

Date: 4/4/2022

Subject: Piping Best Practices

Models: CAC, FJM, DVM S Eco, DVM S, DVM S2

Piping Design

For all Samsung HVAC systems (except for Residential 1 to 1 systems), piping (size, length, fittings, etc.) must be installed per the DVM S Pro design output file. Upon completion, actual piping lengths should be determined, and a DVM Pro “As-Built” file created to ensure that the proper amount of incremental refrigerant is added to the system prior to start-up and that the new lengths do not cause the design to go outside of acceptable limits.

Piping for all systems must be performed per Manufacturer’s recommendations (as outlined in the applicable installation manual) and must meet all Local, State and Federal Codes.

Only Copper ACR/Nitrogenized hard or soft drawn tubing (UNS C12200/ASTM B280) with an operating pressure of 700 psi at 250°F (121°C) must be used. Hard drawn copper is recommended for piping from the outdoor unit to the MCU boxes (heat recovery) or distributors (heat pump). Soft drawn piping should be used from the MCU or distributor to the various indoor units as this will allow for natural expansion of the piping network. If soft drawn copper is used, care should be taken to ensure that the piping is straight to not create any oil traps. In extreme instances, expansion joints (suitable for R-410A refrigeration systems) as specified by the design engineer should be considered.

Piping Connections

For flared connections, burrs should be removed from the inside of the pipe ends using a suitable deburring tool and care must be taken to ensure that no debris is allowed to enter the system during this process. A flare block suitable for R-410A refrigerant should be used to create the flare and a lubricant (refrigerant/machine oil or WD-40) should be applied sparingly to the flare face during the flaring process and to the entire joint sealing surface prior to assembly. Do not use lubricant on the threads. Flare connections must be torqued to the values listed in the applicable installation manual and a backup wrench should always be used to prevent equipment piping damage. The preferred method of making the various (non-flared) piping connections is by brazing using a phosphorous Copper, 15% Silver alloy and adhering to industry best practices. Under no circumstances should soft solder be used.

Please note that a nitrogen bleed must always be maintained on the system while brazing to ensure that oxidation does not accumulate within the piping network. Debris in the system will lead to premature failure of various components within the system and will not be covered under warranty.

Upon completion of brazing, the system should be leak tested up to 600 PSIG using 3 pressure increments (200 PSIG, 400 PSIG and 600 PSIG) to help find successively smaller leaks. Pressure should be held for 24 hours to ensure that no leaks are present. Keep in mind that slight variations in system pressure might occur due to changing ambient conditions.

Once the installer is certain that no leaks are present, the system should then be triple evacuated to ensure that no moisture and/or non-condensables remain which would ultimately impact reliability and performance.

Use of Mechanical Fittings

In certain applications, where it may not be practical to use an open flame, installers might consider using mechanical fittings in lieu of the preferred brazing method described above. Although Samsung HVAC does not endorse any specific product, we are not opposed to the use of such fittings if they are installed per the manufacturer's instructions and meet all Local, State and Federal Codes.

Regardless of the method used to create reliable and permanently "leak free" joints, preparation of the piping and fittings is the key to success.

Warranty

Samsung HVAC does not assume any warranty or liability for field piping (e.g. workmanship, leaks, pipe material failure, etc.). For full warranty details, please refer to the applicable ***Limited Warranty Statement***.