



## **Grinnell Mechanical Products Grooved Fittings For Copper Systems (CTS)**

### **General Description**

Grinnell full flow grooved fittings for copper piping systems provide an economical and efficient method of changing direction. The copper fittings are available in sizes 2 inch to 8 inch (DN50 to DN200) and are ready to be installed using the Grinnell Figure 672 Rigid Coupling or the Figure 61 Flange Adapter for Copper Systems.

#### **WARNING**

*The fittings described herein must be installed and maintained in compliance with this document, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of this device.*

*The owner is responsible for maintaining their system and devices in proper operating condition. The installing contractor or manufacturer should be contacted with any questions.*

### **Technical Data**

#### **Approvals**

UL, ULC, and UPC

#### **Maximum Working Pressure**

See specific data sheet for rating of associated grooved coupling being used.

#### **Material**

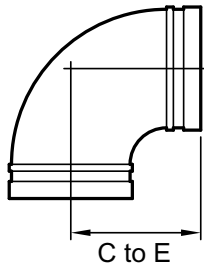
Figures 610, 601, 619, 660, 650 & 621  
Cast copper alloy conforming to  
CDA C89833.

Figures 618, & 652

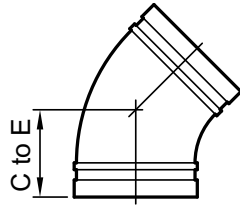
Wrot copper alloy conforming to  
ASTM B-75 C12200; Wall thickness  
per ASTM B-88, Type L. Fabricated:  
ASTM B-88 Type L.



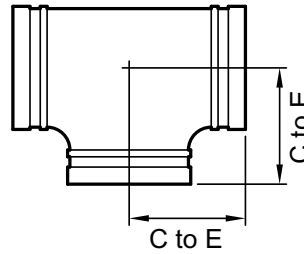
For Fire Protection pressure rating, listing and approval information, contact Tyco Fire & Building Products.



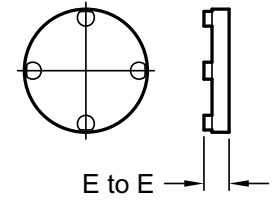
**Figure 610**  
Cast Copper 90° Elbow



**Figure 601**  
Cast Copper 45° Elbow



**Figure 619**  
Cast Copper Tee



**Figure 660**  
Cast Copper End Cap

Nominal Size ANSI DN	Copper Tube O.D. Inches (mm)	Figure 610		Figure 601		Figure 619		Figure 660	
		Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)
2 DN50	2.125 (54,0)	2.91 (73,9)	1.95 (0,9)	2.19 (55,6)	1.6 (0,7)	2.69 (68,3)	2.5 (1,13)	.92 (23,4)	0.66 (0,32)
2½ DN65	2.625 (66,7)	3.31 (84,1)	2.65 (1,2)	2.31 (58,7)	2.1 (1,0)	3.20 (81,3)	3.0 (1,36)	.92 (23,4)	0.99 (0,45)
3 DN80	3.125 (79,4)	3.81 (96,8)	3.65 (1,66)	2.59 (65,8)	2.8 (1,3)	3.52 (89,4)	4.05 (2,2)	.92 (23,4)	1.36 (0,62)
4 DN100	4.125 (104,8)	4.75 (120,7)	7.0 (3,18)	3.19 (81,0)	5.7 (2,6)	4.25 (108,0)	9.15 (4,15)	.92 (23,4)	2.37 (1,08)
5 DN125	5.125 (130,2)	5.94 (150,9)	11.6 (5,26)	3.25 (82,6)	8.0 (3,6)	5.94 (150,9)	17.75 (8,05)	.92 (23,4)	4.16 (1,89)
6 DN150	6.125 (155,6)	6.94 (176,7)	16.62 (7,54)	3.5 (88,9)	10.5 (4,8)	6.94 (176,3)	24.4 (11,07)	.92 (23,4)	5.87 (2,66)
8 DN200	8.125 (206,4)	7.75 (196,9)	23.6 (10,7)	4.25 (108,0)	16.9 (7,7)	7.75 (196,9)	36.25 (16,44)	.92 (23,4)	10.17 (4,61)

Dimensional information in this chart is for cast fittings.  
Please contact Tyco Fire & Building Products for the most up to date information.

**FIGURE 1**  
**FIGURES 610, 601, 619 & 660**

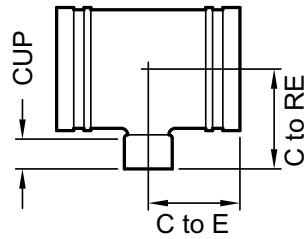
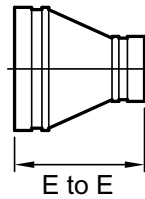


Figure 618 Wrot Copper Reducing Tee  
Groove x Groove x Cup

Nominal Size ANSI (mm)	Nominal C to E Inches (mm)	Nominal C to RE Inches (mm)	Cup Inches (mm)	Approx. Weight Lbs. (kg)
2 x 2 x 3/4 DN50 x DN50 x DN20	3.25 (82,5)	3.68 (93,5)	0.75 (19,1)	1.1 (0,5)
2 x 2 x 1 DN50 x DN50 x DN25	3.25 (82,5)	3.62 (91,9)	0.91 (23,1)	1.1 (0,5)
2 x 2 x 1 1/4 DN50 x DN50 x DN32	3.25 (82,5)	3.68 (93,5)	0.97 (24,6)	1.2 (0,5)
2 x 2 x 1 1/2 DN50 x DN50 x DN	3.25 (82,5)	3.56 (90,4)	1.09 (27,7)	1.2 (0,5)
2 1/2 x 2 1/2 x 3/4 DN65 x DN65 x DN20	3.75 (95,2)	3.93 (99,8)	0.75 (19,1)	1.7 (0,8)
2 1/2 x 2 1/2 x 1 DN65 x DN65 x DN25	3.75 (95,2)	3.87 (98,3)	0.91 (23,1)	1.7 (0,8)
2 1/2 x 2 1/2 x 1 1/4 DN65 x DN65 x DN32	3.75 (95,2)	3.93 (99,8)	0.97 (24,6)	1.8 (0,8)
2 1/2 x 2 1/2 x 1 1/2 DN65 x DN65 x DN40	3.75 (95,2)	3.81 (96,8)	1.09 (27,7)	1.8 (0,8)
3 x 3 x 3/4 DN80 x DN80 x DN20	4.25 (108,0)	4.18 (106,2)	0.75 (19,1)	2.5 (1,1)
3 x 3 x 1 DN80 x DN80 x DN25	4.25 (108,0)	4.12 (104,6)	0.91 (23,1)	2.5 (1,1)
3 x 3 x 1 1/4 DN80 x DN80 x DN32	4.25 (108,0)	4.18 (106,2)	0.97 (24,6)	2.6 (1,2)
3 x 3 x 1 1/2 DN80 x DN80 x DN40	4.25 (108,0)	4.06 (103,1)	1.09 (27,7)	2.7 (1,2)
4 x 4 x 3/4 DN100 x DN100 x DN20	5.00 (127,0)	5.18 (131,6)	0.75 (19,1)	4.6 (2,1)
4 x 4 x 1 DN100 x DN100 x DN25	5.00 (127,0)	5.12 (130,0)	0.91 (23,1)	4.7 (2,1)
4 x 4 x 1 1/4 DN100 x DN100 x DN32	5.00 (127,0)	5.18 (131,6)	0.97 (24,6)	4.8 (2,2)
4 x 4 x 1 1/2 DN100 x DN100 x DN40	5.00 (127,0)	5.06 (128,5)	1.09 (27,7)	4.9 (2,2)

Dimensional information in this chart is for wrot fittings.  
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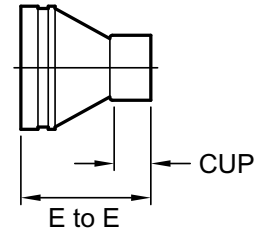
**FIGURE 2**  
**FIGURE 618 REDUCING TEE**



**Figure 650**  
**Cast Copper Groove x Groove**

Nominal Size ANSI Inches DN	E to E Inches (mm)	Approx. Weight Lbs. (kg)
2½ x 2 DN65 x DN50	3.29 (83,6)	1.4 (0,6)
3 x 2 DN80 x DN50	2.50 (63,5)	1.4 (0,6)
3 x 2½ DN80 x DN65	2.50 (63,5)	1.4 (0,6)
4 x 2 DN100 x DN50	4.75 (120,7)	3.2 (1,5)
4 x 2½ DN100 x DN65	3.00 (76,2)	2.3 (1,1)
4 x 3 DN100 x DN80	3.00 (76,2)	2.4 (1,1)
5 x 3 DN125 x DN80	3.88 (98,6)	3.8 (1,7)
5 x 4 DN125 x DN100	3.88 (85,9)	3.8 (1,7)
6 x 3 DN150 x DN80	4.38 (111,3)	5.0 (2,3)
6 x 4 DN150 x DN100	3.88 (98,6)	5.1 (2,3)
6 x 5 DN150 x DN125	3.38 (85,90)	4.9 (2,2)
8 x 4 DN200 x DN100	5.00 (83,57)	8.6 (3,9)
8 x 5 DN200 x DN125	5.00 (83,57)	9.1 (4,1)
8 x 6 DN200 x DN150	5.00 (83,57)	9.5 (4,3)

Dimensional information in this chart is for cast fittings.  
Please contact Tyco Fire & Building Products for the  
most up to date information



**Figure 652**  
**Cast Copper Groove x Cup**

Nominal Size ANSI Inches DN	E to E Inches (mm)	Cup Inches (mm)	Approx. Weight Lbs. (kg)
2 x 1 DN50 x DN25	2.70 (68,6)	0.91 (23,1)	0.5 (0,2)
2 x 1¼ DN50 x DN32	3.00 (76,2)	0.97 (24,6)	0.4 (0,2)
2 x 1½ DN50 x DN40	2.94 (74,7)	1.09 (27,7)	0.4 (0,2)
2½ x 1 DN65 x DN25	2.28 (57,9)	0.91 (23,1)	0.5 (0,2)
2½ x 1¼ DN65 x DN32	3.52 (89,4)	0.97 (24,6)	0.6 (0,3)
2½ x 1½ DN65 x DN40	3.45 (87,6)	1.09 (27,7)	0.6 (0,3)
2½ x 2 DN65 x DN50	3.30 (83,8)	1.34 (34,0)	0.6 (0,3)
3 x 1½ DN80 x DN40	2.59 (65,8)	1.09 (27,7)	0.7 (0,3)
3 x 2 DN80 x DN50	4.10 (104,1)	1.34 (34,0)	1.0 (0,5)
4 x 2 DN100 x DN50	3.41 (86,6)	1.34 (34,0)	1.4 (0,6)

Dimensional information in this chart is for wrought fittings.  
Please contact Tyco Fire & Building Products for the  
most up to date information

**FIGURE 3**  
**FIGURE 650 & 652 CONCENTRIC REDUCERS**

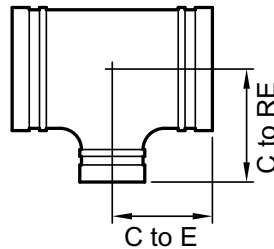


Figure 621 Cast Copper Reducing Tee  
Groove x Groove x Groove

Nominal Size ANSI DN	Copper Tube O.D. Inches (mm)	Nominal C to E Inches (mm)	Nominal C to RE Inches (mm)	Approx. Weight Lbs. (kg)
2½ x 2½ x 2 DN65 x DN65 x DN50	2.625 x 2.625 x 2.125 (66,7 x 66,7 x 54,0)	3.28 (83,3)	3.38 (85,9)	3.47 (1,57)
3 x 3 x 2 DN80 x DN80 x DN50	3.125 x 3.125 x 2.125 (79,4 x 79,4 x 54,0)	3.00 (76,2)	3.38 (85,9)	3.69 (1,67)
3 x 3 x 2½ DN80 x DN80 x DN65	3.125 x 3.125 x 2.625 (79,4 x 79,4 x 66,7)	3.25 (82,6)	3.5 (88,9)	4.13 (1,87)
4 x 4 x 2 DN100 x DN100 x DN50	4.125 x 4.125 x 2.125 (104,8 x 104,8 x 54,0)	3.66 (93,0)	4.13 (104,9)	6.75 (3,06)
4 x 4 x 2½ DN100 x DN100 x DN65	4.125 x 4.125 x 2.625 (104,8 x 104,8 x 66,7)	3.94 (100,1)	4.06 (103,1)	7.31 (3,32)
4 x 4 x 3 DN100 x DN100 x DN80	4.125 x 4.125 x 3.125 (104,8 x 104,8 x 79,4)	4.19 (106,4)	4.16 (105,7)	7.84 (3,56)
5 x 5 x 3 DN125 x DN125 x DN80	5.125 x 5.125 x 3.125 (130,2 x 130,2 x 79,4)	3.75 (95,3)	4.63 (117,6)	9.35 (4,24)
5 x 5 x 4 DN125 x DN125 x DN100	5.125 x 5.125 x 4.125 (130,2 x 130,2 x 104,8)	4.25 (108,0)	4.56 (115,8)	10.95 (4,97)
6 x 6 x 2½ DN150 x DN150 x DN65	6.125 x 6.125 x 2.625 (155,6 x 155,6 x 66,7)	3.63 (92,2)	5.13 (130,3)	10.78 (4,89)
6 x 6 x 3 DN150 x DN150 x DN80	6.125 x 6.125 x 3.125 (155,6 x 155,6 x 79,4)	3.69 (93,7)	5.19 (131,8)	11.05 (5,01)
6 x 6 x 4 DN150 x DN150 x DN100	6.125 x 6.125 x 4.125 (155,6 x 155,6 x 104,8)	4.19 (106,4)	5.13 (130,3)	12.86 (5,83)
6 x 6 x 5 DN150 x DN150 x DN125	6.125 x 6.125 x 5.125 (155,6 x 155,6 x 130,2)	4.69 (119,1)	5.196 (131,8)	14.75 (6,69)

Dimensional information in this chart is for cast fittings.  
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**FIGURE 4**  
**FIGURE 621 REDUCING TEE**

## Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation or maintenance, corrosion, or other external sources of damage. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

## Ordering Procedure

When placing an order, indicate the full product name. Please specify the quantity, figure number, wall thickness, and size. Grinnell Mechanical Products, valves, accessories and other products are available throughout the U.S., Canada, and internationally, through a network of distribution centers. You may write directly or call 215-362-0700 for the distributor nearest you.

**General Notes:** It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Always read and understand the installation instructions (IH-1000). Never remove any piping component or correct or modify any piping deficiencies without first depressurizing and draining the system. Material and gasket selection should be verified to be compatible for the specific application.



Certified Company