

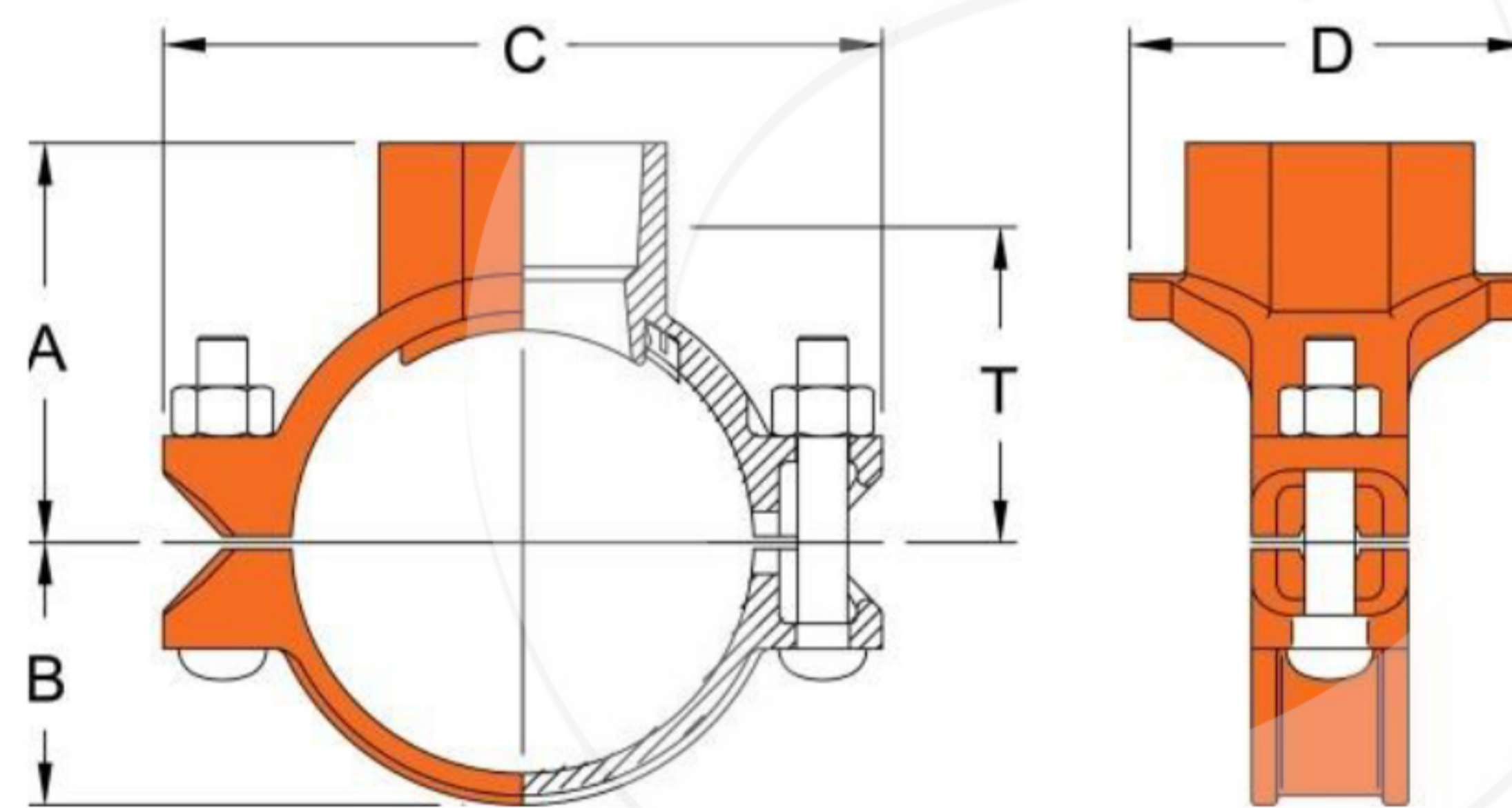
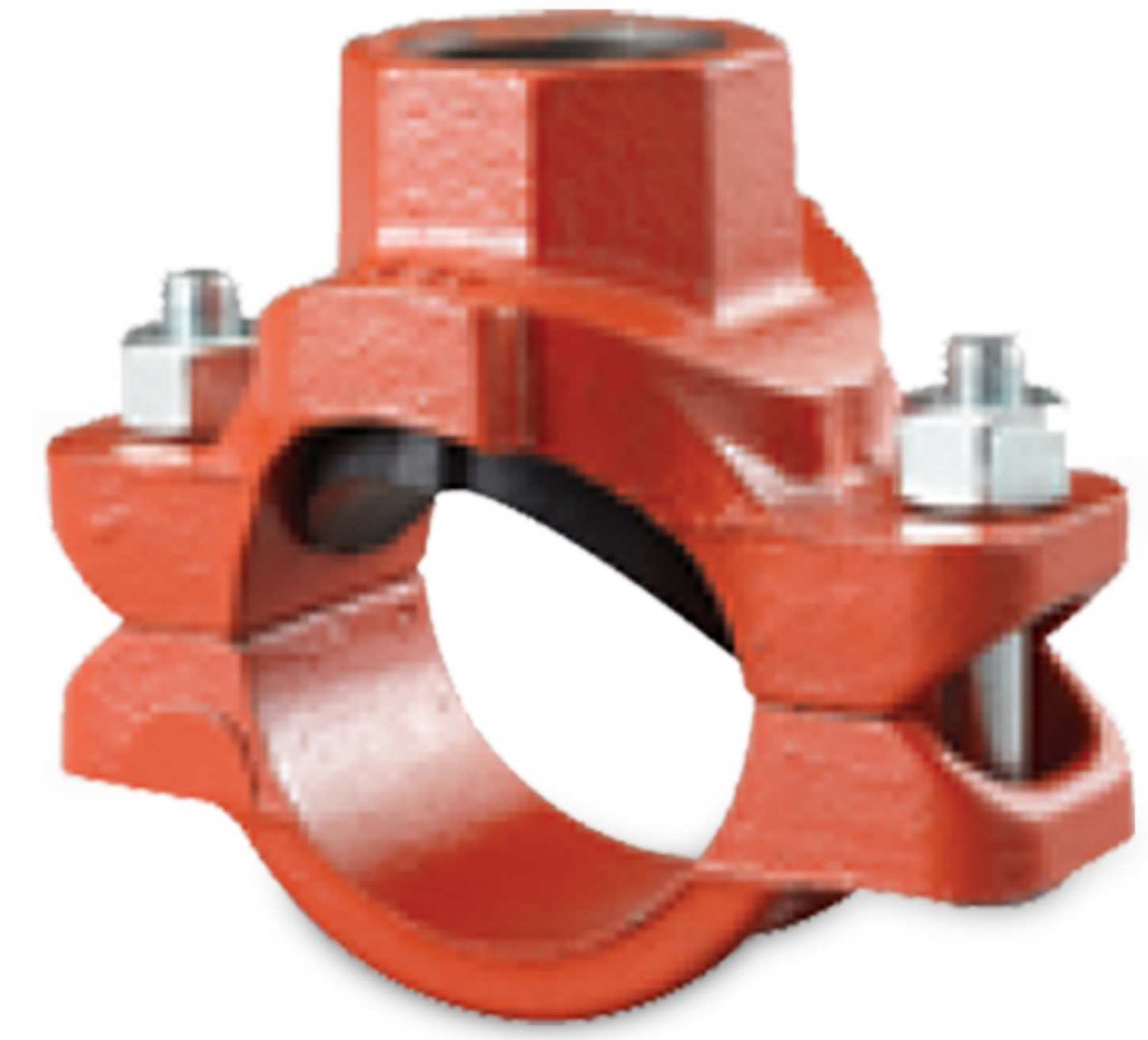
## MODEL M21 MECHANICAL TEE, FEMALE THREADED OUTLET

The **Shurjoint** Model M21 features an advanced design and when mounted on hole cut pipe the Model M21 provides a fast and easy mid-pipe threaded branch outlet. Threads are NPT per ANSI B1.20 or BSPT per ISO 7. By utilizing the Model M21 you can eliminate the need for welding or the use of multiple fittings. The M21 Mechanical Tee is comprised of upper and lower ductile iron housing segments, a grade "E" EPDM rubber gasket (Model M21 & M22 gaskets are interchangeable) and plated track bolts and nuts.

Mechanical tees are supplied with our standard painted finishes, i.e. orange or RAL3000 red. Optional finishes such as hot dipped zinc galvanized and custom epoxy coatings are also available.

**Shurjoint** mechanical tees: Model M21, M22, 7721 & 7722 can also be used on applicable IPS size HDPE pipe. When used in conjunction with HDPE pipe the pressure rating would be the lower of the fitting or pipe rating. Please note **Shurjoint** mechanical tees are not recommended for use on PVC plastic pipe.

**Important Note:** Model M21 housing segments are not compatible and should not be used with other **Shurjoint** mechanical tee housing segments such as Model 7721 & 7722 mechanical tees.



Full warranty terms can be found on [www.shurjoint.com](http://www.shurjoint.com)

### Model M21 Mechanical Tee, Female Threaded Outlet

Nominal Size Run x Branch	Pipe O.D.	Max. Working Pressure (CWP)*	Hole Dia. $\bar{T}$	Dimensions						Bolt Size	Weight
				T $\neq$	A	B	C	D			
in mm	in mm	PSI Bar	in mm	in mm	in mm	in mm	in mm	in mm	in mm	Lbs Kgs	
2 x 1/2 50 x 15	2.375 x 0.840 60.3 x 21.3	300 20	1.50 38	1.97 50	2.50 63.5	1.50 38.1	4.56 115.9	3.19 81	3/8 x 2 1/8 M10 x 55	2.18 0.99	
2 x 3/4 50 x 20	2.375 x 1.050 60.3 x 26.7	300 20	1.50 38	1.97 50	2.50 63.5	1.50 38.1	4.56 115.9	3.19 81	3/8 x 2 1/8 M10 x 55	2.22 1.01	
2 x 1 50 x 25	2.375 x 1.315 60.3 x 33.4	300 20	1.50 38	1.85 47	2.50 63.5	1.50 38.1	4.56 115.9	3.19 81	3/8 x 2 1/8 M10 x 55	2.40 1.09	
2 x 1 1/4 50 x 32	2.375 x 1.660 60.3 x 42.2	300 20	[1.75] [45]	2.05 52	2.87 73.0	1.50 38.1	4.56 115.9	3.31 84	3/8 x 2 1/8 M10 x 55	2.77 1.26	
2 x 1 1/2 50 x 40	2.375 x 1.900 60.3 x 48.3	300 20	[1.75] [45]	2.08 52	3.00 76.2	1.50 38.1	4.56 115.9	3.31 84	3/8 x 2 1/8 M10 x 55	3.01 1.37	
2 1/2 x 1/2 65 x 15	2.875 x 0.840 73.0 x 21.3	300 20	1.50 38	2.20 56	2.75 69.9	1.75 44.5	5.56 141.3	3.19 81	1/2 x 2 3/8 M12 x 60	2.60 1.20	
2 1/2 x 3/4 65 x 20	2.875 x 1.050 73.0 x 26.7	300 20	1.50 38	2.20 56	2.75 69.9	1.75 44.5	5.56 141.3	3.19 81	1/2 x 2 3/8 M12 x 60	2.70 1.20	
2 1/2 x 1 65 x 25	2.875 x 1.315 73.0 x 33.4	300 20	1.50 38	2.09 53	2.75 69.9	1.75 44.5	5.56 141.3	3.19 81	1/2 x 2 3/8 M12 x 60	2.86 1.30	
2 1/2 x 1 1/4 65 x 32	2.875 x 1.660 73.0 x 42.2	300 20	2.00 51	2.28 58	3.00 76.2	1.75 44.5	5.56 141.3	3.70 94	1/2 x 2 3/8 M12 x 60	3.21 1.46	
2 1/2 x 1 1/2 65 x 40	2.875 x 1.900 73.0 x 48.3	300 20	2.00 51	2.28 58	3.00 76.2	1.75 44.5	5.56 141.3	3.70 94	1/2 x 2 3/8 M12 x 60	3.43 1.56	

Model M21 Mechanical Tee, Female Threaded Outlet										
Nominal Size Run x Branch	Pipe O.D.	Max. Working Pressure (CWP)*	Hole Dia. F +3.2, -0 / +0.13, -0	Dimensions					Bolt Size	Weight
				T#	A	B	C	D		
in mm	in mm	PSI Bar	in mm	in mm	in mm	in mm	in mm	in mm	in mm	Lbs Kgs
76.1 mm x 15	3.000 x 0.840 76.1 x 21.3	300 20	1.50 38	2.20 56	2.75 69.9	1.81 46.1	5.69 144.5	3.19 81	1/8 x 2 3/8 M12 x 60	2.64 1.20
76.1 mm x 20	3.000 x 1.050 76.1 x 26.7	300 20	1.50 38	2.20 56	2.75 69.9	1.81 46.1	5.69 144.5	3.19 81	1/8 x 2 3/8 M12 x 60	2.64 1.20
76.1 mm x 25	3.000 x 1.315 76.1 x 33.4	300 20	1.50 38	2.09 53	2.75 69.9	1.81 46.1	5.69 144.5	3.19 81	1/8 x 2 3/8 M12 x 60	2.86 1.30
76.1 mm x 32	3.000 x 1.660 76.1 x 42.2	300 20	2.00 51	2.28 58	3.00 76.2	1.81 46.1	5.69 144.5	3.70 94	1/8 x 2 3/8 M12 x 60	3.21 1.46
76.1 mm x 40	3.000 x 1.900 76.1 x 48.3	300 20	2.00 51	2.28 58	3.00 76.2	1.81 46.1	5.69 144.5	3.70 94	1/8 x 2 3/8 M12 x 60	3.43 1.56
3 x 1/2 80 x 15	3.500 x 0.840 88.9 x 21.3	300 20	1.50 38	2.36 60	3.06 77.8	2.09 53.2	6.19 157.2	3.19 81	1/2 x 3 M12 x 75	3.17 1.44
3 x 3/4 80 x 20	3.500 x 1.050 88.9 x 26.7	300 20	1.50 38	2.32 59	3.06 77.8	2.09 53.2	6.19 157.2	3.19 81	1/2 x 3 M12 x 75	3.21 1.46
3 x 1 80 x 25	3.500 x 1.315 88.9 x 33.4	300 20	1.50 38	2.40 61	3.06 77.8	2.09 53.2	6.19 157.2	3.19 81	1/2 x 3 M12 x 75	3.37 1.53
3 x 1 1/4 80 x 32	3.500 x 1.660 88.9 x 42.2	300 20	2.00 51	2.56 65	3.25 82.6	2.09 53.2	6.19 157.2	3.70 94	1/2 x 3 M12 x 75	3.98 1.81
3 x 1 1/2 80 x 40	3.500 x 1.900 88.9 x 48.3	300 20	2.00 51	2.80 71	3.50 88.9	2.09 53.2	6.19 157.2	3.70 94	1/2 x 3 M12 x 75	4.14 1.88
3 x 2 80 x 50	3.500 x 2.375 88.9 x 60.3	300 20	2.50 64	2.76 70	3.50 88.9	2.09 53.2	6.19 157.2	4.25 108	1/2 x 3 M12 x 75	4.55 2.07
4 x 1/2 100 x 15	3.500 x 0.840 114.3 x 21.3	300 20	1.50 38	2.83 72	3.69 93.7	2.63 66.7	7.19 182.6	3.13 79.4	1/2 x 3 M12 x 75	3.59 1.63
4 x 3/4 100 x 20	4.500 x 1.050 114.3 x 26.7	300 20	1.50 38	2.79 71	3.69 93.7	2.63 66.7	7.19 182.6	3.13 79.4	1/2 x 3 M12 x 75	3.61 1.64
4 x 1 100 x 25	4.500 x 1.315 114.3 x 33.4	300 20	1.50 38	2.87 73	3.69 93.7	2.63 66.7	7.19 182.6	3.13 79.4	1/2 x 3 M12 x 75	3.74 1.70
4 x 1 1/4 100 x 32	4.500 x 1.660 114.3 x 42.2	300 20	2.00 51	3.07 78	3.63 92.1	2.63 66.7	7.19 182.6	4.00 101.6	1/2 x 3 M12 x 75	4.18 1.90
4 x 1 1/2 100 x 40	4.500 x 1.900 114.3 x 48.3	300 20	2.00 51	3.31 84	3.63 92.1	2.63 66.7	7.19 182.6	4.00 101.6	1/2 x 3 M12 x 75	4.49 2.04
4 x 2 100 x 50	4.500 x 2.375 114.3 x 60.3	300 20	2.50 64	3.27 83	4.00 101.6	2.63 66.7	7.19 182.6	4.00 101.6	1/2 x 3 M12 x 75	5.00 2.27
4 x 2 1/2 100 x 65	4.500 x 2.875 114.3 x 73.0	300 20	2.75 70	2.87 73	4.00 101.6	2.63 66.7	7.19 182.6	4.44 112.7	1/2 x 3 M12 x 75	5.43 2.47
100 x 76.1 mm	4.500 x 3.000 114.3 x 76.1	300 20	2.75 70	2.87 73	4.00 101.6	2.63 66.7	7.19 182.6	4.44 112.7	1/2 x 3 M12 x 75	5.65 2.57
4 x 3 100 x 80	4.500 x 3.500 114.3 x 88.9	300 20	3.50 89	3.31 84	4.13 104.8	2.63 66.7	7.19 182.6	5.06 128.6	1/2 x 3 M12 x 75	6.41 2.91
139.7 mm x 50	5.500 x 2.375 139.7 x 60.3	300 20	2.50 64	3.27 83	4.75 120.7	3.19 81.0	8.81 223.8	4.19 106.4	5/8 x 3 1/2 M16 x 90	6.38 2.90
139.7 mm x 76.1 mm	5.500 x 3.000 139.7 x 76.1	300 20	2.75 70	3.67 93	4.75 120.7	3.19 81.0	8.81 223.8	4.57 115.9	5/8 x 3 1/2 M16 x 90	7.40 3.40
139.7 mm x 80	5.500 x 3.500 139.7 x 88.9	300 20	3.50 89	3.82 97	4.75 127.0	3.19 81.0	8.81 223.8	5.19 131.8	5/8 x 3 1/2 M16 x 90	8.41 3.82
5 x 2 125 x 50	5.563 x 2.375 141.3 x 60.3	300 20	2.50 64	3.27 83	4.75 120.7	3.19 81.0	8.81 223.8	4.19 106.4	5/8 x 3 1/2 M16 x 90	6.38 2.90
5 x 2 1/2 125 x 65	5.563 x 2.875 141.3 x 73.0	300 20	2.75 70	3.67 93	4.75 120.7	3.19 81.0	8.81 223.8	4.44 112.7	5/8 x 3 1/2 M16 x 90	7.46 3.39
5 x 3 125 x 80	5.563 x 3.500 141.3 x 88.9	300 20	3.50 89	3.82 97	4.75 127.0	3.19 81.0	8.81 223.8	5.19 131.8	5/8 x 3 1/2 M16 x 90	8.40 3.82
165.1 mm x 32	6.500 x 1.660 165.1 x 42.2	300 20	2.00 51	4.41 112	5.13 130.2	3.72 94.5	9.87 250.8	3.63 92.1	5/8 x 3 1/2 M16 x 90	5.57 2.53
165.1 mm x 40	6.500 x 1.900 165.1 x 48.3	300 20	2.00 51	4.41 112	5.13 130.2	3.72 94.5	9.87 250.8	3.63 92.1	5/8 x 3 1/2 M16 x 90	6.60 3.00
165.1 mm x 50	6.500 x 2.375 165.1 x 60.3	300 20	2.50 64	4.37 111	5.13 130.2	3.72 94.5	9.87 250.8	4.19 106.4	5/8 x 3 1/2 M16 x 90	6.97 3.17
165.1 mm x 65	6.500 x 2.875 165.1 x 73.0	300 20	2.75 70	3.98 101	5.13 130.2	3.72 94.5	9.87 250.8	4.44 112.7	5/8 x 3 1/2 M16 x 90	7.88 3.58

Model M21 Mechanical Tee, Female Threaded Outlet										
Nominal Size Run x Branch	Pipe O.D.	Max. Working Pressure (CWP)*	Hole Dia.† +3.2, -0 / +0.13, -0	Dimensions					Bolt Size	Weight
				T‡	A	B	C	D		
in mm	in mm	PSI Bar	in mm	in mm	in mm	in mm	in mm	in mm	in mm	Lbs Kgs
165.1 mm x 76.1 mm	6.500 x 2.875 165.1 x 76.1	300 20	2.75 70	3.98 101	5.13 130.2	3.72 94.5	9.87 250.8	4.56 115.9	5/8 x 3 1/2 M16 x 90	8.25 3.75
165.1 mm x 80	6.500 x 3.500 165.1 x 88.9	300 20	3.50 89	4.33 110	5.50 139.7	3.72 94.5	9.87 250.8	5.19 131.8	5/8 x 3 1/2 M16 x 90	9.09 4.13
165.1 mm x 100	6.500 x 4.500 165.1 x 114.3	300 20	4.50 114	4.45 113	5.75 146.1	3.72 94.5	9.87 250.8	6.25 158.8	5/8 x 3 1/2 M16 x 90	10.50 4.77
6 x 1 1/4 150 x 32	6.625 x 1.660 168.3 x 42.2	300 20	2.00 51	4.41 112	5.13 130.2	3.72 94.5	9.87 250.8	3.63 92.1	5/8 x 3 1/2 M16 x 90	6.41 2.91
6 x 1 1/2 150 x 40	6.625 x 1.900 168.3 x 48.3	300 20	2.00 51	4.41 112	5.13 130.2	3.72 94.5	9.87 250.8	3.63 92.1	5/8 x 3 1/2 M16 x 90	6.58 2.99
6 x 2 150 x 50	6.625 x 2.375 168.3 x 60.3	300 20	2.50 64	4.37 111	5.13 130.2	3.72 94.5	9.87 250.8	4.19 106.4	5/8 x 3 1/2 M16 x 90	7.00 3.18
6 x 2 1/2 150 x 65	6.625 x 2.875 168.3 x 73.0	300 20	2.75 70	3.98 101	5.13 130.2	3.72 94.5	9.87 250.8	4.44 112.7	5/8 x 3 1/2 M16 x 90	7.88 3.58
150 x 76.1 mm	6.625 x 2.875 168.3 x 76.1	300 20	2.75 70	3.98 101	5.13 130.2	3.72 94.5	9.87 250.8	4.56 115.9	5/8 x 3 1/2 M16 x 90	9.02 3.58
6 x 3 150 x 80	6.625 x 3.500 168.3 x 88.9	300 20	3.50 89	4.33 110	5.50 139.7	3.72 94.5	9.87 250.8	5.19 131.8	5/8 x 3 1/2 M16 x 90	9.02 4.10
6 x 4 150 x 100	6.625 x 4.500 168.3 x 114.3	300 20	4.50 114	4.45 113	5.75 146.1	3.72 94.5	9.87 250.8	6.25 158.8	5/8 x 3 1/2 M16 x 90	10.47 4.76

- † Hole diameters listed are suggested hole diameters.
- ‡ T\*: Take-Out (Center of run to end of pipe to be engaged.)
- [ ] Important: Make special note of the hole saw size and maximum diameter allowed on these sizes, deviation could lead to joint failure.
- \*Working pressure is based on standard wall carbon steel pipe.

## Flow Data – Cv Values

Values for flow of water at +60°F (+16°C).

$$C_v = \frac{Q}{\sqrt{\Delta P}}$$

Where: Cv = Flow coefficient  
Q = Flow (GPM)  
ΔP = Pressure drop (psi)

Model #M21 Mechanical Tee, Female Threaded Outlet Cv Values			
Nominal Size in / mm	Cv Values	Nominal Size in / mm	Cv Values
1/2 15	17	2 50	100
3/4 20	21	2 1/2 65	135
1 25	25	3 80	200
1 1/4 32	45	4 100	400
1 1/2 40	60		

## Outlet Flow Characteristics

Model #M21 Mechanical Tee, Female Threaded Outlet Flow Characteristics			
Nominal Size in / mm	Equivalent Length* feet / meter of pipe	Nominal Size in / mm	Equivalent Length* feet / meter of pipe
1/2 15	2.0 0.6	2 50	6.0 1.8
3/4 20	3.0 0.9	2 1/2 65	8.0 2.4
1 25	3.0 0.9	3 80	10.0 3.1
1 1/4 32	4.0* 1.2	4 100	14.0 4.3
1 1/2 40	4.0* 1.2		

\*Expressed in equivalent of schedule 40 pipe based on Hazen & Williams formula: C=120  
Equivalent length of 2" x 1 1/4" and 2" x 1 1/2" are 6 feet (1.83 meters) and 11 feet (3.36 meters) respectively.

## MATERIAL SPECIFICATIONS

### • Housing:

Ductile Iron to ASTM A536, Gr. 65-45-12 and or ASTM A395, Gr. 65-45-15, min. tensile strength 65,000 psi (448 MPa).

### • Surface Finish:

Orange color painted or red RAL3000 color painted.

- Hotdipgalvanized (Option).
- Epoxy coated in red RAL3000 or other colors (Option)

### • Rubber Gasket:

**Grade “E” EPDM** (Color code: Green stripe) Good for cold & hot water up to +230°F (+110°C). Also good for services for water with acid, water with chlorine or chloramines, deionized water, seawater and waste water, dilute acids, oil-free air and many chemicals. **Not recommended for petroleum oils, minerals oils, solvents and aromatic hydrocarbons.**

Maximum Temperature Range: -30°F (-34°C) to +230°F (+110°C)\*.

\*EPDM gaskets for water services are not recommended for steam services unless couplings or components are accessible for frequent gasket replacement.

- (Option) **Grade “T” Nitrile** (Color code: Orange stripe) Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Also good for water services under +150°F (+66°C).  
Temperature range: -20°F to +180°F (-29°C to +82°C).  
**Do not use for HOT WATER above +150°F (+66°C) or HOT DRY AIR above +140°F (+60°C)**

- Other options: Grade “O” Fluoroelastomer.  
Grade “L” Silicone.

For additional details contact **Shurjoint**.

### • Bolts & Nuts:

Heat treated carbon manganese steel track bolts to ASTM A449-83a (or A183 Gr. 2), minimum tensile strength 110,000 psi (758 MPa), Zinc electroplated, with heavy-duty hexagonal nuts to ASTM A563.

#### General Notes:

- **Maximum Working Pressure (CWP)** listed is the maximum cold water pressure for general piping services tested to ASTM F1476 and or AWWA C606 methods. Figures listed are based standard wall carbon steel pipe. For other pipe schedules or pipe materials, contact **Shurjoint** for additional information.
- **Listed and or Approved Pressures** are pressure ratings for fire protection systems, tested and approved by various approval bodies. Please always refer to the latest approval data posted on the **Shurjoint** website.
- **Field Joint Test:** For one time only the system may be tested hydrostatically at 1½ times the maximum working pressure listed (AWWA C606 5.2.3).
- **Warning:** Piping systems must always be depressurized and drained before attempting disassembly and or removal of any components.
- **The 10 Year Limited Warranty** applies to manufacturing defects only and does not cover severe service/temperature applications or wear parts.
- **Shurjoint** reserves the right to change specifications, designs and or standard without notice and without incurring any obligations.

*Shurjoint product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact **Shurjoint Technical Service**. **Shurjoint** reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligations to make such changes and modifications on **Shurjoint** products previously subsequently sold.*