

1-7. Straight Equivalent Length of Joints

Design the tubing system by referring to the following table for the straight equivalent length of joints.

Table 1-7 Straight Equivalent Length of Joints

Gas tubing size (mm)		12.7	15.88	19.05	22.22	25.4	28.58	31.8	38.1
90° elbow		0.30	0.35	0.42	0.48	0.52	0.57	0.70	0.79
45° elbow		0.23	0.26	0.32	0.36	0.39	0.43	0.53	0.59
U-shape tube bent (R60-100 mm)		0.90	1.05	1.26	1.44	1.56	1.71	2.10	2.37
Trap bend		2.30	2.80	3.20	3.80	4.30	4.70	5.00	5.80
Y-branch distribution joint		Equivalent length conversion not needed.							
Ball valve for service		Equivalent length conversion not needed.							

Table 1-8 Refrigerant tubing (Existing tubing can be used.)

Tubing size (mm)			
Material O		Material 1/2H • H	
ø6.35	t0.8	ø22.22	t1.0
ø9.52	t0.8	ø25.4	t1.0
ø12.7	t0.8	ø28.58	t1.0
ø15.88	t1.0	ø31.75	t1.1
ø19.05	t1.2	ø38.1	over t1.35
		ø41.28	over t1.45

* When bending the tubes, use a bending radius that is at least 4 times the outer diameter of the tubes.
In addition, take sufficient care to avoid crushing or damaging the tubes when bending them.

1-8. Additional Refrigerant Charge

Additional refrigerant charge amount is calculated below.

$$\text{Required amount of additional refrigerant charge} = [(\text{Amount of additional refrigerant charge per meter of each size of liquid tube} \times \text{its tube length}) + (\dots) + (\dots)] + [(\text{Necessary amount of additional refrigerant charge per outdoor unit} + (\dots) + (\dots))]$$

*Always charge accurately using a scale for weighing.

*If the existing tubing is used and the amount of on-site refrigerant charge exceeds the value listed below, change the size of the tubing to reduce the amount of refrigerant.

Total amount of refrigerant for the system with 1 outdoor unit: 50 kg

Total amount of refrigerant for the system with 2 outdoor units: 80 kg

Total amount of refrigerant for the system with 3 outdoor units: 105 kg

Table 1-9-1 Amount of Additional Refrigerant Charge Per Meter, According to Liquid Tubing Size

Liquid tubing size	6.35	9.52	12.7	15.88	19.05	22.22	25.4
Amount of additional refrigerant charge/m (g/m)	26	56	128	185	259	366	490

Table 1-9-2 Necessary Amount of Additional Refrigerant Charge Per Outdoor Unit

SPW-C0706DXH8(R)	SPW-C0906DXH8(R)	SPW-C1156DXH8(R)	SPW-C1306DXH8(R)	SPW-C1406DXH8(R)	SPW-C1606DXH8(R)	SPW-C1806DXH8(R)
2.5 kg	3.5 kg	3.5 kg	6.4 kg	6.4 kg	7.6 kg	7.6 kg

Table 1-10 Refrigerant Charge Amount at Shipment (for Outdoor Unit)

SPW-C0706DXH8(R)	SPW-C0906DXH8(R)	SPW-C1156DXH8(R)	SPW-C1306DXH8(R)	SPW-C1406DXH8(R)	SPW-C1606DXH8(R)	SPW-C1806DXH8(R)
9.9 kg						

1-9. System Limitations

Table 1-11 System Limitations

Max. No. allowable connected outdoor units	3 *2
Max. capacity allowable connected outdoor units	168 kW (60 hp)
Max. connectable indoor units	64 *1
Max. allowable indoor/outdoor capacity ratio	50 – 200 % *3

*1: In the case of 22 hp (type 61.5 kW) or smaller units, the number is limited by the total capacity of the connected indoor units.

*2: Up to 3 units can be connected if the system has been extended.

*3: It is strongly recommended that you choose the unit so the load can become between 50 and 130%.