

SOLDER FITTINGS

Job Name:	
Job Location:	
Engineer:	
Contractor:	
Tag:	
PO Number:	
Representative:	
Wholesale Distributor:	

Description:

WROT-COPPER and CAST-COPPER Alloy fittings from Elkhart Products Corporation are for use in plumbing and other mechanical applications. All 1/8” – 8” fittings are manufactured in the United States at one of our three locations; Elkhart Indiana, Geneva Indiana and Fayetteville Arkansas. WROTCOPPER fittings are designed to join ASTM B88 and ASTM B280 seamless copper tube.

Specifications:

NSF/ANSI 61	Drinking Water System Components - Health Effects
MSS SP73	Brazing Joints for Copper and Copper Alloy Pressure Fittings
MSS SP104	Wrought Copper Solder Joint Pressure Fittings
MSS SP106	Cast Copper Alloy Flanges and Flange Fittings; Class 125, 150 and 300
MSS SP123	Non-Ferrous Threaded and Solder-Joint Unions for Use with Copper Water Tube
MSS SP109	Welded Fabricated Copper Solder Joint Pressure Fittings
ASME/ANSI B16.29	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV
ASME/ANSI B16.18	Cast Copper Alloy Solder Joint Pressure Fittings
ASME/ANSI B16.15	Cast Bronze Threaded Fittings
ASME/ANSI B16.26	Cast Copper Alloy Fittings for Flared Copper Tube
ASME/ANSI B16.23	Cast Copper Alloy Solder Joint Drainage Fittings - DWV
ASME/ANSI B16.24	Bronze Pipe Flanges and Flanged Fittings
ASME/ANSI B16.22	Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings
ASME/ANSI B16.50	Wrought Copper and Copper Alloy Braze Joint Pressure Fittings
RoHS 2011/65/EC	European Union’s Restrictions of Hazardous Substances

Material:

ASTM B75 Alloy C12200	Seamless Copper Tube (0% Lead)
ASTM B152 Alloy C11000	Copper Sheet, Strip, Plate and Rolled Bar (0% Lead)
ASTM B584 Alloy C84400	Copper Alloy Sand Castings for General Applications (>0.25% Lead)
ASTM B584 Alloy C89833	Copper Alloy Sand Castings (< 0.25% Lead)
ASTM B584 Alloy C87700	Copper Alloy Sand Castings (< 0.25% Lead)

LEED Compliance:

The copper tubing and rod used to produce all E.P.C. copper fittings is manufactured from copper cathode which in turn is made up from twenty-five (25) percent post-consumer scrap as described above. Another fifty (50) percent is postindustrial scrap (turnings, shavings and chips).

Lead Free

All WROTCOPPER fittings are manufactured in compliance with federal and state lead content requirements of 0.25% lead or less. Products are identified with “LF”, “LL” or NSF 61-G or NSF 372.

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Large Diameter Weld:

Each large diameter (5", 6" and 8") fitting is electrically welded using silicone bronze meeting AWS A5.7-91R and AMS 4616B to produce a MSS SP-109 compliant product. Each fitting is individually tested with air under water. The burst pressure of EPC welded fitting exceeds the recommended working pressure of the comparable diameter, annealed, straight, seamless ASTM B88-96 type "L" copper water tube by safety factor of 4.

Pressure Ratings:

The table of maximum working pressures below must be understood to reflect what is generally considered as good engineering practice under reasonably constant and favorable conditions; i.e., pressures which are fairly steady, absence of particularly corrosive media, etc. Unusual conditions require increased safety factors and therefore, lower working pressures should be used. From the Copper and Brass Research Association;

Rated Internal Working Pressures of Piping System Made of Copper Water Tube and Soldered Fittings

Solder Used in joints	Service Temp. °F	POUNDS PER SQUARE INCH Water (a) Copper Water Tube-Nominal Sizes			
		1/8" to 1" Incl.	1 1/4" to 2" Incl.	2 1/2" to 4" Incl.	5" to 8" Incl.
* 50-50 Tin-Lead (b)	100	200	175	150	135
	150	150	125	100	90
	200	100	90	75	70
	250	85	75	50	45
95-5 Tin-Antimony (c) (d)	100	500	400	300	270
	150	400	350	275	250
	200	300	250	200	180
	250	200	175	150	135
Brazing Alloys Melting at or above 1000° F	Temperature and pressure ratings consistent with the materials and procedures employed.				

* The data given for 50% tin-50% lead applies also for the 40% tin-60% lead alloy

(a) Including other noncorrosive liquids and gases

(b) ASTM B32, Alloy Grade Sn 50

(c) ASTM B32, Alloy Grade Sb 5

(d) The safe Drinking Water Act Amendment of 1986 prohibits the use in potable water systems of any solder having a lead content in excess of 0.2%

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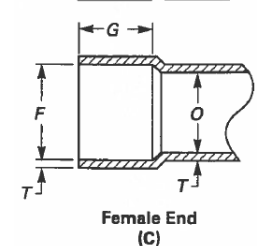
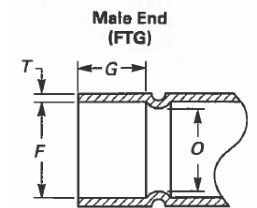
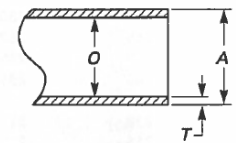
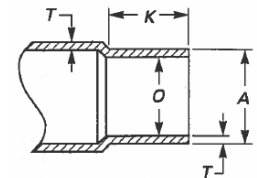
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Dimensions:

Wrot Copper and Bronze Solder-Joint Pressure Fittings

Dimensions of Soldered-Joint Ends (in inches)

Standard Water Tube Size	Male End		Female End			Wall Thickness T	Inside Diameter of Fitting O	
	Outside Diameter A		Length K	Inside Diameter F				Depth G
	Min.	Max.		Min.	Max.			
1/8	0.248	0.251	0.31	0.252	0.256	0.25	.019	0.18
1/4	0.373	0.376	0.38	0.377	0.381	0.31	.023	0.30
3/8	0.497	0.501	0.44	0.502	0.506	0.38	.026	0.39
1/2	0.622	0.626	0.56	0.627	0.631	0.50	.029	0.52
5/8	0.747	0.751	0.69	0.752	0.756	0.62	.031	0.63
3/4	0.872	0.876	0.81	0.877	0.881	0.75	.033	0.74
1	1.122	1.127	0.97	1.128	1.132	0.91	.040	0.98
1 1/4	1.372	1.377	1.03	1.378	1.382	0.97	.044	1.23
1 1/2	1.621	1.627	1.16	1.628	1.633	1.09	.051	1.47
2	2.121	2.127	1.41	2.128	2.133	1.34	.059	1.94
2 1/2	2.621	2.627	1.53	2.628	2.633	1.47	.067	2.42
3	3.121	3.127	1.72	3.128	3.133	1.66	.075	2.89
3 1/2	3.621	3.627	1.97	3.628	3.633	1.91	.086	3.67
4	4.121	4.127	2.22	4.128	4.133	2.16	.096	3.84
5	5.121	5.127	2.72	5.128	5.133	2.66	.111	4.70
6	6.121	6.127	3.22	6.128	6.133	3.09	.124	5.72
8	8.119	8.127	4.09	8.128	8.133	3.97	.173	7.55



Installation Instructions:

1. Cut the tube end square using a rotary tube cutter or fine toothed steel saw
2. Deburr and ream to remove burrs on inside and outside of tube
3. Clean outside of tube to remove oxides and surface oils. Should have a shiny finish, leaving no dark spots
4. Clean inside of fitting to remove oxides and surface oils. Should have a shiny finish, leaving no dark spots
5. Apply flux using brush to apply light uniform coat on the outside of tube and inside of fitting
6. Insert tube into fitting
7. Apply uniform heat; proper heat is achieved when the solder melts upon contact with fitting. Removing flame work solder from bottom to top each side at a time. Wipe off excess solder.

Caution:

Do not overheat the joint which can burn the flux, which will affect the solder's ability to enter the joint properly.

SUBMITTAL SHEET

SOLDER FITTINGS

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Internal Pressure-Temperature Ratings for Copper Fittings, p.s.i.

Standard Water Tube Size	-20°F To						
	100°F	150°F	200°F	250°F	300°F	350°F	400°F
1/4	910	770	740	725	710	605	455
3/8	775	660	635	620	610	515	385
1/2	720	610	585	575	565	480	360
5/8	630	535	515	505	490	420	315
3/4	580	490	475	465	455	385	290
1	490	420	400	395	385	325	245
1 1/4	435	370	355	350	340	290	215
1 1/2	405	345	330	325	315	270	200
2	360	305	295	290	280	240	180
2 1/2	335	285	270	265	260	220	165
3	315	265	255	250	245	210	155
3 1/2	300	255	245	240	235	200	150
4	290	245	235	230	225	195	145
5	265	225	215	215	210	175	130
6	250	210	200	200	195	165	125

PRESSURE LOSS IN FITTINGS EXPRESSED AS EQUIVALENT LENGTH OF TUBE, FEET						
Normal or Standard in Inches	Wrot Copper Fittings					
	90 Degree Ell	45 Degree Ell	Tee Straight Run	Tee Side Branch	Coupling	180 Degree Bend
3/8	0.5	0.5	0.5	1	-	0.5
1/2	0.5	0.5	0.5	1	-	1
5/8	0.5	0.5	0.5	2	-	1
3/4	1	0.5	0.5	2	-	2
1	1	1	0.5	3	-	2
1-1/4	2	1	0.5	4	0.5	3
1-1/2	2	2	1	5	0.5	4
2	2	2	1	7	0.5	8
2-1/2	2	3	2	9	0.5	16
3	3	4	-	-	1	20

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