

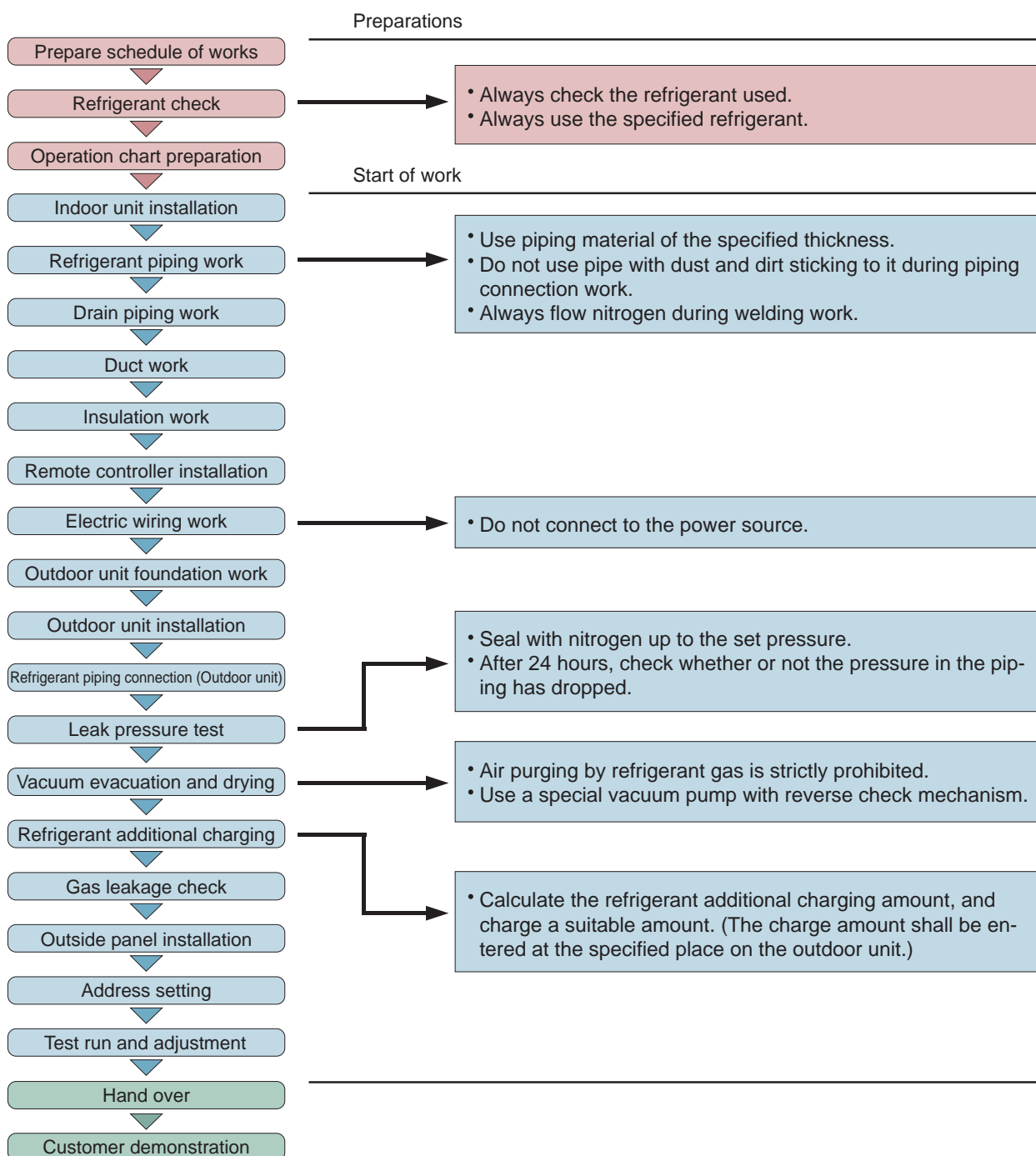
R410A Work Notes

R410A

The working pressure of R410A is approximately 1.6 times higher than that of R22.
As the oil type is also different, be sure not to mix them.

| Refrigerant | R410A | R407C | R22 |
|----------------|-------------|-------------|-------------|
| Oil | POE oil | POE oil | Mineral oil |
| Pressure ratio | Approx. 1.6 | Approx. 1.1 | 1 |

Work flow



Piping material

- Use the correct refrigerant piping and materials for R410A.
- For the pipe wall thickness, see the table below.

| | | | | | |
|---|--|--------|---------|---------|---------|
| Copper pipe outside diameter(Ø) | Ø 6.35 | Ø 9.52 | Ø 12.70 | Ø 15.88 | Ø 19.05 |
| Material | Copper JIS H3300 C1220T-O or equivalent ¹⁾ | | | | |
| Copper pipe ²⁾ wall thickness (mm) | 0.8 | 0.8 | 0.8 | 1.0 | 1.2 |

Note: Always observe and follow the necessary local regulations when installing refrigerant piping.

1) Allowable tensile stress ≥ 33 (N/mm²); 2) Design pressure 4.2MPa.

Tools

- R410A work requires a number of special tools (* symbol).
- Since tools used in R22 work cannot be used, provide the tools separately.

| Tool name | Process and application | |
|---|--|--|
| Pipe cutter | Pipe cutting | Refrigerant piping work |
| * Flaring tool | Pipe flaring work | |
| * Torque wrench (1/2, 5/8) | Flare nut connection | |
| Expander | Expansion at pipe connection | |
| Pipe bender | Pipe bending work | |
| Nitrogen gas | Pipe interior oxidation prevention | Air tightness test |
| Welder | Pipe brazing | |
| * Gauge manifold | Vacuum evacuation and refrigerant charging operation check | Air tightness test ~ Refrigerant additional charging |
| * Charging hose | | |
| * Vacuum pump(with adaptor) | | Vacuum drying |
| Electronic scale for refrigerant charging | | Refrigerant additional charging |
| Gas leak tester | Gas leakage test | |

Work precautions

Refrigerant check Before work, check the refrigerant used and prepare materials matched to the refrigerant.

Refrigerant piping work Observe the basics (dry, clean) of refrigerant piping and carry out work so that problems will not occur. Moreover, when performing welding work, seal in nitrogen gas and perform work so that an oxide film is not produced.



Leak pressure test Conduct a pressure test sufficiently and make sure there is no refrigerant leakage.

Vacuum drying If the vacuum pump does not have a reverse flow check mechanism, use the pump together with a reverse flow check adapter.

Additional refrigerant Charge only the amount of R410A refrigerant calculated in the additional refrigerant charge calculation. This refrigerant should only be charged in a liquid form.