

Installation Instructions R32 pump down kit

Model No. **PAW-PUD2WB-1**

Read through the Installation Instructions before you proceed with the installation.

Please carefully read the “Safety Precautions”. This booklet mainly mentions the safety-related regulatory matters. Regarding the contents of the installation, please scan the matrix two-dimensional (2D) barcode and refer to the detailed manuals.

Panasonic will accept no responsibility for any accident or damage that occurs because of such improper installation in any way not described in the detailed manuals. Also, malfunction caused by incorrect installation is not covered by the product warranty.

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Please Read Before Starting

These instructions are for the pump down valve kit. Please refer to the Installation Instructions for the outdoor unit and indoor units! If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

- This product is a pump down and shut off valve kit

IMPORTANT!

Please Read Before Starting

This pump down valve kit must be installed by the sales dealer or suitably qualified installer.

This information is provided for use by authorised persons only.

1. Safety Precautions

We assume no responsibility for accidents or damages resulting from methods other than those described in the Installation Instructions or methods using unspecified parts.

Malfunctions that occur due to unauthorised installation methods are not covered by the product warranty.

- This Pump Down Kit must be installed in accordance with National Wiring Regulations.
- Please also read installation instructions of connected devices.
- When relocating or repairing this Pump Down Kit, provide the Installation Instructions to the servicing personnel.

 WARNING This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.	 CAUTION This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.
 Prohibited matters	

Precautions for Installation setup

 WARNING
1. Turn off the circuit breaker of the units before installation. 2. Select an installation location which is rigid and strong enough to support or hold the electrical box of this Pump Down Kit, provide pipe clamps which support the additional weight of the valves and select a location for easy maintenance. • Use only the parts specified by Panasonic as supplied accessories. • Ensure cables are installed properly so that external forces cannot affect them. • Disassembly and modification of this Pump Down Kit is not permitted under any circumstances.



WARNING

- This Pump Down Kit must be installed by the sales dealer or suitably qualified installer.
- When installing the Pump Down Kit, use appropriate protective equipment and tools for safety.
- This Pump Down Kit should be securely installed in accordance with the Installation Instructions.
- Electric work must be performed by authorised personnel in accordance with the local regulations and in accordance with the Installation Instructions.
- To avoid malfunctions caused by radio wave interference, keep the Pump Down Kit away from devices such as other wireless devices, microwaves and devices that use 2.4 GHz signal. Depending on the area, the module may not be available.
- Attach the electrical cover to the indoor unit securely.
- Make sure to connect the Pump Down Kit to the PCB and terminal board of the outdoor unit properly.
- Do not set up in hospitals or places where electronic medical devices are located.
- If you have a cardiac pacemaker or implantable cardioverter defibrillator, please keep at least 15 cm away from the Pump Down Kit.
- Do not use the electrical control box near to automatic control equipment (automatic door, fire alarms, etc.).
- In case of an abnormal condition (such as a burning smell), stop the Pump Down Kit immediately and turn the breaker OFF.
- Do not operate with wet hands.
- Do not splash water into open Pump Down Kit electrical box or use in areas with high humidity such as a bathroom.



Caution

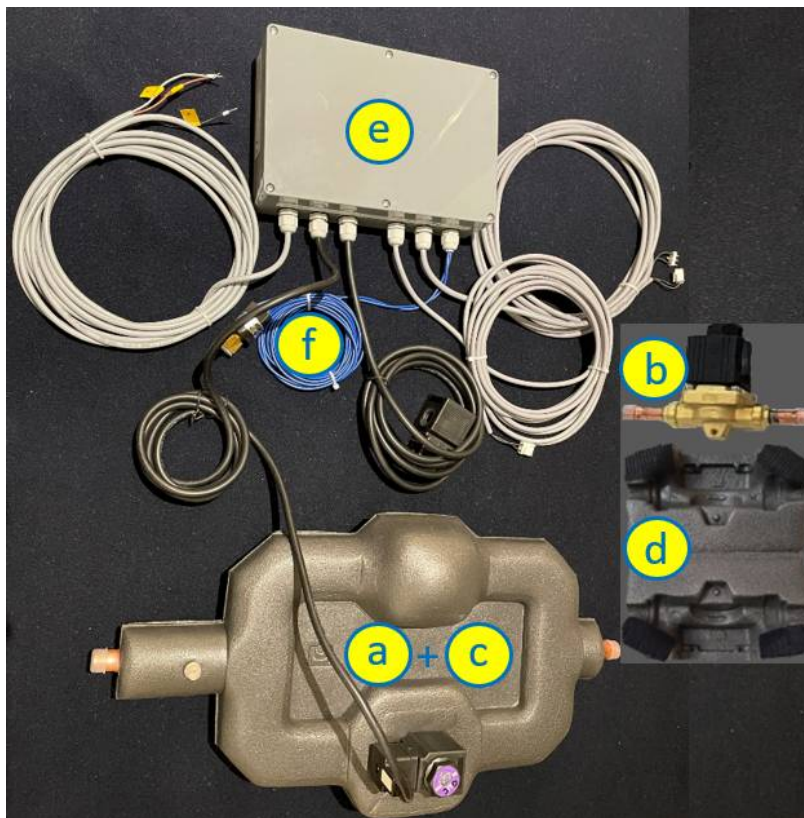
1. Ground yourself to discharge static electricity before performing any wiring.
2. Do not install the Pump Down kit electrical box in places with direct sunlight or where the ambient temperature is more than 45°C. Follow specifications.
3. The connecting cable must not touch piping directly.
4. Do not set up where children can reach the Pump Down Kit.
5. Do not stand on an unstable surface when operating or checking the Pump Down Kit.
6. Do not use in special environments.
Use in places with large amounts oil (including machine oil), steam, flammable or corrosive gas, voltage fluctuation, surrounding the metal body, may lead to severe decrease in functionality and damage to parts.
7. Do not use the Pump Down Kit near other wireless devices, microwaves, cordless phones, or facsimiles.
8. Install this Pump Down Kit electrical box vertically and the valves horizontally.

Note

9. When attaching this Pump Down Kit, be sure to fix it in a proper way and confirm that Pump Down kit electrical box and the valves are fixed.
10. The warranty does not cover the product if it falls from an elevated location.
11. For the setup and commissioning of the whole VRF system please check the outdoor unit manual

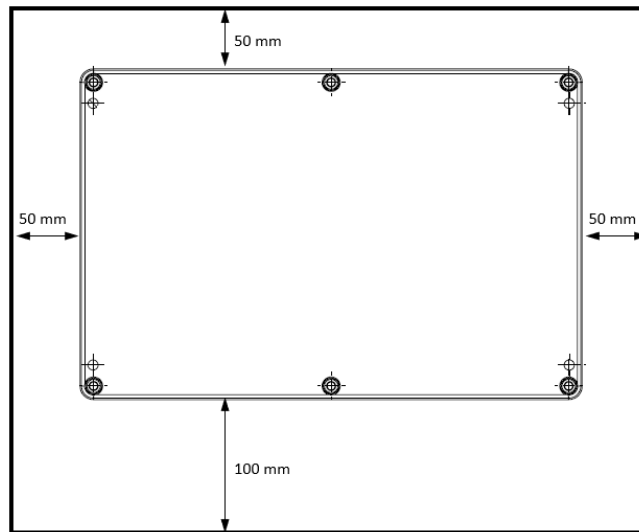
2. Supplied parts of the kit

- a. Pipe kit with magnetic valve and non-return valve (gas pipe).
- b. Single magnetic valve (liquid pipe).
- c. Insulation with Velcro tailored for the pipe kit
- d. Insulation with Velcro tailored for the single valve
- e. Electric box with all wiring already fitted:
 - Power supply to OU terminal
 - Magnetic valve 2 including coil connector
 - Magnetic valve 1 including coil connector
 - O2 connection with plug
 - High-pressure SW connection with plugs
 - Low-pressure switch wiring
- f. Low pressure switch



3. Installation location

3.1 Electrical Box

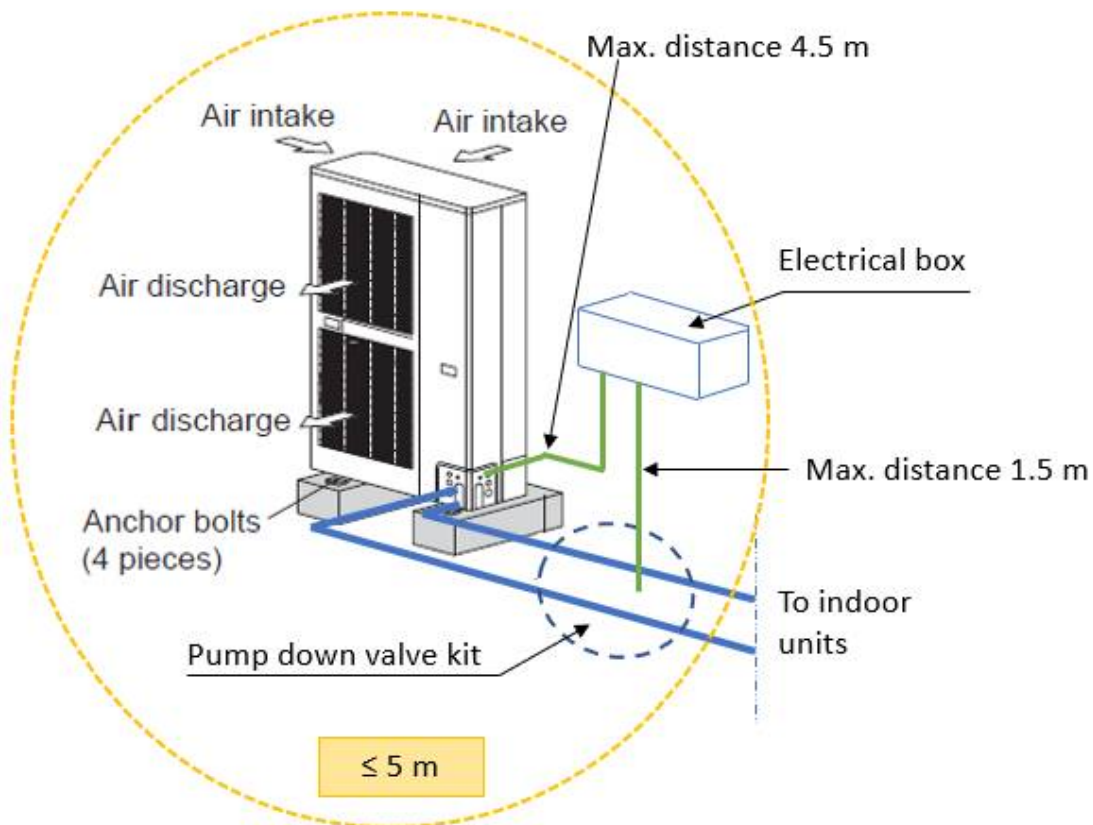


- Install at the height of 100 mm or more (due to space of wiring).
- Keep a space around the Electrical Box as detailed on the figure shown above.
- Preferably install within 4.5 m distance (wiring length) to the outdoor unit and within 1.5 m distance (wiring length) to the valve kit as detailed on the following page. If these limits can't be kept, you need to extend the wiring with field supplied means.
- Avoid the following locations for installation.
 - In direct sunlight
 - Location where vibrations can occur
 - Location where too much dust or water occurs (The Electrical Box Protection Code is IP67 with wires properly connected)
 - Location where condensation occurs
 - Location near heat sources
- Keep a distance of 1 m or more from TVs, radios, and PCs. (Image blur or related noise may occur)
- In the case of high humidity there may be the possibility of condensation water inside the Electrical Box occurring, in this case retrofit the Box with pressure equalization (This measure is to be created on site if required)
- Do not use in special environments.
Use in places with much oil (including machine oil), steam, flammable or corrosive gas, voltage fluctuation, surrounding the metal body, may lead to severe decrease in functionality and damage to parts.

3.2 Piping

For the outdoor unit installation position and space, please refer to the installation instruction of the outdoor unit.

Although the Pump Down Kit could be installed at any position within the main pipe from the outdoor unit to the indoor units, it is recommended to install it as close as possible to the outdoor unit, because of the limited wiring length. If these limits cannot be kept, you need to extend the wiring with field supplied means.



5. Technical specification – Pump Down Kit

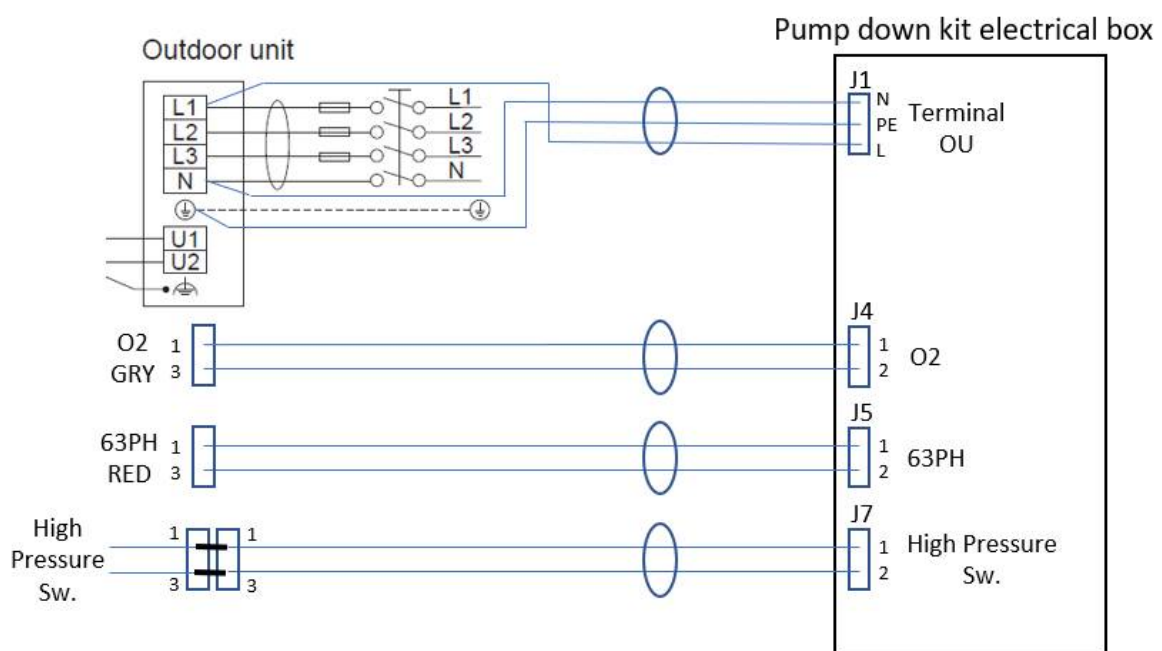
PAW-PUD2WB-1	Unit	Value
Power source	V / ph / Hz	220 ... 240 / 1 / 50
Rated current consumption	A	0.2 A
Rated power consumption (max.)	W	21 W
Dimensions (electrical enclosure)	mm	222 x 146 x 55 (W x H x D)
Dimensions (gas pipe and valves)	mm	500 x 215 x 87 (L x W x H)
Dimensions (liquid valve)	mm	143 x 70.5 x 87 (L x W x H)
Net weight (including valves)	kg	5.3 kg
Pipe diameter	mm (inch)	(Liq.) 9.52 (3/8") / (Gas) 15.88 (5/8"); 22.00 (7/8") ¹
Ambient temperature (max.)	°C	45
Protection class	-	IP67

¹⁾ Use the uncut size (22.00; 7/8") for 10 HP, a field supplied reducer needs to be used for 8 HP (19.05; 3/4"), cut the pipe to use the smaller pipe diameter (15.88; 5/8") for 4 – 6 HP systems. Note that there are special rules for increased pipe size due to longer piping length, for details see the corresponding outdoor unit installation instruction or refer to the design software. In such case, please use field supplied reducers accordingly.

6. Power supply and connection cables between outdoor unit and Pump Down Kit

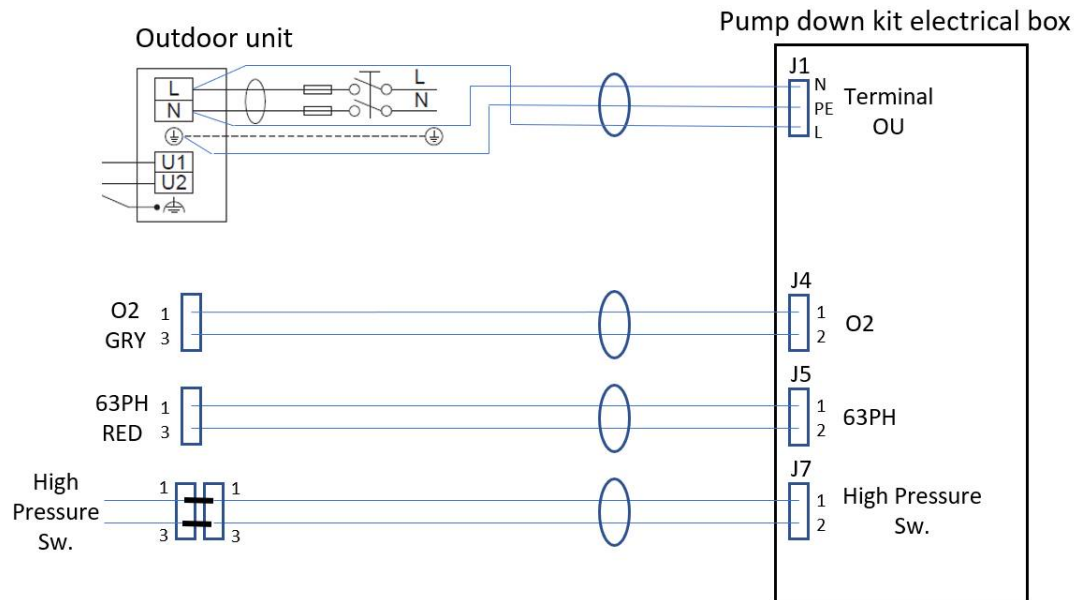
a. Mini ECOi LE1 & LZ2 8/10 HP, LE2 & LZ2 4-6 HP 3-phase

For three-phase outdoor units



b. Mini ECOi LE2, LZ2 4 – 6 HP single phase

For single-phase outdoor units

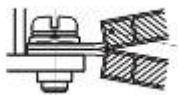


c. Electrical Connection

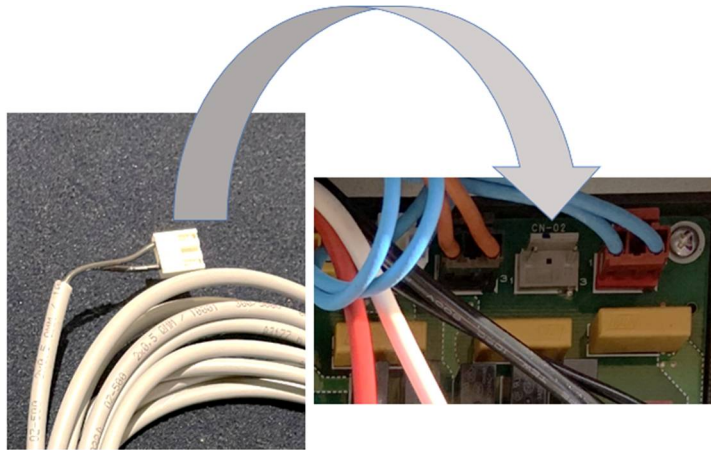
Before any electrical wiring work, take care that the outdoor unit is isolated from the electrical power supply and locked off, to prevent switching on.

Fix the electrical box safely on a suitable wall by the 4 provided 4.5 mm diameter holes (210.5 x 115.5 mm distance as shown in the dimensional drawing) with field supplied suitable screws and wall plugs.

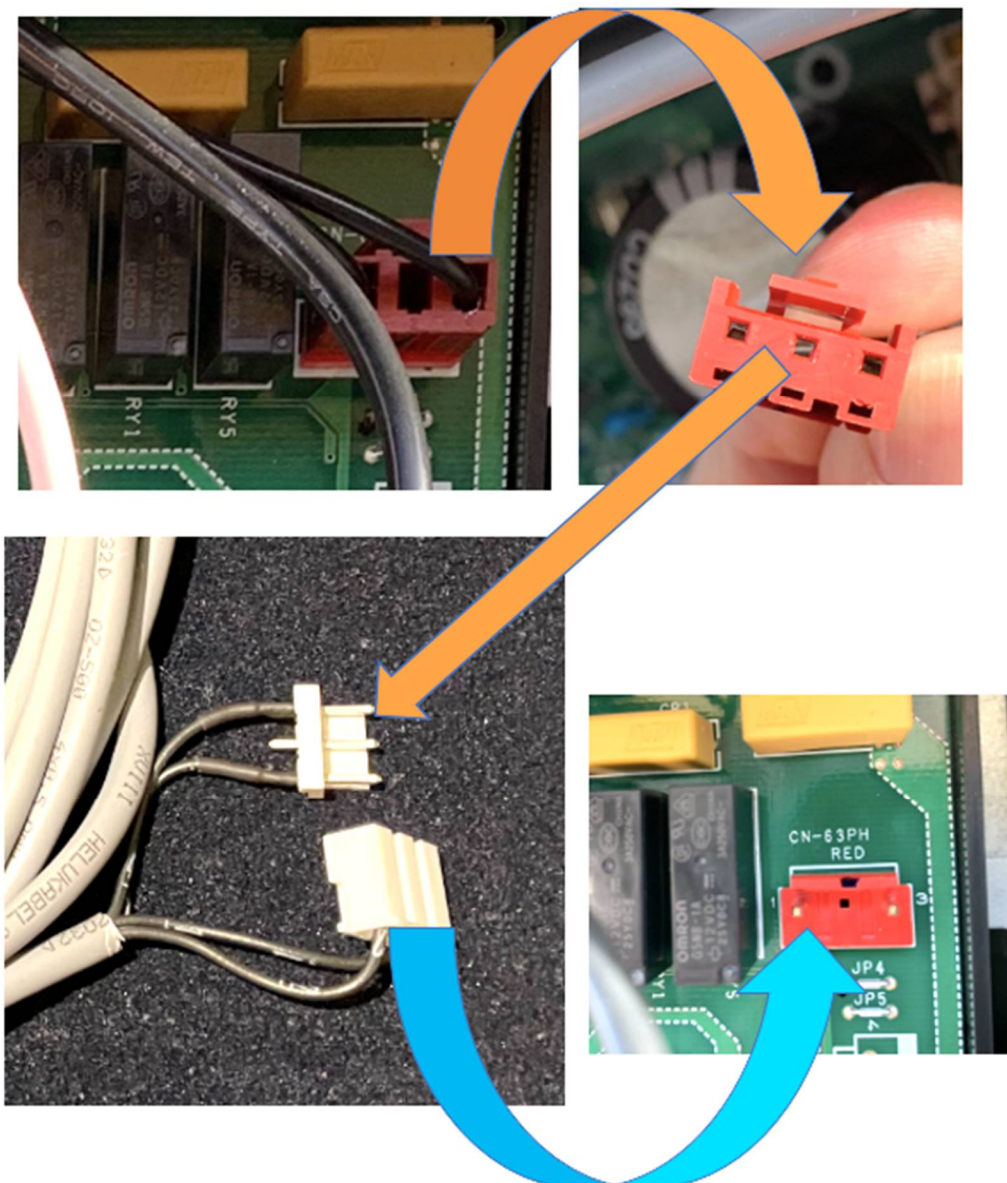
Route the power supply cable through one of the provided openings near the bottom of the outdoor unit and connect L, N, PE of the Pump Down Kit electrical box with round crimp terminals to the outdoor unit power supply terminal, see schematic drawings above, like shown in following principle way:



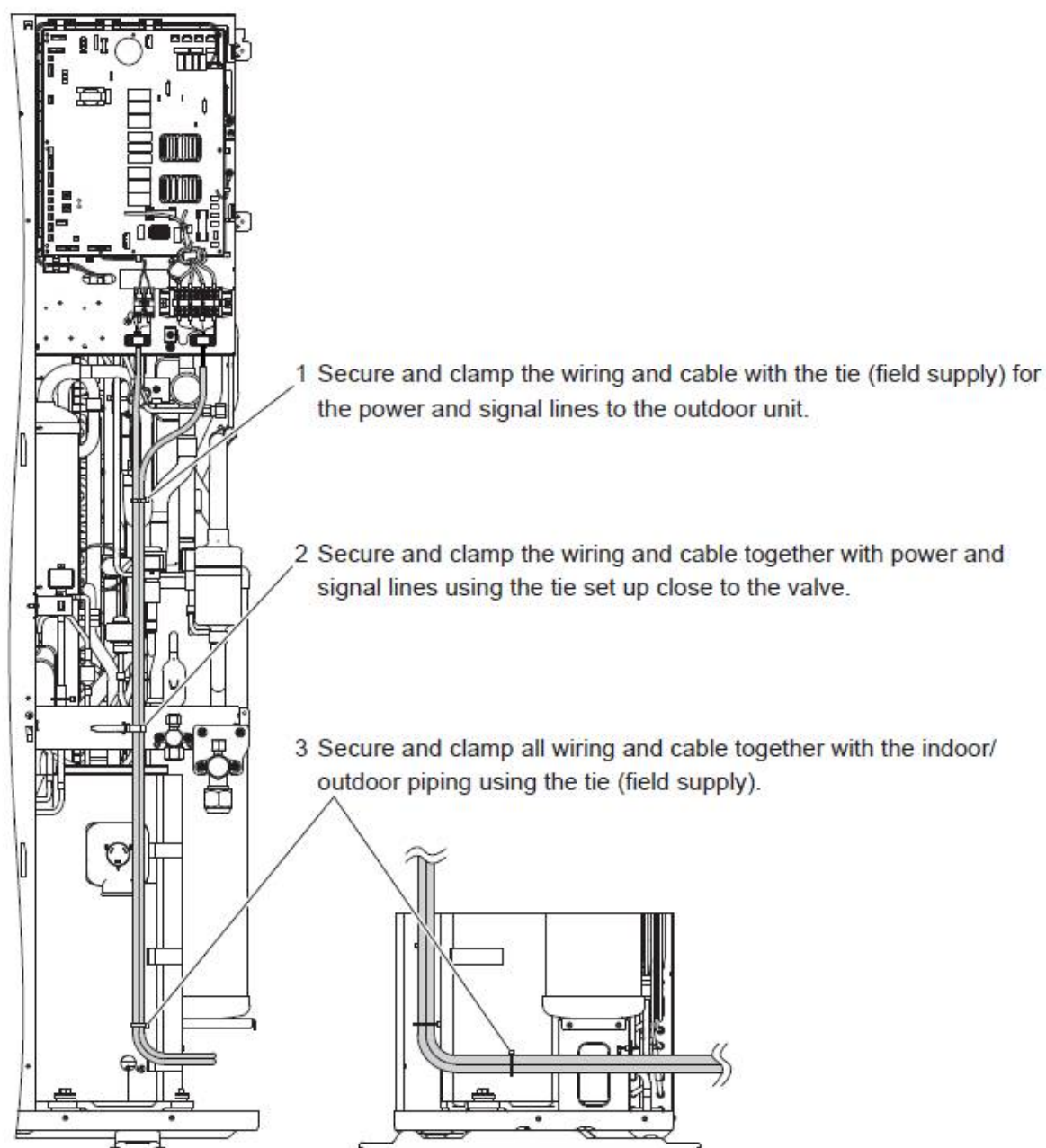
Route the Relay O2 cable with the plug through one of the provided openings near the bottom of the outdoor unit and connect the plug to the grey CN-O2 connector on the outdoor unit main PCB:



Route the combined 1-2 63PH and 3-4 High Pressure SW cable through one of the provided openings near the bottom of the outdoor unit, disconnect the high pressure connector from red CN-63PH and connect it to the male connector of the provided new wiring. Connect the female connector to red CN-63PH:



See the wiring route also in following figure:



6. Installation of the pipe kit and valves

ATTENTION

For the outdoor unit installation and the routing of the tubing, please follow the installation instruction delivered together with the outdoor unit. Use the tubing size as indicated in the installation instruction supplied with the outdoor unit.

The pipe kit needs to be installed in the main gas pipe, while the single valve needs to be installed in the main liquid pipe. Please try to install the valve kit as close as possible to the outdoor unit within 5 m distance to allow for the correct distance for electrical wiring, see also the schematic on page 6 of this manual.

In case you need to install the valve kit at a greater distance, you need to extend the supplied wiring by field supplied means. In this case take care to use appropriate connections following the local rules for electrical wirings at AC 230 V. As all the wiring between electrical box and the outdoor unit, respectively valve kit, are with AC 230 volt and very low power, respectively switching power of only few Watts, it is no problem to extend the wiring even to the maximum distance of the main pipe of each Mini ECOi model (150 m in case of R410A units).

Depending on outdoor unit model and piping length, the main pipes would be in following range:

Outdoor unit horsepower	4 HP	5 HP	6 HP	8 HP	10 HP
Gas tube	15.88 mm (5/8")			19.05 mm (3/4") [22.22 mm (7/8")] ¹	22.22 mm (7/8") [25.4 mm (1")] ¹
Liquid tube	9.52 mm (3/8")			9.52 mm (3/8") [12.7 mm (1/2")] ¹	

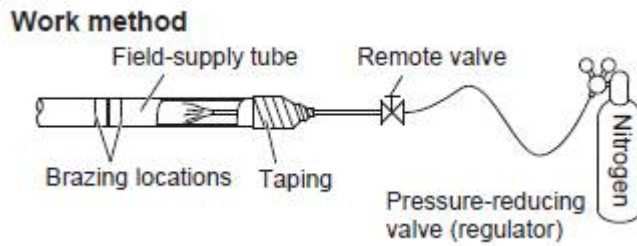
¹⁾ Larger size in case of R410A units by special piping rules, see installation instruction of the outdoor units.

Caution before connecting tubes tightly:

Apply a sealing cap or water-proof tape to prevent dust or water from entering the tubes before they are used.

Cautions during brazing:

- Replace air inside the tube with nitrogen gas to prevent copper oxide film from forming during the brazing process. (Oxygen, carbon dioxide and Freon are not acceptable.)
- Do not allow the tubing to get too hot during brazing. The nitrogen gas inside the tubing may overheat, causing refrigerant system valves to become damaged. Therefore, allow the tubing to cool when brazing.
- Use a reducing valve for the nitrogen cylinder.
- Do not use agents intended to prevent the formation of oxide film. These agents adversely affect the refrigerant and refrigerant oil and may cause damage or malfunctions.
- During brazing protect the valve body with wet cloths to avoid overheating



- The connection of the valve to the system shall be done with an alloy with a low melting point. Before welding the body to the plant, disassemble the valve, taking all detachable parts, the gasket should remain on the removed cover otherwise separate it manually. Make sure, for the installation of the valve, the direction of the arrow indicated on the body, be the same as direction of the flow in the plant and that the coil is preferably facing upwards, also, during the soldering avoid the flame direction towards the body.

7. Installation of the low-pressure switch

After brazing work is finished and the piping had cooled down, remove the cap from the threaded end and screw the low pressure switch tightly:



8. Installation of the magnetic coils

After brazing work is finished and the piping had cooled down, attach the insulation around the pipes and valve bodies, then slide the coil gently onto the valve shaft:



9. Insulation

The pipe kit and the single valve are delivered with the tailored insulation with Velcro, which can be easily fit. The other connecting part of the main pipe should be insulated as usual and indicated in the relevant outdoor unit installation instruction.

10. Adjustments before system can operate

a. Outdoor unit settings

Do the rest of piping, pressure test, evacuation, charging and wiring connection as described in the installation instruction of the outdoor units after having setup the outdoor unit parameter as described here below, perform auto-addressing after setting the outdoor unit address switches properly as described in the installation instruction of the corresponding outdoor unit and once the system has been powered up.

Once the outdoor unit is powered up, please connect the maintenance remote controller (CZ-RTC2 or CZ-RTC4) to the outdoor unit RC plug, enter detailed setting mode (how to do, please refer to the relevant outdoor unit service manual, chapter “outdoor unit maintenance remote controller”) and set up parameter C1 to 002 (for activating just the shut off function). This will cause the O2 signal being ON during normal operation and switch to OFF in case of leakage alarm, closing the valves.

In case you want to use additionally the pump down function in case of leakage alarm, please set parameter C1 to 003 instead.

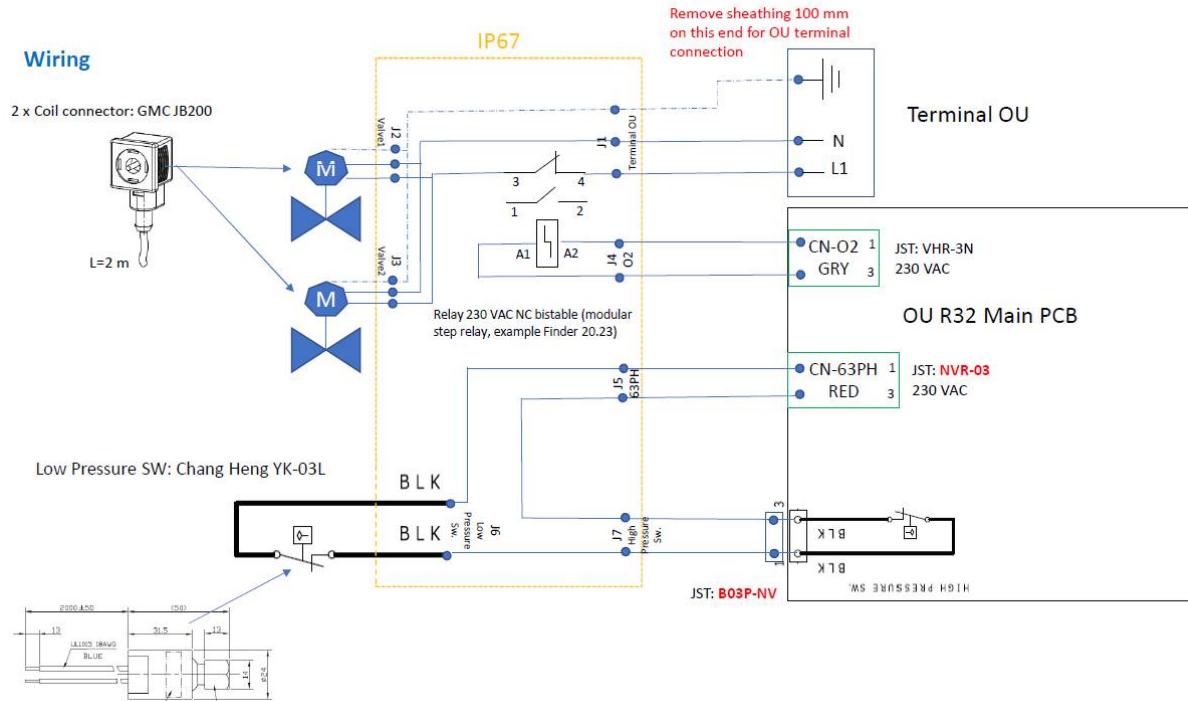
b. Indoor unit settings

On all indoor units with a connected external leakage sensor to the EXCT contact, please go in simple setting mode and change parameter 0b to 0001, allowing the unit to transmit the P14 error, leakage alarm to the outdoor unit.

Further parameter settings, please refer to the corresponding outdoor unit service manual, chapter “Remote Controller Functions”.

11. Pump Down Kit Wiring lay out

PAW-PUD2WB-1



12. Important Note

PAW-PUD2WB-1

The magnetic valves within the kit are normally closed (NO) type. Therefore in case of a power cut within the VRF system, the valves will be shut. Only with the VRF system being power supplied and with the proper settings, the VRF system will be operational. After having installed the pump down kit physically to the piping, do never operate the VRF system without the pump down kit being also electrically connected and the settings as described in chapter 10 of this manual had been executed.

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Newmatik GmbH
Am Markt 1
D-55619 Hennweiler
Germany