OPERATION

&

MAINTENANCE

MANUAL

TC700

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MODEL 700

CONGRATULATIONS: **You have purchased one of the finest R12 Recovery, Recycling, and Charging Machines available at any price.**

Fill out and return the Warranty Card within 90 days to activate Warranty and Free Technical Support.

BEFORE USING THE 700

Check for any shipping damage. Place a claim with carrier if damage is discovered.

DO NOT USE A DAMAGED UNIT.

Complete and return the Warranty Card to activate technical support and warranty coverage

Warranty claims can not be honored without this warranty card on file.

The 700 should not be operated or serviced by any person who has not read all the contents of this manual. Failure to read and comply with these instructions or any one of the limitations noted herein can result in serious injury and/or property damage.

These general instructions deal with the normal operation and maintenance situations encountered with the 700. The instructions should not be interpreted to anticipate every possible contingency.

It is the responsibility of the owner/user to operate the 700 in accordance with all specifications and laws which may apply.

The following pages contain rules for safe operation of the 700. Taking precedence over any specified rule listed herein, however, is the most important rule of all:

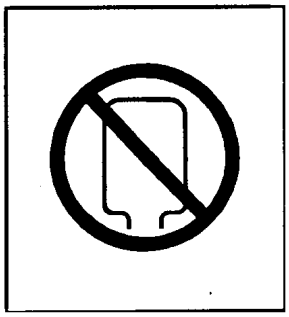
"USE COMMON SENSE".

A few minutes spent reading these instructions can make an operator aware of dangerous practices to avoid and precautions to take for his own safety and the safety of others.

A regular schedule of inspection of the 700 should be established and records maintained with special attention given to Hoses, Oil Levels, Moisture Indicator, and Filters.

SAFETY PRECAUTIONS

- Recover, Recycle, and Charge R12 refrigerant only.
- Wear safety glasses and protective gloves Refrigerant has a very low boiling point and can cause frostbite.
- Follow the 700 operating procedures sequentially to avoid prematurely disconnecting hoses or opening valves which may release refrigerant to the atmosphere.
- Do not expose the 700 to moisture or operate in wet areas.
- Use the 700 in locations with mechanical ventilation that provides at least four air changes per hour.
- Hoses used with the 700 must have shutoff devices within 12 inches of the connection point to the system being serviced to minimize the introduction of non-condensable gases into the recycling unit and the release of refrigerant when being disconnected.
- Disconnect power before performing any maintenance or service on the 700.
- Avoid using an extension cord with the 700. If necessary, use a good condition, UL listed, 3-wire grounded, #14 AWG extension cord of the shortest possible length.
- Connect the 700 to a properly protected, grounded receptacle. Do not over load the circuit.
- Do not allow the 700 to remain unattended in the Charge Mode with power On. The Internal Cylinder Heater will be energized creating a high pressure condition.



NEVER TURN THE CYLINDER UP-SIDE-DOWN.

DO NOT CONNECT THE 700 TO THE LIQUID SIDE OF ANY A/C SYSTEM WITH A CAPACITY GREATER THAN 4 LBS.

REFRIGERANT IN A/C SYSTEMS HAVING LARGER CAPACITIES MUST BE RECOVERED FROM THE VAPOR SIDE ONLY.

NEVER CONNECT THE 700 TO THE LIQUID PORT OF A CYLINDER REFRIGERANT TO FILL THE 700 INTERNAL CYLINDER.

FAILURE TO FOLLOW THE ABOVE MAY CAUSE THE 700 COMPRESSOR TO FAIL AND VOID THE WARRANTY.

PRE-CHARGING THE 700

A/C Systems requiring service often do not have a full charge of refrigerant. To avoid unnecessary repositioning of hoses it is recommended that the 700 be pre-charged until about 3 pounds of liquid refrigerant can be seen in the Internal Cylinder Sight Glass. The Sight Glass is visible through a slotted opening on the right side of the 700.

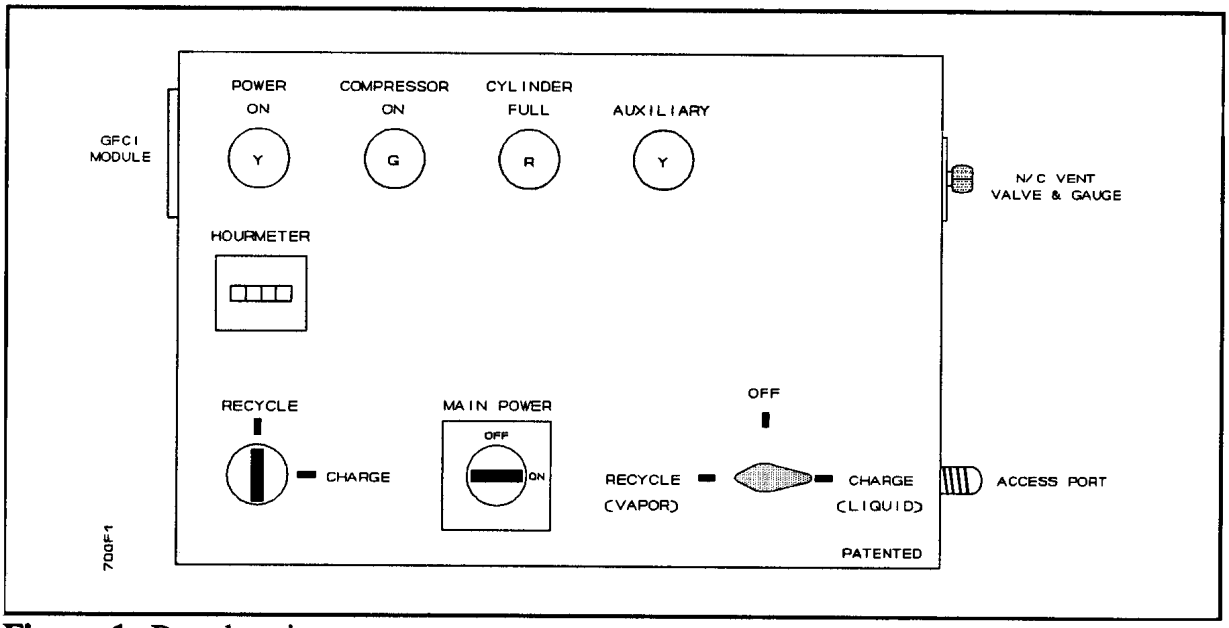


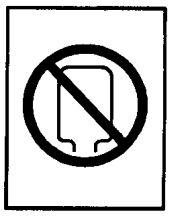
Figure 1 Pre-charging

To Pre-charge the 700, refer to Figure 1 and follow these steps:

1. Turn Main Power Switch to OFF

2. Connect **VAPOR PORT** of a cylinder of clean refrigerant to the 700 Access Port using the Yellow Service Hose.

   Observe that the embossed marking on the cylinder knob says **VAPOR** or **GAS**. Do not rely on color coding of valve knobs.



DO NOT TURN THE CYLINDER UP-SIDE-DOWN.

INTRODUCTION OF LIQUID INTO THE 700 MAY DAMAGE COMPRESSOR AND VOID THE WARRANTY.

3. Open Service Hose Valve and the refrigerant cylinder VAPOR valve

4. Turn the Flow Control Valve to RECYCLE

5 Set Mode Selector to RECYCLE.

6. Turn Main Power Switch to ON.

The Compressor-On Light will illuminate and the 700 will recover and recycle refrigerant into the Internal Cylinder. Observe the liquid refrigerant level rise in the Internal Cylinder Sight Glass and when at approximately 3 lbs. close the Vapor Valve on the refrigerant cylinder.

HINT: *GENTLE* heating of the cylinder of clean refrigerant by immersion in warm water or application of a heating belt will speed the recovery process.

Allow the 700 to continue running until the Compressor-On Light goes off. This will evacuate the Service Hose.

7. When the Compressor-On Light goes off, turn the Flow Control Valve to OFF and turn the Main Power Switch to OFF.

8. Close Service Hose Valve.

NOTE: As refrigerant is processed by the 700, temperature variations can cause vapor to change to liquid which may temporarily settle in various internal components.

If a known amount of refrigerant has been introduced into the 700 it may not all be seen in the Internal Charging Cylinder Sight Glass.

This is normal and nothing to be concerned about.

The refrigerant has not been lost.

RECYCLE MODE

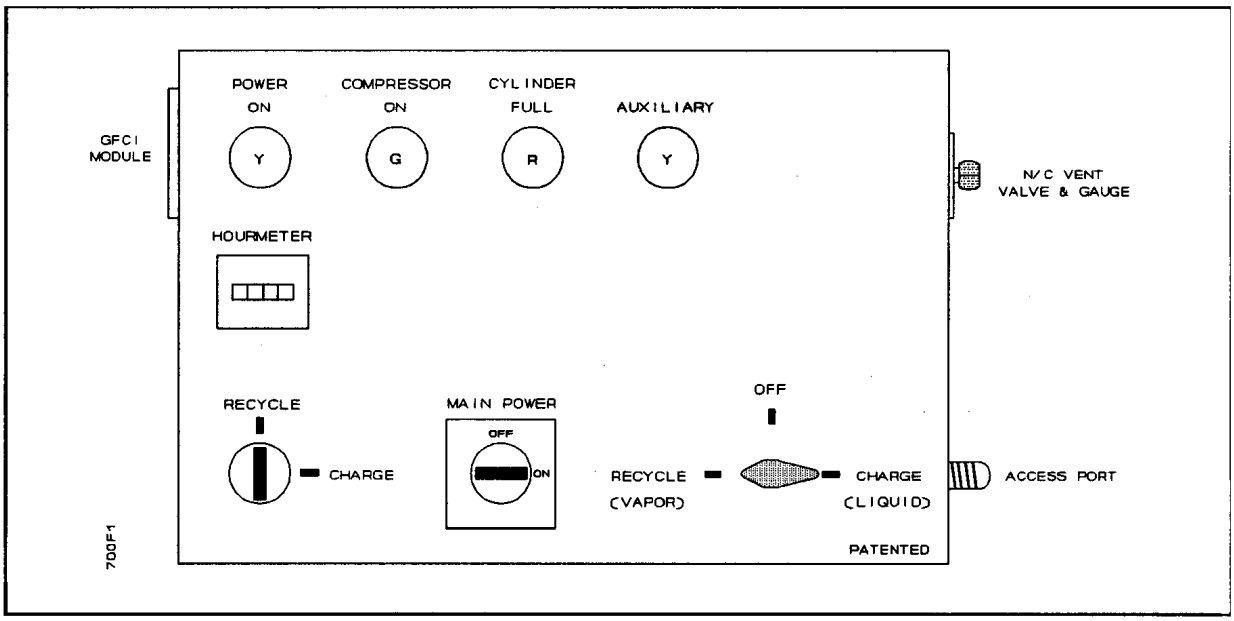


Figure 2 Recycle

To Recycle, refer to Figure 2 and follow these steps:

1. Connect the Service Hose from the Access Port of the 700 to the center port of a Gauge Manifold. The Service Hose Valve should be on the end connected to the 700.

2. Attach High and Low Gauge Manifold Hoses to the A/C system per the vehicle manufacturer's instructions.

3. Open Gauge Manifold Valves

4. Open Service Hose Valve.

5. Turn Flow Control Valve to RECYCLE.

6 Set Mode Selector to RECYCLE

7. Turn Main Power Switch to ON.

   The Compressor-On Light will illuminate. The Compressor and Condenser Fan will be heard operating as refrigerant is recovered from the A/C System.

   The 700 will recover refrigerant from the A/C system until a vacuum is sensed. Compressor will turn off and the Compressor-On Light will turn off.

• DO NOT TURN THE 700 OFF OR DISCONNECT HOSES •

A small quantity of Liquid refrigerant will probably remain in the A/C system. This liquid

will vaporize (boil up) and increase the pressure in the system as the components again warm to ambient temperature. This can be detected by observing an increasing pressure reading on the Low Side of the Gauge Manifold.

If pressure increases to a preset level, the 700 will again start to recover refrigerant. Compressor will turn on and the Compressor-On Light will illuminate.

Allow this sequence to repeat until the Compressor-On Light remains off continuously for at least 2 minutes.

> **NOTE:** Several audible changes may be heard during the recovery and recycling process.
>
> Refrigerant flow through check valves causes a "sizzle-type" sound.
>
> These changing "noises" are normal and nothing to be concerned about.

8. Close Service Hose Valve and Gauge Manifold Valves.

9 Turn Flow Control Valve to OFF.

10. Turn Main Power Switch to OFF.

11. Immediately perform the Air Purge & Oil Drain Procedure on the next page.

CYLINDER FULL LIGHT The Cylinder Full Light will illuminate if the Internal Cylinder fills to capacity. The Internal Cylinder will have to be charged into a DOT storage cylinder before continuing the Recycle procedure.

AIR PURGE & OIL DRAIN PROCEDURE

Oil and Non-condensable Gas (Air) are separated from the recovered refrigerant and **MUST** be removed following **EACH** recycling procedure as follows:

1 **MOMENTARILY** turn the N/C Vent Valve (On the right side of the 700) clockwise until the pressure reading on the Pressure Gauge above this valve drops one small graduation mark (approximately 5 PSIG).

2. **SLOWLY** open the Oil Drain Valve (Lower left side on back of 700) to vent Non-condensable Gas and drain any oil which may have been removed from the A/C System. A plastic cup is provided with the 700 to collect the oil.

   Unless the A/C System had previously been overfilled, the 700 will typically not remove enough oil to make replenishment necessary.

   Leave the Oil Drain Valve open.

3. Determine the room temperature.

4. Locate the pressure (PSIG) corresponding to this room temperature (^{0} F) in the table at the right.

   If the pressure indicated on the gauge is greater than that determined from the table...

   SLOWLY turn the N/C Vent Valve clockwise until the gauge pressure equals that shown in the table. Any Non-condensable Gas will be vented through the Oil Drain Valve.

   NOTE...

   A copy of this temperature/pressure table is located on the rear of the 700 for easy reference.

5. Close the Oil Drain Valve.

6. Turn the N/C Vent Valve clockwise and hold for approximately 5 seconds. This permits any residual Non-condensable Gas to be recirculated for reprocessing during the next recycle procedure.

^{0} F	PSIG
30	42
32	44
34	46
36	48
38	50
40	52
42	54
44	57
46	59
48	61
50	64
52	66
54	69
56	72
58	74
60	77
62	80
64	83
66	85
68	88
70	92
72	95
74	98
76	102
78	105
80	108
82	112
84	115
86	118
88	123
90	127
92	130
94	135
96	138
98	143
100	147
102	150
104	155
106	160
108	165
110	168
112	173
114	178
116	183
118	188
120	193

HOSE EVACUATION

It's important that Air not be introduced into the A/C system during a Charging procedure. To avoid this situation, all hoses and the Gauge Manifold must be evacuated.

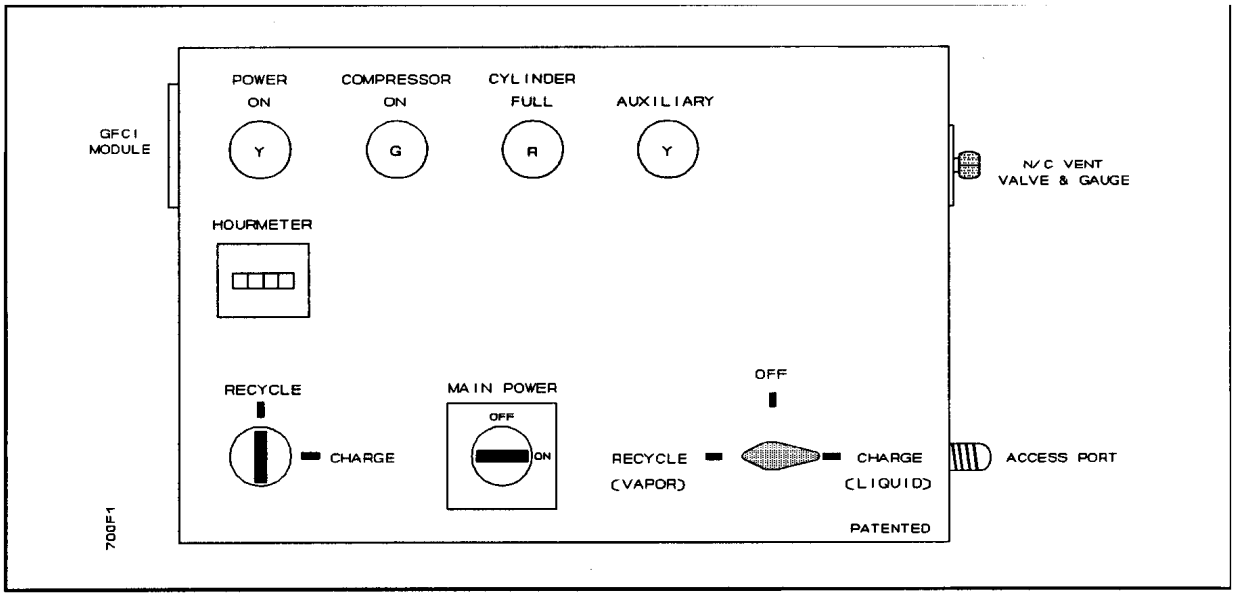


Figure 3 Hose Evacuation

To Evacuate Hoses and Gauge Manifold, refer to Figure 3 and follow these steps

1 Connect Red and Blue Hoses to the high and low ports of the Gauge Manifold.

2. Connect Service Hose as follows:

   Connect end without a Shut Off Valve to center port of the Gauge Manifold.

   Connect end with a Shut Off Valve to Access Port of the 700.

   NOTE: If the Service Hose is not connected as described above, the 700 will not charge.

   A Valve Core Depressor must be in the end of the hose connected to the 700.

3. Close Red and Blue Hose Valves

4. Open High and Low Gauge Manifold Valves.

5. Open Service Hose Valve.

6. Turn Flow Control Valve to RECYCLE.

7. Set Mode Selector Switch to RECYCLE.

8. Turn Main Power to ON.

   The 700 will remove any Air or refrigerant remaining in all hoses and the Gauge Manifold.

9. When the Compressor-On Light goes off, turn the Main Power Switch OFF.

10. Turn Flow Control Valve to OFF.

11. Close Service Hose Valve and the Gauge Manifold Valves.

All Air has now been removed from the Hoses and Gauge Manifold and the Charge procedure can be performed.

ACCESSORY RECEPTACLE

An Accessory Receptacle is located on the rear of the 700. This receptacle can be used for 115 Volt power for a vacuum pump or trouble light.

This receptacle is energized whenever power is connected **AND** the 700 is not recycling refrigerant.

The indicator light labeled **AUXILIARY** will be on when the Accessory Receptacle is energized.

The Auxiliary Receptacle is rated 12 Amp. maximum.

CHARGE MODE

If the A/C repair caused the necessity of replacing a major component such as the Compressor or Accumulator, it is recommended that a deep vacuum be pulled on the system to remove any moisture before charging.

The Hoses and Gauge Manifold should be evacuated as described in the previous section will prevent introducing air into the A/C System during the Charging Procedure.

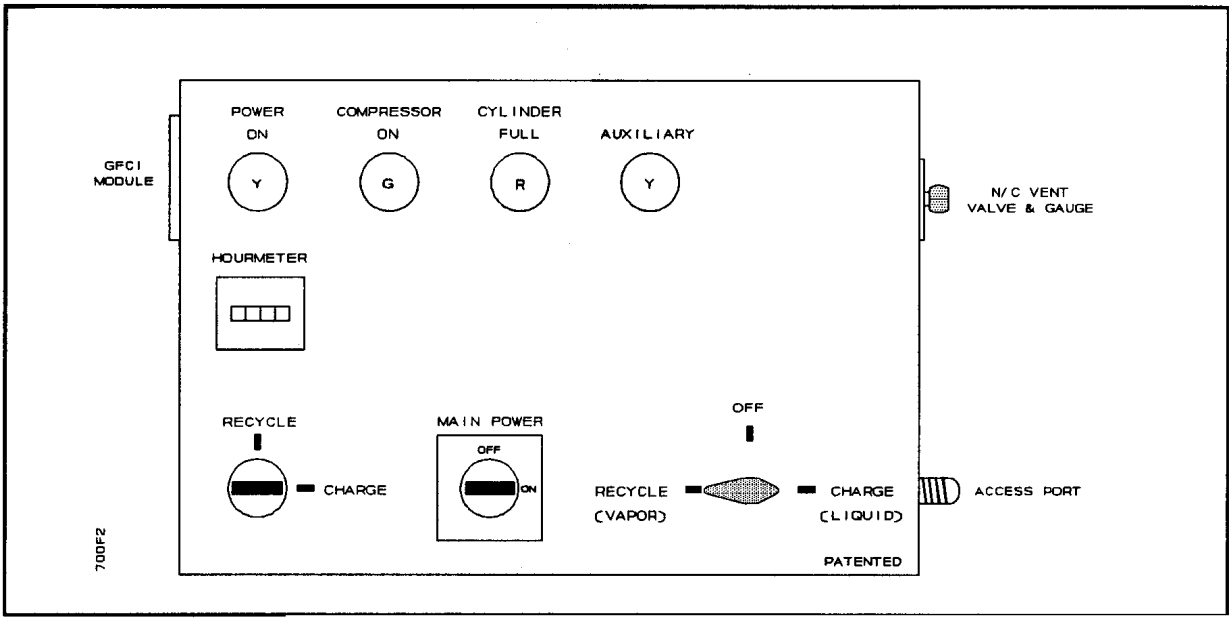


Figure 4 Charging

To Charge, refer to Figure 4 and follow these steps:

1. Connect Service Hose from the center port of the Gauge Manifold to the 700 Access Port.

2. Attach the Gauge Manifold High Side Hose to the A/C system per the vehicle manufacturer's instructions.

3. Set Mode Switch to CHARGE.

4. Turn Flow Control Valve to CHARGE.

4. Open valve on Service Hose.

5. Open High Side Hose Valve.

6. Determine the refrigerant capacity of the A/C system to be charged and set the Sliding Indicator on the 700 Internal Cylinder Sight Glass.

   The A/C System Refrigerant Capacity is usually printed on a tag located on the accumulator or under the hood of the vehicle. Convert this quantity to tenths of a pound or pounds and ounces, if necessary, for setting the 700 charge indicator.

NOTE: The Sight Glass on the Internal Cylinder is marked in "tenths of a pound".

Do not confuse the graduation marks as being in grams.

The following will determine where to set the indicator prior to starting the charge mode:

(760 Liquid Level) - (A/C System Capacity) = Indicator Setting

EXAMPLE: The level of liquid visible in the 750 Internal Cylinder Sight Glass is 7.4 lbs. and the A/C system capacity is 3.2 lbs. The following calculation results...

(7.4) - (3.2) = 4.2

Therefore, the sliding indicator should be set at 4.2 lbs. in this example. When the liquid level lowers to the 4.2 lb. mark, a charge of 3.2 lbs. will have been delivered

7. Turn Main Power Switch to ON. **DO NOT START THE VEHICLE'S ENGINE**

8. **SLOWLY** open Gauge Manifold **HIGH** Side Valve.

   Refrigerant will flow into the high side of the A/C System. Closely monitor the liquid level as it lowers in the Internal Cylinder Sight Glass.

   NOTE: Gauge on side of the 700 Top Box indicates pressure in the Charging Cylinder. To accelerate charging, it may be advisable to wait for the Internal Cylinder Heater to increase the pressure before beginning the charging process.

9. Turn Flow Control Valve to OFF as soon as the level drops to the sliding indicator.

10. Turn Main Power Switch to OFF.

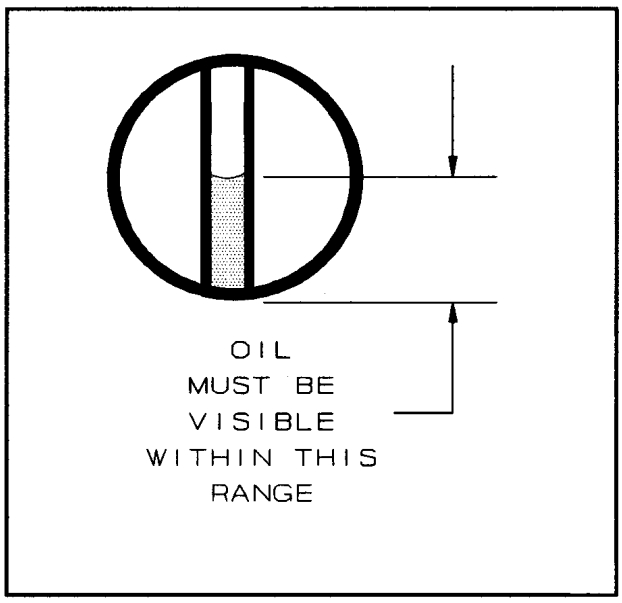
10. Disconnect Gauge Manifold High Hose from the A/C System.

. Evacuate the Hoses and Gauge Manifold as described in the previous section. Close all valves before disconnecting hoses.

NOTE: Some vehicle manufacturers may specify connecting only to the Low Side of the A/C System. Always follow their procedures. The above instructions would have to be modified accordingly.

SCHEDULED MAINTENANCE

COMPRESSOR OIL



Check the oil level in the Compressor *DAILY* before using the 700. The Oil Level Sight Tube is visible through a cut-out in the left side of the black Compressor Cover at the bottom of the machine.

The oil level should be visible in the cut-out and within the range indicated in the illustration.

If oil is not visible or is above the middle of the cut-out call the Warranty Repair Number:

800-468-2321

The oil in the Compressor should be **changed yearly** (or after approximately 50 hours use in a high volume shop). The best time to schedule this procedure is at the end of the peak season, just prior to "storing" the 700.

Contact the manufacturer at 800-468-2321 for a special Oil Change Kit and Instructions.

An oil Drain Fitting is provided on the rear of the unit for draining the Compressor oil

CONDENSER

Periodically clean the Condenser to maintain high efficiency performance of the 700. Disconnect power and remove the Compressor Compartment Cover and blow compressed air through the cooling fins of the Condenser to remove any debris. It may be necessary to use a soft brush if the fins are excessively dirty.

Do not bend the fins on the Condenser coil. Air flow will be restricted and cause damage to the 700. Replace the Compressor Compartment Cover before applying power to the 700.

COMBO FILTERS

Monitor the Moisture Indicator for a color change from BLUE to PINK. When the 700-is new and immediately after changing Combo Filters, the Moisture Indicator may show PINK. This is due to the exposure to air and does not indicate inadequate filter performance. Only after ten hours of operation (after each filter change) should the Moisture Indicator be used to monitor filter performance.

Two Combo Filters are installed in the middle section of the 700.

The OUTLET Combo Filter can be identified by the presence of insulation around the outside. This Outlet Combo Filter must be changed after 50 hours operation **OR** when Moisture Indicator shows "Wet" after 20 hours of operation. Hours are indicated on the Hour Meter.

The INLET Combo Filter does not have insulation around the outside. This Inlet Combo Filter must be changed after 25 hours operation **OR** when Moisture Indicator shows "Wet" after 20 hours of operation. Hours are indicated on the Hour Meter.

Replace Combo Filters as follows:

1. Remove Middle Section Cover to access the Combo Filters.
2. Disconnect Flare Adaptor Fittings at top and bottom of Filters.
3. Remove the mounting nuts and remove Filters.
4. Remove the black insulation from the one filter and re-install on the new Filter
5. Install new Filters using the hardware removed earlier.
6. Connect Flare Adaptor Fittings to top and bottom of Filters.
7. Check for leaks and repair as required.
8. Replace Middle Section Cover.

WARNING: The Outlet Combo Filter has a copper tube attached to the bottom. There may be a Schrader Valve in the replacement Combo Filter fitting which must be removed.

If the Schrader Valve is not removed, oil will not be returned to the Compressor which may cause a NON-WARRANTY COMPRESSOR FAILURE.

PROBLEMS & SOLUTIONS

On rare occasion the 700 may seem to be performing differently or not at all. Experience has shown that varying operating conditions can affect the performance characteristics of the 700. The temperature of the vehicle A/C System will affect how the 700 performs.

Following are typical problems with explanations of the possible cause and solution.

PROBLEM: My 700 worked fine all last Summer. I got it out today for the first service job this Spring and it is very slow in evacuating the system.

SOLUTION: Today's Spring temperature may be much lower than the average temperatures during the summer months. Maybe the vehicle was brought in from outside where the temperature is very low.

The refrigerant in the vehicle will not be under as high a pressure at lower temperatures and the 700 will take longer to draw a vacuum. More cycles may be required to completely recover the refrigerant.

PROBLEM: I put 5 lbs. of refrigerant into the 700 using the Recycle Mode. When I checked the sight glass on the Internal Cylinder, there was less than 5 lbs. I lost Refrigerant. The unit must leak.

SOLUTION: Due to temperature changes, some refrigerant may condense into liquid form and stay in tubes and other components in the circuit preceding the Internal Cylinder. This is normal and will explain why all refrigerant is not visible in the sight glass.

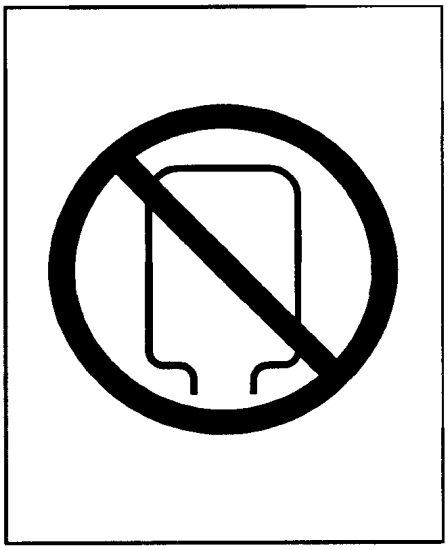
PROBLEM: When I try to fill the Internal Cylinder from an auxiliary cylinder of clean refrigerant, the 700 is really slow or shuts down.

SOLUTION: The auxiliary cylinder will cool due to the vaporization of refrigerant. causes the pressure to decrease.

Place the cylinder in a bucket of warm water. A heat belt can also be used. This will aid in increasing the speed of recycling by the 700.

PROBLEM: I turned a 30 lb. cylinder of new refrigerant up-side-down to pre-charge the Internal Cylinder with liquid. The Internal Cylinder didn't fill and now the 700 won't recover from an A/C system.

SOLUTION: The 700 has been overloaded with liquid refrigerant (See Safety Precaution Section at the beginning of this manual).



IF A CYLINDER IS TURNED UP-SIDE-DOWN, THE 700 WILL OVERFILL WITH LIQUID REFRIGERANT. THIS OVER FILLS THE SUCTION ACCUMULATOR WITH LIQUID.

FROST ON THE OIL DRAIN ON THE REAR OF THE 700 IS A GOOD INDICATION OF THIS OCCURRENCE.

THIS SYMPTOM IS CAUSE FOR CONCERN AS LIQUID REFRIGERANT WILL BE FORCED INTO THE COMPRESSOR.

THIS CAN DESTROY THE COMPRESSOR AND WILL VOID THE WARRANTY.

The safest method to remove the excess liquid which has collected in the Suction Accumulator is to drain it from the Oil Drain on the back of the 700 as follows:

Draw a deep vacuum (25 to 29 In. Hg.) on an empty cylinder and connect it to the Oil Drain. Open the cylinder valve and the Oil Drain valve.

Close the valves and disconnect the cylinder after the liquid has been emptied into the cylinder. This refrigerant can now be recycled by the 700 following normal recycling procedures.

If the above suggested solutions do not solve the problem, call 800-468-2321 and one of our technicians will help diagnose the cause. Please have the Serial Number and hour meter reading available for reference.