

OPERATING INSTRUCTIONS

AUTOMOTIVE A/C RECOVERY SYSTEM

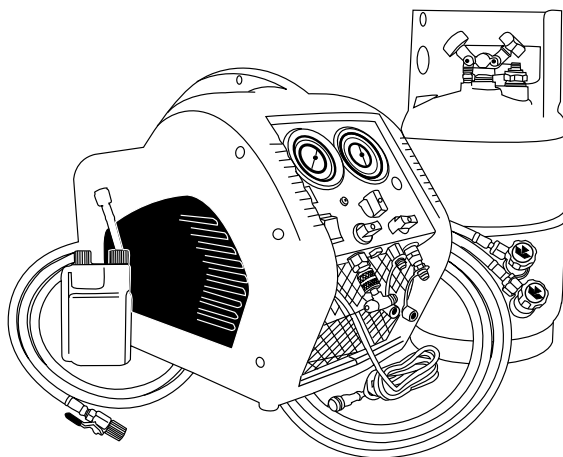
SAFETY INFORMATION!

READ CAREFULLY BEFORE USING RECOVERY SYSTEM!

CAUTION! This equipment should only be operated by certified personnel.

SAFETY SUMMARY

The following safety information is provided as guidelines to help you operate your new system under the safest possible conditions. Any equipment that uses chemicals can be potentially dangerous to use when safety or safe handling instructions are not followed. The following safety instructions are to provide the user with the information necessary for safe use and operation. Please read and retain these instructions for the continued safe use of your service system.



SAFETY INFORMATION

Customers respect the tools with which they work. They know that the tools represent years of constantly improved designs and developments. The customer also knows that tools are dangerous if misused or abused. To reduce risk of discomfort, illness, or even death, read, understand, and follow the following safety instructions. In addition, make certain that anyone using this equipment understands and follows these safety instructions as well.

READ ALL SAFETY INFORMATION CAREFULLY before attempting to install, operate, or service this equipment. Failure to comply with these instructions could result in personal injury and/or property damage.

RETAIN THE FOLLOWING SAFETY INFORMATION FOR FUTURE REFERENCE.

Published standards on safety are available and are listed at the end of this section under **ADDITIONAL SAFETY INFORMATION**.

The National Electrical Code, Occupational Safety and Health Act regulations, local industrial codes and local inspection requirements also provide a basis for equipment installation, use, and service.

The following safety alert symbols identify important safety messages in this manual. When you see one of the symbols shown here, be alert to the possibility of personal injury and carefully read the message that follows.

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 and connection to recover tank's float switch to make sure tank is not over filled. Recovery system with automatic shut down switch must be connected to recovery tank float switch for proper operation. Use only approved tanks for refrigerant recovery. Use Mastercool storage cylinder Part No. 67011 with the 69110 Recovery Machine.

An over filled tank can explode causing serious injury or death.



ELECTRICAL SHOCK HAZARDS

- Make sure system is electrically connected to a properly grounded power source.
- To reduce the risk of electric shock, unplug the air service center from the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- Do not operate the machine with a damaged cord or plug — replace the cord or plug immediately. To reduce the risk of damage to electric plug and cord, disconnect recovery machine by pulling on the plug rather than the cord.

An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:

- a. That pins on plug of extension cord are the same number, size, and shape as those on machine recovery plug.
- b. That extension cord is properly wired and in good electrical condition; and

c. That the wire size is large enough for the length of cord as specified below:

Length of cord in feet:	25	50	100	150
AWG size of cord:	16	12	10	8



MOTION HAZARDS

- Engine parts that are in motion and unexpected movement of a vehicle can injure or kill. When working near moving engine parts, wear snug fit clothing and keep hands and fingers away from moving parts. Keep hoses and tools clear of moving parts. Always stay clear of moving engine parts. Hoses and tools can be thrown through the air if not kept clear of moving engine parts.
- The unexpected movement of a vehicle can injure or kill. When working on vehicles always set the parking brake or block the wheels.



FUME HAZARDS

- FUMES, GASES, AND VAPORS CAN CAUSE DISCOMFORT, ILLNESS, AND DEATH! To reduce the risk of discomfort, illness, or death, read, understand, and follow the following safety instructions. In addition, make certain that anyone that uses the equipment understands and follows these safety instructions as well.
- Avoid breathing A/C refrigerant and lubricant vapor mist. Exposure may irritate eyes, nose, and throat.
- To remove R134a from the A/C system, use certified service equipment. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.
- Always perform vehicle service in a properly ventilated area. Never run an engine without proper ventilation for its exhaust.
- Stop the recycling process if you develop momentary eye, nose, or throat irritation as this indicates inadequate ventilation. Stop work and take necessary steps to improve ventilation in the work area.



HEAT/FREEZING HAZARDS

- When under pressure, refrigerants become liquid. When accidentally released from the liquid state they evaporate and become gaseous. As they evaporate, they can freeze tissue very rapidly. When these gases are breathed in, the lungs can be seriously damaged. If sufficient quantities are taken into the lungs, death can result. If you believe you have exposed your lungs to released refrigerant, seek immediate medical assistance.
- Refrigerants can cause frostbite and severe burns to exposed skin. Refrigerants are under pressure and can be forcibly sprayed in all directions if carelessly handled. Avoid contact with refrigerants and always wear protective gloves and make certain other exposed skin is properly covered.
- Refrigerants can also severely injure or cause permanent blindness to unprotected eyes. Refrigerants are under pressure and can be forcibly sprayed in all directions if carelessly handled. AVOID CONTACT WITH REFRIGERANTS AND ALWAYS WEAR SAFETY GOGGLES.



EXPLOSION/FLAME HAZARDS

- Never recover anything other than the approved refrigerants as specified on the machine. Alternate refrigerants may contain flammables such as butane or propane and can explode or cause a fire. Recovering alternate refrigerants will also void the warranty on your machine.
- For general safety reasons, at the end of the working day or in between services (when services do not immediately follow), make sure all valves on hoses and tanks are closed.
- Do not use this Recovery System in the vicinity of spilled or open containers of flammable substances (gasoline, solvents, etc.).

ADDITIONAL SAFETY INFORMATION

For additional information concerning safety, refer to the following standards.
ANSI Standard Z87.1 — SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION - obtainable from the American National Standards Institute

CAUTION: This equipment should be used in locations with mechanical ventilation that provides at least four air changes per hour or the equipment should be located at least 18 inches (457 mm) above the floor,” or the equivalent.

CAUTION: Do not pressure test or leak test R134a service equipment and/or vehicle air conditioning systems with compressed air. Some mixtures of air and R134a have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may

be obtained from refrigerant manufacturers.

Attention: Technicians using this equipment must be certified under EPA Section 609 (Environmental Protection Agency).

WARNING: There is the possibility of refrigerant and equipment contamination from hydrocarbons or leak sealants in the refrigerant container or the mobile A/C system being serviced or refrigerant container. Before recycling use proper equipment such as a refrigerant identifier, to insure R134a refrigerant only. Refrigerants other than R134a require special handling by someone with specific expertise and equipment.

NOTE: Use only new refrigerant oil to replace the amount removed during the recycling process. Used oil should be discarded per applicable federal, state, and local requirements.

The manufacturer shall not be responsible for any additional costs associated with a product failure including, but not limited to, loss of work time, loss of refrigerant, cross contamination of refrigerant, and unauthorized shipping and/or labor charges.

IMPORTANT: R134a systems have special fittings (per SAE specifications) to avoid cross-contamination with R12 systems. DO NOT adapt your unit for a different refrigerant — system failure will result.

PERIODICALLY INSPECT AND MAINTAIN REFRIGERANT HOSES AND SEALS TO ENSURE THAT HOSES AND SEALS PREVENT THE ADDITION OF EXCESS AIR, DUE TO LEAKS, DURING THE RECOVERY PROCESS, WHICH WOULD INCREASE THE NCG LEVEL IN THE RECOVERED REFRIGERANT.

All hoses used for interconnecting system should have shut off valves (manual or automatic) on both ends. Treat all hoses and connections with caution. Hoses or connections will contain liquid refrigerant or gas under pressure. Connect and disconnect fittings with caution.

The Recovery System includes a fine screen filter at the inlet port. Screen should be checked often or whenever contamination prevents proper operation of recovery system.

OPERATING GUIDE FOR DIRECT VAPOR OR LIQUID RECOVERY (Refer to fig.1)

Note: A. If recovery machine shuts off due to full tank, close valve on tank and shut off machine. Replace and connect empty recovery tank to yellow hose and restart Recovery Machine. If Recovery Machine does not start refer to Steps 10 and 11.

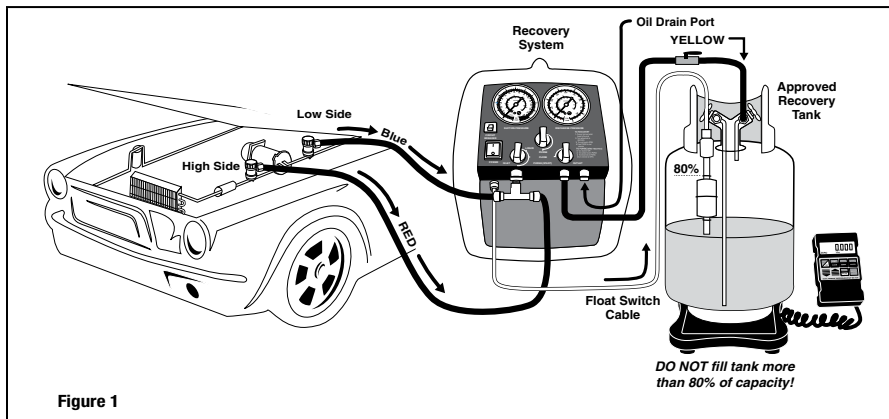
B. The recovery procedure should operate for 28 minutes. If the procedure stops before 28 minutes of operation, wait 5 minutes and check for low side pressure rise. If the pressure rises, repeat the recovery procedure until the pressure stays below atmospheric.

1. Make sure on-off switch is off, "O" pushed in. Connect system to grounded power connection.
2. Turn INLET (blue color) valve to CLOSE position. Turn center valve (yellow color) to RECOVER position.
3. Connect blue and red hose to inlet "T" fitting on recovery machine. Hoses have shut-off valves on both ends.
4. Connect blue hose from low side system connection to inlet port. Connect red hose from high side system connection to inlet port. A "T" fitting is provided at inlet port to connect both the blue and red hose.
5. Connect yellow hose from outlet port of recovery machine to vapor (gas) connection on recovery tank.
6. Connect float switch cable from recovery machine to recovery tank.

NOTE: Recovery system will not operate if float switch cable is not connected. Recovery tank must be Mastercool part #67011 and have a maximum capacity switch to prevent over filling of tank. Purge air and moisture from system by bleeding lines or use a vacuum pump.

7. Open the vapor valve on the recovery tank.
8. Turn OUTLET (red color) valve to OPEN position.
9. Turn INLET valve on Recovery System to OPEN.
10. Turn the Recovery System on (push power switch "I"). If the Recovery system fails to start, turn the power switch off. Turn inlet valve to PURGE. Turn center valve to PURGE. Rotate center valve between PURGE and RECOVER to get the inlet and outlet pressures within 70 PSI of each other. Leave the center valve in the RECOVER position. Turn the power switch on. If the Recovery System starts, immediately turn the inlet valve to OPEN. If the Recovery System still does not start, repeat the above procedure.
11. Observe operation of system. In rare instances "slugging" may be apparent (loud compressor noise or high vibration). If this condition is apparent turn inlet valve to LIQUID position. System can be run with this setting continuously. It is suggested that operator periodically turn inlet valve to OPEN position and check for proper operation of system. Best operation of the system is with inlet valve OPEN and automatic pressure regulating valve controlling flow conditions.
12. When the inlet pressure is 15" Hg or more, the recovery is done. To purge the Recovery System, leave the system running. Turn the center valve to PURGE. Turn the inlet valve to PURGE. It may take 1 or 2 minutes to purge the Recovery machine of refrigerant, depending on how much liquid is in it.
13. If draining the oil, turn the machine off between 10 PSI and 2 PSI. Otherwise, let the Recovery system run until it reaches 15" Hg or more, or the low pressure switch turns the Recovery system off.
14. Make sure the Recovery system is off. Turn the inlet and outlet valves to CLOSE. Close the valve on the tank and

remove the hoses.



OPTIONAL RECOVERY MACHINE PURGE

1. Turn inlet valve to PURGE. Turn center valve to PURGE. Outlet valve should be in the OPEN position. Turn the power switch on. If the machine does not start, turn the power switch off. Rotate the center valve between PURGE and RECOVER until the inlet and outlet pressures are within 70 PSI of each other. Leave the center valve in the PURGE position. Turn the power switch on.
2. Purge may take a minute as some liquid refrigerant may be in the Recovery System.
3. If draining oil, turn the Recovery Machine off when the inlet is between 10 PSI and 2 PSI. Otherwise, turn the recovery system off when the inlet pressure is 15" hg or below.
4. If venting of system is required, disconnect outlet hose to relieve residual pressure after purge.
5. The inlet port has a fine screen filter. Remove inlet nut and clean screen filter after every use.

TO DRAIN RECOVERED OIL

CAUTION! Do not cap the open bottle neck! The neck must remain open to vent pressure.

NOTE! The oil separator capacity is approximately 1.5 oz which can cover 8-10 normal recoveries. However, some systems deposit more oil in the separator due to high pressure or excessive oil in the system. It is recommended that oil is drained after each use of the recovery machine.

1. Check pressure on recovery machine inlet pressure gauge. Pressure must be below 10 PSI (.7 Bar), but above 2 PSI (.1 Bar).
2. Insert short yellow hose into the "plastic bottle with two openings" which is supplied. Carefully attach the short yellow hose to the oil drain fitting on the recovery machine. As hose is tightened on fitting, oil will flow into container. (Hose is equipped with a depressor which will open core valve in oil drain fitting).
3. When oil has drained completely, disconnect the hose from the system. Unscrew the cap/hose from the bottle and dispose of the oil into an environmentally approved container.

REPLACEMENT PARTS

Product	Part #
Mastercool Storage Cylinder	67011 (This storage tank must be used with the 69390 Recovery Machine)

⚠ WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm.