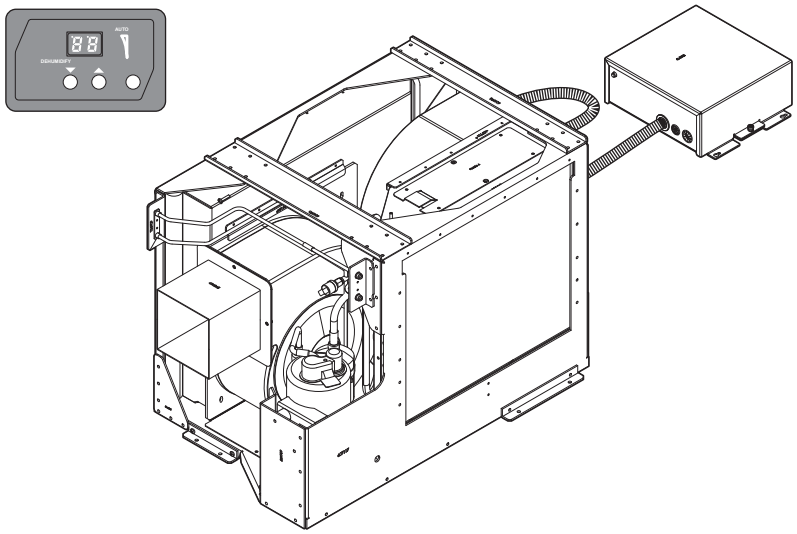
DOMETIC

SPECIALTY VEHICLES AIR CONDITIONER



ASCDU15HV 1161, Q3 Control

EN **Universal Self-Contained Air Conditioning Unit and Q3 Control**

L-5502 | Form No. 340949 20200317 |

Service Center & Dealer Locations
Visit: www.dometic.com

Read these instructions carefully.

Contents

1 Explanation of Symbols and Safety Instructions

This manual has safety information and instructions to help you eliminate or reduce the risk of accidents and injuries.

1.1 Recognize Safety Information

⚠ **This is the safety alert symbol.** It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

1.2 Understand Signal Words

A signal word will identify safety messages and property damage messages, and also will indicate the degree or level of hazard seriousness.

⚠ **DANGER!**
Indicates a hazardous situation that, if **not** avoided, will result in death or serious injury.

⚠ **WARNING**
Indicates a hazardous situation that, if **not** avoided, could result in death or serious injury.

⚠ **CAUTION**
Indicates a hazardous situation that, if **not** avoided, could result in minor or moderate injury.

NOTICE: Used to address practices **not** related to physical injury.

Indicates additional information that is **not** related to physical injury.

1.3 Supplemental Directives

To reduce the risk of accidents and injuries, please observe the following directives before proceeding to service this appliance:

- Read and follow all safety information and instructions.
- Read and understand these instructions before service or maintenance of this product.
- Allow only qualified, experienced technicians to service this system.
- When servicing the air conditioning unit, replacement parts and installations must comply with all applicable local or national codes, including the latest editions of the following standards:

U.S.A.

– ANSI/NFPA70, National Electrical Code (NEC)
– ANSI/NFPA 1192, Recreational Vehicles Code
– ANSI Z21.57, Recreational Vehicles Code

Canada

– CSA C22.1, Parts I & II, Canadian Electrical Code
– CSA Z240 RV Series, Recreational Vehicles

1.4 General Safety Messages

⚠ **WARNING: ELECTRICAL SHOCK, FIRE, AND/OR EXPLOSION HAZARD. Failure to obey the following warnings could result in death or serious injury:**

- Disconnect all power before working within any electrical enclosure or before handling any electrical connections.
- If powered diagnostics are necessary to troubleshoot the appliance, a trained and certified service technician is required.
- Use only Dometic replacement parts and components that are specifically approved for use with the appliance.
- Avoid improper adjustment, alterations, service, or maintenance of the appliance. Service and maintenance must be done by a qualified service person only.
- Do **not** modify this product in any way. Modification can be extremely hazardous.

⚠ **WARNING: EXPLOSION AND/OR HEALTH HAZARD.**
This unit contains refrigerant gas under pressure. Avoid puncturing or breaking any tubing. Failure to obey this warning could result in death or serious injury.

2 Intended Use

This service manual is intended for use by OEM installers and dealer technicians. Manual users are assumed to have a basic understanding of air conditioning best practices and experience in the proper use of the tools and materials related to maintaining and servicing air conditioning equipment.

3 Troubleshooting

This section outlines the main causes of air conditioner issues and helps to identify the potential causes.

Review the "Troubleshooting Table" on page 4 to help identify the suspected operational issue, the potential causes, and the diagnostic procedure associated with those issues.

Refer to the "Diagnostics Table" on page 8 for links to specific air conditioning components that show diagnostic tasks to help you confirm the suspected operational issue and potential cause.

Remember to check the basics before replacing any parts, such as power, installation, or operational issues. Refer to "Power/Installation Issues" on page 28, "Operation Checks" on page 29, or "Maintenance" on page 44 for more details.

Troubleshooting Table

Operational Issue	Potential Reason	Page
The system is operating intermittently.	The control box interconnect cable plug connection is loose.	20
	The control box interconnect cable plug has water intrusion.	
	The control box interconnect cable plug is damaged.	20
	The display cable is loose or damaged.	24
	The connections on the Q3 control or the unity control board are loose.	26
	There is a bad Q3 control.	43
	There is a defective unity control board.	42
The system runs continuously.	The set point temperature is set to an unobtainable level.	29
	The air temperature sensor is located in the improper area.	
	The ambient temperature is too high for cooling.	
	The evaporator airflow is blocked.	24
	The evaporator fan coil is iced.	
	The airflow through the evaporator coil is restricted.	
	The compressor contactor contacts are fused.	22
	The contacts on the unity control board are fused.	26
	There is low refrigerant charge in the system.	33
	There is a contaminated charge in the system.	
	The door of the vehicle is open.	20
The system is noisy.	The compressor is noisy.	20
	The evaporator fan is noisy.	24
	The condenser fan is noisy.	23
	A unit hold down bracket is loose.	26
	There are loose parts.	9

Operational Issue	Potential Reason	Page
The system has low supply-air flow.	The evaporator fan coil is iced.	24
	The evaporator fan coil is dirty.	
	The evaporator air filter is dirty.	
	The evaporator fan speed is set on low or manual low.	24
	The evaporator blower capacitor is defective.	25
	The dampers or supply vents (if present) are closed or blocked.	29
The compressor will not run.	The 25 A circuit breaker is not pushed in for the compressor.	21
	There is a faulty compressor run capacitor.	23
	There is a faulty compressor start capacitor.	23
	There is a faulty compressor start relay.	23
	The supply power in or out of the contactor is insufficient.	22
	There is a faulty compressor 30 A contactor.	22
	The compressor leads are loose.	22
	There is an open condition in the compressor motor windings.	
	There is a short-to-ground condition in the compressor motor windings.	
	There is a bad or open compressor thermal overload switch.	23
The compressor has a high amperage draw.	There is a faulty compressor run capacitor.	23
	There are loose electrical connections causing a high resistance.	12
	The line voltage is incorrect or has low voltage.	28
	The airflow through the condenser coil is restricted.	23
	The mF value of the condenser blower run capacitor is incorrect, causing the fan to run slow.	24
	The refrigerant pressure is too high.	32
	There is an excessive heat load on the system.	29
The compressor overload switch is experiencing open conditions.	The airflow to the condenser is restricted.	23
	There is low AC voltage.	28
	There are loose electrical connections causing high resistance.	23
	The high-pressure switch is faulty and does not open on high pressure.	
	There is high resistance on the compressor overload circuit.	
The compressor is running, but the suction pressure is low and there is insufficient cooling.	Obstructions are present in the evaporator airflow passages.	21
	There is a low refrigerant charge in the system.	32
	The evaporator blower capacitor is faulty, causing the fan to run slow.	25
	The air filter is dirty.	45
	The evaporator fan speed is set too low.	21
	The evaporator fan coil is iced or dirty.	24
	The dampers or supply vents (if present) are closed or blocked.	29
	The supply-air is short-cycling.	

Operational Issue	Potential Reason	Page
The condenser fan is not running.	The wiring is faulty, causing a loose or open circuit.	24
	The mF value of the condenser blower run capacitor is incorrect.	24
	The unity control board is faulty.	26
	The condenser fan motor is bad.	23
	There is an obstruction or object in the blower wheel.	
	There is a bad Q3 control.	43
	There is a defective unity control board.	42
The evaporator fan coil is iced.	The temperature set point is set to low.	24
	The evaporator fan speed is set to low or on manual low.	24
	The evaporator fan coil is dirty.	25
	The evaporator air filter is dirty.	
	The mF value of the evaporator blower run capacitor is incorrect and is causing the fan to run slow.	
	The supply air is short-cycling.	24
	The dampers or supply vents (if present) are closed or blocked.	29
The evaporator fan is not running.	The wiring is faulty due to a loose or open circuit.	25
	The mF value of the evaporator blower run capacitor is incorrect.	25
	The unity control board is defective.	26
	The evaporator fan motor is bad.	24
	There is an obstruction or object in the blower wheel.	24
	There is a bad Q3 control.	43
There is no heat.	The Dometic Q heat relay is defective.	24
	The auxiliary heater thermal overload switch is faulty.	21
	The auxiliary heater element has an open circuit.	
	There are loose electrical connections.	
	There is a lack of continuity in the auxiliary heater circuit due to a bad wire or connector.	
	The temperature set point is satisfied.	25
	There is a bad Q3 control.	43
	There is a defective unity control board.	42
	The Q3 control is not programmed for cool only and/or the aux heat is not enabled.	13
	An incorrect mode was selected.	25

Operational Issue	Potential Reason	Page
There is no cooling.	The temperature set point is satisfied.	25
	The Q3 control is in Manual Fan mode.	31
	The Q3 control is in Heat mode.	30
	The condenser airflow is obstructed.	23
	The evaporator airflow is obstructed.	24
	The system has lost refrigerant.	32
	The ambient temperature is too high for cooling.	29
	The compressor thermal overload switch is open.	23
There is a high-pressure fault.	The high-pressure switch is faulty.	25
	The airflow through the condenser coil is restricted.	23
	Noncondensables are present in the refrigerant system.	32
	The mF value of the condenser blower run capacitor is incorrect and is causing the fan to run slow.	24
	The condenser fan is burned out, resulting in low or no air flow.	24
	The system is overcharged.	32
There is a low-pressure fault.	The refrigerant charge in the system is low.	25
	The airflow in the evaporator is restricted.	24
	The evaporator coil is iced.	
	The evaporator fan coil is dirty.	
	The evaporator fan is not running.	
	The air-filter is dirty.	
	The dampers or supply vents (if present) are closed or blocked.	29
	The unity control board is defective.	42
	There are loose electrical connections.	25
	The low-pressure switch is faulty.	25
	The supply air is short-cycling.	24
There is no red LED illuminated on the unity control board when the breaker is on.	The power reading between L1 and L2 is incorrect (proper voltage is 115 VAC).	26
	There are loose or open power wires to the unity control board.	
	There is a defective unity control board.	42
	There is a shorted Q3 control.	25
	There is a shorted control display cable.	24

Diagnostics Table

4 General Information

This section provides reference information on the tooling, model identification, components, and terminology associated with the different air conditioning models.

The images used in this document are for reference purposes only. Components and component locations may vary according to specific product models. Measurements may vary ±0.38 in. (10 mm).

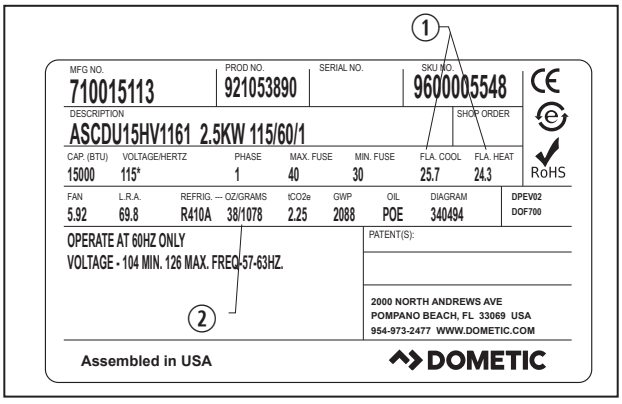
4.1 Tools and Materials

Dometic recommends that the following tools and materials be used while servicing the refrigerator:

Recommended Tools	
R-410A Gauge Manifold	Charging Weight Scale
Recovery Machine	Multimeter
Recovery Tank	R-410A Refrigerant
General Tool Set	

4.2 Product Data Plate

Use the following image as a reference for the air conditioner data plate.



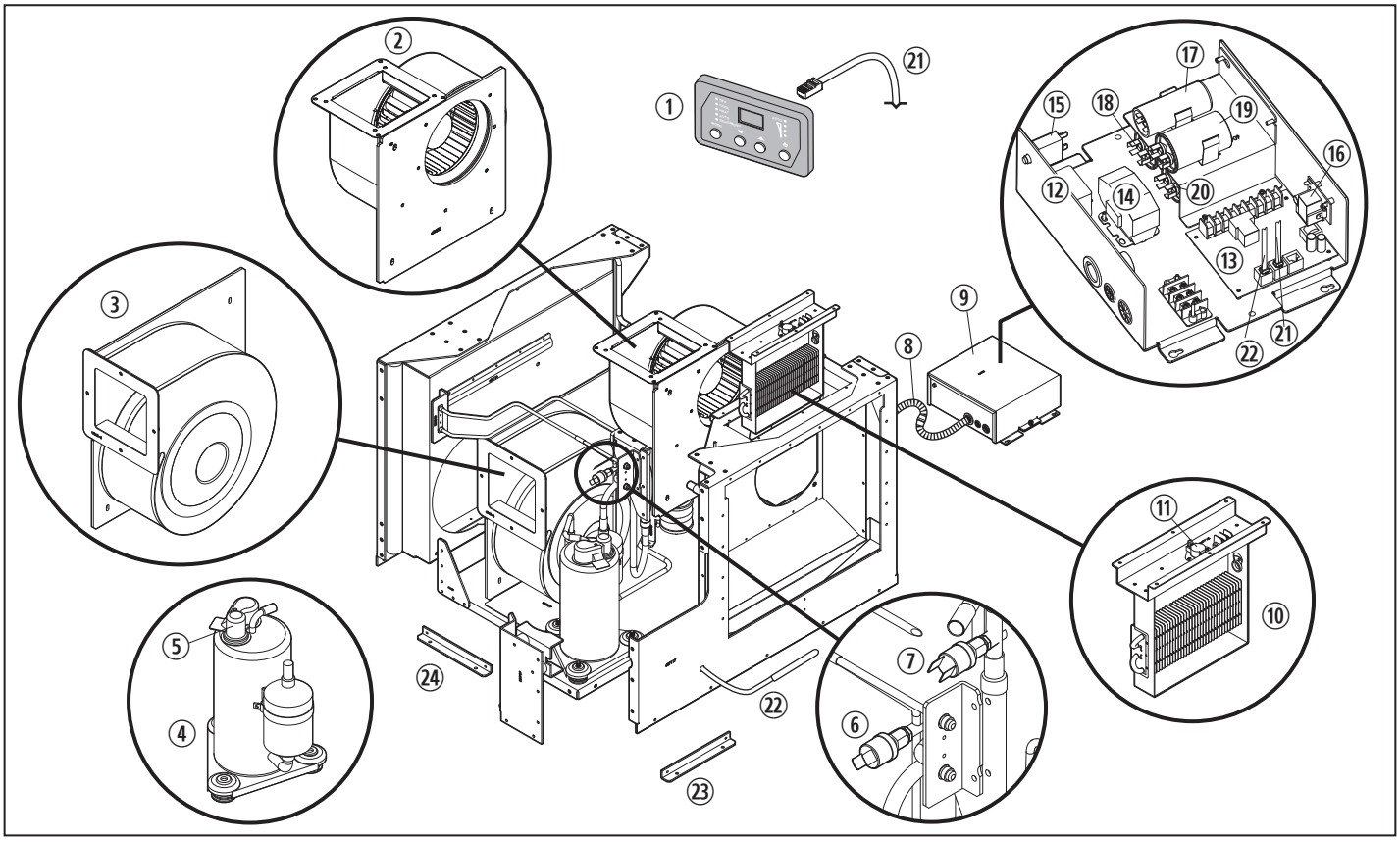
1 Product Data Plate Example

① Amp Draw Cool and Heat

② Weigh-In Charge

4.3 System Component Identification

Figure 2 shows the locations of the major components within the ASCDU15HV 1161 Air Conditioning Unit.



2 ASCDU15HV 1161 Air Conditioning Unit Component Locations

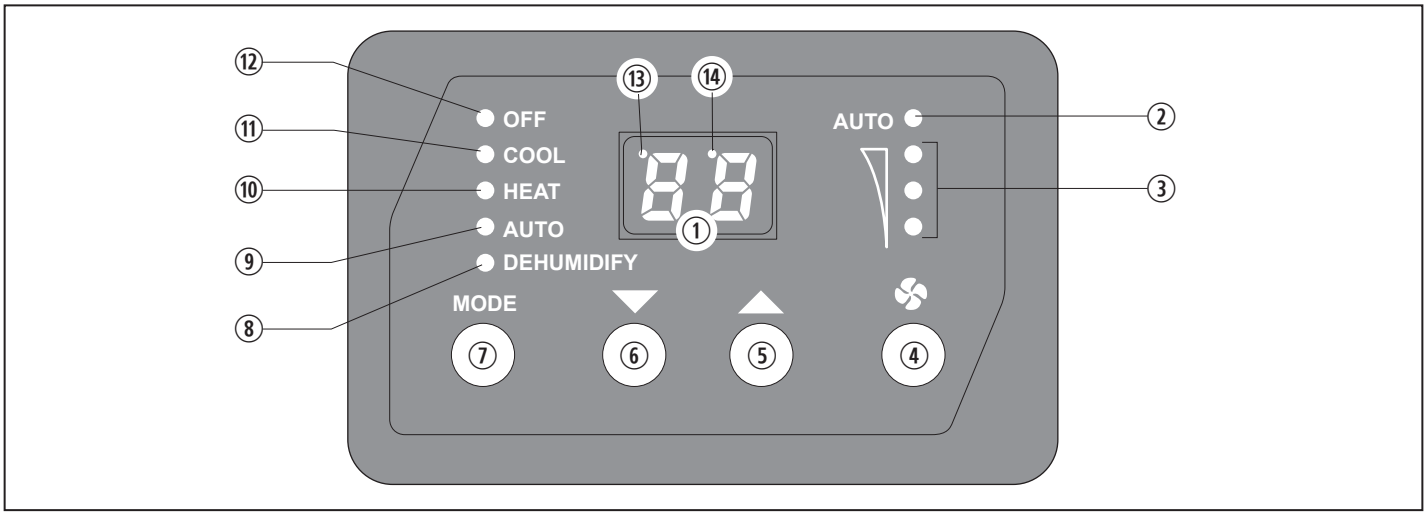
① Q3 Control
② Evaporator Blower Assembly
③ Condenser Blower Assembly
④ Compressor Assembly
⑤ Compressor Thermal Overload Switch
⑥ High-Pressure Switch (HPS)
⑦ Low-Pressure Switch (LPS)
⑧ 10 ft (3 m) Interconnect Cable
⑨ Electrical Box
⑩ Auxiliary Heater Assembly
⑪ Auxiliary Heater Thermal Overload Switch
⑫ Compressor Start Relay
⑬ Unity Control Board
⑭ Compressor Contactor (30 A, 115 V)
⑮ Circuit Breaker (25 A, 250 V)
⑯ Dometic Q Heat Relay
⑰ Compressor Start Capacitor
⑱ Compressor Run Capacitor
⑲ Evaporator Blower Capacitor
⑳ Condenser Blower Capacitor
㉑ Display Cable 15 ft (4.6 m)
㉒ Temperature Sensor 15 ft (4.6 m)
㉓ Unit Hold Down Bracket (Universal)*
㉔ Unit Hold Down Bracket (Fixed)*

* Reference "Unit Hold Down Bracket" on page 26 for additional component location information.

4.4 Q3 Control Overview

Figure 3 identifies the buttons on the Q3 control used with the ASCDU15HV 1161 Air Conditioning Unit.

Specifics regarding the Q3 control operation have been included in "Service Procedures" on page 32 and "Programmable Functions, Ranges, and Factory Defaults" on page 13.



3 Q3 Control Features

① Data Display
② Auto Fan Mode Indicator
③ Fan Speed Indicators
④ Fan Button
⑤ Up Button
⑥ Down Button
⑦ Mode Button
⑧ Dehumidify Mode Indicator
⑨ Auto Mode Indicator
⑩ Aux Heat/Heat Mode Indicator
⑪ Cool Mode Indicator
⑫ Off Mode Indicator
⑬ Cooling/Heating Indicator
⑭ Set Point/Manual Fan Mode

4.5 General Air Conditioning Terminology

The following table defines some of the terms that are typically used when dealing with air conditioning units.

Term	Definition
Evaporator	The evaporator absorbs heat from the conditioned space.
Condenser	The condenser dissipates heat to the outside space.
Compressor	The compressor contains the motor and pump that is moving the refrigerant.
Cap Tube	The cap tube separates the high side from the low side. The cap tube restricts the flow of refrigerant from the condenser to the evaporator.
Q3 Control	The Q3 control is the thermostat for the air conditioning unit.

4.6 R-410A Reference Information

⚠ WARNING: HEALTH HAZARD. Failure to obey these warnings could result in death or serious injury:

- **Never** open the system to atmosphere while it is under a vacuum.
- When the system must be opened for service, evacuate the system, then break the vacuum with dry nitrogen and replace the filter dryers.
- Do **not** vent R-410A into the atmosphere.

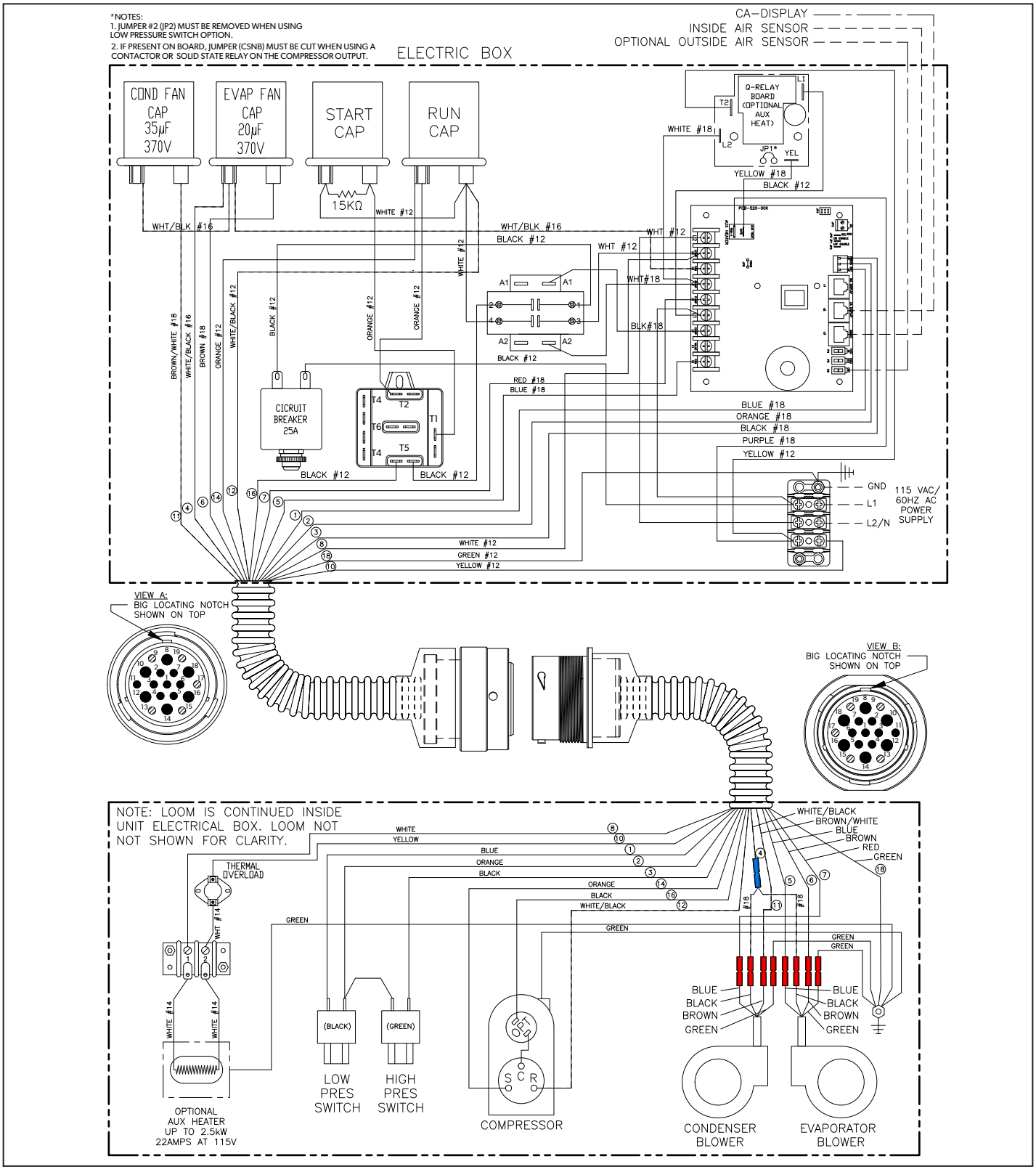
NOTICE: Do **not** use liquid line filter dryers with rated working pressures less than 600 PSIG (4137 kPa). Wrap all filter dryers and service valves with wet cloth when brazing. Unit damage can occur.

The following list provides important information regarding R-410A, which is the type of refrigerant used in this air conditioning system.

- This system uses R-410A refrigerant.
- R-410A is an environmentally safe hydrofluorocarbon (HFC) refrigerant.
- R-410A refrigerant operates at 50%–70% higher pressure than R-22. Ensure that the servicing equipment and replacement components used are designed to operate with R-410A.
- R-410A refrigerant cylinders are light maroon (pink).
- R-410A refrigerant cylinders have a dip tube that allows liquid to flow out of the cylinder in an upright position.
- Recovery cylinder service pressure ratings must be 400 PSIG (2758 kPa), DOT RBA400, or DOT BW400.
- R-410A systems should be charged with liquid refrigerant. Use a commercial type metering device in the manifold hose.
- R-410A requires a different set of gauges than those used for R-22.
- Manifold sets should be 800 PSIG (5516 kPa) high side and 250 PSIG (1724 kPa) low side with a 550 PSIG (3792 kPa) low-side retard.
- Use hoses with an 800 PSIG (5516 kPa) service-pressure rating.
- R-410A requires matched evaporator and condenser systems.
- Leak detectors should be designed to detect HFC refrigerant.
- R-410A, as with other HFCs, is only compatible with POE or PVE oils.
- POE oils absorb moisture rapidly. Do not expose oil to the atmosphere.
- Vacuum pumps will not remove moisture from oil.
- A liquid line filter dryer listed for R410-A is required on every unit.

4.7 Q3 Control and ASCDU15HV 1161 Wiring Diagram

This diagram shows the wiring specifications for the unit.



4 System Wiring Diagram

4.8 Programmable Functions, Ranges, and Factory Defaults

This section provides information on the programmable functions, ranges, and factory defaults of the ASCDU15HV 1161 Air Conditioning Unit.

For details on how to enter the programming mode on the Q3 control, refer to "Entering Programming Mode" on page 19.

4.8.1 Quick Reference Table

This table shows the specifications and explanations of the various functions available for the ASCDU15HV 1161 Air Conditioning Unit.

For detailed information on the function, ranges, and factory defaults listed in the table, refer to "Description of Functions" on page 14.

Function Number	Description	Factory Default	Required Settings	Function Range
1	Compressor Time Delay	0	–	0–70 seconds
2	Display Fahrenheit, Celsius, or Auto	°F	–	F, C, or A
3	Compressor Differential	12 [12/8 = 1.5°F (0.8 °C)]	–	2–31
4	Fan Response Differential	8 [8/8 = 1 °F (0.6 °C)]	–	2–31
5	Low Fan Speed	38	–	2–57
6	High Fan Speed	85	–	41–99
7	Fan Mode	C (Continuous)	–	C = Continuous I = Intermittent
8	AC Line Voltage Calibration	–	–	Plus or minus 1%
9	Temperature Calibration	–	–	Plus or minus 1%
10	HU (Humidity) Pre-circulation	10 minutes	–	0–30 minutes
11	HU Dehumidification	30 minutes	–	10–60 minutes
12	HU Time Period	12 hours	–	2–16 hours
13	Software Revision	Current Version	–	N/A
14	Product Software	dE (Direct Expansion)	–	dE = Direct Expansion
15	Low-Pressure Switch Test	OA = OK FA = Fault	–	N/A
16	High-Pressure Switch Test	OA = OK FA = Fault	–	N/A
17	LCD or LED Segment Test	Displays all LCD graphics or LED segments	–	N/A
18	Sleep Mode (LCD back light off or LEDs dim)	On	–	On = Continuous display SL = Sleep Mode
19	Cool-Only Mode	HP	**The Q3 control MUST be set to "CL" for this function.**	HP = Heat Pump CL = Cool Only (must be set to CL)
20	High-Pressure Delay	3 minutes	–	1–5 minutes

Function Number	Description	Factory Default	Required Settings	Function Range
21	Anti-Icing Routine Adjustment	70 °F (21 °C)	–	65–80 °F (18–26 °C)
22	Fan-Speed Divisions	5	–	3 = 3 speeds 5 = 5 speeds
23	Aux Heat/Heat Enable/Disable	--	**The Q3 control MUST be set to "h1" for this function.**	-- = Aux Heat/Heat Disabled h1 = Aux Heat/Heat Enabled (must be set to h1)
24	Seawater Low Limit Temp	N/A	N/A	N/A
25	Humidity Sensor Limit	N/A	N/A	N/A
26	Air Filter Timing Setting (x 100 hours)	0	–	0 = Disabled 1–25 = 100–2500 hours
27	Select FAMU (Fresh Air Makeup) Operation	N/A	N/A	N/A
28	CAN Bus Unit ID	N/A	N/A	N/A
29	CAN Bus Group ID	N/A	N/A	N/A
30	Custom Medium Fan Speeds	2	–	2 or 5, or 2 or 3
31	Medium Low Fan Speed	50	–	2–99
32	Medium Fan Speed	62	–	2–99
33	Medium High Fan Speed	74	–	2–99

If a factory reset is performed, parameter 19 MUST be set to "CL" and parameter 23 MUST be set to "h1" to enable Aux Heat/Heat mode.

4.8.2 Description of Functions

The following sections contain information on the programmable functions available within the Q3 control.

1: Compressor Time Delay

If programmable function 19 is set to "CL", there will be a five-minute time delay before the display shows readings. If an attempt is made to change the five-minute time delay, the changes will not be recognized by the system.

2: Fahrenheit, Celsius, or Auto Selection

Select "F" for Fahrenheit. Select "C" for Celsius. Auto selection defaults to 60 Hz and F.

3: Compressor Restart Differential

The compressor restart differential is the ambient temperature change needed for the compressor to cycle on and off. The factory setting of 1.5 °F (0.8 °C) should be adequate for most applications. Differential selections are available in increments of 1/8 °. All program functions must be adjusted in °F, even if the temperature display is changed from Fahrenheit to Celsius (refer to "2: Fahrenheit, Celsius, or Auto Selection" on page 14).
To change the settings one degree, add or subtract eight. Be careful not to set the compressor restart differential too low. This will cause the compressor to start and stop often, placing an undue load on the electrical system and shortening the life of the compressor.

4: Fan Response Differential

When the fan is in the Auto fan mode, the fan speed is governed by how much the conditioned space temperature differs from the set point. The fan runs faster when the difference is greater. As the conditioned space cools or warms, and the temperature approaches the set point, the fan slows down automatically. The fan response differential can be adjusted from 1/4° to 4°, in 1/8° increments. All program functions must be adjusted in °F even if the temperature display is changed from Fahrenheit to Celsius. Refer to "2: Fahrenheit, Celsius, or Auto Selection" on page 14.

The fan speed range is divided by the Q3 control system into five equal increments. If the fan response differential is set at 1/2°, then the fan speed will change 20% for each 1/2° of temperature deviation from the set point. Lowering the fan speed differential will cause the fan to change speeds more frequently as the temperature changes. Raising the fan speed differential will result in slower fan speed changes for a given temperature change. The factory setting of 1/2° is ideal for most applications.

If the compressor restart and the fan response differentials are both set to the factory default or a comparable range and the Auto fan mode is on, then the fan will not run at high speed unless the conditioned space temperature rises 3 °F (-16 °C) above the set point.

5: Low Fan Speed

You can adjust the lowest fan speed to suit individual preferences. For instance, you may wish to decrease the low fan speed setting to minimize fan noise.

For the most efficient operation of your system, you should keep the low fan speed at the highest possible setting, consistent with a comfortable noise level. Running the fan speed too low may have an adverse effect on the system and may cause the evaporator coil to freeze and shut down on low pressure.

6: High Fan Speed

A blower will often reach its highest speed at a voltage lower than full line voltage. For example, at a line voltage of 115 VAC, the blower might reach its fastest speed at 110 VAC. At higher voltages, the blower speed will not increase significantly.

The high fan speed adjustment allows you to set the maximum high-speed voltage to the threshold of the blower high-speed response. The Q3 control system divides the fan speed voltage steps into five equal increments (between the low-speed and high-speed adjustments). Accurately setting the high and low fan speed adjustments can help ensure that each fan speed increment step results in a noticeable change of fan speed.

- While in programming mode, listen to the fan noise level and use the Up button to raise the displayed value past the point that you can hear an increase in the fan noise level.
- Press the Down button to lower the voltage until you hear a drop in the fan speed. Raise that number by two or three to ensure that it is set at the highest speed.

7: Fan Mode

You can select continuous or intermittent fan operation. Select “C” and the fan will run continuously while the system is on. Select “I” for intermittent operation and the fan will cycle on and off with the compressor.

If you select intermittent fan operation, you should relocate the thermistor from the return-air grille to a conditioned space wall where it can best sense the average room temperature. Check with your dealer or call Dometic for more information.

8: AC Line Voltage Calibration

The unity control board assembly has a built-in voltmeter that senses AC line voltage and this feature displays the voltage being read. The unity control board automatically responds to sustained low-voltage or high-voltage conditions by shutting down the air conditioning system to prevent compressor damage. At installation, the unity control board voltmeter should be calibrated to line voltage within ± 1 %. To check or re-calibrate the AC line voltage:

- Line voltage will be displayed as the last two digits of the voltage. On 115 VAC systems, 95 VAC appears as “95”, 100 VAC as “00”, and 115 VAC as “15”.
- To check accuracy or to calibrate, turn off all on-board AC loads and measure the line voltage with an accurate voltmeter.
- Press the Up or Down buttons to recalibrate the value as required.

9: Temperature Calibration

This feature calibrates the ambient sensor within a range of ±1%. The temperature sensor should be within one or two degrees of the actual room temperature.

Setting increments are in °F even when the Q3 control is set to display °C. Adjust this parameter to display the correct room-temperature reading.

To check accuracy or to calibrate:

- The sensed temperature is displayed. Place an accurate thermometer beside the sensor and compare the temperatures.
- Press the Up or Down buttons to recalibrate the value as required.

10: Dehumidification Pre-Circulation Time

The humidity control program (HU) automatically operates the air conditioning system for a programmed time period to help control humidity. This dehumidification feature works in three stages:

1. The fan comes on at high speed to circulate air for ten minutes.
2. The fan then drops to low speed, and the compressor cycles on in the cool mode to dehumidify.
3. After the dehumidification cycle, the system turns off. The process repeats according to the programmed time period.

The compressor time delay setting (see "1: Compressor Time Delay" on page 14) governs when the dehumidification cycle starts. Every one second of compressor delay equals a six-minute advance into the dehumidification cycle.

The factory default settings are:

- Pre-circulation cycle—10 minutes
- Dehumidification cycle—30 minutes
- Overall time period—12 hours

The factory settings are adequate for most moderate climates and boats. For very humid climates, shorten the overall time period and extend the dehumidification time. In dry climates, select a longer overall time period between cycles and a shorter dehumidification time. Programmable function 10 governs the pre-circulation cycle time and should not be changed.

11: Dehumidification Time

The dehumidification time determines how long the compressor runs in the dehumidification mode (see "10: Dehumidification Pre-Circulation Time" on page 16). The display shows the dehumidification time period in minutes. You can select 0, 10, 20, 30, 40, or 50 minutes. Select a longer dehumidification time in climates with high humidity. Select a lower dehumidification time in climates with low humidity.

12: Dehumidification Overall Time Period

This setting determines how often the system performs the dehumidification process. The display shows the overall time period in hours. You can select intervals of 2, 4, 6, 8, 10, 12, 14, or 16 hours. Choose a shorter overall time period in climates with high humidity. Choose a longer overall time period in climates with low humidity.

Recommended Humidity Control Settings

Outside Temp.	Relative Humidity	Time Period	Dehumidification Time
Below 80 °F (27 °C)	75–85%	12 hours	10 minutes
	Above 85%	8 hours	20 minutes
80–90 °F (27–32 °C)	75–85%	10 hours	30 minutes
	Above 85%	6 hours	40 minutes
Below 90 °F (32 °C)	75–85%	8 hours	50 minutes
	Above 85%	6 hours	60 minutes

13: Software Revision Level

This setting displays the software version and revision level of the system. It will display a two-digit number such as “05” for version five. Have this information ready prior to calling a dealer or the factory for service assistance.

14: Determining Your Product Type

The system default is dE for "direct expansion self-contained."

15: Low-Pressure Switch Test

⚠ WARNING: EXPLOSION HAZARD.
During this test, low- and high-pressure faults are ignored. The system must be monitored closely during this test and must be shut down immediately if pressures exceed 625 PSI (44 Bar). Failure to obey this warning could result in death or serious injury.

NOTICE: The system should only be operated for a brief period of time if pressures fall below 30 PSI (2 Bar). If the system is operated below 30 PSI (2 Bar) for an extended period of time, the system can ingest liquid and compressor damage can occur.

The low-pressure switch test is used to test the low-pressure circuit for a fault or to test for a low charge in the system. This test can also be used to charge a system. Press the Mode button to enter the low-pressure switch test. During this test, the unit will operate in cool mode at high fan speed, and the display will show "OA" (closed circuit) if the low-pressure switch circuit is OK or "FA" (open circuit) if the low-pressure switch has a fault or the system is low in charge. Press the Fan button to exit this test mode.

16: High-Pressure Switch Test

⚠ WARNING: EXPLOSION HAZARD.
During this test, low- and high-pressure faults are ignored. The system must be monitored closely during this test and must be shut down immediately if pressures exceed 625 PSI (44 Bar). Failure to obey this warning could result in death or serious injury.

NOTICE: The system should only be operated for a brief period of time if pressures fall below 30 PSI (2 Bar). If the system is operated below 30 PSI (2 Bar) for an extended period of time, the system can ingest liquid and compressor damage can occur.

The high-pressure switch test is used to test the high-pressure circuit for a fault, an overcharged system, or the loss of air flow. Press the Mode button to enter the high-pressure switch test. During the test, the unit will operate in cool mode at high fan speed, and the display will show "OA" (closed circuit) if the high-pressure switch circuit is OK or "FA" (open circuit) if the high-pressure switch circuit has a fault or system is overcharged or has loss of condenser air flow. Press the Fan button to exit this test.

17: LED Segment Test

Press the Mode button to test the display. All LED segments should display. Press the Fan button to exit this test.

18: Sleep Mode

Select "SL" for sleep mode and the LEDs remain dim or the back light remains off until a key is pressed, which will temporarily brighten the display. Select On and the Q3 control LEDs stay at the current brightness setting.

19: Cool-Only Mode

Select "CL" for cool-only operation and the unit will operate in cooling or (optional) aux heat/heat modes.

NOTICE: **The unit must be placed in CL Mode. If the unit is left in HP Mode, unit damage can occur.**

ⓘ In "CL" cool-only mode, a five-minute compressor delay will initiate whenever the compressor shuts down on the set point, a fault occurs, or there is a power outage. The five-minute delay will begin immediately after the compressor shuts down. The Q3 control will show the remaining time delay countdown at two-second intervals when the compressor is called to operate within the five-minute countdown period. If the five-minute delay period has passed before the compressor is called to operate, the compressor will come on with no delay.

20: High-Pressure Restart Delay

This function is used when the standard three-minute delay during the high-pressure fault routine requires an extended restart delay. The restart delay can be increased up to five minutes between high-pressure fault off cycle.

21: Anti-Icing Routine Adjustment

The anti-icing routine prevents ice build up on the evaporator coil during extended periods of cooling operation. Installation variables such as grille sizes, length of ducting, insulation, and ambient temperatures determine the run time required to achieve the set point. Factors that substantially increase run time include operating the system with hatches and doors open, and programming an unrealistic set point [for example 65 °F (18 °C)]. Such situations can cause the evaporator to form ice on warm, humid days.

This function is used during cooling operation to allow any ice that may have formed on the evaporator coil to melt when the conditioned space temperature drops below 70 °F (21 °C) (default). This routine works in ten-minute cycles during which time the compressor cycles off for 15 seconds for each degree the ambient-temperature is below 70 °F (21 °C) (default) and runs during the rest of the ten-minute cycle. For example, if the conditioned space temperature is 67 °F (19 °C), the compressor will shut off for 45 seconds (3 x 15 seconds), and then run for nine minutes and 15 seconds (ten minutes minus 45 seconds), repeating in ten-minute intervals. You may adjust the conditioned space temperature at which the anti-icing routine is initiated. The range of adjustment is 65–80 °F (18–26 °C).

22: Fan Speed Division

You can select either five or three fan-speed divisions based on the fan response differential (see "4: Fan Response Differential" on page 15). The default is set at five fan-speed divisions.

For custom programming parameters, the fan speed division must be set to five.

The default is set at five fan-speed divisions.

The Q3 control displays either the individual high, medium, and low fan-speed LEDs if three speeds are selected, or a combination of the high, medium, and low fan-speed LEDs if five speeds are selected, for example:

- Low speed = low LED
- Medium low speed = medium and low LEDs
- Medium speed = medium LED
- Medium high speed = medium and high LEDs
- High speed = high LED

23: Aux Heat Enabled/Disabled

Programmable function 23 must be set to “h1” and programmable function 19 must be set to “CL” for this system to operate properly in aux heat/heat mode.

When you enable the aux heat/heat function (“h1”), the fan will delay turning off for 30 seconds to allow the auxiliary heater to cool down. The delay occurs when the auxiliary heater cycles off after the set point is reached or when the mode is changed.

24: Seawater Low Limit Temp

Do not adjust. The feature is not available.

25: Humidity Sensor Limit

Do not adjust. The feature is not available.

26: Air Filter Timing Setting and Reset

Use this feature for a reminder to clean or replace the unit’s air filter. Select the number of operating hours until the filter reminder appears in the Q3 control flashing “Ar” then “FL”. The value entered represents that number times 100 hours. Function values are between 1 (100 hours) and 25 (2500 hours). Dometic recommends that you check the air filter at least every 500 hours of operation or more often depending on use. The default setting is off, designated with “00.” To reset the timer and stop the flashing filter reminder, press the Fan, Up, and Down buttons simultaneously.

27: Select FAMU Operation

Do not adjust. The feature is not available.

28: CAN Bus Unit ID

Do not adjust. The feature is not available.

29: CAN Bus Group ID

Do not adjust. The feature is not available.

30: Custom Medium Fan Speed

You can set the number of fan speeds that can be modified by selecting either two or five speeds (if function 22, fan speed division, is set to five).

If function 22 is set to three, the selection options for function 30 will be two or three. If three is selected, then 32, medium fan speed, will be enabled.

If function 22 is set to five and function 30 is set to five, you can modify three more fan speeds (medium low, medium, and medium high) as functions 31, 32, and 33, if enabled.

31: Fan Speed Medium Low

You can adjust the medium low fan speed to suit individual preferences. For instance, you may wish to decrease the medium low fan speed setting to minimize fan noise.

32: Fan Speed Medium

You can adjust the medium fan speed to suit individual preferences. For instance, you may wish to decrease the medium fan speed setting to minimize fan noise.

33: Fan Speed Medium High

You can adjust the medium high fan speed to suit individual preferences. For instance, you may wish to decrease the medium high fan speed setting to minimize fan noise.

4.9 Programming the Q3 Control

The Q3 control must be in the off mode prior to entering programming mode.

Your air conditioning unit is cool only and does not have a reversing valve. Once Programmable function 19 and programmable function 23 are set, the only allowable operational modes that can be selected are Off, Cool, Heat, and Dehumidify. Refer to "Programmable Functions, Ranges, and Factory Defaults" on page 13.

You must set programmable function 19 to “CL” for cool only and programmable function 23 to “h1” for heat.

4.9.1 Entering Programming Mode

To enter the programming mode, press the Mode button, then select the off mode. Once in off mode:

1. Simultaneously press and hold the Mode and Down buttons for three seconds. “PO” flashes in the display while the buttons are being held. When “PO” stops flashing and the off LED flashes, you have successfully entered programming mode.
2. Press the Up or Down buttons to scroll until the desired programmable function number (1–29) is displayed. Refer to "Programmable Functions, Ranges, and Factory Defaults" on page 13.
3. Press the Mode button to access the programmable value of the displayed function number. The function’s current value flashes on the display.
4. Press the Up or Down buttons to change the value of that function.
5. Press the Fan button to save the new setting and return to program mode. Scroll to another function number and continue programming, or press Fan again to exit programming mode and return to off mode.

Whether your Q3 control is set to display temperature in °F or °C, at temperature-related programming values must be adjusted in °F only.

4.9.2 Customizing the Functions

The system’s default setting may be changed by the installing dealer or end-user.

A summary of the function settings, permitted values, and original factory default settings of each are listed in "Programmable Functions, Ranges, and Factory Defaults" on page 13. Record the data for any function settings you change in the custom settings column of that table.

4.9.3 Restoring Factory Default Settings

You can restore the original factory default settings and overwrite all the customized changes you made. To restore the factory default settings, switch to off mode and then press and hold the Up and Down buttons simultaneously. Hold the buttons for three seconds while “00” flashes in the display. Successful memory reset is indicated by a “1” flashing back and forth across the display. Release the buttons. The system returns to the off mode.

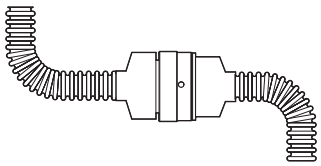
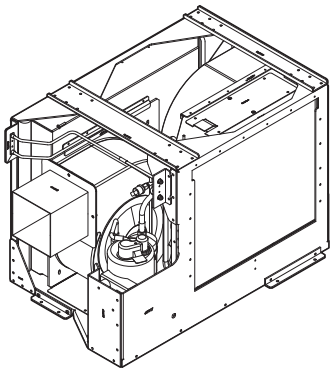
After restoring the factory default settings, for the unit to function, you must set cool only mode (programmable function 19) to “CL” and aux heat/heat (programmable function 23) to “h1”. Any other user programmable functions must be reprogrammed.

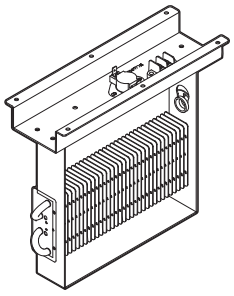
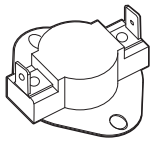
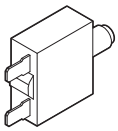
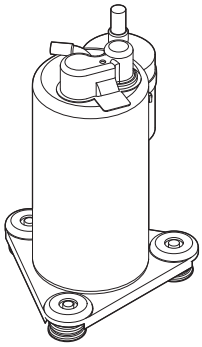
5 Diagnostic Procedures

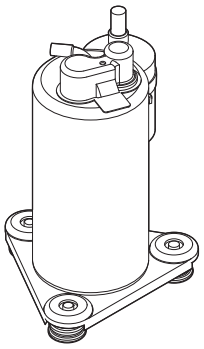
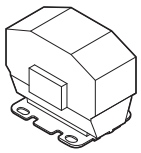
You can identify air conditioner operational issues using either component-based diagnostic procedures (refer to "Component-Based Diagnostics" on page 20), or via the indicator lights on the Q3 control (refer to "Error-Based Diagnostics" on page 26).

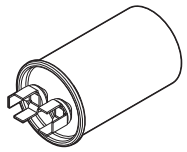
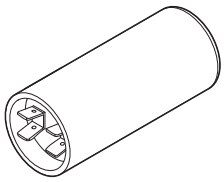
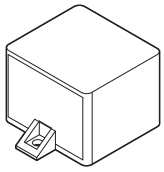
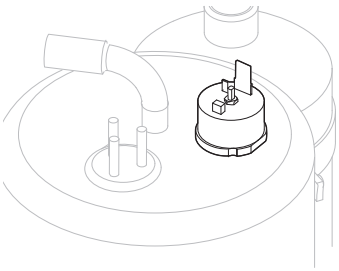
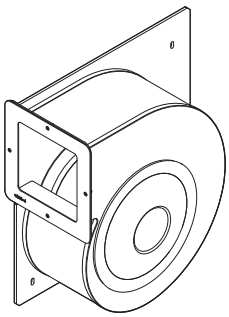
5.1 Component-Based Diagnostics

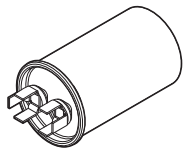
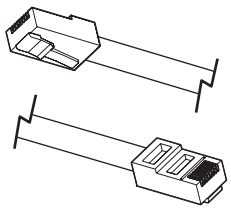
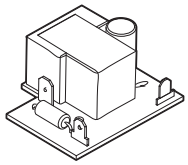
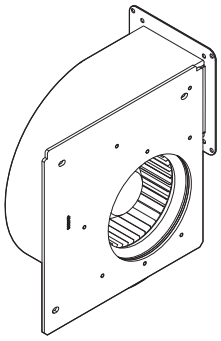
This section has information to help you identify various air conditioning operation issues by diagnosing individual component parts. Remember to check the basics before replacing any parts, such as power, installation, or operational issues. Refer to "Power/ Installation Issues" on page 28, "Operation Checks" on page 29, or "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12 for more details.

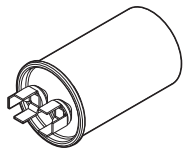
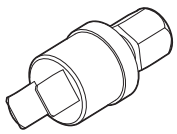
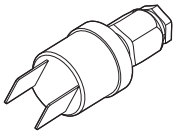
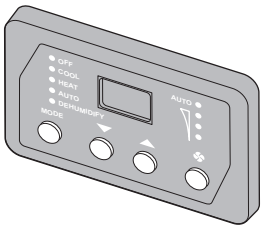
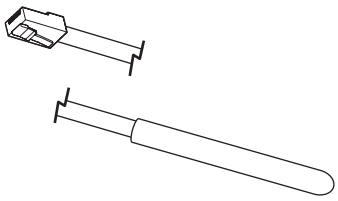
Component	Diagnostic Question	Action Based On Status	Page
10 ft (3 m) Interconnect Cable			
	Does the system operate intermittently?	• Check the interconnect cable plug for complete insertion. If the plug has not been inserted properly, fix the connection and ensure it is tight. • Check the plug for water intrusion. If the plug has water intrusion, replace the interconnect cable plug. • Check the plug for damage. If the plug is damaged, replace the plug.	43
Air Conditioning Overall System			
	Does the system run continuously?	Verify the compressor contactor has not become fused.	22
		Verify the set point is set at an obtainable level and make adjustments as necessary.	31
		Verify the door is closed. If the door is found to be open, close the door and verify the unit will cycle off.	N/A
		Check that the ambient temperature is not too high for cooling.	29
	Does the system have low airflow through the evaporator coil?	• Verify the airflow is not blocked. Check the system and remove obstructions as necessary. • Verify the coil is not iced. If the coil is iced, melt the ice and clean the coil as necessary.	24, 44
		Verify the fan speed is set correctly. If the fan speed is not set correctly, make adjustments as necessary.	31
		Verify the programming of the Q3 control.	13, 19
	Is the system noisy?	• Check the compressor mounts. • Check the evaporator blower for noise. • Check the condenser blower for noise. • Check the tubing (gas lines). • Check the unit hold down brackets and component mounts.	9

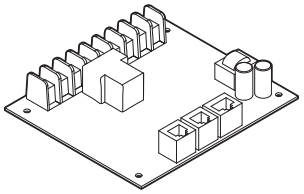
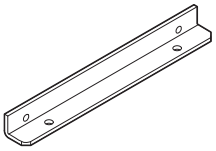
Component	Diagnostic Question	Action Based On Status	Page
Auxiliary Heater			
	Is the auxiliary heater not operating?	Check the Dometic Q heat relay operation.	24
		Check the auxiliary heater thermal overload switch for continuity.	21
		Check the electrical connections to the Dometic Q heat relay.	12
		Verify the resistance in the auxiliary heater circuit. The auxiliary heater resistance should read approximately 5.3 Ohms.	N/A
		Verify the continuity of the auxiliary heater element. Replace the auxiliary heater element if the readings are incorrect.	34
Auxiliary Heater Thermal Overload Switch			
	Is there no heating?	Check for debris in the evaporator airflow. If debris is found, clear as necessary.	24, 44
		Verify air flow through the evaporator.	24
		Check for continuity. If there is no continuity, replace the Auxiliary Heater Thermal Overload Switch.	34
Circuit Breaker (25 A, 250 V)			
	Is the compressor not operating?	• Check that the circuit breaker is pushed in. If the circuit breaker is not pushed in, push the circuit breaker in. • Check for continuity when the breaker is pushed in and the power is disconnected. If there is no continuity, replace the circuit breaker.	N/A
Compressor Assembly			
	Does the compressor run with high suction pressure and insufficient cooling?	Check the condenser airflow. If the condenser airflow is blocked, remove the obstructions from the system.	23, 44
		• Verify that there are no noncondensables in the system. • Check the system pressures and correct as necessary.	32, 32
	Does the compressor run with low suction pressure and insufficient cooling?	Verify the evaporator airflow is not restricted. Check the system and remove obstructions as necessary.	24, 44
		Check the fan speed. Adjust if necessary.	31
		Test the evaporator blower capacitor. If the capacitor is found to be faulty, replace the capacitor.	25, 40
		Test the refrigerant pressure in the system to ensure the system is not low on refrigerant.	32, 32

Component	Diagnostic Question	Action Based On Status	Page
Compressor Assembly (continued)			
	Does the compressor stop on the high-pressure switch when the condenser fan is on?	Test the high-pressure switch.	25
		Check that the airflow through the condenser coil is not restricted. Clean any obstructions from the condenser airflow.	23, 44
		• Verify that there are no noncondensables in the system. • Check the system pressures and correct as necessary.	32
	Does the compressor cycle the low-pressure switch when the evaporator fan is running?	Verify the airflow in the evaporator is not restricted. Check the system and remove obstructions as necessary.	24, 44
		Check the refrigerant charge. If the charge is low: • Check for leaks. • Add refrigerant.	32 33
	Is the compressor not running?	The refrigerant pressure is too low to close the low-pressure switch. Check the system pressures.	32
	Is the compressor not running when the compressor contactor is closed?	Check for loose or broken wires.	12
		Verify the circuit breaker is pushed in on the electrical box for the compressor.	21
		• Verify the compressor is not locked. If the compressor is locked, replace the compressor assembly. • Verify there is not an open condition in the compressor motor windings. If open condition exists, replace the compressor.	35
		• Verify the electrical connections are tight. Repair any loose electrical connections. • Verify the compressor leads are tight. If the compressor leads are loose, repair as necessary.	12
		Measure the resistance of the motor windings. – Common-to-Run: 0.58 Ohms – Common-to-Start: 3.73 Ohms – ±7% at 167 °F (75 °C)	N/A
Compressor Contactor (30 A, 115 V)			
	Is the compressor not running?	• Use a multimeter to test for the primary power in and out of the compressor contactor. • Check for power in L1 and L2. There should be power out to T1 and T2 when 115 VAC is applied to the coil primary. If the readings are incorrect, replace the compressor contactor.	36
	Does the compressor run all of the time?	Confirm that there is **no** power out to A1 and A2 at the primary coil of the contactor. • If there is power at T1 and T2, the contacts are fused. • If the readings are incorrect, replace the compressor contactor.	36

Component	Diagnostic Question	Action Based On Status	Page
Compressor Run Capacitor			
	Is the compressor not running?	Check the mF value of the compressor run capacitor for 60 mF. If the mF value of the capacitor is incorrect, replace the compressor run capacitor.	37
Compressor Start Capacitor			
	Does the compressor not start?	Test the mF value of the compressor start capacitor for 45–53 mF. If the mF value of the capacitor is incorrect, the compressor start capacitor and compressor start relay need to be replaced.	38
Compressor Start Relay			
	Does the compressor not start?	Test the compressor start relay: 1. Replace the compressor start relay with a known good relay. 2. Attempt to start the compressor. 3. If the compressor starts, replace the compressor start relay and the compressor start capacitor at the same time. 4. Retest.	38
Compressor Thermal Overload Switch			
	Is the compressor overload switch experiencing open conditions?	Check the airflow through the condenser. Remove any obstructions as needed.	23, 44
		Check for loose electrical connections and/or high resistance on the compressor overload switch. Repair any loose or high resistance connections, as necessary.	12
Condenser Blower Assembly			
	Is there no or low cooling?	Verify there are no obstructions in the condenser airflow.	44
		Check the condenser blower capacitor and the power in. If the readings are acceptable, replace the blower.	39
	Is the condenser blower noisy?	Check for debris in the blower wheel, remove obstructions as necessary, and recheck.	44
		If the blower is still noisy after removing any obstructions, replace the blower.	39

Component	Diagnostic Question	Action Based On Status	Page
Condenser Blower Capacitor			
	Is the condenser fan slow or not running?	Check the wiring. If there are any issues with the wiring, repair as necessary.	12
		Check the mF value of the condensor blower capacitor for 35 mF. If the mF value of the capacitor is incorrect, replace the condenser blower capacitor.	39
Display Cable 15 ft. (4.6 m)			
		• Check continuity. • Confirm latch is in place. • Check contacts for moisture or corrosion on the connectors. If the display cable is suspect, substitute a known good display cable and retest. • Check for damage. Replace the display cable if it is damaged. Remove the display cable by unplugging it. Re-insert the display cable by plugging the ends into the appropriate socket.	N/A
Dometic Q Heat Relay			
	Is there no heat?	Use a multimeter to test for power in L1 and out T2 of the Dometic Q heat relay when the Q3 control is calling for heat. If there is no power at T2, test using the following steps: 1. Remove the T2, L1, YEL, and L2 wires from the Dometic Q heat relay board. 2. Apply 115 VAC from L2 to the YEL terminals. 3. Listen for the Dometic Q heat relay to click. 4. Confirm continuity between the T2 and L1 terminals. If there is no continuity between T2 and L1, replace the relay.	35
Evaporator Blower Assembly			
	Is the evaporator air flow low?	Verify the proper airflow through the system. Remove any obstructions as necessary.	44
		Clean or replace the air filter as necessary.	45
		Check for any crushed or restricted ducting.	29
		Check the evaporator blower capacitor and the power in. If the readings are acceptable, replace the blower.	25, 40
	Is the evaporator fan coil iced?	Press and release the Up or Down button on the QC Control to view the current Q3 control set point. Raise or lower the set point as necessary.	31
		Verify the proper airflow through the system. Remove any obstructions as necessary.	44
		Clean or replace the air filter as necessary.	45
		Check for any crushed or restricted ducting. Verify the supply air is not short-cycling.	29
		Verify that the low fan speed setting is not too low. Reprogram as necessary.	13, 15
		Verify the supply air is not short-cycling.	29

Component	Diagnostic Question	Action Based On Status	Page
Evaporator Blower Capacitor			
	Is the evaporator fan slow or not running?	Test the mF value of the evaporator blower capacitor for 20 mF. If the mF value is incorrect, replace the evaporator blower capacitor.	40
		Check for a poor connection or open wire in the wiring to and from the capacitor.	12
High-Pressure Switch			
	Is the high-pressure switch experiencing open conditions?	Test the high-pressure switch – Opens at 625 PSI ± 25 – Closes at 450 PSI ± 15. Check for continuity when the switch is closed.	17
		Check the condenser airflow and remove any obstructions as necessary.	23, 44
		Check the condenser fan operation.	23
		If the switch proves faulty, replace the high-pressure switch.	41
Low-Pressure Switch			
	Is the low-pressure switch experiencing open conditions?	Check the refrigerant system pressure to ensure the system is not out of refrigerant.	32
		Test the low-pressure switch: – Opens at 60 PSI ± 5 – Closes at 75 PSI ± 5. Check for continuity when the switch is closed.	17
		If the switch proves faulty, replace the low-pressure switch.	41
Q3 Control			
	Is the Q3 control calling?	Check the illumination of the Q3 control. If it is not working, substitute a known good Q3 control unit and retest.	N/A
		Check the Q3 control set point is set properly based on the inside temperature: – Press and release the Up or Down button on the QC Control to view the current Q3 control set point. – Raise or lower the set point as necessary.	31
	Is there no heat or no cooling?	Check that the correct heating or cooling mode is active on the Q3 control. If not, set the correct mode.	30
Temperature Sensor 15 ft. (4.6 m)			
	Is the temperature not reading properly?	• Check continuity. The reading should be approximately 3,000 Ohms at 77 °F (25 °C). • Confirm the latch is in place. • Check contacts for moisture or corrosion on connectors. If sensor is suspect, substitute a known good sensor and retest. • Check for damage. Replace the sensor if it is damaged. Remove the sensor by unplugging it. Re-insert the sensor by plugging the ends into the appropriate plug-in.	N/A
		Check the temperature against a known good thermometer and calibrate the sensor, if necessary.	13, 16

Component	Diagnostic Question	Action Based On Status	Page
Unity Control Board			
	Is there a red LED illuminated on the unity control board?	Use a multimeter to check the voltage between L1 and L2. Proper voltage should be 115 VAC.	N/A
		If there is power and no light illuminated, replace the unity control board.	42
	Is the system performing erratically?	Check the wiring. If there is a problem with the wiring, repair as necessary.	12
		Check the Q3 control and display cable. If there is a problem with the Q3 control, replace the Q3 control.	41
Unit Hold Down Bracket			
	Is the system noisy?	The unit has multiple locations for hold down brackets: • Universal: unit hold down brackets that can fit into any set of two holes found on the three sides of the unit that have five mounting holes available for mounting the bracket. • Fixed: located on the side of the unit with only one set of mounting holes. Check the hold down brackets for movement. If the brackets are loose, tighten them.	9

5.2 Error-Based Diagnostics

Refer to the table to diagnose system errors based on the messages that are displayed on the Q3 control.

Code	Description	Possible Cause	Possible Action	Page
LO/AC	The operating voltage remained below the acceptable time limit for three minutes or more (90 Volts for a 100 V system, 100 Volts for a 115 V system).	If the AC line voltage drops and remains below the limit (90 V for a 100 V system, 100 V for a 115 V system) for more than three minutes, the Q3 control shuts down the entire system	For the low-voltage shutdown function to work properly, the unity control board internal voltmeter should be calibrated.	28
HI/PS	The head pressure is above the maximum preset limit.	There is a possible condenser fan failure.	Test and replace the condenser fan, if necessary.	23, 39
		There is improper airflow through the condenser.	Check the condenser for proper airflow. Remove any obstructions.	23, 44
		The condenser coil is dirty.	Clean the condenser coil.	44
HP/- -	The high pressure circuit is open on start up.	The high-pressure switch is open.	Replace the high-pressure switch.	25, 41
		The high-pressure switch may be faulty.	Test and replace the high-pressure switch, if necessary.	25

Code	Description	Possible Cause	Possible Action	Page
LO/PS	The suction pressure is below the minimum preset limit.	A loss of refrigerant occurred in system.	Check for leaks in the system.	32
		The ambient temperature is too low for cooling.	Verify the ambient temperature is not too low for cooling.	29
		The evaporator fan has failed.	Replace the evaporator blower assembly.	40
		The return-air filter is dirty.	Replace the return-air filter.	45
		The evaporator coil is dirty.	Clean the evaporator coil.	45
LP/- -	The low pressure circuit is open on start up.	The low-pressure switch has failed.	Test and replace the low-pressure switch, if necessary.	25, 41
		The circuit wires are open.	Check for an open condition and repair as necessary.	12
		There is a loss of refrigerant in the system.	Check for system leaks.	32
IS/- - or - -	The Q3 control flashes "IS/- -" for three seconds if the Mode button is pressed. After three seconds, the Q3 control shows a constant "- -". Cool or Heat Mode may be selected for emergency operation and the display will show a constant "- -".	The inside temperature sensor failed.	Replace the inside temperature sensor.	25
Ar/FL	The Q3 control flashes "Ar/FL" for 15 seconds every 30 minutes	The return-air filter needs to be cleaned or replaced.	• Clean or replace the return-air filter.	45
			• Reset and stop the flashing by pressing the Fan, Up, and Down buttons simultaneously.	18
LC	"LC" flashes momentarily if a button is pressed.	This indicates the Q3 control is locked in the current mode of operation.	Enter or exit lock mode by pressing the Mode, Up, and Fan buttons simultaneously. "UL" will flash for three seconds when exiting lock mode.	33
OU/ 1st digit/ 2nd 2 digits or OU	The Q3 control displays the outside temperature from this optional sensor as "OU", then the first digit, followed by a second two digits.	The Q3 control displays "OU" if the optional outside temperature sensor is not installed, failed open, or shorted.	Replace the optional outside temperature sensor, if applicable.	N/A
LO/SE	The Q3 control is displaying "LO/SE".	The optional thermal couple was plugged into the blue port.	Plug the optional thermal couple into the red port.	12

5.3 Faults and Error Messages

To protect the equipment, certain fault conditions trigger a shutdown, and the system will not restart until the fault is repaired.

If an operational failure occurs, the display will flash a fault or error code message. Fault code displays are canceled by pressing the mode button.

This system is equipped with high-pressure and low-pressure switches for the high- and low-pressure shutdown to operate.

5.3.1 High-Pressure Shutdown (HI/PS)

This function is only applicable in AC mode.

The high-pressure switch is monitored by the unity control board. The high-pressure switch opens when the discharge pressure rises above a preset maximum limit. If the high-pressure switch opens, the unity control board will attempt three restarts and will have a five-minute countdown between restarts before it shuts down the entire system. The Q3 control will alternately flash "HI" and "PS." This is a sustained shutdown, and even when the pressure lowers after the shutdown, the system will remain off until it is reset by pressing the mode button on the Q3 control.

5.3.2 Low-Pressure Shutdown (LO/PS)

This function is only applicable in AC mode.

The low-pressure switch is monitored by the unity control board. The low-pressure switch opens when the suction pressure drops below a preset minimum limit. If the low-pressure switch opens, the unit will first run for two minutes and then shut down for 50 seconds. This will happen four times. If the switch has not closed, the unit will shut down for 15 minutes, and the display will alternately flash "LO" and "PS." After 15 minutes of shutdown, the cycle starts again, and the unit will run for two minutes and then shut down for 50 seconds. This will repeat four more times.

If after eight attempted compressor starts, the low-pressure switch does not stay closed, the unit will go into a sustained shutdown and the Q3 control alternates flashing "LO" and "PS".

If the low-pressure switch closes at any time before the sustained shutdown, the unit will operate normally.

5.3.3 Low-Voltage Shutdown

This function is only applicable in AC mode.

The low-voltage protection feature is always active. If the AC line voltage drops and remains below the limit (90 VAC for a 100 VAC system, 100 VAC for a 115 VAC system) for more than three minutes, the Q3 control shuts down the entire system. The Q3 control alternates flashing "LO" and "AC". This is a sustained shutdown, and the system will not resume operation even if the line voltage returns to normal levels. To reset, press the mode button.

For the low-voltage shutdown function to work properly, the unity control board internal voltmeter should be calibrated. This should be done when the system is installed.

6 Power/Installation Issues

Many of the air conditioning problems are caused by issues outside of the product itself. When diagnosing an air conditioning problem, always check the issues described in this section before replacing components.

6.1 Power Issues

If the air conditioner is experiencing a source issue from the power supply of the vehicle, the fix may not be related to the air conditioner and could be the result of a vehicle power issue.

Use a multimeter to diagnose any issues related to an outside power supply. Do not use a test light, as it does not provide enough useful information for a proper diagnosis.

6.2 Installation Issues

Refer to the following table for issues regarding the installation of the air conditioning system. Use the installation manual in conjunction with the remedies in the following table to correct any installation issues.

Problem	Possible Cause	Remedy
The system will not start.	The push-on connectors or butt splices became disconnected during installation.	• Disconnect the power supply and open the electric box. • Check the wiring diagram and make corrections if necessary. • Refer to the "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.
The system runs continuously.	The air sensor was installed in the improper location.	Remove and install the air sensor into the proper location. The proper factory installed location is at the bottom center of the evaporator intake opening utilizing the two holes in the chassis for the clamps. Refer to component number 22 in the "System Component Identification" on page 9.
The system has low airflow or is short cycling.	• The ducting has been crushed, restricted, or is leaking air. • The supply air is blowing into the return-air stream.	• Ensure the ducting is straight, smooth, and as taut as possible. • Seal any leaks in the ducting. • Redirect the supply air so that it is not blowing into the return-air stream.
The unit is not efficient in cooling.	• The ambient temperature is too high for cooling. • There is an excessive heat load on the system. • The set point on the Q3 control is set too high for cooling or too low for heating.	When cooling, the air conditioner will operate most efficiently in outside air temperatures below 95 °F (35 °C). At higher outside air temperatures, the unit will operate but at a reduced capacity. A high-pressure shut down may occur at outside ambient air temperatures near 130 °F (54 °C).
The compressor cycles on the low-pressure switch when the evaporator fan is running with little and/or no airflow.	The dampers or supply vents (if present) are faulty, closed, or blocked.	Clean, replace, or open the damper or supply vents. Refer to the Installation and Operation Manual for the specific procedures.

7 Operation Checks

Many air conditioning problems are caused by the improper operation of the product. When diagnosing an air conditioning problem, always check the functionality of the appliance before replacing components. This section contains information on how to properly operate the air conditioner and the Q3 control.

⚠ WARNING: FIRE AND/OR EXPLOSION HAZARD.

R-410A refrigerant systems operate at higher pressures than standard R-22 systems. Do **not** use R-22 to service the equipment or components on R-410A refrigerant equipment. Failure to obey this warning could result in death or serious injury.

⚠ WARNING: BREATHING HAZARD. Failure to obey these warnings could result in death or serious injury.

- Refrigerants are heavier than air. They can “push out” the oxygen in your lungs in an enclosed space. To avoid possible death or difficulty breathing:
  - **Never** sniff a refrigerant.
  - **Never** purge refrigerant into an enclosed room or space. All refrigerants must, by law, be reclaimed.
  - If an indoor leak is suspected, thoroughly ventilate the area before beginning work.
- **Never** burn refrigerant as poisonous gas will be produced.
- Always follow EPA guidelines.

⚠ WARNING: BURN HAZARD.

Liquid refrigerant can be very cold. To avoid possible frostbite or blindness, avoid contact and wear gloves and goggles. If liquid refrigerant does contact your skin or eyes, get medical help immediately. Failure to obey this warning could result in death or serious injury.

This unit is factory charged with the required amount of refrigerant. If refrigerant recharging is required, call Dometic for the proper amount of refrigerant required for this system.

The electrical power source must agree with the units' data plate rating. Check the tightness of all of the electrical connections. Ensure all barriers and covers are in place at this point.

7.1 Understanding Button Functions

For the button locations and Q3 control functions, refer to "Q3 Control Overview" on page 10.

The following list contains the button functions for the Q3 control.

- **Mode button** – Press and release to toggle between the Off and all other modes of operation.
- **Up button** – Press and release to display the set point. Press and hold the Up button to increase the set point. Set point increases one degree each time the button is pressed.
- **Down button** – Press and release to display the set point. Press and hold the Down button to decrease the set point. Set point decreases one degree each time the button is pressed.
- **Fan button** – Press to select the Automatic Fan Mode, the Manual Fan Mode, or to advance through the manual fan speeds.
- **Display Outside Temperature (optional)** – Press the Fan and Down buttons simultaneously to display the outside temperature (optional). If the outside temperature is not available, open or shorted (closed), the display flashes "--" instead of a temperature reading. Press the Fan and Down buttons simultaneously to display the outside temperature (optional). If outside temperature is not available, open or shorted (closed), the display flashes "--" instead of a temperature reading.

7.2 Normal Heating or Cooling Cycle

If you select Cool Mode, only cooling is supplied. If you select Heat, only heat is supplied. The conditioned space temperature in either mode is maintained within the compressor differential setting.

During a Cooling or Heating cycle, the fan will operate at a fan speed depending on the fan's operational mode. If a Manual fan speed is selected, the fan will operate at this speed at all times, even if the set point has been satisfied and the cooling or heating cycle has ended. If the fan is in Auto mode, the fan speed will be determined by Programmable Function 4, the Fan Response Differential, and Programmable Function 22, Fan-Speed Divisions. Refer to these parameters for further details on the fan speeds during Auto fan operation. When in Auto fan mode, the fan speed will return to low speed once the set point temperature has been satisfied and the cooling or heating cycle has ended.

7.3 Modes and Programmable Functions

This section provides the detailed information about each mode.

7.3.1 Power On and Basic Modes

Press the Mode button to turn the system on. In three seconds, the system will start operating in whichever mode it was running prior to the last shut down. For the initial startup, the control will be in Cool Mode. To change modes before the system starts, press the Mode button before the three-second startup completes (while the display is flashing). Or, while the system is on, press the Mode button at any time to change the mode.

The modes available are:

- Off
- Cool
- Heat
- Auto (automatically switches between Cool and Heat Modes, depending on set point requirements)
- Dehumidification Mode

7.3.2 Dehumidification Mode

Press the Mode button until the Dehumidify LED indicator illuminates. The display flashes “HU” during this mode of operation. When Dehumidification Mode is activated, the humidity control program automatically turns the air conditioning system on at timed intervals to remove moisture from the air. The system is programmed at the factory for average values. To change the factory settings, see "10: Dehumidification Pre-Circulation Time" on page 16, "11: Dehumidification Time" on page 16, and "12: Dehumidification Overall Time Period" on page 16.

When the system is in Dehumidification Mode, all system safeguard controls remain active. For example, if the line voltage falls below preset limits, the system will automatically shut down. If the AC power is interrupted, the system will automatically resume operation in Dehumidification Mode when power is restored.

7.3.3 Adjusting the Set Point

To view the set point, press and release the Up or Down button. To adjust the set point, press the Up or Down buttons to set the desired room temperature (press and hold either button to scroll). The set point range is 55 °F–99 °F (12 °C–37 °C). After selecting the desired set point temperature, if no buttons are pressed for three seconds, the display automatically reverts to showing the conditioned space temperature. Conditioned space temperature is continuously displayed. The upper center dot in the Q3 control lights when the set point is being adjusted.

7.3.4 Fan Operation and Control

Press the Fan button to adjust the fan speed while in Manual Fan Speed Mode or to switch between Manual and Automatic Fan Speed Modes. The fan may be operated manually whether the system is on or off as long as there is power to the unit. Automatic Fan Speed Mode can only operate when the system is on. Fan behavior also depends on how the Fan Mode function is programmed: “C” for continuous or “I” for intermittent running with the compressor. See "7: Fan Mode" on page 15. When in Manual Fan mode, the Auto Fan LED is off.

7.3.5 Nonvolatile Memory

The Q3 control has non-volatile memory requiring no batteries or backup power. When power is lost, the operating parameters are retained indefinitely. When power is restored, the Q3 control resumes operating as last programmed.

7.3.6 Display Inside Temperature

The Q3 control continuously displays conditioned space temperature. If Mode or Set Point is changed, after three seconds the Q3 control automatically reverts to showing inside temperature. If inside temperature is greater than 99 °F (37 °C) or less then 0 °F (-17 °C), the display shows either 99 °F (37 °C) or 0 °F (-17 °C) respectively as the maximum or minimum inside temperature.

7.3.7 Dimming the Display

Press the Mode and Up buttons simultaneously and repeatedly to select the brightness setting for the Q3 control.

7.3.8 Sleep Mode

Sleep Mode dims all LEDs. When in Sleep Mode, press any button to brighten the Q3 control, then operate as usual. See "18: Sleep Mode" on page 17.

7.3.9 Lockout Display Mode

Press the Mode, Up, and Dan buttons simultaneously to select the Lockout Display Mode setting. This mode locks the Q3 control in the current mode selected. If a button is pressed, the Q3 control flashes “LC” for 2 seconds then goes back to displaying the inside temperature. In Lockout Mode, the Q3 control shows conditioned space temperature and the indicators operate as normal, yet all button presses are ignored until Mode and Up and Fan buttons are pressed simultaneously, then “UL” displays momentarily and the buttons are unlocked for normal operation. In Lockout Mode all sensors operate as normal and any fault and error codes will be displayed.

7.3.10 Anti-Ice Routine

The Q3 control occasionally shuts down the compressor when in Cool Mode to allow any ice to melt that may have formed on the evaporator coil. The anti-ice routine shutdown occurs when the conditioned space temperature falls below 70 °F (21 °C). The default setting of 70 °F (21 °C) can be adjusted. See "21: Anti-Icing Routine Adjustment" on page 18.

During a ten-minute cycle period, the compressor shuts off for 15 seconds for each degree below 70 °F (21 °C) (default). For example, if the inside temperature is 67 °F (19 °C), the compressor will shut off for 45 seconds, and then run for nine minutes and 15 seconds, repeating this cycle in ten-minute intervals.

8 Service Procedures

⚠ WARNING: EXPLOSION AND/OR HEALTH HAZARD.

This unit contains refrigerant gas under pressure. Avoid puncturing or breaking any tubing. Failure to obey this warning could result in death or serious injury.

⚠ WARNING: ELECTRICAL SHOCK HAZARD. Failure to obey these warnings could result in death or serious injury:

- Disconnect all power before working within any electrical enclosure or before handling any electrical connections.
- Before operating the unit, be certain the unit is properly grounded.

NOTICE: Do **not** use any other refrigerant in this system. Do **not** put liquid into the discharge line if the unit is running. Do **not** remove R-410A as a vapor. Unit damage can occur.

This section has information to help you service the unit components and replace the unit, if needed. Remember to check the basics before replacing any parts, such as loose wiring, overall installation, or operational issues. Refer to "Power/Installation Issues" on page 28, "Operation Checks" on page 29, or "Maintenance" on page 44 for more details.

For any wiring actions in this section, refer to "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.

8.1 Checking the System Pressure

Connecting the gauges should always be a last resort. Every time the gauges are connected, contaminants can be introduced into the system. Alway check the air flow, the return air, and the temperature differential first.

Use this procedure to check the system pressure when the gauges are attached to the unit.

1. Connect the proper line on the gauge manifold to the discharge line. The discharge pressure will be measured on the port beside the pressure switch.
2. Connect the proper line on the gauge manifold to the suction line. The suction pressure will be measured on the suction line entering the compressor.
3. Run the unit and check the pressures. The discharge pressure is usually two and a half to three times higher than the suction pressure.

   If the compressor, condenser fan, and evaporator fan are running with proper air flow and the pressures are abnormally high or erratic, the system may be contaminated with non-condensables. Evacuate and recharge by weight with clean R410A.

   Static pressure in the system only indicates there is pressure in the unit. It does not indicate there is enough refrigerant in the system. It can indicate there is a leak or a low charge in the system.

8.2 Checking the System For Leaks

If both the suction and discharge pressures seem low, add nitrogen or R-410A to pressurize the unit.

With a pressurized system, check all of the joints for leaks by applying a soap and water mixture. If leaks are present, the soap will bubble at the location of the leak.

8.3 Charging the Unit

Always charge the system with R-410A refrigerant as a liquid. It is recommended to use a Charge Faster to ensure there is no liquid that enters the compressor. Only charge by weight.

This unit is designed for use with R-410A refrigerant. Because R-410A is a blend, it is required that refrigerant always be removed from the cylinder as a liquid. Admit liquid into the system through the discharge line. If adding refrigerant into the suction line, use a commercial metering/expansion device at the gauge manifold. To remove liquid from the cylinder, pass it through the metering device at the gauge set and then pass it into the suction line as a vapor.

1. Connect the gauges to the unit. Refer to "Checking the System Pressure" on page 32.
2. Use a recovery machine to recover the refrigerant from the unit.
3. Remove the recovery machine from the unit.
4. Place a vacuum on the unit no less than 600 microns.
5. Lock the gauges and make sure the vacuum holds for at least 30 minutes. This ensures there is no moisture, leaks, or contaminants in the system.
6. Use a weigh scale to charge the unit to the factory specification found on the product data plate. Refer to "Product Data Plate" on page 8.

8.4 Selecting the Lockout Mode

Use this procedure to set the lockout mode on the Q3 control.

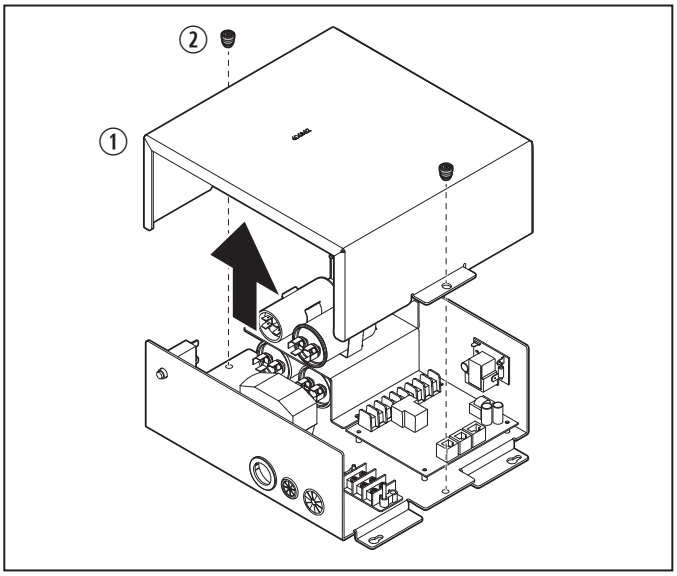
1. Press the Mode, Up, and Fan buttons simultaneously to select the Lockout Display Mode setting. This mode locks the Q3 control in the current mode selected.

   In Lockout Mode, the Q3 control shows conditioned space temperature, the indicators operate as normal, all sensors operate as normal, and any fault and error codes are displayed. If a button is pressed, the Q3 control flashes “LC” for 2 seconds then goes back to displaying the inside temperature. All button presses are ignored.

2. To release lockout mode, press the Mode, Up, and Fan buttons simultaneously. “UL” displays momentarily and the buttons are unlocked for normal operation.

8.5 Removing the Electrical Box Cover

Use this procedure to remove and install the electrical box cover.



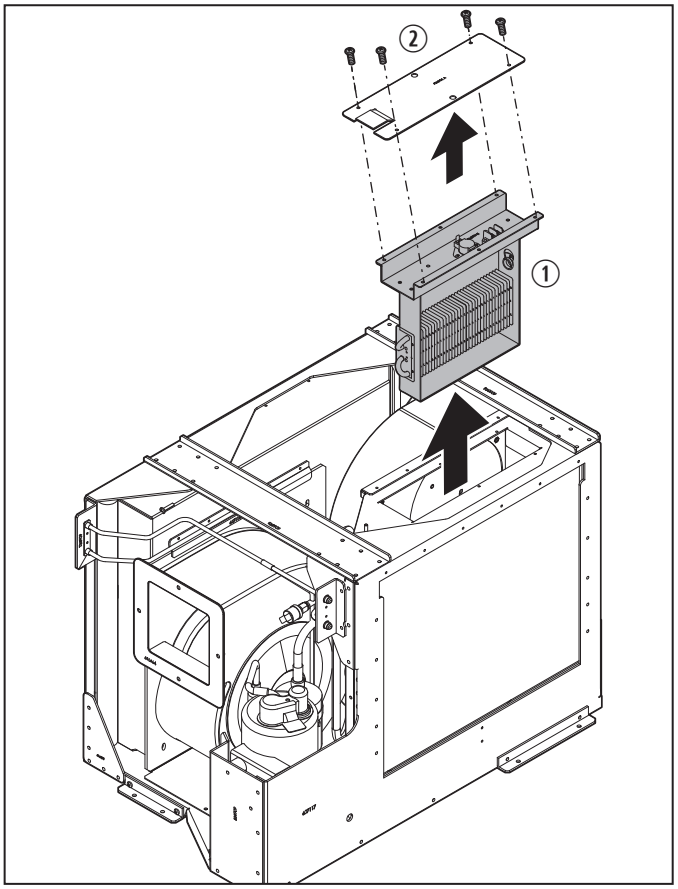
5 Removing the Electrical Box Cover

① Electrical Box Cover ② Cover Screws

1. Turn the electrical power to the unit off.
2. Remove the screw securing the cover to the electrical box.
3. Pull the cover away from the electrical box.

8.6 Servicing the Auxiliary Heater

Use this procedure to remove and install the auxiliary heater.



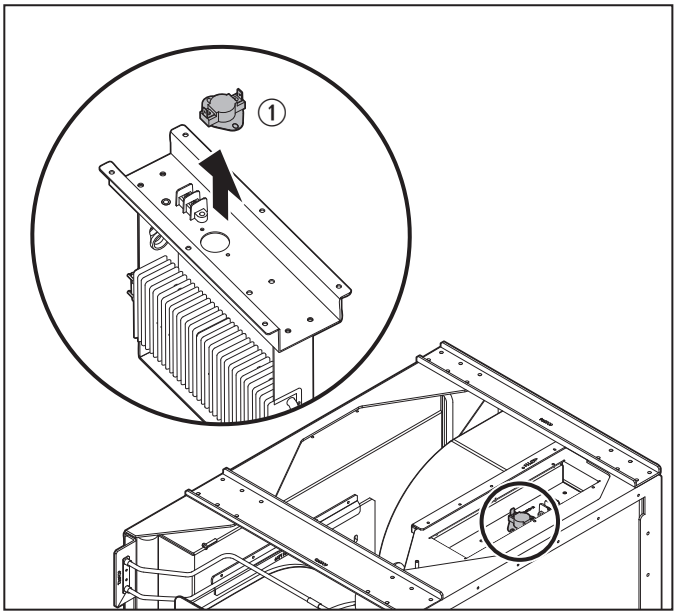
6 Auxiliary Heater Removal

① Auxiliary Heater ② Cover

1. Turn the electrical power to the unit off.
2. Slide the cover off of the unit to expose the auxiliary heater.
3. Disconnect the two wires from the top of the auxiliary heater: the yellow wire from the auxiliary heater thermal overload switch and the white wire from the terminal strip.
4. Remove the mounting screws securing the auxiliary heater to the unit.
5. Slide the auxiliary heater up and out of the unit.
6. To reinstall, perform steps 1–5 in reverse.
7. Restore power to the system and verify proper operation of the system.

8.7 Servicing the Auxiliary Heater Thermal Overload Switch

Use this procedure to remove and install the auxiliary heater thermal overload switch.



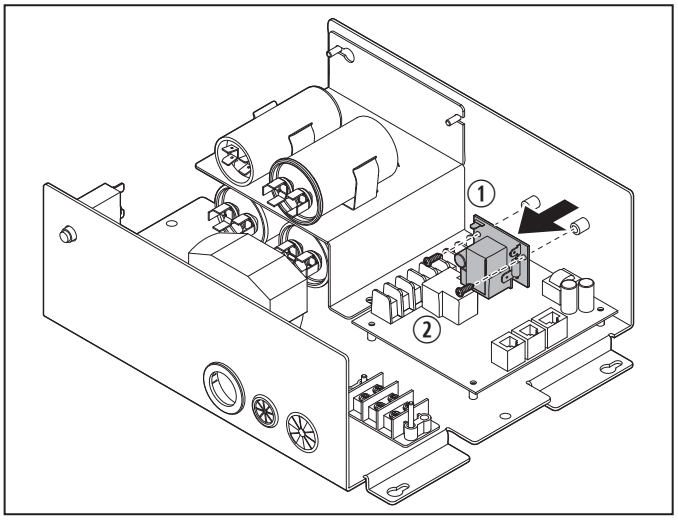
7 Auxiliary Heater Thermal Overload Switch Removal

① Auxiliary Heater Thermal Overload Switch

1. Perform steps 1–2 in "Servicing the Auxiliary Heater" on page 34.
2. Remove the two wires on the auxiliary heater thermal overload switch.
3. Unscrew the two mounting screws securing the auxiliary heater thermal overload switch to the auxiliary heater.
4. Pull the switch out of the unit.
5. To reinstall, perform steps 1–4 in reverse.
6. Restore power to the system and verify proper operation of the system.

8.8 Servicing the Dometic Q Heat Relay

Use this procedure to remove and install the Dometic Q heat relay.



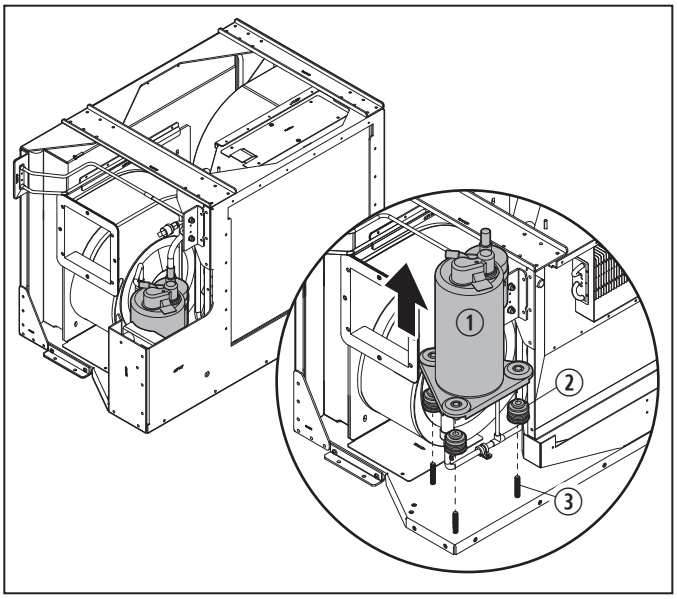
8 Dometic Q Heat Relay

① Dometic Q Heat Relay ② Mounting Screws

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Remove four wires from the relay.
3. Remove the two mounting screws, then pull the Dometic Q heat relay out of the electrical box.
4. To reinstall, perform steps 1–3 in reverse. Make sure to reconnect all wires to the previous position.
5. Restore power to the system and ensure proper operation of the system.

8.9 Servicing the Compressor Assembly

Use this procedure to remove and install the compressor assembly.



9 Compressor Assembly Removal

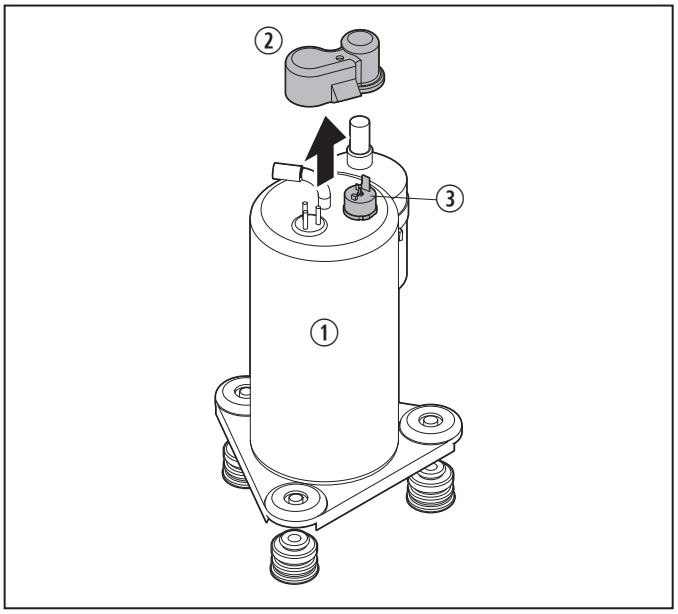
① Compressor ③ Sleeves
② Grommets

1. Turn off the electrical power to the unit.
2. Use a recovery machine to recover the refrigerant in the system.
3. Remove the recovery machine from the unit.
4. Disconnect the orange wire and the black/white wire from the compressor assembly.
5. Disconnect the black wire between the compressor assembly and the compressor overload switch.
6. Heat the connection of the suction and discharge lines and remove the suction and discharge lines from the compressor assembly.
7. Lift the compressor assembly out of the unit.
8. Press the three grommets out of the mounting locations on the compressor assembly.
9. Press the three sleeves out of the center of the grommets.

10. Check for acid contamination from compressor failure and clean if acid is present. This must be done or the acid will damage the new compressor assembly and void the compressor replacement warranty.
11. Flush the system to remove any contamination from the unit.
12. To reinstall the compressor assembly, perform steps 3–9 in reverse.
13. Replace the filter drier. This is required.
14. Replace the refrigerant. Refer to "Charging the Unit" on page 33.
15. Restore power to the system and ensure proper operation of the system.
16. Check for refrigerant leaks. Refer to "Checking the System For Leaks" on page 32.

8.10 Servicing the Compressor Overload Switch

Use this procedure to remove and install the compressor overload switch.



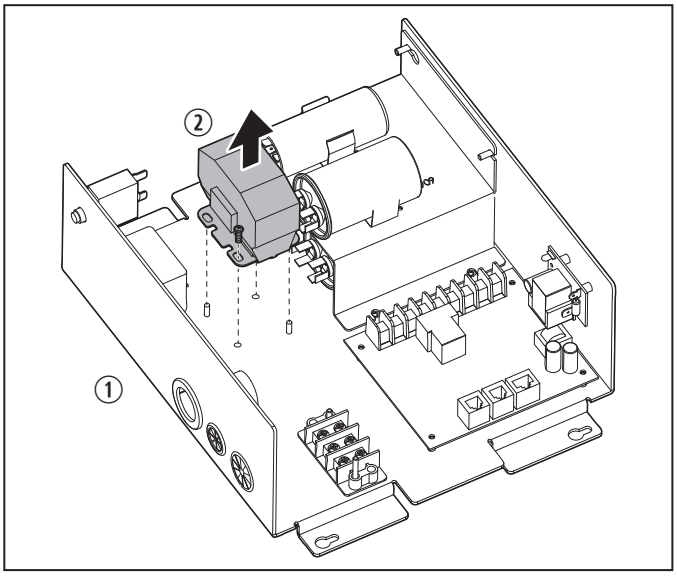
10 Compressor Overload Switch Removal

① Compressor Assembly ③ Overload Switch
② Cap

1. Turn off electrical power to the unit.
2. Remove the cap from the compressor.
3. Disconnect the black wire between the compressor assembly and the compressor overload switch.
4. Remove the black wire from the harness to the compressor overload switch.
5. To reinstall, perform steps 2–4 in reverse.
6. Restore power to the system and ensure proper operation of the system.
7. Check for refrigerant leaks. Refer to "Checking the System For Leaks" on page 32.

8.11 Servicing the Compressor Contactor

Use this procedure to remove and install the compressor contactor.



11 Compressor Contactor Removal

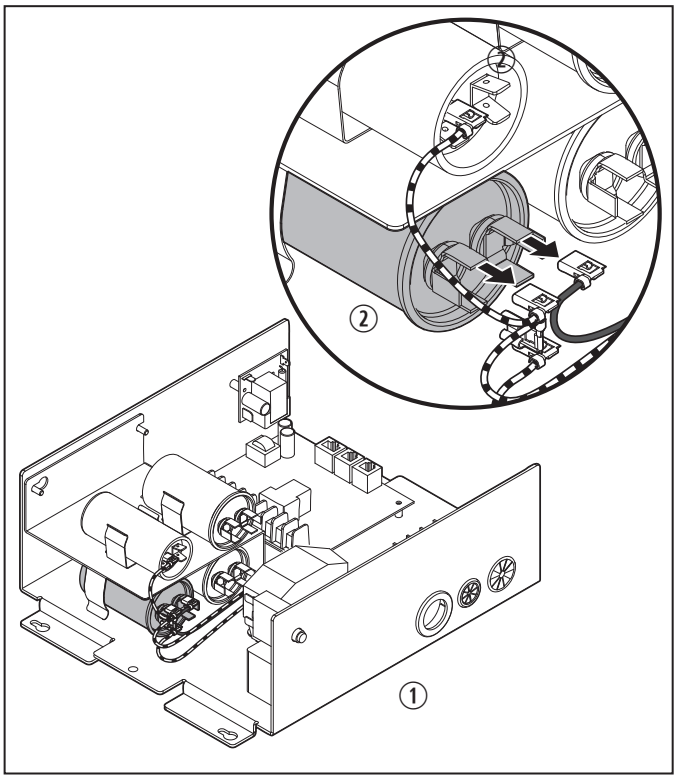
① Electrical Box ② Compressor Contactor

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Label all contactor connections prior to removal. Refer to "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.
3. Disconnect the three white wires and three black wires from the compressor contactor.
4. Remove the mounting screws securing the compressor contactor.
5. Pull the compressor contactor out of the electrical box.

6. To reinstall, perform steps 1–5 in reverse.
7. Restore power to the system and ensure proper operation of the system.

8.12 Servicing the Compressor Run Capacitor

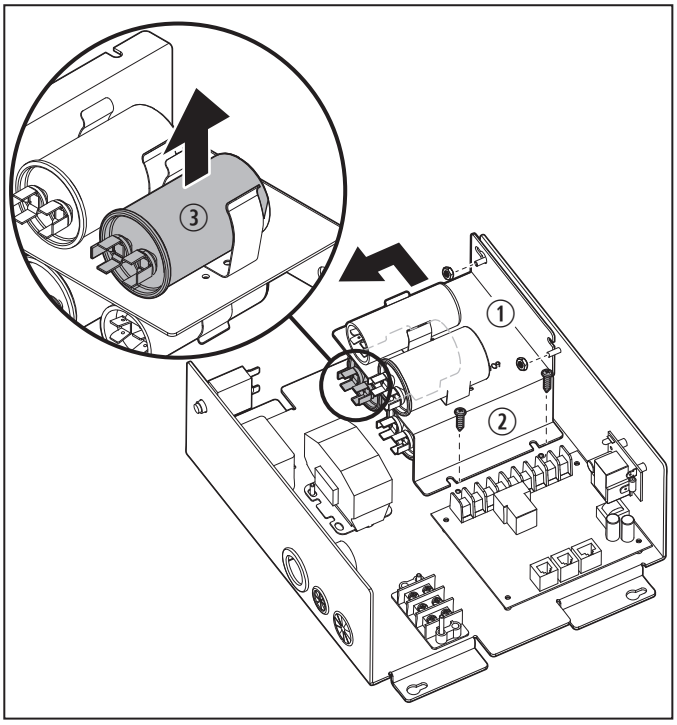
Use this procedure to remove and install the compressor run capacitor.



12 Compressor Run Capacitor Electrical Connections

① Electrical Box ② Compressor Run Capacitor

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Disconnect the two orange wires from the compressor run capacitor.
3. Disconnect the white wire between the compressor run capacitor and the compressor start capacitor.
4. Disconnect the black/white wire and the other white wire from the bottom of the compressor run capacitor.



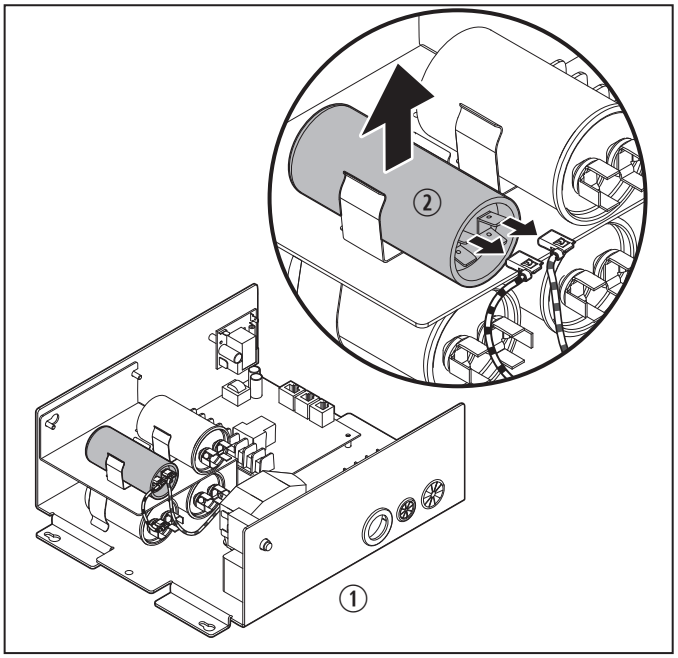
13 Compressor Run Capacitor Removal

① Metal Bracket ③ Compressor Run Capacitor
② Mounting Screws

5. Loosen the two mounting screws securing the metal bracket to the electrical box.
6. Loosen the two nuts securing the top portion of the bracket to the electrical box.
7. Slide the bracket to the outer side of the electrical box.
8. Remove the bracket from the electrical box.
9. Pull the compressor run capacitor out of the mounting clip.
10. To reinstall, perform steps 1–9 in reverse.
11. Restore power to the system and ensure proper operation of the system.

8.13 Servicing the Compressor Start Capacitor

Use this procedure to remove and install the compressor start capacitor.



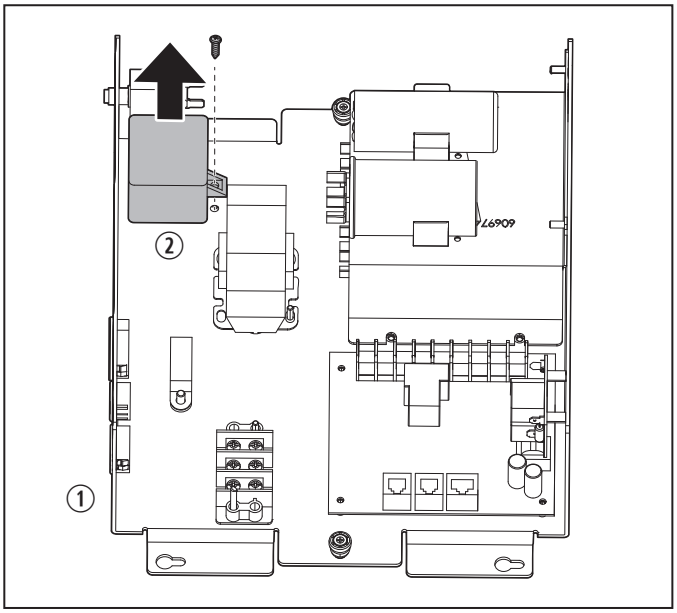
14 Compressor Start Capacitor Removal

① Electrical Box ② Compressor Start Capacitor

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Disconnect the white wire and the orange wire from the connectors on the compressor start capacitor.
3. Pull the compressor start capacitor out of the mounting clip.
4. To reinstall, perform steps 1–3 in reverse.
5. Restore power to the system and verify proper operation of the system.

8.14 Servicing the Compressor Start Relay

Use this procedure to remove and install the compressor start relay.



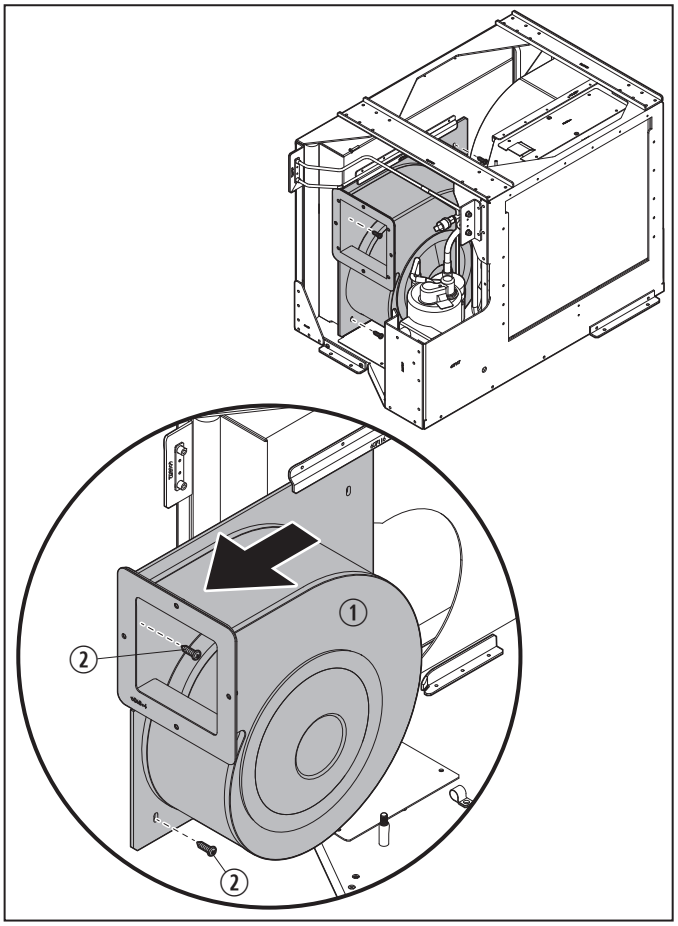
15 Compressor Start Relay Removal

① Electrical Box ② Compressor Start Relay

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Remove two orange and two black wires from relay noting positions for reassembly.
3. Remove the screw securing the compressor start relay to the electrical box.
4. Pull the compressor start relay out of the electrical box.
5. To reinstall, perform steps 1–4 in reverse.
6. Restore power to the system and ensure proper operation of the system.

8.15 Servicing the Condenser Blower Assembly

Use this procedure to remove and install the condenser blower assembly.



16 Condenser Blower Assembly Removal

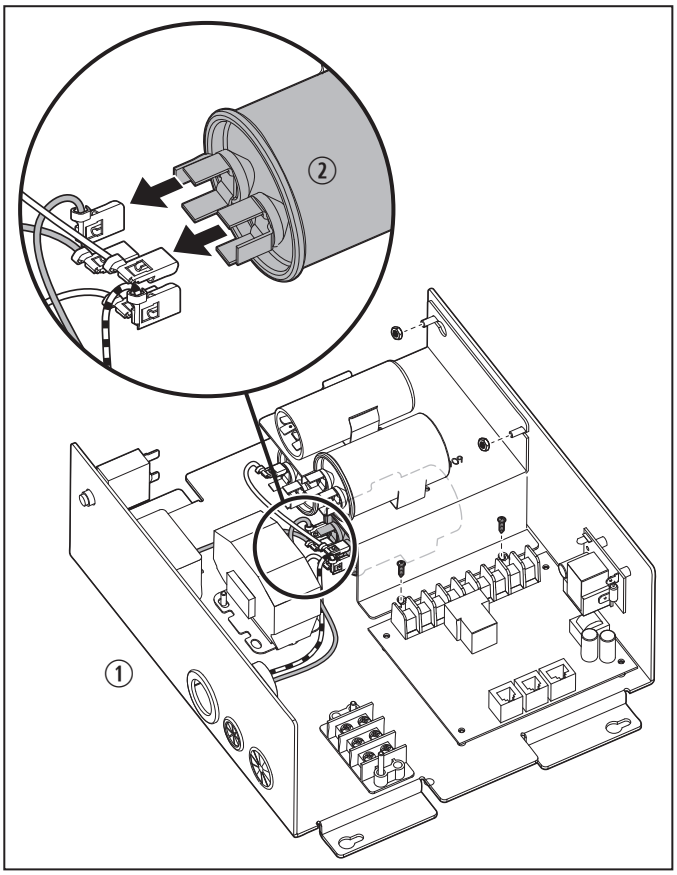
① Condenser Blower ② Mounting Screws

1. Turn off the electrical power to the unit.
2. Disconnect any ducting connected to the outlet of the condenser blower assembly.
3. Label the four butt connector locations prior to removal for use during installation. Refer to "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.
4. Disconnect the green wire to green wire butt splice and dispose of the butt splice.
5. Disconnect the brown wire to brown/white wire butt splice and dispose of the butt splice.
6. Disconnect the black wire to black/white wire butt splice and dispose of the butt splice.
7. Disconnect the blue wire to red wire butt splice and dispose of the butt splice.
8. Remove the mounting screws securing the condenser blower assembly to the unit.

   The most common blower orientation is shown. Screws may be in a different position based on the configuration used.
9. Slide the condenser blower assembly off of the mounting screws.
10. Lift the condenser blower assembly off of the unit.
11. To reinstall, perform steps 1–10 in reverse.
12. Restore power to the system and verify proper operation of the system.

8.16 Servicing the Condenser Blower Capacitor

Use this procedure to remove and install the condenser blower capacitor.



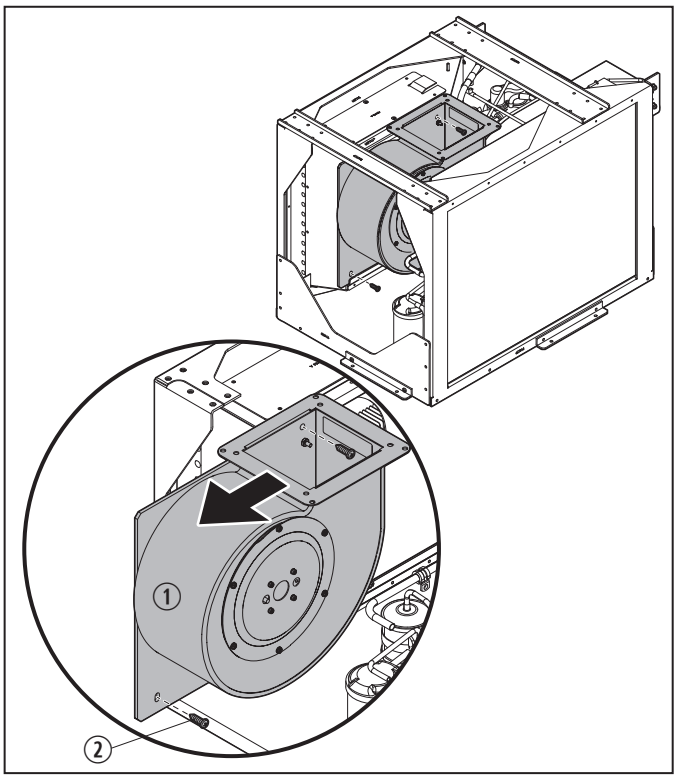
17 Condenser Blower Capacitor Removal

① Electrical Box ② Condenser Blower Capacitor

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Disconnect the white/black wire and the brown/white wire from the connectors on the bottom of the condenser blower capacitor.
3. Loosen the two mounting screws and two nuts securing the metal bracket to the electrical box and slide the bracket out of the way of the condenser blower capacitor.
4. Pull the condenser blower capacitor out of the mounting clip.
5. To reinstall, perform steps 1–4 in reverse.
6. Restore power to the system and verify proper operation of the system.

8.17 Servicing the Evaporator Blower Assembly

Use this procedure to remove and install the evaporator blower assembly.



18 Evaporator Blower Assembly Removal

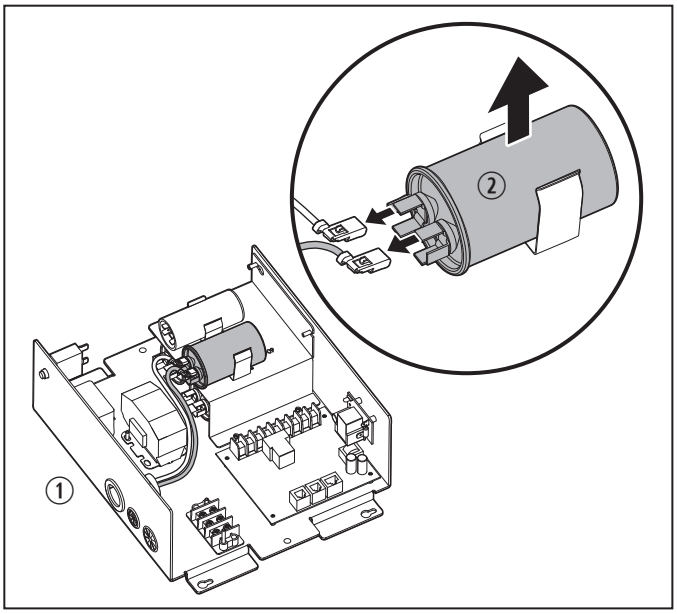
① Evaporator Blower ② Mounting Screws

1. Turn the electrical power to the unit off.
2. Remove any ducting secured to the outlet of the evaporator blower assembly.
3. Label the four butt connector locations prior to removal for use during installation. Refer to "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.
4. Disconnect the blue wire to blue wire butt connector and discard the connector.
5. Disconnect the black wire to black/white wire butt connector and discard the connector.
6. Disconnect the brown wire to brown/white wire butt connector and discard the connector.
7. Unscrew the four mounting screws securing the evaporator blower assembly to the unit.
8. Slide the evaporator blower assembly out of the unit.

   It may be difficult to slide out the blower, as it can stick to the foam insulation. Gently wiggle the assembly to loosen the foam attachment.
9. Lift the evaporator blower assembly off of the unit.
10. To reinstall, perform steps 1–9 in reverse.
11. Restore power to the system and verify proper operation of the system.

8.18 Servicing the Evaporator Blower Capacitor

Use this procedure to remove and install the evaporator blower capacitor.



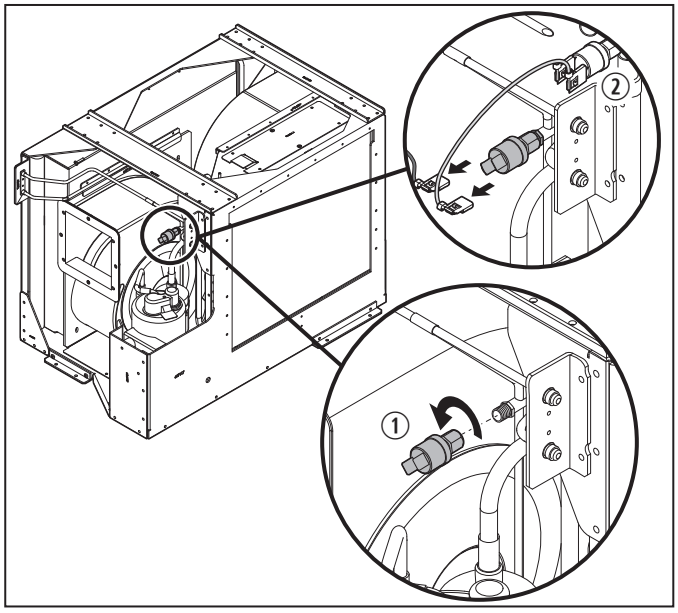
19 Evaporator Blower Capacitor Electrical Connections

① Electrical Box ② Evaporator Blower Capacitor

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Disconnect the brown wire from the evaporator blower capacitor.
3. Disconnect the three white/black wires from the evaporator blower capacitor.
4. Pull the evaporator blower capacitor out of the mounting clip.
5. To reinstall, perform steps 1–4 in reverse.
6. Restore power to the system and ensure proper operation of the system.

8.19 Servicing the High-Pressure Switch

Use this procedure to remove and install the high-pressure switch.



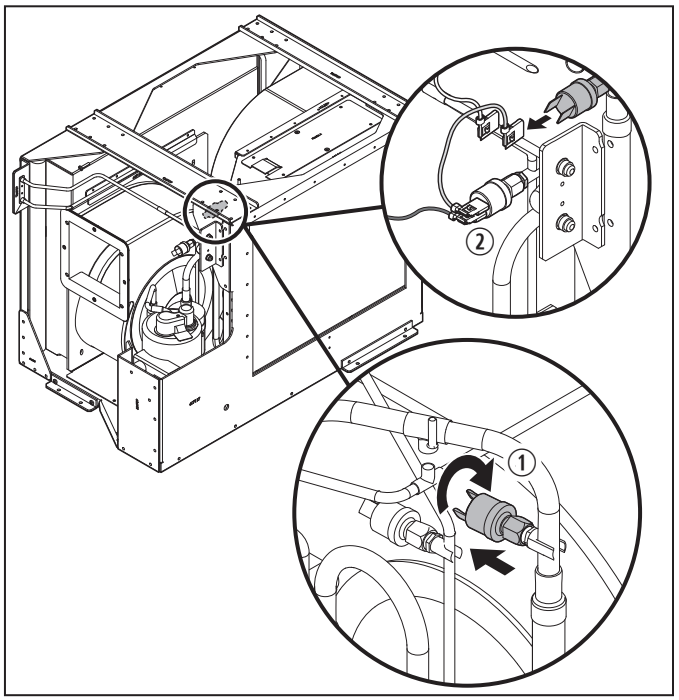
20 High-Pressure Switch Removal

① High-Pressure Switch ② Low-Pressure Switch

1. Turn off the electrical power to the unit.
2. Disconnect the yellow wire from the high-pressure switch.
3. Disconnect the blue wire from the high-pressure switch.
4. Unscrew quickly to reduce gas loss and remove the high-pressure switch from the unit.
5. To reinstall, perform steps 1–4 in reverse.
6. Check for leaks.
7. Restore power to the system and verify proper operation of the system.

8.20 Servicing the Low-Pressure Switch

Use this procedure to remove and install the low-pressure switch.



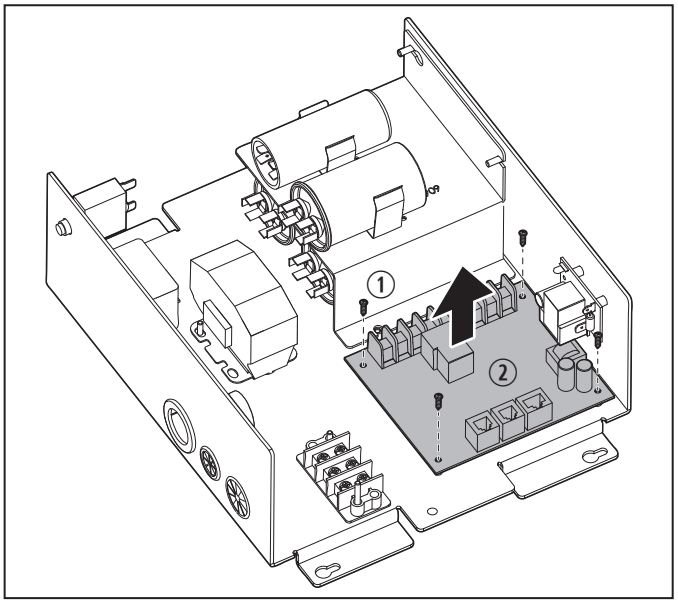
21 Low-Pressure Switch Removal

① Low-Pressure Switch ② High-Pressure Switch

1. Turn off the electrical power to the unit.
2. Disconnect the yellow wire from the low-pressure switch.
3. Disconnect the white wire from the low-pressure switch.
4. Unscrew quickly to reduce gas loss and remove the low-pressure switch from the unit.
5. To reinstall, perform steps 1–4 in reverse.
6. Check for leaks.
7. Restore power to the system and verify proper operation of the system.

8.21 Servicing the Unity Control Board

Use this procedure to remove and install the unity control board.



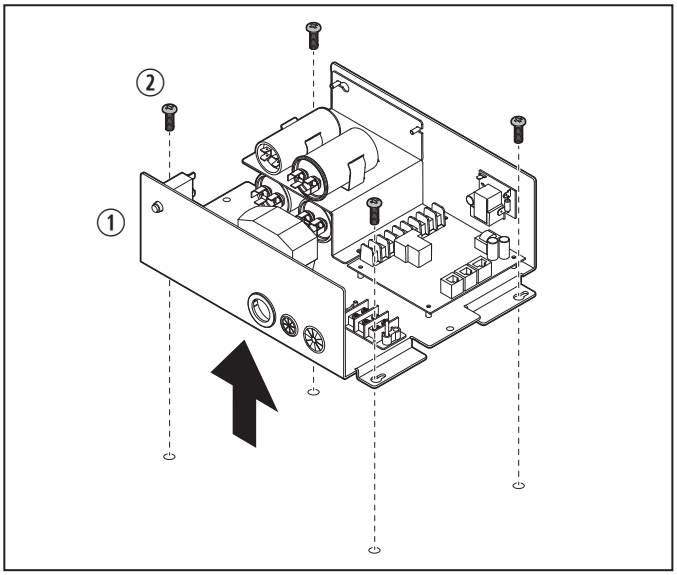
22 Unity Control Board Removal

① Mounting Screws ② Unity Control Board

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Disconnect the electrical connection from the unity control board. Refer to "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.
3. Remove the four screws securing the unity control board to the electrical box.
4. Pull the unity control board out of the electrical box.
5. To reinstall, perform steps 1–4 in reverse.
6. Restore power to the system and ensure proper operation of the system.

8.22 Servicing the Electrical Box

Use this procedure to remove and install the electrical box.



23 Electrical Box Removal

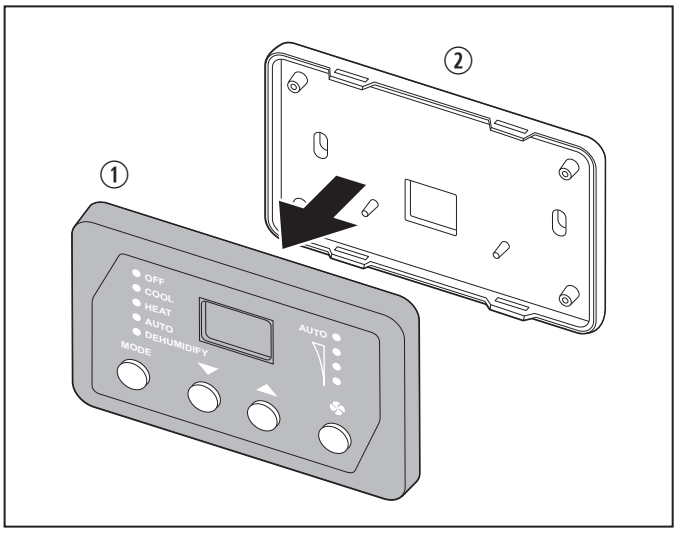
① Electrical Box ② Mounting Screws

1. Perform the steps in "Removing the Electrical Box Cover" on page 33.
2. Label all of the connections prior to removal for use during installation.
3. Disconnect all of the wires secured within the electrical box. Refer to "Q3 Control and ASCDU15HV 1161 Wiring Diagram" on page 12.
4. Remove the mounting screws.
5. Pull the electrical box away from the mounting location.
6. To reinstall, perform steps 1–5 in reverse.
7. Restore power to the system and ensure proper operation of the system.

8.23 Servicing the Q3 Control

Use this procedure to remove and install the components of the Q3 control.

8.23.1 Replacing the Q3 Control Assembly

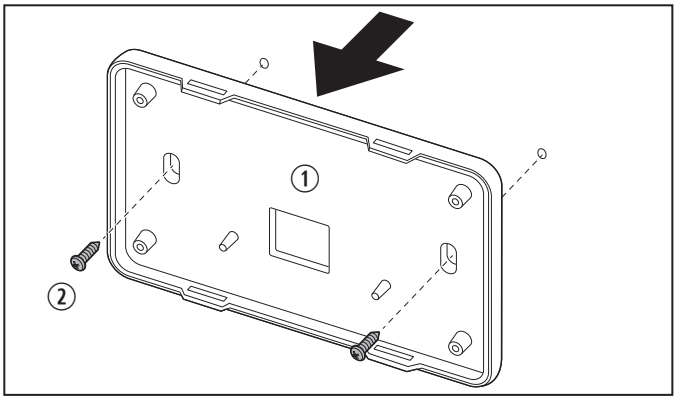


24 Front Housing Assembly Removal

① Q3 Control ② Back Mounting Plate

1. Turn the electrical power to the unit off.
2. Gently pull the front housing assembly away from the back mounting plate.
3. Disconnect the display cable from the back of the front housing assembly.
4. To reinstall, perform steps 1–3 in reverse.
5. Restore power to the unit and verify proper operation of the Q3 control.

8.23.2 Replacing the Q3 Back Mounting Plate



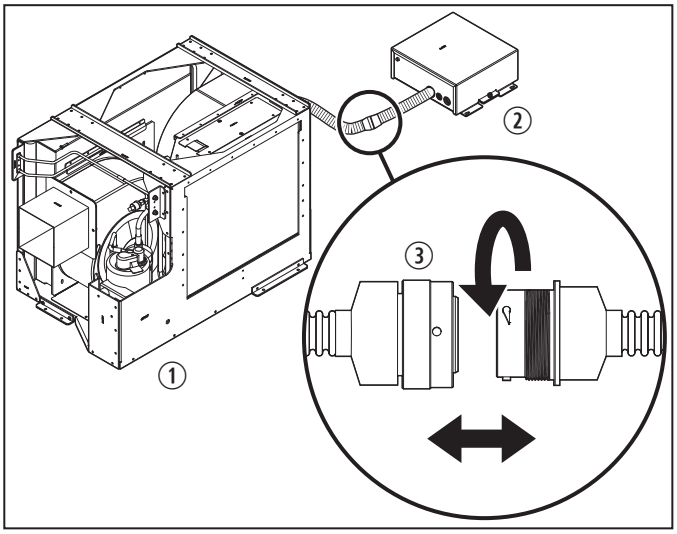
25 Back Mounting Plate Removal

① Q3 Back Mounting Plate ② Mounting Screws

1. Perform the steps in "Replacing the Q3 Control Assembly" on page 43.
2. Remove the mounting screws.
3. Pull the back mounting plate away from the mounting location.
4. To reinstall, perform steps 1–2 in reverse.

8.24 Servicing the Interconnect Cable

Use this procedure to remove and install the interconnect cable.

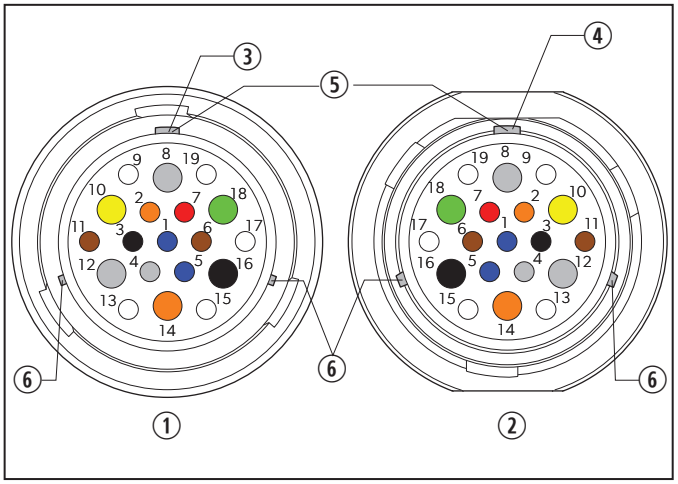


26 Interconnect Cable Removal

① Unit ③ Interconnect Cable

② Electrical Box

1. Turn the electrical power to the unit off.
2. Disconnect the interconnect cable plug attached to the electrical box from the plug attached to the unit.



27 Interconnect Cable Terminal Pins

① Electrical Box Plug with Female Terminals
② Unit Plug Male Terminals
③ Male Locating Notches
④ Female Locating Notches
⑤ Big Locating Notches
⑥ Small Locating Notches

3. To reinstall:
   a. Align the three male locating notches (big and small) with the three female locating notches (big and small).
   b. Push the two connector halves together.
   c. Rotate the outer ring to complete the joining of the plugs and lock them together.
4. Restore power to the system and ensure proper operation of the system.

9 Maintenance

Check the following items monthly, bi-monthly, or yearly (or more often if local conditions and usage patterns dictate) as part of a routine maintenance program.

The refrigerant gas used in the air conditioning system is adequate for the life of the system. Routine charging of the system is not necessary.

Monthly	
Task	**Page**
Clean or replace the return-air filter.	45
Check the condensate drain for blockages.	45
Check for any obstructions in the system.	N/A
Annually	
Task	**Page**
Clean and inspect the condenser coils.	44
Visually inspect the connecting lines and coils for signs of oil leakage.	N/A
Check the wiring for loose or broken connections.	12
Check the evaporator coils. Clean if necessary.	45

9.1 Cleaning the Coils

NOTICE: Harsh chemicals, household bleach, or acid or basic cleaners should **not** be used to clean the outdoor or indoor coils of any kind. These cleaners can be very difficult to rinse out of the coil and can accelerate corrosion at the fin/tube interface where dissimilar materials are in contact. If there is dirt below the surface of the coil, use an environmentally safe cleaner.

NOTICE: High velocity water from a pressure washer, water hose, or compressed air should **not** be used to clean a coil. The force of the water or air jet will bend the fin edges and increase air side pressure drop.

Coil cleaning should be part of the unit's regularly scheduled maintenance procedures to ensure the long life of the coil. Failure to clean the coils may result in reduced durability in the environment.

9.1.1 Cleaning the Condenser Coils

Periodic cleaning with an environmentally safe coil cleaner is essential to extend the life of the condenser coils.

Avoid the use of the following:

- Coil brighteners
- High-pressure washers
- Poor-quality water

9.1.2 Cleaning the Evaporator Coils

Use indoor coil cleaner to clean the evaporator coil. Follow the manufacturers instructions when using indoor coil cleaner.

9.2 Checking the Condensate Drains

Check the condensate drain for obstructions every three months. Check for obstructions by rapidly pouring a quart of water into the condensate pan. If the water does not completely drain within 30 seconds, check the drain outlets for clogs. Remember that many air conditioning units have two drains and hoses, one at each end of the drain pan.

9.3 Cleaning the Return-Air Filter

Check the return-air filter once a month and replace or clean as necessary. To clean the filter:

1. Remove the filter from the unit.
2. Rinse the filter with water.
3. Let the filter air dry.
4. Install the filter back into the unit.

10 Disposal

Place the packaging material in the appropriate recycling waste bins, whenever possible. Consult a local recycling center or specialist dealer for details about how to dispose of the product in accordance with all applicable national and local regulations.

11 Replacement Parts

For the most current parts information, visit www.dometic.com.

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