

Automatic Refrigerant Charge

Towards Smart Building Installation and Maintenance



VRV S High Seasonal Efficiency *SERIES*



Automatic completion with proper refrigerant amount



Monitoring refrigerant charging is unnecessary



No recalculation of charge amount due to minor design changes locally



Smart and Quality Installation

Simple and Easy

2 STEPS EXECUTION

An automatic refrigerant charge port is provided to facilitate automatic refrigerant charge function.

For optimal system efficiency, it is recommended to conduct automatic refrigerant charging.

At any point of time, refrigerant charging is required after a period of operation time, user can initiate automatic refrigerant charge function again for easy maintenance.



STEP 1

Calculate additional refrigerant charge amount (kg) based on design drawings

Required Information

Elevation drawing

AND

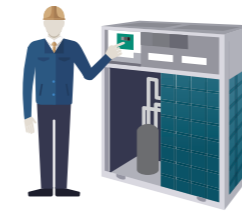
Plan layout piping drawing

Calculation Methodology

VRV Xpress

OR

Manual calculation



STEP 2

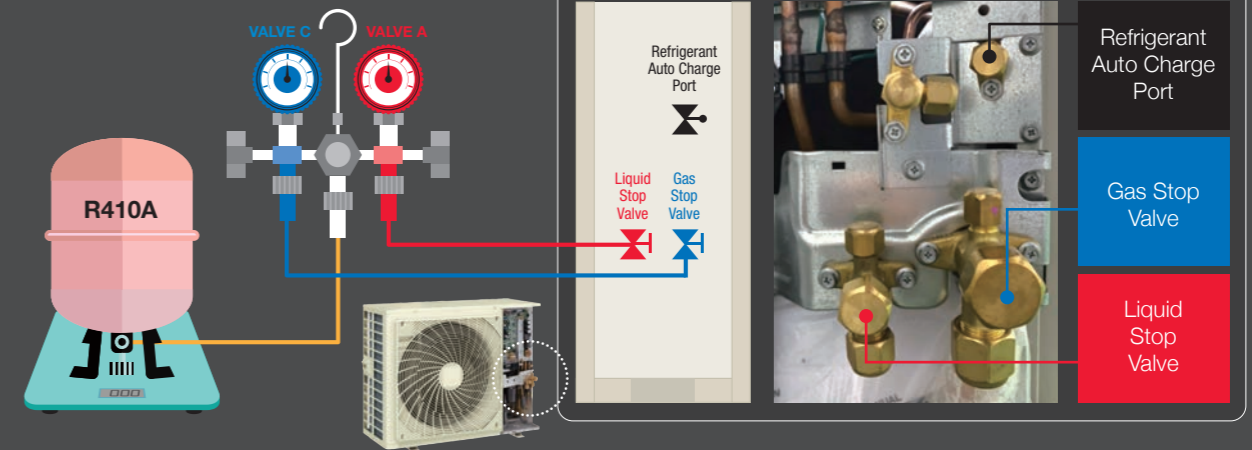
Automatic Refrigerant Charging

Connect charging hose from the measuring gauge to Refrigerant Auto Charge port. Procedure to run automatic refrigerant charging:

- 1 Open Liquid and Gas Stop Valve. Valve A and Valve C remain closed.
- 2 Enter **Mode 2** button on the PCB board.
- 3 Push **BS2** once.
- 4 "888" will be shown on screen.
- 5 Push **BS2** button and hold for more than **5 seconds**.
- 6 CU will start to prepare for operation. "t01" will be shown, this means that pressure control is executed.
- 7 Display will change from "t01" to "t02" (Cooling start-up) then to "t03" (Waiting stable cooling operation).
- 8 When "t03" flashes, automatic refrigerant charging is now ready to commence.
- 9 Push **BS2** within **5 minutes** and open **Valve C**.
- 10 During the charging process, the screen will display "t03" and low pressure value with an interval of 1 second.
- 11 Refrigerant will be charged automatically and "P9" will appear on screen when charging process is completed.

When completed, close Valve C and push BS1 to leave program and proceed to Test Run.

Valve Connection



Tips For Faster Automatic Refrigerant Charging

To shorten refrigerant charging time, user can pre-charge -5kg before initiating automatic refrigerant charge function. **Example: Total required additional refrigerant amount is 12kg, user can pre-charge 7kg, then initiate automatic refrigerant charge function for the balance 5kg.**

When outdoor ambient temperature falls below 15 degree Celsius (°C), a cylinder heater is recommended for faster charging time.

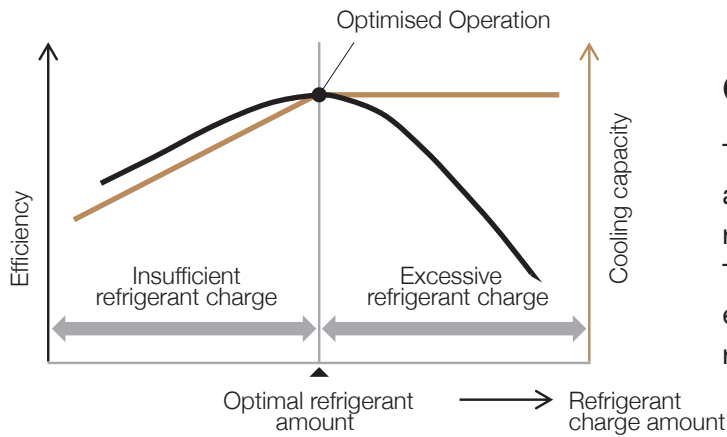
*For piping length more than 90m, it is mandatory to conduct automatic refrigerant charging, otherwise testing & commissioning operation will not proceed. The automatic refrigerant charging has limits as described below.

• Outdoor temperature: 0°C DB~43°C DB. • Indoor temperature: 10°C DB~32°C DB.

When the outdoor temperature is lower than 5°C, the refrigerant tank should be warmed during refrigerant charging.

Automatic Refrigerant Charge Function

Contribute to optimise operation efficiency, higher quality and easier installation.



Optimised operation efficiency

The automatic refrigerant charge function automatically determines the optimal amount of refrigerant to be charged. This function prevents capacity shortage or energy loss due to excessive or insufficient refrigerant.

Benefits



Quick & Easy Execution

- ▶ Simple 2 steps procedure
- ▶ Automatic refrigerant charge function only charge in necessary amount of refrigerant
- ▶ Easy maintenance as refrigerant charge amount will be regulated automatically if VRV unit requires recharging after a certain period of operation time



Quality Installation

- ▶ Charge in accurate refrigerant amount for VRV system to operate at its optimal condition
- ▶ Prevents overcharging of refrigerant amount
- ▶ Overcharging can cause VRV to underperform on actual site, and compressor might break down easily



Cost & Time Saving

- ▶ Only charge in necessary amount of refrigerant to reduce refrigerant usage
- ▶ Self regulated charging process using PCB saves time and effort, as monitoring of refrigerant charging process is unnecessary
- ▶ Reduce labour cost as preliminary calculation of refrigerant piping length is required, and recalculation of refrigerant charge amount is not required if there is minor design change



Smart & Efficient System

- ▶ Fuss-free automated refrigerant charging process
- ▶ Having accurate refrigerant amount enables VRV system to operate at its optimal performance and reduces electricity consumption – Making buildings more “Green”
- ▶ Saves energy and electricity cost

