

## FIG. 6045 & FIG. 6047

### CTS Mechanical Tees and Crosses



Fig. 6047

Fig. 6045



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FLOW DATA (FRICTIONAL RESISTANCE)		
Branch Size Inches	C.V. Value	Equiv. Pipe Length Feet
DN/mm		Meters
1/2 15	22 -	1.0 0.3
3/4 20	25 -	2.0 0.6
1 25	44 -	2.0 0.6

Gruvlok® CTS Mechanical Tees and Crosses provide a quick and easy outlet at any location along copper tube. A hole drilled or cut in the tube to receive the locating collar of the CTS Mechanical Tee is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The CTS Mechanical Tee housing is specially engineered to fit to the tube OD and the CTS Mechanical Tee gasket provides a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 300 PSI (20.6 bar) when assembled on K or L copper tube.

The Fig. 6045 CTS Mechanical Tee provides for a branch connection and the Fig. 6047 CTS Mechanical Cross provides for a cross connection in K, L, or M copper tube. Gruvlok CTS Mechanical Tees and Crosses have a NPT female pipe thread branch.

CTS Mechanical Tee and Cross connections are available in sizes 2 1/2" x 3/4" through 4" x 1 1/2", allowing versatility in piping design.

## MATERIAL SPECIFICATIONS

### BOLTS:

SAE J429, Grade 5, Zinc Electroplated  
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

### HEAVY HEX NUTS:

ASTM A563, Grade A, Zinc Electroplated  
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

### HOUSING:

Copper Alloy conforming to CDA C83470 or C89833

### GASKETS: Materials

Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)

-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)  
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.  
NOT FOR USE IN PETROLEUM APPLICATIONS.

### LUBRICATION:

- ☐ Standard Gruvlok
- ☐ Gruvlok Xtreme™

PROJECT INFORMATION		APPROVAL STAMP
Project:		<input type="checkbox"/> Approved
Address:		<input type="checkbox"/> Approved as noted
Contractor:		<input type="checkbox"/> Not approved
Engineer:		Remarks:
Submittal Date:		
Notes 1:		
Notes 2:		

## FIG. 6045 & FIG. 6047

### CTS Mechanical Tees and Crosses

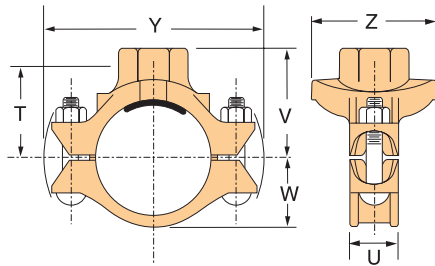


Fig. 6045

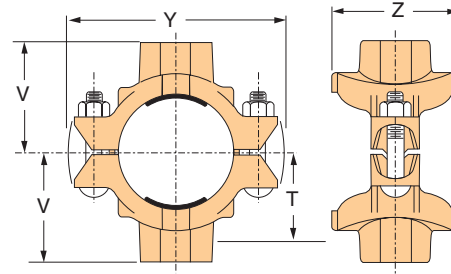


Fig. 6047

FIGURE 6045 & FIGURE 6047 CTS OUTLET

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure		CTS Outlet Dimensions						Bolt Size	Specifie Torque §		Approx. Wt. Each	
		Min. Diameter	Max. Diameter			T	U	V Threaded	W	Y	Z		Min.	Max.	6045	6047
				K, L	M											
In./DN(mm)	In./mm	In./mm	In./mm	PSI/bar	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Ft.-Lbs/N-m	Lbs./Kg	Lbs./Kg		
2½ x ¾ 65 x 20	2.625 x 1.050 66.7 x 26.7	1½ 38	1⅝ 41	300 20.7	250 17.2	1⅝ 49	1⅜ 35	2½ 64	1⅝ 41	6⅝ 156	3 76	½ x 3 -	60 80	80 110	3.3 1.5	4.3 1.9
2½ x 1 65 x 25	2.625 x 1.315 66.7 x 33.7	1½ 38	1⅝ 41	300 20.7	250 17.2	1⅝ 46	1⅜ 35	2½ 64	1⅝ 41	6⅝ 156	3 76	½ x 3 -	60 80	80 110	3.2 1.5	4.3 1.9
2½ x 1½ 65 x 40	2.625 x 1.900 66.7 x 48.3	2 51	2⅝ 54	300 20.7	250 17.2	2 51	1⅜ 35	2⅞ 68	1⅝ 41	6⅝ 156	3 76	½ x 3 -	60 80	80 110	3.7 1.7	5.0 2.3
3 x ¾ 80 x 20	3.125 x 1.050 79.4 x 26.7	1½ 38	1⅝ 41	300 20.7	250 17.2	2⅜ 56	1½ 38	2¾ 70	1⅝ 48	6⅝ 168	3⅞ 94	½ x 3 -	60 80	80 110	4.3 1.9	5.6 2.5
3 x 1 80 x 25	3.125 x 1.315 79.4 x 33.7	1½ 38	1⅝ 41	300 20.7	250 17.2	2⅞ 52	1½ 38	2¾ 70	1⅝ 48	6⅝ 168	3⅞ 94	½ x 3 -	60 80	80 110	4.2 1.9	5.3 2.4
3 x 1½ 80 x 40	3.125 x 1.900 79.4 x 48.3	2 51	2⅝ 54	300 20.7	250 17.2	2⅜ 56	1½ 38	2⅞ 73	1⅝ 48	6⅝ 168	3⅞ 94	½ x 3 -	60 80	80 110	4.1 1.9	5.3 2.4
4 x ¾ 100 x 20	4.125 x 1.050 104.8 x 26.7	1½ 38	1⅝ 41	300 20.7	250 17.2	2⅞ 68	1⅝ 46	3¼ 83	2⅝ 60	7¼ 184	3⅝ 92	½ x 3 -	60 80	80 110	4.3 1.9	5.8 2.6
4 x 1 100 x 25	4.125 x 1.315 104.8 x 33.7	1½ 38	1⅝ 41	300 20.7	250 17.2	2⅞ 65	1⅝ 46	3¼ 83	2⅝ 60	7¼ 184	3⅝ 92	½ x 3 -	60 80	80 110	4.1 1.9	5.5 2.5
4 x 1½ 100 x 40	4.125 x 1.900 104.8 x 48.3	2 51	2⅝ 54	300 20.7	250 17.2	2⅞ 68	1⅝ 46	3⅝ 86	2⅝ 60	7¼ 184	3⅝ 92	½ x 3 -	60 80	80 110	4.1 1.9	5.4 2.4

§ – For additional Bolt Torque information, see the Technical Data Section of the Gruvlok Catalog. See Installation & Assembly directions on last page.

# FIG. 6045 & FIG. 6047

## CTS Mechanical Tees and Crosses

### ⚠ WARNING



- Read and understand all instructions before use.
- Ensure system is drained and depressurized before installation or service.
- Use appropriate personal protective equipment.

Failure to follow these instructions could result in serious personal injury and/or property damage.

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER COUPLING ASSEMBLY.

Thorough lubrication of the gasket is essential to assist the gasket into the proper sealing position.

**1 PIPE PREPARATION**—Cut the appropriate size hole in the pipe and remove any burrs. Be sure to remove any debris from inside the pipe. Clean the gasket sealing surface within  $\frac{5}{8}$ " of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket.

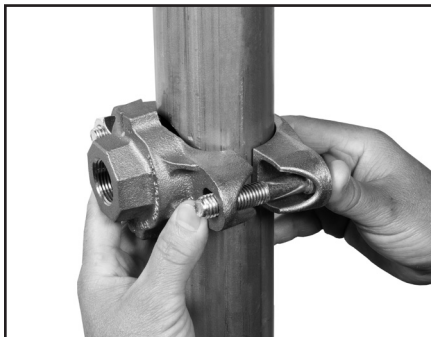
BRANCH SIZE	HOLE SAW SIZE
(Inches)	(Inches) (+1/8, -0)
$\frac{3}{4}$ , 1	$1\frac{1}{2}$
$1\frac{1}{2}$	2



**2 CHECK & LUBRICATE GASKET**—Check the gasket to be sure it is compatible for the intended service. Apply a thin layer of Gruvlok lubricant to the back surface of the gasket. Be careful that foreign particles do not adhere to the lubricated surfaces. Insert the gasket back into the outlet housing making sure the tabs in the gasket line up with the tab recesses in the housing.



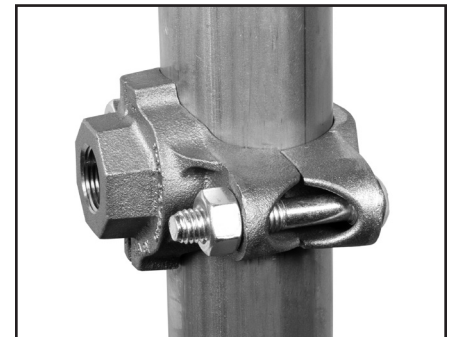
**3 GASKET INSTALLATION**—Lubricate the exposed surface of the gasket. Align the outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



**4 ALIGNMENT**—Align the strap around the pipe, insert the bolts and tighten the nuts finger tight.



**5 TIGHTEN NUTS**—Alternately and evenly tighten the nuts to the specified bolt torque.



**6 ASSEMBLY IS COMPLETE**

### FIGS. 6045 & 6047—SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on the Gruvlok® CTS Mechanical Tees and Crosses. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure, battery strength and operational variations.

**CAUTION:** Proper torquing of the bolts is required to obtain the specified performance. Overtorquing the bolts may result in damage to the bolt and/or casting which could result in lower pressure retention capabilities, lower bend load capabilities, pipe joint leakage and pipe joint separation.

### ANSI SPECIFIED BOLT TORQUE

Bolt Size	Wrench Size	Specified Bolt Torque *
In.	In.	Ft.-Lbs.
$\frac{1}{2}$	$\frac{7}{8}$	60-80

\* Non-lubricated bolt torques