

RECOVERY/RECYCLE/RECHARGE



Operating Instructions

WARNING!!

Do not stop the recovery process. Permanent damage will occur that could void the warranty.

CONTENTS

INTRODUCTION	4
SAFETY SUMMARY	4
SAFETY INFORMATION	4
ELECTRICAL SHOCK HAZARDS	4
MOTION HAZARDS	5
FUME HAZARDS	5
HEAT/FREEZING HAZARDS	5
EXPLOSION/FLAME HAZARDS	5
ADDITIONAL SAFETY INFORMATION	5
CERTIFICATION	6
ABOUT THIS MANUAL	6
ABOUT YOUR AIR CONDITIONING RECOVERY/RECYCLE SERVICE CENTER	6
WARRANTY	6
GENERAL INFORMATION	6
PRINCIPLES OF OPERATION	7
SETUP	7
THE MACHINE	8
BASIC COMPONENTS	8
CONTROLS AND CONTROL SYSTEM	8
CONTROL PANEL FUNCTION KEYS	9
FUNCTION SELECTOR KEYBOARD	9
ALARMS	9
PRELIMINARY OPERATIONS	10
AUTOMATIC PROCEDURE	10
ASSISTED PROCEDURE	16
RECOVERY AND RECYCLING	17
VACUUM	18
VACUUM LEAK CHECKING	18
NEW OIL INJECTION	19
CHARGING REFRIGERANT	20
SET-UP	23
LAST RECOVERED QUANTITY	23
FILLING THE MACHINE TANK	23
PURGING NON-CONDENSABLE GASES	24
LANGUAGE	25
MEASURE UNITS	26
WEIGHT	26
PRESSURE	26
TEMPERATURE	26
SET DATE & TIME	27
SET-UP HEAD PRINTING	27
INSERT OPERATOR NUMBER	28
OPTION	28
INFORMATION	29
DATA	29

COUNTERS	29
FILTER CONDITIONS	30
REF MANAGEMENT	30
PASSWORD	31
INFO: SW, LANGUAGE DB	32
ROUTINE MAINTENANCE	32
VACUUM PUMP	32
Oil Fill	32
Checking Oil Level	33
Oil Change	33
REPLACING THE DRYER FILTERS	33
FILLING THE NEW OIL CONTAINER	34
EMPTYING THE USED OIL CONTAINER	34
CHECKING THE SCALE RESPONSE	34
DATABASE CUSTOMIZATION	35
DATA ENTRY	35
USE	36
DELETION	36
DATABASE UPGRADE	36
CONTRAST	37
REPLACING THE PRINTER PAPER	37
CONVERSION CHART	37

INTRODUCTION

This machine is ETL Laboratories approved, in compliance with SAE J2788. We are dedicated to solving the issues surrounding the safe containment and proper management of refrigerants. Your new machine incorporates the latest technology and state of the art features to aid you in servicing R134a air conditioning and refrigeration systems.

NOTICE:

The SAE J2788 standard has, by design made recycling machines more complex than previous models that some End Users might be familiar with. Some noticeable changes that the End User should expect from ALL new recycling machines are the following.

1. **RECOVERY TIME:** The average recovery time is approximately 30 minutes. This time is necessary to meet the SAE J2788 standard which requires that the machine recovers at least 95% of the AC system refrigerant and cleans the refrigerant to a minimum of 95% purity.
2. **HOT WEATHER:** As the ambient temperature approaches 100°F, some End Users have experienced an increase in recovery time. This is due to the natural response of R134a when its temperature is elevated. R134a has difficulty transforming from a gas into a liquid state at elevated temperatures. The transformation into liquid is necessary for the machine to complete the recovery process. The End User might notice the same effect when performing a TANK CHARGING operation.
3. **COLD WEATHER:** As the ambient temperature approaches 50°F, some End Users have experienced an increase in recovery time. This is due to the natural response of R134a when its temperature is lowered. R134a has difficulty transforming from a liquid into a vapor state at reduced temperatures. The transformation into vapor is necessary for the machine to complete the distilling process. The End User might notice the same effect when performing a TANK CHARGING operation.

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 known or 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

Every craftsman respects the tools with which they work. They know that the tools represent years of constantly improved designs and developments. The true craftsman 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 else that uses 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.

Never fill the tank to more than 80% of maximum capacity as this will not leave an expansion chamber for absorbing any pressure increases.



ELECTRICAL SHOCK HAZARDS

- To reduce the risk of electric shock, unplug the power supply cord 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 the power cord 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, electric shock and component damage. 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 plug on recycler.
- 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 service equipment certified to meet the requirements of SAE J2788--R134a recycling 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), see to it that all valves on hoses and the machine are closed.

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, 11 West 42nd St., New York, NY 10036, Telephone (212) 642-4900, Fax (212) 398-0023 - www.ansi.org

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 contamination 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, if necessary.

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.

CERTIFICATION

All technicians opening the refrigeration circuit in automotive air conditioning systems must now be certified in refrigerant recovery and recycling procedures to be in compliance with Section 609 of the Clean Air Act Amendments of 1990. For information on certification call MACS Worldwide at (215) 631-7020.

ABOUT THIS MANUAL

This manual includes a SAFETY SUMMARY, MACHINE PREPARATION FOR USE, OPERATION procedures, and MAINTENANCE instructions, for your Air Conditioning Service Center. Anyone intending to use the machine should become familiar with ALL the information included in this manual (especially the SAFETY SUMMARY) before attempting to use it.

Before operating this machine for the first time, perform all PREPARATION FOR USE instructions. If your new machine is not properly prepared to perform a service, your service data could be erroneous. In order to properly perform a complete air conditioning service, follow all procedures in the order presented. Please take the time to study this manual before operating the machine. Then keep this manual close at hand for future reference. Please pay close attention to the SAFETY SUMMARY and all WARNINGS and CAUTIONS provided throughout this manual.

ABOUT YOUR AIR CONDITIONING RECOVERY/RECYCLE SERVICE CENTER

Your machine incorporates a highly accurate electronic scale for determining charging weights, etc. Other functions can also be performed with the electronic scale as you will discover during the operating procedures. Either standard or metric units of measure can be selected. Your new machine has been designed specifically to use R134a, to operate within the objectives of the Montreal Protocol.

WARRANTY

This product is warranted against any defect in materials and/or construction for a period of 1 year from the date of delivery. The warranty consists of free-of-charge replacement or repair of defective component parts or parts considered defective by the Manufacturer. Reference to the machine serial number must be included in any requests for spare parts. This warranty does not cover defects arising from normal wear, incorrect or improper installation, or phenomena not inherent to normal use and operation of the product.

NOTE: Regarding the above, the Manufacturer reminds the Customer that according to international and national laws and regulations in force the goods are shipped at the sole risk of the latter and, unless otherwise specified in the confirmation of order phase, the goods are shipped uninsured. The Manufacturer therefore declines any and all responsibility in merit of CLAIMS for damages due to shipping, loading and unloading, and unpacking.

The product for which repair under guarantee is requested must be shipped to the manufacturer under the customer's exclusive responsibility and at the customer's exclusive expense and risk. In order to avoid damage during shipping for repairs, the Manufacturer's original packing must always be used and scale must be locked prior to shipping, refer to Setup on page 7.

The manufacturer declines any and all responsibility for damage to vehicles on which recovery/recycling and recharging are performed if said damage is the result of unskillful handling by the operator or of failure to observe the basic safety rules set forth in the instruction manual.

The warranty will expire automatically at the end of the twelve month period or whenever one of the following occurs: failure to perform maintenance; use of improper maintenance procedures; use of unsuitable lubricants and/or tracer fluids; inept or improper use; repairs performed by unauthorized personnel and/or with non-original spare parts; damage caused by shocks, fires, or other accidental events.

To activate the warranty, mail the attached warranty card.

GENERAL INFORMATION

Machine identification information is printed on the data plate on the rear of the machine (see Figure 1). Overall machine dimensions:

Height:	41.3 inch	Width:	23.6 inch	Depth:	21.6 inch	Weight:	176 lb
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Like any equipment with moving parts, the machine inevitably produces noise. The construction system, paneling, and special provisions adopted by

the Manufacturer are such that during work, the average noise level of the machine is less than 70 dB (A).

NOTE: The machine is intended for indoor use only.



PRINCIPLES OF OPERATION

In a single series of operations, the machine permits recovering and recycling refrigerant with no risk of release into the environment, and also permits purging the A/C system of humidity and deposits contained in the oil. The machine is equipped with a built-in evaporator/separator that removes oil and other impurities from the refrigerant recovered from the A/C system and collects them in a container for that purpose. The fluid is then filtered, recycled and returned to the tank installed in the machine. The machine also permits running certain operational and leak tests on the A/C system.

SETUP

The machine is supplied fully assembled and tested. Referring to Figure 3, mount the hose with the BLUE quick-connect coupling on the male threaded connector indicated by the BLUE LOW PRESSURE symbol and the hose with the RED quick-connect coupling on the male threaded connector indicated by the RED HIGH PRESSURE symbol.

Referring to Figure 4, remove the protection under the refrigerant scale as follows (UNLOCK SCALE):

- Loosen the nut (Fig 4-2.)
- Loosen the screw (Fig. 4-1) two to four turns (do not remove from machine.)
- Tighten the nut (Fig. 4-2.)

NOTE: In the event that the equipment has to be transported; the refrigerant tank scale **MUST** be locked in place as follows:

- Use two 10mm wrenches.
- Loosen the nut (Fig. 4-2.)
- Switch the machine on.
- Tighten the screw slowly (Fig. 4-1) until the display signals ZERO Ref. Available.
- Tighten the nut (Fig. 4-2) forcefully (using the second wrench to lock the screw (Fig. 4-1).
- Check that the screw (Fig. 4-1) is actually locked, if necessary repeat the locking operation from the beginning.



FIG. 3

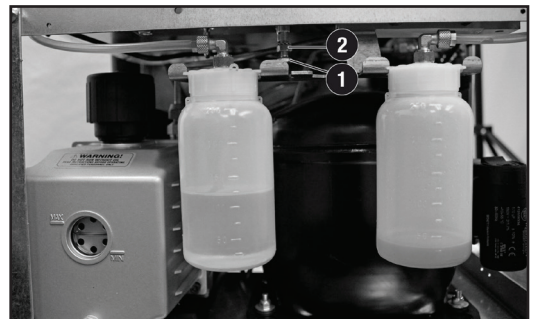


FIG. 4

THE MACHINE

BASIC COMPONENTS (Refer to Figures 5, 6)

A) Control Console	B) Service Valves	C) High & Low Service Ports	D) New Oil Bottle	E) Sight Glass	F) Serial Port
G) Vacuum Pump	H) Wheels	I) Main Switch	J) Socket for Electrical Supply Plug	K) Fuse Holder	L) Electronic Scale
M) Used Oil Bottle	N) Drier Filters	O) Tank	P) Tank Heater	Q) Printer	



FIG. 5

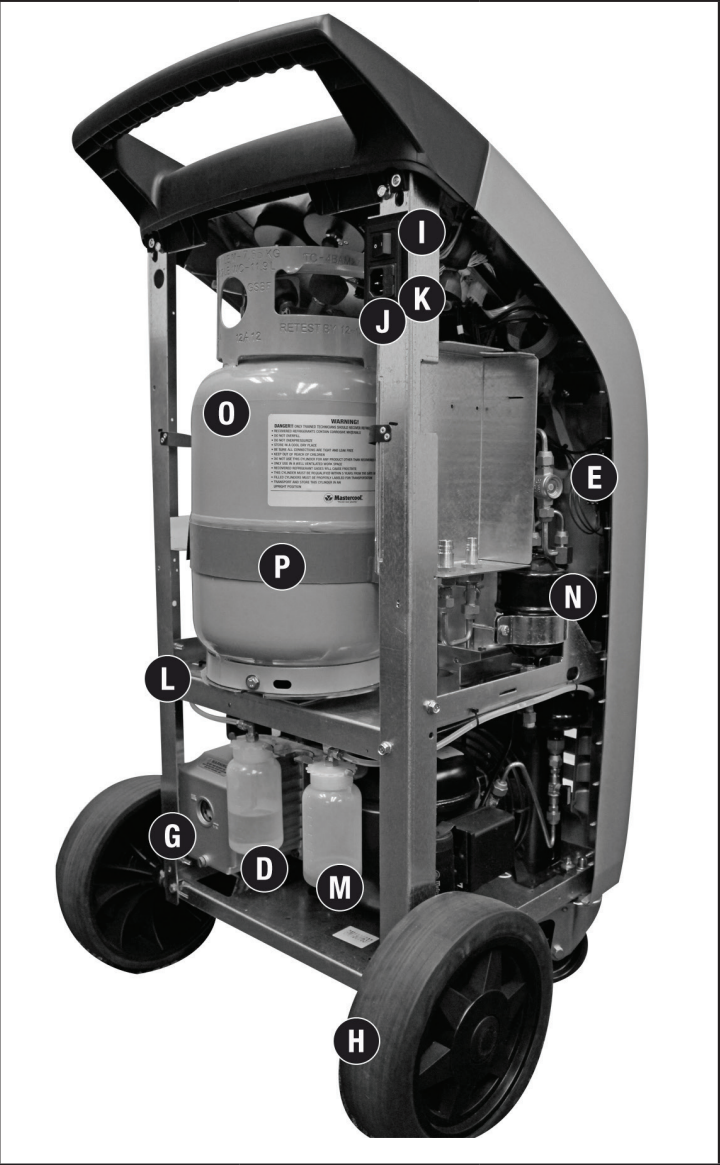
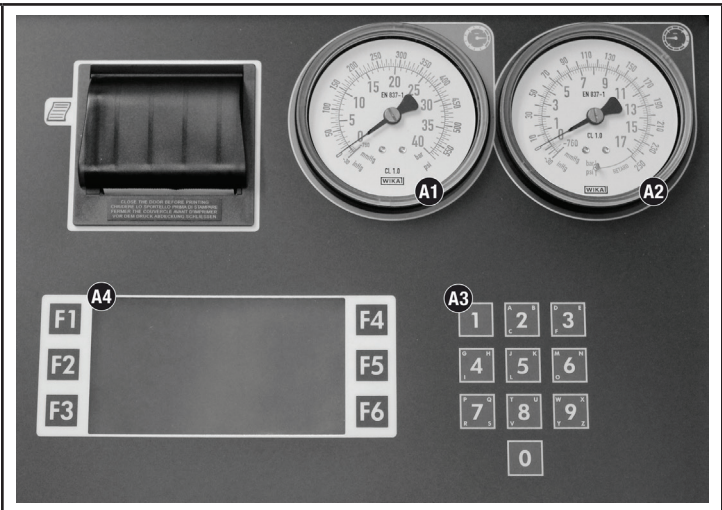


FIG. 6

CONTROLS AND CONTROL SYSTEM

Fig. 7
A1) High pressure gauge
A2) Low pressure gauge
A3) Keyboard
A4) LCD



CONTROL PANEL FUNCTION KEYS

Choose control panel functions by pressing the FN key that appears beside the icon on the display.

ICON	DESCRIPTION	FUNCTION
	AUTOMATIC PROCEDURE	Activates a menu that helps the user set up an automatic recover/vacuum/vacuum leak check/oil injection and charge sequence
	PRINT	Print a summary of the last procedure performed
	INFO	Activates a menu that contains all the information of the recycling machine
	ASSISTED PROCEDURE	Activates a menu that helps the user to perform a recovery, vacuum, oil injection, or charge operation individually
	SETUP	Activates the setup menu of the recycling machine
	CALIBRATION	Activates the calibration menu of the recycling machine. Should only be performed by a Qualified Service Center. Special tools and codes are needed
	START	To start a procedure or operation shown on the display
	STOP	To stop a procedure or operation, silences the audible alarm or returns to the previous screen
	ENTER	To accept a procedure or operation shown on the display
	UP ARROW	Used for scrolling up through the menu items
	LEFT ARROW	Used for moving the cursor to the left
	DOWN ARROW	Used for scrolling down through the menu items
	RIGHT ARROW	Used for moving the cursor to the right
[DB]	DATABASE	Used to select a charge value from a database

FUNCTION SELECTOR KEYBOARD

- F1: Press to launch the procedure or operation shown on the display.
- F2: Press to interrupt the operation being performed -- recovery - oil discharge - vacuum/oil charging - charging. Press F1 to resume operation from the point of interruption. Pressing F2 during an alarm state, error state, or end-of-operation state silences the audible alarm.
- F4: Press to confirm the procedure or operation flashing on the LCD.
- ↓: Press to move downward from one procedure or operation to another within a menu.
- ↑: Press to move upward from one procedure or operation to another within a menu.

NOTE: “Tank” and “Bottle” are both used to describe a refrigerant container.

ALARMS

HIGH PRESSURE ALARM:

Beeper and LCD advise when the pressure of the fluid in the circuit reaches 290 psi (20 bar). The recovery operation is automatically interrupted. See page 24, Purging Non-Condensable Gases.

FULL TANK ALARM:

Beeper and LCD advises when the tank is filled to more than 80% of maximum capacity; that is, 24 lbs (10.8 kg.), the RECOVERY operation is automatically interrupted. To cancel this alarm, charge one or more A/C systems before recovering any more refrigerant or, using a scale and a D.O.T. tank, charge enough refrigerant into the D.O.T. tank so that the refrigerant available will be approximately 12 to 15 lbs. This refrigerant can be reclaimed later should 69789/69789-H need to be re-filled again with refrigerant. (See Empty Tank Alarm)

NOTE: Do not attempt to charge a new refrigerant tank (blue tank with a single port valve). These tanks are not D.O.T. approved for refilling and only have a check valve in them that allows refrigerant to leave the tank. Since these tanks have a check valve and DO NOT have pressure safety devices on them they cannot be

refilled by 69789/69789-H.

NOTE: Never transfer refrigerants to a cylinder or tank unless it is D.O.T. approved for refilling. D.O.T. approval is indicated by the designation “DOT 4BA” or “DOT 4BW” stamped on a tank’s collar (handle.) If a refrigerant tank is overfilled, it may explode! Failure to abide by these warnings may cause personal injury or death.

EMPTY TANK ALARM:

Beeper and the LCD advise when the quantity of refrigerant fluid contained in the tank is too low. At this time it will be necessary to bottle fill 69789/69789-H to approximately 12 to 15 lbs of refrigerant in order for the alarm to clear.

SERVICE ALARM:

Service Alarm: The first service alarm; when the total recovered amount of refrigerant reaches 114 lbs, a beeper will sound and the LCD will display SERVICE ALARM. To clear the alarm, press F2. After the first alarm is cleared, filters should be purchased to have ready when 69789/69789-H requires that the filters be replaced. **The second service alarm;** when the total recovered amount of refrigerant reaches 132 lbs, a beeper will sound and the LCD will display ENTER FILTER CODE. There will also be 10 dots along the bottom of the screen. To deactivate the alarm, the filters will need to be replaced (see page 34 Replacing the dryer filters.)

NOTE: It is good practice to change the Vacuum pump oil when the filters are being changed. (see page 32, Vacuum Pump)

LOW REFRIGERANT ALARM:

Beeper and the LCD advise when the charging quantity set exceeds the amount of refrigerant available. The minimum quantity of refrigerant is 4.50 lbs. If the gas available minus the charge quantity equals less than 4.5 lbs, 69789/69789-H will interrupt the attempt to charge and notify the operator that there is **insufficient refrigerant**. At this time it will be necessary to tank charge 69789/69789-H to approximately 12 to 15 lbs of refrigerant in order to perform a charge. For instance, if the gas available is 9.50 lbs and the charge quantity is 1.80 lbs, then 9.50 lbs minus 1.80 lbs equals 7.70 lbs. 7.70 lbs is greater than 4.50 lbs so 69789/69789-H will perform the charge. If the gas available is 5.90 lbs and the charge quantity is 1.80 lbs, then 5.90 lbs minus 1.80 lbs equals 4.10 lbs. 4.10 lbs is less than 4.50 lbs, so 69789/69789-H will not charge and will let the operator know that there is insufficient refrigerant available.

PRELIMINARY OPERATIONS

Check that the main switch (Fig. 6-I, page 8) is set to 0. Check that all the machine valves are closed. Connect the machine to the electrical supply and switch on. Check that the vacuum pump oil level indicator shows at least one-half full. If the level is lower, add oil as explained in the ROUTINE MAINTENANCE section (page 32.) Check that in the new oil container (Fig. 6-D, page 8) there are at least 3.4 oz. (100 cc) of the oil recommended by the manufacturer of the vehicle A/C system. Check that the oil level in used oil container (Fig. 6-M, page 8) is less than 6.7 oz. (200 cc.) Check the machine’s data display to be sure there is at least 9 lbs (4.08 kg) of refrigerant in the tank. Should this not be the case, fill the on-board machine tank from an external tank of appropriate refrigerant following the procedure described in the ROUTINE MAINTENANCE section (page 32.)

WARNING:

DO NOT STOP THE RECOVERY PROCESS. Stopping the recovery process will definitely cause damage to the Compressor and perhaps other components. It will also cause the machine to fill up with unprocessed liquid refrigerant which will disable the machine from further use. Damage due to **STOPPING THE RECOVERY PROCESS** could void the warranty.

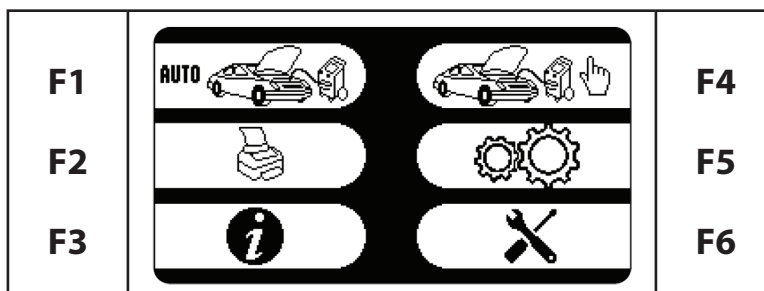
AUTOMATIC PROCEDURE

In the automatic mode, all the operations are performed automatically: recovery and recycling, oil discharge, vacuum, new oil reintegration, and charging. The values for the quantity of gas recovered, quantity of oil recovered, vacuum time, quantity of oil reintegrated, and quantity of gas charged into the system are automatically printed at the end of all operations.

Connect the hoses to the A/C system with the quick-connect couplings, bearing in mind that BLUE must be connected to the low pressure side and RED to high pressure. If the A/C system is equipped with a single quick-connect coupling for high or low pressure, connect only the relative hose.

Check that the high- and low-pressure taps are closed. Start the vehicle engine and switch on the air conditioner. Allow both to run for about 5 to 10 minutes with the passenger compartment fan at full speed. **THEN TURN OFF THE A/C SYSTEM AND SHUT-OFF THE VEHICLE’S ENGINE.**

Turn on the machine, from main menu:



Select AUTOMATIC PROCEDURE, the following screen is displayed (only if the hardware for hybrid vehicles is installed in the machine).

■	SELECT	  
	Standard vehicle	
	Hybrid vehicle	
	Gas Filling xxg	

Press F4  to confirm STANDARD VEHICLE or press the DOWN ARROW  and then F4  to select HYBRID VEHICLE.

NOTE: When HYBRID VEHICLE is selected the OIL phase of the AUTOMATIC PROCEDURE is disabled.

The following message appears:

■	warning using pag oil or tracer in hybrid vehicles can damage the compressor	  
	Gas Filling xxg	

Press F4  to continue

■	use specific oil with a separate device Press ENTER	  
	Gas Filling xxg	

Press F4  to continue, a pop-up window with vacuum settings will be displayed:

■	vacuum 20 MIN	  
	Gas Filling xxg	

Set the vacuum time by keying in the desired time. To accept the time value that is already there, press F4. The machine will automatically perform a 2 minute automatic leak check when the time value is 11 minutes or longer. Automatic leak check will start after 9 minutes of vacuuming. If a leak is detected, the machine will notify the operator that a leak was detected and will not continue vacuuming. If no leak is detected, the machine will continue vacuuming for the time remaining.

■	Oil No	  
	Automatic Oil	
	Oil xxcc	
	Gas Filling xxg	

1) Press F4  to skip Oil Refill.

2) Scroll to "Automatic Oil" with the DOWN ARROW  and confirm it by pressing F4 .

■	Oil	No	  
	Automatic Oil		
	Oil	xxcc	
	Gas Filling	xxg	

NOTE: When the Vacuum operation is completed the system will automatically reintegrate with the same quantity of oil extracted during Recovery.

3) Scroll to “Oil” with the DOWN ARROW ↓, then use the keys 0 to 9 to type the volume of oil to be automatically reintegrated after Vacuum, then press F4 ↵ to confirm.

NOTE: cc = ml

■	Oil	No	  
	Automatic Oil		
	Oil	30cc	
	Gas Filling	xxg	

The following summary screen will be displayed:

■	AUTOMATIC PROCEDURE		  
	Vacuum	20min	
	Oil	30cc	
	Ref Charge	xxg	
DB			

1. Set the quantity of refrigerant required for the A/C system to be charged. Following are examples for each set of units.

Lb, the display will have 4 digits, two digits then a decimal point and then two digits. The cursor moves from the left to the right. If the desired charge is 1.75 lbs, then you will enter 0 1 7 5.

Oz, the display will have 3 digits. The cursor moves from the right to the left. If the desired charge is 36 oz's, then you will enter 0 3 6.

Gr, the display will have 5 digits. The cursor moves from the right to the left. If the desired charge is 980 grams, the you will enter 9 8 0.

Kg, the display will have 3 digits, two digits then a decimal and then one digit. The cursor moves from the right to the left. If the desired charge is 1.5 Kg's then you will enter 1 5.

Lb-oz, the display will have 4 digits, two digits then a colon and then two digits. The cursor moves from the left to the right. If the desired charge is 1 lb's 7 oz's then you will enter 0 1 0 7.

■	AUTOMATIC PROCEDURE		  
	Vacuum	20min	
	Oil	30cc	
	Ref Charge	1.75lb	
DB			

NOTE: When working with A/C systems with a single high-pressure (RED) coupling, set the charging quantity 3 oz. (.19 lb or 85g) more than the required quantity, since in this case it will be impossible to recover the residual refrigerant from the hoses after charging.

NOTE: In most cases, the quantity of refrigerant being charged into the A/C system is given on a data plate inside the engine compartment of the vehicle. If you do not know the correct quantity, consult the relevant manuals.

2. DATABASE ADVANCE: Press the DATABASE [DB] key, the following screen will appear on the display.

■	DATABASE ADVANCED		  
	Acura		
	Alfa Romeo		
	Audi		
	BMW		
	Buick		
Cadillac			

Use DOWN ARROW ↓ and UP ARROW ↑ to select the required vehicle brand and press F4 ← to confirm. The display will now show the various models (for example, if the brand chosen was BMW):

■	BMW		  
	Alpina B7 2007-08		
	Alpina B7 2011-12		
	Alpina V8 2003		
	128 2008-09		
	128 2011-12		
	135 2008-09		

Use DOWN ARROW ↓ and UP ARROW ↑ to select the model required press F4 ← to confirm. The following will appear on the display:

■	AUTOMATIC PROCEDURE		  
	Vacuum	20min	
	Oil	30cc	
	Ref Charge	01.79lb	

The machine will be ready to enter the correct quantity of refrigerant. Confirm by pressing the F4 ← key. See customizing the database (page 35) to add user defined vehicle charge values.

■	Insert Plate N.		  
	Press F4		
	Gas Filling	xxg	

Type the plate of the car, use RIGHT ARROW → and LEFT ARROW ← to move inside plate number; press ENTER ← to confirm. If no plate number is needed, press F4 to continue.

NOTE: the numerical keys include an alphabet that is used similar to text messaging; for example: press “2” once to display “A”, twice to display “B”, three times for “C”, four times for “2”.

If “Hybrid vehicle” was selected, the graphic display will show the flushing procedure:

▶	AUTOMATIC PROCEDURE		  
	HP & LP Hoses		
	Flushing Procedure		
	F1 to continue		
	F2 to exit		

Press F1 ▶ to continue, the following screen will be displayed:

▶	AUTOMATIC PROCEDURE	↶
■	Connect and open HP and LP hoses to the side of the machine F1 to continue F2 to exit	↑ ↓

Press F1 ▶ to begin hoses flushing, the following screen will be displayed:

■	Hoses Flushing Please Wait ACP>26inHg	
---	---	--

Hose flushing consists of 4 cleaning rounds, at the end of the 4 phases the following screen will be displayed:

NOTE: The hose flushing process takes approximately 10 minutes to complete. **DUE TO THE SAFETY ISSUES RELATED TO HYBRID VEHICLES DO NOT STOP THIS PROCESS.**

■	AUTOMATIC PROCEDURE Disconnect hoses from machine, then connect to AC system Press F4	↶
---	--	---

Press F4 ↶ to continue with the AUTOMATIC PROCEDURE. The following screen will be displayed:

▶	RECOVERY/RECYCLING	
■	Open high and low service port valves Press F1	

Open the high and low pressure taps on the machine and press F1 ▶ to begin the RECOVERY/RECYCLING process. During this phase, the graphic display will show the following:

■	RECOVERY/RECYCLING Ref recov. 00.00lb Tp 87 psi T 68.7°F Acp 2 psi	
---	--	--

Upon completion of recovery, the machine will stop and automatically discharge the used oil from the A/C system if any was present during recovery. The oil discharge operation lasts 6-14 minutes depending on the ambient temperature and the amount of refrigerant recovered. During the oil discharge operation, the following screen will be displayed:

■	RECOVERY/RECYCLING Recovery paused oil draining please wait Time: 6 min Recov. Oil oml	
---	--	--

If any residual refrigerant is left in the A/C system, as indicated by an increase in pressure during the oil discharge phase, recovery will automatically restart.

NOTE: Stopping the recovery phase before the oil is discharged may damage the recovery/recycle machine's compressor.

Upon completion of discharge, the machine will check for the presence of air in the tank, and if it's necessary, purge the non-condensable gases. The alarm will sound continuously and the display will show:

■	RECOVERY/RECYCLING Air Purge Tp 137 psi T 80.4°F Acp 0 psi Air Purge	
---	--	--

The Recovery/Recycle machine will automatically purge non-condensable gases (NCGS) if excess NCGS are detected at the end of recovery. Allow the unit to complete this procedure, eliminating the chance of NCGS being charged to the AC system.

NOTE: Charging may not run to completion due to pressure balance between the internal refrigerative storage tank and the A/C system. If this occurs, close the high pressure valve (leaving the low-pressure side open), start the vehicle and switch on the A/C system. The unit is equipped with a tank heater to limit this occurrence. When the charging operation is complete, the machine will display the following dialog boxes:

▶ ■	REF CHARGING END OF CHARGE CLOSE HIGH AND LOW SERVICE PORT VALVES F1: TO CONTINUE	
------------	---	--

▶ ■	REF CHARGING START ENGINE TURN ON A/C SYSTEM F1: TO CONTINUE	
------------	---	--

▶ ■	REF CHARGING VERIFY A/C SYSTEM PRESSURES F1: TO CONTINUE	
------------	--	--

▶ ■	REF CHARGING CLOSE HP PRESSURE COUPLER F1: TO CONTINUE	
------------	--	--

▶	REF CHARGING Open high and low service port valves Turn on A/C system F1: to continue	
---	--	--

■	REF CHARGING ALLOW HIGH AND LOW PRESSURE TO EQUALIZE CLOSE ALL VALVES F2: WHEN COMPLETE	
---	--	--

ASSISTED PROCEDURE

WARNING:

DO NOT STOP THE RECOVERY PROCESS. Stopping the recovery process will definitely cause damage to the Compressor and perhaps other components. It will also cause the machine to fill up with unprocessed liquid refrigerant which will disable the machine from further use. Damage due to STOPPING THE RECOVERY PROCESS could void the warranty.

In the assisted procedure mode, all the operations can be performed individually. The values for the quantity of gas recovered, quantity of oil recovered, vacuum time, quantity of oil reintegrated, and quantity of gas charged into the system are automatically printed at the end of each single operation.

F1		F4
F2		F5
F3		F6

From main menu:

Select the ASSISTED PROCEDURE, the following screen is displayed (only if the hardware for hybrid vehicles is installed in the machine).

■	SELECT	←
	Standard vehicle	↑
	Hybrid vehicle	↓
	Gas Filling xxg	

Press F4 ← to confirm STANDARD VEHICLE or press the DOWN ARROW ↓ and then F4 ← to select HYBRID VEHICLE.

NOTE: When HYBRID VEHICLE is selected the OIL phase of the AUTOMATIC PROCEDURE is disabled and the **HOSE FLUSHING** operation is activated.

The following message appears:

■	warning using pag oil or tracer in hybrid vehicles can damage the compressor	←
	Gas Filling xxg	↑
		↓

Press F4 ← to continue

■	use specific oil with a separate device Press ENTER	  
	Gas Filling xxg	

Press F4  to continue

■	ASSISTED PROCEDURE	
	Hose Flushing	
	Recovery/Recycling	
	Vacuum	
	Ref Charge xx.xx lb	

Since hybrid was selected, the hose flushing procedure will need to be performed to ensure that no cross contamination will occur. Select hose flushing and press F4 .

▶	HP & LP HOSES FLUSHING PROCEDURE	
■	F1 to continue F2 to exit	

F1 to continue

▶	Connect and open HP and LP hoses to the side of the machine	
■	F1 to continue F2 to exit	

F1 to continue

▶	HOSE FLUSHING PLEASE WAIT	
■	ACP >26 inHg	

Hose flushing consists of 4 cleaning rounds. At the end of the 4 phases, the following screen will be displayed.

NOTE: The hose flushing process takes approximately 10 minutes to complete. Due to the safety issues related to hybrid vehicles, **do not stop this process.**

■	HOSE FLUSHING END OF SEQUENCES	
	F2 to exit	

RECOVERY AND RECYCLING

Connect the hoses to the A/C system with the quick-connect couplings, bearing in mind that BLUE must be connected to the low-pressure side and RED to high pressure. If the A/C system is equipped with a single quick-connect coupling for high or low pressure, connect only the relative hose. Check that the high- and low-pressure taps are closed. Start the vehicle engine and the air conditioner and allow both to run for 5 to 10 minutes

with the passenger compartment fan at full speed. Switch off the vehicle engine.

From ASSISTED PROCEDURE, the following screen will be displayed:

■	ASSISTED PROCEDURE	↶ ↑ ↓
	Recovery/Recycling	
	Vacuum Oil Ref Charge xx.xxlb	

Press F4 ↵ to confirm “Recovery/Recycling,” a pop-up window will be displayed:

▶	Recovery/Recycling	
	Open high and low service port valve Press F1	
■	Gas Filling xxg	

Press F1 ↵ to confirm “Recovery/Recycling.” The following screen will be displayed:

■	Insert Plate N.	↶ ← →
	Press F4	
	Gas Filling xxg	

Type the plate of the car, use RIGHT ARROW → and LEFT ARROW ← to move inside plate number; press F4 ↵ to confirm.

NOTE: The numerical keys include an alphabet that is used similar to text messaging; for example: press “2” once to display “A”, twice to display “B”, three times for “C”, four times for “2”.

The following screen will be displayed:

▶	Recovery/Recycling	
	Open high and low pressure taps, then Press F1 to continue F2 to exit	

Open the high and low pressure taps on the machine and press the START to begin the refrigerant recovery/recycling phase. During this phase, the graphic display will show the quantity of refrigerant recovered. The machine checks whether or not there is air in the bottle and, if necessary, purges the non-condensable gas. The alarm will sound continuously and an AIR PURGE warning will be displayed. The machine will automatically discharge any non-condensable gas. Allowing the machine to fully complete the procedure will reduce the risk of return flows, which may cause excessive non-condensable gas to be recharged into the air conditioning system. Upon completion of recovery, the machine will stop and discharge, while automatically displaying the used oil extracted from the A/C system during the recovery phase. The oil discharge operation lasts 6-14 minutes. If any residual refrigerant in the A/C system should increase in pressure during this phase, the machine will automatically begin recovering the refrigerant.

VACUUM

Use the quick-connect couplings to connect the hoses to the A/C system, bearing in mind that BLUE must be connected to the low pressure side and RED to high pressure. If the system is equipped with a single quick-connect coupling for high or low pressure, connect only the relative hose.

VACUUM LEAK CHECKING

The machine will automatically perform a 2 minute AUTOMATIC LEAK CHECK when the time value is 11 minutes or longer. The AUTOMATIC LEAK CHECK will start after 9 minutes of vacuuming. If a leak is detected the machine will notify the operator that a leak was detected and it will not continue vacuuming. If no leak is detected, the machine will continue vacuuming for the time remaining. (Detection of micro leaks are not guaranteed.)

From the ASSISTED PROCEDURE, scroll down with the DOWN ARROW ↓, select “Vaccum,” then press F4 ↵.

■	ASSISTED PROCEDURE		  
	Recovery/Recycling		
	Vacuum		
	Oil		
	Ref Charge	xx.xxlb	

NOTE: The oil phase is disabled in case of hybrid vehicles.

Enter the vacuum time and press F4 .

■	Vacuum 20 min		  
	Gas Filling	xxg	

The following screen will be displayed:

▶ ■	VACUUM	
	Vacuum	20min
	Open high and low service port valves	
	F1: to continue F2: exit	

Open the high- and low-pressure taps of the machine and press F1 .

■	VACUUM	
	Time Left	20min
	HEATER*	
	ACp = >26 inhg	
	Tp = 86 psi	

NEW OIL INJECTION

This operation can be carried out ONLY following a vacuum operation and before charging. From the ASSISTED PROCEDURE, scroll down with DOWN ARROW , select "Oil":

■	ASSISTED PROCEDURE		  
	Recovery/Recycling		
	Vacuum*		
	Oil*		
	Ref Charge	xx.xxlb	

*The OIL phase is disabled in case of hybrid vehicles.

Press F4  to confirm, a pop-up window with oil settings will be displayed.

■	Oil 0 cc		  
	Hybrid Vehicle		
	Gas Filling	xxg	

Enter the amount of oil, then press F4 .

■	Oil	NO	  
	Manual Oil	30 cc	
	Gas Filling	xxg	

→ 3 → 0 →

■	Oil	NO	  
	Manual Oil	30 cc	
	Gas Filling	xxg	

The following screen will be displayed:

NOTE: cc = ml

▶	Oil Injection		
	Oil	30 ml	
■	Press F1 to continue F2 to exit		

Open the high and low-pressure taps (if the A/C system is equipped with a single quick-connect coupling for high or low pressure, open only the relative tap) of the machine, press F1 ▶.

■	Oil Injection		
	End of oil injection procedure Press F2		

CHARGING REFRIGERANT

From ASSISTED PROCEDURE, scroll with the DOWN ARROW ↓, select “Ref Charge”.

■	ASSISTED PROCEDURE		  
	Recovery/Recycling		
	Vacuum		
	Oil*		
	DB	Ref Charge	

*The OIL phase is disabled in case of hybrid vehicles.

Set the quantity of refrigerant required for the A/C system to be charged using one of the two procedures below.

1. Manual Operation: Set the quantity for the charge. Following are examples for each set of units.

Lb, the display will have 4 digits, two digits then a decimal point and then two digits. The cursor moves from the left to the right. If the desired charge is 1.75 lbs, then you will enter 0 1 7 5.

Oz, the display will have 3 digits. The cursor moves from the right to the left. If the desired charge is 36 oz's, then you will enter 0 3 6.

Gr, the display will have 5 digits. The cursor moves from the right to the left. If the desired charge is 980 grams, the you will enter 9 8 0.

Kg, the display will have 3 digits, two digits then a decimal and then one digit. The cursor moves from the right to the left. If the desired charge is 1.5 Kg's then you will enter 1 5.

Lb-oz, the display will have 4 digits, two digits then a colon and then two digits. The cursor moves from the left to the right. If the desired charge is 1 lb's 7 oz's then you will enter 0 1 0 7.

NOTE: When working with A/C systems with a single high-pressure (RED) coupling, set the charging quantity 3 oz. (.19 lb or 85 g) more than the required quantity, since in this case it will be impossible to recover the residual refrigerant from the hoses after charging.

■ DB	AUTOMATIC PROCEDURE	↶
	Recovery/Recycling	
	Vacuum	
	Oil	
	Ref Charge	01.75lb
		↷

→ 0 → 1 → 0 → 7

■ DB	AUTOMATIC PROCEDURE	↶
	Recovery/Recycling	
	Vacuum	
	Oil	
	Ref Charge	01.75lb
		↷

DATABASE ADVANCED: press DATABASE [DB] key, the following screen will appear on the display:

■	DATABASE ADVANCED	↶
	Acura	
	Alfa Romeo	
	Audi	
	BMW	
	Buick	
	Cadillac	↷

Use DOWN ARROW ↓ and UP ARROW ↑ to select the required vehicle brand and press F4 ↶ to confirm. The display will now show the various models (for example, if the brand chosen was BMW):

■	BMW	↶
	Alpina B7 2007-08	
	Alpina B7 2011-12	
	Alpina V8 2003	
	128 2008-09	
	128 2011-12	
	135 2008-09	↷

Use DOWN ARROW ↓ and UP ARROW ↑ to select the model required and press F4 ↶ to confirm. The following will appear on the display:

■ DB	ASSISTED PROCEDURE	↶
	Recovery/Recycling	
	Vacuum	
	Oil*	
	Ref Charge	01.79lb
		↷

See Customizing the Database (page 35) to add user defined vehicle charge values.

■	Insert Plate N.	↶
	Press F4	↶
	Gas Filling	xxg
		↷

Type the plate of the car, use RIGHT ARROW → and LEFT ARROW ← to move inside plate number; press F4 ↶ to confirm.

NOTE: the numerical keys include an alphabet that is used similar to text messaging; for example: press “2” once to display “A”, twice to display

“B”, three times for “C”, four times for “2”.

The following screen will be displayed:

 	REF CHARGING	
	Ref Charging Ref 01.79 lb Open high and low valves Press F1	

Open the high- and low-pressure taps (if the A/C system is equipped with a single quick-connect coupling for high or low pressure, open only the relative tap) of the machine and press F1 .

Note: Charging may not run to completion due to pressure balance between the internal tank and the A/C system. If this occurs, close the valve on the high pressure quick connect coupling (leaving the low-pressure side open), turn on the vehicle and switch on the A/C system. The unit is equipped with a tank heater to limit this occurrence. When the charging operation is complete, the machine will display the following:

 	REF CHARGING END OF CHARGE CLOSE HIGH AND LOW SERVICE PORT VALVES F1: TO CONTINUE	

 	REF CHARGING START ENGINE TURN ON A/C SYSTEM F1: TO CONTINUE	

 	REF CHARGING VERIFY A/C SYSTEM PRESSURES F1: TO CONTINUE	

 	REF CHARGING CLOSE HP PRESSURE COUPLER F1: TO CONTINUE	

 	REF CHARGING OPEN HIGH AND LOW SERVICE PORT VALVES TURN ON A/C SYSTEM F1: TO CONTINUE	

■	REF CHARGING	
	ALLOW HIGH AND LOW PRESSURE TO EQUALIZE	
	CLOSE ALL VALVES	
	F2: WHEN COMPLETE	

SETUP

LAST RECOVERED QUANTITY

To see how much refrigerant was recovered during the last recovery phase.

F1	AUTO 		F4
F2			F5
F3			F6

Select F5:

■	SETUP	  
	Last Recovered Qty	
	Tank Charging	
	Air Purge	
	Language	
	Measure Units	
	Set Date & Time	

Select LAST RECOVERED QTY, Press F4 ↵:

■	LAST RECOVERED QTY	  
	01.50 LB	
	F2: MAIN MENU	

This value gets updated after each complete recovery phase.

FILLING THE MACHINE TANK

This operation must be performed whenever the available refrigerant fluid in the tank is less than 9 lbs (4.8 kg) and must be performed when the "Empty Tank" alarm is displayed. Recommended capacity is between 10 and 15 lbs. Obtain a tank of R134a. Connect the tank adapter fitting (69788-332) to the R134a tank. Then, connect the high pressure hose from the tank to the high pressure valve on the machine. Open both the valve on the external tank and the high pressure valve on the machine. If the external tank is not supplied with a liquid valve, turn it upside down to obtain a higher delivery rate.

F1	AUTO 		F4
F2			F5
F3			F6

At the MAIN MENU select F5.

■	SETUP	 
	Last Recovered Qty	
	Tank Charging	
	Air Purge	
	Language	
	Measure Units	
	Set Date & Time	

Select Tank Charging and press F4 .

The following screen will be displayed:

▶	Tank Charging	
	Set amount: xx.x lb	
■	Min=xx Max=xx lb	
	F1 to continue	
	F2: reset	

Set the quantity of refrigerant to be transferred to the machine bottle (the quantity must be between the limit values suggested by the machine) and press F1 ▶ to confirm:

▶	Tank Charging	
	Use the HP hose to connect external tank and	
■	Press F1 to continue	

Press F1 ▶:

▶	Tank Charging	
	Open the external tank valve, open HP valve and	
■	Press F1 to continue	
	F2 to exit	

Press F1 ▶, the machine will now fill the machine bottle with the preset quantity. When the quantity minus 1 lb is reached, the machine will stop and display:

▶	Tank Charging	
	Close external bottle tap	
■	Press F1 to continue	
	F2 to exit	

Close the bottle tap and press F1 ▶, the machine will stop automatically after having recovered the residual refrigerant from the hoses. Close the high-pressure tap. Disconnect the external bottle. Switch the machine off.

PURGING NON-CONDENSABLE GASES

If 69789/69789-H should become loaded with excessive tank pressure due to the accumulation of NCG (Non-Condensable Gases) it will be necessary that the operator purge the NCG manually. The operator will need to start the manual purge and the machine will automatically stop the purge when the proper pressure is reached. The operator can also stop the purge manually before the machine determines the proper pressure.

F1			F4
F2			F5
F3			F6

At the MAIN MENU select F5.

	SETUP	
	Last Recovered Qty	
	Tank Charging	
	Air Purge	
	Language	
	Measure Units	
	Set Date & Time	

Select AIR PURGE and press F4 ↵, the following screen will be displayed:

	Air Purge	
	Bottle Pres 107 psi	
	Tank Temp 75.7°F	
	F1: to purge air	
	F2: Main Menu	

Press F1 ↵ to start the air purge:

	Air Purge	
	Bottle Pres 107 psi	
	Tank Temp 75.7°F	
	F1: Back	

If no air purge is necessary, the following screen will be displayed:

	Air Purge	
	No purge necessary	
	F1: Back	
	F2: Main Menu	

LANGUAGE

F1			F4
F2			F5
F3			F6

At the MAIN MENU select F5.

■	SETUP	↶
	Last Recovered Qty	
	Tank Charging	↓
	Air Purge	
	Language	
	Measure Units	
	Set Date & Time	

Select LANGUAGE and press F4 ↶, the following screen will be displayed:

■	SETUP	↶
	English	
	Italiano	↑
	Francais	
	Espanol	
	Deutsch	
	Portuguese	↓

Use the DOWN ARROW ↓ and UP ARROW ↑ to scroll the available languages. Select a language and press F4 ↶. The machine will reset in a few seconds.

MEASURE UNITS

F1	AUTO 		F4
F2			F5
F3			F6

At the MAIN MENU select F5.

■	SETUP	↶
	Last Recovered Qty	
	Tank Charging	↓
	Air Purge	
	Language	
	Measure Units	
	Set Date & Time	

Select MEASURE UNITS, press F4 ↶:

■	Weight	lb	↶
	Pressure Unit	psi	
	Temperature	°F	←
	Setup Heading Print		
	Insert Operator N.		→

WEIGHT

Press F4 ↶ to select the units (lb, oz, gr, kg or lb:oz). Press F2 ■ to exit.

PRESSURE

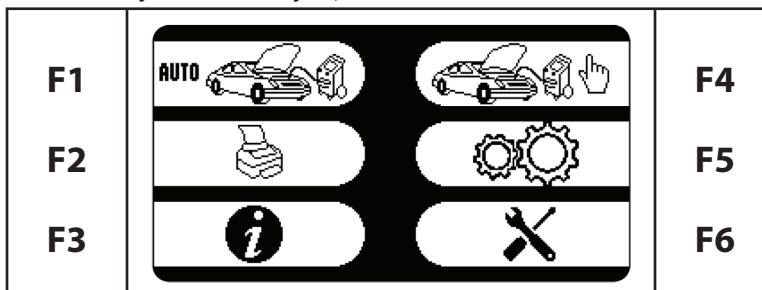
Use DOWN ARROW ↓ to select “Pressure” then press F4 ↶ to change from psi to bar. Press F2 ■ to exit.

TEMPERATURE

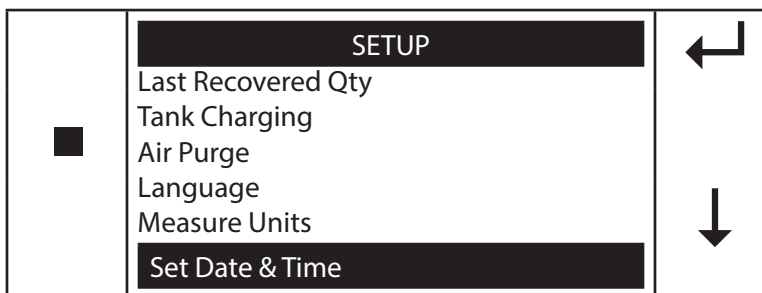
Use DOWN ARROW ↓ to select “Temperature” then press F4 ↶ to change from °F to °C. Press F2 ■ to exit.

SET DATE & TIME

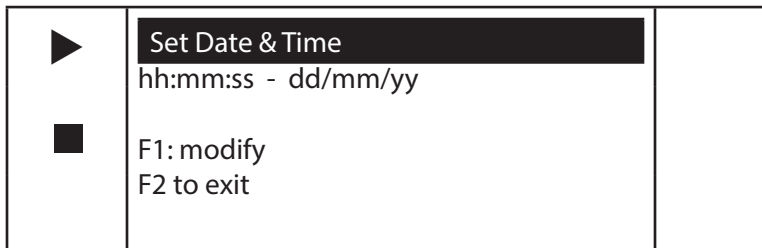
The machine holds date and time data in memory for about one year, even if switched off.



At the MAIN MENU select F5.

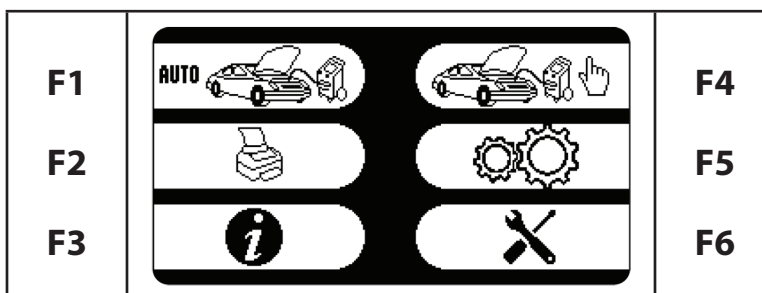


Select DATE & TIME, Press F4.

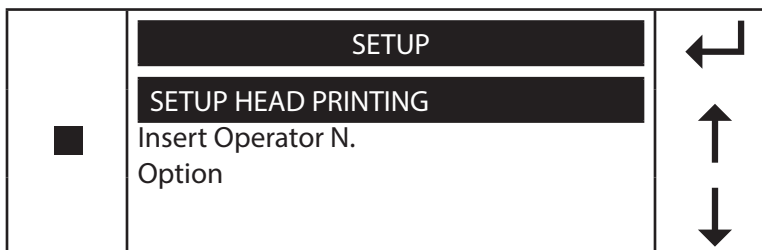


Press F1 ▶ to modify “Date & Time.” Type actual hours and minutes, then day, month and year. When finished press F2 ■ to exit.

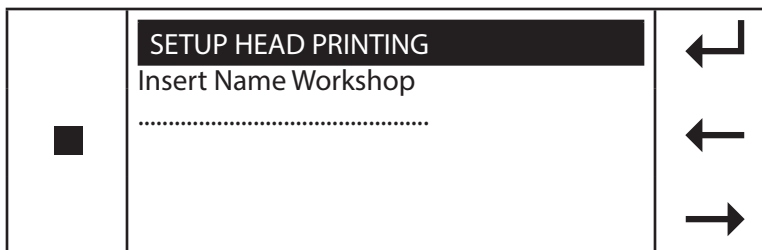
SETUP HEADING PRINT



At the MAIN MENU select F5.



Select SETUP HEAD PRINTING, press F4 ↵:



Type the shop name in the space provided. Use RIGHT ARROW → and LEFT ARROW ← to move the cursor then Press F4 ↵. A second line for shop name appears. Fill in the second line and press F4 ↵ or press F4 ↵ to skip to the second shop name line.

■	SETUP HEAD PRINTING	↵
	Insert Phone Number	←
		→

Type the “Phone Number” use RIGHT ARROW → and LEFT ARROW ← to move then Press F4 ↵ to confirm.

NOTE: the numerical keys include an alphabet that is used similar to text messaging; for example: press “2” once to display “A”, twice to display “B”, three times for “C”, four times for “2”.

INSERT OPERATOR NUMBER

F1			F4
F2			F5
F3			F6

At the MAIN MENU select F5.

■	SETUP	↵
	Setup Head Printing	↑
	INSERT OPERATOR N. Option	↓

Select INSERT OPERATOR N., press F4 ↵:

■	INSERT OPERATOR N.	↵
		←
		→

Type the “Operator Number,” use RIGHT ARROW → and LEFT ARROW ← to move; then Press F4 ↵ to confirm and exit.

NOTE: the numerical keys include an alphabet that is used similar to text messaging; for example: press “2” once to display “A”, twice to display “B”, three times for “C”, four times for “2”.

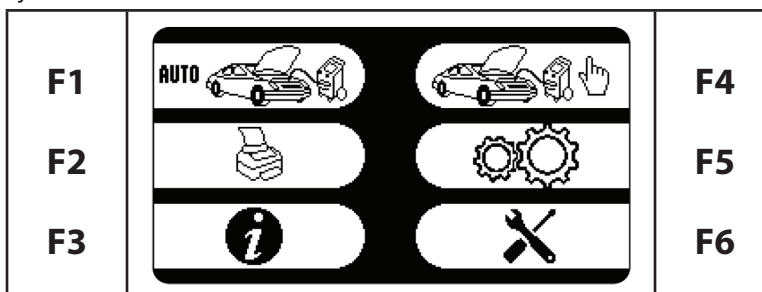
OPTION

For Manufacturers Only.

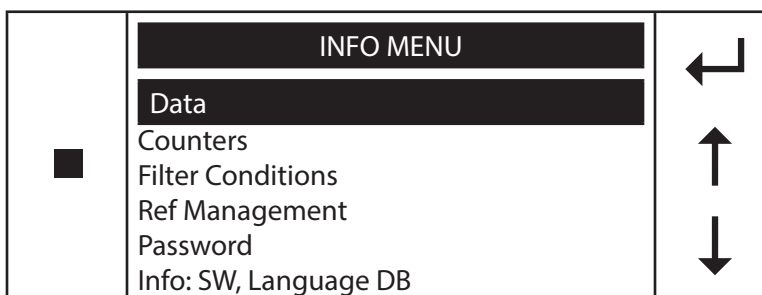
INFORMATION

DATA

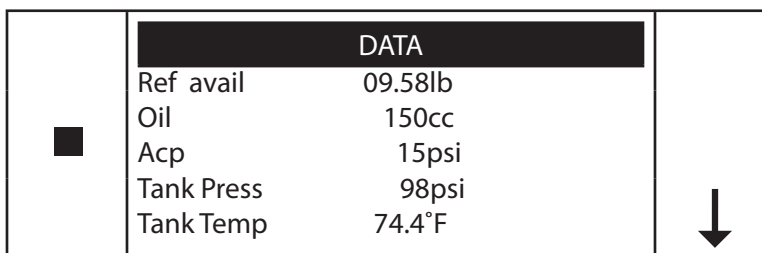
This menu shows all the data read by the machine.



At the MAIN MENU select INFO F3.



Select DATA, press F4 ↵:



-Ref avail.: quantity of refrigerant available in the storage bottle.

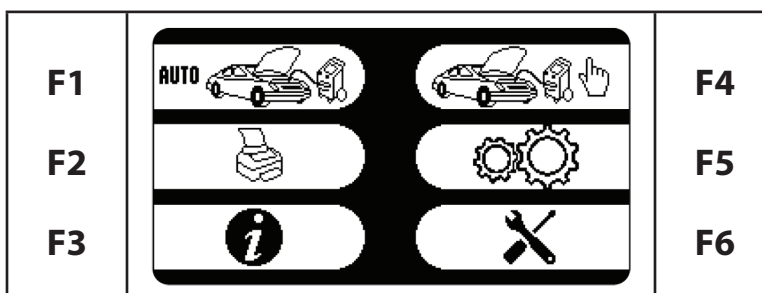
-Oil: total quantity of oil in all the oil containers.

-Acp: pressure in the vehicles air conditioning system.

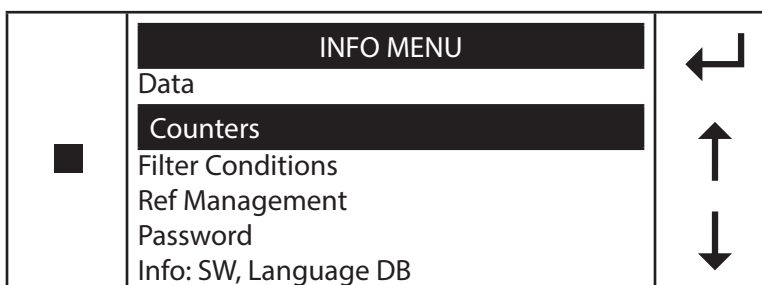
-Tank Press: refrigerant storage bottle pressure.

-Tank Temp: temperature of the tank temperature probe.

COUNTERS



At the MAIN MENU select INFO F3.



Select COUNTERS, press F4 ↵:

▶ ■	COUNTERS	
	Recovery	18.89lb
	Service	18.10lb
	Vacuum	85min
	Gas Chg.	09.49lb
	Cyl. Chg.	03.75lb
	F1 to print	

This screen displays the total value for: refrigerant recovered, service alarm counter, vacuum time, refrigerant charging and tank charging. Press F1 ▶ to print all values.

FILTER CONDITIONS

F1			F4
F2			F5
F3			F6

At the MAIN MENU select INFO F3.

■	INFO MENU		  
	Data		
	Conditions		
	Filter Conditions		
	Ref Management		
	Password		
	Info: SW, Language DB		

Select FILTER CONDITIONS, press F4 ↵:

■	FILTER CONDITIONS	
	13.44%	
	F2 to exit	

This screen shows the percentage of used filter life. Press F2 ■ to exit.

REF MANAGEMENT

This machine memorizes the various operations involving refrigerant: recovery, filling the A/C system and filling the storage tank. A record is kept for each operation: data and time, type of operation, displaced amount, operator number, refrigerant availability in the storage tank. The machine can store up to 100 records. Beginning with the 90th record, a message is displayed to inform the operator of how many operations can still be recorded.

F1			F4
F2			F5
F3			F6

At the MAIN MENU select INFO F3.

■	INFO MENU	  
	Data	
	Conditions	
	Filter Conditions	
	Ref Management	
	Password	
	Info: SW, Language DB	

Select REF MANAGEMENT, press F4 ↵:

■	Ref Management	
	0 - delete	
	1 - print	

Press “1” to print all the records in batches of 25, beginning with the most recent:

Press “0” to delete all the records in memory.

When finished press STOP ■ to exit.

PASSWORD

F1			F4
F2			F5
F3			F6

At the MAIN MENU select INFO F3.

■	INFO MENU	  
	Data	
	Counters	
	Filter Conditions	
	Ref Management	
	Password	
	Info: SW, Language DB	

Select PASSWORD, press F4 ↵:

■	PASSWORD	
		

A 4-digit password may be entered to block the machine. Once a code is put in, it will be necessary to input the code in order to use automatic procedure, assisted procedure or setup.

Entering the passcode “0000” removes the block.

INFO: SW, LANGUAGE, DB

F1			F4
F2			F5
F3			F6

At the MAIN MENU select INFO F3.

	INFO MENU	
	Data	
	Counters	
	Filter Conditions	
	Ref Management	
	Password	
	Info: SW, Language DB	
		←
		↑
		↓

Select INFO: SW, LANGUAGE DB, press F4 ↵:

	SOFT VERSION	
	SW: x.xx	
	DBA: xxxxxxxxx	
	Text: xx.xx	
	F2 to exit	

This screen displays the name of the current software revision and the current database software that is loaded in the machine’s memory.

ROUTINE MAINTENANCE

VACUUM PUMP

Perform the operations listed below on a routine basis in order to ensure the best operation of the vacuum pump:
When filling or replacing the pump oil, use only the oil recommended by the manufacturer.

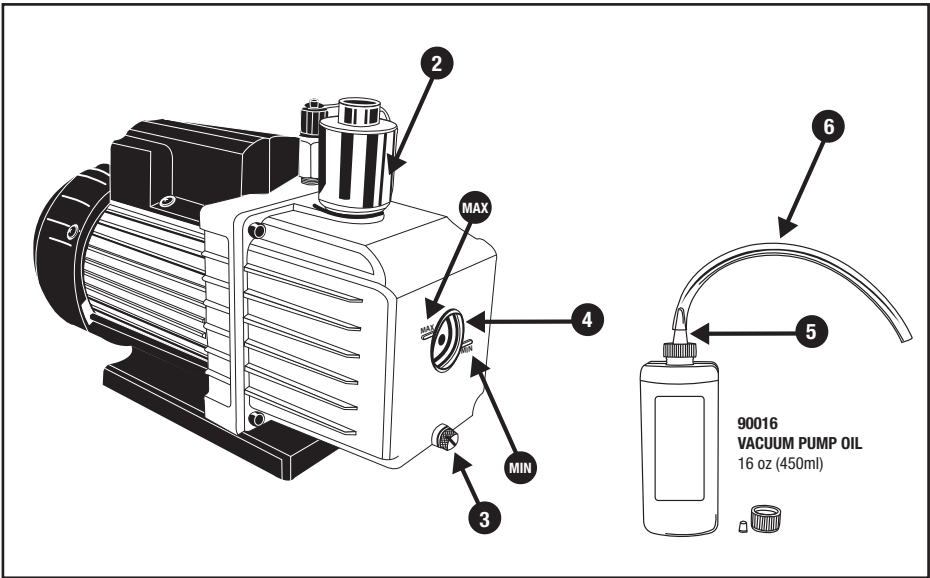


FIG. 8

OIL FILL - (NEW MACHINE)

This vacuum pump has been tested at the factory and shipped with only trace amounts of oil. OIL MUST BE ADDED BEFORE OPERATING! Failure to add oil will damage the cartridge and void warranty.

NOTE: Make sure the oil drain valve located below the front casing is closed before attempting to add oil (Fig 8-3.)

- 1) Disconnect the machine from the electrical supply.
- 2) Remove the rear cover (6 screws.)
- 3) Unscrew the oil fill/muffler plug (Fig 8-2.)
- 4) Oil Bottle: A) Remove oil bottle cap
B) Remove the silver foil
C) Attach the filling top (be sure to remove the red cap) (Fig. 8-5.)
D) Attach the filling hose (Fig. 8-6.)
- 5.) Slowly add oil until oil level rises to the top of the oil level line. Do not overfill with oil! (Fig 8-4.)
- 6.) Replace the oil fill/muffler plug (Fig 8-2.)
- 7.) Re-install the rear cover (6 screws.)

CHECKING OIL LEVEL

The oil level in the sight glass should be between the max and min line (Fig 8-4.) If oil level falls below the MIN line add oil per oil fill instructions.

OIL CHANGE

The vacuum pump oil must be replaced:

- 1) Every 120 working hours, or
- 2) When the filter/dryers are replaced, or
- 3) At the beginning or end of every season, or
- 4) Whenever the oil changes color due to absorption of moisture.

Before beginning the oil change procedure, obtain an empty 16 oz. (1 pint) or larger container in which to collect the used oil.

- 1) Disconnect the machine from the electrical supply.
- 2) Remove the rear cover (6 screws.)
- 3) Unscrew the oil fill/muffler plug (Fig 8-2.)
- 4) Unscrew the drain plug (Fig. 8-3.)
- 5) Allow all the oil to run out into a disposal container (drain clearance is less than 3.95 inches.)
- 6) Close the drain plug (Fig. 8-3.)
- 7) Pour in new oil through the fill hole until the level rises to the midpoint on the indicators (Fig. 8-4.)
- 8) Replace the oil fill/muffler plug (Fig. 8-2.)
- 9) Replace the rear plastic cover on the machine (6 screws.)

NOTE: When changing the vacuum pump oil, dispose of used oil as per federal, local and state regulations.

REPLACING THE DRYER FILTERS

Replace the filters when the machine alerts you. Replace the filters only with Mastercool part numbers: 69788-FLTRPK. When changing the filters you will need a filter code. To obtain a filter code, please call Mastercool Inc. Technical Service at 888-825-6989.

LOCK OUT: If you are changing the filters because of the Second Service alarm (see page 10) and has locked out 69789/69789-H, then a filter code will be needed to re-set 69789/69789-H. Before changing the filters, call Mastercool Inc. Technical Service at 888-825-6989 to get the filter code.

NO LOCK OUT: If the filters are being changed at an unscheduled time, no filter code will be needed to continue operating 69789/69789-H. Only when the machine reaches the pre-programmed recovery quantity of 132 lbs will it lock out. Once the machine is locked out, the filter code will be needed to re-set the 69789/69789-H. (See LOCK OUT)

To change the filters, proceed as described below (refer to Fig. 9):

- 1) Disconnect the machine from the electrical supply.
- 2) Wear protective gloves and glasses.
- 3) Remove the rear plastic cover from the machine (6 screws.)
- 4) Close both of the valves on top of tank.
- 5) Close the valve (Fig. 9-1) under the filter (Fig. 9-4.)
- 6) Connect the low pressure quick-connect coupling to the male connector (Fig. 9-2) under the filter (Fig. 9-4.)
- 7) Connect the machine to the electrical supply and turn the machine on.
- 8) Put in the filter code. (Only if locked out) To put in the filter code, you will need to use the down arrow key to move the cursor to the next character. To input a letter, continue to press the same number with the corresponding

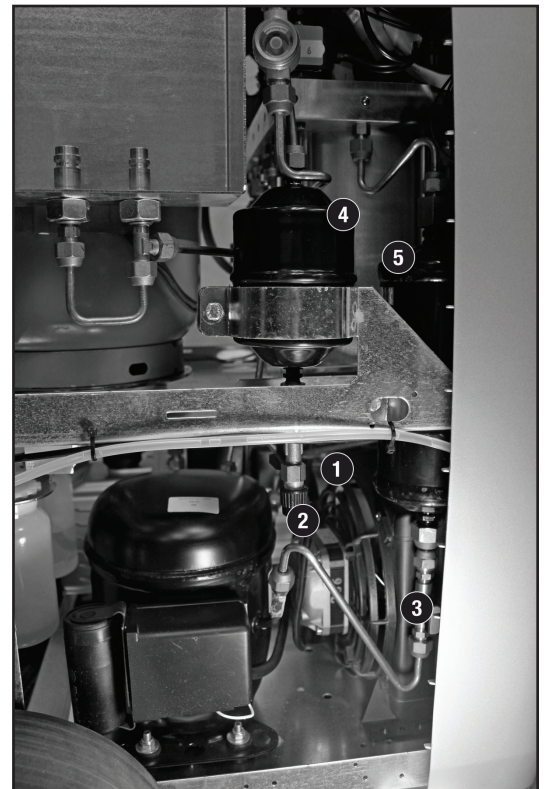


FIG. 9

- letter until the desired letter appears. Once the entire code is showing on the screen, press the F4 key.
- 9) Using Assisted Procedure, start a recovery operation (**NOTE:** the valve under the low pressure filter [Fig. 9-3] should be open).
 - 10) When oil draining is reached, immediately close the valve (Fig. 9-3) under the filter (Fig. 9-5) and turn the machine off.
 - 11) Disconnect the machine from the electrical supply.
 - 12) Disconnect the low pressure quick-connect coupling from the connector (Fig. 9-2) under the filter (Fig. 9-4).
 - 13) Replace the filters. **IMPORTANT:** The filter replacement must be performed as quickly as possible in order to avoid possible contamination by moisture in the ambient air.
 - 14) Open the valve (Fig. 9-1) under the filter (Fig. 9-4) and the valve (Fig. 9-3) under the filter (Fig. 9-5).
 - 15) Open both valves on top of the tank.
 - 16) Connect the machine to the electrical supply and turn the machine on. (Leave the rear cover off at this time)
 - 17) Press F1 when the machine displays "INTERRUPTED, F1: TO CONTINUE."
 - 18) Press F2 when the machine displays "ERROR SYSTEM EMPTY."
 - 19) Tank charge about 1 lb (-500g) of refrigerant to charge the machine circuit.
 - 20) While the machine is recovering, use an electronic leak detector to check the seal on the connections that were opened to replace the filters. Retighten if necessary.
 - 21) Turn the machine off and replace the rear plastic cover on the machine. (6 screws)
 - 22) The machine is now ready for normal use.

FILLING THE NEW OIL CONTAINER

It is good practice to fill the oil container whenever the oil level falls below 3.4 oz (100 cc) in order to guarantee that there will be sufficient oil for topping off during successive operations. Always refer to the information provided by the A/C system manufacturer for oil specifications (oil is not supplied.)

Remove the new oil container from its holder. Unscrew the container while holding the cap in place. Fill the new oil container with the correct quantity of oil, of suitable type and grade. Screw the new oil container back on and replace the new oil container in the holder.

EMPTYING THE USED OIL CONTAINER

This operation must be performed whenever the oil level exceeds 6.7 oz (200 cc.)

Procedure: Remove the container from its holder. Unscrew the container while holding the cap in place. Empty the used oil into a suitable container for used oils. Screw the container back in place while holding the cap in place. Carefully replace the container into its holder. (Dispose of used oil as per your federal, local and state regulations.)

CHECKING THE SCALE RESPONSE

Turn the unit on and go to the data screen (F3.) Note the Refrigerant Available value. Hang the 500g test weight that was supplied with the machine from the hook under the scale. (Fig 10-7) The "REF AVAILABLE" should go up by 500g+/-28g, 1.10lb +/- .06lb or 18oz +/- 1oz depending on what units the machine is set at. If the results of the test are not within these specifications, it is recommended that the scale be re-calibrated. The scale re-calibration should be done by a qualified Service Technician. The equipment necessary for scale re-calibration is not supplied with 69789/69789-H.



FIG. 10

DATABASE CUSTOMIZATION

F1			F4
F2			F5
F3			F6

At the MAIN MENU select either AUTOMATIC or ASSISTED PROCEDURE.

	ASSISTED PROCEDURE Recovery/Recycling Vacuum Oil Ref Charge 00.00lb	← ↵ ↑ ↓
■ DB		

At the Ref Charge step, press the DATABASE [DB] key, the following screen will appear on the display:

	DATABASE ADVANCED Acura Alfa Romeo Audi BMW Buick Cadillac	← ↵ ↑ ↓
■		

Press the UP ARROW ↑, select “User Defined.”

	DATABASE ADVANCED Subaru Suzuki Toyota Volkswagen Volvo User Defined	← ↵ ↑ ↓
■		

Press F4 ↵, the following screen will appear on the display:

	DATABASE ADVANCED ???? ???? ???? ????	← ↵ ↑ ↓
▶ ■		

DATA ENTRY

To enter customized data, press F1. The following screen will be displayed:

■	DATABASE ADVANCED	  
	Model Name:	

Type in the vehicle model, use RIGHT ARROW → and LEFT ARROW ← to move inside; press F4 ↵ to confirm.

NOTE: the numerical keys include an alphabet that is used similar to text messaging; for example: press “2” once to display “A,” twice to display “B,” three times for “C,” four times for “2.”

The following screen will be displayed:

■	DATABASE ADVANCED	  
	Model Name: Abcde Fghilmn Model Quantity:	

Type in the corresponding refrigerant quantity in grams, press F4 ↵ to confirm.

USE

To use the customized data, scroll with the DOWN ARROW ↓ and UP ARROW ↑ to the desired vehicle model:

▶ ■	DATABASE ADVANCED	  
	Abcd Efgh Lmno Pqrs ???? ???? ???? ????	

DELETION

To delete custom data fields, scroll the DOWN ARROW ↓ and UP ARROW ↑ to the desired vehicle model and press “0” (ZERO). An alarm signal will sound and the following screen will be displayed.

▶ ■	DATABASE ADVANCED	
	Abcd Efgh Xxx g DELETED? F1 : yes F2: no	

Press F1 ▶ to confirm deletion or F2 ■ to exit without deletion.

NOTE CONCERNING THE DATABASE: We have taken all due care in gathering and entering the information contained in the database. The database data must nevertheless be considered purely indicative; the manufacturer declines any and all responsibility for incorrect data.

DATABASE UPGRADE

Database upgrades are available. Call 973-252-9119 and ask for details.

CONTRAST

Keys 4 and 5 may be used to adjust the screen contrast. Key 4 decreases contrast; key 5 increases contrast.

NOTE: Contrast control is active only with the machine in the main menu.

REPLACING THE PRINTER PAPER

Use only heat-sensitive paper of the type described below.

Paper width: 58mm

Maximum paper roll diameter: 40mm

Alternative paper roll sizes: 2 1/4" x 55'
2 1/4" x 80'

CONVERSION CHART

Ounces (oz) to pounds (lbs):	divide by 16
Pounds (lbs) to ounces (oz):	multiply by 16
Ounces (oz) to grams (g):	multiply by 28.4
Grams (g) to ounces (oz):	divide by 28.4
Pounds (lbs) to kilograms (kg):	divide by 2.205
Kilograms (kg) to pounds (lbs):	multiply by 2.205
Kilograms (kg) to ounces (oz):	multiply by 35.27
Ounces (oz) to kilograms (kg):	multiply by 0.0284