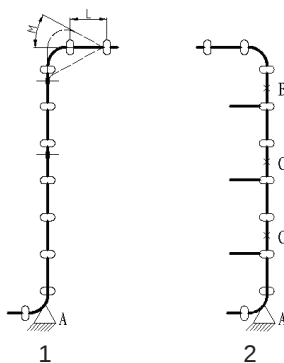
Locate an anchor at the base of the riser (A) to support. When this system is pressurized, the pipe movement due to pressure thrust will be strained and there will be no shear forces acting at the branch connections.

the total weight of the pipe, couplings and fluid. Provide pipe guides on every other pipe length, as a minimum, to pre-vent possible deflection of the pipe line at the coupling joints as the riser expands due to pressure thrust or thermal growth. Note that no intermediate anchors are required.

When the system is pressurized the pipe stack will "grow" due to pressure thrust which causes maximum separation of pipe ends within the couplings. The maximum amount of stack growth can be predetermined (see Linear Movement). In this example the pipe length "L" at the top of the riser must be long enough to permit sufficient deflection (see Angular Movement) to accommodate the total movement "M" from both pressure thrust and thermal gradients.

### Risers with Branch Connections

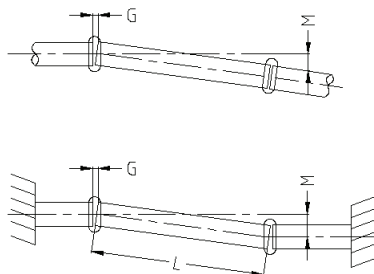
Install the riser with the predetermined gap method. Anchor the pipe at or near the base with a pressure thrust anchor "A" capable of supporting the full pressure thrust, weight of pipe and the fluid column. Anchor at "B" with an anchor capable of withstanding full pressure thrust at the top of the riser plus weight of pipe column. Place intermediate anchors "C" as shown, between anchors "A" and "B". Also place intermediate clamps at every other pipe length as a minimum.



### Misalignment & Deflections:

The angular movement capability of the flexible coupling permits the assembly of pipe joints where the piping is not properly aligned. At least two couplings are required to provide for lateral pipe misalignment. Deflection (longitudinal misalignment) may be accommodated within a single coupling as long as the angle of deflection does not exceed the value shown in the coupling performance data for the particular size and coupling type.

A pipe joint that utilizes the angular deflection capability of the coupling will react to pressure and thermal forces dependent upon the manner in which it is restrained. An unrestrained joint will react to these forces by straightening, thus reducing, if not eliminating, the deflection at the joint. If joint deflection has been designed into the pipe layout and must be maintained, then sufficient anchors must be provided to resist the lateral forces and hold the joint in the deflected condition.



The amount of deflection from pipe run centerline can

be calculated utilizing the following equations:

$$M = L \sin \theta$$

$$\theta = \sin^{-1} (G \div D)$$

$$M = (G \div D) \times L$$

Where:

M = Misalignment (inches)

G = Maximum Allowable Pipe End Movement (Inches) as shown under "Performance Data" (Value to be reduced by Design Factor)

$\theta$  = Maximum Deflection (Degrees) from centerline as shown under "Performance Data" (Value to be reduced by Design Factor)

D = Pipe Outside Diameter (Inches)

L = Pipe Length (Inches)

### Curve Layout:

Utilizing the angular deflection at each coupling joint curves may be laid out using straight pipe lengths and Couplings.

This example shows how to calculate the curve radius, required pipe lengths, and number of required couplings.

$$R = L / (2 \times \sin(\theta / 2))$$

$$L = 2 \times R \times \sin(\theta / 2)$$

$$N = T / \theta$$

WHERE:

N = Number of Couplings

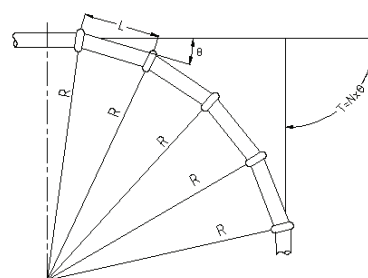
R = Radius of Curve (feet)

L = Pipe Length (feet)

$\theta$  = Deflection from centerline (Degrees) of each Coupling

(See coupling performance data, value to be reduced by Design Factor)

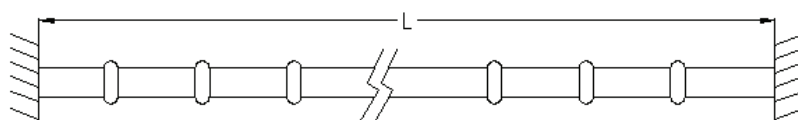
T = Total Angular Deflection of all Couplings.



## Movement -Application

### Thermal stress

Thermal stress is caused by changes in temperature, resulting in either expansion or contraction. When designing a system you must allow for this thermal movement. To determine the appropriate number of flexible couplings to allow for this thermal movement please refer to the following.



Example:

- 4" straight steel pipe, 30m long
- Anchored on both ends
- Minimum temperature (during installation) = 5
- Maximum working temperature = 55

From the thermal expansion table, we know the overall pipeline length will increase by 18mm (0.71" ). You can also use Formula 1 or Table 3 to find the amount of thermal expansion. We want to know the number of couplings that are required to address this thermal movement problem.

The allowed movement of a 4" flexible coupling is :

Movement range x Adjustment = Allowed movement

$$4.3\text{mm} \times 75\% = 3.2\text{mm}$$

The appropriate number of coupling is:

Thermal expansion / Allowed movement = Number of couplings

$$18\text{mm} / 3.2\text{mm} = 5.6$$

Conclusion:

The appropriate number of coupling is 6.

### Thermal Expansion

| Temperature difference | Pipe length (m)       |      |      |      |      |      |
|------------------------|-----------------------|------|------|------|------|------|
|                        | 1                     | 5    | 10   | 20   | 30   | 40   |
|                        | Thermal Expansion mm) |      |      |      |      |      |
| 1                      | 0.012                 | 0.06 | 0.12 | 0.24 | 0.36 | 0.48 |
| 5                      | 0.06                  | 0.3  | 0.6  | 1.2  | 1.8  | 2.4  |
| 10                     | 0.12                  | 0.6  | 1.2  | 2.4  | 3.6  | 4.8  |
| 20                     | 0.24                  | 1.2  | 2.4  | 4.8  | 7.2  | 9.6  |
| 30                     | 0.36                  | 1.8  | 3.6  | 7.2  | 11   | 15   |
| 40                     | 0.48                  | 2.4  | 4.8  | 9.6  | 14   | 20   |
| 50                     | 0.6                   | 3    | 6    | 12   | 18   | 24   |
| 60                     | 0.72                  | 3.6  | 7.2  | 14   | 22   | 29   |
| 70                     | 0.84                  | 4.2  | 8.4  | 17   | 25   | 34   |
| 80                     | 0.96                  | 4.8  | 9.6  | 19   | 29   | 39   |

#### Thermal Expansion Formula 1

$$\lambda = \alpha \times L \times T$$

$\lambda$  Thermal Expansion

$\alpha$  Linear Expansion  
coefficient for steel

$L$  Pipe length

$T$  Temperature difference

## Anchoring and Supports

When designing the hangers, supports and anchors for a grooved end pipe system, the piping designer must consider certain unique characteristics of the grooved type coupling in addition to many universal pipe hanger and support design factors. As with any pipe system, the hanger or support system must provide for

- 1) the weight of the pipe, couplings, fluid and pipe system components;
- 2) reduce stresses at pipe joints; and
- 3) permit required pipe system movement to relieve stress.

The following chart shows the maximum span between pipe hangers, supports and anchors.

### Max. Span between Supports (steel pipe)

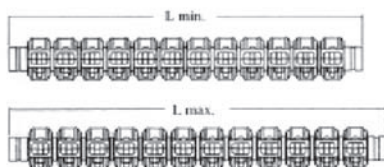
| Nominal Size (mm)                     |                     | 15  | 20  | 25  | 32  | 40  | 50 | 70 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|---------------------------------------|---------------------|-----|-----|-----|-----|-----|----|----|----|-----|-----|-----|-----|-----|-----|
| Max. Span<br>Between Supports<br>(mm) | Insulating Pipe     | 2   | 2.5 | 2.5 | 2.5 | 3   | 3  | 4  | 4  | 4.5 | 6   | 7   | 7   | 8   | 8.5 |
|                                       | Non-insulating Pipe | 2.5 | 3   | 3.5 | 4   | 4.5 | 5  | 6  | 6  | 6.5 | 7   | 8   | 9.5 | 11  | 12  |

## Flexible Couplings: Linear Movement and Angular Movement

| Dimensions   |                | Linear<br>Movemen | Angular Movement |                |
|--------------|----------------|-------------------|------------------|----------------|
| Nominal Size | Pipe O.D.      |                   |                  |                |
| mm/in        | mm/in          | mm/in             | (°)              | mm/in<br>in/ft |
| 25<br>1      | 33.7<br>1.315  | 2.0<br>0.0787     | 2° -45           | 48<br>0.58     |
| 32<br>1¼     | 42.4<br>1.660  | 2.0<br>0.0787     | 2° -10           | 38<br>0.45     |
| 40<br>1½     | 48.3<br>1.900  | 3.2<br>0.125      | 1° -54           | 33<br>0.40     |
| 50<br>2      | 60.3<br>2.375  | 3.2<br>0.125      | 1° -31           | 26<br>0.32     |
| 65<br>2½     | 73.0<br>2.875  | 3.2<br>0.125      | 1° -27           | 25<br>0.30     |
| 65<br>2½     | 76.1<br>3.000  | 3.2<br>0.125      | 1° -12           | 21<br>0.25     |
| 80<br>3      | 88.9<br>3.500  | 3.2<br>0.125      | 1° -02           | 18<br>0.22     |
| 100<br>4     | 108.0<br>4.250 | 3.2<br>0.125      | 1° -51           | 32<br>0.39     |
| 100<br>4     | 114.3<br>4.500 | 3.2<br>0.125      | 1° -36           | 28<br>0.34     |

| Dimensions   |                 | Linear<br>Movemen | Angular Movement |                |
|--------------|-----------------|-------------------|------------------|----------------|
| Nominal Size | Pipe O.D.       |                   |                  |                |
| mm/in        | mm/in           | mm/in             | (°)              | mm/in<br>in/ft |
| 125<br>5     | 133.0<br>5.250  | 3.2<br>0.125      | 1° -41           | 30<br>0.36     |
| 125<br>5     | 139.7<br>5.500  | 3.2<br>0.125      | 1° -19           | 23<br>0.28     |
| 125<br>5     | 141.3<br>5.563  | 3.2<br>0.125      | 1° -03           | 18<br>0.22     |
| 150<br>6     | 159.0<br>6.250  | 3.2<br>0.125      | 1° -18           | 23<br>0.27     |
| 150<br>6     | 165.1<br>6.500  | 3.2<br>0.125      | 1° -05           | 20<br>0.24     |
| 150<br>6     | 168.3<br>6.625  | 3.2<br>0.125      | 1° -05           | 19<br>0.23     |
| 200<br>8     | 219.1<br>8.625  | 3.2<br>0.125      | 0° -50           | 15<br>0.17     |
| 250<br>10    | 273<br>10.750   | 3.2<br>0.125      | 0° -40           | 12<br>0.14     |
| 300<br>12    | 323.9<br>12.750 | 3.2<br>0.125      | 0° -34           | 10<br>0.12     |

## Movement capability of couplings-expansion and contraction joints



| Nominal Size | Pipe O.D. mm | Maximum Allowable Movement m | L min. mm | L max. mm | Number of Couplings | Filled With Water Pressure |
|--------------|--------------|------------------------------|-----------|-----------|---------------------|----------------------------|
| 1            | 33.7         | 45                           | 617       | 662       | 10                  | 300                        |
| 1¼           | 42.4         | 45                           | 617       | 662       | 10                  | 300                        |
| 1½           | 48.3         | 45                           | 617       | 662       | 10                  | 300                        |
| 2            | 60.3         | 45                           | 617       | 662       | 10                  | 300                        |
| 2½           | 73.0         | 45                           | 617       | 662       | 10                  | 300                        |
| 76.1         | 76.1         | 45                           | 617       | 662       | 10                  | 300                        |
| 3            | 88.9         | 45                           | 617       | 662       | 10                  | 300                        |
| 4            | 114.3        | 47                           | 503       | 550       | 7                   | 300                        |
| 139.7        | 139.7        | 47                           | 503       | 550       | 7                   | 300                        |
| 5            | 141.3        | 47                           | 503       | 550       | 7                   | 300                        |
| 165.1        | 165.1        | 52                           | 503       | 550       | 7                   | 300                        |
| 6            | 168.3        | 52                           | 591       | 643       | 7                   | 300                        |
| 8            | 219.1        | 52                           | 591       | 643       | 7                   | 300                        |
| 10           | 273.0        | 52                           | 591       | 643       | 7                   | 300                        |
| 12           | 323.9        | 52                           | 591       | 643       | 7                   | 300                        |

## Engineering Test

| No. | Test Type                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Vacuum Test               | Grooved couplings, grooved reducing couplings, grooved split flanges, mechanical tees, and plain end couplings shall be able to withstand the effects of vacuum conditions encountered when sprinkler systems are drained. Samples of each nominal size and style of gasketed coupling and fitting shall be subjected to an internal vacuum of 25 inHg (85 kPa) for a duration of 5 minutes. Following the vacuum test, the test assembly shall be pneumatically pressurized from zero to 50 psi (345 kPa) while submerged in a water bath. There shall be no leakage or permanent deformation as a result of this test. |
| 2   | Hydrostatic Strength Test | All items shall be able to withstand an internal hydrostatic pressure equal to three-five times the rated working pressure without cracking, rupture, or permanent distortion. The test shall be conducted for a duration of 1 minute. (Test Size ≤6 Five time 8"-10" 4 time ≥12" 3 times)                                                                                                                                                                                                                                                                                                                               |

| No. | Test Type                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3   | Air Leakage Test                              | The coupling assembly shall be pressurised with air to 3 bar +0.5/-0 bar. The assembly shall be immersed in water to establish that there is no visible leakage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 4   | Moment Test                                   | The moment resistance shall be demonstrated while the test assembly is internally pressurized to the rated working pressure. Then a force was applied to the test assembly. There shall be no leakage, cracking, or fitting or coupling pull-off as a result of this test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5   | Hot Gasket Test                               | Standard gaskets shall be assembled to short lengths of pipe, and subjected to 275°F (135°C) for a duration of 45 days. After exposure, the test assembly shall be submerged in a water bath and subjected to an air under water leakage test from zero to 50 psi (0 to 345 kPa) in order to evaluate for leakage. After the air under water testing is completed, the test assembly shall be disassembled and the gasket shall not crack when squeezed together from any twodiametrically opposite points, or twisted into a figure-eight shape. The gasket shall then be visually inspected for signs of cracking, tearing, or excessive degradation as a result of this test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 6   | Cold Gasket Test                              | Standard gaskets shall be assembled to short lengths of pipe, and subjected to 275°F (135°C) for a duration of 45 days. After exposure, the test assembly shall be submerged in a water bath and subjected to an air under water leakage test from zero to 50 psi (0 to 345 kPa) in order to evaluate for leakage. After the air under water testing is completed, the test assembly shall be disassembled and the gasket shall not crack when squeezed together from any twodiametrically opposite points, or twisted into a figure-eight shape. The gasket shall then be visually inspected for signs of cracking, tearing, or excessive degradation as a result of this test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7   | Flame test                                    | The test shall be conducted in a room free from air draught. The test joint is mounted, U-bent on the test apparatus and filled with water. The angle corresponds to the angle documented as a result of the test Subsequently the test joint is drained. The fuel pan is placed centrally below the pipe joint Fuel is filled into the pan and the fuel is ignited Burning time 5 min for nominal diameters < DN 100; 8 min for nominal diameters ≥ DN 100 For reducer couplings the dimension of the smaller nominal diameter shall apply for the determination of the burning time. The flame shall be extinguished immediately once the burning time has expired (5 min or 8 min) and the test joint shall be cooled down. For cooling the test joint is immediately sprayed with water until steam formation is no longer visible, but at least for 3 min. The test joint is then filled completely with water and exposed to a test pressure which corresponds to the maximum permissible pressure and is checked visibly for leaks. Water may leak in form of drops, however, not in form of flowing water or a water spray. The test joint is then pressure relieved (force and internal pressure). |
| 8   | Cycling Pressure Resistance Water Hammer Test | Prior to the cycling, assemblies shall be subjected to a hydrostatic strength test to the rated working pressure, 175 psi (1205 kPa) minimum, for a duration of 5 minutes. Without leakage or cracking. Assemblies shall then be subjected to 20,000 cycles from zero pressure to the rated working pressure, 175 psi (1205 kPa) minimum. After cycling, the test assembly shall be tested Hydrostatic Strength and maintain 5minutes without leakage and cracking.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 9   | Friction Loss Determination                   | The construction and installation of the coupling or fitting shall be such that obstruction to the passage of water through the coupling or fitting body is minimal. The loss in pressure through the coupling or fitting shall not exceed 5.0 psi (35 kPa) at a flow producing a velocity of 20 ft/s (6.1 m/s) in Schedule 40 steel pipe of the same nominal diameter as the coupling or fitting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| No. | Test Type                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10  | Leakage Test - Assembly without Gasket | Leakage from a gasket-less coupling assembly or fitting shall not exceed that of an operating sprinkler head whose discharge coefficient (K-factor) is 5.3 to 5.8 gal/min(psi) <sup>1/2</sup> [76 - 84 L/min/(bar) <sup>1/2</sup> ]. This test is for nominal pipe sizes normally associated with over-head piping, less than or equal to 12 in. NPS (300 mm).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 11  | Torsion test                           | This test relates to pipe joints ≤ DN 40 only. The test joint is filled with water and exposed once to the maximum permissible pressure and is then pressure relieved again. Subsequently the test joint is fixed on one pipe end and an increasing torque is applied to the other pipe end. At the pressure-less test joint the pipe joint shall be able to transmit a torque of up to 80 Nm from one pipe end to the other pipe end without any torsion of the pipe ends against each other.                                                                                                                                                                                                                                                                                                                                                                     |
| 12  | Flexibility Test for Flexible Fittings | With the assembly pressurized to its rated pressure, a bending moment is to be applied to deflect the joint to the maximum angle specified by the manufacturer, while not less than 1 degree for nominal pipe diameters less than 8 inches (203.2 mm) or 0.5 degrees for 8 inches (203.2 mm) and larger. Observations are to be made for leakage or pipe damage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 13  | Seismic Evaluation                     | In order to evaluate the use of grooved couplings in Earthquake zones 50 through 500 years, test assemblies utilizing flexible couplings and short lengths of steel pipe, in the same nominal size, will be subjected to cyclic testing. The test will deflect the assembly to the manufacturer's maximum recommended angle in the forward and reverse direction for a total 15 cycles with the internal pressure equal to the rated working pressure. There shall be no leakage, cracking, or rupture as a result of this test.                                                                                                                                                                                                                                                                                                                                   |
| 14  | Lateral Displacement                   | The coupling shall not leak during any of the tests, within the manufacturer's stated limitations for angular deflection or lateral displacement of associated pipework.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 15  | Hydrostatic fluctuation pressure test  | The coupling assembly shall be pressurised with water to a gauge pressure of 10 bar ±1 bar for 2min, +30s/-0s to establish a datum. The assembly shall then be drained before being subjected to the greatest vacuum attainable to a maximum of 600mm a/mercury or -0.8bar +0bar/-0.1 bar for 2min +30s/-0s, and allowed to return to atmospheric pressure in not less than 5s. The assembly shall then be pressurised with water to 10 bar ±1bar for 2 min +30s/-0s. The assembly shall be examined for leakage throughout the test. The relative movement of each pipe shall be recorded at the greatest vacuum and at each pressure. There shall be no leakage.                                                                                                                                                                                                 |
| 16  | Fire Test                              | If a gasketed pipe coupling or fitting employs non-ferrous materials for its substantial structural components, or if in the judgment of FM Approvals, the design is otherwise suspect with respect to fire resistance, a fire test shall be conducted. A representative size assembled joint without a gasket shall be exposed to a 1000 °F (538 °C) fire environment for 5 minutes. The assembly shall be dry for the duration of this exposure. Immediately after the exposure, a water flow shall be introduced through the joint and sustained until the assembly is cool to the touch. No cracking or distortion of any component of the coupling or fitting shall occur. The coupling or fitting shall then be disassembled and the gasket installed. After reassembly, the joint shall be hydrostatically tested, as described in to the hydrostatic test. |

## Notes



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