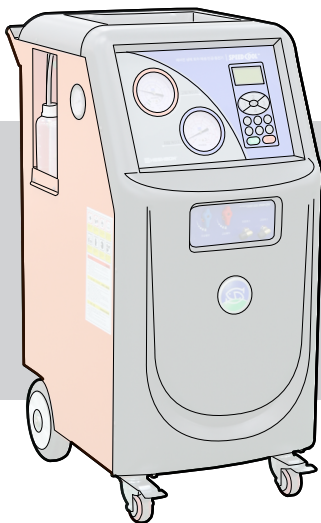




# **SPEED** *COOL* **USER'S GUIDE**



**HR-371**  
Refrigerant Recycler

**SPEED** *COOL*

Installation/Operation & Maintenance Manual

Before use, read and understand this manual thoroughly. "Safety Cautions" are established to keep your safe and prevent damages on properties, so you are wanted to read them carefully. The manual may be changed without any prior notice for quality improvement.

Thanks you for purchasing this automobile maintenance device of HESHBON.

To use this product safely and efficiently, it is useful to read this manual carefully.

Better quality and service will be given to you.

- Make sure to always keep this manual for future reference.
- Refer to this manual for components, installation instructions, usage and quality assurance.
- For safety purpose, this product should be also given to end users.

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Introduction

Safety

Installation

Preparation

Operation

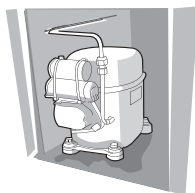
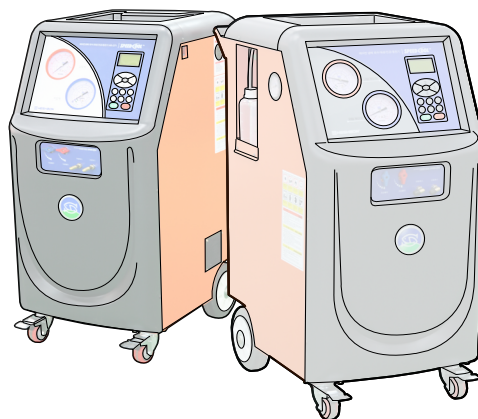
Maintenance

Appendix

■ This manual is prepared on April 2007.  
Specifications in this manual are subject to change for quality improvement without prior notice.

## Special features of the product

### Introduction



# SAFETY



### ■ Design

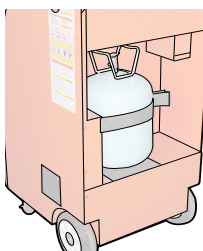
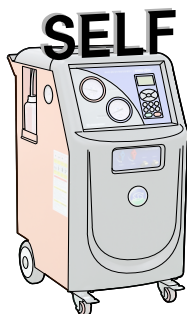
► HR-371 is a newly upgraded version by professional designers' hands. It not only functions as a machine for servicing but only decorates your office beautifully.

### ■ Largest capacity

► The domestically largest capacity recovery compressor(HBP Type) and vacuum pump guarantee the quickest work.

### ■ Safety system

► A user can work in a safer environment thanks to our unique safety measures, for instance, system check, excessive pressure preventive system, high pressure preventive system, cylinder safety valve system, refrigerant leakage preventive system, low refrigerant warning system from supply cylinder.



#### ■ Max. size pressure gauge

► For more convenient work, the largest diameter high/low pressure gauges are adopted together with a digital pressure gauge

#### ■ Oil separator exclusive for a collector(USA)

► Even very tiny particles from oils may be filtered and separated by oil separator exclusive for a collector(USA).

#### ■ System health-check function

► The machine smartly can execute health-check with electronic scale, remaining refrigerant level, low pressure sensor, air purge, temperature sensor and etc.

#### ■ Core type refrigerant filter drier

► Inside the machine, the multi-functional core block type refrigerant filter drier is adopted. Instead filters for moisture of which particles are large, this multi-functional dry filter can process tiny moisture, acid, sludge and more other substances, securing the extreme performance.

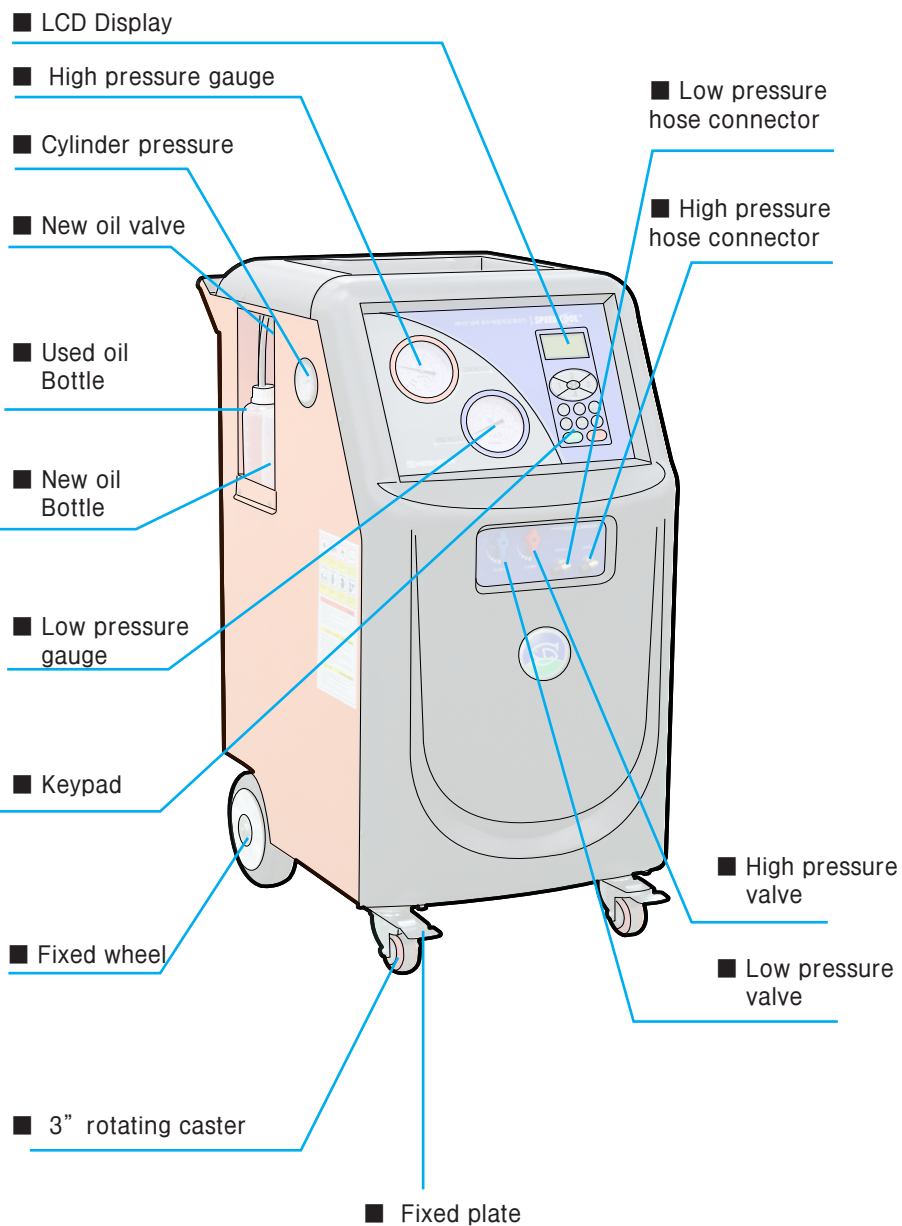
#### ■ Built-in large capacity cylinder

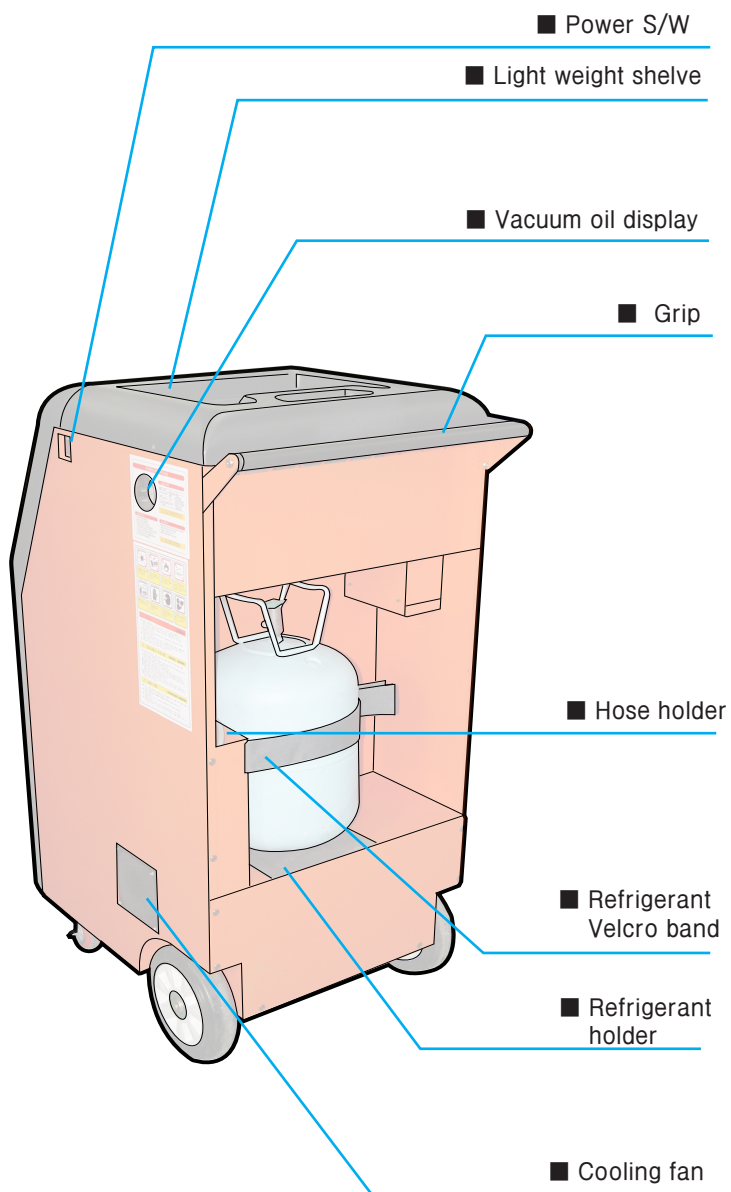
► The large capacity recovery cylinder boasts the largest capacity for passenger car(21.7kg DOT), which has been approved in U.S.A. and several vehicles can be processed only by one charging.

#### ■ Convenience function

► Additional functions such as auto air purge function, automatic used oil discharge system, Recycle and Charge, which have been adopted only for a higher version, are contained in the machine, and a holder for supply cylinder is also served, maximizing the use convenience.

## Parts Names





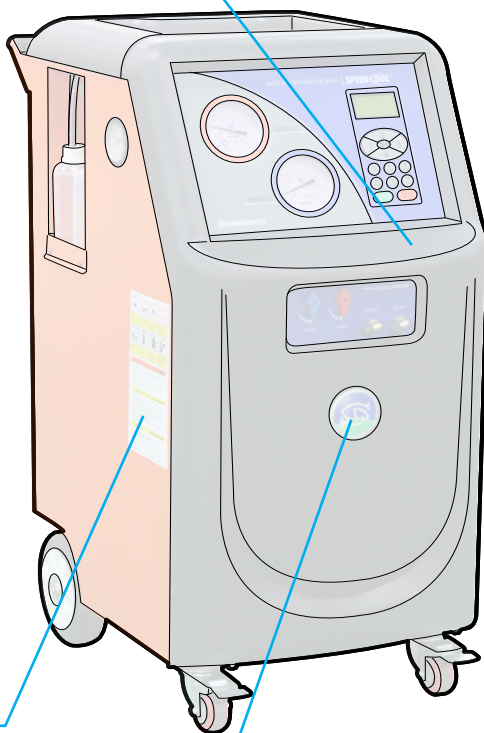
## Locations of Plate and Label

## Introduction

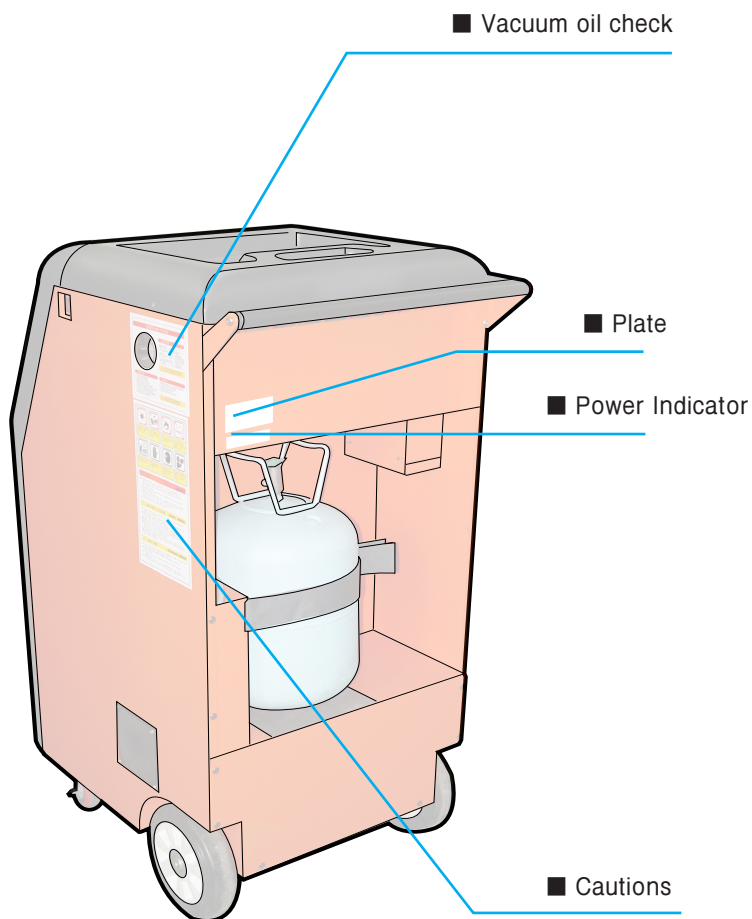
## ■ R-134a Refrigerant Display sticker

## ■ Quick Guide

## ■ Heshbon Symbol







## Functions of Control Panel

### ■ Names & Functions



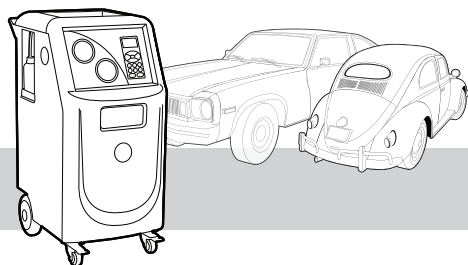
#### 1 Functions of Keypad



- 1) Direction keys / Number keys
  - Direction keys: LCD display status, brightness adjustment
  - Enter numbers: 1 ~ 4
- 2) System Operation Mode Setup key / Number keys
  - Recovery, vacuum, charging, auto, semi-auto, leakage key
  - Enter: used to modify time and refrigerant level
  - Enter numbers: 5 ~ 9, 0
- 3) Start, End key
  - When starting or ending a work

## Specifications

Item	Spec.	Remarks
Model	HR-371	Speed Cool
Refrigerant	R(HFC)-134a	R(CFC)-12, customized order
Control	Microprocessor	Electronic scale, sen- sor, solenoid applied technology
Scale range	5g / 75kg	
Filter	33.5g.In_4.1ton	Moisture, acid, sludge, banish, composite type
Cylinder cap.	21.7kg	D.O.T. certified
Vacuum pump	140 ℓ /min	Vacuum exclusive pump
Power	AC 220V / 60Hz	
Recovery compressor	16cc/rev	1/2HP, HBP
Temperature range	10~45℃	
Dimensions	500(W) X 710(D) X 1,090(H)	



## Enjoy repairing

Your source of excellent equipment

## Danger/Warning/Caution

### Illustration rules

It explains illustrative marks thoroughly used in the manual. Read them carefully, being helpful to you. The rule is applicable only to the manuals of HESHBON Co.,Ltd



1. A user may die or be seriously injured unless the indication is kept.



2. A user may be seriously injured or may not avoid damages on properties unless the indication is kept.



3. A user may be injured or may not avoid damages on properties unless the indication is kept.



4. Terms' definition to improve your better understanding.



5. It helps you use the product efficiently.



6. Important safety notices or checks during the use of this product.

After purchasing a refrigerant, make sure to check its MSDS(Material Safety Data Sheet) or pressure properties on Internet or from your dealer before use.

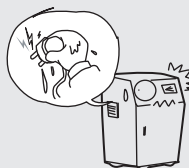
Do not work with the machine in a place directly exposed to rain or water.  
► It may cause serious injury.



Never attempt to work in a place around a fire.  
► It may cause serious injury.



Do not touch the power cable with wet hands.  
► It may cause serious injury.



Make sure to check the proper temp./pressure range of a refrigerant / use the designated refrigerant products only.  
► It may cause serious injury.



Do not handle this machine if you are not full comprehend the manual (abnormal operation of buttons may cause problems)



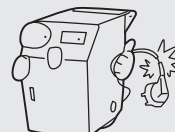
Do not work with the machine on a unlevelled floor.  
► It may generate inaccurate measurements (A precise electronic scale is built in).



Make sure to wear safety goggles.  
► If refrigerant or oil splashes to the eyes, it may cause serious injuries.



Do not pull out the electric cable with excessive force.  
► It may cause electric shock or a fire.



## Safety cautions

A user should read the following important information carefully to keep oneself from any injury and prevent any property from damages.



Make sure to wear gloves when handling this machine.

- When refrigerant touches the skin, it may cause frostbite



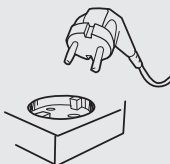
Do not use several plugs of electric products on an outlet.

- It may cause electric shock or a fire.



Always keep the contact point between the power plug and outlets clean.

- It may cause electric shock or a fire.



Handle this machine in a well-ventilated place.

- Ventilate a workplace frequently.

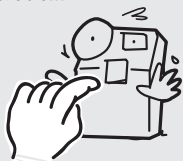


Safety



Do not use any improper button while the machine is working.

- It may cause a problem



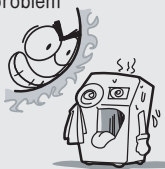
Pull out the power plug when this machine is not used for a long time or there is any thunder or lightning.

- It may cause a problem



Do not expose this product to direct sunrays.

- It may cause a problem



It is prohibited to disassemble or modify this machine without permission.

- It may cause a problem.



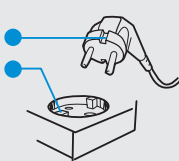
Do not place any heavy article on it.

- It may cause a problem.



Make sure use an outlet with grounding connection.

- It may cause a problem.



Do not bend it forcibly or press on it with a heavy article,

- It may cause a problem.



Please read this manual carefully and fully understand the content before use.

- Unless dangerous or warning notices are kept, it may result in serious accidents.



## Transportation and Cautions

### Carrying

Basically, this machine should be carried by a forklift once it is arrived on an installation place but if there is not forklift, three or more persons should carry this machine so that no impact is applied on it.

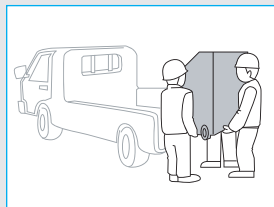
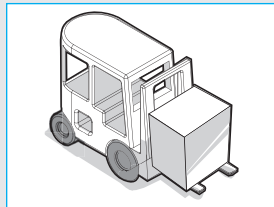
► Push the product to a place to install.

► Unpack the machine and check it carefully.

► Check whether it contains components accurately. (once any parts missing are found, contact the company.)



When lifting up or lowering this machine, three persons should move together; the back may hurt when moving it.



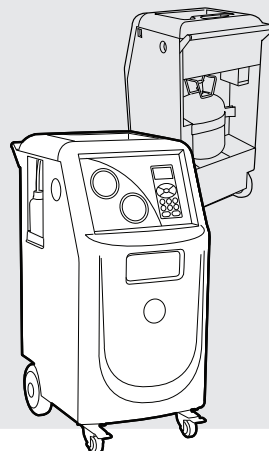
### Cautions

► The machine is designed to be mobile.

► Since it contains a precise scale and precise sensor in it, excessive movements or impact may damage it.

► Do not move it or apply any impact while this machine is working, which may affect the results of operation.

► Make sure to use this machine on a leveled floor.



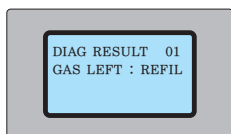
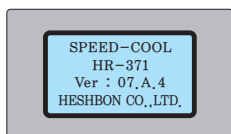
## Installation

### 1 Check the attachments

Please check whether the attachments are normally placed as described in the manual.

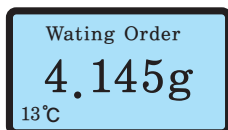
### 2 Power supply

Allow the power and turn on the power switch. Then, check whether the LCD display works normally. If normal, it shows the indication as presented in the left figure.



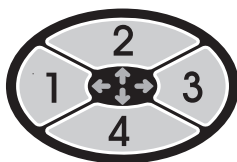
### 3 Move to waiting display.

After checking the above indication, press End button to move the waiting display.

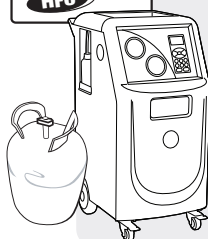


### 4 LCD display adjustment

- Start adjusting LCD display(key 2).
- Adjust the brightness with Up/Down buttons(key 2/key 4).
- LCD display lamp can be turned on or off with L/R buttons(Key 1/Key 3).
- After setting the machine, press End button.



### Checkpoint before using SpeedCool-R134a refrigerant

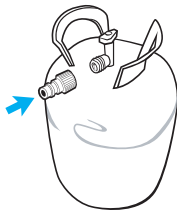


Before using HR-371 SpeedCool, check the refrigerant type in air conditioner of a vehicle. You can find this information from a vehicle's service manual or printing below the bonnet. However, a vehicle may have a mixed refrigerant, so it is necessary to test it with 'Refrigerant Tester' to check it accurately.

Do not use any mixed refrigerant in the SpeedCool, which is designed only for R134a. If it collects any other refrigerant, it may cause the increase of system pressure or damage parts, resulting in a problem.

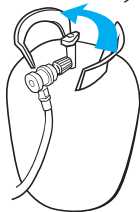
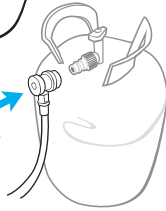
## Refrigerant transfer(Charge)

Refrigerant Charge is to move a refrigerant from supply cylinder to inside cylinder. If the refrigerant in supply cylinder is lower than 5 psi, it shows "No refrigerant in supply cylinder" and stops. Before starting operating, replace the supply refrigerant cylinder.

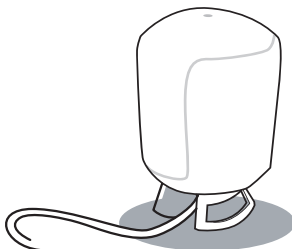
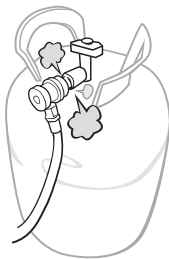


1. Connect a refrigerant transfer nipple to the cylinder (closely stick it to the connector).

2. Connect a lower pressure hose (slightly tighten it because connecting the hose may press O-ring).



3. Open the refrigerant cylinder valve (check any leakage).



### 1 Connecting a refrigerant connector.

Connect the Charge refrigerant you purchased to the connector and start transferring the refrigerant to the SpeedCool.



For the quick adaptor used when connecting the hose, refer to page 15.



Caution of handling refrigerant: make sure to wear goggles and gloves every time you handle a refrigerant.

### 2 Check leakage.

Use soapsuds to check any leakage on the refrigerant connector.

► Checkpoint when any leakage is found

Turn off the valve and disconnect it. Check whether the connector's rubber ring and cylinder connector are damaged. If no damage is found, retry to connect it. If a refrigerant is still leaking even though the product is not damaged or in problem, contact your dealer.

### 3 Upsetting a refrigerant cylinder

Upset a refrigerant cylinder.

► A supply cylinder should be connected to liquid side (L or LIQUID) and then, move it back upright.



Waiting Order  
**4.145g**  
13°C

[ Set Up ]  
1. Gas/Purge/Recyc  
2. Logbook  
3. Hardware Setup

[Gas/Purge/Recycle]  
1. Refill : Requir  
2. Purge : Not Re  
3. Recycl :

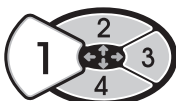
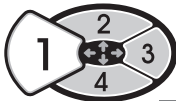
Refil : 05Kg  
Open low Valve  
&sourceGas Valve  
Press START

[Refill]  
Operating  
5000g

[Refill]  
Close  
Out gas valve  
Press START

[Refill]  
Line Recovering  
5,105g

Refill Completed  
5,200g



(Example of Setting) 5kg is set



Checkpoint when refrigerant Charge is not possible

- (1) Check whether high/low pressure valves and inside/supply refrigerant valves are open.
- (2) Check whether O-ring on a refrigerant transfer valve is pressurized.
- (3) Slightly tighten the refrigerant transfer valve when connecting it(to avoid any leakage)

#### 4 Press the button to transfer refrigerant.

If pressing the button on the control panel of the SpeedCool, it shows maintenance entry display. Press No.1 button to select Gas/Purge/Recycle. Press No.1 button again to select refrigerant transfer.

#### 5 Start transferring refrigerant.

SpeedCool starts transferring refrigerant from supply cylinder to inside refrigerant cylinder.

The amount as much as entered by an operator is transferred(up to 10kg).

(Example of Setting) 5kg is set

Once 5kg(setting) is set, SpeedCool stops and indicates the message as presented in the left figure.

Close the valve on the supply cylinder and press Start button. Then, it starts Line Recovery to collect the remaining refrigerant in it for a minute(5kg and less is not entered).

The total volume of the refrigerant volume inside it and the transferred volume are displayed.

#### 6 Refill completed

Upon the completion of collecting refrigerant, the LCD display shows a message "Refill completed."

► (Example of Setting) if 5kg is set, it shows about 5,200g: 5kg plus a volume collected from line.

#### 7 Work Preparation completed.

Separate the supply cylinder and store it. You readily start working. Now, you can start working.

## Preparation 1 Connecting a hose to a vehicle



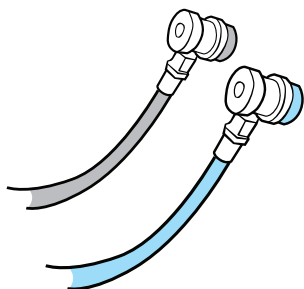
► Before using the SpeedCool, it describes how to connect high/low pressure connector to a vehicle.

► SpeedCool is designed to collect or refill refrigerant from/to the air conditioner of a vehicle with an engine off. Make sure to collect or refill refrigerant after starting a vehicle, connector it to the designated connector, checking the air conditioner 's status with the high/low pressure gauges of SpeedCool and then stopping the engine.

► Vehicle 's air conditioner contains high pressure line and low pressure line.

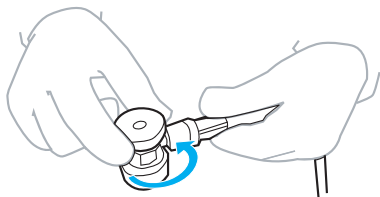
- Low Pressure Line: a line with low pressure to absorb gas refrigerant from the compressor
- High Pressure Line: a high pressure line with a mixed refrigerant of gas and liquid compressed in the compressor.

## Preparation



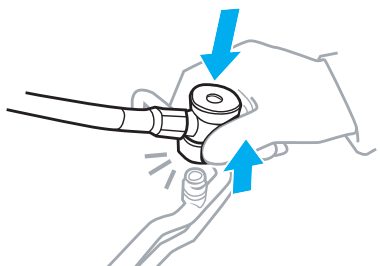
## 1 Quick Adaptor for R(HFC)-134a

The connection hose and connector of SpeedCool are colorfully divided by high/low pressure part; high pressure is in red and low pressure is in blue(the connector supplied in the SpeedCool is the quick adaptor exclusive for R(HFC)-134a; high/low pressure parts are connected in the same way



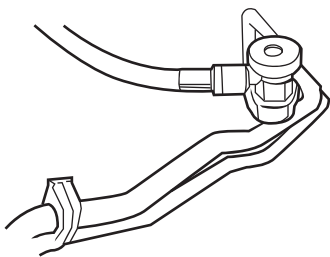
## 2 Open the fixed handle on the connector

Check whether the handle fixed on the top is completely open.



## 3 Lifting up the round part.

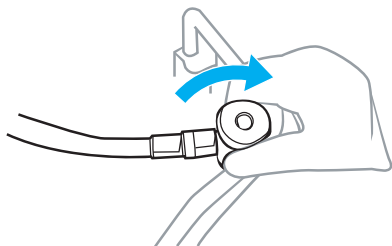
Lift up the fixed round part below the quick connector.



5

Inserting to an air conditioner service nipple.

Align the center of round hole on an air conditioner service nipple of a vehicle and insert as presented in the figure.



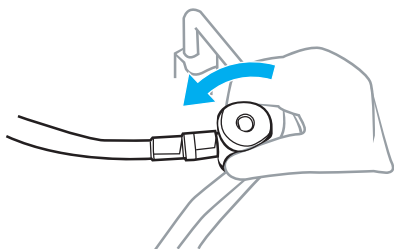
6

Lock the quick connector

After the insertion, turn it smoothly to the direction indicated on the quick connector until it does not move any more.



High/low pressure service nipples have different sizes. Check the size of a connector and connect it to the right size nipple.



7

Detaching the quick connector after work

After the works up to the above step, separate the quick connector by turning the fixation screw reversely 2 or 3 times, lifting up the fixation bracket on the bottom and pulling it up.



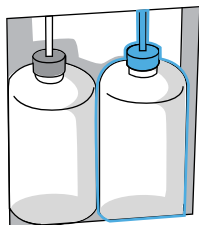
Do not unscrew the fixation screw of the quick connector. It may cause leakage of refrigerant or missing pin, resulting in a problem.



If mounting the service coupling on the high/low pressure service nipples when sand or dust are built on the nipples, make sure to clean it up before insertion. If O-ring of the service coupling is stained with dust or sand, it may cause a problem. The high/low service nipples are expendables and are not excluded from the A/S service items. Please control the machine in right way and use the machine rightly and safely



## Preparation 2-Check refrigerant/oil and air conditioner's condition



### 1 Check refrigerant/oil



- ▶ Check whether the refrigerant level is higher than 3,000g in the display (5,000g is appropriate volume to work)
- ▶ Replenish the exclusive oil to the new oil cylinder and empty the used oil cylinder.

### 2 Check air conditioner's status

Check the status of air conditioner in a vehicle.

- ▶ Connect the high pressure coupling to the air conditioner line of a vehicle.

- ▶ Change the high/low pressure valves of the SpeedCool to OFF.

ON  -----▶  OFF

- ▶ If the low pressure gauge is 0 psi, immediately apply vacuum and execute vehicle's leakage test.

- ▶ Start the engine, move the ventilation switch to level 2 and turn on the air conditioner.

- ▶ Then, determine whether the vehicle's air compressor is working normally with the engine sound.
  - Normal: it sounds crack regularly.
  - Abnormal: abnormal sound.
  - No sound.

- ▶ Check air conditioner's pressure.
  - Check whether low pressure drops between 40 ~ 10 or high pressure rises between 150 ~ 350 with a compressor ON.



#### ■ How to check a leakage from air conditioner

- 1-Vacuum leakage test: make air conditioner line of a vehicle completely vacuum and check any change in the digital low pressure gauge.
- 2-Pressurization test: refill the refrigerant into a vehicle as much as one and half or twice of the specified volume, check any leakage sound and investigate leaking points by using soapsuds.

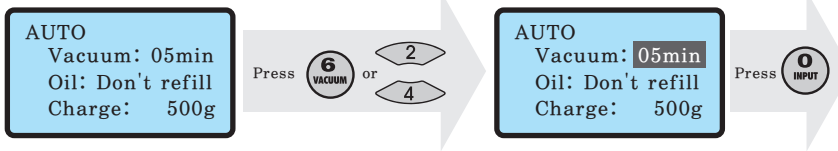


Even after the refrigerant Recovery/Charge process using Speed-Cool is complete, please execute the vehicle's air-conditioner system check as the above.

### Preparation 3-Enter numerical information before work

When it is necessary to modify the operation hours and refrigerant volume, select an item to modify, press "Enter" button and change a new value.

#### 1 Example of modifying operation hours and refrigerant volume – Automatic

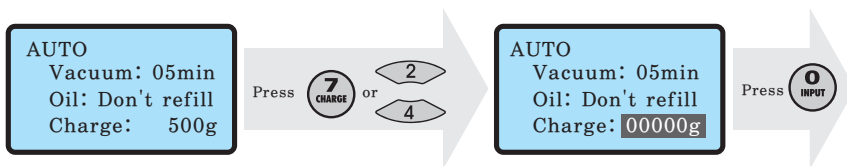


Select 'Vacuum' using vacuum key or direction keys.

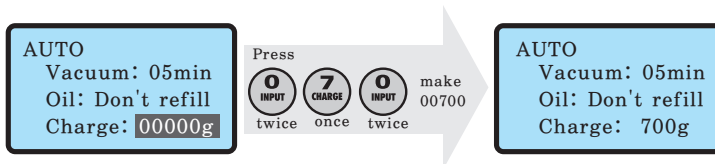


To enter 15, enter '1' and '5', completing '15'.  
(Similarly, if, for instance, entering 30 minutes, enter '3' and '0')

#### 2 Change Charge volume–Change refrigerant volume



Select 'CHARGE' using charge key or direction keys.



Press '0', '7' and '0', twice, once and twice, respectively to enter 00700.  
(Similarly, if, for instance, entering 670, press '0', twice '6' and '7' once each and then, press '0' once)

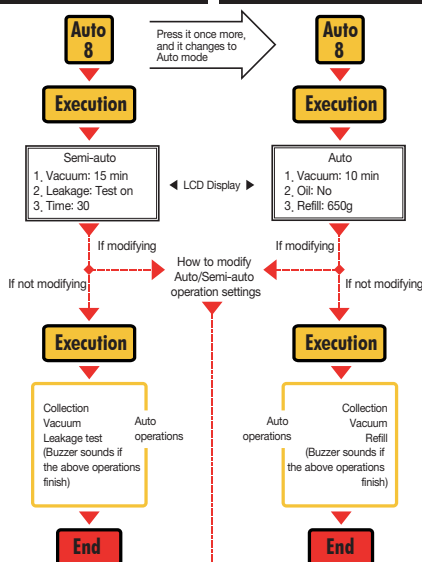
## Auto/Semi-auto mode

Auto mode is used only when it is reasonably thought that a vehicle's air conditioner works normally because Recovery, vacuum and Charge of refrigerant are automatically executed. In Semi-auto mode, it collects refrigerant, makes it vacuum and stops. The mode is used when a vehicle has a leakage, air conditioning line is repaired or oil is to be refilled.

### Semi-auto leakage test / Working procedure in Auto mode

#### Semi-auto leakage test

#### Auto operation



#### How to change the settings in Semi-auto mode

- ① Changing vacuum time ➡ **6 VACUUM** ➡ **0 INPUT** ➡ Enter a value,
- ② Change leakage test ➡ **9 LEAK** ➡ On or Off using L/R keys  
(Key ◀ / Key ▶)
- ③ Test on in display ➡ **0 INPUT** ➡ Enter a value,

#### How to change the settings in Auto mode

- ① Changing vacuum time ➡ **6 VACUUM** ➡ **0 INPUT** ➡ Enter a value,
- ② Changing refilling volume ➡ **7 CHARGE** ➡ **0 INPUT** ➡ Enter a value,  
(750g : 0.0,7.5,0)

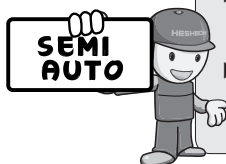
#### Working in Semi-auto mode is useful when

- ① Refrigerant is to be replenished after separating air conditioning pipes and parts and repairing the system,
- ② Checking air pressure of vacuum gauge after checking any leakage from a vehicle with no refrigerant or after making it vacuum; or
- ③ It is determined that oil is to be injected to refrigerant compressor
  - A vehicle coming in with air conditioner on, a vehicle of which air conditioner has ever been used during the date and etc,

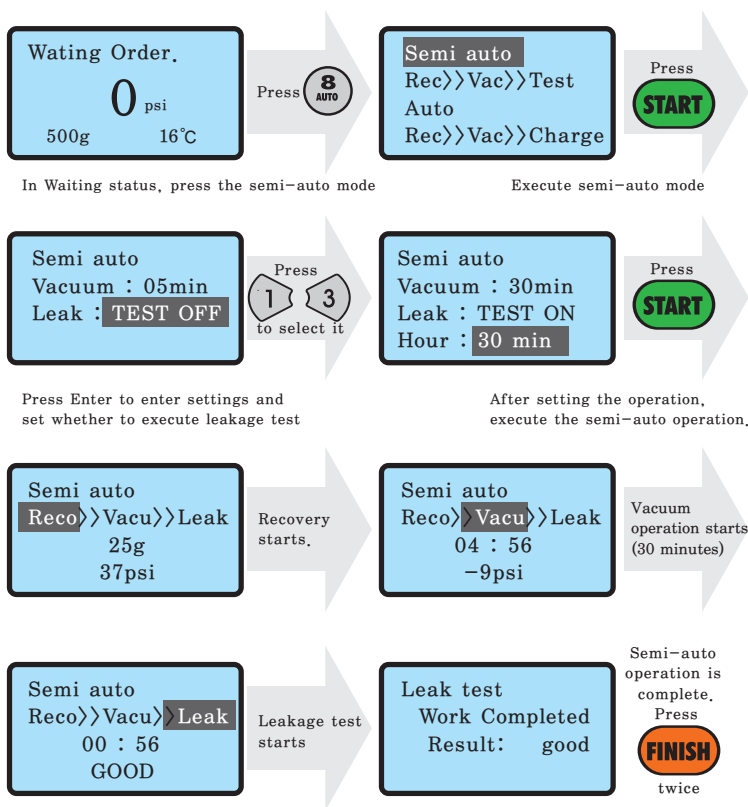
## ■ Semi-auto mode

### In Semi-auto mode

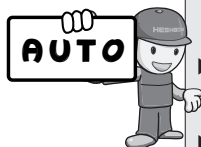
- ▶ Recovery and vacuum are automatically executed in series.
- ▶ Charge is executed when the inside cylinder contains more 1,500g than the Charge volume(Charge volume+1,500g).
- ▶ Semi-auto mode is useful for a vehicle that is stored with insufficient refrigerant or of which parts have been disassembled for repairs.
- ▶ After the semi-auto mode, an operator can continue any desirable work in manual mode.



### 1 Start semi-auto operation



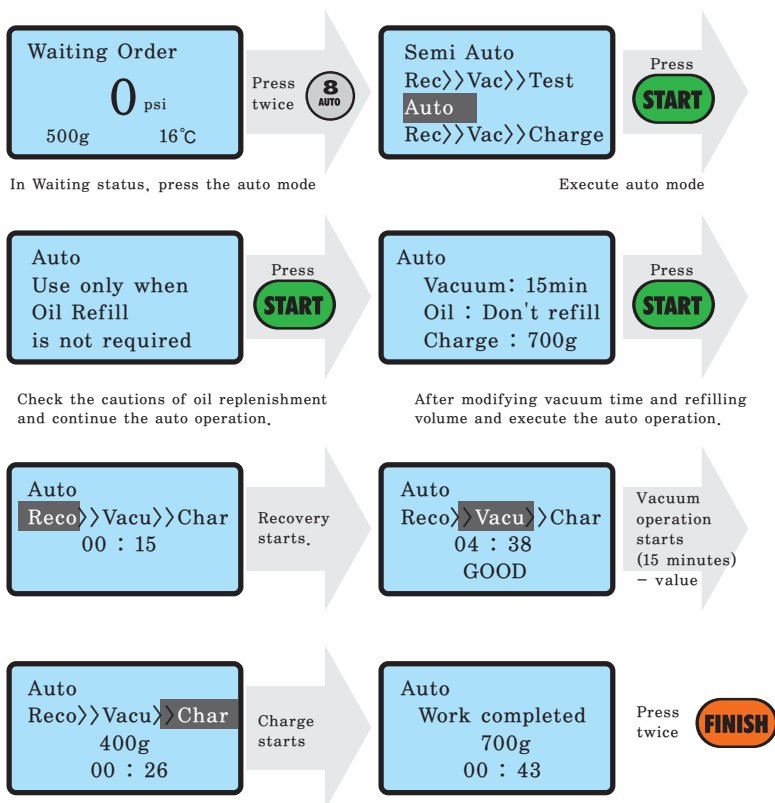
## ■ Auto mode



### In Auto mode—

- ▶ Recovery, vacuum, Charge are automatically executed in series.
- ▶ If selecting "Auto/Semi-auto" and pressing "Start", it displays auto setup. In addition, if selecting "Auto/Semi-auto" and pressing "Start", it displays the semi-auto setup.
- ▶ SpeedCool(HR-371) is designed not to execute Recovery for the safety purpose if the gas volume inside the cylinder is 20kg and higher.
- ▶ Use only when Oil Refill is not Required.

## 1 Setting auto operation

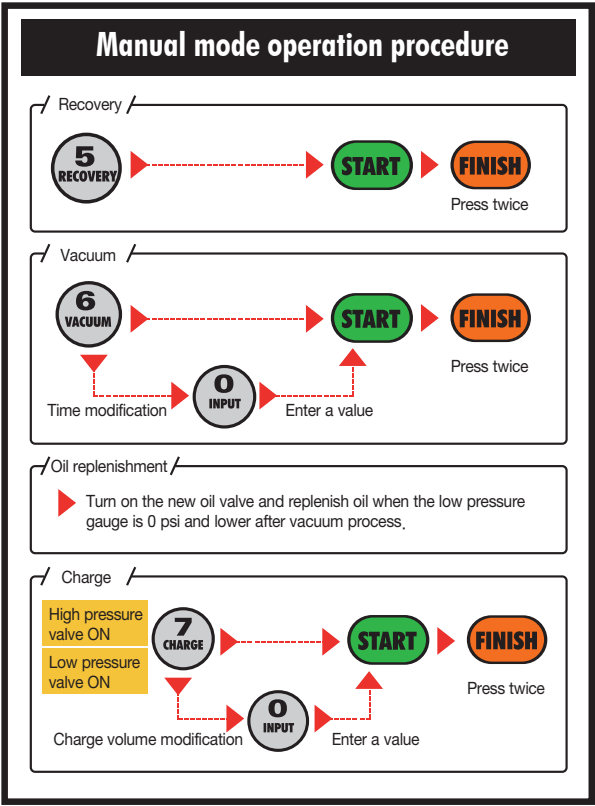


If any items to check are found while the machine is working, it stops automatically. Once it completes up to Charge, the buzzer sounds and a message stating the "work complete" is indicated.



Manual Work Mode

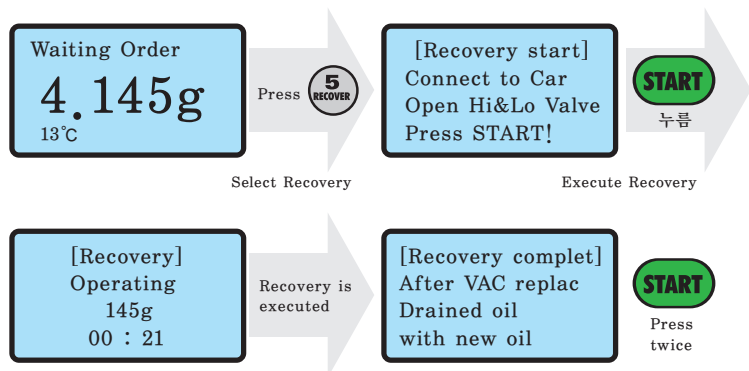
The mode is used when Recovery, vacuum, oil replenishment, Charge and Recycle works are to be individually executed.



## ■ Recovery

Recovery is the function absorbing refrigerant from air conditioner to SpeedCool. Used oil, water and other impurities are separated from the refrigerant through a filter and the filtrated refrigerant is stored in the cylinder. Before collecting refrigerant, check the condition of air conditioner(refer to p.17 How to check air conditioner). If high/low pressure gauges show 0 psi and lower in the inspection, do not collect refrigerant. If the pressure is still higher than 0 psi after Recovery, repeat the Recovery process once more.

### 1 Start refrigerant Recovery



### 2 Recovery completion

► Finish the Recovery by pressing End button.  
After the Recovery, check the pressure by using the low pressure gauge and if it is 0psi and higher, repeat the Recovery once more.

[Recovery]  
Operating  
Pressure high  
00 : 11

Should check  
Air purge: PURGE

Should Check  
Gas Left: OUTLET

[Recovery]  
Operating  
Overweight  
30 : 00

### 3 Diagnostic Information

► Since the pressure of the system rises excessively due to abnormal pressure, the system needs checking.

- Check whether the valve of inside cylinder is opened.
- Check whether the air purge valve is normal.

► The inside cylinder is designed not to execute Recovery for the safety reason in case of 20kg and more. When the message is displayed, it is necessary to separately purchase a cylinder that can be used for replenishment, discharge refrigerant to the supply cylinder by using refrigerant charge function(key No.9) and execute Recovery.



Once purchasing a cylinder for replenishment, it is recommended to make the cylinder vacuum and use it in order to maintain the purity of refrigerant.

### 4 Discharging refrigerant

- Select No.9 in Waiting display.
- Enter a Charge volume as same as the Charge setting and execute Charge.
- Discharging refrigerant complete
  - Press "End" button



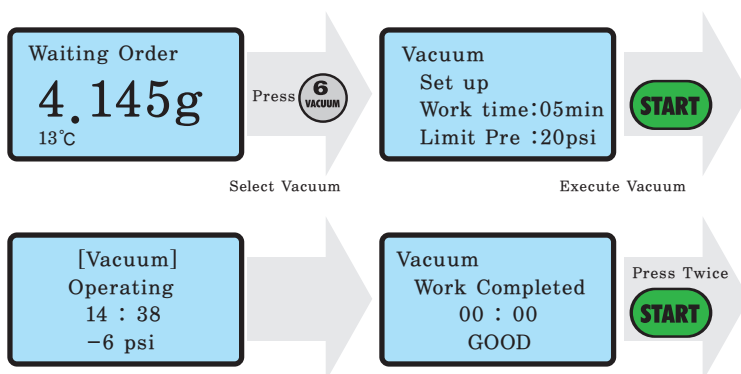
When discharging refrigerant, the cylinder should be able to be re-filled. And if making the cylinder vacuum before discharging, the work can be implemented easily.

## ■ Vacuum

It is necessary to execute vacuum before Charge refrigerant into a vehicle. Vacuum functions as facilitating proper Charge of refrigerant and discharging moisture accumulated in the dry filter of an air conditioner and internal line.

It is recommended that vacuum time is 15 minutes. If remaining refrigerant is found during vacuum or if the pressure rises when starting or during a work, it determines there is remaining refrigerant and stops. At the moment, execute Recovery and then, continue vacuum.

### 1 Start vacuum



### 2 Vacuum complete

► Press "End" button and complete vacuum. Check the low pressure gauge after vacuum and then, check whether the pressure gauge rises

### 3 Major diagnostic information

► If remaining refrigerant is found during vacuum or if the pressure rises when starting or during a work, SpeedCool determines there is remaining refrigerant and stops. At the moment, it stops and displays "Pressure Exists."

► To collect refrigerant, execute Recovery.

Vacuum  
Pressure Exists  
Recovery Require  
System check

## ■ Oil replenishment



If collecting refrigerant from an air conditioner of a vehicle, the frozen oil is also collected in accordance with an operation time of the air conditioner. The collected amount depends on operation time (for instance, the gap may be 3 ~ 5 times between a status air conditioner is rarely used in spring time and a status air conditioner is frequently use in summer season). Best way is Oil replenish only amount drained Oil. You keep work according to manufacturer's manual.



A valve to insert oil for oil replenishment



▶ When open the valve, make sure to check whether the low pressure gauge's needle is within green area.

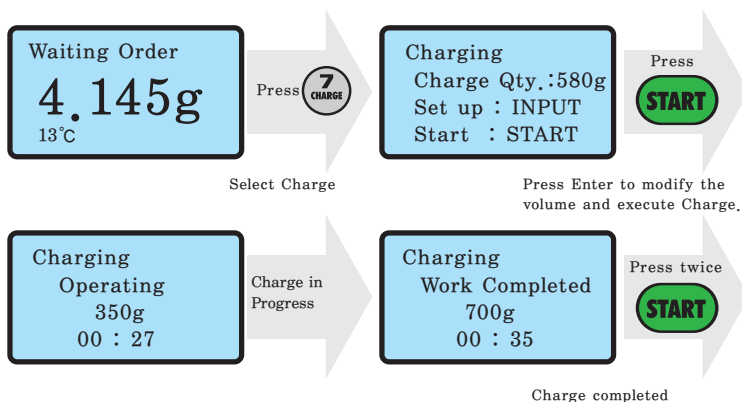
### 2 Start replenishing oil

- ▶ Once vacuum operation is complete, check whether the digital low pressure gauge shows 0 psi.
- ▶ Turn on the new oil insertion valve – after vacuum is complete. (high/low pressure valve should be ON)
- ▶ Replenish oil into a new oil bottle (properly)
  - Oil type: R-134a
- ▶ As the compressor oil is collected when collecting oil and replacing parts, oil should be replenished. (keep manufacturer's manual)

## ■ Charge

Charge is to insert refrigerant into the air conditioner of a vehicle. Make sure to refill a specified volume of refrigerant after checking the volume by vehicle models/types. Charge is not available if the remaining refrigerant inside the cylinder is lower than the Charge volume about +1,500g. At the moment, replenish the refrigerant by conveying refrigerant and then, execute the operation.

### 1 Start Charge



### 2 Recharge

- If it stops during Charge, a buzzer sounds and it shows a message stating "Please start up, turn on the air conditioner and press 'Start'".
- According to the message, start the engine, turn on the air conditioner and press Start.
- Once fully refilled, it shows "Charge completed" in the LCD display.

[Charging]  
Close high Valve  
Open Low Valve  
Press START

[Charging]  
Start the Car  
Turn on A/C  
Press START

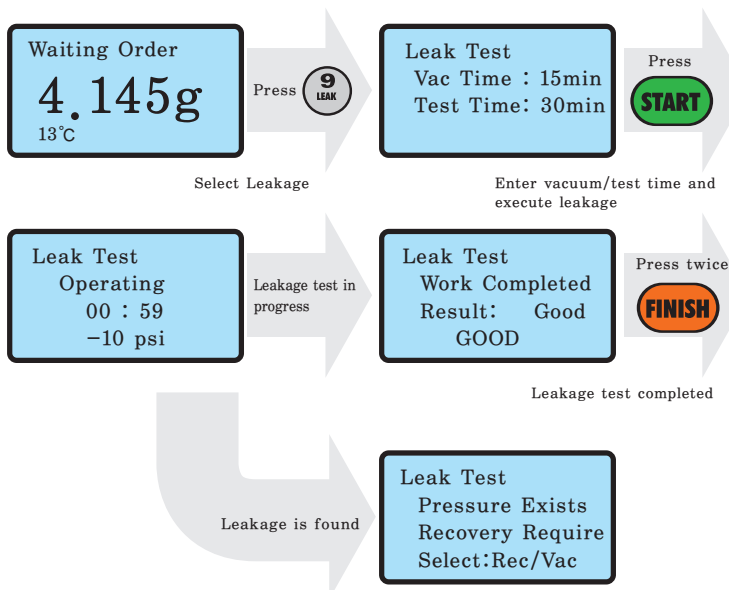
### 3 When Charge is difficult

- ▶ If refrigerant level in a cylinder is low  
(Charge volume + 1,500g and lower)
  - Replenish refrigerant and retry
- ▶ If vacuum operation is not normally execute
  - If a vehicle can not be handled normally after executing vacuum operation once, make sure to execute vacuum for 30 minutes and longer and then, retry it.
- ▶ If air conditioner's line is blocked
  - Frequently, expansion valve drier may be blocked.
- ▶ Impurities are built in the strainer on the air conditioner's hose connection
  - Execute Recovery and disassemble and clean the assembly
- ▶ Parts to be inspected(frozen status of each part)
  - frozen around the expansion valve
  - frozen around a drier
  - partially frozen around a hose

#### ■ Leakage test

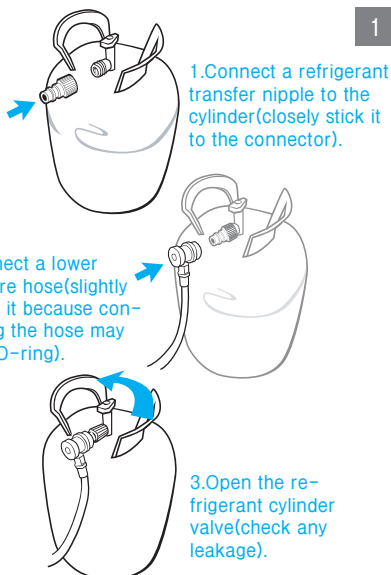
For a vehicle of which air conditioner piping and parts are disassembled for repair or a vehicle with no refrigerant, it needs refrigerant leakage test. If it needs re-execution of Recovery due to supply pressure rise, it may be due to leakage of refrigerant. It should be executed if the digital low pressure is 0 psi and lower.

### 1 Start leakage test



## Enter the device maintenance

Refrigerant Charge is to move a refrigerant from supply cylinder to inside cylinder. If the refrigerant in supply cylinder is lower than 5 psi, it shows "No refrigerant in supply cylinder" and stops. Before starting operating, replace the supply refrigerant cylinder.



### 1 Connecting a refrigerant connector.

Connect the Charge refrigerant you purchased to the connector and start transferring the refrigerant to the SpeedCool.



For the quick adaptor used when connecting the hose, refer to page 15.



Caution of handling refrigerant: make sure to wear goggles and gloves every time you handle a refrigerant.

### 2 Check leakage.

Use soapsuds to check any leakage on the refrigerant connector.

► Checkpoint when any leakage is found

Turn off the valve and disconnect it. Check whether the connector's rubber ring and cylinder connector are damaged. If no damage is found, retry to connect it. If a refrigerant is still leaking even though the product is not damaged or in problem, contact your dealer.

### 3 Upsetting a refrigerant cylinder

Upset a refrigerant cylinder.

► A supply cylinder should be connected to liquid side (L or LIQUID) and then, move it back upright.





Waiting Order  
**4.145g**  
13°C

[ Set Up ]  
1. Gas/Purge/Recyc  
2. Logbook  
3. Hardware Setup

[ Gas/Purge/Recycle ]  
1. Refill : Requir  
2. Purge : Not Re  
3. Recycl :

Refil : 05Kg  
Open low Valve  
& source Gas Valve  
Press START

[ Refill ]  
Operating  
5000g

[ Refill ]  
Close  
Out gas valve  
Press START

[ Refill ]  
Line Recovering  
5,105g

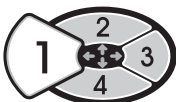
Refill Completed  
5,200g

(Example of Setting) 5kg is set



Checkpoint when refrigerant Charge is not possible

- (1) Check whether high/low pressure valves and inside/supply refrigerant valves are open.
- (2) Check whether O-ring on a refrigerant transfer valve is pressurized.
- (3) Slightly tighten the refrigerant transfer valve when connecting it(to avoid any leakage)



#### 4 Press the button to transfer refrigerant.

If pressing the button on the control panel of the SpeedCool, it shows maintenance entry display. Press No.1 button to select Gas/Purge/Recycle. Press No.1 button again to select refrigerant transfer.

#### 5 Start transferring refrigerant.

SpeedCool starts transferring refrigerant from supply cylinder to inside refrigerant cylinder.

The amount as much as entered by an operator is transferred(up to 10kg).

(Example of Setting) 5kg is set

Once 5kg(setting) is set, SpeedCool stops and indicates the message as presented in the left figure.

Close the valve on the supply cylinder and press Start button. Then, it starts Line Recovery to collect the remaining refrigerant in it for a minute(5kg and less is not entered).

The total volume of the refrigerant volume inside it and the transferred volume are displayed.

#### 6 Refill completed

Upon the completion of collecting refrigerant, the LCD display shows a message "Refill completed."

►(Example of Setting) if 5kg is set, it shows about 5,200g: 5kg plus a volume collected from line.

#### 7 Work Preparation completed.

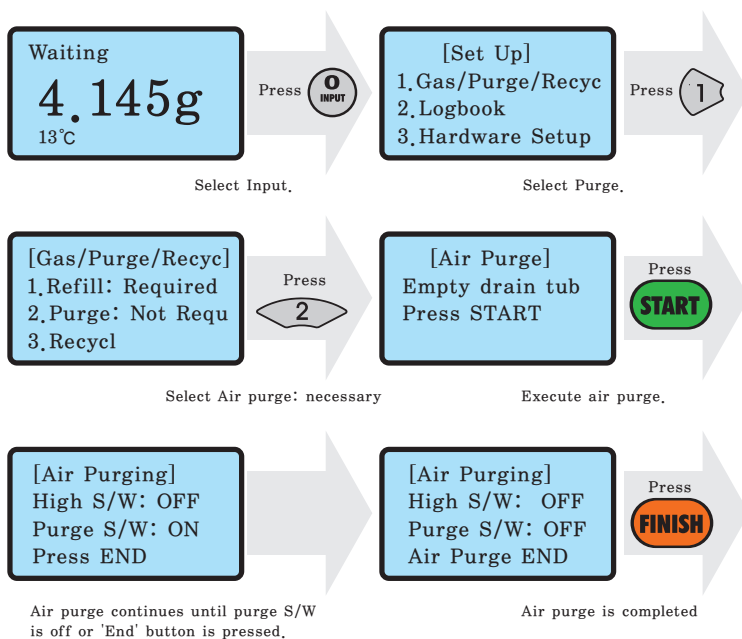
Separate the supply cylinder and store it. You readily start working. Now, you can start working.

## ■ Purge

When an excessive pressure occurs and rises up to the limit if uncondensed gas or unknown gas flows into the SpeedCool, Purge, at the moment, functionally drain the uncondensed gas from the internal cylinder.

Since the Recovery compressor does not work if the high pressure switch is ON, air purge execute until when purge switch OFF. Then, press ' End ' button and complete the operation(purge should stop before the cylinder 's pressure gauge rises up to 100psi).

### 1 Start purge operation



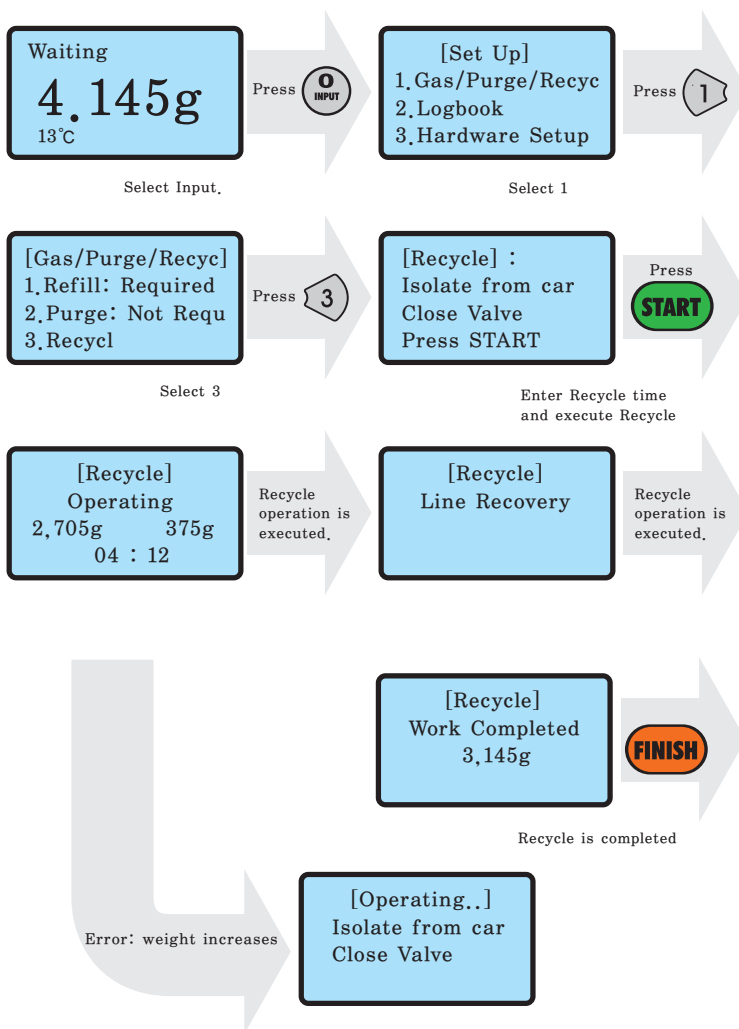
If when Purge S/W off, It start air purge  
IF you want finish the Purge, press STOP.

## ■ Recycle



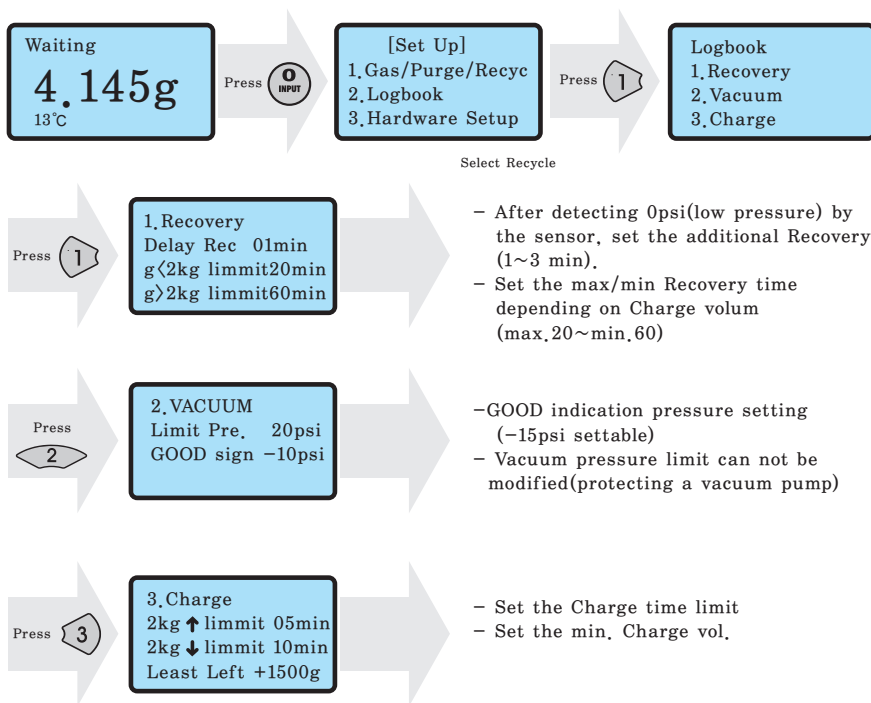
When Moisture Indicator turns yellow, Recycle operation is executed. Recycle operation is also needed when Charge is difficult due to low pressure of the inside cylinder or presume. For the operation, it is necessary to separate high/low pressure hoses and turn off high/low pressure valves. The max Recycle time is limited to 15 minutes (enter 15 minutes and shorter). It is prohibited to stop the operation during working (if intermediately stopping the operation, it needs a Recovery operation)

### 1 Start Recycle



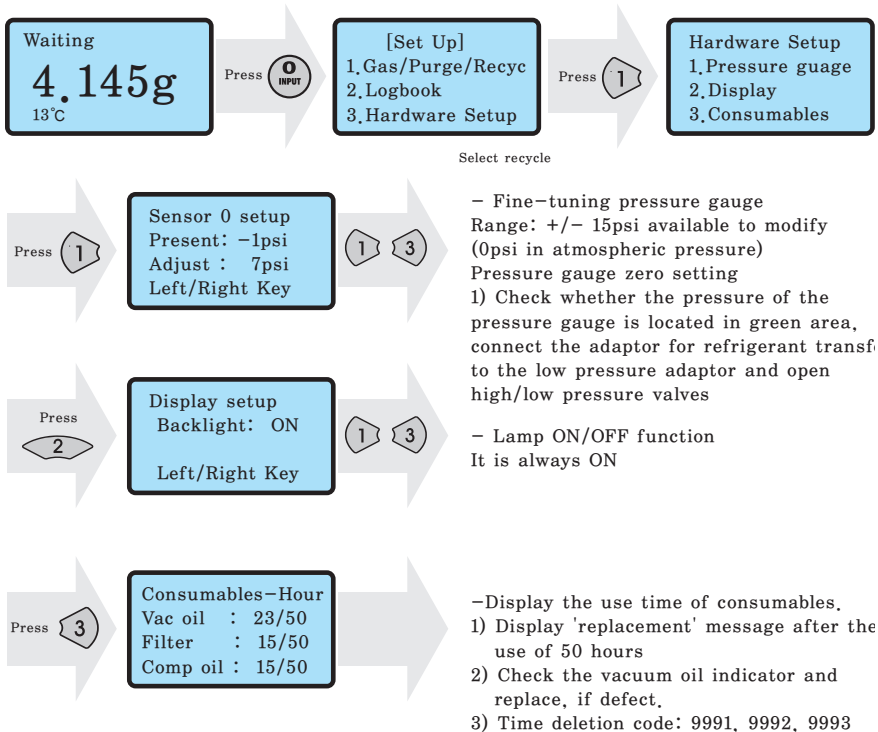
## ■ Log Book

It increases workability and protects the system by setting the operation mode.



## ■ Hardware Setup

This function is prepared to maintain the devices including consumables.



## Problemshooting & Maintenance

### ■ Problemshooting

#### 1 LCD does not work.

- ▶ Connect an outlet and turn on the power switch.
- ▶ Check whether the power is correct.
- ▶ Check whether the harness of LCD is contact defective.
- ▶ Check trans input/output

#### 2 Recovery is not available

- ▶ Check whether a compressor works normally.
- ▶ (if "Pressure high" is displayed) check whether the valve of internal cylinder is opened.
- ▶ (if "Pressure high" is displayed) execute air purge.

[Recovery]  
Operating  
Pressure high  
00 : 11

Should check  
  
Air purge: PURGE

#### 3 If a message stating "Over weight" is displayed

- ▶ The inside cylinder is designed not to execute Recovery operation if 20kg and more is contained in the cylinder in order to avoid a risk from impact and loss of refrigerant. Therefore, if a message, "Over weight" is displayed, a refillable cylinder or a another vehicle, charge it supply and execute Recovery

Should Check  
  
Gas Left: OUTLET

[Recovery]  
Operating  
Overweight  
30 : 00

## [Charging]

Close high Valve  
Open Low Valve  
Press START

## [Charging]

Start the Car  
Turn on A/C  
Press START

## Vacuum

Pressure Exists  
Recovery Require  
System check

## 4 Charge is not available.

- ▶ If it can not even start Charge, check the connection.
- ▶ If it stops during Charge, a buzzer sounds and a message stating "Start the engine, turn on the air conditioner and press Start" is displayed.
- ▶ According to the message, start the engine, turn on the air conditioner and press Start.
- ▶ Check whether the valve of the inside cylinder is open.
- ▶ Check the quick connector.

## 5 Vacuum operation does not work

- ▶ If a message stating "pressure Exist Recovery Require" is displayed, it means that the pressure rises because the blocked part of a vehicle is open. Therefore, execute Recovery and retry vacuum operation.
- ▶ If a vacuum pump does not work even though no specific message is displayed, open the top cover and check whether a vacuum pump connector is detached.

## 6 Display does not change by pressing buttons.

- ▶ Try to press End key. If it change Display, check the operation by pressing a desirable button.
- ▶ Check whether the harness of keyboard after top cover open.



For the further information about problemshooting/maintenance, contact the sales dealer/agent of HESHBON Co.,Ltd.

### ■ How to remove the front cover

#### 1 Remove the plastic cover.

► Release the bolts on the left/right sides of the front cover and top cover and remove the plastic cover.

#### 2 Remove the top cover

Lift up the back side of the top cover, pull and lift it up so that the front key is escaped and pull it backward.

(To reassemble it, align the front, push it slightly and assemble it according to the key part.)



#### 3 Remove the front cover

► Unscrew the bolt on the center of front control panel, pull it forward to detach the right/left wings, lower them and remove the front hose assembly.

(\*caution: since a bolt inserted into resin when initially assembled may get off, just tighten it until it is smoothly fixed – Do not forcibly screw it until the spring washer is pressurized and gets flat)





## Zero setting of High/Low Pressure gauges

## 1 Zero setting of high/low

► Check whether the pressure of high/low pressure gauges is lower than 0 (if the pressure is higher than the specified range, open the high/low pressure valves and execute Recovery)

Connect the refrigerant transfer nipple to the low pressure hose adaptor, open the high/low pressure valves, separate the high/low pressure hoses from it. Then, if the needle of the gauge does not move, cut off(+) the front film using a knife, adjust the needle within 0 area by using (-) screw driver, tab the plate to see whether it changes and close it with sticky tape and others to avoid any inflow of impurities.

After separating a connected refrigerant transfer nipple and connecting a separated hose and check whether there is any leakage from high/low pressure valves.

## ■ How to put on top skin(protective plastic)

## 1 How to put on top skin (protective plastic)



For the further information about problemshooting/maintenance, contact the sales dealer/agent of HESHBON Co.,Ltd.

► Spread any folded part, align it according to the top lightweight parts plate and front control panel and make it tight while pressing any squeezed part. At a low temperature, it is helpful to make it tight completely if using warm blow from a hair drier and other devices.

Remove the part covered with plastic in the area of the right and left bolts and fix the bolts according to the round shape.



## APPENDIX

- Cautions of Air Conditioner Maintenance
- Table of Air Conditioner Health-Check List
- Cautions when using a vacuum pump

※The content in the appendices are references only and it may contain errors. Therefore, for the information on vehicles, the maintenance and repair may vary at the car maker's manual and discretion of the mechanic.

Your Source of Excellent Equipment

**HESHBON®**

Parts List may change without notice if the specifications are changed. The parts list is prepared, as of April, 2007, by HESHBON Laboratory

## Cautions of Air Conditioner Maintenance

### 1 Operation sounds from a compressor

Just like an engine, a compressor experience high speed rotation/high compression, from which an air conditioner may generate operation sound(noise) and vibration, which may increase due to accumulated engine load and idle rpm.

### 2 Cautions when collecting/Charge refrigerant

Since a compressor oil is also collected when collecting refrigerant and replacing parts(components), the oil should be replenished.

### 3 Checklist for a vehicle with air conditioner noise problem

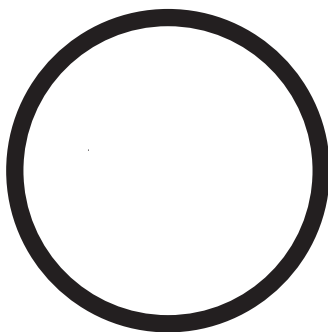
- 1) Check whether noise(operation sound) is originally from the normal operation of a compressor.
- 2) Check and adjust the tension of a belt and check any changes in noise.
- 3) Determine whether the noise is originated from the expansion valve.
  - In case of noise from the expansion valve, check the below 4) and 5); if it still exists, replace the valve.
  - Example of expansion valve: intermittent ' poo ' sound, flowing water sound from refrigerant ' shee ' sound
- 4) Collect refrigerant, check the collected refrigerant volume, make it vacuum and check any leakage from the system.
- 5) Insert the specified volume of refrigerant with compressor oil.
  - ※ Cautions of R/O preparation after compressor defect is checked
  - Describe noise sound, occurrence conditions, collected refrigerant volume and etc in detail

### 4 Checklist for a vehicle with air conditioner performance problem

- 1) Check whether or not a customer complains the normal operation.
- 2) In case of a vehicle with low wind level, check the air conditioner filter and if contaminated, explain to a customer that a filter should be regularly replaced.
- 3) Check any abnormal pressure level and parts of an air conditioner.
- 4) Collect refrigerant, check the collected refrigerant volume, make it vacuum and check any leakage.
- 5) Refill a specified volume of refrigerant with compressor oil.

## Cautions when using a vacuum pump

### Caution of vacuum pump



#### Daily check list

Check list	Checking condition	Standard	Note
Oil gauge	After operating vacuum function	Oil surface between indication scale	Supply or Discharge oil
Oil color	When it starts and stops	Transparent	Exchange if it's brown or dirty
Oil temper	Check the heat of oil box	Summer: 65°C ± 7°C	Winter: Use in site higher than 10°C



Only operate pump in site higher than 10°C  
(Low temper make motor damage)

#### Oil exchange method

1. Remove cover
2. Operate vacuuming during 10min.
3. Open the oil cap
4. Open below outlet
5. Check discharge all oil
6. Close below outlet, put new oil
7. Close oil cap and vacuuming
8. Assemble cover

#### Oil exchange cycle

1. When you keep it for a long time
2. When oil color changed or turbid
3. When you see floating matter or water
4. When shown oil exchange message

### Table of Air Conditioner OK-Check List

#### ■Normal status

Pressure	Low pressure : 15 ~ 30 psi / High pressure : 150 ~ 250 psi
Situation	Refrigerant gas is good, air conditioning system works normally.

#### ■If refrigerant gas is not circulated

Pressure	Low pressure : no pressure (very low) / High pressure : 100 psi(low)
Situation	Insufficient cooling performance(not cold). It is often cold.
Causes	The expansion valve's hole is blocked(frozen, dust and impurities). Gas is leaking from the bulb of the expansion valve.
Diagnosis	The expansion valve's hole is blocked.
Measures	<ul style="list-style-type: none"> <li>▶ Moisture elimination: make it vacuum again and refill refrigerant.</li> <li>▶ Dust elimination: disassemble the expansion valve and clean it up with compressed air or replace it with new one.</li> <li>▶ Replace a receiver drier.</li> <li>▶ Gas leakage from the bulb of expansion valve: replace it.</li> </ul>

#### ■Compression defect of a compressor

Pressure	Low pressure: 40 ~ 60 psi / High pressure: 70 ~ 100 psi
Situation	Insufficient cooling performance(not cold).
Causes	Leakage inside a compressor.
Diagnosis	Compression problem of a compressor(leaking or damaged valve).
Measures	Repair and/or replace a compressor.

#### ■Excessive refrigerant gas

Pressure	Low pressure: more 30 psi(high) / High pressure: 250psi(high)
Situation	Insufficient cooling performance(not cold). No bubbles around a sight glass
Causes	Excessive refrigerant gas. Bad cooling performance of a condenser
Diagnosis	Refrigerant is excessively refilled inside the air conditioner Bad cooling performance of a condenser. Defective condenser pin/cooling fan.
Measures	Discharge refrigerant gas. Clean up the condenser and check the cooling fan belt.

■ If refrigerant gas is insufficient

Pressure	Low pressure : 8 ~ 15 psi / High pressure : 80 ~ 150 psi
Situation	Cooling performance is low(the outlet of vent is not cool) Bubbles around sight glass
Causes	<ul style="list-style-type: none"> <li>- Expansion valve's hole is blocked.</li> <li>- Receiver drier is blocked.</li> <li>- Leakage of air conditioning system's refrigerant gas</li> </ul>
Diagnosis	Insufficient or leaking refrigerant
Measures	Repair a point leaking refrigerant and refill refrigerant Repair and/or replace the expansion valve and receiver driver

■ Air is mixed inside the system

Pressure	Low pressure: 30 psi(high) / High pressure : 280 psi(high)
Situation	Insufficient cooling performance. When touching the low pressure pipe, can not feel cold.
Causes	Air is mixed into the air conditioning system.
Diagnosis	Bad vacuum operation of an air conditioning system.
Measures	Charge refrigerant by re-collecting and making it vacuum. Contaminated condenser oil : clean up and replace Replace a receiver drier.

■ Moisture is mixed inside the system

Pressure	Low pressure: lower than 15psi but excessively trembling. High pressure: 70 ~ 150 (low or excessively trembling)
Situation	Air conditioner's cooling conditions is cool or not periodically. Gauge pressure often drops and returns to the normal pressure.
Causes	Because of air mixed into the air conditioning system, the expansion valve is often frozen.
Diagnosis	Receiver drier is excessively saturated. Moisture is frozen around the expansion valve.
Measures	Charge refrigerant by re-collecting and making it vacuum. Replace a receiver drier.





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