

Air Conditioners For Building Application Outdoor Unit

PURY-RP200-250-300YJM-B(-BS) For use with R410A

MINERAL OIL COLLECTION (REFRIGERANT OIL RECOVERY) INSTRUCTIONS MANUAL

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ANLEITUNGSHANDBUCH FÜR DIE MINERALÖLSAMMLUNG
(KÄLTEMITTELÖLENTNAHME)

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MANUEL D'INSTRUCTIONS POUR LA COLLECTE D'HUILE MINÉRALE
(RÉCUPÉRATION DE L'HUILE FRIGORIFIQUE)

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MANUAL DE INSTRUCCIONES PARA LA RECOGIDA DE ACEITE MINERAL
(RECUPERACIÓN DE ACEITE REFRIGERANTE)

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RACCOLTA DELL'OLIO MINERALE (RECUPERO DELL'OLIO REFRIGERANTE)
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MANUAL DE INSTRUÇÕES DE RECOLHA DE ÓLEO MINERAL
(RECUPERAÇÃO DO ÓLEO REFRIGERANTE)

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1. Unit Components

Figure 1 Top view of the refrigerant pipes inside an outdoor unit

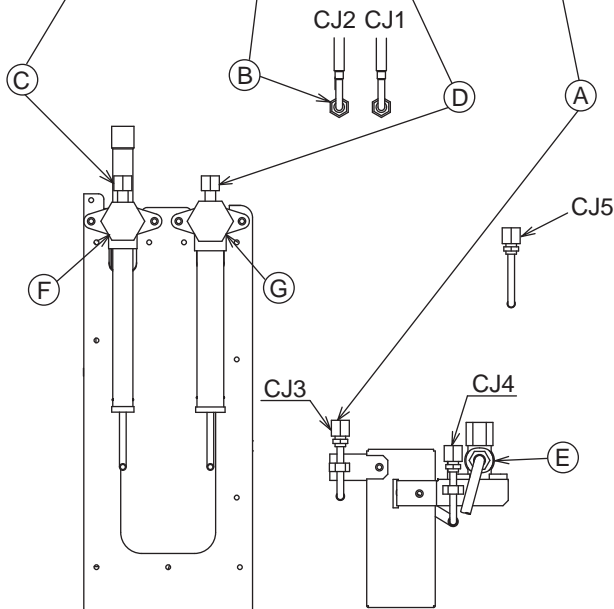
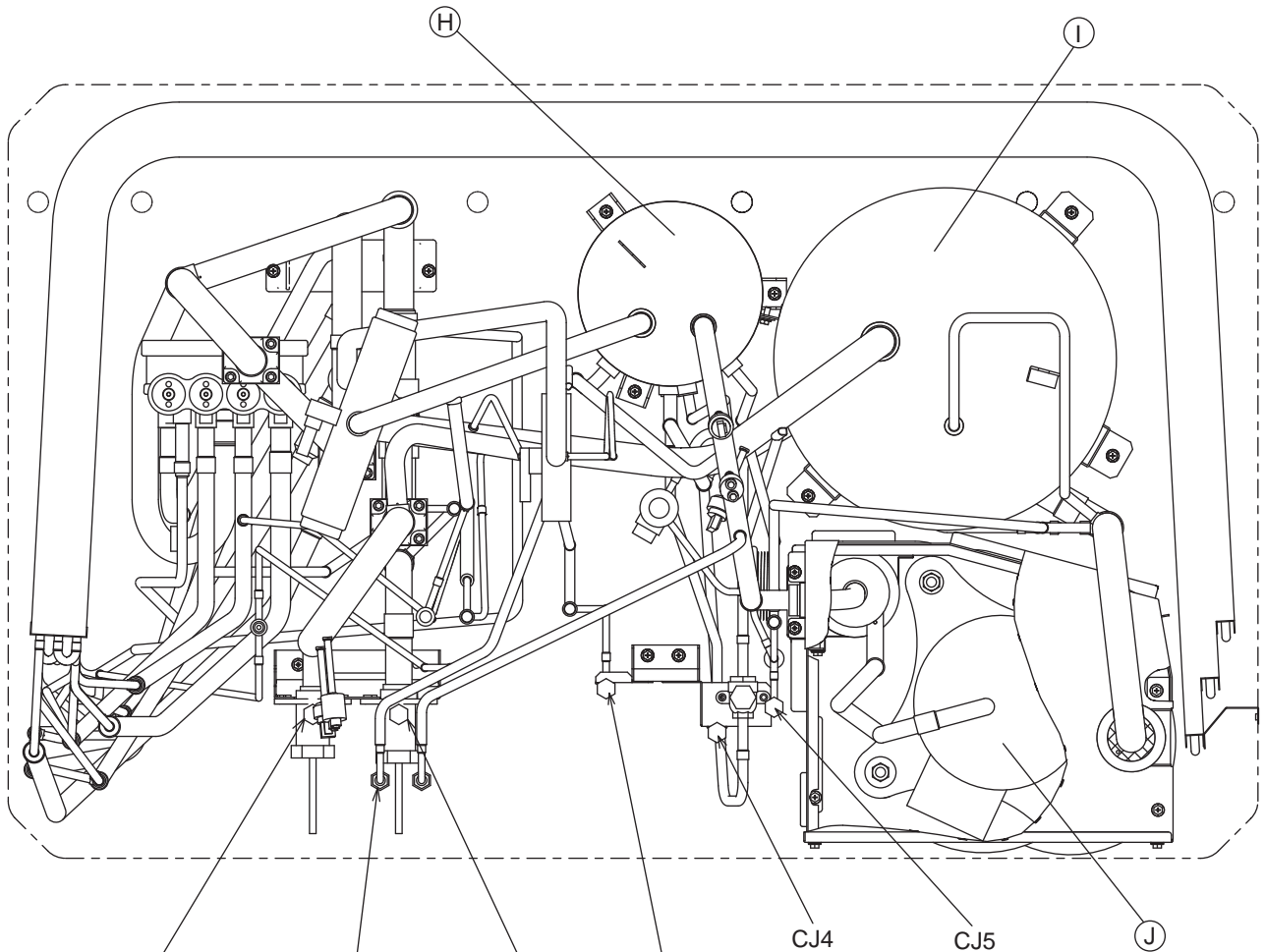


Figure 2 Valve types allocations

- (A): Refrigerant charge port (for automatic charging only)
- (B): Check joint on the low-pressure side
A port through which additional refrigerant is charged after the completion of refrigerant oil recovery operation
- (C): Service port on the high-pressure valve
Connecting port to the refrigerant circuit
• Evacuation port (high-pressure side)
• A port through which refrigerant for the indoor units is charged
- (D): Service port on the low-pressure valve
Connecting port to the refrigerant circuit
• Evacuation port (low-pressure side)
• A port through which refrigerant for the indoor units is charged
- (E): A valve to be closed after the completion of refrigerant oil recovery operation (BV3)
(Be sure to close this valve after the completion of refrigerant oil recovery operation.)
- (F): High-pressure valve
- (G): Low-pressure valve
- (H): O/T
- (I): ACC
- (J): COMP
- CJ3: Refrigerant charge port
- CJ4: Oil sampling port
- CJ5: Refrigerant oil discharge port

2. Refrigerant Oil Recovery Operation Flow

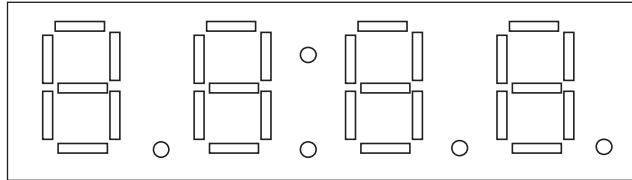
2.1 Refrigerant oil recovery operation monitor display

1. How to read the LED on the service monitor

Units' operation status can be monitored on the LED display by setting the dipswitches SW1-1 through 1-10 on the MAIN board of the outdoor units.

Four 7-segment LEDs are used to display numerical values, flags, and alphabets to display various information.

7SEG LED



The LEDs display such information as pressure and temperature in numerical values and operating conditions and the ON/OFF status of solenoid valve as flags.

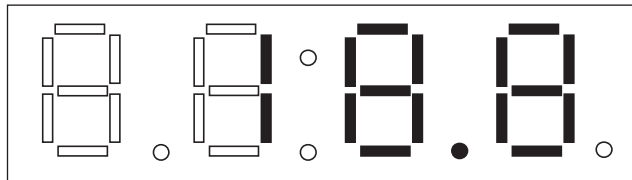
● Display of numerical values

Example: When the pressure sensor reads 18.8 kg/cm²G (Item No. 58)

* The unit of pressure is in kg/cm²G.

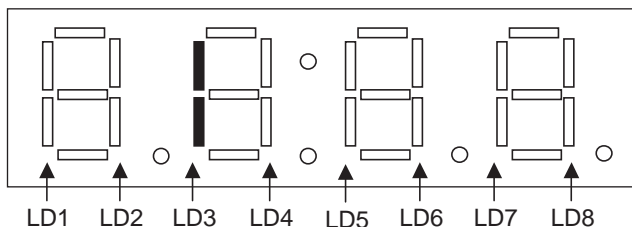
* Use the following conversion formula to convert the displayed value into a value in SI unit (MPa).

SI unit (MPa) = Displayed value (kg/cm²G) × 0.098



● Flag display (Each set of two lines in vertical alignment indicates a flag.)

Example: Outdoor unit in the 3-minute restart delay mode. (Item No. 14)



2. Table of items that can be monitored on the LED on the outdoor unit circuit board

No	SW1										Display content	LED display										Notes
	1	2	3	4	5	6	7	8	9	10		LD1	LD2	LD3	LD4	LD5	LD6	LD7	LD8	LD9	LD10	
58	0	1	0	1	1	1	0	0	0	0	High pressure (kgf/cm ² G)	-99.9 to 999.9										
59	1	1	0	1	1	1	0	0	0	0	Low pressure (kgf/cm ² G)	-99.9 to 999.9										
60	0	0	1	1	1	1	0	0	0	0	Intermediate pressure (kgf/cm ² G)	-99.9 to 999.9										
45	1	0	1	1	0	1	0	0	0	0	Discharge temperature (°C)	-99.9 to 999.9										
131	1	1	0	0	0	0	0	1	0	0	Refrigerant oil recovery operation steps	rEP ↔ steps										Reversed display
122	0	1	0	1	1	1	1	0	0	0	Refrigerant oil recovery remaining time (*1)	0 to 9999										
120	0	0	0	1	1	1	1	0	0	0	Refrigerant oil recovery completion indicator flag Refrigerant charge adjustment completion indicator flag	S-1 (0) ↔ r-1 (0) (*2)										Reversed display

(*1) The initial remaining time that indicates the refrigerant oil recovery is 80. A countdown will start on step 3 in the cooling mode.

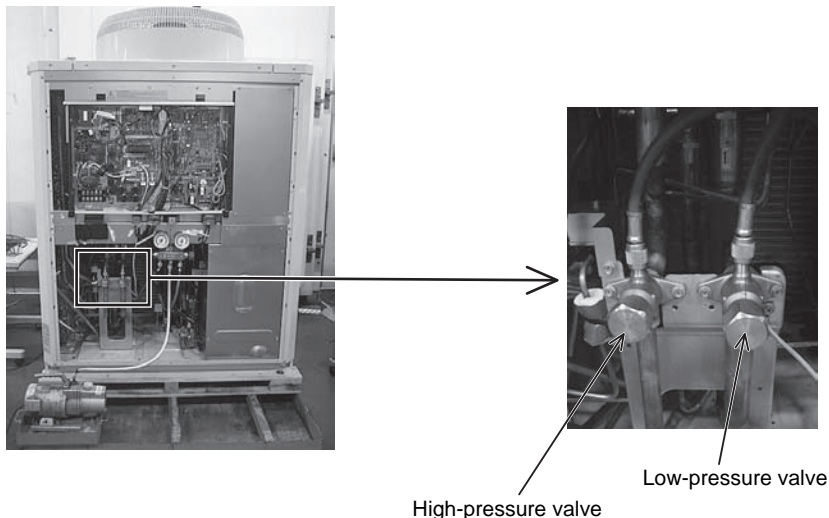
The countdown does not include the time for checking the refrigerant charge amount.

(*2) S-1: Refrigerant oil recovery complete, S-0: Refrigerant oil recovery incomplete,
r-1: Refrigerant charge adjustment complete, r-0: Refrigerant charge adjustment incomplete.

2.2 Procedures for refrigerant oil recovery

① Evacuating the existing pipes, and ensuring air tightness

Procedure 1 Charge airtight gas through the service port on both the high-pressure and low-pressure valves. The air tightness should be 4.15 MPa. After checking the air tightness, evacuate the air through the service port on both the high-pressure and low-pressure valves.



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② Refrigerant charging

Procedure 2

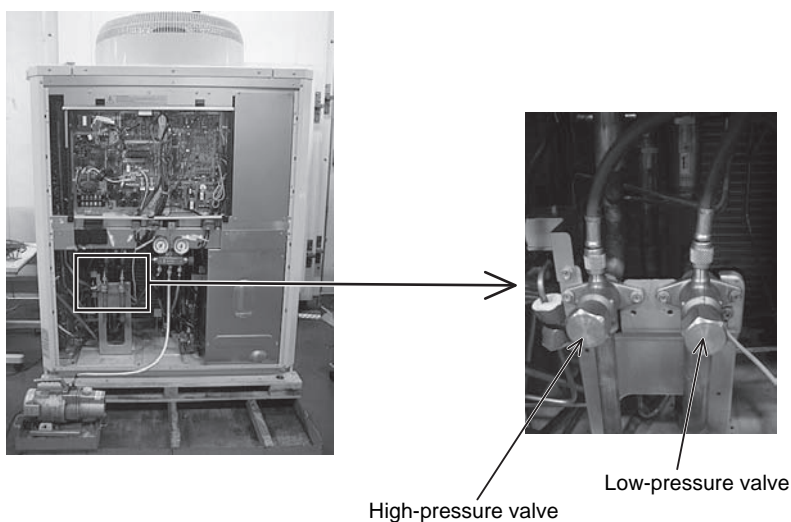
•If the length or diameter of the refrigerant pipe is unknown

Charge the required amount of refrigerant (indoor units + BC controllers) through both high-pressure and low-pressure service port valves.

•When refrigerant pipe diameter and length are already known

Charge the required amount of refrigerant (indoor units + BC controllers + pipes) through both the high-pressure and low-pressure service port valves. See the table below for the required amount of refrigerant for the indoor units and BC controllers. To calculate the required amount of refrigerant charged for the pipes, refer to 10.1. "Calculation of additional refrigerant charge" in the installation manual on the CD-ROM.

If there is excess refrigerant that cannot be charged, use it during oil recovery operation at step 4 (cooling operation).



Total capacity of connected indoor units	Charged amount (kg)
- 80	2.0
81 - 160	2.5
161 - 330	3.0
331 - 390	3.5
391 - 480	4.5

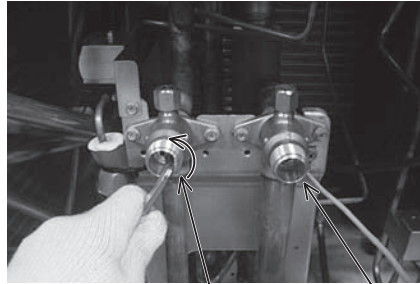
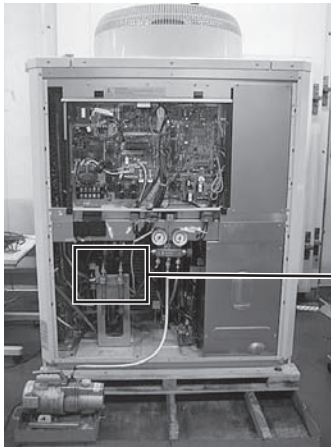
Total outdoor unit Model	Charged amount per BC controller (Standard / Main) (kg)
P200	2.0
P250	3.0
P300	

* After charging the required amount of refrigerant to the existing pipes, open the valve so that the pressure in the existing pipes and outdoor unit are equal. (Refer to Procedure 3.) Do not open the valve on the outdoor unit when the existing pipes are under vacuum. Doing so may cause the refrigerant that is dissolved in the refrigerant oil in the compressor to form and cause some oil to migrate to the existing pipes, resulting in insufficient lubrication.

③ Opening the valves

Procedure 3 Open both the high-pressure and low-pressure valves.

Use a hexagonal wrench to open the valves. Refer to the table below for the proper wrench size.



High-pressure valve

Low-pressure valve

Hexagonal wrench size

	A	
	High-pressure	Low-pressure
8, 10, 12 HP	8 mm	8 mm

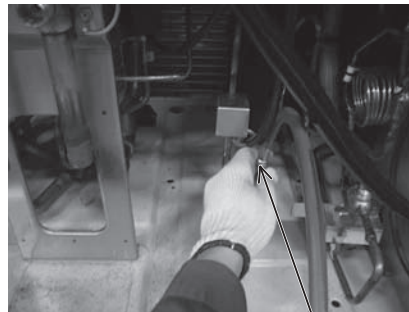
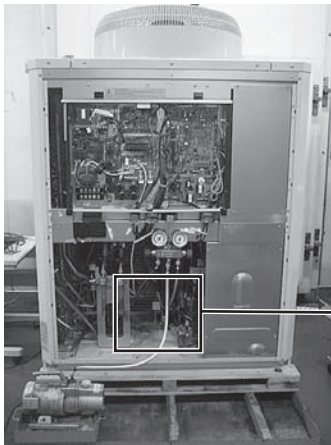


④ Connecting the refrigerant cylinder(s)

Procedure 4 If the required amount of refrigerant is not charged, disconnect the charging hose connected to the refrigerant cylinder from the service port on high-pressure and low-pressure side, and connect the charging hose to the refrigerant charge port CJ3 (only for automatic charging).

* Check that each cylinder has the correct amount of refrigerant.

* If the amount of refrigerant is insufficient, the units may stop during refrigerant oil recovery or it may take longer than usual to complete a test run.



Refrigerant charge port (CJ3)

⑤ Setting the unit address and checking for proper system operation

Procedure 5 Set the unit address, turn on the power, and check for proper operation of the system.

* If an attempt is made to operate the outdoor unit before the refrigerant oil recovery operation is complete, an error code 7116 will appear on the remote controller. This does not indicate a malfunction. Wait for the oil recovery operation to be completed. The error code 7116 will go off upon completion of oil recovery operation.

⑥ Refrigerant oil recovery operation

Procedure 6 Set the dipswitches 3-1 and 4-8 to ON in that order. The compressor turns on, and oil recovery operation starts.

Procedure 7 The refrigerant oil recovery operation is explained in the next page. Wait for the operation to be automatically completed.

* If there was excess refrigerant that had not been charged at “②Refrigerant charging”, charge it during oil recovery operation at step 4 (cooling operation). After charging the refrigerant, close the valve on the refrigerant cylinder. (Even when the required amount of refrigerant is already charged, refrigerant charge is automatically adjusted.)

* If the cylinder runs out of refrigerant during the refrigerant oil recovery operation, continue the operation and replace the cylinder.

* If the cumulative oil recovery operation hour is more than three and a half hours, turn the dipswitches 4-8 and 3-1 to OFF to stop the operation and turn the dipswitches 4-7 on the units (OC) to OFF.

Wait for the operation to be automatically completed.

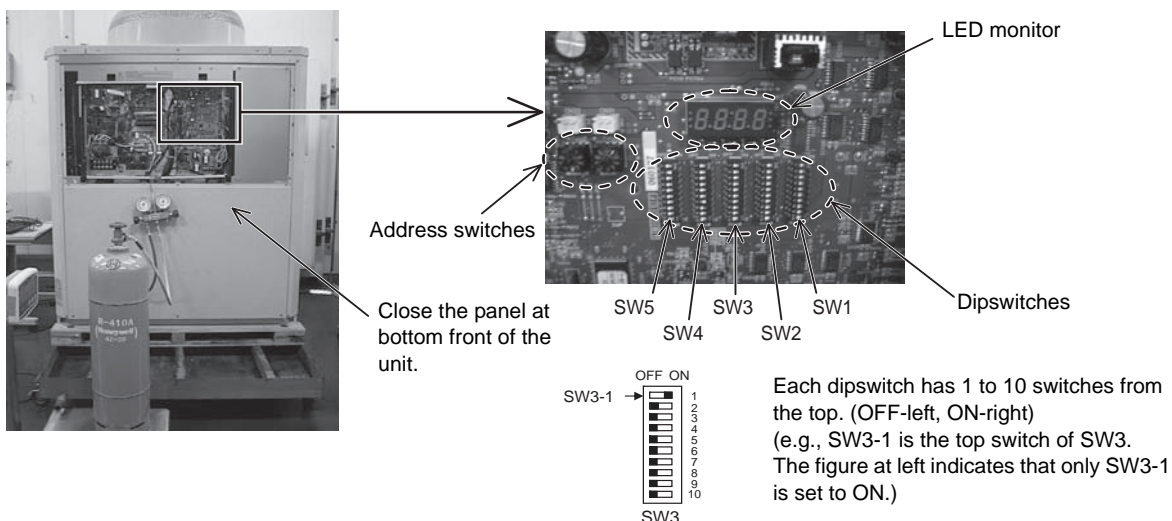
* **Refer to the table at right for the maximum amount of refrigerant charge. Do not exceed the maximum amount.**

If the refrigerant oil recovery operation does not finish after the maximum amount of refrigerant is charged, close the valve on refrigerant cylinder, and wait for the operation to be completed automatically.

* If the cylinder runs out of refrigerant during the refrigerant oil recovery operation, continue the operation and replace the cylinder.

Outdoor unit capacity and the maximum amount of refrigerant charge

Outdoor unit capacity	Maximum amount of refrigerant charge (except for the indoor units and BC controllers) (kg)
RP200, 250, 300	20.0

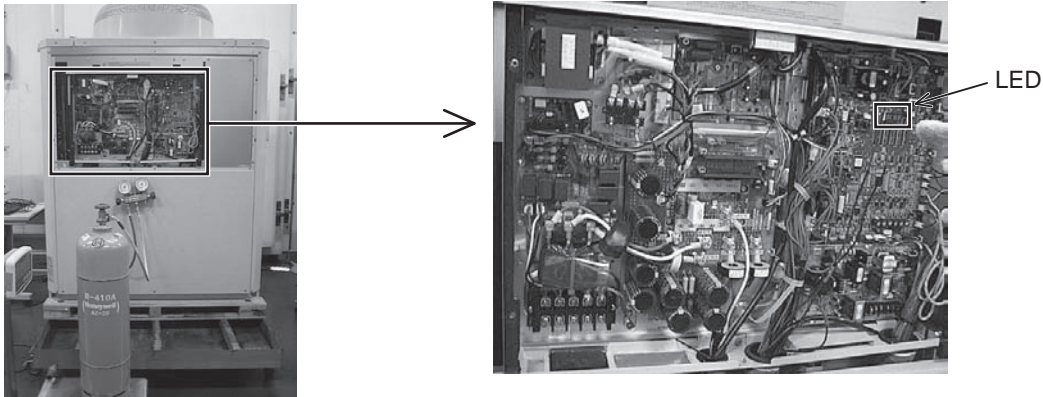


If the length or diameter of the refrigerant pipe is known, please make note of the following.

If more than the amount of refrigerant that you calculated is charged into the system in auto-charge mode, then there is no problem if you wish to close the cylinder valve while the unit is operating. The unit will stop operating of its own accord.

⑦ Check for successful completion of the refrigerant oil recovery operation.

Procedure 8 Turn the dipswitches 1-4, 1-5, 1-6, and 1-7 to ON to verify that the refrigerant oil recovery operation is completed. "S-1" or "r-1" on the outdoor unit's LED indicates a successful completion.



"S-1" "r-1": The refrigerant oil recovery operation is successfully completed. Go to the next procedure.

"S-1" "r-0": The refrigerant charge adjustment is not completed, but regular air conditioning operation can be started. If there was excess refrigerant that had not been charged, charge it through the low-pressure check joint (CJ2) during the air conditioning operation.

"S-0" "r-1": The refrigerant oil recovery operation is not completed. To restart the refrigerant oil recovery operation, set the dipswitches 3-1 and 4-8 to ON in that order.

"S-0" "r-0": The refrigerant oil recovery operation is not completed. To restart the refrigerant oil recovery operation, set the dipswitches 3-1 and 4-8 to ON in that order.

⑧ Disconnecting the cylinder

Procedure 9 After completing the oil recovery operation, close the valve on the cylinder, and disconnect the cylinder within five minutes.

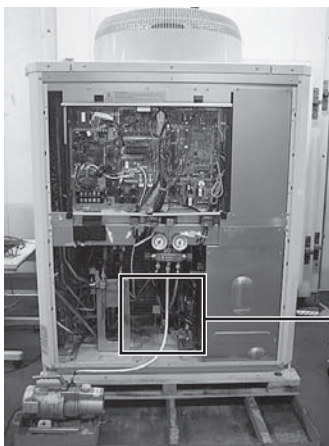
⑨ Recording the amount of refrigerant that was charged

Procedure 10 Write on the control box panel the amount of refrigerant charged.

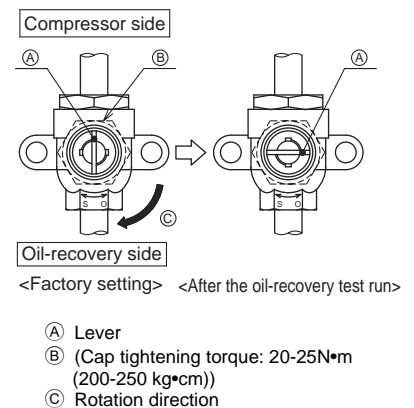


⑩ Closing the valve on the connecting port to the refrigerant circuit

Procedure 11 Close BV3 completely. The refrigerant oil recovered from the existing pipes is sealed in an oil recovery vessel.



Turn the valve clockwise by 90 degrees.
* Use a tool if necessary.



This product is designed and intended for use in the residential,
commercial and light-industrial environment.

The product at hand is
based on the following EU
regulations:

- Low Voltage Directive 2006/95/EC
- Electromagnetic Compatibility Directive 2004/108/EC
- Pressure Equipment Directive 97/23/EC

Please be sure to put the contact address/telephone number on
this manual before handing it to the customer.



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