

Section 50

Chapter 2

AIR CONDITIONER SYSTEM SERVICE

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SPECIFICATIONS

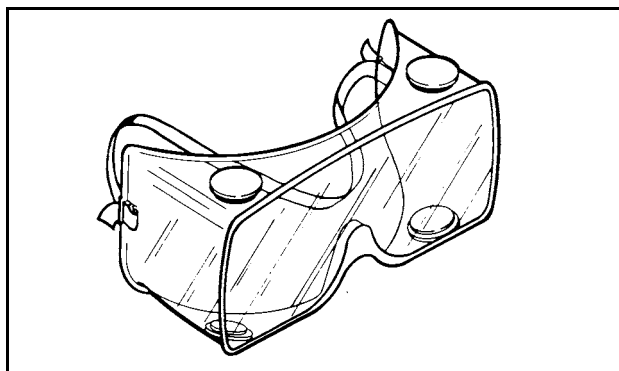
Air Conditioning System Refrigerant Capacity	4.63 lb. (U.S.) (2.1 kg.)
Clutch Front Plate Air Gap.....	0.016 to 0.031 inch (0.41 to 0.79 mm)

SPECIAL TORQUES

Compressor Clutch Retaining Nut	15 to 20 Nm (11 to 15 lb. ft.)
Oil Filler Plug	15 to 24 Nm (11 to 18 lb. ft.)
Dust Cover Screws	7 to 11 Nm (5 to 8 lb. ft.)

SPECIAL TOOLS

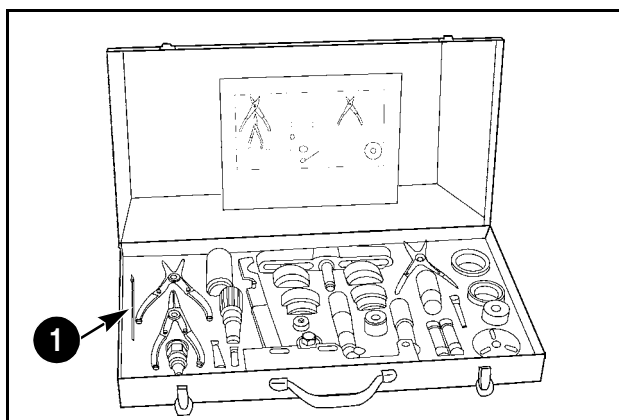
Combination Impact and Chemical Splash Safety Goggles



109L7

Compressor Tool Set, CAS10747A

The compressor dipstick (1) can be found in the Compressor Tool Set or purchased separately - CAS10747-19.

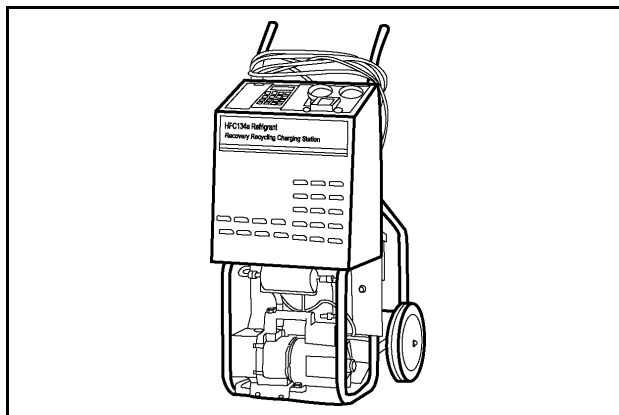


RD99K079

Refrigerant Recovery Station, OEM1415

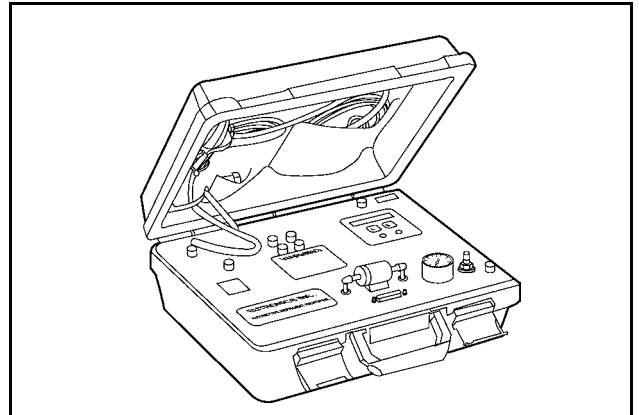
6 Foot Length, Quick Disconnect Refrigerant Charging Hoses: OEM1438 (Yellow), OEM1439 (Blue), OEM1440 (Red)

20 Foot Length, Quick Disconnect Refrigerant Hoses: OEM1442 (Set includes Yellow, Blue and Red hoses.)



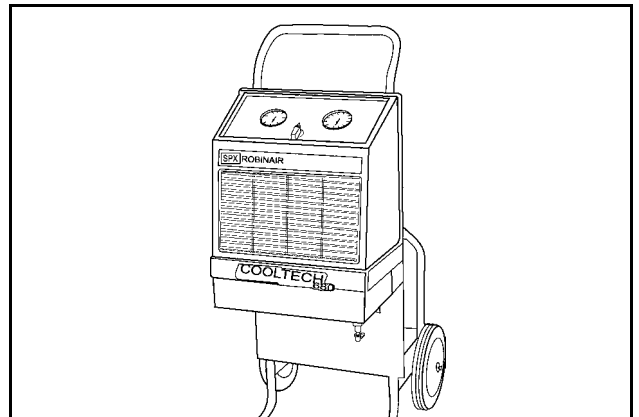
A22094

Refrigerant Identifier OEM4450



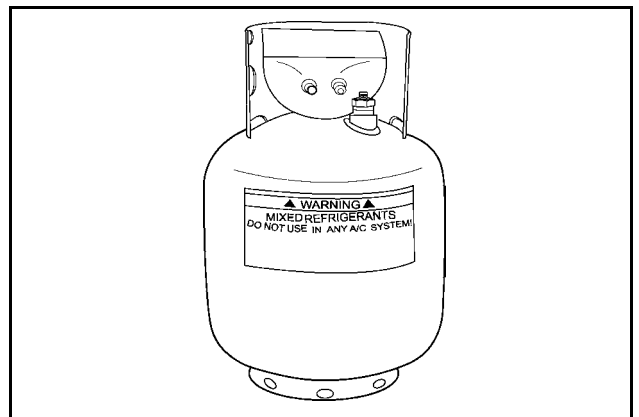
RR99M070

Air-Powered Recovery Station with Tank
OEM1691



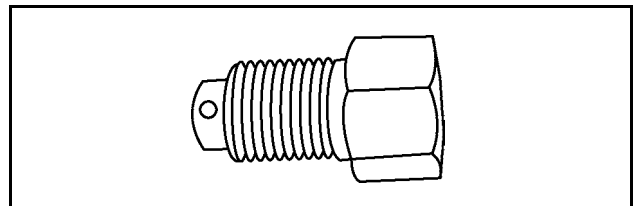
RR00D078

Additional 50 lb. Contaminated Refrigerant Tanks
OEM1692



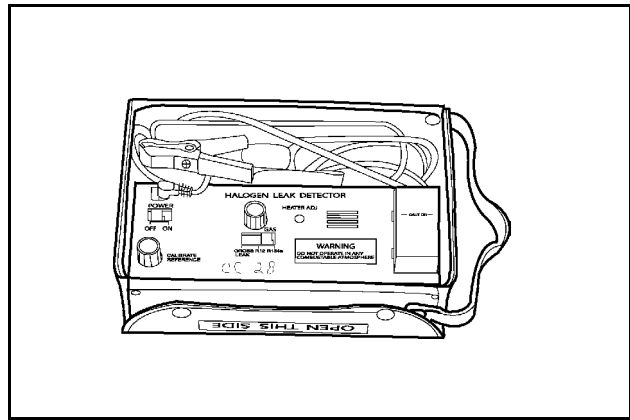
RR00E140

1/4 Inch FFLX to 1/2 Inch Acme Adapter
OEM1693



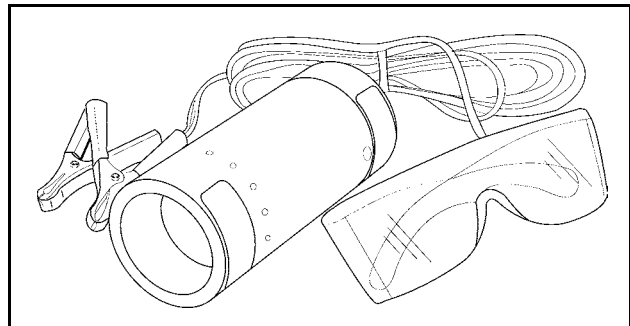
RR00E139

Electronic Leak Detector OEM1437



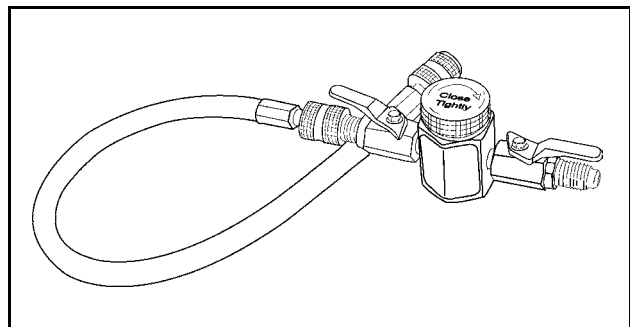
A22090

UV Leak Detection Lamp and Goggles
BSL750



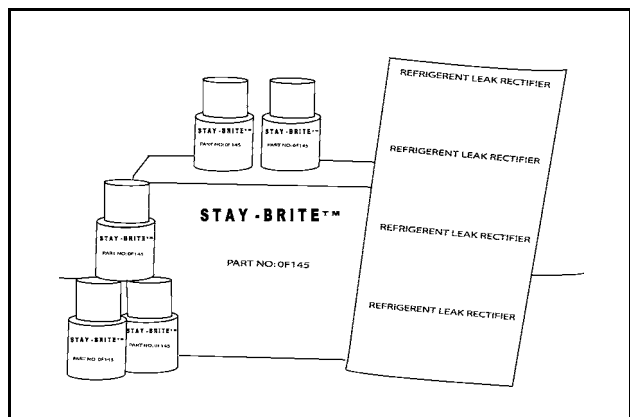
RR00F098

Recovery Station UV Dye Injector
for R-134a Refrigerant - BSL734



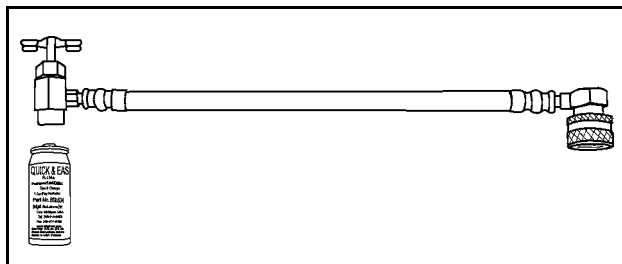
RR00F101

UV Leak Detection Dye for R-134a Refrigerant
B726012



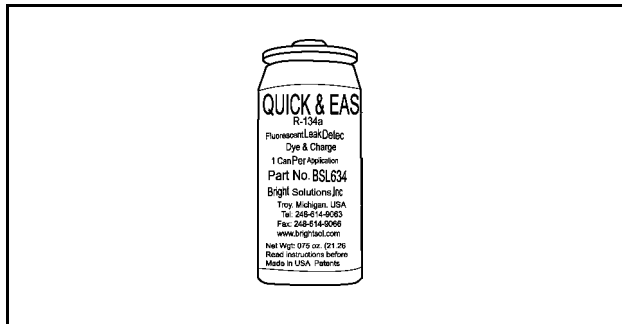
RR00F102

**R134a Quick and Easy Dye Injector Tool
BSL738**



RD01F248

**Quick and Easy R134a Charge Cans -
6-Pack BSL634**



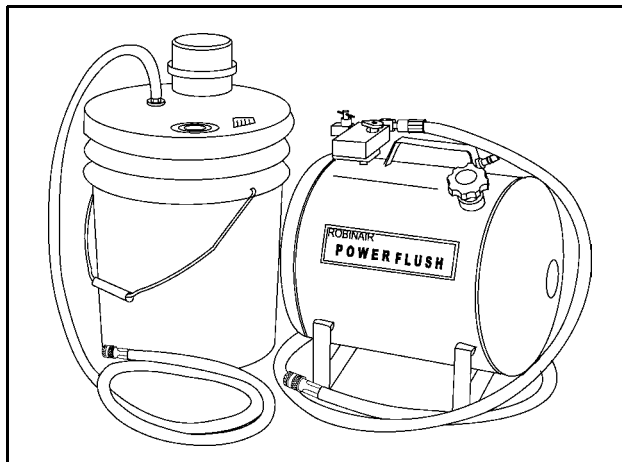
RD01F249

UV Fluorescent Dye Cleaner - B795016



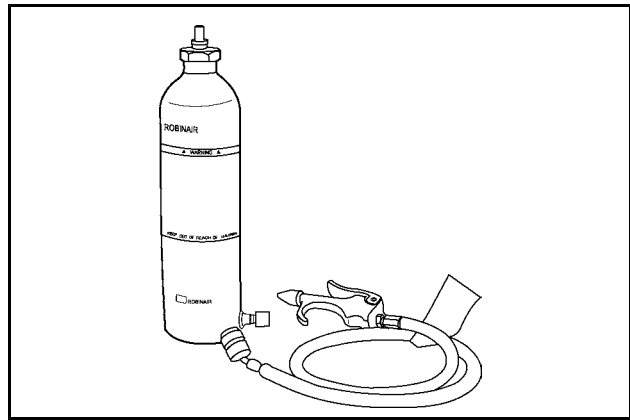
RR00F100

**Power Flush Model 17550
BS33801 - A/C Flushing Solution,
Case of Six 1-Gallon Containers**



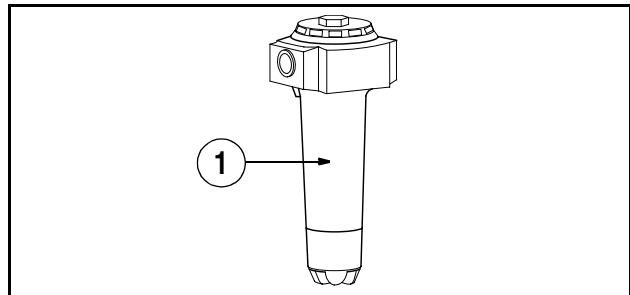
RR00F093

**Flush Gun Kit Model 17585
BS33801 - A/C Flushing Solution,
Case of Six 1-Gallon Containers**



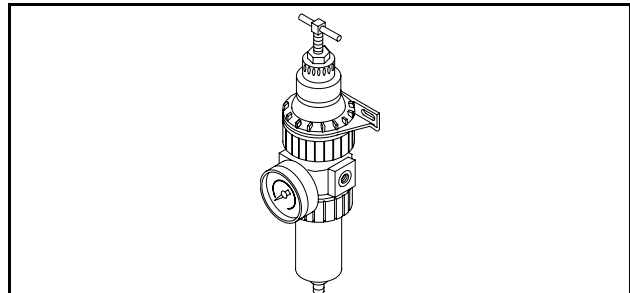
RP00G007

**Coalescing Air Filter/Dryer (1)
Similar to Ingersoll-Rand Model IR5CHE
or Grainger Model 4KR65**



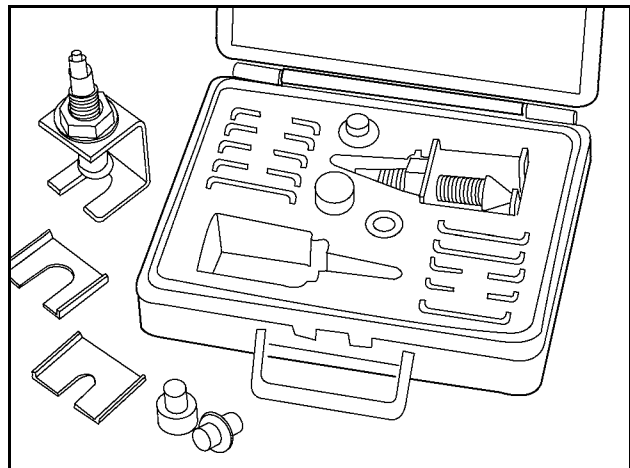
RI00F041

**Pressure Regulator Capable of Providing 45 psi
at 4.0 cfm (310 kPa at 0.11 cmm)
with Integrated Pressure Gauge**



RI00F042

17582 Universal Flush Fitting Kit



RR00F148

SAFETY PROCEDURES



THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.

M171B

ATTENTION: *Only authorized technicians certified by an approved training and certification organization may service or repair motor vehicle or mobile air conditioning systems.*

Refrigerant HFC-134a is the most stable and easiest to work with of the refrigerants now used in air conditioning systems. Refrigerant HFC-134a does not contain chlorofluorocarbons (CFC's) which are harmful to the earth's ozone layer.

Safety procedures must be followed when working with refrigerant HFC-134a to prevent possible personal injury.

1. Always wear combination impact and chemical splash safety goggles when doing any service work near an air conditioner system. Liquid refrigerant in the eyes can cause serious injury. Do the following if you get refrigerant near or in your eyes:

- A. Flush your eyes with water for 15 minutes.
- B. See a physician immediately. M779

2. Always recover all refrigerant prior to opening an A/C system. A drop of liquid refrigerant on your skin may cause frostbite burns. Open fittings carefully and slowly when servicing the air conditioning system. Your skin must be treated for frostbite burns or a physician must be seen if you get refrigerant on your skin. M799

3. Keep refrigerant containers in correct upright position. Always keep refrigerant containers away from heat and sunlight. The pressure in a container will increase with heat. M743

4. Always check refrigerant purity with OEM4450 Refrigerant Identifier before recovering refrigerant and before testing the system. M777

5. Use the air-powered OEM1691 ONLY to recover contaminated refrigerant. Do NOT use OEM1415 or OEM1418 recycling stations to recover contaminated refrigerant. If contaminated refrigerant contains more than 2% hydrocarbon (propane, butane, or isobutane), the mixture must be treated as flammable; if more than 4% hydrocarbon, the mixture must be treated as explosive; in both cases an electric-powered recovery station may NOT be used. Avoid heat, sparks and flame when working with this contaminated refrigerant. M800

6. Dangerous gas can form when refrigerant comes in contact with an open flame. Never inhale fumes. M745

7. Never leak test with compressed air or flame tester. Tests have indicated that compressed mixtures of HFC-134a and air can form a combustible gas. M746

AIR CONDITIONER SYSTEM REFRIGERANT RECOVERY

IMPORTANT: *There are no repair procedures for the compressor or compressor clutch. If the clutch or compressor are defective, replace them.*



WARNING: *134a is the only refrigerant approved in 134a systems. Alternative refrigerants which boast better cooling capabilities are in most cases highly flammable. Do not expose contaminated refrigerant to spark, flame or yourself.* M748

IMPORTANT: *Refrigerant contamination has become an issue since the introduction of 134a as a replacement for R-12. Contamination refers to a refrigerant blend and/or mixture of alternative refrigerants and 134a. Typically, R-12 systems which are in need of repair or recharge are suspect to refrigerant contamination due to the number of so called "drop-in" replacements or substitutes for 134a. Systems designed for 134a, such as the MX MAGNUM, may be at lower risk for contamination, but precautions should be taken to prevent contamination of service equipment and/or other A/C systems.*

IMPORTANT: *A refrigerant identifier should be used to determine refrigerant contamination prior to recovery. It is recommended to use OEM4450 refrigerant identifier. If a refrigerant contamination level of 2% or greater is discovered, do not recover the system to a tank with pure 134a refrigerant. Recover only to a tank reserved for contaminated refrigerant with the air-powered station - OEM1691.*



WARNING: *OEM1415, and its predecessor OEM1418, were designed for the recovery and recycling of pure 134a refrigerant. Do NOT use OEM1415 and OEM1418 to recover contaminated refrigerant; you will void your warranty, you may damage the compressor and filter-drier in the recovery station, and you may expose yourself to the danger of an explosion.* M795



WARNING: *If the refrigerant identifier indicates the system contains more than 2% hydrocarbon (propane, butane or isobutane), the system and its contents must be treated as flammable; if more than 4% hydrocarbon, the system and its contents must be treated as explosive. Do not operate the vehicle or the A/C system. Do not recover this contaminated refrigerant with an electric-powered unit (OEM1415 or OEM1418). Use the air-powered station - OEM1691 - to recover this refrigerant. Avoid heat, sparks and open flame when working with this contaminated refrigerant.* M796

IMPORTANT: *If contaminated refrigerant is discovered and recovered with OEM1691, replace the receiver-drier in the tractor being serviced BEFORE you recharge the system with pure 134a refrigerant. OEM1415 or OEM1418 should be used to evacuate and recharge the system after the contaminated refrigerant has been safely recovered.*

NOTE: *Check with your local environmental agency for regulations on the proper disposition of contaminated refrigerant.*

NOTE: *In the United States, EPA regulations require that tanks of contaminated refrigerant be sent to a refrigerant reclaimer for the contents to be purified or destroyed. Call 1-800-296-1996 to locate a reclaimer in your area.*



WARNING: *Do NOT use a tank without a limit switch to recover contaminated refrigerant with OEM1691. The limit switch prevents overfilling the tank and protects your safety.* M797



WARNING: *When working with SP-20 PAG oil, follow these safety precautions: 1) Avoid contact with eyes, skin and clothing. 2) Avoid breathing vapor, aerosol and mist. 3) Do not swallow. 4) Use only with adequate ventilation. 5) Wear protective safety goggles and non-permeable gloves when handling SP-20 PAG oil.* M798

Overview

In many countries, **recovery**, **recycling** and **reclamation** have legal definitions and standard meanings in the mobile A/C industry.

Recovery is transferring refrigerant in any condition from a system to a storage container without testing or purifying the refrigerant in any way.

Recycling is the cleaning of refrigerant for reuse by oil-separation, non-condensable gas removal and single or multiple passes through filter/moisture absorption devices.

Reclamation is processing refrigerant to a level equal to new product specifications as determined by chemical analysis, (testing to ARI 700).

In servicing A/C systems with OEM1415, when “recover” is depressed, the refrigerant in the vehicle is transferred to the recovery tank on the unit without testing or purifying. At the same time, SP-20 PAG oil is separated from the refrigerant and stored separately in the reservoir. This oil requires proper disposal and should never be returned to the vehicle.

When “vacuum” is depressed, the vacuum pump on OEM1415 evacuates the atmosphere in the vehicle A/C system to a vacuum of 28 to 29-1/2 inches of mercury (Hg). Air and moisture are removed in the process, and only SP-20 PAG oil remains in the vehicle’s A/C system.

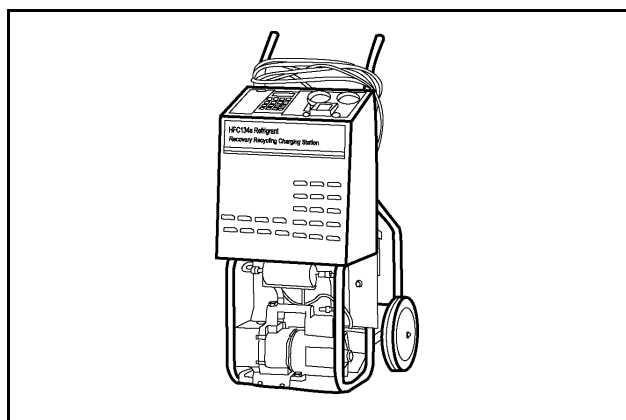
When “recycle” is depressed, the entire contents of the recovery tank on OEM1415 are “recycled.” The refrigerant in the tank is passed through a filter-drier in OEM1415 and cleaned; non-condensables are removed, and air is purged automatically. (Older recovery units like OEM1418 have manual air purge.)

NOTE: *In automatic operation, recycling begins about 5 seconds after the vacuum pump starts.*

NOTE: *During recycling, some additional SP-20 PAG oil is separated from the refrigerant and stored separately in the reservoir.*

Only new SP-20 PAG oil is added to replace the oil which was separated during recovery, and when “recharge” is depressed, only clean “recycled” refrigerant is returned to the vehicle’s A/C system.

OEM1415 (or OEM1418) does not perform “reclamation.”



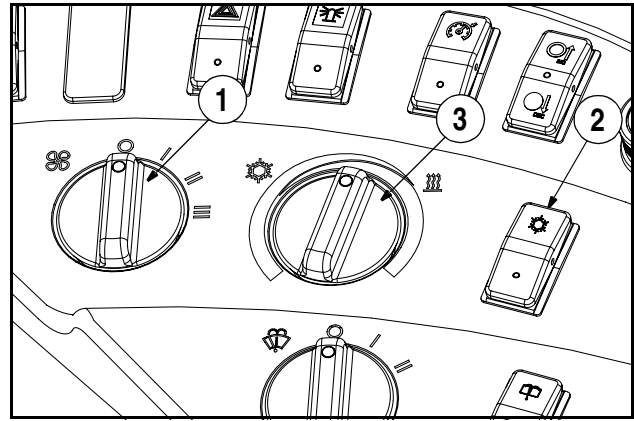
OEM1415

A22094

RECOVERING PURE 134A REFRIGERANT

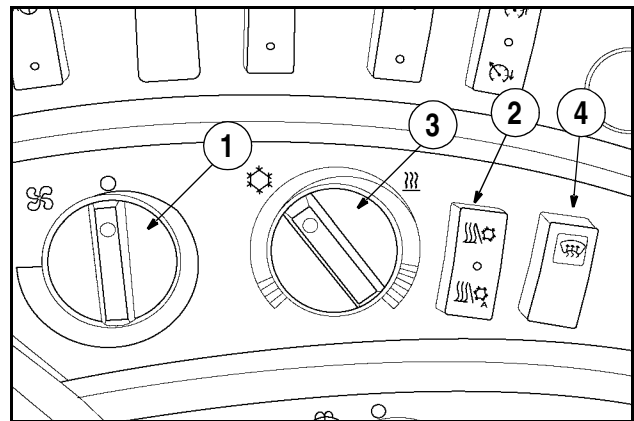
STEP 1

Start the tractor and run the engine at 1500 RPM. If possible, operate the air conditioner for 15 minutes at maximum cooling and maximum blower speed. ATC switch set to DEFOG/DEFROST, standard A/C switch set to ON.



Standard A/C Controls

RH02J044



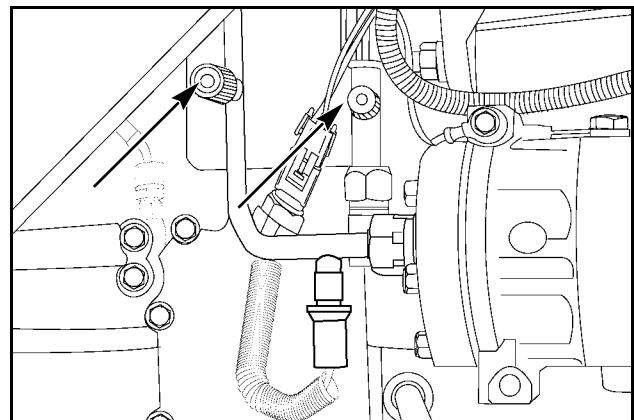
ATC A/C Controls

RH05J039

- | | |
|-------------------------------|-------------------------|
| 1. BLOWER CONTROL | 3. TEMPERATURE CONTROL |
| 2. ATC OR STANDARD A/C SWITCH | 4. DEFOG/DEFROST SWITCH |

STEP 2

Clean the external surfaces of the compressor and hoses. Remove the caps from the service ports on the suction and pressure lines.



RD02H032

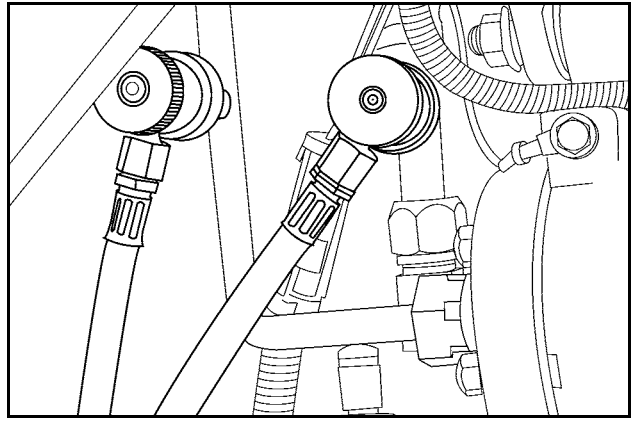
STEP 3

IMPORTANT: Use Refrigerant Identifier OEM4450 to verify refrigerant purity. If refrigerant is 98% pure HFC-134a and/or the only non-condensibles test as air and moisture, then proceed with Step 4. If not, go to Step 12.

With the charging station manifold gauge valves in the closed position, connect the hoses from the test gauges to the service ports.

Connect the hose from the low pressure gauge to the port on the suction hose. Turn in valve depressor.

Connect the hose from the high pressure gauge to the port on the discharge hose. Turn in valve depressor.

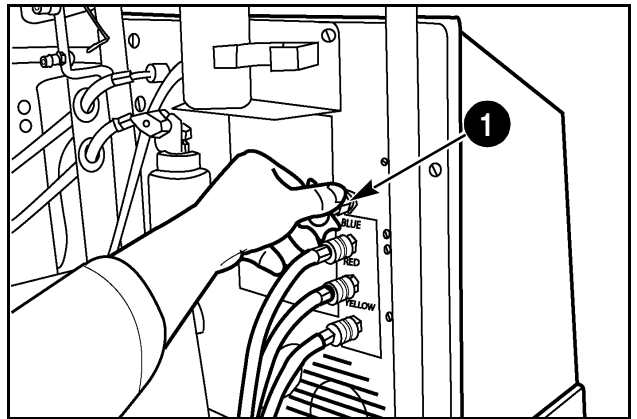


RD02H029

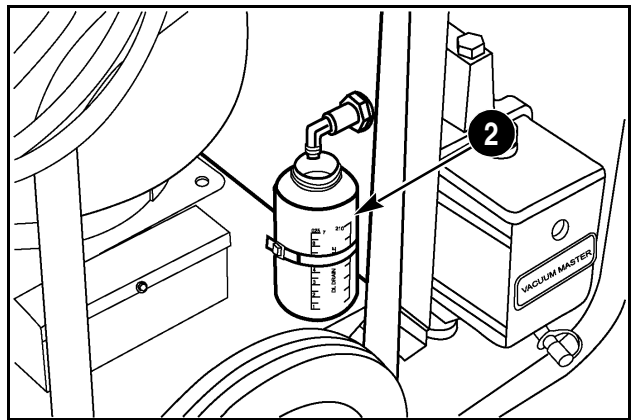
STEP 4

Open the drain valve to make sure that the oil separator is drained prior to recovery. Oil may have mistakenly been left in the recovery unit itself from the previous service job. An oily mist will discharge if the separator has been drained.

Check that the oil reservoir has been drained prior to recovery to avoid returning additional oil to the system.



MK96C017



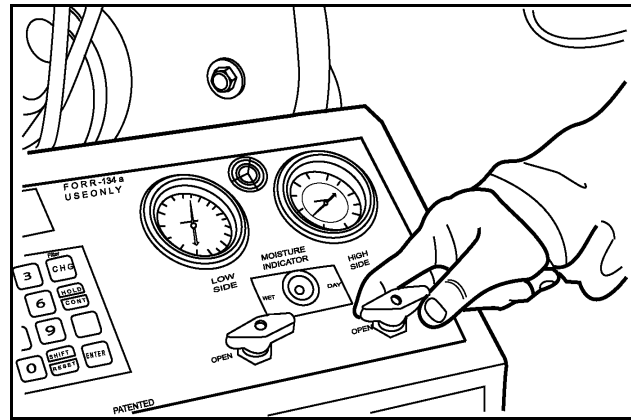
A22111

1. DRAIN VALVE

2. RESERVOIR DRAIN

STEP 5

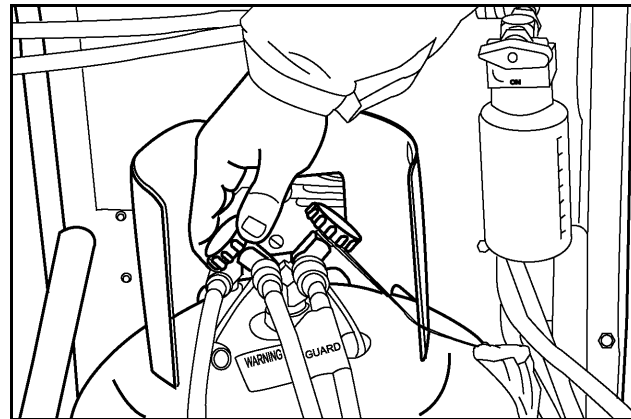
Open the high and low valves.



A22114

STEP 6

Make certain the refrigerant tank gas and liquid valves are open.



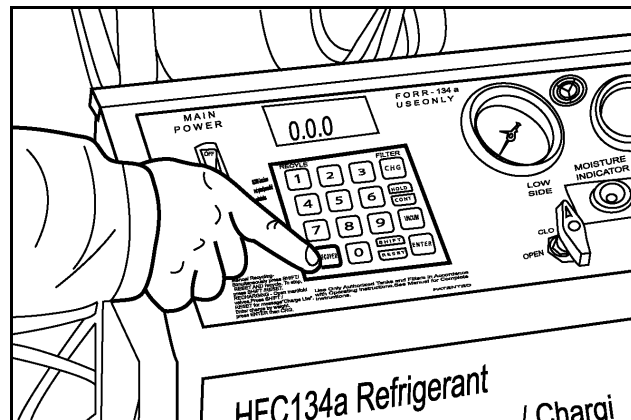
A22107

STEP 7

Connect the main power plug to a 115 volt AC outlet. Move the main power switch to the ON position and depress the RECOVER switch.

The compressor will shut OFF automatically when recovery is complete. Wait for 5 minutes and observe the manifold pressure gauges for a pressure rise. If no pressure rise, recovery is complete. If pressure rises above 0 PSI, depress the HOLD/CONT switch and repeat until pressure holds for two minutes. Then wait for the compressor to automatically shut OFF.

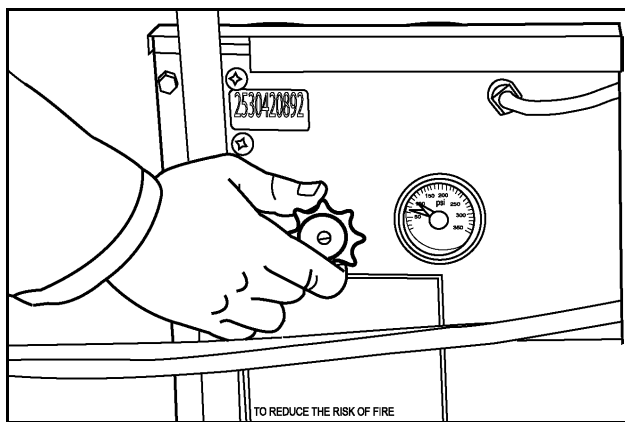
NOTE: Refrigerant may pool inside the tractor's A/C system. When the recovery unit's compressor is turned off, the refrigerant will vaporize in the ambient heat causing the system pressure to rise again. Repeat the recovery process until the system remains at a vacuum for at least two minutes.



A22112

STEP 8

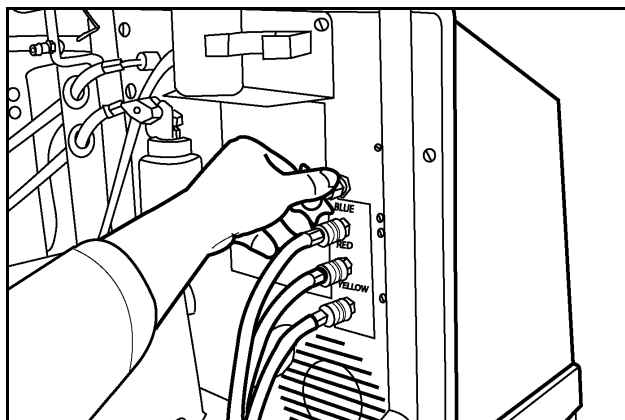
Some recovery units require a manual air purge to remove non-condensables from the recovery tank. Refer to the operators manual for your unit. Air purge is automatic on an OEM1415 when it evacuates the A/C system.



A22108

STEP 9

Slowly open the oil drain valve and drain the oil into the reservoir. When the oil stops draining, close the oil drain valve completely.



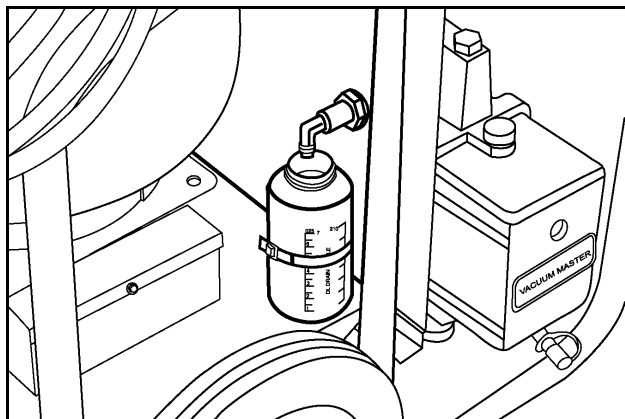
MK96C017

STEP 10

Record the amount of oil in the reservoir. This amount of new oil should be added back to the system. Dispose of any oil in the bottle in an appropriate manner and return the bottle to the station.

STEP 11

All refrigerant has been removed from the A/C system; replace components or make any repairs at this time.



A22111

RECOVERING CONTAMINATED REFRIGERANT WITH OEM1691

IMPORTANT: When contaminated refrigerant is discovered with Refrigerant Identifier OEM4450, additional care is necessary to protect your safety and prevent the contamination of service equipment and your refrigerant supply. Recover the refrigerant with OEM1691 station to a recovery tank reserved for contaminated refrigerant. Do NOT use OEM1415 or OEM1418 to recover the contaminated refrigerant.

IMPORTANT: Read all safety warning and maintenance sections of the operator's manual before operating the station.



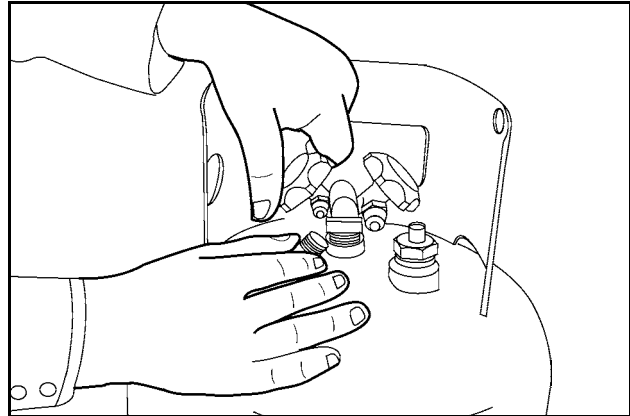
WARNING: Do NOT use a tank without a limit switch to recover contaminated refrigerant with OEM1691. The limit switch prevents overfilling of the tank and protects your safety.

M797

Preparing the Tank

STEP 12

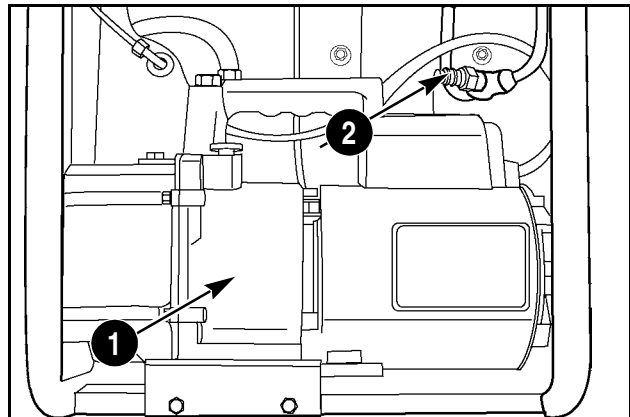
The tank for the station may be filled with 10 to 15 psi of dry nitrogen which must be removed before it can be used. Remove the cap from the red valve outlet. Open the tank valve to release the nitrogen. Close the tank valve.



RR00E127

STEP 13

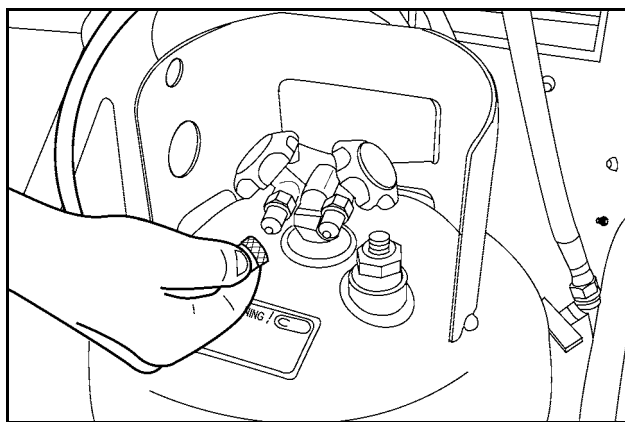
Use the vacuum pump (1) on OEM1415 or OEM1418 to pull a 5 minute vacuum on the tank. Connect the tank at the location (2) shown.



RR00E153

STEP 14

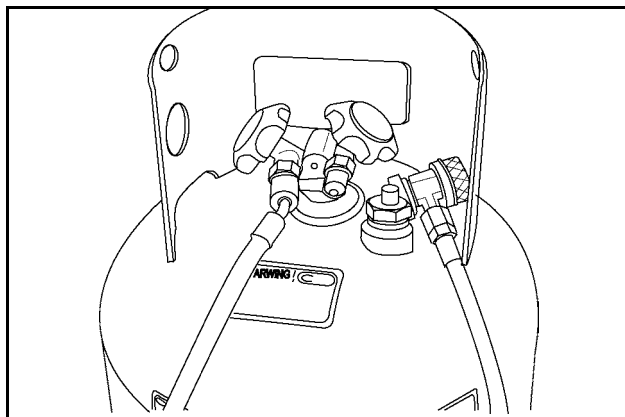
A 1/4 inch FFLX to 1/2 inch Acme adapter (OEM1693) should have been ordered with the unit. Connect the adapter to the red tank valve.



RR00E144

STEP 15

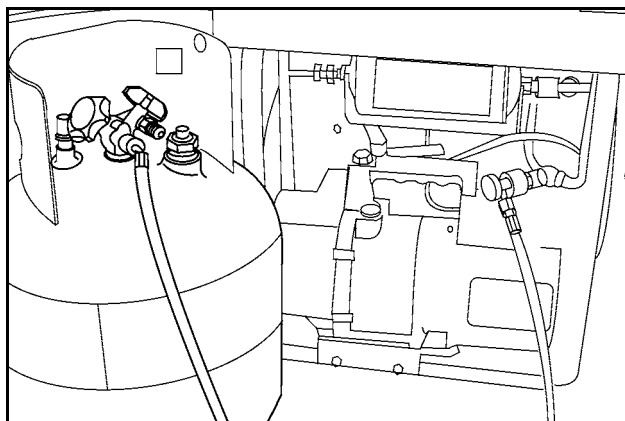
Connect the 96 inch (2.4 m) blue hose with the R134a service coupler to the adapter.



RR00E152

STEP 16

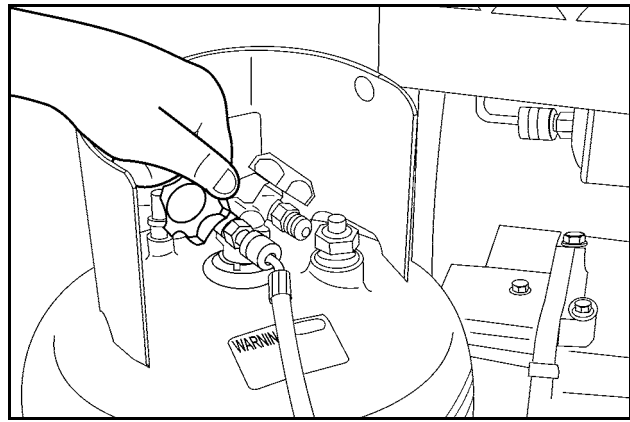
Connect the R134a service coupler to the tee fitting on top of the vacuum pump on OEM1415 or OEM1418. Open the valve on the service coupler by turning it clockwise.



RR00E154

STEP 17

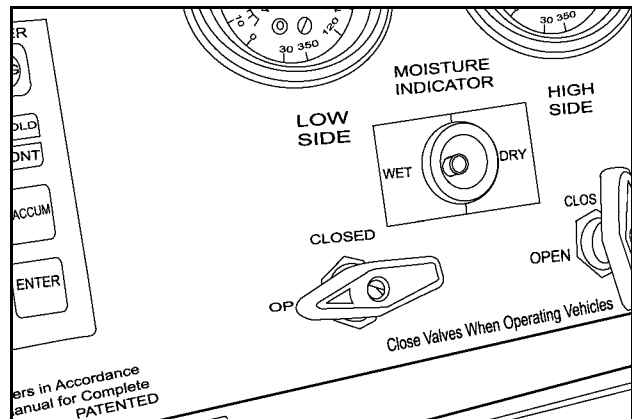
Open the valve on the tank.



RR00E155

STEP 18

Open the low side manifold on the control panel of OEM1415 or OEM1418.



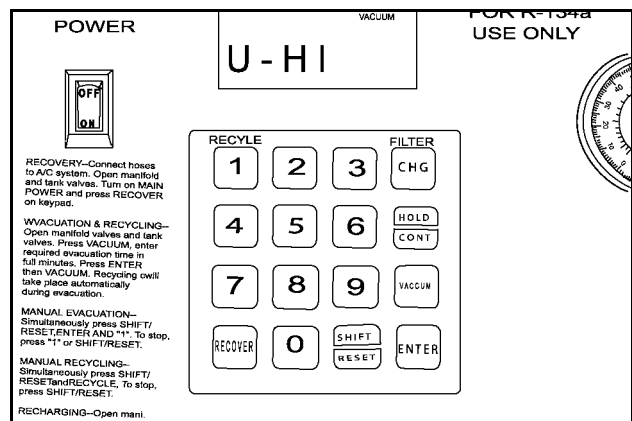
RR00E156

STEP 19

Press SHIFT/RESET and ENTER at the same time.

Press 1. The vacuum pump starts and runs continuously until any other key is depressed.

Run the vacuum pump for a minimum of 5 minutes. Then press 1 to stop the pump.



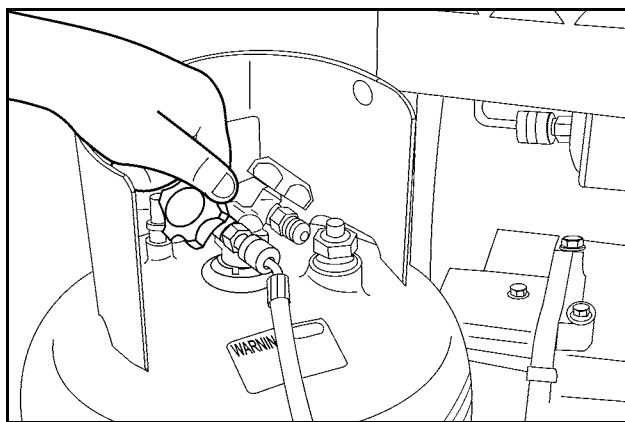
R00E141

STEP 20

Press SHIFT/RESET again to return to the normal display mode.

Close the valve on the tank.

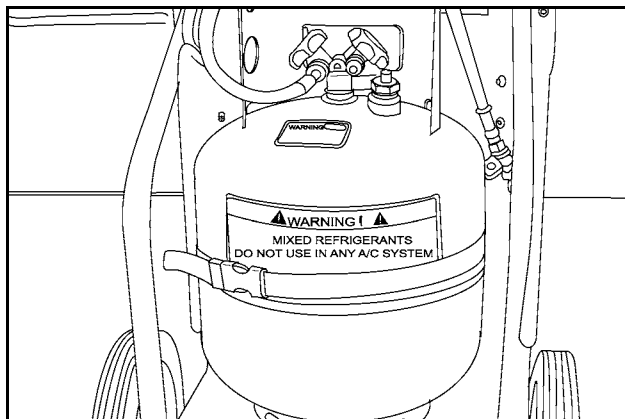
Close the valve on the service coupler by turning it counterclockwise and disconnect the blue hose from the vacuum pump.



RR00E155

STEP 21

Set the tank on the platform at the rear of the station. Tighten the black strap securely around the tank.

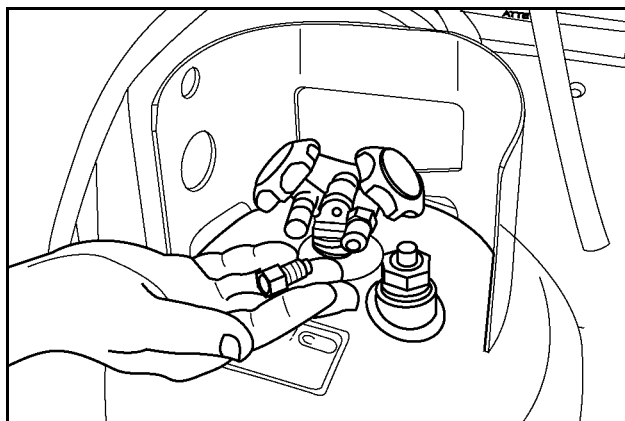


RR00E143

STEP 22

Disconnect the R134a hose from the adapter. Disconnect the adapter from the tank and store for future use. Reinstall the cap on the red valve outlet port.

The tank is now prepared. See the operator's manual to prepare the recovery station for use.



RR00E145

Recovery Process

IMPORTANT: *If a recovery tank becomes full during a recovery, the float switch will automatically turn off the scavenger. See Step 35 for changing tanks in the middle of a recovery.*

STEP 23



WARNING: *Do not operate the vehicle or the A/C system if the refrigerant identifier shows more than 2% hydrocarbon in the mixture.*

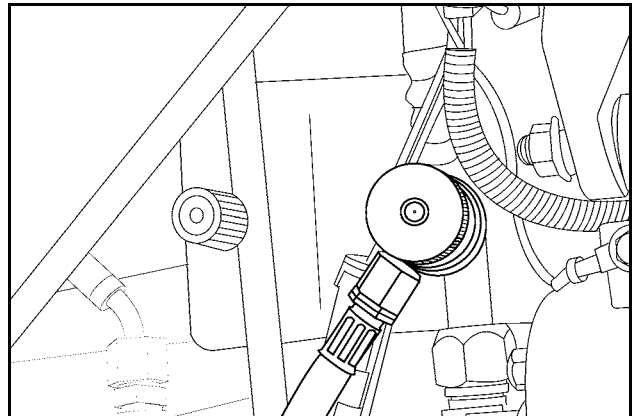
M801

Start the tractor and run the engine at 1500 RPM. If possible, operate the air conditioner for a few minutes at maximum cooling and maximum blower speed, with ATC switch set to DEFOG/DEFROST, or standard A/C switch to ON. Tests have shown that more refrigerant will be recovered if this action is performed.

NOTE: *Turn the system and tractor OFF before connecting the station.*

STEP 24

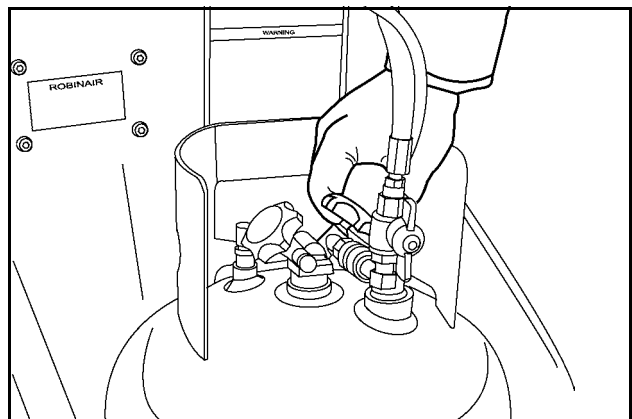
Remove the cap on the low pressure port at the compressor. Connect the blue R134a recovery hose from the station to the low side service port at the compressor.



RD02H030

STEP 25

Open the tank valve for the R134a hose. Open the valve at the service port.



RR00E159

**Thanks very much for your reading,
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Please click here, Then get the complete
manual**

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click on it.**

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admin@servicemanualperfect.com**