

CLEAN WELD FITTINGS AND FACE SEAL BODIES



Western Valve & Fitting

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Livermore, CA 94551

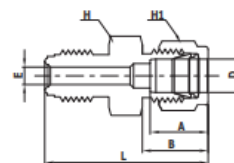
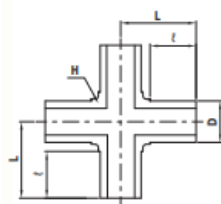
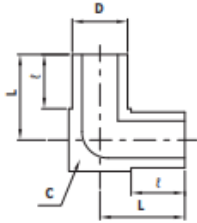


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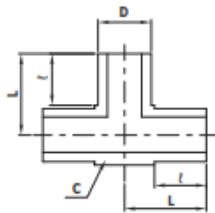
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Mini Elbow



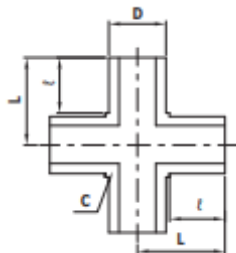
| Part No. | D Tube O.D. | Wall Thickness | ε | L | C Cubic Body | Working Pressure |
|------------|-------------|----------------|------------|-------------|--------------|------------------|
| Fractional | in. | | mm (in.) | | in. | psig (barg) |
| ME-2 | 1/8 | 0.028 | 6.4 (0.25) | 10.4 (0.41) | 5/16 | 8500 (585) |
| ME-4 | 1/4 | 0.035 | | 11.9 (0.47) | 7/16 | 3300 (227) |
| ME-6 | 3/8 | | | 13.5 (0.53) | 9/16 | 3700 (254) |
| ME-8 | 1/2 | 0.049 | | | | |

Mini Tee



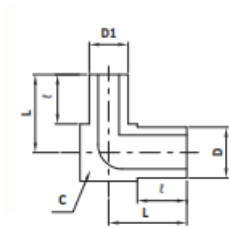
| Part No. | D Tube O.D. | Wall Thickness | ε | L | C Cubic Body | Working Pressure |
|------------|-------------|----------------|------------|-------------|--------------|------------------|
| Fractional | in. | | mm (in.) | | in. | psig (barg) |
| MT-2 | 1/8 | 0.028 | 6.4 (0.25) | 10.4 (0.41) | 5/16 | 8500 (585) |
| MT-4 | 1/4 | 0.035 | | 11.9 (0.47) | 7/16 | 3300 (227) |
| MT-6 | 3/8 | | | 13.5 (0.53) | 9/16 | 3700 (254) |
| MT-8 | 1/2 | 0.049 | | | | |

Mini Cross



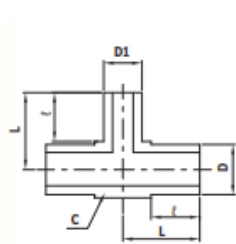
| Part No. | D Tube O.D. | Wall Thickness | ε | L | C Cubic Body | Working Pressure |
|------------|-------------|----------------|------------|-------------|--------------|------------------|
| Fractional | in. | | mm (in.) | | in. | psig (barg) |
| MC-2 | 1/8 | 0.028 | 6.4 (0.25) | 10.4 (0.41) | 5/16 | 8500 (585) |
| MC-4 | 1/4 | 0.035 | | 11.9 (0.47) | 7/16 | 3300 (227) |
| MC-6 | 3/8 | | | 13.5 (0.53) | 9/16 | 3700 (254) |
| MC-8 | 1/2 | 0.049 | | | | |

Mini Reducing Elbow



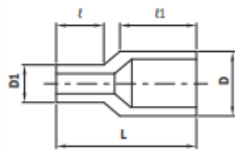
| Part No. | D Tube O.D. | Wall Thickness | D1 Tube O.D. | Wall Thickness | ℓ | L | C Cubic Body | Working Pressure |
|------------|-------------|----------------|--------------|----------------|------------|-------------|--------------|------------------|
| Fractional | in. | | | mm (in.) | | in. | psig (barg) | |
| MER-6-4 | 3/8 | 0.035 | 1/4 | 0.035 | 6.4 (0.25) | 11.9 (0.47) | 7/16 | 3300 (227) |
| MER-8-4 | 1/2 | 0.049 | | | | 13.5 (0.53) | 9/16 | 3700 (254) |
| MER-8-6 | | | 3/8 | | | | 3300 (227) | |

Mini Reducing Tee



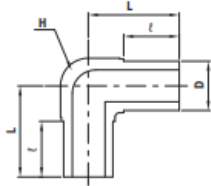
| Part No. | D Tube O.D. | Wall Thickness | D1 Tube O.D. | Wall Thickness | ℓ | L | C Cubic Body | Working Pressure |
|------------|-------------|----------------|--------------|----------------|------------|-------------|--------------|------------------|
| Fractional | in. | | | mm (in.) | | in. | psig (barg) | |
| MTR-6-4 | 3/8 | 0.035 | 1/4 | 0.035 | 6.4 (0.25) | 11.9 (0.47) | 7/16 | 3300 (227) |
| MTR-8-4 | 1/2 | 0.049 | | | | 13.5 (0.53) | 9/16 | 3700 (254) |
| MTR-8-6 | | | 3/8 | | | | 3300 (227) | |

Mini Reducing Union



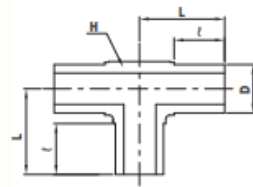
| Part No. | D Tube O.D. | Wall Thickness | D1 Tube O.D. | Wall Thickness | L | ℓ | ℓ1 | Working Pressure |
|------------|-------------|----------------|--------------|----------------|--------------|--------------|-------------|------------------|
| Fractional | in. | | | mm (in.) | | | psig (barg) | |
| MUR-4-2 | 1/4 | 0.035 | 1/8 | 0.028 | 19.05 (0.75) | 10.41 (0.41) | 6.35 (0.25) | 5100 (351) |
| MUR-6-4 | 3/8 | | 1/4 | 0.035 | | | | 3300 (227) |
| MUR-8-4 | 1/2 | 0.049 | 3/8 | | | | | 3700 (254) |
| MUR-8-6 | | | | | | | | 3300 (227) |

Long Elbow



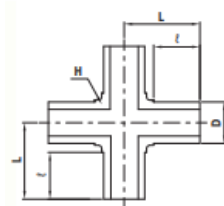
| Part No. | D Tube Size | Wall Thickness | ℓ | L | H Hex. Body | Working Pressure |
|------------|-------------|----------------|----------------|-------------|-------------|------------------|
| Fractional | in. | | mm (in.) | | in. | psig (barg) |
| MEL-4 | 1/4 | 0.035 | 19.0 (0.75) | 31.2 (1.23) | 7/16 | 5100 (351) |
| MEL-6 | 3/8 | | | 30.5 (1.20) | | 3300 (227) |
| MEL-8 | 1/2 | 0.049 | | 34.0 (1.34) | 11/16 | 3700 (254) |
| MEL-12 | 3/4 | | | 37.1 (1.46) | 15/16 | |
| MEL-16 | 1 | 0.065 | 24.4 (0.94) | 47.0 (1.85) | 1 1/4 | 2400 (165) |

Long Tee



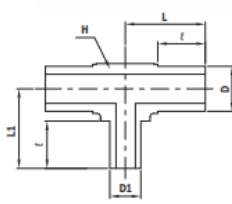
| Part No. | D Tube Size | Wall Thickness | ℓ | L | H Hex. Body | Working Pressure |
|------------|-------------|----------------|----------------|-------------|-------------|------------------|
| Fractional | in. | | mm (in.) | | in. | psig (barg) |
| MTL-4 | 1/4 | 0.035 | 19.0 (0.75) | 31.2 (1.23) | 7/16 | 5100 (351) |
| MTL-6 | 3/8 | | | 30.5 (1.20) | | 3300 (227) |
| MTL-8 | 1/2 | 0.049 | | 34.0 (1.34) | 11/16 | 3700 (254) |
| MTL-12 | 3/4 | | | 37.1 (1.46) | 15/16 | |
| MTL-16 | 1 | 0.065 | 24.4 (0.94) | 47.0 (1.85) | 1 1/4 | 2400 (165) |

Long Cross



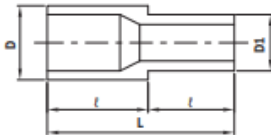
| Part No. | D Tube Size | Wall Thickness | ℓ | L | H Hex. Body | Working Pressure |
|------------|-------------|----------------|----------------|-------------|-------------|------------------|
| Fractional | in. | | mm (in.) | | in. | psig (barg) |
| MCL-4 | 1/4 | 0.035 | 0.75 (19.0) | 31.2 (1.23) | 7/16 | 5100 (351) |
| MCL-6 | 3/8 | | | 30.5 (1.20) | | 3300 (227) |
| MCL-8 | 1/2 | 0.049 | | 34.0 (1.34) | 11/16 | 3700 (254) |

Long Reducing Tee



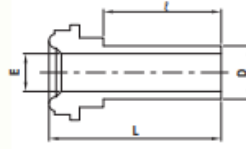
| Part No. | D Tube Size | Wall Thickness | D1 Tube Size | Wall Thickness | ϵ | L | L1 | H Hex. Body | Working Pressure |
|------------|-------------|----------------|--------------|----------------|-------------|-------------|-------------|-------------|------------------|
| Fractional | in. | | | mm (in.) | | in. | | psig (barg) | |
| MRT-6-4 | 3/8 | 0.035 | 1/4 | 0.035 | 0.75 (19.0) | 30.5 (1.20) | 31.2 (1.23) | 7/16 | 3300 (227) |
| MRT-8-4 | 1/2 | 0.049 | | | | 34.0 (1.34) | 34.0 (1.34) | | |
| MRT-8-6 | | | 3/8 | | | 34.3 (1.35) | 34.3 (1.35) | 15/16 | 2400 (165) |
| MRT-12-6 | 3/4 | 0.065 | 1/4 | | | 37.1 (1.46) | 37.6 (1.48) | | |
| MRT-12-4 | | | | | | | | | |

Long Reducing Union



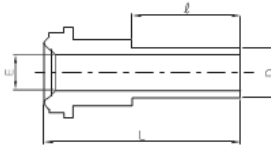
| Part No. | D Tube Size | Wall Thickness | D1 Tube Size | Wall Thickness | L | ϵ | Working Pressure |
|------------|-------------|----------------|--------------|----------------|-------------|-------------|------------------|
| Fractional | in. | | | mm (in.) | | psig (barg) | |
| MLUR-6-4 | 3/8 | 0.035 | 1/4 | 0.035 | 38.1 (1.50) | 19.0 (0.75) | 3300 (227) |
| MLUR-8-4 | 1/2 | 0.049 | | | | | 3700 (254) |
| MLUR-8-6 | | | 3/8 | | | | 3300 (227) |
| MLUR12-8 | 3/4 | 0.049 | 1/2 | 0.049 | | | 2400 (165) |
| MLUR-16-8 | 1 | 0.065 | 3/4 | | | | |
| MLUR-16-12 | | | | | | | |

Short Gland



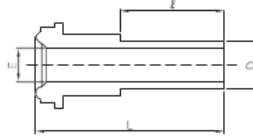
| Part No. | Size | D Tube Size | Wall Thickness | L | ℓ | E | Working Pressure | | |
|--------------|------|-------------|----------------|-------------|-------------|------------|------------------|------------|------------|
| | | | | | | | NI | S | CU |
| Fractional | | in. | | mm (in.) | | | psig (barg) | | |
| MSG-2-1.08 | 1/8 | 1/8 | 0.028 | 27.4 (1.08) | 19.1 (0.75) | 1.5 (0.06) | 8500 (585) | 8500 (585) | 6800 (468) |
| MSG-4-2-1.10 | 1/4 | | | 27.9 (1.1) | | | 5100 (351) | 5100 (351) | 5100 (351) |
| MSG-4-.60 | 1/4 | 1/4 | 0.035 | 15.2 (0.6) | 6.4 (0.25) | 4.6 (0.18) | 5100 (351) | 5100 (351) | 5100 (351) |
| MSG-4-.72 | | | | 18.3 (0.72) | 9.6 (0.38) | | | | |
| MSG-4-1.10 | | | | 27.9 (1.1) | 19.1 (0.75) | | | | |
| MSG-8-4-1.12 | 1/2 | 3/8 | 0.035 | 28.4 (1.12) | 19.1 (0.75) | 7.9 (0.31) | 3500 (241) | 4300 (296) | 2800 (192) |
| MSG-8-6-.62 | 1/2 | | | 15.7 (0.62) | 6.4 (0.25) | | 3300 (227) | 3300 (227) | 2600 (179) |
| MSG-8-6-1.12 | | 28.4 (1.12) | 19.1 (0.75) | | | | | | |
| MSG-8-.62 | 1/2 | 1/2 | 0.049 | 15.7 (0.62) | 6.4 (0.25) | 10.2 (0.4) | 3500 (241) | 3500 (241) | 2800 (192) |
| MSG-8-.74 | | | | 18.8 (0.74) | 9.6 (0.38) | | | | |
| MSG-8-1.12 | | | | 28.4 (1.12) | 19.1 (0.75) | | | | |

Long Gland



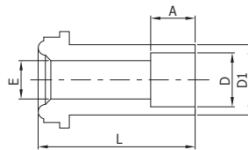
| Part No. | Head Size (in.) | Tube Size (D) | | L | | ℓ | | E | | Working Pressure |
|--------------|-----------------|---------------|-------|------|------|------|------|------|------|------------------|
| | | in. | mm | in. | mm | in. | mm | in. | mm | psig(bar) |
| MLG-2-1.42 | 1/8 | 1/8 | 3.17 | 1.42 | 36.1 | 0.75 | 19.1 | 0.06 | 1.5 | 8500(585) |
| MLG-4-1.20 | 1/4 | 1/4 | 6.35 | 1.20 | 30.5 | 0.25 | 6.4 | 0.18 | 4.6 | 5100(350) |
| MLG-4-1.31 | 1/4 | 1/4 | 6.35 | 1.31 | 33.3 | 0.36 | 9.1 | 0.18 | 4.6 | 5100(349) |
| MLG-4-1.32 | 1/4 | 1/4 | 6.35 | 1.32 | 33.5 | 0.38 | 9.6 | 0.18 | 4.6 | 5100(350) |
| MLG-4-1.7 | 1/4 | 1/4 | 6.35 | 1.70 | 43.2 | 0.75 | 19.1 | 0.18 | 4.6 | 5100(350) |
| MLG-8-1.8 | 1/2 | 3/8 | 9.53 | 1.29 | 32.8 | 0.25 | 6.4 | 0.31 | 7.9 | 3300(227) |
| MLG-8-6-1.29 | 1/2 | 3/8 | 9.53 | 1.79 | 45.5 | 0.75 | 19.1 | 0.31 | 7.9 | 3300(227) |
| MLG-8-6-1.79 | 1/2 | 1/2 | 12.7 | 1.29 | 32.8 | 0.25 | 6.4 | 0.40 | 10.2 | 3500(241) |
| MLG-8-1.29 | 1/2 | 1/2 | 12.7 | 1.41 | 35.8 | 0.38 | 9.6 | 0.40 | 10.2 | 3500(241) |
| MLG-8-1.41 | 1/2 | 1/2 | 12.7 | 1.79 | 45.5 | 0.75 | 19.1 | 0.40 | 10.2 | 3500(241) |
| MLG-8-1.79 | 1/2 | 1/4 | 6.35 | 1.80 | 45.7 | 0.75 | 19.1 | 0.18 | 4.6 | 4300(296) |
| MLG-12-2.03 | 3/4 | 3/4 | 19.05 | 2.03 | 51.6 | 0.75 | 19.1 | 0.65 | 16.5 | 2400(165) |
| MLG-12-2.32 | 1 | 1 | 25.4 | 2.32 | 58.9 | 0.75 | 19.1 | 0.87 | 22.1 | 2400(165) |

Male Gland



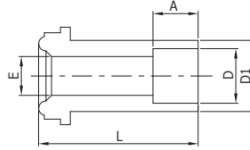
| Part No. | Head Size (in.) | Tube Size (D) | | E | | L | | e | | Working Pressure psig(bar) |
|-------------|-----------------|---------------|-------|------|------|------|------|------|------|-------------------------------|
| | | in. | mm | in. | mm | in. | mm | in. | mm | |
| MG-2-.70 | 1/8 | 1/8 | 3.17 | 0.06 | 1.5 | 0.70 | 17.8 | 0.28 | 7.1 | 11200(771) |
| MG-4-2-1.31 | 1/4 | 1/8 | 3.17 | 0.06 | 1.5 | 1.31 | 33.3 | 0.28 | 7.1 | 10000(689) |
| MG-4-1.31 | 1/4 | 1/4 | 6.35 | 0.12 | 3.0 | 1.31 | 33.3 | 0.41 | 10.4 | 10000(689) |
| MG-6-1.50 | 1/2 | 3/8 | 9.53 | 0.28 | 7.1 | 1.50 | 38.1 | 0.41 | 10.4 | 4300(296) |
| MG-8-1.50 | 1/2 | 1/2 | 12.7 | 0.4 | 10.2 | 1.50 | 38.1 | 0.50 | 12.7 | 3500(241) |
| MG-8-4-1.50 | 1/2 | 1/4 | 6.35 | 0.12 | 3.0 | 1.50 | 38.1 | 0.41 | 10.4 | 4300(296) |
| MG-12-2.00 | 3/4 | 3/4 | 19.05 | 0.53 | 13.5 | 2.00 | 50.8 | 0.62 | 15.7 | 3700(254) |
| MG-16-2.22 | 1 | 1 | 25.4 | 0.75 | 19.1 | 2.22 | 56.4 | 0.81 | 20.6 | 3000(206) |

Socket Gland



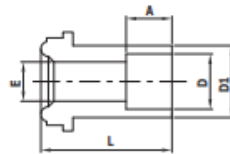
| Part NO. | R Size (in.) | D Tube size | L | A | E | D1 | Working Pressure | | |
|------------|--------------|-------------|-------------|------------|-------------|------------|------------------|-----------|------------|
| | | | | | | | NI | S | CU |
| Fractional | | In. | Mm (in.) | | | | Psig (barg) | | |
| MSWG-2-1 | 1\8 | 1\16 | 17.8 (0.70) | 2.5(0.10) | 1.3 (0.05) | 3.3 (0.13) | 9000(620) | 9000(620) | 7200 (496) |
| MSWG-2 | 1\8 | 1\8 | 17.8 (0.70) | 2.5(0.10) | 2.3 (0.09) | 5.1 (0.20) | 7100(489) | 7100(489) | 7100 (489) |
| MSWG-4 | 1\4 | 1\4 | 33.3 (1.31) | 7.1 (0.28) | 4.6 (0.18) | 8.9 (0.35) | 5500(378) | 5500(378) | 5500 (378) |
| MSWG-6 | 1\2 | 3\8 | 38.1 (1.50) | 7.9 (0.31) | 7.1 (0.28) | 15.2(0.60) | 3500(241) | 4300(296) | 2800 (192) |
| MSWG-8 | 1\2 | 1\2 | 38.1 (1.50) | 9.6 (0.38) | 10.2(0.40) | 15.2(0.60) | 3000(206) | 3000(206) | 2400 (165) |
| MSWG-12 | 3\4 | 3\4 | 50.8 (2.00) | 11.2(0.44) | 15.7(0.62) | 22.4(0.88) | 2800(192) | 2800(192) | 2200 (151) |
| MSWG-16 | 1 | 1 | 56.4 (2.22) | 15.7(0.62) | 22.1(0.87) | 30.2(1.19) | 2400(165) | 3000(206) | 1900 (130) |

Reducing Socket Gland



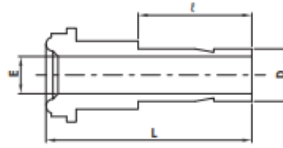
| Part NO. | R Size (in.) | D Tube size | L | A | E | D1 | Working Pressure | | |
|------------|--------------|-------------|-------------|------------|------------|------------|------------------|-----------|------------|
| | | | | | | | NI | S | CU |
| Fractional | | In. | Mm (in.) | | | | Psig (barg) | | |
| MSRG-4-2 | 1/4 | 1/8 | 33.3 (1.31) | 2.5 (0.10) | 2.3 (0.09) | 8.9 (0.35) | 8000(551) | 8000(551) | 8000 (551) |
| MSRG-8-4 | 1/2 | 1/4 | 38.1 (1.50) | 7.1 (0.28) | 4.6 (0.18) | 15.2(0.60) | 3500(241) | 3500(241) | 3500 (241) |

Short Socket Gland



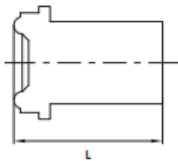
| Part No. | R Size (in.) | D Tube Size | L | A | E | D1 | Working Pressure | | |
|------------|--------------|-------------|-------------|------------|------------|------------|------------------|------------|------------|
| | | | | | | | NI | S | CU |
| Fractional | | in. | mm (in.) | | | | psig (barg) | | |
| MSSG-4-.50 | 1/4 | 1/4 | 12.7 (0.5) | 7.1 (0.28) | 4.6 (0.18) | 8.9 (0.35) | 5500 (378) | 5500 (378) | 5500 (378) |
| MSSG-4-.75 | | | 19.1 (0.75) | | | | | | |

Tube Adapter Gland



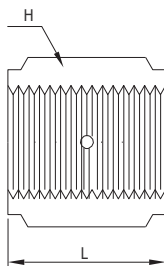
| Part No. | R Size (in.) | D Tube Size | L | ℓ | E | Working Pressure | | |
|------------|--------------|-------------|-------------|-------------|------------|------------------|-------------|------------|
| | | | | | | NI | S | CU |
| Fractional | | in. | mm (in.) | | | psig (barg) | | |
| MTAG-4 | 1/4 | 1/4 | 41.0 (1.62) | 16.2 (0.64) | 4.3 (0.17) | 8000 (551) | 10000 (689) | 6400 (440) |
| MTAG-6 | 1/2 | 3/8 | 46.0 (1.81) | 17.8 (0.70) | 6.8 (0.27) | 3500 (241) | 4300 (296) | 2800 (192) |
| MTAG-8 | | 1/2 | 49.3 (1.94) | 24.4 (0.96) | 9.4 (0.37) | | | |

Blind Gland



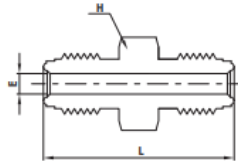
| Part No. | R Size (in.) | L |
|----------|--------------|-------------|
| | | mm (in.) |
| MBG-2 | 1/8 | 17.8 (0.7) |
| MBG-4 | 1/4 | 33.3 (1.31) |
| MBG-8 | 1/2 | 38.1 (1.50) |
| MBG-12 | 3/4 | 50.8 (2.00) |
| MBG-16 | 1 | 56.4 (2.22) |

Coupling



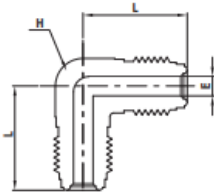
| Part No. | R Size (in.) | L | H Hex. |
|----------|--------------|-------------|--------|
| | | mm (in.) | in. |
| MFC-2 | 1/8 | 16.8 (0.66) | 7/16 |
| MFC-4 | 1/4 | 30.2 (1.19) | 3/4 |
| MFC-8 | 1/2 | 33.3 (1.31) | 1 1/16 |
| MFC-12 | 3/4 | 42.7 (1.68) | 1 1/2 |
| MFC-16 | 1 | 51.8 (2.04) | 1 3/4 |

Union



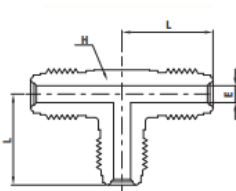
| Part No. | R Size (in.) | L | E | H, Hex | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|--------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | NI | S | CU |
| MU-2 | 1/8 | 28.7 (1.13) | 2.3 (0.09) | 3/8 | 9000 (620) | 11200 (771) | 7200 (496) |
| MU-4 | 1/4 | 39.4 (1.55) | 4.6 (0.18) | 5/8 | 8000 (551) | 10000 (689) | 6400 (440) |
| MU-8 | 1/2 | 46.7 (1.84) | 10.2 (0.40) | 15/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MU-12 | 3/4 | 62.0 (2.44) | 15.7 (0.62) | 1 5/16 | 3000 (206) | 3700 (254) | 2400 (165) |
| MU-16 | 1 | 65.8 (2.59) | 22.1 (0.87) | 1 5/8 | 2400 (165) | 3000 (206) | 1900 (130) |

Union Elbow



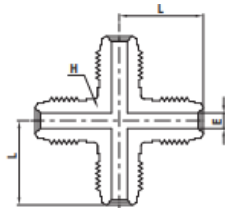
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|---------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | NI | S | CU |
| MMUE-2 | 1/8 | 22.6 (0.89) | 2.3 (0.09) | 7/16 | 9000 (620) | 11200 (771) | 7200 (496) |
| MMUE-4 | 1/4 | 27.2 (1.07) | 4.6 (0.18) | 1/2 | 8000 (551) | 10000 (689) | 6400 (440) |
| MMUE-8 | 1/2 | 36.8 (1.45) | 10.2 (0.40) | 13/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MMUE-12 | 3/4 | 48.8 (1.92) | 15.7 (0.62) | 1 1/4 | 3000 (206) | 3700 (254) | 2400 (165) |
| MMUE-16 | 1 | 50.8 (2.00) | 22.1 (0.87) | 1 11/16 | 2400 (165) | 3000 (206) | 1900 (130) |

Union Tee



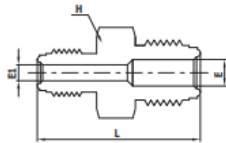
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|---------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | NI | S | CU |
| MMT-2 | 1/8 | 22.6 (0.89) | 2.3 (0.09) | 7/16 | 9000 (620) | 11200 (771) | 7200 (496) |
| MMT-4 | 1/4 | 27.2 (1.07) | 4.6 (0.18) | 1/2 | 8000 (551) | 10000 (689) | 6400 (440) |
| MMT-8 | 1/2 | 36.8 (1.45) | 10.2 (0.40) | 13/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MMT-12 | 3/4 | 48.8 (1.92) | 15.7 (0.62) | 1 1/4 | 3000 (206) | 3700 (254) | 2400 (165) |
| MMT-16 | 1 | 50.8 (2.00) | 22.1 (0.87) | 1 11/16 | 2400 (165) | 3000 (206) | 1900 (130) |

Union Cross



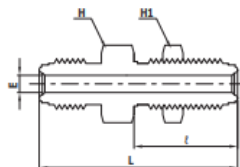
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|---------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | NI | S | CU |
| MMX-2 | 1/8 | 22.6 (0.89) | 2.3 (0.09) | 7/16 | 9000 (620) | 11200 (771) | 7200 (496) |
| MMX-4 | 1/4 | 27.2 (1.07) | 4.6 (0.18) | 1/2 | 8000 (551) | 10000 (689) | 6400 (440) |
| MMX-8 | 1/2 | 36.8 (1.45) | 10.2 (0.40) | 13/16 H | 3500 (241) | 4300 (296) | 2800 (192) |
| MMX-12 | 3/4 | 48.8 (1.92) | 15.7 (0.62) | 1 1/4 | 3000 (206) | 3700 (254) | 2400 (165) |
| MMX-16 | 1 | 50.8 (2.00) | 22.1 (0.87) | 1 11/16 | 2400 (165) | 3000 (206) | 1900 (130) |

Reducing Union



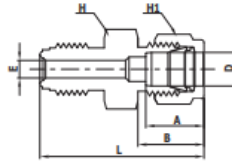
| Part No. | R Size (in.) | | L | E | E1 | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-----|-------------|-------------|------------|---------|------------------------------|-------------|------------|
| | | | mm (in.) | | | in. | NI | S | CU |
| MMRU-4-2 | 1/4 | 1/8 | 34.8 (1.37) | 4.6 (0.18) | 2.3 (0.09) | 5/8 | 8000 (551) | 10000 (689) | 6400 (440) |
| MMRU-8-4 | 1/2 | 1/4 | 43.4 (1.71) | 10.2 (0.40) | 4.6 (0.18) | 15/16 | 3500 (241) | 4300 (296) | 2800 (192) |

Bulkhead Union



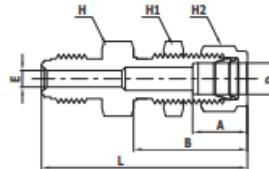
| Part No. | R Size (in.) | L | ℓ | E | H, Hex. | H1, Hex. | Panel Hole Size | Max. Panel Thickness | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|-------------|---------|----------|-----------------|----------------------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | in. | in. | in. (mm) | NI | S | CU | |
| MBU-4-L | 1/4 | 56.6 (2.23) | 33.0 (1.30) | 4.6 (0.18) | 3/4 | 3/4 | 19/32 (15.0) | 0.44 (11.2) | 8000 (551) | 10000 (689) | 6400 (440) |
| MBU-4-S | | 46.2 (1.82) | 25.1 (0.99) | | | | | 0.13 (3.3) | | | |
| MBU-8-L | 1/2 | 65.3 (2.57) | 37.6 (1.48) | 10.2 (0.40) | 1 1/16 | 1 1/16 | 29/32 (23.1) | 0.50 (12.7) | 3500 (241) | 4300 (296) | 2800 (192) |
| MBU-8-S | | 54.4 (2.14) | 28.2 (1.11) | | | | | 0.13 (3.3) | | | |

Tube Fitting Connector



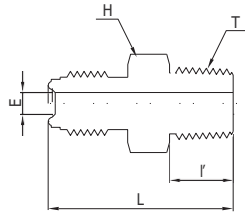
| Part No. | R Size (in.) | D Tube Size | L | B | A | E | H, Hex. | H1, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|-------------|-------------|-------------|---------|----------|------------------------------|-------------|------------|
| | | | | | | | | | mm (in.) | | |
| MUC-4-2 | 1/4 | 1/8 | 38.9 (1.53) | 15.2 (0.60) | 12.7 (0.50) | 2.3 (0.09) | 5/8 | 7/16 | 8000 (551) | 10000 (689) | 6400 (440) |
| MUC-4-4 | | 1/4 | 41.1 (1.62) | 17.8 (0.70) | 15.2 (0.60) | 4.6 (0.18) | | | | | |
| MUC-8-6 | 1/2 | 3/8 | 46.7 (1.84) | 19.3 (0.76) | 16.8 (0.66) | 7.1 (0.28) | 15/16 | 11/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MUC-8-8 | | 1/2 | 49.5 (1.95) | 21.8 (0.86) | 22.9 (0.90) | 10.2 (0.40) | | | | | |

Tube Fitting Bulkhead Connector



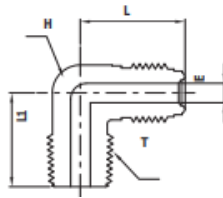
| Part No. | R Size (in.) | D Tube Size | L | B | A | E | H, Hex. | H1, Hex. | H2, Hex. | Panel Hole Size | Max. Panel Thickness | Working Pressure psig (barg) | | |
|----------|--------------|-------------|-------------|-------------|-------------|-------------|---------|----------|----------|-----------------|----------------------|------------------------------|-------------|------------|
| | | | | | | | | | | | | mm (in.) | | |
| MBUC-4-L | 1/4 | 1/4 | 57.2 (2.25) | 33.5 (1.32) | 15.2 (0.60) | 4.6 (0.18) | 5/8 | 5/8 | 9/16 | 15/32 (11.9) | 10.2 (0.4) | 8000 (551) | 10000 (689) | 6400 (440) |
| MBUC-4-S | | | 47.8 (1.88) | 26.7 (1.05) | | | | | | | 3.3 (0.13) | | | |
| MBUC-8-6 | 1/2 | 3/8 | 64.5 (2.54) | 36.8 (1.45) | 16.8 (0.66) | 7.1 (0.28) | 15/16 | 3/4 | 11/16 | 19/32 (15.0) | 11.2 (0.44) | 3500 (241) | 4300 (296) | 2800 (192) |
| MBUC-8-8 | | 1/2 | 69.6 (2.74) | 41.9 (1.65) | 22.9 (0.90) | 10.2 (0.40) | | 15/16 | 7/8 | 25/32 (19.8) | 12.7 (0.5) | | | |

Male NPT Connector

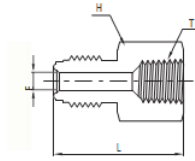


| Part No. | R Size (in.) | NPT T | L | ℓ | E | H, Hex. | Working Pressure psig (barg) | | | |
|------------|--------------|-------|-------------|-------------|-------------|---------|------------------------------|-------------|------------|-------------|
| | | | | | | | mm (in.) | | | NI |
| MMC-2-1N | 1/8 | 1/16 | 27.2 (1.07) | 9.6 (0.38) | 2.3 (0.09) | 3/8 | 9000 (620) | 9000 (620) | 7200 (496) | |
| MMC-2-2N | | 1/8 | | | | | | | | 7/16 |
| MMC-4-2N | 1/4 | 1/4 | 33.3 (1.31) | 14.2 (0.56) | 4.6 (0.18) | 5/8 | 8000 (551) | 10000 (689) | 6400 (440) | |
| MMC-4-4N | | | 37.8 (1.49) | | | | | | | |
| MMC-8-4N | 1/2 | 3/8 | 41.9 (1.65) | 19.1 (0.75) | 7.1 (0.28) | 15/16 | 3500 (241) | 4300 (296) | 2800 (192) | |
| MMC-8-6N | | | | | | | | | | 9.6 (0.38) |
| MMC-8-8N | | | | | | | | | | 10.2 (0.40) |
| MMC-12-12N | 3/4 | 3/4 | 55.6 (2.19) | 19.1 (0.75) | 15.7 (0.62) | 1 5/16 | 3000 (206) | 3700 (254) | 2400 (165) | |
| MMC-16-16N | 1 | 1 | 62.7 (2.47) | 23.9 (0.94) | 22.1 (0.87) | 1 5/8 | 2400 (165) | 3000 (206) | 1900 (130) | |

Male NPT Elbow



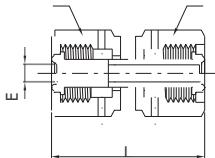
| Part No. | R Size (in.) | NPT T | L | L1 | ℓ | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------|-------------|-------------|-------------|-------------|---------|------------------------------|-------------|------------|
| | | | | | | | | mm (in.) | | |
| MME-4-2N | 1/4 | 1/8 | 1.07 (27.2) | 22.1 (0.87) | 9.6 (0.38) | 4.6 (0.18) | 1/2 | 8000 (551) | 10000 (689) | 6400 (440) |
| MME-4-4N | | 1/4 | | 26.7 (1.05) | | | | | 14.2 (0.56) | 8000 (551) |
| MME-8-6N | 1/2 | 3/8 | 1.45 (36.8) | 32.0 (1.26) | 19.1 (0.75) | 10.2 (0.40) | 13/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MME-8-8N | | 1/2 | | 36.8 (1.45) | | | | | | |



Female NPT Connector

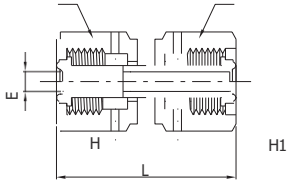
| Part No. | R Size (in.) | NP T T | L | E | H, Hex. | Working Pressure psig (barg) | | |
|------------|--------------|--------|-------------|-------------|---------|------------------------------|------------|------------|
| | | | mm (in.) | | in. | NI | S | CU |
| MFC-2-1N | 1/8 | 1/16 | 27.9 (1.10) | 2.3 (0.09) | 7/16 | 6700 (461) | 6700 (461) | 6700 (461) |
| MFC-2-2N | | 1/8 | 30.2 (1.19) | | 9/16 | 6500 (447) | 6500 (447) | 6500 (447) |
| MFC-4-2N | 1/4 | 1/4 | 35.8 (1.41) | 4.6 (0.18) | 5/8 | 8000 (551) | 8000 (551) | 6400 (440) |
| MFC-4-4N | | | 39.1 (1.54) | | 3/4 | 6600 (454) | 6600 (454) | 5200 (358) |
| MFC-8-6N | 1/2 | 3/8 | 44.7 (1.76) | 10.2 (0.40) | 15/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MFC-8-8N | | 1/2 | 50.5 (1.99) | | 1 1/16 | | | |
| MFC-12-12N | 3/4 | 3/4 | 59.9 (2.36) | 15.7 (0.62) | 1 5/16 | 3000 (206) | 3700 (254) | 2400 (165) |
| MFC-16-16N | 1 | 1 | 63.8 (2.51) | 22.1 (0.87) | 1 5/8 | 2400 (165) | 3000 (206) | 1900 (130) |

Swivel Female Union



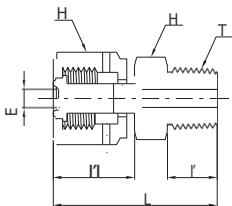
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|------------|---------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | NI | S | CU |
| MFSU-4 | 1/4 | 43.4 (1.71) | 4.6 (0.18) | 3/4 | 8000 (551) | 10000 (689) | 6400 (440) |
| MFSU-8 | 1/2 | 46.7 (1.84) | 10.2 (0.4) | 1 1/16 | 3500 (241) | 4300 (296) | 2800 (192) |

Swivel Female Union



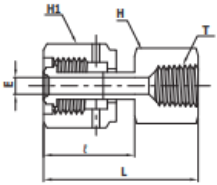
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|------------|---------|------------------------------|-------------|------------|
| | | mm (in.) | in. | in. | NI | S | CU |
| MFSU-4 | 1/4 | 43.4 (1.71) | 4.6 (0.18) | 3/4 | 8000 (551) | 10000 (689) | 6400 (440) |
| MFSU-8 | 1/2 | 46.7 (1.84) | 10.2 (0.4) | 1 1/16 | 3500 (241) | 4300 (296) | 2800 (192) |

Swivel Male NPT Connector



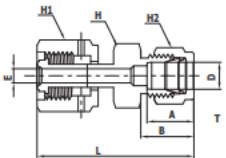
| Part No. | R Size (in.) | NPT | L | l | l1 | E | H, Hex. | H1, Hex. | Working Pressure psig (barg) | | |
|-----------|--------------|-----|-------------|-------------|-------------|-------------|---------|----------|------------------------------|------------|------------|
| | | | mm (in.) | mm (in.) | mm (in.) | in. | in. | NI | S | CU | |
| MFSC-4-2N | 1/4 | 1/8 | 1.58 (40.1) | 9.6 (0.38) | 24.1 (0.95) | 4.6 (0.18) | 7/16 | 3/4 | 8000 (551) | 8000 (551) | 6400 (440) |
| MFSC-4-4N | | 1/4 | 1.79 (45.5) | 14.2 (0.56) | 23.4 (0.92) | | 9/16 | | | | |
| MFSC-8-6N | 1/2 | 3/8 | 1.89 (48.0) | 19.1 (0.75) | 25.4 (1.00) | 10.2 (0.40) | 11/16 | 1 1/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MFSC-8-8N | | 1/2 | 2.09 (53.1) | | 25.6 (1.01) | | 7/8 | | | | |

Swivel Female NPT Connector



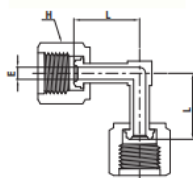
| Part No. | R Size (in.) | NPT T | L | ℓ | E | H, Hex. | H, Hex. | Working Pressure psig (barg) | | |
|------------|--------------|-------|-------------|-------------|-------------|-------------|-------------|------------------------------|------------|------------|
| | | | mm (in.) | | | in. | | NI | S | CU |
| | | | MFSFC-4-4N | 1/4 | 1/4 | 45.0 (1.77) | 23.4 (0.92) | 4.6 (0.18) | 3/4 | 3/4 |
| MFSFC-8-6N | 1/2 | 3/8 | 49.5 (1.95) | 26.9 (1.06) | 10.2 (0.40) | 7/8 | 1 1/16 | 3500 (241) | 4300 (296) | 2800 (192) |
| MFSFC-8-8N | | 1/2 | 55.4 (2.18) | 26.4 (1.04) | | 1 1/16 | | | | |

Swivel Tube Fitting Connector



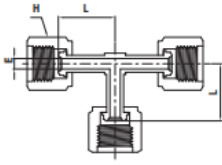
| Part No. | R Size (in.) | D Tube Size | E | L | A | B | H, Hex. | H1, Hex. | H2, Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|----------|-----|-----|------------|-------------|------------|------------|------------------------------|-----|------|
| | | | mm (in.) | | | | in. | | | NI | S | CU |
| | | | MFCS-4 | 1/4 | 1/4 | 4.6 (0.18) | 49.3 (1.94) | 15.2 (0.6) | 17.8 (0.7) | 1/2 | 3/4 | 9/16 |

Swivel Elbow



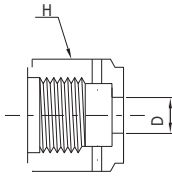
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------------------|----------|-----|-------------|------------------------------|-----|------------|
| | | mm (in.) | | in. | NI | S | CU |
| | | MFSE-4 | 1/4 | 25.4 (1.00) | 4.6 (0.18) | 3/4 | 5100 (351) |
| MFSE-8 | CONTACT FOR AVAILABILITY | | | | | | |
| MFSE-12 | CONTACT FOR AVAILABILITY | | | | | | |
| MFSE-16 | CONTACT FOR AVAILABILITY | | | | | | |

Swivel Tee



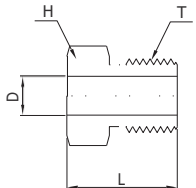
| Part No. | R Size (in.) | L | E | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------------------------|----------------|------------|---------|---------------------------------|---------------|---------------|
| | | mm (in.) | | in. | NI | S | CU |
| MFST-4 | 1/4 | 25.4 (1.00) | 4.6 (0.18) | 3/4 | 5100 (351) | 5100 (351) | 5100 (351) |
| MFST-8 | CONTACT FOR AVAILABILITY | | | | | | |
| MFST-12 | CONTACT FOR AVAILABILITY | | | | | | |
| MFST-16 | CONTACT FOR AVAILABILITY | | | | | | |

Female Nut



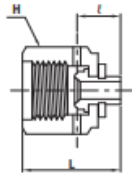
| Part No. | R Size (in.) | L | D | H, Hex. |
|----------|--------------|-------------|-------------|---------|
| | | mm (in.) | | in. |
| MFN-2 | 1/8 | 13.5 (0.53) | 5.3 (0.21) | 7/16 |
| MFN-4 | 1/4 | 20.6 (0.81) | 9.1 (0.36) | 3/4 |
| MFN-8 | 1/2 | 22.4 (0.88) | 15.5 (0.61) | 1 1/16 |
| MFN-12 | 3/4 | 28.4 (1.12) | 22.6 (0.89) | 1 1/2 |
| MFN-16 | 1 | 34.0 (1.34) | 30.5 (1.20) | 1 3/4 |

Male Nut



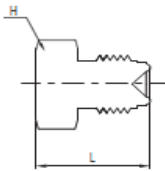
| Part No. | R Size (in.) | L | D | H, Hex. |
|----------|--------------|-------------|-------------|---------|
| | | mm (in.) | | in. |
| MMN-2 | 1/8 | 12.7 (0.50) | 5.3 (0.21) | 3/8 |
| MMN-4 | 1/4 | 18.0 (0.71) | 9.1 (0.36) | 5/8 |
| MMN-8 | 1/2 | 20.6 (0.81) | 15.5 (0.61) | 15/16 |
| MMN-10 | 5/8 | | 18.8 (0.74) | 1 1/16 |
| MMN-12 | 3/4 | 25.4 (1.00) | 22.6 (0.89) | 1 5/16 |
| MMN-16 | 1 | 30.2 (1.19) | 30.5 (1.20) | 1 5/8 |

Plug



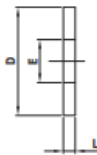
| Part No. | R Size (in.) | A (L) | ℓ | H, Hex. |
|----------|--------------|-------------|-------------|---------|
| | | mm (in.) | | in. |
| MP-2 | 1/8 | 16.0 (0.63) | 7.6 (0.30) | 7/16 |
| MP-4 | 1/4 | 23.9 (0.94) | 11.2 (0.44) | 3/4 |
| MP-8 | 1/2 | 25.6 (1.01) | 11.4 (0.45) | 1 1/16 |
| MP-12 | 3/4 | 32.8 (1.29) | 13.7 (0.54) | 1 1/2 |
| MP-16 | 1 | 39.1 (1.54) | 16.0 (0.63) | 1 3/4 |

Cap



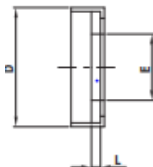
| Part No. | R Size (in.) | L | H, Hex. |
|----------|--------------|-------------|---------|
| | | mm (in.) | in. |
| MC-2 | 1/8 | 17.3 (0.68) | 3/8 |
| MC-4 | 1/4 | 23.4 (0.92) | 5/8 |
| MC-8 | 1/2 | 27.4 (1.08) | 15/16 |
| MC-12 | 3/4 | 36.3 (1.43) | 1 5/16 |
| MC-16 | 1 | 38.6 (1.52) | 1 5/8 |

Gasket



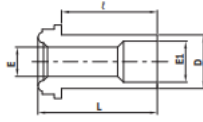
| Part No. | R Size (in.) | E | D | L Thickness |
|------------|--------------|-------------|-------------|-------------|
| | | mm (in.) | | |
| MG-2-SS-U | 1/8 | 2.3 (0.09) | 6.6 (0.26) | 0.8 (0.03) |
| MG-4-SS-U | 1/4 | 5.6 (0.22) | 11.9 (0.47) | |
| MG-8-SS-U | 1/2 | 11.2 (0.44) | 19.8 (0.78) | |
| MG-12-SS-U | 3/4 | 16.8 (0.66) | 29.0 (1.14) | |
| MG-16-SS-U | 1 | 22.6 (0.89) | 35.6 (1.40) | |

Gasket Retainer



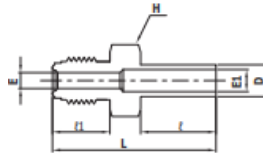
| Part No. | R Size (in.) | E | D | L Thickness |
|----------|--------------|-------------|---------------------------|-------------|
| | | mm (in.) | | |
| GR-4 | 1/4 | 5.6 (0.22) | 11.9 (0.47) → 12.7 (0.5) | 0.8 (0.03) |
| GR-8 | 1/2 | 11.2 (0.44) | 19.2 (0.76) → 20.1 (0.79) | |
| GR-12 | 3/4 | 16.8 (0.66) | 28.5 (1.12) → 29 (1.14) | |
| GR-16 | 1 | 22.6 (0.89) | 35.1 (1.38) → 35.6 (1.4) | |

High Flow Gland



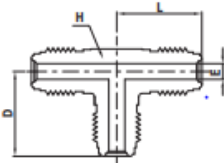
| Part No. | R Size (in.) | D Tube Size | WALL THICKNESS | L | A | E | E1 | Working Pressure psig (barg) | | |
|-------------|--------------|-------------|----------------|------------|-------------|------------|------------|------------------------------|------------|------------|
| | | | | | | | | mm (in.) | | |
| MHFG-4-.60 | 1/4 | 3/8 | 0.89(0.035) | 15.2(0.60) | 10.4 (0.41) | 6.4 (0.25) | 7.9 (0.31) | 3300 (227) | 3300 (227) | 3300 (227) |
| MHFG-4-1.19 | | | | 30.2(1.19) | 25.4 (1.00) | | | | | |
| MHFG-4-1.31 | | | | 33.3(1.31) | 28.4 (1.12) | | | | | |

High Flow Reducer



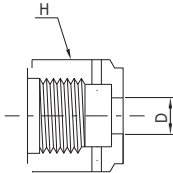
| Part No. | R Size | D Tube Size | L | ℓ | ℓ1 | E | E1 | H, Hex. | Working Pressure psig (barg) | | |
|----------|--------|-------------|-------------|-------------|-------------|------------|------------|---------|------------------------------|------------|------------|
| | | | | | | | | | mm (in.) | | |
| HFR-4-6 | 1/4 | 3/8 | 42.7 (1.68) | 19.1 (0.75) | 15.7 (0.62) | 6.4 (0.25) | 7.9 (0.31) | 5/8 | 3300 (227) | 3300 (227) | 3300 (227) |

High Flow Union Tee



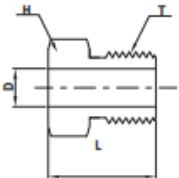
| Part No. | R Size (in.) | L | E | H Hex. | Working Pressure psig (barg) | | |
|----------|--------------|-------------|------------|--------|------------------------------|-------------|------------|
| | | mm (in.) | | in. | NI | S | CU |
| HFUT-4 | 1/4 | 27.2 (1.07) | 6.4 (0.25) | 1/2 | 8000 (551) | 10000 (689) | 6400 (440) |

High Flow Female Nut



| Part No. | R Size (in.) | L | D | H, Hex. |
|----------|--------------|-------------|-------------|---------|
| | | mm (in.) | | in. |
| HFFN-4SR | 1/4 | 20.6 (0.81) | 9.9 (0.39) | 3/4 |
| HFFN-4 | | | 11.7 (0.46) | |

High Flow Male Nut



| Part No. | R Size (in.) | L | D | H, Hex. |
|----------|--------------|-------------|------------|---------|
| | | mm (in.) | | in. |
| HFMN-4SR | 1/4 | 18.0 (0.71) | 9.9 (0.39) | 5/8 |

UHP PROCESS & MATERIAL SPECIFICATION

VERIFICATION METHODS AND SPECIFICATIONS

| Parameter | Specification | Test Method |
|--|---|---|
| Chromium-to-iron (Cr/Fe) | <ul style="list-style-type: none"> Ratio ≥ 2.0 Ratio ≥ 1.0 at 10Å after subtraction of Carbon layer | ESCA (Electron Spectroscopy for Chemical Analysis) per SEMATECH 901204038, also called XPS (X-ray Photoelectron Spectroscopy) |
| Chromium oxide-to-iron oxide (CrO/FeO) | Ratio ≥ 3.0 | |
| Oxide thickness | $\geq 20\text{\AA}$ after subtraction of Carbon layer | AES (Auger Electron Spectroscopy) per SEMATECH 910605738 |
| Carbon Layer | $\leq 10\text{\AA}$ (no evidence of detached iron oxide layer) | |
| Surface Contamination | (In Atomic Percentage) <ul style="list-style-type: none"> Carbon < 30.0 Sulfur < 1.0 Phosphorus < 2.0 Silicon < 1.5 Nitrogen < 2.0 | |
| Surface Defects | <ul style="list-style-type: none"> ≤ 25 defects over 5 sample areas ≤ 15 defects total average | SEM (Scanning Electron Microscopy) per SEMATECH 901204018 |
| Total Anionic Contamination | <ul style="list-style-type: none"> Total anionic contamination added to the test water ≤ 1 ppm Individual anionic contaminant added to the test water ≤ 0.2 ppm | ASTM D 4327 (Total Anions) |
| Appearance | All parts will be highly reflective mirror-like with consistent roughness and a uniform lustrous finish. | Finished parts are visually inspected by the unaided eye using additional bright light |

PACKAGING AND IDENTIFICATION

Parts are laser engraved with material heat codes for material traceability. All fittings are packaged in our cleanroom to keep them free from outside contaminants during shipping. Identification and traceability information is visible without opening the product package to reduce the chances for contamination of the product and the system to which it is being assembled.

Packaging and identification procedures meet the requirements:

- SEMI E49.6, "Guide for Subsystem Assembly and Testing Procedures-Stainless Steel Systems"

CLEANING AND DRYING

The DI water cleaning system is closed to the outside environment and thereby limits particle contamination. Products move through a series of ultrasonic washing and multistage DI water rinse tanks directly into the cleanroom for drying, final inspection and packaging.

The DI Water characteristics are based on the guidelines of:

- SEMI E49.6, "Guide for Subsystem Assembly and Testing Procedures-Stainless Steel Systems".

DI WATER CHARACTERISTICS

| | |
|----------------------------|--|
| Resistivity | $\geq 17.5 \text{ M}\Omega \cdot \text{cm}$ at 25°C (77°F) |
| Total organic carbon (TOC) | ≤ 20 ppb |
| Silica | ≤ 5 ppb |
| Bacteria | ≤ 10 colonies per 100 ml |
| Hot DI water temperature | 167°F (75°C) minimum |

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