



Container Refrigeration



OPERATIONS, SERVICE, AND PARTS MANUAL

For

XtendFRESH™

Controlled Atmosphere Option



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SECTION 1

SAFETY SUMMARY

1.1 General Safety Notices

The following general safety notices supplement specific warnings and cautions appearing elsewhere in this manual. These recommended precautions must be understood and applied during operation and maintenance of the equipment covered herein. The general safety notices are presented in the following three sections labeled: First Aid, Operating Precautions and Maintenance Precautions. A listing of specific warnings and cautions appearing elsewhere in the manual follows the general safety notices. Additional notices for Worker Safety, and High Voltage Safety are also included.

1.2 First Aid

An injury, no matter how slight, should never go unattended. Always obtain first aid or medical attention immediately.

1.3 Operating Precautions

Always wear safety glasses.

Keep hands, clothing and tools clear of the evaporator and condenser fans.

Wear appropriate personal protective equipment for the work being undertaken.

No work should be performed on the unit until all circuit breakers and start-stop switches are turned OFF, and power supply is disconnected.

In case of severe vibration or unusual noise, stop the unit and investigate.

1.4 Maintenance Precautions

Be sure power is turned OFF before installation of XtendFRESH™ Controlled Atmosphere option. Tag circuit breaker and power supply to prevent accidental energizing of circuit. Do not bypass any electrical safety devices, e.g. bridging an overload, or using any sort of jumper wires.

Problems with the system should be diagnosed, any necessary repairs performed by qualified service personnel.

When performing any arc welding on the container unit or refrigerated compartment, disconnect all wire harness connectors from the modules in the control box. Do not remove wire harness from the modules unless you are grounded to the container unit frame with a static safe wrist strap.

1.5 Specific Danger, Warning and Caution Statements

To help identify the hazards presented on the container unit labels and explain the level of awareness each one carries, an explanation is given with the appropriate consequences:

DANGER - alert to an immediate hazard that WILL result in severe personal injury or death.

WARNING - alert to hazards or unsafe conditions that COULD result in severe personal injury or death.

CAUTION - alert to potential hazard or unsafe practice that could result in minor personal injury, product or property damage.

The following safety statements are applicable to the XtendFRESH option unit used with any container unit and appear elsewhere in this manual. These recommended precautions must be understood and applied during operation and maintenance of the equipment covered herein.

 **WARNING**

In case of electrical fire, open circuit switch and extinguish with CO₂ (never use water).

 **WARNING**

Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting. Refer to [Section 4.7](#).

 **WARNING**

Before servicing the unit, make sure the Start-Stop switch (ST) is in the OFF position. Unit circuit breaker (CB-1) and external power sources are turned OFF and tagged to prevent accidental energizing of circuits.

 **WARNING**

Do not inject gas into the container unless the manual fresh air vent is opened. Damage to the unit and risk of personal injury exists if a pressure relief pathway is not established.

 **CAUTION**

Do not run the Calibration tests under loaded conditions.

NOTICE

While the XtendFRESH option is operating, the process of inducing ripening by introducing ethylene should not be performed.

NOTICE

It is required that the calibration procedure only be performed during pre-trip or when the container has been fully vented.

NOTICE

Prior to performing service work, a thorough review and understanding of the entire manual is recommended.

SECTION 2

INTRODUCTION

2.1 Introduction

This manual contains information specific to the Carrier Transicold XtendFRESH™ Controlled Atmosphere option. This manual is to be used in conjunction with the separately bound Operation and Service Manual and Service Parts Manual for the model of your particular refrigeration unit.

Carrier Transicold's exclusive XtendFRESH option is a modular system. The XtendFRESH system's ability to control container atmosphere is done by removing ethylene and simultaneously controlling levels of O₂ and CO₂. This extends the produce ripening process, which increases shelf life and enables longer cargo routes for certain high respiring, perishable commodities.

SECTION 3 DESCRIPTION

3.1 Refrigeration Unit - Front Section

The refrigeration unit is designed so that the majority of its components are accessible from the front (**Figure 3.1**). A manually operated venting system is located in the upper left access panel. Behind this left access panel are located the CO₂ sensor and O₂ sensor. The right access panel contains integrated components of the XtendFRESH™ Controlled Atmosphere option. This panel may be removed to allow entry into the evaporator section where the CO₂ scrubber and other components are located.

Figure 3.1 Refrigeration Unit - Front

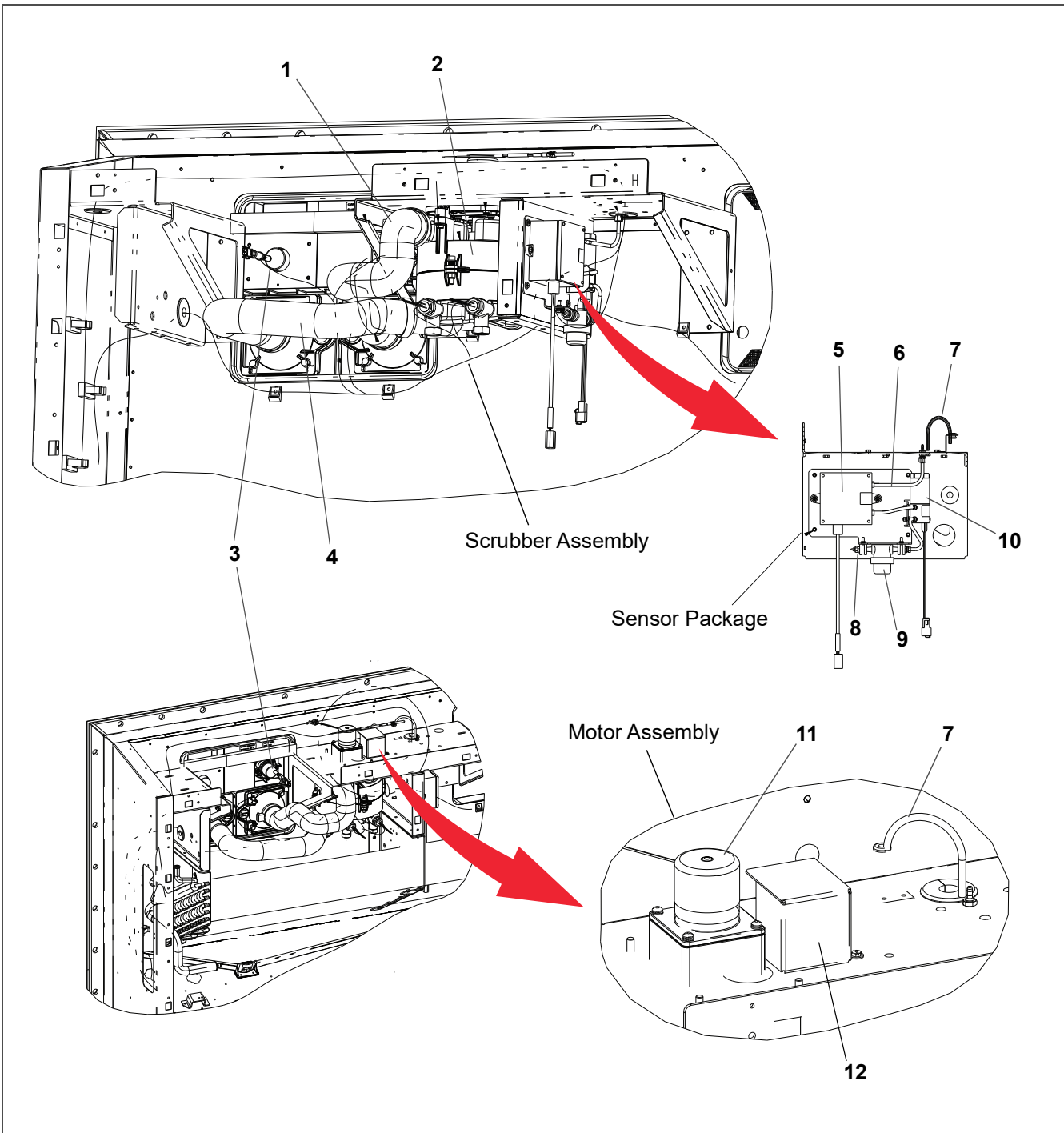


3.2 Evaporator Section

Components of the XtendFRESH option are mounted in the evaporator section in addition to the standard refrigeration unit components. These components (**Figure 3.2**) include the XtendFRESH Scrubber Assembly, Motor Assembly and Sensor Package.

Air from within the container is passed to the O₂ sensor and CO₂ sensor. Data is then supplied to the controller. The controller calculates O₂ and CO₂ values in order to maintain the preset values.

Figure 3.2 Evaporator Section Components



- | | |
|-----------------------------|---|
| 1. Desorb Out Hose | 7. O ₂ /CO ₂ Outlet |
| 2. Scrubber Filter Assembly | 8. O ₂ /CO ₂ Inlet |
| 3. Fresh Air Solenoid | 9. Sensor Air Filter |
| 4. Desorb In Hose | 10. O ₂ Sensor |
| 5. CO ₂ Sensor | 11. CO ₂ Scrubber Motor |
| 6. O ₂ Amplifier | 12. Port Cap |

3.3 AutoFRESH Interface Module

The AutoFRESH Interface Module (AIM) is a device that prevents the CO₂ sensor from being calibrated when the ML3 controller is reset. The purpose of the device is to pull the CO₂ sensor zero calibration line low when the CO₂ sensor is calibrated.

3.4 Ground Isolation Module

The Ground Isolation Module (GIM) is a device installed on units with a scrubber motor that has the rotational output signal. The purpose of the module is to optically isolate the scrubber motor from the ML3 controller. Troubleshooting of this device is located in [AL96](#) Troubleshooting table.

3.5 Sensor Switch Module

The Sensor Switch Module (SSM) is a device that allows for the O₂ sensor and VPS sensor to use the same ML3 controller input. Controller software manages the switching of the device and reading of the correct input. Troubleshooting of this device is located in [AL09](#) Troubleshooting table.

3.6 Safety and Protective Devices

Table 3–1 Safety and Protective Devices

DEVICE	DEVICE SETTING
Fuse FX1, FX2	5 Amp
Fuse FX3, FX4 - Time Delay	15 Amp
Fuse FX5, FX6 - Time Delay	5 Amp
Fuse FX7, FX8 (PIDs NT2709 and NT2774)	5 Amp

SECTION 4

OPERATION

4.1 Introduction

This section addresses the operating requirements for the XtendFRESH™ Controlled Atmosphere option. Operating parameters are not changed except for XtendFRESH settings. For information pertaining to the operation of the refrigeration system, refer to the Operation and Service Manual for your particular model.

4.2 Operation

The XtendFRESH (FrESH) option is a modular option that offers enhanced functionality to help slow the ripening process of perishable cargo by removing ethylene and simultaneously controlling CO₂ and O₂ levels in multiple combinations. This enables the fresh transport of perishables on longer voyages. The system's ability to control the container atmosphere is performed with the use of a CO₂ Scrubber and a fresh air vent.

During the scrubbing process, CO₂ and ethylene are removed. The scrubber allows for the control of CO₂ based on CO₂ sensor input. The oxygen is controlled by the cargo's natural respiration and by opening and closing solenoid operated air vents. An O₂ sensor monitors the level of O₂ and allows the system to prevent the O₂ levels from dropping below the lower setpoint.

NOTICE

While the XtendFRESH option is operating, the process of inducing ripening by introducing ethylene should not be performed.

4.3 Pre-Trip Inspection

Pre-trip testing of the XtendFRESH option is performed via function code 43. During the pre-trip inspection, the technician verifies operation by visual observation during this test. Refer to [Section 6.10](#) for more information.

4.4 XtendFRESH Operation

There are two function codes, code 43 and code 44, that assist with XtendFRESH operation. Code 43 contains specific parameters for operation and code 44 provides a visible display of component conditions.

4.5 Code 43 (Cd43)



Cd43 is used to select a specific mode of operation and the associated parameters. The modes of operation are: FrESH, OFF, tESt and PUrgE. Within each of these modes of operation are sub menus that have selectable parameters. Not all parameters are available in each sub menu. When setting any mode of operation, the entire process must be followed to ensure all parameters are set.

4.5.1 Activate Fresh Mode to Start Up the System



Video available in the Mobile Version



In **Fresh** mode, all XtendFRESH operations are enabled and setpoints for CO₂ and O₂ can be edited.

1. Press the CODE SELECT key on the keypad.
2. Press the Up or Down Arrow key until "Cd 43" is displayed, then press the ENTER key. The selection in the right display will blink.

3. Press the Up or Down Arrow key until “FrESh” mode is in the right display, then press the ENTER key.
4. The CO₂ setpoint is displayed. “CO2SP” appears in the left display with the setpoint value blinking in the right display. Use the arrow keys to change the setpoint and press ENTER to confirm. Or, just press ENTER to keep the originally displayed value.

NOTE

The CO₂ setpoint is the maximum level of CO₂ allowed for the cargo. The range is 0% to 19% in 1% increments, with a default setting of 5%.

5. Next, the O₂ setpoint is displayed. “O2 SP” appears in the left display with its setpoint blinking in the right display. Use the arrow keys to change the setpoint and press ENTER to confirm. Or, just press ENTER to keep the originally displayed value.

NOTE

The O₂ setpoint is the minimum level of oxygen allowed for the cargo. The range is from 3% to 21% in 1% increments; the default setting is 10%.

4.5.2 Activate Off Mode



When **Off** mode is active, all XtendFRESH operations will be disabled. The XtendFRESH vents will be closed and the scrubber will remain off. This will be the default mode anytime a frozen mode of operation has been selected. Whenever a frozen setpoint is selected, the current XtendFRESH setting will be saved.

1. Press the CODE SELECT key on the keypad.
2. Press the Up or Down Arrow key until “Cd 43” is displayed.
3. Press the ENTER key. The selection in the right display will blink.
4. Press the Up or Down Arrow key until “OFF” mode is displayed and then press the ENTER key.

4.5.3 Activate Test Mode



When **Test** mode is active, the operator has the ability to test system operation of the mechanical components, test and calibrate the CO₂ sensor and verify that the O₂ sensor is in a valid range.

1. Press the CODE SELECT key on the keypad.
2. Press the Up or Down Arrow key until “Cd 43” is displayed.
3. Press the ENTER key. The selection in the right display will blink.
4. Press the Up or Down Arrow key until “tEST” mode is displayed and then press the ENTER key.
5. After Test mode is selected, “tEST” in the right display will blink. Press the ENTER key as it is blinking to enter the system tests.

Test Mode - Mechanical Tests

During a mechanical test, the fresh air solenoids will open for 8 seconds and then close, followed by the blower fan(s) and scrubber motor turning on for 60 seconds. Visual inspection of each occurrence is required. On units configured to read the scrubber motor output indicator, a message of “Scrub PASS” will be posted if the scrubber motor is rotating. If not, “Scrub FAIL” will appear.

If the unit is equipped with the Vent Position Sensor (VPS) option, you need to manually check the operation of the VPS switch. Refer to [Section 6.9.1](#) for additional information.

Test Mode - Sensor Tests

During a sensor test, the controller will verify that the CO₂ sensor is reading 0% and the O₂ sensor is in a valid range. If both meet this requirement, a calibration test “CAL StArt” will be displayed for five seconds, a CO₂ sensor calibration will be performed and an O₂ sensor validity check will be performed. Then, a ten minute countdown timer is placed in the right hand display.

If both sensors pass, a “CAL PASS” message will display for five minutes or until the user presses and holds the CODE SELECT key for five seconds. In either case, normal operation will be resumed.

If one or both of the sensors are outside of the range, check condition requirements. The failed results will be displayed “No CAL”, alternating every five seconds. To exit, the user should press and hold the CODE SELECT key for three seconds. A “CO₂ FAIL” or “O₂ FAIL” message will appear if the test fails.

If the range check fails, it indicates a drifted sensor. Verify that the box is clean of cargo remnants from last trip, open the back doors, and rerun the test. If the range check fails a second time, replace the sensor that is out of range.

If the O₂ sensor reads 2000 mV or less when flushed with fresh air, the sensor is at the end of its life and needs to be replaced. This value can be viewed in Cd44.

If either of the sensors fail open or shorted, an Alarm 09 for O₂ sensor or Alarm 10 for CO₂ sensor will occur.

NOTICE

It is required that the calibration procedure only be performed during pre-trip or when the container has been fully vented.

4.5.4 Activate or Deactivate Purge Mode



When **Purge** mode is active, it allows the user to suspend XtendFRESH operations while pre-charging gas levels in the container. All XtendFRESH control actions and alarms 29 and 96 are suspended in order to purge the container to a desired gas concentration. When activated, Purge mode stays active for a period of time selected from the Purge mode sub menu.

Procedure:

1. Press the CODE SELECT key on the keypad.
2. Use the Arrow keys until “Cd 43” is displayed, then press the ENTER key. The selection in the right display will blink.
3. Use the Arrow keys until “PURGE” mode is displayed, then press the ENTER key.
4. “CO2SP” appears in the left display with the CO₂ setpoint blinking in the right. Use the Arrow keys to change the CO₂ setpoint and press ENTER to confirm. Or, just press ENTER to keep the originally displayed value.

NOTE

The CO₂ setpoint is the maximum level of CO₂ allowed for the cargo. The range is 0% to 19% in 1% increments, with a default setting of 5%.

5. “O2 SP” appears in the left display with the O₂ setpoint blinking in the right. Use the Arrow keys to change the O₂ setpoint and press ENTER to confirm. Or, just press ENTER to keep the originally displayed value.

NOTE

The O₂ setpoint is the minimum level of oxygen allowed for the cargo. The range is from 3% to 21% in 1% increments; the default setting is 10%.

6. "PUrgE" is now in the left display. Use the Arrow keys to toggle the right display to "On" or "OFF", then press the ENTER key.

When "OFF" is selected, Purge mode is either not activated or terminated if it was previously activated.

When "On" is selected, "tim" is in the left display with the current purge time flashing (default 5 hours) in the right display. The "tim" value is the amount of time XtendFRESH will be held off to allow charging and settling of gases.

7. Use the Arrow keys to change the time value and press the ENTER key to confirm and enter Purge mode.

8. Purge mode is now active. During Purge mode, while the timer is counting down the display toggles between:

- left display shows "PUrgE" and right display shows how much time remaining.
- left display shows temperature setpoint and right display shows control temperature setpoint.

NOTE

If there is an alarm in the alarm list, the Purge mode countdown will not be displayed but Purge mode is still enabled.

9. When the Purge mode timer expires, Fresh mode is enabled and the unit reverts to normal temperature control display. Purge mode is terminated on power cycle, trip start, defrost or pre-trip.

10. To view CO₂ and O₂ values during Purge mode, exit Cd43 by pressing the CODE SELECT key until Cd 43 is in the left display. Then, use the up arrow to bring up Cd44 and press the ENTER key.

4.6 Code 44 (Cd44)













Cd44 allows the user to view the following XtendFRESH values: CO₂ setpoint, CO₂ percentage, O₂ setpoint, O₂ percentage, and O₂ voltage.

For the CO₂ setpoint, the range is from 0 to 19% in 1% increments with a default setting of 5%. For the O₂ setpoint, the range is from 3% to 21% in 1% increments with a default setting of 10%.

4.6.1 Display Cd44 Values

1. Press the CODE SELECT key on the keypad.
2. Press the Up or Down Arrow keys until "Cd 44" is in the left display, then press the ENTER key.
3. Press the Down Arrow key to toggle between the different values available in this sub menu.

CO ₂ Setpoint		
CO ₂ %		
O ₂ Setpoint		
O ₂ %		
O ₂ Voltage (displayed in mV)		

4.7 Container Venting Procedure



WARNING

Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting. (Refer to [Section 4.7](#))

1. Set the Start-Stop (ST) switch to the “1” position to turn the unit On.
2. Fully open the manual fresh air vent.

NOTE

Avoid any direct breathing of the venting gases from the air makeup vent.

3. Go to Cd43, select Fresh mode and set the operating parameters to 21% O₂. Refer to [Section 4.5.1](#)
4. Allow the refrigeration unit to run. This allows the evaporator fans to exchange low-oxygen level air with ambient air.
5. Monitor the container internal environment via Cd44. Refer to [Section 4.6.1](#).
6. When the oxygen level reaches a safe level $\sim 20 \pm 2\%$, open both of the container rear doors and pull back the curtain to facilitate the clearing of the hazardous atmosphere. Step away from the container rear doors. Continue refrigeration operation for five minutes prior to entry or unloading of the container.

SECTION 5

TROUBLESHOOTING

5.1 Alarms

Alarm display is an independent controller software function. If an operating parameter is outside of the expected range or a component does not return a valid signal back to the controller, an alarm is generated. The XtendFRESH™ Controlled Atmosphere option alarms are AL07, AL09, AL10, AL29, AL62 and AL96.

AL07	FRESH AIR VENT OPEN	
Cause:	For units equipped with XtendFRESH and a Vent Position Sensor, the controller will monitor the manual fresh air opening at a pre-determined time. If during this time the fresh air vent is open and XtendFRESH is active, an alarm will be generated. If alarm is active, the controller monitors the manual fresh air once per hour. Upon clearing the alarm, the controller goes back to monitoring at the pre-determined time.	
	Component	Vent Position Sensor (VPS)
	Troubleshooting	Manually reposition vent to 0% and confirm using Cd45. If Cd45 is not reading 0%, perform a calibration of the panel. Refer to Section 6.9 . If unable to obtain a zero reading, replace the defective VPS. If unit is loaded, ensure vent is closed. Note and replace VPS on next PTI. The alarm will not affect the XtendFRESH system from operating.

AL09	O ₂ SENSOR FAILURE	
Cause:	Triggered anytime the O ₂ sensor reading is outside of the normal operation range, after an initial signal was detected.	
	Component	O ₂ Sensor, O ₂ Amplifier, Sensor Switch Module (if equipped)
	Troubleshooting	Check Cd44 and scroll down to 02V. The O ₂ sensor output will be displayed in millivolts (130mV to 4100mV). <u>Switch equipped:</u> If voltage is not present at Cd44 and a sensor switch module is installed, check for O ₂ voltage on the black wire connected to the sensor switch module, connecting ground of meter to TP9. If the voltage is in the 130mV to 4.1V range, directly wire the black wire to KD04. This may cause an AL07 depending on O ₂ reading but XtendFRESH will operate normally. If no voltage on the black wire, proceed to next step. Check wiring (refer to schematic), and correct if found mis-wired. If O ₂ sensor is available, remove the upper fresh air panel and evaporator motor and replace the sensor. If after replacing sensor AL09 continues, replace amplifier. If parts are not available, turn XtendFRESH option off (Cd43) and open the Manual Fresh Air Vent.

AL10	CO₂ SENSOR FAILURE	
Cause:	Triggered anytime the CO ₂ sensor reading is outside of the normal operation range, after an initial signal was detected.	
	Component	CO ₂ Sensor
	Troubleshooting	Check the voltage at MC5 to the ground pin on TP9. (1 - 4.7 vdc) Check wiring (refer to schematic), and correct if found mis-wired. If part is available, remove upper fresh air panel and evaporator motor; replace sensor. If no part is available, take no action and service at next PTI. XtendFRESH will continuously run the scrubber. O ₂ level will be controlled with the opening and closing of the fresh air vents as required.

AL29	LOSS OF ATMOSPHERIC CONTROL	
Cause:	Triggered whenever the CO ₂ level is above its upper limit by 1% for 60 minutes. Or, when the O ₂ level is greater than 1% below its setpoint for longer than 30 minutes after the unit has been in range. The alarm is triggered off when the levels return to within the normal range.	
	Setup	Run Cd43 test mode for troubleshooting the below components. At the end of test mode, a sensor calibration will be attempted. Under loaded box conditions, the sensor values may post "No Cal" or "CAL FAIL". Results from original calibration will be retained. If test mode times out, then hold the code select key for 3 seconds to exit test mode.
	Troubleshooting	If components do not energize, check FX1 and FX2 for power (460 VAC). If fuse is open, check heater continuity (XHT1 to ground). Must be greater than 1 mega ohm. If less than 1, disconnect the heater at XHT1 and XHT2. Replace fuse. Unit will control on fresh air solenoids.
	Component	Solenoid Air Vents.
	Troubleshooting	Visually inspect to see if the Solenoid Valves are opening air vents. If vents open, troubleshoot the next component. If vents do not open, continue with troubleshooting below. Check FX4 fuse for power (~20 volts dc). If fuse is open, check wiring and or replace solenoid if part is available. If no part is available, open manual fresh air vent.
	Component	XtendFRESH Fan(s) / XtendFRESH Scrubber Motor
	Troubleshooting	Visually inspect to see if the XtendFRESH Fan(s) are running (air blowing on left, intake on right), check current draw of motor at the XST1 (~40 to 200 milliamps / contactor load side). Troubleshoot the non-operating component. If both are running, proceed to next component. Verify XS contactor is pulling in. If not, check FX6 fuse for power (24 VAC). If not, check power at controller KB4. Check FX3 fuse for power (~20 vdc). If no power, replace fuse. If fuse opens a second time, take no further action. O ₂ level will be controlled with the opening and closing of the fresh air vents. If part is available, replace either fan or scrubber motor. Fan is replaceable from the front on a loaded unit; Scrubber motor is not. If no part is available or accessible, take no action and service at next PTI. O ₂ level will be controlled with the opening and closing of the fresh air vents.

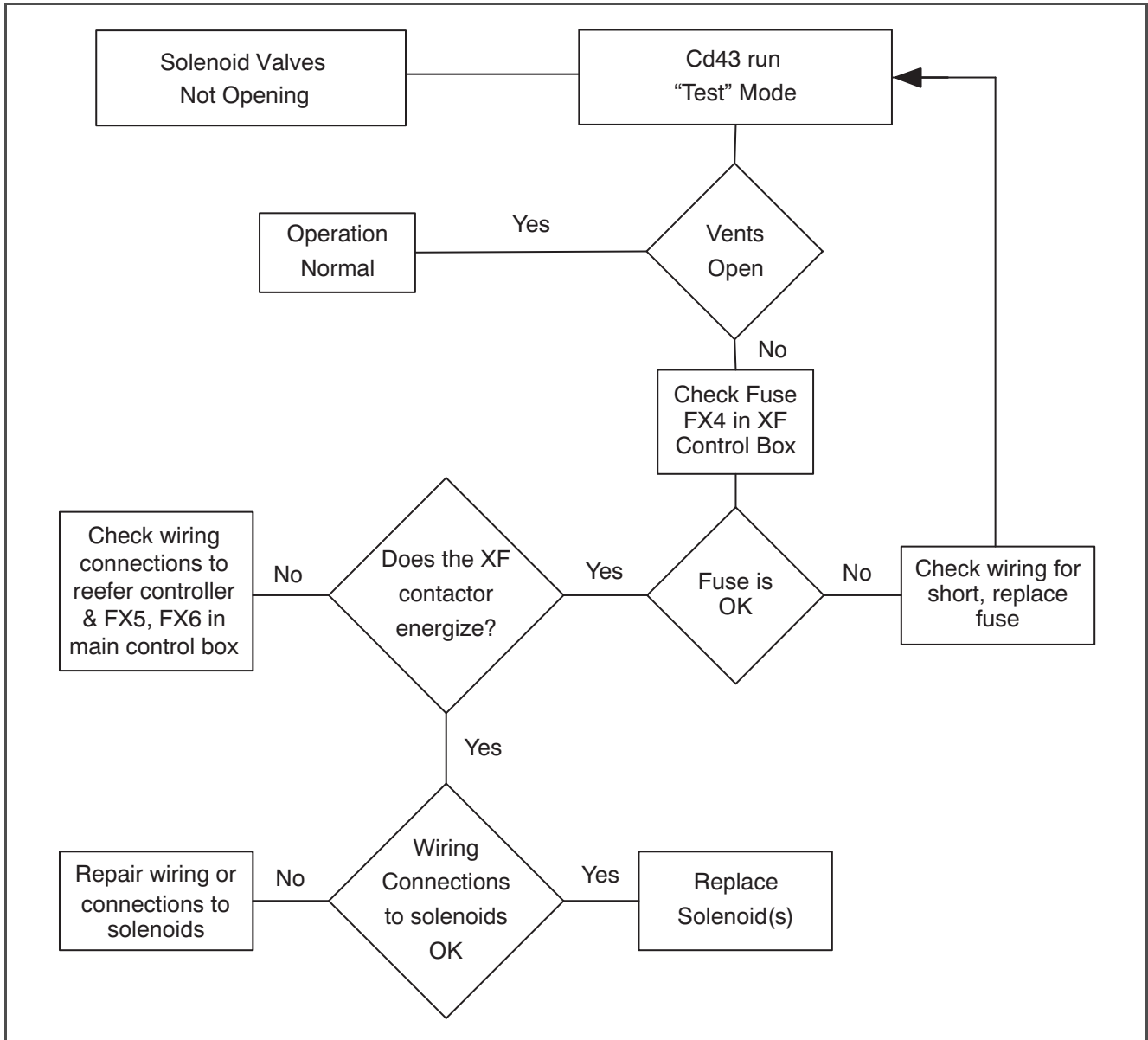
AL29	LOSS OF ATMOSPHERIC CONTROL	
	Component	Heater
	Troubleshooting	Verify XH contactor is pulling in. If not, check FX6 for power (24 VAC). If open ohm contactors XHA1 and XSA1 to ground. Replace (12 Amp) contactor. If contactor is pulling, power unit off and check heater resistance from XH1 to XH2 (450 to 500 ohms). If heater is outside of the range, disconnect heater at XHT1 and XHT2 and replace at next PTI. Unit will control on fresh air solenoids.

AL62	O₂ OUT OF RANGE	
Cause:	This is a notification alarm and does not pose a risk to fresh produce. AL62 is triggered when there is an indication that the O ₂ level is rising after reaching its setpoint (+ 1%). If O ₂ level exceeds 4% above setpoint, the alarm is activated. The alarm does not activate if the unit was pre-tripped or trip started between last reaching its O ₂ setpoint and exceeding the plus 4%, or if power has been turned off for eight hours. The alarm is deactivated if O ₂ drops below setpoint (+ 1%) or if a pre-trip or trip start is performed.	
	Component	Scrubber Failure
	Troubleshooting	Refer to the troubleshooting of the Scrubber Motor in the AL29 alarm.
	Component	XtendFRESH Solenoid Valves
	Troubleshooting	Refer to the troubleshooting of the Solenoid Air Vent in the AL29 alarm.
	Component	Container Air Tightness
	Troubleshooting	Seal container where possible (access panels, rear doors, mounting hardware, etc).

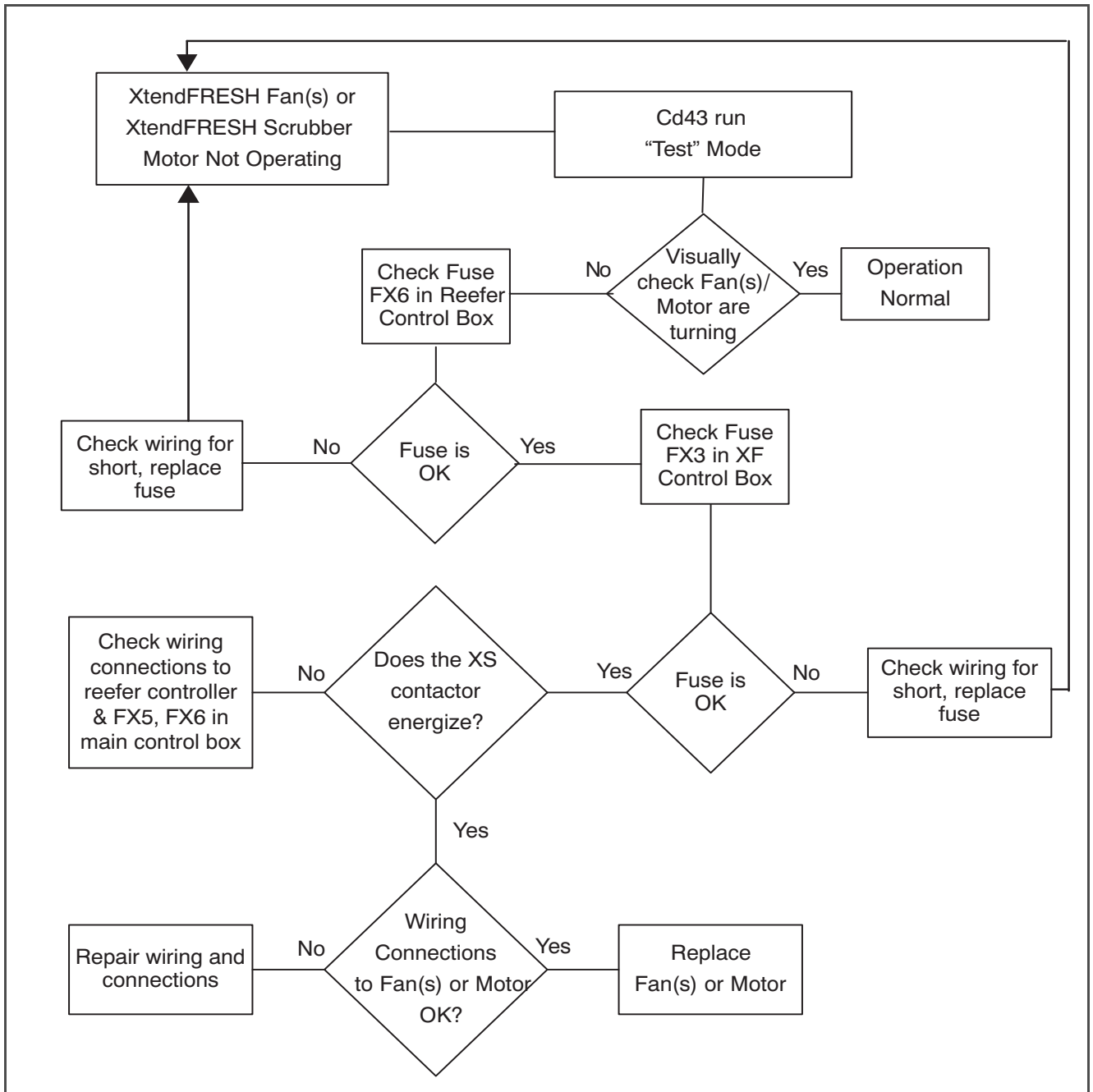
AL96	SCRUBBER ROTATIONAL FAILURE - OPTIONAL FEATURE	
Cause:	Feedback from the Scrubber Motor to the controller is not sensed when the motor is turning.	
	Component	Scrubber Fuse
	Troubleshooting	Check to see if Fuse FX6 is blown. Replace Fuse if necessary.
	Component	Scrubber Motor
	Troubleshooting	Run Test Mode and verify scrubber bed is turning. If back panel cannot be removed to check, verify the scrubber amperage consumption, read at XS contactor wire XSL1. If between 40 and 200mA, motor is rotating properly. If no current detected, check and replace FX3. If current spiking to 350mA for 2 seconds then dropping to 90mA, the scrubber motor is locked. If the scrubber motor is locked, further inspection of the scrubber bed is required. Unit will control CO ₂ with the fresh air solenoid when this alarm occurs if scrubber inaccessible. If Scrubber Motor not operating, follow the troubleshooting flowchart in Section 5.2.2 and take appropriate action.
	Component	Ground Isolation Module (GIM)
	Troubleshooting	Once it has been verified that the scrubber motor is rotating check the wiring connections to the GIM module. If all wires are secured properly, re-place the GIM module if one is available. If not, the unit will control CO ₂ using the fresh air solenoids.

5.2 XtendFRESH Assembly Not Operating

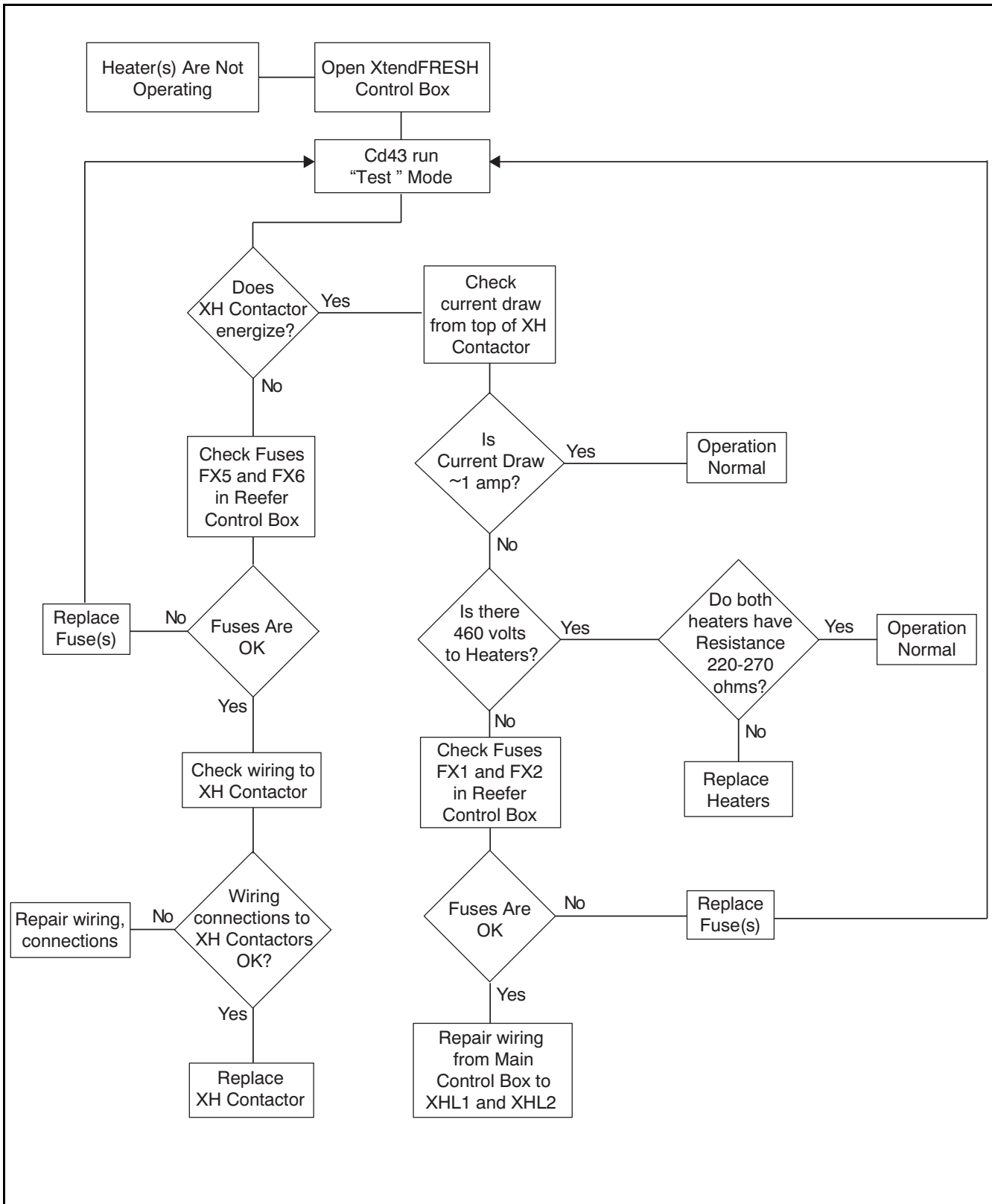
5.2.1 Solenoid Valves Not Opening Air Vent(s)



5.2.2 XtendFRESH Fan(s)/XtendFRESH Scrubber Not Operating



5.2.3 Heater(s) Not Operating



SECTION 6

SERVICE

WARNING

Before servicing unit, make sure the Start-Stop switch (ST) is in the OFF position. Unit circuit breaker (CB-1) and external power sources are turned OFF and tagged to prevent accidental energizing of circuits.

WARNING

Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting (refer to [Section 4.7](#)).

NOTICE

Prior to performing service work, a thorough review and understanding of the entire manual is recommended.

6.1 Maintenance Schedule

Table 6–1 Maintenance Schedule

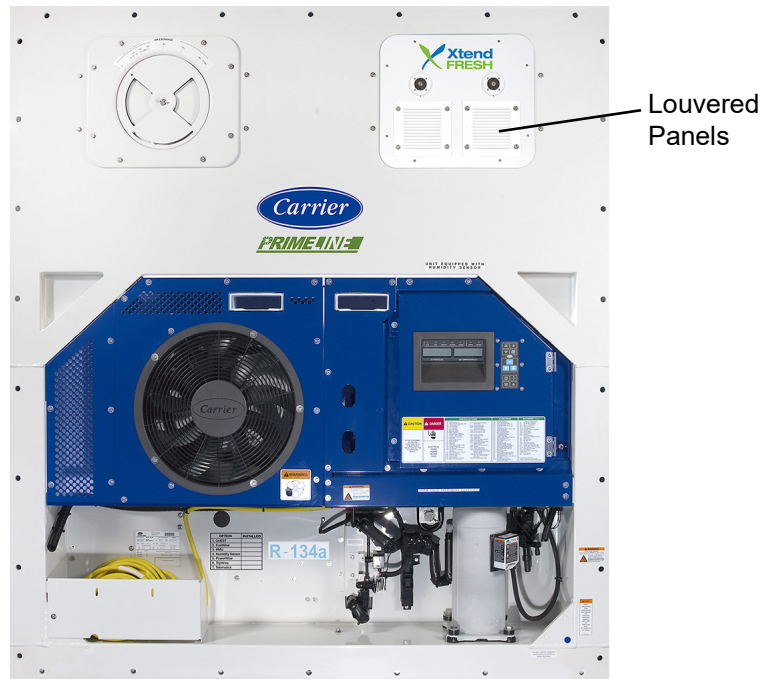
OPERATION	REFERENCE SECTION
Pre-Trip	
Pre-Trip Inspection - before starting.	Section 6.10
Verify container meets leak specification.	Section 6.11
Inspect air intake filter(s).	Section 6.2
Replace poly sheet curtain.	Section 6.12
Calibrate O ₂ sensor and CO ₂ sensor.	Section 4.5.3
Annually	
Replace sensor air filter.	Section 6.3
Clean panel air filter(s) with fresh water.	Section 6.2
Every 3 Years	
Replace scrubber cartridge.	Section 6.7.1

6.2 Panel Air Filter

6.2.1 Removing the Panel Air Filter(s)

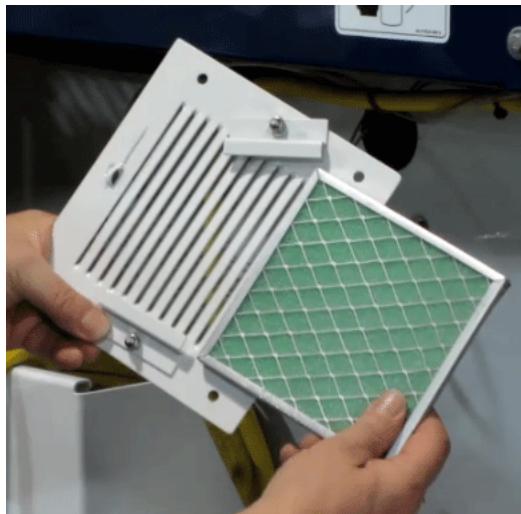
1. Remove the louvered panels from the right-hand side refrigeration evaporator access panel ([Figure 6.1](#)) by removing the bolts, flat washers, and rubber washers.

Figure 6.1 XtendFRESH Panel



2. Loosen two #10-32 nuts that secure the brackets holding the air filter in place.
3. Slide the panel air filter(s) out (**Figure 6.2**).

Figure 6.2 Panel Air Filter(s)



6.2.2 Replacing the Panel Air Filter(s)

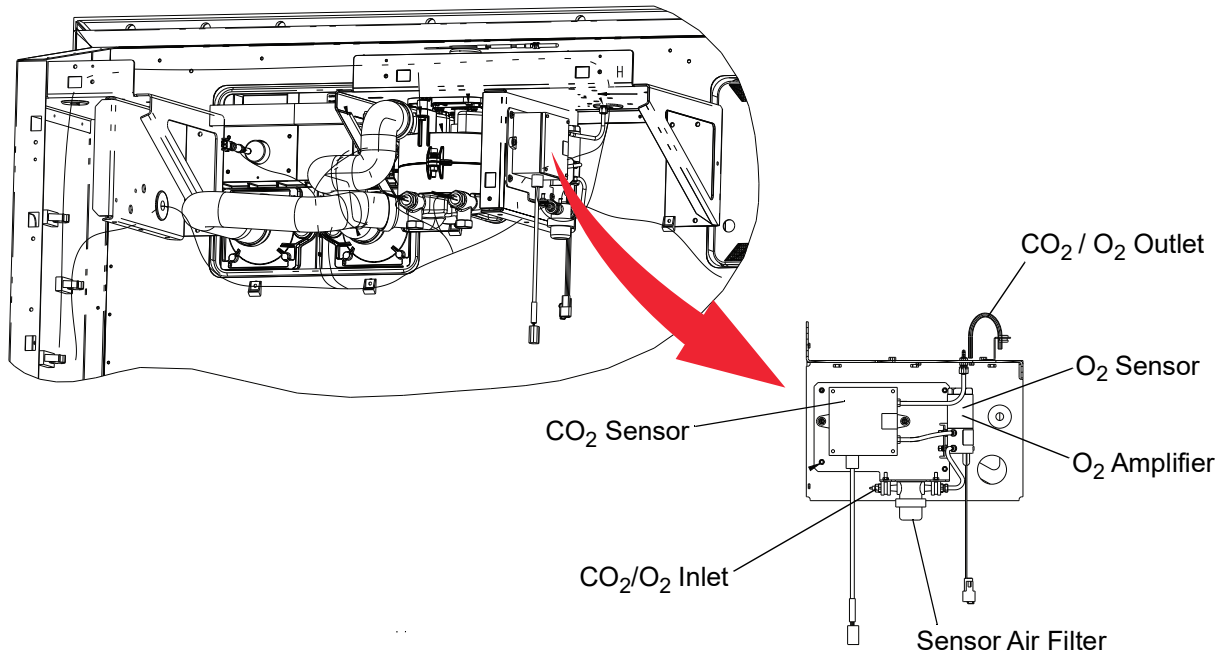
1. Install the panel air filter by reversing the above steps. Be sure the filter is fully inserted until it hits the stop. Also be sure to install the filters in the correct air flow direction. The filter's wire mesh must be facing towards the inside of the container.



Video available in the Mobile Version

6.3 Sensor Air Filter

Figure 6.3 CO₂/O₂ Assembly



WARNING

Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting. Refer to [Section 4.7](#).

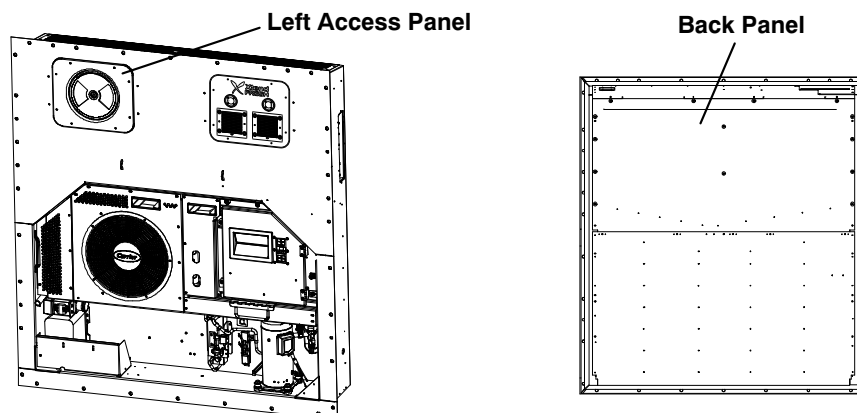
WARNING

Before servicing unit, make sure the Start-Stop switch (ST) is in the OFF position. Unit circuit breaker (CB-1) and external power sources are turned OFF and tagged to prevent accidental energizing of circuits.

6.3.1 Removing the Sensor Air Filter Element

When replacing the Sensor Air Filter element it can be accessed in two ways: through the left-hand side evaporator access panel or through the inside of the container by removing the upper back panel ([Figure 6.4](#)). Refer to [Section 6.6](#) for procedures to remove and install the left access panel.

Figure 6.4 Left Access Panel and Back Panel (Inside of Container)

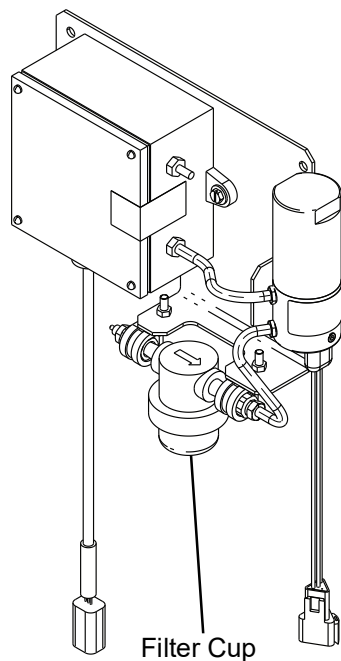


1. Follow container venting procedures before performing any maintenance on the sensor air filter element. Refer to [Section 4.7](#).
2. By hand, unscrew and remove the filter cup from the bottom of the sensor air filter assembly ([Figure 6.5](#)).
3. Remove the filter element from the filter assembly.

6.3.2 Replacing the Sensor Air Filter Element

1. Install the sensor air filter element by reversing the above steps.

Figure 6.5 Filter Cup



6.4 Oxygen Sensor

6.4.1 Removing the Oxygen Sensor

When replacing the oxygen sensor it can be accessed in two ways: through the left-hand side evaporator access panel or through the inside of the container by lowering the upper evaporator panel ([Figure 6.4](#)). Refer to [Section 6.6](#) for procedures to remove and install the left access panel.



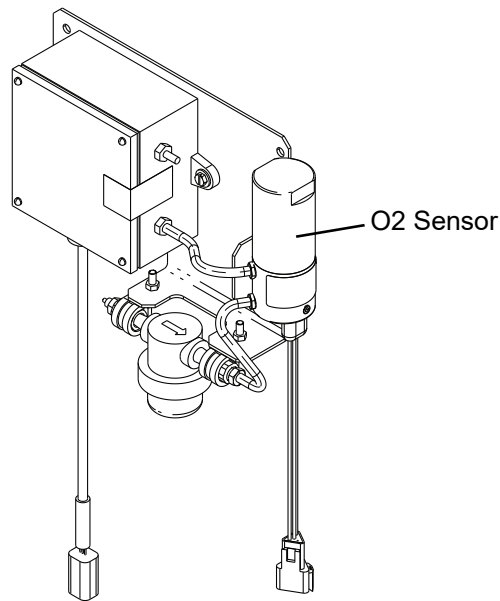
Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting. Refer to [Section 4.7](#).



Before servicing unit, make sure the Start-Stop switch (ST) is in the OFF position. Unit circuit breaker (CB-1) and external power sources are turned OFF and tagged to prevent accidental energizing of circuits.

1. Follow container venting procedures before performing any maintenance on the oxygen sensor ([Figure 6.6](#)).
2. Remove the cushion clamp, if equipped, and screws that secure the oxygen sensor.
3. Cut the wire tie that secures the wiring to the oxygen sensor body.
4. Unplug the wiring connector from the receptacle.
5. Remove the oxygen sensor from the oxygen sensor housing.

Figure 6.6 O₂ Sensor



6.4.2 Replacing the Oxygen Sensor

1. Install the oxygen sensor by reversing the above steps.



Video available in the Mobile Version

6.5 Carbon Dioxide Sensor

6.5.1 Removing the CO₂ Sensor

When replacing the CO₂ sensor it can be accessed in two ways: through the left-hand side evaporator access panel or through the inside of the container by removing the upper back panel (Figure 6.4). Refer to Figure 6.3 for the physical location of the CO₂ sensor. Refer to Section 6.6 for procedures to remove and install the left access panel.



WARNING

Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting. Refer to Section 4.7.

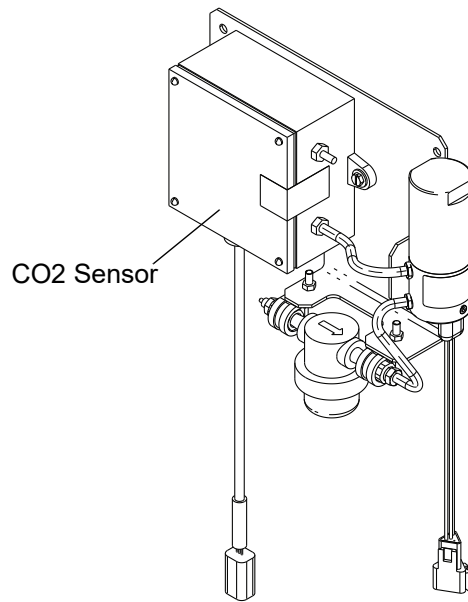


WARNING

Before servicing unit, make sure the start-stop switch (ST) is in the OFF position. Unit circuit breaker (CB-1) and external power sources are turned OFF and tagged to prevent accidental energizing of circuits.

1. Follow container venting procedures before performing any maintenance on the CO₂ sensor.
2. Remove the electrical connector and the inlet and outlet tubes from the body of the sensor (Figure 6.3).
3. Loosen the screws which holds the CO₂ sensor to the fan deck bracket.
4. Install replacement CO₂ sensor by reversing steps 2 and 3.
5. Calibrate the CO₂ sensor, following the test procedure. Refer to Section 4.5.3.

Figure 6.7 CO₂ Sensor



6.6 XtendFRESH Access Panel

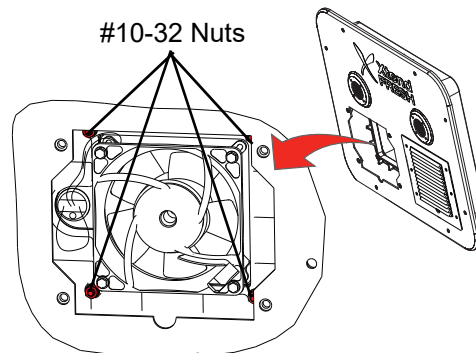


Before servicing unit, make sure the Start-Stop switch (ST) is in the OFF position. Unit circuit breaker (CB-1) and external power sources are turned OFF and tagged to prevent accidental energizing of circuits.

6.6.1 Removing the XtendFRESH Access Panel

1. Remove the two louvered panels from the upper right access panel (Figure 6.1) by removing the mounting bolts and T.I.R locking device if used.
2. Remove the eight #10-32 nuts holding the ducts in place. Leave the blower fan mounted to its duct. Gently push the duct away from the back of the panel (Figure 6.8).

Figure 6.8 Blower Fan Nut Locations

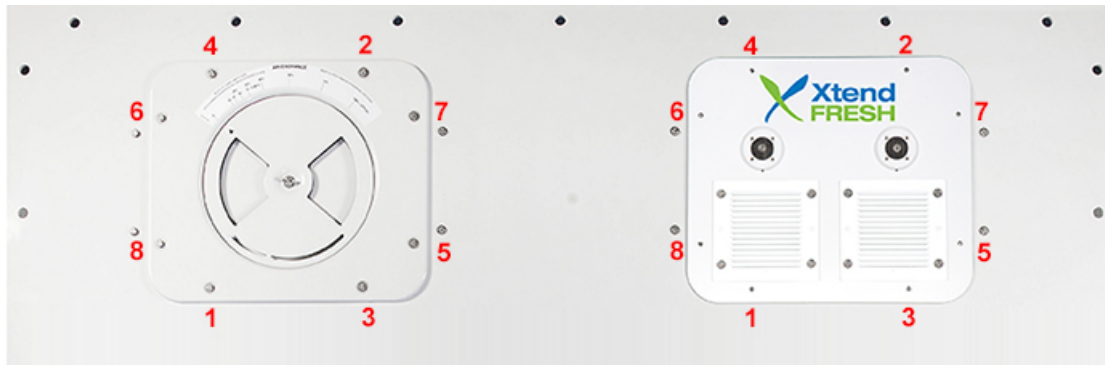


3. Remove the access panel mounting bolts and T.I.R. locking device if used.
4. Carefully pull the access panel out slightly to reach inside of the unit and unplug the fresh air solenoid and fan connectors.
5. Set the panel aside to make any necessary repairs.

6.6.2 Re-installing the XtendFRESH Access Panel

1. Plug in the fresh air solenoid and fan connections, on the back of the access panel.
2. Install the access panel and secure with mounting hardware.
3. Reach into the access panel and pull the transition ducts into position of the access panel. Make sure the gasket is properly seated.
4. Secure the ducts in place with eight #10-32 nuts (**Figure 6.8**).
5. Re-attach the louver panels. Torque the panel bolts to 60 in/lbs. (6.8 Nm), using the torque sequence shown in **Figure 6.9**. Repeat the torque sequence twice for a proper seal.

Figure 6.9 Torque Sequence



6.6.3 Replacing the XtendFRESH Fan(s)

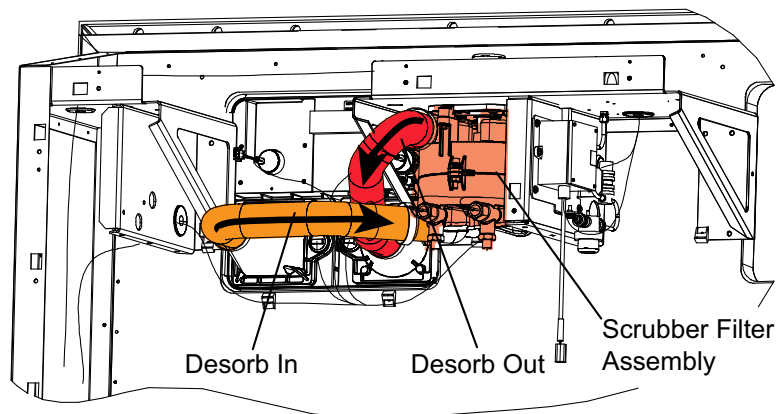
1. Remove the two louvered panels from the upper right access panel (**Figure 6.1**) by removing the mounting bolts and T.I.R. locking device if used.
2. Unbolt the defective fan from the panel. Unplug the blower connections. Make note of the fan direction.
3. Replace the defective fan, making sure the fan will be turning in the proper direction. The fan on the right side should have the label showing, and the left fan the label should be on the inside facing the transition.
4. Re-attach the fan wiring connections.
5. Inspect the air filter(s). Clean or replace as needed.
6. Install the louvered panel with filters to the access panel.

6.7 Scrubber Filter

6.7.1 Removing the Scrubber Filter

When replacing the Scrubber it can be accessed through the inside of the container. Refer to **Figure 6.10** for the physical location of the Scrubber.

Figure 6.10 Hose/Scrubber Locations

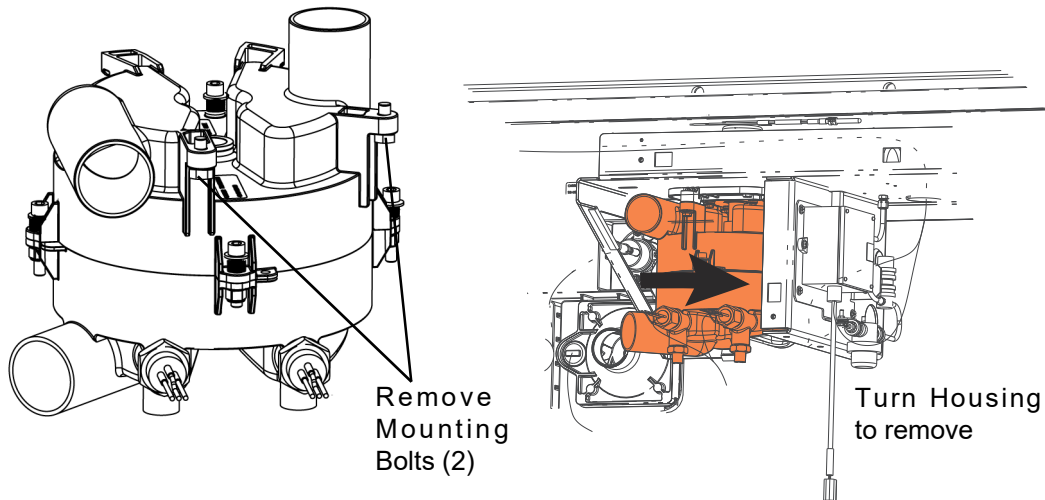


1. Lower the back panel (**Figure 6.4**).
2. Unplug the scrubber heaters.
3. Loosen the hose clamps and remove the hose from the scrubber filter assembly, top and bottom (**Figure 6.10**).
4. Remove the two bolts securing the scrubber housing to the top mounting bracket. Turn the scrubber housing 10 degrees to remove it from the unit (**Figure 6.11**).

NOTE

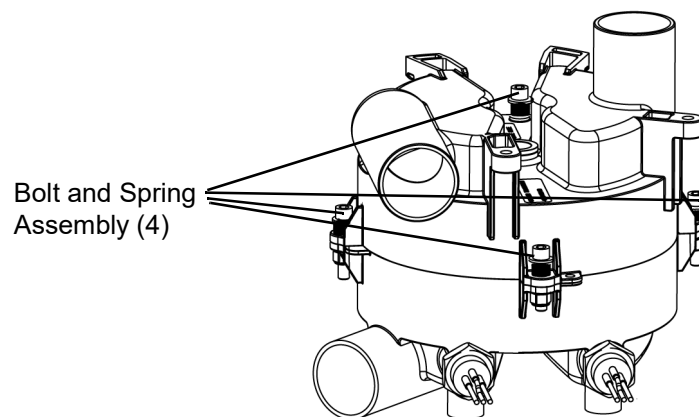
Original XtendFRESH units have a tall exhaust port and port cap (**Figure 3.2**) and need to be removed in order to remove the housing.

Figure 6.11 Removing the Scrubber Housing



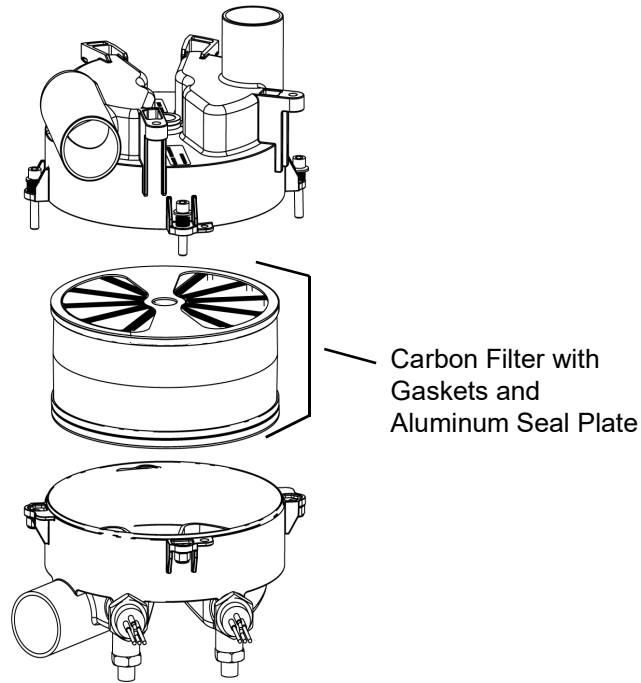
5. Move the scrubber housing to a clean area for disassembly.
6. Remove the four bolt and spring assemblies holding the scrubber housing together (**Figure 6.12**).

Figure 6.12 Scrubber Bolt/Spring Assemblies



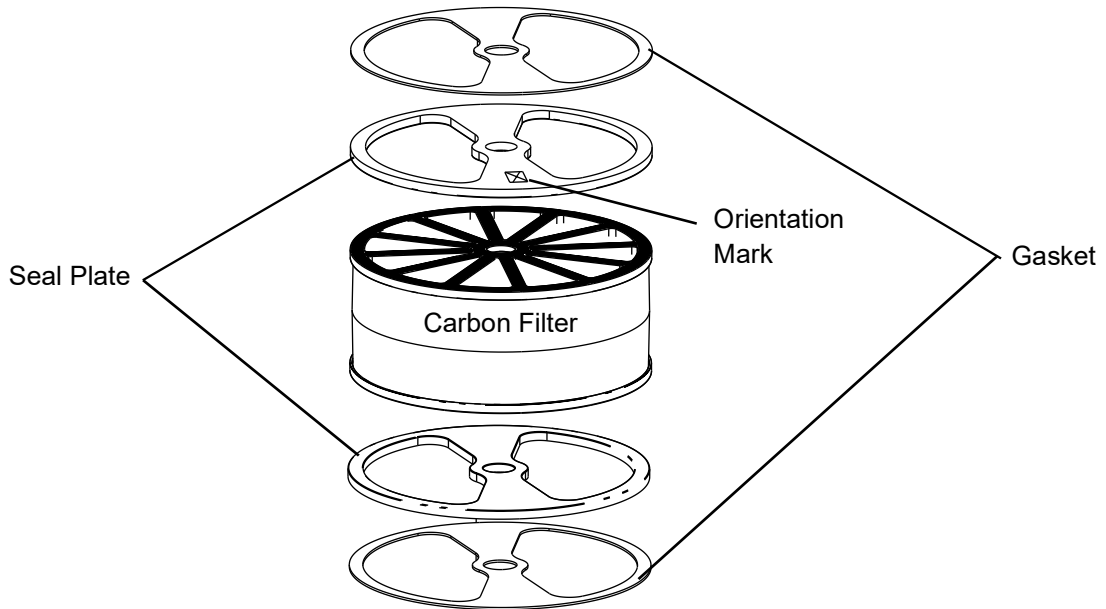
7. Separate the upper and lower halves of the scrubber housing.
8. Remove the carbon filter from the scrubber housing along with the gaskets and aluminum seal plate (**Figure 6.13**).

Figure 6.13 Scrubber Separated with Filter



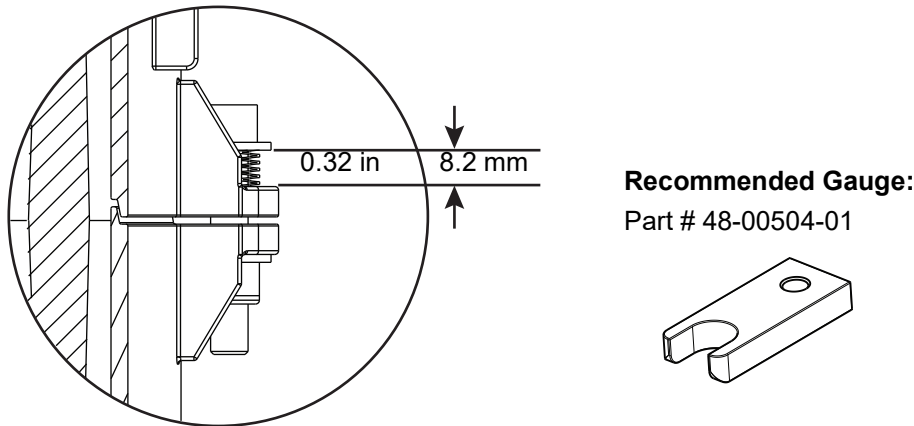
9. Install the seal plates and gaskets. Replace if damaged. Reinstall the new filter, making sure the gasket and seal plate are in the proper position. The side of the seal plate with the X must be installed towards the gasket (**Figure 6.14**).

Figure 6.14 Carbon Filter with Gasket and Seal Plate



10. Place the top plate and gasket on the top of the filter. Align the top housing so that the gasket and aluminum plate fit into the recess in the housing.
11. Bolt the housing together with the bolt and spring assemblies (**Figure 6.12**).
12. When tightening the spring assemblies the spring gap must be 0.310 inches (8mm) between the bottom of the washer and the housing tab surface (**Figure 6.15**).

Figure 6.15 Bolt / Spring Assembly Dimension



6.7.2 Installing the Scrubber

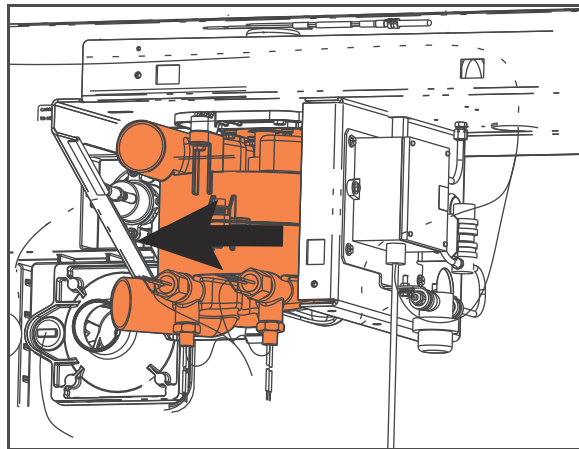
1. Align the scrubber shaft in the slot of the coupling attached to the motor.

NOTICE

It will aid in the installation if the shaft coupling (on top of the shaft) is loose to help with self-alignment. It will tighten during motor rotation.

2. The scrubber requires a ten degree turn in order to secure the back portion into the mounting tabs ([Figure 6.16](#)).

Figure 6.16 Scrubber Housing



3. Connect the hoses from the air ducts to the scrubber housing ([Figure 6.10](#)).
4. Make sure the hose is completely on the housing, tighten the hose clamps and use cable ties to secure the hoses to the gusset. Be sure the hoses are level.
5. Reconnect the scrubber heaters. Use cable ties to secure the wiring to prevent chafing.

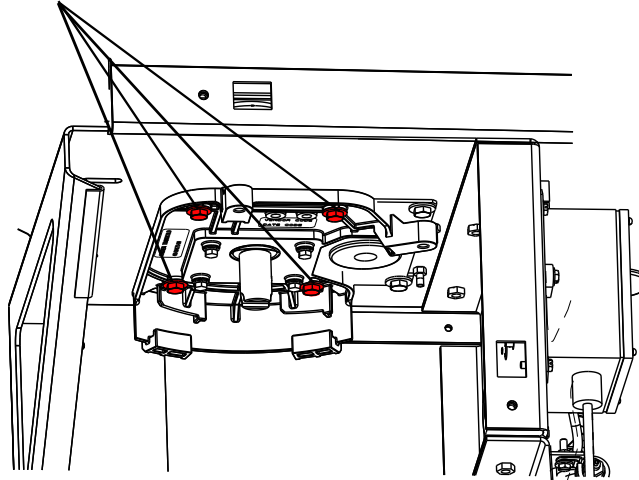
6.7.3 Replacing the Scrubber Motor

When replacing the Scrubber motor it can be accessed through the inside of the container. Refer to [Figure 6.10](#) for the physical location of the motor.

1. Start by removing the scrubber housing. Refer to [Section 6.7.1](#)
2. After removing the scrubber housing remove the four 1/4-20 mounting screws that attach the scrubber mounting plate to the fan deck ([Figure 6.17](#)).

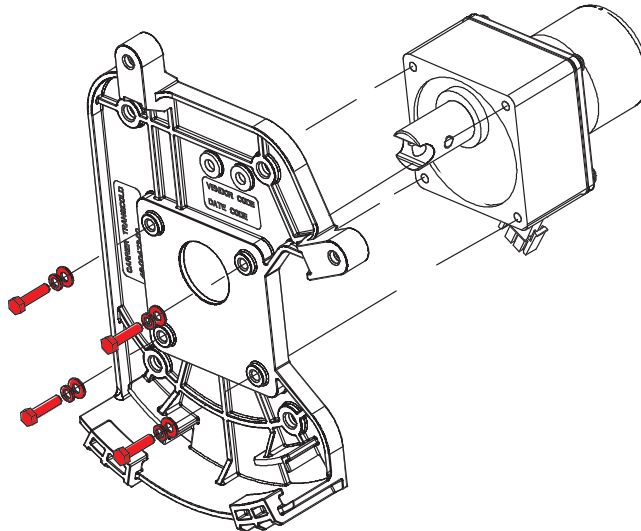
Figure 6.17 Scrubber Mounting Plate

4 Mounting Screws



3. Carefully lower the plate while unplugging the scrubber motor connection. It may be necessary to cut the wire ties.
4. Remove the four hex head screws holding the motor to the mounting plate (**Figure 6.18**).

Figure 6.18 Motor and Mounting Plate



5. Replace the motor and follow the instructions in reverse order.



Video available in the Mobile Version

6.8 Fresh Air Solenoid

6.8.1 Replacing the Fresh Air Solenoid

1. Remove the right-hand evaporator panel. Refer to **Section 6.6.1**.
2. There are two solenoids in the panel. The one on the left, as facing the panel from the back, requires the removal of a cover plate to access the four mounting screws. Remove the four 10-24 mounting screws.
3. Remove the 10-24 nuts and replace the defective solenoid by reversing steps 1-3.

6.9 Vent Position Sensor

For units equipped with XtendFRESH and a Vent Position Sensor, there is a solid state switch that will change depending on unit operation. If the unit is in XtendFRESH mode (Cd43 set to “FrESH”), the signal provided to the controller will be sent from the Oxygen sensor. If Cd43 is set to “OFF”, the signal to the controller will be sent from the Vent Position Sensor (VPS).

6.9.1 Checking the VPS Switch

To check the operation of the VPS switch, bring up Cd43 set the option to “OFF”. Navigate to Cd45 and then open the manual fresh air panel and verify the sensor is reading in Cd45. Go back to Cd43 and activate XtendFRESH (“FrESH”). Cd44 should now show the CO₂ and O₂ values. Cd45 should display “----”.

6.10 Pre-Trip



Video available in the Mobile Version

NOTE

Depending on equipment owner configuration, XtendFRESH may be turned “ON” or “OFF” after an AUTO PTI or TripStart. An individual Pre-Trip test or Cd43 “tEst” mode will not change the current state of XtendFRESH.

To ensure a successful XtendFRESH trip the following pre-trip steps should be performed prior to each trip. The following procedure is to be used in alignment with the 5369 release or higher.

1. Remove the rear upper back panel.
2. Press the CODE SELECT key on the keypad.
3. Press the Arrow keys until Code Select Cd18 is displayed then press the ENTER key. Verify that the container has software version (5369 or higher).
4. Then go to Code Select Cd43 and select “tEst” mode. Refer to [Section 4.5.3](#) for procedure.
5. This initiates a mechanical component operational test which is a visual inspection, followed by a CO₂ calibration and O₂ sensor check.

Refer to Cd43 Test Mode described under [Section 4.5.3](#) for description of mechanical and sensor tests.

CAUTION

Do not run the Calibration tests under loaded conditions.

6. On completion of the Cd43 test, prepare the box for an air leak test.
7. Check the defrost drain hose for any damage and ensure that the trap is filled with water.
8. Reinstall the upper back panel and ensure the floor drains within the container are sealed.
9. Ensure the manual fresh air panel is closed tight and that the warning label is in place on the unit.

Figure 6.19 Warning Label



10. Check air tightness of the box following the Box Checkout/Leak Test procedure. Refer to [Section 6.11.1](#). The box must meet or exceed the air tightness requirement.
11. Load cargo, install the new curtain and select the desired O₂ and CO₂ levels via Code Select Cd43 “FrESh” modes. Refer to [Section 4.5.1](#).
12. Immediately after the cargo is loaded it is recommended to perform a second leak test on the box.

6.11 Container Preparation

Check the rear container doors and door handles for proper operating condition. Check for proper installation of labels on the container and refrigeration unit. Always visually check the inside of the container for occupants prior to closing the doors.

6.11.1 Box Checkout/Leak Test

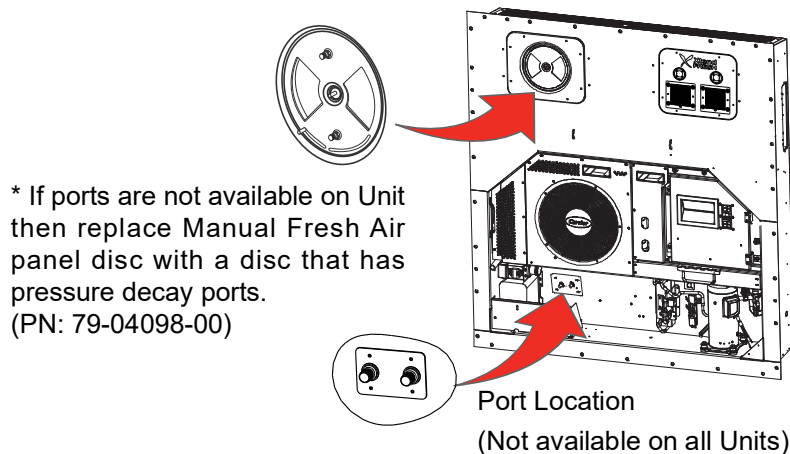


Video available in the Mobile Version

When using the XtendFRESH system, the box must conform to leak rates in order to maintain control of the O₂ and CO₂ setpoints. The minimal box requirement is a pressure decay of 2 inch WG (50mm) to 1 inch WG (25mm) of eight minutes or more for a 40 foot container and four minutes or more for a 20 foot container. It is recommended that it be checked prior to the voyage.

To perform this check some units may be equipped with two pressure connection ports on the front of the unit. If the ports are not available then a Manual Fresh Air panel (part number 79-04098-00) with two Schrader ports should be installed.

Figure 6.20 Container Leakage Test Ports



One of the ports is connected to a pressurized air supply and the other is connected to a Magnehelic pressure gauge. The pressure gauge monitors the container leakage rate.

Prior to performing the leak test:

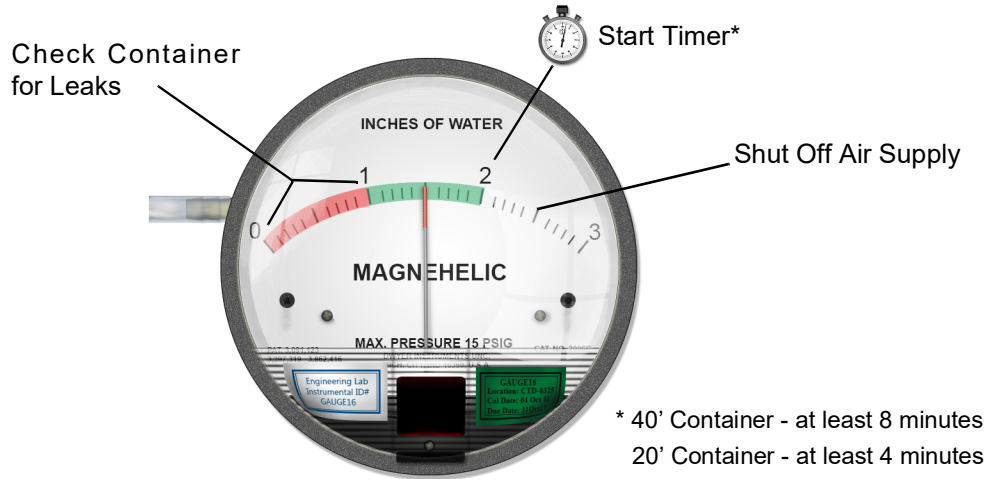
- Seal the floor drains with plugs
- Ensure the unit condensate drain line is filled with water
- Ensure the air makeup panel is tightly closed
- Insert plug in drain hose. Install container curtain at the rear door
- Seal the door shut

When installing the door curtain (part number 76-50036-01), place the curtain around the door and seal the curtain along the top and sides of the box and close the door. The curtain should be visible throughout the perimeter of the doors. Tape may be used to assist in holding the curtain in position. Always use a new curtain as a small rip in the curtain can result in a failure of the test.

After connecting the gauges, turn on the air supply and regulate the air pressure to 40-60 psi. When the Magnehelic gauge reads 2.5 inches of water gauge, shut off the air supply. **Do not exceed 3.0 inches of WG.**

Monitor the Magnehelic pressure gauge for the drop in air pressure in the container. When the Magnehelic pressure gauge reads 2 inches, start a timer. When the Magnehelic pressure gauge reads 1 inch of WG, stop timing. The amount of time expired should be no less than eight minutes or more for a 40 foot container and four minutes or more for a 20 foot container. If it is less than the required time (i.e six minutes), then the container needs to be checked for leaks.

Figure 6.21 Magnehelic Gauge (Kit # 07-00177-20)

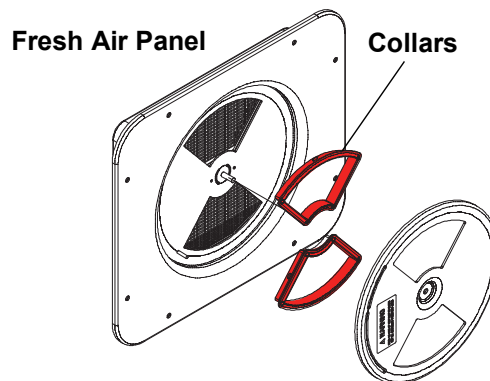


External Checks:

Check for leaks with the following recommended checks. Re-pressurize the container to 2 inches water gauge and look for leaks at the following areas using soapy water (mixture of dish detergent and water) looking for bubbles.

- Inspect evaporator unit access panels. Check gasket is properly in place. Tighten access panel bolts to 60 inch-lbs. and caulk if necessary.
- Inspect at condensate drain outlet line. If leaking, complete other checks and re-inspect internally.
- Inspect unit/container box joints. Caulk if necessary.
- Inspect the through-wire bulkhead connections. Secure and caulk if required.
- Inspect the container floor drains under container (if accessible). If leaking, complete external checks and reinspect internally.
- Inspect the rear door seals. Ensure curtain is properly installed (curtain should be visible throughout the perimeter of the doors). Remove an install new curtain. De-pressurize the container prior to opening the container.
- Ensure manual fresh air panel is equipped with collars (Part # 79-04064-00).

Figure 6.22 Fresh Air Panel Collars



Internal Checks:

Remove pressure within the container and perform inspections at the following locations.

- Inspect curtain for any rips. Replace curtain
- Inspect the container floor drains. Ensure they are properly sealed. Standard drains can not be used.
- Inspect condensate drain outlet line. Confirm drain line is filled with water.
- Inspect for any internal wall damage. Repair and caulk as required
- Inspect floor to side wall joint, floor to front bulkhead joint for any damage. Repair and caulk as required

On completion of the checks and any associated repairs it is recommended that the unit be tested again to verify it that it now meets the required level.

6.11.2 Initialize XtendFRESH Atmospheric Conditions

The purpose of this procedure is to create optimal conditions that have been studied and shown to slow the ripening cycle of some commodities by the use of nitrogen (N₂) and carbon dioxide (CO₂) gas cylinders.

Procedure:

1. Open the manual fresh air vent to allow for charging of gas.

If unit is equipped with a Vent Position Sensor (VPS):

- a. Bring up Cd43 on the display and set to Off mode to disable all XtendFRESH operations.
- b. Bring up Cd45.
- c. Open the manual fresh air vent until the display reads 10 CFM.

If unit is not equipped with a Vent Position Sensor (VPS):

- a. Open the manual fresh air vent until the indicator points to approximately 9 CFM.



Do not inject gas into the container unless the manual fresh air vent is opened. Damage to the unit and risk of personal injury exists if a pressure relief pathway is not established.

2. Enable Purge mode using Cd43. This is done to establish the amount of time to purge the unit of O₂ and CO₂. Refer to [Section 4.5](#) for procedure.

If not using Purge mode, the CO₂ and O₂ levels can be viewed in Cd44.

3. Purge mode is now active.
4. To establish the proper level of O₂ in the unit, charge with N₂ gas. Connect the hose from the N₂ regulator to the unit equipped gas injection port. Then, start releasing N₂ gas until the O₂ levels reach the desired level.

NOTE

If injection pressure is too high, then there is a risk of clearing the unit defrost condensate trap. If this happens, the condensate trap will need to be refilled with water. If condensate trap has been cleared of water, then a leak exists that will hinder atmosphere control.

5. To establish the proper level of CO₂ in the unit, charge with CO₂ gas. Connect the purging hose to the CO₂ regulator. After injection, the sensor may read much lower than this for at least a half hour.

NOTE

Increasing the CO₂ pressure too high will run the risk of freezing the regulator. Due to mixing and sensor lag, the CO₂ level will continue to rise for some time after stopping the CO₂ regulator.

6. Once the Purge mode timer is expired, remove the gas injection hose connections and close the manual fresh air vent. If gas concentrations reach desired levels prior to the timer expiring, set Purge mode in Cd43 to OFF prior to closing the manual fresh air vent. When the timer is expired or Purge mode is set to OFF to disable it, the unit will revert to Fresh mode using the setpoints entered for Purge mode.

6.12 Container Curtain



Potential hazardous atmosphere and low oxygen levels inside the container, ventilate before entering. Stay away from doors while venting. Refer to [Section 4.7](#).



Video available in the Mobile Version

6.12.1 Installing the Curtain

1. Open the rear doors of the container.
2. Use a new curtain.
3. Fully unfold the door curtain package and hold it up to the container opening. Tape may be used to assist holding the curtain in position.
4. Place curtain around door and seal curtain along top and sides of box. Install in track if available.
5. Close the rear doors of the container.

SECTION 7

ELECTRICAL WIRING SCHEMATIC AND DIAGRAMS

7.1 Introduction

This section contains the Electrical Schematics and Wiring Diagrams for a basic unit with XtendFRESH™ Controlled Atmosphere option.

Refer to the Operation and Service manual for your particular unit for actual schematic and wiring diagram information on components outside the XtendFRESH option.

Figure 7.1 PIDs lower than NT2570 - Schematic and Wiring Diagram

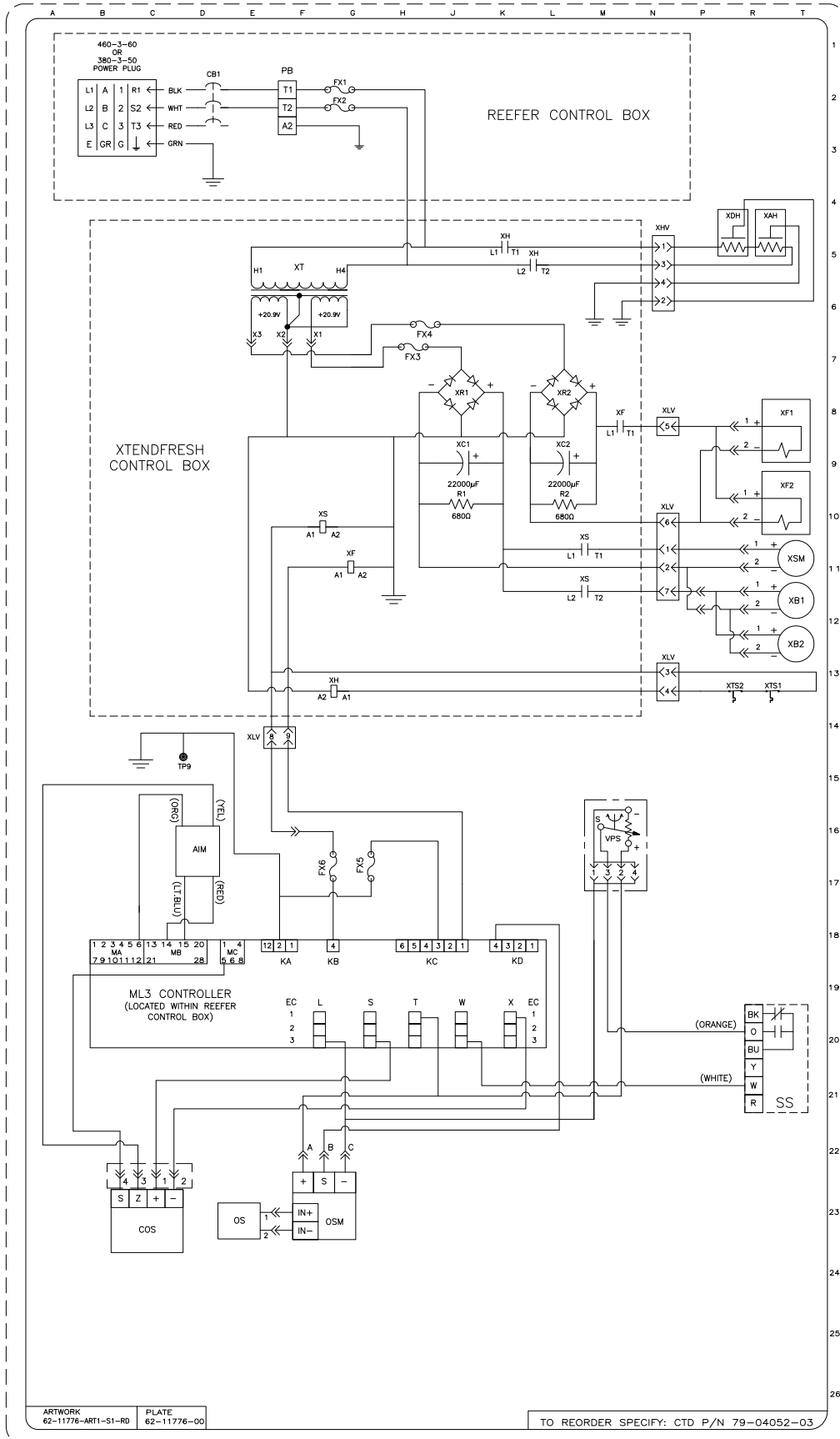


Figure 7.2 PIDs lower than NT2570 - Schematic and Wiring Diagram (Page 2)

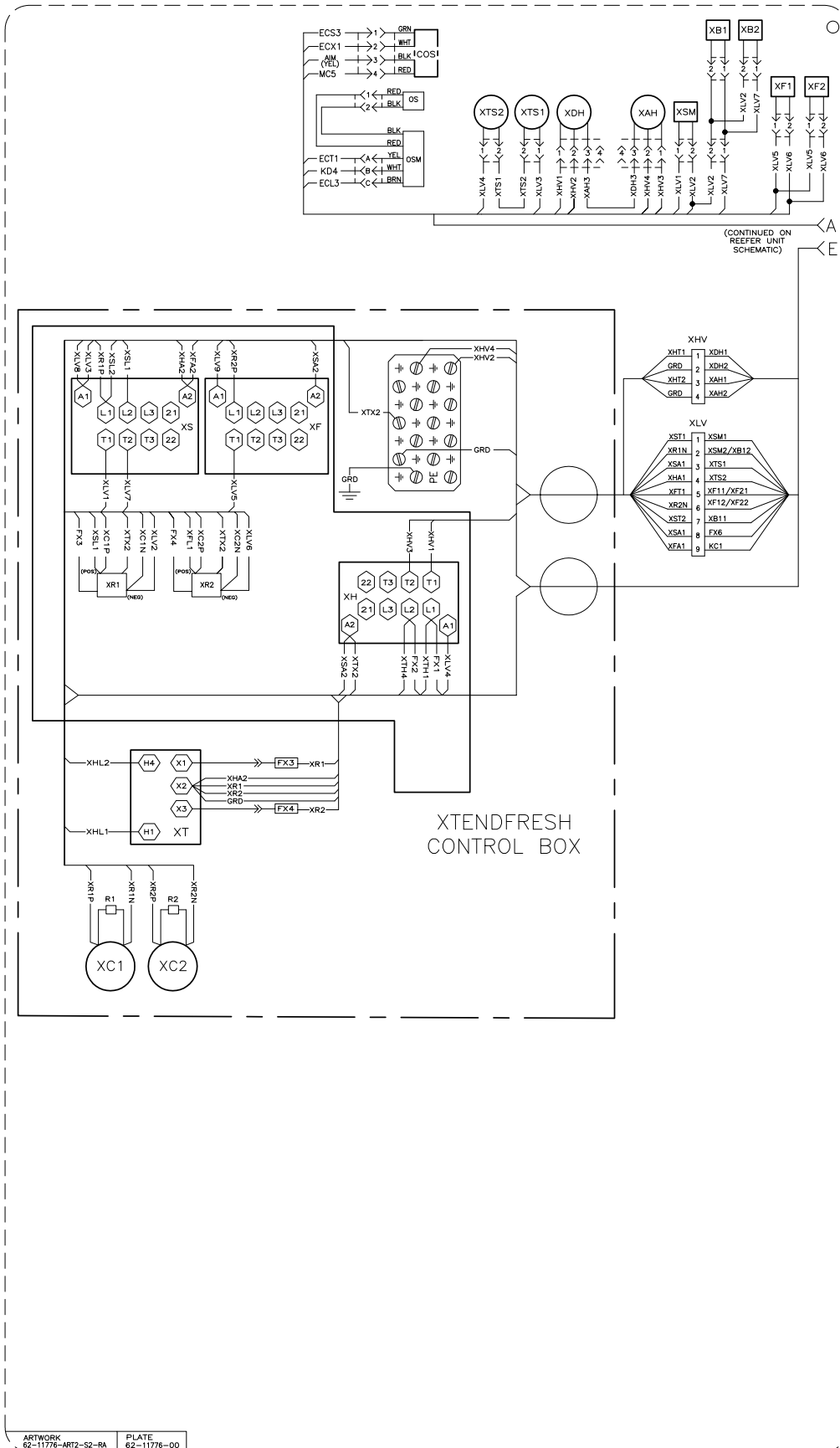


Figure 7.3 PIDs lower than NT2570 - Legend

NOTES:

1. COMPONENTS OUTLINED BY PHANTOM LINE (- - - - -) INDICATES OPTIONAL OR FIELD INSTALLED EQUIPMENT.

CONTROLLER OPERATION

1. XTENDFRESH MODE:
PRESS THE CODE SELECT KEY AND BY USING THE UP OR DOWN ARROW KEYS SELECT C043 AND PRESS ENTER
PRESS ENTER AND SCROLL TO SELECT "XTEND", "OFF" OR "TEST" MODES.
2. GAS SET POINT SELECTION:
WHEN XTEND IS DISPLAYED IN THE RIGHT WINDOW AND FLASHING, PRESS ENTER, SCROLL UP OR DOWN TO SET THE GAS SET POINTS AND PRESS ENTER. EACH TIME BOTH CO2 AND O2 SETPOINTS MUST BE ENTERED.
3. TEST MODE:
PRESS ENTER AND SCROLL TO ACCESS "TEST" OR "CAL" MODES. WHEN "TEST" IS DISPLAYED PRESS ENTER AND THE FRESH AIR SOLENOIDS WILL OPEN FOR 8 SECONDS THEN THE SCRUBBER WILL TURN ON FOR 80 SECONDS.
4. TEST MODE (GAS SENSOR CALIBRATION):
ENSURE CONTAINER IS EMPTY AND ATMOSPHERE IS FRESH INSIDE, WHEN "CAL" IS DISPLAYED PRESS ENTER AND SCROLL TO "COCAL" OR "AIRCL". PRESS ENTER TO SELECT THE SENSOR TO CALIBRATE. PRESS ENTER AND HOLD FOR APPROX. 10 SECONDS WHEN "EMPTY BOX" IS DISPLAYED TO INITIATE CALIBRATION, AT ANY TIME PRESS AND HOLD THE CODE SELECT KEY TO ABORT THE SENSOR CALIBRATION. CALIBRATION WILL LAST FOR UP TO 10 MINUTES, AFTER WHICH THE DISPLAY WILL SHOW "PASS" OR "FAIL".
5. VIEW GAS LEVELS:
SELECT CODE 44 AND PRESS ENTER TO VIEW CURRENT CO2 AND O2 LEVELS IN THE CONTAINER.

CIRCUIT PROTECTION	RATING
FX1,FX2 FERRAZ SHAWMUT, ATMRS	5 AMP
FX3,FX4 BUSSMANN MDA-15-R (TIME-DELAY)	15 AMP
FX5,FX6 BUSSMANN MDL-5-R (TIME-DELAY)	5 AMP

LEGEND

ZONE	SYMBOL	DESCRIPTION
C16	AIM	AUTOFRESH INTERFACE MODULE
O2	CB1	CIRCUIT BREAKER 460 V
C23	COS	CO2 SENSOR
H7,G2, G17,F17	FX1,FX2,FX3, FX4,FX5,FX6	FUSE - XTENDFRESH
E23	OS	O2 SENSOR
O23	OSM	O2 SENSOR AMPLIFIER
G2	PB	UNIT PHASE CONTACTOR
J10,L10	R1,R2	RESISTOR
T21	SS	SENSOR SWITCH MODULE
C14	TP	TEST POINT
M16	VPS	VENT POSITION SENSOR
R4	XAH	XTENDFRESH ADSORB HEATER
T12	XB1	XTENDFRESH DESORB BLOWER (FAN) 1
T12	XB2	XTENDFRESH DESORB BLOWER (FAN) 2
J9	XC1	CAPACITOR 1
L9	XC2	CAPACITOR 2
R4	XDH	XTENDFRESH DESORB HEATER
G11,M8	XF	XTENDFRESH FRESH AIR CONTACTOR
T8	XF1	XTENDFRESH FRESH AIR SOLENOID 1
T9	XF2	XTENDFRESH FRESH AIR SOLENOID 2
G13,K5,L5	XH	XTENDFRESH HEATER CONTACTOR
N5	XHV	XTENDFRESH HIGH VOLTAGE CONNECTOR
E14,N8,N10,N13	XLV	XTENDFRESH LOW VOLTAGE CONNECTOR
J8	XR1	XTENDFRESH RECTIFIER 1
L8	XR2	XTENDFRESH RECTIFIER 2
F10,M10,M11	XS	XTENDFRESH SCRUBBER CONTACTOR
T11	XSM	XTENDFRESH SCRUBBER MOTOR
F5	XT	XTENDFRESH TRANSFORMER (24VAC)
R13	XTS1	XTENDFRESH THERMOSTAT 1
R13	XTS2	XTENDFRESH THERMOSTAT 2

Figure 7.5 PIDs NT2570 and NT2617 - Schematic and Wiring Diagram (Page 2)

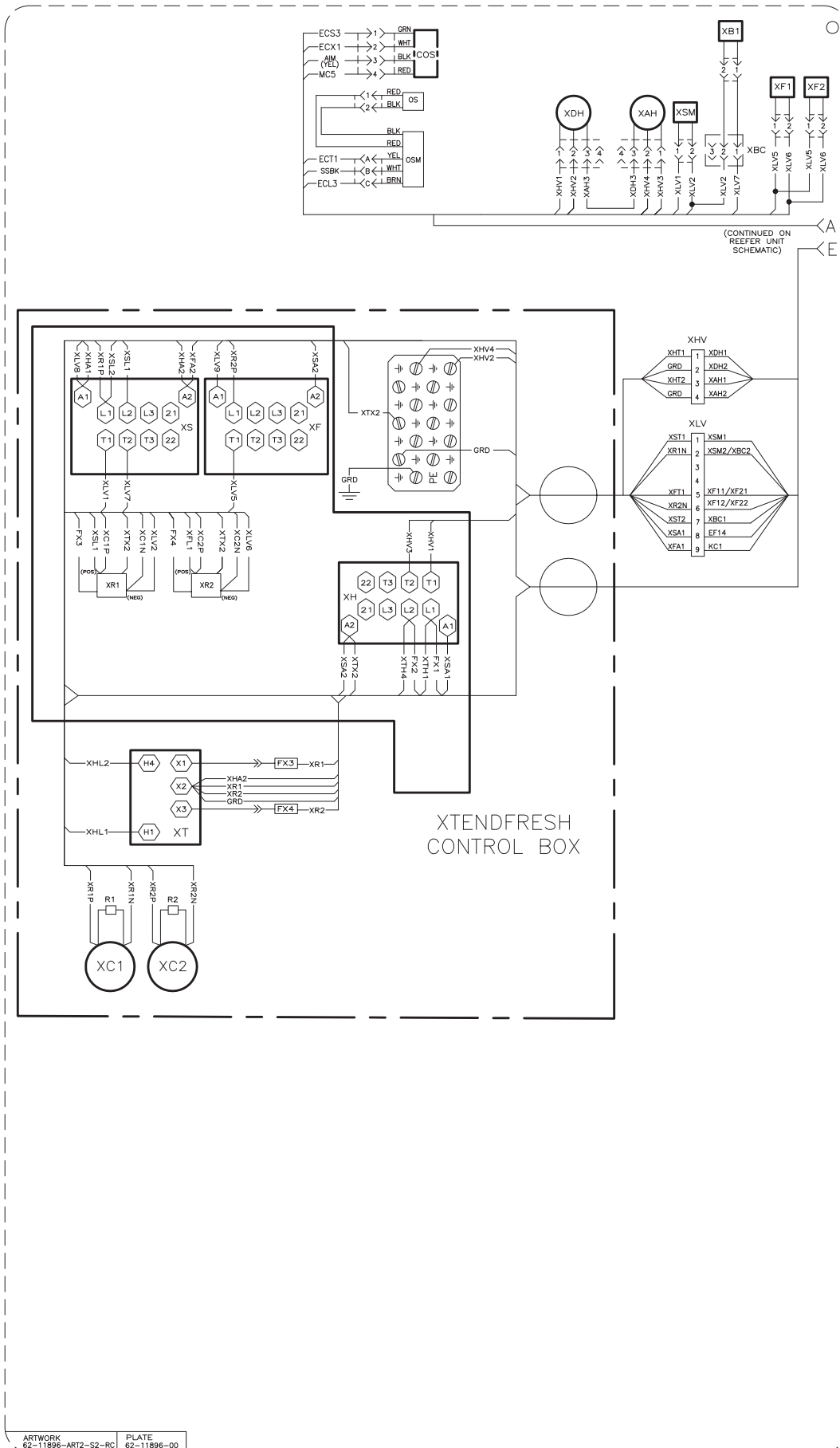


Figure 7.6 PIDs NT2570 and NT2617 - Legend

- NOTES:
- COMPONENTS OUTLINED BY PHANTOM LINE (- - - -) INDICATES OPTIONAL OR FIELD INSTALLED EQUIPMENT.
- CONTROLLER OPERATION
- XTENDFRESH MODE:
PRESS THE CODE SELECT KEY AND BY USING THE UP OR DOWN ARROW KEYS SELECT CD43 AND PRESS ENTER
PRESS ENTER AND SCROLL TO SELECT "XTEND", "OFF" OR "TEST" MODES.
 - GAS SET POINT SELECTION:
WHEN XTEND IS DISPLAYED IN THE RIGHT WINDOW AND FLASHING, PRESS ENTER, SCROLL UP OR DOWN TO SET THE GAS SET POINTS AND PRESS ENTER. EACH TIME BOTH CO2 AND O2 SETPOINTS MUST BE ENTERED.
 - TEST MODE:
PRESS ENTER AND SCROLL TO ACCESS "TEST" OR "CAL" MODES. WHEN "TEST" IS DISPLAYED PRESS ENTER AND THE FRESH AIR SOLENOIDS WILL OPEN FOR 8 SECONDS THEN THE SCRUBBER WILL TURN ON FOR 60 SECONDS.
 - TEST MODE (GAS SENSOR CALIBRATION):
ENSURE CONTAINER IS EMPTY AND ATMOSPHERE IS FRESH INSIDE. WHEN "CAL" IS DISPLAYED PRESS ENTER AND SCROLL TO "COCAL" OR "AIRCL". PRESS ENTER TO SELECT THE SENSOR TO CALIBRATE. PRESS ENTER AND HOLD FOR APPROX. 10 SECONDS WHEN "EMPTY BOX" IS DISPLAYED TO INITIATE CALIBRATION. AT ANY TIME, PRESS AND HOLD THE CODE SELECT KEY TO ABORT THE SENSOR CALIBRATION. CALIBRATION WILL LAST FOR UP TO 10 MINUTES, AFTER WHICH THE DISPLAY WILL SHOW "PASS" OR "FAIL".
 - VIEW GAS LEVELS:
SELECT CODE 44 AND PRESS ENTER TO VIEW CURRENT CO2 AND O2 LEVELS IN THE CONTAINER.

CIRCUIT PROTECTION	RATING
FX1,FX2 FERRAZ SHAWMUT, ATMRS	5 AMP
FX3,FX4 BUSSMANN MDA-15-R (TIME-DELAY)	15 AMP
FX5,FX6 BUSSMANN MDL-5-R (TIME-DELAY)	5 AMP

LEGEND

ZONE	SYMBOL	DESCRIPTION
C16	AIM	- AUTOFRESH INTERFACE MODULE
D2	CB1	- CIRCUIT BREAKER 460 V
C23	COS	- CO2 SENSOR
F16	EF	- EVAPORATOR FAN CONTACTOR (HIGH SPEED)
H7,C2, D17,F17	FX1,FX2,FX3, FX4,FX5,FX6	- FUSE - XTENDFRESH
E23	OS	- O2 SENSOR
G23	OSM	- O2 SENSOR AMPLIFIER
G2	PB	- UNIT PHASE CONTACTOR
J10,L10	R1,R2	- RESISTOR
T21	SS	- SENSOR SWITCH MODULE
C14	TP	- TEST POINT
M16	VPS	- VENT POSITION SENSOR
R4	XAH	- XTENDFRESH ADSORB HEATER
T12	XB1	- XTENDFRESH DESORB BLOWER (FAN)
P12	XBC	- XTENDFRESH BLOWER CONNECTOR
J9	XC1	- CAPACITOR 1
L9	XC2	- CAPACITOR 2
R4	XDH	- XTENDFRESH DESORB HEATER
G11,M8	XF	- XTENDFRESH FRESH AIR CONTACTOR
T8	XF1	- XTENDFRESH FRESH AIR SOLENOID 1
T9	XF2	- XTENDFRESH FRESH AIR SOLENOID 2
F9,K5,L5	XH	- XTENDFRESH HEATER CONTACTOR
N5	XHV	- XTENDFRESH HIGH VOLTAGE CONNECTOR
E14,N8,N10	XLV	- XTENDFRESH LOW VOLTAGE CONNECTOR
J8	XR1	- XTENDFRESH RECTIFIER 1
L8	XR2	- XTENDFRESH RECTIFIER 2
F10,M10,M11	XS	- XTENDFRESH SCRUBBER CONTACTOR
T11	XSM	- XTENDFRESH SCRUBBER MOTOR
F5	XT	- XTENDFRESH TRANSFORMER (24VAC)

Figure 7.7 PID NT2619 and NT2727 - Schematic and Wiring Diagram

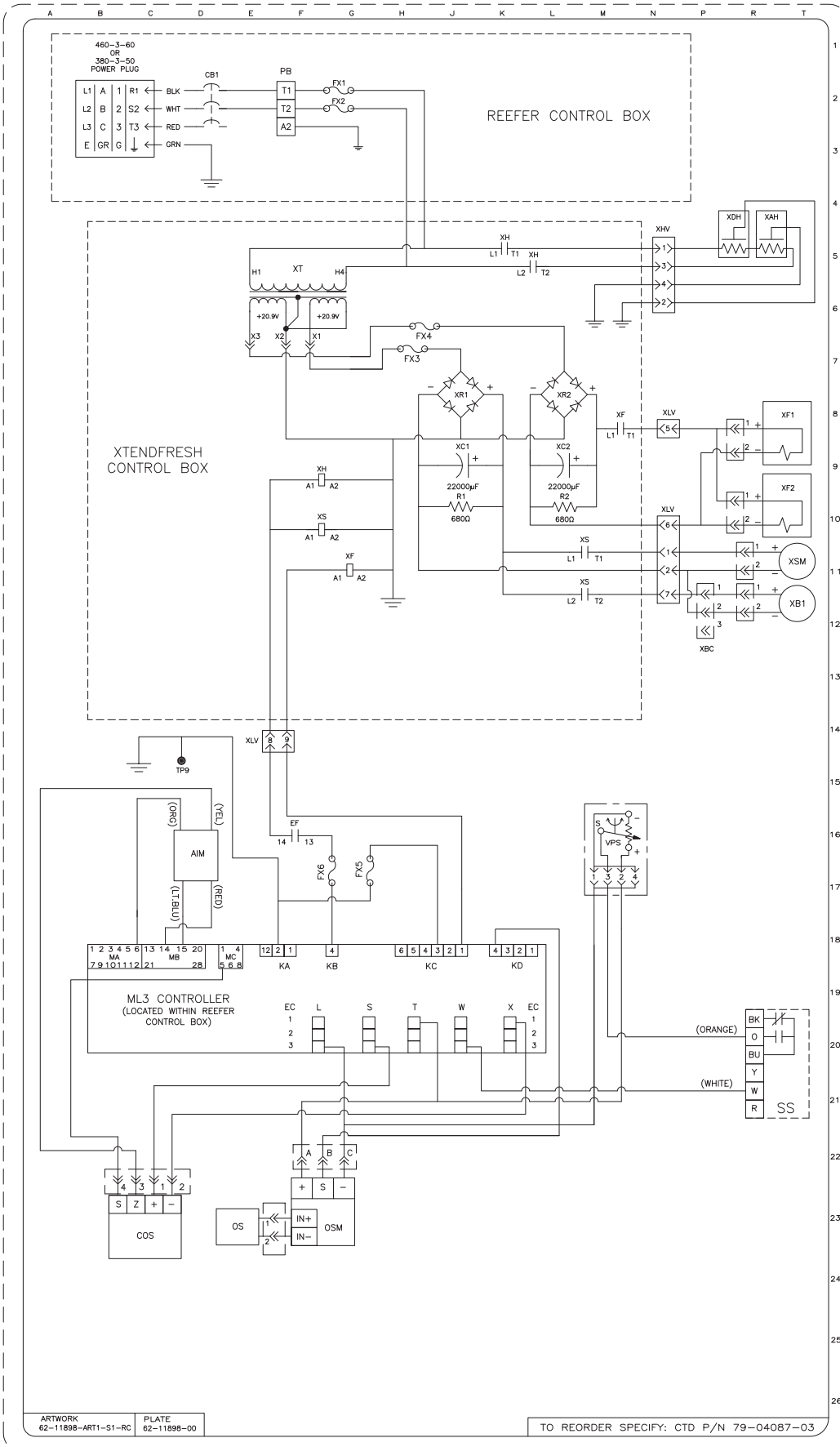


Figure 7.8 PID NT2619 and NT2727 - Schematic and Wiring Diagram (Page 2)

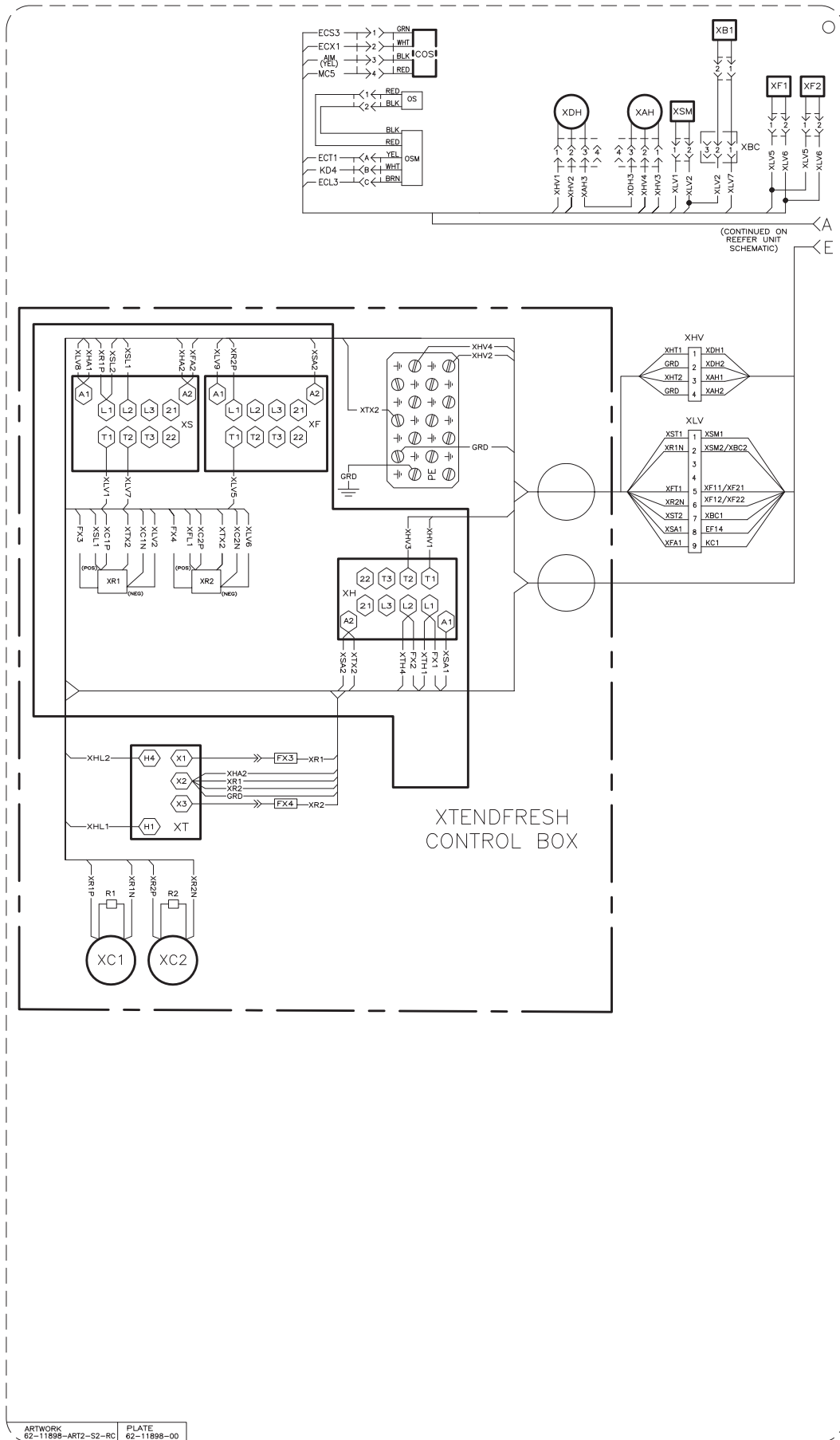


Figure 7.9 PID NT2619 and NT2727 - Legend

NOTES:

- COMPONENTS OUTLINED BY PHANTOM LINE (- - - -) INDICATES OPTIONAL OR FIELD INSTALLED EQUIPMENT.

CONTROLLER OPERATION

1. XTENDFRESH MODE:

PRESS THE CODE SELECT KEY AND BY USING THE UP OR DOWN ARROW KEYS SELECT C043 AND PRESS ENTER
PRESS ENTER AND SCROLL TO SELECT "XTEND", "OFF" OR "TEST" MODES.

2. GAS SET POINT SELECTION:

WHEN XTEND IS DISPLAYED IN THE RIGHT WINDOW AND FLASHING, PRESS ENTER. SCROLL UP OR DOWN TO SET THE GAS SET POINTS AND PRESS ENTER. EACH TIME BOTH CO2 AND O2 SETPOINTS MUST BE ENTERED.

3. TEST MODE:

PRESS ENTER AND SCROLL TO ACCESS "TEST" OR "CAL" MODES. WHEN "TEST" IS DISPLAYED PRESS ENTER AND THE FRESH AIR SOLENOIDS WILL OPEN FOR 8 SECONDS THEN THE SCRUBBER WILL TURN ON FOR 60 SECONDS.

4. TEST MODE (GAS SENSOR CALIBRATION):

ENSURE CONTAINER IS EMPTY AND ATMOSPHERE IS FRESH INSIDE. WHEN "CAL" IS DISPLAYED PRESS ENTER AND SCROLL TO "COCAL" OR "AIRCL". PRESS ENTER TO SELECT THE SENSOR TO CALIBRATE. PRESS ENTER AND HOLD FOR APPROX 10 SECONDS WHEN "EMPTY BOX" IS DISPLAYED TO INITIATE CALIBRATION. AT ANY TIME PRESS AND HOLD THE CODE SELECT KEY TO ABORT THE SENSOR CALIBRATION. CALIBRATION WILL LAST FOR UP TO 10 MINUTES, AFTER WHICH THE DISPLAY WILL SHOW "PASS" OR "FAIL".

5. VIEW GAS LEVELS:

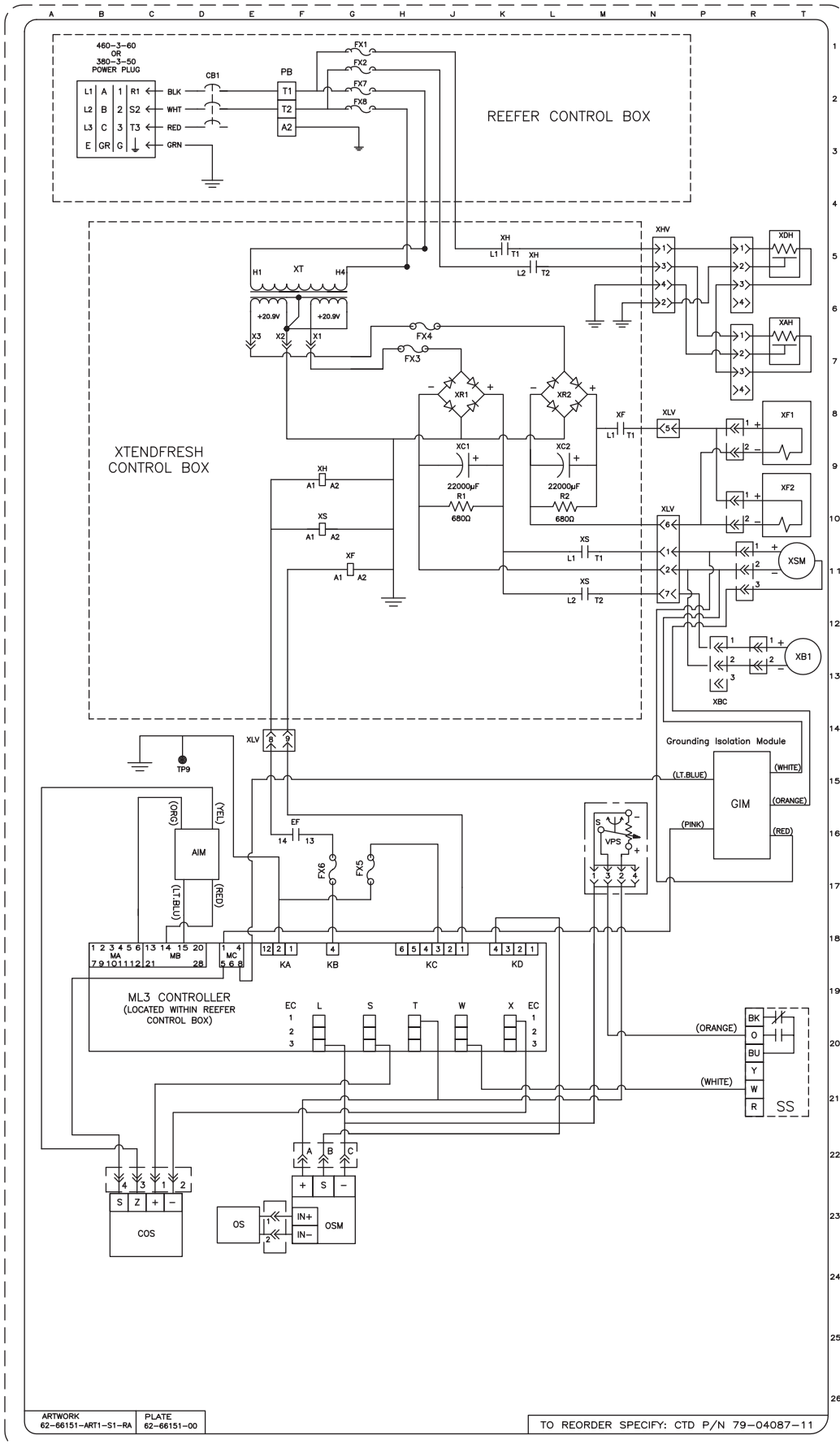
SELECT CODE 44 AND PRESS ENTER TO VIEW CURRENT CO2 AND O2 LEVELS IN THE CONTAINER.

CIRCUIT PROTECTION		RATING
FX1,FX2	FERRAZ SHAWMUT, ATMR5	5 AMP
FX3,FX4	BUSSMANN MDA-15-R (TIME-DELAY)	15 AMP
FX5,FX6	BUSSMANN MDL-5-R (TIME-DELAY)	5 AMP

LEGEND

ZONE	SYMBOL	DESCRIPTION
C16	AIM	- AUTOFRESH INTERFACE MODULE
D2	CB1	- CIRCUIT BREAKER 460 V
C23	C05	- CO2 SENSOR
F16	EF	- EVAPORATOR FAN CONTACTOR (HIGH SPEED)
H7,G2, G17,F17	FX1,FX2,FX3, FX4,FX5,FX6	- FUSE - XTENDFRESH
E23	OS	- O2 SENSOR
G23	OSM	- O2 SENSOR AMPLIFIER
G2	PB	- UNIT PHASE CONTACTOR
J10,L10	R1,R2	- RESISTOR
T21	SS	- SENSOR SWITCH MODULE
C14	TP	- TEST POINT
M16	VPS	- VENT POSITION SENSOR
R4	XAH	- XTENDFRESH ADSORB HEATER
T12	XB1	- XTENDFRESH DESORB BLOWER (FAN)
P12	XBC	- XTENDFRESH BLOWER CONNECTOR
J9	XC1	- CAPACITOR 1
L9	XC2	- CAPACITOR 2
R4	XDH	- XTENDFRESH DESORB HEATER
G11,M8	XF	- XTENDFRESH FRESH AIR CONTACTOR
T8	XF1	- XTENDFRESH FRESH AIR SOLENOID 1
T9	XF2	- XTENDFRESH FRESH AIR SOLENOID 2
F9,K5,L5	XH	- XTENDFRESH HEATER CONTACTOR
N5	XHV	- XTENDFRESH HIGH VOLTAGE CONNECTOR
E14,N8,N10	XLV	- XTENDFRESH LOW VOLTAGE CONNECTOR
J8	XR1	- XTENDFRESH RECTIFIER 1
L8	XR2	- XTENDFRESH RECTIFIER 2
F10,M10,M11	XS	- XTENDFRESH SCRUBBER CONTACTOR
T11	XSM	- XTENDFRESH SCRUBBER MOTOR
F5	XT	- XTENDFRESH TRANSFORMER (24VAC)

Figure 7.10 PIDs NT2774 and higher - Schematic and Wiring Diagram



ARTWORK 62-66151-ART1-S1-RA PLATE 62-66151-00

TO REORDER SPECIFY: CTD P/N 79-04087-11

Figure 7.11 PIDs NT2774 and higher - Schematic and Wiring Diagram (Page 2)

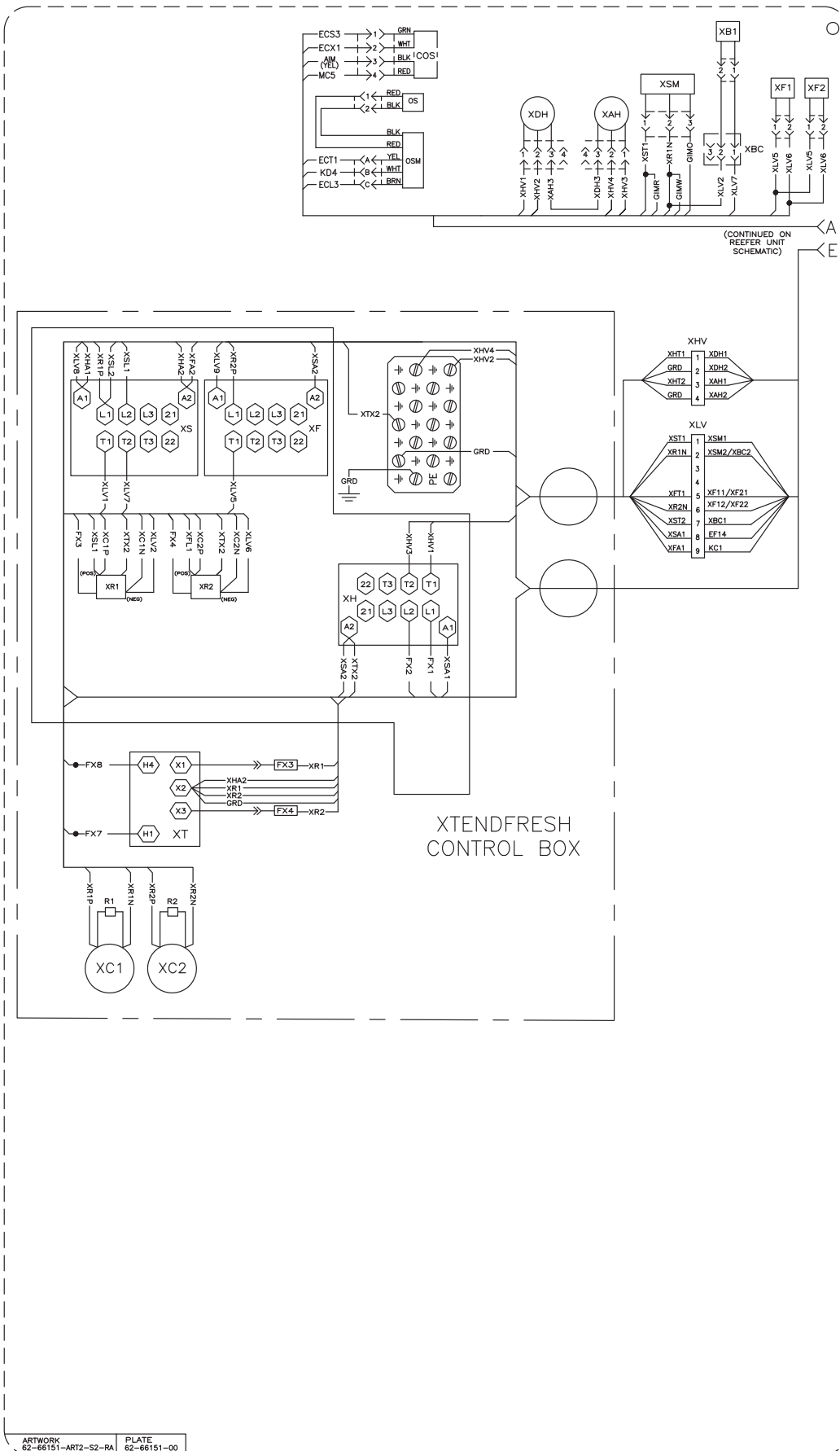


Figure 7.12 PIDs NT2774 and higher - Legend

NOTES:

- COMPONENTS OUTLINED BY PHANTOM LINE (- - - -) INDICATES OPTIONAL OR FIELD INSTALLED EQUIPMENT.

CONTROLLER OPERATION

- XTENDFRESH MODE:**
PRESS THE CODE SELECT KEY AND BY USING THE UP OR DOWN ARROW KEYS SELECT CD43 AND PRESS ENTER
PRESS ENTER AND SCROLL TO SELECT "XTEND", "OFF" OR "TEST" MODES.
- GAS SET POINT SELECTION:**
WHEN XTEND IS DISPLAYED IN THE RIGHT WINDOW AND FLASHING, PRESS ENTER, SCROLL UP OR DOWN TO SET THE GAS SET POINTS AND PRESS ENTER. EACH TIME BOTH CO2 AND O2 SETPOINTS MUST BE ENTERED.
- TEST MODE:**
PRESS ENTER AND SCROLL TO ACCESS "TEST" OR "CAL" MODES. WHEN "TEST" IS DISPLAYED PRESS ENTER AND THE FRESH AIR SOLENOIDS WILL OPEN FOR 8 SECONDS THEN THE SCRUBBER WILL TURN ON FOR 60 SECONDS.
- TEST MODE (GAS SENSOR CALIBRATION):**
ENSURE CONTAINER IS EMPTY AND ATMOSPHERE IS FRESH INSIDE. WHEN "CAL" IS DISPLAYED PRESS ENTER AND SCROLL TO "CO2CAL" OR "AIRCL". PRESS ENTER TO SELECT THE SENSOR TO CALIBRATE. PRESS ENTER AND HOLD FOR APPROX 10 SECONDS WHEN "EMPTY BOX" IS DISPLAYED TO INITIATE CALIBRATION. AT ANY TIME PRESS AND HOLD THE CODE SELECT KEY TO ABORT THE SENSOR CALIBRATION. CALIBRATION WILL LAST FOR UP TO 10 MINUTES, AFTER WHICH THE DISPLAY WILL SHOW "PASS" OR "FAIL".
- VIEW GAS LEVELS:**
SELECT CODE 44 AND PRESS ENTER TO VIEW CURRENT CO2 AND O2 LEVELS IN THE CONTAINER.

CIRCUIT PROTECTION		RATING
FX1,FX2,FX7,FXB	FERRAZ SHAWMUT, ATMR5	5 AMP
FX3,FX4	BUSSMANN MDA-15-R (TIME-DELAY)	15 AMP
FX5,FX6	BUSSMANN MDL-5-R (TIME-DELAY)	5 AMP

LEGEND

ZONE	SYMBOL	DESCRIPTION
C16	AM	AUTOFRESH INTERFACE MODULE
D2	CB1	CIRCUIT BREAKER 460V
C23	CO5	CO2 SENSOR
F16	EF	EVAPORATOR FAN CONTACTOR (HIGH SPEED)
H7,G1,G2, G17,F17	FX1,FX2,FX3, FX4,FX5,FX6, FX7,FX8	FUSE - XTENDFRESH
R15	GIM	GROUND ISOLATION MODULE
E23	OS	O2 SENSOR
G23	OSM	O2 SENSOR AMPLIFIER
G2	PB	UNIT PHASE CONTACTOR
J10,L10	R1,R2	RESISTOR
T21	SS	SENSOR SWITCH MODULE
C14	TP	TEST POINT
M16	VPS	VENT POSITION SENSOR
R6	XAH	XTENDFRESH ADSORB HEATER
T12	XB1	XTENDFRESH DESORB BLOWER (FAN)
F12	XBC	XTENDFRESH BLOWER CONNECTOR
J9	XC1	CAPACITOR 1
L9	XC2	CAPACITOR 2
R5	XDH	XTENDFRESH DESORB HEATER
G11,M8	XF	XTENDFRESH FRESH AIR CONTACTOR
T8	XF1	XTENDFRESH FRESH AIR SOLENOID 1
T9	XF2	XTENDFRESH FRESH AIR SOLENOID 2
F9,K5,L5	XH	XTENDFRESH HEATER CONTACTOR
N5	XHV	XTENDFRESH HIGH VOLTAGE CONNECTOR
E14,N8,N10	XLV	XTENDFRESH LOW VOLTAGE CONNECTOR
J8	XR1	XTENDFRESH RECTIFIER 1
L8	XR2	XTENDFRESH RECTIFIER 2
F10,M10,M11	XS	XTENDFRESH SCRUBBER CONTACTOR
T11	XSM	XTENDFRESH SCRUBBER MOTOR
F5	XT	XTENDFRESH TRANSFORMER (24VAC)

ARTWORK 62-66151-ART3-S3-RA PLATE 62-66151-01

SECTION 8

SERVICE PARTS LIST

8.1 Ordering Instructions

All orders and inquiries for parts must include: Parts Identification Number (PID), Model Number, Unit Serial Number, Part Number, Description of part as shown on list and Quantity required. Address all correspondence for parts to the following address:

CARRIER TRANSICOLD DIVISION
Replacement Components Group, TR-20
P.O. Box 4805, Syracuse, New York 13221
or FAX to: (315) 432-3778

8.2 Letter Designations

The following letter designations are used to classify parts throughout this list:

A/R = As Required

N/A = Not Available

NS = Not shown in illustration

NSS = Not sold separately - Order next higher assembly or kit

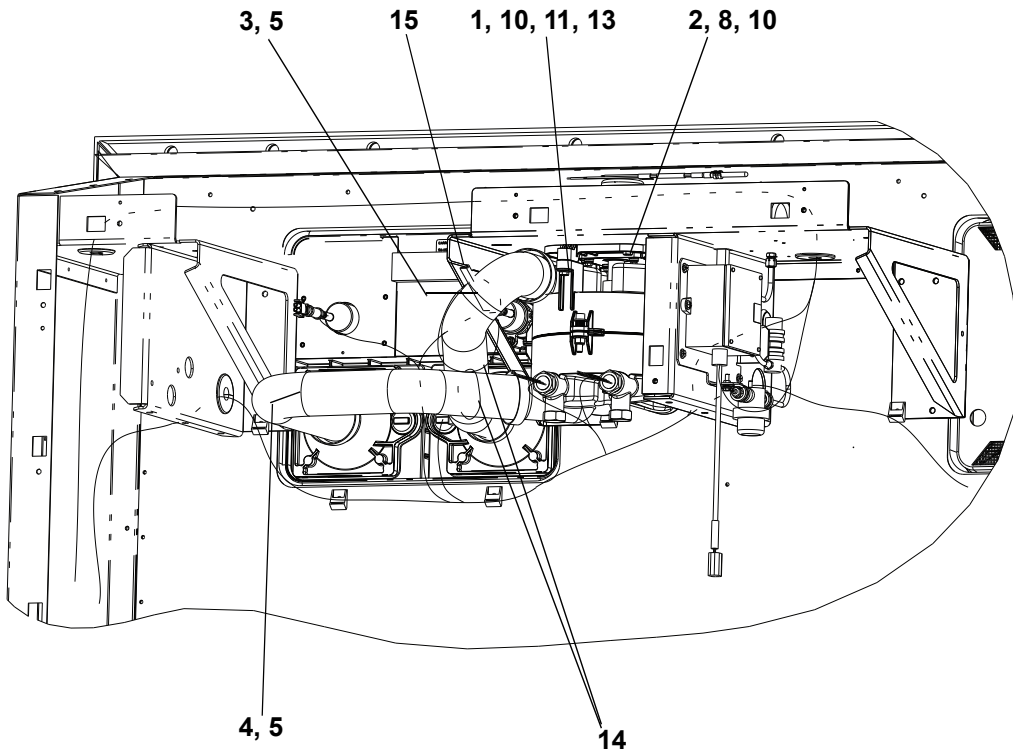
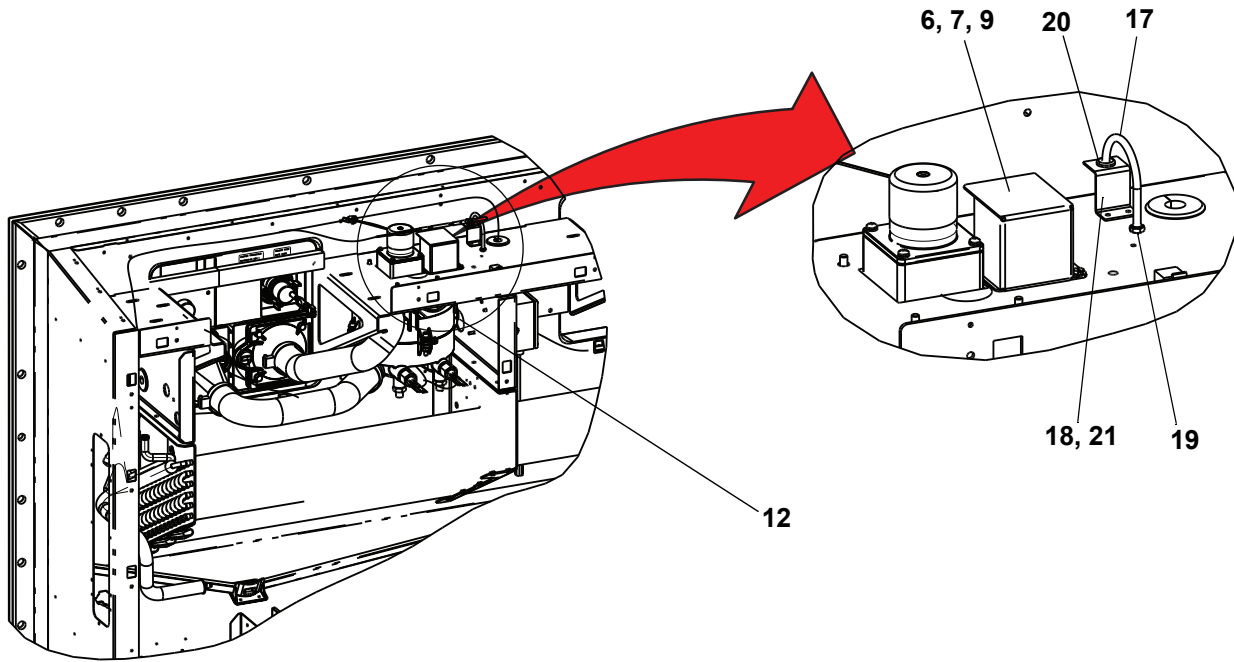
PID = Parts Identification Number – essential to identify unit configuration.

PL = Purchase Locally

SST = Stainless Steel - 300 Series unless otherwise specified.

SV = Suffix SV - added to part number designates service replacement part.

9 Parts List for XtendFRESH

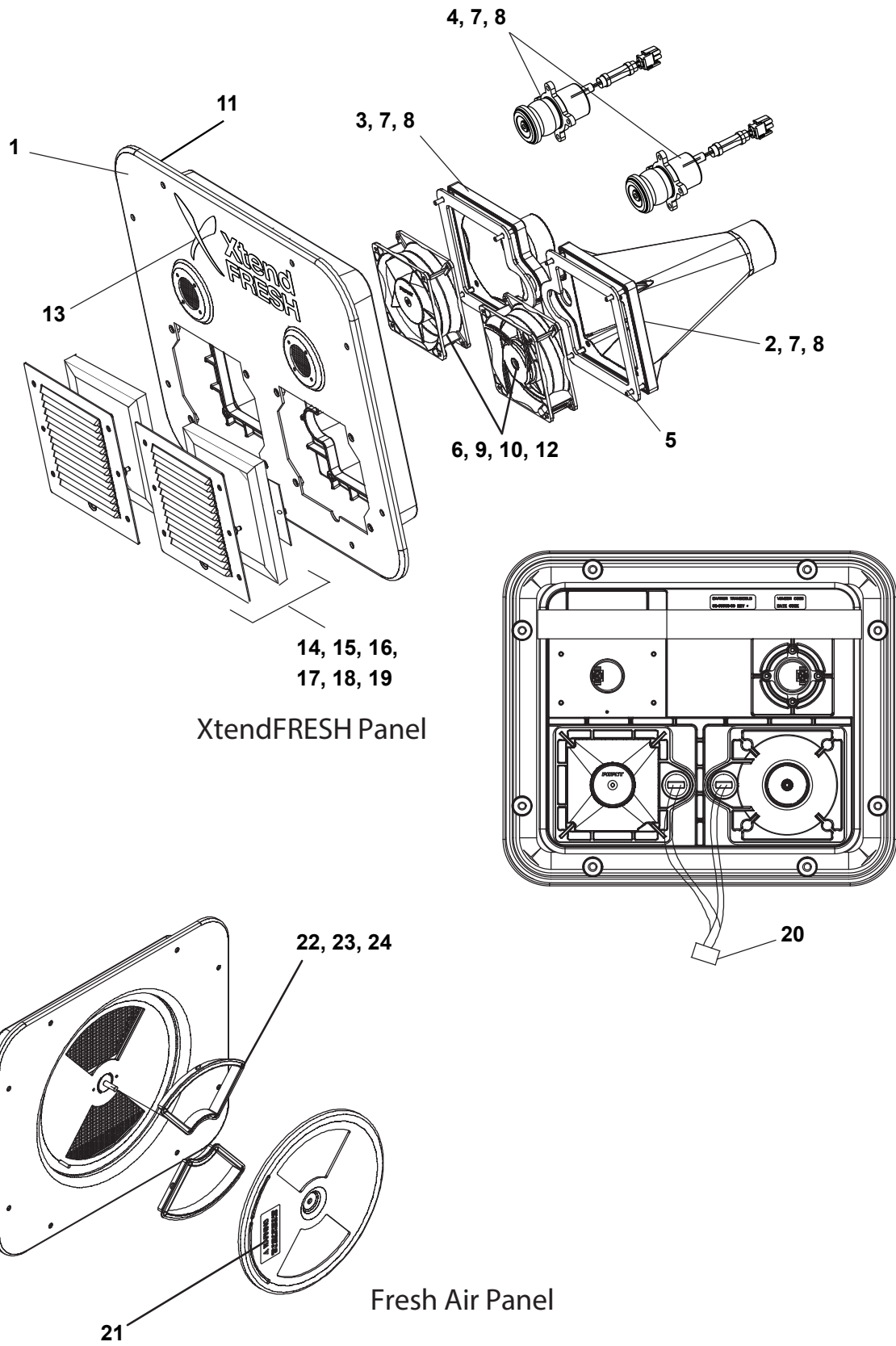


9 Parts List for XtendFRESH

Item	Part Number	Description	Qty
1	79-04124-02	Scrubber Assembly, XtendFRESH	1
2	79-04028-20	Scrubber Motor Assembly	1
3	58-05136-01	XtendFRESH Hose Desorb	1
4	58-05136-00	XtendFRESH Hose Desorb	1
5	44-00045-05	Clamp, Hose, 2.06-3.00 Worm Type	4
6	68-17663-00	Plate, Cover, .063 Thick Aluminum	1
7	66-U-1-5321-8	Washer, Plain, #10 Type A	6
8	66-U-1-5321-7	Screw, Cap Hexhead, 1/4-20 x 1	4
9	66-U-1-5371-6	Screw, Machine Hexhead, #10-24 x .750 Slotted	6
10	66-U-1-5321-7	Washer, Plain 1/4 W Type A	12
11	66-U-1-5361-47	Bolt, Machine Hexhead, 1/4-20 x 1.25 Long	2
12	44-00361-00	Clip, Retaining, .88-1.00 Wire Mounting	2
13	34-00663-11	Washer, Lock, 1/4 Spring	2
14	66-U-1-3882-3	Wire Tie, 1/16-4.0 Self Locking	4
15	66CH-1-1172-19	Trim, Flexible 4 inch	1
16	76-50036-01	Kit, CA Pre-Trip Curtain (not shown)	1
17	58-04497-01	Tube, 1/4 Outer Diameter x 6.25 Long	2
18	68-14739-00	Bracket	1
19	40-00640-00	Union, Bulkhead	1
20	58-00065-84	Grommet, .25 x .50 x .187 Panel	1
21	34-00928-20	Rivet, Blind, .125 Diameter .126-.250	2

77-01795

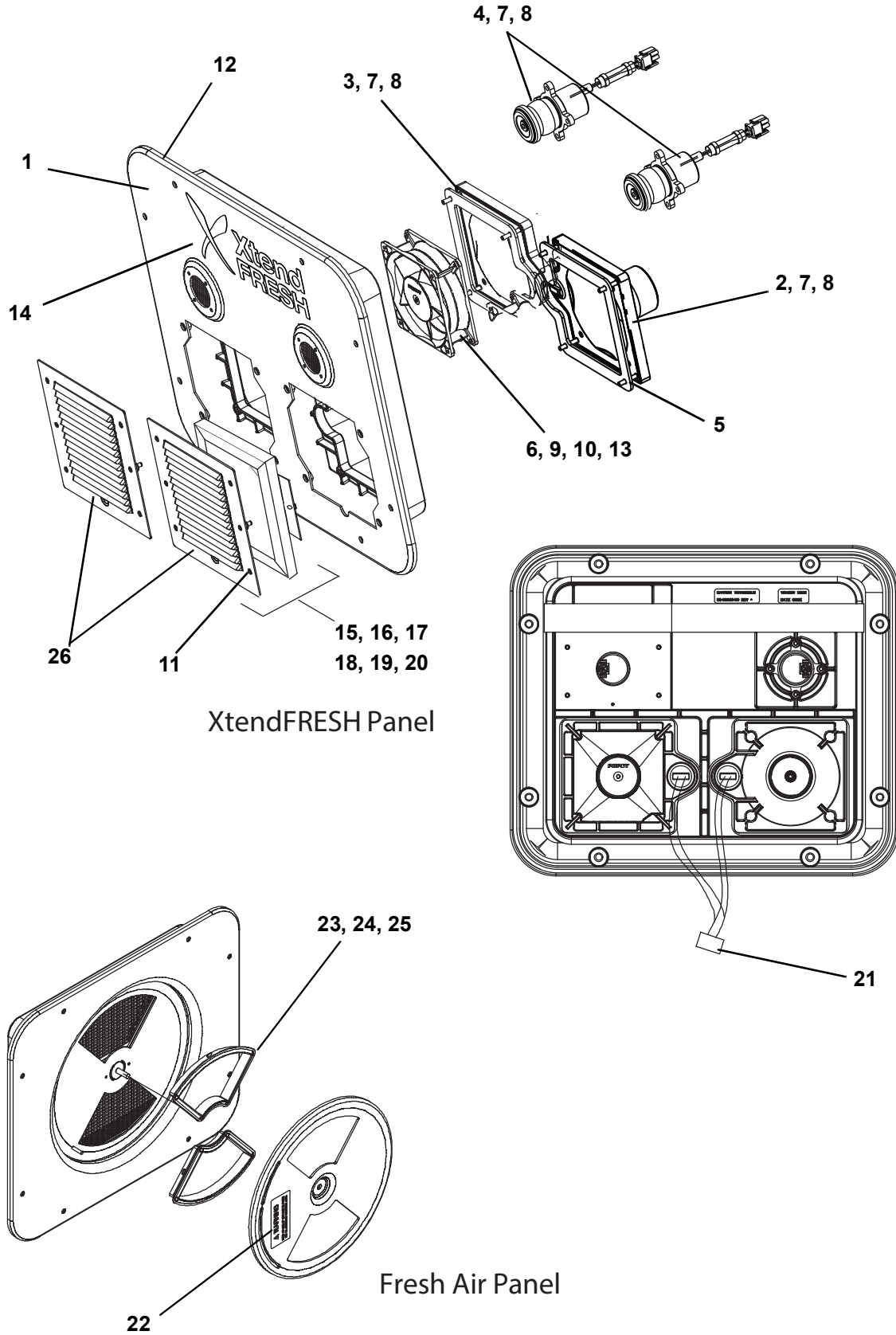
10 Parts List for Panel Assemblies (PIDs lower than NT2727)



10 Parts List for Panel Assemblies (PIDs lower than NT2727)

Item	Part Number	Description	Qty
1	79-04043-00	Panel Assembly, XtendFRESH	1
2	58-04999-00	Duct, Desorb In	1
3	58-05002-00	Duct, Desorb Out	1
4	79-04033-00	XtendFRESH Solenoid Valve Assembly	2
5	42-00823-00	Gasket	2
6	38-00631-00	XtendFRESH Fan	2
7	34-00795-09	Nut, Self Lock, 10-32	16
8	34-00662-09	Washer, Plain, #10 Medium .032 Thick	20
9	34-00662-08	Washer, Plain, #8 Medium .032 Thick	8
10	34-01146-04	Washer, Lock, M4 Spring	8
11	42-00823-00	Gasket, .26 x .5 Half Round	1
12	34-01197-45	Screw Hexhead, M4-0.7 x 45	8
13	62-11762-00	Label, XtendFRESH Logo	1
14	79-04037-00	Filter Assembly includes:	2
15	38-00634-00	Desorb Air Filter	2
16	68-17301-01	Cover	2
17	68-17374-00	Bracket	4
18	34-00795-09	Nut	4
19	34-66627-00	Screw, Cap Hexhead 1/4-20 x 1.00 TIR	8
20	22-66656-38	Wire Harness, XtendFRESH Fans	1
21	62-11894-00	Label	1
22	79-04064-00	Fresh Air Panel Assembly Includes:	1
23	58-66674-00	Collar	2
24	58-66643-00	Gasket	2
			79-04043

10 Parts List for Panel Assemblies (PIDs NT2727 and higher)



XtendFRESH Panel

Fresh Air Panel

10 Parts List for Panel Assemblies (PIDs NT2727 and higher)

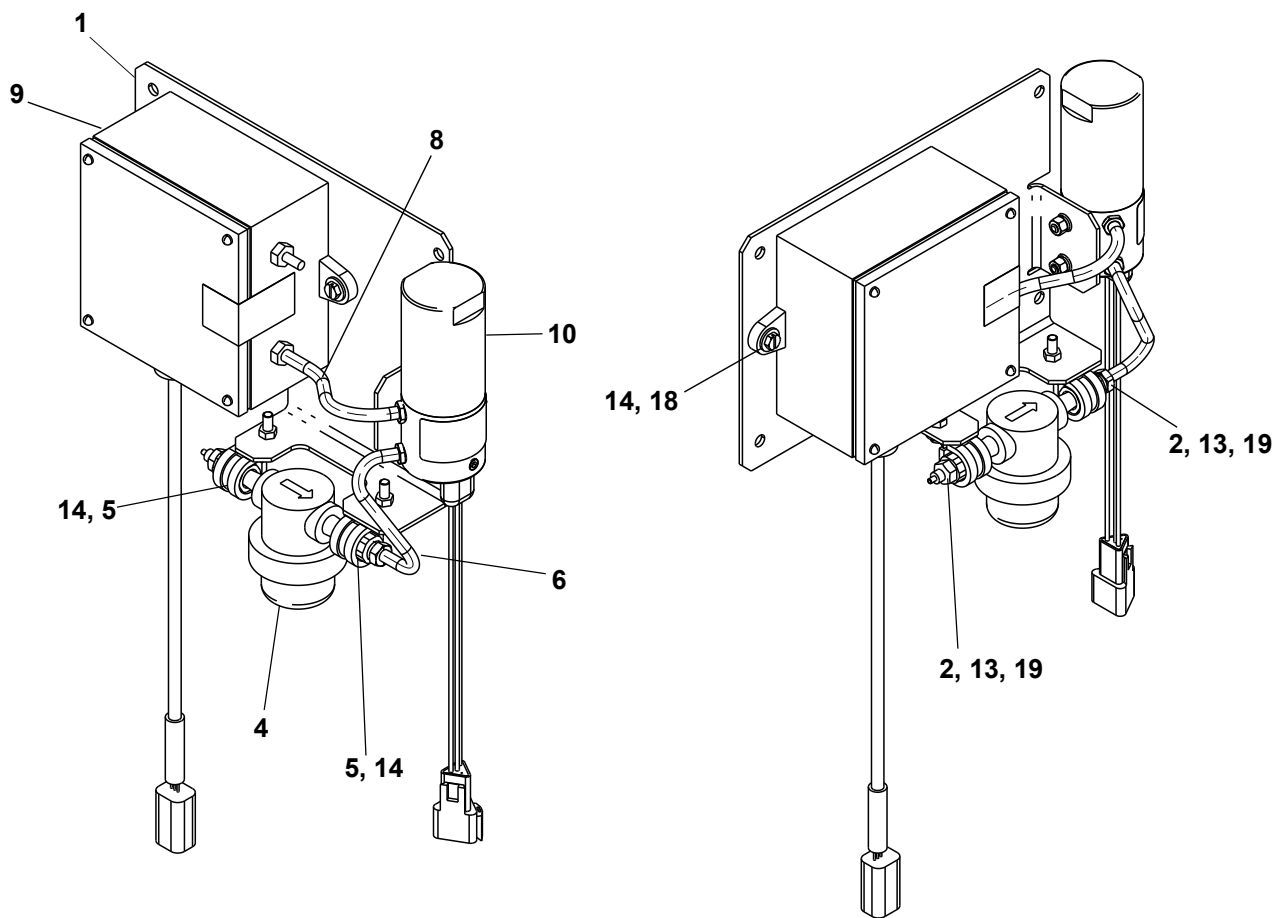
Item	Part Number	Description	Qty
1	79-04086-01	Panel Assembly, XtendFRESH	1
2	58-05002-00	Duct, Desorb In	1
3	58-05002-00	Duct, Desorb Out	1
4	79-04033-00	XtendFRESH Solenoid Valve Assembly	2
5	42-00823-00	Gasket	2
6	38-00631-00	XtendFRESH Fan	1
7	34-00795-09	Nut, Self Lock, 10-32	16
8	34-00662-09	Washer, Plain, #10 Medium .032 Thick	20
9	34-00662-08	Washer, Plain, #8 Medium .032 Thick	4
10	34-01146-04	Washer, Lock, M4 Spring	4
11	34-66682-00	Washer, Rubber	8
12	42-00237-00	Gasket, .26 x .5 Half Round	1
13	34-01197-45	Screw Hexhead, M4-0.7 x 45	4
14	62-11762-00	Label, XtendFRESH Logo	1
15	79-04037-00	Filter Assembly includes:	1
16	38-00634-00	Desorb Air Filter	1
17	68-17301-01	Cover	1
18	68-17374-00	Bracket	2
19	34-00795-09	Nut	2
20	34-66627-00	Screw, Cap Hexhead 1/4-20 x 1.00 TIR	8
21	22-66656-58	Wire Harness, XtendFRESH Fans	1
22	62-11894-00	Label	1
23	79-04064-00	Fresh Air Panel Assembly Includes:	1
24	58-66674-00	Collar	2
25	58-66643-00	Gasket	2
26	79-04122-00	Louver Assembly	1
			79-04086

11 Parts List for Sensor Assembly (PIDs lower than NT2838)

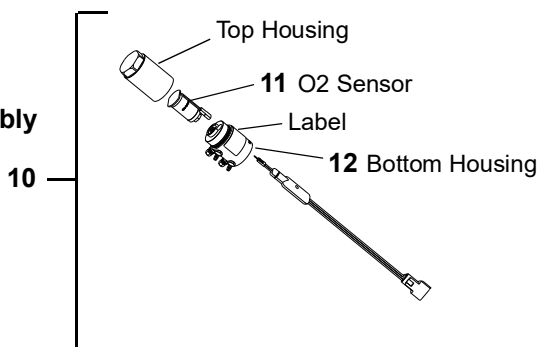
Item	Part Number	Description	Qty
1	79-04035-00	Sensor Assembly Includes:	1
2	68-17351-00	Plate .090 Thick Aluminum	1
3	40-00297-00	Coupling, x Pipe Thread	2
4	40-00108-03	Coupling, Half Union	1
5	30-00415-01	Sensor Filter Assembly	1
6	34-00373-07	Tube Clamp, .62 Diameter Cushion	2
7	58-04497-05	Tube, 1/4 inch Outside Diameter x 5.00 inch L	1
8	58-04497-06	Tube, 1/4 inch Outside Diameter x 3.25 inch L	1
9	10-00398-01	CO2 Sensor	1
10	10-00344-01	O2 Sensor (see item 18 for replacement kit)	1
11	34-00373-61	Tube Clamp, .88 Diameter Cushion	2
12	48-00297-00	Housing for O2 Sensor	1
13	KA-70PP-048	Fitting, Hose, Inside Diameter BARB x NPT	3
14	12-00346-01	O2 Sensor Amplifier (see item 18 for replacement kit)	1
15	66-U-1-5371-6	Screw, Machine Hexhead, #10-24 x .50 Slotted	8
16	58-04152-01	Washer, Spacer, 8M (0.315 inches)	2
17	66-U-1-5321-8	Washer, Plain, #10 Type A	4
18	76-66674-00	O2 Sensor & Amplifier Assembly (replaces O2 Sensor 10-00344-01 and O2 Amplifier 12-00346-01):	1
19	12-00852-03	O2 Sensor Assembly	1
20	58-04497-05	Flexible Tube (5 inch)	1
21	58-04497-04	Flexible Tube (7.75 inch)	1

79-04035-00

12 Parts List for Sensor Assembly (PIDs NT2838 and higher)



O2 Sensor and Amplifier Assembly

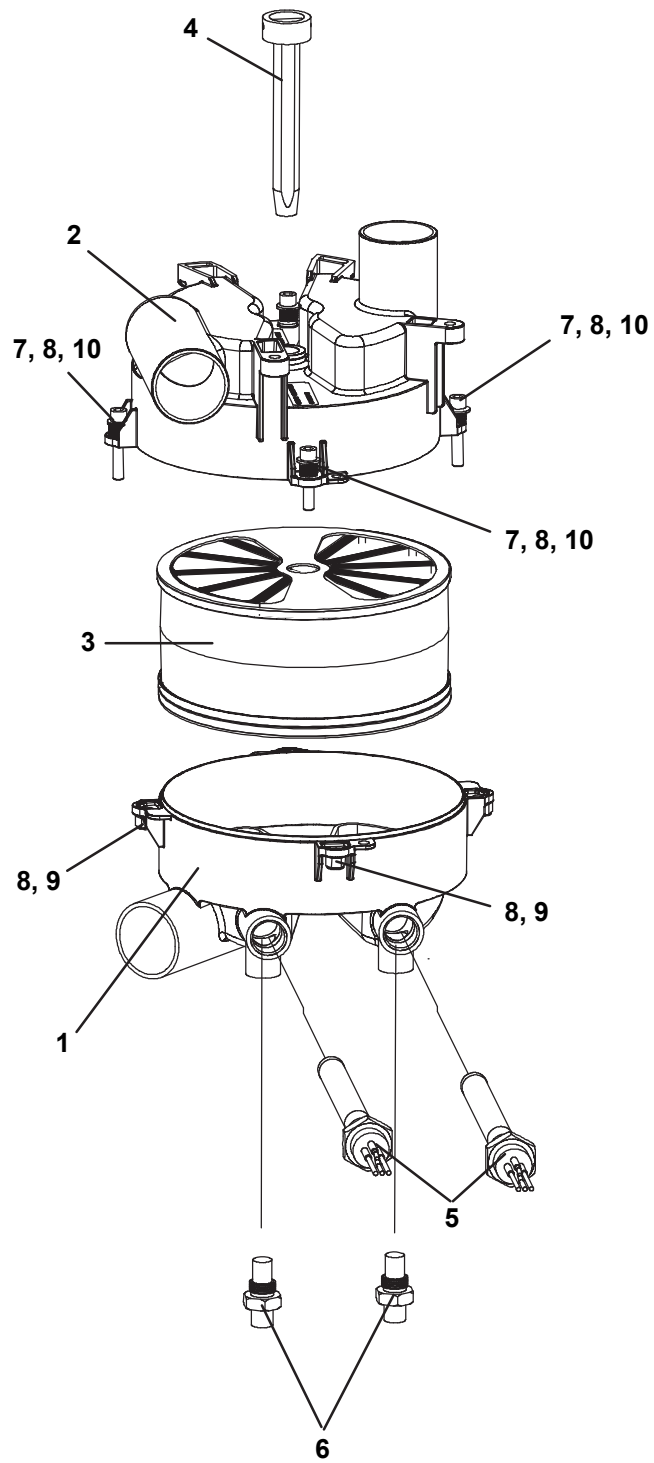


12 Parts List for Sensor Assembly (PIDs NT2838 and higher)

Item	Part Number	Description	Qty
	79-66787-00	Sensor Assembly Includes:	1
1	68-17351-01	Plate	1
2	40-00297-00	Coupling	2
3	40-00108-03	Coupling	1
4	30-00415-01	Filter Assembly	1
5	34-00373-07	Clamp, Tube	2
6	58-04497-08	Tube	1
8	58-04497-07	Tube	1
9	10-00398-01	CO2 Sensor	1
10	76-66674-00	O2 Sensor & Amplifier Assembly (replaces O2 Sensor 10-00344-01 and O2 Amplifier 12-00346-01):	1
	12-00852-03	O2 Sensor Assembly	1
	58-04497-05	Flexible Tube (5 inch)	1
	58-04497-04	Flexible Tube (7.75 inch)	1
11	76-66673-00	O2 Amplifier Kit (replaces O2 Amplifier from kit 76-66674-00):	1
	12-00852-34	O2 Amplifier Housing Assembly	1
	98-66059	Installation Instructions	1
12	76-66672-00	O2 Sensor Kit (replaces O2 Sensor Assembly from kit 76-66674-00):	1
	12-00852-20	O2 Sensor	1
	98-66058	Installation Instructions	1
13	--KA--70PP-048	Fitting, Hose	1
14	66-U---1--5371-6	Screw, Mach HxHd	4
18	66-U---1--5321-8	Washer, Plain	2

79-66787-00

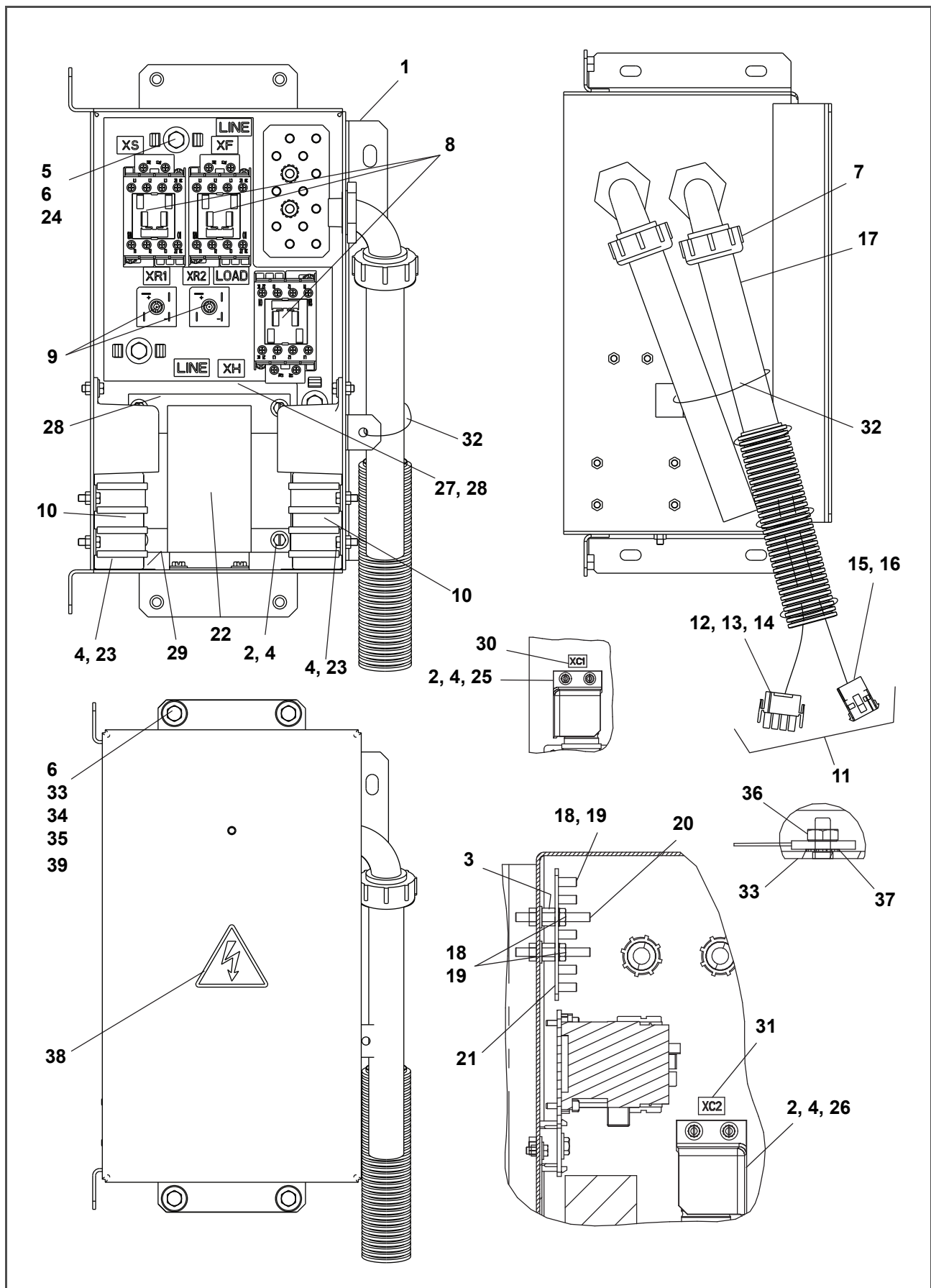
13 Parts List for Scrubber Assembly



13 Parts List for Scrubber Assembly

Item	Part Number	Description	Qty
1	48-00468-00	Bottom Housing	1
2	48-00469-00	Top Housing	1
3	76-00868-00	Scrubber Filter Kit Includes:	1
	79-04032-00	Filter Assembly	1
	58-04996-00	Gasket	2
	48-00504-01	Gauge	1
	48-00479-00	Plate, Seal	2
4	79-04029-00	Shaft Assembly	1
5	24-02028-02	Heater, 230VAC	2
6	34-06386-00	Screw, Cap Hex Head HD	2
7	34-06099-22	Screw, cap sch, 5/16-18 x 1.75	4
8	66-U-1-5321-4	Washer, Plain, 5/16 N Type A	8
9	34-00667-12	Nut, Self Lock, 5/16-18	4
10	73-00228-00	Spring, Multi-Wave	4
			79-04044

14 Parts List for Wiring Assembly



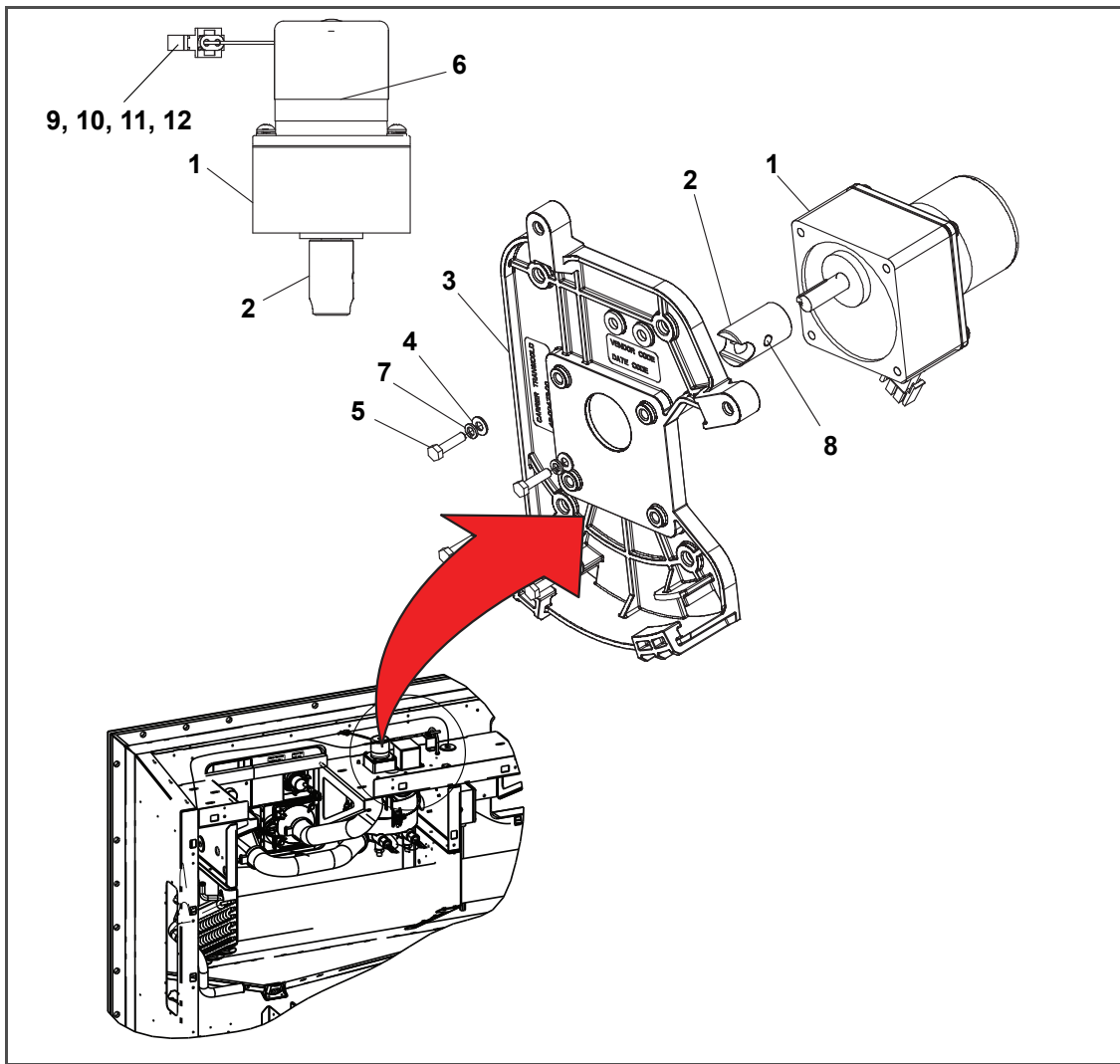
14 Parts List for Wiring Assembly

Item	Part Number	Description	Qty
1	86-05037-00	Box Assembly, Welded	1
2	66-U-1-5321-8	Washer, Plain #10 Type A	10
3	66-U-1-5321-3	Washer, Plain N Type A	2
4	66-U-1-5371-7	Screw, Machine Hexhead, #10-24 x .500 Slotted	18
5	34-00655-08	Screw, Cap Hexhead, 1/4-20 x 1.00	3
6	66-U-1-5321-7	Washer, Plain, W Type A	7
7	22-04287-00	Connector, 3/4 90 Degree Elbow	2
8	10-00431-00	Contactator	3
9	10-01120-00	Rectifier	2
10	10-00495-00	Capacitor	2
11	91-00440-00	High Voltage Wire Harness Includes	1
12	22-01997-16	Connector, Male, AMP Plug HSG 4 CIRC	1
13	22-01997-17	Seal, AMP Wire SEAL 4 CIRC	1
14	22-01997-18	Seal, Interface Seal 4 CIRC	1
15	22-01997-11	Connector, Female, AMP CAP HSG, 9 CIRC	1
16	22-01997-13	Seal, AMP Wire Seal 9 CIRC	1
17	66SC0603AA0090	Spiral Conduit, 3/4 inch x 9.00 Long	2
18	AT-39JA-171	Nut, Hex, 1/4-20	7
19	AU-27JR-171	Washer, Lock, External Tooth	7
20	66-U-1-9592-13	Standoff, 1/4-20 x 0.375 Long	2
21	68-86230-00	Strap Assembly, GRD, All Populated	1
22	10-00497-00	Transformer, Base Unit	1
23	66-U-1-5732-20	Clamp, Tube, 1.38 Diameter, 2 Holemtg	4
24	91-00447-00	Wire Harness, XtendFRESH	1
25	58-05009-00	Cover, Shield	1
26	58-05009-01	Cover, Shield	1
27	66NS1201CD0020	Sleeve, 75 Inner Diameter x 2.00 Long	1
28	66-U-1-3882	Wire Tie, 1/16-1-3/4 Self Locking	2
29	58-04026-107	Protector	2
30	62-10530-41	Label, .75 x .50 "XC1"	1
31	62-10530-42	Label, .75 x .50 "XC2"	1
32	58-00969-00	Wire Tie, 2.80 Diameter Double Loop	1
33	79-04039-00	Door Assembly, XtendFRESH Control Box Includes:	1

14 Parts List for Wiring Assembly

34	34-06154-03	Screw, Cap Hexhead, T.I.R. 1/4-20 x .75	4
35	34-06053-00	Washer, .250 Inner Diameter x .800 Outer Diameter	4
36	34-00665-09	Nut, Hex, #10-32	1
37	AU-27JR-131	Washer, Lock, #10 External Tooth	1
38	62-03957-04	Decal Warning, High Voltage	1
39	42-00776-00	Gasket	
40	22-00060-36	Fuse 15 Amp Slow Blow (Not Shown)	2
41	76-66652-00	Fuse Holder (Not Shown)	2
			91-00440

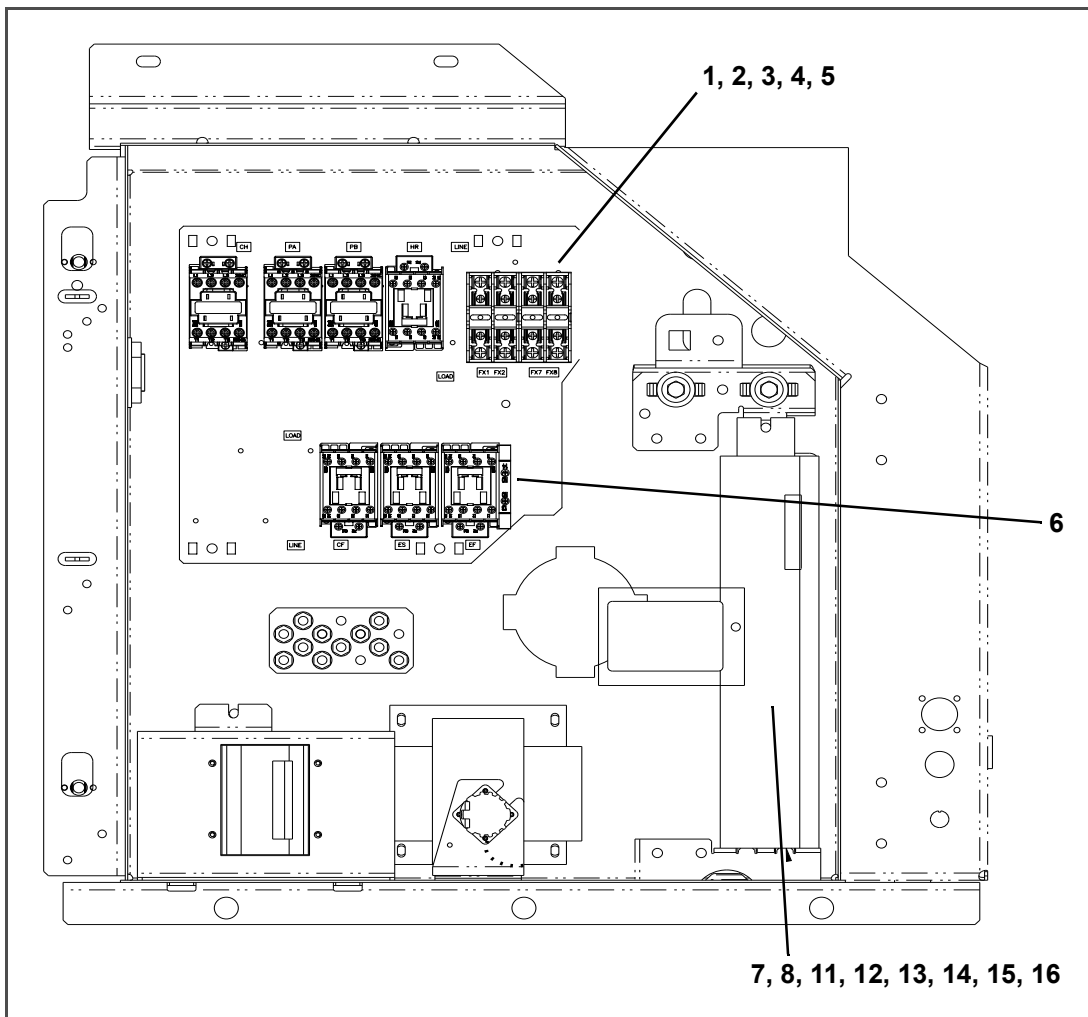
15 Parts List for Motor Assembly



Item	Part Number	Description	Qty
1	79-04028-20	XtendFRESH Motor	1
2	48-00474-00	Motor Coupling	1
3	48-00473-00	Motor Plate	1
4	34-00662-09	Washer, Plain #10 Medium .032 Thick	4
5	34-60000-20	Screw, Machine Hexhead, M5 x 20mm (.787)	4
6	58-05010-00	Cap, End Motor	1
7	34-01146-05	Washer, Lock, M5 Spring	4
8	34-06358-00	Set Screw	1
9	22-01997-24	Connector	1
10	22-01997-02	Socket	2
11	22-01997-25	Wire Seal	1
12	22-01997-26	Interface Seal	1

79-04028

16 Parts List for Control Box



Item	Part Number	Description	Qty
1	22-04043-01	Fuse, 600V 5 Amps	4*
2	22-04044-01	Fuse Holder, Class CC	4*
3	22-04044-00	Fuse Block, Class CC, 2 Pole	2*
4	34-06243-00	Screw, 8-32 x 0.75 TF Trilobe, SST	2
5	66-U1-5321-2	Washer, Plain, #8 Type A	2
6	10-00431-03	Auxiliary Contactor, 10 Amp	1
7	22-00060-21	Fuse, 5 Amps, Slow Blow (Not Shown)	2
8	76-66652-02	Fuse Holder, In-line (Not Shown)	2
9	22-00060-36	Fuse, 15 Amps	2
10	22-66726-01	Fuse Holder, In-line (Not Shown)	2
11	76-00848-00	Install Kit for XF Sensor Switch Includes: (Not Shown)	1
12	10-00499-00	Module (Not Shown)	1
13	66-U---1--3803	Tube, Heat Shrink (Not Shown)	6
14	66-U---1--3882	Wire Tie (Not Shown)	4
15	10-00477-00	AIM Module (Not Shown)	1
16	10-00502-00	GIM Module (Not Shown)	1

* Qty is 1/2 of listed quantity for PIDs lower than NT2774



China RoHS per SJ/T 11364-2014

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属板部件	○	○	○	○	○	○
塑料部件	○	○	○	○	○	○
加热部件	○	○	○	○	○	○
马达与风扇组件	X	○	○	○	○	○
接触器	○	○	○	○	○	○
变压器	○	○	○	○	○	○
传感器	X	○	○	○	○	○
阀组件	○	○	○	○	○	○
电缆线	○	○	○	○	○	○
标签与绝缘材料	○	○	○	○	○	○
本表格依据 SJ/T 11364 的规定编制。 ○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。 X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。						

62-66122-03, Rev A

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