

RHS[®] 980

Operation Manual



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Manifold Protected Under US Pat No. 7,726,343

Manual P/N: 035 81589 00 (REV A)

CONGRATULATIONS

You have purchased the finest Recovery, Recycling and Charging Machine certified to SAE Standard J2788!

Fill out and return the Warranty Card within 90 days to activate warranty and free lifetime technical support.

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INTRODUCTION

RTI RHS980 Refrigerant Handling System is designed for use on R134a vehicles and is compliant with J2788 standard. Unit recovers 95% of automobile refrigerant systems and has a refrigerant recharge accuracy of +/- 1/2 ounce. It features fully automatic operation. All control functions of the RHS980 are designed to provide intuitive and rapid interaction with the service technician. Easily removable one piece composite cover allows gaining unobstructed access to all interior components for service and maintenance.

Images below show the key features of RHS980 Refrigerant Handling System.



OVERVIEW OF THE RHS980 AND HOW TO OPERATE IT

The RHS980 is designed for intuitive operation with menu driven prompts on the display.

A few minutes spent reviewing the contents of this operation manual will enable the technician to understand and optimize the use of the RHS980 to provide customers with a professional A/C service.

The display shows data such as the internal cylinder weight and prompts the technician for input using the alpha-numeric keypad and various navigation buttons.

The RHS980 can be used to perform a fully automatic A/C service. The technician will be prompted for entry of data such as charge amount and given options like vacuum leak test. Once the necessary data has been entered, the RHS980 will automatically perform the complete A/C service and alert the technician for interaction or that the service is complete.

The RHS980 can also be used to perform individual functions like recycle, vacuum or charge. The keypad has dedicated buttons (AUTOMATIC, RECYCLE, VACUUM and CHARGE) to allow the technician to jump directly to any one of these functions.

Units of measure displayed can be changed at any time by repeatedly pressing the **U/M** key.

A setup routine can be used to select options, set default values, perform maintenance operations and manage fluid capacities processed.

IMPORTANT – review the Startup & Safe Operation statements on the following page before operating the RHS980. Failure to do so may cause personal injury or cause the RHS980 to malfunction.

The Automatic Mode of operation is explained in the following pages. The screen which will be displayed for each step is shown on the left. A description of the RHS980 operation is shown to the right of each screen.

► **VERY IMPORTANT – MACHINE SHUTDOWN** ◀

The new SAE Standard J2788 dictates that the filter must be changed at set intervals to ensure that recycled refrigerant is pure.

The RHS980 has one filter which must be changed after recycling every 150 lbs. of refrigerant.

The technician will be alerted when the filter life is at 100 LB (45 KG). This allows time to order a replacement filter kit (See “Parts Identification”).

When the filter has purified 150 LB (68 KG) of refrigerant, **the RHS980 will shut down** and not perform any function.

A new filter must be installed to re-activate the RHS980C-NAV controller.

Fill out and return the Warranty Registration to activate the RHS980 warranty and free lifetime technical support. This can also be done by calling RTI Technologies and providing information to one of the Technical Support Technicians.

Call 800-468-2321

STARTUP & SAFE OPERATION

- Do not use a damaged unit. Check for shipping damage and place a claim with carrier if damage is discovered.
- Return the Warranty Card to activate technical support service and warranty coverage.
- The RHS980 should be operated by certified personnel only.
- The RHS980 should not be operated or serviced by any person who has not read all the contents of this manual.
- This manual describes normal operation and maintenance for the RHS980. Failure to read and comply with these instructions or any one of the limitations noted herein can result in serious injury and/or property damage. The instructions should not be interpreted to anticipate every possible contingency.
- It is the responsibility of the owner/user to operate the RHS980 in accordance with all laws and specifications which may apply.
- Recover, recycle, and charge only R134a.
- Avoid breathing refrigerant or lubricant vapor. Exposure may irritate eyes, nose and throat. Ventilate work area if accidental system discharge occurs.
- Wear safety glasses and protective gloves. Refrigerant has a very low boiling point and can cause frostbite.
- Follow the RHS980 operating procedures sequentially to avoid prematurely disconnecting hoses or opening valves which may release refrigerant to the atmosphere.
- Do not expose the RHS980 to moisture or operate in wet areas.
- Use RHS980 in areas with ventilation that provides at least four air changes per hour.
- Service hoses must be constructed of the proper materials and with lengths as supplied with the RHS980 (See "Parts Identification"). Hoses must have shutoff devices at the connection point to the A/C to minimize the introduction of air into the RHS980 and the release of refrigerant when being disconnected.
- Avoid using an extension cord with the RHS980. If necessary use a good condition, three wire grounded, #14 AWG or larger extension cord of the shortest possible length.
- Disconnect power before performing any maintenance or service on the RHS980.

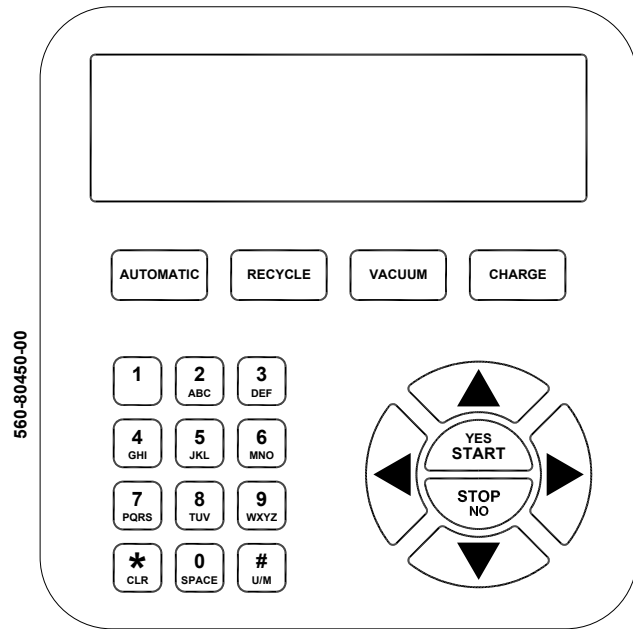
SPECIAL CONSIDERATIONS WITH R134a

R134a has been shown to be nonflammable at ambient temperature and atmospheric pressure. However, tests under controlled conditions have indicated that at pressures above atmospheric and with air concentrations greater than 60 percent by volume, R134a can form combustible mixtures.

While it is recognized that an ignition source is also required for combustion to occur, the presence of combustible mixtures is a potentially dangerous situation and should be avoided.

Under no circumstances should any equipment be pressure tested or leak tested with air and R134a mixtures. Do not use compressed air for leak detection in R134a systems.

CONTROL PANEL



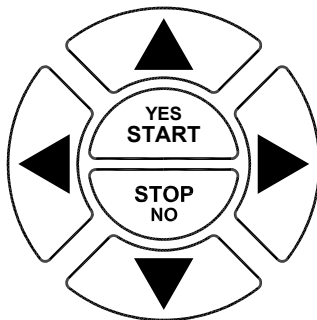
Pressing any one of these four buttons causes the RHS980 to jump to the respective procedure.



The alpha-numeric keypad is used to enter data when prompted on the LCD screen.

Note: The # key also has U/M printed on it. Pressing this key will toggle the units of measure displayed on the LCD screen.

Note: Pressing the number 4 key provides quick access to change languages. Follow prompts to select desired language.



Pressing any one of the arrow keys will move the point of data entry on the LCD screen in the respective direction.

Some screens provide options to select. The arrow keys make it possible to select the desired input.

The START and STOP buttons are used to start or stop procedures as prompted on the LCD screen.

FIRST TIME USE

The first time a new RHS980 is powered up it will automatically perform a routine where the language is selected. The language can be changed later if desired in the Setup Mode.

The RHS980 will arrive without any refrigerant. It will be necessary to put new refrigerant into the internal charge cylinder before any other sequences can be run. The amount of refrigerant which to be transferred is factory set at 18 LB (8.16 KG). This amount can be adjusted if desired. Refer to SETUP section under DEFAULT VALUES to change the factory setting. Connect the short yellow hose on the rear of the RHS980 to a new 30 lb. cylinder of refrigerant. Open the cylinder valve, turn the cylinder up-side-down and place it on the platform. Secure with web belt.

Plug the power cord into an appropriate power source. Avoid using an extension cord. If necessary, use a good condition, three wire grounded, #14 AWG or larger extension cord of the shortest possible length.

```
R H S 9 8 0
B Y   R T I   T E C H N O L O G I E S
                               X X X X X X
```

```
S E L E C T   L A N G U A G E
▶ E N G L I S H       E S P A Ñ O L
  F R A N Ç A I S     D E U T C H
                               ▲ , ▼
```

```
W E I G H T =   # # . #   L B
A U T O M A T I C
                               S T A R T ?
```

```
W E I G H T =   # # . #   L B
R E C Y C L E
                               S T A R T ?
```

```
W E I G H T =   # # . #   L B
V A C U U M
                               S T A R T ?
```

```
W E I G H T =   # # . #   L B
C H A R G E
                               S T A R T ?
```

```
W E I G H T =   # # . #   L B
F I L L   C Y L I N D E R
                               S T A R T ?
```

```
S T A R T I N G   R E F R I G E R A N T
I D E N T I F I E R
D O N O T   C O N N E C T   H O S E S
P L E A S E   W A I T . . .
```

Press the Power Switch to turn on the RHS980.

The screen shown to the left will be displayed and a buzzer will sound.

Press ▲ or ▼ key to scroll the displayed arrow to the desired language. Press **START** key.

(Refer to Section CHANGING LANGUAGES for additional information on loading new languages)

Note: Pressing the #4 key from the main menu will access the language selection option.

The screen shown to the left will be displayed. Press the ▼ key to scroll to the next screen.

Press ▼ key.

Press ▼ key.

Press ▼ key.

Press **START** key.

If the RHS980 has a refrigerant identifier installed, the screen to the left and next 6 subsequent screens will appear. The refrigerant identifier is an optional item and can be installed in the field. Contact RTI for more information.

```
EXAMINE ID SAMPLE  
HOSE / FILTER FOR OIL  
START TO CONTINUE  
STOP TO END
```

Inspect the identifier hose for traces of oil contamination. If oil is present in the hose, remove the contaminated hose section or replace the entire hose assembly. See REFRIGERANT IDENTIFIER MAINTENANCE section of manual. Press **START** key.

```
CONNECT IDENTIFIER  
SAMPLE HOSE TO LOW  
SIDE  
PRESS YES WHEN DONE
```

Connect refrigerant identifier hose found on the rear of the RHS980 to the cylinder of new refrigerant. Unit includes an adapter to convert the ½ inch Acme fitting on the cylinder to low side coupler. **Cylinder of new refrigerant must be upright with valve at top of tank.** Press **YES** key.

```
GAS ANALYSIS IS IN  
PROCESS . . PLEASE  
WAIT
```

Sample of new cylinder refrigerant is processed and the hose and coupler must be removed. Press **START** key.

```
REMOVE IDENTIFIER  
SAMPLE HOSE FROM LOW  
SIDE  
PRESS YES WHEN DONE
```

```
ID RESULTS :  
R134 : ## . # % , AIR : ## . # %  
HC : ## . # % PRESS NO TO  
REJECT , YES TO ACCEPT
```

This shows the results from the refrigerant sample processed. Select **NO** key to reject these results or **YES** key to accept the results. Pressing **NO** will return to the initial screen.

```
> 5 % AIR SUGGESTS  
EXCESS OIL IN SAMPLE  
HOSE / FILTER . REMEDY  
BEFORE USE . CONTINUE ?
```

If the results from the refrigerant identification show an air percentage above 5%, this screen will appear. Inspect the id filter, sample hose and coupler filter prior to the next identification to ensure these devices are free of oil contamination. See REFRIGERANT IDENTIFIER MAINTENANCE section for more information.

```
CONNECT HOSE TO  
SOURCE TANK  
OPEN VALVE  
START ?
```

This is a reminder that the cylinder of new refrigerant must be connected to the yellow hose on the rear of the RHS980. Press **START** key.

```
FILL CYL IN PROCESS  
AMT FILLED ## . # LB  
STOP TO END
```

Refrigerant will be transferred from the cylinder on the rear platform into the internal charge cylinder of the RHS980. **Cylinder of new refrigerant must be upside down with valve at bottom of tank.**

```
FILL CYL IN PROCESS  
TIME LEFT ## . # #  
STOP TO END
```

The amount transferred will be displayed.

F I L L	C Y L	C O M P L E T E
A M T	F I L L E D	# # . # L B
S T O P	T O	E N D

The Fill Cylinder procedure is complete when desired amount of refrigerant has been transferred. The Setup procedure allows changing the value and is covered in DEFAULT VALUES section in this manual.

Note: To fill to less than 18 LB (8.16 KG), close valve on cylinder of new refrigerant and allow procedure to complete. A minimum of 10 LB (4.53 KG) is suggested for truck service application. Do not manually STOP process with out allowing the RHS980 to clear the refrigerant from the accumulator.

REFRIGERANT BLENDS

The RHS980 is designed to recover, recycle and charge R134a. Take extreme precaution to ensure that other refrigerants are not recovered into the RHS980.

A refrigerant identifier is recommended for evaluating refrigerant in the A/C system prior to servicing.

Recovering other refrigerants will contaminate the refrigerant in the RHS980 charge cylinder.

LEAK SEALERS

Sealants and leak stop chemicals in A/C systems may cause serious damage to the RHS980 if they are present in the refrigerant recovered intended for recovery.

Detection devices are readily available to check for the presence of these chemicals and are highly recommended to protect the RHS980.

Call RTI for more information about solutions for detection of refrigerant blends and leak sealers.

AUTOMATIC OPERATION

The **AUTOMATIC** function allows an operator to program an automatic recycle, vacuum, vacuum leak test and charge sequence.

```
WEIGHT =   ## . #  LB
AUTOMATIC
                                START?
```

```
STARTING REFRIGERANT
IDENTIFIER
DO NOT CONNECT HOSES
PLEASE WAIT...
```

```
EXAMINE ID SAMPLE
HOSE/FILTER FOR OIL
START TO CONTINUE
STOP TO END
```

```
CONNECT IDENTIFIER
SAMPLE HOSE TO LOW
SIDE
PRESS YES WHEN DONE
```

```
GAS ANALYSIS IS IN
PROCESS... PLEASE
WAIT
```

```
REMOVE IDENTIFIER
SAMPLE HOSE FROM LOW
SIDE
PRESS YES WHEN DONE
```

```
ID RESULTS:
R134A:   ## . # % AIR ## . # %
HC: ## . # % PRESS NO TO
REJECT. YES TO ACCEPT
```

```
> 5% AIR SUGGESTS
EXCESS OIL IN SAMPLE
HOSE/FILTER. REMEDY
BEFORE USE. CONTINUE?
```

```
CHECK OIL DRAIN
LEVEL, ADJUST ORING
TO TOP OF LEVEL
                                CONTINUE?
```

At the main menu screen, press the **START** key.

If the RHS980 has the optional refrigerant identifier installed, the screen to the left and next 6 subsequent screens will appear.

Inspect the identifier hose for traces of oil contamination. If oil is present in the hose, remove the contamination hose section or replace the entire hose assembly. See **REFRIGERANT IDENTIFIER MAINTENANCE** section of manual.

Connect refrigerant identifier hose found on the rear of the RHS980 to the vehicle low side service port. Press **YES** key.

Sample of vehicle A/C refrigerant is processed and the hose and coupler must be removed. Press **START** key.

This shows the results from the refrigerant sample processed. Select **NO** key to reject these results or **YES** key to accept the results. Pressing **NO** will return to the initial screen.

If the results from the refrigerant identification show an air percentage above 5%, this screen will appear. Inspect the id filter, sample hose and coupler filter prior to the next identification to ensure these devices are free of oil contamination. See **REFRIGERANT IDENTIFIER MAINTENANCE** section for more information.

Adjust the O-Ring on the oil drain bottle to determine how much oil has been removed from the system during the service.

Press **START** key

```
P R E S S   # 1   K E Y   T O
P A U S E   A N D   R E S U M E
V A C U U M   P U M P
                                C O N T I N U E   ?
```

```
P E R F O R M   O I L
I N J E C T I O N   ?
S E L E C T   Y E S   O R   N O
```

```
E N T E R   V A C U U M
T I M E   # #   M I N
                                C O N T I N U E   ?
```

```
P E R F O R M   L E A K   T E S T
S E L E C T   Y E S   O R   N O
```

```
U S E   A C   C A P A C I T Y
G U I D E   T O   D E T E R M I N E
C H A R G E   A M O U N T   ?
S E L E C T   Y E S   O R   N O
```

```
V E R I F Y I N G   D A T A B A S E
P L E A S E   W A I T   . . .
```

```
S E L E C T   Y E A R
> # # # #
> # # # #
> # # # #
```

```
S E L E C T   M A K E
> # # # #
> # # # #
> # # # #
```

```
S E L E C T   M O D E L
> # # # #
> # # # #
> # # # #
```

Vacuum feature can be paused or resumed by pressing the # 1 key.

Press **START** key.

Press **YES** key if you want to inject oil into the A/C system after the Vacuum process has been completed. After the vacuum process has been completed the RHS980 will prompt you to inject the desired amount of oil. Press **NO** key if no oil is to be injected into the A/C system. If the RHS980 unit is enabled for the HYBRID OIL FLUSH feature, the RHS980 will not allow you to inject oil into the A/C system.

Enter the time desired to vacuum the A/C system.

Press **START** key.

Press **YES** key if a vacuum leak test is required. Otherwise press **NO** key.

See **SETUP SELECTABLE OPTIONS** to enable or disable AC CAPACITY GUIDE. To use the AC capacity guide to determine the charge amount, press **YES** key, otherwise press NO key. Pressing the **YES** key will show next 7 subsequent screens.

Screen to the left will appear after the operator selections are made and data is processed internally.

Select the year for the vehicle being serviced. Press **YES** key on the highlighted value to continue. Use ▲ or ▼ key to scroll the displayed arrow to the desired selection.

Select the make of the vehicle being serviced. Press **YES** key on the highlighted value to continue. Use ▲ or ▼ key to scroll the displayed arrow to the desired selection.

Select the model of the vehicle being serviced. Press **YES** key on the highlighted value to continue. Use ▲ or ▼ key to scroll the displayed arrow to the desired selection.

```
S E L E C T   E N G I N E
> # # # #
> # # # #
> # # # #
```

```
S E L E C T   S Y S T E M
> # # # #
> # # # #
> # # # #
```

```
Y E A R , M O D E L , E N G I N E
S Y S T E M   T Y P E X X , X X   O Z
C O N D E N S E R   C A P A C I T Y
X X   O Z
```

```
E N T E R   C H A R G E   A M O U N T
  # # . #   L B

C O N T I N U E ?
```

```
S E L E C T   T O   C H A R G E
H I G H   O R   L O W
          H I G H / L O W
          C O N T I N U E ?
```

```
C O N N E C T   H O S E S
O P E N   V A L V E S

S T A R T ?
```

```
R E C Y C L E   I N   P R O C E S S
A M T   R E C   # # . #   L B

S T O P   T O   E N D
```

```
R E C Y C L E   I N   P R O C E S S
A M T   R E C   # # . #   L B
T I M E   L E F T   # #   M I N
S T O P   T O   E N D
```

```
V A C U U M   I N   P R O C E S S
T I M E   L E F T   # #   M I N
L E V E L   # #   I N H G
S T O P   T O   E N D
```

Select the engine configuration of the vehicle being serviced, if more than 1 option is available. Press **YES** key on the highlighted value to continue. Use **▲** or **▼** key to scroll the displayed arrow to the desired selection.

If required, a screen to select the system for the vehicle being serviced will be shown. Press **YES** key on the highlighted value to continue. Use **▲** or **▼** key to scroll the displayed arrow to the desired selection.

The data will be shown for the vehicle parameters entered on this screen. Year, Make, Model, type, system and refrigerant capacity in OZ is detailed. Press **▼** key to display the next screen or **YES** key to accept the charge amount.

Enter the amount of refrigerant to be charged into the A/C system or the charge capacity will be automatically entered if the AC database was used. Press **START** key.

Press **▶** or **◀** key to select which side to charge to on the A/C system. The word HIGH or LOW will display in bold letters. Press **START** key.

Connect the red hose to the high side and the blue hose to the low side of the A/C system. Open the valves on both hoses. Press **START** key.

The RHS980 will now recover and recycle refrigerant. The amount of refrigerant recovered will be displayed. The next screen will be displayed when vehicle system pressure is in a vacuum.

The RHS980 will now pause for the time entered previously for Recycle Hold Time. The time left will be displayed. This allows any liquid refrigerant in the A/C system to vaporize. The RHS980 may cycle on and off to recover refrigerant in this case.

The RHS980 will draw a deep vacuum on the A/C system for the time entered in the default vacuum run time in the set up menus. The time left and the vacuum level in micron will be displayed.

```
CHECK VACUUM LEAK
TIME LEFT ## MIN
START TO CONTINUE
STOP TO END
```

The vacuum leak test will begin if selected earlier. The time left will be displayed.

```
LEAK TEST FAILED

STOP TO END
```

If leak test fails, press **STOP** key to end process. Perform diagnostic on vehicle A/C system to find leak. Correct vehicle system before resuming A/C service. If vacuum test PASSED the RHS980 will progress to operation below.

```
ADD OIL NOW

CONTINUE?
```

The RHS980 will pause so that the oil can be injected if oil injection was previously selected. Check the oil drain bottle to determine how much oil was removed from the A/C system. Open valve on new oil bottle until desired amount of oil has been drawn from the bottle. Then close valve and press **START** key.

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

```
PURGE IN PROCESS
PLEASE WAIT

STOP TO END
```

The RHS980 will purge air from the recovered refrigerant if necessary. This process will be displayed.

```
CHARGE IN PROCESS
AMT CHG= ##.# LB
DO NOT DISTURB UNIT!
STOP TO END
```

The RHS980 will charge the amount of refrigerant set previously into the A/C system. **TO AVOID AN INACCURATE CHARGE, DO NOT BUMP OR MOVE THE RHS980 DURING THIS PROCESS.**

```
AUTOMATIC COMPLETE
AMT REC= ##.## LB
AMT CHG= ##.## LB
CONTINUE?
```

Press **START** key to proceed to the hose evacuation procedure as outlined below.

```
START TO EVAC HOSES
STOP TO END
```

Press **START** key to begin the hose evacuation procedure.

```
DISCONNECT HS HOSE
AND START A/C MAX
CONTINUE?
```

```
EQUALIZING HOSES
PLEASE WAIT
```

```
DISCONNECT LOW SIDE
HOSE, SHUT OFF ENGINE
CONTINUE?
```

```
CLEARING HOSES
AMT REC ##.# LB
TIME LEFT ## MIN
STOP TO END
```

```
EVAC HOSES COMPLETE
INSTALL SERVICE CAPS
ADD OIL IF REQUIRED
STOP TO END
```

Close the high side coupler and disconnect from the vehicle system coupler. Start the engine and place the A/C system on max setting. Press **START** key.

While the engine and A/C system is running, liquid is being removed from the services hoses. This ensures only vapor remains in hoses.

Close the low side coupler and disconnect from the vehicle system coupler. Turn off the vehicle engine. Press **START** key.

A clearing procedure will run to remove refrigerant from internal components.

Any vapor refrigerant remaining in the hoses will be recovered into the RHS980.

The automatic cycle is complete when the hose evacuation process is ended. Check level of oil drained and add oil to the A/C system following standard injection procedures. Reinstall service caps onto vehicle A/C ports.

Press **STOP** key.

PRINTING RESULTS

The RHS980 has an optional printer which allows the operator to print data collected during the AC system service. Contact RTI for more information. If print to flash drive is enabled (SEE SELECTABLE OPTIONS) and a flash drive is attached to the USB port, a duplicate report will be generated. File naming convention is: YEAR, MONTH, DAY, SEQUENCE.TXT. Use any text editor software to view file contents.

```
WEIGHT =   ## . #  LB
AUTOMATIC
START?
```

```
WEIGHT =   ## . #  LB
PRINT RESULTS
START?
```

```
ENTER VIN NUMBER
#####
START TO CONTINUE
STOP TO END
```

```
PRINTING RESULTS
TO PRINTER
PLEASE WAIT...
```

```
CLEAR RESULTS / DATA
COLLECTED?
SELECT YES OR NO
```

```
PRINT ANOTHER
REPORT?
SELECT YES OR NO
```

Example of printout:

```
*****
RTI TECHNOLOGIES
RHS980
DATE: ## - ## - ####
TIME: ## : ## : ##
SOFTWARE REV: 980###
PRINTOUT OF RESULTS
VIN: #####
VEHICLE DATA
RECYCLED: ###
VAC LEAK TEST: #####
MIN VAC LEVEL: #####
CHARGED: ###
*****
```

At the main menu screen, press the ▲ key 2 times.

See **Printer Maintenance** section if additional paper is required.

Press **START** key.

Using the alpha-numeric keypad, enter the vehicle identification number. Follow typical text messaging methods to enter characters. After a brief delay during entry, cursor position will move to the right. Press **START** key when complete.

Press **YES** key if printing is complete or **NO** key if data retention is required.

If **NO** key was entered above, an option to print another report is offered. Press **YES** or **NO** key.

To remove print-out, tear at a slight angle as shown below.



Units of measure on print-out are dependent on selected units during normal operation.

Depending on the process performed, selected data will be available for printing. **Data is stored when the processes are allowed to run until full completion.**

PRINTING RESULTS
TO FLASH DRIVE
PLEASE WAIT...

If printing to a flash drive is **enabled**, then the screen to the left will be shown and the data will be printed to the flash drive.

HIGH VOLTAGE OIL FLUSH

An RHS980 configured from the factory to perform service on high voltage systems is designated RHS980H. The RHS980H has the ability to perform an internal oil flushing process to eliminate cross contaminations between PAG oil used in a conventional R-134a system and POE oil used in HIGH VOLTAGE HYBRID systems. The POE oil acts as a lubricant, but more importantly the POE oil is required to keep the HIGH VOLTAGE system isolated from the chassis. If the HYBRID's system becomes conductive, the service technician can be at risk of electrical shock. During the HIGH VOLTAGE OIL FLUSH process the residual PAG oil from previous services will be flushed from the HIGH - Low side couplers and hoses along with the corresponding internal passages of the RHS980H unit.

IMPORTANT – THE HIGH VOLTAGE OIL FLUSH PROCESS MUST BE PERFORMED BEFORE A SERVICE ON A HYBRID VEHICLE WITH THIS MACHINE IS CONDUCTED!

IT IS THE SERVICE TECHNICIANS RESPONSIBILITY TO UNDERSTAND THE RISKS INVOLVED IN SERVICING A HIGH VOLTAGE HYBRID A/C SYSTEM, AS WELL AS DETERMING THE PROPER OIL REQUIRED FOR THE HYBRIDS A/C SYSTEM TO ENSURE ITS ELECTRICAL ISOLATION FROM THE VEHICLES CHASSIS IS MAINTAINED.

Units that are configured for the High Voltage Oil Flush, there will be a screen illustrated below that will start the High Voltage Oil Flush process, as well the RHS980H will NOT have the oil injection feature. The oil injection bottle and connections will NOT be present next to the oil drain bottle. The High Voltage Oil Flush configured unit will also be shipped with a HIGH -LOW side adapter so that the hoses can be connected to flush residual PAG oil from previous services. To access to the HIGH VOLTAGE OIL FLUSH FEATURE, follow the procedure below.

WEIGHT = # # . # L B
A U T O M A T I C
S T A R T ?

The screen shown to the left will be displayed. Press the ▼ key to scroll to the next screen.

WEIGHT = # # . # L B
R E C Y C L E
S T A R T ?

Press ▼ key.

WEIGHT = # # . # L B
V A C U U M
S T A R T ?

Press ▼ key.

WEIGHT = # # . # L B
C H A R G E
S T A R T ?

Press ▼ key.

```
WEIGHT=  ## . # LB
FILL CYLINDER
START?
```

Press ▼ key.

```
WEIGHT=  ## . # LB
TECH ALERT DEMO
START?
```

Press ▼ key.

```
WEIGHT=  ## . # LB
HIGH VOLTAGE OIL
FLUSH START?
```

Press **START** key.

```
CONNECT EXT FLUSH
ADAPTER TO LOW AND
HIGH SIDE COUPLERS
CONTINUE?
```

Connect the HIGH and LOW side couplers with the supplied HIGH VOLTAGE OIL FLUSH adapter as shown below, open HIGH and LOW side couplers. Press the **START** key.



```
CHARGE IN PROCESS
AMT CHG= ##. ## LB
DO NOT DISTURB UNIT!
STOP TO END
```

The RHS980 will perform the HIGH VOLTAGE OIL FLUSH process at this time.

```
RECYCLE IN PROCESS
AMT REC ##. ## LB
TIME LEFT ## : ##
STOP TO END
```

```
HIGH VOLTAGE OIL
FLUSH COMPLETE

STOP TO END
```

Press **STOP** key to end the process, disconnect the HIGH and LOW service couplers from the HIGH VOLTAGE OIL FLUSH adapter

SETUP

The setup procedure provides a means of setting options for various operation functions of the RHS980.

```
WEIGHT =   ## . #  LB
AUTOMATIC
START ?
```

The initial screen displayed after turning on power will be as shown to the left.

```
WEIGHT =   ## . #  LB
SETUP
START ?
```

Press the ▼ key to scroll through screens until the setup screen shown to the left is displayed. Press the **START** key.

SELECTABLE OPTIONS

```
SELECTABLE OPTIONS
CONTINUE ?
```

The first screen will be for SELECTABLE OPTIONS. Press the ▼ key to scroll through other setup screens: DEFAULT VALUES, MAINTENANCE OPTIONS and TOTAL CAPACITIES. These four setup procedures are described below. Press **START** key.

```
SELECT LANGUAGE
▶ ENGLISH      ESPAÑOL
FRANÇAIS
▲ , ▼
```

Default is ENGLISH.

The first option is to select the language which is used on LCD display screens.

Press ▲ or ▼ key to scroll the displayed arrow to the desired language. Press **START** key.

Note: Pressing the #4 key from the main menu will access the language selection option.

```
BUZZER ENABLED ?
▶ YES
NO
▲
▼
```

Default is YES.

This enables or disables the buzzer on the RHS980. Press the ▲ or ▼ key to scroll to YES or NO. Press **START** key.

```
REFRIG ID INSTALLED ?
YES
▶ NO
▲
▼
```

Default is NO.

This enables the RHS980 to interact with the RTI Refrigerant Identifier. If this optional item was not installed at the factory, visit the RTI web-site for more information. Press the ▲ or ▼ key to scroll to YES or NO. Press **START** key.

```
AC CAP DB INSTALLED?
▶ NO
INTERNAL ▲
EXTERNAL ▼
```

Default is NO.

```
PRINTER INSTALLED?
YES
▶ NO ▲
```

Default is NO.

```
PRINT TO FLASH DRIVE
▶ YES ▲
NO ▼
```

Default is YES.

```
LOW VOLTAGE DETECT
ENABLED?
YES ▲
▶ NO ▼
```

Default is NO.

```
MICRON VACUUM
SENSOR ENABLED?
YES ▲
▶ NO ▼
```

Default is NO.

```
PASSWORD PROTECTION
ENABLED?
YES ▲
▶ NO ▼
```

Default is NO.

```
ENTER PASSWORD
#### ▲
START TO CONTINUE ▼
STOP TO END
```

```
VIN ENTRY ENABLED?
▶ YES ▲
NO ▼
```

Default is YES.

This enables the RHS980 to interact with the RTI Refrigerant Capacity Database. If NO is selected, the operator will not be prompted prior to charge to access the AC Capacity Database for the vehicle charge amount. Selecting external and having flash drive with the All Makes Database attached to the unit USB port, all other manufacturers charge capacities will be available. Press the ▲ or ▼ key to scroll to choices. Press **START** key.

Contact RTI for more information.

This enables or disables the on board printer on the RHS980. Press the ▲ or ▼ key to scroll to YES or NO. Press **START** key.

Use to enable or disable printing service results or setup parameters as files on the attached flash drive. Press the ▲ or ▼ key to scroll to YES or NO. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature can be enabled on base RHS980 and RHS980 with High Voltage Oil Flush. **IMPORTANT** The password will be required to proceed with any operation after powering the unit if this feature has been enabled. The password will also be required to make any changes in the **Selectable Options** and the **Default Values** sections if enabled. See Maintenance Options in regards to default password and changing passwords. Press **START** key. If **YES** is selected the following screen will be shown.

Default Service Managers password is 5237, enter this password to continue. Proceed to Maintenance Section to see how to change default password to one of the 20 optional passwords. Press **START** key.

This feature allows the vehicles VIN to be entered that is being serviced. Press **START** key.

```
OPERATOR ID ENTRY
  YES
▶ NO
```

Default is NO.

```
AC TEST MODE
ENABLED?
  YES
▶ NO
```

Default is NO.

```
VACUUM PUMP OIL LIFE
TEST ENABLED?
  YES
▶ NO
```

Default is NO.

```
REFRIGERANT LIQUID
FLUSH ENABLED?
  YES
▶ NO
```

Default is NO.

```
TECHALERT DEMOMODE
ENABLED?
▶ YES
  NO
```

Default is YES.

```
HIGH PRESSURE LEAK
DETECT ENABLED?
  YES
▶ NO
```

Default is NO.

```
AUTOMATIC WEIGHING
OIL INJECTION ENABLED
  YES
▶ NO
```

Default is NO.

```
AUTOMATIC WEIGHING
OIL DRAIN ENABLED?
  YES
▶ NO
```

Default is NO.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

Enabling this feature will allow the user to demonstrate the TechALERT capabilities without actually performing a service. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

```

AUTOMATIC WEIGHING
UV DYE ENABLED?
  YES
▶ NO
  
```

Default is NO.

```

HIGH VOLTAGE OIL
FLUSH ENABLED?
  YES
▶ NO
  
```

Default is **YES** if purchased with this feature, Default is **NO**, if not purchased with this feature.

```

FILL CYLINDER
ENABLED?
▶ YES
  NO
  
```

Default is **YES**.

```

MANUAL OIL INJECTION
ENABLED?
▶ YES
  NO
  
```

Default is **YES**.

DEFAULT VALUES

```

DEFAULT VALUES

CONTINUE?
  
```

```

FILL CYLINDER TARGET
AMOUNT ##.## LB
BETWEEN 6.6 & 24.2 LB
CONTINUE?
  
```

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 but is enabled on RHS980 units with high voltage oil flush capability.

WARNING DO NOT ENABLE THIS FEATURE IF YOUR UNIT IS NOT CONFIGURED FOR HIGH VOLTAGE OIL FLUSH. IF YOUR UNIT HAS AN OIL INJECTION BOTTLE AND CONNECTION POINT TO INJECT OIL INTO THE A/C SYSTEM DO NOT ENABLE THIS FEATURE. Press **START** key.

This feature allows the operator to fill the internal cylinder of the RHS980 from an external virgin refrigerant tank to the preset amount, see Default Values. Press **START** key.

This feature allows the operator to inject oil into the A/C system on NON- HYBRID vehicles, after the vacuum process has been performed. This feature is **NOT** enabled from the RTI factory and **SHOULD NOT** be enabled in the field on units that are configured for HIGH VOLTAGE OIL FLUSH for HYBRID vehicles. Press **START** key.

Press **START** key.

The Fill Cylinder procedure will automatically transfer refrigerant from a new cylinder of refrigerant to the internal RHS980 charge cylinder. The value set here will be the amount of refrigerant which will have been transferred when the procedure stops automatically.

Enter an amount between 3 and 11 KG (6.6 and 24.2 LB). The value will be displayed as it is entered. Press **START** key. (Default is 8.00 KG (17.6 LB))

```
INITIAL VACUUM HOLD
##### MICRON
BETWEEN 3K & 9K
CONTINUE?
```

```
FINAL VACUUM LEVEL
##### MICRON
BETWEEN 1K & 9K
CONTINUE?
```

```
VACUUM RUN TIME
## MIN
BETWEEN 1 & 99 MIN
CONTINUE?
```

```
HOSES OVERCHARGE
AMOUNT #.## KG
BETWEEN 0 & 2.2 LB
CONTINUE?
```

```
DEFAULT MINIMUM LINE
VOLTAGE ###V AC
BETWEEN 90 & 120VAC
CONTINUE?
```

```
ELEVATION FROM SEA
LEVEL ##### FT
BETWEEN 0 & 30K FEET
CONTINUE?
```

```
OIL LIFE VACUUM RISE
LEVEL ### MICRON
BETWEEN 25 & 200
CONTINUE?
```

```
OIL DRAIN MAX LEVEL
### ML
BETWEEN 50 & 200ML
CONTINUE?
```

```
MINIMUM VACUUM LEAK
LEVEL ## INHG
BETWEEN 15 & 25
CONTINUE?
```

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key

This screen prompts for the length of time the vacuum pump will run during each cycle. There is one initial cycle to pull the system for an initial vacuum leak test, then a second cycle to obtain the final micron level. Enter a number of minutes between 1 and 99. The value will be displayed as it is entered. Press **START** key. (Default is 10 MIN)

A small overcharge of refrigerant is necessary to compensate for refrigerant which will remain in the hose after a charge procedure. Enter the number of KG between 0 and 0.99 (0 and 2.2 LB). The value will be displayed as it is entered. Press **START** key. **Change to value must be verified by service manager by entering a password.** (Default is 0.02 KG (0.04 LB))

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

Elevation from sea level used to adjust pressure transducer calibration. Enter a number in feet from 0 to 30,000 feet. The elevation can be obtained by calling your local airport. Press **START** key. (Default is 400 FT)

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

This feature is not applicable to the base RHS980 and RHS980 with High voltage oil flush. Enabling this feature will compromise the functionality of the unit. Press **START** key.

During vacuum leak test, this value is used to determine a pass or fail.

HIGH VOLTAGE FLUSH
CHG AMT# . # LB
BETWEEN 0.1 & 2.0 LB
CONTINUE ?

MAINTENANCE OPTIONS

PERFORM CALIBRATION
CHECK ?
SELECT YES OR NO

RTI recommends checking calibration every 3 months

ATTACH WEIGHT TO
BOTTOM OF MACHINE
CONTINUE ?

CALIBRATION APPROVED
REMOVE WEIGHT
CONTINUE ?

Or the next screen may be displayed...

CALIBRATION REJECTED
RECALIBRATE UNIT OR
CALL FOR SERVICE
CONTINUE ?

PERFORM INTERNAL
CYLINDER LOAD CELL
CALIBRATION
SELECT YES OR NO

CONNECT CYLINDER TO
LOW SIDE HOSE AND
OPEN VALVE
CONTINUE ?

CHARGE IN PROCESS
AMT CHG = ## . ## LB
CONTINUE ?

CALIBRATION MIN
WEIGHT ON

The Default value is 0.7 lbs for the HIGH VOLTAGE OIL FLUSH. **WARNING, DO NOT REDUCE THIS SETTING TO LESS THAN 0.7 LBS AS THE FLUSHING PROCESS WILL NOT BE COMPLETED PROPERLY AND RESIDUAL OIL MAY BE LEFT IN LINES.** Press **START** key.

The calibration of the weight scale in the RHS980 can be easily checked using this procedure. A steel ball of a precise weight is provided with the RHS980 for performing this calibration check. Remove the document pocket on the left side to gain access to the calibration ball. Ball is under a bracket near the bottom base, see PARTS IDENTIFICATION. **Unit must show positive weight on scale prior to selecting this procedure.** Press **YES** key. Access to unit calibration must be verified by service manager by entering a password.

The screen prompts to attach the steel ball to the bottom of the machine. There is a small post which protrudes through the bottom plate of the RHS980 (see Parts Identification at rear of this Operation Manual). This post is magnetic. Attach the calibration weight to this post. Press **START** key.

This screen will display if the weight scale is in calibration. If calibration check failed, the RHS980 must be fully calibrated. See below.

This screen will display if the weight scale is not in calibration. To perform a full load cell calibration procedure, press **START** key.

Press **YES** key if a calibration is required. Otherwise, press **NO** key. **Special RTI 10 KG (22 LB) weights are required to calibrate the scale, do not use steel ball supplied with the machine!** Load cell calibration should be performed by qualified technicians only and should be performed at least once per year. Call RTI technical support for more information. 1-800-468-2321 X 1

If **YES** key was pressed, this screen will display. Connect the blue low side hose of the RHS980 to the vapor port of a refillable DOT cylinder. Open the valve on the cylinder. Press **START** key. Refrigerant will be transferred from the RHS980 internal cylinder into the externally connected DOT cylinder.

This screen will display a decreasing amount as refrigerant is transferred to the DOT cylinder. Press **START** key when the amount does not decrease any more. This screen indicates the weight scale is reading a minimum weight since the charge cylinder is empty. Press **START** key.

```
CALIBRATION MAX
WEIGHT ON

CONTINUE?
```

This screen prompts for maximum weight. Place the calibration weights on top of the RHS980 charge cylinder. The weight scale will now read a maximum weight. Press **START** key.

```
CALIBRATION COMPLETE
REMOVE WEIGHT
AMOUNT = ###XX
CONTINUE?
```

The weight scale is now calibrated. Remove the calibration weights. Press **START** key.

```
SET DATE AND TIME?
## - ## - ####
## : ## : ##
SELECT YES OR NO
```

Press **YES** key if adjustment to the date and time is required. Otherwise, press **NO** key.

```
SET THE DATE FORMAT
YYYY - MM - DD ▲
MM - DD - YYYY ▼
CONTINUE?
```

The format for the date is selected by pressing **START** key. Change highlighted format with the ▲ or ▼ key.

```
SET THE YEAR
### # ▲
CONTINUE? ▼
```

Using ▲ or ▼ key, increase or decrease the year. Press **START** key to continue.

```
SET THE MONTH
## # ▲
CONTINUE? ▼
```

Using ▲ or ▼ key, increase or decrease the month. Press **START** key to continue.

```
SET THE DAY
## # ▲
CONTINUE? ▼
```

Using ▲ or ▼ key, increase or decrease the day. Press **START** key to continue.

```
SET THE HOUR
## : ## ▲
CONTINUE? ▼
```

Using ▲ or ▼ key, increase or decrease the hour. Press **START** key to continue.

```
SET THE MINUTES
## : ## ▲
CONTINUE? ▼
```

Using ▲ or ▼ key, increase or decrease the minutes. Press **START** key to continue.

```
ACCEPT THESE VALUES?
## - ## - ####
## : ##
SELECT YES OR NO
```

Press **YES** key to accept the date and time changes, press **NO** key to return without changes.

Unit is equipped with a battery backup feature to save time and date. Battery life is dependent on many conditions. See Parts Identification for replacement battery part number.

```
USE ▲ ▼ TO CHANGE
SELECTED OUTPUT
START TOGGLES ON&OFF
STOP TO END
```

```
USE ▲ ▼ TO CHANGE
SELECTED INPUT
STOP TO END
### ##### ###
```

```
PERFORM COMBO FILTER
REPLACEMENT?
SELECT YES OR NO
```

```
CHECKING
PRESSURES
PLEASE WAIT
```

```
REMOVE AND REPLACE
COMBO FILTER
CONTINUE?
```

```
ENTER FILTER SERIAL
NUMBER
#####
CONTINUE?
```

```
PERFORM VACUUM PUMP
OIL REPLACEMENT
SELECT YES OR NO
```

```
REFER TO MANUAL FOR
COMPLETE INSTRUCTION
FOR VAC OIL CHANGE
CONTINUE?
```

Inputs and outputs of devices in the RHS980 can be checked for diagnostic purposes. Press **YES** key.

Press **▲** or **▼** key to select various outputs. The output identification number will display on the screen. For a selected output, press the **START** key to toggle it on and off. Press **STOP** key to advance to next screen.

Press **▲** or **▼** key to select various inputs. The input identification number will display on the screen. For a selected input, press the **START** key to toggle it on and off and display units. Press **STOP** key to advance to next screen.

The RHS980 combo filter must be replaced after every 150 LB (68 KG) of refrigerant has been recovered from A/C systems. Press **YES** to start the procedure to change the combo filter. This filter can be accessed by removing the literature pocket on the left side of the RHS980. Press **YES** key.

Internal pressure of the combo filter will be checked. If pressure is detected a buzzer will sound and the display will indicate the need to go to recycle mode to eliminate the pressure.

This screen will display if pressure was not detected. Replace the combo filter. Note the serial number on the new combo filter label as it may not be visible when installed. Press **START** key.

Enter the new six digit combo filter serial number. Press **START** key.

The RHS980 records the hours of vacuum pump use and prompts after every 10 hours that the oil should be changed. Earlier replacement of oil may be required if oil appears cloudy or vacuum performance is unsatisfactory. Press **YES** key to replace the vacuum pump oil.

Refer to Vacuum Pump Maintenance Section in this manual for complete instructions for the vacuum pump oil change procedure. Press **START** key when oil has been changed. RTI recommends changing of both in-line hose screen filters at this interval also. See **PARTS IDENTIFICATION** section for details.

```
CHANGE OPERATOR
PASSWORDS ?
SELECT YES OR NO
```

```
ENTER PASSWORD
###
START TO CONTINUE
STOP TO END
```

```
PASSWORD ACCEPTED
START TO CONTINUE
STOP TO END
```

Or the next screen may be displayed....

```
PASSWORD REJECTED
START TO CONTINUE
STOP TO END
```

```
NUM KEYS TO CHANGE
USE ▲ ▼ TO SCROLL
START TO CONTINUE
STOP TO END
```

```
7 5 8 4      4 4 3 5      9 1 1 5      ▲
1 0 2 8      0 9 9 6      1 5 3 4
8 1 9 0      1 3 7 6      1 0 8 0
2 8 3 9      5 9 0 6      6 9 6 9      ▼
```

```
2 1 9 2      3 2 6 0      6 2 2 9      ▲
2 2 7 0      8 9 8 3      7 1 8 8
2 9 3 9      1 8 7 8      ▼
```

```
PASSWORDS ACCEPTED
CONTINUE ?
```

```
CHANGE SERVICE
MANAGERS PASSWORD
SELECT YES OR NO
```

```
ENTER PASSWORD
###
START TO CONTINUE
STOP TO END
```

One of the 20 optional passwords stored in the RHS980 can be used for password protection and can be changed by performing the operation to the left. Press **START** key to continue.

If **YES** was selected you will see the next 7 subsequent screens. The RHS 980 will prompt to enter the service managers password, default is 5237, this password was previously used to enable the password protection feature. Press **START** key to continue.

This screen will be shown after the Default Password has been accepted. Press **START** key to continue.

If the Default Service managers password is rejected, this screen is shown. Check the password and press **START** key.

The numeric keys are used to change the password which is selected. Use the ▲, ▼, ► and ◀ key to change the highlighted password selection. Press **START** key.

20 default passwords are shown. Passwords can be assigned to each service technician individually. It is a recommended practice to record these passwords in a secure location. After changes are complete, press **START** key to continue and accept changes.

Press **START** key.

If **YES** was selected above to change operators password, the RHS980 will give the option to change the Service Managers password, if this option is desired, press **YES** key.

Enter the default Service managers password. Press **START** key.

P A S S W O R D S A C C E P T E D

C O N T I N U E ?

E N T E R N E W S E R V I C E
M A N A G E R S P A S S W O R D

C O N T I N U E ?

P A S S W O R D U P D A T E D

C O N T I N U E ?

P R I N T P A R A M E T E R
S E T T I N G S ?

S E L E C T Y E S O R N O

Example of printout:

```

*****
      R T I   T E C H N O L O G I E S
      R H S 9 8 0
DATE :  ## - ## - ## ##
TIME :  ## : ##
PRINTOUT PARAMETER SET
ITEM      DEF      SET
LANGUAGE  DENG     XXXX
BUZZER    NO       XXXX
REF ID     NO       XXXX
ACDB      INT      XXXX
PRINTTER  YES      XXXX
PRINTFD   NO
FILLTARG  8.000     XXXXX
FINTVACC  50000    XXXXXX
FINVACC   20000    XXXXXX
VACRUNT   10       XX
HOSEVOL   0.002    X  X
MILEVOLT  9000      XXXX
ELLEVOLT  4000      XXXXX
OILRISE   50       XXXX
*****

```

TOTAL CAPACITIES

T O T A L C A P A C I T I E S

C O N T I N U E ?

C O M B O F I L T E R L I F E
R E M A I N I N G # # # L B S

C O N T I N U E ?

This screen will be shown after the Default Password has been accepted. Press **START** key to continue.

Enter the Service Managers new 4 digit password and press **YES** to continue. **Important** once the Service Managers default password has been changed, the password must be remembered to make any further changes.

This screen will be shown after the new Service Managers password has been accepted. Press **START** key to continue.

The RHS980 has the capability to print all of the user selectable parameters to the printer or to a file. Press **YES** key to access this feature.

If printing to a flash drive is enabled in the SELECTABLE OPTIONS section, a file will be created containing the parameter listing. File naming convention is as follows: paramtr.txt. New data printed will be appended to the end of the file. Use any text editor software to view file contents.

The RHS980 records data which can be used for shop management of the equipment and refrigerant usage. Press **START** key.

The RHS980 combo filter must be replaced after every 150 LB (68 KG). of refrigerant has been recovered from A/C systems. An alert will display when the filter life is at 100 LB (45.35 KG). The RHS980 will shut down when the filter life is at 150 LB (68 KG). A new filter must be installed and a serial number entered to re-start the RHS980. Press **START** key to go to next screen.

```
TOTAL REFRIGERANT
RECYCLED ##### LB
CONTINUE?
```

The RHS980 records the total refrigerant which has been recycled. That total is displayed on this screen. Press **START** key to go to next screen.

```
TOTAL REFRIGERANT
CHARGED ##### LB
CONTINUE?
```

The RHS980 records the total refrigerant which has been charged. That total is displayed on this screen. Press **START** key to go to next screen.

```
VACUUM PUMP OIL LIFE
REMAINING ## HOURS
CONTINUE?
```

The RHS980 records the hours the vacuum pump runs. A reminder screen displays when that total equals 10 hours. The vacuum pump oil should be changed at that time. This screen displays the hours remaining until the reminder screen will display. Press **START** key to continue.

REMINDERS

```
REMINDER: CALL
SERVICE TO CHECK
SCALE CALIBRATION
CONTINUE?
```

After 1 year, a reminder to schedule service to check the internal scale calibration will be shown. Call RTI to assist with scheduling maintenance with a service center. Press **START** key to continue.

```
REMINDER: PERFORM
CALIBRATION CHECK?
CONTINUE?
```

After 3 combo filter changes, a reminder to perform a scale calibration check will be prompted. Follow MAINTENANCE OPTIONS section of the manual for more details. Press **START** key to continue.

TechALERT DEMO MODE

The RHS980 has been configured with a TechALERT demonstration mode. This feature allows the user to witness the signals that will be sent from TechALERT base as well as what signals will be received with the TechALERT remote. To reach the TechALERT demo mode feature, follow the procedure below.

```
WEIGHT = ##.# LB
AUTOMATIC
START?
```

The screen shown to the left will be displayed. Press the ▼ key to scroll to the next screen.

```
WEIGHT = ##.# LB
RECYCLE
START?
```

Press ▼ key.

```
WEIGHT = ##.# LB
VACUUM
START?
```

Press ▼ key.

```
WEIGHT =  ## . #  LB
CHARGE
START ?
```

Press ▼ key.

```
WEIGHT =  ## . #  LB
FILL CYLINDER
START ?
```

Press ▼ key.

```
WEIGHT =  ## . #  LB
TECH ALERT DEMO
START ?
```

Press **START** key.

```
SELECT DEMO MODE
AUTOMATIC
MANUAL
CONTINUE ?
```

Select either the AUTOMATIC mode or MANUAL mode, if AUTOMATIC mode is selected follow the subsequent 5 screens. If MANUAL was selected see below. Use the ▲ or ▼ key to change the selection. Press **START** key.

```
SIGNAL WILL CHANGE
AUTOMATICALLY AFTER
30 SECONDS
CONTINUE ?
```

The signal will be sent for 30 seconds before switching to the next signal.

```
SENDING RUNNING
LED GREEN, BUZZ OFF
VIB OFF, TIME LEFT ##
STOP TO END
```

RUNNING signal being sent.

```
SENDING FAULT
LED RED, BUZZ OFF
VIB ON, TIME LEFT ##
STOP TO END
```

FAULT signal being sent.

```
SENDING COMPLETE
LED GRN/YEL, BUZZ ON
VIB ON, TIME LEFT ##
STOP TO END
```

COMPLETE signal being sent.

```
SENDING CLEAR SIGNAL
LED OFF, BUZZ OFF
VIB OFF, TIME LEFT ##
STOP TO END
```

Press the **STOP** key to end TechALERT automatic demo mode.

```
SELECT DEMO MODE
AUTOMATIC
MANUAL
CONTINUE ?
```

If MANUAL mode is selected follow the subsequent screens. Use the ▲ or ▼ key to change the selection. Press **START** key.

```
PRESS # 1 = RUN , # 2 =
FAULT , # 3 = COMPLETE ,
# 0 = CLEAR
STOP TO END
```

When in TechALERT manual demo mode, push the corresponding key on the keypad to witness the desired signal.

Press the **STOP** key to end the TechALERT manual demo mode.

VACUUM PUMP MAINTENANCE

Oil must be periodically changed in the vacuum pump to ensure continued performance. The RHS980 will display a reminder after every ten hours of vacuum pump use.

A drain port and fill port for the vacuum pump protrude through the rear wall of the RHS980 to the left of the handle. A sight glass for viewing the oil level in the vacuum pump is located on the end of the fill port.

Remove Fill Port Cap to optimize fluid draining. Drain oil from the drain port and refill with new oil through the fill port. Use oil which is specially formulated for a vacuum pump.

RTI Part Numbers:

011 80004 00 One quart bottle

360 80012 00 Case of 12 one quart bottles

The oil level should be visible approximately one-half the way up in the sight glass. **DO NOT OVERFILL!**

Please be advised, vacuum pump overfilling or running the machine without service hoses being connected can cause vacuum pump oil to be discharged out through the vacuum pump vent tube at the bottom of the machine. Overfilling can be corrected. Refer to MAINTENANCE OPTIONS section for instructions regarding machine reset.

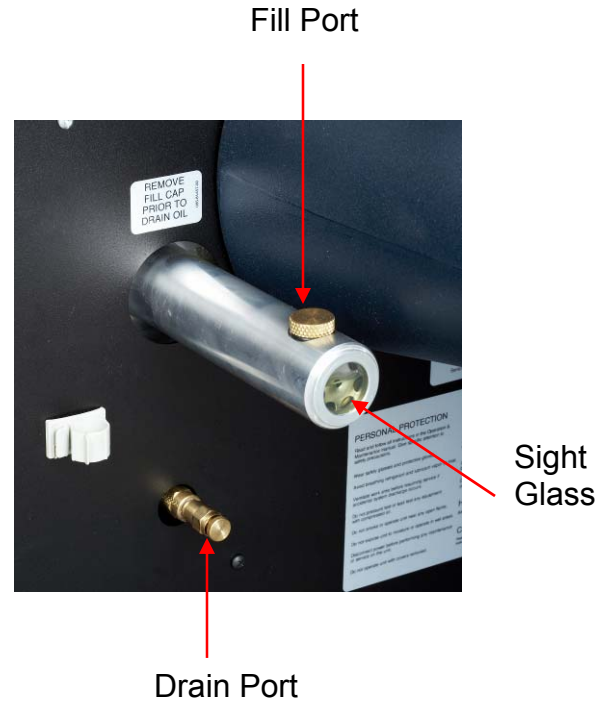
COMBO FILTER MAINTENANCE

The RHS980 combo filter must be replaced after every 150 LB (68 KG). of refrigerant has been recovered from A/C systems. An alert will display when the filter life is at 100 LB (45.35 KG). The RHS980 will shut down when the filter life is at 150 LB (68 KG). A new filter must be installed and a serial number entered to re-start the RHS980.

A special routine for changing the combo filter is explained in MAINTENANCE OPTIONS section of this manual.

Remove the document pocket on the left side of the RHS980 to gain access to the combo filter. The combo filter is on the right side of the manifold as shown in the photo. A hex on top of the filter is provided to make filter removal and installation easy. Use an open end wrench on this hex. New o-rings are provided with the replacement filter. Apply a light coating of mineral oil to the o-rings prior to reassembly.

A serial number is printed on a label attached to the new filter. Make a note of this number as it may not be visible when the filter is installed. This serial number must be entered to reset the 150 LB (68 kg) filter life routine. Refer to MAINTENANCE OPTIONS section for instructions regarding machine reset.



Recommend using RTI vacuum pump oil for optimal performance



Combo Filter

Order Filter Kit: 360 82133 00

PRINTER MAINTENANCE

(Optional Item)

The printer paper will require replacement and can be accessed on the rear of the RHS980.

Paper is 58MM Wide X 45MM Diameter Thermal paper and can be found at most local office supply retailers. Replacement paper is available from RTI.

Order Kit: 360 82218 00

Press the door release button to open cover as shown.

Insert the paper with about 5mm of paper outside the printer.

Close cover door. Light will indicate Green when printer is ready.



Door Release Button

REFRIGERANT IDENTIFIER MAINTENANCE (Optional Item)

A reported high concentration of air by the identifier can be caused by any of the following:

- No refrigerant in the vehicle A/C system.
- Gross leak in vehicle A/C system.
- Refrigerant identifier coupler not properly connected during sampling operation.
- Pinched, plugged or oil clogged sample hose. Oil contaminated sample hose must be replaced, order hose kit listed below
- Clogged oil filter trap. Oil contaminated filter must be replaced, order filter kit listed below.
- Coupler o-ring damaged or missing, order hose kit listed below.

Hose & Coupler Kit Order: 360 82219 00

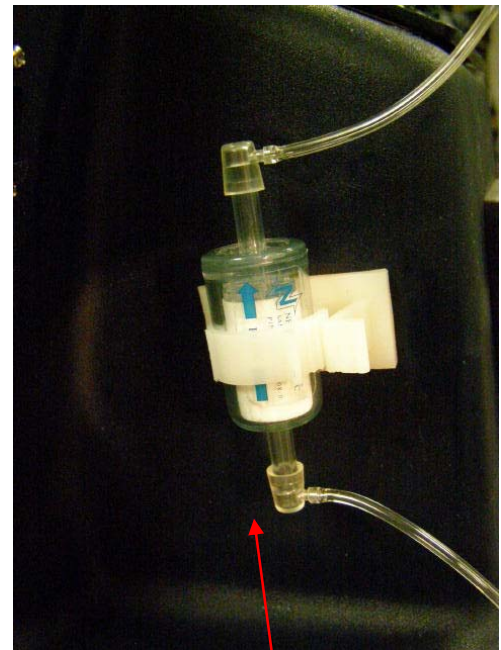
Coupler Kit Order: 026 80480 01

Hose Kit Order: 026 80480 02

Filter Kit Order: 026 80560 00



Hose kit



Filter kit

Check hose and filter trap for oil or UV dye for contamination.

Replace if contaminated.

UPDATING PROGRAM, LANGUAGES AND AC DATABASE

The RHS980 has the capability to easily update program functionality, screen languages and AC charge capacity database. This is accomplished by inserting a programmed flash drive into the USB slot in the rear of the unit and cycling power OFF and ON.

```
RHS980
BY RTI TECHNOLOGIES
LOADING UPDATE
```

If languages are loading, the following message will display.

```
CHECKING FOR NEW
LANGUAGE FILE ON
FLASH DRIVE...
PLEASE WAIT
```

If AC database is loading, the following message will display.

```
CHECKING FOR NEW
DATABASE FILE ON
FLASH DRIVE...
PLEASE WAIT
```

If configuration file is loading, the following message will display. The configuration file sets all options back to factory defaults.

```
LOADING NEW
CONFIGURATION FILE
FROM FLASH DRIVE..
PLEASE WAIT
```

Contact RTI for more information regarding the All Makes Database.

Flash
Drive



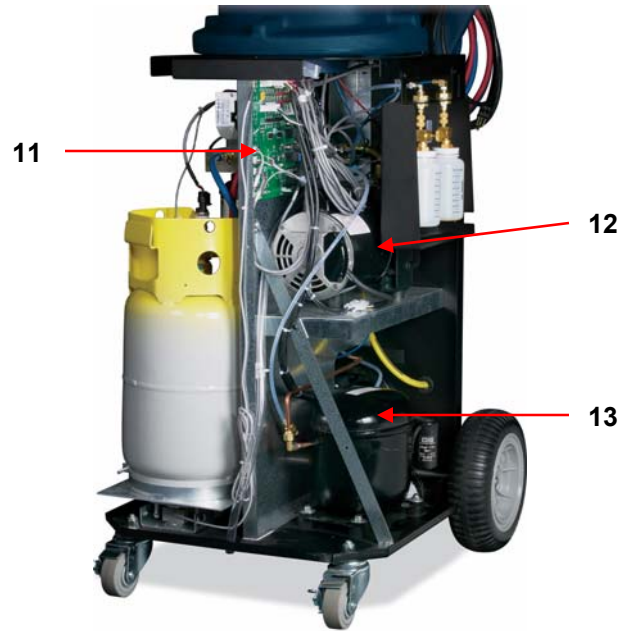
WARNING
**DO NOT REMOVE FLASH DRIVE UNTIL
UPDATE IS COMPLETE**
**FLASH DRIVE MUST REMAIN IN PORT IF
ACCESSING ALL MAKES DATABASE**

FREQUENTLY USED RTI CONSUMABLE ITEMS

RTI P/N	ITEM DESCRIPTION
028 80035 04	HOSE RED 9 FT .5 ACME X M14-1.5
028 80036 04	HOSE BLU 9 FT .5 ACME X M14-1.5
023 80095 00	COUPLING FSC HIGH RED M14-1.5 215010
023 80096 00	COUPLING FSC LOW BLUE M14-1.5 215011
360 82175 00	KIT FILTER MAINTENANCE FOR RHS980
011 80004 00	OIL VACUUM PUMP (QUART) 217020
360 81733 00	SEALER IDENTIFIER KIT
026 80483 00	EQUIPMENT STORAGE COVER RHS 980 PL HANDLE
360 81618 00	FILTER , INLINE MICRON FOR MACHINES, 10 PK
360 80672 00	O-RING REPAIR SET FOR R134a SERVICE COUPLERS
360 82219 00	KIT REPLACEMENT ID SAMPLE HOSE RHS980C-N
026 80480 01	COUPLER REPLACEMENT EID IDENTIFIER
026 80480 02	FILTER/HOSE REPLACEMENT EID IDENTIFIER
026 80309 00	SEALANT DETECTOR CARTRIDGE, 25 PK.
360 80012 00	OIL VACUUM PUMP (12 QT CASE)
360 82292 00	REPLACEMENT BATTERY FOR CIRCUIT BOARD CR1025
026 80560 00	FILTER REPLACEMENT OIL TRAP
360 82218 00	KIT REPLACEMENT THERM PAPER RHS980

Note: For RHS980 replacement parts contact RTI Technical Support at 1-800-468-2321, ext 1.

PARTS IDENTIFICATION



- 1 Manifold Assembly
- 2 In-line Hose Screen Filters
- 3 Service Hoses
- 4 New Refrigerant (not included)
- 5 Condenser Fan
- 6 Control Power Supply
- 7 Combo Filter
- 8 Charge Cylinder
- 9 Load Cell
- 10 Calibration Ball
- 11 Control Board
- 12 Vacuum Pump
- 13 Compressor (Maintenance Free)
- 14 High Pressure Gauge
- 15 Low Pressure Gauge
- 16 Display & Keypad
- 17 Power Switch
- 18 Oil Drain Bottle
- 19 Oil Fill Bottle (Not available for RHS980 unit servicing Hybrid vehicles)





TechALERT® Remote
(front view shown actual size)

- Made from hi-strength composite material
- Impact and chemical resistant housing
- Ergonomically shaped and lightweight for ease-of-handling and use
- Four easy-to-see LED's
 - Each LED can be synchronized to a specific RTI machine
 - Intuitive LED illumination codes provide alert status
 - LED's brightly illuminate either red or green for excellent readability
 - LED's are sealed for long life
- Sealed activation button
- Internal wireless synchronization sensor



TechALERT® Remote
(rear view shown actual size)

- Integrated clip for secure shirt pocket placement
- Battery compartment
 - Easily removed cover
 - Two (2) AAA batteries required to power remote, batteries included

It just makes sense—the key to increased productivity is to keep technicians and their machines continually performing *value-added work*. Service techs that are constantly checking machine status are busy—but this type of busy does nothing to generate profits.

TechALERT® Base
(front view shown actual size with docking remote)

- Conveniently mounts to compatible RTI service machines
- Made from hi-strength composite material
- Impact and chemical resistant housing
- Storage pocket holds one remote
- LED indicator for synchronization process
- Sealed control button
- Internal wireless synchronization sensor



Specifications

Electrical	3.0 V, requires (2) AAA batteries for power; batteries included.
Operating Range	Up to 250 feet nominally from base unit (Certain conditions may increase or decrease distance accordingly)
Battery Operating Life	30 days typical (certain conditions may increase or decrease life accordingly)
Low Battery Indicator	Included, LED alert signal
Remote Dimensions	5.5 in x 1.0 in x 0.8 in (14.0 cm x 2.5 cm x 2.0 cm) (L x W x D)
Remote Weight	3.0 ounces (batteries included)
Shipping Box Dimensions	10.75 in x 7.5 in x 3.5 in (L x W x D)
Shipping Weight	2.0 lb (box and components)

Complete TechALERT® System (Includes one [1] Base for RHS®980 and one (1) Universal Remote, AAA batteries included)

495-80000-00

TechALERT® Base only for RHS®980

495-80002-00

TechALERT® Universal Remote only (AAA batteries included)

495-80001-00