FX Series Service Manual

Models: FX134, FX1234, FX3030

CPS AUTOMOTIVE RECOVER, RECYCLE, RECHARGE
General Safety Instructions

Only qualified service personnel should service this unit. The service personnel should be qualified in refrigerant and electrical service work. It will be necessary for the service technician to operate the unit with the service covers removed. Please use extreme caution due to the presence of un-insulated live electrical parts.

**Danger - Electrical Shock Hazard.** When servicing this equipment with the front cover opened, live un-insulated electrical connections will be exposed. An Electrical Shock hazard could result in severe injury or even death.

**Danger -** The unit’s recovery tank contains liquid refrigerant. Overfilling of the recovery tank may cause a violent explosion resulting in severe injury or even death.

**Danger -** Only use CPS Automotive recommended recovery tanks with this unit. See distributor for replacement tanks.

**Danger -** Avoid breathing refrigerant vapors and lubricant vapor or mist. Breathing high concentration levels may cause heart arrhythmia, loss of consciousness, or even cause suffocation and death.

**Caution -** all hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal protective equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.

**Caution -** Avoid breathing refrigerant vapors and/or lubricant mist. Exposure may irritate eyes, nose, throat, and skin. Please read the manufacturers Material Safety Data Sheet for further safety information on refrigerants and lubricants.

**Caution -** to reduce the risk of fire, avoid the use of extension cords thinner than NO. 14 awg. (1.5m1.5mm²) to prevent the overheating of this cord please keep length to a minimum.

**Caution -** do not use this equipment in the vicinity of spilled or open containers of gasoline or other flammable substances. Make certain that all safety devices are functioning properly before operating the equipment.

Mixing of different refrigerants will cause this equipment and the mobile A/C system to prematurely fail.

Note: It is very expensive to destroy mixed or damaged refrigerants.

Make sure that recovery tank is placed on the load cell platform at all times. Failure to do so will disable certain safety features of this unit.
Introduction

The FX series is a fully automatic Recovery/Recycling, and Recharging Refrigerant work station. The FX134 Series meets and exceeds the new SAE J2788. FX1234 Series meets and exceeds the new J2843/J2788. The FX3030 Series meets and exceeds J3030. The FX134, FX1234, and FX3030 Series models are single circuit R/R/R machines for handling R134a, R1234yf from mobile AC systems. The following table will give you more information on the models available, the power supply and the CPS Automotive tank models available for the FX 134, FX1234, and FX3030 Series.

CAUTION: The FX134, FX1234, and FX3030 series uses the integrated scale for tanks overfill protection. The information on Maximum Refrigerant and Empty Tank weights must be accurately inputted or the overfill protection will not function correctly. See Warnings and Dangers of overfilling a tank.

<table>
<thead>
<tr>
<th>CPS Models</th>
<th>Voltage</th>
<th>Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX134/FX1234/FX3030</td>
<td>115</td>
<td>50/60</td>
</tr>
<tr>
<td>FX134E/FX1234E/FX3030E</td>
<td>220-240</td>
<td>50/60</td>
</tr>
<tr>
<td>FX134J/FX1234J/FX3030J</td>
<td>100</td>
<td>50/60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPS Tank Models</th>
<th>Max Refrigerant Weight</th>
<th>Empty Tank Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRX400T*</td>
<td>38 lbs. 0 ounces</td>
<td>28 lbs 8 ounces *</td>
</tr>
<tr>
<td>CRX390T</td>
<td>68 lbs. 0 ounces</td>
<td>57 lbs 8 ounces</td>
</tr>
<tr>
<td>40L</td>
<td>33.64 KG</td>
<td>20.9 KG</td>
</tr>
</tbody>
</table>

* comes standard on FX134/FX1234/FX3030

1 The unit can be configured to most approved recovery tanks. Data from the tank manufacturer will be required to complete the tank configuration process. See Section 1 for tank configuration details.
Many problems are a result of operator error. Please read the FX134/FX1234/FX3030 Series operating manual. The manual is separated into 4 Sections:

**Section 1** gives instructions on how to gain service access to the FX134/FX1234/FX3030. This Section also gives instructions on proper calibration and mechanical repair procedure.

**Section 2** contains a list of common problems and how to resolve them.

**Section 3** contains instructions on how to repair various components used in the FX134/FX1234/FX3030 Series.

**Section 4** contains additional Electrical and Plumbing Schematics of the FX134/FX1234/FX3030 Series. This section also contains the FX134/FX1234/FX3030 Series parts list.

**SUMMARY OF OPERATION**

The following information will help illustrate the flow path of the FX134/FX1234/FX3030 series in each of the unit’s modes. Understanding what valve, component, etc… that each mode utilizes will help with faster diagnose and repair the unit.
RECOVER/RECYCLE

NOTE: The FX1234 and FX3030 will implement refrigerant indentifying process according to J2743. Refrigerant sample will pass through (SC2) low side service hose. The refrigerant sample will then pass through low side manifold valve (LV2) and (LS2) solenoid valve allow sample into identifier. Once refrigerant has been sampled and passes. The recovery unit will operate as instructed below. See Identifier Plumbing Schematic.

The Manifold gauges read the respective service line pressures. The recovered refrigerant will pass through their respective open HI and LO manifold valves (LV1, LV2). The combined HI and LO refrigerant then flows through the open RECOVER valve (LV4) and then into a Constant Pressure Regulator. The REGULATOR reduces the pressure down to 80 psig where it flows into a DOA Chamber where oil is separated from refrigerant (if liquid is present) the liquid refrigerant is boiled off by the heat exchanger in DOA Chamber. After leaving the DOA Chamber, the vapor refrigerant enters the COMPRESSOR suction where it is compressed to a high pressure gas. This completes the first step in the recycling process. The refrigerant then passes through the heat exchanger in DOA Chamber then to RECOVERY OUT valve (HV1) and passes by the systems HIGH PRESSURE SWITCH (HP) on its way to the storage tank. If the pressure goes above 450 psig, the HP will open and disrupt power to the unit’s compressor and signals to the control PCB that a HIGH PRESSURE LIMIT condition exists. Recovery is complete when the Pressure Transducer (PT) senses the required vacuum. When recovery is complete, the automatic oil drain will commence for 45 seconds.
RECOVER- Oil Drain Flow

Once Recover is done and the compressor shuts off. The air purge valve HS1 will open to pressurize DOA Chamber then HS1 will close. The compressor will come on to lower pressure in DOA for oil draining. Once pressure level is achieved, then (HV3) opens allowing excess oil to drain from DOA Chamber for 30 seconds.
EVACUATION

After the mobile a/c system is repaired, it should then be pulled into a deep vacuum to remove residual gasses and moisture before recharging it with refrigerant. The unit evacuates gasses from the a/c system through the LO Side and HI Side service hoses. The gasses enter the unit through the two service hoses attached to the LO and HI Manifold. The gasses will then pass through their respective open LO and HI valves (LV1 and LV2). The combined HI and LO gasses then flows through the open EVACUATION valve (LV3) and then into the VACUUM PUMP. The VACUUM PUMP exhausts the evacuated gasses to the atmosphere.

IMPORTANT: if either the LO or HI manifold gauges read more than 5 psig, the unit will not start the evacuation mode, but go into the RECOVER mode to recover the gasses causing the pressure.

The Evacuation mode will run per the programmed time set by the user.
NOTE: FX1234 and FX3030 will have addition steps in charging according to J2743. There will be a 10 minute vacuum test. The first 5 minutes the vacuum pump mode will run. (See Vacuum Plumbing Schematic) Then the second 5 minutes of the vacuum leak test is where it checks for vacuum loss. Then a 15% of programmed charge is released for pressurizing A/C for manual leak check using electronic leak detection. The unit will complete charge once all has passed as instructed below.

Using the keypad to program the desired charge, the liquid refrigerant from the storage tank will pass through the FILTER DRIER (F2). This completes the third and final procedure of the recycling process. Once through the FILTER DRIER (F2), the liquid refrigerant will then pass through the open CHARGING SOLENOID VALVE (LS1). The liquid refrigerant will then pass through the open Low Manifold valve (LV2) and onward through the Low service hose. After the required amount of refrigerant is charged, the control PCB de-energizes charging solenoid valve (LS1). The LCD display charge complete, and ask if you want to go to Car Health. If you select to use Car Health the screen will ask you to start car, and low side (LV2) will open and allow running pressures to be seen at the pressure transducers. The screen will then display digital manifold and operating pressures on hi and low side of A/C system. If you choose not use the Car Health, then the screen will ask you to close hi coupler and start cars A/C system. The low and hi service hoses will then open (LV1 and LV2) and allow suction of car A/C compressor to clear hoses.
NOTE: FX1234 and FX3030 will have addition steps in charging according to J2743. There will be a 10 minute vacuum test. The first 5 minutes the vacuum pump mode will run. (See Vacuum Plumbing Schematic) Then the second 5 minutes of the vacuum leak test is where it checks for vacuum loss. Then a 15% of programmed charge is released for pressurizing A/C for manual leak check using electronic leak detection. The unit will complete charge once all has passed as instructed below.

The a/c system should be in a deep vacuum before proceeding. After using the keypad to program the desired charge, the liquid refrigerant from the storage tank will pass through the FILTER DRIER (F2). This completes the third and final procedure of the recycling process. Once through the FILTER DRIER (F2), the liquid refrigerant will then pass through the open CHARGING SOLENOID VALVE (LS1). The liquid refrigerant will then pass through the open HI Manifold valve (LV1) and onward through the HI, Lo, or both service hoses depending on what was selected. After the required amount of refrigerant is charged, the control PCB de-energizes charging solenoid valve (LS1). The LCD display will read “CHARGE COMPLETE” and give an audible signal.
NOTE: FX1234 and FX3030 will have addition steps in charging according to J2743. There will be a 10 minute vacuum test. The first 5 minutes the vacuum pump mode will run. (See Vacuum Plumbing Schematic) Then the second 5 minutes of the vacuum leak test is where it checks for vacuum loss. Then a 15% of programmed charge is released for pressurizing A/C for manual leak check using electronic leak detection. The unit will complete charge once all has passed as instructed below.

The a/c system should be in a deep vacuum before proceeding. After using the keypad to program the desired charge, the liquid refrigerant from the storage tank will pass through the FILTER DRIER (F2). This completes the third and final procedure of the recycling process. Once through the FILTER DRIER (F2), the liquid refrigerant will then pass through the open CHARGING SOLENOID VALVE (LS1). The liquid refrigerant will then pass through the open HI Manifold valve (LV1) and onward through the HI, Lo, or both service hoses depending on what was selected. After the required amount of refrigerant is charged, the control PCB de-energizes charging solenoid valve (LS1). The LCD display will read “CHARGE COMPLETE” and give an audible signal.
NOTE: The FX1234 and FX3030 will implement refrigerant identifying process according to J2743. Refrigerant sample will pass through (SC2) low side service hose. The refrigerant sample will then pass through low side manifold valve (LV2) and (LS2) solenoid valve allow sample into identifier. Once refrigerant has been sampled and passes. The recovery unit will operate as instructed below. See Identifier Plumbing Schematic.

To refill the FX134A / FX 1234 / FX3030, attach a new supply tank of refrigerant to the HI Side Service hose using the required adaptors. The liquid refrigerant from the new refrigerant tank will flow through the open HI Side service hose and pass through the open Hi Side valve (LV1) then through the open RECOVER valve (LV4) and then into a Constant Pressure Regulator. The REGULATOR reduces the pressure down to 80 psig where it flows into a DOA Chamber where liquid refrigerant is boiled off by heat exchanger in DOA chamber, and oil separated from refrigerant. After leaving the DOA Chamber, the vapor refrigerant enters the COMPRESSOR suction where it is compressed to a high pressure gas. The compressed refrigerant passes through the RECOVERY OUT valve (HV1) then passes by systems HIGH PRESSURE SWITCH (HP) on its way to the storage tank. If the pressure goes above 450 psig, HP will open and disrupt power to the unit’s compressor and signals to the control PCB that a HIGH PRESSURE LIMIT condition exists.
AIR PURGE

Air Purge is performed automatically on the FX134A / FX 1234 / FX3030 series. Two thermistors are used to determine if the storage tank has had enough time to stabilize. Once it is determined Air Purge can take place, the unit will open the charging solenoid valve (LS1) to the Pressure transducer (PT). The PT compares this pressure to the actual saturated pressures stored in the PCB microprocessor. If Air Purge is required, the Air Purge solenoid pressure.
The FX1234 and FX3030 will implement refrigerant indentifying process according to J2743. Refrigerant sample will pass through (SC2) low side service hose. The refrigerant sample will then pass through low side manifold valve (LV2) and (LS2) solenoid valve allow sample into identifier. Once refrigerant has been sampled and passes. The recovery unit will operate as instructed below.

---

**LEGEND**
- COMP: Compressor
- DS: Oil Separator
- DOA: Oil Separator Chamber
- HP: High Pressure LHI Switch, Auto Reset
- LV1: Automatic BV, HI Side service hose
- LV2: Automatic BV, LO Side Service Hose
- LV3: Automatic BV, Vacuum Pump
- LV4: Automatic BV, Recovery In
- HV1: Automatic BV, Recovery Out
- VAC: Vacuum Pump
- LSI: Changing Solenoid Valve
- HIS: Air Purge Solenoid Valve
- F2: Suction Line Filter Drier
- SCI: HI Side Coupler
- SC2: LO Side Coupler
- GI: HI side gauge
- F2: HI side gauge
- HG: Refrigerant Identifier (optional)
- LS2: Refrigerant Identifier (optional)
- PT1: LO/CO2n Press Transducer
- PT2: HI Side Pressure Transducer

---

**FX3030 Dual Gas OILLESS PLUMBING SCHEMATIC 9-18-2014**
FX3030 PUMP DOWN

FX3030 Dual Gas OILLESS PLUMBING SCHEMATIC 9-18-2014

LEGEND:
- Comp- Compressor
- DS- Oil Separator
- EOA- Evaporation, Oil Separation Chamber
- HP- High Pressure Limit Switch, Auto Reset
- LVI- Automatic BV, Hi Side Service Hose
- LV2- Automatic BV, LD Side Service Hose
- LV3- Automatic BV, Vacuum Pump
- LV4- Automatic BV, Recovery In
- HV1- Automatic BV, Recovery Out
- HV2- Automatic BV, PUMP DOWN
- HV3- Automatic BV, DDA GM Drain
- VAC- Vacuum Pump
- LSI- Charging Solenoid Valve
- HS1- AP Purge Solenoid Valve
- F2- Suction Line Filter Drier
- SC1- HC Side Coupler
- SC2- LD Side Coupler
- GL- Hi side gauge
- GS- LD side gauge
- REG- Regulator, Set at 80 PSIG
- REF- Refrigerant Identifier (optional)
- LS2- Ref DD valve Solenoid Valve (optional)
- PT1- Lp/Coolant Press Transducer
- PT2- Hi Side Pressure Transducer

OIL SHUT OFF
Hose Flush High Voltage Compressor

FX3030 Dual Gas OILLESS PLUMBING SCHEMATIC 9-18-2014

LEGEND:
- DIFP- Compressor
- DR- DI separator
- DQA- DI separation chamber
- HP- High Pressure Limit Switch, Auto Reset
- LVR- Automatic BV, Hi Side service hose
- LV2- Automatic BV, LO Side Service Hose
- LV3- Automatic BV, Vacuum Pump
- LV4- Automatic BV, Recovery In
- HV1- Automatic BV, Recovery Out
- HV2- Automatic BV, PUMP DOWN
- HV3- Automatic BV, DRO ON Drain
- VAC- Vacuum Pump
- LS1- Charging Solenoid Valve
- HS1- Air Purge Solenoid Valve
- F2- Suction Line Filter Drier
- SC1- Hi Side Coupler
- SC2- LO Side Coupler
- GL- Hi side gauge
- GS- LO side gauge
- REG- Regulator, Set at 80 PSIG
- REF- Refrigerant Identifier (optional)
- LS2- Ref IDer Solenoid Valve (optional)
- PT1- Lo/Coaxon Pressure Transducer
- PT2- Hi Side Pressure Transducer
CAR HEALTH

Car Health the screen will ask you to start car, and low side (LV2) will open and allow low side running pressure to be seen at the PT 1 pressure transducer. The hi side pressure will be seen at PT 2 pressure transducer which is common to hi side service hose. The screen will then display digital manifold and operating pressures on hi and low side of A/C system.
Section 1- Service Access and Calibration Procedure

1. Updating or Re-programming software
2. Front Service Panel Access
3. PCB Board/Control Panel Access
4. Scale/PC Board Recalibration Procedure
5. Tank Weight configuration
6. Scale Tare Procedure
7. Gauge Calibration Procedure
8. Pressure Transducer Recalibration

Note: If there is any question on how to perform these procedures, please consult CPS service center.

1. Updating Program

   a. The unit can be updated by using USB stick or SD card.
   b. The SD card is simply inserted to the SD reader on the back of control panel and turn on unit. The unit will beep three times at the start of installation, and then single beeps as it loads program. The unit will beep three times at the end if down load. No password is needed. Do not remove SD card unit main screen “Do Not Connect to Car” comes up.
   c. The USB is used from the update date screen. On the home screen push the gear icon on bottom of screen. Two new icons will appear. Select the wrenches on right side of the screen. Then six new icons will appear. Select the Up grade icon and install USB stick into USB Port. The screen will detect program and then push green arrow and will prom you for password that came with update.
2. Front Panel Service Access into FX134A / FX1234 / FX3030

a. Remove service hoses, oil drain bottle, yellow holding bin for accessories and yellow face plate to expose panel screws.

b. Remove screws as indicated in picture and remove front panel. **Note:** Check for screws on side cover over lapping top panel outer edge at very top on control panel. Remove screws if unit has them.

c. Removing the front access panel gives access to the lower section of the unit where the DOA, Fan, Condenser, Evaporator, Regulator, Compressor, Vacuum Pump, Power Supply PCB’s, Pressure Transducer PCB, and Relay PCB are contained.
3. PCB / Control Panel Service Access  FX134A / FX1234 / FX3030

a. Follow steps in Front Service Access above.

b. Then remove the two plastic engagement screws on both sides as shown below.

c. Then remove screws from side covers over lapping top panel edge if unit came with screws.

d. Then gently pull side cover back to clear top panel edge when lifting top panel straight up. The top panel is engaged by to plastic placement pins on back side of control panel.
4. Scale/PCB Board Recalibration Procedure

a. Remove back tank cover by removing both thumb screws holding cover on to main chassis.

b. Remove tank strap from tank, and unplug heater blanket. Then turn both ball valves on tank hoses to the off position, and disconnect tank hoses from purge block. Then remove tank from scale platform and place to the side.

c. Turn unit on and allow main screen to come up. Select the gears icon at the bottom of screen. Then select the wrenches icon on next screen. Then select the scale icon on next screen. Then select the scale icon with plus sigh on scale on next screen. Enter password **ABBA1216** to allow full calibration. Follow instruction on screen to complete calibration. Replace tank and tank strap around tank. Don’t forget to plug heater blanket backing before installing tank cover.

**Note:** 25lb weight is needed.
5. Tank Weight Configuration

WARNING!!!!!! ONLY CPS APPROVED SERVICE TECHNICIANS SHOULD PERFORM THIS PROCEDURE. It is very important that the correct tank weights are entered. Failure to input the correct information could lead to a dangerous condition on where the storage tank is overfilled. OVERFILLED TANKS CAN EXPLODE.

The Models FX134A / FX1234 / FX3030 are shipped with a 50lb DOT storage tank (CRX400T).

Use only CPS approved storage tanks on the FX134A / FX1234 / FX3030 Series. If other than CPS approved storage tank are use, they must meet the specific country’s safety regulations on refrigerant storage.

The following is how to adjust the tank settings on the FX134A / FX1234 / FX3030 Series PCB:

a. Turn unit on and proceed to main menu, and select the gears icon on bottom of screen.
b. On next screen select the gears icon on the left side of screen.
c. Then select tank icon on next screen. Then select red circle icon on next screen, and enter password ABBA1216.
d. The first screen you will enter tank weight. This is the T.W. stamped on tank.
e. Then push green arrow to next screen and enter water capacity weight. This is the W.C. stamped on tank.
f. Then push W for water capacity and preset amount of empty tank weight and max refrigerant will display.
g. Push green arrow to lock in and continue back to main screen.

If you have any questions about the tank selection, please call 877-776-8486, and ask for technical support.
6. Scale Tare and Accuracy Check Procedure

The scale of the FX134A / FX1234 / FX3030 Series may require a periodic adjustment. After time the scale may slightly drift from its initial zero setting. The following is the re-tare procedure to reset the zero setting:

a. Turn unit on and proceed to main menu, and select the gears icon on bottom of screen.
b. On next screen select the wrenches icon on the right side of screen.
c. Then select scale icon on screen.
d. Then select scale icon with check mark above it.
e. Then place 1 lb weight that is supplied with FX unit on top of tank. (Leave tank on scale)
f. Select green check mark if 1 lb is displayed, and continue back to main menu.
g. Select red circle if 1 lb is not displayed and select Tare icon on screen, and follow instructions on screen for scale.
h. Then repeat steps above starting with step d.
i. A full calibration may be needed if proper readings are not achieved. (see section 4)
7. Gauge Calibration

It will be necessary to recalibrate the LO & HI Side Manifold gauges periodically. Read the LO and HI Side Manifold gauges. If pressure is present, proceed to run RECOVER mode. Once RECOVER mode is complete, open the LO Side and HI Side Service hoses to atmosphere by removing the service couplers from the end of the service hoses. Always use caution when opening hoses. Always expect refrigerant to be present. When open to atmosphere, the reading on the gauge should be 0 psig/MPa/kPa/bar. If the gauges read correctly, close the Service hoses. Calibration is not required. If the gauges are not reading correctly, re-calibration is required. First make sure the service couplers or ball valve on the end of the service hoses are removed or open to atmosphere. Then remove the Plastic Plug on the gauge lens. And finally use a small flat tip screwdriver to turn the pressure gauge adjustment screw (located on the face of the gauge) until the gauge pointer reads 0 psig/Mpa/kPa/bar. Repeat this adjustment for both gauges. Once done re-install the Plastic Plugs and the service couplers.

8. Pressure Transducer Calibration

a. Perform a PT calibration from PT diagnostic test screen.

b. Turn unit on and press service on start up screen.

c. Then press PT diagnostic on screen and allow calibration of pt to run.

d. Once the test screen appears then tap the CPS icon 4 times and the PT icon will appear.

e. Press PT icon and follow instruction on screen for recalibrating pressure transducers. 70 to 100 PSI will be needed.
Section 2. - Common Problems and Solutions

The most common problems fall under one of the following categories:

A. No Power to the unit after turning on Main Power Switch
B. Circuit breaker trips when plugging the unit into power source
C. Circuit breaker trips when Compressor is to be energized
D. Circuit breaker trips when the Vacuum Pump is to be energized
E. Compressor will not start when the compressor relay light on the Relay PCB is energized
F. Vacuum Pump will not start when the Evacuation relay light on the Relay PCB is energized
G. Unit will not Charge, no pressure on Manifold gauges
H. Unit will not Charge, pressure on Manifold gauges
I. Charging is very slow
J. Charging Inaccuracies- Over and Under Charging
K. High Pressure Limit Cutout
L. Tank Full Limit
M. Vacuum Pump starts in Evacuation mode, but will not pull into a deep vacuum
N. Compressor is running continuously when the compressor relay light on the Relay PCB is energized
O. Incorrect Gauge Reading
Note: If the problem is not included in the above categories, please consult CPS service center support for addition information.

A. No power to the unit after turning ON the Main Power Switch

Possible Cause: Power Cord not connected correctly.

Solution: Check to make sure the Power Cord is properly plugged into the correct power source and it is properly attached to the back of the unit (via IEC plug). Turn main power switch on.

Possible Cause: FX134A / FX1234 / FX3030 circuit breaker tripped.

Solution: Check the Circuit Breaker on the back of the unit to see if it is tripped. If tripped, push the switch trip mechanism to reset. If circuit breaker continues to trip.

Possible Cause: The AC-DC power supply failed. The main Power Switch work through the Main PCB thus if no power to the Main PCB via the power supply, the unit will not come on.

Solution: Check all AC-DC power supply wire connectors are firmly engaged. Check that the Main Power Switch wires are firmly engaged. If no output power, check the input voltage (100-240 VAC) to the AC-DC power supply. If no inlet power check wire connections. If inlet power is measured, then check the output voltage (12VDC) of AC-DC power supply. If no outlet power, replace AC-DC power supply.

B. Circuit breaker trips when plugging the unit into power source

Possible Cause: Short circuit exists

Solution: Take an OHM meter and check L1 and L2 of the IEC inlet to the IEC ground. If continuity exists, trace back to where the short circuit exists.

C. Circuit breaker trips when Compressor is to be energized

Possible Cause: Extension cord under size.

Solution: Use a extension cord minimum of 14ga

Possible Cause: Compressor flooded with liquid refrigerant or seized compressor.

Solution: Remove the front service panel. Locate the compressor suction port.

Possible Cause: Bad compressor start relay or capacitor or bad motor windings (shorted to ground).

Solution: Replace compressor start components and try re-starting compressor, if circuit breaker continues to trip when there is no pressure on the compressor, the compressor maybe seized. Replace compressor.

Solution: Also check continuity from ground to each of the compressor terminal points. If continuity exists on any of the terminal points to ground, the compressor motor windings have failed. Replace the compressor.
D. Circuit breaker trips when the Vacuum Pump is to be energized

Possible Cause: Extension cord under size.

Solution: Use a extension cord minimum of 14ga

Possible Cause: Vacuum pump oil is contaminated and/or cold causing the vacuum pump start windings to kick on and off upon start up.

Solution: Replace vacuum pump oil. Use CPS Vacuum Pump oil. It is specially formulated for cold weather conditions.

Possible Cause: Vacuum pump voltage switch is in the wrong position.

Solution: Set vacuum pump voltage switch to the correct position.

Possible Cause: Vacuum pump mechanism is locked up or bad motor windings.

Solution: Replace vacuum pump.

E. Compressor will not start when the compressor relay light on the Relay PCB is energized

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present. It will be necessary to operate this unit with the front cover opened. Please use extreme caution when live power is applied to the unit.

Possible Cause: Compressor start components or Compressor motor windings have failed.

Solution: Check the compressor power leads to see if voltage exists. Unit should be turn on. If the unit goes into auto air purge, after the air purge the compressor is to run. Check the Relay PCB for the compressor relay to be energized. If voltage is present, the problem can be narrowed down to the overload, compressor motor windings, compressor start relay and capacitor. If voltage does not exist on the compressor power leads, check Relay on PCB. The contact points on this relay should be closed when powered up unless a tank full or HP condition exists. Also check for loose wires.

F. Vacuum Pump will not start when the Evacuation relay light on the Relay PCB is energized

Possible Cause: Vacuum pump power cord is not plugged in.

Solution: Check the power cord connection to the vacuum pump IEC inlet.

Possible Cause: Vacuum pump power switch (located on the Vacuum Pump) is not turn to the ON position.

Solution: Turn vacuum pump switch ON.

Possible Cause: Fuse in Vacuum Pump IEC inlet has blown. (on older pumps date code early 2014)

Solution: Replace Fuse. Note the holder contains one extra fuse.

Possible Cause: Open Vacuum Pump motor windings.

Solution: Check for continuity between L1 and L2 of the IEC inlet. If open, the motor windings are bad. Replace vacuum pump.
G. Unit will not Charge, no pressure on Manifold gauges

Possible Cause: Storage tank liquid valve and/or Liquid hose valve are closed
Solution: Make sure the liquid supply to the charging solenoid valve has all valve open.

Possible Cause: Charging Solenoid Valve is not energizing. Solution: Check to see if 12VDC is present on the Charging Solenoid Coil with the unit in the charging mode. If voltage is present, check the resistance of the solenoid coil. If resistance is not measure, the solenoid coil is defective. Replace solenoid coil. See Section 3, Item 5 for repair details

H. Unit will not Charge, pressure on Manifold gauges

Possible Cause: The service coupler valve is closed
Solution: Make sure the service coupler valve is open.

Possible Cause: The service couplers are not depressing the ac system’s service valve core.
Solution: Make sure the Coupler core depressor is functioning correctly.

Possible Cause: The Liquid and Vapor hoses are switched on the storage tank. (would charge but become static)
Solution: Correct the hose configuration.

I. Charging is very slow

Possible Cause: Cold temperature conditions exist. At 70F, the charging rate of the FX134A / FX1234 / FX3030 is about 1.0 LB/minute.
Solution: Install option FX134A / FX1234 / FX3030 heater blanket.

Possible Cause: The Liquid and Vapor hoses are switched on the storage tank.
Solution: Correct the hose configuration.

Possible Cause: The service couplers connection is slightly depressing the ac system’s service valve core.
Solution: Make sure the Coupler core depressor is functioning correctly.
J. Charging Inaccuracies- Over and Under Charging

Possible Cause: Unit was moved during the Charging operation Solution: It is very important that when unit is charging, it is not bumped or in an area with excessive vibration during the CHARGING mode. The pneumatic wheels will help to reduce an external vibration. Also the front casters utilizes a brake to help further stabilize the unit.

Possible Cause: Storage Tank touching Framework

Solution: Place the Storage tank in the center of the scale platform. If the scale touches the framework, it will cause enough friction that the scale will read incorrectly during charging.

Possible Cause: Uneven surface.

Solution: The Fx134A / FX1234 / FX3030 Series unit should not be operated on a surface with a grade of more than 5 degrees. The unit should be placed on a level surface to ensure the highest accuracy of charging.

Possible Cause: The Charging Solenoid is not properly closing.

Solution: Disassembly the Charging solenoid and check for foreign material in the solenoid valve. See SECTION 3 on solenoid valve service.

K. High Pressure Limit Cutout - LCD message HIGH PRESS LIMIT

Possible Cause: Tank Vapor valve and/or the Vapor Hose valve are closed causing the High Pressure to build up on the compressor discharge. Once the pressure goes above 450 PSIG, the HP switch will activate.

Solution: Open Tank Vapor and Vapor Hose valve to relieve the high pressure restriction. Re-start unit.

Possible Cause: High amounts of non-condensable (NCG’s) are present in the storage tank.

Solution: Check the tank pressure. If large amounts of NCG’s are present in the storage tank, follow the purge procedure in the manual to remove the NCG’s.

Possible Cause: Electrical Malfunction

Solution: Check for loose wires on the HP switch.

L. Tank Full Limit - LCD message “TANK FULL”

Possible Cause: Storage tank has exceeded maximum refrigerant amount.

Solution: You will need a spare empty storage tank. Connect the HI Side Service hose to the vapor port of the empty storage tank. Charge about 8-10 pounds of refrigerant into the empty storage tank. Properly label the empty storage tank with the refrigerant type. The unit can now be used for normal service operation.

Possible Cause: Scale not reading correct weight.

Solution: If the Tare (Zero) set point of the scale is incorrect, this could “fool” the PC Board into thinking that there is
more refrigerant in the storage tank than there really is. This could make the refrigerant reading in the tank exceed the maximum amount. Follow the Tare procedure in SECTION 1 of this manual.

M. Vacuum Pump starts in Evacuation mode, but will not pull into a deep vacuum (this type of leak will could prevent the Automatic PT calibration from completing its operation) or Leak Detected after Evacuation

Possible Cause: Hose to Vacuum Pump is disconnected or loose

Solution: Check Vacuum Pump Hose connections. Also check Low and High Side Service hoses for leaks. Possible Cause: Service Hose or Service Couplers have developed a leak.

Solution: Replace the defective part.

N. Compressor is running continuously when the compressor relay light on the Relay PCB is energized

Possible Cause: PT is out of calibration.

Solution: Recalibration the PT by turning unit off and then back on.

Possible Cause: Oil Injection Valve is not closed.

Solution: Make sure Oil Injection Valve is closed. Any leaks through this valve will prevent the unit from pulling a deep vacuum. Also make sure the Oil Injection Toggle Valve packing nut is tight.

Possible Cause: Service Hose or Service Couplers have developed a leak.

Solution: Replace the defective part.

O. Incorrect Gauge Reading

Possible Cause: The gauge is not in calibration.

Solution: Recalibrate gauges as shown in SECTION 1.
Section 3 - Repair Procedures Component Service and Repair Instructions

1. PC Board/ LCD Replacement
2. Scale Replacement
3. Compressor Replacement
4. Solenoid Replacement
5. Pressure Transducer Replacement
6. Gauge Replacement
7. DC Power Supplies Replacement
8. High Pressure Switch Replacement
9. Fan Replacement
10. Refrigerant Identifier Replacement / Maintenance
11. HI and LO Manifold Block Replacement
12. LO or HI Manifold PCB Replacement
13. Relay PCB Replacement
14. Pressure Transducer PCB Replacement
15. Printer Replacement
16. Wheel Service and Replacement
17. Vacuum Pump Replacement
1. PC Board and/or LCD Replacement

**Danger:** Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Disconnect power supply to the FX134A / FX1234 / FX3030.

Keep the PC Board free from static electricity. Static electricity can damage the microprocessor.

a. Service Access: See Section 1 parts 2 & 3  
b. Remove all wire connection from Main PCB  
c. Remove four screws on PCB/LCD mounting bracket.  
d. Remove four outside screws on PCB to separate LCD and Main PCB
2. Scale Replacement

Disconnect power supply to the FX134A / FX1234 / FX3030 Series.

j. Remove back tank cover by removing both thumb screws holding cover on to main chassis.

k. Remove tank strap from tank, and unplug heater blanket. Then turn both ball valves on tank hoses to the off position, and disconnect tank hoses from purge block. Then remove tank from scale platform and place to the side.

l. Remove two platform screws and set platform to the side. Be sure to gather up spacer for reinstallation of platform.

m. Remove black scale patch cord, and the four screws on scale base to remove scale assembly.
3. Compressor Replacement

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Disconnect power supply to FX134A / FX1234 / FX3030 series.

Caution- all hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal protective equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.

Danger: Always assume that high-pressure refrigerant exists in the Compressor. Failure to do so may result in bodily injury.

a. Service Access: See Section 1 part 2
b. Disconnect power connector on compressor
c. Remove suction and discharge compressor hoses.
d. Remove the four mounting screws from bottom side of compressor shelf.

Unplug power connector
Remove both suction and discharge hoses
Remove four mounting bolts from bottom side of compressor shelf
4. Charging and Air Purge Solenoid Replacement

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Disconnect power supply to the FX134A / FX1234 / FX3030 Series.

a. Service Access: See Section 1 part 2 & 3

b. Check resistance by unplugging coil from lo side block PCB, and ohm coil out. Reading on coil should be between 18 to 22 Ohms.

c. Locate proper solenoid valve and remove 9/16 nut from top of coil.

d. Remove coil, and washer from plunger stem.

e. Remove Plunger stem with screw driver.
5. Pressure Transducer Replacement.

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Disconnect power supply to the FX134A / FX1234 / FX3030 Series.

a. Service Access: See Section 1 part 2 & 3

b. Locate pressure transducer PT1 and PT 2 on low side ball valve manifold block.

c. Unplug pressure transducer from Pressure Transducer PCB below ball valve manifold block.

d. Remove Manifold block PCB if servicing PT2 (see section 3 -12 for instruction.)

e. Remove brass packing nut. If silicone is present then you will have to turn nut and wire harness together to remove sensor assembly.

f. Remove nut and spring washer from defected assembly for reinstall on new pressure transducer.

g. Check for o ring damage on center post of manifold block where pressure transducer is seated. (oil the o ring)

h. Perform a PT calibration from PT diagnostic test screen. Tap the CPS icon 4 times and the PT icon will appear. Press PT icon and follow instruction on screen for recalibrating pressure transducers. 70 to 100 PSI will be needed.
6. Gauge Replacement

Danger- Avoid breathing refrigerant vapors and lubricant vapor or mist. Breathing high concentration levels may cause heart arrhythmia, loss of consciousness, or even cause suffocation.

Caution- all hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal protective equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.

Caution- avoid breathing refrigerant vapors and/or lubricant mist. Exposure may irritate eyes, nose, throat, and skin. Please read the manufacturers Material Safety Data Sheet for further safety information on refrigerants and lubricants.

Danger: Always assume that high-pressure refrigerant exists. Failure to do so may result in bodily injury.

Disconnect power supply to the FX134A / FX1234 / FX3030 Series.

a. Run the RECOVER operation to remove residual refrigerant from the LO/HI Manifold gauges.

b. Remove three screws from outer ring of gauge.

c. Pull gauge from top panel, and remove nylon hose compression fitting from gauge.

d. Install nylon hose compression fitting to new gauge and tighten.

e. Reinstall gauge in top panel.

Remove three outer mounting screws

Loosen compression fitting with 5/16 wrench
7. DC Power Supply Replacement

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Disconnect power supply to the FX134A / FX1234 / FX3030 Series.

a. Front Panel Service Access: See Section 1 part 2

b. Locate both power supplies in vacuum pump compartment of unit.

c. Disconnect wires from selected power supply.

d. Using a pair of needle nose pliers. Compress the nylon stand off one at a time to release PCB from standoffs.

15 watt power supply front one. The 65 watt power supply is the back on.

To remove PCB from stand off. Squeeze stand off from flat side using a pair of needle nose pliers to depress little clip and slide PCB corner off of stand off.
3. High Pressure Switch Service and Replacement

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Danger: Avoid breathing refrigerant vapors and lubricant vapor or mist. Breathing high concentration levels may cause heart arrhythmia, loss of consciousness, or even cause suffocation.

Caution: All hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal protective equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.

Caution: Avoid breathing refrigerant vapors and/or lubricant mist. Exposure may irritate eyes, nose, throat, and skin. Please read the manufacturers Material Safety Data Sheet for further safety information on refrigerants and lubricants.

Danger: Always assume that high-pressure refrigerant exists. Failure to do so may result in bodily injury.

Disconnect power supply to the FX134A / FX1234 / FX3030 Series.

a. Service Access: Please see Section 1 parts 2&3

b. Close ball valve on tank vapor hose and disconnect to release pressure from hose and hi side manifold block

c. Using ohm meter check the switch. The switch should be closed with no pressure on it.

c. Remove high pressures switch from hi side manifold block and replace.

Check the switch with OHM meter. The switch should be closed with no pressure on high side block.
9. Fan Replacement

Disconnect power supply to the FX134A / FX1234 / FX3030 series.

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

a. Front Panel Service Access: Please see Section 1 part 2

b. Locate fan in the compressor department.

c. Remove both screws holding fan in place.

d. Remove fan wires once fan is removed from back panel.

10. Refrigerant Identifier Replacement / Maintenance (FX1234, FX3030)

Disconnect power supply to the FX1234 / FX3030 series.

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Danger- Avoid breathing refrigerant vapors and lubricant vapor or mist. Breathing high concentration levels may cause heart arrhythmia, loss of consciousness, or even cause suffocation.

Caution- all hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal protective equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.
Caution- avoid breathing refrigerant vapors and/or lubricant mist. Exposure may irritate eyes, nose, throat, and skin. Please read the manufacturers Material Safety Data Sheet for further safety information on refrigerants and lubricants.

Danger: Always assume that high-pressure refrigerant exists. Failure to do so may result in bodily injury.

a. Remove four Phillips screws in each of the corners of the identifier.
b. Remove identifier from side panel wiggling from side to side.
c. Disconnect clear PVC and power connector from back of identifier to replace unit.
d. To replace brass orifice pull clear PVC out of the cabinet until brass orifice is present. Using wrenches undo each end and replace brass body only.
e. To replace oxygen sensor. Remove plastic plug on back of identifier. Then pull out the wire harness and unplug connector and unscrew sensor with screw driver.
f. Replace filter on identifier. Remove both end from old filter and replace with new filter with flow direction in mind.
11. LO and HI Manifold Replacement

Disconnect power supply to the FX134A / FX1234 / FX3030 series.

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Danger- Avoid breathing refrigerant vapors and lubricant vapor or mist. Breathing high concentration levels may cause heart arrhythmia, loss of consciousness, or even cause suffocation.

Caution- all hoses may contain liquid refrigerant under pressure. Contact with refrigerant may cause frostbite or other related injuries. Wear proper personal protective equipment such as safety goggles and gloves. When disconnecting any hose, please use extreme caution.

Caution- avoid breathing refrigerant vapors and/or lubricant mist. Exposure may irritate eyes, nose, throat, and skin. Please read the manufacturers Material Safety Data Sheet for further safety information on refrigerants and lubricants.

Danger: Always assume that high-pressure refrigerant exists. Failure to do so may result in bodily injury.

a. Recover any refrigerant in service hoses.

b. Close both tank valves and ball valves on tank hoses.

c. Remove tank hoses from purge block to release any remaining pressure.

d. Front Panel Service Access: Please see Section 1 part 2 to service internal hoses.

e. Locate lo or hi manifold block.

f. Disconnect refrigerant hoses and wire connections.

g. Remove the two mounting bolts located on aluminum body.
12. LO or HI Manifold PCB Replacement

Disconnect power supply to the FX134A / FX1234 / FX3030 series.

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

a. Service Access: Please see Section 1 part 2 & 3
b. Locate lo or hi manifold block.
c. Disconnect wire connections.
d. Remove four mounting screws behind Mylar cover and remove PCB.

![Lo Block PCB](image1)

Remove four mounting screws from PCB

![Hi Block PCB](image2)

Remove four mounting screws from PCB
13. Relay PCB Replacement

Disconnect power supply to the FX134A / FX1234 / FX3030 series.

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

a. Service Access: Please see Section 1 part 2 & 3
b. Locate Relay PCB in vacuum pump compartment.
c. Disconnect wires and remove PCB using needle nose pliers on standoffs.

To remove PCB from stand off, squeeze stand off from flat side using a pair of needle nose pliers to depress little clip and slide PCB corner off of stand off.
14. Wheel Service and Replacement

Disconnect power supply to the FX134A / FX1234 / FX3030 series.

**Danger:** Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

a. Place brake on caster to prevent unit from rolling.

b. Place a block of wood under unit to prop up wheel.

c. Remove screw and washer from end of axle.

d. Slide wheel off and replace with new wheel.
15. Vacuum Pump Service and Replacement

Danger: Only a qualified service technician should service this equipment. An Electrical Shock hazard is present which could lead to severe injury or even death.

Disconnect power supply to the FX134A / FX1234 / FX3030 series.

a. Service Access: Please see Section 1 part 2 & 3

b. Locate vacuum pump on bottom shelve.

c. Disconnect power plug and remove vacuum pump hose.

d. Remove mounting nuts and Oil refill cap to remove vacuum pump from shelve.
Section 4 Reference Materials

1. FX134A / FX1234 / FX3030 Series Refrigeration Schematic

2. FX134A / FX1234 / FX3030 Series Electrical Schematic

3. LO Manifold PCB Light Code

4. HI Manifold PCB Light Code

5. Relay PCB Light Code

6. Main PCB Light Code

7. Parts List
1. FX134A / FX1234 / FX3030 Series Refrigeration Schematic

FX3030 Dual Gas OILLESS PLUMBING SCHEMATIC 9-18-2014

LEGEND:
- Comp = Compressor
- D1 = Diaphragm
- EA = Expansion Chamber
- HP = High Pressure Limit Switch, Auto Reset
- LV1 = Automatic BV, Hi Side service hose
- LV2 = Automatic BV, Lo Side Service Hose
- LV3 = Automatic BV, Vacuum Pump
- LV4 = Automatic BV, Recovery In
- HV1 = Automatic BV, Recovery Out
- HV2 = Automatic BV, PUMP DOWN
- HV3 = Automatic BV, DOA ON Drain
- VAC = Vacuum Pump
- LS1 = Charging Solenoid Valve
- HS1 = Hi Pressure Solenoid Valve
- F2 = Suction Line Filter Drier
- SCI = Hi Side Coupler
- SCB = Lo Side Coupler
- GL = Hi side gauge
- GE = Lo side gauge
- REG = Regulator, Set at 80 PSIG
- REP = Refrigerant Identifier (optional)
- LS2 = Refrigerant Solenoid Valve (optional)
- PT1 = Lo/Coaxial Press Transducer
- PT2 = Hi Side Pressure Transducer
2. FX134A / FX1234 / FX3030 Series Electrical Schematic
3. LO Manifold Block PCB Lights

- **12 DCV Incoming Power**
- **Connection yellow patch cord**
- **Red LED L4 Motor energized**
- **L4 12VDC motor power supply**
- **Red LED L3 Motor energized**
- **L3 12VDC motor power supply**
- **Red LED L2 Motor energized**
- **L2 12VDC motor power supply**
- **Red LED L1 Motor energized**
- **L1 12VDC motor power supply**
- **Heater blanket input to relay PCB**
- **12VDC Charging solenoid valve**
- **Red LED energized charging**
- **AUX 12VDC**
- **AUX 12VDC**
- **AUX 12VDC**

- **L4 Compressor Red LED ball valve closed**
- **L4 Compressor Green LED ball valve open**
- **L3 Vacuum Red LED ball valve closed**
- **L3 Vacuum Green LED ball valve open**
- **L2 Low service hose Red LED ball valve closed**
- **L2 Low service hose Green LED ball valve open**
- **L1 Hi service hose Red LED ball valve closed**
- **L1 Hi service hose Green LED ball valve open**
LV1, LV2, LV3 and LV4 Motor Lights (Red)

These lights are on monetarily when any of the LV1, LV2, LV3 or LV4 are required to either open or close. No more than one can be energized at any one time. Once the valve has found it position, the Motor Light will de energize.

LS1 Solenoid Lights (Red)

Will be energized when CHARGING is shown on LCD.
Will be energized when FILTER CHANGE is shown on LCD.

LV1, LV2, LV3 and LV4 Sensor Lights (Red & Green)

Red light will indicate CLOSED position.
Green light will indicate OPEN position.

4. HI Manifold Block PCB Lights
5. Relay PCB Lights

HV1, HV2, and HV3 Motor Lights (Red)
These lights are on monetarily when HV1, HV2 or HV3 are required to either to open or close. No more than one can be energized at any one time. Once the valve has found its position, the Motor Light will de-energize.

HS1 Solenoid Light (Red)
Will be energized when Air Purge is shown on LCD.

HV1, HV2, and HV3 Sensor Lights (Red and Green)
Red light will indicate CLOSED position.
Green light will indicate OPEN position.
52

6. Main PCB Lights

Compressor Relay light will energize when Recovery, Refill, and Evacuating Filter.
Vacuum Pump Relay light will energize when evacuating system.
Fan Relay will energize when fan is running.
Heater Blanket Relay will energize when charging.
Error Codes

"E1-BAD TXT EPROM"; A bad scale may cause this, also.
"E2-SCALE ADC"; Connection to the scale electronics lost.
"E3-SCALE EPROM"; Scale not calibrated?
"E4-CANNOT CAL"; Scale cannot be calibrated or bad calibration.
"E5-MBV FAULT: X"; Where X is a number from 1 to 5 indicating which MBV has failed.
"E6-AMB. THRM"; Ambient thermistor in the “head” is bad.
"E7-TNK THRHM"; Thermistor attached to the oil sep. is bad.
"E8-PT TRANS"; Pressure transducer is bad.
"E10-BAD FILTERTIME"; Filter code problems.
"E11-DEFAULTS NOT SET"; What it says…
"E12-BAD GRAPH MEM"; Problems with the graphics like Chinese and Russian.
"E13-BAD PTR. TO INFO MEM"; Major software corruption, fatal error.
“E15 FLOW SWITCH ERROR Air flow switch is open.
"UNKNOWN ERROR"; What it says…
Identifier Error Codes

“00001” Error #1: The air or gas readings were unstable.
- Solution: Move the unit away from sources of EMF or RFI such as radio transmitters and arc welders.

“00002” Error #2: The air or gas readings were excessively high.
- Solution: Move the unit away from sources of EMF or RFI such as radio transmitters and arc welders.

“00003” Error #3: The air calibration resulted in a low output.
- Solution: Prevent refrigerant from flowing into the unit through the sample inlet during air calibration.
- Solution: Allow any refrigerant in the atmosphere to dissipate before performing air calibration.
- Solution: Verify that the air intake and the exhaust are not obstructed
- Solution: Verify that the white filter is correctly plugged into the rubber grommets.

“00004” Error #4: The unit is beyond the operating temperature range
- Solution: Move the unit to an area where the ambient temperature is within the specified operating range.

“00005” Error #5: The refrigerant sampled has an excessively large amount of air or there was little or no sample flow due to a closed valve or plugged sample filter. This is the code to prompt the user to change the brass filter. This should be considered more as a prompt than an actual error.
- Solution: Verify the coupler valve is open.
- Solution: Verify the sample filter is not plugged with debris or oil
- Solution: Replace brass sample filter
- Solution: Verify that the white filter is correctly plugged into the rubber grommets.

“00006” Error #6: The air sensor has expired and must be replaced before the analyzer can be used.

“00007” Error #7: The pressure read by the sensor has been determined to be too high.
- Solution: Verify that the exhaust is not obstructed.
# 7. AR2788S Series Parts List

<table>
<thead>
<tr>
<th>P/N</th>
<th>DESCRIPTION</th>
<th>P/N</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>39-020</td>
<td>115 VAC 6&quot; FAN</td>
<td>FX3030X16</td>
<td>PRESSURE TRANSUDER</td>
</tr>
<tr>
<td>39-021</td>
<td>230 VAC 6&quot; FAN</td>
<td>FX3030X17</td>
<td>CASTOR W/BRACE</td>
</tr>
<tr>
<td>AR2788SX11</td>
<td>AR2788S/FA1234 TANK FILTER IN HOSE ASSY</td>
<td>FX3030X18</td>
<td>FX1234 LO SIDE SERVICE HOSE 10 FT</td>
</tr>
<tr>
<td>AR2788SX29</td>
<td>FILTER BRACKET STRAPS</td>
<td>FX3030X19</td>
<td>OIL DRAIN BOTTLE</td>
</tr>
<tr>
<td>AR2788SX31</td>
<td>12 VDC SOLENOID CHARGING VALVE OPERATOR</td>
<td>FX3030X2</td>
<td>FX1234 HI SIDE SERVICE HOSE 10 FT</td>
</tr>
<tr>
<td>AR2788X14A</td>
<td>1/2 ACME REFILL ADAPTOR</td>
<td>FX3030X20</td>
<td>FX134A VACUUM PUMP HOSE ASSY</td>
</tr>
<tr>
<td>AR2788X14B</td>
<td>1/4 SAE REFILL ADAPTOR</td>
<td>FX3030X21</td>
<td>FX134A HEAT,ASSY,HV1 VAPOR OUT BH</td>
</tr>
<tr>
<td>AR2788X16</td>
<td>LOW SIDE GAUGE KIT</td>
<td>FX3030X22</td>
<td>FX134A HEAT, ASSY, HV3-OIL DRAIN BULK HEAD</td>
</tr>
<tr>
<td>AR2788X17</td>
<td>HIGH SIDE GAUGE KIT</td>
<td>FX3030X23</td>
<td>FX134A HEAT, ASSY, LV4-DOA IN</td>
</tr>
<tr>
<td>AR2788X25</td>
<td>AR2700/AR2788/AR2788S/FA1234/FX134 SCALE PCB</td>
<td>FX3030X24</td>
<td>4 RELAY PCB</td>
</tr>
<tr>
<td>AR2788X30</td>
<td>ONE LB WEIGHT</td>
<td>FX3030X25</td>
<td>FX134A OPERATION MANUAL</td>
</tr>
<tr>
<td>AR2788X32</td>
<td>15 AMP BREAKER 115 VAC</td>
<td>FX3030X26</td>
<td>FX1234 OPERATION MANUAL</td>
</tr>
<tr>
<td>AR2788X33</td>
<td>10 AMP BREAKER 230 VAC</td>
<td>FX3030X27</td>
<td>FX3030 OPERATION MANUAL</td>
</tr>
<tr>
<td>AR2788X40</td>
<td>6 FT POWER CORD 115 VAC</td>
<td>FX3030X28</td>
<td>MAIN PCB I/LCD ASSY / SD DATA CARD</td>
</tr>
<tr>
<td>AR2788X41</td>
<td>6 FT POWER CORD 230 VAC EUROPE</td>
<td>FX3030X29</td>
<td>FX134A LOW BLOCK ASSY</td>
</tr>
<tr>
<td>AR2788X45</td>
<td>HIGH PRESSURE SWITCH 450PSI</td>
<td>FX3030X3</td>
<td>SCALE PATCH CABLE BLK</td>
</tr>
<tr>
<td>AR2788X53</td>
<td>HEATER BLANKET IEC</td>
<td>FX3030X30</td>
<td>FX134A HI BLOCK ASSY</td>
</tr>
<tr>
<td>AR2788X57</td>
<td>1/8 GAUGE TUBE/WITH COMPRESSION FITTINGS</td>
<td>FX3030X31</td>
<td>POWER HARNESS IN 6 PIN CONNECOR</td>
</tr>
<tr>
<td>AR2788X65</td>
<td>10&quot; WHEEL</td>
<td>FX3030X32</td>
<td>HV MAIN POWER HARNESS TO LG 65W POWER</td>
</tr>
<tr>
<td>AR27XHB115</td>
<td>115 VAC HEATER BLANKET</td>
<td>FX3030X33</td>
<td>EX AUX POWER HARNESS OUT 8 PIN CONNECTOR</td>
</tr>
<tr>
<td>AR27XHB230</td>
<td>230 VAC HEATER BLANKET</td>
<td>FX3030X34</td>
<td>PRESSURE TRANSUDER PCB</td>
</tr>
<tr>
<td>FA1234X13</td>
<td>FA1234/134A VAPOR HOSE RECOVERY TANK</td>
<td>FX3030X35</td>
<td>ON / OFF POWER SWITCH LIGHT WIRE HARNESS</td>
</tr>
<tr>
<td>FA1234X18</td>
<td>FA1234/134AHOSE,COMP DISCHARGE-DOAINEHEAT EX</td>
<td>FX3030X36</td>
<td>USB WIRE HARNESS</td>
</tr>
<tr>
<td>FA1234X19</td>
<td>FA1234/134AHOSE,ASSY,DOA HEAT EX OUT TO HV1 TEE</td>
<td>FX3030X37</td>
<td>IDENTIFIER WIRE HARNESS</td>
</tr>
<tr>
<td>FA1234X2</td>
<td>FX134A COMPRESSOR ASSY 115 VAC (sealed relay)</td>
<td>FX3030X38</td>
<td>SD CARN READER WIRE HARNESSSES 4 PIN</td>
</tr>
<tr>
<td>FA1234X21</td>
<td>FA1234/134A HOSE,ASSY,DOA PURGE TEE IN AUX</td>
<td>FX3030X38B</td>
<td>SD CARN READER WIRE HARNESSSES 5 PIN</td>
</tr>
<tr>
<td>FA1234X22</td>
<td>FA1234/134A HOSE,ASSY,HV1 TANK VAPOR</td>
<td>FX3030X39</td>
<td>RCA JAC WIRE HARNESS</td>
</tr>
<tr>
<td>FA1234X23</td>
<td>FA1234/134A HOSE,ASSY,F31 TANK LIQUID</td>
<td>FX3030X4</td>
<td>PT PATCH CABLE BLUE</td>
</tr>
<tr>
<td>FA1234X24</td>
<td>FA1234/134A HOSE,ASSY,HV1 TEE HV2</td>
<td>FX3030X40</td>
<td>12VDC 16W WIRE HARNESS</td>
</tr>
<tr>
<td>FA1234X25</td>
<td>FA1234/134A HOSE,ASSY,HV3-OIL DRAIN BULK HEAD</td>
<td>FX3030X41</td>
<td>HIGH PRESSURE SWITCH WIRE HARNESS ORANGE</td>
</tr>
<tr>
<td>FA1234X26</td>
<td>FA1234/134A HOSE,ASSY,LV3-HV2 TEE VAC</td>
<td>FX3030X42</td>
<td>THERMAL PRINTER</td>
</tr>
<tr>
<td>FA1234X29</td>
<td>TEMPERATURE SENSOR TANK VAPOR LINE</td>
<td>FX3030X43</td>
<td>FLUSH BLOCK HYBRID FX134A</td>
</tr>
<tr>
<td>FA1234X3</td>
<td>FA1234 COMPRESSOR ASSY 230 VAC 50 HZ</td>
<td>FX3030X44</td>
<td>FLUSH BLOCK HYBRID FX1234</td>
</tr>
<tr>
<td>FA1234X30</td>
<td>TEMPERATURE SENSOR AMBIENT MAIN PCB</td>
<td>FX3030X45</td>
<td>FLUSH BLOCK HYBRID FX3030</td>
</tr>
<tr>
<td>FA1234X32</td>
<td>AIR FLOW SWITCH</td>
<td>FX3030X46</td>
<td>FLOW SWITCH JUMPER</td>
</tr>
<tr>
<td>FA1234X36</td>
<td>FA1234 1234YF REFILL ADAPTOR</td>
<td>FX3030X47</td>
<td>IDENTIFIER INTERNAL HOSE</td>
</tr>
<tr>
<td>FA1234X37</td>
<td>FA1234 BRASS REGULATOR 80 PSI</td>
<td>FX3030X48</td>
<td>IDENTIFIER SOLENOID VALVE ASSY</td>
</tr>
<tr>
<td>FA1234X39</td>
<td>IEC INLET MAIN POWER</td>
<td>FX3030X49</td>
<td>AIR FLOW SWITCH WIRE HARNESS</td>
</tr>
<tr>
<td>FA1234X92</td>
<td>92# TANK KIT FOR ADDITIONAL REFRIGERANTS</td>
<td>FX3030X5</td>
<td>RELAY PATCH CABLE RED</td>
</tr>
<tr>
<td>FX3030X10</td>
<td>10 PIN WIRE/IDENTIFIER WIRE / SD CARD PCB ASSY</td>
<td>FX3030X50</td>
<td>50# TANK KIT FOR ADDITIONAL REFRIGERANTS</td>
</tr>
<tr>
<td>FX3030X11</td>
<td>FX134A SCALE ASSEMBLY</td>
<td>FX3030X6</td>
<td>LOW BLOCK PATCH CABLE YELLOW</td>
</tr>
<tr>
<td>FX3030X12</td>
<td>MAIN POWER SWITCH MOMENTARY</td>
<td>FX3030X7</td>
<td>HIGH BLOCK PATCH CABLE GREEN</td>
</tr>
<tr>
<td>FX3030X13</td>
<td>POWER SUPPLY PCB 65W 12 VCD</td>
<td>FX3030X8</td>
<td>FX134A LOW SIDE BLOCK PCB</td>
</tr>
<tr>
<td>FX3030X14</td>
<td>POWER SUPPLY PCB 15W 12VCD</td>
<td>FX3030X9</td>
<td>FX134A HIGH SIDE BLOCK PCB</td>
</tr>
<tr>
<td>FX3030X15</td>
<td>ONE LB WEIGHT</td>
<td>FX3030X16</td>
<td>PRESSURE TRANSUDER</td>
</tr>
</tbody>
</table>
Additional Contact Information

CPS Products Globe Locations

CPS North America Head Quarter
1010 East 31st Street Hialeah, Fl 33013 USA
Telephone 305-687-4121, Toll Free 800-277-3808; Fax 305-687-3743
Email cpssales@cpsproducts.com  WWW.cpsproducts.com