

WROUGHT COPPER FITTING

THE BEST TECHNOLOGY AND THE BEST CHOICE

Fitting Division of SD is making a new leap forward in the copper fittings market with its own trademark PS FITTING based on technology inherited from Poongsan Corp and many years' accumulated experience. It is leading the relevant industry with stabilized quality of products, organizational power optimally adapted to external environments and superior technology.

Our products, which are suitable for construction, refrigeration and air conditioning, hygienic and medical applications, are certified by global standards such as KS, JIS, and AS, etc. We offer satisfaction with the best products for any specifications and requirements of our customers.

Our Copper Pipe Fittings, which gains increasingly interest with the increasing concerns about health and environment, is an innovative new product realized through relentless technology development and accumulated know-how. We are ready to respond to the rapidly changing modern industrial market.

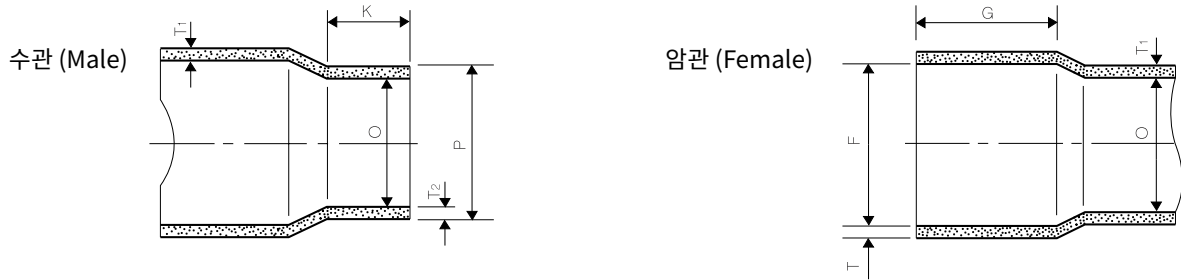
Our elbow products have relatively long bending length compared to other products. They are featured with easy installation and implementation, and high pressure and high heat resistance. In addition, our patented lubricant back spraying method enables high quality production and excellent precision surface with CNC spinning method.

(All range of products from 6mm to 300mm available)





· 접합부의 기본치수 / Dimensions of Solder joint ends / **KS Standard**



호칭지름 Nominal Size		접 합 부 Jointing Parts											최소샬 두께 T1또는T2 Minimum wall thickness T1 or T2	최소 안지름 Minimum inside diameter	
		수 Male						암 Female							
(A)	(B)	기준 바깥지름 Basic outside diameter	허용차 Toler- ance	실측 바깥지름 Measured outside diameter		타원값 Elliptic value	최소 길이 Min length	기준 안지름 Basic inside diameter	허용차 Toler- ance	실측안지름 Measured inside diameter		타원값 Elliptic value	최소 깊이 Min length depth		T1 or T2
		P		최소치 Mini- mum value	최대치 Maxi- mum value		K	F		최소치 Minimum value	최대치 Maximum value		G		
				(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
6	1/8	6.35	±0.03	6.28	6.40	0.08	7	6.45	±0.03	6.39	6.51	0.08	6	0.6	5
8	1/4	9.52		9.45	9.59	0.08	9	9.62		9.55	9.69	0.08	8	0.6	6
10	3/8	12.70		12.62	12.78	0.10	10	12.81		12.73	12.89	0.10	9	0.7	9
15	1/2	15.88		15.78	15.98	0.13	12	16.00		15.91	16.09	0.12	11	0.8	12
19	5/8	19.05		18.94	19.16	0.15	16	19.19		19.08	19.30	0.16	15	0.8	14
20	3/4	22.22	±0.04	22.11	22.33	0.16	18	22.36	±0.04	22.25	22.47	0.16	17	0.9	17
25	1	28.58		28.44	28.72	0.20	22	28.75		28.62	28.88	0.18	21	1.0	23
32	1 1/4	34.92		34.76	35.08	0.24	25	35.11		34.96	35.26	0.22	24	1.2	28
40	1 1/2	41.28	±0.05	41.08	41.48	0.29	28	41.50	±0.05	41.33	41.67	0.24	27	1.3	34
50	2	53.98		53.77	54.19	0.32	34	54.22		54.03	54.41	0.29	33	1.5	45
65	2 1/2	66.68		66.43	66.93	0.40	38	66.96		66.73	67.19	0.36	37	1.7	55
80	3	79.38		79.13	79.63	0.40	43	79.66		79.43	79.89	0.36	42	2.0	67
100	4	104.78	±0.08	104.47	105.09	0.52	55	105.12	±0.08	104.83	105.41	0.46	54	2.4	90
125	5	130.18		129.84	130.52	0.52	69	130.55		130.21	130.89	0.52	67	2.8	119
150	6	155.58		155.19	155.97	0.62	82	156.00		155.61	156.39	0.62	78	3.1	145
200	8	206.38		205.86	206.90	0.88	104	206.93		206.41	207.45	0.88	100	4.5	192
250	10	257.18	±0.15	256.48	257.88	1.10	115	259.06	±0.15	258.36	259.76	1.10	110	5.0	235

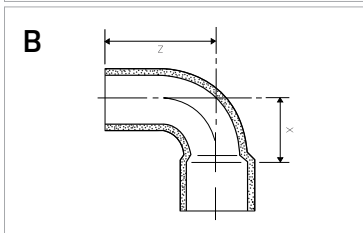
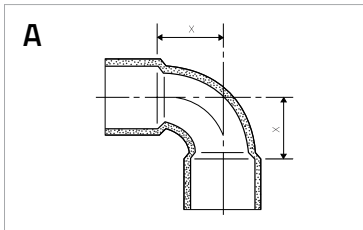
- 호칭지름은 (A) 또는 (B) 중 한가지를 사용한다.
- 1종 접합부의 임의의 단면에서 측정된 최소 바깥지름(최소 안지름) 및 최대 바깥지름(최대 안지름)의 평균값과 기준 바깥지름(기준 안지름)과의 차는 표에 나타내는 허용차의 범위에 있어야 한다.
- 1종 접합부의 임의의 단면에서 측정된 최소 바깥지름(최소 안지름) 및 최대 바깥지름(최대 안지름)은 표에 나타내는 실측 바깥지름(실측 안지름)의 최소 값과 최대 값 사이에 있고, 동시에 최대 바깥지름(최대 안지름)과 최소 바깥지름(최소 안지름)과의 차가 표의 타원값의 범위에 있어야 한다.
- 표의 P, K, F, G, T1, T2 및 O는 그림의 각 부를 말한다.
- 이 규격은 KS D 5578에 의한 것임.
- 제품의 X 값과 Y 값은 당사의 생산설비조건에 따라 변경될 수있으니 시공전 반드시 확인바랍니다.

- The difference between the average value of the minimum outside diameter (minimum inside diameter) and the maximum outside diameter (maximum inside diameter) and the basic outside diameter (basic inside diameter) shall be within the range of the tolerances given in the Table.
- The minimum outside diameter (minimum inside diameter) and the maximum outside diameter (maximum inside diameter) measured at an optional section of the jointing part shall be between the minimum value and the maximum value of the measured outside diameter (measured inside diameter).
- P, K, F, G, T1, T2 and O given in the Table stand for the corresponding parts in Fig.
- The X and Y dimensions can be changed according to our production facility conditions. Please check before install.

ELBOW

THE BEST TECHNOLOGY AND THE BEST CHOICE

90° ELBOW A/B



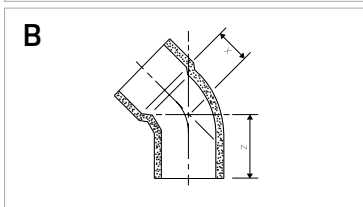
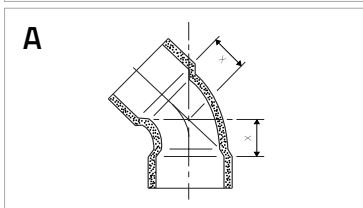
90° ELBOW A

호칭지름 Nominal Size		X
A	B	
6	1/8	9
8	1/4	11
10	3/8	14
15	1/2	14
19	5/8	16
20	3/4	19.5
25	1	23
32	1 1/4	28
40	1 1/2	34
50	2	45
65	2 1/2	54
80	3	64
100	4	85
125	5	91
150	6	115
200	8	190
250	10	210

90° ELBOW B

호칭지름 Nominal Size		X	Z
A	B		
6	1/8	9	18
8	1/4	11	20
10	3/8	14	25
15	1/2	14	25
19	5/8	16	32
20	3/4	18	36
25	1	23	45
32	1 1/4	28	53
40	1 1/2	34	62
50	2	45	79

45°/22.5° ELBOW A, 45° ELBOW B



45°/22.5° ELBOW A

호칭지름 Nominal Size		X
A	B	
8	1/4	6
10	3/8	6.5
15	1/2	8
19	5/8	9
20	3/4	10
25	1	12
32	1 1/4	13
40	1 1/2	20
50	2	27
65	2 1/2	43
80	3	46
100	4	57
125	5	60
150	6	70
200	8	95
250	10	125

45° ELBOW B

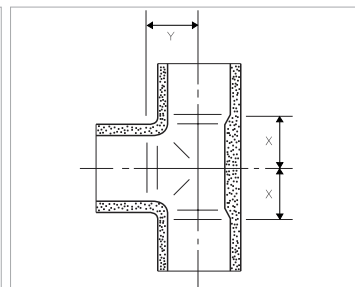
호칭지름 Nominal Size		X	Z
A	B		
8	1/4	6	16
10	3/8	6.5	16.5
15	1/2	8	20
19	5/8	9	25
20	3/4	10	28
25	1	12	34
32	1 1/4	13	38
40	1 1/2	20	48
50	2	27	61

TEE

THE BEST TECHNOLOGY AND THE BEST CHOICE

선행 재고 보유 및 납기 대응력을 지속적으로 하는
고객만족, 영업력 강화 서비스 제공

Provide customer oriented service by keeping
advanced stock and delivering before time.



호칭지름 Nominal Size		X	Y
A	B		
6 × 6	1/8 × 1/8	4	5
8 × 8	1/4 × 1/4	5	7
10 × 8	3/8 × 1/4	8	9
10 × 10	3/8 × 3/8	9	9
15 × 8	1/2 × 1/4	7	11
15 × 10	1/2 × 3/8	8	11
15 × 15	1/2 × 1/2	9	11
19 × 15	5/8 × 1/2	11	12.5
19 × 19	5/8 × 5/8	13	12.5
20 × 15	3/4 × 1/2	10	14.5
20 × 19	3/4 × 5/8	12	14.5
20 × 20	3/4 × 3/4	14	14.5
25 × 15	1 × 1/2	10	17.5
25 × 19	1 × 5/8	12	17.5
25 × 20	1 × 3/4	14	17.5
25 × 25	1 × 1	17	17.5
32 × 15	1 1/4 × 1/2	10	21
32 × 19	1 1/4 × 5/8	13	21
32 × 20	1 1/4 × 3/4	15	21
32 × 25	1 1/4 × 1	18	21
32 × 32	1 1/4 × 1 1/4	21	21
40 × 15	1 1/2 × 1/2	12	27
40 × 19	1 1/2 × 5/8	13	27
40 × 20	1 1/2 × 3/4	14	27
40 × 25	1 1/2 × 1	18	27
40 × 32	1 1/2 × 1 1/4	22	27
40 × 40	1 1/2 × 1 1/2	25	27
50 × 15	2 × 1/2	11	32
50 × 19	2 × 5/8	13	32
50 × 20	2 × 3/4	15	32
50 × 25	2 × 1	18	32
50 × 32	2 × 1 1/4	20	32

호칭지름 Nominal Size		X	Y
A	B		
50 × 40	2 × 1 1/2	24	32
50 × 50	2 × 2	30	32
65 × 15	2 1/2 × 1/2	13	40
65 × 19	2 1/2 × 5/8	14	40
65 × 20	2 1/2 × 3/4	16	40
65 × 25	2 1/2 × 1	18	40
65 × 32	2 1/2 × 1 1/4	21	40
65 × 40	2 1/2 × 1 1/2	26	40
65 × 50	2 1/2 × 2	32	40
65 × 65	2 1/2 × 2 1/2	38	40
80 × 15	3 × 1/2	13	46
80 × 19	3 × 5/8	14	46
80 × 20	3 × 3/4	16	46
80 × 25	3 × 1	19	46
80 × 32	3 × 1 1/4	24	46
80 × 40	3 × 1 1/2	27	46
80 × 50	3 × 2	31	46
80 × 65	3 × 2 1/2	38	46
80 × 80	3 × 3	45	46
100 × 15	4 × 1/2	17	60
100 × 19	4 × 5/8	18	60
100 × 20	4 × 3/4	20	60
100 × 25	4 × 1	22	60
100 × 32	4 × 1 1/4	24	60
100 × 40	4 × 1 1/2	30	60
100 × 50	4 × 2	35	60
100 × 65	4 × 2 1/2	40	60
100 × 80	4 × 3	47	60
100 × 100	4 × 4	56	60
125 × 15	5 × 1/2	22	75.5
125 × 19	5 × 5/8	22	75.5
125 × 20	5 × 3/4	22	75.5

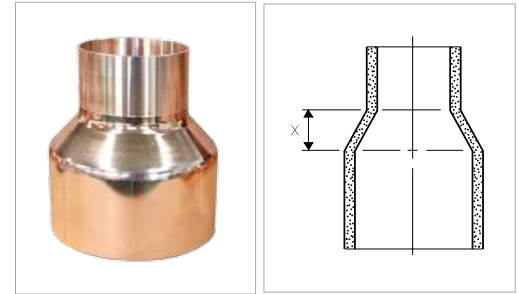
호칭지름 Nominal Size		X	Y
A	B		
125 × 25	5 × 1	30	75.5
125 × 32	5 × 1 1/4	30	75.5
125 × 40	5 × 1 1/2	31	75.5
125 × 50	5 × 2	32	75.5
125 × 65	5 × 2 1/2	45	75.5
125 × 80	5 × 3	48	75.5
125 × 100	5 × 4	63	75.5
125 × 125	5 × 5	74	75.5
150 × 15	6 × 1/2	38	95
150 × 19	6 × 5/8	38	95
150 × 20	6 × 3/4	38	95
150 × 25	6 × 1	38	93
150 × 32	6 × 1 1/4	38	93
150 × 40	6 × 1 1/2	40	90
150 × 50	6 × 2	43	90
150 × 65	6 × 2 1/2	47	90
150 × 80	6 × 3	55	90
150 × 100	6 × 4	65	90
150 × 125	6 × 5	82	90
150 × 150	6 × 6	88	90
200 × 50	8 × 2	52.5	130
200 × 65	8 × 2 1/2	52.5	130
200 × 80	8 × 3	55	130
200 × 100	8 × 4	70	130
200 × 125	8 × 5	80.5	130
200 × 150	8 × 6	92.5	130
200 × 200	8 × 8	117.5	130
250 × 100	10 × 4	85	150
250 × 125	10 × 5	97.5	150
250 × 150	10 × 6	110	150
250 × 200	10 × 8	138	150
250 × 250	10 × 10	168	150

REDUCER, CAP

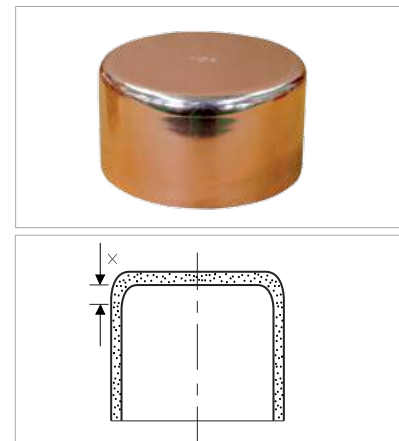
THE BEST TECHNOLOGY AND THE BEST CHOICE

REDUCER

호칭지름 Nominal Size		X	호칭지름 Nominal Size		X
A	B		A	B	
10 × 8	3/8 × 1/4	4	100 × 15	4 × 1/2	50
15 × 10	1/2 × 3/8	4	100 × 20	4 × 3/4	47
19 × 15	5/8 × 1/2	5	100 × 25	4 × 1	42
20 × 15	3/4 × 1/2	5	100 × 32	4 × 1 1/4	37
20 × 19	3/4 × 5/8	4	100 × 40	4 × 1 1/2	30
25 × 15	1 × 1/2	7	100 × 50	4 × 2	25
25 × 19	1 × 5/8	7	100 × 65	4 × 2 1/2	20
25 × 20	1 × 3/4	4	100 × 80	4 × 3	17
32 × 15	1 1/4 × 1/2	10	125 × 15	5 × 1/2	57
32 × 19	1 1/4 × 5/8	10	125 × 20	5 × 3/4	55
32 × 20	1 1/4 × 3/4	10	125 × 25	5 × 1	52
32 × 25	1 1/4 × 1	5	125 × 32	5 × 1 1/4	50
40 × 15	1 1/2 × 1/2	13	125 × 40	5 × 1 1/2	48
40 × 19	1 1/2 × 5/8	10	125 × 50	5 × 2	42
40 × 20	1 1/2 × 3/4	10	125 × 65	5 × 2 1/2	36
40 × 25	1 1/2 × 1	8	125 × 80	5 × 3	30
40 × 32	1 1/2 × 1 1/4	4	125 × 100	5 × 4	18
50 × 15	2 × 1/2	23	150 × 15	6 × 1/2	75
50 × 19	2 × 5/8	20	150 × 20	6 × 3/4	67
50 × 20	2 × 3/4	17	150 × 25	6 × 1	64
50 × 25	2 × 1	13	150 × 32	6 × 1 1/4	62
50 × 32	2 × 1 1/4	10	150 × 40	6 × 1 1/2	59
50 × 40	2 × 1 1/2	7	150 × 50	6 × 2	52
65 × 15	2 1/2 × 1/2	25	150 × 65	6 × 2 1/2	43
65 × 19	2 1/2 × 5/8		150 × 80	6 × 3	40
65 × 20	2 1/2 × 3/4	20	150 × 100	6 × 4	28
65 × 25	2 1/2 × 1	17	150 × 125	6 × 5	30
65 × 32	2 1/2 × 1 1/4	15	200 × 50	8 × 2	77
65 × 40	2 1/2 × 1 1/2	13	200 × 65	8 × 2 1/2	73
65 × 50	2 1/2 × 2	9	200 × 80	8 × 3	68
80 × 15	3 × 1/2	37	200 × 100	8 × 4	50
80 × 20	3 × 3/4	33	200 × 125	8 × 5	45
80 × 25	3 × 1	29	200 × 150	8 × 6	32
80 × 32	3 × 1 1/4	25	250 × 100	10 × 4	80
80 × 40	3 × 1 1/2	21	250 × 125	10 × 5	67
80 × 50	3 × 2	17	250 × 150	10 × 6	54
80 × 65	3 × 2 1/2	10	250 × 200	10 × 8	30



CAP

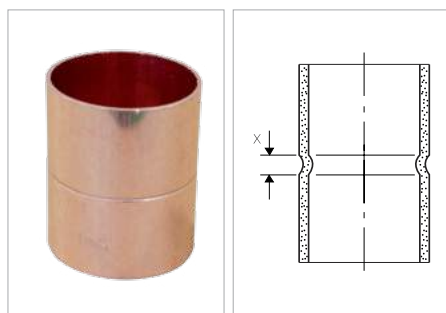


호칭지름 Nominal Size		X
A	B	
15	1/2	1.5
19	5/8	2.0
20	3/4	2.0
25	1	2.5
32	1 1/4	2.5
40	1 1/2	3.0
50	2	3.0
65	2 1/2	3.5
80	3	3.5
100	4	3.5
125	5	4.0
150	6	4.0

SOCKET / RETURN BEND / FLANGE

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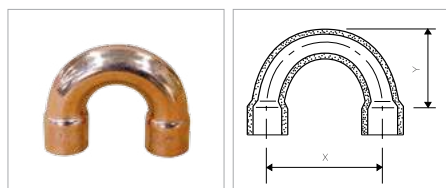
SOCKET



호칭지름 Nominal Size		X
A	B	
8	1/4	2.0
10	3/8	2.0
15	1/2	2.0
19	5/8	2.5
20	3/4	3.0
25	1	3.0
32	1 1/4	3.0
40	1 1/2	3.0

호칭지름 Nominal Size		X
A	B	
50	2	3.0
65	2 1/2	4.0
80	3	4.5
100	4	5.0
125	5	6.0
150	6	7.0
200	8	8.0
250	10	8.0

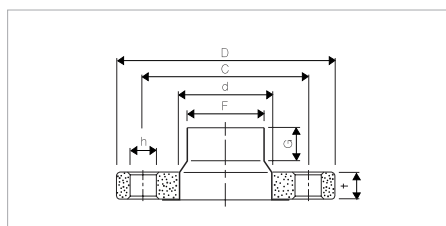
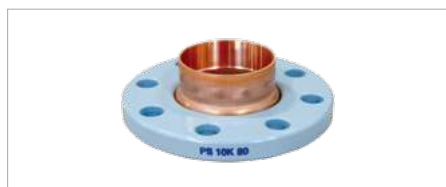
RETURN BEND



호칭지름 Nominal Size		X	Y
A	B		
8	1/4	35.0	22.0
10	3/8	37.5	25.0
15	1/2	41.0	28.0
19	5/8	47.5	34.0
20	3/4	62.0	42.0

호칭지름 Nominal Size		X	Y
A	B		
25.4	7/8	65.0	44.0
25	1	70.0	49.0
32	1 1/4	101.6	68.3
40	1 1/2	114.3	77.8
50	2	139.7	96.8

DIELECTRIC FLANGE (CLASS 10kgf/cm²)



호칭지름 Nominal Size		주요부치수 Main parts Dimensions						
A	B	d	C	D	t	h	F	G
15	1/2	26.5	70	95	12	16 × 4	16.00	11
20	3/4	33.0	75	100	14	16 × 4	22.36	17
25	1	40.0	90	128	14	20 × 4	28.75	21
32	1 1/4	46.7	100	135	16	20 × 4	35.11	23
40	1 1/2	53.7	105	140	16	20 × 4	41.50	23
50	2	68.2	120	155	16	20 × 4	54.22	24
65	2 1/2	81.5	140	175	18	20 × 4	66.96	26
80	3	95.0	150	185	18	20 × 8	79.66	27
100	4	120.0	175	210	18	20 × 8	105.12	28
125	5	146.5	210	250	20	24 × 8	130.55	31
150	6	173.5	240	280	22	24 × 8	156.00	35
200	8	228.0	290	330	22	24 × 12	206.93	40
250	10	285.0	355	400	24	26 × 12	259.06	50

동관과 동관이음쇠의 용접방법

Welding method of copper pipe and copper pipe fitting

솔더링 작업 / SOLDERING

기름이나 산화물 등이 부착되어 있는 그대로 용접하면 용융된 용접재의 흐름이 불량하여 빈 공간이 생길 수 있으므로 그림과 같이 접합부 표면을 미세한 샌드 페이퍼, 나일론 천, 와이어 브러쉬 등을 사용하여 연마한 후 걸레로 닦아주어야 한다.

In case that welding is carried out with attachment of oil or oxide, the flow of molten weld material may become poor and generates gaps. Therefore, the surface of the welded part should be polished using fine sand paper, nylon cloth, wire brush, etc. and wiped and cleaned with a cloth.



연마작업 / Polishing



후럭스 도포 / Flux Coating

솔더링 작업에서 후럭스는 매우 중요한 역할을 한다. 즉 솔더는 자체 강도가 약하므로 모세관 현상에 의해서만 강력한 접합이 기대되므로 접합부위의 표면 상황이 크게 영향을 끼치게 된다.

후럭스를 사용하면 연마 작업 중 완전히 제거하지 못한 여분의 산화물이 제거되며, 용접 도중 관 표면을 감싸주어 산화를 방지함으로써 용융된 솔더의 확산이 잘 이루어진다. 후럭스는 가열시 집합부 전면에 넓게 퍼지므로 겹침 부위의 1/3정도 면적에만 도포해 주면 된다.

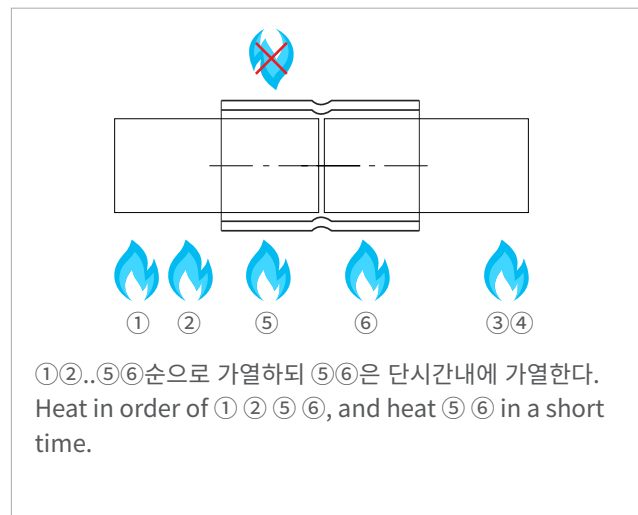
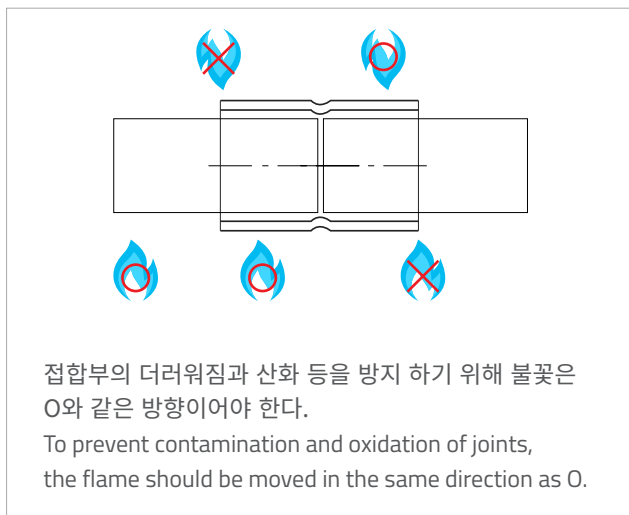
Flux plays a very important role in soldering operations. In other words, since the solder itself is weak in strength, strong bonding is expected only by the capillary phenomenon, so that the surface condition of the soldering area is greatly affected.

When flux is used, the excess oxide that was not completely removed during the polishing operation is removed and oxidization is prevented by covering the tube surface during welding, so molten solder can be effectively diffused. Since the flux spreads widely over the entire surface of the welded part during heating, it is applied to only about 1/3 of the overlap area.

THE BEST TECHNOLOGY AND THE BEST CHOICE

가열 방법은 그림과 같이 불꽃을 이음부 내면으로 들어가지 않는 방향으로 전체가 골고루 가열되도록 불꽃을 이동시키면서 가열시킨 후 (적당한 가열온도는 후력스가 거품상태로 된 다음에 관이 쥐색으로 변한다) 불꽃을 치우고 솔더를 이음부위에 접촉시켜 녹인다.

As shown in the figure, while moving the flame along the pipe to heat the whole part uniformly in such direction that the flame does not enter the inner surface of the joint (adequate heating temperature is known when the pipe is changed into mouse gray before the flux makes forming. Remove the flame and melt the solder by contacting with the joint.



가열의 순서 / Order of Heating

접합부가 잘 조립되어 있다면 거의 순간적으로 접합부의 둘레에 용융된 솔더의 태가 형성된다. 용융된 솔더의 유동이 불량하고 한쪽으로만 침투되면 접합면에 산화물이 묻어 있거나 가열이 덜된 경우이고, 접합부 틈새로 침투되지 않거나 밖으로 흘러 넘치면 과열이 된 경우이다.

만약 용접재가 용융되지 않게 되면 충분히 가열되지 않은 것이므로 접합부를 재가열하고 다시 접촉시켜 녹인다. 또한 가열로 후력스를 연소시켜 버려 효력을 감소시키지 않도록 하여야 하며 후력스가 연소되면 용융된 용접재는 접합부 틈새로 흘러 들어가지 않으므로 분해하여 다시 연마하고 후력스를 도포하여야 한다.

접합부의 온도가 냉각되기 전에 형검으로 과잉의 용접재나 후력스를 닦아내 준다.

용접재가 완전히 응고될 때까지 움직이거나 물을 끼얹지 않도록 한다. 물을 끼얹으면 용접재가 튀거나 갈라질 염려가 있고, 특히 동합금 이음쇠를 사용한 때에는 이음쇠에 금이 가는 수가 있다.

In case that the joint is well welded, molten solder is formed around the joint almost instantaneously. If the flow of molten solder is poor and penetrates into only one side, oxide is remained on the joint surface, which means heating is not completely done while the flow of molten solder does not penetrate through the joint gap or overflows, it is caused by overheating.

If the weld material is not melted, it is caused by insufficient heat. Reheat the joint and contact to the joint for melting. Also, make sure to combust the flux by heating while keeping the effect without reduction. When the flux is burned, disassemble the molten weld material to prevent the flux from flowing into the gap of the joint and then polish again and apply it. Wipe the excess weld or flux with a cloth before the joint cools down.

Do not move or spray water on the welding material until it is completely solidified. If water is sprayed, the welding material is likely to spatter or crack. In particular, when a copper alloy fitting is used, the fitting is likely to crack.

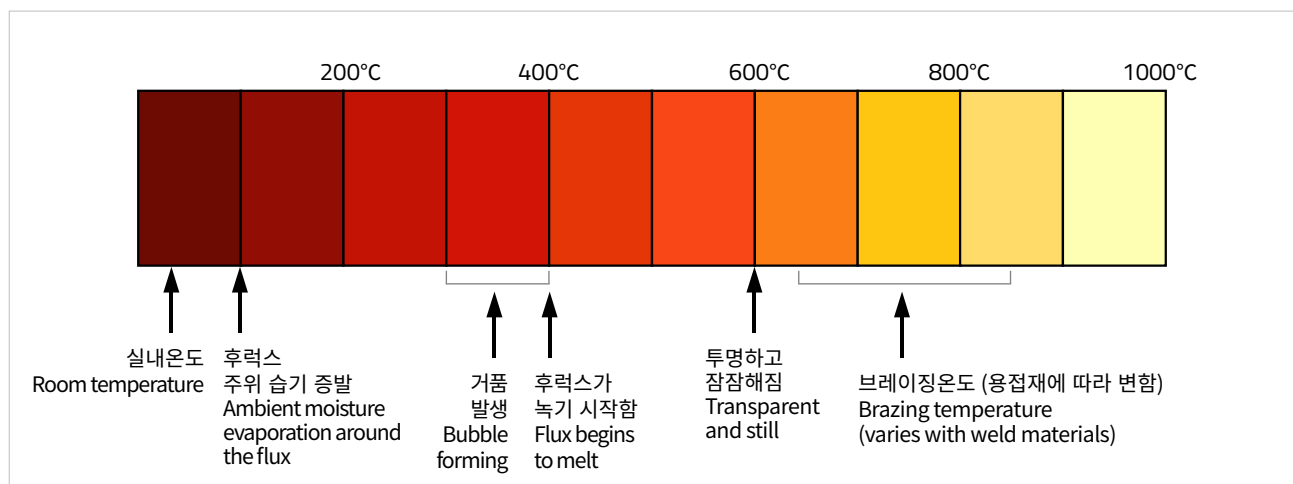
동관과 동관이음쇠의 용접방법

Welding method of copper pipe and copper pipe fitting

브레이징 작업 / BRAZING

동관 배관 중 가장 중요한 사항은 브레이징 작업시의 가열 온도이다. 브레이징 휠러 메탈은 비교적 높은 온도인 700~800°C 정도에서 용융되므로 특히 과열에 주의하여야 한다. 다음 그림은 가열 온도의 척도를 도시한 것이다. 안전한 가열을 위하여는 가열 토치의 선택이 중요하다.

The most important factor for the copper pipe is the heating temperature when brazing. Brazing wheeler metal is melted at a relatively high temperature of 700 ~ 800, so be careful to avoid overheating. The following figure shows a scale of heating temperature. The choice of the heating torch is important for the safety while heating.



가열온도와 후럭스의 상태 / Heating Temperature And State Of Flux

토치는 일반적으로 동관 전용 토치를 사용하는 것이 바람직하나, 산소 아세틸렌 토치를 사용할 경우 과열이 되지 않도록 하여야 한다. 가열방법은 솔더링 작업 시와 같은 조건을 원칙으로 하지만, 브레이징의 경우는 동관을 조성하고 있는 결정구조가 성장하게 되는 재결정 온도 이상으로 가열하여야 하므로 가열부와 비가열부의 경계에 경도차가 발생하여 그 부분이 약해질 수 있으므로 접합부만 집중 가열이 되지 않도록 접합부 좌우로부터 서서히 가열되도록 하여야 한다. 충분히 가열된 다음 용접재를 접합부에 대어주면 틈새 내부로 침투되면서 연속되는 환상대(環狀帶)가 나타난다. 경우에 따라 용접재가 퍼지지 않고 물방울처럼 되는 경우에는 표면에 산화물이 남아있거나 가열이 충분하지 않은 때문이고, 또한 용접재가 흘러 들어가지 않고 관과 이음쇠의 외측으로 흐를 경우에는 과열된 것이다. 대구경 관을 접합시키고자 할 때는 노즐이 2개소 이상으로 제작된 토치를 사용하는 것이 효율적이다. 작업이 끝난 후, 특히 후럭스를 사용하는 동합금 이음쇠의 경우에는 표면에 묻어 있는 산화물이나 여분의 후럭스를 제거해 주어야 하고, 급냉시키면 금이 가거나 깨지는 수가 있으므로 서서히 냉각시키는 것이 좋다.

Generally, it is preferable to use a torch dedicated to a copper pipe, but when using an Oxygen acetylene torch, overheating should be prevented.

In principle, the heating method is the same as the soldering operation.

However, in the case of brazing, it should heat higher than recrystallization temperature at which the crystal structure that copper pipe is formed develops. And hardness is generated differently at the boundary between the heating part and the non-heating part, which may cause the weakness in the welded part. So, heat slowly from the left and right sides of the joint to prevent partial heating on the specific area.

THE BEST TECHNOLOGY AND THE BEST CHOICE

When the welding material is heated sufficiently and then is placed to the joint part, a continuous annular band appears as it penetrates into the gap. In some cases, if the welding material does not spread and becomes like a water droplet, it is because the oxide is left on the surface or the heating is not sufficient. Or, if the welding material does not flow inside, rather flows outside the pipe and the fitting, it means it is overheated. When joining a large diameter pipe, it is effective to use a torch made of two or more nozzles. After finishing work, for copper alloy fittings using flux, it is recommended to remove oxide or excess flux on the surface and slowly cool it down because it may cause crack or break if cooling down fast. In the case of copper alloy fittings using flux, especially after finishing work, it is recommended to remove oxide or excess flux on the surface and slowly cool it because it may crack or break if quenched.

접합부위의 상용압력 / GENERAL PRESSURE AT WELDED PART

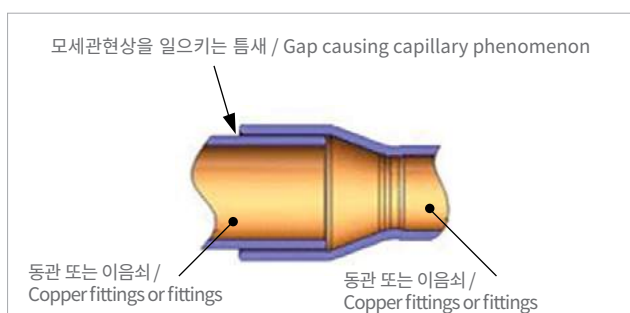
AWS 및 ASTM에서 규정하는 용접재중 시스템의 상용압력과 온도를 고려하여 적당한 것을 선택한다. 대부분 동관의 용접은 솔더링으로 충분하지만 저온(-18°C~-73°C)에서 작업이 이루어진다면 솔더링부의 상용압력 이상이 요구되는 경우에는 브레이징 휠러메탈을 사용하여야 한다.

다음 도표는 접합부 틈새와 인장강도와와의 관계를 도식한 것으로 겹침부의 틈새가 0.04mm 부근에서 가장 높은 인장강도를 갖는다. 그러나 제조상의 한계가 있으므로 동관에서 요구하는 접합부의 틈새는 대략 0.04~0.2mm범위에 들면 된다.

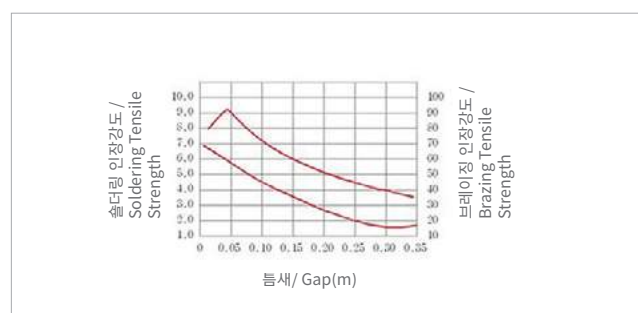
Choose the appropriate one considering the general pressure and temperature of the welding system in accordance with the specification of AWS and ASTM. Most copper tubes are sufficient for soldering, but when working at low temperatures (-18 ° C to -73 ° C) or when more than the general pressure is required for the soldering section, a brazing wheeler metal should be used. The following table shows the relationship between the joint gap and tensile strength, and it has the highest tensile strength near the gap of 0.04mm in the overlapping part. However, due to manufacturing limitations, the clearance of the joint required in the copper pipe is in the range of approximately 0.04 to 0.2mm.

사용용접재 / Welding material	사용온도 / Operating temperature (°C)	관경 (A) / Pipe diameter				
		3~25	32~50	65~100	125~200	250~300
Sn96 Sb5	38	35.16	28.12	21.09	18.95	10.5
	66	28.12	24.56	19.36	17.53	10.5
	94	21.09	17.53	14.08	12.64	9.78
	121	14.06	12.33	10.5	9.48	7.74
브레이징용 (용융온도 540~760°C) For brazing (melting temperature 540 ~ 760 °C)		압력과 온도관계는 용접재의 재질과 시공방법에 의함. The relationship between pressure and temperature depends on the material and construction method of the welding material.				

솔더링 접합부의 최대사용압력 (kg/cm²) / Maximum operating pressure of soldering joint (kg / cm²)



용접틈새 / Weld Gap



용접부의 틈새와 인장강도 /
Gap And Tensile Strength Of Welded Area