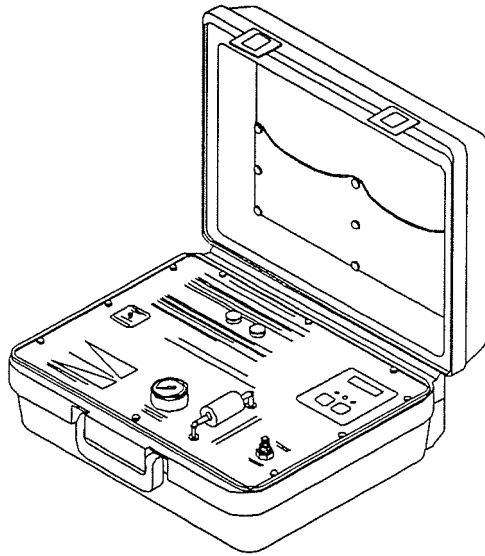




Refrigerant Identifier

NEUTRONICS INC.

Model 9552 Operation Instructions



The Identifier is a precision instrument designed to provide indications of refrigerant purity. The user of the Identifier should treat the Identifier with care in order to gain maximum performance and life. Before utilizing the Identifier, the user should first study and understand this manual in its entirety. Particular attention should be given to the operation notes stated on page 7 of this manual.

Sales, Technical Questions and Customer Support: (610) 524-8800

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Welcome

Thank you for your order of a Dupont/Neutronics Refrigerant Identifier. You have purchased the latest and most advanced technology available for the identification of common commercial refrigerants.

A joint development and design effort between DuPont and Neutronics has resulted in providing the refrigerant reclaimer and field technician an alternative to expensive gas chromatography and mass spectrometer analysis currently utilized to identify refrigerant types.

Identification of refrigerant types is becoming increasingly critical due to regulations, cross contamination and compatibility issues. The DuPont/Neutronics Refrigerant Identifier will provide the user with the ability to identify R-12, R-134a, R-22, R-500 and R-502 refrigerants in either air conditioning systems, refrigeration systems or in refrigerant storage cylinders.

Functional Description

The Identifier is designed to identify liquid refrigerant samples taken directly from a HVACR system or refrigerant storage cylinders. Refrigerant samples are introduced into the Identifier via a specially designed sample hose. The sample hose minimizes refrigerant sample volume and provides initial particulate filtration. The sample enters the Identifier via a pressure switch controlled solenoid valve. Oil, acids and other contaminants are removed in an internal, heated flash pot. Separated oils and contaminants are automatically flushed from the Identifier into an external catch basin supplied with the instrument. The cleansed sample gas is regulated and passed through a coalescing filter which further cleanses the sample of oils and particulates. The clean sample gas travels to the multiple detector NDIR (Non-Dispersive InfraRed) sensing device for analysis. Signals from the sensing device are fed into a microprocessor where the refrigerant type and purity are determined. Results of the analysis are displayed on the Identifier liquid crystal display (LCD) and can be output to a user supplied printer.

Analysis of the refrigerant will determine the type of refrigerant and whether the refrigerant meets acceptable reclaim standards. Refrigerant samples which are deemed pure will be typed by the Identifier LCD as either R12, R-134a, R-22, R-500 or R-502. Refrigerant samples which are not deemed pure will be typed as *FAIL* by the Identifier LCD.

The Identifier is supplied in a rugged carrying case complete with hose and devices necessary for proper operation. The top panel of the Identifier contains short form instructions pertaining to its operation.

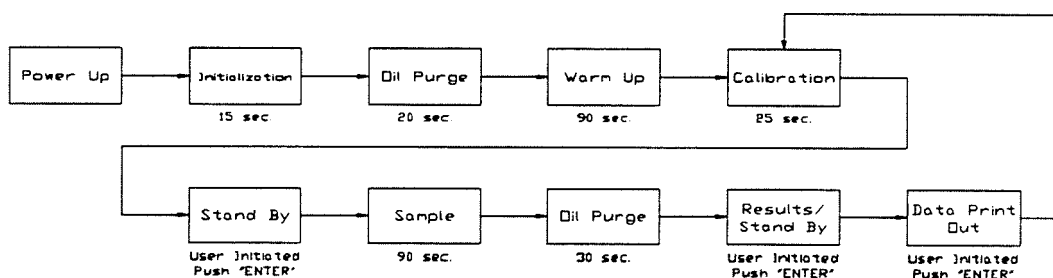
Packing List

When you receive the Identifier, carefully unpack the shipping box of all contents. Examine the shipping carton for signs of damage or mishandling. Report evidence of damage or mishandling to the carrier immediately. Inventory the contents of the shipping carton and verify the presence of the below listed components:

- 1 - Refrigerant Identifier Instrument in Plastic Case
- 1 - Refrigerant Sample Hose (located in case internal pocket)
- 1 - Ambient Air Supply Hose (located in case internal pocket)
- 1 - Oil Drain Hose (located in case internal pocket)
- 1 - Oil Catch Basin (located in case internal pocket)
- 1 - Operation Manual (located internal to case)
- 10 - Identification Labels (located in case internal pocket)

Product Specifications

Sample Type:	Liquid samples below 300 psig of R-12, R-134a, R-22, R-500, R-502
Enclosure Type:	Portable Carrying Case, 15.5" Wide x 14.5" Deep x 6.5" High (394 x 368 x 165mm)
Weight:	10.75 pounds (4.9 kg)
Accuracy:	+/- 1% for concentrations of contaminants
Sensitivity:	Detects and indicates R-12, R-134a, R-22, R-500 or R-500 if the sample is sensed to be at least 98% by weight pure in terms of refrigerant cross contamination.
Sensor Type:	Multiple Detector Non-Dispersive Infrared (NDIR)
Power:	110/220 VAC, 50/60 Hz, 1 Amp as indicated on top panel
Sample Volume:	typically less than 1 ounce (25 grams)
Sample Hose:	1/4" SAE female flare connection on service end, mating connector on Identifier end, 90 micron in-line filtration, nylon inner core, polyurethane outer cover, 800 psig working pressure, 6 foot length
Sample Filter:	Coalescing type with red dye maintenance indicator, 93% of 0.1 micron retention
Sample Pressure:	300 psig MAXIMUM input pressure 5-25 psig internally regulated system pressure
Sample Flow Rate:	Approximately 1 scfh after flashing
Printer Port Output:	Will support most parallel port printer connections
Temperature Range:	0-50 C (32-120 F)
Timing Cycle:	As depicted below



Safety Instructions

The Refrigerant Identifier is designed for ease of safe operation by the end user. Please observe and follow the below listed instructions to ensure safe operation of this product.

- Study and understand this manual in its entirety **BEFORE** attempting to operate the Identifier.
- **ALWAYS** use eye protection and gloves suitable for contact with refrigerants when utilizing the Identifier.
- **ALWAYS** use the sample hose supplied with the Identifier or purchased separately from an Authorized DuPont/Neutronics Refrigerant Identifier Dealer. Use of other sample hoses may introduce analysis errors and cause excessive refrigerant venting.
- **DO NOT CONNECT** the sample hose of the Identifier to the low side or vapor port of an air conditioning system or storage cylinder. The Identifier is designed for liquid samples and the introduction of vapor samples may introduce analysis errors.
- When disconnecting the sample hose from the refrigerant source **ALWAYS** point the hose away from eyes, face and exposed skin. The sample hose will vent some amount of liquid refrigerant.
- **NEVER** operate the Identifier with the HVACR system running. Electrical noise from the HVACR system may cause Identifier microprocessor errors.
- **ALWAYS** inspect the hoses **BEFORE** each use. **DO NOT** use hoses which are frayed, obstructed, cracked, split or otherwise damaged.
- **ALWAYS** connect the oil drain hose to the oil catch basin **BEFORE** attempting Identifier use. Failure to connect these components may result in oil spillage from the Identifier during automatic oil purges.
- **NEVER** obstruct the case vents, the air intake port, the sample exhaust port, or the oil drain port during Identifier use.
- **THE USER BEARS FULL RESPONSIBILITY** for disposing waste refrigerant oil purged from the Identifier in an environmentally acceptable manner.
- Treat the Identifier with care. **DO NOT** drop, throw, submerge, disassemble, carry the hoses or power cord, or generally mistreat the Identifier.
- **ALWAYS** utilize the Identifier on a flat and sturdy surface. Inclination of the Identifier may cause liquid refrigerant flooding and oil contamination of the Identifier sensing device.
- **ONLY** plug the Identifier into power outlets known to supply the required power as recorded on the top panel of the Identifier.
- **USE ONLY** DuPont/Neutronics supplied spare parts. The use of other spare parts may cause errors and will void the warranty.
- **DO NOT** utilize the Identifier in wet locations or in locations where water is being sprayed.
- **ALWAYS** keep the Identifier top panel dry.
- **BEFORE OPERATING THE IDENTIFIER, READ THE OPERATION NOTES CONTAINED IN THE NEXT SECTION OF THIS MANUAL.**

Operation Notes

The following will provide the end user with tips and use instructions to aid in trouble-free operation of the DuPont/Neutronics Refrigerant Identifier.

Treatment:

- Always clean the instrument top panel and all associated equipment of accumulated residue, oil, dirt, grime, etc..
- Never expose the instrument to direct sprays of refrigerant, oils, or liquids.
- Do not drop, throw, or otherwise mistreat the instrument.
- Always locate the instrument as high above and as far away from the refrigerant source as possible in order to minimize contact with refrigerant clouds.

Sample Hose:

- Never disconnect the hose from the Identifier inlet port when the hose is full of refrigerant.
- When sampling from dirty sources or old refrigerant cylinders, frequently inspect the sample hose filter, located in the in-line housing on the hose, for scale and other foreign materials which will clog the filter element.
- Never utilize the sample hose without a filter element installed into the in-line housing of the hose. Introduction of foreign particles into the Identifier will damage control solenoid valves.

Sample Filter:

- Inspect the sample filter, located on the Identifier top panel, before and after each use. **IMMEDIATELY REPLACE THE FILTER AS SOON AS THE WHITE FILTER ELEMENT BEGINS TO TURN RED ON THE ELEMENT OUTSIDE DIAMETER.** Filter element life will depend solely on the cleanliness of source refrigerant.
- **DO NOT** attempt to reuse the black plastic elbows which are supplied with early versions of the sample filter. Replacement filters are supplied with elbows either pre-installed or sonically welded in place. Re-use of the black elbow fittings will result in refrigerant leakage and improper function of the Identifier.

Air Intake Hose:

- It is always good practice to connect the air intake hose to the air intake port, located on the top panel, when utilizing the Identifier in an area with high refrigerant concentrations. Route the free end of the hose to a suitable location, typically four feet above the floor or higher, which will supply clean ambient air. Vented refrigerant vapors are heavier than air and thus will collect on floors or other low surfaces. The intake of ambient air which is contaminated by refrigerant vapors will cause error 3 calibration codes.

Sampling Hints:

- When taking multiple samples from a single refrigerant source, disconnect the sample hose from the refrigerant source between each test to guard against refrigerant fractionation in the sample hose.
- **DO NOT** block the vent ports located on the sides and bottom of the Identifier case when using the instrument.

Oil Handling Hints:

- Always connect the oil drain hose to the oil catch basin so that the deflector shield is positioned to direct venting gas away from the Identifier.
- Always store the oil drain hose in the plastic bag supplied with the Identifier to minimize oil fouling of the Identifier.
- Always store the oil catch basin with the closure cap securely fastened to minimize oil fouling of the Identifier.
- Always clean the oil handling components of accumulated oil to minimize oil fouling of the Identifier.
- Always dispose of waste oil in an environmentally acceptable manner.

Component Descriptions

The Refrigerant Identifier is supplied complete with all devices to enable use directly out of the shipping box. The following will provide a brief description of the major components supplied with the Refrigerant Identifier.

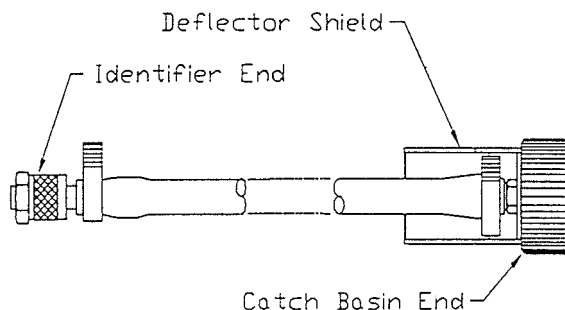
A. Instrument

The Instrument consists of all sampling, sensing and electronics housed within a plastic case. The Instrument is portable and will house all hoses, devices and some spare parts. The user will only have access to the various ports and the instrument top panel. The top panel contains short form operational instructions, the operation center, sample filter, power cord and pressure gauge.

The operation center consists of an LCD display, three status LEDs and two operation push buttons. The LCD will provide the user with operational prompts, status information and analysis results. The LEDs will provide the user with operational status indications via a green *Sample* LED, a yellow *Purge* LED and a red *Fault* LED. The push buttons will provide the user an alarm *Horn Mute* option and the ability to communicate with the microprocessor through the *Enter* button.

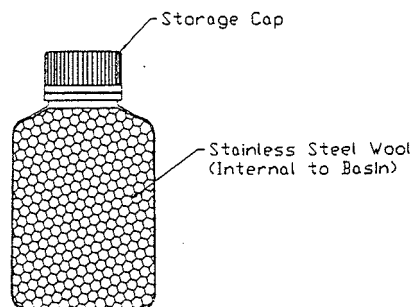
B. Oil Drain Hose

The Oil Drain Hose is a 1 foot by 3/8 inch outside diameter neoprene tube which will connect the Identifier oil drain port to the oil catch basin. The hose has a mating Identifier connector on one end and a cap with deflector shield on the other end. Waste oil will be purged from the Identifier and into the catch basin for proper disposal through this hose. The hose will come packaged in a zip lock bag to prevent oil spillage in the Identifier during non-use periods.



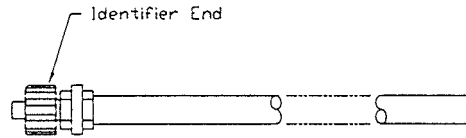
C. Oil Catch Basin

The Oil Catch Basin is a 4 ounce polyethylene screw capped bottle, packed with stainless steel wool. The basin will accept and retain waste oil purge from the Identifier through the oil drain hose. During use, the basin will be secured to the side of the Identifier case via a velcro retaining strap. The bottle is supplied with a screw cap closure to provide a sealing mechanism to prevent oil spillage in the Identifier during nonuse periods.

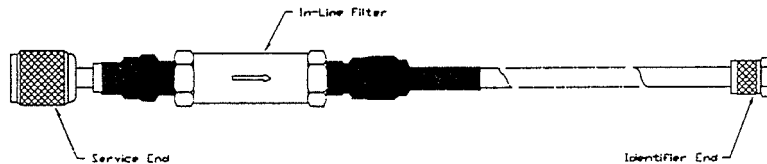


D. Air Intake Hose

The Air Intake Hose is a 6 foot by 1/4 inch outside diameter neoprene tube which will connect to the Identifier air intake port of the top panel. The hose is intended to provide a means by which to draw ambient air into the Identifier for calibration purposes from remote areas when the possibility of refrigerant and/or hydrocarbon vapor contamination of the ambient air is possible. The hose is to be connected to the Identifier air intake port and ideally suspended from a level above the Identifier to avoid the heavier refrigerant and/or hydrocarbon vapors.



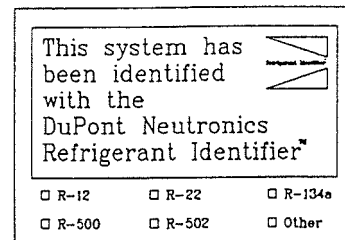
E. Sample Hose



The Sample Hose is a 6 foot long hose with a nylon inner core and a polyurethane outer cover. The hose contains a 90 micron in-line filter to protect the inlet solenoid valve and the hose itself from particulate clogging. The service end of the hose is equipped with a female 1/4" SAE flare coupler while the Identifier end fitting matches the Identifier inlet port. The Sample Hose will connect the refrigerant source to the Identifier inlet port, located on the top panel.

F. Identification Labels

The Identification Labels are adhesive backed labels which provide the user a method for marking HVACR systems or storage cylinders as to the refrigerant type contained within. The label provides check off areas for R-12, R-22, R-134a, R-500, R-502 or other. After the user has identified the refrigerant type within the system or cylinder, an Identification Label can be appropriately marked and applied.

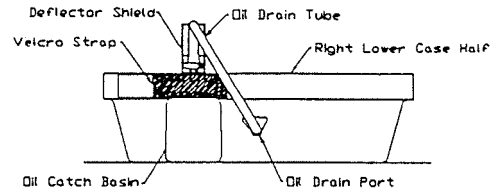


Operation Instructions

The Refrigerant Identifier has three major modes of operation as follows: Initial Power Up, Calibration and Sampling. The has input responsibilities on the sampling mode of operation only. This includes prompting the Identifier to take a sample, prompting the Identifier to prepare for another sample and prompting the Identifier to print out analysis results.

Initial Power Up

1. Connect the oil drain hose between the oil catch basin and the Identifier oil drain port, which is located on the right side of the case. Secure the oil catch basin to the right side of the case using the supplied velcro strap. *Be sure to position the deflector shield of the hose so that venting vapors and/or oil will be directed away from the instrument top panel.*



Note: Failure to connect the oil drain hose to the catch basin or secure the catch basin to the Identifier case may result in waste oil spillage during oil purge operations. Failure to properly position the deflector shield of the hose to direct venting vapors away from the Identifier top panel may result in excess top panel fouling which can lead to error 3 codes.

2. If the surrounding area ambient air is suspected of containing refrigerant and/or hydrocarbon vapors, connect the air intake hose to the Identifier air intake port which is located center left on the top panel. The ideal placement of the free end of the hose is above the level of the Identifier to minimize drawing in the heavier vapors during calibration.
3. Connect the sample hose to the inlet port of the Identifier, located in the lower right corner of the top panel.

Note: The sample hose only requires a finger tight connection to provide a leak-tight seal. **DO NOT** torque the fitting with a wrench.

4. Connect the service end of the sample hose to the high side (or liquid) port of the HVACR system or storage cylinder. Open any valves which may prevent access to the refrigerant by the Identifier.

Note: When connecting to a HVACR system, be sure that the system is turned off to avoid electrical noise interference with the Identifier microprocessor unit.

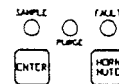
5. Connect an external, user supplied printer, if a printout of the analysis is desired, to the printer port located on the left side of the Identifier case. Connect the male end of the parallel printer cable (user supplied) to the printer port by first removing the two screws and the static cover from the port. Connect the free end of the cable to the printer.

Note: The printer output will support most parallel printers. The printer and printer cable are supplied by the user. When the printout feature is not being used the static cap and holding screws should be installed onto the printer port to prevent fouling from dirt, oil, moisture, etc..

6. Plug the Identifier power cord into a suitable power outlet as specified by the power label located on the upper left corner of the top panel.

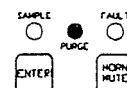
- When the Identifier is plugged in it will immediately power up and start an initialization mode during which the LCD display will scroll the message *Use for r12 or r134 or r22 or r500 or r502*. This will verify to the user that the Identifier is configured with the proper software to analyze the aforementioned refrigerants.

USE



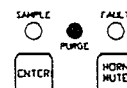
- After the initialization mode has completed the Identifier will perform an initial oil purge to clear the sampling system of oil residue from previous uses. The LCD will read *oil* and the *Purge* LED will illuminate while the internal purge pump forces ambient air through the front end of the sampling system and out of the oil drain port.

oil



- Following the initial oil purge the Identifier will enter the warm up period during which the NDIR is warming to its optimal operation temperature. The LCD will read *cold* while the *Purge* LED remains illuminated.

cold



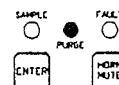
Note: Operation of the Identifier in ambient temperatures below 40°F will add additional time to the warm up period. To maintain accuracy when checking R502 in conditions where the ambient temperature is above 120°F, **DO NOT** leave the unit plugged in for more than 30 minutes prior to using.

- During the cold mode it is possible to print out the results of the refrigerant analysis performed prior to the current warm up period if so desired. To print out the prior results, make sure the printer cable is connected and the printer is on and ready. Depress the Horn Mute button of the Identifier and the prior analysis results will print out while the display reads *Pm*. The Identifier will store the prior analysis results after each sample run.

Calibration Mode

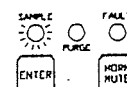
- When the NDIR has reached its optimal temperature the Identifier will perform an initial calibration. The LCD will read *CAL* while the Purge LED remains illuminated. The Identifier will draw ambient air into the NDIR for calibration while the inlet solenoid valve flushes the front end of the sampling system with refrigerant from the sample hose. This operation is simultaneously clearing the NDIR of residue refrigerant while also clearing the front end sampling system of residue refrigerant oils.

CAL



- When the initial calibration has completed the Identifier will enter the standby mode. The LCD will read *HOSE* while the *Sample* LED flashes. The Identifier is now ready for a sample and is awaiting user instructions.

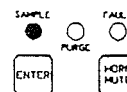
HOSE



Sample Mode

1. When the user depresses the Enter button of the Identifier the sample mode will immediately begin. The LCD will read *FLO* while the *Sample* LED is illuminated. The sample cycle will initially flush the front end of the sampling system three times to insure that liquid is being admitted to the Identifier and the "vapor locks" do not occur in the sample hose. The flushing will be marked by distinct clicks if the inlet and drain solenoid valves. Following the flush operation the pressure switch will control the admission of liquid refrigerant into the Identifier. The user will notice that the system pressure gauge will cycle up and down as the liquid is flashed to vapor and the vapor is presented to the NDIR. This is the normal operation and does not signal any functional problems.

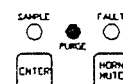
FLO



Note: The system pressure gauge will indicate the regulated system sample pressure AND NOT the source refrigerant pressure.

2. When the Identifier has gathered all of the sampling data, the sample mode will cease and an oil purge will occur to clear the sample system of accumulated oils. The purge pump will energize and force the oil out of the oil drain port and into the oil catch basin. The LCD will read *oil* and the *Purge* LED will illuminate.

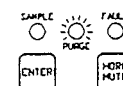
oil



3. After the waste oil has been expelled from the Identifier the results of the analysis will be shown by the LCD as follows:

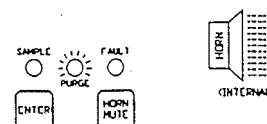
- a) If the sensed refrigerant has been deemed to be 98% by weight or greater pure (in terms of refrigerant cross contamination): The LCD will display the sensed pure refrigerant as either *r12*, *r22*, *134a*, *r500*, or *r502*. Additionally, should the sample be sensed to be a mixture of either R12, R22 or R134 and the mixture has a component which is in the 95-100% range purity, the user can depress the *Enter* button to have the LCD scroll through the component refrigerant sensed percentages. The *Purge* LED will be flashing to indicate that the Identifier is poised for printout and a new sample run.

r502



- b) If the sensed refrigerant has been deemed to be less than 98% by weight pure (in terms of refrigerant cross contamination): The LCD will read *FAIL* and the alarm horn will sound. The user can silence the alarm at any time by depressing the *Horn Mute* button on the Identifier top panel. Additionally, should the sample be sensed to be a mixture of either R12 or R22 and the mixture has a component which is in the 95-100% range purity, the user can depress the *Enter* button to have the LCD scroll through the component refrigerant sensed percentages. The *Purge* LED will be flashing to indicate that the Identifier is poised for printout and a new calibration run.

FAIL



Note: If the user depresses the *Enter* button for LCD percentage scrolling and either R-12 or R-22 is not in the 95-100% range or if R-500 or R-502 has been detected by the Identifier, the Identifier will move directly to the functions described in Step 4 of this manual.

4. The Identifier will continue to convey the results of the analysis to the user, as described in step 3, until the user either unplugs the instrument or initiates further instructions to the Identifier. To print out the results of the analysis, make sure that an external printer is connected to the Identifier printer port and that the printer is powered and ready. Depress the *Enter* button of the Identifier. The Identifier will return to the calibration mode and the results of the analysis will print out on the printer, as depicted below. Should the user desire to sample again from the same source, first remove the sample hose from the source and allow the sample hose to clear. Reconnect the sample hose to the source and then depress the *Enter* button. The Identifier will return to the calibration mode to ready for another sample cycle.

Note: If the Identifier has provided a *FAIL* analysis, it is recommended that the sample be re-tested to confirm. If the retest is a pass, the purity level of the sample is at the built in trigger point of 98%. If the purity is at 98%, the Identifier may alternate between pass and fail from sample to sample.

Note: The sample hose must be disconnected from the source and reconnected between sample runs even if the sample is taken from the same source.

Note: Should the user not desire to print out analysis results, simply do not connect a printer to the Identifier printer port.

Note: Should the user not have a printer available at the time of sampling, the last analysis made before unplugging the Identifier will be stored in the microprocessor and can be printed the next time the Identifier is powered up and is in a cold mode as described by step 5 under Initial Power Up.

Sample Print Out Statements:

For component mixture samples (95-100% of either R-12 or R-22):

Date: _____

Cylinder: _____

Job: _____

DUPONT

REFRIGERANT IDENTIFIER

MODEL 9535

R12% = 100.0

Percentage of R22 contamination = 0.0

R12 >= 98% pure

For sample runs deemed to be pure:

Date: _____

Cylinder: _____

Job: _____

DUPONT

REFRIGERANT IDENTIFIER

MODEL 9552

Percentage of R502 \geq 98

5. To end the session, simply unplug the Identifier from the power outlet and proceed to Stowage.

Stowage

When all sample analysis has been completed, the user should stow the Identifier unit as described below.

1. Unplug the power cord from the power outlet.
2. Disconnect the sample hose from the refrigerant source.

Warning: Disconnection of the sample hose from the refrigerant source will be accompanied by escaping deminimus quantities of refrigerant vapor which will present freezing hazards to exposed skin.

Warning: **DO NOT** disconnect the sample from the Identifier inlet port until the sample hose has first been disconnected from the refrigerant source and the hose has completely outgassed.

3. Disconnect the sample hose from the Identifier inlet port. Inspect the hose to verify that it is not obstructed, cracked, frayed, or otherwise damaged. If the hose shows signs of damage, replace it **BEFORE** using the Identifier again.
4. Disconnect the oil drain hose and oil catch basin. Inspect the oil drain hose for signs of damage and replace if necessary. Wrap the oil drain hose and place it in its zip lock bag. Stow the hose in the Identifier case pocket. Drain the catch basin of the purged refrigerant waste oil and seal the catch basin with the screwed cap. Stow the catch basin in the case pocket of the Identifier.

Warning: THE USER BEARS FULL RESPONSIBILITY FOR DISPOSING OF WASTE OIL IN AN ENVIRONMENTALLY ACCEPTABLE MANNER!

5. Disconnect the air intake hose, wrap and stow in the Identifier case pocket.
6. Wrap the power cord and stow into the mounting clips of the Identifier case lid.
7. Wipe down the top panel of the Identifier and inspect the sample filter for signs of red dye on the filter element. **THE FILTER ELEMENT MUST BE CHANGED AS SOON AS THE RED DYE BEGINS TO SHOW ON THE OUTSIDE DIAMETER OF THE WHITE FILTER ELEMENT.**
8. Close the Identifier case lid and secure the two case locks.

Maintenance

A. Inspections

The Refrigerant Identifier is designed to be a low maintenance instrument; however, the Refrigerant Identifier is a precision instrument and care must be given to keep the instrument in peak form. The following procedures will guide the user in maintaining the Refrigerant Identifier.

1. **Sample Filter:** Inspect the white element of the sample filter, located on the top panel, before, during and after each use of the Identifier. If the element is beginning to show red coloration on its outside diameter it **should be replaced** as per the sample filter replacement procedure of Maintenance Section C. Failure to replace the filter after it begins to turn red could lead to oil contamination of the NDIR and sampling system and would involve costly out of warranty repairs.

Note: Filter life will vary depending upon the condition of the refrigerant source. Heavily oiled refrigerant sources will shorten filter life.

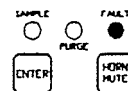
2. **Sample Hose Filter:** Inspect the system pressure gauge during operation of the Identifier to verify that it is cycling in the 5 to 25 psig range. Lack of pressure indications on the gauge during sampling runs may indicate that the sample hose filter is clogged and requires replacement as per the sample hose replacement procedure of Maintenance Section D.

Note: Filter life will vary depending upon the condition of the refrigerant source. Sources heavily laden with particulate such as rust or scale will shorten filter life.

3. **Hoses:** All hoses should be inspected before and after each use of the Identifier to verify that they have not become obstructed, frayed, split, cracked, or otherwise damaged. Damaged hoses should be replaced immediately as referenced in the Maintenance Spare Parts Listing.
4. **Oil Catch Basin:** The oil catch basin should be drained after each use of the Identifier in an environmentally acceptable manner. Failure to drain the catch basin may result in oil spillage and Identifier damage. The catch basin contains stainless steel wool to aid in oil mist coalescing. Inspect the wool for rust or deterioration and replace as required.
5. **Special Concerns with Oil:** The Identifier should be inspected after each use for deposits of oil on the top panel, the case lid, or the case exterior. The presence of oil can retain refrigerant vapors which can lead to error 3 codes during operation. Clean the Identifier of accumulated oils, grease, dirt, etc. after each use.

B. Error Codes

The Refrigerant Identifier is supplied with self diagnostic software to alert the user of operational problems which may cause analysis errors. The Identifier LCD will present the user with an error code, as listed below, the *Fault* LED will illuminate and the alarm horn will sound. In all error code cases, the error condition is cleared by unplugging the Identifier and plugging it back into the power outlet.



- Err.1 - Warm up failure or electrical noise interference. Insure that the HVACR system being tested is not operating. Operation of the Identifier in ambient temperatures below 40°F may require additional warm up time before a sample run may ensue. Clear the error code, insure that the tested system is not running, and allow additional time for warm up before attempting a sample run.

Err.2 - NDIR sensor failure. This error is commonly caused by a failure to properly clear residue refrigerant from the system leaving the NDIR detectors in an unsteady state. Clear the error code and attempt to use allowing additional warm up time before sampling.

Err.3 - Calibration failure. This error code indicates that refrigerant vapors and/or hydrocarbon vapors in the surrounding ambient air are being drawn in the NDIR during calibration. Clear the error code and install the air intake hose so that its free end is suspended above the refrigerant vapor cloud; or, remove the Identifier to an area known to be free of refrigerant vapors to allow it to clear.

Note: If any of the above error codes occur and can not be cleared as specified, call the Tech Line at (610) 524-8800 for customer assistance.

C. Sample Filter Replacement Procedure

When the filter element of the sample filter, located on the top panel of the Identifier, begins to show red dye on its outside diameter, **the sample filter must be replaced** as outlined below.

Warning: Failure to replace the sample filter when the red dye begins to show on the outside diameter of the filter element will result in eventual Identifier failure and damage. Repair of the Identifier damaged by sample filter neglect will carry high out of warranty costs.

Required Tools:

- none

Required Materials:

- Replacement Sample Filter, Part Number 6-02-6000-08-0

Replacement Procedure:

1. Verify that the Identifier is unplugged and that all hoses are disconnected.
2. Pull the sample filter straight up out its retaining clip.
3. Gently pull the black tubing connections off of the barb fittings of the filter housing. **DO NOT** allow the tubing to be pushed or slip back into the internal section of the Identifier.
4. Discard the spent filter in an environmentally acceptable manner.
5. Connect the black tubing of step 3 to the replacement filter barb fittings taking note of the flow direction arrow printed on the filter housing and the Identifier top panel. The flow arrows must point in the same direction.
6. Install the filter into the retaining clip by gently pushing the tube back into the top panel and pressing the filter into the clip.

D. Sample Hose Filter Replacement

When the pressure gauge of the Identifier top panel does not indicate pressure during sampling runs, the sample hose filter element and seal may require replacement as outlined below. Note that loss of pressure indications on the top panel gauge may also be caused by a clogged or split hose, lack of source refrigerant pressure, or failure to connect the service end of the sample hose to the refrigerant source.

Required Tools:

- 8" Adjustable Wrenches

Required Materials:

- Replacement Sample Hose Filter Element/Seal Kit, Part Number 4-05-2300-05-0

Replacement Procedure:

1. Verify that the Identifier is unplugged and that all hoses are disconnected.
2. Using adjustable wrenches, unscrew the in-line filter housing located at the service end of the sample hose.
3. Remove the stainless steel filter element, neoprene seal, and the tension spring. Retain the spring for reassembly of the filter.
4. Discard the clogged filter element and the used seal in an environmentally acceptable manner.
5. Install the replacement filter element and seal with the spring saved from step 3.
6. Thread the filter housing back together and wrench tighten to secure.

E. Spare Parts Listing

The following list provides the user with common parts required for the upkeep of the Refrigerant Identifier. Contact your local DuPont Authorized Distributor to order.

Part Description	Part Number
Sample Filter Assembly (package of 5)	6-02-6000-08-1
Sample Hose Filter Element/Seal Kit	4-05-2300-05-0
Sample Hose Assembly	6-02-6000-02-2
Air Intake Hose Assembly	6-02-6000-11-0
Oil Drain Hose Assembly	6-02-6000-12-0
Oil Catch Basin Assembly	6-02-6000-21-0
Oil Catch Basin Stainless Steel Wool (package of 5)	6-02-6000-15-0
Identification Labels	2-06-5000-10-0
Operation Manual	5-06-7000-04-0

Warranty

NEUTRONICS warrants, subject the terms listed below, that the goods will be free from defects in design, materials, and workmanship for a period of (1) one year from the date that the goods are purchased by the buyer.

THE SOLE LIABILITY OF NEUTRONICS FOR ALL PURPOSES SHALL BE TO REPAIR OR REPLACE, AT THE SOLE OPTION OF NEUTRONICS, DEFECTS APPEARING WITH THE (1) ONE YEAR PERIOD. NEUTRONICS SHALL HAVE NO OBLIGATIONS FOR REPAIR OR REPLACEMENT UNLESS NEUTRONICS HAS RECEIVED WRITTEN NOTICE OF THE ALLEGED DEFECT WITHIN THE (1) ONE YEAR PERIOD AND THE DEFECTIVE GOODS ARE PROMPTLY RETURNED BY THE BUYER, AT ITS EXPENSE, TO NEUTRONICS AT: 456 CREAMERY WAY, EXTON, PA 19341 USA, AND THE DEFECT WAS NOT THE RESULT OF USE OF THE PRODUCT IN A MANNER INCONSISTENT WITH THE INSTRUCTIONS AND MANUALS PROVIDED TO THE BUYER. NEUTRONICS WILL DELIVER THE REPAIRED OR NEW GOODS TO THE BUYER AT NEUTRONICS' EXPENSE. IN NO EVENT WILL NEUTRONICS BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE DEFECTS OR FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, WHETHER IN CONTRACT, TORT, OR OTHERWISE, FOR PERSONAL INJURY OR PROPERTY DAMAGE.

It shall be the responsibility of the buyer to read carefully and abide by all instructions provided to the buyer in the instruction manual or elsewhere. Buyer shall be responsible for insuring that the goods are functioning properly at all times and shall not use any goods which are not functioning properly.

EXCEPT AS SPECIFICALLY SET FORTH AND LIMITED IN THIS PARAGRAPH, NEUTRONICS, INC. MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES AS TO MERCHANTABILITY, OR AS TO THE FITNESS OF THE GOODS OR ANY PARTICULAR USE OR PURPOSE, AND ANY WARRANTIES SET FORTH IN THIS PARAGRAPH ARE IN LIEU OF SUCH IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR PARTICULAR USE OR PURPOSE.

Return Procedure

In the unlikely event that you experience problems with your unit please call Neutronics at (610) 524-8800 during normal business hours. Please be sure to have the following information readily available:

1. Unit Model #
2. Unit Serial #
3. Specific Problem
4. Date of Purchase

If the technician cannot solve your problem over the phone you will be issued a Return Material Authorization # and asked to ship your unit back to our factory location.

Simply complete the return shipping label below, tear it off, and attach it to the Identifier box. This will help us expedite your repair. Additionally, please enclose a note with the unit telling the technician the problem with the unit and where to return the unit when the repair has been completed. For warranty repairs please enclose proof of purchase.

Customer Name:
Customer Address:

Contact Name:
Neutronics, Inc.
456 Creamery Way
Exton, PA 19341
Attn: Service Dept.

Return Material Authorization # _____