

## 5. Refrigerant Charging Procedure

### A: PROCEDURE

**Preparation tool:**

**Manifold gauge set**

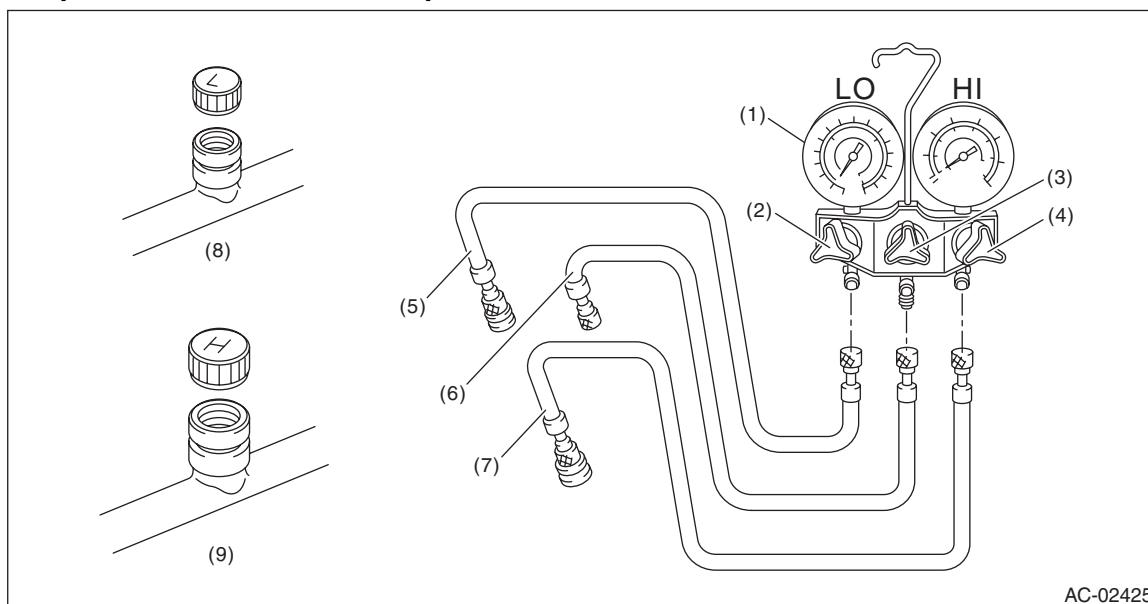
**Vacuum pump**

**Can tap**

**Weight scale**

**CAUTION:**

- While working, be sure to wear protective goggles and protective gloves.
- Air in the cycle can cause insufficient air conditioning, and water in the cycle can cause clogging in the cycle (icing) and rust. To remove this air and water content, use a vacuum pump to perform evacuation before filling with refrigerant. By making the inside of the cycle a vacuum, the water content will evaporate even at normal temperatures, and can be removed.



(1) Manifold gauge	(4) High pressure valve	(7) High-pressure hose
(2) Low pressure valve	(5) Low-pressure hose	(8) Low-pressure side service port
(3) Center valve	(6) Center manifold hose (vacuum pump and charge)	(9) High-pressure side service port

- 1) Attach the manifold gauge set.

(1) Check that all valves are fully closed.

(2) Install the low/high pressure hoses to the service ports on the low/high pressure sides of the vehicle respectively.

**CAUTION:**

**Confirm that the connections are secure.**

(3) Connect the center manifold hose of the manifold gauge to the vacuum pump.

- 2) Perform evacuation.

**CAUTION:**

**Make sure to perform evacuation using a vacuum pump.**

(1) Open the low-pressure valve, high-pressure valve and center valve.

(2) Operate the vacuum pump.

(3) Perform evacuation for 5 minutes or more, and when the low pressure gauge needle reaches -0.1 MPa (1.0 kgf/cm<sup>2</sup>, 14 psi), close the center manifold hose valve, and stop the vacuum pump.

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## HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

(4) Leave alone for 5 to 10 minutes after closing the low pressure side and high pressure side valves, and check whether there is any change in the low pressure gauge needle indication. If the needle position changes, this indicates a leak. Check the pipe and hose connections, and repair the location with the problem. In this case, repeat again from step 1).

(5) If there is no leakage, continue evacuation for additional 20 — 30 minutes, close all valves and then stop the vacuum pump.

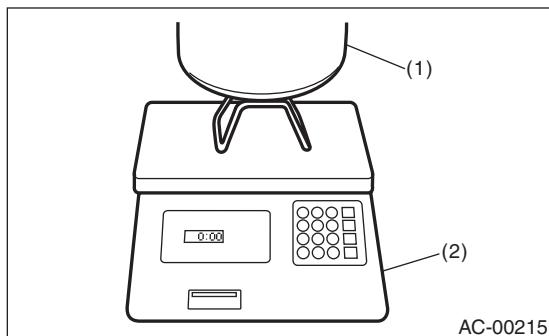
### 3) Charge refrigerant.

(1) Follow the can tap operation manual to attach it to the refrigerant can.

(2) Disconnect the center manifold hose from the vacuum pump, and connect the hose to the tap valve.

#### NOTE:

When a 13.6 kg (30 lb) refrigerant container (1) is used, measure the amount of refrigerant with a refrigerant charging scale (2), and connect with the center manifold hose.



(3) Open the tap valve of HFC-134a supply container (refrigerant can or refrigerant container).

(4) Loosen the center manifold hose connection on the manifold gauge for a few seconds (if there is a purge valve on the manifold gauge, push this instead) to allow the air in the center manifold hose to be bled by the refrigerant pressure.

(5) Open the low-pressure side and high-pressure side valves of the manifold gauge to fill with refrigerant.

#### NOTE:

If the HFC-134a supply container is empty, close all valves of manifold gauge and tap valve of HFC-134a supply container, and replace the empty container. After replacing with a new HFC-134a supply container, perform air purge, and resume the filling operation.

(6) If the low pressure gauge indicates approximately 0.2 MPa (2.0 kgf/cm<sup>2</sup>, 29 psi) or refrigerant filling efficiency drops, close the low-pressure side valve and high-pressure side valve.

(7) Check that the low-pressure side valve and high-pressure side valve are closed, turn off the A/C switch and start the engine.

#### CAUTION:

**When filling with the engine running, do not open the high pressure side valve. Always fill from the low pressure side.**

(8) To prevent damage to the compressor, push the A/C switch ON-OFF quickly a few times.

(9) Set the vehicle to the following conditions.

Item	Condition
Engine speed	1,500 rpm
AC switch	ON
Temperature control switch or dial	LO (MAX COOL)
Fan switch or dial	HI (MAX)
FRESH/RECIRC switch	RECIRC
Air flow control switch	VENT
Window	Open

(10) Open the low-pressure side valve, check the refrigerant pressure with a manifold gauge and fill with refrigerant up to the specified amount. <Ref. to AC-23, INSPECTION WITH PRESSURE SYMPTOM, INSPECTION, Refrigerant Pressure with Manifold Gauge Set.>

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- 4) Using an electronic leak detector (leak tester), check for refrigerant leaks in the system. <Ref. to AC-30, INSPECTION, Refrigerant Leak Check.>
- 5) After filling with refrigerant, close all valves and remove the manifold gauge set.
- 6) Attach cap to the service port of the low-pressure side and high-pressure side.