



## Blizzard Turbo Split System Installation and Operation Manual

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Dometic Truck  
Rev. 20170601  
L-3448 English  
P/N 339061

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## INTRODUCTION

The Dometic Blizzard Turbo is an auxiliary air conditioning system that cools the sleeper cab and keeps the driver comfortable without running the engine.

Instead of wasting fuel by using an idling engine to power the truck's own air conditioning system, the Blizzard Turbo uses an alternative source of power, such as:

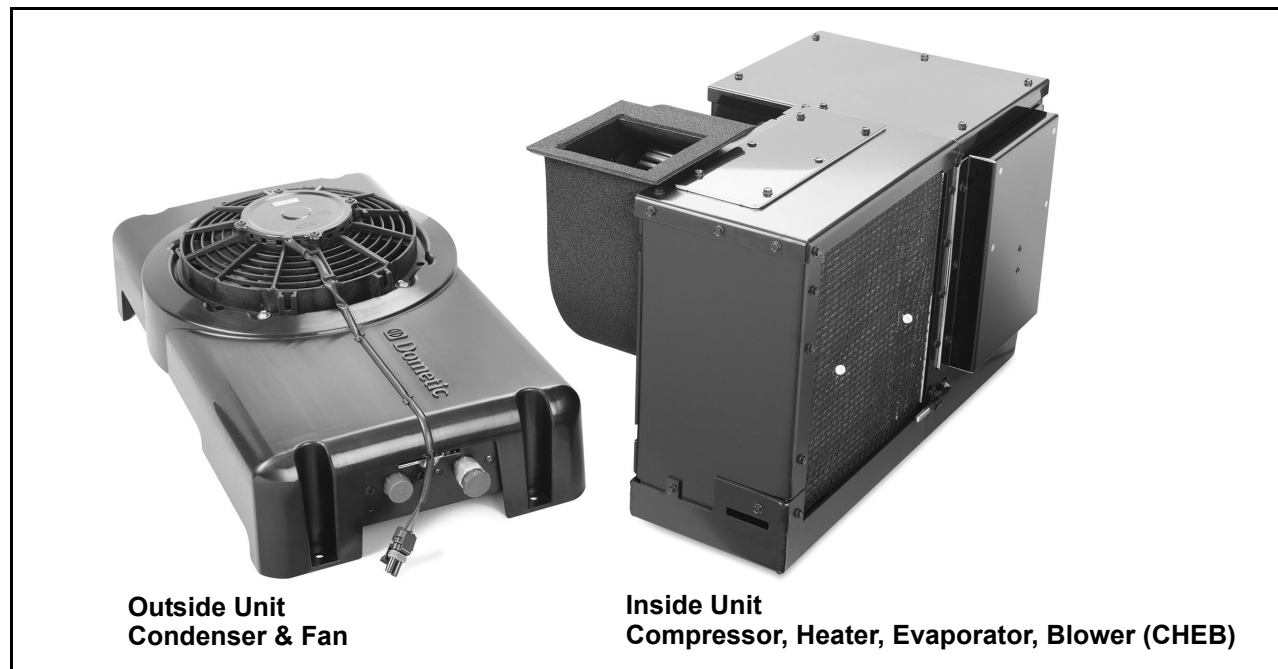
- 115VAC power supplied by an onboard diesel genset
- A shorepower connection when an external AC power source is available, or
- A bank of deep cycle batteries using an inverter to convert the 12V battery output into usable 115VAC power

Dometic's patented Blizzard Turbo is a split system that consists of two separate components (see Figure 1):

- **The outside unit** contains the condenser and cooling fan. It can be bolted horizontally to the underside or vertically to the back of the sleeper cab.
- **The inside unit** contains the compressor, heater (optional), evaporator, blower (CHEB). The CHEB also houses the Power Logic Box (PLB) and other associated components. The inside unit is mounted under a berth or seat or in a side storage locker.

The two units are connected by reusable pre-charged quick-connect refrigerant line sets. The system is designed so that both units automatically charge to the correct refrigerant pressure as soon as the line sets are connected. No special tools are required.

**Figure 1: Blizzard Turbo Split System Components**



# SAFETY

## IMPORTANT NOTICES

This manual contains essential information concerning the safe and proper installation and operation of your air conditioning system. Read and follow all safety instructions in the manual and on the unit to reduce the risk of accident, injury or death. If there are any statements or procedures that you do not understand, contact your dealer.

**STOP! READ THESE NOTICES AND WARNINGS BEFORE YOU PROCEED ANY FURTHER!**



This safety alert symbol appears with most safety statements. It means attention, become alert, your safety is involved! Please read and abide by the message that follows the safety alert symbol.



### DANGER

Indicates a hazardous situation which, if not avoided, *will* result in death or serious injury.



### WARNING

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



### CAUTION

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

### NOTICE

Indicates a situation which can cause damage to the equipment, personal property and/or the environment, or cause the equipment to operate improperly.

**NOTE:** Used to point out helpful suggestions that will result in improved installation, reliability or operation.

## SAFETY GUIDELINES

1. Allow only qualified, experienced technicians to install or service this system.
2. Install the system in accordance with all local codes. If no local codes exist, follow National Codes (NEC in the U.S., CEC in Canada).
3. Open the electrical disconnect switch(es) before electrically connecting the unit.
4. Before operating the unit, be certain it is properly grounded.
5. The units contain refrigerant gas under pressure. Avoid puncturing or breaking any tubing.
6. Before operating the system, complete the refrigerant connections.



### WARNING

To avoid personal injury, shock, or death, ensure the electrical disconnect switch(es) is (are) in the OFF position before installing, modifying, or servicing the unit. Lock out and tag the switch with a suitable warning label. Wiring must conform with NEC or CEC and all local codes.

## GENERAL SAFETY PRECAUTIONS



### WARNING

Dometic, manufacturer of Dometic Auxiliary A/C and Dometic Refrigerators and Freezers, makes the following safety warnings concerning the application, installation, use and care of its products. Although these warnings are extensive, there may be specific hazards which may arise out of circumstances which we have not outlined herein. Use this as a guide for developing an awareness of potential hazards of all kinds. Such an awareness will be a key factor in assuring your SAFETY and comfort.

**ELECTRICITY** - Many Dometic products operate on 115, 230 or 440VAC power. Such voltages can be LETHAL; therefore, the chassis, cabinets, bases, etc., on all components must be grounded together and connected to the vessel's grounding system. Sparks can occur as switches, thermostats and relays open and close in the normal operation of the equipment. Since this is the case, ventilating blowers for the removal of hazardous fumes or vapors should be operated at least 5 minutes before and during

operation of any Dometic product or group of Dometic products. All electrical connections must be covered and protected so accidental contact cannot be made by persons using the equipment, as such contact could be LETHAL.

**GAS** - Dometic Air Conditioning and Refrigeration components utilize R-134A refrigerant (Tetrafluoroethane), R-407C (which contains Difluoromethane [HFC-32], Pentafluoroethane [HFC-125], and 1.1.1.2-Tetrafluoroethane [HFC-134A]), R-404A (R-125/R-143A/R-134 [44%/52%/4%]), or R-417A, which are non-toxic, non-flammable gases; however, these gases contain no oxygen and will not support life. Refrigerant gas tends to settle in the lowest areas of the compartment. If you experience a leak, evacuate all personnel, and ventilate area. Do not allow open flames in the area of leaks because refrigerant gas, when burned, decomposes into other potentially LETHAL gases. Refrigerant components operate at high pressure and no servicing should be attempted without gloves, long-sleeved clothing and eye protection. Liquid refrigerant gas can cause severe frost burns to the skin and eyes.

**VENTILATION** - To cool or heat air, Dometic Air Conditioning and Refrigeration components are designed to move air through a heat exchanger by a blower or propeller fan. This design necessarily produces a suction on one side of the air handling component and a pressure on the other side. Air handling components must be installed so that the suction-pressure action does not: (1) pressurize an area to the extent that structural failure occurs which could cause harm to occupants or bystanders, or (2) cause a suction or low pressure in an area where hydrogen gas from batteries, raw fuel vapor from fuel tanks, carbon monoxide from operating propulsion engines, power generators or heaters, methane gas from sewage holding tanks, or any other dangerous gas or vapor could exist. If an air handling unit is installed in such a manner that allows potentially lethal gases or vapors to be discharged by the air handling unit into the living space, this could result in loss of life.

Maximum protection against the introduction of dangerous gases or vapors into living spaces can be obtained by providing living spaces which are sealed from all other spaces by use of airtight bulkheads and decks, etc., and through the introduction of clean air into the living space. Bear in mind that the advent of air conditioning, whether it be for cooling or for heating, naturally leads to the practice of closing a living space tightly. Never close all windows and doors unless auxiliary ventilating systems, which introduce clean outside air into the living space, are used. Always leave enough window and door openings to provide adequate ventilation in the event potentially lethal gases or fumes should escape from any source.

**CONDENSATE** - All cooling units produce water condensate when operating on the cooling cycle. This water must be drained from the cooling unit. If condensate is allowed to drip on a steel structure, rotting or decay and structural failure may occur which could result in loss of life. If condensate is allowed to drip on electrical components, deterioration of the electrical components could result in hazardous conditions. When an air conditioning system is in operation, condensate drains may be subjected to negative pressure. Always locate condensate drains as far as possible from points where engine waste and other dangerous gases are exhausted so no such dangerous gases can be drawn into the condensate drains.

**WARNING**

Never sleep in a closed area in a vehicle when any equipment, which functions as a result of the combustion of a volatile fuel, is in operation (such as engines, generators, power plants, or oil-fired heaters, etc.). At any time, the exhaust system of such devices could fail, resulting in a build-up of LETHAL gases within the closed area.

Warning Revised: 6-5-06

## SAFE HANDLING OF REFRIGERANTS

These warnings can not cover every conceivable situation, but they should serve as a useful guide.

**WARNING**

To avoid possible explosion, death, or injury, practice safe handling of refrigerants.

**WARNING**

Refrigerants are heavier than air. They can “push out” the oxygen in your lungs or in any 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.
- 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.
- Never burn refrigerant, as poisonous gas will be produced.
- Always follow EPA regulations.

**WARNING****To avoid possible explosion:**

- Never apply flame or steam to a refrigerant cylinder. If you must heat a cylinder for faster charging, partially immerse it in warm water.
- Never fill a cylinder more than 80% full of liquid refrigerant.
- Never add anything other than R-410A to an R-410A cylinder. R-410A operates at a 50 to 70% higher pressure than R-22 systems. Service equipment used must be listed or certified for R-410A.
- Store cylinders in a cool, dry place. Never use a cylinder as a platform or a roller.

**WARNING****To avoid possible explosion, use only returnable (not disposable) service cylinders when removing refrigerant from a system.**

- Ensure the cylinder is free of damage which could lead to a leak or explosion.
- Ensure the hydrostatic test date does not exceed 5 years.
- Ensure the pressure rating meets or exceeds 400 pounds.
- When in doubt, do not use the cylinder.

## BEFORE YOU START

1. Read this installation manual thoroughly and carefully before attempting to install system so you understand the order in which the components are installed. This will also help you avoid bodily injury, damage to the truck, or damage to the Dometic system.
2. Determine locations where the air conditioning components will be installed.
3. Lay out all parts and check to make sure you have everything shown on the parts list.
4. Do NOT throw away the cardboard box the unit came in! A template is included on one panel of the box that you will need to use during installation.
5. Check the list of tools required for installation and make sure you have them all and know how to use them.
6. Make sure you have a large and well lit workspace.
7. Have an assistant available to help with some of the steps.
8. Wear all appropriate safety equipment.

This manual will assist in the quickest and most efficient install possible.

## ADDITIONAL DOCUMENTATION AVAILABLE

This manual contains basic instructions for installing and commissioning the system. Supplementary guidelines for installing the components and air distribution kits in specific truck models are also available. Check [www.dometictruck.com](http://www.dometictruck.com) and download the appropriate manuals before you start.

For APU-powered systems: Generator installation and operating instructions will be provided by your APU system supplier.

For Dometic battery-powered systems: A separate manual covers installation of the batteries, inverter, alternator / regulator and other components. If you do not have this manual, you can download it from [www.dometictruck.com](http://www.dometictruck.com).

## TOOLS REQUIRED

- Reciprocating Saw
- Hole Saws: 1-5/8", 1 7/8", 2-1/2", 4", 4-1/2"
- Drill (cordless or electric)
- Drill Bits: 1/8", 5/32", 9/32"
- Nut Drivers: 1/4", 3/8", 5/16"
- Phillips head screwdriver
- Open-end wrenches: (2) 7/16", (1) 15/16", (1) 13/16", (1) 3/4"

- Torque wrench may also be required
- Utility Knife
- Light Machine Oil
- Insert Installation Tool

## PARTS LIST

Table 1: BLIZZARD TURBO KIT COMPONENTS

NAME	DESCRIPTION	PART NUMBER	QUANTITY
CHEB	Compressor, Evaporator, Blower assembly with Easy Start	N/A	1
Condenser	12V Condenser fan	N/A	1
Hose Set	Hose kit LP & HP w/90 degree - 8 ft (2.4 m)	N/A	1
Qt Control	Electronic control module	722200100	1
Qt Cable	SMXir cable for Qt control	CXP15	1
P-Trap Assembly	Hose, plug & clamp	N/A	1
Power Cable	P&T 110V supply cable - 10 ft (3 m)	337648	1
Condenser Cable	12V supply cable with fuse	337657	1
Ignition Lock	12V interlock cable - 15 ft (4.5 m)	337659	1
Return-Air Grille	Rectangular air grille - 12.5 x 5.5 in (318 x 140 mm)	V12.4X55	1
Grommets	Bulkhead insulating grommets	4152703	2
QCV	Quick-connect cover for ACC condenser	710035074	1
Hose Adapter	Hose adapter ring - 5 in (127 mm)	335884	1

## POSSIBLE MODIFICATIONS TO VEHICLE

- OEM components may need to be relocated to accommodate the installation of the battery box.
- Condenser must be mounted to the outside of the sleeper.
- CHEB and power inverter may be installed in the existing storage spaces under the bunk.
- Heating and A/C duct work may be routed in existing closets or storage compartments.
- Truck's engine must be fitted with an upgraded alternator and wiring of 300 amps or more.
- For optimum performance, main batteries should be upgraded to recommended batteries specified by Dometic.

## DO NOT ATTEMPT THIS INSTALLATION UNLESS

- You have experience with tools required.
- You can safely lift weights of up to 80 pounds (36.3 kg).

# INSTALLATION INSTRUCTIONS

## PART 1: INSTALLATION OF THE CHEB

Ensure that the CHEB (Compressor, Heater, Evaporator, Blower) is placed so that all electrical wiring connections and refrigerant ports are easily accessible for future maintenance and service.

**NOTE:** *If the CHEB will be installed in a tight-fitting area, it is best to cut all holes and install supply and return air grilles before installing the CHEB unit, so that nothing will interfere with hole saws or drilling locations. If so, see "Part 5: Duct and Grille Installation" on page 13 before continuing with this section.*

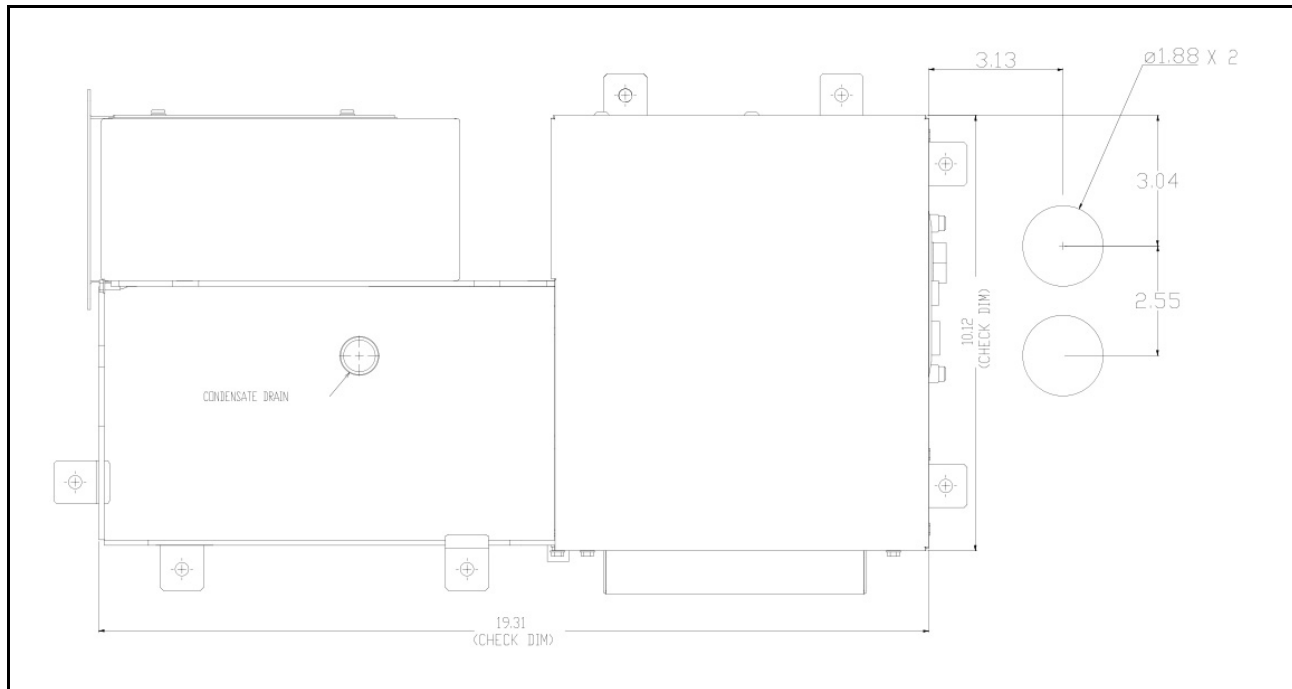
Tools required for this step:

- Reciprocating Saw
- Drill
- Hole Saws: 1-5/8", 1-7/8", 2-1/2", 4", 4-1/2"
- Utility Knife
- Drill Bits: 1/8", 5/32", 9/32"
- Nut Drivers: 1/4", 3/8", 5/16"
- Phillips Head Screwdriver
- Open End Wrenches
- Light Machine Oil

### CHEB INSTALLATION STEPS:

1. Cut out the template found on a panel of the cardboard box in which the unit was packed (or, the template may be printed and packed inside the box). See Figure 2.
2. Tape template to the floor to determine where holes will be drilled for line sets, and condensate drain. **Double check underneath the cab to ensure you will not cause damage to anything such as structural members, hydraulic, air, or electric lines under the floor.**
3. Before drilling the correct size holes, drill a small pilot hole in each location, to see under the truck where the drill bit is coming through. This is to confirm the location is clear of all obstructions.
4. If floor mat is present use a 2-1/2" hole saw to cut through the floor mat ONLY in order to remove that area of the floor mat.
5. Use hole saws to cut each hole. You will need to cut (2) 1-7/8" holes for refrigerant line and condenser cord, and a single 1-5/8" hole for the P-Trap.



**Figure 2: CHEB Template (not to scale)**

6. Use utility knife to cut holes in each snap grommet.
7. Install grommets into the two larger holes cut for line sets.
8. Prep CHEB for installation. Sometimes there is a lack of access to the line sets once CHEB is bolted to vehicle, therefore, it is best to connect line set (90 degree portion) to the CHEB before lowering it into bunk. Use a drop of light machine oil on the male fittings to lubricate fittings and help with an easier seal. Use two wrenches to tighten fittings to CHEB. It is normal to hear a "hiss" when connecting. Tighten fittings to 10-12 ft pounds. See Figure 3.

**Figure 3: Make Connections to the CHEB Before Placing It Inside**

9. Once line sets are on, attach hose barb supplied with hold-down kit to condensate drain pan using a wrench.
10. Attach plenum to unit as needed for duct run from top or side. See Figure 4.

**Figure 4: Plenum Installed on CHEB Blower**

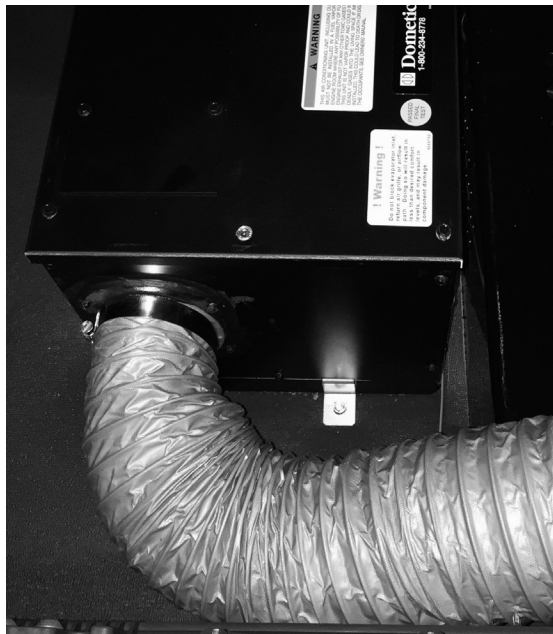
11. When refrigerant line sets and hose barb are attached, lower the compressor end into the bunk area. Make sure the condensate portion of the unit is aligned with the 1-5/8" hole that was cut.
12. Through one of the grommets, route the condenser fan cable/plug and then one of the refrigerant lines.
13. Through the second grommet, route the other refrigerant line.
14. Use clips, bolts, washers, and nuts provided in the hold down kit to mount the CHEB unit into place. Someone will need to hold nut with one wrench under truck, while someone inside sleeper turns the bolt. Be sure to tighten **slowly** to prevent seizing of the nut.
15. Once CHEB is properly mounted, run flexible duct between adapters on CHEB and supply air grilles or Dometic duct towers. Run duct as straight as possible, do not have any kinks or sharp bends that will restrict air flow, and use only as much duct as needed. Attach at both ends with a large hose clamp.

See Figure 5 and Figure 6 for ducting options from plenum.

**Figure 5: Example of ducting from plenum (Option 1: Two 4" flex ducts)**



**Figure 6: Example of ducting from plenum (Option 2: One 5" flex duct)**



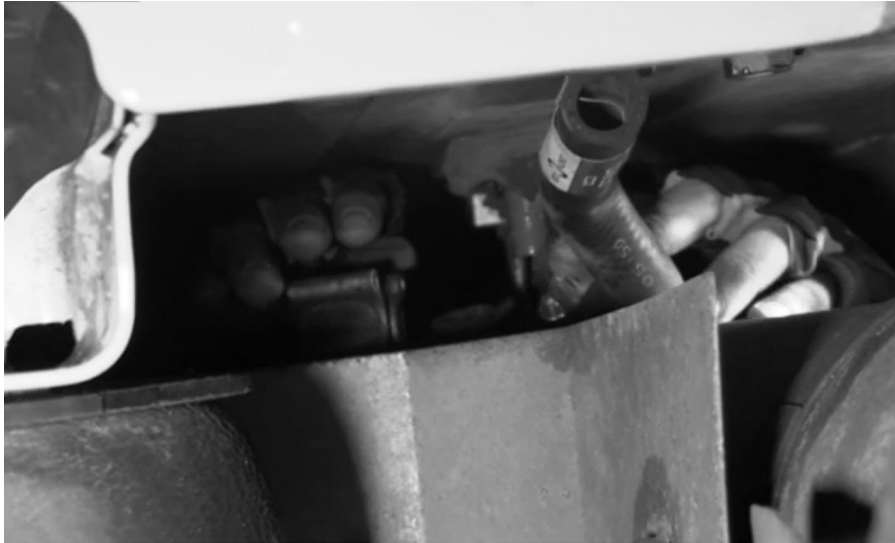
16. Install P-Trap on drain fitting under truck for condensate pan. Make sure the open end of the P-Trap is facing the rear of the truck and tighten it. See Figure 7.



**WARNING**

It is very important that you use the P-Trap to create a water seal to prevent hazardous or deadly fumes from entering the cab.

**Figure 7: Under the cab, the opening of the P-trap must face the rear**



**WARNING**

It is very important that you use the P-Trap to create a water seal to prevent hazardous or deadly fumes from entering the sleeper from under the truck.

### INSTALLING IGNITION INTERLOCK

The ignition interlock prevents the air conditioning from running while the truck's ignition is in any position except completely off. If the air conditioning system is allowed to run while underway, you will not properly charge the batteries. This will result in short run times, and greatly reduce the life of the batteries and alternator installed.

1. Run cable under floor mat.
2. Connect to fuse panel ignition switch, or electrical power source that supplies 12VDC in all key positions except "Off". There are multiple 12VCD test lights that can be purchased for use in finding an empty fuse position where this occurs

## PART 2: CONDENSER INSTALLATION

Intall the condenser on the rear exterior of the truck cab. It can be mounted vertically or horizontally. If mounted vertically, ensure the refrigerant connections are on the bottom. See Figure 8.

Tools required for this step:

- Drill Bits
- Insert Installation Tool
- Inserts
- Ratchet Wrenches
- Open End Wrenches
- Light Machine Oil

### INSTALLING THE CONDENSER

1. Run line set up the back wall to determine maximum height you can install the condenser. The higher the condenser, the more efficient it will be.
2. On the back of the cab, use a tape measure and level to ensure that the condenser template is level and center.
3. Drill the holes for inserts. Be careful not to drill through inside wall of sleeper as well.

4. Attach rivet nuts to the truck body. Use rivet nuts provided (or McMaster-Carr® #95105A143). Use an appropriate tool such as McMaster-Carr® #95585A600 plus mandrel set 95585A650. In order: The first thing to go on the bolt is the lock washer, followed by the flat washer, then through the condenser, then into the rivet nut. In addition to the supplied lock nuts, use a thread locker such as blue Loctite® 243 or equal on the bolts that mount the condenser to the rivet nuts. Follow all manufacturer recommendations. Do NOT rely on sheetmetal screws (such as “self-tappers”) to attach the condenser to the truck body. These may loosen over time, and the condenser may fall off.

*(McMaster-Carr is a registered trademark of McMaster-Carr Supply Company. Loctite is a registered trademark of Henkel Corporation.)*

5. Place inserts inside holes and use tool to install correctly.
6. Using bolts provided, mount the condenser to the back wall of the cab.

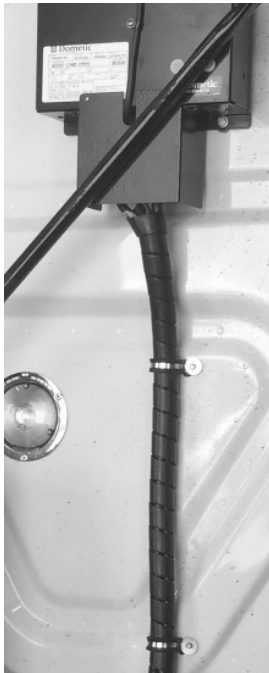
**Figure 8: Condenser on Back of Truck**



### **PART 3: SECURING LINE SETS & CONDENSER CABLE**

Route refrigerant line sets and cabling in a location that will not rub or chafe any structural members, or be compromised by any kind of heat-generating source. Also be sure that they are securely fastened with the proper cable ties for a neat installation. See Figure 9.

1. Using cable clamps, run line sets and cord under truck, securing them tightly, about every 12" to 18".
2. Run line sets and cord neatly up the back wall of the sleeper securing every 12" to 18" with cable ties.
3. Connect line sets to the condenser and be sure to lubricate the male fittings with light machine oil before connecting and tightening. Remember, it is normal to hear a slight hiss when connecting. Tighten to 10-12 ft lbs.
4. Before connecting fan plugs together, make sure all debris is cleaned from seal surface on the male plug and make sure female receptacle is clear of any debris. Make sure that wires leaving plugs are allowed to exit straight from plugs, without any hard bends.

**Figure 9: Neat Line Set Installation**

## PART 4: INSTALLING QT CONTROL

When deciding on the best location to mount the Qt Control, consider where it will be most convenient for the driver to use while in the bunk.

The Qt control is an advanced microprocessor system that provides a more comfortable environment and better system protection than a mechanical control. In addition, over 20 programmable functions allow the user to customize the system to suit the specific needs of the environment.

The system consists of the following components:

- **Power Logic Board** - Monitors and controls all functions of the air conditioning unit.
- **Qt Control/Display** - Easy-to-read user interface with a digital readout and LED indicators.
- **Temperature-Sensing Element** - Air temperature is monitored by a temperature-sensing element (TSEP) that plugs into the Power Logic Board.
- **Connecting Cable** - The Control/Display connects to the Power Logic Board with a CXP connecting cable.

**Figure 10: Qt Control/Display**

1. Once you have decided on a location, drill hole for CXP cable.
2. Mount the backing plate provided with the control.
3. Run the CXP cord from the switch to CHEB unit and plug into the socket marked Display. You can run cord along duct work if it makes it easier.

**CAUTION**

**To avoid interference, do not route these cables beside HVAC power cords, high-voltage wiring, or antenna wires. Keep cable runs as short as possible to reduce chance of interference.**

4. Plug CXP cord into socket on back of display.
5. Snap display into place on mounting bracket being careful not to crimp the cable.

## PART 5: DUCT AND GRILLE INSTALLATION

When deciding the best locations for supply and return air grilles, keep in mind that cold air falls and hot air rises. Therefore, the supply air grille should be installed high, and the return air grille should be installed low, as close to the CHEB as possible.

Tools required for this step:

- Reciprocating saw
- Machine screws
- Screw & nut drivers
- Drill
- Hole saw 4", 4-1/2", 5", 5-1/4"

### RETURN AIR GRILLE

The return air grille takes air from inside the cab and returns it to the air conditioner. Therefore, this grille should be placed as close as possible to the CHEB unit. See Figure 11.

1. Ensure that the location will have an unobstructed flow from grille to CHEB unit's evaporator coil.
2. Use proper hole and reciprocating saws to cut minimum size hole required for your grille.
3. Attach return air grille with four sheet metal screws. Make sure the vanes are oriented downward. See Figure 11.

**Figure 11: Return Air Grille Installed Near CHEB**



## SUPPLY AIR GRILLES

1. If truck has factory-installed engine-driven air conditioning/heat, you may be able to use an adapter or other means to connect the Dometic air conditioning duct to the existing ductwork. Otherwise, run two or more ducts (depending on system size—use all that are included in your kit) from the unit to the supply air grilles.
2. Cool air falls, so the higher you can mount one of the grilles the better. It is also good to choose an area that's going to be covering the bunk itself.
3. Once locations are decided, use 4" hole saws to cut holes for supply air grilles.
4. Once holes are cut, attach grilles using sheet metal screws.
5. If, due to space constraints, you are doing this part prior to installing the CHEB, you will attach ducting after CHEB mounting is complete. (See "Part 1: Installation of the CHEB" on page 6.)

## INSTALLING OPTIONAL DUCT TOWERS

1. Determine the best locations to mount duct towers. Two on the back wall, or one on back wall and one on side wall is sufficient.
2. If needed, use small hole saws to cut two holes in portion of bunk with mattress removed. Two holes side by side and possibly a short cut between the holes may be required.
3. Once the locations are decided (and holes cut if needed), use a level to ensure the duct towers are vertical.
4. Drill self-tapping screws into duct towers in both grille locations to mount the towers.
5. Ducting will need to be connected to the bottom of the duct tower. In some cases a transition fitting will be used and in some cases the ducting may be connected directly to the tube.
6. Do not run the duct until the CHEB installation is complete.

**Figure 12: Example - Option 1: Connecting two 4" flex ducts and two towers**

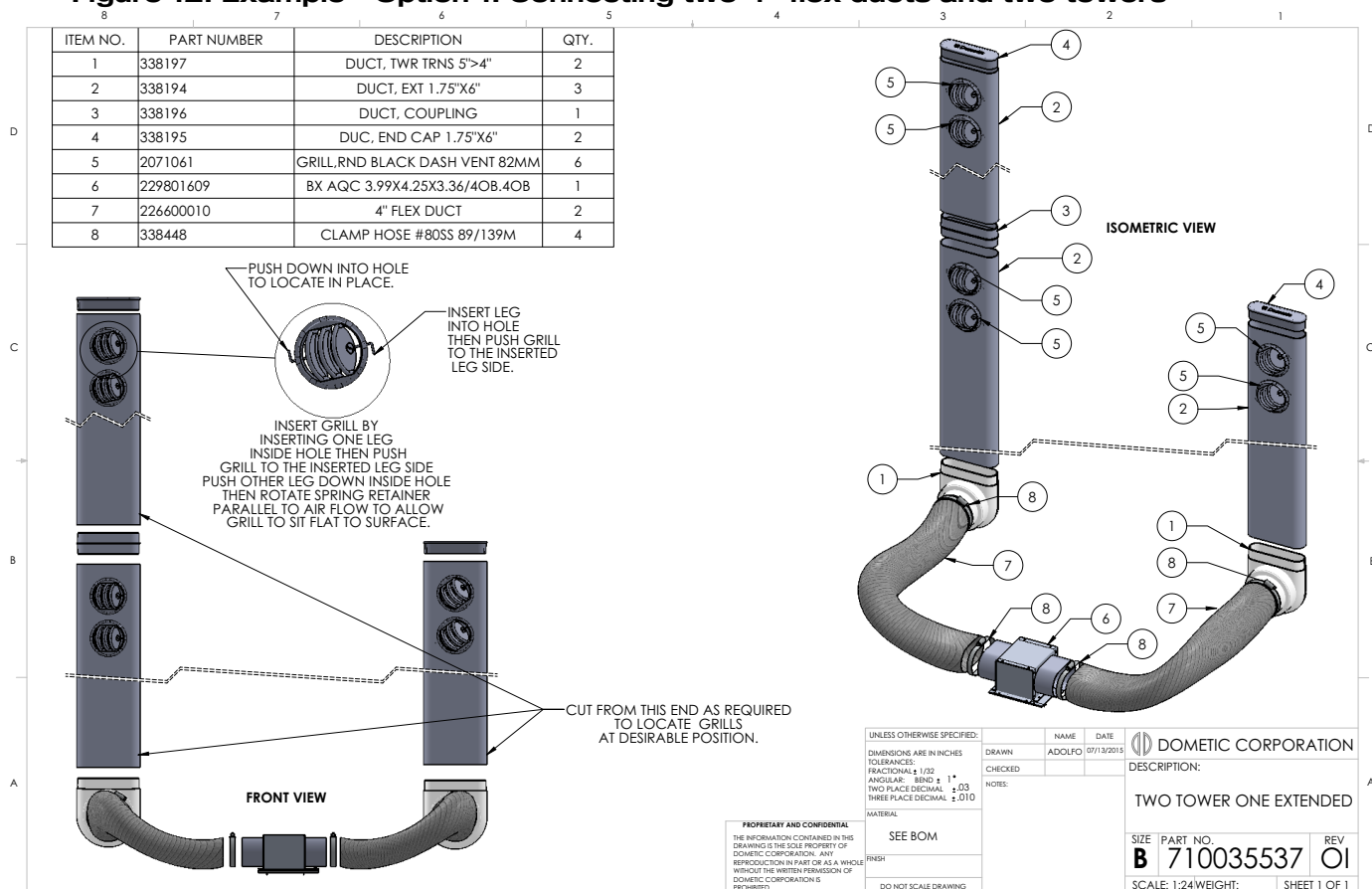
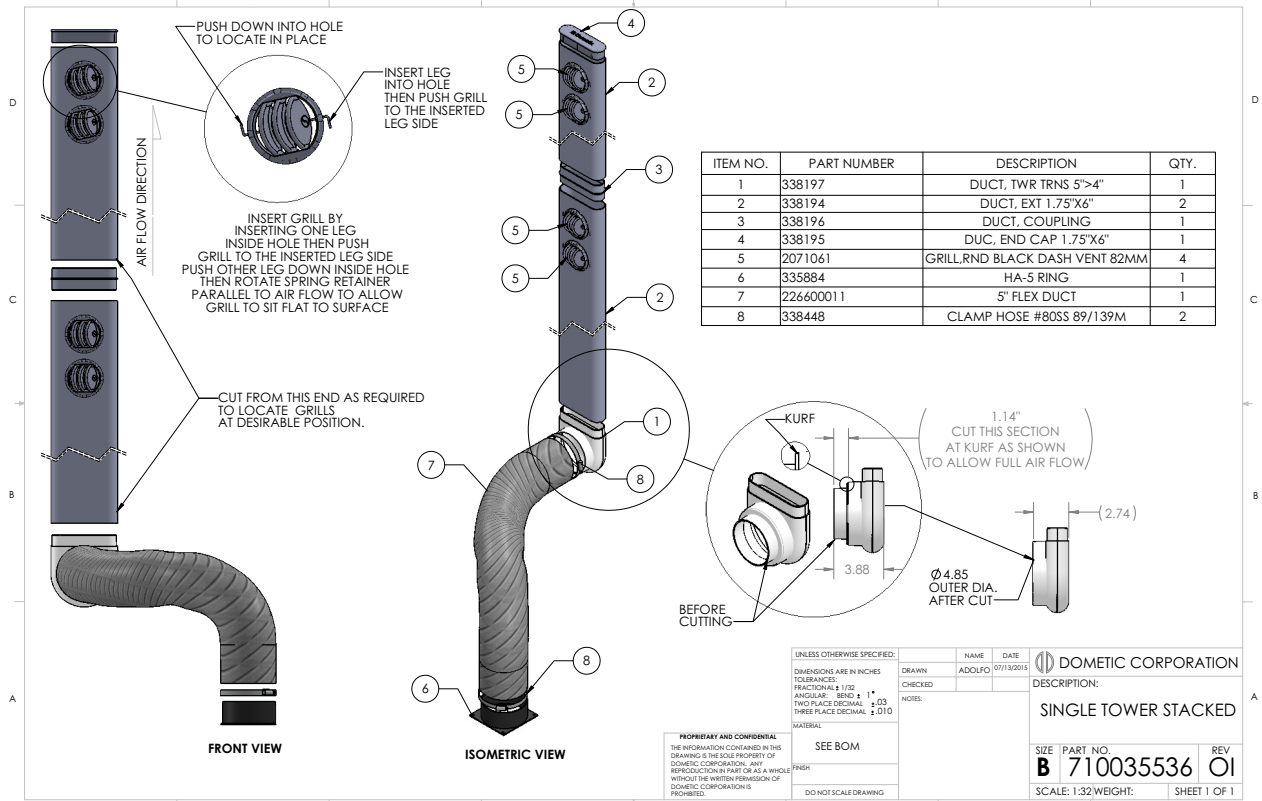




Figure 13: Example - Option 2: Connecting one 5" flex duct and one tower stacked



# OPERATING THE SYSTEM WITH QT CONTROLS

## QT QUICK START

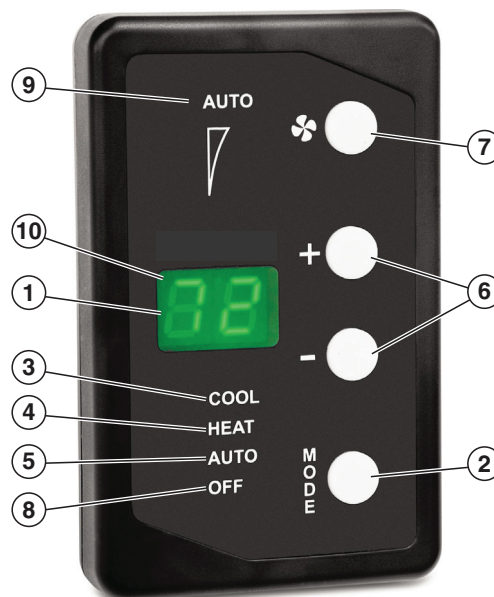
Use the COOL, HEAT or AUTO button to start desired function. To adjust setpoint, push plus (+) or minus (-) button to increase or decrease temperature in single increments or press and hold either button to scroll temperature until desired setpoint is reached. The plus button allows the setpoint to increase and the minus button decreases the setpoint. The fan speed automatically adjusts to the temperature difference between the setpoint and inside temperature, or it can be set manually by pushing the fan button.

The Qt Control/Display is arranged for logical operation. (See Figure 14.)

1. **Data Display** - Large LED readout that provides indication of current setpoint, temperatures, programmed values and fault/error messages.
2. **Mode Key** - Enables user to cycle through the different modes (refer to indicators). The mode sequence begins OFF, COOL, HEAT, AUTO, OFF.
3. **Cool Mode Indicator** - Lights when COOL mode is manually selected or when compressor is on during AUTO mode.
4. **Heat Mode Indicator** - Lights when HEAT mode is manually selected or when heating element is on during AUTO mode.
5. **Auto Indicator** - Lights when system is in automatic changeover mode. It will switch from cooling to heating as needed. Fan speed is automatically selected.
6. **Plus (+) and Minus (-) Keys** - Raises or lowers the setpoint. In programming mode, these keys change function numbers and corresponding values. Press and hold keys for large changes.
7. **Fan Key** - Selects manual fan control. In the OFF mode, pressing this key will start the fan in manual mode.
8. **Off Indicator** - Lights when the system is de-energized (by pressing the MODE key). Data display remains on. Setpoint adjustments, temperature displays and manual fan controls remain active when the system is in the OFF mode.
9. **Fan Speed Indicators** - Row of four small LEDs beside the fan key. The top light indicates the fan is in AUTO mode, the bottom light indicates low fan speed, and the other two lights indicate medium and high speed. When AUTO fan LED is not lit, the fan is in manual mode and fan speed can be adjusted by pressing the fan key.
10. **Cooling or Heating Indicator** - When COOL or HEAT mode is manually selected, the dot in the upper-left corner in the data display will illuminate when the compressor is running in COOL mode or the heater element is running in HEAT mode.

**NOTE:** This indicator does not function during AUTO mode. The compressor and heating element “power up” is indicated by the HEAT and COOL mode indicator lights. See sections 3 and 4 above.

**Figure 14: The Qt Control/Display**



## QT BASIC OPERATION

### POWER ON

When AC power is applied to the system at the circuit breaker, the Qt Control/Display microprocessor performs a self-check and retrieves, from permanent memory, the last operating configuration. This process takes about four seconds, after which the system will begin operating just as it had been when power was last turned off.

**NOTE: These systems have a two-minute compressor restart delay to allow the system refrigerant pressures to equalize before starting. This delay begins when the compressor shuts down for any reason. This delay is increased by the Compressor Time Delay function so that vehicles with multiple units can be set to prevent all units from turning on at the same time if power is lost and restored.**

### SYSTEM OFF

Press the OFF key to turn the system off. Note that the data display remains energized even when the system is off. The fan can be turned on manually when the system is in the OFF mode.

**NOTE: The Qt has built-in protection against sudden power interruptions. The system automatically stores the current operating configuration in permanent memory every time you make changes. (The new operation mode must be in affect for 30 seconds before it is saved into permanent memory.) When AC power is lost, the Qt system retains these settings, and when AC power is restored it resumes operation using the same settings as before.**

### SELECTING SETPOINT

Press either plus (+) or minus (-) key once and the setpoint will be displayed. Press either key once more to change the setpoint. Pressing and holding either key will scroll the setpoint temperature. While in setpoint mode, a dot will appear in the top-middle of the display. After three seconds of no key presses, the new setpoint is applied, the dot disappears in the display and the current internal temperature is shown.

### DISPLAYING TEMPERATURE

When the unit is in any mode such as OFF, HEAT, COOL or AUTO, the display will show the internal temperature. In order to see the internal temperature when the unit is in program mode, press the fan key twice to save existing data and exit program mode.

### COOL MODE

Press the MODE key until the COOL LED lights. Note that the internal temperature must be above the setpoint by approximately three degrees before the compressor is energized and cooling begins. At this point a dot will be illuminated in the upper-left corner of the display indicating the compressor is on. When the internal temperature equals the setpoint the compressor is de-energized and the dot will go off. When the compressor cycles off in any mode, a two-minute compressor delay is initiated. When the compressor is called to run again, it will be delayed for the remaining time left in the two-minute delay and shown on the display.

### HEAT MODE

Press the MODE key until the HEAT LED lights. Note that the internal temperature must be below the setpoint by approximately three degrees before the heat element is energized and heating begins. At this point a dot will be illuminated in the upper-left corner of the display indicating the heating element is on. When the internal temperature equals the setpoint the heating element is de-energized and the dot will go off.

**NOTE: When the system is in AUTO mode, the HEAT LED will illuminate when the heat element is energized. When the heat element is de-energized, the HEAT LED will go off.**

### AUTO MODE

Press the MODE key until the AUTO LED is lit. Note that the COOL or HEAT LED will be lit along with the AUTO LED when the compressor or heating element is energized. If the internal temperature equals the setpoint, only the AUTO LED will be on.

### AUTOMATIC FAN SPEED (INTERNAL AIR FLOW)

The internal fan runs continuously in any mode unless the system is turned off (except in Power Saver mode, see heading "Power Saver Mode").

Fan operation in continuous AUTO mode is automatic (top LED will be lit) and is based on a temperature differential of internal temperature and setpoint.

In COOL mode or AUTO COOL, the fan speed increases one speed for every degree of change of internal temperature above the setpoint. After 3°F above setpoint is obtained, high fan speed is reached. As internal temperature decreases or approaches

setpoint, the fan speed will decrease to medium speed at 2°F above setpoint and low speed at 1°F above setpoint. Upon a further drop in internal temperature, the compressor cycles off and the fan will continue to operate at low speed.

In HEAT mode or AUTO HEAT, the fan increases one speed until 3°F below the setpoint is obtained. At that point the fan will operate at medium speed. As the internal temperature increases or approaches the setpoint, the fan speed will decrease to low speed and stay at that speed. This cycle is continuous using the AUTO function depending on the mode the system is in.

## MANUAL SPEED CONTROL

**OFF mode:** Pressing the fan button will start the blower in speed 1 (low speed, one LED lit, no AUTO fan LED). Subsequent presses of the fan key will move the fan speed up one speed at a time until speed 3 is reached (high speed) and then it will move down one speed at a time until speed 1 is reached. At this time one more press will turn the fan off and no indicators will illuminate. At high speed, three LEDs will be lit, medium speed, two LEDs will be lit and low speed, only the bottom LED will be lit.

**NOTE:** The user cannot return the fan speed to AUTO mode while the control is in OFF mode.

**COOL, HEAT or AUTO mode:** The default is AUTO fan mode (see automatic fan speed section). When fan button is pressed, the fan will go to manual operation at speed 1 (low speed). Subsequent presses of the fan key will move the fan speed up one speed at a time until speed 3 is reached (high speed) and then it will move down one speed at a time until speed 1 is reached. At this time one more press will return fan back to AUTO mode. During HEAT mode operation, if in AUTO fan mode, maximum speed is medium speed. However, if manual fan mode is initiated, then all three speeds are used.

## ADJUSTING DISPLAY BRIGHTNESS

Press the MODE and plus (+) keys simultaneously. Subsequent presses will adjust the LED from a high, medium and low brightness.

## PROGRAMMING QT DIGITAL/CONTROL SYSTEM

Qt Display/Control systems are programmed at the factory for optimum values. The following programming changes are to be made by a trained technician or with the aid of a factory technician.

All programming is done in the OFF mode. While in the OFF mode, enter program mode by pressing the MODE and minus (-) keys simultaneously for three seconds. The display will flash "PO" during those three seconds. After the three-second flash, a flashing 1 will appear in the display. This 1 is function #1. While in program mode, the OFF LED will flash indicating program mode. (See Table 2.)

Scroll through the different function numbers by pressing the plus (+) or minus (-) key. When the correct function number is displayed, press the MODE key to display the current value. Adjust this value by using the plus (+) or minus (-) key.

**NOTE:** Some functions denote values or test operations that cannot be adjusted.

Press the fan key to save information. This action will return the user to the current function number. Continue to change and/or observe values by scrolling as described above or press the fan key again to exit program mode and return to OFF mode. When program mode is exited, the OFF LED stops blinking and remains lit.

## FACTORY MEMORY RESET

This feature can only be used in the OFF mode.

To restore programmed functions to factory settings: Press the plus (+) and minus (-) keys simultaneously for three seconds. During the three seconds, the display will flash "00" and then a 1 will alternate across the screen until the reset is complete.

## FAHRENHEIT/CELSIUS DISPLAY

*Factory Default: Fahrenheit*

While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #2 is displayed. Press the MODE key and the current value is displayed °F or °C. Use the plus (+) or minus (-) key to change the value and then, press fan key twice to save information and exit program mode.

## LOW FAN SPEED ADJUSTMENT

*Factory Default: 38*

The lowest fan speed can be adjusted to suit individual preferences. For instance, the user may wish to decrease the low fan speed setting in the sleeper compartment to minimize fan noise.

**To adjust low fan speed:**

While in OFF mode, enter programming mode by pressing the MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #5 is displayed. Press the MODE key and the current value is displayed. The low fan LED will flash. Factory default is 38. Range is 2 to 57. Use the plus (+) or minus (-) key to change value and then, press the fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

**NOTE: For most efficient operation of your system, you should normally keep the low fan speed at the highest possible setting consistent with a comfortable noise level. Running the fan speed too slow can damage the compressor.**

**Table 2: PROGRAMMABLE FUNCTION CHART**

Programmable Function	Qt Display Indicators	Function #	Factory Setting	Range
Fahrenheit/Celsius	Displays F OFF mode flashes	2	F	°F or °C
Low Fan Speed	Displays 38 OFF mode flashes Low fan speed LED	5	38	2 to 57
High Fan Speed	Displays 60 OFF mode flashes All fan speed LED	6	85	41 to 99
Fan Mode	Displays C OFF mode flashes	7	C	C or I
AC Line Voltage Calibration	Displays last two digits of line voltage OFF mode flashes	8	—	±1%
Temperature Calibration	Displays inside temperature OFF mode flashes	9	—	±1%
Software Version	Displays version # OFF mode flashes	10	n/a	n/a
Software Revision	Displays revision # OFF mode flashes	11	n/a	n/a
High Pressure Switch Test	Displays OA or FA OFF mode flashes and COOL LED flashes (dot in upper-left corner of display is lit if compressor is on)	12	OA=Okay FA=Fault	n/a
LED Test	Displays all LEDs OFF mode flashes	13	Lights all LEDs	n/a
LED Sleep Mode	Displays ON=LEDs or SL=LEDs Dims settings 10 seconds from last key touched	14	ON	ON=Continuous SL=Sleep mode
Power Saver Mode	Displays "___" OFF mode flashes	15	"___" = Normal mode	"___" = Normal mode P1=Power saver mode

## HIGH FAN SPEED ADJUSTMENT

*Factory Default: 85*

The high fan speed adjustment allows the user to set the maximum high-speed voltage to the threshold of the blower high-speed response.

To adjust the high fan speed:

While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #6 is displayed. Press the MODE key and the current value is displayed. All fan speed LEDs will flash. Factory default is 85. Range is 41 to 99. Use the plus (+) or minus (-) key to change the value and then, press fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

## FAN MODE

*Factory Default: Continuous*

You can select the continuous fan operation or instruct the fan to cycle on and off with the system compressor.

*To select continuous or intermittent fan:*

While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #7 is displayed. Press the MODE key and the current value is displayed: C or I. Factory default is C. Use the plus (+) or minus (-) key to change the value to I (intermittent) and then, press fan key once to save information and continue programming or press the fan key twice to save and exit programming mode.

**NOTE: For best operation using intermittent fan mode, relocate internal air sensor (thermister) from the return air duct to an inside wall to best sense room air temperature. Check with your dealer or call the Dometic Applications Department for more information.**

## AC LINE VOLTAGE CALIBRATION

The Qt Control/Display assembly has a built-in voltmeter that senses AC line voltage. The microprocessor automatically responds to sustain high and low voltages by shutting down the air conditioning system to prevent component damage. At installation, the Qt Control/Display is calibrated to line voltage within +/- 1%.

*Low AC shutdown during COOL mode:* If incoming voltage is  $\leq 104\text{VAC}$  (on a 115VAC system) for greater than three minutes, the system will shut down and "LO/AC" will flash on the display. If incoming voltage is  $\leq 207$  (on a 230VAC system) for greater than three minutes, the system will shut down and "LO/AC" will flash on the display.

*Low AC shutdown during HEAT mode:* If incoming voltage is  $\leq 95\text{VAC}$  (on a 115VAC system) for greater than three minutes, the system will shut down and "LO/AC" will flash on the display. If incoming voltage is  $\leq 200\text{VAC}$  (on a 230VAC system) for greater than three minutes, the system will shut down and "LO/AC" will flash on the display.

*High AC shutdown during COOL or HEAT mode:* If incoming voltage is  $\geq 127\text{VAC}$  (on a 115VAC system) for greater than three minutes, the system will shut down and "HI/AC" will flash on the display. If incoming voltage is  $\geq 246\text{VAC}$  (on a 230VAC system) for greater than three minutes, the system will shut down and "HI/AC" will flash on the display.

## TO CHECK OR CALIBRATE AC LINE VOLTAGE:

Turn off all on-board AC loads including the air conditioning unit and measure the line voltage at the Dometic power electrical box input terminals with an accurate voltmeter. While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in programming mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #8 is displayed. Press the MODE key and the last two digits of the current value are displayed. If voltage is not correct, use the plus (+) or minus (-) key to enter the correct value and then, press the fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

## GENERATOR OUTPUT CALIBRATIONS

In order to perform this check, run unit in COOL mode with the compressor energized. Measure the voltage and frequency at the input terminals inside the Dometic power electrical box. Check the voltage at the Qt Control/Display as stated above. Ensure that the generator's output is 104-127VAC and 57-63 Hz. If not, adjust the generator using the manufacturer's recommendations to within the above given guidelines.

## TEMPERATURE CALIBRATION

Typically, the temperature sensor is within +/- 2 degrees of actual room temperature. To check or calibrate the sensor: turn AC unit off. While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #9 is displayed. Press the MODE key and the temperature value is displayed. Place an accurate thermometer beside the system's thermister and compare the temperatures. If the temperature is not correct, use the plus (+) or minus (-) key to enter the correct value and then, press the fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

## SOFTWARE VERSION AND REVISION NUMBERS

Turn AC unit off. While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #10 is displayed. Press the MODE key and the version # is displayed. Press the fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

To access the revision number, perform the same steps but scroll to function #11.

## LED SLEEP MODE

When in this mode, the LEDs and display dim in brightness 10 seconds after last key is pressed.

The first press of any button to perform an operation will bring the display and indicators to full brightness (additional presses of a button will then change a value). The display LEDs will remain at full brightness until 10 seconds have passed after the last keystroke. To access this mode: Turn the AC unit off. While in OFF mode, enter program mode by pressing MODE and minus (-) key for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function number by pressing the plus (+) or minus (-) key until #14 is displayed. Press the fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

## ANTI-ICE ROUTINE

If at any time during normal operation in the COOL mode, the suction line sensor detects a temperature lower than 34°F, the control will initiate the anti-ice routine. The first step the controller takes is to speed up the evaporator fan. If this does not rectify the situation, then the controller will cycle the compressor. The anti-icing routine will end when the suction line temperature returns to normal, with no intervention needed from the user.

## POWER SAVER MODE

Power Saver mode allows the air conditioning unit to conserve power while operating on an inverter by the following actions:

### Power Saver Mode 1

- The setpoint lowest setting is 68°F.
- The internal blower is set on "intermittent" operation.
- The compressor will cycle off for two minutes every eight minutes (even if the thermostat is calling for continuous cooling).

### Power Saver Mode 2

- The setpoint lowest setting is 70°F.
- The internal blower is set on "intermittent" operation.

The heating cycle temperature is limited to 76°F

To access this mode: Turn AC unit off. While in OFF mode, enter program mode by pressing MODE and minus (-) keys for three seconds. The display will flash "PO" during the three seconds. After the three-second flash, a flashing 1 will appear on the display, which is function #1. While in program mode, the OFF LED will flash, which indicates program mode. Scroll through the function numbers by pressing the plus (+) or minus (-) key until #15 is displayed. Press the fan key once to save information and continue programming or press the fan key twice to save and exit program mode.

## FAULT SHUTDOWNS AND ERROR MESSAGES

When power is lost, the system will begin operating in the previous mode prior to power loss. All program values are retained in a non-volatile memory.

The Qt Control/Display contains built-in safeguards designed to protect the air conditioning system from damaging conditions. If an operational failure occurs, the Qt Control/Display will flash one of the following code messages. Fault or error code displays are cancelled by pressing the MODE key. (See Table 3 and Table 4.)

**NOTE 1: If user selects HEAT or COOL mode, unit will operate and the display will flash “Error Code” until the MODE key is pressed. After the MODE key is pressed, display will show steady “—” until fault is corrected.**

If user selects AUTO mode, unit will shut down until MODE key is pressed. Display will show “—” and unit will run.

**NOTE 2: If an “Error Code” is displayed, the MODE key may be pressed to continue operating the unit until the sensor is repaired. Fault code shutdown must be corrected before operation is allowed to continue.**

**Table 3: FAULT CODE CHART**

FAULT CODE DISPLAY	MODES	COMMENT
“LO” then “AC”	Low voltage shutdown	See AC line voltage calibration section
“HI” then “AC”	High voltage shutdown	See AC line voltage calibration section
“LO” then “FC”	Low frequency shutdown	Incoming frequency < 57 Hz. Adjust power source output frequency to 60 Hz with unit operating in COOL mode.
“HI” then “FC”	High frequency shutdown	Incoming frequency > 63 Hz. Adjust power source output frequency to 60 Hz with unit operating in COOL mode.
“HI” then “PS”	High pressure shutdown (compressor running)	Head pressure above 425 psi during cooling operation. Check to see if condenser fan is operating properly.
“HI” then “—”	High pressure shutdown (compressor off)	High pressure switch or wiring has “failed open” during cooling operation. Replace high pressure switch or check high pressure switch wiring for an “open circuit.”

**Table 4: ERROR CODE CHART**

ERROR CODE DISPLAY	MODES	COMMENT
“IS” then “—”	Internal temperature sensor error	Replace internal temperature sensor with cable. See note 1 above.
“CS” then “—” (ignore during heating mode)	Compressor discharge temperature sensor fail	Replace compressor discharge temperature sensor and cable. See note 1 above.
“—” (steady)	Mode button has been pressed to run unit after an “Error Code.”	Unit running after a sensor failure. See note 2 above.
“LO” then “ES”	Evaporator sensor shutdown	Shutdown due to evaporator icing in COOL mode. Evaporator sensor temperature < 34°F. De-ice the evaporator by running the internal fan only in manual mode.
“ES” then “—”	Evaporator temperature sensor	Failed or shorted evaporator temperature sensor. Replace evaporator temperature sensor and cable. See note 1 above.



# TROUBLESHOOTING

## QT CONTROL/DISPLAY TROUBLESHOOTING GUIDE

Table 5: QT CONTROL/DISPLAY PROBLEMS &amp; SOLUTIONS

PROBLEM	POSSIBLE SOLUTION
Display not on	<ol style="list-style-type: none"> <li>1. Turn circuit breaker on</li> <li>2. Check CXP cable and connections</li> <li>3. Replace Control/Display</li> <li>4. Replace Power Logic Board</li> </ol>
Erratic temperature display	<ol style="list-style-type: none"> <li>1. Perform a Factory Memory Reset</li> <li>2. Check temperature sensor, cable and connection</li> <li>3. Ensure the temperature sensor is installed properly</li> <li>4. Calibrate temperature</li> <li>5. Replace Power Logic Board</li> </ol>
Erratic system operation	<ol style="list-style-type: none"> <li>1. Perform a Factory Memory Reset</li> <li>2. Check CXP cable and connections</li> <li>3. Check temperature sensor, cable and connection</li> <li>4. Replace Control/Display</li> <li>5. Replace Power Logic Board</li> </ol>

**WARNING**

The Power Logic Board operates at 115VAC or 230VAC. Make sure the power is off before removing the cover of the Power Logic Box.

Contact an authorized servicing dealer if the problem continues, or for replacement parts.

## SYSTEM TROUBLESHOOTING GUIDE

**NOTE:** Internal fan (blower) is constantly on (unless in Power Saver mode); if not check all power connections.

**Table 6: SYSTEM PROBLEMS AND SOLUTIONS**

PROBLEM	SOLUTIONS
<b>Unit does not operate at all. Internal fan (blower) is not running.</b>	<ol style="list-style-type: none"> <li>1. If the Qt Control/Display is not on (all LEDs and data display window is dark), follow instructions in the Quick Qt Control/Display Troubleshooting Guide above. <ol style="list-style-type: none"> <li>a. Turn circuit breaker on or reset Qt Control/Display</li> <li>b. Check to ensure that the Qt Control/Display is connected to a Q-Power Logic Board (Qt Control/Display will not function with SMXII logic board)</li> <li>c. Check CXP or TSEP cables and connections</li> <li>d. Replace CXP or TSEP cables</li> <li>e. Replace Qt Control/Display</li> <li>f. Replace Q-Power Logic Board</li> </ol> </li> <li>2. If the Qt Control/Display is on, check the following: <ol style="list-style-type: none"> <li>a. Ensure that the generator is running at the correct frequency</li> <li>b. Check that the batteries are fully charged</li> <li>c. Check that the shorepower (if being used) is connected properly</li> <li>d. Ensure the unit's circuit breaker is ON, and not tripped</li> <li>e. Ensure that the inverter (if equipped) is connected properly and fuse/breaker (DC and/or AC) is not tripped</li> </ol> </li> </ol>
<b>Unit does not operate. Internal fan (blower) is running.</b>	<ol style="list-style-type: none"> <li>1. Check that the Qt Control/Display is not in the OFF mode</li> <li>2. Check the Qt Control/Display for fault/error code and follow Fault/Error Code Troubleshooting Chart</li> <li>3. Check the temperature setpoint to make sure it is sufficient for the unit to operate in AUTO, COOL or HEAT modes</li> </ol>
<b>Unit does not make cold air.</b>	<ol style="list-style-type: none"> <li>1. Check the temperature setpoint to make sure it is sufficient for the unit to cool</li> <li>2. Check the evaporator air filter, clean as needed</li> <li>3. Make sure switch is set to COOL</li> <li>4. Make sure evaporator blower is running by checking for air flow from the grill</li> <li>5. Make sure that the condenser blower is running by checking for air flow under the sleeper</li> <li>6. Check the condenser coil while under the sleeper, clean as needed</li> <li>7. Check the evaporator coil to make sure it is not frozen up (Note that sometimes, during cool outside weather, and a low fan speed, the coil may ice up. Turn the temperature setpoint so that the compressor cuts off and turn the fan to maximum speed. Allow unit to defrost, then resume cooling.)</li> </ol>

PROBLEM	SOLUTIONS
Unit does not make warm air.	<ol style="list-style-type: none"> <li>1. Make sure switch is set to HEAT</li> <li>2. Check the evaporator air filter, clean as needed</li> <li>3. Make sure evaporator blower is running by checking for air flow from the grill</li> <li>4. Manually lower the fan speed, air temperature should warm up</li> </ol>
Unit does not cool or heat sufficiently.	<ol style="list-style-type: none"> <li>1. Change the setpoint of the thermostat as required</li> <li>2. Check evaporator air filter, clean as needed</li> <li>3. Check condenser coil, clean as needed</li> <li>4. Close curtains over windows and between the cab and sleeper</li> <li>5. Call a service technician, do not attempt internal repairs yourself</li> </ol>

## OPTIMIZING PERFORMANCE

### REDUCE HEAT LOAD

To improve the air conditioner's performance on a hot day, you can reduce the heat load by parking in a shaded area, covering the windows with reflective shades to block out direct sunlight and pulling the curtain between the sleeper and cab. Make sure windows and doors are tightly closed and turn off any other heat-producing appliances.

### OPERATION AND MAINTENANCE

**Inspect and clean the air filter** regularly to ensure good air flow across the evaporator coils. You will find the filter in the return air path, either directly behind the grill or in front of the evaporator coil.

**Do not block the air flow** between the return air grill and evaporator coil with pillows, blankets, papers or other objects.

**Check the condensate drain** often to make sure water is draining properly. Make sure the drain fittings do not get clogged. Note that the drain hose under the truck should be tied in a loop so as to form a natural trap. This will help prevent outside air and exhaust discharge from getting inside.

**Inspect and clean any debris** from the condenser coil area of the external condensing unit to ensure good air flow.

**Occasionally check for chafe** on outside wires and refrigerant lines (split systems).

Dometic's Blizzard Turbo is designed so that you should never need to recharge the refrigerant loop under normal circumstances. If the refrigerant level ever needs to be adjusted, federal law requires that it must be done by an EPA-licensed HVAC technician with the proper tools to avoid accidental discharge of any refrigerant gas into the air.

**Table 7: MAINTENANCE FOR COMPONENTS**

COMPONENT	NECESSARY ACTION
Compressor	No maintenance is necessary
Condenser Blower	No maintenance is necessary
Evaporator Blower	No maintenance is necessary
Heater	No maintenance is necessary
Evaporator Filter	Remove and wash with soapy water or blow out with compressed air monthly
Condenser Screen	Clean debris from screen every month during the cooling season
Condenser Coil	Clean with water and soap once yearly to remove any oil or debris
Drain Tubing	Check for obstructions and positioning before the cooling season

## TOTAL SYSTEM CHARGE

### STANDARD LENGTH LINE SET

A typical system consists of a CHEB, a line set, and a condenser. Each of these components come from the factory with a specific amount of refrigerant so that they add up to the correct system charge. Therefore, the installer should not usually add or subtract refrigerant.

But if for some reason the system needs to be recovered and recharged, it's important to know the correct total system charge, and you can find this on the data plate. The data plate indicates two important numbers:

1. First, the data plate tells you how much refrigerant the individual component shipped with. For example, a typical CHEB might indicate a 10 oz charge. That is because the CHEB itself shipped with 10 oz of refrigerant in it.
2. Second, the data plate tells you the nominal total system charge. It assumes you have a 6 ft line set, because that is most common. For example, a typical system charge is 16.5 oz. That is, 10 oz in the CHEB + 3.5 in the condenser + 1.5 in the liquid line + 1.5 in the hot gas line = 16.5 oz. But if your line set is not 6 ft, then the optimum total system charge will be different.

### EXTRA LENGTH LINE SET

For every extra foot of length (over 6 ft) in the liquid line, allow an additional 0.25 oz of refrigerant.

For example, suppose the data plate says 16.5 oz, but your liquid line is 8 ft long. That's 2 ft longer than the standard 6 ft:

$$2 \text{ ft} \times (0.25\text{oz/ft}) = 0.5 \text{ oz.}$$

So for an 8 ft line set, the optimum total system charge is:

$$16.5 \text{ oz} + 0.5 \text{ oz} = 17 \text{ oz.}$$

### SHORTER LENGTH LINE SET

Going the other direction, if your line set is shorter than 6 ft, reduce 0.25 oz of refrigerant for every decreased foot of line set.

For example, if your liquid line is only 3 ft long, which is 3 ft shorter than the standard 6 ft:

$$-3 \text{ ft} \times (0.25\text{oz/ft}) = -0.75 \text{ oz}$$

So for a 3 ft line set, the optimum total system charge is:

$$16.5 - 0.75 \text{ oz} = 15.75 \text{ oz}$$

**Table 8: CHARGE ADJUSTMENTS FOR VARIOUS LENGTHS OF LINE SETS**

TOTAL LENGTH OF LIQUID LINE SET (FT)	TOTAL SYSTEM CHARGE ADJUSTMENT (OZ)
3.3	-0.68 (decrease)
6	0.00 (no change)
8	0.50 (add)
12	1.50 (add)
16	2.50 (add)
26	5.00 (add)

## NOTES

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