



**Mastercool<sup>®</sup> Inc.**  
*"World Class Quality"*

## **OPERATING INSTRUCTIONS** **69500 RECYCLING MODULE**

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## SAFETY INFORMATION

### **READ CAREFULLY BEFORE USING THE 69500 RECOVERY SYSTEM!**

1. This equipment is designed to be used by qualified service personnel. The operator of this equipment must be familiar with air conditioning and refrigeration systems. Do not attempt to operate this equipment until all safety instructions and operating instructions are read and understood.
2. Always use eye protection (safety goggles) and hand protection (gloves) when working with refrigerants. Other types of personal protective equipment should also be used.
3. Do not pressure test system with air. Some mixtures of air and refrigerant can be combustible or explosive.
4. **Read carefully before use of RECOVERY/RECYCLE SYSTEM.**
  - A) When not in use or in storage, recovery/recycle system should have a slight positive pressure in system using an environmentally acceptable refrigerant (134A, etc.). This prevents moisture and air from contaminating the filter and moisture indicating sight glass.
  - B) After every use of recycle system, oil separator must be drained. This prevents cross contamination of oil/refrigerants and carry over that may occur if oil separator is not empty. "Valves 9, 10, and 11" should be closed when recycle system is not being used. See operating instructions for draining procedure of oil separator.
  - C) Recycle system must always be mounted vertically so that oil separator is in an **up-right position** with "valve 9" pointing down and "valves 10 and 11" pointing up. **This is very important for the proper operation of the oil separator and to prevent oil contamination of recycle system.**
5. Recovery tank contains liquid refrigerant under high pressure. Never over fill recovery tank. Tanks should be filled to a maximum of 80% of capacity only. Use scale only to continuously monitor the recovery tank weight. Use only approved tanks for refrigerant recovery. **An overfilled tank can explode causing serious injury or death.**
6. Do not breath refrigerant vapors and/or lubricant vapor or mist. Breathing high concentrations of these substances will cause severe health problems. Always use Recovery System in a well ventilated area.
7. This equipment is intended for use with one type refrigerant at a time until the self-purging feature is used. Mixing of different refrigerants will cause your recovered supply of refrigerant to become contaminated.

**NOTE: It is very expensive to destroy mixed or damaged refrigerants!**

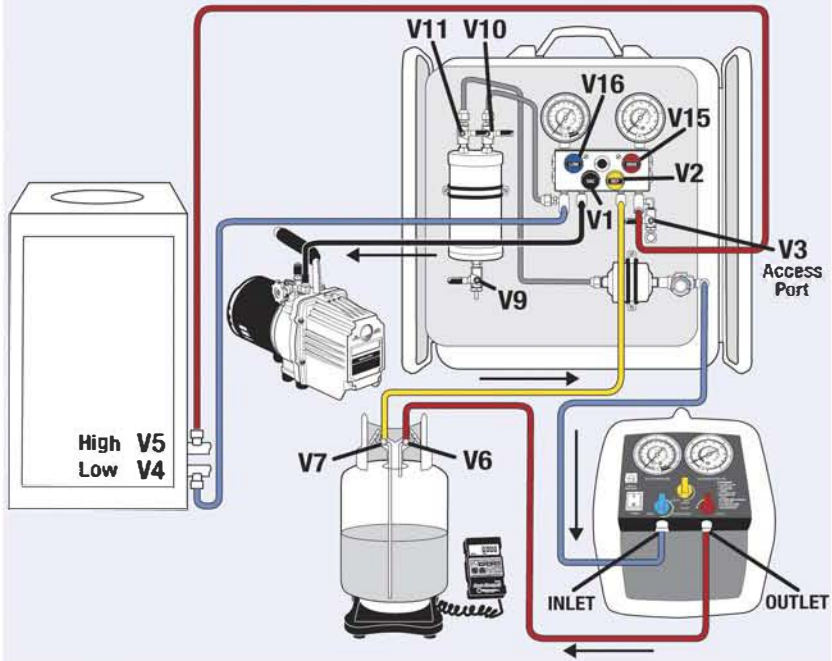
**DANGER! -- EXPLOSION RISK!!!**

**DO NOT RECOVER FLAMMABLE REFRIGERANTS**



# USE OF RECOVER / RECYCLE SYSTEM

FIGURE 1



## STEP #1

Evacuate hoses used on recovery/ recycle system to remove air and moisture. **This operation must be done before recovery or charging of refrigerant.**

1. Connect recycle module, A/C system, DOT recovery tank, scale for use with recovery tank and recovery machine "figure 1".
2. Open "valves 1, 2, 10, 11, 15 and 16", inlet and outlet valve on recovery machine, and valve on vacuum pump (if equipped). Do not open valves on DOT tank or A/C system. Turn on vacuum pump. Hoses and recovery/ recycle system will be evacuated of air, moisture and any residual gases. When using Mastercool Recovery Machine, turn yellow middle knob on recovery machine to "purge" position. This will accelerate evacuation of recovery machine.
3. When sufficient vacuum has been produced shut off "valve 1" and valve on vacuum pump (if equipped), turn off vacuum pump.

## STEP #2

Recover refrigerant from A/C system. Use this step if refrigerant is known to be in A/C system.

1. Connect system per "figure 1". Evacuate system per **STEP #1**.
2. Open both high and low pressure valves on A/C system.
3. Open vapor "valve 6" on DOT tank.

**Note: Fill DOT recovery tank to a maximum of 80% by weight.**

**Use scale with DOT tank to insure a maximum of 80% full.**

4. Start recovery machine. Refrigerant (liquid and/or vapor) will flow out of A/C system high and low ports through recycle module, through recovery machine and into DOT tank. Recovery machine will shut off when sufficient vacuum is achieved in A/C system (about -10 to -14 inches of HG, -.3 to -.45 bar). (*con't on Page 5*)

5. Switch recovery machine to purge mode and operate until machine shuts off under vacuum conditions. Maximum amount of refrigerant that can be removed from system by using recovery system is now complete.

### STEP #3

Create high vacuum in A/C system (prepare for refrigerant charging). **If any refrigerant is in A/C system complete step #2 before starting step #3.**

1. Connect system per "figure 1". Evacuate system per **STEP #1**.
2. Open high and low pressure valves on A/C system.
3. Turn on vacuum pump. Open "valve 1" and valve on vacuum pump (if equipped).
4. After a high vacuum is achieved close "valve 10". Continue running vacuum pump until very high vacuum A/C system requires is achieved.
5. Close high and low pressure valves on A/C system.
6. Close "valve 1" and vacuum pump valve (if equipped). Turn off vacuum pump.

### STEP #4

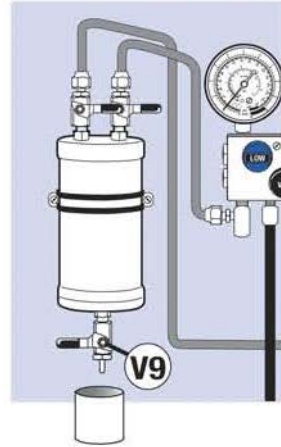
Charging of A/C system with liquid refrigerant. **Make sure system allows charging with liquid refrigerant. Check and make sure A/C system has been evacuated or refrigerant in A/C system is the same as charging refrigerant.**

1. Connect system per "figure 1" if A/C system can be charged with liquid refrigerant into high side connection. If A/C system is to be completely charged, complete **STEPS 1, 2 and #3** and then continue to number 2. If system is to have refrigerant added to existing charge, complete **STEP #1** only, then continue to number 2.
2. Dot tank should be installed on a scale to monitor the amount of refrigerant being put into A/C system. Close "valve 10". Open high and low side valve on A/C system. Refrigerant may or may not flow thru sight glass at this time depending on temperature and pressure of A/C system.
3. Check scale weight for amount of refrigerant in DOT tank. Record weight to use later in determining amount of refrigerant that has gone into A/C system. Open "valve 10". Close "manifold inlet valve 16". Open "valves 6 and 7" on dot tank. Turn on recovery machine. Check scale for amount of refrigerant going from dot tank to A/C system.
4. When proper amount of refrigerant has been added close "valve 7", low side and high side valve on A/C system. Continue to run recovery machine. Recovery machine will shut off when vacuum level on inlet of recovery machine reaches the proper vacuum reading. Open "manifold inlet valve 16" and recovery machine will start and run until proper vacuum condition is reached.
5. Check scale for proper amount of refrigerant added. If proper amount of refrigerant has been transferred continue to number 6. If more refrigerant is required open "valve 7" and low side valve on A/C system. Close "manifold inlet valve 16". Recovery machine will start and charge more refrigerant to A/C system. Repeat number 4.
6. After proper amount of refrigerant is transferred and recovery machine shuts off, change settings to purge mode. Recovery machine will transfer most refrigerant in recovery/recycle unit to dot tank. When recovery machine shuts off close "valve 3". Close high side valve on A/C system. Charge is complete.

## DRAINING OIL SEPARATOR

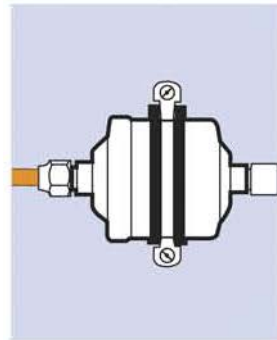
When recovering and recycling refrigerant, most oil that is removed from the A/C system will be retained in the oil separator. The oil should be drained out of separator after each use to prevent the mixing of different oils during recovery.

1. After recovery/recycle operation, when a low residual pressure (5-10 PSI, .3-.7 bar) exists in the recovery/recycle unit, close "valves 10 and 11". Put a small container under "valve 9".
2. With the oil separator standing vertically, very slowly open "valve 9". Oil collected by the oil separator will drain into container. Close "valve 9". Dispose of oil in an approved manner.



## FILTER MAINTENANCE

Filter should be changed on a regular bases. The frequency will depend on the condition of the refrigerants being recovered/recycled. One way to test for a dirty filter is to compare the pressure readings on low side gauge of manifold with low side gauge on recovery machine. With recovery/recycle system circulating refrigerant gauge readings should be within 10 psi (.7 bar) of each other. A pressure difference higher than this indicates a dirty filter.



## MOISTURE INDICATING SIGHT GLASS

The moisture indicating sight glass changes color depending on the amount of moisture present in recycle system. As mentioned previously recycle system should be kept sealed to prevent moisture from outside of system contaminating indicating sight glass Replacement of sight glass is required when recycle system is evacuated to a high vacuum and sight glass does not indicate a "dry" condition.

