



OLIVER
TRAVEL TRAILERS



2020

LEGACY ELITE & LEGACY ELITE II

**STANDARD
FEATURES**

COMPONENT MANUALS

VIEW THIS MANUAL ONLINE AT OLIVERTRAVELTRAILERS.COM



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STANDARD COMPONENT WARRANTY INFORMATION

AirXcel MAXX Fan

AirXcel
3050 N. Saint Francis St., Wichita, KS 67219

Email: rvp_sales@airxcel.com
Phone: 316-832-3468
Warranty: 2-Year Limited



Anderson “No-Sway” Weight Distribution Hitch

Andersen Hitches
3125 North Yellowstone Highway, Idaho Falls, ID 83401-1709

Email: N/A
Phone: 800-635-6106
Warranty: Limited Lifetime



Barker’s VIP 3000 and VIP 3500 Power Jacks

Barker Manufacturing
1125 Watkins Road, Battle Creek, MI 49015

Email: sales@barkermfg.com
Phone: (888) 367-6978
Warranty: 2-Year Extended



Bulldog Collar-Lok Coupler – 7,000 lbs.

Cequent Performance Products, Inc.
47912 Halyard Drive Suite 100, Plymouth, MI 48170

Email: N/A
Phone: 888-521-0510
Warranty: 1-Year



Cooper Tires - Legacy Elite

Cooper Tire & Rubber Company
701 Lima Ave., Findlay, OH 45840

Email: cooperinfo@coopertire.com
Phone: (800) 854-6288
Warranty: 50,000 miles



Conture Microwave

InterCON Marketing
1540 Northgate Blvd., Sarasota, FL 34234

Email: contactus@contoure.com
Phone: (941) 355-4488
Warranty: 1-Year



Dayton Stainless Steel Kitchen Sink

Elkay Headquarters
2222 Camden Court, Oak Brook, IL 60523

Email: CustCare@Elkay.com
Phone: 630-574-8484
Warranty: 1-Year Limited



STANDARD COMPONENT WARRANTY INFORMATION



Dehco Stainless Steel Kitchen Faucet

Dehco Inc.
3601 Charlotte Ave, Elkhart, IN 46517

Email: warranty@dehco.com
Phone: 800-621-2278
Warranty: 1-Year



Dexter Axles and EZ Flex Suspension

Dexter Axle Corporate Headquarters
2900 Industrial Parkway East, Elkhart, IN 46516

Email: N/A
Phone: (574) 295-7888
Warranty: 2-Years



Dometic A/C and Thermostat

Dometic
2320 Industrial Pkwy, Elkhart, IN 46516

Email: customersupportcenter@dometicus.com
Phone: 800-544-4881
Warranty: 2-Year Limited



Dometic 9500 Series Awning

Dometic
2320 Industrial Pkwy, Elkhart, IN 46516

Email: customersupportcenter@dometicus.com
Phone: 800-544-4881
Warranty: 1-Year Limited - Parts, Labor, Freight



Dometic Cooktop

Dometic
2320 Industrial Pkwy, Elkhart, IN 46516

Email: customersupportcenter@dometicus.com
Phone: 800-544-4881
Warranty: 2-Year Limited



Dometic Furnace

Dometic
2320 Industrial Pkwy, Elkhart, IN 46516

Email: customersupportcenter@dometicus.com
Phone: 800-544-4881
Warranty: 2-Year Limited



Dometic Toilet

Dometic
2320 Industrial Pkwy, Elkhart, IN 46516

Email: customersupportcenter@dometicus.com
Phone: 800-544-4881
Warranty: 2-Year Limited





STANDARD COMPONENT WARRANTY INFORMATION

Dura Faucet Bathroom Faucet/Shower Head

Dura Faucet
91215 SE 34th St., Suite 106-382, Camas, WA 98607

Email: customerservice@durafaucet.com
Phone: 888-242-5932
Warranty: 1-Year Limited



High Pointe Microwave

Collins & Company
17880 Commerce Drive, Bristol, IN 46507

Phone: (574) 848-1118
Warranty: 1-Year



ITC RV Fontana Exterior Shower

ITC Global Headquarters
230 East Lakewood Blvd., Holland, Michigan 49424

Email: sales@itc-us.com
Phone: 616-396-1355
Warranty: 1-Year



Jensen Speakers

ASA Electronics
2602 Marina Drive, Elkhart, IN 46514

Email: inquiry@asaelectronics.com
Phone: 877-305-0445
Warranty: 1-Year



Jensen Stereo JWM 40

ASA Electronics
2602 Marina Drive, Elkhart, IN 46514

Email: inquiry@asaelectronics.com
Phone: 877-305-0445
Warranty: 1-Year



Jensen TV JTV24DC

ASA Electronics
2602 Marina Drive, Elkhart, IN 46514

Email: inquiry@asaelectronics.com
Phone: 877-305-0445
Warranty: 1-Year



Norcold Refrigerator

Thetford Corp
7101 Jackson Road, Ann Arbor, MI 48103

Email: N/A
Phone: 800-543-1219
Warranty: 1-Year Limited



STANDARD COMPONENT WARRANTY INFORMATION



Powertron Deep Cycle 12V

Trojan Battery Sales
11301 47th Street, Clearwater, FL 33762

Email: sales@trojanbatterysales.com
Phone: 800-282-3750
Warranty: Powertron Deep Cycle 2-Year / Trojan AGM 1-Year



Progressive Dynamics Converter/Power Center

Progressive Dynamics, Inc.
507 Industrial Road, Marshall, MI 49068

Email: PDIWEST1@aol.com
Phone: 269-781-4241
Warranty: 2-Years



Progressive Industries EMS-HW30C Surge Protector

Progressive Industries, Inc.
1020 Goodworth Dr., Apex, NC 27539

Email: sales@progressiveindustries.net
Phone: 919-462-8280
Warranty: Limited Lifetime



Shurflo 4008 RV Revolution By-Pass Pump

SHURFLO® East
52748 Park Six Court, Elkhart, IN 46514

Email: customer_service@SHURFLO.com
Phone: 800-854-3218
Warranty: 1-Year



Sterling Stainless Steel Bathroom Sink

Sterling Plumbing
444 Highland Drive, Kohler, WI 53044

Email: N/A
Phone: 1-800-STERLING
Warranty: 1-Year Limited



Suburban Water Heater

Suburban Manufacturing Co.
676 Broadway Street, Dayton, TN 37321

Email: N/A
Phone: 423-775-2131 Ext. 7107
Warranty: 2-Year Limited



VanAir Ventline Bathroom Exhaust Fan

Ventline
902 South Division St., Bristol, IN 46507

Email: N/A
Phone: (574) 848-4491
Warranty: 1-Year





BARKER STABILIZATION JACK (TONGUE)

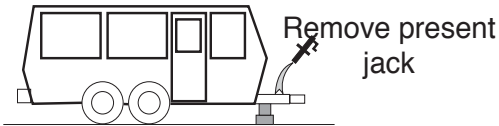
VIP 3000 POWER JACK OWNER'S INSTRUCTIONS P/N 30826(WHITE) OR P/N 31696, 31837 (BLACK)

H&H Engineering VIP 3,000 Power Jack is designed to lift up to 3,000 pounds a full 18". It's design also includes a night light, a build in leveling device, attached foot plate, and an emergency crank handle. An important part of owning and using VIP Jack is being sure it is properly installed and serviced.

GENERAL SAFETY:

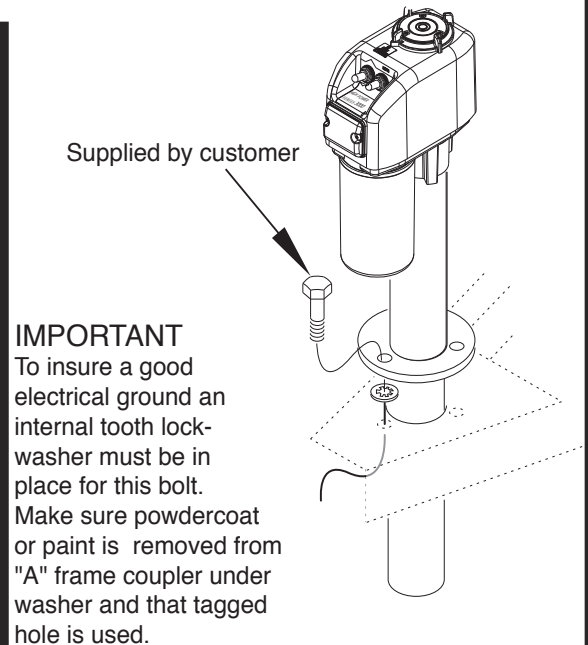
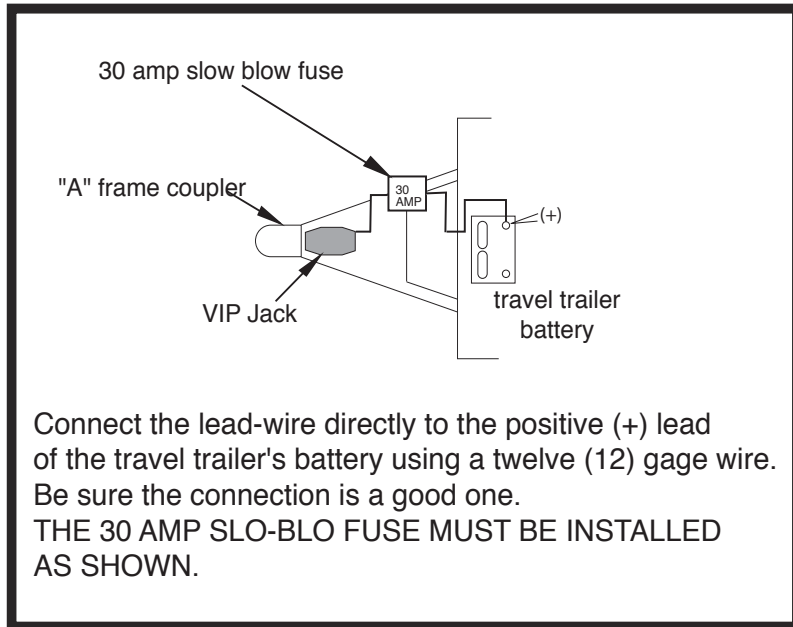
Read and understand the Jack installation instructions. Always block trailer wheel when using the jack. Remove jewelry (watches, rings, etc.)

BEFORE INSTALLATION:



Raise your travel trailer's front end and place blocks or stabilizing jacks under the front "A" frame. Lower the trailer until it rests securely on stabilizing jacks or blocks. Retract present jack and remove.

INSTALLATION: Install Jack in hole and secure with 3 bolts & 3 internal tooth lockwashers (bolt holes are threaded)
Attach the foot plate to VIP Jack with .50-20 bolt and .50" lockwasher



IMPORTANT NOTICE:

If it is necessary to change the position of the powerhead relative to the post and flange (in order to provide clearance between powerhead and LP gas bottle or LP gas cover, or more clearance between the lift gate and the powerhead) loosen set screws and rotate head without lifting off coupling. Retighten set screws when head is in desired position.

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REV. LETTER: E	ECN#: 13855	APPROVED:



VIP 3000 POWER JACK OWNER'S INSTRUCTIONS

P/N 30826(WHITE) OR P/N 31696, 31837 (BLACK)

OPERATION (ELECTRIC)

REMEMBER TO KEEP HANDS AND FEET FROM UNDER THE FOOT PLATE WHEN USING POWER JACK.

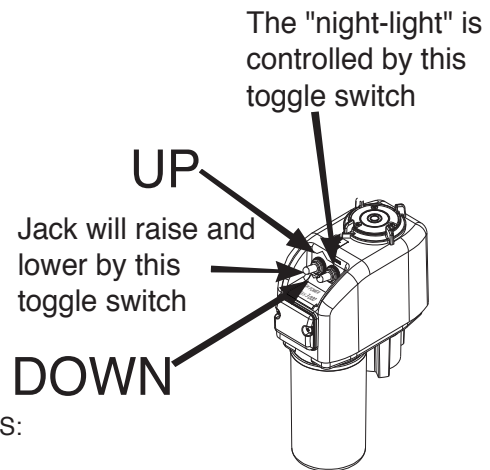
When VIP JACK reaches the end of it's travel (either raising or lowering) the internal clutch activates. Dolly wheels are not recommended.



Warning

AVOID THE RISK OF INJURY OR DEATH TO YOURSELF AND OTHERS:

- USE THE JACK FOR LIFTING THE TRAVEL TRAILER ONLY.
- NEVER GET BENEATH THE TRAILER WHEN IT IS SUPPORTED BY THE JACK.
- SUPPORT THE VEHICLE WITH THE APPROPRIATE MEANS.

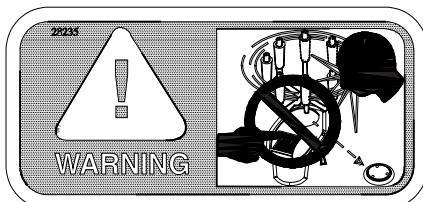
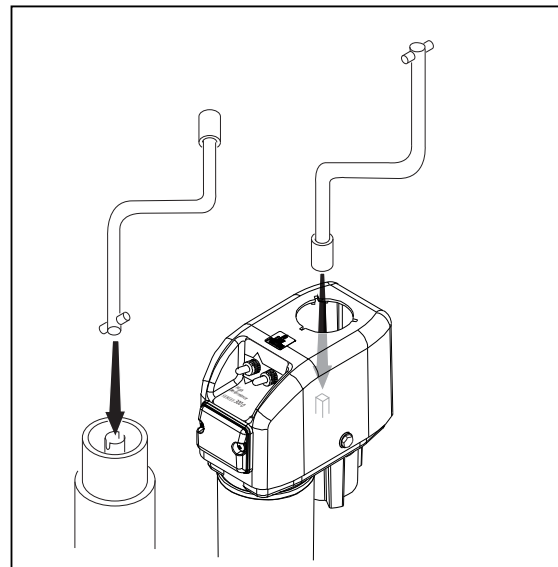


OPERATION (MANUALLY):

If an electrical failure should occur the emergency handle may be inserted into the jack post and the jack can be raised or lowered.

(Access can be obtained by twisting cap off.)

If the powerhead is removed crank can still be used to raise and lower jack.

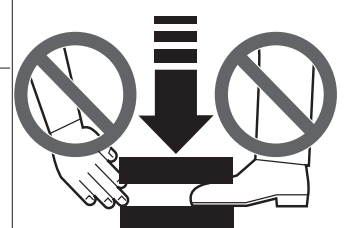


WARNING!!!

Do not use toggle switch with crank handle in place. Breaking this rule will cause serious injury or death.

WARNING

Don't risk serious injury or death in a shearing or squeezing accident. Keep body, hands, and feet away.



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■ REMEMBER TO KEEP HANDS AND FEET OUT FROM UNDER THE FOOT PLATE WHEN USING THE POWER JACK!!

■ DOLLY WHEELS ARE NOT RECOMMENDED.

BREAKING THESE RULES WILL CAUSE SERIOUS INJURY OR DEATH.



DIVISION OF BARKER MFG. CO.
730 E. MICHIGAN AVE. / P.O. BOX 460
BATTLE CREEK MI 49016 / (269) 965-2371

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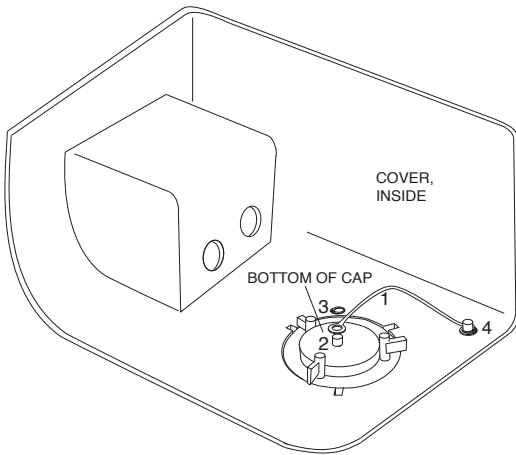
VIP 3000 POWER JACK OWNER'S INSTRUCTIONS

P/N 30826(WHITE) OR P/N 31696, 31837 (BLACK)

STRAP ATTACHMENT:

1. Press strap (1) onto the stud (2) at the bottom of the cap.
2. Press the retaining ring (3) on stud (2) snug it down against the strap (1).
3. Repeat this process (4) on the stud found on the inside of the cover.

THIS WILL SECURE YOUR CAP.



MAINTENANCE:

Once a year, the powerhead should be removed and a liberal amount of grease (preferably a grease with high melting point) applied directly to the coupling on which the drive pin rests.

DO NOT POUR OIL into top of the jack post.

Once a year, the housing cover should be removed and the gears inspected for proper lubrication.

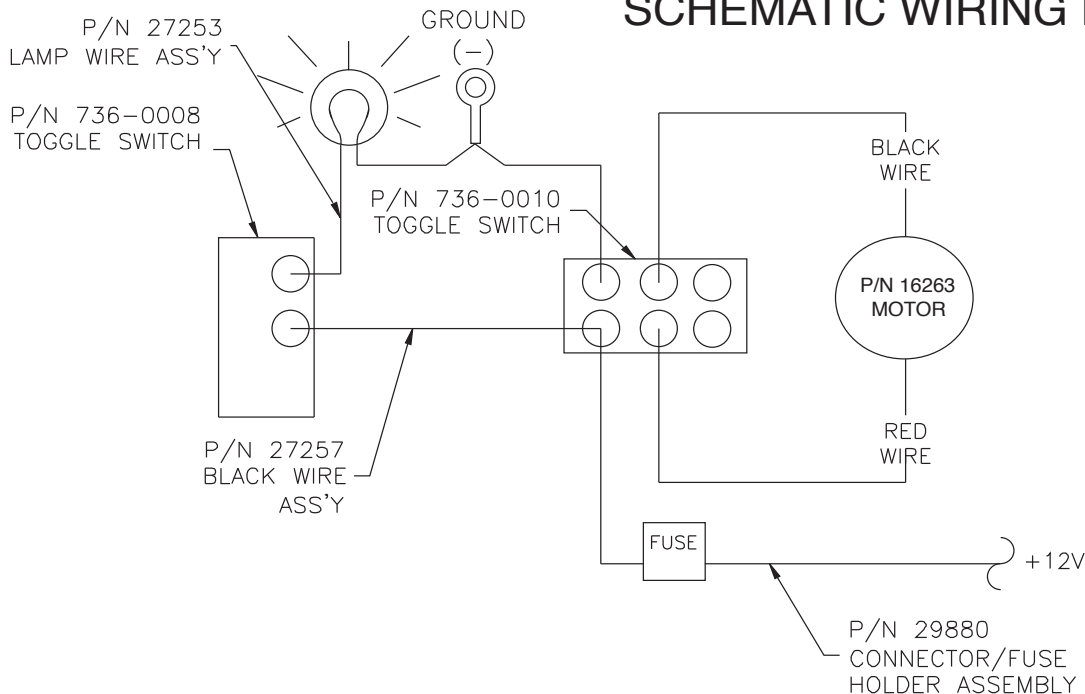
Remove 4 screws and tap around edge of housing to free cover.

DO NOT insert screw driver blade! (This may damage mating surfaces.)

Before replacing cover, clean mating surfaces.

If lubrication is needed, use Mobilith 460 grease or equivalent.

SCHEMATIC WIRING DIAGRAM



H&H ENGINEERING

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Bulldog Collar-Lok™ Couplers

Read, Understand, Follow and Save These Instructions

Read, understand and follow all of these instructions and warnings (Instructions) before installing and using this product. Install and use this product only as specified in these instructions. Improper installation or use of this product may result in property damage, serious injury, and/or death. Never allow installation or use of this product by anyone without providing them with these instructions. You must read, understand and follow all instructions and warnings for any product(s) to which this product is used in conjunction with or installed. Save these instructions with the product for use as a reference for any future installation and use of the product.

⚠ WARNING Failure to follow these warnings and instructions may result in property damage, serious bodily injury, and/or death.

- Purchaser/owner must ensure that product is installed according to these instructions.
- Purchaser/owner must not alter or modify product.
- Operator and bystanders should never position any part of body under any portion of this product or the load being supported.
- Do not allow children to play on or around this product or the load being supported.
- Weigh your trailer plus added load. Do not exceed lesser of mounting bracket, coupler, hitch, vehicle, ball, or trailer weight ratings (including load).
- Never exceed maximum rated capacity. Refer to stamped markings or decals on product to obtain rated capacity. If uncertain, contact Cequent Performance Products at 1-800-632-3290 or www.cequentgroup.com
- Use only the proper ball for this coupler as indicated on the coupler body. If uncertain, contact Cequent Performance Products at 1-800-632-3290 or www.cequentgroup.com
- Always secure load, vehicle and trailer (by blocking wheels) before latching/unlatching coupler.
- Use caution when uncoupling as tongue may rise suddenly due to negative tongue load.
- After installing channel and/or coupler, if coupler operation has been impaired in any way, do not use it.
- Keep the ball pocket and mechanism clean. When parking or storing your trailer, keep the coupler off the ground so dirt and/or other foreign material will not build up in the coupler ball pocket.
- Do not tow if ball is not fully seated and/or coupler is not closed.
- All welding must be performed by a AWS certified welder.
- This product rated according to SAE J684.

Before Towing:

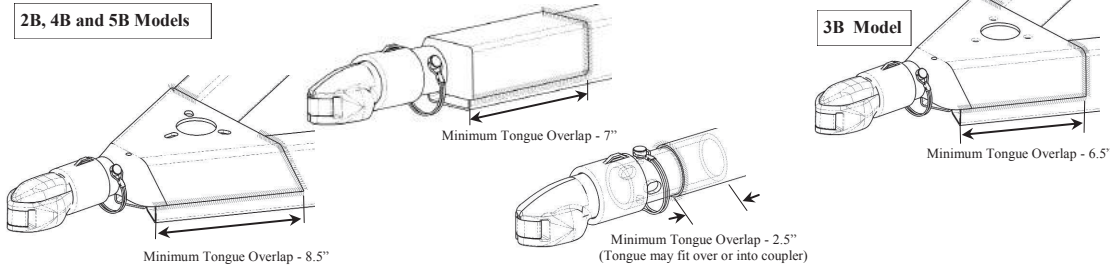
- Check vehicle, channel, hitch, hitch ball and coupler for signs of wear or damage and that the coupler handle opens and closes freely. If coupler and/or channel is deformed or damaged, replace complete coupler and bracket.
- Always replace bent, broken, or worn parts before using this product.
- Check that the hitch ball is fully seated in the coupler ball pocket, close coupler and insert pin behind the collar or through the latch.
- Check channel hardware for wear and proper tightness. Replace bent, broken, or worn hardware. Tighten hardware to appropriate SAE proofload specifications (See table specs). Use only grade 5 hardware.
- Make sure that the trailer safety chains are properly connected to the towing vehicle and trailer according to SAE J684.
- Make sure that all trailer lighting is hooked up and working properly.

Coupler Installation Warning: Failure to follow all installation instructions could result in coupler failure.

Before mounting the coupler confirm that there will be no interference from the tow vehicle, tongue, ground, and any other mounted accessories while stationary or in motion. Before installing, check for interference in open and closed positions. Check for interference again after installation is complete. All welding must be performed by an AWS certified welder. The coupler must be rigidly attached to the trailer in order for the coupler to support its maximum rated load according to SAE J684. After installation, check to make sure that coupler operation has not been impaired in any way. Do not use coupler if its operation has been impaired.

Weld-on Instructions:

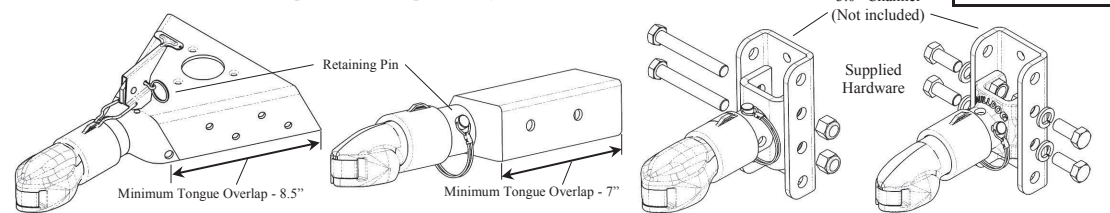
- All welding must be performed by an AWS certified welder.
- Assure the coupler internal stop is butted against the end of the trailer tongue for maximum overlap.
- If using a weld-on coupler, weld 3/16" around the interface between coupler and tongue. See illustrations below. No undercut or washout while welding.



Bolt-on Instructions:

- Assure that the coupler internal stop is butted against the end of trailer tongue for maximum overlap before securing.
- Torque grade 5 bolts with locknuts to appropriate SAE proof load specifications (See table specs). No deformation of trailer tongue end allowed.
- The number and size of fasteners required must be specified by the trailer manufacturer.

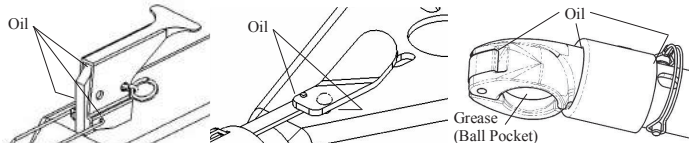
Torque Specs	
Ø 3/8"	- 23 ft.lbs.
Ø 1/2"	- 55 ft. lbs.
Ø 5/8"	- 110 ft. lbs.



Maintenance

Keep ball pocket and mechanism clean. The following procedures should be performed at least annually:

- Check welds and mounting bolt torque.
- Grease ball pocket.
- Oil pivot points with SAE 30 wt. motor oil.
- Inspect retaining pins and replace if necessary.

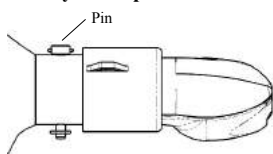




BULLDOG COUPLER

Operation

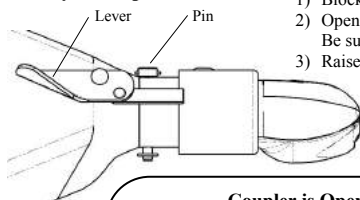
M-Style Coupler



To Couple:

- 1) Block trailer wheels.
- 2) Align hitch ball beneath coupler.
- 3) If the coupler is closed, open it by removing the pin behind the collar and sliding the collar away from the ball pocket. Be sure the coupler cap is open and holds the collar back.
- 4) Lower the trailer onto the hitch ball.
- 5) Visually check that the hitch ball is fully seated in the coupler.
- 6) After the hitch ball is seated in the coupler, carefully close the coupler cap. Be sure the collar springs toward the ball pocket and captures the coupler cap.
- 7) Reinsert the pin behind the collar. Do not tow without pin in place.
- 8) Always secure safety chains to vehicle before towing according to SAE J684.

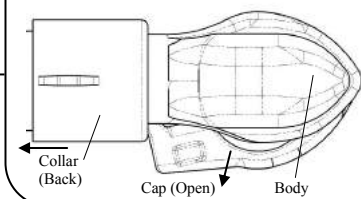
L-Style Coupler



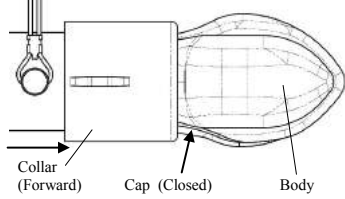
To Uncouple:

- 1) Block trailer wheels.
- 2) Open the coupler by removing the pin behind the collar and sliding the collar away from the ball pocket. Be sure the coupler cap is open and holds the collar back.
- 3) Raise the trailer from the hitch ball.

Coupler is Open Cap is Open



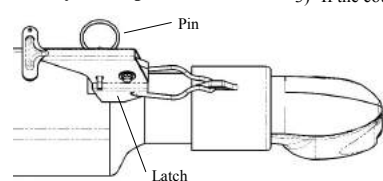
Coupler is Closed Collar is Capturing Cap



To Couple:

- 1) Block trailer wheels.
- 2) Align hitch ball beneath coupler.
- 3) If the coupler is closed, open it by removing the pin in the latch and lifting the latch. Be sure the coupler cap is open and holds the collar back.
- 4) Lower the trailer onto the hitch ball.
- 5) Visually check that the hitch ball is fully seated in the coupler.
- 6) After the hitch ball is seated in the coupler, carefully close the coupler cap and lower the latch. Be sure the collar springs toward the ball pocket and captures the coupler cap.
- 7) Reinsert the pin in the latch. Do not tow without pin in place.
- 8) Always secure safety chains to vehicle before towing according to SAE J684.

H-Style Coupler



To Uncouple:

- 1) Block trailer wheels.
- 2) Open the coupler by removing the pin in the latch and lifting the latch. Be sure the coupler cap is open and holds the collar back.
- 3) Raise the trailer from the hitch ball.

How to Order

Use only Cequent Performance Products' parts or parts of equal quality for repair. Replacement parts are available through Cequent Performance Products' Customer Service Department, 1-800-632-3290. Please specify product model number.

Limited Five Year Warranty

Limited Warranty. Cequent Performance Products, Inc. ("We" or "Us") warrants to the original consumer purchaser only ("You") that the product will be free from material defects in both material and workmanship for a period of five years, ordinary wear and tear excepted; provided that installation and use of the product is in accordance with product instructions. There are no other warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose. If the product does not comply with this limited 5 year warranty, Your sole and exclusive remedy is that We will replace the product without charge to You and within a reasonable time or, at our option, refund the purchase price. This warranty is not transferable.

Limitations on the Warranty. This limited warranty does not cover: (a) normal wear and tear; (b) damage through abuse, neglect, misuse, or as a result of any accident or in any other manner; (c) damage from misapplication, overloading, or improper installation, including welds; (d) improper maintenance and repair; and (e) product alteration in any manner by anyone other than Us, with the sole exception of alterations made pursuant to product instructions and in a workmanlike manner.

Obligations of Purchaser. To make a warranty claim, contact Us at 47912 Halyard Dr. Suite 100, Plymouth, MI 48170, 1-800-632-3290, identify the product by model number, and follow the claim instructions that will be provided. Any returned product that is replaced or refunded by Us becomes our property. You will be responsible for return shipping costs. Please retain your purchase receipt to verify date of purchase and that You are the original consumer purchaser. The product and the purchase receipt must be provided to Us in order to process Your warranty claim.

Remedy Limits. Repair or replacement is Your sole remedy under this limited warranty or any other warranty related to the product. We shall not be liable for service or labor charges incurred in removing or replacing a product or any incidental or consequential damages of any kind.

Assumption of Risk. You acknowledge and agree that any use of the product for any purpose other than the specified use(s) stated in the product instructions is at Your own risk.

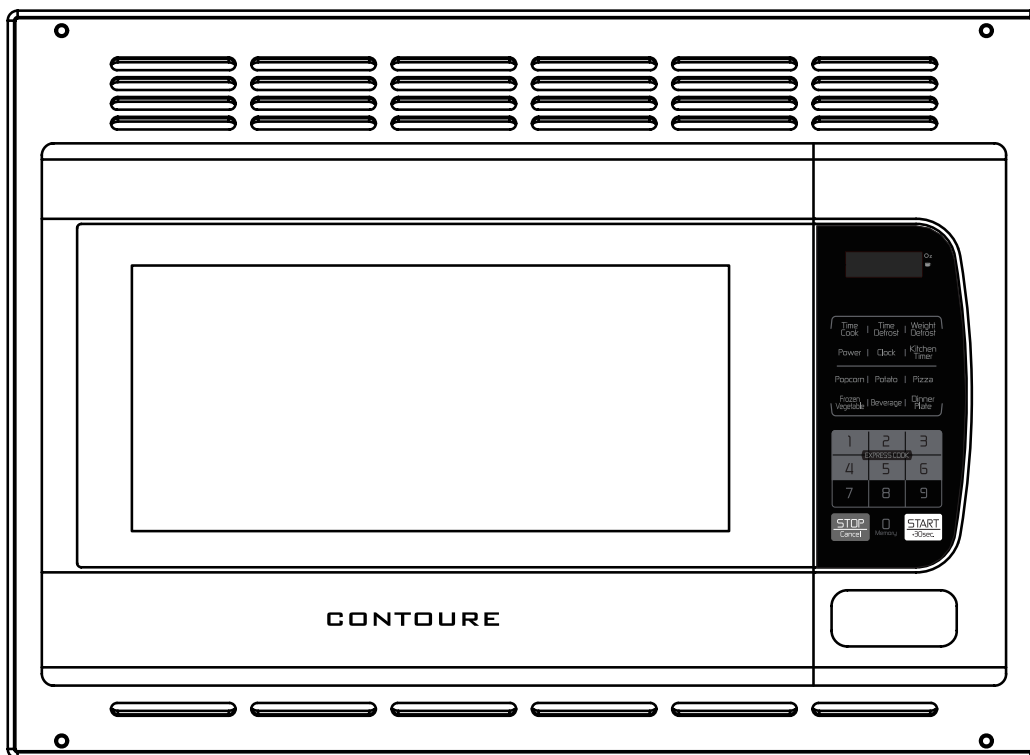
Governing Law. This limited warranty gives You specific legal rights, and You also may have other rights which vary from state to state. This limited warranty is governed by the laws of the State of Michigan, without regard to rules pertaining to conflicts of law. The state courts located in Oakland County, Michigan shall have exclusive jurisdiction for any disputes relating to this warranty.



CONTOURE™

SPACE SAVER APPLIANCES

1.0 Cu.Ft Stainless Steel Built-in Microwave Oven Deluxe EasyClean interior



Model:RV-950S

Read these instructions carefully before using your microwave oven, and keep it carefully.

If you follow the instructions, your oven will provide you with many years of good service.



PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- (a) Do not attempt to operate this oven with the door open since this can result in harmful exposure to microwave energy. It is important not to defeat or tamper with the safety interlocks.
- (b) Do not place any object between the oven front face and the door or allow soil or cleaner residue to accumulate on sealing surfaces.
- (c) Do not operate the oven if it is damaged. It is particularly important that the oven door closes properly and that there is no damage to the:
 - (1) DOOR (bent)
 - (2) HINGES AND LATCHES (broken or loosened)
 - (3) DOOR SEALS AND SEALING SURFACE
- (d) The oven should not be adjusted or repaired by anyone except properly qualified service personnel.

Specifications

Model:	RV-950S
Rated Voltage:	120V~ 60Hz
Rated Input Power(Microwave):	1350W
Rated Output Power(Microwave):	900W
Oven Capacity:	1.0 Cu.ft.
Turntable Diameter:	Ø 10.6 inch(270 mm)
External Dimensions:	19.1X13.6X11.5 inch (485mmX346mmX291mm)
Net Weight:	Approx. 27.1 Lbs(12.29 kg)



IMPORTANT SAFETY INSTRUCTIONS

When using electrical appliances basic safety precautions should be followed, including the following:

WARNING - To reduce the risk of burns, electric shock, fire, injury to persons or exposure to excessive microwave energy:

1. Read all instructions before using the appliance.
2. Read and follow the specific: "PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY" found on page 2.
3. This appliance must be grounded. Connect only to properly grounded outlet. See "GROUNDING INSTRUCTIONS" found on page 5.
4. Install or locate this appliance only in accordance with the provided installation instructions.
5. Some products such as whole eggs and sealed containers - for example, closed glass jars - are able to explode and should not be heated in this oven.
6. Use this appliance only for its intended use as described in the manual. Do not use corrosive chemicals or vapors in this appliance. This type of oven is specifically designed to heat, cook or dry food. It is not designed for industrial or laboratory use.
7. As with any appliance, close supervision is necessary when used by children.
8. Do not operate this appliance if it has a damaged cord or plug, if it is not working properly, or if it has been damaged or dropped.
9. This appliance should be serviced only by qualified service personnel. Contact nearest authorized service facility for examination, repair, or adjustment.
10. Do not cover or block any openings on the appliance.
11. Do not store this appliance outdoors. Do not use this product near water - for example, near a kitchen sink, in a wet basement, near a swimming pool, or similar location.
12. Do not immerse cord or plug in water.
13. Keep cord away from heated surface.
14. Do not let cord hang over edge of table or counter.
15. When cleaning surfaces of door and oven that comes together on closing the door, use only mild, nonabrasive soaps, or detergent applied with a sponge or soft cloth.
16. To reduce the risk of fire in the oven cavity:
 - 1). Do not overcook food. Carefully attend appliance when paper, plastic, or other combustible materials are placed inside the oven to facilitate cooking.
 - 2). Remove wire twist-ties from paper or plastic bag before placing bag in oven.
 - 3). If material inside of the oven ignites, keep oven door closed, turn oven off, and disconnect the power cord, or shut off power at the fuse or circuit breaker panel.
 - 4). Do not use the cavity for storage purposes. Do not leave paper products, cooking utensils, or food in the cavity when not in use.
17. Liquids, such as water, coffee, or tea are able to be overheated beyond the boiling point without appearing to be boiling. Visible bubbling or boiling when the container is removed from the microwave oven is not always present.



THIS COULD RESULT IN VERY HOT LIQUID SUDDENLY BOILING OVER WHEN THE CONTAINER IS DISTURBED OR A UTENSIL IS INSERTED INTO THE LIQUID.

To reduce the risk of injury to persons:

- 1) Do not overheat the liquid.
- 2) Stir the liquid both before and halfway through heating it.
- 3) Do not use straight-sided containers with narrow necks.
- 4) After heating, allow the container to stand in the microwave oven for a short time before removing the container.
- 5) Use extreme care when inserting a spoon or other utensil into the container.

SAVE THESE INSTRUCTIONS

GROUNDING INSTRUCTIONS

This appliance must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This appliance is equipped with a cord having a grounding wire with a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded.

WARNING - Improper use of the grounding can result in a risk of electric shock.

Consult a qualified electrician or serviceman if the grounding instructions are not completely understood, or if doubt exists as to whether the appliance is properly grounded. If it is necessary to use an extension cord, use only a 3-wire extension cord that has a 3-blade grounded plug, and 3-slot receptacle that will accept the plug on the appliance. The marked rating of the extension cord shall be equal to or greater than the electrical rating of the appliance.

DANGER - Electric Shock Hazard

Touching some of the internal components can cause serious personal injury or death. Do not disassemble this appliance.

WARNING - Electric Shock Hazard

Improper use of the grounding can result in electric shock. Do not plug into an outlet until appliance is properly installed and grounded.

1. A short power-supply cord is provided to reduce the risks resulting from becoming entangled in or tripping over a longer cord.
2. Longer cord sets or extension cords are available and may be used if care is exercised in their use.
3. If a long cord or extension cord is used:
 - 1) The marked electrical rating of the cord set or extension cord should be at least as great as the electrical rating of the appliance.
 - 2) The extension cord must be a grounding-type 3-wire cord.
 - 3) The longer cord should be arranged so that it will not drape over the counter top or tabletop where it can be pulled on by children or tripped over unintentionally.



RADIO INTERFERENCE

1. Operation of the microwave oven may cause interference to your radio, TV or similar equipment.
2. When there is interference, it may be reduced or eliminated by taking the following measures:
 - 1) Clean door and sealing surface of the oven
 - 2) Reorient the receiving antenna of radio or television.
 - 3) Relocate the microwave oven with respect to the receiver.
 - 4) Move the microwave oven away from the receiver.
 - 5) Plug the microwave oven into a different outlet so that microwave oven and receiver are on different branch circuits.

SAFETY

1. The oven must be on a leveled surface.
2. The turntable and turntable roller rest must be in the oven during cooking. Place the cookware gently on the turntable and handle it carefully to avoid possible breakage.
3. Incorrect use of browning dish may cause the turntable to break.
4. Use only the specified bag size when using Direct Access Popcorn.
5. The oven has several built-in safety switches to ensure that the power remains off when the door is open. Do not tamper with these switches.
6. Do not operate the microwave oven empty. Operating the oven with no food or food that is extremely low in moisture can cause fire, charring or sparking.
7. Do not cook bacon directly on the turntable. Excessive local heating of the turntable may cause the turntable to break.
8. Do not heat baby bottles or baby food in the microwave oven. Uneven heating may occur and could cause physical injury.
9. Do not heat narrow-necked containers, such as syrup bottles.
10. Do not attempt to deep-fry in your microwave oven.
11. Do not attempt home canning in this microwave oven, as it is impossible to be sure all contents of the jar have reached boiling temperature.



12. Do not use this microwave oven for commercial purpose. This microwave oven is made for household use only.
13. To prevent delayed eruptive boiling of hot liquids and beverages or scalding yourself, stir liquid before placing the container in the oven and again halfway through cooking time. Let stand in the oven for a short time and stir again before removing the container.
14. Use carefully when cooking food in the microwave oven to avoid burning due to excessive cooking.
15. When the appliance is operated in the combination mode, children should only use the oven under adult supervision due to the temperatures generated.
16. Failure to maintain the oven in a clean condition could lead to deterioration that could adversely affect the life of the appliance and possibly result in a hazardous situation.

UTENSILS

CAUTION - Personal Injury Hazard

Tightly-closed utensils could explode. Closed containers should be opened and plastic pouches should be pierced before cooking.

See the instructions on "Materials you can use in microwave oven or to be avoided in microwave oven."

There may be certain non-metallic utensils that are not safe to use for microwaving. If in doubt, you can test the utensil in question following the procedure below.

Utensil Test:

1. Fill a microwave-safe container with 1 cup of cold water (250ml) along with the utensil in question.
2. Cook on maximum power for 1 minute.
3. Carefully feel the utensil. If the empty utensil is warm, do not use it for microwave cooking.
4. Do not exceed 1 minute cooking time.



Materials you can use in microwave oven

Utensils	Remarks
Aluminum foil	Shielding only. Small smooth pieces can be used to cover thin parts of meat or poultry to prevent overcooking. Arcing can occur if foil is too close to oven walls. The foil should be at least 1 inch (2.5cm) away from oven walls.
Browning dish	Follow manufacturer* instructions. The bottom of browning dish must be at least 3/16 inch (5mm) above the turntable. Incorrect usage may cause the turntable to break.
Dinnerware	Microwave-safe only. Follow manufacturer's instructions. Do not use cracked or chipped dishes.
Glass jars	Always remove lid. Use only to heat food until just warm. Most glass jars are not heat resistant and may break.
Glassware	Heat-resistant oven glassware only. Make sure there is no metallic trim. Do not use cracked or chipped dishes.
Oven cooking bags	Follow manufacturer* instructions. Do not close with metal tie. Make slits to allow steam to escape.
Paper plates and cups	Use for short*erm cooking/warming only. Do not leave oven unattended while cooking.
Paper towels	Use to cover food for reheating and absorbing fat. Use with supervision for a short-term cooking only.
Parchment paper	Use as a cover to prevent splattering or a wrap for steaming.
Plastic	Microwave-safe only. Follow the manufacturer* instructions. Should be labeled "Microwave Safe". Some plastic containers soften, as the food inside gets hot. "Boiling bags" and tightly closed plastic bags should be slit, pierced or vented as directed by package.
Plastic wrap	Microwave-safe only. Use to cover food during cooking to retain moisture. Do not allow plastic wrap to touch food.
Thermometers	Microwave-safe only (meat and candy thermometers).
Wax paper	Use as a cover to prevent splattering and retain moisture.

Materials to be avoided in microwave oven

Utensils	Remarks
Aluminum tray	May cause arcing. Transfer food into microwave-safe dish.
Food carton with metal handle	May cause arcing. Transfer food into microwave-safe dish.
Metal or metal-trimmed utensils	Metal shields the food from microwave energy. Metal trim may cause arcing.
Metal twist ties	May cause arcing and could cause a fire in the oven.
Paper bags	May cause a fire in the oven.
Plastic foam	Plastic foam may melt or contaminate the liquid inside when exposed to high temperature.



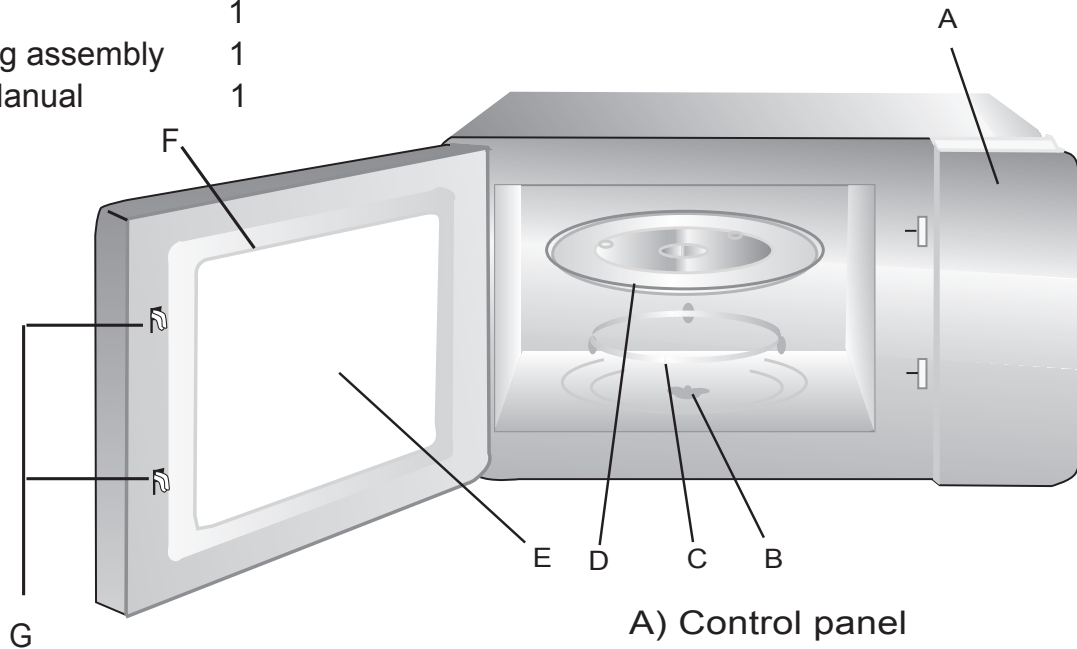
SETTING UP YOUR OVEN

Names of Oven Parts and Accessories

Remove the oven and all materials from the carton and oven cavity.

Your oven comes with the following accessories:

- Glass tray 1
- Turntable ring assembly 1
- Instruction Manual 1



- A) Control panel
- B) Turntable shaft
- C) Turntable ring assembly
- D) Glass tray
- E) Observation window
- F) Door assembly
- G) Safety interlock system

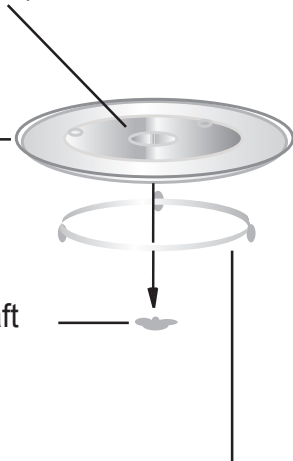
Turntable Installation

Hub (underside)

Glass tray

Turntable shaft

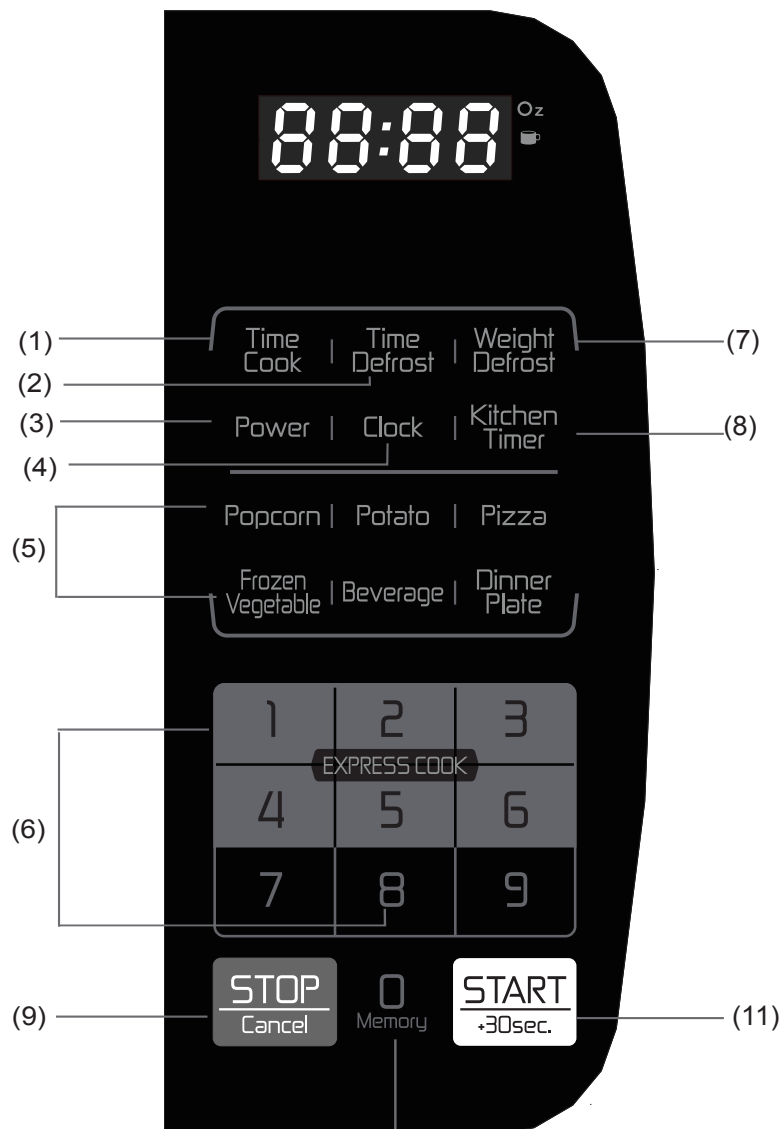
Turntable ring assembly



- a. Never place the glass tray upside down. The glass tray should never be restricted.
- b. Both glass tray and turntable ring assembly must always be used during cooking.
- c. All food and containers of food are always placed on the glass tray for cooking.
- d. If glass tray or turntable ring assembly cracks or breaks, contact your nearest authorized service center.

OPERATION

Control Panel and Features



- (1) Time Cook
- (2) Time Defrost
- (3) Power
- (4) Clock
- (5) Auto menu: Popcorn, Potato, Pizza, Frozen Vegetable, Beverage, Dinner Plate
- (6) Number Buttons: 0-9
- (7) Weight Defrost
- (8) Kitchen Timer function
- (9) Stop/Cancel: clears all previous setting pressed before cooking starts. During cooking: press once to stop oven; twice to stop and clear all entries.

OPERATION

1. Power Level

11 power levels are available.

Level	10	9	8	7	6	5	4	3	2	1	0
Power	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
Display	PL10	PL9	PL8	PL7	PL6	PL5	PL4	PL3	PL2	PL1	PL0

2. Clock Setting

(1) Press " CLOCK ", "00:00" will display.



(2) Press the number keys and enter the current time. For example, time is 10:12 now, please press " 1,0,1,2" .



(3) Press " CLOCK " to finish clock setting. ":" will flash and the clock will be lit.

(4) If the numbers are not within the range of 1:00-12:59, the setting will be invalid until valid numbers are input.

Note: (1) In the process of clock setting, if the " STOP/CANCEL" button is pressed or if there is no operation selected within 1 minute, the oven will go back to the previous setting automatically.

(2) If the clock needs to be reset, repeat steps 1- 3.

3. Kitchen Timer

(1) Press "KITCHEN TIMER ," LED will display "00:00".



(2) Press the number keys and enter the timer time. (The maximum cooking time is 99 minutes and 99 seconds.)

(3) Press " START/+30SEC. " to confirm setting.

(4) When the timer time arrives, the buzzer will beep 5 times.

If the clock is set, the LED will display the current time.

Note: 1) The kitchen timer is a timer and will not display the "Clock".

2) When using the kitchen timer, no program can be set.

4. Microwave Cook

(1) Press "TIME COOK" once, LED will display "00:00".



(2) Press number keys to input the cooking time. The maximum cooking time is 99 minutes and 99 seconds.

(3) Press " POWER " once, LED will display "PL10". The default power is 100% power.

Now you can press number keys to adjust the power level.

(4) Press " START/+30SEC." to start cooking.



Example: to cook the food with 50% microwave power for 15 minutes.

- a. Press "TIME COOK" once. "00:00" displays.
- b. Press "1", "5", "0", "0" in order.
- c. Press "POWER" once, then press "5" to select 50% microwave power.
- d. Press "START/+30SEC." to start cooking.



Note: 1) In the process of setting, if the " STOP/CANCEL" button is pressed or if there is no operation within 1 minute, the oven will go back to the previous setting automatically.

2) If "PL0" is selected, the oven will work with fan without power.

3) During microwave cooking, "POWER" can be pressed to change the power you need.

After pressing "POWER", the current power will light for 3 seconds, now you can press number button to change the power. The oven will work with the selected power for the rest of the cooking time.

5. Speedy Cooking

- (1) If not already cooking, press number pads 1-6 to quickly cook from 1-6 minutes at 100% power. Press " START/+30SEC." to increase the cooking time. The maximum cooking time is 99 minutes and 99 seconds.
- (2) To cook for 30 seconds at 100% power, press "START/+30SEC". Each press on the the same button will increase cooking time by 30 seconds. The maximum cooking cooking time is 99 minutes and 99 seconds.

Note: During microwave cooking and time defrost, time can be added by pressing "START/30SEC." button.

6. Weight Defrost Function

- (1) Press " WEIGHT DEFROST ", LED will display "dEF1".
- (2) Press number buttons to input weight to be defrosted.
Input the weight ranged between 4~100 Oz.
- (3) Press " START/+30SEC. " to start defrosting and the cooking time remaining will be displayed.



Note: If the weight input is not within 4~100 Oz, the input will be invalid.

7. Time Defrost Function

- (1) Press " TIME DEFROST ", LED will display "dEF2".
- (2) Press number pads to input defrosting time. The effective time range is 0:01~99:99.
- (3) The default microwave power is power level 3. If you want to change the power level, press " POWER " once, and the LED will display "PL 3", then press the number pad of the power level you wanted.
- (4) Press " START/+30SEC. " to start defrosting. The remaining cooking time will be displayed.

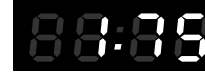




8. POPCORN

a) Press "POPCORN" repeatedly until the package size of your popcorn appears in the display, "1.75", "3.0", "3.5" will display in order.

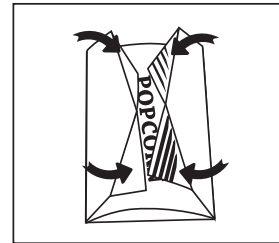
For example, press "POPCORN" once, "1.75" appears.



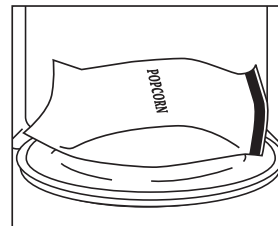
b) Press "START/+30 SEC." to cook, buzzer sounds once. When cooking finishes, buzzer will sound five times.

Important Information About Microwave Popcorn Feature

1. When selecting 3.0-3.5 ounces of popcorn, it is suggested that you fold down a triangle on each corner of the bag before cooking. Refer to the picture at right.



3. If/When the popcorn bag expands and no longer rotates properly, please press "STOP/CANCEL" button once and open the oven door and adjust the bag position to ensure even cooking.



9. POTATO

a) Press "POTATO" repeatedly until the number you wish appears in the display, "1", "2", "3" will display in order.

"1": 1 potato (approximate 8 oz)

"2": 2 potatoes (approximate 16 oz)

"3": 3 potatoes (approximate 24 oz)

For example, press "POTATO" once, "1" appears.



b) Press "START/+30 SEC." to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times.

10. FROZEN VEGETABLE

a) Press "FROZEN VEGETABLE" repeatedly until the package size of your vegetables appears in the display, "4.0", "8.0", "16.0" oz will display in order.

For example, press "FROZEN VEGETABLE" once, "4.0" appears.



b) Press "START/+30 SEC." to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times.



11. BEVERAGE

a) Press " BEVERAGE " repeatedly until the number you wish appears in the display, "1", "2", "3" cup will display in order.

For example, press "BEVERAGE" once, "1" appears.



b) Press "START/+30 SEC." to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times.

12. DINNER PLATE

a) Press " DINNER PLATE " repeatedly until the number you wish appears in the display, "9.0", "12.0", "18.0" oz will display in order.

For example, press "DINNER PLATE" once, "9.0" appears.



b) Press "START/+30 SEC." to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times.

13. PIZZA

a) Press " PIZZA " repeatedly until the weight of your pizza appears in the display, "4.0", "8.0", "14.0" oz will display in order.

For example, press "PIZZA" once, "4.0" appears.



b) Press "START/+30 SEC." to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times.

14. MEMORY FUNCTION

(1) Press "0/MEMORY" to choose memory setting 1-3. The LED will display 1,2,3.

(2) If the setting has been programmed, press " START/+30 SEC." to use it. If not, continue to choose the setting. Only one or two stages can be set.

(3) After finishing the setting, press "START/+30 SEC." once to save the setting.

Press " START/+30 SEC." again, it will start cooking.

Example: to program the following setting as the second memory,

to cook the food with 80% microwave power for 3 minutes and 20 seconds.

The steps are as follows:

a. In waiting state, press "0/MEMORY" twice, the screen displays "2".

b. Press "TIME COOK" once, then press "3", "2", "0" in order.

c. Press "POWER" once, "PL10" displays, then press "8" and "PL8" displays.

d. Press "START/+30 SEC." to save the setting. Buzzer sounds once and the LED will display "2". If you press "START/+30SEC." again, the setting will be saved as memory 2 and it will start cooking.

e. If power is lost, the "0/MEMORY" setting will need to be reprogrammed.

f. If you want to run the saved setting, in waiting state, press "0/MEMORY" twice, screen displays "2", then press "START/+30SEC." to run.



15. Multi-stage Cooking

At most, 2 stages can be set for cooking. In multi-stage cooking, if one stage is defrosting, then defrosting shall be placed at the first stage automatically.

Note: Auto cooking cannot work in the multi-stage cooking.


Example: if you want to cook with 80% microwave power for 5 minutes + 60% microwave power for 10 minutes. The cooking steps are as following:

- (1) Press "TIME COOK" once, then press "5","0","0" to set the cooking time;
- (2) Press "POWER" once, then press "8" to select 80% microwave power.
- (3) Press "TIME COOK" once, then press "1","0","0","0" to set the cooking time;
- (4) Press "POWER" once, then press "6" to select 60% microwave power.
- (5) Press "START/+30 SEC." to start cooking.

16. INQUIRING FUNCTION

- (1) In cooking state, press " CLOCK ", the LED will display clock for three seconds.
- (2) In the microwave or multi-stage cooking, press " POWER " to inquire microwave power level, and the current microwave power will be displayed. After three seconds, the oven will turn back to the previous state.

17. LOCK FUNCTION FOR CHILDREN

Lock: In waiting state, press " STOP/CANCEL " for 3 seconds, there will be a long "beep" denoting the entering into the children-lock state; meanwhile, LED will display " ".

Lock Cancel: In locked state, press " STOP/CANCEL " for 3 seconds, there will be a long "beep" denoting that lock is released.

18. COOKING END REMINDING FUNCTION

When the cooking is over, the buzzer will sound 5 "beep" to alert user the cooking is finished.

19. OTHER SPECIFICATIONS

- (1) In standby state, if the set clock digital tube displays current time, the icon " : " would flash; otherwise, it shows " 0:00 ".
- (2) In setting function state, LED displays corresponding setting.
- (3) In working or pause state, LED displays surplus cooking time.



Maintenance

Troubleshooting

Check your problem by using the chart below and try the solutions for each problem. If the microwave oven still does not work properly, contact the nearest authorized service center.

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Oven will not start	<ul style="list-style-type: none"> a. Electrical cord for oven is not plugged in. b. Door is open. c. Wrong operation is set. 	<ul style="list-style-type: none"> a. Plug into the outlet. b. Close the door and try again. c. Check instructions.
Arcing or sparking	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. The oven is operated when empty. c. Spilled food remains in the cavity. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Do not operate with oven empty. c. Clean cavity with wet towel.
Unevenly cooked foods	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. Food is not defrosted completely. c. Cooking time, power level is not suitable. d. Food is not turned or stirred. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Completely defrost food. c. Use correct cooking time, power level. d. Turn or stir food.
Overcooked foods	Cooking time, power level is not suitable.	Use correct cooking time, power level.
Undercooked foods	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. Food is not defrosted completely. c. Oven ventilation ports are restricted. d. Cooking time, power level is not suitable. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Completely defrost food. c. Check to see that oven ventilation ports are not restricted. d. Use correct cooking time, power level.
Improper defrosting	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. Cooking time, power level is not suitable. c. Food is not turned or stirred. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Use correct cooking time, power level. c. Turn or stir food.



CONTOURE MICROWAVE

CONTOURE™

SPACE SAVER APPLIANCES

CONTOURE Limited Warranty

REGISTER ONLINE. IT'S QUICKY AND EASY! www.ContoureUSA.com

Warranty registration is not mandatory, but doing so will help us to service you more quickly if you need to present a warranty claim. Please go online to complete and return this warranty registration to us.

National Brands LLC. warrants this CONTOURE product ("product") to be free of all defects in material and workmanship for the applicable period specified below commencing from the date of original purchase. This warranty extends to the original buyer only.

Ninety (90) Day Full Warranty: Within ninety (90) days from the date of original purchase, National Brands LLC. in its sole discretion, will either repair or replace, free of charge, any part proving defective in material or workmanship. All warranty repairs and service must be performed at a National brands LLC. location of service by an authorized National brands LLC. technician. All expenses related to replacing or repairing a defective part under this ninety (90) day warranty shall be assumed by National Brands LLC., except the cost of transporting the product to and from National Brands LLC., which shall be assumed by the buyer. If the product is replaced, the replacement will be with a product that is identical or equivalent to the warranted product. If the product cannot be repaired or replaced, National brands LLC. will issue a refund to the buyer for the original purchase price less that amount directly attributable to use by the buyer.

One (1) Year Limited Warranty: After the expiration of the ninety (90) day warranty, and within one (1) year from the date of original purchase, National Brands LLC. will replace any part proving defective in material or workmanship with a product that is identical or equivalent to the warranted part. The buyer shall assume the cost of transporting the defective product to and from National Brands LLC. If the product cannot be replaced, National Brands LLC. will issue a refund to the buyer for the original purchase price less that amount directly attributable to use by the buyer.

Warranty Exclusions: This warranty does not apply to any costs, repairs or services for the following:

- Service calls to correct the installation of the warranty-covered products, to explain the usage of the product to the buyer, or to reset or replace home circuit breakers or fuses
- Repairs necessitated by use other than normal home use
- Damage resulting from misuse, abuse, accidents, alternations, improper installation, fire, flood acts of God or damage caused by the shipping of the product by the buyer to National Brands LLC.
- Corrective work necessitate by repairs made by anyone other than a National Brands LLC. authorized service technician
- Costs incurred for disposing the product at locations other than a National Brands LLC. facility

Hot to Obtain Warranty Service: Upon discovery of any defect, malfunction, or nonconformity in the warranty-covered product, the buyer should visit www.ContoureUSA.com and complete the warranty service request form online.

Notice to Buyer: This warranty gives the buyer specific legal rights, and the buyer may also have other rights which vary from state to state. You have the right to bring any action at law or equity to resolve disputes concerning or to enforce the provisions of this warranty. Every implied warranty, including any statutory warranty or condition of merchantability or fitness for a particular purpose, is disclaimed except to the extent prohibited by law, in which case such warranty or condition is limited to the duration and extent of this written warranty.

Inquiries: If buyer has any questions concerning CONTOURE's product warranty please visit: www.ContoureUSA.com

Thank you again for purchasing your CONTOURE product!



Microwave Oven

INSTRUCTION MANUAL

Model:EM925AQR

PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- (a) Do not attempt to operate this oven with the door open since this can result in harmful exposure to microwave energy. It is important not to break or tamper with the safety interlocks.
- (b) Do not place any object between the oven front face and the door or allow soil or cleaner residue to accumulate on sealing surfaces.
- (c) **Do not operate the oven if it is damaged. It is particularly important that the oven door closes properly and that there is no damage to the:**
 - (1) **DOOR (bent)**
 - (2) **HINGES AND LATCHES (broken or loosened)**
 - (3) **DOOR SEALS AND SEALING SURFACE**
- (d) **The oven should not be adjusted or repaired by anyone except properly qualified service personnel.**

ADDENDUM

If the apparatus is not maintained in a good state of cleanliness, its surface could be degraded and affect the lifespan of the apparatus and lead to a dangerous situation.

Specifications

Model:	EM925AQR
Rated Voltage:	120V~ 60Hz
Rated Input Power(Microwave):	1350W
Rated Output Power(Microwave):	900W
Oven Capacity:	1.0 Cu.ft.
Turntable Diameter:	Ø 10.6 inch
External Dimensions:	19.1X14.8X11.5 inch
Net Weight:	Approx.28.2 Lbs
Warning:	Handling the cord on this press or cords associated with accessories sold with this product, will expose you to lead a chemical known to the state of California to cause cancer, and birth defects or other reproductive harm. Wash hands after handling.



SAFETY

1. The oven must be on a level surface.
2. The turntable and turntable roller rest must be in the oven during cooking. Place the cookware gently on the turntable and handle it carefully to avoid possible breakage.
3. Incorrect use of browning dish may cause the turntable to break.
4. Use only the specified bag size when using Popcorn.
5. The oven has several built-in safety switches to ensure that the power remains off when the door is open. Do not tamper with these switches.
6. Do not operate the microwave oven empty. Operating the oven with no food or food that is extremely low in moisture can cause fire, charring or sparking.
7. Do not cook bacon directly on the turntable. Excessive heating of the turntable may cause the turntable to break.
8. Do not heat baby bottles or baby food in the microwave oven. Uneven heating may occur and could cause physical injury.
9. Do not heat narrow-necked containers, such as syrup bottles.
10. Do not attempt to deep-fry in your microwave oven.
11. Do not attempt home canning in this microwave oven, as it is impossible to be sure all contents of the jar have reached boiling temperature.
12. Do not use this microwave oven for commercial purposes. This microwave oven is made for household use only.
13. To prevent delayed eruptive boiling of hot liquids and beverages or scalding yourself, stir liquid before placing the container in the oven and again halfway through cooking time. Let stand in the oven for a short time and stir again before removing the container.
14. Use carefully when cooking food in the microwave oven to avoid burning due to excessive cooking.
15. Failure to maintain the oven in a clean condition could lead to deterioration that could adversely affect the life of the appliance and possibly result in a hazardous situation.

Radio Interference

1. Operation of the microwave oven may cause interference to your radio, TV or similar equipment.
2. When there is interference, it may be reduced or eliminated by taking the following measures:
 - 1) Clean door and sealing surface of the oven
 - 2) Reorient the receiving antenna of radio or television.
 - 3) Relocate the microwave oven with respect to the receiver.
 - 4) Move the microwave oven away from the receiver.
 - 5) Plug the microwave oven into a different outlet so that microwave oven and receiver are on different branch circuits.



IMPORTANT SAFETY INSTRUCTIONS

WARNING

To reduce the risk of fire, electric shock, injury to persons or exposure to excessive microwave oven energy when using your appliance, follow basic precautions, including the following:

1. Read all instructions before using the appliance.
 2. Read and follow the specific: **"PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY" on page 2.**
 3. As with most cooking appliances, close supervision is necessary to reduce the risk of a fire in the oven cavity.
- If materials inside the oven ignite:**
1. Keep the oven door closed.
 2. Turn the oven off, and unplug the appliance.
 3. Disconnect the power cord, shut off power at the fuse or circuit breaker panel.
 4. Do not overcook food. Carefully attend the appliance when paper, plastic, or other combustible materials are placed inside the oven to facilitate cooking.
 5. Do not use the oven cavity for storage purposes. Do not store combustible items such as bread, cookies, paper products, etc. inside the oven.
 6. Remove wire twist-ties and metal handles from paper or plastic containers/bags before placing them in the oven.
 7. This oven must be grounded. Connect only to properly grounded outlet. See **"GROUNDING INSTRUCTIONS" on page 5.**
 8. Install or locate this oven only in accordance with the installation instructions provided.
 9. Some products such as whole eggs, water with oil or fat, sealed to explode and therefore should not be heated in this oven.
 10. Use this appliance only for its intended uses as described in this manual. Do not use corrosive chemicals or vapors in this appliance. This oven is specifically designed to heat or cook food. It is not designed for industrial or laboratory use.
 11. As with any appliance, close supervision is necessary when used by children.
 12. Do not operate this oven if it has a damaged cord or plug, if it is not working properly or if it has been damaged or dropped.
 13. This appliance should be serviced only by qualified service technicians. Contact the nearest authorized service facility for examination, repair or adjustment.
 14. Do not cover or block any vents on the oven.
 15. Do not store or use this appliance outdoors.
 16. Do not use this oven near water, for example, near a kitchen sink, in a wet basement, near a swimming pool, or similar locations.
 17. Do not immerse cord or plug in water.
 18. Keep cord away from heated surfaces.
 19. Do not let cord hang over edge of table or counter.
 20. When cleaning door and oven surfaces use only mild, nonabrasive soaps or detergents applied with a sponge or soft cloth.



21. Liquids, such as water, coffee, or tea are able to be overheated beyond the boiling point without appearing to be boiling. Visible bubbling or boiling when the container is removed from the microwave oven is not always present. THIS COULD RESULT IN VERY HOT LIQUIDS SUDDENLY BOILING OVER WHEN THE CONTAINER IS DISTURBED OR A SPOON OR OTHER UTENSIL IS INSERTED INTO THE LIQUID.
- i) Do not overheat the liquid.
 - ii) Stir the liquid both before and halfway through heating it.
 - iii) Do not use straight-sided containers with narrow necks.
 - iv) After heating, allow the container to stand in the microwave oven for a short time before removing the container.
 - v) Use extreme care when inserting a spoon or other utensil into the container.

SAVE THESE INSTRUCTIONS To Reduce the Risk of Injury to Persons GROUNDING INSTRUCTIONS

DANGER

Electric Shock Hazard
Touching some of the internal components can cause serious personal injury or death. Do not disassemble this appliance.

WARNING

Electric Shock Hazard
Improper use of the grounding can result in electric shock. Do not plug into an outlet until appliance is properly installed and grounded.

Three-pronged (grounding) plug



This appliance must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This appliance is equipped with a cord having grounding wire with a grounding plug. The plug must be

plugged into an outlet that is properly installed and grounded.

Consult a qualified electrician or serviceman if the grounding instructions are not completely understood or if doubt exists as to whether the appliance is properly grounded. If it is necessary to use an extension cord, use only a 3-wire extension cord that has a 3-pronged grounding plug, and a 3-slot receptacle that will accept the plug on the appliance. The marked rating of the extension cord shall be equal to or greater than the electrical rating of the appliance.

1. A short power-supply cord is provided to reduce the risks resulting from becoming entangled in or tripping over a longer cord.
2. Longer cord sets or extension cord is provided to reduce the risks resulting from becoming entangled in or tripping over a longer cord.
3. If a long cord sets or extension cord is used:
 - 1) The marked electrical rating of the cord set or extension marked electrical rating of the cord set or extension cord should be at least as great as the electrical rating of the appliance.
 - 2) The extension cord must be a grounding-type 3-wire cord.
 - 3) The longer cord should be arranged so that it will not drape over the countertop or tabletop where it can be pulled on by children or tripped over unintentionally.



UTENSILS

See the instructions on "Materials you can use in microwave oven or to be avoided in microwave oven." There may be certain non-metallic utensils that are not safe to use for microwaving. If in doubt, you can test the utensil in question following the procedure below.

CAUTION

Personal Injury Hazard

Tightly-closed utensils could explode. Closed containers should be opened and plastic pouches should be pierced before cooking.

Utensil Test:

1. Fill a microwave-safe container with 1 cup of cold water (250ml) along with the utensil in question.
2. Cook on maximum power for 1 minute.
3. Carefully feel the utensil. If the empty utensil is warm, do not use it for microwave cooking.
4. **Do not exceed 1 minute cooking time.**

Materials you can use in microwave oven

Utensils Remarks

Aluminum foil	Shielding only. Small smooth pieces can be used to cover thin parts of meat or poultry to prevent overcooking. Arcing can occur if foil is too close to oven walls. The foil should be at least 1 inch (2.5cm) away from oven walls.
Browning dish	Follow manufacturer's instructions. The bottom of browning dish must be at least 3/16 inch (5mm) above the turntable. Incorrect usage may cause the turntable to break.
Dinnerware	Microwave-safe only. Follow manufacturer's instructions. Do not use cracked or chipped dishes.
Glass jars	Always remove lid. Use only to heat food until just warm. Most glass jars are not heat resistant and may break.
Glassware	Heat-resistant oven glassware only. Make sure there is no metallic trim. Do not use cracked or chipped dishes.
Oven cooking bags	Follow manufacturer's instructions. Do not close with metal tie. Make slits to allow steam to escape.
Paper plates and cups	Use for short-term cooking/warming only. Do not leave oven unattended while cooking.
Paper towels	Use to cover food for reheating and absorbing fat. Use with supervision for a short-term cooking only.
Parchment paper	Use as a cover to prevent splattering or a wrap for steaming.
Plastic	Microwave-safe only. Follow the manufacturer's instructions. Should be labeled "Microwave Safe". Some plastic containers soften, as the food inside gets hot. "Boiling bags" and tightly closed plastic bags should be slit, pierced or vented as directed by package.
Plastic wrap	Microwave-safe only. Use to cover food during cooking to retain moisture. Do not allow plastic wrap to touch food.
Thermometers	Microwave-safe only (meat and candy thermometers).
Wax paper	Use as a cover to prevent splattering and retain moisture.



Materials to be avoided in microwave oven

Utensils Remarks

Aluminum tray	May cause arcing. Transfer food into microwave-safe dish.
Food carton with metal handle	May cause arcing. Transfer food into microwave-safe dish.
Metal or metal-trimmed utensils	Metal shields the food from microwave energy. Metal trim may cause arcing.
Metal twist ties	May cause arcing and could cause a fire in the oven.
Paper bags	May cause a fire in the oven.
Plastic foam	Plastic foam may melt or contaminate the liquid inside when exposed to high temperature.
Wood	Wood will dry out when used in the microwave oven and may split or crack.

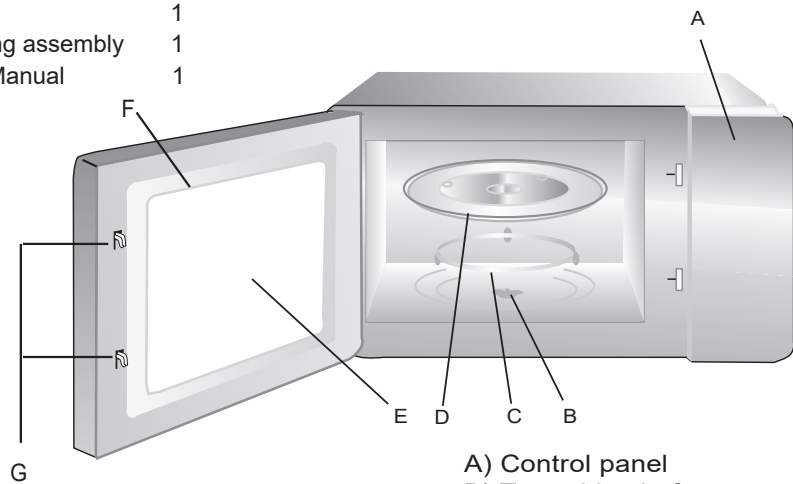
SETTING UP YOUR OVEN

Names of Oven Parts and Accessories

Remove the oven and all materials from the carton and oven cavity.

Your oven comes with the following accessories:

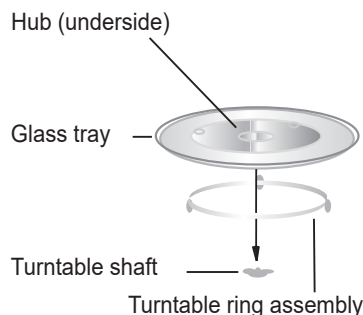
- Glass tray 1
- Turntable ring assembly 1
- Instruction Manual 1



- A) Control panel
- B) Turntable shaft
- C) Turntable ring assembly
- D) Glass tray
- E) Observation window
- F) Door assembly
- G) Safety interlock system



Turntable Installation



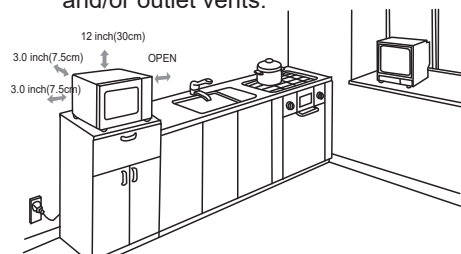
- Never place the glass tray upside down. The glass tray should never be restricted.
- Both glass tray and turntable ring assembly must always be used during cooking.
- All food and containers of food are always placed on the glass tray for cooking.
- If glass tray or turntable ring assembly cracks or breaks, contact your nearest authorized service center.

Countertop Installation

Remove all packing material and accessories. Examine the oven for any damage such as dents or broken door. Do not install if oven is damaged.

Installation

- Select a level surface that provides enough open space for the intake and/or outlet vents.



- Leave a minimum clearance of 12 inches (30cm) above the oven.
- Do not remove the legs from the bottom of the oven.

A minimum clearance of 3.0 inches (7.5cm) is required between the oven and any adjacent walls. One side must be open.

For Built-in kits:

- Model number and brand of built-in kit: KITR2501S, HIGH POINTE
 - MWO model number and brand which employ built-in Kit: EM925AQR, HIGH POINTE
- IMPORTANT: This Built-In Kit is ONLY For Use With HIGH POINTE Microwave Ovens Model EM925AQR Where This Built-In Kit, Model KITR2501S Is Specified On . The Back Of The Unit And In The INSTRUCTION MANUAL.

Cabinet: Remove any protective film found on the microwave oven cabinet surface.

Do not remove the light brown Mica cover that is attached to the oven cavity to protect the magnetron.

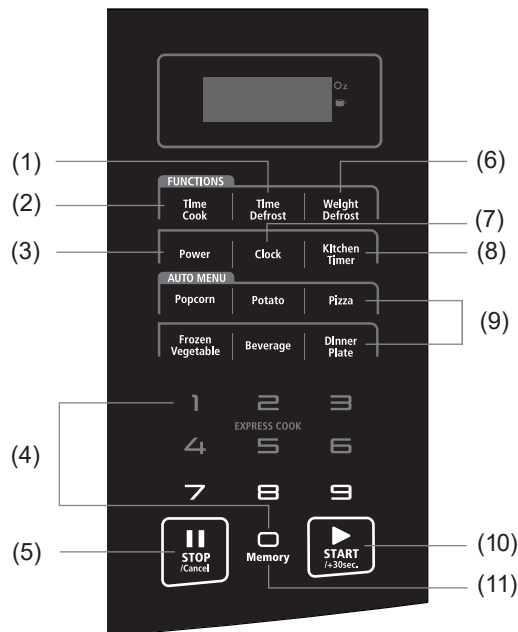
- Blocking the intake and/or outlet openings can damage the oven.
- Place the oven as far away from radios and TV as possible. Operation of microwave oven may cause interference to your radio or TV reception.
- Plug your oven into a standard household outlet. Be sure the voltage and the frequency is the same as the voltage and the frequency on the rating label.

WARNING: Do not install oven over a range cooktop or other heat-producing appliance. Unless using manufactures built-in kit and instructions. If improbably installed near or over a heat source, the oven could be damaged and the warranty would be void.



OPERATION

Control Panel and Features



- (1) **Time Defrost**
- (2) **Time Cook**
- (3) **Power**
- (4) **Number keys**
- (5) **Stop/Cancel:** clears all previous settings pressed before cooking starts. During cooking: press once to stop oven; twice to stop and clear all entries.
- (6) **Weight Defrost**
- (7) **Clock**
- (8) **Kitchen Timer**
- (9) **Auto Menu**
- (10) **Start/ +30SEC.**
- (11) **Memory**



OPERATION

1. Power Level

11 power levels are available.

Level	10	9	8	7	6	5	4	3	2	1	0
Power	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
Display	PL10	PL9	PL8	PL7	PL6	PL5	PL4	PL3	PL2	PL1	PL0

2. Clock Setting

- (1) Press "**CLOCK**" once, "00:00" will display.
- (2) Press the number keys and enter the current time. For example, time is 12:10 now, please press "1, 2, 1, 0" in turn.
- (3) Press "**CLOCK**" to finish clock setting. ":" will flash and the clock will be lighted.
- (4) If the numbers input are not within the range of 1:00--12:59, the setting will be invalid until valid numbers are input.

Note: (1) In the process of clock setting, if the "**STOP/CANCEL**" button is pressed or if there is no operation within 1 minute, the oven will go back to the former setting automatically.

- (2) If the clock need to be reset, please repeat step 1 to step 3.

3. Kitchen Timer

- (1) Press "**KITCHEN TIMER**" once, the screen will display 00:00, the first hour figure flash.
- (2) Press the number keys and enter the timer time. (The maximum cooking time is 99 minutes and 99 seconds.)
- (3) Press "**START/+30SEC.**" to confirm setting.
- (4) When the timer time arrives, the buzzer will ring 5 times.
If the clock has been set (12-hour system), the screen will display the current time.

Note: 1) The kitchen time is different from 12-hour system. Kitchen Timer is a timer.

- 2) During kitchen timer, any program cannot be set.

4. Microwave cook

- (1) Press "**TIME COOK**" once, the screen will display "00:00".
- (2) Press number keys to input the cooking time; the maximum cooking time is 99 minutes and 99 seconds.
- (3) Press "**POWER**" once, the screen will display "PL10". The default power is 100% power.
Now you can press number keys to adjust the power level.
- (4) Press "**START/+30SEC.**" to start cooking.



Example: to cook the food with 50% microwave power for 15 minutes.

- a. Press "**TIME COOK**" once. "00:00" displays.
- b. Press "1", "5", "0", "0" in order.
- c. Press "**POWER**" once, then press "5" to select 50% microwave power.
- d. Press "**START/+30SEC.**" to start cooking.

Note: 1) In the process of setting, if the "**STOP/CANCEL**" button is pressed or if there is no operation within 1 minute, the oven will go back to the former setting automatically.

2) If "PL 0" selected, the oven will work with fan for no power. You can use this level to remove the odour of the oven.

3) During microwave cooking, "**POWER**" can be pressed to change the power you need.

After pressing "**POWER**", the current power flash for 3 seconds, now you can press number button to change the power. The oven will work with the selected power for the rest time.

5. Speedy Cooking

(1) In waiting state, instant cooking at 100% power level can be started by select a cooking time from 1 to 6 minutes by pressing number pads 1 to 6. Press "**START/+30SEC.**" to increase the cooking time; the maximum cooking time is 99 minutes and 99 seconds.

(2) In waiting state, instant cooking at 100% power level with 30 seconds' cooking time can be started by pressing "**START/+30SEC**". Each press on the same button will increase cooking time by 30 seconds. the maximum cooking time is 99 minutes and 99 seconds.

Note: during microwave cooking and time defrost, time can be added by pressing "**START/+30SEC.**" button.

6. Weight Defrost Function

(1) Press "**WEIGHT DEFROST**" once, the screen will display "dEF1".

(2) Press numerical buttons to input weight to be defrosted.

Input the weight ranged between 4~100 Oz.

(3) Press "**START/+30SEC.**" to start defrosting and the cooking time remained will be displayed.



7. Time Defrost Function

- (1) Press "**TIME DEFROST**" once, the screen will display "dEF2".
- (2) Press number pads to input defrosting time. The effective time range is 0:01~99:99.
- (3) The default microwave power is power level 3. If you want to change the power level, press "**POWER**" once, and the screen will display "PL 3", then press the number pad of the power level you wanted.
- (4) Press "**START/+30SEC.**" to start defrosting. The remained cooking time will be displayed.

8. POPCORN

- a) Press "**POPCORN**" repeatedly until the number you wish appears in the display, "1.75", "3.0", "3.5"Oz will display in order.
For example, press "**POPCORN**" once, "1.75" appears.
- b) Press "**START/+30 SEC.**" to cook, buzzer sounds once. When cooking finishes, buzzer will sound five times and then turn back to waiting state.

9. POTATO

- a) Press "**POTATO**" repeatedly until the number you wish appears in the display, "1", "2", "3" will display in order.
"1"SET : 1 potato (approximate 8 Oz)
"2"SETS: 2 potatoes (approximate 16 Oz)
"3"SETS: 3 potatoes (approximate 24 Oz)
For example, press "**POTATO**" once, "1" appears.
- b) Press "**START/+30 SEC.**" to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times and then turn back to waiting state.

10. FROZEN VEGETABLE

- a) Press "**FROZEN VEGETABLE**" repeatedly until the number you wish appears in the display, "4.0", "8.0", "16.0" Oz will display in order.
For example, press "**FROZEN VEGETABLE**" once, "4.0" appears.
- b) Press "**START/+30 SEC.**" to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times and then turn back to waiting state.

11. BEVERGAE

- a) Press "**BEVERAGE**" repeatedly until the number you wish appears in the display, "1", "2", "3" cup will display in order. One cup is about 120ml. For example, press "**BEVERAGE**" once, "1" appears.
- b) Press "**START/+30 SEC.**" to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times and then turn back to waiting state.



12. DINNER PLATE

- a) Press "**DINNER PLATE**" repeatedly until the number you wish appears in the display, "9.0", "12.0", "18.0" Oz will display in order.
For example, press "**DINNER PLATE**" once, "9.0" appears.
- b) Press "**START/+30 SEC.**" to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times and then turn back to waiting state.

13. PIZZA

- a) Press "**PIZZA**" repeatedly until the number you wish appears in the display, "4.0", "8.0", "14.0" Oz will display in order.
For example, press "**PIZZA**" once, "4.0" appears.
- b) Press "**START/+30 SEC.**" to cook, buzzer sounds once. When cooking finishes, buzzer sounds five times and then turn back to waiting state.

14. MEMORY FUNCTION

- (1) Press "**0/MEMORY**" to choose memory 1-3 procedure. The screen will display 1, 2, 3.
- (2) If the procedure has been set, press "**START/ +30 SEC.**" to use it. If not, continue to set the procedure. Only one or two stages can be set.
- (3) After finishing the setting, press "**START/ +30 SEC.**" once to save the procedure.
If press "**START/ +30 SEC.**" again, it will start cooking.

Example: To set the following procedure as the second memory, that is memory 2.

To cook the food with 80% microwave power for 3 minutes and 20 seconds.

The steps are as follow:

- a. In waiting states, press "**0/MEMORY**" twice, stop pressing until the screen displays "2".
- b. Press "**TIME COOK**" once, then press "3", "2", "0" in order.
- c. Press "**POWER**" once, "PL10" displays, then press "8" and "PL8" displays.
- d. Press "**START/ +30 SEC.**" to save the setting. Buzzer sounds once and the screen will display "2". If you press "**START/+30SEC.**" again, the procedure will be saved as the memory 2 and operated.
- e. If the electricity is not cut off, the procedure will be saved all the time. If it is, the procedure need to reset.
- f. If you want to run the saved procedure, in waiting state, press "**0/MEMORY**" twice, screen displays "2", then press "**START/+30SEC.**" to run.



15. Multi-stage cooking

At most 2 stages can be set for cooking. In multi-stage cooking, if one stage is defrosting, then defrosting shall be placed at the first stage automatically.

Note: Auto cooking cannot work in the multi-stage cooking.

Example: if you want to cook with 80% microwave power for 5 minutes + 60% microwave power for 10 minutes. The cooking steps are as following:

- (1) Press "**TIME COOK**" once, then press "5", "0", "0" to set the cooking time;
- (2) Press "**POWER**" once, then press "8" to select 80% microwave power.
- (3) Press "**TIME COOK**" once, then press "1", "0", "0", "0" to set the cooking time;
- (4) Press "**POWER**" once, then press "6" to select 60% microwave power.
- (5) Press "**START/ +30 SEC.**" to start cooking.

16. LOCK FUNCTION FOR CHILDREN

Lock: In waiting state, press " **STOP/CANCEL** " for 3 seconds, there will be a long "beep" denoting the entering into the children-lock state; meanwhile, screen will display "  ".

Lock quitting: In locked state, press " **STOP/CANCEL** " for 3 seconds, there will be a long "beep" denoting that lock is released.

17. INQUIRING FUNCTION

- (1) In cooking state, press " **CLOCK** ", the oven will display clock for three seconds.
- (2) In the microwave cooking state, press " **POWER** " to inquire microwave power level, and the current microwave power will be displayed. After three seconds, the oven will turn back to the previous state. In multi-stage state, the inquiring way can be done by the same way as above.

18. COOKING END REMINDING FUNCTION

When the cooking is over, the buzzer will sound 5 "beep"s to alert user the cooking is finished.

19. OTHER SPECIFICATIONS

- (1) In standby state , if the set clock digital tube displays current time, the icon " : " would flash; otherwise, it shows " **0:00** ".
- (2) In setting function state, the screen displays corresponding setting.
- (3) In working or pause state, the screen displays surplus cooking time.



Maintenance

Troubleshooting

Check your problem by using the chart below and try the solutions for each problem. If the microwave oven still does not work properly, contact the nearest authorized service center.

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Oven will not start	<ul style="list-style-type: none"> a. Electrical cord for oven is not plugged in. b. Door is open. c. Wrong operation is set. 	<ul style="list-style-type: none"> a. Plug into the outlet. b. Close the door and try again. c. Check instructions.
Arcing or sparking	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. The oven is operated when empty. c. Spilled food remains in the cavity. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Do not operate with oven empty. c. Clean cavity with wet towel.
Unevenly cooked foods	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. Food is not defrosted completely. c. Cooking time, power level is not suitable. d. Food is not turned or stirred. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Completely defrost food. c. Use correct cooking time, power level. d. Turn or stir food.
Overcooked foods	Cooking time, power level is not suitable.	Use correct cooking time, power level.
Undercooked foods	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. Food is not defrosted completely. c. Oven ventilation ports are restricted. d. Cooking time, power level is not suitable. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Completely defrost food. c. Check to see that oven ventilation ports are not restricted. d. Use correct cooking time, power level.
Improper defrosting	<ul style="list-style-type: none"> a. Materials to be avoided in microwave oven were used. b. Cooking time, power level is not suitable. c. Food is not turned or stirred. 	<ul style="list-style-type: none"> a. Use microwave-safe cookware only. b. Use correct cooking time, power level. c. Turn or stir food.



RECORD THIS INFORMATION FOR FUTURE REFERENCE:

Model Number _____
Serial Number _____
Date Purchased _____
Retailer / Qualified Installer _____

OPERATING
INSTRUCTIONS

TYPE

9500

MANUAL

CASE / CASSETTE AWNING

MODEL

200(LL)(CC).003(#)



Read these instructions carefully. These instructions MUST stay with this product.

REVISION B
Form No. 3314494.000 09/16
(French 3314495.000_B)
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INTRODUCTION

This cassette awning (hereinafter referred to as “awning,” or “product”) is designed and intended for use on RVs with straight sides. It is especially well suited for RVs with an over cab extension where there is not sufficient surface for a bottom mounting bracket. Use these instructions to ensure correct operation of product.

Dometic Corporation reserves the right to modify appearances and specifications without notice.

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DOCUMENT SYMBOLS



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



Indicates step-by-step instructions.



IMPORTANT SAFETY INSTRUCTIONS

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

A. 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.

B. Understand Signal Words

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

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 is used to address practices **NOT** related to physical injury.

C. Supplemental Directives



Read and follow all safety information and instructions to avoid possible injury or death.

Read and understand these instructions before [installing / using / servicing / performing maintenance on] this product.

Incorrect [installation / operation / servicing / maintaining] of this product can lead to serious injury. Follow all instructions.

The installation **MUST** comply with all applicable local and national codes, including the latest edition of the following standards:

U.S.A.

- ANSI/NFPA70, National Electrical Code (NEC)
- ANSI/NFPA 1192, Recreational Vehicles Code

CANADA

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

D. General Safety Messages

WARNING Failure to obey the following warnings could result in death or serious injury:

- This product **MUST** be [installed / serviced] by a qualified service technician.
- Do **NOT** modify this product in any way. Modification can be extremely hazardous.
- Frequently examine product for imbalance (uneven fit / sagging / loose parts); and signs of wear or damage to wiring (if applicable) and other critical parts. Do **NOT** use product if adjustments or repairs are necessary.



Critical parts may include awning fabric, cables, arm assemblies, etc.

- Do **NOT** allow anyone (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge to use this product, unless they have been given supervision or instruction (concerning use of this product) by a person responsible for their safety.
- Do **NOT** allow children to play with product or with fixed controls (if applicable).
- Do **NOT** add any devices or accessories to this product except those specifically authorized in writing by Dometic Corporation.
- **IMPACT OR CRUSH HAZARD. NEVER** leave an open awning unattended. Keep awning stowed (closed) when snow, heavy rain, wind, and severe weather conditions are expected.
- **IMPACT OR CRUSH HAZARD.** Do **NOT** allow water to pool, snow to accumulate, or heavy debris on awning fabric. Do **NOT** hang or place anything on awning. The awning will become unstable, and could bend or collapse.
- **FIRE HAZARD.** Keep sources of heat and fire (barbecue grills, portable heater, etc.) away from awning.

CAUTION Failure to obey the following cautions could result in injury:

- **PINCH HAZARD.** Maintain a horizontal distance of at least 16" between fully open awning and any permanent object.



Do **NOT** face awning toward permanent objects that may interfere with awning operation.

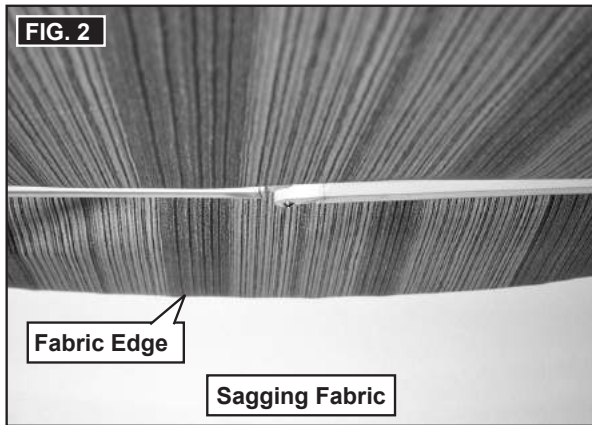
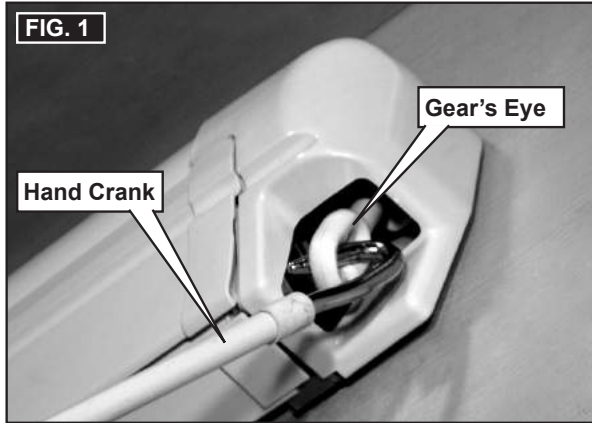


OPERATION

A. Open Awning

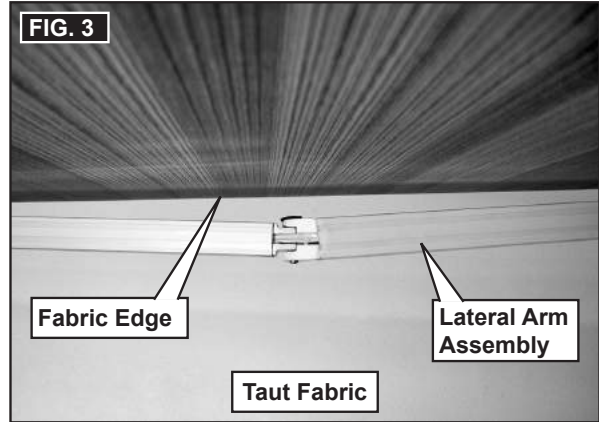
1. **CAUTION** PINCH HAZARD. Maintain a horizontal distance of at least 16" between fully open awning and any permanent object. Failure to obey this caution could result in injury.
Place hook end of hand crank into gear's eye. Then rotate hand crank until awning is fully extended. See (FIG. 1).

i The awning is fully extended when fabric starts to sag. See (FIG. 2).



2. **NOTICE** Do **NOT** allow awning fabric to rest on rafters. Wind will cause awning fabric to rub against arm assemblies which could result in premature wear and abrasions.

When awning is fully extended (fabric is sagging), rotate hand crank back approximately 1/4 turn to obtain maximum tension. See (FIG. 3).





OPERATION

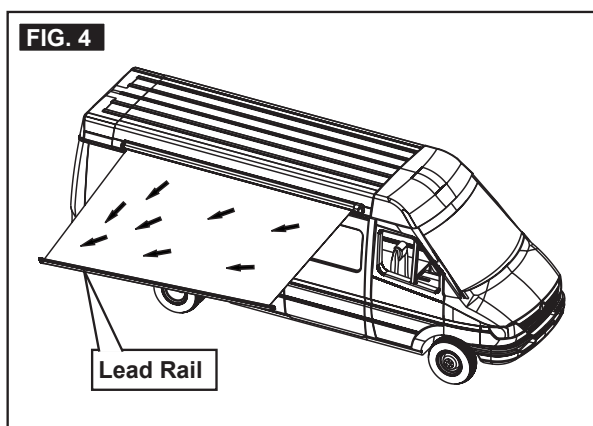
B. Water Shed Feature

⚠ WARNING Failure to obey the following warnings could result in death or serious injury:

- **IMPACT OR CRUSH HAZARD.** Do **NOT** allow water to pool or snow to accumulate on awning fabric. The awning will become unstable, and could bend or collapse. Whenever heavy rain or snow is expected, place awning in stowed (closed) position.
- **IMPACT OR CRUSH HAZARD.** Do **NOT** constrain or tie down lead rail as this could disable the water shed feature.

This awning is designed with a water shed feature that automatically lowers one side of awning during light rain to allow water run off.

i This water shed feature is meant for light rain only.



C. Close Awning

⚠ WARNING PINCH HAZARD. Keep **CLEAR** of arm assemblies while closing awning. Arm assemblies will [fold / close] against back rail. Failure to obey this warning could result in death or serious injury.

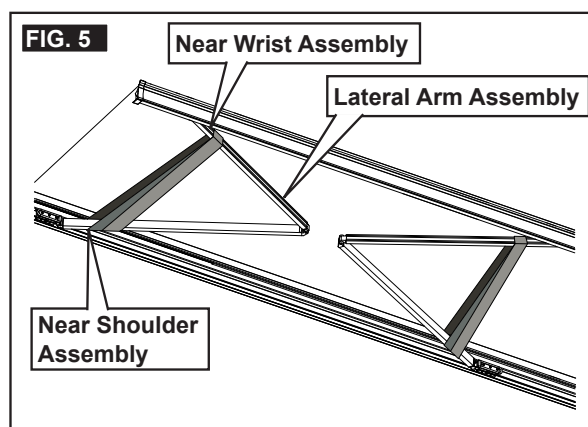
Place hook end of hand crank into gear's eye. Then rotate crank until awning is fully retracted. See (FIG. 1).

D. Prepare Awning For Travel

- ⚠ WARNING** IMPACT OR CRUSH HAZARD. Do **NOT** transport RV if awning fabric is torn / damaged, even if awning closes successfully. Damaged awning fabric could compromise awning's stability, and could allow awning to extend quickly and unexpectedly during transit. Failure to obey this warning could result in death or serious injury.

Inspect Awning for damage.

i If awning fabric is torn / damaged, tie all lateral arm assemblies securely (with fabric strapping or light rope) near shoulder and wrist to close awning as much as possible. Then contact a qualified Dometic service technician for on-site repair. See (FIG. 5).





GENERAL CARE AND USE

A. Precautions

NOTICE Failure to obey the following notices could damage product or property:

- Do **NOT** use insecticides or other sprays near awning fabric. These could cause stains, and could adversely affect fabric's ability to repel water.
- Do **NOT** expose awning to adverse environmental conditions, corrosive agents, or other harmful conditions.
- Do **NOT** allow corner of entry door to contact awning fabric. Otherwise, premature wear or tearing of awning fabric could occur.
- **NEVER** close awning (for storage) when wet. The combination of moisture and dirt could result in mildew, discoloration, and stains.

i If it is necessary to roll up awning (temporarily) while it's wet, make sure you roll it out and let it dry (as soon as conditions allow) before rolling it up again.

- Do **NOT** allow dirt, leaves, or other debris to accumulate on awning, which could cause abrasion and stains. Mildew could grow on dirt and organic debris causing permanent discoloration, stains, and odors to awning fabric.

B. Hardware Maintenance

i 1. **NOTICE** Do **NOT** use strong chemicals or abrasives to clean parts, as their protective surfaces will be damaged.

Clean awning hardware (as needed) with a mild surface cleaner (such as dish soap).

2. **NOTICE** Do **NOT** use silicone sprays near labels. Otherwise, the label's adhesive bond to product surfaces could weaken.

Apply silicone spray lubricant as needed to keep the fabric roller tube assembly's moving parts operating smoothly.

3. Lubricate all sliding surfaces of arm assemblies with silicone spray as needed.

C. Fabric Maintenance

Vinyl fabric offers the advantage of durability and water resistance.

i Wrinkling is a normal characteristic of vinyl. Wrinkling may be more noticeable when retracted, and after prolonged periods of stowage (rolled up). Leave awning open during warm weather to minimize the wrinkling over a period of time.

1. To clean:

i a. Mix 1/4 cup dish soap and 1/4 cup bleach to 5 gallons of fresh water to use as cleaning solution.

b. **NOTICE** Do **NOT** use abrasive or corrosive cleaners, mildew removers, or hard bristle brushes on awning fabric.

Liberal drench open awning fabric with cleaning solution.

c. Close awning, let it soak for 5 minutes, then open awning again.

d. **NOTICE** Remove solution **COMPLETELY** from awning fabric. Bleach will degrade awning fabric if **NOT** completely rinsed off.

Thoroughly hose off top and bottom of fabric with clean water.

i Repeat as necessary to completely remove solution.

e. **NOTICE** **NEVER** close awning (for storage) when wet. The combination of moisture and dirt could result in mildew, discoloration, and stains.

Allow awning to dry thoroughly before stowing (rolling up).

2. To repair a pinhole, or if a spot of coating flakes off from top layer of vinyl fabric:

i a. Apply a very small dab of VLP (Vinyl Liquid Patch) on tip of cotton swab.

i VLP is available from Dometic Corporation. Reference part number 3314216.000 when ordering.

b. Gently roll cotton swab around pinhole. The VLP will melt the coating (on fabric) and that will quickly fill in pinhole and blend with all colored vinyls.

c. **NOTICE** **NEVER** close (roll up) awning when vinyl liquid patch is wet. Otherwise, damage to other parts of awning fabric (melting through layers) will occur.

Allow VLP to dry thoroughly before stowing (rolling up) awning.

D. When To Get More Help

If malfunctions occur (that cannot be corrected by reviewing these instructions), contact a qualified service technician.

i A slight "travel line" may appear where door roller (if installed) contacts awning fabric. This is considered normal and does **NOT** affect the integrity of awning fabric.



Atwood
Atwood Mobile Products LLC
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1120 North Main Street Elkhart, IN 46614-3203
USA & Canada 1-866-869-3118
Internet: <http://www.atwoodmobile.com>

No index entries found.

Models LPCO
USER'S MANUAL AND INSTALLATION INSTRUCTIONS



Intertek

TESTED TO UL2034, UL1484 AND CSA 6.19

**For questions concerning your Alarm, please call our Customer Service
at 1-866-869-3118**

Please have the following information ready when calling:

Alarm Model Number (located on the back of alarm):
Alarm Assembly Number (located on the back of alarm):
Date of Manufactured (located on the bottom of alarm):
Date of Purchase:
Where Purchased:

P/N 30094 Rev E 3/15



What to do When the Alarm Sounds!

Carbon Monoxide or Propane Alarm Procedure



WARNING: Activation of the CO or LP Alarm indicates the presence of Carbon Monoxide (CO) or Propane (LP) which can kill you.

If alarm sound 4 quick beeps, 5 seconds off CO is present

If alarm sound 6 quick beeps, 5 seconds off LP is present

If alarm sound 4-6 quick beeps with multi-tone both CO and LP is present

1. Immediately move to fresh air – outdoors or by an open door/window. Do a head count to check that all persons are accounted for. Do not re-enter the premises nor move away from the open door/window until the emergency services responders have arrived, the premises have been aired out, and your alarm remains in its normal condition.
2. Call your emergency service (Fire Department or 911)

PHONE NUMBER

Never restart the source of a CO or LP problem until it has been corrected. Never ignore the sound of the alarm!

If the alarm is sounding, pressing the test/reset button will terminate the alarm. If the CO or LP condition that caused the alert in the first place continues, the alarm will reactivate. If the unit alarms again within 6 minutes, it is sensing high levels of CO or LP which can quickly become a dangerous situation.

READ ENTIRE MANUAL BEFORE USING THIS ALARM

Your new Atwood Carbon Monoxide and Propane (CO/LP) alarms are sophisticated instruments that has been carefully designed and tested to detect CO and LP build up in a residential or recreation vehicle environment.



Carbon Monoxide (CO) and Liquefied Petroleum (LP or Propane) gases can cause hazardous conditions when found in high concentrations. Both gases are known to be found in recreational vehicles and the proper detection of these gases provides a safe environment for the occupants of the vehicle.

CARBON MONOXIDE AWARENESS

The following are the symptoms of Carbon Monoxide poisoning and must be discussed with all occupants of the vehicle.

1. **Mild Exposure:** Slight headache, nausea, vomiting, fatigue (“Flue like symptoms).
2. **Medium Exposure:** Severe throbbing headache, drowsiness, confusion, fast heart rate.
3. **Extreme Exposure:** Unconsciousness, convulsions, heart and lung failure, brain damage, and death.

Many cases of reported CARBON MONOXIDE POISONING indicate that while victims are aware they are not well, they become so disoriented they are unable to save themselves by either exiting the building or calling for assistance. Young children and house hold pets are typically the first affected. This device does not provide warnings for all levels of CO. Individuals with certain medical conditions may consider using a warning device that provides both audible and visual signals for carbon monoxide concentrations below 30 ppm. Everyone is susceptible to the danger of CO, but experts agree that unborn babies, small children, pregnant women, senior citizens and people with heart or respiratory problems are at the highest risk for serious injury or death.

If you experience ANY symptoms of CO poisoning, consult your physician.

Be aware that the following conditions can result in transient CO situations, such as:

1. Excessive spillage or reverse venting of fuel burning appliances caused by:
 - Outdoor ambient conditions such as wind direction and/or velocity, including high gusts of wind; heavy air in the vent pipes (cold/humid air with extended periods between cycles).
 - Negative pressure differential resulting from the use of exhaust fans.
 - Simultaneous operation of several fuel burning appliances competing for limited internal air.
 - Vent pipe connection vibrating loose from clothes dryers, furnaces, or water heaters.



- Obstructions in or unconventional vent pipe designs which amplify the above situations.
2. Extended operation of un-vented fuel-burning devices (range, oven, fireplace, etc).
 3. Temperature inversions which can trap exhaust gasses near the ground.
 4. Car idling in an open or closed attached garage, or near a home.


LIQUEFIED PETROLEUM GAS AWARENESS

LP gas is commonly called Propane and is sold commercially as a suitable fuel in portable and permanent heating and cooking appliances.


It is important to detect LP gas due to its explosiveness at concentrated volumes. The lowest explosive limit for LP concentration is 2,1000 parts per million (ppm). This detector was designed to alarm at 10% of this limit or 2100 ppm.


Important Warning Statements

IMPORTANT: This carbon monoxide alarm is designed to detect carbon monoxide from ANY source of combustion. It is NOT designed to detect smoke, fire, or any other gas

 **WARNING:** Carbon monoxide alarms are not smoke alarms. This carbon monoxide alarm is not a substitute for installing and maintain an appropriate number of smoke alarms in your home.

This carbon monoxide alarm will not sense smoke, fire, or any poisonous gas other than carbon monoxide even though carbon monoxide can be generated by fire. For this reason you must install smoke alarms to provide early warning of fire and to protect you and your family from fire and its related hazards.

 **CAUTION:** This alarm will only indicate the presence of carbon monoxide or propane at the sensors. Carbon monoxide or propane may be present in other areas.

 **WARNING:** This product is intended for use in ordinary indoor locations of family living units. It is not designed to measure compliance with commercial or industrial standards, It is not suitable for installation in hazardous locations as defined in the National Electric Code.

The Installation of this device should not be used as a substitute for proper installation, use and maintenance of fuel burning appliances, including appropriate ventilation and exhaust systems. It does not prevent CO from occurring, nor can it solve and existing CO



problem.

⚠️ WARNING: This device is designed to protect individuals from acute effects of carbon monoxide exposure. It may not fully safeguard individuals with specific medical conditions. If in doubt, consult a medical practitioner.

Individuals with medical problems may consider using warning devices which provide audible and visual signals for carbon monoxide concentrations under 30 PPM.

This carbon monoxide and propane alarm requires a continuous supply of electrical power – it will not work without power.

This alarm has not been investigated for carbon monoxide detection below 70 PPM.

⚠️ WARNING: If alarm has been subjected to abnormally cold temperatures, the alarm may exhibit an Error condition. Allow the alarm to warm and press the “Test/Reset” button to reset the alarm.

TEST ALARM OPERATION AFTER VEHICLE HAS BEEN IN STORAGE, BEFORE EACH TRIP, AND AT LEAST ONCE PER WEEK DURING USE.



WARNING:

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

WHAT TO DO IF YOU SMELL GAS

- Evacuate all persons from vehicle.
- Shut off gas supply at gas container or source.
- Do not touch any electrical switch, or use any phone or radio in vehicle.
- Do not start vehicle's engine or electric generator.
- Contact nearest gas supplier or qualified Service Technician for repairs.
- If you cannot reach a gas supplier or qualified Service Technician, contact the nearest fire department.
- Do not run on gas supply until gas leak(s) has been repaired.

Note: two self-adhesive emergency contact labels are provided. The user must add telephone numbers for the local emergency service provider and for a qualified service



DOMETIC LP/CO DETECTOR

technician. User must place one label next to the alarm. The other label must be placed near a source of fresh air where you plan to gather in the event the alarm indicates carbon monoxide presence.

TESTING

Note: Unit must be powered for three minutes before test can be performed.

The Test/Rest button is used to verify proper alarm operating. Executing the test function sounds the alarm and lights up all LED's. The test will sound the alarm twice, with 4 “beeps” in 1 second followed by 5 seconds of silence.

By pressing the button, you can verify that the alarm sounds and that all visual indicators function properly. The alarm is internally monitored while powered to ensure proper operation and to detect faults.

Important

- This detector will only indicate the presence of CO or LP gas at the sensor. Gases may be present in other areas.
- The detector is not suitable as a smoke or fire detector. Not suitable for installation in hazardous locations as defined in the National Electrical Code.

MODEL DESCRIPTION

LP=Propane	CO=Carbon Monoxide	D=12Vdc	A=120Vac	O=OEM	R=Retail
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OEM Package			Retail Package		
Model	Part No	Color	Model	Part No	Color
LPCO_DOW	36636	White	LPCO_DRW	36681	White
LPCO_DOB	31011	Black	LPCO_DRB	31012	Black
LPCO_AOW	36520	White	LPCO_ARW	36521	White
LPCO_AOB	31003	Black	LPCO_ARB	31004	Black
Surface Box	31128	Black	Surface Box	36689	White



SPECIFICATIONS

	LP	CO
Alarm Level:	2100 ppm for 10 seconds	70 ppm for 60 to 240 minutes 150 ppm for 10 to 50 minutes 400 ppm for 4 to 15 minutes
Audio Alarm	Min. 85 dB at 10 Feet	
Visual Alarm	LP blinking red LED and Chirping	CO blinking red LED and Chirping
Malfunction	Red Fault LED on and chirping sound	
Sensor End of Life Alarm	Blinking red LED's and Chirping	
Dimensions	3-9/16" H X 3-7/16" W	
Supply Voltage Thresholds	9 to 18 VDC (13.5 V nominal)	
Supply Current (Max)	75 am	
Supply Current (Typical)	40 mA	
IAS Tested @	67% to 133% of supply voltage	
Current Draw	Typical 70 mA – Alarm 100 mA	
POWER CONSERVATION MODE		
Current Draw	10 mA	
Temperature	-40° to 70° C (-40° to 158°F)	
Storage Temperature	-40° to 70° C (-40° to 158°F)	
Humidity	15 to 90%	
Warranty	Limited, 2 year	
Alarm Lifetime	7 years (powered operation)	
Standards	ETL tested to UL 2034 & UL 1484 Residential and RV and Complies with CSA 6.19	

For Service and Information Contact

**Atwood Mobile Products LLC, 1874 South Pioneer Road Salt Lake City, Utah 84104-4226
Consumer Service Department, 1120 North Main, Elkhart, IN 46514 USA.
Phone: 866-869-3118**

ALARM OPERATION



The alarm includes four LED indicators, an LP, CO and LPCO oscillating multi-tone audible alarms, and one Test/Reset button that provide interaction and feed back with your alarm. The indicators allow you to troubleshoot your alarm and to determine the proper actions to take. The visual indicators are labeled Power, Fault, Carbon Monoxide, and Propane.

The alarm operates in six separate modes that will be identified in this section.

Power Off Mode

This mode indicates that there is insufficient power provided to the alarm. The indicators and button will not function in this mode. Sufficient power must be provided to the alarm to exit this mode.

Normal Gas Detection Mode

This mode indicates that gas concentrations are continuously monitored. It also indicates that gas concentrations are at safe levels. In this mode the Power indicator will be lit, and all other indicators will not be active. The Test function for the Test/Reset button will be active.

Alarm Active Mode

This mode indicates that one or more gas concentrations have achieved unsafe levels. In this mode the Power indicator will be lit. In the case that the CO concentration is unsafe the Carbon Monoxide indicator will be lit. In the case that the LP concentration is unsafe the Propane indicator will be lit. In this mode the audible indicator will signal an alarm, and the Reset function of the Test/Reset button will be active. This mode will be exited automatically if the CO concentration falls to a safe level for an extended period of time and LP concentrations falls below 500 ppm for greater than 10 seconds.

Alarm Test Mode

This mode indicates that the Test function of the Test/Reset button was imitated. In this mode, all visual indicators will be lit, and the audible indicator will signal an alarm. The test/Rest button will not function during this mode. This mode will be exited automatically within 10 seconds.



Alarm Reset / Stabilization Mode

This mode indicates that the alarm is stabilizing for the first 3 minutes after power-up or the first 6 minutes after the Rest Function was initiated. In this mode the Power indicator will be lit, and the reset alarm’s indicator will be flashing. The other visual indicators, the audible indicator, and the Test/Reset button function will be off. This mode will be exited if the previously inactive alarm is triggered. If gas concentrations are still high after the 6 minutes, the previous alarm will reactivate.

Fault Mode

This mode indicates that a fault has been detected that compromises some alarm function. If a fault is detected on only one of the sensors, the other sensor would function normally. The table below lists the indicator actions and the corresponding alarm status. This mode will be exited automatically when the fault is cleared.

If the fault persists, the alarm is not functioning properly and must be replaced to ensure your safety in the area.

End of Life Mode

The Detector will operate in end-of-life mode after the Detector has been powered for 7 years +/- 128 days. This represents the operating life of the sensors used to detect CO and LP gas.

After 7 years, the sensors are no longer reliable and the Detector must be replaced.

Once end-of-life mode has been entered, it is permanent, even after a power out cycle. If the reset/test button is pressed during end-of-life mode, the audible alarm will be silenced for 48 hours before being automatically reactivated. The power visual indicator will be on and the CO and/or LP visual indicators will be flashing. The audible alarm will be sounding per table below.

FUNCTIONS

Feature	Function	Status
Power LED	Flashing	Power supply fault
	On	Power supply OK
Propane LED	Flashing	Propane alarm disabled
	Off	Propane alarm OK
Carbon	Flashing	Carbon Monoxide alarm disabled



Monoxide LED	Off	Carbon Monoxide alarm OK
Fault LED	On	Fault active
Audible Indicator	Chirp	Fault Active
	4 Chirps	CO Alarm Active
	6 Chirps	LP Alarm Active different tone
	4-6 Chirps	Co-LP Oscillating multi-tone Alarm Active
End of life	Chirp	Sensor failure
	ON	Both CO & LP LED's steady on

Figure 1: Fault Indicator Actions

IMPORTANT – If this alarm does not test properly return it immediately for repair or replacement.

The visual indicators have two distinct functions: On and Flashing.

The “On” function is indicated by constant solid brightness of the LED. The “Flashing” function is indicated by the LED blinking once every second.

The audible indicator has two distinct functions: Alarm and Fault.

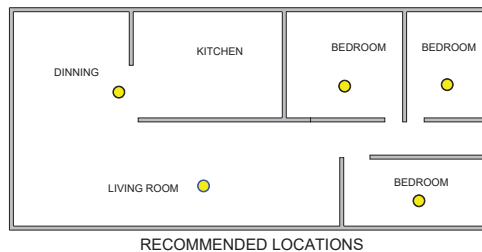
In the “Alarm” mode for the CO the alarm will sound four “beeps” in 1 second followed by 5 seconds of silence, after 4 minutes of alarming, the silence will last for 1 minute between the 4 beeps. For the LP the alarm will sound six “beeps” in 1 second continually. In the “fault” function, the alarm will last for 1 minute. In the “Fault” function, the alarm will sound a “chirp” once every 40 seconds until the fault is cleared.

INSTALLATION INSTRUCTIONS

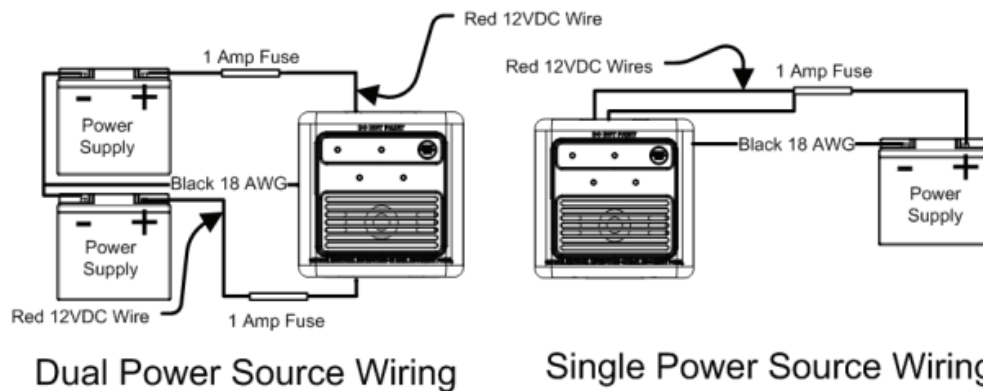
- LP/CO units when possible should be mounted lower to detect LP gas first due to its explosive nature and CO will be detected through air current circulation.
- Select a location as close as possible to appliances that could be potential sources of LP gas leaks and where the initial concentration may be greatest.
- **DO NOT INSTALL** next to doors or windows that may dilute the concentration of any LP gas presents in the environment and preclude a timely alarm signal.
- **DO NOT INSTALL** the detector in a closet or in a location that could become obstructed by a curtain, hanging clothes or any other objects.



- **DO NOT LOCATE** detector where it could be exposed to splashes of water or grease or where it could be damaged by impact with moving objects (i.e. furniture, feet, etc.).
- **DO NOT INSTALL** on a wall switch controlled by a power line or ground fault circuit.
- Usually you will find more than one suitable location that will also provide ease of viewing and connection to power.
- **DO NOT INSTALL** in any location within 5 feet (1.5m) of any cooking appliance.
- Never use detergents or solvents to clean the alarm chemicals can permanently damage or temporarily contaminate the sensor.
- Avoid spraying air freshener, hair spray, paint or other aerosols near the alarm.
- The following is a list of substances that at high levels can affect the sensor and cause an alarm. (Methane, propane, iso-butane, ethylene, ethanol, alcohol, carbon monoxide, iso-propylene, benzene, toluene, ethyl acetate, hydrogen, hydrogen sulfide, sulfur dioxides.)



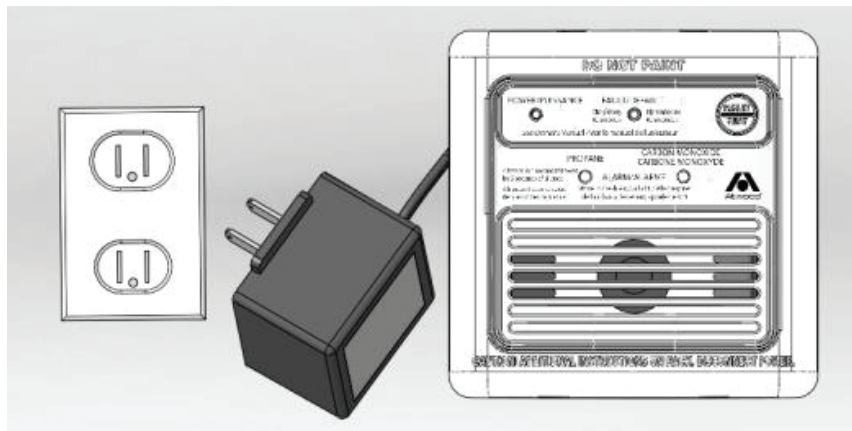
WIRING





DOMETIC LP/CO DETECTOR

- Before routing the wires, disconnect the 12 VDC power supply to avoid shorting. Make sure that the power connections are made to a properly fused circuit (15 amp maximum) 1 amp fuse is recommended for single or multiple detector installation. Can be fused through a distribution panel or power supply box.
- Connection to a **Master Storage Switch** is acceptable. The alarm will be off along with all other 12 volt equipment when the storage switch is turned to the off position. **DO NOT USE THE RV WHEN THE STORAGE SWITCH IS IN USE.**
- All connections must be in accordance with the National Electrical Code in the United States and the Canadian Electric Code in Canada. All connection must use approved wiring and connectors of an appropriate size see wiring diagram labeled, "Figure A".
- Some models are hard wired with a 110 AC adapter allowing the unit to be plug directly into a 110 AC wall outlet as shown.



SURFACE MOUNTING BOX

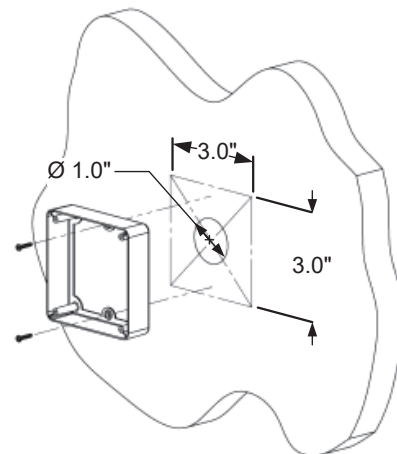
1. A detachable mounting box allows the unit to be mounted as a surface installation. If desired you can purchase the optional mounting box for surface installation by ordering part no. 31128 black or 36689 white part.
2. Mounting box is attached to the surface location where the alarm is to be mounted with two screws see instructions below.
3. To remove cover flange from alarm insert a flat blade screw driver into the middle of



- the slot at the top of the flange and pry down to lift the flange off the alarm.
- 4. To install the mounting box to the alarm place the alarm inside the box and fasten in place with the four screws provided.
- 5. Reinstall the cover flange by placing the flange against the alarm and snapping it into place.

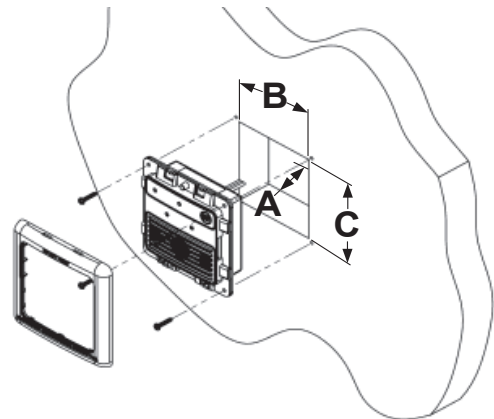
Surface Mounting

1. Mark on the desired mounting surface a box approximately 3" inch wide by 3" high draw and cut hole.
2. Route power leads to the opening and connect wires to the detector per the wiring diagrams.
3. Remove cover flange as describe above in surface mounting box section.
4. Center and mount the base over the outline done in step 1 with two screws provide through the two holes in the box.
5. Snap the cover onto the base
6. Verify that the LED lights(s) align within the cutouts of the face.



Flush Mounting

1. Verify that there is a minimum of (A) 1-1/2" inches of free space behind the wall.
2. Mark on the desired mounting surface a box approximately (B) 3-1/2" inch wide by (C) 3-5/8" high and cutout.
3. Route power leads to the opening and connect wire to the detector per the wiring diagrams.
4. Install the detector and excess wiring through the opening until mounting flange is flush to the wall.





5. Mount the unit using the 4 screws provided one in each corner of the flange.

AC Power Adapter Mounting

- Power supply can be plugged into a 120 VAC wall outlet either on the surface or behind a wall in a cabinet if so desired.
1. Cut a hole in the wall large enough to put the adapter through to the outlet. Put the adapter through the mounting box before screwing the box onto the wall.
 2. Following steps outlined above for either surface or flush mounting of the alarm.
 3. Adapter wire is run underneath the mounting box when install a surface mounted alarm.

OPERATING INSTRUCTIONS

Applying power to the detector will cause the detector to display a Power green LED light.

Warm Up Operation - The LP LED light will flash green every 8 seconds for the first 3 minutes indicating the unit is going through normal warm and check functions. **Normal**

Operation – Detector displays a solid green light with no other lights on.

DETECTOR TEST

1. Press “TEST” button until alarm sounds; then release the “TEST” button.
2. The detector will sound three times.
3. The LED will flash red; then return to normal operation and display a flashing green LED every 8 seconds.
4. This test must be carried out not less than once per week to ensure proper operation of the detector.

LP GAS DETECTION

Whenever the measured concentration of LP gas exceeds 2000 ppm, the detector will provide a visual and audible alarm by sounding the buzzer and flashing the LED red. The buzzer may be temporarily silenced by pressing the test button. However, until the measured concentration is reduced to a safe level, the alarm will sound again within 4 minutes.

POWER MANAGEMENT

The operating voltage for the detector is 8 VDC to 16 VDC. In these conditions, the unit will meet the specifications of the UL 1484 standard. The actual voltage applied the



detector in a recreational vehicle may drop below the minimum 8 VDC. The Atwood Detector is designed to provide the user with a Low Voltage Warning before reaching the level and to provide additional distinct, clear warnings and alarms after the 8 VDC level is reached. However, if available power supplied to the unit is below the operating voltage of 8 VDC, the detectors will not detect gas or provide you protection against dangerous levels of LP or CO.

The following descriptions of operational modes will provide the user with an understanding of how the detector performs to conserve available battery power and alert the user to non-operating duce to battery draw-down.

Low Power Warning Mode

When the available voltage is between 10 VDC and 8 VDC, the LED will flash orange. In this mode, the detector is still fully operational; and capable of both sensing and providing an alarm to dangerous concentrations of LP gas; and is providing the user a warning that the available power is nearing the bottom limit of the operating voltage range. Steps should be taken to maintain available power at an acceptable level.

Power conservation Mode:

When the available power is between 8 VDC and 6 VDC, the microprocessor is programmed to place the detector into Power Conservation Mode. In this mode the detector is capable of neither sensing nor providing an alarm to dangerous concentrations of LP gas. The detector conserves the remaining available power by reducing its power consumption to approximately 10 milliamps (10mA). In this mode, the detector will emit 3 quick “chirps” once and flash RED/ORANGE repeatedly every 3 minutes.

Low Power Alarm Mode:

When the available power falls below 6 VDC, the LED will display a steady RED LED. This condition will remain until power is depleted or restored to a level exceeding 10 VDC. Again, in this mode the detector is neither sensing nor providing an alarm to dangerous concentrations of LP gas. If after restoring available power to a level in excess of 10 VDC, the detector stays in this steady RED LED mode (even after pressing the TEST button), return the detector to the Atwood Service Center. This is an indication of possible microprocessor failure.



The power management functions of the Atwood Detector are designed to make the most efficient use of available power and to provide the user with the maximum protection through distinct warnings and alarms.

Power Failure

If no power is applied to the unit or there is a failure of power circuits, there will be no identification from the LED. If there is no indication from the LED, but the audible alarm sounds when the TEST button is pressed, then the LED is defective and the user must contact the Atwood Service Center.

End of Life

Unit is designed to give maximum life of sensors under normal conditions. This is seven years from date of installation of unit. A sticker has been provided to record this information and should be placed next to the unit where it can be viewed. At the end of life the unit will give two quick “chirps” and both the LP and CO LED’s will turn red. This state will continue until unit is replaced. If the reset/test button is pressed during end-of-life mode, the audible alarm will be silenced for 48 hours before being reactivated. The lamps states will remain unchanged while the audible alarm is silenced for this period at the end of the 48 hours the audible alarm will be turned and the alarm will remain on and can’t be silenced both LED’s will remain on. The alarm in this condition will not sense either LP or CO gases. **YOU MUST REPLACE ALARM** it is not field repairable.

TROUBLE SHOOTING QUICK-GUIDE

Use this chart to determine in which mode the detector is executing. Match the detector to the state of the indicator on the left to narrow down the possible operating modes.



Function	LED Display	Alarm Sound	Unit Status	Recommendation
Normal Operation	Power LED Green flashes every 30 seconds	None	Normal DC operation (sensing no CO or LP)	None
CO	CO LED Red flashes with beeps	4 quick beeps, 5 seconds silence repeating	Alarm condition. Dangerous concentrations of CO detected	Refer to “What to do When the Alarm Sound” (inside front cover)
LP	LP LED Red flashes with beeps	6 quick beeps, 5 seconds silence repeating (tone difference from CO)	Alarm condition Dangerous concentrations of LP detected	Refer to “What to do When the Alarm Sound” (inside front cover)
Low Power below 6 V DC	Power LED Red steady on	None	Alarm is not detecting	Correct power source unit will not operate with low or no power
Power conservation 6-8 V DC	Power LED Red and Orange flashing	3 quick beeps 3 minutes silence repeating	Alarm is not detecting	Correct power source unit will not operate with low or no power
Minimal Power 8-10 V DC	Power LED Orange flashing	None	Alarm CO and LP detecting	Correct power source unit will not operate with low or no power
No Power	NO LED	None	Alarm is not detecting	Correct or restore power imminently
Error or fault		1 quick beep 40 seconds silence	Unit in fault mode not detecting	Test/Reset test button if fault does not clear replace unit
End of Life	CO & LP LED Red steady on	2 quick beeps 5 seconds silence repeating	Unit sensor are depleted	Imminently replace alarm



WARRANTY

Atwood Mobile Products LIMITED WARRANTY

Atwood Mobile Products, LLC warrants to the original owner and subject to the below mentioned conditions, that this hydro flame™ product will be free of defects in material or workmanship for a period of two years from the original date of purchase. Atwood's liability hereunder is limited to the replacement of the product, repair of the product, or replacement of the product with a reconditioned product at the discretion of the manufacturer. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other cause not arising from defects in material workmanship. This warranty extends to the original owner of the product only and is subject to the following conditions:

1. For two years from the date of purchase, Atwood will repair or replace any part defective in material or workmanship. This warranty includes reasonable labor charges required to remove and replace the part. Service calls to customer's location are not considered part of these charges and are, therefore, the responsibility of the owner.
2. **In the event of a warranty claim, the owner must contact, in advance, either an authorized Atwood Service Center or the Atwood Service Department. Warranty claim service must be performed at an authorized Atwood Service Center (a list will be provided at no charge) or an approved by the Consumer Service Department, 1120 North Main, Elkhart, IN 46514 USA. Phone: 1-866-869-3118.**
3. **RETURN PARTS MUST BE SHIPPED TO ATWOOD "PREPAID".** Credit for shipping costs will be included with the warranty claim. The defective parts become the property of Atwood Mobile Products, LLC and must be returned to the **Atwood Mobile Products, Quality Assurance Dept., Salt Lake City, Operations 1874 South Pioneer Road, Salt Lake City, Utah 84104 USA.**
4. This warranty applies only if the unit is installed according to the installation instructions provided and complies with local and state codes.
5. The warranty period on replacement parts is the unused portion of the original warranty period.
6. Damage or failure resulting from misuse (including failure to seek proper repair service). Misapplication, alternations, water damage, freezing or not using genuine Atwood parts are the owner's responsibility.
7. Atwood does not assume responsibility for any loss of use of vehicle, loss of time, inconvenience, expense for gasoline, telephone, travel, lodging, loss or damage to personal property or revenues. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.
8. Any implied warranties are limited to (2) two years. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.
9. Replacement parts purchased outside of the original furnace warranty carry a 90 day warranty. This includes the part at no charge and reasonable labor charges to replace it.

This Gas Detector is designed for use in recreation vehicles for warning of LP or CO gases. Any other use, unless authorized in writing by the Atwood Engineering Department, voids this warranty



EN Gravity-flush toilet
Instruction manual



310 and 320 Series Gravity-Flush Toilets



DOMETIC PORCELAIN TOILET AND PARTS LIST



IF SERVICE OF THIS TOILET IS EVER REQUIRED, READ THIS BEFORE SERVICING PRODUCT.

DO NOT REMOVE TOILET FROM VEHICLE.
DO NOT SEPARATE CERAMIC BOWL FROM PLASTIC BASE.
DO NOT REMOVE FOOT PEDAL FROM BASE.
DISASSEMBLY OF COMPONENTS MAY VOID WARRANTY.
SEE MANUAL AND REPLACEMENT KITS FOR SERVICE INFORMATION.

Dometic Corporation

Sanitation Division

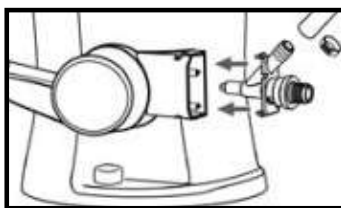
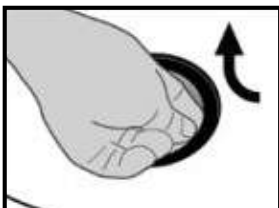
Call Customer Service: 1-800-321-9886 (8 a.m. – 5 p.m. ET)

TOILET DOES NOT NEED TO BE REMOVED FROM VEHICLE FOR BASIC REPAIRS *(if necessary)*

Flush ball seal – Dometic’s revolutionary ball seal allows future replacement of worn or damaged ball seals without requiring tools or toilet disassembly. The ball seal can be changed in just a few minutes without removing the toilet from the floor. Detailed replacement instructions are included with replacement ball seal kits.

Snap-in water valve cartridge – Allows easy replacement of worn or damaged water valves. In cold climates, be sure to follow winterizing procedure in owner’s manual to help avoid water valve failure. Refer to replacement instructions in new water valve kit prior to removal or installation of water valve assembly.

Factory-sealed bowl-to-base assembly – Unlike other Dometic foot-pedal toilets, **the bowl and base of 310 and 320 series toilets should not be separated for any reason.**



Each Dometic toilet is 100% factory-tested to assure a watertight seal in the toilet bowl before it is shipped.

After installation at the RV or other vehicle factory, the entire toilet and waste tank system is flood-tested for leaks by filling the system with water to the rim of the toilet bowl. This process requires holding the flush ball open with a device which may temporarily distort the ball seal from its original shape and, as a result, cause the seal to leak water into the waste tank during normal use. The ball seal may need to be reconditioned to its original shape.

IF NEW TOILET DOES NOT HOLD WATER IN BOWL...

Please follow the procedures below before attempting to replace the seal.

1. Hold flush ball in full open position by pressing on pedal.
2. Using finger, apply moderate downward pressure around edge of ball seal.
3. Close flush ball.
4. Keeping flush ball closed, pour one quart of hot tap water into toilet bowl.
5. Let water cool completely.
6. Check for leak.

If leak still persists, flush ball seal should be replaced. Follow instructions provided with replacement seal kit.





Dometic Gravity-Flush Toilet

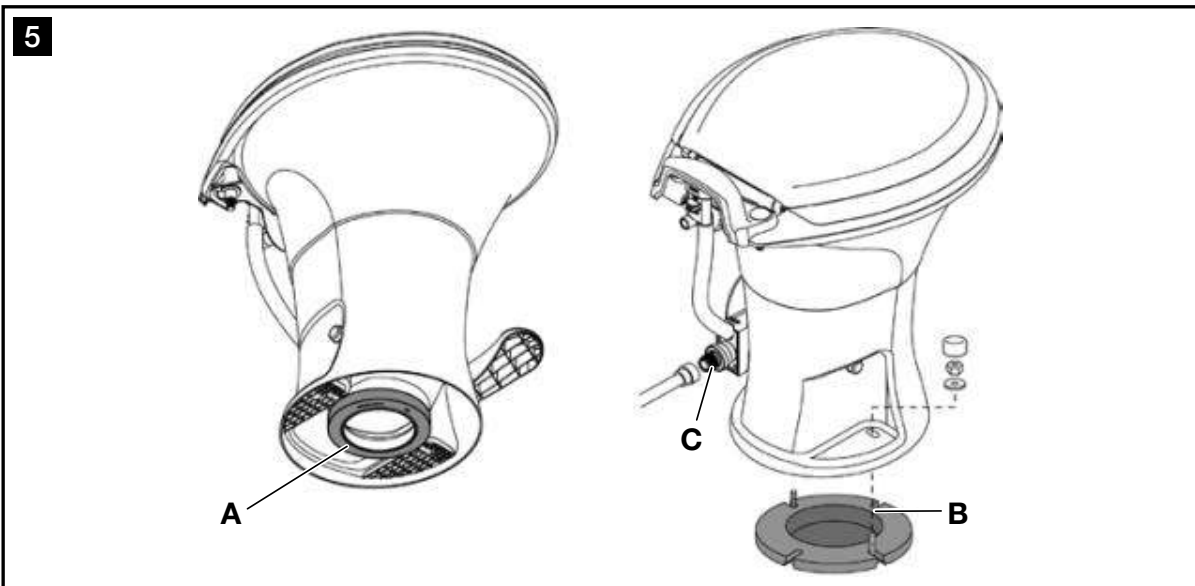
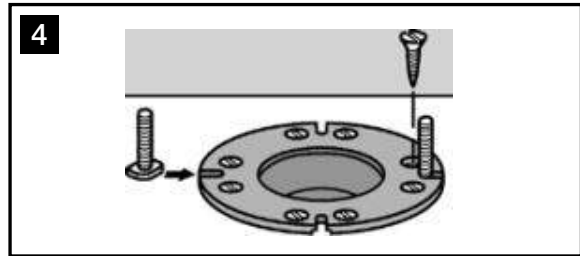
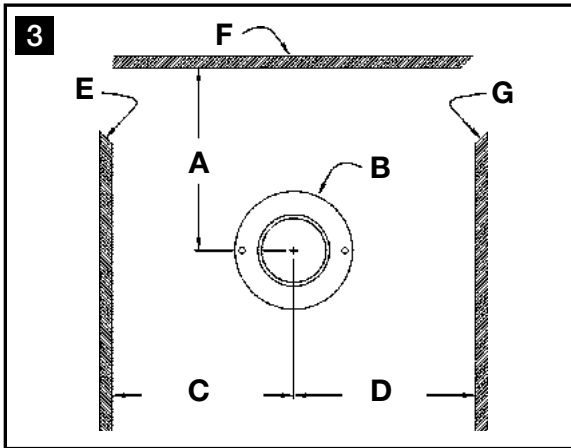
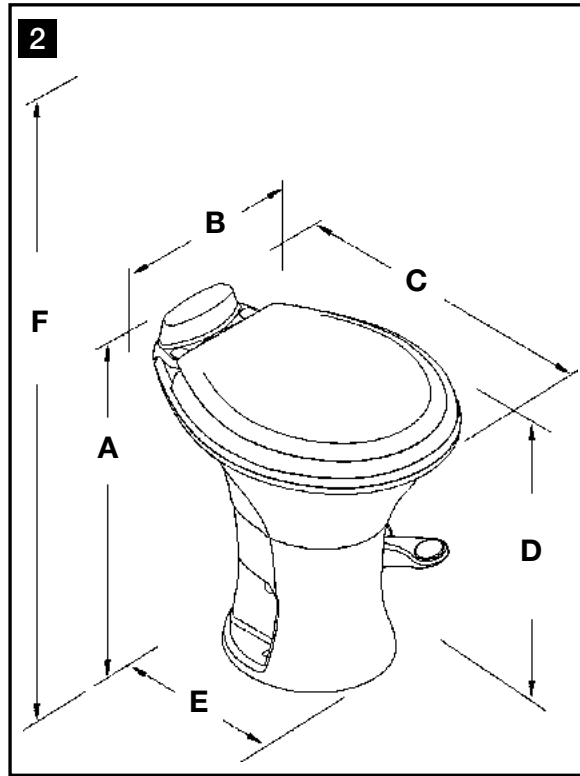
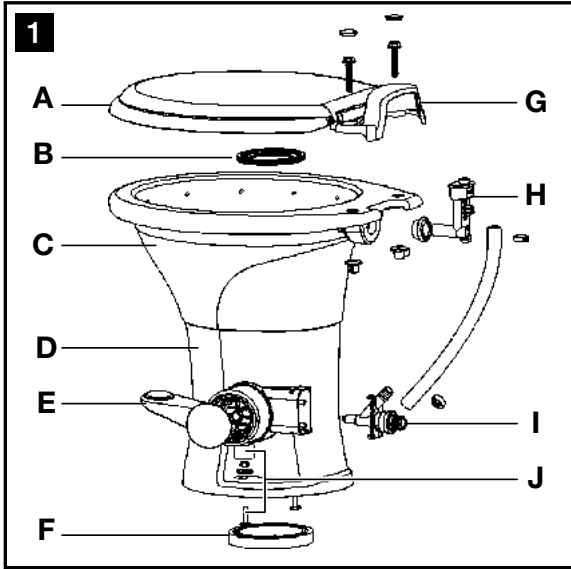




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1 Notes on using the manual



Caution!

Safety Instruction: Failure to observe this instruction can cause material damage and impair the function of the device.



Note

Supplementary information for operating the device.

fig. **1** A, page 3 : This refers to an element in an illustration. In this example, item A in figure 1 on page 3.

2 General safety instructions

The manufacturer will not be held liable for claims for damage resulting from the following:

- Faulty installation or connection
- Damage to the unit from mechanical influences, misuse or abuse
- Alterations to the unit without express written permission from the manufacturer
- Use for purposes other than those described in this manual

2.1 Warnings

The following statements must be read and understood before installing, servicing and/or operating this product. Modification of this product may result in property damage.

1. Do not use chlorine or caustic chemicals, such as laundry bleach or drain-opening types, in the system. These products damage the seals in toilets and other plumbing valves.
2. Do not permit foreign objects (paper towels, paper cups, diapers, sanitary napkins, etc.) to be flushed through the toilet.
3. Mechanical seal toilets are designed to only discharge directly into a holding tank. Horizontal pipe runs as found in conventional residential or commercial plumbing systems cannot be accommodated.
4. Toilet bowl must be regularly cleaned and winterized according to “Cleaning” and “Winterization and storage” procedures on pages 8-9, or your warranty coverage may be voided.



3 Intended use

Dometic 310 and 320 series toilets provide lightweight, residential-size toilets for installation directly above a holding tank.

3.1 Benefits

PowerFlush technology. Improved pressurized rim flow creates high-speed, full bowl rinsing.

Premium user comfort. Full-size seat, deep bowl and 18-in. (457 mm) seat height result in greater homelike performance.

Easy installation. Two-bolt design fits most existing toilet floor flanges – great for new or replacement installations. Just place on floor flange, tighten bolts, connect water, and it's ready.

Compact design. Small footprint with 10-inch or 11-inch (254 or 279 mm) rough-in.

Ergonomically enhanced pedal operation. Lower pedal height for easier use; “one-direction” action to add water and flush.

4 Specifications

4.1 Materials

Materials

Toilet bowl: vitreous ceramic

Base, foot pedal, water valve: polypropylene

Model 310 toilet seat: polypropylene

Water valve: polypropylene

Model 320 toilet seat: wood

Vacuum breaker: ABS/polypropylene

Flush ball seal: nitrile butyl rubber

Floor seal: nitrile rubber, foam

4.2 Minimum installation requirements

Water Supply	Fitting	0.5 in. NPT
	Flow rate	3.0-5.0* gpm / 11.4-18.9 lpm recommended 2.0 gpm / 9.5 lpm minimum
	Static pressure	30-100 PSI / 206.8-689.5 kPa
Discharge	Floor flange	3 in./76 mm ID, 1/4-7/16 in. (6-11 mm) thick

* Water supply that exceeds 5.0 gpm / 18.9 lpm may require a flow restrictor at toilet inlet. Specifications subject to change without notice.

4.3 Toilet dimensions (fig. 2, page 3)

Ref.	Dimensions	
	Model 310	Model 320
A	20 in. / 508 mm	20 in. / 508 mm
B	15 in. / 381 mm	15 in. / 381 mm
C	19 in. / 483 mm	22 in. / 559 mm
D	18 in. / 457 mm - seat height	18 in. / 457 mm - seat height
E	14.75 in. / 375 mm	16 in. / 406 mm
F	33 in. / 838 mm - seat lid up	33 in. / 838 mm - seat lid up



6.2 Toilet installation

1. To replace an older toilet, turn off water supply to toilet. Remove and drain water supply line. Remove toilet hold-down bolts/screws. Remove toilet from floor. Remove and discard old floor flange seal and hold-down bolts. Verify center of floor flange is at least 10 inches / 254 mm (for model 310) or 11 inches / 279 mm (for model 320) from back wall (fig. **3** A, page 3). Make sure top surface of floor flange is clean and free of any debris or sealant.
2. If installing a new floor flange, make certain that toilet mounting holes are located at the correct angle (fig. **3** B, page 3). Floor flange must be secured to floor with a minimum of four screws (8 is preferred). Insert two supplied T-bolts into slots in floor flange (fig. **4**, page 3).
3. Verify that floor flange seal is installed on base of toilet (fig. **5** A, page 3). Carefully set toilet over floor flange. Align holes in toilet base with T-bolts as toilet is lowered onto floor flange. Toilet must be aligned so that outlet of base fits inside of floor flange outlet hole.



Note

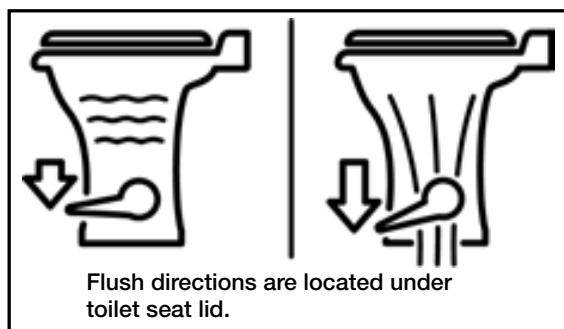
Entire toilet base does not rest completely on floor yet. Floor seal must be compressed in following steps.

4. Install floor mounting nuts and washers onto T-bolts. Carefully torque nuts to 30-40 inch-pounds. DO NOT OVERTIGHTEN. Alternate between sides when tightening to prevent distortion of base. When tight, base should be securely attached and flat against floor. Attach bolt covers onto nuts. (Fig. **5** B, page 3)
5. If toilet is being installed in a shower stall, apply a bead of caulk around base of toilet to prevent water seepage under base.
6. Connect water supply line and torque connection to 30-40 inch-pounds. DO NOT OVERTIGHTEN. (Fig. **5** C, page 3)
7. Turn on water supply line. Flush toilet several times and check for leaks.

7 Operation

7.1 Add water to bowl

To add water to the toilet, press the flush pedal part way down. Water flows into the bowl while flush ball remains closed. If the flush ball moves, let up on the pedal slightly. Adding water to an empty bowl helps prevent holding tank odors from entering the living space. Adding water is recommended prior to flushing solids and toilet paper.



7.2 Flush toilet

To flush, press pedal down until it contacts the floor. Release pedal after complete flush.

- When flushing liquids, press the pedal for 1-2 seconds.
- When flushing solids, press pedal until contents are rinsed from bowl. Flushing longer than necessary will cause holding tank to fill too quickly.

A small amount of water will collect in the bowl after a flush to create an airtight seal.



Note

To prevent holding tank odors from entering the living space, make sure a small amount of water remains in the toilet bowl.



8 Cleaning

8.1 Routine toilet cleaning

For routine cleaning, use SeaLand® Toilet Bowl Cleaner. If you cannot find it in your area, contact Dometic for your nearest dealer. If the cleaner is not available, use most any non-abrasive bathroom and toilet bowl cleaner. Please follow label instructions.

8.2 Flush ball/seal cleaning

After a period of time, mineral deposits from hard water may build up on the flush ball or seal, resulting in a slow water leak. To prevent this, periodically clean the flush ball and seal.



1. Remove minor debris from the flush ball and seal by slowly pressing and releasing the flush pedal several times. This will loosen and rinse debris from the surfaces. Repeat several times for stubborn buildup.
2. If step 1 does not fully clean the ball and seal, clean with a soft bristle brush and SeaLand toilet bowl cleaner. Fully clean the top of the flush ball and under the seal where it contacts the flush ball. After cleaning underside of seal, apply light downward pressure to top of seal while brushing around full perimeter of seal.
3. If this does not correct a leaking seal, it may require replacement.

9 Winterization and storage

When a Dometic toilet is stored for long periods of time or may be exposed to temperatures below freezing, the toilet must be winterized or stored according to one of the following procedures.



Caution

This toilet is not intended for use when exposed to temperatures below freezing.



Caution

Never use automotive-type antifreeze (ethylene glycol) in freshwater systems.



Note

Use nontoxic antifreeze (propylene glycol) designated for potable water systems. (See vehicle owner's manual.)

Storage options

Non-toxic Antifreeze Winterization (recommended method)

1. Pour antifreeze in potable water tank according to instructions from antifreeze manufacturer.
2. Flush toilet several times until antifreeze has flowed completely through toilet. For toilets with hand sprayer, the hand sprayer must be turned on to assure antifreeze is cycled through the sprayer.

Drain Water from Toilet

1. Turn off water supply to toilet.
2. Remove water supply line from water valve.
3. Place a small container under water valve inlet to catch draining water.

(continued on next page)



DOMETIC PORCELAIN TOILET AND PARTS LIST

Dometic Gravity-Flush Toilet

Winterization and storage

4. Press flush pedal and allow water to completely drain from water valve and vacuum breaker.
5. Leave water line disconnected until threat of freezing temperature is past.



Note

Never leave vehicle or premises unoccupied for extended periods of time with municipal water supply or onboard water pump turned on when there is a possibility of freezing temperature.

IMPORTANT:

Toilet warranty does not cover freeze-damaged water valve

The Dometic 310 and 320 series toilet warranty expressly excludes coverage for any damages to the toilet or vehicle that may occur as a result of improper winterization of the toilet. **An indicator of improper winterization is freeze damage to the water valve which results in leaks.**

Dometic 310 and 320 series toilet water valves exceed maximum water pressure as defined by North American plumbing code agencies. However, if trapped water freezes in piping that supplies water to the toilet, it expands and creates extremely high pressure that can damage the valve (see photo). To avoid this, winterize the toilet as described in this manual. If freeze-damage occurs as a result of improper winterization, replace the water valve with a 300/310/320 toilet water valve kit, part number 385311641. **IF WATER VALVE IS RETURNED FOR WARRANTY CLAIM, DOMETIC RESERVES THE RIGHT TO DENY CLAIM IF PROBLEM IS CAUSED BY FREEZE DAMAGE.**

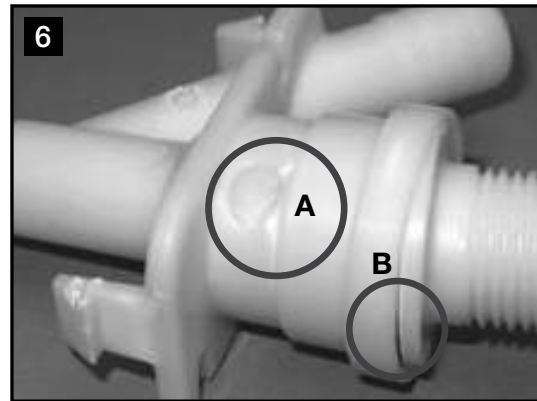


Fig. 6 A – Freeze Damage Indicator Window: white stress marks indicate freeze damage
B – Water valve damage due to severe exposure to below-freezing temperature



10 Troubleshooting

Problem	Possible Cause	Service Instruction
1. Water will not stay in bowl.	a. Flush ball seal is not properly positioned. b. Flush ball or seal is dirty. c. Worn or damaged flush ball seal.	a. Press pedal to hold flush ball open, then lightly press down around edge of ball seal with finger to conform to flush ball. b. Clean flush ball and seal. c. Replace seal.
2. Odor from toilet when flush ball is open.	a. Plugged holding tank vent. b. Odor from holding tank contents.	a. Clear obstruction from vent. b. Add deodorant to holding tank.
3. Odor from toilet when flush ball is closed.	a. No water in bowl. b. Damaged flush ball seal. c. Damaged floor flange seal.	a. Add water to bowl. b. Replace seal. c. Replace floor seal.
4. Flush ball will not close completely.	a. Too much friction between flush ball and seal.	a. Clean and lubricate flush ball and seal with silicone spray or furniture polish.
5. Water flow into toilet will not stop.	a. Worn or defective water valve.	a. Replace water valve.
6. Water does not enter toilet bowl properly.	a. Insufficient water flow rate at toilet inlet. b. Screen at water valve inlet is clogged. c. Water valve is worn or damaged. d. Plugged rim wash holes in toilet.	a. Make sure flow rate at toilet inlet is 3.0-5.0 gpm / 11.4-18.9 lpm (recommended rate). b. Clean screen. c. Replace water valve. d. Clean rim wash holes.
7. Hand sprayer leaks (hand sprayer is not provided with all models).	a. Hand sprayer is defective.	a. Replace hand sprayer.
8. Water is leaking from water valve.	a. Water line connection is loose or not seated properly. b. Water valve is damaged or defective.	a. Insure that threads are not cross-threaded and tighten connection. b. Replace water valve.
9. Water is leaking from toilet base.	a. Toilet is not secure to floor. b. Worn or defective floor flange seal.	a. Tighten toilet mounting bolts. b. Replace floor flange seal.
10. Water is leaking from rear of toilet.	a. Loose vacuum breaker. b. Damaged or defective vacuum breaker. c. Cracked or defective toilet bowl.	a. Make sure vacuum breaker stem is pushed fully into sealing grommet in back of bowl. b. Replace vacuum breaker. c. Replace toilet.



DOMETIC PORCELAIN TOILET AND PARTS LIST

Dometic Gravity-Flush Toilet

Warranty / Customer service

11 Warranty

Manufacturer's Two-Year and Ten-Year Limited Warranty

Dometic Corporation warrants, to the original purchaser only, that this Dometic® gravity discharge toilet, if used for personal, family or household-like purposes, is free from defects in material and workmanship for a period of two (2) years from the date of purchase.

Dometic also warrants, to the original purchaser only, that the ceramic portion of the toilet bowl will not scratch or craze for a period of ten (10) years if used for personal, family or household-like purposes, and is regularly cleaned as described in the product owner's manual.

If this Dometic product is placed in commercial or business use, it will be warranted, to the original purchaser only, to be free of defects in material and workmanship for a period of ninety (90) days from the date of purchase.

Dometic reserves the right to replace or repair any part of this product that proves, upon inspection by Dometic, to be defective in material or workmanship. All labor and transportation costs or charges incidental to warranty service are to be borne by the purchaser-user.

EXCLUSIONS

IN NO EVENT SHALL DOMETIC BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, FOR DAMAGES RESULTING FROM IMPROPER INSTALLATION, OR FOR DAMAGES CAUSED BY NEGLIGENCE, ABUSE, ALTERATION, OR USE OF UNAUTHORIZED COMPONENTS. THIS INCLUDES FAILURES WHICH MAY RESULT FROM NOT FOLLOWING THE WINTERIZATION OR CLEANING PROCEDURES AS DESCRIBED IN THIS OWNER'S MANUAL. ALL IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, ARE LIMITED TO A PERIOD OF ONE (1) YEAR FROM DATE OF PURCHASE.

IMPLIED WARRANTIES

No person is authorized to change, add to, or create any warranty or obligation other than that set forth herein. Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to one (1) year from the date of purchase for products used for personal, family or household-like purposes, and ninety (90) days from the date of purchase for products placed in commercial or business use.

OTHER RIGHTS

Some states do not allow limitations on the duration of an implied warranty, and some states do not allow exclusions or limitations regarding incidental or consequential damages; so, the above limitations may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

To obtain warranty service, first contact the local dealer from whom the product was purchased or go to <http://www.dometic.com/enus/Americas/USA/Customer-Support/> for a dealer near you.

12 Customer service

12.1 Toilet model identification

The toilet model identification label is located on the toilet base under the water valve. Please have this information ready if contacting Dometic for customer service.

12.2 Contact information

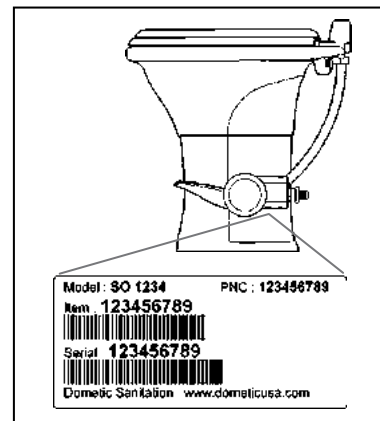
There is a strong, worldwide network to assist in servicing and maintaining your toilet system. For the Authorized Service Center near you, please call from 8:00 a.m. to 5:00 p.m. (ET) Monday through Friday.

You may also contact or have your local dealer contact the Parts Distributor nearest you for quick response to your replacement parts needs. They carry a complete inventory for the Dometic product line.

Telephone: 1 800-321-9886 U.S.A. and Canada
330-496-3211 International

Fax: 330-496-3097 U.S.A. and Canada
330-496-3220 International

Web site: <http://www.Dometic.com>





Dometic Gravity-Flush Toilet

Dometic Group is a customer-driven, world-leading provider of leisure products for the RV, automotive, truck and marine markets. We supply the industry and aftermarket with a complete range of air conditioners, refrigerators, awnings, cookers, sanitation systems, lighting, mobile power equipment, comfort and safety solutions, windows, doors and other equipment that make life more comfortable away from home.

Dometic Group supplies a wide range of workshop equipment for service and maintenance of built-in air conditioners. Dometic Group also provides specially designed refrigerators for hotel rooms, offices, wine storage and transport and storage of medical products.

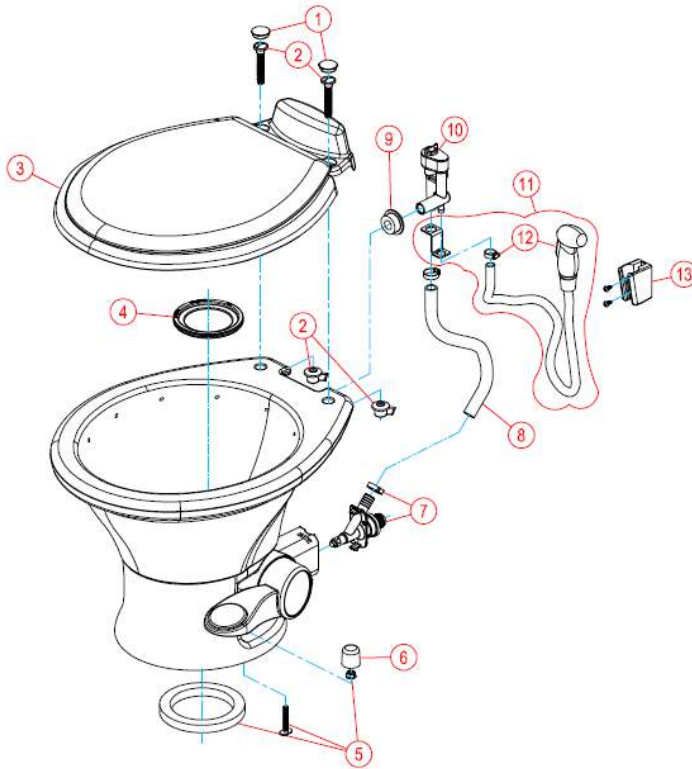
Our products are sold in almost 100 countries and are produced mainly in wholly-owned production facilities around the world.





DOMETIC PORCELAIN TOILET AND PARTS LIST

PARTS LIST: 311 LOW-PROFILE GRAVITY FLUSH TOILET



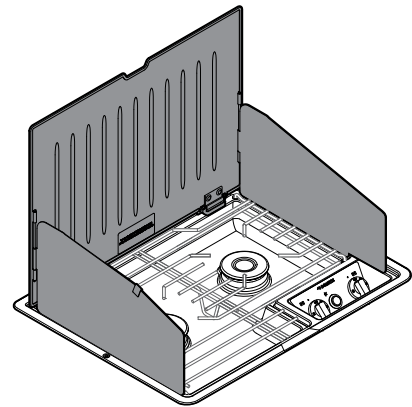
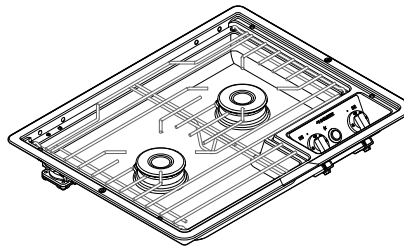
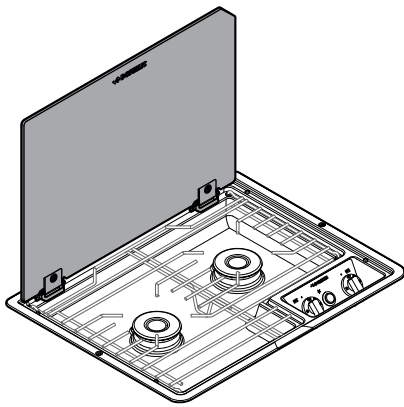
ITEM	PART NUMBER & DESCRIPTION
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2	385311650 SEAT/COVER MTG HARDWARE-WHITE 385311651 SEAT/COVER MTG HARDWARE-BONE *INCLUDES ITEM 1
3	385311646 SEAT/COVER REPLACEMENT - WHITE 385311647 SEAT/COVER REPLACEMENT - BONE *INCLUDES ITEM 1 & 2
4	385311658 FLUSH BALL SEAL
5	385311652 MOUNTING HARDWARE/SEAL - WHITE 385311653 MOUNTING HARDWARE/SEAL - BONE *INCLUDES ITEM 6
6	385311654 FLOOR BOLT CAP - WHITE 385311655 FLOOR BOLT CAP - BONE
7	385311641 WATER VALVE KIT
8	385311937 WATER SUPPLY HOSE - WHITE 385311938 WATER SUPPLY HOSE - BONE *INCLUDES CLAMPS
9	385311164 1/2" SEALING GROMMET
10	385230335 VACUUM BREAKER KIT w/HAND SPRAY 385316906 VACUUM BREAKER KIT *INCLUDES ITEM 9
11*	385319054 HAND SPRAY KIT w/VAC BREAKER - WHT *INCLUDES ITEMS 9, 10 & 12
12*	385311124 HAND SPRAYER - WHITE *INCLUDES ITEM 13
13*	385230319 HAND SPRAY BRACKET w/SCREWS-WHT

* ITEMS 11, 12, & 13 ARE OPTIONAL ACCESSORIES;
NOT PROVIDED WITH EVERY MODEL.

Dometic Corporation - Sanitation Systems
13128 State Rt. 226, P.O. Box 38
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↗ DOMETIC HOT PRODUCTS COOKTOP



D21

EN	D21 Drop-in Cooktop Installation and Operating Manual 2
FR	Plaque de cuisson encastrable D21 Manuel d'installation et d'utilisation 14

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death.

– Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

– **WHAT TO DO IF YOU SMELL GAS**

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your recreational vehicle.
- Clear the recreational vehicle of all occupants.
- Turn off the gas supply tank valve(s) or main gas supply.
- Immediately call your gas supplier for instructions.
- If you cannot reach your gas supplier, call the fire department.

– Have the gas system checked and leakage source corrected by a qualified installer, service agency, manufacturer or dealer, or the gas supplier.





NORTH AMERICAN ADDRESS INFORMATION

USA & CANADA

Service Office
Dometic Corporation
1120 North Main Street
Elkhart, IN 46514

Service Center & Dealer Locations

Visit: www.dometic.com

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Read these instructions carefully. These instructions must stay with this product.

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- 2 General information 4
- 3 Intended use 4
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- 6 Maintenance, cleaning, and storage12
- 7 Disposal12
- 8 Replacement parts13
- Limited two-year warranty 13



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 will indicate the degree or level of hazard seriousness.

⚠ 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 is used to address practices **not** related to physical injury.



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

1.3 Supplemental directives



Read and follow all safety information and instructions to avoid possible injury or death. Read and understand these instructions before installation, use, and maintenance of this product. Incorrect installation, operation, and maintenance of this product can lead to serious injury. The installation must comply with all applicable local or national codes, including the latest edition of the following standards:

U.S.A.

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

Canada

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

1.4 General safety messages

⚠ WARNING Failure to obey the following warnings could result in death or serious injury:

- This product must be installed by a qualified service technician.
- Dometic gas-operated cooking units are for use with LP gas only and for installation in recreational vehicles only (e.g. travel trailers, motor homes, tent campers, etc.). Any other uses can lead to property damage, serious injury, or death.
- Improper installation, adjustment, service, or maintenance can cause injury, property damage, or death. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, manufacturer, or the gas supplier.
- Do **not** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Shut off all gas appliances and pilot lights when refueling gasoline or LP tanks, or when the vehicle is in motion. Failure to do so can result in property damage, serious injury or death.
- Gas flames consume oxygen, which must be replaced to assure proper combustion. A window or air vent should be open slightly while using any cooking appliance. Failure to provide fresh air during combustion can lead to carbon monoxide poisoning and could result in serious injury or death.
- When the Cooktop is in use, the Cover must be fully open and in the upright position.



D21 Drop-in Cooktop

CAUTION Do not use the Cover as a griddle or cooking surface. Doing so could result in property damage or injury.

NOTICE The Cover must be closed when the vehicle is in motion.

i Have the installer or dealer show you where the main gas shut off valve is located so that you will know how and where to turn off the gas supply when necessary.

2 GENERAL INFORMATION

i 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).

Included Parts	Quantity
#6 x 3/4" Screws	2
(2) Nylon Washers	2
Corner Pieces	4

Recommended Tools	
Drill	3/32" Drill Bit
#2 Drive Screwdriver	Crescent Wrenches (2)

Optional Parts*	Reference Number
Metal Cover	50236
Glass Cover	50255

*The glass cover is preinstalled on the SECG model and the metal cover is preinstalled on the BPWM models. Available as an accessory for all other models.

3 INTENDED USE

This Drop-in Cooktop (hereinafter referred to as "Cooktop") is designed and intended for use inside, or for temporary use outside, the recreational vehicle (hereinafter referred to as "RV") for which it is supplied. Use these instructions to ensure correct installation, function, and operation of the Cooktop. While this Cooktop is approved for outside installation, portable or outdoor installations into an enclosure not made from metal or wood must be approved by Dometic prior to use. Do **not** store the Cooktop outdoors. This Cooktop is **not** designed for installation adjacent to another Cooktop.

The manufacturer accepts no liability for damage in the following cases:

- Faulty assembly or connection.
- Damage to the product resulting from mechanical influences and excess voltage.
- Alterations to the product without express permission from the manufacturer.
- Use for purposes other than those described in the operating manual.

Dometic Corporation reserves the right to modify appearances and specifications without notice.

4 INSTALLATION

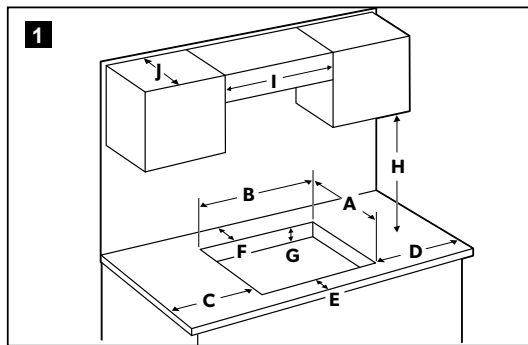
⚠ WARNING FIRE, EXPLOSION, OR BURN HAZARD. Do **not** use matches, candles, or other sources of ignition to test fittings and gas lines for leaks. Doing so could result in an explosion, causing serious injury or death.

i The gas line material between the Cooktop and the bottom shield must be rated for a minimum of 300°F (149°C) exposure.

4.1 Constructing the cabinet

For proper operation, the cabinet must:

- Be properly constructed of wood or metal, to the dimensions shown.
- Be squared to the counter top and cabinet face.
- Have the cabinet opening be level from side to side and from front to rear.
- Be positioned so that no combustible material can be placed next to the Cooktop sides. If there is a gap between the Cooktop and an adjacent cabinet, you must close the gap prior to installing the Cooktop.



A ‡	B ‡	C	D	E	F §	G	H †	I *	J ¥
13.75" (350 mm)	17.875" (455 mm)	1.875" (48 mm)	2.25" (58 mm)	0.75" (20 mm)	2.625"/1.125" (67 mm/29 mm)	4.125" (105 mm)	19.50" (20 mm)	*	¥

‡ For proper fit, these dimensions must be within +/- 1/8" (3.2 mm).

§ 2.625" (67 mm) for all models without preinstalled cover. 1.2" (31 mm) for models with preinstalled cover (SECG and BPWM models).

† 19.50" (H) [20 mm] is the minimum vertical distance between combustible material and the Cooktop. Installer must follow requirements of table 2-6.7.2 of ANSI 1192.

* > nominal width of the Cooktop

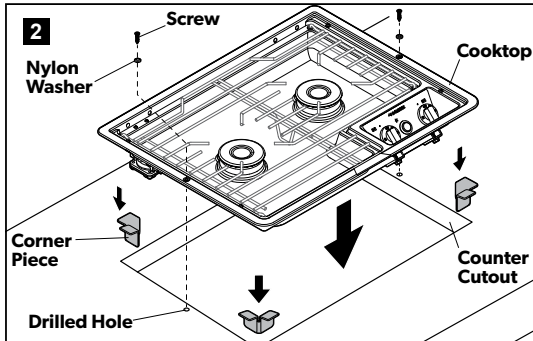
¥ 13.00" (J) [331 mm] is the maximum depth of cabinets installed above cooking tops per ANSI Z21.57, Clause 1.25.1.L.



D21 Drop-in Cooktop

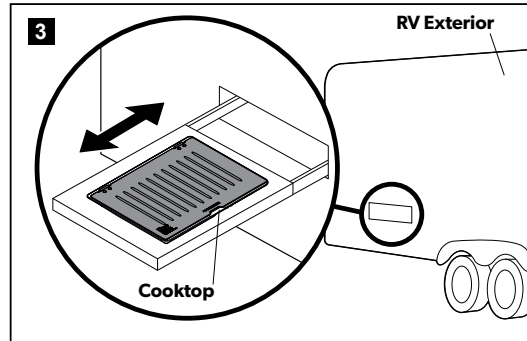
4.2 Placing your cooktop

Inside installation



- Locate and cut the opening in the countertop according to the dimensions in "4.1 Constructing the cabinet" on page 5.
- Drill holes in the countertop to match the location of the screw holes on the Cooktop.
- Place one corner piece (supplied) at each corner of the opening, so that the lip of the corner piece is flat against the countertop.
- Insert the screws and nylon washers (supplied) to install the Cooktop.
- Place the Cooktop into the opening so that it rests on top of the corner pieces. Hand-tighten the screws to the countertop.
- Verify the Cooktop is level from side to side and front to rear.
- Tighten the screws to secure the Cooktop to the countertop using a #2 screwdriver. Do **not** overtighten.

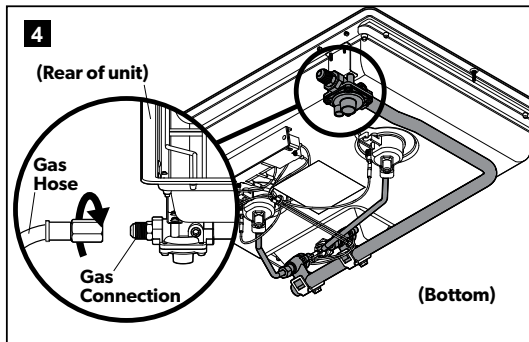
Outside installation



i Do **not** store the Cooktop outside.

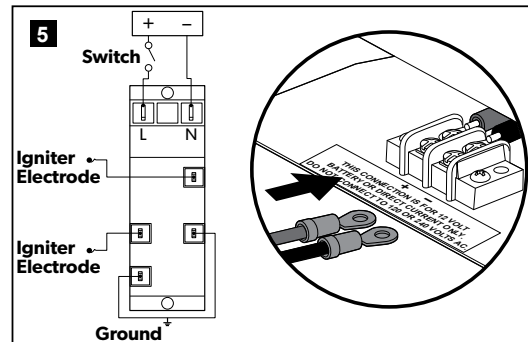


4.3 Connecting the propane gas



- Run a propane-certified hose from the propane supply tank to the gas connection on the Cooktop.
- Tighten according to appropriate RV and gas codes. Use two wrenches when tightening. Hold regulator in place while tightening hose.
- Turn ON the gas supply by turning the gas shut-off valve on the tank counterclockwise.
- Check for leaks using a non-corrosive leak detection fluid. Do **not** use a soap and water solution. Leak test pressures in excess of 13.9" W.C. (1/2 psi) of air pressure will invalidate the warranty.
- After confirming there are no leaks, turn OFF the gas supply by turning the gas shut-off valve on the tank clockwise.

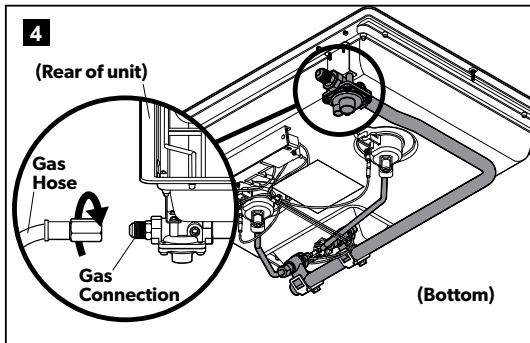
4.4 Connecting the 12 V ignition



- Connect the positive and negative wires to the terminal block on the back of the Cooktop.
- i** Connecting the wires to the wrong terminal will cause the igniter **not** to operate and can damage the ignition coil.
- i** For 12 V circuits only. Connecting to a higher voltage circuit can cause ignition coil damage.

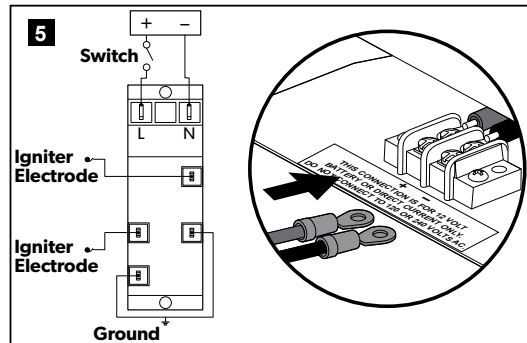


4.3 Connecting the propane gas



- Run a propane-certified hose from the propane supply tank to the gas connection on the Cooktop.
- Tighten according to appropriate RV and gas codes. Use two wrenches when tightening. Hold regulator in place while tightening hose.
- Turn ON the gas supply by turning the gas shut-off valve on the tank counterclockwise.
- Check for leaks using a non-corrosive leak detection fluid. Do **not** use a soap and water solution. Leak test pressures in excess of 13.9" W.C. (1/2 psi) of air pressure will invalidate the warranty.
- After confirming there are no leaks, turn OFF the gas supply by turning the gas shut-off valve on the tank clockwise.

4.4 Connecting the 12 V ignition



- Connect the positive and negative wires to the terminal block on the back of the Cooktop.
- i** Connecting the wires to the wrong terminal will cause the igniter **not** to operate and can damage the ignition coil.
- i** For 12 V circuits only. Connecting to a higher voltage circuit can cause ignition coil damage



5 OPERATION

5.1 Operating/safety guidelines

⚠ WARNING BURN HAZARD, FIRE, EXPLOSION, AND/OR CARBON MONOXIDE HAZARD Failure to obey the following warnings could result in damage, a burn hazard, possible explosion, carbon monoxide buildup, serious injury, or death:

- Avoid negative draft or positive draft situations or the operation of this Cooktop during excessively windy conditions. Negative draft caused by air moving across the Cooktop may blow out the burner flame or move the flame into the Cooktop, resulting in damage, a burn hazard, possible explosion, carbon monoxide buildup, injury, or death. Do not operate the Cooktop in excessively windy conditions as this may cause a negative or positive draft. Doing so may blow out the top burner flame during use, and can result in an explosion, fire hazard, injury, or death.
- The Cooktop must be completely separated and/or sealed from other air moving or air-consuming devices such as, but not limited to, furnaces, microwave ovens, clothes dryers, cooling fans, and doors or drawers in common cabinets. Failure to do so can affect the appliance(s) combustion air supply by creating either a negative or positive draft, which can result in serious injury or death.
- Do not use the Cooktop for space heating. Doing so may cause overheating of the Cooktop and/or could cause carbon monoxide poisoning, resulting in serious injury or death.
- While operating the Cooktop, frequently check the temperature of contents within cabinet areas above the Cooktop. Do not store flammable or combustible material in cabinets above, or above and adjacent to, the Cooktop. Failure to follow this instruction could result in a fire, serious injury, or death.
- Do **not** heat unopened containers. They could explode. The hot contents may cause burns and container particles may cause injury.
- Do **not** store flammable materials on, in, or near Cooktop. Any fumes can create an explosion and/or fire hazard.
- Do **not** operate Cooktop if it is damaged or not working properly.
- Verify sufficient gas supply before attempting to light any burner. Air in the gas supply line will significantly delay burner ignition, and a burner may light unexpectedly as the air in the line clears out and is replaced by LP gas; this unexpected ignition may burn you. Air may be introduced into the supply line when the vehicle gas bottle is replaced, during servicing of other gas appliances, etc.
- If any burner should extinguish (after initially lighting or due to accidental blowout), turn all burner knobs clockwise to OFF and WAIT 5 MINUTES before attempting to re-light the burner.
- Do **not** touch burners, burner grates, or areas near burners during and after use. Do **not** let clothing or other flammable materials contact burners or areas near burners until these areas have had sufficient time to cool.
- Use large enough pans to cover the burner area and contain the cooked food. This will reduce or eliminate heavy splattering or spills that can ignite and burn you.
- Be sure that glass cooking utensils are safe for use on the Cooktop. Only certain kinds of glass utensils are suitable for surface or burner use without breaking due to sudden changes in temperature.
- Never leave burners unattended when in use, as pan contents may boil over, resulting in smoke or a grease spill that may ignite.
- Turn pan handles inward, but **not** over other top burners. This reduces the chance of burns due to bumping a pan.
- Because grease is flammable, never allow grease to collect around top burners or on the Cooktop surface. Wipe up any grease spills immediately.
- Never use water on grease fires, and never pick up a flaming pan. Smother a flaming pan with a tight-fitting lid or cookie sheet. Flaming grease outside of the pan can be extinguished with baking soda or a multipurpose dry chemical or foam-type fire extinguisher.
- Use care when lighting a burner by hand. If the burner lights unexpectedly, or your hand is close to the burner, you may be burned.
- Burner flame should **not** extend beyond the edge of the cooking utensil. The flame could burn you and cause poor cooking results.
- Control knobs must be turned OFF when **not** cooking. Someone could be burned or a fire may start if a

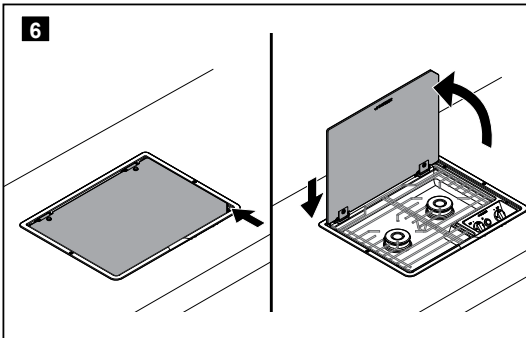


burner is accidentally left ON.

5.2 Operating your cover

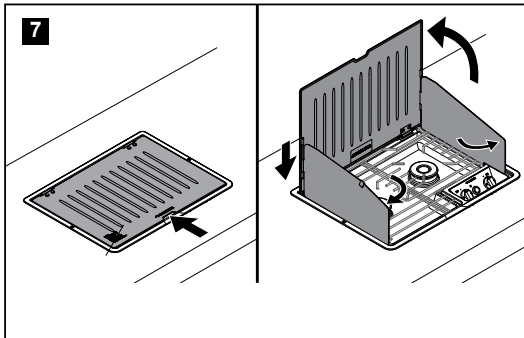
This section describes how to open and close the glass and metal covers on the Cooktop. The glass cover is preinstalled on the SECG model and the metal cover is preinstalled on the BPWM models. Covers are available as accessories for all other models.

Opening the glass cover



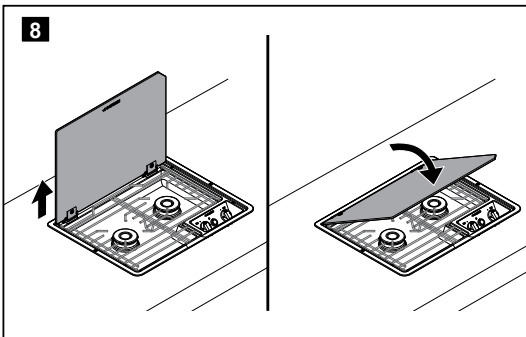
- Lift the Cover from the corner slot. Raise it completely, then gently lower the Cover down to rest on the back of the Cooktop.

Opening the metal cover



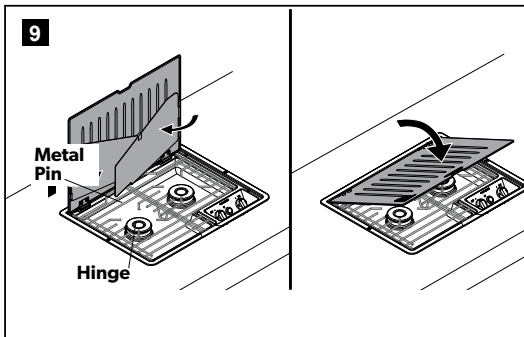
- Lift the Cover from the center slot. Raise it completely, then gently lower the Cover down to lock into the back of the Cooktop.
- Unclip the wind guards, open them, and lower them into position between the Cooktop and the grate.

Closing the glass cover



- Lift the Cover up, then gently lower it down onto the Cooktop.

Closing the metal cover



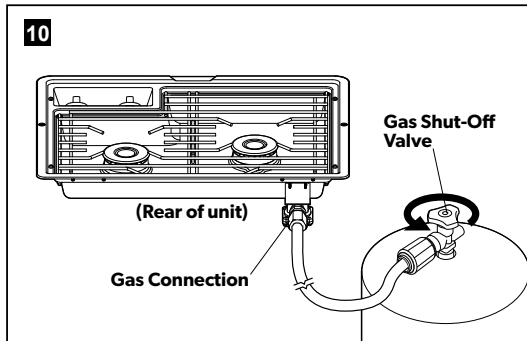
- Fold the wind guards, clip them together, and lift them up.
- Lift up the Cover, then gently lower it down onto the Cooktop.



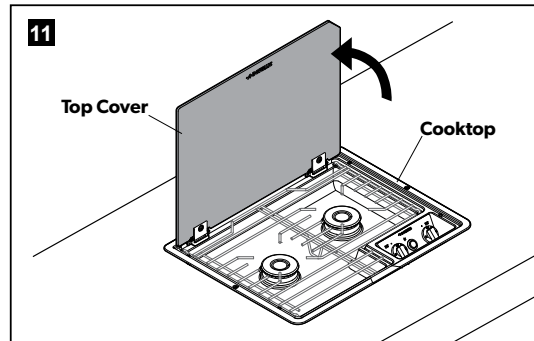
D21 Drop-in Cooktop

5.3 Preparing your cooktop for use

NOTICE Glass can be easily scratched. Use care when setting items on the top of the cover. Avoid sliding items across the cover. Do not drop objects onto the cover, as this may cause breakage.



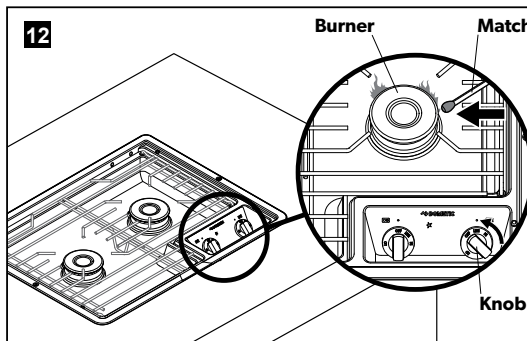
- Turn the gas ON at the gas shut-off valve (counterclockwise).



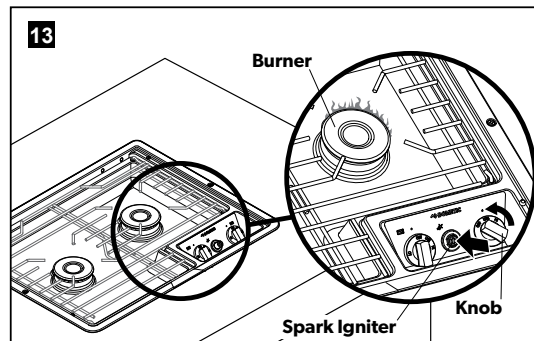
- i** If your Cooktop is equipped with a top cover, lift the top cover when operating the Cooktop. See "5.2 Operating your cover" on page 9.

5.4 Lighting the burner

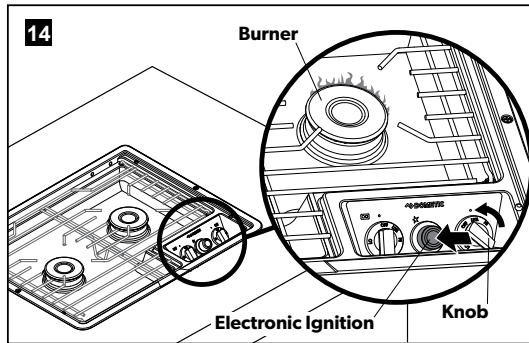
All burner controls operate counterclockwise and must be pressed inward when turning to light. Do **not** attempt to light more than one burner at a time.



- To light the Cooktop with a match, turn the knob counterclockwise and IMMEDIATELY hold a lit match near the burner.

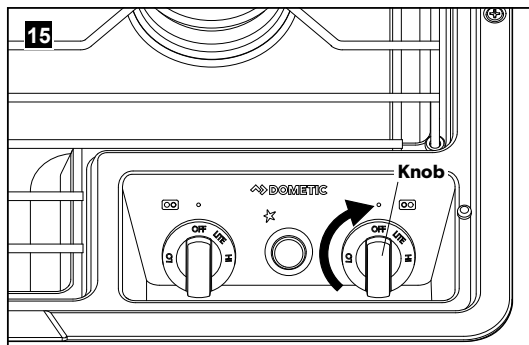


- To light the Cooktop using a spark igniter, turn the knob counterclockwise and press the spark igniter button until it clicks and the burner ignites.



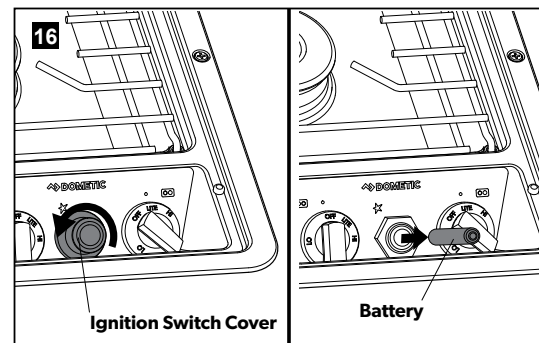
- To light the Cooktop using the electronic ignition, turn the knob counterclockwise, then press and hold the electronic ignition button until the burner lights.

5.5 Extinguishing the burner



- To extinguish the burner, turn the knob to the "OFF" position to stop the flow of gas to the burner.

5.6 Changing the battery (battery ignition)



- Unscrew the ignition switch cover.
- Remove and replace the AAA battery.



6 MAINTENANCE, CLEANING, AND STORAGE

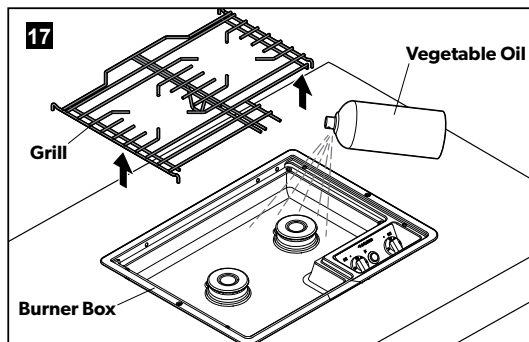
⚠ WARNING BURN HAZARD, FIRE, EXPLOSION, AND/OR CARBON MONOXIDE HAZARD. Keep Cooktop area clear of combustible cleaning materials, gasoline, and other flammable vapors and liquids. Failure to obey this warning could result in damage, a burn hazard, possible explosion, carbon monoxide buildup, serious injury, or death.

⚠ CAUTION Failure to obey the following cautions could result in damage or injury:

- All Cooktop surfaces, burner grates, and burners must be cool before cleaning or disassembling the Cooktop.
- Clean all surfaces quickly after spills.
- Use warm soapy water only to clean the burner grates, burner box, painted surfaces, porcelain surfaces, stainless steel surfaces, and plastic items on your Cooktop. Do **not** use gritty or acid-type cleaners. Do **not** use steel wool or abrasive cleaners, as they will damage your Cooktop. Use only non-abrasive plastic scrubbing pads.
- Do **not** allow foods containing acids (such as lemon juice, tomato juice, or vinegar) to remain on porcelain or painted surfaces. Acids may remove the glossy finish. Pitting and discoloration will result if spills are allowed to remain for any length of time on stainless steel. Do **not** allow spills to remain on burner caps. Caps could be permanently stained if spills are not cleaned up promptly.

i Proper installation and care will help keep your Cooktop looking and operating like new. Most cleaning can be performed using normal household items.

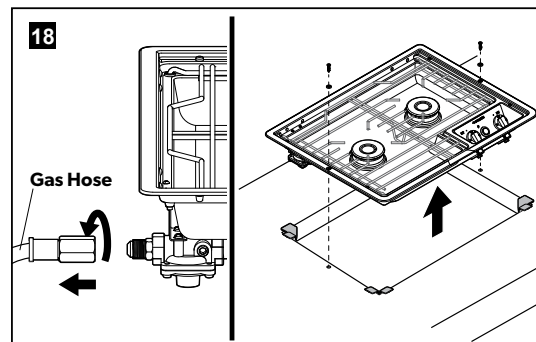
6.1 Cleaning your cooktop



- Remove the grill from the Cooktop.
- Dry all surfaces and the burner box then spray surfaces with vegetable oil or a similar product to help prevent the surface from rusting during storage.

i Clean oil off of the surface of the Cooktop before reinstalling and operating the Cooktop.

6.2 Storing your cooktop



i Refer to your installation manual for additional detail and safety messaging.

- Disconnect the gas hose from the Cooktop. Remove the screws securing the Cooktop and lift the Cooktop out of the cutout.
- Pack the Cooktop in its original packaging, or other suitable materials, to protect it from damage.

7 DISPOSAL

Place packaging material only in the appropriate recycling waste bins, whenever possible. Do **not** dispose of the range or slide-in without consulting a local recycling center or specialist dealer for details about how to dispose of the range or slide-in in accordance with the applicable national and local regulations.



8 REPLACEMENT PARTS

⚠ WARNING BURN HAZARD, FIRE, EXPLOSION, AND/OR CARBON MONOXIDE HAZARD. Use only Dometic replacement parts and components, which are specifically approved for use with the Drop-In Cooktop. Failure to obey this warning could result in damage, a burn hazard, possible explosion, carbon monoxide buildup, serious injury, or death.

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

LIMITED TWO-YEAR WARRANTY

LIMITED TWO-YEAR WARRANTY AVAILABLE AT WWW.DOMETIC.COM/WARRANTY.

IF YOU HAVE QUESTIONS, OR TO OBTAIN A COPY OF THE LIMITED WARRANTY FREE OF CHARGE, CONTACT:

DOMETIC CORPORATION
CUSTOMER SUPPORT CENTER
1120 NORTH MAIN STREET
ELKHART, INDIANA, USA 46514
1-800-544-4881 OPT 1

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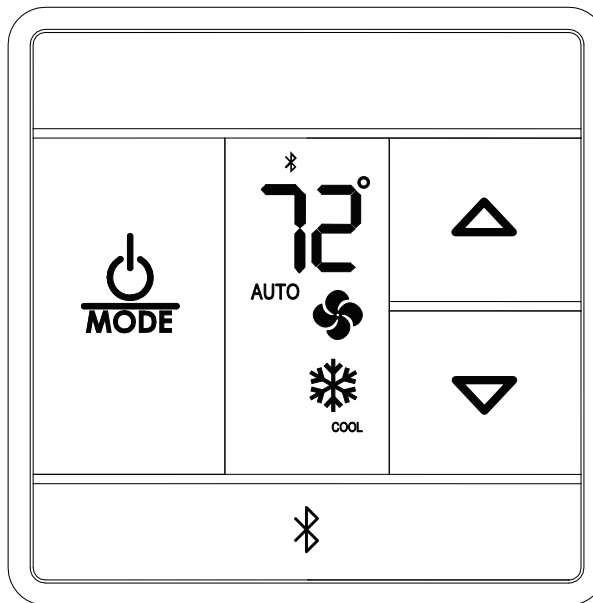
dometic.com/sales-offices



OPERATING INSTRUCTIONS

BLUETOOTH® CAPACITIVE TOUCH THERMOSTAT

3316420.XXX { MODEL
 COOL/FURNACE
 COOL/FURNACE/HEAT STRIP
 COOL/FURNACE/HEAT PUMP



Read these instructions carefully. These instructions **MUST** stay with this product.

REVISION B
 Form No. 3316468.000 10/16
 (French 3316469.000_B)
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 Please Visit:
www.eDometic.com



INTRODUCTION

This Bluetooth® Capacitive Touch thermostat (hereinafter referred to as “CT thermostat” or “product”) is designed and intended for use in a Recreational Vehicle (hereinafter referred to as "RV"). Use these instructions to ensure correct installation, function, and operation of product.


Dometic Corporation reserves the right to modify appearances and specifications without notice.

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DOCUMENT SYMBOLS

-  Indicates additional information that is **NOT** related to physical injury.

FCC AND IC REGULATIONS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

FAMILIARIZATION

To familiarize yourself with the operation of your new CT thermostat, review the following diagrams and accompanying text explaining functional characteristics of this system.

A. Features

- Capacitive Touch Interface
- Bluetooth® Connection
- Blue LED Backlight
- Liquid Crystal Display (LCD)
- Auto Fan
- Indoor Temperature Display
- Air Conditioner - Provides additional indoor air circulation during furnace operation



FAMILIARIZATION

B. System Initialization

An installer needs to perform a system initialization.

1. Ensure the CT thermostat is Off.
2. Simultaneously press and hold the **Up** (\blacktriangle) button and the ⏻ / **Mode** button for three seconds. LCD will show "--". This completes system initialization.
3. Set the furnace On/Off temperature differential. See "B. Furnace Mode" on page 22.

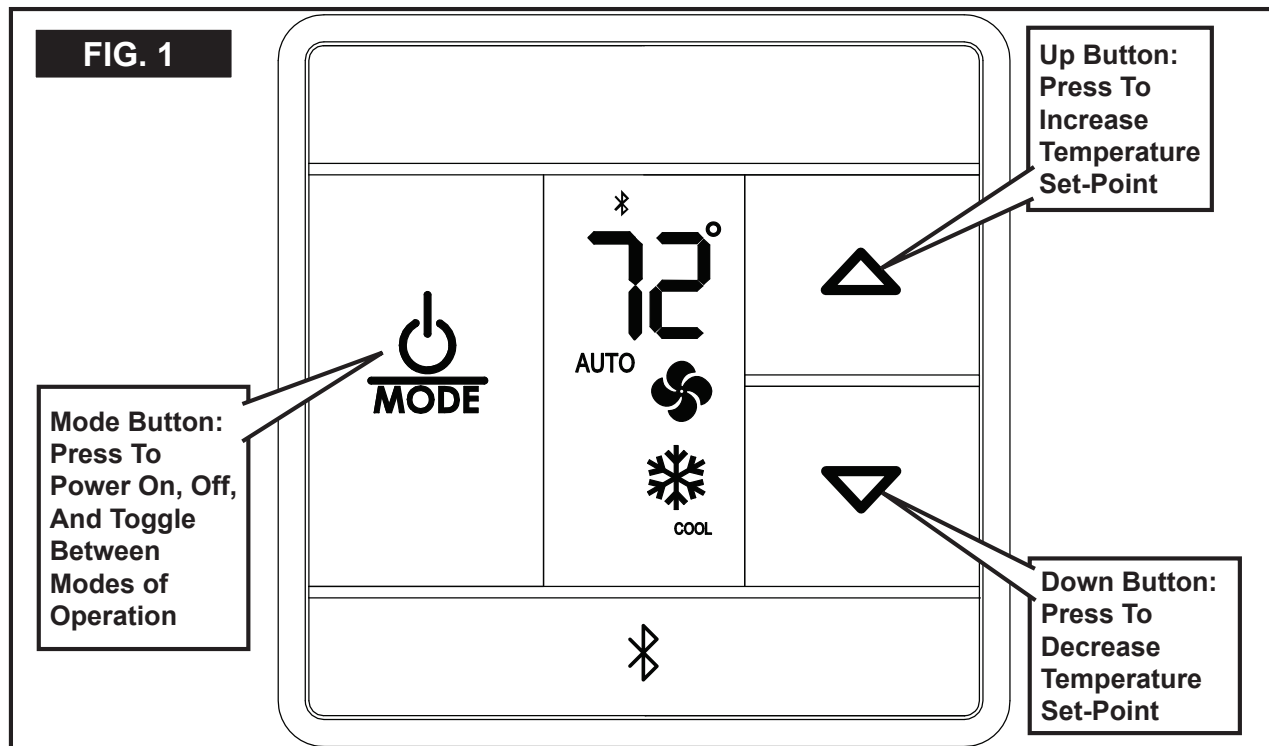
C. Factory Preset Settings

The CT thermostat is pre-programmed to these settings:

Heating	68°F / 20°C
Cooling	72°F / 22°C
Fan Speed	Auto
Mode	Off
Furnace Differential	2°F

D. Quick Reference

See FIG. 1 for control button quick reference.






CT THERMOSTAT PROGRAMMING AND OPERATION

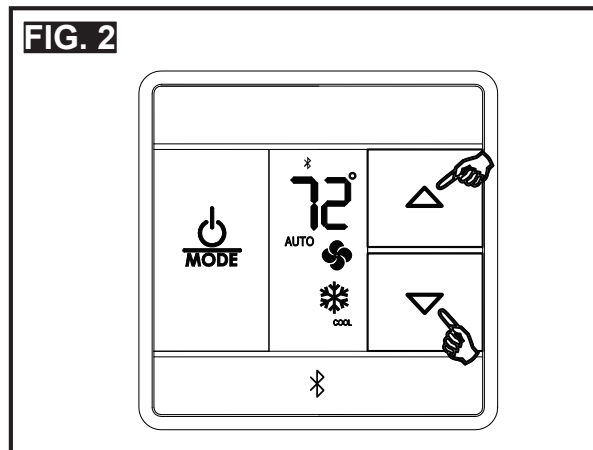
A. Turning The CT Thermostat On And Off

1. Press the **⏻ / Mode** button to turn the CT thermostat on. See FIG. 1.
2. To turn the CT thermostat off, continue pressing the **⏻ / Mode** button until "Off" appears on the LCD. After 15 seconds of illumination, the LCD turns off.

 Dependent upon the systems installed, the Mode options you will scroll through are Off, Fan, Cool, Furnace, Heat Pump, and Heat Strip.

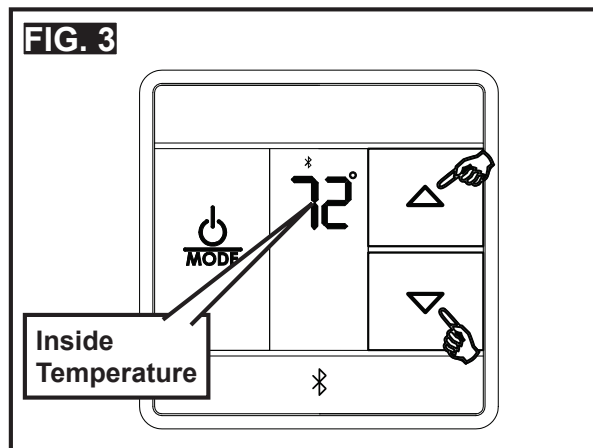
B. Switching Between °F and °C

1. Simultaneously press the **Up (▲)** and **Down (▼)** buttons to toggle the LCD between °F and °C. See FIG. 2.



C. Displaying The Inside Temperature

1. Ensure the CT thermostat is in Off mode. If it is not, press the **⏻ / Mode** button until you reach Off mode.
2. Press either the **Up (▲)** or **Down (▼)** button to display the temperature. See FIG. 3



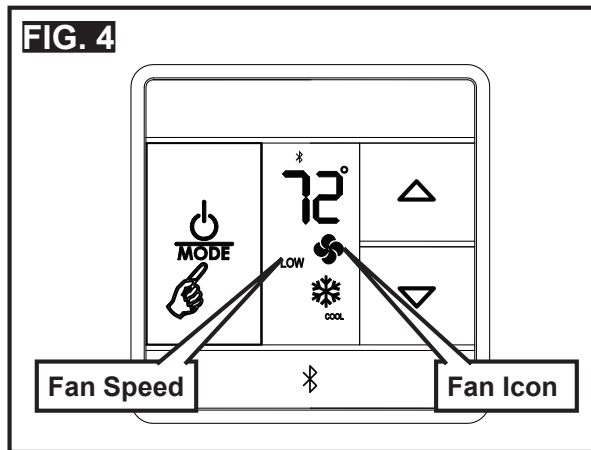


CT THERMOSTAT PROGRAMMING AND OPERATION

D. Setting The Fan Speed (Fan Mode)

Fan mode provides three speed settings:

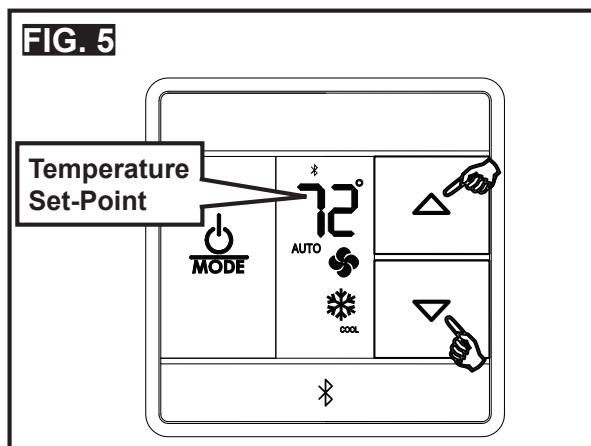
- Low – Fan operates continuously at a low speed.
 - High – Fan operates continuously at a high speed.
 - Auto – Fan and compressor cycle on and off and the speed varies based on room temperature and temperature setting on the CT thermostat. When the temperature difference between the room and the CT thermostat is:
 - $>5^{\circ}\text{F}$ (-15°C), the fan operates at a high speed
 - $<4^{\circ}\text{F}$ (-15.5°C), the fan operates at low speed.
1. Press the **Mode** button until the Fan icon appears.
 2. Press the **Up** (\blacktriangle) or **Down** (\blacktriangledown) button until the desired fan speed appears on the LCD. See FIG. 4.



E. Setting The Temperature

The possible modes for setting the temperature are Cool, Furnace, Heat Pump, and Heat Strip. See "Mode Description" on page 22 for more information on these mode settings.

1. Press the **Mode** button until you see your desired mode on the LCD.
2. Press the **Up** (\blacktriangle) and **Down** (\blacktriangledown) buttons until you reach your desired temperature setting. The maximum temperature setting is 90°F (32°C). The minimum for heating is 40°F (4.4°C) and 55°F (13°C) for cooling. See FIG. 5.






BLUETOOTH® PROGRAMMING AND OPERATION

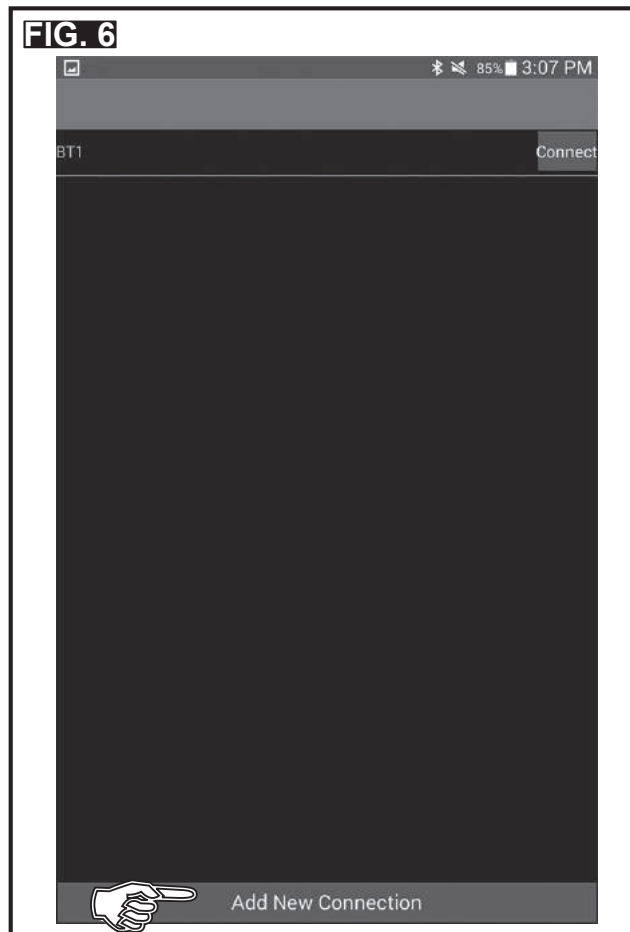
A. Pairing A Mobile Device With A CT Thermostat

Before you begin, ensure you are standing within 3' (1 m) of the CT thermostat you wish to pair your mobile device with. Do not touch the CT thermostat for 15 seconds to ensure the backlight is off. Confirm the Bluetooth® icon is blinking slowly (flashes at 2 second intervals).

 If the Bluetooth® icon is illuminated, this device is already connected to an app. Disconnect the other mobile device in order to connect to this CT thermostat.

If the Bluetooth® icon is not visible the Bluetooth® radio may have gone to sleep to conserve power (after 5 days of system inactivity). Press any button to wake the Bluetooth® system and ensure the icon is blinking slowly.


1. Open the Dometic Climate Control App on your mobile device and go to the pair management screen. If no CT thermostats are paired with the mobile device this will be indicated with a pop-up. Press **OK** the clear the pop-up and display the Pair Management screen.
 - a. If you already have CT thermostats paired with the mobile device the app will attempt to connect to the last used thermostat or the default thermostat (see "C. Setting/Unsetting The Default Device" on page 15). Press **Cancel** while connecting is in progress to show the Pair Management screen
 - b. If a paired thermostat is connected, the main screen displays. Select the Settings menu and then press **Disconnect** to show the Pair Management screen.
2. Press **Add New Connection**. See FIG. 6.

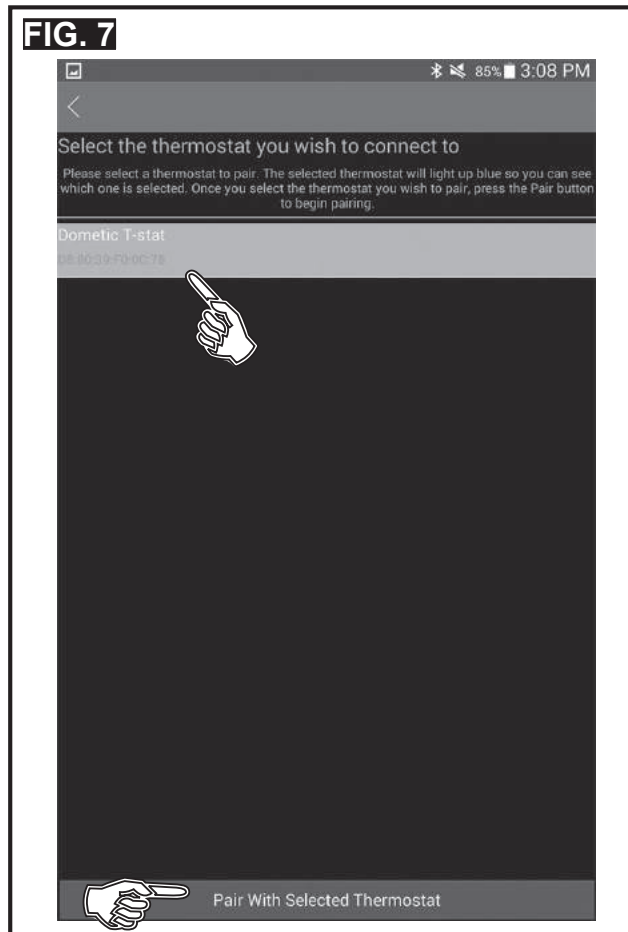





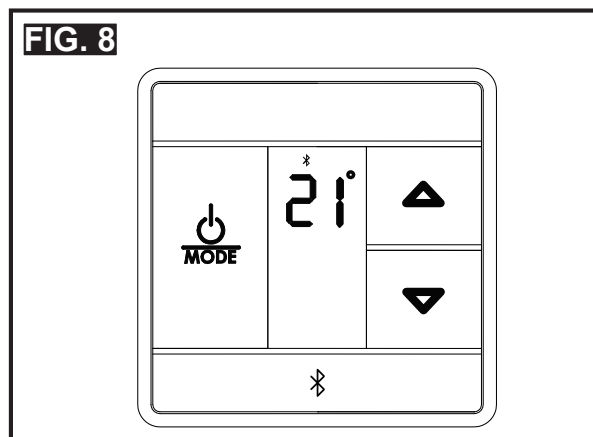
BLUETOOTH® PROGRAMMING AND OPERATION

3. Select one of the available CT thermostat devices on the list that displays on the screen. The app will attempt to connect to the CT thermostat and turn the display backlight on to confirm the app is communicating with the correct CT thermostat. When the CT thermostat backlight is lit, it is communicating with the mobile device. To start pairing with the selected CT thermostat, press **Pair With Selected Thermostat**. See FIG. 7.

 If the backlight on the CT thermostat you wish to pair with does **NOT** come on within 10 seconds, select a different CT thermostat from the list.




4. Press the  / **Mode** button on the CT thermostat until OFF mode is selected. A 2-digit PIN displays. FIG. 8 shows a 2-digit pin of “21” as an example:

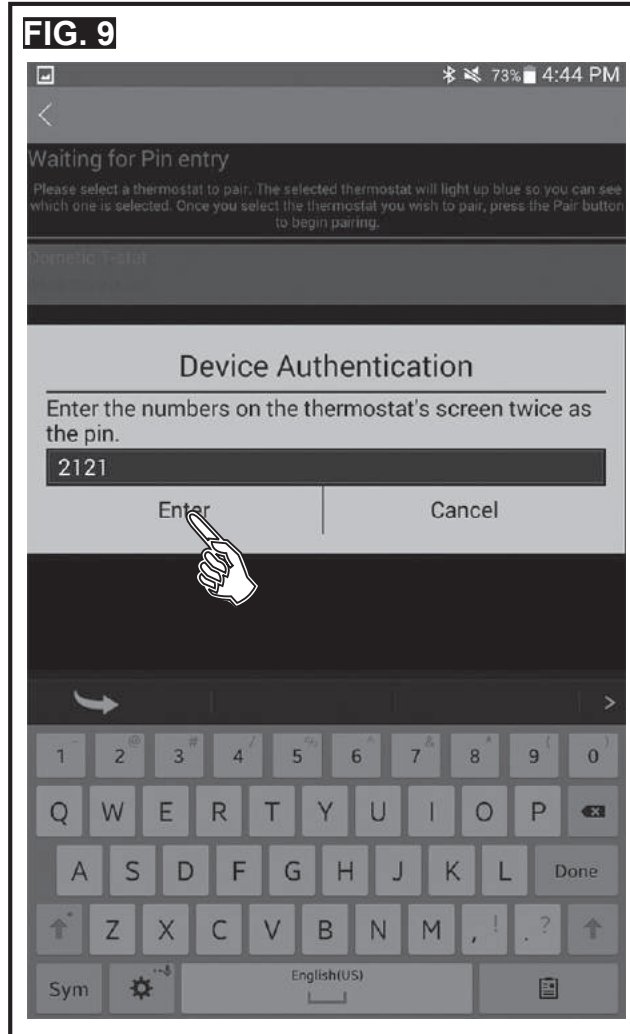




BLUETOOTH® PROGRAMMING AND OPERATION

 Steps 5-6 **MUST** be completed within 15 seconds. Otherwise, the pairing process **MUST** be repeated from step 2.

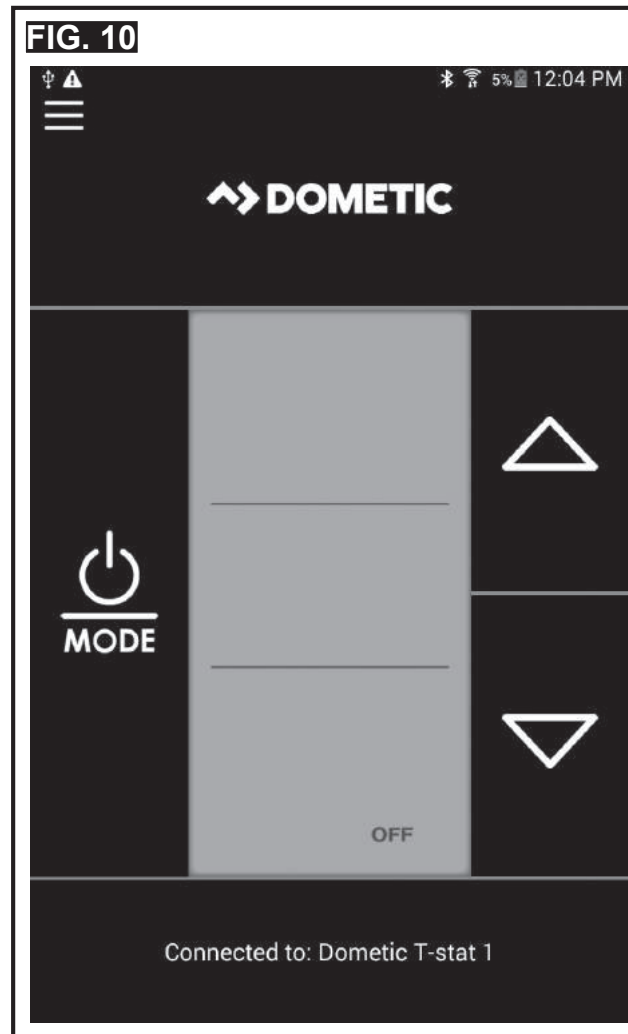
5. Enter this 2-digit code twice in the app and press **Enter**. FIG. 9 shows "2121".





BLUETOOTH® PROGRAMMING AND OPERATION

6. Upon successful connection, the app displays an interface similar to your CT thermostat. See FIG. 10.



7. It is recommended to re-name the CT thermostat at this point. See "B. Changing The CT Thermostat Name" on page 11 for more information.

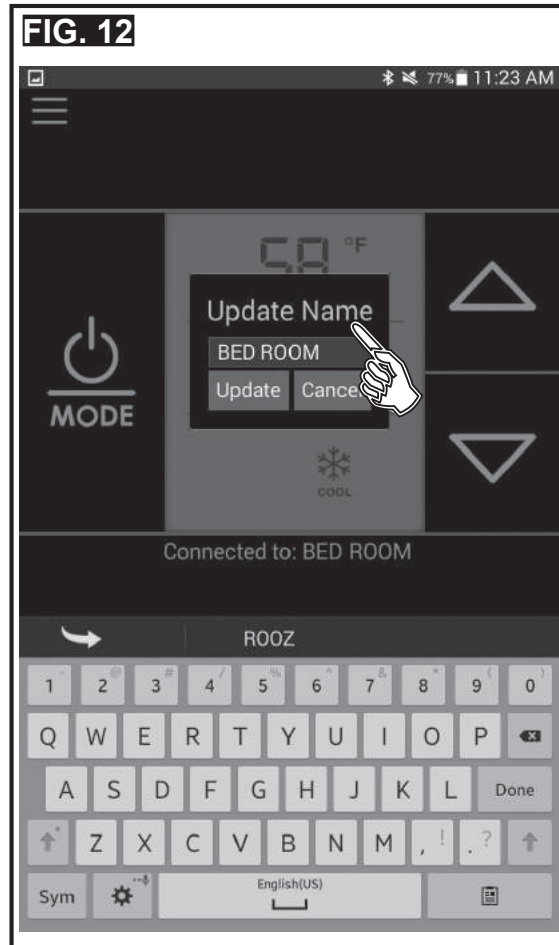
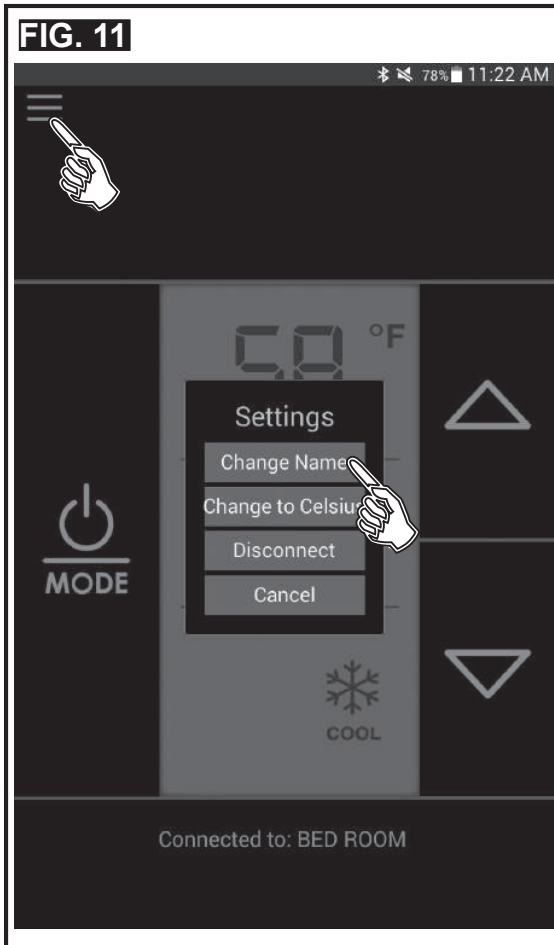
BLUETOOTH® PROGRAMMING AND OPERATION

B. Changing The CT Thermostat Name

You can either change the name of the CT thermostat while connected (from the Main screen) or while disconnected (from the Pair Management screen).

Renaming a device from the Main screen:

1. Select the Settings menu (upper left) and press **Change Name**. See FIG. 11.
2. Enter any name which makes it easy for you to identify the system controlled by the CT thermostat. For example “Bed Room” or “Living Room”. See FIG. 12.
3. Press **Update** to change and save the new name. See FIG. 12.

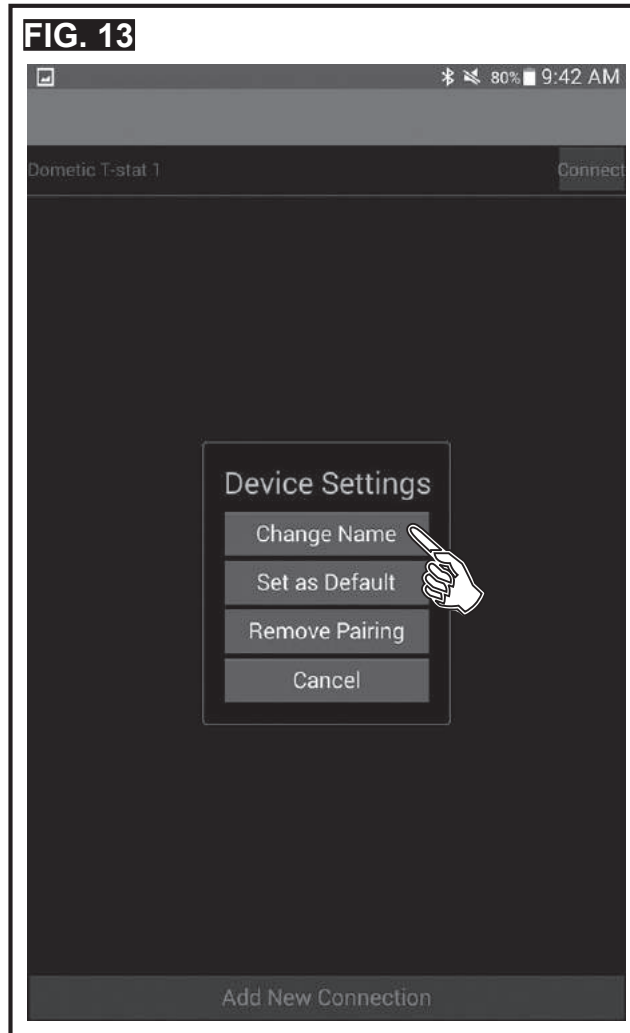




BLUETOOTH® PROGRAMMING AND OPERATION

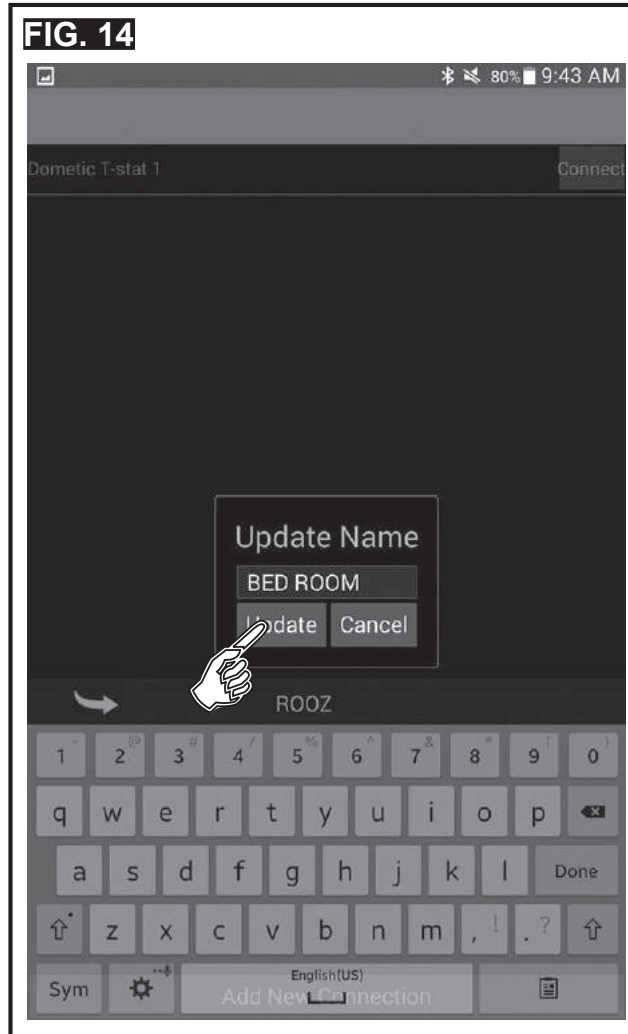
Renaming a device from the Pair Management screen:

1. Touch the line for the CT thermostat you wish to re-name.
2. Press **Change Name**. See FIG. 13.



BLUETOOTH® PROGRAMMING AND OPERATION

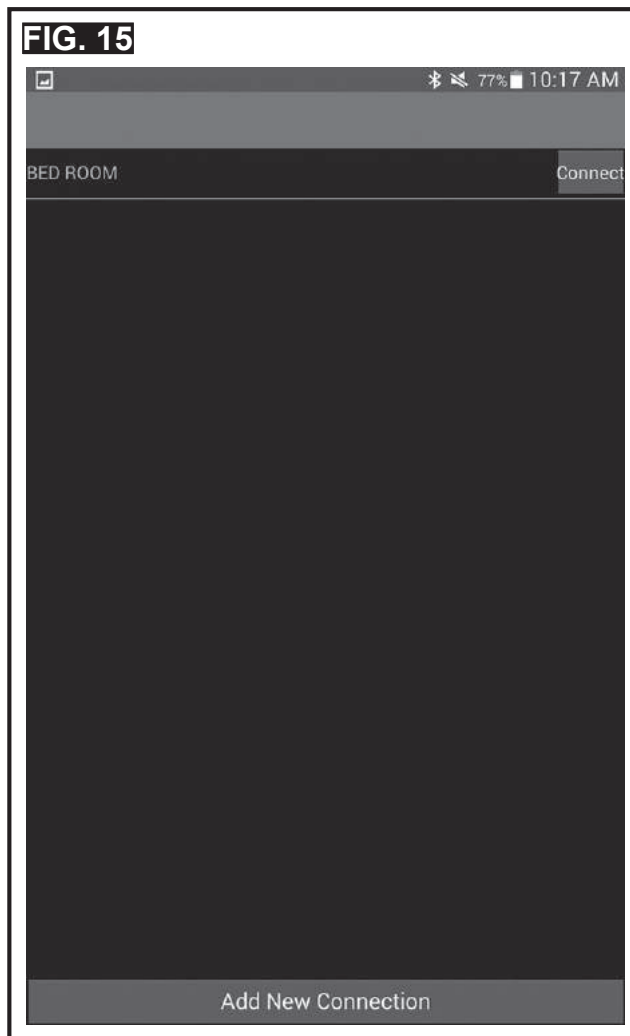
3. Enter any name which makes it easy for you to identify the system controlled by the CT thermostat. For example “Bed Room” or “Living Room”. Press **Update** to save the new name. See FIG. 14.





BLUETOOTH® PROGRAMMING AND OPERATION

4. The new name appears on the screen. See FIG. 15.





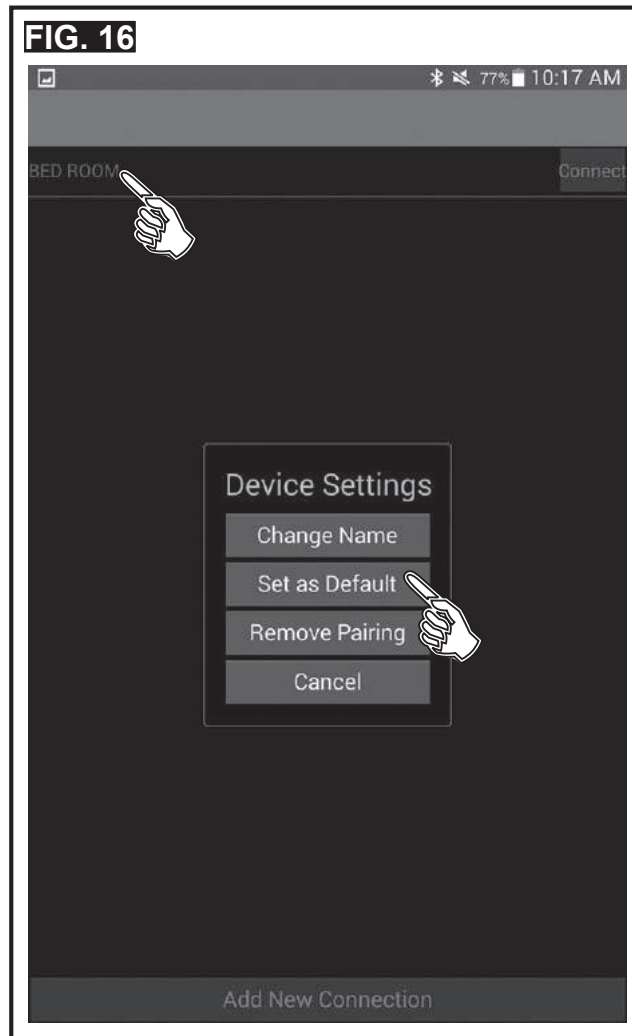
BLUETOOTH® PROGRAMMING AND OPERATION

C. Setting/Unsetting The Default Device

Assuming at least one paired device exists, the app normally reconnects to the last connected CT thermostat when the app launches. If you wish to override this behavior you can set a default device. The default device is the only CT thermostat that the app will try to connect to automatically regardless of the last connected CT thermostat. Only one default CT thermostat can be set per mobile device.

To set the default device:

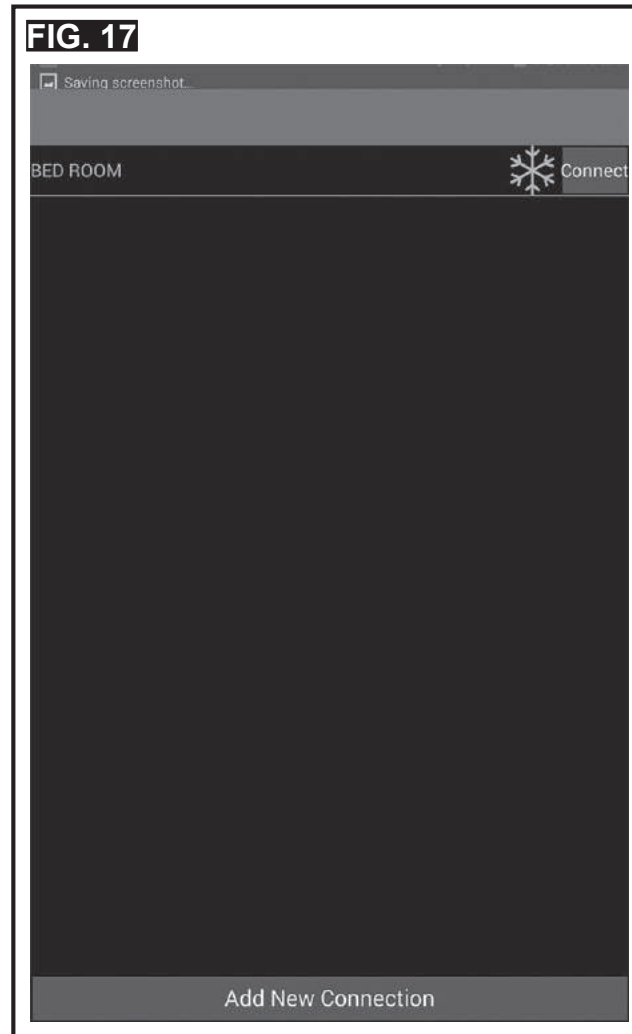
1. Disconnect from the CT thermostat to display the Pair Management screen.
2. Choose the paired CT thermostat you want to make the default device.
3. From the pop-up menu select **Set as Default**. See FIG. 16.





BLUETOOTH® PROGRAMMING AND OPERATION

4. A snowflake icon will appear beside the name of the CT thermostat in the Paired Management screen to show that it is now selected as the default. See FIG. 17.

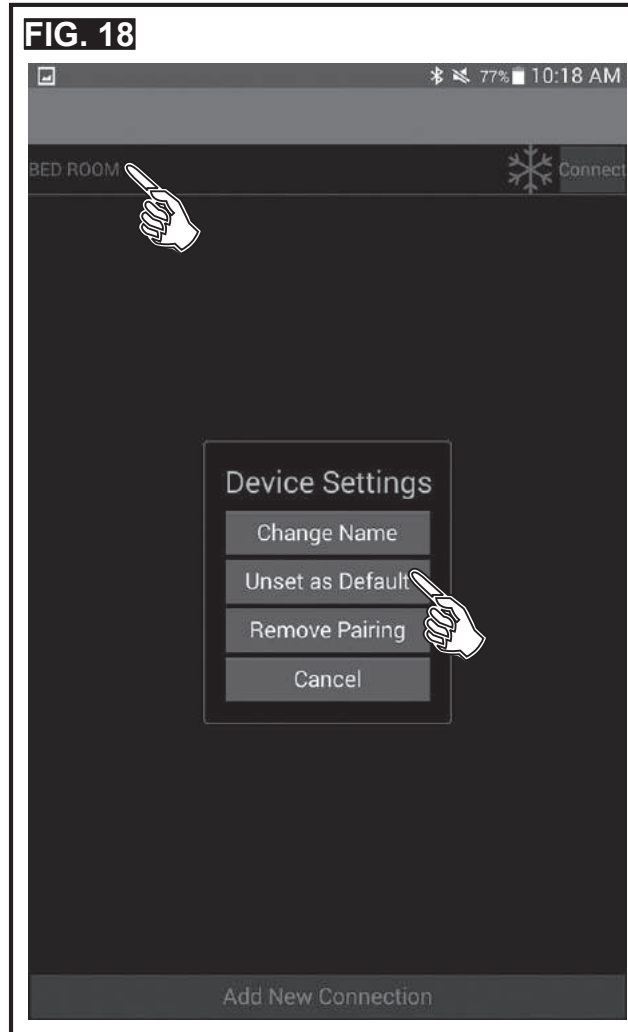




BLUETOOTH® PROGRAMMING AND OPERATION

To unset a default device:

1. Disconnect from the CT thermostat to display the Pair Management screen.
2. Choose the CT thermostat with the snowflake icon.
3. From the pop-up menu press **Unset as Default**. See FIG. 18.



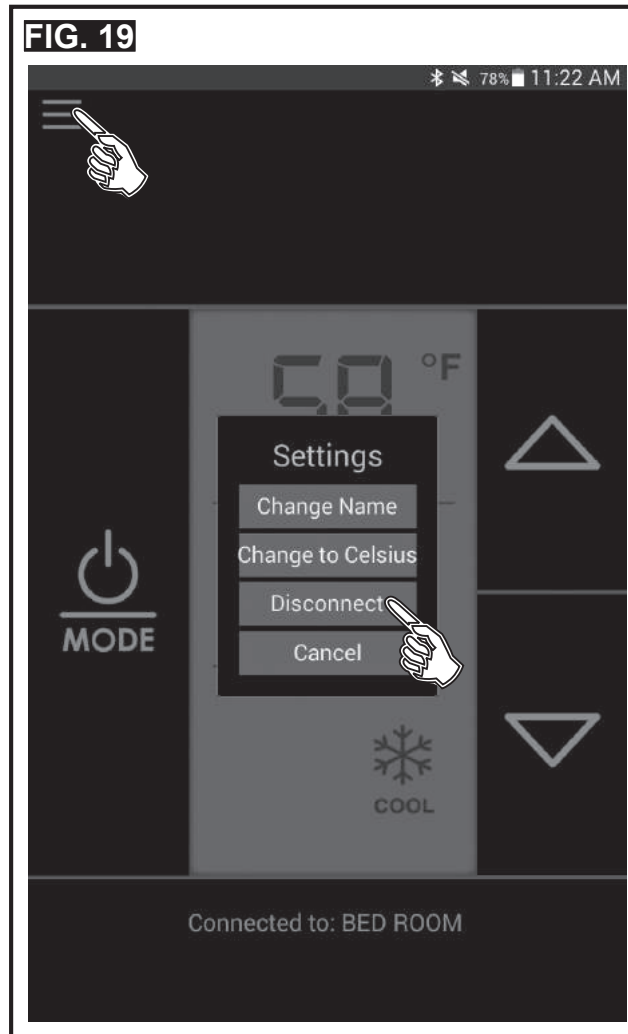
4. The snowflake icon disappears from the CT thermostat.



BLUETOOTH® PROGRAMMING AND OPERATION

D. Connecting To A Different CT Thermostat

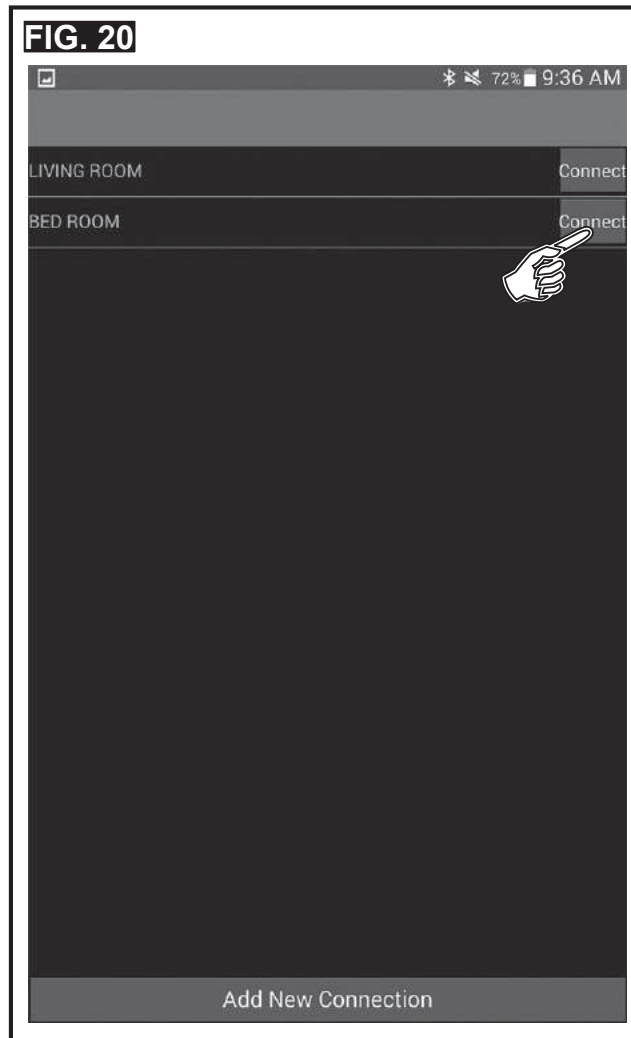
1. To connect to a different CT thermostat (up to four maximum), select the top-left corner of the app to access the Settings menu. See FIG. 19.
2. Press **Disconnect** to disconnect from the currently-connected CT thermostat. See FIG. 19.







BLUETOOTH® PROGRAMMING AND OPERATION

3. Either press **Connect** to choose an already configured CT thermostat (See FIG. 20) or follow the steps in "A. Pairing A Mobile Device With A CT Thermostat" on page 7 to add a new connection.

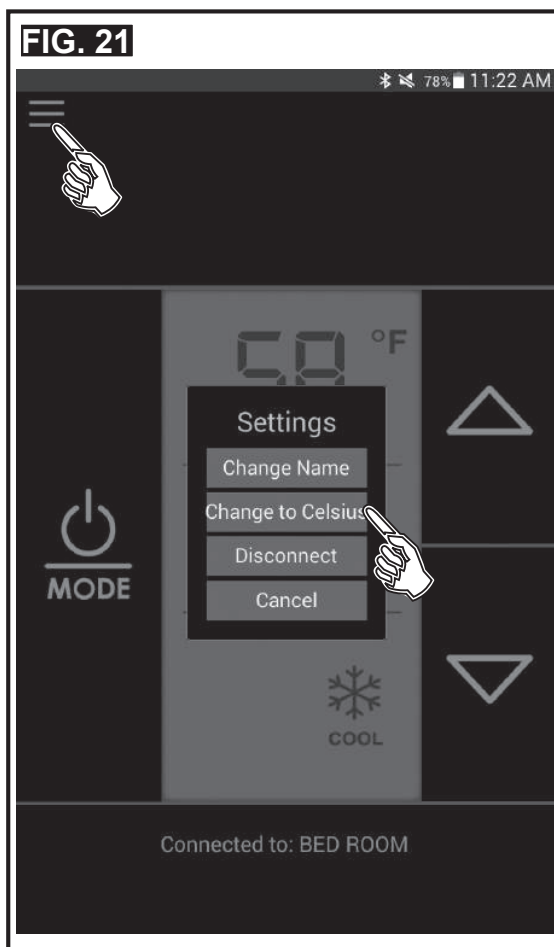


BLUETOOTH® PROGRAMMING AND OPERATION

E. Switching From Fahrenheit to Celsius

-  Display units can only be changed while a CT thermostat is connected.
-  The displayed temperature units will only be changed on the mobile device, and **NOT** on the CT thermostat device itself. To change the CT thermostat device display see instructions for changing the display units on the CT thermostat.

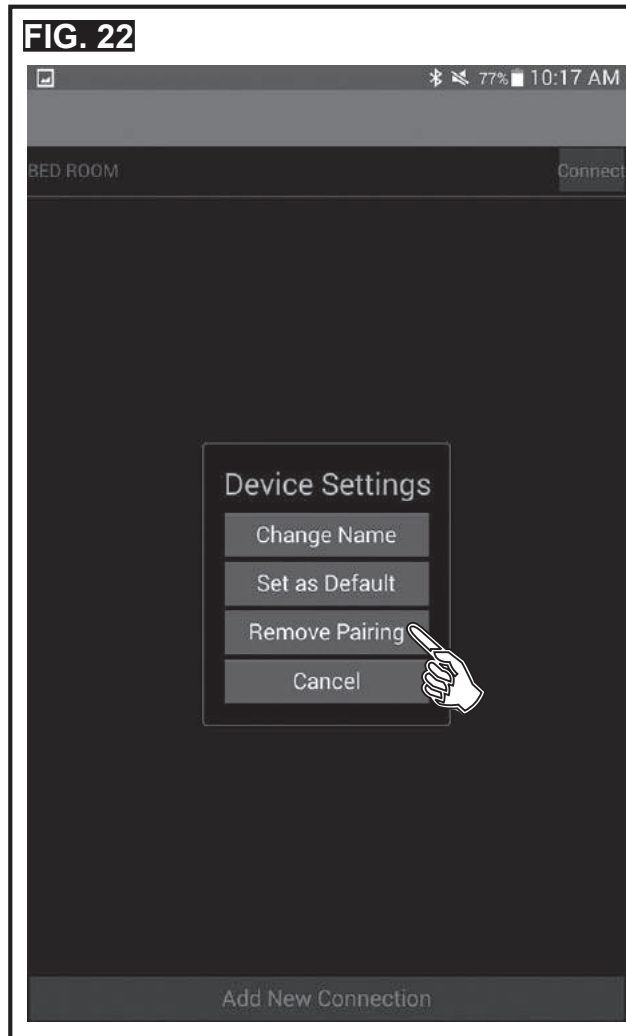
1. Select the top-left corner of the app to access the Settings menu. See FIG. 21.
2. Choose **Change to Celsius/Fahrenheit**.



BLUETOOTH® PROGRAMMING AND OPERATION

F. Removing A Paired CT Thermostat From The App

1. Disconnect from the CT thermostat to display the Pair Management screen.
2. Choose the CT thermostat you wish to remove from the app and press **Remove Pairing** to remove the CT thermostat from the app. See FIG. 22.



G. A Note On CT Thermostat Factory Reset And Lost Pairs

On CT thermostats equipped with Bluetooth® control the system initialization feature also resets the Bluetooth® system and removes all known mobile device pairs from the CT thermostat. Also if more than four mobile devices are connected with a CT thermostat, the CT thermostat only remembers pairing information on the four most recent devices paired.

Any mobile devices that were paired with a CT thermostat that undergoes a system initialization or pair removal, will need to be paired again with the CT thermostat. The app will automatically remove device pairs from its paired list if it detects that it is no longer paired with the CT thermostat on a connection attempt. This is indicated by a pop-up message in the app.

See the instructions for performing a CT thermostat factory reset.



MODE DESCRIPTION

A. Cool Mode

In Cool Mode, the system cycles the compressor On and Off based on room air temperature and temperature set-point on the CT thermostat. The fan turns on first, followed by the compressor approximately 2 minutes later. There are three fan speeds in Cool Mode:

- “Low”: Fan operates continuously at low speed. The compressor cycles On and Off.
- “High”: Fan operates continuously at high speed. The compressor cycles On and Off.
- “Auto”: Fan speed varies depending on the difference between the temperature set-point and room air temperature. The compressor and the fan cycle On and Off with the CT thermostat.

B. Furnace Mode

There are three fan speeds in Furnace Mode:

- “Low”: Fan operates continuously at low speed.
- “High”: Fan operates continuously at high speed.
- “Auto”: Fan is Off.



If additional indoor air circulation provided by the air conditioner is **NOT** desired during Furnace Mode, select “Auto” in Fan Mode to shut the air conditioner fan off. If “Low” or “High” is selected, the air conditioner fan will continue to operate at the selected speed.

In Furnace Mode the system cycles the RV furnace On and Off based on room air temperature and temperature set-point on the CT thermostat. CT thermostat can be configured to operate using an On / Off differential of either 1°F (-17 °C) or 2°F (-16.6 °C). This feature is programmed during the system initialization.

To set the temperature differential, the system must be Off. Press the **Down** (▼) button and simultaneously press and hold the **Mode** button for three seconds. Press the **Up** (▲) button to toggle between “d1” and “d2”, “d1” for 1°F (-17 °C) differential and “d2” for 2°F (-16.6 °C) differential.

C. Heat Pump Mode (Select Models)

In Heat Pump Mode, the system cycles the compressor On and Off based on room air temperature and temperature set-point on the CT thermostat. When the system calls for heating there will be a delay of approximately 2 minutes. There are three fan speeds in Heat Pump Mode:

- “Low”: Fan operates continuously at low speed. The compressor cycles On and Off.
- “High”: Fan operates continuously at high speed. The compressor cycles On and Off.
- “Auto”: Fan speed varies depending on the difference between the temperature set-point and room air temperature. The compressor and the fan will cycle On and Off with the CT thermostat. Compressor shuts off first followed by the fan in approximately 15 seconds.

This mode of operation is a customer option usually selected when temperatures are below 70 °F and the user needs to warm the living space. This reverses refrigerant flow in the air conditioner, causing warm air to be dispensed inside rather than cold, and cold air is dispensed outside rather than warm.

This mode of operation can cause a dilemma where the outside coil, which is now dispensing cold air, can freeze up due to cold air blowing across the coil mixed with outside temperature. A system freeze up can render the heat pump inoperable. There is a defrost feature that prevents this from happening. See "C. Defrost Cycle" on page 23 for more information.



MODE DESCRIPTION

D. Heat Strip Mode (Select Models)


In Heat Strip Mode, the system cycles the heat strip On and Off based on room air temperature and temperature set-point on the CT thermostat. There are three fan speeds in Heat Strip Mode:


- “Low”: Fan operates continuously at low speed. Heat strip cycles On and Off.
- “High”: Fan operates continuously at high speed. Heat strip cycles On and Off.
- “Auto”: Fan operates in low speed and will cycle On and Off with the CT thermostat.

SPECIAL FEATURES

A. Capacitive Touch Interface

The capacitive touch interface provides a clean, modern user interface.

 Capacitive touch interface requires skin contact to function, therefore it will **NOT** work through gloves, bandages, etc.


 Moisture, including wet fingers, on the capacitive touch interface can cause sensors to become unresponsive until the water evaporates.

B. Compressor Time Delay

A time delay of approximately 2 minutes occurs anytime the compressor is required to begin cooling or heat pump cycle.

C. Defrost Cycle

During heat pump operation, if the outside coil begins to freeze up, a defrost cycle is initiated that temporarily puts the heat pump back into air conditioning mode. This reverses the refrigerant flow and melts ice forming on the outside coil. Typically this occurs when outside temperatures are below 42 °F (5.5 °C) and repeats every 25 minutes of compressor run time. During this cycle the unit will cease to provide hot air flow temporarily. This is normal and is **NOT** an indication of malfunction.

 Defrost cycling **SHALL** continue until measured temperature of the outside sensor is ≤ 30 °F (-1 °C) or ≥ 42 °F (5.5 °C).

D. Low Ambient Heat Pump Lock Out

All heat pumps are constrained to operation at a temperature range determined by outside conditions. Since all heat pumps lose efficiency at low outside ambient temperatures, the heat pump has a lock out feature that prevents Heat Pump Mode of operation when temperatures fall below 30 °F (-1 °C). If system is set in Auto Mode fan will be turned off. The fan will remain on if the fan setting is set to Low or High. However, the compressor will not run and there will be no heat function below 30 °F (-1 °C).

SPECIAL FEATURES

E. Power Interruption

In the event power to the air conditioner or control is interrupted, the system will restart with the previous set-points once power is restored.

F. LCD Error Code

When the system determines one of the faults listed has occurred, an error code displays on the LCD.

Error Code:

- E1 Loss of communication between CT thermostat and module board. LCD will cycle between E1 and previous mode setting. System will shut down.
- E2 Open circuit or out of range Indoor Temperature Sensor. Heating and cooling operation will be locked out. Fan operation can continue to operate.
- E3 Shorted Indoor Temperature Sensor. Heating and cooling operation will be locked out. Fan operation can continue to operate.
- E4 Open circuit or out of range Outdoor Temperature Sensor (select models). Heat Pump operation will be locked out. Air Conditioner, Fan, and Furnace operation can continue to operate.
- E5 Open Circuit or out of range Freeze Sensor. Air Conditioner mode of operation will be locked out, but displays the last temperature set-point.

GENERAL INFORMATION

A. Frost Formation

1. On Cooling Coil
 - a. Frost on a small portion of the coil is not unusual. Under certain conditions, ice may form on the evaporator coil. This is indicated by very cold output at very low air speed and the icing can be seen through the air inlet hole with the filter removed. If this should occur, inspect the filter and clean if dirty. Make sure air vents are open and not obstructed. Units have a greater tendency to frost when the outside temperature is relatively low. This may be prevented by adjusting the thermostat control knob to a warmer setting (counter clockwise). Should frosting continue, operate on any FAN ONLY setting until the cooling coil is free of frost; then resume normal operation. If frost condition persists, contact your local service center for assistance.
2. On Outdoor Coil While Heating
 - a. Operation at low outdoor temperatures causes low coil temperatures. This can result in ice forming on the outdoor coil in certain conditions. This is indicated by reduced heat output and could fully stop fan rotation in extreme conditions. To avoid this, the system controls turn off the compressor if outdoor temperature drops below 42° F (5° C) and returns heating when the temperature raises 5° F (-15° C).



GENERAL INFORMATION

B. Reduce Heat Gain

The ability of this air conditioner to maintain the desired inside temperature depends on the heat gain of the RV.

Some preventative measures taken by the occupants of the RV can reduce the heat gain and improve the performance of the air conditioner. During extremely high outdoor temperatures, the heat gain of the RV may be reduced by:

- Parking the RV in a shaded area
- Using window shades (blinds and/or curtains)
- Keeping windows and doors shut or minimizing usage
- Avoiding the use of heat producing appliances

Operation on High Fan/Cooling mode will give optimum or maximum efficiency in high humidity or high outside temperatures.

Starting the air conditioner early in the morning and giving it a “head start” on the expected high outdoor ambient will greatly improve its ability to maintain the desired indoor temperature.

For a more permanent solution to high heat gain, accessories like Dometic outdoor patio and window awnings will reduce heat gain by removing the direct sun. They also add a nice area to enjoy company during the cool of the evening.

C. Disclaimer

The manufacturer of this unit will not be responsible for damage caused by condensation forming on ceilings, windows, or other surfaces. Air contains water vapor which condenses when temperature of a surface is below Dew point. During normal operation this unit is designed to remove a certain amount of moisture from the air, depending on the size of the space being conditioned. Keeping doors and windows closed when this air conditioner is in operation will greatly reduce the chance of condensation forming on interior surfaces.

MAINTENANCE

A. Thermostat

1. Clean the CT thermostat with a dry soft cloth.



Do **NOT** spray water directly on CT thermostat. Do **NOT** use solvents for cleaning.



If a moist soft cloth is needed to clean the CT thermostat surface, the sensors may become unresponsive. If this happens, it will be necessary to allow the water enough time to evaporate for sensors to regain responsiveness.

B. Air Filter

1. Periodically (a minimum of every 2 weeks of operation) remove the air filter located behind the return air grille and wash it with soap and water, let dry and then reinstall.




NEVER run unit without return air filter in place. This will plug the unit evaporator coil with dirt and may substantially degrade the performance of the unit over time.



MAINTENANCE

C. Return Air Housing

1. Clean housing with a soft cloth dampened with water and a mild detergent.

 **NEVER** use furniture polish, solvents, scouring pads or powders.

D. Fan Motor

1. The blower motor is factory lubricated and requires no service.

SERVICE-UNIT DOES NOT OPERATE

In the unlikely event the unit fails to operate or operates improperly, check the following before calling your service center.

- If the RV is connected to a motor generator, make sure the motor generator is running and producing power.
- If the RV is connected to a power supply by a land line, make sure the line is sized properly to run unit load and that it is plugged into the power supply.
- Check the 120 Vac fuse or circuit breaker. Make sure the fuse is not burnt or that the circuit breaker is “ON” and not activated.
- Check the 12 Vdc fuse or circuit breaker. Make sure the fuse is not burnt or that the circuit breaker is “ON” and not activated.

After the above checks have been made, and unit still does not operate, please visit www.eDometic.com to locate a service center near you. This product **MUST** be serviced by a qualified service technician. When contacting a service center, always give the following:

- Unit model and serial number. This information can be found on the identification label located on the unit base pan. Remove the return air filter to view the identification label.
- Air Distribution Box (if equipped) model and serial number. This information can be found on the rating plate located on the ceiling template. Remove the return air filter to view the rating plate.
- Electronic Control Kit (if equipped) part number and serial number. This information can be found on the identification label located on the side of the electronic control box. Remove the return air filter to view the identification label.



FIRE EXTINGUISHER

First Alert

User's Manual Auto Fire Extinguishers



M08-0039-001 M 07/04



Model FESA5

IMPORTANT! Please read carefully and save.

This user's manual contains important information about your fire extinguisher's operation. If you are installing this fire extinguisher for use by others, you must leave this manual—or a copy of it—with the end user.

Read extinguisher label and the entire user's manual carefully before installing or using the unit. Make sure everyone in your household is completely familiar with the operation of the extinguisher, and review the instructions regularly. In an emergency, you will not have time to read instructions.

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Limited Warranty	2

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First Alert®, 3901 Liberty Street Road, Aurora, IL 60504-8122
Consumer Affairs: (800) 323-9005 • www.firstalert.com

IMPORTANT INFORMATION ABOUT FIRE EXTINGUISHERS

NOTE: Be sure the extinguisher is rated to fight the type of fire most likely to occur in the area you choose to install it. Since household fires commonly start in the kitchen, you should always install an extinguisher in the kitchen. For added security, you should also install additional extinguishers in utility areas, and other living areas in your household.

Fire extinguishers are classified by fire type. The A, B and C rating system defines the kinds of burning materials each fire extinguisher is designed to fight. The numbers in front of the A, B, or C indicate the rating for size of the fire the unit can extinguish. Using the wrong type of fire extinguisher can do more harm than good. Make sure you understand which fire extinguisher to use on each class of fire!



Class A rating: The agent/powder is suitable for fighting small fires involving wood, paper, cloth, rubber, and some plastics.



Class B rating: The agent/powder is suitable for fighting small fires involving grease, oil, gasoline, kerosene, and other flammable liquids.



Class C rating: The agent/powder is suitable for fighting small fires in "live" electrical equipment.

Model FESA5 is rated 5-B-C. It is NOT rated to fight Class A fires.

READ BEFORE INSTALLING OR USING THIS FIRE EXTINGUISHER!

⚠ DANGER!

- This extinguisher is designed for use against small fires that have just started and are small enough to fight safely. It is not designed to fight large fires that are burning out of control. If the fire is too hot or smoky for you to get within 6 feet (2 meters) of it, do not try to fight it yourself. Warn everyone, evacuate the premises, and have someone call the Fire Department from outside the building. Trying to fight a large fire yourself can result in injury or death.
- Do not puncture or burn any fire extinguisher. The contents are under pressure, and the extinguisher could explode.
- Never locate this extinguisher close to an engine, stove or other source of heat. It is pressurized and could rupture or explode if exposed to temperatures over 150° F (66° C).

⚠ CAUTION!

- This extinguisher contains a dry powder extinguishing agent. The agent/powder is nontoxic, but can irritate skin. When using this unit, avoid breathing the powder. Always ventilate the area after use.

WHERE TO INSTALL THIS EXTINGUISHER

This extinguisher is designed to be used in your car or other vehicle. It has a special mounting bracket to keep the unit from discharging accidentally. We recommend you mount the extinguisher to keep it safe from puncture or other damage. Since not every vehicle can accommodate the mounting bracket, the bracket is also designed to keep the extinguisher from rolling if you do not mount it.

This Fire Extinguisher may be mounted:

- In the trunk of a vehicle
- On an inside panel of a vehicle
- On a clean, dry surface where the temperature does not go above 120° F (49° C) or below -40° F (-40° C)

Do NOT mount this Fire Extinguisher:

- To the dashboard of the vehicle
- To the exterior of a vehicle
- To the engine of a vehicle
- On or near any other source of heat

HOW TO INSTALL THIS EXTINGUISHER

NOTE: Since surface types vary, mounting screws are not included. Purchase screws or bolts specifically designed for the surface on which you will mount the fire extinguisher. The fire extinguisher label lists its maximum weight.

Installing the Mounting Bracket in A Vehicle

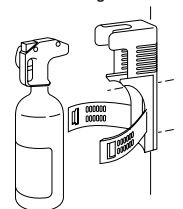
⚠ CAUTION!

- This extinguisher has a quick-release bracket for mounting. Mount the extinguisher as shown in "Installing the Mounting Bracket."
- Do not use sheet metal screws or wood screws; vehicle vibrations may loosen them.
- Do not make holes in the vehicle structure if you are not sure what is on the other side. You may accidentally cause severe damage to electrical lines, gasoline lines or tanks, or other vehicle systems.
- Do not break the plastic loop holding the safety pin in place! This loop prevents accidental discharge of the fire extinguisher. Break the loop only in an emergency before using the fire extinguisher.

Remove mounting bracket from extinguisher by unlocking the clasp and pulling the bracket away from the extinguisher. Use two strong screws (such as #8 machine screws) to mount the bracket securely onto metal or another solid surface that can support the weight of the fire extinguisher. The mounting bracket must be secure so you can remove the extinguisher quickly in an emergency.

- Install the mounting bracket as shown in "Installing The Mounting Bracket" using strong screws (such as #8 machine screws) with washers and nuts. The screws should not be longer than necessary to accommodate a washer and nut. Mounting screws, washers, and nuts are not included (see Note above).

Installing the Mounting Bracket



- After installing the mounting bracket, replace the extinguisher on the bracket with the nose of the extinguisher pointing into the bracket.

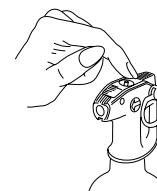
CHECKING AND INSPECTING THE FIRE EXTINGUISHER

⚠ WARNING!

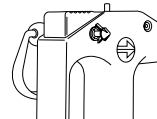
DO NOT CHECK THE PRESSURE OR TEST THE FIRE EXTINGUISHER BY SQUEEZING THE TRIGGER, EVEN BRIEFLY. ONCE USED IT WILL GRADUALLY LOSE PRESSURE AND WILL NOT BE FULLY CHARGED FOR USE IN AN EMERGENCY.

- Inspect and test the extinguisher once a week. Start by removing the extinguisher from the mounting bracket/cap. Check the extinguisher pressure by pressing the green button on top of the cap as shown in "Checking the Pressure." If the button pops back up, the extinguisher is properly pressurized and ready to use. If the button stays down, the extinguisher has lost pressure and must be replaced.
- Check for signs of damage or misuse. Make sure you can still read all the text on the label. Carefully examine the surface of the extinguisher for corrosion. You can help prevent corrosion by cleaning the extinguisher if it gets wet or dirty. If you notice corrosion during the warranty period, return the unit to First Alert® (see "Limited Warranty" at the end of this manual).
- Make sure the tamper indicator ("safety seal") is still intact as shown in "Location Of The "Safety Seal" and the nozzle is clean and unobstructed.
- When you finish inspecting the fire extinguisher, always put it back into the mounting bracket. Make sure the handle is locked down and the safety seal is intact.

Checking the Pressure



Location of the "Safety Seal"



IMPORTANT!

For more information about fire extinguishers, consult the NFPA Standard #10, "Portable Fire Extinguishers," available from the National Fire Protection Association, Inc., Batterymarch Park, Quincy, MA 02169, USA.



HOW TO OPERATE YOUR FIRE EXTINGUISHER IN A FIRE EMERGENCY

▲ DANGER!

- Make sure your extinguisher may be safely and effectively used on the small fire you want to fight. Always use extreme caution when fighting any fire. Fight a fire only where there is a clear escape path to allow you to get out safely if the fire gets worse.

▲ WARNING!

- Avoid breathing smoke and heated fumes; stay low if necessary. Burning materials will release toxic fumes. Inhaling these fumes may cause injury or death.

▲ CAUTION!

- Always stand back far enough away from the fire—near an exit—and make sure nothing is between you and your escape route. If you get too close to a fire, you risk getting burned or hit by splattering material like grease. If the fire is too hot or smoky for you to get within 6 feet (2 meters), DO NOT try to fight the fire yourself. Evacuate immediately and call the Fire Department.
- For fires on a kitchen stove, turn oven or burners off immediately if possible. If you can't reach the oven or burner controls safely, extinguish the fire first, then turn them off.
- Fight the fire from an upwind direction with your back to any strong air current. Trying to fight a fire with currents blowing towards you can result in serious injury.

TO FIGHT THE FIRE

▲ DANGER!

- Turn off the engine immediately if you suspect a vehicle fire. Evacuate the car, sending passengers a safe distance away. If you see flames escaping from under the vehicle's hood, the fire is too large to fight. DO NOT attempt to open the hood or fight the fire; instead move a safe distance from the car and call for help immediately. Trying to fight this size fire could result in injury or death.
- If there are no visible flames and you attempt to fight a small fire, always use extreme caution if lifting your vehicle's hood. Flames may flash when you open the hood, which can cause severe injury or death.

▲ WARNING!

- This unit will not operate with mounting bracket attached. The extinguisher must be removed from the mounting bracket or it cannot discharge its contents to fight a fire.

If You Suspect a Vehicle Fire:

1. Pull vehicle over, away from all traffic.
2. Turn off vehicle engine.
3. Evacuate all passengers and move them a safe distance from the vehicle. Do not plug a cellular phone into your own vehicle to call the Fire Department.
4. Remove the extinguisher from the mounting bracket.
5. Hold the extinguisher firmly, with the nozzle facing away from you. Pull out the pin to break the "Safety Seal." You won't be able to squeeze the trigger until the safety seal is removed.
6. Stand back 6 feet (2 meters) from the fire and make sure the fire is not between you and your exit.
7. Hold the extinguisher upright and aim the nozzle at the base of the fire.
8. Press and hold the trigger to discharge the powder.
9. Sweep the spray at the base of the burning material, using quick side-to-side motions. (If the spray scatters the fire, move back.)
10. Move slowly towards the fire as the extinguisher spray pushes the fire back. Maintain a 6-foot (2 meter) distance between you and the front of the fire at all times.
11. Completely discharge the contents of the extinguisher and make sure the fire is completely out. Flashbacks are common with fires.



AFTER THE FIRE IS EXTINGUISHED

▲ DANGER!

Do not start the vehicle up or plug in any electrical accessories (cellular phone, CD player, TV or VCR, etc.) until the vehicle has been cleaned up completely. It is very important to remove the powder from electrical equipment after a fire. If the powder gets wet, it can conduct electricity. (Using a dry chemical extinguisher on wet electrical equipment can be hazardous for this reason.) This may worsen an electrical leakage problem, impair the equipment's insulation, or create an electrical shock hazard.

If you think the fire had an electrical origin:

- Turn off the engine and do not touch any electrical wires, fuses or accessories.
- Leave the vehicle and stay a safe distance away until the Fire Department arrives.
- Do not restart the vehicle or plug in any electrical appliances or accessories until a licensed mechanic has inspected the vehicle's electrical system.

HOW TO CLEAN AFTER USING A FIRE EXTINGUISHER

NOTE: The powder spray from the extinguisher may spread over a wide area, and may soil upholstery, carpets and walls.

- Sweep/vacuum up as much of the powder as possible. Then use a damp cloth to wipe off the remaining agent.
- If you have any questions about cleaning appliances that the agent has come into contact with, please contact the appliance manufacturer.

IF YOUR EXTINGUISHER NEEDS SERVICE

This fire extinguisher is a disposable device that is NOT rechargeable.

▲ CAUTION!

Do not try to service or repair this fire extinguisher under any circumstances. Do not try to remove the nozzle or valve assembly. This is a pressurized device that can cause serious injury if tampered with.

If there is a problem and it is still under warranty, please see "How to Obtain Warranty Service" in the Limited Warranty.

DISPOSING OF A USED EXTINGUISHER

Completely discharge the extinguisher outdoors by turning the unit upside down and pulling the trigger. Dispose of the empty unit properly and replace it with a new fire extinguisher.

▲ DANGER!

Never puncture, burn or expose this fire extinguisher to temperatures over 150° F (66° C) even if it is fully discharged. The contents are under pressure and it could explode.

LIMITED WARRANTY

BRK Brands, Inc. ("BRK") the maker of First Alert® brand products, warrants that for a period of five years from the date of purchase, this product will be free from defects in material and workmanship. BRK, at its option, will repair or replace this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. If the product is no longer available, replacement may be made with a similar product of equal or greater value. This is your exclusive warranty.

This warranty is valid for the original retail purchaser from the date of initial retail purchase and is not transferable. Keep the original sales receipt. Proof of purchase is required to obtain warranty performance. BRK dealers, service centers, or retail stores selling BRK products do not have the right to alter, modify or any way change the terms and conditions of this warranty.

This warranty does not cover normal wear of parts or damage resulting from any of the following: negligent use or misuse of the product, use on improper voltage or current, use contrary to the operating instructions, disassembly, repair or alteration by anyone other than BRK or an authorized service center. Further, the warranty does not cover acts of God, such as fire, flood, hurricanes and tornadoes.

BRK shall not be liable for any incidental or consequential damages caused by the breach of any express or implied warranty. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose is limited in duration to the duration of the above warranty. Some states, provinces, or jurisdictions do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state, or province to province.

How to Obtain Warranty Service:

Service: If service is required, do not return the product to your retailer. In order to obtain warranty service, contact the Consumer Affairs Division at 1-800-323-9005, 7:30 AM to 5:00 PM, Central Standard Time, Monday through Friday. To assist in serving you, please have the model number and date of purchase available when calling.

Address: 303 Nelson Avenue, Neosho, MO 64850-8806

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M08-0039-001 M 07/04



SEELEVEL II™

RV Tank Monitor



MODEL 709-P3 MANUAL

IMPORTANT OPERATOR INFORMATION

DATE INSTALLED: _____

SERIAL NUMBER: _____

	Signal Level	Sender Height
Black Water Tank		
Grey Water Tank		
Fresh Water Tank		

Printed in Canada

www.garnetstruments.com

GARNET

Liquid management solutions, your way.



GARNET

SEELEVEL II™

Tank Monitor

MODEL 709-P3

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CHAPTER 1 - OVERVIEW

The **SEELEVEL II**™ Tank Monitor represents a massive leap forward in level measurement technology for the Recreational Vehicle industry. The SeeLevel has a combination of features, accuracy, reliability, and diagnostic capability that have never been available before.

Model 709-P3 will monitor the battery voltage, the fresh water and sewer holding tanks, and includes a pump switch. The information is displayed on a 3-digit alpha-numeric LED display. In addition, the system can display the operating characteristics of each of the tank sending units, giving it unsurpassed diagnostic capability.

▲ WARNING: *All power circuits must be fused. If a fuse is not provided with the system then it is the installer's responsibility to install a fuse with a maximum rating of 7.5 amps. A relay is required if more than 7.5 amps is needed for the pump.*

For more detailed information please refer to Chapter 7 "TROUBLESHOOTING GUIDE" and section "How to avoid damaging the display or pump switch due to excessive current".



CHAPTER 2 - SYSTEM DESCRIPTION

The SeeLevel consists of a display unit that mounts inside the RV, and sender panels that stick to the side of the holding tank. A single 2 conductor wire is used to connect all the sender panels to the display.

The Sender: Each sender panel is a flexible self-adhesive printed circuit board which is adhered to the side of the holding tank. The sender panel can be cut to length to match the height of the tank, and it auto calibrates itself so that it can read from Empty to Full regardless of the height of the tank. The sender scans the water level through the tank wall using advanced digital techniques programmed into the sender microprocessor. When the sender transmits the water or sewer level information to the display, it sends a digital code that has built in error detection, making it highly unlikely for the display to read an incorrect level, even if the wiring is marginal. In addition to the level, the sender also transmits diagnostic information about its operation. This information can be used to determine if there is buildup of sludge on the inside of the tank, or to determine if the sender is damaged or delaminating from the side of the tank. If sludge buildup in the tank becomes extreme the gauge will cease to operate properly, so by monitoring the signal power the tank can be cleaned before the buildup gets excessive. Three different sender options (710JS, 710ES, and 710SS) and the ability to double stack the senders provide accurate level measurement for tank heights ranging from 4½" to 34".

The Display: The display receives the information from the three sender panels via a single 2 conductor wire, and displays the level information in percent of full on a 3-digit LED display. When the button for a particular tank is pressed, the display shows the level for that tank. If the button is pressed and released, the display will show the level for about 5 seconds and then shut down automatically. If another button is pressed before the display shuts down, then the new level will immediately be shown. If the same water or waste button is pressed twice, the display will hold on that tank and continue to show updated levels for 5 minutes before shutting off. This allows the user to monitor the filling or draining of a tank. By pressing two buttons at once, the diagnostic functions can be accessed; these are described in detail in the troubleshooting chapter.



GARNET SEELEVEL II TANK MONITOR

If a sender is operating properly and connected to the display with good wiring, then the display will show the level normally. If the wiring is disconnected, shorted, or cut, or if the sender panel is defective, then the display will indicate an error code. The various error codes are shown in the troubleshooting chapter.

With these diagnostic features and the digital nature of the tank level sensing technology, it is almost impossible for the system to indicate an incorrect water level, and in the very unlikely event it does occur, servicing is greatly aided with the diagnostic information.

The system also shows the RV battery voltage by measuring the voltage which powers the display. The voltage is shown with a resolution of 0.1 volt.



CHAPTER 3 - OPERATING INSTRUCTIONS

The display is the only system component that is accessed by the user. All user input to the display is done using the four buttons along the bottom of the display. Operation of the display is as follows:

To read a water or sewer tank level:

1. Press the button corresponding to the tank to be checked and release it, the display will show the level in percent on the LED display. If no other button is pressed, then the display will shut off after about 5 seconds.
2. If another button (including **BATT**) is pressed before the 5 second time is up for the first button, the display will immediately switch to showing the new level or voltage. The 5 second timeout is restarted every time a button is pressed.
3. To continuously display a reading, press and release the desired button, and then press the same button a second time. When the button is released, the display will be in hold mode, which is indicated by the decimal point on the right hand side turning on. While the display is in the hold mode it will recheck the level once per second so the user can watch the level change while the tank is being filled or drained. The display will automatically shut off after 5 minutes in hold mode. To end the hold mode before the 5 minutes is up, press any tank button, and the display will shut off.

To read the battery voltage:

1. Press the **BATT** button and release it, the display will show the battery voltage on the LED display.
2. If no other button is pressed, then the display will shut down after about 5 seconds. If the **BATT** button is held down, the display will continuously recheck the voltage and show the updated value. The reading may flicker back and forth between two values, for example, 12.6 and 12.7 volts. This is normal behavior for a digital voltage display.
3. If another button is pressed before the 5 second time is up for the **BATT** button, the display will immediately switch to showing the value for the new button. The 5 second timeout is restarted every time a button is pressed.
4. There is no hold mode for the battery voltage.



CHAPTER 4 - DISPLAY CALIBRATION

To program the LED brightness:

1. If the display is to be used inside the coach, the LED brightness should be low. If it is to be used in the service bay area where sunlight can reach it, the LED brightness should be high.
2. To program the LED brightness, the display needs to enter the brightness programming mode. To do this, press and hold down the **BATT** button, the display will show the battery voltage.
3. While continuing to hold down the **BATT** button, press and hold down the **GREY** button. Continue to hold down both buttons for about 5 seconds until the display shows "**bri**" to indicate the brightness programming mode. When this occurs release both buttons.
4. The display will now indicate the brightness that is currently programmed by showing "**b-1**", "**b-2**", "**b-3**", or "**b-4**", where "**b-1**" is the minimum brightness and "**b-4**" is the maximum brightness.
5. Press the **GREY** tank button to increase brightness, or the **FRESH** tank button to decrease brightness.
6. When the display shows the correct brightness, press the **BATT** button to exit the programming mode.

To program the number of senders for each tank:

1. To program the number of senders for each tank, the display needs to enter the sender programming mode. This should only be done at the time of installation, there is no reason to change the number of senders afterward. Make sure that the number of senders programmed into the display matches with the number of senders connected, otherwise the display will show an error.
2. To enter the sender programming mode, press and hold down the button for the tank to be programmed, the display may show a level or an error message for that tank.
3. While continuing to hold down the button for the tank, press and hold down the **BATT** button. The display will immediately show "**dIA**" (diagnostics), continue to hold down both buttons until the display enters the programming mode, this should take about 5 seconds.



4. When the programming mode is entered, the display will show "**FrS**" if entering the number of senders for the fresh tank, "**GrS**" if entering the grey tank, or "**bLS**" if entering the black tank. When this occurs release both buttons.
5. The display will now show "**1SE**" (one sender) or "**2SE**" (two senders), based on what is currently programmed into the display. These are the only two options, the display will not work with more than two senders per tank.
6. To change the number of senders, press the tank button, each time the button is pressed the display will switch to the other number.
7. When the display shows the correct number of senders, press the **BATT** button to exit the programming mode. Each tank will need to be calibrated individually using this procedure.

The battery voltage is calibrated at the factory, this should never need to be changed.



CHAPTER 5 - SENDER PROGRAMMING

To program the 710ES or 710SS sender for the correct tank:

1. Since the senders are all connected in parallel to save wiring and to simplify installation, the senders must be programmed so they know which tank they are on. The senders can be programmed for either the fresh, grey, or black tank. This is done with the two tabs on the top corners of the sender. See the following diagram.
2. The senders default to fresh tank operation if the programming is not altered. Consequently, if the sender is for the fresh tank, nothing further needs to be done to it.
3. If the sender is for the grey tank, remove the tab that says "**GRY**" next to it.
4. If the sender is for the black tank, remove the tab that says "**BLK**" next to it.
5. This is all that is required to program the senders for the correct tank. However, if you make an error, you have one chance to correct it, as described below.
6. If the "**GRY**" tab has been removed and it should be a black tank sender, or if the "**BLK**" tab has been removed and it should be a grey tank sender, then cut out the recessed grey-black correction tab that says "**GBC**" next to it. This reverses the effect of the grey and black tabs.
7. If either the "**GRY**" or "**BLK**" tabs have been removed and it should be for a fresh tank, then remove the other "**GRY**" or "**BLK**" tab. When both the "**GRY**" and "**BLK**" tabs are removed, it is equivalent to neither of them being removed.
8. If the sender is single, no further programming is required.
9. If double stacked senders are used, the top sender must have additional programming, as described below.
10. Refer to the 710ES and 710SS sender programming diagram.

To program the 710ES or 710SS sender as top or bottom:

1. Since the senders are all connected in parallel to save wiring and to simplify installation, the senders must be programmed so they know whether they are a single, top, or bottom sender. This is done with the tab at the top center of the sender. See the following diagram.



2. The senders default to single or bottom operation if the programming is not altered. Consequently, if the sender is for single or bottom operation, nothing further needs to be done to it (beyond programming it for the correct tank).
3. For a top sender, remove the tab that says "**TOP**" next to it.
4. This is all that is required to program the senders for single, top, or bottom use. However, if you make an error, you have one chance to correct it, as described below.
5. If the "**TOP**" tab has been removed and it should be a single or bottom sender, then cut out the recessed top correction tab that says "**TC**" next to it. This reverses the effect of the top tab.
6. Verify that both the top and bottom senders have been programmed for the correct tank.

To program the 710JS sender for the correct tank:

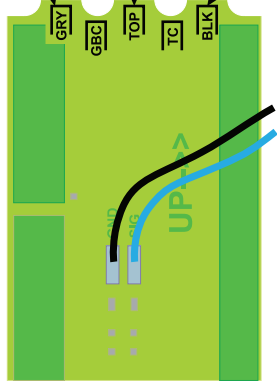
1. Since the senders are all connected in parallel to save wiring and to simplify installation, the senders must be programmed so they know which tank they are on. The senders can be programmed for either the fresh, grey, or black tank. This is done with the two tabs on the top corners of the sender. See the following diagram.
2. The senders default to fresh tank operation if the programming is not altered. Consequently, if the sender is for the fresh tank, nothing further needs to be done to it.
3. If the sender is for the grey tank, remove the tab that says "**GRY**" next to it.
4. If the sender is for the black tank, remove the tab that says "**BLK**" next to it.
5. This is all that is required to program the senders for the correct tank. However, if you make an error, you have one chance to correct it, as described below.
6. If the "**GRY**" or "**BLK**" tab has been removed by mistake, the sender can be changed to a fresh tank sender by cutting the other corner tab ("**GRY**" or "**BLK**").
7. Refer to the 710JS sender programming diagram.



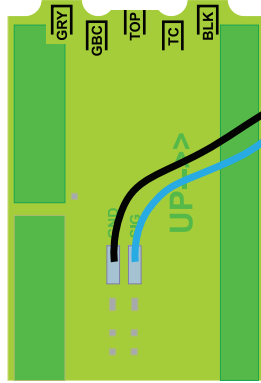
GARNET SEELEVEL II TANK MONITOR

There are no tab cuts for FRESH SINGLE or BOTTOM sender programming

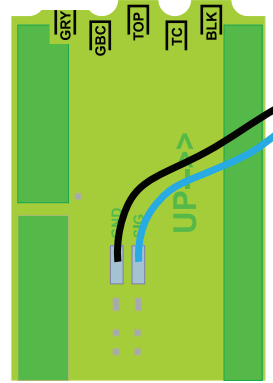
Cut for TOP sender
Cut for GREY tank Cut for BLACK tank



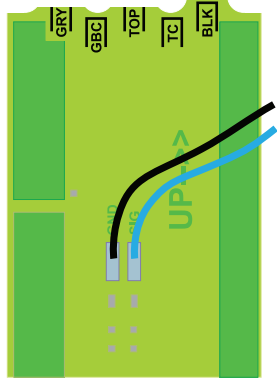
Tab cut for FRESH TOP sender programming



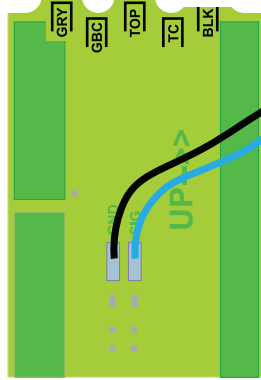
Tab cut for GREY SINGLE or BOTTOM sender programming



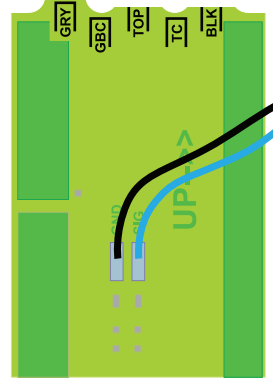
Tab cuts for GREY TOP sender programming



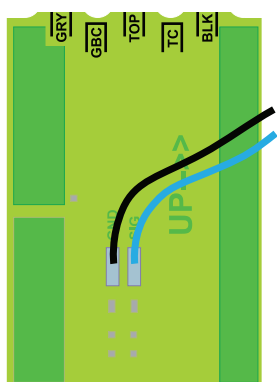
Tab cut for BLACK SINGLE or BOTTOM sender programming



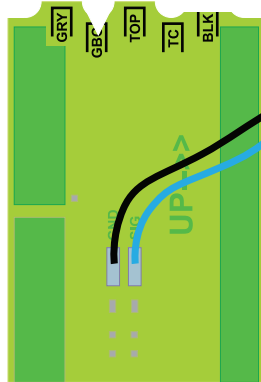
Tab cuts for BLACK TOP sender programming



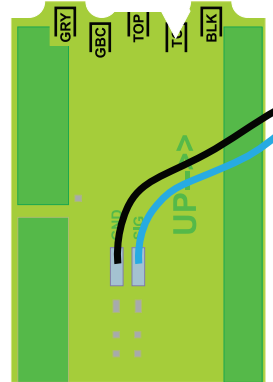
Example of corrected FRESH TOP sender programming (GRY or BLK tab cut by mistake)



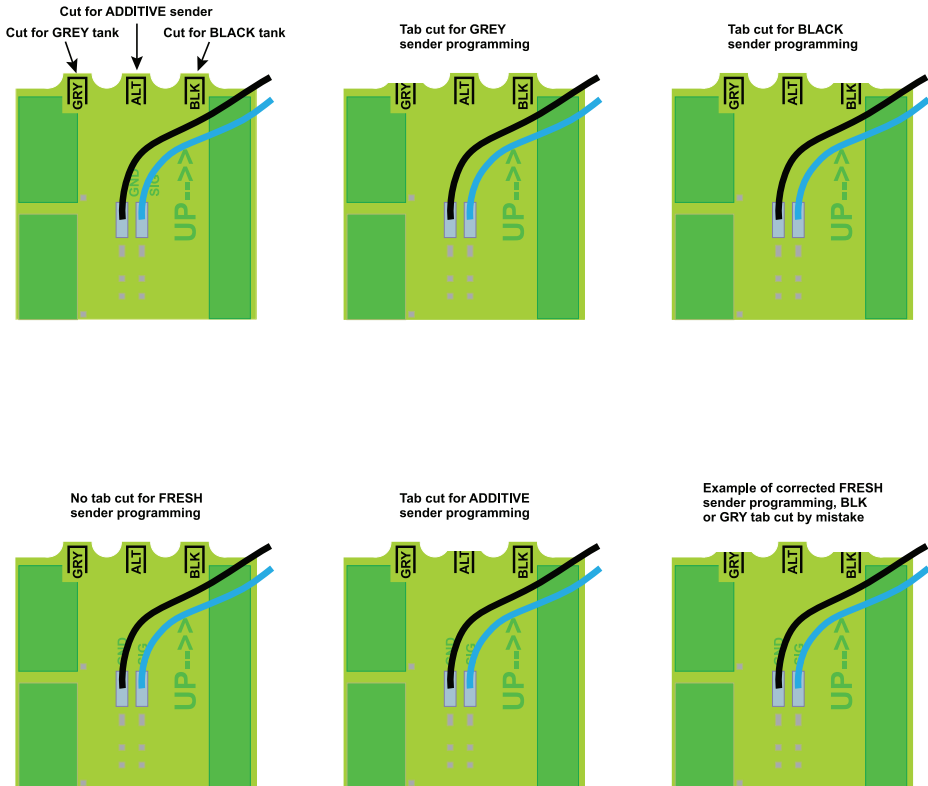
Example of corrected GREY SINGLE or BOTTOM sender programming (BLK tab cut by mistake)



Example of corrected FRESH SINGLE or BOTTOM sender programming (TOP tab cut by mistake)



710ES AND 710SS SENDER PROGRAMMING



710JS SENDER PROGRAMMING



CHAPTER 6 - INSTALLATION GUIDE

1. Please refer to the “**Troubleshooting and Installation Tips**” section in Chapter 7 for details on avoiding installation issues.
2. The installation consists of mounting the display inside the RV, cutting and fastening the senders to the sides of the holding tanks, connecting wiring, and programming the display. When wiring **DO NOT** use spade connectors to join wires, only use crimp on butt connectors or solder the wires together.
3. Mount the display by cutting a hole in the wall 3” wide by 1 7/8” high and bringing the wiring out through the hole to connect to the display panel connector.
4. Connect the wiring according to the following table. It is easier to connect the wiring to the display connector first, and then plug the connector into the display panel. The senders need to be grounded to a single ground wire from the display. Make sure that the system ground is connected to the breaker panel ground.

Wire Color	Function
Red 18 gauge	+12V power input to monitor
Black 18 gauge	Ground
Blue 18 gauge	Tank senders
White 18 gauge	Pump indicator

5. Determine where to mount the senders on the tanks. They will need to have a flat area on the side of the tank large enough so the whole width of the sender is in contact with the side of the tank, all the way from the top to the bottom of the tank. Make sure that any metal is at least an 1” away from either side or the top and bottom of the sender, and at least 2” away from the face of the sender. Clean the area well so that there is no dust, grease, oil, water, etc., that would prevent the adhesive on the sender from sticking.
6. Measure the height of the tank to determine which sender configuration to use and how long the senders should be. Refer to the following table. **Note:** **DO NOT** mix sender types when stacking senders.



Tank Height	Sender Options	
	Best Resolution	Other Acceptable
4½" - 5"	JS	-
5" - 7"	JS	ES
7" - 13"	ES	SS
13" - 17"	stacked ES	SS
17" - 25"	stacked ES	stacked SS
25" - 34"	stacked SS	-

For single sender applications:

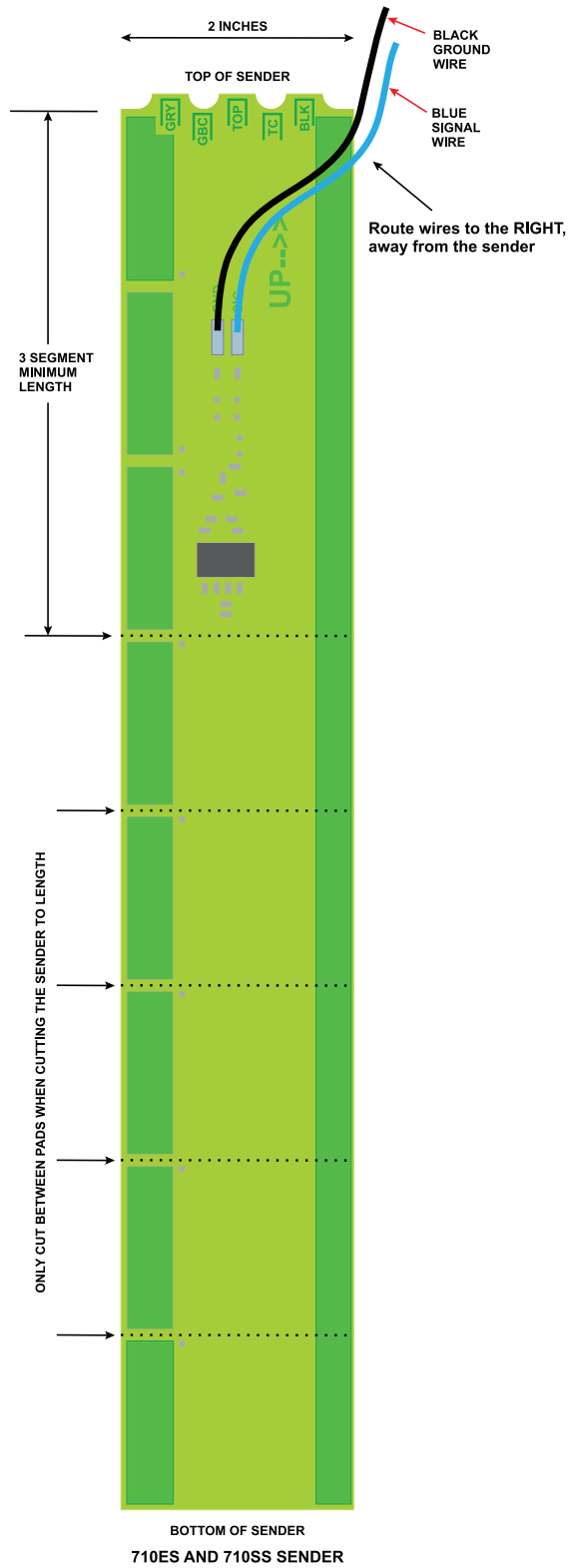
The sender ends should be ¼" to ¾" away from the top and bottom of the tank, to allow for the thickness of the tank top and bottom and any bows in them (see the diagrams). The senders are calibrated to account for this distance from the bottom of the tank. The SS sender is cut to the nearest even 2" in length. The ES sender is cut to the nearest even 1.5" in length, for example, for a system with a tank height of 11.75", cut the sender to be 10.5" long, this allows ⅝" at each end when the sender is centered vertically on the tank. The JS sender is cut to the nearest 1.0" in length. **IMPORTANT:** DO NOT cut the 710SS sender shorter than 6". This sender will not work if it is cut shorter than 6". DO NOT cut the 710ES sender shorter than 4½". This sender will not work if it is cut less than 4½". DO NOT cut the 710JS sender shorter than 4". This sender will not work if it is cut less than 4".

For double stacked sender applications:

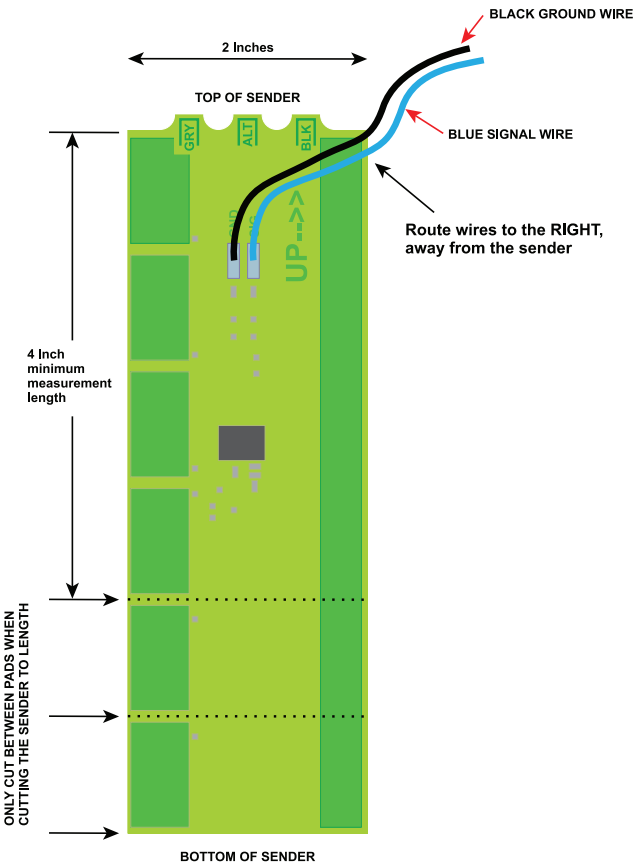
For tall tanks, double stacked 710ES or 710SS senders are used. The sender ends should be ¼" to ¾" away from the top and bottom of the tank, to allow for the thickness of the tank top and bottom and any bows in them (see the diagrams). The senders are calibrated to account for this distance from the bottom of the tank. In addition, there needs to be a gap of ⅛" to ¼" in between the double senders. Therefore the total length of both senders will be: tank height - ¼" - ¼" - ⅛", then rounded down to the nearest 1.5" (ES sender) or 2" (SS sender). The top and bottom senders should be approximately the same length for best results. For example, if the tank height is 22", then $22" - \frac{1}{4}" - \frac{1}{4}" - \frac{1}{8}" = 21 \frac{3}{8}"$, so the total length of both ES senders will be 21". Make both senders 10.5" long.



GARNET SEELEVEL II TANK MONITOR



710ES AND 710SS SENDER



710JS SENDER



7. To make the senders the right length (assuming they are too long) they will need to cut off with a pair of scissors. The end to be cut is the bottom end, which is the opposite end from the top where the wires come out (see the diagrams). DO NOT cut the sides, and DO NOT cut the 710ES sender shorter than 4 ½", the 710SS sender shorter than 6" or the 710JS sender shorter than 4". The cut must be in between the sensor pads, and the cut must be made parallel to the existing bottom end. Double check your measurements, if the sender is cut too short, it cannot be lengthened.
8. The senders need to be programmed so they know which tank they are on. This is done by selectively cutting off the tabs on the top of the sender. See the chapter entitled "**SENDER PROGRAMMING**" for details.
9. For double stacked sender systems, the senders also need to be programmed so they know whether they are being used as top or bottom senders. See the chapter entitled "**SENDER PROGRAMMING**" for details.
10. Once the sender is cut to length and programmed, do a test by taping the sender to the tank wall. Make sure there are no air gaps between the sender and the tank. Verify operation before permanently sticking the sender to the tank wall. Once proper operation has been confirmed, carefully peel the backing paper off the adhesive. Do this slowly to prevent the adhesive from being ripped off the sender, and to prevent the backing paper from ripping. Be careful not to bend the sender sharply in the process. Position the sender over the side of the tank and carefully stick it down. **MAKE SURE THAT THE END WITH WIRES IS POINTING UP!!** Position the bottom of the sender at least ¼" above the bottom of the tank, or slightly higher if required to equalize the space at the top and bottom of the tank. Make sure that the sender is square with the tank. You only have one shot at this, if you try to peel it off the tank once it is stuck the sender may be damaged by the sharp bending. Carefully press the sender down to the tank so that all of the adhesive is contacting the tank wall.
11. Do steps 5 to 10 for the other two holding tanks.
12. Connect all the blue wires from the senders together, and to the blue wire from the display. Connect the black wire from each sender to ground at the display. It is very important that the display and the senders have the same ground. Use crimp on butt connectors to fasten the wires together. Make sure that the wires from the sender are routed to the **RIGHT** side of the sender, away from the sender. **NEVER** route the wires to the left of the sender. If they drape over the sender they could affect the reading. Secure the wires with tie wraps

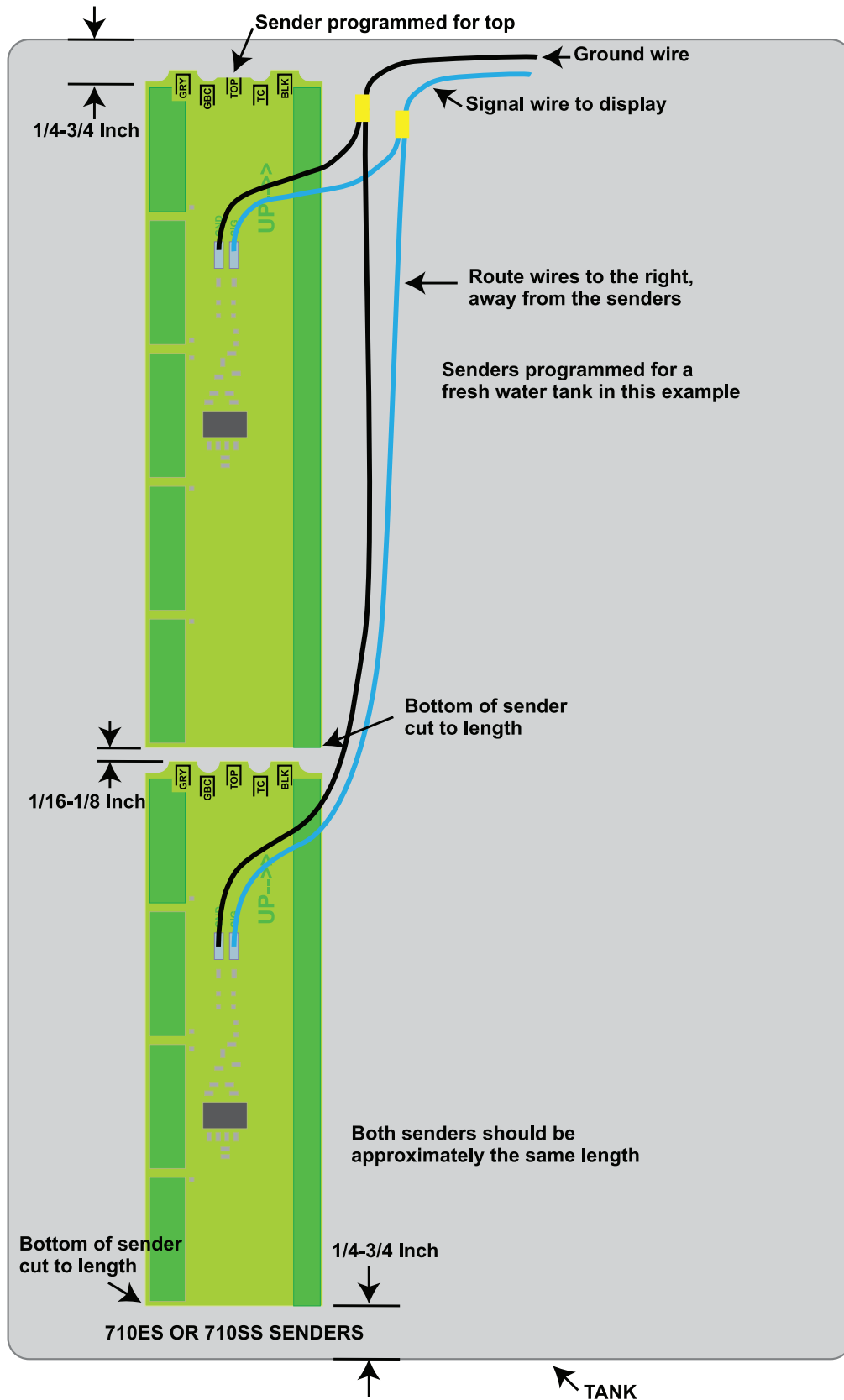


or something similar so that the wires do not rattle or press against the sender, this may result in sender damage or wires breaking over time. Refer to the enclosed wiring diagrams.

13. All that remains now is calibration and testing. The tank senders will self calibrate to whatever length they are cut, so they will always read from 0% to 100%. The display needs to be set to a single or double sender system for each tank. See the chapter entitled "**DISPLAY CALIBRATION**" and the section "**To program the number of senders for each tank**" for details. Make sure you do it for each tank.
14. For the initial test, have the tank at least $\frac{1}{4}$ full of water or sewage, and verify that the percent level reading looks correct (see the chapter entitled "**OPERATING INSTRUCTIONS**" and the section "**To read a water or sewer tank level**" for details). Check to see that the signal power is at least 20% (see the chapter entitled "**TROUBLESHOOTING GUIDE**" and the section "**To review the sender diagnostics**" for details). If the signal power is too low, make sure that the sender(s) is well stuck to the side of the tank and that the tank is reasonably clean inside, as a large buildup will reduce signal strength. The gauge will work with maximum signal strengths as low as 20%, but it is good to have at least 50% to 60% at installation so that there is some margin available for buildup in the tank. Note that the system "learns" about the characteristics of the tank with use, so the readings may be inaccurate when the tank is empty or almost empty when the system is first tested. Once the tank has been filled at least $\frac{1}{4}$ full the system will be properly "taught" and should read correctly after that.
15. If equipped, connect the pump switch as required.
16. **▲ WARNING: The pump switch is rated for a maximum of 7.5 amps. The use of a relay is required if more than 7.5 amps is needed. A 7.5 amp (max) fuse must be installed in the series with the 12V power circuit to the switch!**
17. Verify that the battery voltage reads correctly. If it appears low, make sure you have good wiring for the 12 volt power and the ground.



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Typical Double Stacked 710ES or 710SS Sender Installation



CHAPTER 7 - TROUBLESHOOTING GUIDE

Display trouble codes:

If a sender or its wiring is not operating properly, the following codes are shown on the display:

1. If a sender is unresponsive or there is an open circuit in the wiring so that the sender is not connected, the display will indicate an open circuit by showing "**OPn**" on the LED display.
2. If a sender is shorted or there is a short in the wiring, the display will indicate a short circuit by showing "**Sht**" on the LED display.
3. If a sender is sending bad data, there is damaged wiring, or if there is electrical interference, the display will indicate a data error by showing "**Err**" on the LED display. Also, if the senders have not been programmed correctly, they can interfere with one another and result in "**Err**" on the LED display. Check all the senders to make sure they are programmed correctly. If they are, replace the sender that is creating the error.
4. If the display has been programmed for a single sender, and double stacked senders have been connected, the display will show "**StA**". In this case, change the senders or reprogram the display as required. If only a top sender has been connected, the display will show "**nbo**", indicating that no bottom sender has been received. If the tank should only have a single sender, correct the programming on the sender, it should not be a top sender.
5. If the display has been programmed for double stacked senders for tall tanks, and only the bottom sender is working and the top one is not, then the display will show "**ntP**" indicating that no top sender is being received. If the top is working but no bottom sender is being received, then the display will show "**nbo**". If neither sender is working, then the display will show "**OPn**". Check the wiring and the programming of the senders. If all is OK with that, replace the bad sender.
6. The display contains a permanent memory which is used to store the programming for battery voltage calibration value and the tank sender signal levels. These signal levels are used to help the system adapt to the tanks, which increases sender accuracy at low tank levels. If this memory should fail, "**CAL**" will be flashed on the LED display, indicating a calibration failure. It will be necessary to replace the display if this occurs.
7. There are no diagnostics for the battery voltage.



The diagnostics can be used to check the wiring and the senders:

1. If a short circuit is showing, disconnect the senders one at a time at the sender location. If the short circuit indication goes away when a sender is removed, then that sender is bad. If all the senders are removed but a short circuit still shows, then the wiring may be shorted. Disconnect the sender wire at the display, the short indication should go away. If it doesn't, the display is bad.
2. If an open circuit for all the senders is showing, it is most likely a wiring open circuit or display failure, since it is unlikely that all three senders are bad. Try shorting the wiring together at the display, the display should indicate a short circuit. If it doesn't, the display is bad. If it does, then remove that connection and short the wires together at the sender locations. If no short circuit is shown, then the wiring is open. If the display does show a short circuit, then the senders must be bad.
3. If a single sender is showing an open, try shorting the wiring together right at that sender. If a short now shows, the sender is bad or not wired properly. If no short circuit shows on the display, the wiring to that sender is open.

To review the sender diagnostics:

1. The sender diagnostics can be reviewed periodically to check for any degradation of the tank senders. If a sender appears to be malfunctioning, reviewing the diagnostics should be the first step in the troubleshooting process.
2. There are two diagnostics for the senders: the signal power, and the sender height.

The signal power is an indication of how much signal is being transmitted through the tank wall and picked up by the receive part of the sender. If the signal power is too low, it can indicate a sender which is detached from the tank, excessive buildup on the inside of the tank, bad wiring to the sender, low battery voltage, or a defective sender. Typical signal power should be 50% to 60%. The minimum signal power for proper operation is 20%.

The sender height is the number of receive segments present in the sender. To determine the length of the sender, multiply the calibration by 2.0 (SS sender) or 1.5 (ES sender) or 1.0 (JS sender) to get the length in inches. The senders always auto calibrate to the length that they are cut, so this diagnostic allows the user to confirm the length and to make sure that the auto calibration is working properly.



3. To check the diagnostics, press and hold the button for the tank to be checked, the display will show the level for that tank.
4. While continuing to hold down the button for the tank, press the **BATT** button. When the display shows "dIA", release the buttons, the display will then change to showing the signal power diagnostic. This is indicated by a "P" showing on the left digit, for example "P26" indicates a 26% signal power.
5. The signal power will show for 5 seconds. The display will then change to showing the sender height. This is indicated by a small "h" showing on the left digit, for example "h 6" indicates that the sender has 6 receive segments, which is 6" high for a JS sender, 9" high for an ES sender, or 12" high for an SS sender.
6. After 5 seconds of showing the height, the display will shut off.

TROUBLESHOOTING AND INSTALLATION TIPS

What to do if the system freezes or is unresponsive:

1. If the display is unresponsive, it may be "hung" due to a static discharge or electrical noise. Try rebooting it by shutting off the 12V power to it for a few seconds, then turning it back on.

What to do if operation becomes erratic or stops completely:

1. Make sure all wiring connections are solid. Do not use spade connectors to join wiring as they will degrade over time. Use insulated crimp-on butt connectors or solder and insulate the wire connections.

What to do in dual console systems if the two displays do not read the same:

1. For dual display console applications, if the consoles disagree the most likely reason is a bad console ground. Both console grounds, and the sender grounds, must be connected together with ground wiring. Do not depend on metal chassis components. See item 2 in the following section for further details.

What to do if readings jump or are inaccurate

1. We have had a few instances where 120VAC interference has caused the readings to stall and create a gap; readings would skip from 50% to 70% and then begin to function again. The cause was wiring between consoles and senders being tied



too close to entrance boxes for shore power or bundled with other high AC voltage lines or junction boxes.

2. Always ground the senders and the console to the same ground circuit. This is very important; RV's can have several ground circuits with resistance between them. We have had instances where two consoles are installed with a different ground for the service bay console and interior console. If you see different levels from each console on the same tank, then the ground circuit is not common. Connect both consoles to the same ground back to the breaker panel ground point.

What to do if the system indicates a residual or non-zero water level even though the tank is drained completely:

1. This can be due to a convex tank bottom or a sloped tank bottom. In the case of the convex bottom tank a ring of water may remain after draining. In the case of the sloped bottom (to the drain valve side) a very small amount of water left in the tank will result in a non-zero level indication. In both of these cases, temporary installation of the sender using duct tape or masking tape will allow the installer to check the tank level before committing to a final sender position. After cutting the sender to length and connecting the wires, be sure to tape down both sides of the sender to eliminate air gaps between the sender and tank surface which can cause low signal strength and unpredictable performance. The ends of the sender must be at least $\frac{1}{4}$ " to $\frac{1}{2}$ " away from the tank bottom and top to allow for wall thickness. The exterior bottom & top of the tank are not the same as the interior bottom & top; depending on the tank wall thickness the inside height is $\frac{1}{2}$ " to 1" shorter than the outside height. Knowing the wall thickness of your tank will allow you to find the optimal sender position; placing the sender where it can "see" the water will ensure proper level calculation and sender operation.
2. The signal strength should be in the 50% range for best performance. If the signal strength is in the 20% range it is indicative of a high resistance in a connector, a bad ground, or improper bonding of the sender to the tank (a possible air gap on one or both sides of the sender).
3. With the console installed you can check the level on each tank, if you get an indicated level of 10% to 20% and you know this is too high, reposition the sensor board as follows:

In the case of a convex tank bottom, usually found on large flat tanks, raising the sender is the best solution to accomplish a zero reading when the tank is empty. This may result in having to shorten the sender by an additional segment.



On sloped tanks, which are used to promote complete draining, one alternative is to measure the end of the tank opposite from the drain valve. It may be necessary to extend the wire harness to be able to measure on the optimal side. On the drain valve side, the best choice is to elevate the sender to avoid reading a puddle at the drain valve.

4. The close proximity of metal to the sender can be misinterpreted as water, since they have similar electrical characteristics. Any metal such as steel, aluminum, copper, or brass can affect the sender reading if it is closer than about 2" brackets, straps, pipes, ducts, etc. close to the sender you may have to move the sender away from them. Again, trial positioning using tape is necessary until the problem disappears. Flexible pieces of metal can be held away from the sender with rubber wedged between the sender and the metal. If the metal is off to the side of the sender, or just butting to the edge then it is usually not a problem, particularly on the right hand side of the sender.
5. Make sure that metal doors or covers are far enough away from the sender as well, once everything is closed up the positioning may change. The symptoms of exposure to large metal components are usually a non-zero reading when the tank is empty, or the level appearing to jump suddenly as the tank is drained or filled.
6. On fresh tanks there is sometimes a potential to not be able to use all the water in the tank, we suggest you elevate the fresh sender 1" off the tank bottom and position the top of the sender to allow for vent position (if the vent is on the side of the tank). This way you should see '0' before the pump starts to suck air. Some tanks have a sump style draw system, in this case there is no concern with unusable water, just allow for the wall thickness when positioning the sender board (usually ½" to 1" margin from the outer shell). If the sender is positioned above the vent then the maximum reading may be less than 100%.
7. There may be a buildup on the inside walls of black and grey tanks. We get calls occasionally about older coaches that have not been in service for a few years in which the black tank will now indicate a level even though it is empty. The likely cause is that the tank has a significant build-up, probably exceeding ¼" to ½" thick! Redex is not an acceptable chemical to promote clean tank walls; it is far too slow to get the breakdown action started. Use an RV type of liquid chemical, we suggest Tissue Digester, Sensor Cleaner, or the latest we have used called Happy Campers Holding Tank Extreme Cleaner available at www.happycampersworld.com. The next time you take a



trip, leave with a high concentration of the chemical in the tank and approximately 30% full of fresh water. Hopefully you can drive for 2-3 days allowing the tank levels to rise through normal use. We recommend that you exceed the level that you see the system report when the tank is empty. After the sloshing and the soaking hopefully the build-up will be flushed away when the tank is drained and flushed. If you still have symptoms the treatment may required a few more times. The waste did not build up on the tank wall in one day, so it may not dissolve in one treatment! The build-up looks like water to the system since it holds a significant volume of water in the build-up area. It takes much more than a film or piece of tissue to cause the error.

What to do if the system reads a zero water level at all times, or does not reach 100%:

1. This may be due to excessive tank wall thickness. We have tested the sender on an actual tank with $\frac{3}{8}$ " wall thickness to ensure proper operation. If you encounter an excessively thick tank wall the symptom will be a zero reading regardless of the actual tank level. The cross check would be to test the sender on another tank by taping it in place temporarily, if it now works the tank wall thickness is well over $\frac{3}{8}$ ". You can also use a 1 gallon jug or a 5 gallon pail as a test tank to crosscheck operation of the sender.
2. A symptom we have seen is the sender will not indicate 100% when the tank is full. If the sender is positioned too high on the tank, then water cannot reach high enough on the sender for it to read 100%. The top of the sender must be at least $\frac{1}{4}$ " to $\frac{1}{2}$ " away from the top of the tank to allow for wall thickness.
3. Another possibility is a tank wall thickness issue that may occur at the corners or edges of the tank. This has not been a common issue, and the only correction you can make is to move the board slightly lower, away from the thick area.

What to do if sender delamination occurs:

1. We have had reports of the senders literally falling off the tanks or showing serious delamination. This is likely caused by a lack of tank surface preparation. Surface prep is very simple, wipe the area to be adhered to with products like Pro Bond, alcohol, or acetone. Do not use thinners because they leave residues which attack the adhesive. Ambient temperatures of less than 60°F or 15°C prevent the bonding agents in the



adhesive from working properly; use a heat gun to warm the tank surface if necessary. Also be sure the surface is dry, again a heat gun is the best way to dry the bonding area. Finally, the surface of the tank must be smooth. The adhesive works much better on smooth surfaces, if necessary use an orbital sander with fine grit paper (220 grit) to quickly accomplish the desired smoothness.

2. Another possibility is the wiring harness pulling on the sender. Make sure the wiring to the tank sender is well supported so that it does not put a load on the sender. Be sure to support all connecting harnesses; do not let the board support the harness, this will in time cause delamination of the board from the tank. One simple way to do this is to use Gorilla tape across the top of the sender at a 90 degree angle to the sender orientation, with the wiring held in place by the tape. The wires from the sender must be routed straight up or to the right for reliable operation.

How to protect the sender from road spray and debris:

1. On installations where the holding tank is exposed to under chassis road spray and flying rocks etc. we recommend the use of an auto body undercoat, which is easily purchased in auto parts stores. This tar based material clings well to the senders and protects from water and debris.
2. One material in particular is 3M Professional Grade Rubberized Undercoating, product code 03584. Another product that works well is a Dominion Sure Seal rubberized undercoating such as Gravel Guard Rocker Guard Coating.
3. After the system is completed and tested apply the undercoat over the complete board using two coats. Do not use lacquer, enamel paint, or plastic paint for auto bumpers as these contain chemicals that will dissolve the conformal coating on the board and cause malfunctions.

How to avoid damaging the display when mounting:

1. If mounting the display in a metal panel or wall there is a risk of permanent damage due to a jagged opening or too small of an opening. The metal panel can short circuit the display rendering it inoperable and requiring the installer to replace it. Ensure that the edges of the cutout are smooth and that no material is bent outward where it can dig into the display. Make sure that the cutout is large enough so that the display can be easily inserted without having to angle it. There is a 1/2" border all around the display to cover the edge of the hole, so



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if the hole is a bit larger than the minimum requirement it will still be covered by the display.

2. When fastening the display to the panel, make sure that it is centered in the hole and not resting on one edge.
3. Non-conductive mounting spacers are available to help prevent damaging the display. Contact Garnet for further details.

How to avoid damaging the display or pump switch due to excessive current:

1. Please be aware that the water pump switch circuit has a limitation on current draw of 7.5 amps, some large pumps can draw over 10 amps. These high drain pumps must use a relay or the display console printed circuit will overheat and damage the display permanently.
2. If the 12V supply line from the electrical panel does not have a 7.5 amp fuse rating, please be sure to install the supplied fuse holder with a 7.5 amp automotive style fuse inline on the +12V red wire.
3. **▲ WARNING: All power circuits must be fused. If a fuse is not provided with the system then it is the installer's responsibility to install a fuse with a maximum rating of 7.5 amps. A relay is required if more than 7.5 amps is needed for the pump.**



CHAPTER 8 - SPECIFICATIONS

Resolution	JS sender: 1/4" (6 mm) ES sender: 3/8" (10 mm) SS sender: 1/2" (13 mm)
Accuracy:	+/- 8% or better, limited by resolution and tank height and shape.
Temperature range:	+32 to +140 °F (0 to + 60 °C)
Sender materials:	0.008" thick glass epoxy circuit board with conformal coating for circuit protection. Laminated on the back with 3M 300LSE Bonding Adhesive.
Sender length range:	JS sender: 4" to 6", which will measure tank heights from 4 1/2" to 7". ES sender: 4 1/2" to 12", which will measure tank heights from 5" to 13" (single sender) and up to 25" (dual senders). SS sender: 6" to 16", which will measure tank heights from 7" to 17" (single sender) and up to 34" (dual senders).
Display mounting panel:	Black panel, approximately 4" wide by 2.8" high by 1" thick (102mm wide X 71mm high X 25mm thick). Panel screws to wall.
System power requirements:	Display requires 12 volts from the RV battery, the system will function from 11 volts to 16 volts. Current drain is less than 200mA.
Wiring:	A single two wire conductor required from the display to the senders. All the senders are wired in parallel. 12 V power and ground required for display.
LPG:	-
Pump switch:	The pump switch is rated for a maximum of 7.5 amps. The use of a relay is required if more than 7.5 amps is needed. A 7.5 amp (max) fuse must be installed in series with the 12V power circuit to the switch!



CHAPTER 9 - SERVICE AND WARRANTY INFORMATION

The warranty will only apply only if the warranty card that is shipped with the equipment has been returned to Garnet Instruments Ltd.

DISCLAIMER OF WARRANTY ON HARDWARE

Garnet Instruments Ltd. warrants equipment manufactured by Garnet to be free from defects in material and workmanship under normal use and service for a period of one year from the date of sale from Garnet or an Authorized Dealer. The warranty period will start from the date of purchase or installation as indicated on the warranty card. Under these warranties, Garnet shall be responsible only for actual loss or damage suffered and then only to the extent of Garnet's invoiced price of the product. Garnet shall not be liable in any case for labor charges for indirect, special, or consequential damages. Garnet shall not be liable in any case for the removal and/or reinstallation of defective Garnet equipment. These warranties shall not apply to any defects or other damages to any Garnet equipment that has been altered or tampered with by anyone other than Garnet factory representatives. In all cases, Garnet will warrant only Garnet products which are being used for applications acceptable to Garnet and within the technical specifications of the particular product. In addition, Garnet will warrant only those products which have been installed and maintained according to Garnet factory specifications.

LIMITATION ON WARRANTIES

These warranties are the only warranties, expressed or implied, upon which products are sold by Garnet and Garnet makes no warranty of merchantability or fitness for any particular purpose in respect to the products sold. Garnet products or parts thereof assumed to be defective by the purchaser within the stipulated warranty period should be returned to the seller, local distributor, or directly to Garnet for evaluation and service. Whenever direct factory evaluation, service or replacement is necessary, the customer must first, by either letter or phone, obtain a Returned Material Authorization (RMA) from Garnet Instruments directly. No material may be returned to Garnet without an RMA number assigned to it or without proper factory authorization. Any returns must be returned freight prepaid to: Garnet Instruments Ltd, 286 Kaska Road, Sherwood Park, Alberta, T8A 4G7. Returned warranted items will be repaired or replaced at the discretion of Garnet Instruments. Any Garnet items under the Garnet Warranty Policy that are deemed irreparable by Garnet Instruments will be replaced at no charge or a credit will be issued for that item subject to the customer's request.

If you do have a warranty claim or if the equipment needs to be serviced, contact the installation dealer. If you do need to contact Garnet, we can be reached as follows:

CANADA

Garnet Instruments Ltd.
286 Kaska Road
Sherwood Park, AB T8A 4G7
CANADA
email: info@garnetinstruments.com

UNITED STATES

Garnet US Inc.
5360 Granbury Road
Granbury, TX 76049
USA
email: infous@garnetinstruments.com

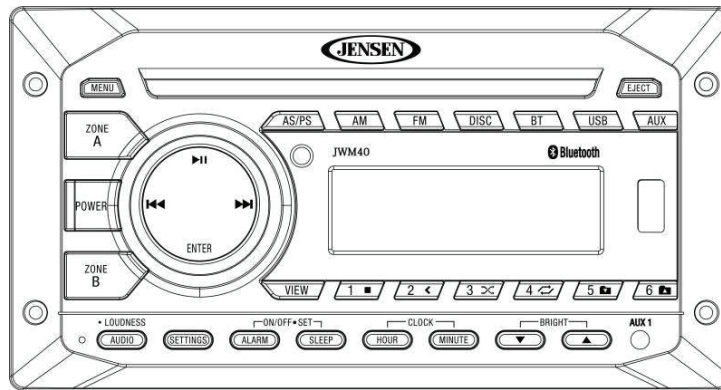


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JWM40

MOBILE AUDIO SYSTEM

Installation and Owner's Manual



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INTRODUCTION

Thank You!

Thank you for choosing a Jensen product. We hope you will find the instructions in this owner's manual clear and easy to follow. If you take a few minutes to look through it, you'll learn how to use all the features of your new Jensen receiver for maximum enjoyment.

Features

Features of Jensen JWM40 mobile audio system include:

- Digital AM/FM Tuner/30 Preset stations (12 AM/18 FM)
- Bluetooth Ready with A2DP/AVRCP Streaming Audio
- Electronic Bass, Treble, Balance and Fader Controls
- Skip Protected Disc Mechanism
- DVD/CD-R/RW and MP3 Compatible
- Time/Alarm Clock
- LCD Backlight Control
- 1/8" Front Auxiliary Audio/Video Input
- Rear Audio RCA Inputs/Outputs
- USB Playback of MP3 Files
- 2 Zone / 4 Speaker Output
- Wireless Remote Control Included

Precautions

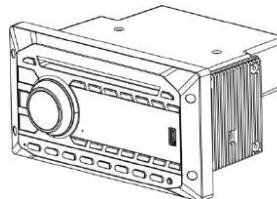
- **Use the Proper Power Supply**
This product is designed to operate with a 12 volt DC, negative ground battery system (the standard system in a North American vehicle).
- **Protect the Disc Mechanism.**
Avoid inserting any foreign objects into the slot of this player. Failure to observe this may cause malfunction due to the precise mechanism of this unit.
- **Use Authorized Service Centers**
Do not attempt to disassemble or adjust this precision product; contact a professional for assistance.
- **Avoid Moisture**
To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.

- **Avoid Cleaning Products**
The front of this unit should only be cleaned with a slightly damp cloth. Do not use cleansers.
- **Use Recommended Accessories.**
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK AND ANNOYING INTERFERENCE, USE ONLY THE RECOMMENDED ACCESSORIES.

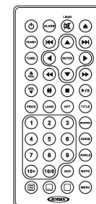
CAUTION: This mobile DVD player is a Class I laser product that uses a visible/invisible laser beam which could cause hazardous radiation exposure if improperly directed. Be sure to operate the mobile DVD player as instructed. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Do not open covers and do not attempt to repair the unit yourself. Refer servicing to qualified personnel.

Packing List

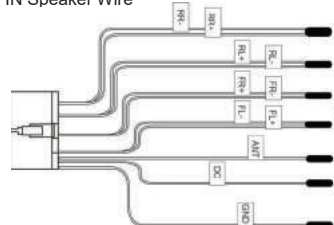
JWM40



Remote Control



20-PIN Speaker Wire




DISC NOTES

Depending on the recording status, conditions of the disc, and the equipment used for recording, some CD-Rs/CD-RWs may not play on this unit. For more reliable playback, please adhere to the following recommendations:

- Use CD-RWs with speed 1x to 4x and write with speed 1x to 2x.
- Use CD-Rs with speed 1x to 8x and write with speed 1x to 2x.
- Do not play a CD-RW which has been written more than 5 times.

Compatible Disc Types




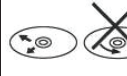
Table 1: General Disc Information

Symbol	12cm Disc Properties	Max Play time
	Single side single layer (DVD-5)	(MPEG 2 Method) 133 minutes
	Single side double layer (DVD-9)	242 minutes
	Double side single layer (DVD-10)	266 minutes
	Double side double layer (DVD-18)	484 minutes
	Single side single layer (VCD)	MPEG 1 Method 74 minutes
	Single side single layer	74 minutes

NOTE: CD-R and CD-RW discs will not play unless the recording session is closed and the CD is finalized.

Disc Maintenance

- A dirty or defective disc may cause sound dropouts while playing. Before playing, wipe the disc using a clean cloth, working from the center hole towards the outside edge. Never use benzene, thinners, cleaning fluids, anti-static liquids or any other solvent.

			
Insert label side up.	Do not bend.	Never touch the underside of the disc	Wipe clean from this center to the edge.

- Be sure to use only round CDs for this unit and do not use any special shape CDs. Use of special shape CDs may cause the unit to malfunction.
- Do not stick paper or tape on the disc. Do not use CDs with labels or stickers attached or that have sticky residue from removed stickers.
- Do not expose discs to direct sunlight or heat sources such as hot air-ducts, or leave them in a vehicle parked in direct sunlight where there can be a considerable rise in temperature inside the vehicle.

NOTE: A disc may become scratched (although not enough to make it unusable) depending on how you handle it and other conditions in the usage environment. These scratches are not an indication of a problem with the player.



INSTALLATION

It's a good idea to read all of the instructions before beginning the installation. We recommend having your Jensen JWM40 installed by a reputable RV dealership.

Tools and Supplies

You will need these tools and supplies to install your JWM40:

- Phillips screwdriver
- Wire cutters and strippers
- Tools to remove existing radio (screwdriver, socket wrench set or other tools)
- Electrical tape
- Crimping tool
- Volt meter/test light
- Crimp connections
- 16 gauge wire for power connections
- 16 - 18 gauge speaker wire
- Four M3x20mm (3/32 x 0.75") screws

Disconnecting the Battery

To prevent a short circuit, be sure to turn off the ignition and remove the negative (-) battery cable prior to installation.

NOTE: If the JWM40 is to be installed in a vehicle equipped with an onboard drive or navigation computer, do not disconnect the battery cable. If the cable is disconnected, the computer memory may be lost. Under these conditions, use extra caution during installation to avoid causing a short circuit.

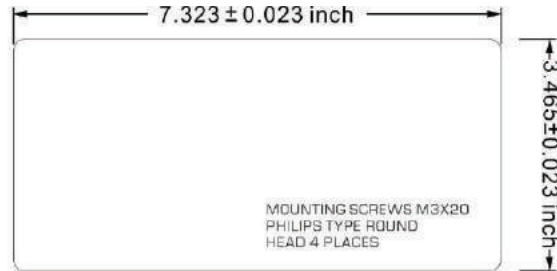
Selecting the Mounting Location

Select a mounting location, taking care to avoid the following:

- Places exposed to heat-radiating appliances such as electric heaters
- Adjacent to other equipment that radiates heat
- Poorly-ventilated or dusty places
- Moist or humid locations

Preparing the Opening

Use the mounting hole diagram (below) to measure and cut a mounting hole, then mount the unit using four M3x20mm screws.

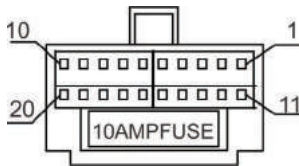


NOTE: Before cutting the mounting hole, make sure the area behind the mounting location is clear of wires, fuel and vacuum or brake lines.



WIRING

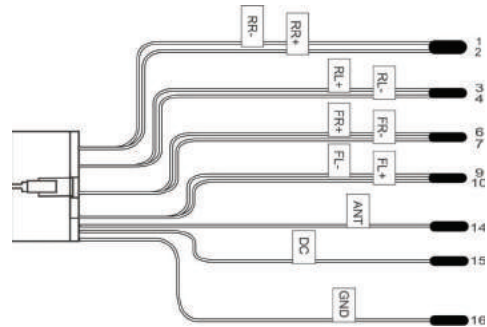
The wiring diagram depicts all the wiring connections required for proper operation of the unit.



DETAIL A
SHOWN FROM PIN VIEW

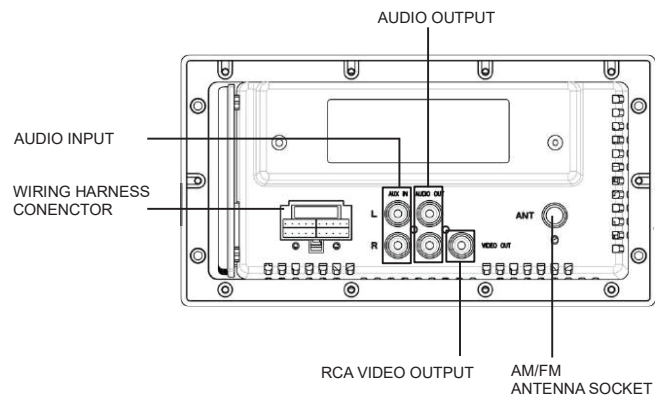
PIN NO.	WIRE COLOR	DESCRIPTION
1	VIOLET/BLACK	REAR RIGHT SPEAKER (-)
2	VIOLET	REAR RIGHT SPEAKER (+)
3	GREEN	REAR LEFT SPEAKER (+)
4	GREEN/BLACK	REAR LEFT SPEAKER (-)
5	N/A	N/A
6	GRAY	FRONT RIGHT SPEAKER (+)
7	GRAY/BLACK	FRONT RIGHT SPEAKER (-)
8	N/A	N/A
9	WHITE/BLACK	FRONT LEFT SPEAKER (-)
10	WHITE	FRONT LEFT SPEAKER (+)
11	N/A	N/A
12	N/A	N/A
13	N/A	N/A
14	BLUE	AMP REMOTE (+12VDC 100mA)
15	RED	+12VDC SWITCHED
16	BLACK	GROUND
17	N/A	N/A
18	N/A	N/A
19	N/A	N/A
20	N/A	N/A

WARNING: Wiring harness comes with stripped and tinned leads to aid in the installation process. Any unused speaker wires must have their exposed ends cut off or insulated individually.



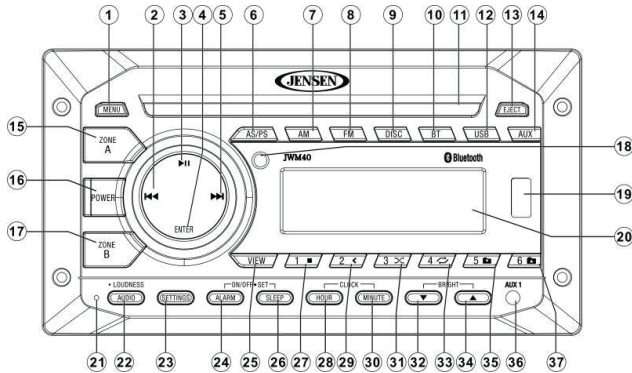
CONNECTIONS

The diagram below depicts all the available audio/video connections available to use with your system.





BASIC OPERATION



Power

Press the **POWER** button (16) to turn the unit on or enter standby mode. The unit will resume at the last mode (Tuner, Aux, etc.) after turn on.

Volume control

Rotate the **VOL** encoder knob control clockwise to increase or counter-clockwise to decrease the volume output.

The maximum volume setting is "40". While adjusting the volume, the LCD displays numerical representation of the level.

Audio Menu Setting

Press the **AUDIO** button (22) to step through the following audio adjustment options. Rotate the **VOL/ENTER** encoder knob control to adjust the selected audio feature.

Audio Adjustment

- **BAS**: Adjust the Bass level from "-7" to "+7".
- **TRE**: Adjust the treble from "-7" to "+7".
- **BAL**: Adjust the speaker output balance between "L7" (left) and "R7" (right). "BAL 0" indicates an equal balance between the left and right speakers.
- **FAD**: Adjust the speaker fade between "R7" (rear) and "F7" (front). "FAD 0" indicates and equal balance between the rear and front speakers.

This function will time out after ten seconds of inactivity and the unit will resume normal operation.

Loudness

Press the **LOUD** button (22) to toggle the loudness function on/off.

Mute

Press the **MUTE** button (3) to silence the audio output in tuner, CD, DVD, BT, USB or auxiliary input mode. Press again to restore the previous volume level.

Liquid Crystal Display (LCD)

The liquid crystal display (LCD) panel (20) displays the frequency, time and activated functions.

Press the **BRIGHT UP** button (34) to increase the LCD brightness and press the **BRIGHT DOWN** button (32) to decrease the LCD brightness from "LEVEL 0" (off) to "LEVEL 9" (brightest).

NOTE: When subjected to cold temperatures for an extended period of time, LCD panels will take longer to illuminate and the display visibility may slightly decrease. Optimal LCD operation will return to normal when the temperature increases to a normal range.

System menu setting

1. Press the **SETTING** button (23) to enter the system menu.
2. Press **SETTING** button or press the [**<<** | **>>**] (2,5) to choose the following system menu list:
3. Once the desired menu item appears on the display, adjust that option by rotating the volume encoder knob clockwise or counter-clockwise within 10 seconds.
4. Press the **ENTER** knob button (4) to confirm your selection and exit system menu. The unit will automatically exit the audio menu after 10 seconds of inactivity.

The following items can be adjusted:

- **Beep On/Off**: Turn the audible beep On/Off (heard when functions /buttons are selected).
Note: Beep tone off will not affect the audible tone of the alarm clock.
- **LCD Brightness**: Adjust the brightness of the LCD backlight from "BRI 0" (off) to "BRI 9" (Brightest).

Setting the Bluetooth

- Bluetooth (On/Off): Choose "Bluetooth On" or "Bluetooth Off".
- Bluetooth Device (Locked/Unlocked, Disconnect/Connect, Delete): view, lock and delete from a list of previously paired mobile device models.
- Bluetooth Pair: Press "**ENTER**" knob to automatically pair a device.
- PRESET Volume (PVOL): Select an automatic turn on volume

Reset

Press **ENTER** knob button to reset the JWM40 to factory default.

Auxiliary Input Function

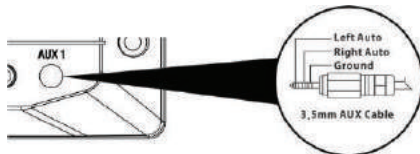
Press the **AUX** button (14) repeatedly to toggle between AUX IN1 and AUX IN2 from any other mode when a portable audio device is connected to the unit. To connect a portable audio device, insert a standard 3.5mm (audio line output or headphone output from your portable CD / MP3 / iPod or other media player) into the AUX A/V IN connector (AUX IN1) (36) on the front of the unit or the AUDIO IN (AUX IN2) on the back of the unit (see "Wiring" on page 4).

Auxiliary Input Connector

For front panel A/V input, an external audio/video (A/V) source such as a video game player, camera, etc. can be connected to the front panel A/V input with a proper A/V cable adapter (not included). Please note that there are several different 3.5mm A/V cable standards, so refer to the diagram below for proper configuration. Connect the device to the AUX A/V IN connector (36) on the front panel.

In addition to front panel auxiliary input source, the unit can also be connected to the RCA audio input through the AUX AUDIO INPUT jack on the rear of the unit.

Press the **AUX** button (14) to directly access auxiliary input modes (AUX 1 IN and AUX 2 IN) from any other mode when a portable audio device is connected to the unit.



USB Interface Connector

You can connect a USB device directly to USB interface (19) on the front of the

JWM40 for playback of compatible files. Playback begins automatically. Press the USB button (12) to switch to USB mode from another source. Refer to "MP3/USB Operation" on page 12 for additional operating instructions.

NOTE: USB will not support Apple device playback. The USB input supplies up to 1A of charging current.

Clock Display

Press the **VIEW** button (25) to alternate between playing time and clock time while in Tuner, CD, DVD, USB or auxiliary input mode.

Clock Setup

Press and hold the clock **HOUR** or **MINUTE** button (28, 30) to access clock setup mode. The number representing the hours and minutes will flash. Press the **HOUR** button (28) to adjust the hour and press the **MINUTE** button (30) to adjust minutes. The new time will be saved five seconds after the last adjustment is made.

Sleep Mode

The Sleep Timer will automatically turn off the JWM40 in the designated number of minutes. To set the Sleep Time, press the **SLEEP** button (26) and the sleep time will appear in the display with the number representing the minutes (SLEEP 0). Press **SLEEP** button repeatedly to change the sleep time from 0 (OFF), 15, 30, 45 or 60 minutes.

Alarm Setting

To set the alarm, *press and hold* the **ALARM** button (24) for 2 seconds and the clock will begin flashing. Press the **HOUR** button to adjust the hour once at a time or *press and hold* to advance rapidly. Repeatedly press the **MINUTE** button to adjust the minute one digit at a time, or *press and hold* to advance rapidly.

Press the **ALARM SET** or **ENTER** knob button to save the alarm time.

Once a time is set, press **ALARM** (24) to turn the alarm function on or off.

Remote Sensor

Infrared receiver (18) is located on the upper left of front panel to receive infrared signal emitted by the remote control.

Speaker Output

The two speaker output buttons (15, 17) (Zone A, Zone B) control speaker zones output from the radio. Press any of the two buttons to turn the corresponding speaker



zone on or off. SPK A (Zone A), SPK B (Zone B) will appear on the display.

Reset

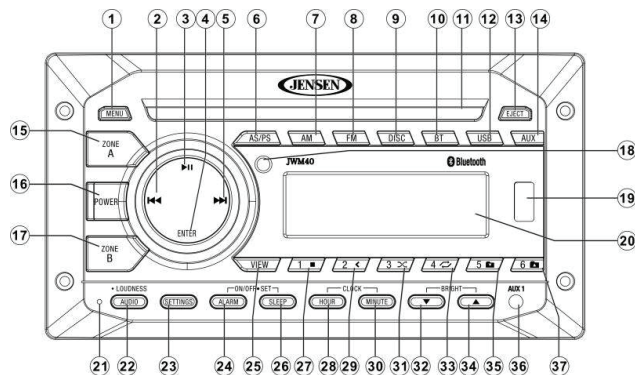
The reset button should be activated for the following reasons:

- Initial installation of the unit when all wiring is completed
- Function buttons do not operate
- Error symbol on the display

Use a ball point pen or similar object to press the **RESET** button (21). This may be necessary should the unit display an error code.



TUNER OPERATION



Automatically Store / Preset Scan (AS/PS)

Automatically Store

Select an AM or FM band. *Press and hold* the **AS/PS** button (6) for more than 3 seconds and the unit will automatically scan for and store 12 or 18 strongest station for all bands. To stop this function before the automatic storing is complete, press **AS/PS** again.

Preset Scan

Select a band. Press **AS/PS** button to scan stations stored in the current band. The unit will pause for 10 seconds at each preset station. Press **AS/PS** again to stop scanning when the desired station is reached.

Select a Band

1. Press **AM** button (7) repeatedly to select the band (AM1, AM2)
2. Press **FM** button (8) repeatedly to select the band (FM1, FM2 and FM3) Manual Tuning

Manual Tuning

Press the **>>|** or **|<<** buttons (5, 2) to seek stations up/down step by step.

Auto Seek Tuning

Press and hold the **>>|** or **|<<** buttons (5, 2) to automatically seek the next or previous strong station.

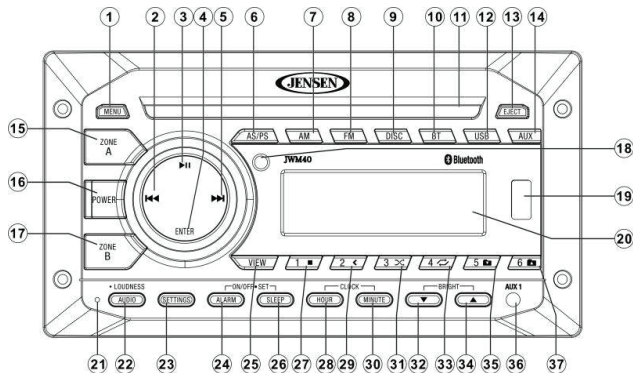
Preset Stations

Six numbered preset buttons store and recall stations for each AM and FM band.

Store a Station

Select a band (if needed). Press a 1-6 preset button to select the corresponding stored station.

DISC OPERATION



CD OPERATION

Inserting a CD

Insert a CD label-side up into the disc slot (11) and the disc will begin to play automatically.

Ejecting a CD

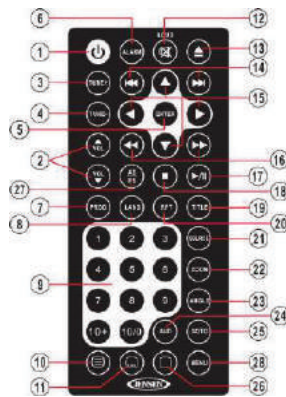
Press the **EJECT** button (13) to stop CD play and eject the CD.

Pausing Playback

Press the **▶||** button (3) to suspend or resume disc play

Stop Playback

Press the **1■** button (27) to suspend disc play, and "PRE-STOP" will appear on the display. Press the **▶||** button to resume disc playback from the last position. Press **1■** button twice and "STOP" will appear on the display.



Track Select

Press the **>>|** or **|<<<** buttons (5, 2) to advance to the previous or next track on the CD. The selected track number will appear on the display. *Press and hold* the **>>|** or **|<<<** buttons for more than three seconds to fast forward or fast reverse through the disc. CD play starts when the play/ pause button is pressed.

Fast Forward/Reverse

Press and hold the **>>|** or **|<<<** buttons or press the **>>>** or **<<<<** buttons on the remote control (16) once for FAST FORWARD/REVERSE X 2. *Press and hold* additional times for FAST FORWARD/REVERSE X 4, X 8, X 20 or PLAY. Press the **▶||** button on the control panel (3) or remote control (17) to end fast forward or reverse and resume normal playback.

Repeat (RPT)

Press the **4♻** button (33) during disc play to access the repeat function. Press again to continuously repeat the selected track (RPT ONE). Press a third time to repeat all tracks (RPT ALL). Press one more time to stop the repeat function (RPT OFF).

Random Shuffle (RDM)

Press the **3♻** button (31) during disc play to play all tracks on CD in random, shuffled order (RDM ON). Press **3♻** again to stop random play (RDM OFF).

Remote Control Direct Track Entry

To select a track directly, use the number pad on the remote control (9). For single digit entries, press the corresponding number for two digit entries. Press the **10+** button followed by the last digit (i.e., for track 16, press **10+** and then 6).

GOTO Direct Track/Chapter Access

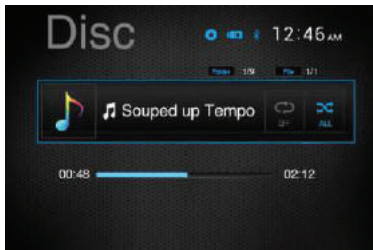
Use the **GOTO** function to access a track (chapter) directly.

1. Press the **GOTO** button (25) on the remote control. The On Screen Display information will appear with the track number highlighted.
2. Use the number keys on the remote control to enter the 3-digit track number directly (i.e. for track 10, enter "010").
3. Press the **ENTER** button (5) to confirm and begin playback.



CD Playback Information

The following information is displayed on the screen during CD playback:



Folder 1/9 –The first number (1) indicates the current folder that is currently playing. The second number (9) indicates the number of available folders.

File 1/1 - The first number (1) indicates the current file that is currently playing. The second number (1) indicates the number of available files.



Press the **4** button (33) during disc play to access the repeat function.



Press the **3** button (31) during disc play to play all tracks on CD in random, shuffled order (RDM ON)

00:48  **02:12**

00:48 – remaining playing time of current track;

02:12 – total playing time of current track.

DVD OPERATION

DVD Title Menu

Press the **MENU** button (1) to go to the DVD title menu while in DVD mode.

Inserting a Disc

Insert a disc label-side up into the disc slot (11) and the disc will begin to play.

NOTE: Press the DISC or USB button (9, 12) to alternate between the USB and DVD source.

Ejecting a DVD

Press the **EJECT** button (13) to stop DVD play and eject the DVD

Pausing Playback

Press the **▶||** button (3) to suspend or resume disc play

Stop Playback

Press the **1■** button (27) to suspend disc play, and “PRE STOP” will appear on the display. Press the **▶||** button (3) to resume disc play from the last position. Press **1■** button twice and “STOP” will appear on the display.

Track Select

Press the **>>|** or **|<<** buttons (5, 2) to advance to the next or previous track on the disc. The selected track number will appear on the display

Enter/Select

While in menu mode, press the **ENTER** button (4) to select a menu option.

Language Selection

While playing a DVD, press the **6/FOLDER UP** button (37) to change the DVD audio language.

Fast Forward/Reverse

Press and hold the **>>|** or **|<<** buttons (5, 2) or press the **>>** or **<<** buttons on the remote control (16) once for FAST FORWARD/REVERSE X 2. Press and hold additional times for FAST FORWARD/REVERSE X 4, X 8, X 20 or PLAY. Press the **▶||** button on the control panel (3) or remote control (17) to end fast forward or reverse and resume normal playback

Repeat Chapter/Title

Press the **4** button (33) on the control panel or the **RPT** button (20) on the remote control multiple times during playback to select from the following repeat play options:

- DVD: RER Chapter, RER Title, RPT All, RPT OFF

DVD Playback Features


The following remote control features, along with many others, are available during DVD playback (see “Remote Control Operation” on page 16 for complete functionality):


- LANG: Press to choose an alternate audio language, if available,
- SUBTITLE: Press to select an alternate subtitle language, if available,
- ANGLE: Press to select an alternate viewing angle, if available.
- ZOOM: Press to zoom the picture at ZOOM 2, ZOOM 3, ZOOM 4, ZOOM 1/2,

ZOOM 1/3 or ZOOM 1/4, or select OFF to return to normal view.

NOTE: Feature availability is dependent upon DVD embedded information.

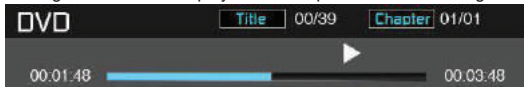
Playback Information

During DVD and VCD playback, press the  button (26) on the remote control to display playback information on the screen, including the media playing and current playback time.

Continue pressing the  button additional times to display additional information, as indicated below.

DVD Playback Information

The following information is displayed at the top of the screen during DVD playback:



Title 00/39 – The first number (00) indicates the current title that is currently playing. The second number (39) indicates the number of available titles.

Chapter 01/01 –The first number (01) indicates the current chapter that is currently playing. The second number (01) indicates the number of available chapters.

Remote Control Direct Track Entry

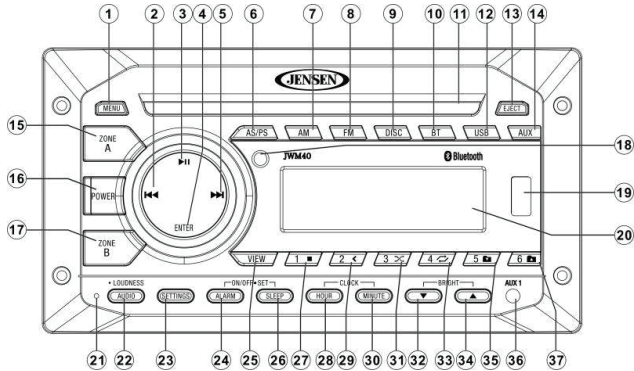
To select a track directly, use the number pad on the remote control (9). For single digit entries, press the corresponding number. For two digit entries, press the **10+** button followed by the last digit (i.e., for track 16, press **10+** and then **6**).

GOTO Direct Track/Chapter Access

Use the GOTO function to access a track (chapter) directly.

1. Press the **GOTO** button (25) on the remote control. The On Screen Display information will appear with the track number highlighted.
2. Use the number keys on the remote control to enter the 3-digit track number directly (i.e. for track 10, enter "010").
3. Press the **ENTER** button to confirm and begin playback.

MP3/USB OPERATION

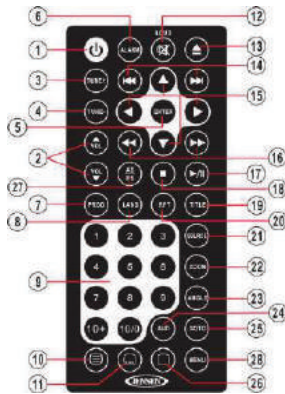


If the user connects a USB mass storage device, the radio automatically powers on, if necessary, and switches to digital file playback mode and selects that physical media. Changing modes or turning off the radio pauses playback. Playback will resume exactly where paused when returning to digital file playback mode.

Inserting a USB Device

The **USB connector** (19) is at the right side of the panel. Insert a USB device to automatically access USB mode and begin playback. The LCD will display "LOADING" and "USB" while files are initially loaded. When USB is removed, it will automatically back to the previous mode before the USB is connected. During other playback mode, when USB is connected, press **USB** (12) to enter USB playback mode directly.

NOTE: MP4 video format is not supported.



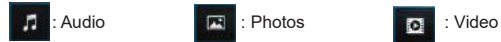
NOTE: Smart phone playback is not supported through USB, it must be done over Bluetooth. 1A charging is supported with compatible devices.

MP3 Monitor Display

After loading an MP3 disc or USB device, the following screen will appear on your output monitor.



Select one of these icons to access the corresponding media on your disc or USB device. If the media type is not present, the icon will not be selectable.



Play/Pause

Press the **▶||** button (3) to suspend or resume disc play

Track Select

When playback is stopped, press the **>>|** or **|<<** button (5, 2) or **<<<** or **>>>** button on the remote control to search in the current folder. During playback, press the **>>|** or **|<<** button to access the previous/next file. The selected file number will appear on the display.

Folder Up/Down

Press and hold the **6/FOLDER UP** button (37) to access a higher folder level (FOLDER UP). *Press and hold* the **5/FOLDER DOWN** button (35) to access a lower folder level (FOLDER DN).

Repeat (RPT)

Press the **4** button (33) on the control panel or the **RPT** button (20) on the remote control multiple times during playback to select from the following repeat play options: RPT 1 (track), RPT DIR (folder), RPT ALL (disc), RPT OFF.

Random Shuffle (RDM)

Press the **3** button (31) during song playback to play all files in random, shuffled order. Press **3** again to stop random play.

Fast Forward/Reverse

Press and hold the **>>** or **<<** buttons or press the **>>** or **<<** buttons on the remote control (16) once for FORWARD X 2. Press and hold additional times for FORWARD X 4, X 8, X 20 or PLAY. Press the **▶||** button on the control panel (3) or remote control (17) to end fast forward or reverse and resume normal playback

Remote Control Direct Track Entry

To select a file directly, use the number pad on the remote control (9). For single digit entries, press the corresponding number. For two digit entries, press the **10+** button followed by the last digit (i.e., for file 16, press **10+** and then **6**).

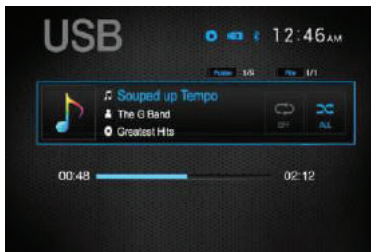
GOTO Direct Track/Chapter Access

Use the **GOTO** function to access a track (chapter) directly.

1. Press the **GOTO** button (25) on the remote control. The On Screen Display information will appear with the track number highlighted.
2. Use the number keys on the remote control to enter the 3-digit track number directly (i.e. for track 10, enter "010").
3. Press the **ENTER** button (5) to confirm and begin playback.


MP3 Playback Information


The following information is displayed at the top of the screen during MP3 playback:



Folder 1/9 –The first number (1) indicates the current folder that is currently playing. The second number (9) indicates the number of available folders.

File 1/1 - The first number (1) indicates the current file that is currently playing. The second number (1) indicates the number of available files.

 Press the **4** button (33) during disc play to access the repeat function.

 Press the **3** button (31) during disc play to play all tracks on CD in random, shuffled order (RDM ON)

00:48  **02:12**

00:48 – remaining playing time of current track;
02:12 – total playing time of current track.



BLUETOOTH OPERATION

The JWM40 includes built-in Bluetooth technology that allows you to connect this head unit to Bluetooth-enabled devices for streaming audio playback.

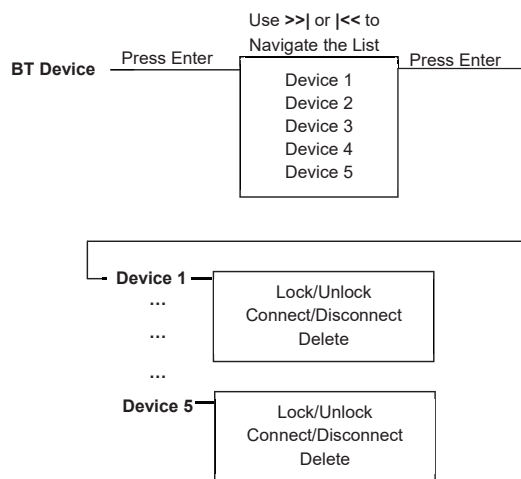
About Bluetooth Technology

Bluetooth wireless technology is a short-range wireless radio protocol. Operating in the 2.4 GHz range, it transmits audio and data at speeds up to 2.1 Mbit/s over a range of up to 10 meters.

Bluetooth Menu Options

NOTE: Please note that some Bluetooth menu options are only available while the unit is in Bluetooth Audio mode.

Press and hold the **BT** button (10) to enter menu adjustment mode. Repeatedly press the **>>|** or **|<<** buttons (5, 2) or **SETTINGS** button (23) to access the "Bluetooth On/Off" menu function. Rotate the volume encoder knob to select **BLUETOOTH ON**, then press the **ENTER** button (12) to turn the Bluetooth function On or Off. The following menu options are available when the unit is in Bluetooth mode.



- **Bluetooth Pair <ENTER>:** Press and hold **BT** button (10) to start pairing with a Bluetooth enabled device.
- **Bluetooth Device:** Press the **ENTER** knob button to view a list of previously paired mobile devices models. Press the **>>|** or **|<<** buttons to view devices from the list. You cannot delete a device that is actively connected. Press the **ENTER** knob button to select the device. Press the **>>|** or **|<<** button to choose **Lock/Unlock**, **Connect/Disconnect** or **Delete** for this device.
- **Bluetooth Pair (BT Pair):** Press and hold the **BT** button for about 4 seconds to start pairing with a Bluetooth
- **Disconnect:** To disconnect a paired device, press the **ENTER** knob button to temporarily remove the Bluetooth link. The link can be re-established through your phone menu by selecting the JWM40 for connection.
- **Lock/Unlock:** The JWM40 can store up to 5 devices for Bluetooth connection. The devices are stored in FIFO (First In First Out) order. To prevent a device from being bumped from the list when more than 5 devices are used, you must lock the device. To Lock/Unlock a device, press the **ENTER** knob button.
- **Delete:** To delete a device from the list, press the **ENTER** knob button.

Pairing a Bluetooth Device

Before you begin, consult the owner's manual for the Bluetooth device you want to pair with the JWM40.

1. Press the **BT** button (10) to enter Bluetooth mode.
2. Press and hold the **BT** button to start the Bluetooth pairing process. The JWM40 will display "PAIR" and will be available to pair for 120 seconds.
3. In your device Bluetooth settings, select "JWM40" to connect.
4. If prompted for a password, enter "0000".

After connecting successfully, you will be able to listen to audio from your Bluetooth enabled device through the JWM40.

Bluetooth Audio (A2DP)

The A2DP music is available for Bluetooth enabled phones when the phone is connected. To access Bluetooth mode and play songs stored in your phone, press the **BT** button (10) to enter the Bluetooth mode.

While in Bluetooth mode, the "BT PAUSE" will display on the LCD.

Selecting Tracks

During playback, press the **>>|** or **|<<** button (5, 2) to play the previous or next track.


Pausing Playback

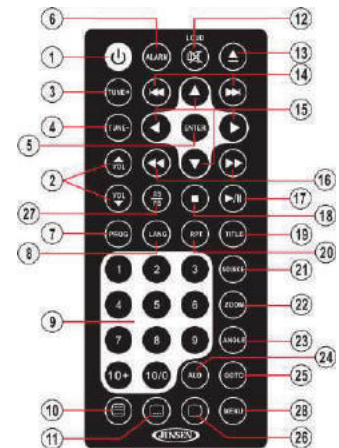
During playback, press the ►|| button (3) to pause the Bluetooth audio playback. "BT PAUSE" will appear on the LCD. Press ►|| button again to resume playback.

If you change to another mode, the mobile device audio will pause. Press the **BT** button (10) to return to Bluetooth mode and resume mobile phone audio playback.

NOTE: If a Bluetooth device is disconnected due to the power being turned off or if the device is out of range, the unit will automatically search for the matching Bluetooth mobile device when the power is restored.



REMOTE CONTROL OPERATION

REF	DESCRIPTION	TUNER	BLUETOOTH	CD/MP3/USB	DVD
1	Power	Turn radio on/standby mode.	Turn radio on/standby mode.	Turn radio on/standby mode.	Turn radio on/standby mode.
2	VOL +/-	Adjust volume up/down. Press for Audio Control Setup menu.	Adjust volume up/down. Press for Audio Control Setup menu.	Adjust volume up/down. Press for Audio Control Setup menu.	Adjust volume up/down. Press for Audio Control Setup menu.
3	TUNE +	Tune to higher station.			
4	TUNE -	Tune to lower station.			
5	ENTER			Confirm menu selection.	Confirm menu selection.
6	ALARM	Turn the alarm feature on/off.	Turn the alarm feature on/off.	Turn the alarm feature on/off.	Turn the alarm feature on/off.
7	LANG				Select alternate audio language, if available.
8	Numeric Keyboard	Use 1-6 to access preset stations.		Enter track number to access track directly. For track Number > 10, use 10+ followed by second digit.	Enter track number to access track directly. For track Number > 10, use 10+ followed by second digit.
9	Setup			View SETUP menu.	View SETUP menu.
10	Subtitle				Choose subtitle language, if available.
11	Mute/LOUD	Silence Audio output. <i>Press and hold</i> to turn LOUDNESS feature on/off.	Silence Audio output. <i>Press and hold</i> to turn LOUDNESS feature on/off.	Silence Audio output. <i>Press and hold</i> to turn LOUDNESS feature on/off.	Silence Audio output. <i>Press and hold</i> to turn LOUDNESS feature on/off.
12	Eject	Eject Disc.	Eject Disc.	Eject Disc.	Eject Disc.
13	Previous/Next		Select next/previous track.	Select next/previous track.	Select next/previous chapter.
14	Directional Buttons			Move to desired menu item and then press ENTER to confirm.	Use with DVD menu to move to desired menu item and then press ENTER to confirm.
15	Fast Reverse/ Forward			Fast Forward 2X, 4X, 8X, 20X. Fast Reverse 2X, 4X, 8X, 20X.	Fast Forward 2X, 4X, 8X, 20X. Fast Reverse 2X, 4X, 8X, 20X.
16	Play/Pause		Pause/resume playback.	Pause/resume playback.	Pause/resume playback.
17	Stop			Stop playback.	Stop playback.
18	TITLE				Press to view title menu. Use directional arrows and play button to play selected title. May not be supported by all discs.
19	RPT			Repeat track.	Repeat chapter.
20	SOURCE	Select source for playback.	Select source for playback.	Select source for playback.	Select source for playback.



21	ZOOM				Zoom picture or press repeatedly to change magnification level.
22	ANGLE				Select alternate viewing angle, if available.
23	AUD	Access Audio Menu options.	Access Audio Menu options.	Access Audio Menu options.	Access Audio Menu options.
24	GOTO			Select exact time, track or chapter for playback.	Select exact time, track or chapter for playback.
25	Display			Display current playback information on the screen.	Display current playback information on the screen.
26	AS/PS	Browse preset stations (10 sec. interval). <i>Press and hold</i> to scan/store stations.			
27	MENU	Access system MENU.	Access system MENU.	Access system MENU.	Press to access system MENU. <i>Press and hold</i> to access DVD MENU.

DVD SETTINGS

Press the  (setup) button (10) on the remote control to access the Settings menu and adjust system settings for the following categories:



- Audio Language: English, Chinese, Japanese, French, Spanish, Portuguese, Latin or German
- Subtitle Language: On/ Off
- Menu Language: English, Chinese, Japanese, French, Spanish, Portuguese, Latin or German
- Password: 4 digit password
- Rating: Select the parental control level for all DVD plays: Kid Safe > Adult. The security password is required to make changes to this feature.
- Aspect Ratio: 4:3 PS, 4:3 LB, 16:9



CARE AND MAINTENANCE

- Keep the product dry. If it does get wet, wipe it dry immediately. Liquids might contain minerals that can corrode the electronic circuits.
- Keep the product away from dust and dirt, which can cause premature wear of parts.
- Handle the product gently and carefully. Dropping it can damage circuit boards and cases, and can cause the product to work improperly.
- Wipe the product with a dampened cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the product.
- Use and store the product only in normal temperature environments. High temperature can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.

Ignition

The most common source of noise in reception is the ignition system. This is a result of the radio being placed close to the ignition system (engine). This type of noise can be easily detected because it will vary in intensity of pitch with the speed of the engine.

Usually, the ignition noise can be suppressed considerably by using a radio suppression type high voltage ignition wire and suppressor resistor in the ignition system. (Most vessels employ this wire and resistor but it may be necessary to check them for correct operation.) Another method of suppression is the use of additional noise suppressors. These can be obtained from most CB/A radio or electronic supply shops.

Interference

Radio reception in a moving environment is very different from reception in a stationary environment (home). It is very important to understand the difference. AM reception will deteriorate when passing under a bridge or when passing under high voltage lines. Although AM is subject to environmental noise, it has the ability to receive at great distance. This is because broadcasting signals follow the curvature of the earth and are reflected back by the upper atmosphere.

TROUBLESHOOTING

Symptom	Solution
Radio will not turn ON or No front panel operation	Try the reset button.
	Check fuse.
	Check 12V+ on accessory wire to radio (RED wire)
	Check Ground.
Radio turns ON, but no sound	Verify Volume, Fader/Balance, Mute controls are set correctly (see owner's manual).
	Try the reset button.
	Verify proper speaker selection.
	Verify proper speaker connections.
	Check for shorts or open circuits on speaker wires. <ul style="list-style-type: none"> • If short on "A" channel, "B" channels will continue to function. • If short on "B" channels, "A" channel will continue to function.
CD/DVD does not load fully	Make sure unit has power and no other CD/DVD is currently inside.
	Make sure transport screw has been removed from rear of unit. Disc will load for several seconds and then eject if transport screw has not been removed.
CD/DVD does not play correctly	Check to make sure disc is inserted correctly.
	Verify disc is free from dirt, scratches, etc.
	Check with factory CDs.
	Inspect radio's chassis to verify shipping screw(s) have been removed.
No AM or FM reception	Check factory original CDs for compatibility warnings (due to various copy-protection, multimedia content, etc.).
	Verify you are tuned to a valid station.
	Check your antenna connection on rear of stereo.
DVD plays sound but no video	Try a different antenna
	Make sure the HDMI cable is routed from the HDMI output to the input on the television.
Unit does not respond to Remote Control	Verify that you have a clear line of sight for the IR signal.
	Check the batteries.
	Confirm the remote IR sensor is plugged into IR input (if applicable).



SPECIFICATIONS

FM Tuner

Frequency Coverage (USA) 87.5 to 107.9 MHz
 Sensitivity <4 μV
 Stereo Separation@1 kHz >25 dB

AM Tuner

Frequency Range (USA) 530-1710 kHz
 Sensitivity (S/N=20dB) <63 μV

Amplifier

Output Power 6W RMS x 4
 Output Impedance Compatible with 4-8 Ω ohms speakers, 4 ohm load minimum
DVD

Frequency Response 20-20,000 Hz
 Channel Separation 50 dB
 S/N Ratio 65 dB
 Distortion 0.5%

General

Power Supply Requirements DC 12 Volts, Negative Ground
 Operating Voltage 11-16 VDC
 Overall Dimensions 208mm (W) x 110.0mm (D) x 130.0mm (H)
 8.19" (W) x 4.33" (D) x 3.39" (H)
 Mounting Dimensions 180mm (W) x 133mm (D) x 86mm (H)
 7.09" (W) x 5.2" (D) x 3.39" (H)
 Weight 1.45 KG
 3.20 lbs.

FCC Notes

WARNING! Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complied with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.



ASA Electronics Corporation

www.asaelectronics.com
 www.jensenheavyduty.com

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 v.100718



JTV24DC

LED TV User's Guide

- Please observe all safety precautions when using this product.
- Please read this manual carefully.

Guide de l'utilisateur du téléviseur LED

- Veuillez observer toutes les mesures de sécurité en utilisant ce produit.
- Veuillez lire soigneusement ce manuel avant d'utiliser ce produit.

English

Français

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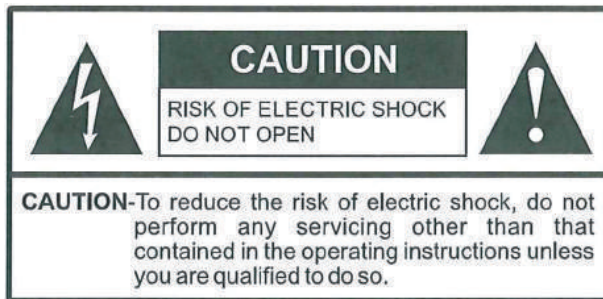
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Important Information

WARNING

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated “ dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This product utilizes tin-lead solder, and fluorescent lamp containing a small amount of mercury. Disposal of these materials may be regulated due to environmental considerations. For disposal or recycling information, please contact your local authorities or the Electronic Industries Alliance: www.eia.org.

FCC STATEMENT

This product has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC CAUTION:

Pursuant to 47CFR, Part 15.21 of the FCC rules, any changes or modifications to this monitor not expressly approved by the manufacturer could cause harmful interference and would void the user’s authority to operate this device.

WARNING

This is a CLASS B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures to counter interference

IMPORTANT SAFETY INSTRUCTIONS

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this product near water. Apparatus should not be exposed to dripping or splashing and no objects filled with liquids, such as vases, should be placed on the product.
- 6) Clean only with a dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus(including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments / accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. when a cart is used, use caution when moving the cart / apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the product has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 15) Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.



Important Safeguards

Before using your TV, please read these instructions completely, and keep this manual for future reference. Carefully observe and comply with all warnings, cautions and instructions placed on the unit or described in the operating instructions or service manual.

WARNING

To guard against injury, the following basic safety precautions should be observed in the installation, use and servicing of the unit.

Power Sources

This unit should be operated only from the type of power source indicated on the information label. If you are not sure of the type of electrical power supplied to your home, consult your dealer or local power company.

Grounding or Polarization

This unit is equipped with a polarized AC power cord plug (a plug having one blade wider than the other), or a DC power connection, for use in a vehicle. Follow the instructions below:

For the unit with a polarized AC power cord plug

This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to have a suitable outlet installed. Do not defeat the safety purpose of the polarized plug by forcing it in.



For the unit with a DC power connector

For installation in a vehicle, connect the red wire to the 12V accessory line and the black wire to ground terminal.

Wall outlet

Do not use a poor fitting outlet. Insert the plug fully into the outlet. If it is loose, it may cause arcing and result in fire. Contact your electrician to have the outlet changed.

Wiring

For your safety, unplug the power cord when wiring cables.

Electric shock

Do not touch the AC power cord or the unit with a wet hand. If you plug / unplug the AC power cord from the unit with a wet hand, it may cause electric shock. Never attempt to move the unit unless the AC power cord is disconnected.

Cleaning

- Clean the power plug regularly.
- If the plug is covered with dust and it picks up moisture, its insulation may deteriorate and result in fire.
- Unplug the power plug and clean it regularly.
- Unplug the power cord when cleaning this unit. If not, it may result in electric shock.
- Clean the cabinet of the TV with a dry soft cloth. To remove dust from the screen, wipe it with a soft cloth.



- Stubborn stains may be removed with a cloth slightly dampened with a solution of mild soap and warm water. Never use strong solvents such as thinner or benzine for cleaning.
- If using a chemically pre-treated cloth, please follow the instructions provided on the package.

Overloading

Do not overload wall outlets, extension cords or convenience receptacles beyond their capacity, since this can result in fire or electric shock.

Power

Always turn the unit off when it is not being used. When the unit is left unattended and unused for long periods of time, unplug it from the wall outlet as a precaution against the possibility of an internal malfunction that could create a fire hazard.

Sound

If a snapping or popping sound from the TV is continuous or frequent while the TV is operating, unplug the TV and consult your dealer or service technician. It is normal for TV's to make occasional snapping or popping sounds, particularly when being turned on or off.

Power Cord

If you damage the power cord, it may result in fire or electric shock.

- Do not pinch, bend, or twist the cord excessively. The core lines may be bared and cut and cause short-circuit, resulting in fire or electric shock.
- Do not convert or damage the power cord.
- Do not put anything heavy on the power cord.
- Do not pull the power cord.
- Keep the power cord away from heat sources.
- Be sure to grasp the plug when disconnecting the power cord.
- If the power cord is damaged, stop using it and replace with a new one.

Ventilation

The slots and openings in the TV are provided for necessary ventilation. To ensure reliable operation of the unit, and to protect it from overheating, these slots and openings must never be blocked or covered. Unless proper Ventilation is provided, the unit may gather dust and get dirty. For proper ventilation, observe the following:

- Do not install the unit turned backward or sideways.
- Do not install the unit turned over or upside down.
- Never cover the slots and openings with a cloth or other materials.
- Never block the slots and openings by placing the unit on a bed, sofa, rug or other similar surface.
- Never place the unit in a confined space, such as a bookcase or built-in cabinet, unless proper ventilation is provided.
- Leave some space around the unit. Otherwise, adequate air-circulation may be blocked, causing overheating, and may cause fire or damage the unit.

Heat sources

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.



Important Safeguards

Do not use this product near water

Do not use near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool. Do not use immediately after moving from a low temperature to high temperature environment, as this cause condensation, which may result in fire, electric shock, or other hazards. This product should not be exposed to dripping or splashing and no objects filled with liquids, such as vases, should be placed on the product.

Entering of objects and liquids

Never insert an object into the product through vents or openings. High voltage flows in the product, and inserting an object can cause electric shock and / or short internal parts. For the same reason, do not spill water or liquid on the product.

Lightning

Unplug this apparatus during lightning storms or when unused for long periods of time.

For added protection during a lightning storm, or when left unattended and unused for long periods of time, unplug the product from the wall outlet and disconnect the antenna. This will prevent damage to the equipment due to lightning and power-line surges.

Servicing

Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Replacement parts

In case the product needs replacement parts, make sure the service person uses replacement parts specified by the manufacturer, or those with the same characteristics and performance as the original parts. Use of unauthorized parts can result in fire, electric shock and / or other danger.

Attachments

Only use attachments / accessories specified by the manufacturer. Do not use attachments not recommended by the manufacturer. Use of improper attachments can result in accidents.

Damage requiring service

If any of the following conditions occurs, unplug the power cord from the AC outlet and request a qualified service person to perform repairs.

- a. The power cord or plug is damaged.
- b. Liquid is spilled on the product or when objects have fallen into the product.
- c. The product has been exposed to rain or water.
- d. The product does not operate properly as described in the operating instructions.
Do not touch the controls other than those described in the operating instructions. Improper adjustment of controls not described in the instructions can cause damage, which often requires extensive adjustment work by qualified technician.
- e. The product has been dropped or the cabinet has been damaged in any way.
- f. The product displays an abnormal condition or exhibits a distinct change in performance. Any noticeable abnormality in the product indicates that the product needs servicing.

Safety checks

Upon completion of service or repair work, request the service technician to perform safety checks to ensure that the product is in proper operating condition.

Wall or ceiling mounting

When mounting the product on a wall or ceiling, be sure to install the product according to the method recommended by the manufacturer.

Panel protection

This panel used in this product is made of glass. Therefore, it can break when the product is dropped or impacted upon by other objects. Be careful not to be injured by broken glass pieces if the panel breaks.

Pixel defect

Occasionally, a few non-active pixels may appear on the screen as a fixed point of blue, green or red. Please note that this does not affect the performance of your product.

Antennas

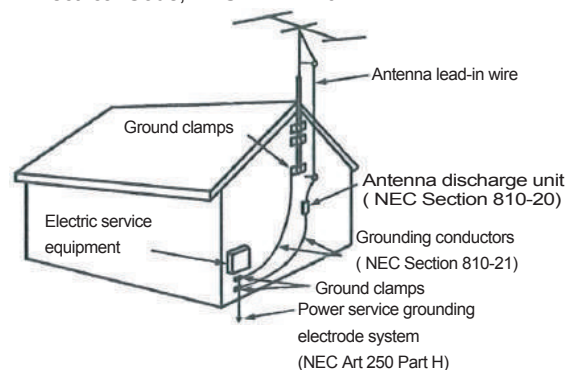
Outdoor Antenna Grounding

If an outdoor antenna is installed, follow the precautions below. An outdoor antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can come in contact with such power lines or circuits.

WHEN INSTALLING AN OUTDOOR ANTENNA SYSTEM, EXTREME CARE SHOULD BE TAKEN TO KEEP FROM CONTACTING POWER LINES OR CIRCUITS AS CONTACT WITH THEM IS ALMOST INVARIABLY FATAL.

Be sure the antenna system is grounded to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code (NEC) in USA and Section 54 of the Canadian Electrical Code in Canada provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

Antenna Grounding According to the National Electrical Code, ANSI/NFPA 70



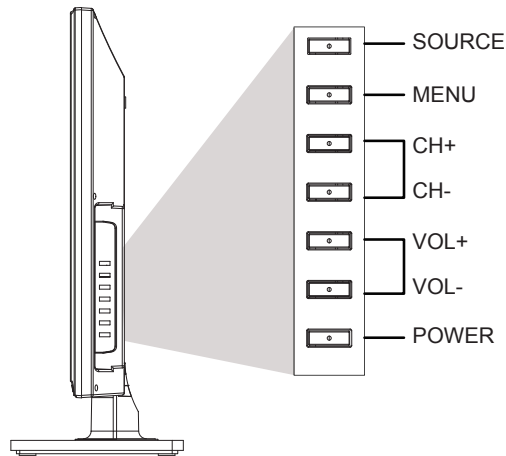
NEC: National Electrical Code

User Guide Information

Part Identification

Right View

JTV24DC



- | | |
|---------------------------------------|----------------------|
| ① SOURCE Button | ④ VOL+ / VOL- Button |
| ② MENU Button-OSD Menu Display Button | ⑤ POWER Button |
| ③ CH-/ CH+Button | |

Accessories

- The configuration of the components may look different from the following illustration.



AV Cable



DC Power Cable



Battery 1.5V (AA x 2)

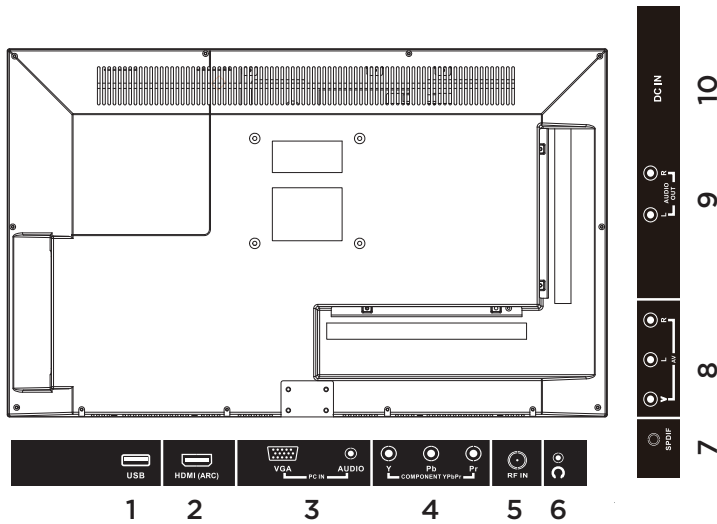


Remote Control

Part Identification

Back View

JTV24DC



- | | |
|--------------------------------|-----------------------------|
| 1. USB Port | 6. HEADPHONE OUTPUT |
| 2. HDMI (ARC) INPUT | 7. SPDIF OUTPUT |
| 3. PC IN (VGA and AUDIO) INPUT | 8. AV IN (VIDEO and AUDIO) |
| 4. COMPONENT INPUT | 9. AUDIO (L/R) OUT |
| 5. RF IN | 10. DC IN |

User Guide Information

Mounting on a Desktop

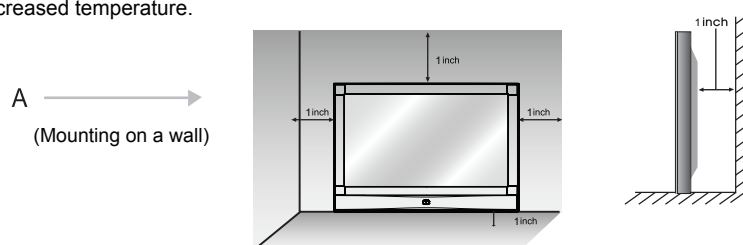


- Your LED TV can be mounted on a desktop with the base installed.
- This is not a floor-standing unit.

Installation Precautions

Wall Mounting

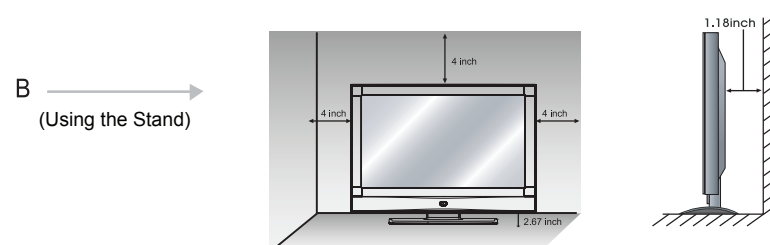
- Please ensure enough space for safe use. (Please refer to diagrams A and B.)
- Installation of the LED TV in an improperly ventilated location can cause damage to the LED TV due to increased temperature.



* Contact your dealer to purchase the "Adjustable-angle wall mount" required for wall-mounted installation.

Using the Stand

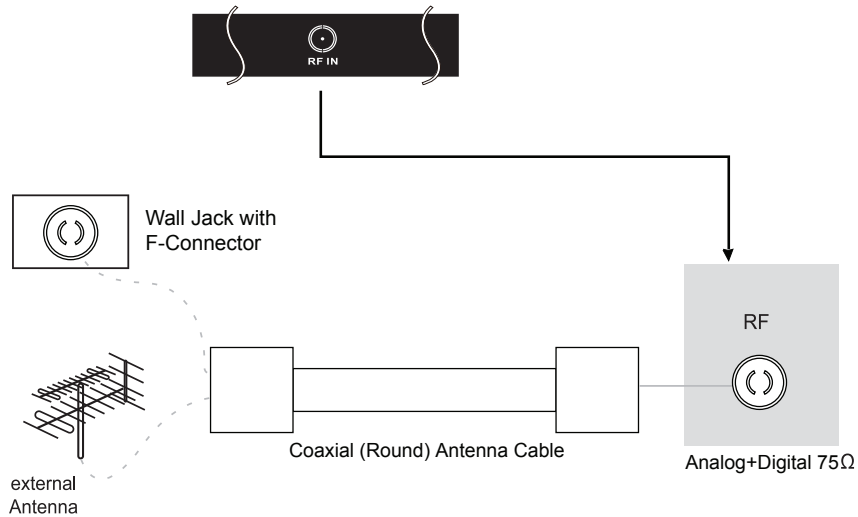
- Do not install on an unstable location with a support area smaller than the LED TV.
- Please refer to the desktop stand user's manual for details of installation.



Installing an Antenna

For connecting to ATSC or NTSC broadcast

- Use a coaxial cable to connect the wall jack or external antenna to the RF-IN on the LED TV



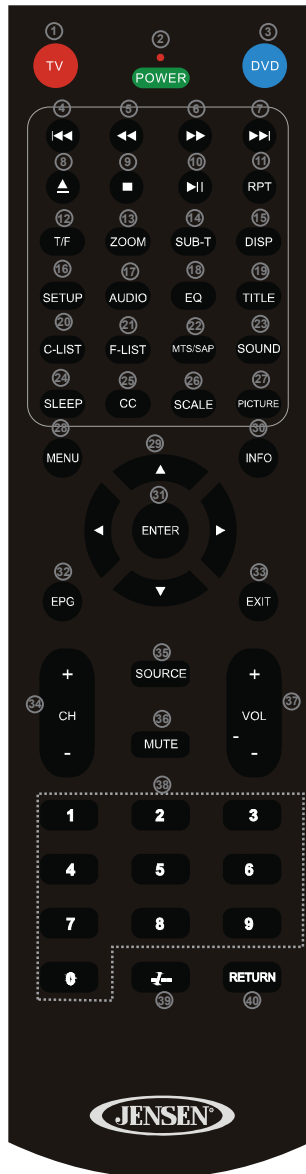
Press the SOURCE button on the remote control to select TV, then press RIGHT button to confirm. Then you can receive the ATSC/NTSC signal.



User Guide Information

Remote Control

● Functions of remote control buttons





















































①	TV	Activate TV Mode
②	POWER	On / off for TV and DVD
③	DVD	Activate DVD Mode
④	PREVIOUS	
⑤	FAST REVERSE	
⑥	FAST FORWARD	
⑦	NEXT	
⑧	EJECT (DVD)	
⑨	STOP	
⑩	PLAY/PAUSE	
⑪	RPT	Repeat Selection
⑫	T/F (DVD)	
⑬	ZOOM (DVD)	
⑭	SUB-T (DVD)	
⑮	DISP (DVD)	Display Time or Chapter information
⑯	SET UP (DVD)	
⑰	AUDIO (DVD)	
⑱	EQ (DVD)	
⑲	TITLE (DVD)	
⑳	C-LIST	Press C-LIST button to display the channel list
㉑	F-LIST	Press this button to display the favourite list
㉒	MTS/SAP	Press MTS/SAP to select Stereo, SAP or Mono
㉓	SOUND	Press SOUND to cycle select sound types: Standard / Music / Movie / Personal.
㉔	SLEEP	Cycles through the LED TV sleep time: off / 5 / 10 / 15 / 30 / 45 / 60 / 90 / 120 / 180 / 240 minutes
㉕	CC	Closed Captions
㉖	SCALE	Cycles scale modes: Wide, Zoom, Cinema, Normal.
㉗	PICTURE	Press PICTURE to cycle select picture types: Standard / Dynamic / Soft / Personal
㉘	MENU	Displays the OSD menu on the screen
㉙	NAVIGATION	Move up, down, left or right
㉚	INFORMATION	Press INFO to display information about the current channel.
㉛	ENTER	Press ENTER to confirm your operation
㉜	EPG	Displays the program guide
㉝	EXIT	Exits the current menu.
㉞	CH+/CH-	Increase or Decrease channel
㉟	SOURCE	Displays AV Inputs
㊱	MUTE	Press once mutes audio, press again to restore audio
㊲	VOL+/VOL-	Increase or Decrease volume
㊳	NUMERIC KEYS	
㊴	--	Digital channel selection
㊵	RETURN	Return to previously viewed channel

English

User Guide Information

Remote Control

BUTTON	TV-FUNCTION	DVD-FUNCTION	BUTTON	TV-FUNCTION	DVD-FUNCTION	BUTTON	TV-FUNCTION	DVD-FUNCTION
	POWER	POWER		EPG			STOP	STOP
	CH+ CH-				T-F		PLAY-PAUSE	PLAY-PAUSE
	VOL+ VOL-	VOL+ VOL-			EJECT		PREVIOUS	PREVIOUS
	RETURN			-/-			FAST-REVERSE	FAST-REVERSE
	MUTE	MUTE		1	1		FAST-FORWARD	FAST-FORWARD
	MENU	MENU		2	2		NEXT	NEXT
	INFO			3	3		RPT	RPT
	UP	UP		4	4			ZOOM
	DOWN	DOWN		5	5			SUB-T
	LEFT	LEFT		6	6			DISP
	RIGHT	RIGHT		7	7			SETUP
	ENTER	OK		8	8			AUDIO
	SOURCE	SOURCE		9	9			EQ
	EXIT			0	0			TITLE
	MTS-SAP			SCALE			CC	
	F-LIST			C-LIST			SLEEP	
	PICTURE			SOUND				

NOTE: DVD functions are intended for JENSEN DVD players only.
See your JENSEN DVD manual for more information.

User Guide Information

Precautions

Avoiding Remote Control Problems

1. Check the polarity (+,-) of the batteries in the remote control.
2. Check that the batteries are good.

Inserting Batteries in the Remote Control

1. Open the cover completely.
2. Insert the two supplied batteries (AA, 1.5V). Ensure that the polarities (+ and -) of the batteries are aligned correctly.
3. Replace the cover.



⚠ CAUTION: Risk of explosion if battery is replaced by incorrect type.
Dispose of used batteries according to national code (Recycling program).

How to use the remote control

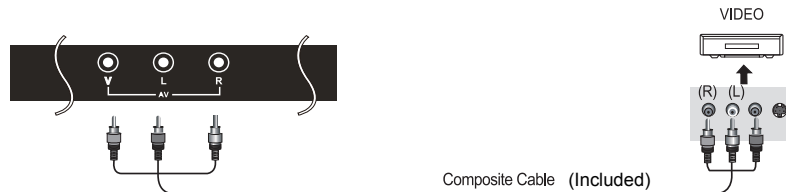
- The remote control should be operated within 30 feet (7m) and 30° to the left and the right of the IR receiver at the front of the LED TV.
- Used batteries should be disposed of properly.

Connection

VCR Connections

- Connecting to the Composite terminal

※ Terminals vary by manufacturer

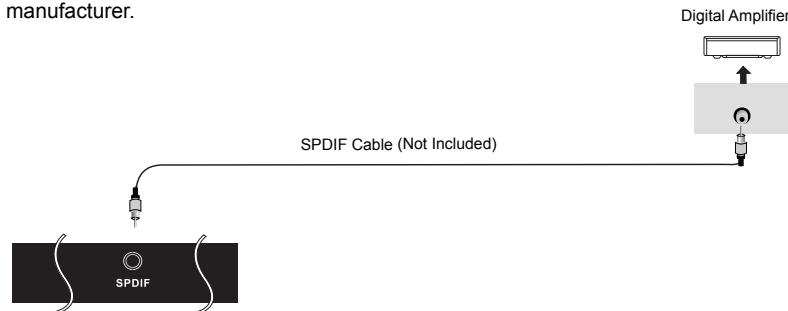


Connect the LED TV's Composite In terminal to VCR's Composite OUT terminal using the included Composite cable. (Make sure the color of the terminals and the colors of the cable are the same.)

Digital Amplifier Connections




- Connecting to a Digital Amplifier

※ Terminals vary by manufacturer.



English

Watching Video Tape

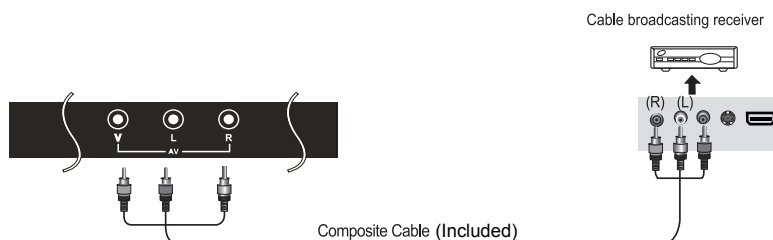
1. Turn on the LED TV and press  on the remote control.
2. Use  to move to "AV."
3. Press  to confirm the source selection, will automatically enter the selection mode.
4. Turn on the VCR, insert the tape and press the play button.

Connection

Satellite / Cable TV Set-Top Box Connections

- Connecting to the Composite terminal

- ※ In order to watch Cable TV, Subscribe to your local Cable TV company and install a separate receiver (Set-Top Box)
- ※ Terminals vary by manufacturer






Connect the LED TV's Composite In terminal to the cable broadcasting receiver Composite Out terminal using the Composite cable. (Make sure the color of the terminals and the color of cables are the same)

- Connecting to the HDMI terminal



English

Watching Cable TV

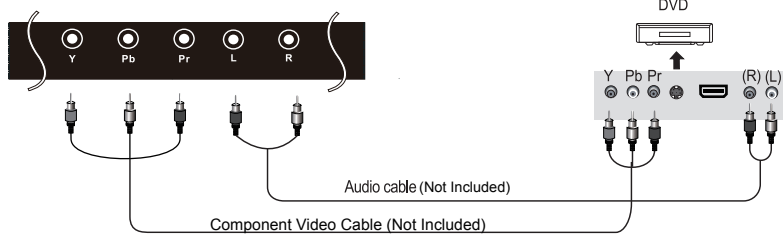
1. Turn on the LED TV and press  on the remote control.
2. Use  to move to "AV". If HDMI has been connected, select "HDMI".
3. Press  to confirm the source selection.
4. Turn on the cable broadcasting receiver and select the channel you wish to view.

Connection

DVD Connections

● Connecting to the component terminal

※ Terminals vary by manufacturer



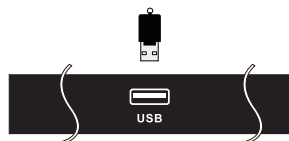
1. Connect LED TV's YPbPr (Component) terminal to DVD's Video Out terminal.
2. Connect LED TV's Audio terminals to DVD's Audio Out terminal.
3. It must match the component connection cable Y, Pb, Pr colors between the LED TV and DVD Player.

● Connecting to the HDMI terminal



USB Connections

※ Connection to USB.



Note: This USB connection can be used for software upgrade and using the USB media (Audio + photos) player.

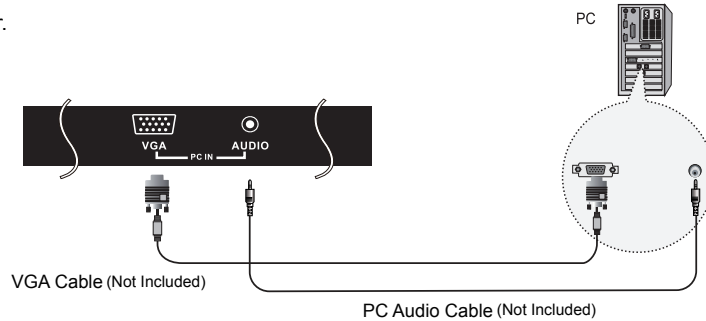
Playing DVDs

1. Turn on the LED TV and press the source button.
2. Press Source to cycle and select "Component". If HDMI has been connected, select "HDMI".
3. Stop operation a few seconds, will automatically enter the selection mode.
4. Turn on the DVD player, insert the DVD disc and press the Play button.

Connection

PC Connections

※ Terminals vary by manufacturer.

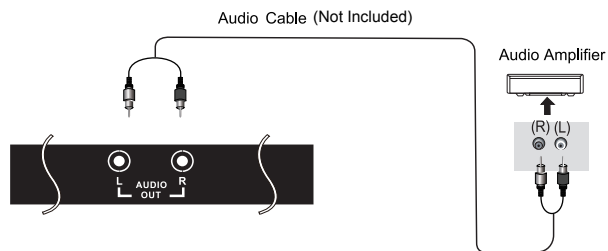


- Connect the LED TV's PC Input terminal to the PC's VGA terminal using a VGA cable.
- Connect the LED TV's PC Audio terminal to the PC's Audio terminal using a 3.5mm (Headphone) audio cable. (Only for PC's with an Audio terminal)

External Audio Amplifier

● Connecting to an amplifier or home theater system.

※ Terminals vary by manufacturer.




- Connect the LED TV's AUDIO (L/R) output terminal to Audio Amplifier using an audio patch cable.
Note: The speakers of LED TV still have output audio signal at this time.
- You can use the Volume +/- buttons to adjust the audio output level.

English

How to use as a PC monitor

1. Turn on the LED TV and press  on the remote control.


2. Use  to move to "VGA".


3. Press  to confirm the source selection.


Basic Use

Selecting Input Source

- You can select between the TV signal and the input signal of other equipment connected to the TV.
- Use this function to switch to the input source you wish to view.

Press  button on the remote control.

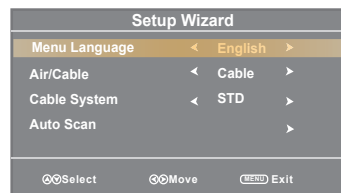
Use  to move to the desired input source.

Press  to select.

Note: After you have selected the desired input source and pause for a few moments, then LED TV will automatically enter the selected mode.

Initial Setup Wizard

After connecting your TV antenna or Coaxial cable, turn the television ON. The quick setup wizard will display on-screen. Select your preferred language followed by antenna options and performing Auto Scan to receive local broadcast channels that will be stored in the TV tuner memory.



The wizard will direct you to the TV menu to select antenna options and run the Channel Auto Scan. Channels found will be stored in the TV tuner memory.

How to Navigate:

- Press the ▲▼ arrow button to highlight Menu Language and then press ◀▶ button to select OSD Language.
- Press the ◀▶ arrow button to highlight **CABLE / AIR** based on your antenna connection.
- Press the ▼ arrow button to select **Auto Scan** and press ▶ arrow (when Cable is selected, 'AUTO' is recommended). Otherwise, press the ◀▶ arrow button to select **Cable System** : STD > IRC > HRC > Auto.

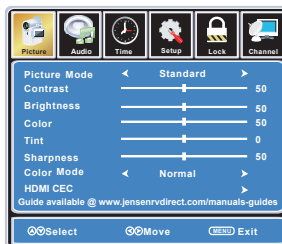
Application

Menu Operation

1. Press the POWER button to turn the LED TV on.
2. Press the MENU button on the remote control, the on-screen menu will appear.
3. Use the LEFT and RIGHT buttons to select your main menu option.

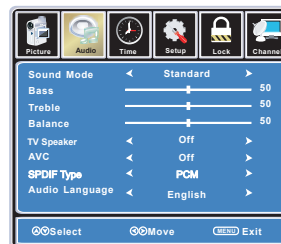
PICTURE MENU:

Allows you to make adjustments to your picture settings.



AUDIO MENU:

Allows you to customize the sound options and effects.



TIME MENU:

Allows you to set up a variety of time options.



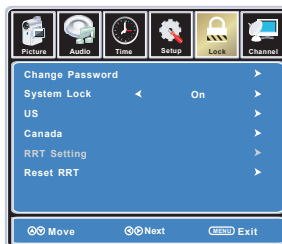
SETUP MENU:

Allows you to set up a variety of setup options.



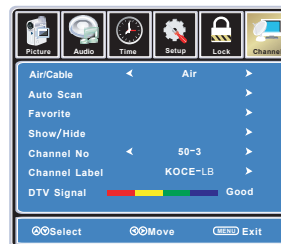
LOCK MENU:

Allows you to set up a variety of lock options.



CHANNEL MENU:

Allows you to search channels and set up a variety of channel options.



4. Use the UP / DOWN buttons to select an option of the sub-menu, and press the RIGHT button. While in adjustment mode, use the LEFT / RIGHT buttons to change the value of the item.
5. Press the MENU button to exit submenu to return to the main menu. Press the MENU button again or EXIT button to exit the main menu.

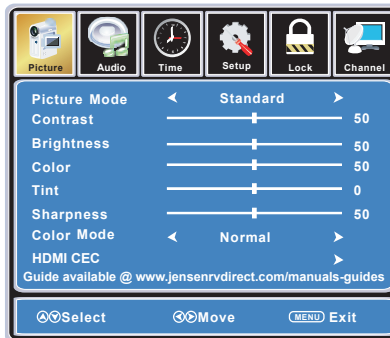
Note: Some options are not available for all inputs.

English

Customizing the PICTURE Settings

Select TV source for example. (Press SOURCE button to select TV mode)

1. Press the POWER button to turn the LED TV on
2. Press the MENU button on the remote control to display the Main menu, and use the LEFT and RIGHT buttons to select the PICTURE.
3. Use the UP and DOWN buttons to highlight an individual PICTURE options, use the LEFT and RIGHT buttons to change the setting, and press the MENU or EXIT button to exit.



The PICTURE menu includes the following options :

Picture Mode	Cycles through picture display modes: Standard, Dynamic, Soft, Personal.
Contrast	Controls the difference between the brightest and darkest regions of the picture.
Brightness	Controls the overall brightness of the picture
Color	Controls the color.
Tint	Controls the tint.
Sharpness	Increase this setting to see crisp edges in the picture; decrease it for soft edges .
Color Mode	Cycles through color modes: Normal, Cool, Warm.
HDMI CEC	



If you turn off the CEC Mode then the following items (TV Auto Power,TV Auto Switch,Device Auto Standby) will not be used.

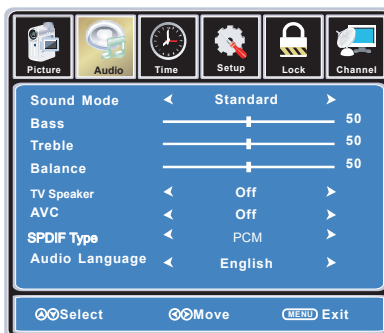
TV Auto Power	On-TV will turn on when compatible CEC device is activated on HDMI connection.
TV Auto Switch	On-TV will switch to HDMI inputs when compatible CEC device is activated on HDMI connection.
Device Auto Standby	On-When TV turned off, any connected, compatible CEC device will also turn off.
Audio Receiver	Enables audio to be sent to an HDMI connected AV receiver.

Application

Customizing the Audio Settings

Select TV source for example. (Press SOURCE button to select TV mode)

1. Press the POWER button to turn the LED TV on.
2. Press the MENU button on the remote control to display the Main menu, and use the LEFT and RIGHT buttons to select the AUDIO.
3. Use the UP and DOWN buttons to highlight an individual Audio options, use the LEFT and RIGHT buttons to change the setting, and press the MENU or EXIT button to exit.



The SOUND menu includes the following options :

Sound Mode	Cycles through sound modes: Standard, Music, Movie and Personal.
Bass	Controls the relative intensity of lower pitched sounds.
Treble	Controls the relative intensity of higher pitched sounds
Balance	To adjust the balance of the left and right sound track, or turn off the volume of the left and right sound track.
TV Speaker	Allows you to select between ON and OFF.
AVC	On or off (Automatic Volume Control) to keep volume level steady.
SPDIF Type	Allows you to select between PCM and RAW (Digital connection to Home Theater system)
Audio Language	Allows you to select preferred audio languages: English, French and Spanish.

Customizing the TIME Settings

Select TV source for example. (Press SOURCE button to select TV mode)

1. Press the POWER button to turn the LED TV on.
2. Press the MENU button on the remote control to display the Main menu, and use the LEFT and RIGHT buttons to select the TIME.
3. Use the UP and DOWN buttons to highlight an individual TIME option, use the LEFT and RIGHT buttons to change the setting, and press the MENU or EXIT button to exit.



The TIME menu includes the following options :

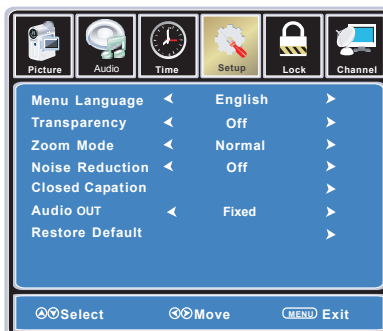
Sleep Time	Allows you to set up the sleep time: 5 Min, 10 Min, 15 Min, 30 Min, 45 Min, 60 Min, 90 Min, 120 Min, 180 Min, 240 Min and off.
Time Zone	Allows you to select correct time zone: Pacific, Alaska, Hawaii, Eastern, Central and Mountain.
Daylight Saving Time	Allows you to turn on or off daylight saving time.

Application

Customizing the SETUP Settings

Select TV source for example. (Press SOURCE button to select TV mode)

1. Press the POWER button to turn the LED TV on.
2. Press the MENU button on the remote control to display the Main menu, and use the LEFT or RIGHT button to select SETUP.
3. Use the UP and DOWN buttons to highlight an individual SETUP option, use the LEFT and RIGHT buttons to change the setting, and press the MENU or EXIT button to exit.



The SETUP menu includes the following options:

Menu Language	Allows you to select menu languages: English, Français and Español.
Transparency	Allows you turn on or off the transparency function of on screen menu.
Zoom Mode	Allows you to select the zoom modes: Normal, Cinema, Wide, Zoom.
Noise Reduction	Allows you to select the noise reduction modes: Strong, Off, Weak, Middle.

Customizing the SETUP Settings

Closed Caption

Use Down button to highlight "Closed Caption", then press RIGHT button or ENTER to enter into the following menu.



CC Mode Allows you to select the CC Modes: On, Off and CC on Mute.

Basic Selection Allows you to select the basic selections: CC1, CC2, CC3, CC4, Text1, Text2, Text3 and Text4.

Advanced Selection Allows you to select the advanced services: Service1, Service2, Service3, Service4, Service 5 and Service 6.

Option Use Down button to highlight the "Option" item, then press RIGHT button to enter into the following menu.



Use UP and DOWN buttons to highlight the desired item, and use LEFT and RIGHT buttons to select.

Audio Out Allows you to select between Variable and Fixed.

Note: The TV Speakers need to be set to Off in the Audio Menu before the Audio Out setting is enabled.

Restore Default Restores all settings in SETUP menu to factory settings.

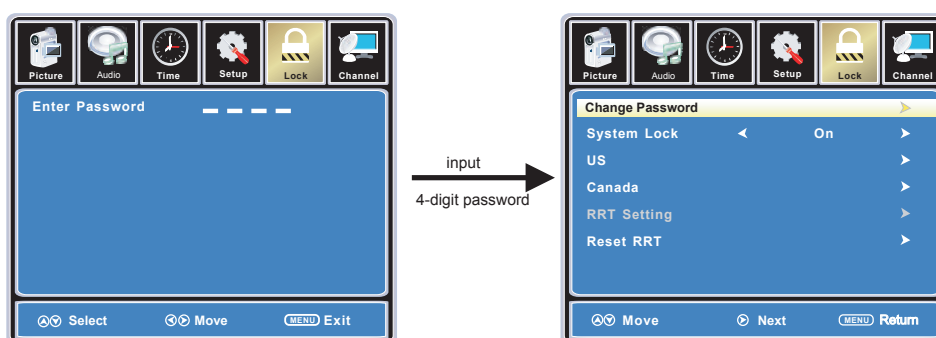
Application

Customizing the LOCK Settings

Select TV source for example. (Press SOURCE button to select TV mode)

1. Press the POWER button to turn the LED TV on
2. Press the MENU button on the remote control to display the Main menu, and use the LEFT and RIGHT buttons to select the LOCK
3. Use the DOWN button to highlight "Enter Password", use the numeric keys to input a 4-digit password. After that, the screen will display the next menu. After setting, press menu or exit button to exit.

NOTE: The factory password is 0000.



The LOCK menu includes the following options :

Change Password

Use DOWN button to select "Change Password", then press RIGHT or ENTER button to enter into the following menu.



Input the new 4-digit password and confirm it.

System Lock

Allows you to turn On or Off the system lock. If you turn off the system lock, then the following items (US, Canada, RRT Setting and Reset RRT) will not be used.

Customizing the LOCK Settings

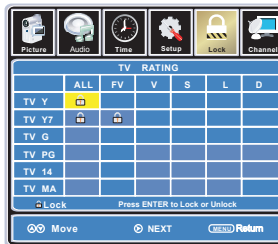
US

Use Down button to highlight "US", then press RIGHT or ENTER button to enter into the following menu.



TV

Use Down button to highlight "TV", then press RIGHT or ENTER button to enter into the following menu.



Use UP and DOWN buttons to select the desired rating and press ENTER button to block or unblock rating.

MPAA

The Movie rating (System) is used for original movies rated by the Motion Picture Association of America (MPAA) as broadcasted on cable TV and not edited for television. Use UP or DOWN button to select N/A, G, PG, PG-13, R, NC-17 or X.

RATING	DESCRIPTION
G	General Audiences. Movie is appropriate for all ages.
PG	Parental Guidance Suggested. May contain material not suited for younger viewers.
PG-13	Contains content that may not be appropriate for viewers under the age of 13.
R	Restricted. Contains adult content, no one under 17 admitted without parent.
NC-17	No one 17 and under admitted.
X	Adults only.

Application

Customizing the LOCK Settings

Canada

Use the Down button to highlight "Canada", then press the RIGHT or ENTER button to enter into the following menu.



Canada English Use LEFT and RIGHT buttons to select among: E, C, C8+, G, PG, 14+ and 18+

Canada French Use LEFT and RIGHT buttons to select among: E, G, 8ans+, 13ans+, 16ans+ and 18ans+

RRT Setting

Reset RRT

Allows you to reset the RRT setting.

Customizing the CHANNEL Settings

Select TV source for example. (Press SOURCE button to select TV mode)

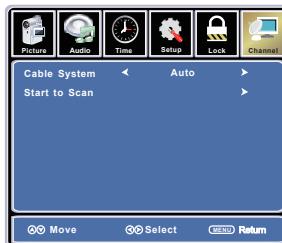
1. Press the POWER button to turn the LED TV on.
2. Press the MENU button on the remote control to display the Main menu, and use the LEFT and RIGHT buttons to select the CHANNEL.
3. Use the UP and DOWN buttons to highlight an individual CHANNEL option, use the LEFT and RIGHT buttons to change the setting, and press the MENU or EXIT button to exit.



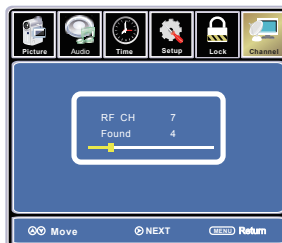
The CHANNEL menu includes the following options :

Air/Cable Allows you to select between Air and Cable.

Auto Scan Use Down button to highlight "Auto Scan", then press RIGHT or ENTER button to enter into the following menu.



If you select "Air" as input signal in Antenna , you can press RIGHT or ENTER button to search the channels automatically.



The receivable channels will be stored automatically. When searching channels, press MENU to stop.

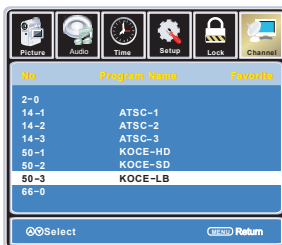
Application

Customizing the CHANNEL Settings

If you select "Cable" as input signal in Antenna then you can select Cable Systems: Auto, STD, IRC and HRC.
 Use DOWN button to highlight "Start to Scan", then press the RIGHT or ENTER button to search the channels automatically.
 The receivable channels will be stored automatically.
 When searching channels, press MENU to stop.

Favorite

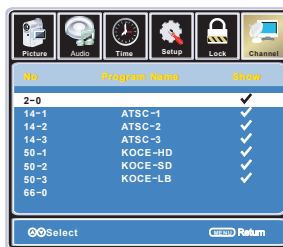
Allows you to add these channels as the favorite channels.
 Use UP or DOWN button to highlight "Favorite", then press the RIGHT or ENTER button to enter into the following menu.



Use UP and DOWN button to highlight the desired channel, then press the ENTER button to add or remove the highlighted channel as favorite.

Show / Hide

Allows you to show or hide the channels.
 Use the UP or DOWN button to highlight "Show / Hide", then press the RIGHT or ENTER button to enter into the following menu.



Use the UP and DOWN button to highlight the desired channel, then press ENTER button to show or hide the highlighted channel.

Channel No. Displays the number of the current channel.

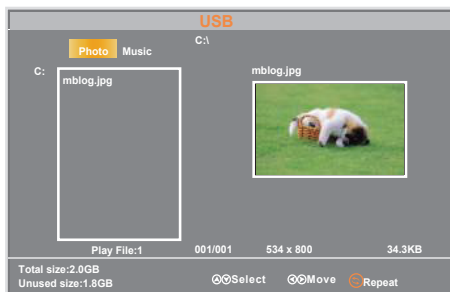
Channel Label Displays the label of the current channel.

DTV Signal Displays the quality of the current DTV signal.

USB Settings

This TV is a widescreen TV with USB port. Through the USB port the TV can access USB flash drives and display pictures or play MP3 files. To use this feature connect a USB flash drive to the USB port of the TV and press the SOURCE button to select USB to start browsing for music and pictures.

In the USB Mode, select Photo



In the Photo Mode:

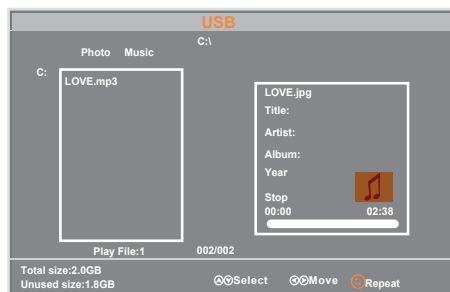
You can use the ◀ or ▶ button to select Photo.

You can use the ▲ or ▼ button to select the file you want and press ENTER to view the file.

You can use the ■ button to return main menu.

You can use the ◀◀ or ▶▶ button to select the file you want.

In the USB Mode, select Music



In the Music Mode:

You can use the ◀ or ▶ button to select Music.

You can use the ▲ or ▼ button to select the file you want and press ENTER to play the file.

You can use the ■ button to Stop.

You can use the ◀◀ ▶▶ ▶▶ ◀◀ ▶▶ RPT button to select the file you want.

Maintenance and Service

Troubleshooting

- In case a problem occurs with your LED TV, please take the following steps first.
- If you still have the problem, turn the power off and contact your dealer or an authorized service center.

Problem	Action
The screen does not appear.	Is the power plug connected? Insert the power plug. Press the power button of the remote control.
The screen appears too slowly after the power is turned on.	This problem occurs for a brief time in the process of image elimination processing in order to hide temporary screen noise that occurs when the power is turned on. But if the screen does not come after 1 minute contact your dealer or an authorized service center.
Screen is too bright or too dark.	Adjust the brightness or contrast.
Screen is too large or too small.	Adjust the Scale or Zoom Settings.
Stripes appear on the screen and it shakes.	Stop using wireless telephones, hair dryers or electric drills.
The screen does not move.	Press the PAUSE button. Check if the Pause button is pressed on external equipment.
Screen appears, Voice is not heard	<ol style="list-style-type: none"> 1. Press the "MUTE" button. 2. Increase the sound level by pressing the volume adjustment button. 3. Check if sound terminal of external input is connected properly. 4. Check if audio cables are connected properly. 5. Select and check the other input. <p>If the sound still does not work and the other channels are the same after you have done as the above, contact your dealer or an authorized service center.</p>
Remote control does not work	<ol style="list-style-type: none"> 1. Check if main power is On. 2. Check that the batteries of the remote controller were loaded properly. 3. Check to see if any obstacle exists between the LED TV and the remote control, then remove it, if any. 4. If the batteries are low, replace them with two new batteries.



Specifications

JTV24DC

LED Panel	Panel Size	23.8" TFT LED
	Brightness	200
	Contrast Ratio	1000:1
	Viewing Angle	170°/160°
Max. Resolution		1920 x 1080
INPUT	VIDEO	1
	AUDIO (L/R)	1
	PC/AUDIO (L/R)	1
	HDMI	1
	RF	1
	Component (YPbPr)	1
	USB	1
OUTPUT	AUDIO (L/R)	1
	SPDIF	1
Power Source		DC 12V
Power Consumption		30W
Dimension		23.3" x 13.8" x 1.9"
Weight		9.25lbs

- The cabinet design and electronics specifications may be modified without prior notice for performance improvement.
- Weight and dimensions are approximate

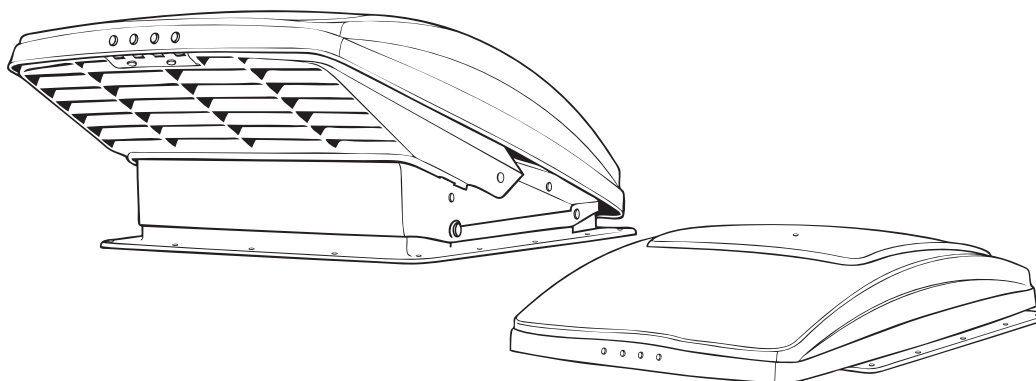
English



MAXXFAN[®]

INSTALLATION INSTRUCTIONS, INFORMATION AND OPERATING GUIDE

FOR ALL MAXXFAN[®] Deluxe MODELS
5100K, 5101K, 5301K, 6200K, 6201K, 6401K,
7000K, 7001K, 7500K, 7501K, 8000K, 8001K,
8500K, 8501K, 8700K, 8751K, 8900K, 8951K



READ AND SAVE THESE INSTRUCTIONS

NOTE: Refer to supplied Operating Instructions regarding the model you have purchased.

The **MAXXFAN** installs into a standard RV roof opening of 14" x 14".

To determine if your roof opening is correctly sized, simply remove the interior ceiling garnish trim ring of your existing roof vent and measure the ceiling opening or verify the opening is large enough by sliding the **MAXXFAN** interior garnish trim ring into the opening.

Due to the EXHAUST / INTAKE LOUVERS that face the rear of the vehicle, the **MAXXFAN** requires a roof area clear of obstructions such as air conditioners, storage boxes, etc. for at least 8" to the rear of the existing standard roof vent flange outer rear edge.

The **MAXXFAN** is designed for a minimum roof thickness of 1 1/8" to a maximum of 6 1/2". If your roof thickness is less than 1 1/8", build additional thickness at the ceiling opening using wood or other suitable material.

The **MAXXFAN** requires a minimum 12 Volt DC, 5 amp service. Confirm that the circuit you intend to use will accommodate the additional load. Use the proper gauge stranded wire for electrical connections.

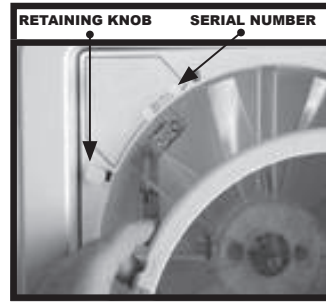
WARNING! To reduce risk of fire, injury to persons or damage to property, use only in the manner intended by AIRXCEL, INC. Should you have questions, please contact AIRXCEL/MAXXAIR VENTILATION SOLUTIONS Customer Service at 316.832.4357.





MAXXFAN® 2 YEAR LIMITED WARRANTY

AIRXCEL, INC. - RV PRODUCTS DIVISION / MAXXAIR Ventilation Solutions warrants to be free of manufacturing defects, regardless of ownership for a period of two (2) years from the original date of purchase. If the product is installed as original equipment on a vehicle, the warranty period shall begin on the date of the original purchase of the vehicle. In all other instances, the warranty shall begin on the date the product was purchased. **You must keep your original sales receipt.** This **Limited Warranty** does not include “Acts of God,” failure due to misuse, improper installation or accidental / incidental damages. Please call AIRXCEL, INC. at 1-316-832-4357 if you have any questions or need assistance.



Please have your original sales receipt and MAXXFAN Serial Number readily available. AIRXCEL will correct the confirmed defect within 45 days by repair or replacement without charge for materials and labor. This limited warranty does not cover any freight costs for the return of the product to or from AIRXCEL, INC. or costs associated with installation, removal or reinstallation of the product.

We invite your comments and suggestions regarding our products. Any information you supply is for AIRXCEL / MAXXAIR's internal use and will not be shared or sold to others.

The Serial Number for your MAXXFAN is located on the back page of this booklet and on the fan control plate under the round insect screen frame. (Your serial number may or may not be located in the same position as referenced in the above image). Reference your operating guide. Rotate the four retaining knobs 180° and remove the screen to view. DO NOT OPERATE the MAXXFAN with the screen removed.

CAUTIONS AND CARE OF YOUR MAXXFAN®

This product has been manufactured using prime UV stabilized Polymers for maximum toughness and durability. However, the use of caustic or solvent based chemicals can cause cracking and product failure.

PLEASE CLEAN ALL PARTS WITH MILD SOAP AND WATER ONLY.

Do not use Petroleum Containing Additives or Solvent Based Products on any of the MAXXFAN's components or its corrosion resistant hardware.

LISTED BELOW ARE SOME KNOWN CHEMICAL PRODUCTS TO BE AWARE OF:

NON COMPATIBLE CHEMICALS - DO NOT USE THESE:

Ketones, Esters, Acetone or other like solvents, Halogenated Hydrocarbons, Amines, Aromatic Hydrocarbons, (Loctite Formulas), or any products containing references to: chemicals that are not to be used on plastics.

GENERALLY COMPATIBLE (But should be used in low concentration where possible)

Acids, Alcohol, Alkalis, Aliphatic Hydrocarbons, Mild Soap Solution (avoid strong Alkaline Material), Silicone Oil or Greases (avoid those containing Aromatic Hydrocarbons or other additives). Review the contents of your cleaning materials carefully.

*For additional information regarding your **NEW MAXXFAN®** Deluxe, please refer to the **INFORMATION AND OPERATION GUIDES FOR YOUR PARTICULAR MODEL ON THE FOLLOWING PAGES.***



INFORMATION AND OPERATING GUIDE

KEYPAD FOR MAXXFAN® Deluxe MODELS

5301K • 6401K

KNOB, VENT LID OPEN/CLOSE

Manual Opening

Pull to unlock prior to turning. Rotate Knob clockwise to Close Vent Lid; Rotate Knob counter-clockwise to Open Vent Lid. Push "IN" to lock when Vent Lid is open or closed. It may be necessary to slightly rotate the knob to properly align it while pushing it up to lock.

Do not use excessive force when operating Knob.

KEYPAD CONTROLS

Use Keys on Keypad to control MAXXFAN functions (see descriptions below).



INSECT SCREEN RETAINER KNOB

Rotate all 4 knobs 1/2 turn to remove screen.

Caution: Never operate fan with screen removed.

CEILING FAN MODE

With the fan motor running, close the Vent Lid to enter Ceiling Fan Mode. The fan motor will continue to run and circulate air within the RV cabin.

SERIAL NUMBER LABEL

The serial number label is located underneath the round insect screen.

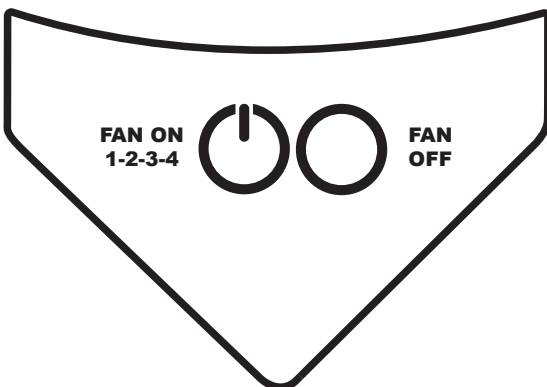
NOTE: The MAXXFAN is designed to be fully opened or fully closed when the vehicle is moving.

KEYPAD CONTROLS

KEYPAD FOR MAXXFAN® Deluxe MODELS

5301K • 6401K

CAUTION: When removing insect screen for cleaning, turn the MAXXFAN OFF and remove the vehicle 12 volt power to the MAXXFAN. When cleaning your MAXXFAN, use only a mild detergent solution.



FAN ON
1-2-3-4

Turns the Fan Motor ON to the last selected speed

When the fan is running, cycles through four (4) speeds, once **HIGH SPEED** is reached, fan motor cycles back to **LOW SPEED**



FAN OFF

Turns the Fan Motor OFF at any selected speed



INFORMATION AND OPERATING GUIDE

KEYPAD FOR MAXXFAN® Deluxe MODELS

**5100K, 5101K, 6200K, 6201K, 7000K, 7001K, 7500K, 7501K,
8000K, 8001K, 8500K, 8501K**

KNOB, VENT LID OPEN/CLOSE

Manual Opening Models

Pull to unlock prior to turning. Rotate Knob clockwise to Close Vent Lid; Rotate Knob counter-clockwise to Open Vent Lid. Push "IN" to lock when Vent Lid is open or closed.

Automatic Opening Models

Allows closing of the vent lid in the event of RV power loss. This knob does not lock. Do not push in or pull out. Rotate knob clockwise to close vent lid; rotate knob counter-clockwise to open vent lid.

Do not use excessive force when operating Knob.

KEYPAD CONTROLS

Use Keys on Keypad to control MAXXFAN functions (see descriptions on next page).

NOTE: IR Sensor not on all models.

INSECT SCREEN RETAINER KNOB

Rotate all 4 knobs 1/2 turn to remove screen.

Caution: Never operate fan with screen removed

THERMOSTAT TEMPERATURE SENSOR

CEILING FAN MODE

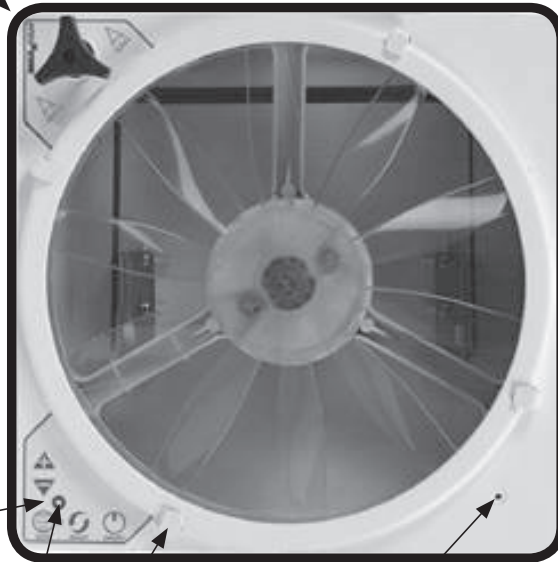
With the fan motor running, close the Vent Lid to enter Ceiling Fan Mode. The fan motor will continue to run and circulate air within the RV cabin.

SERIAL NUMBER LABEL

The serial number label is located underneath the round insect screen.

NOTE: The MAXXFAN is designed to be fully opened or fully closed when the vehicle is moving.

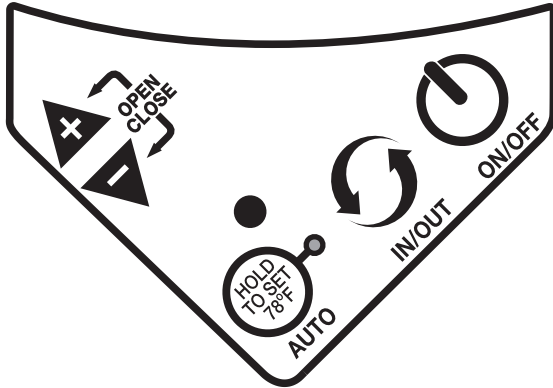
CAUTION: When removing screen for cleaning, turn the MAXXFAN OFF and remove the vehicle 12 volt power to the MAXXFAN. When cleaning your MAXXFAN, use only a mild detergent solution.





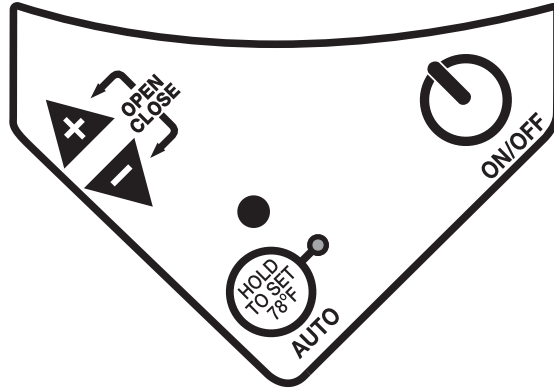
KEYPAD CONTROLS

KEYPAD FOR
MAXXFAN® Deluxe
INTAKE/EXHAUST MODELS
5100K, 6200K, 7000K, 7500K,
8000K, 8500K



KEYPAD CONTROLS

KEYPAD FOR
MAXXFAN® Deluxe
EXHAUST ONLY MODELS
5101K, 6201K, 7001K, 7501K
8001K, 8501K



NOTE: A beeping sound will confirm each key press



ON/OFF

ON/OFF: Use this key to start the fan or to turn off the fan. On Automatic Opening Models the lid will also open or close when the fan is turned on or off. On Manual Opening Models pushing this key while in Auto Mode will exit Auto Mode, turn off the fan and the lid will stay in the position you selected. On Automatic Opening Models this button will exit Auto mode, turn the fan off, and close the lid.



IN/OUT

IN/OUT: Use this key to reverse the direction of the fan, the fan will slow down and pause for two (2) seconds before resuming operation in the opposite direction. **Note:** In Auto Mode the fan direction is automatically positioned to Exhaust, but may be overridden and changed to Intake by depressing this key. **PLEASE NOTE: THIS KEY HAS BEEN REMOVED ON EXHAUST ONLY MODELS**



AUTO

AUTO: Auto Mode allows the thermostat to turn the fan **ON and OFF** depending on the thermostat setting. Press this key once for less than three (3) seconds to enter Auto Mode, three (3) quick beeps will confirm the MAXXFAN has entered Auto Mode. To EXIT Auto Mode, press the **ON/OFF** key. Initial factory set point for the thermostat is 78°F/25°C. The green LED will light to indicate the MAXXFAN is in Auto Mode. To adjust, follow instructions below:

If no previous thermostat temperature was entered, or you wish to change a previous set temperature, press the HOLD TO SET key for more than 3 seconds and you will hear one long beep and the thermostat will be reset to 78°F. To further adjust the set temperature, if desired, use the (+) or (-) Arrow keys to adjust at 1° increments per press. The fan will emit a beeping sound to confirm this setting. If a previous thermostat temperature was entered, the fan will remember this temperature setting and the next time you enter Auto Mode, the fan will start ventilating automatically as directed by the thermostat. The fan speed will automatically adjust based on the cabin temperature. As cabin temperature rises, the fan increases in speed. **Note:** If 12 volt RV power is removed from the MAXXFAN, the thermostat will be reset to 78°F/25°C.



ARROW - When in Auto Mode: Use the (+) & (-) Arrow keys to adjust the thermostat set temperature up or down in 1° increments per press.

When in Manual Mode: Use the (+) & (-) Arrow keys to adjust the fan speed up or down. When the fan speed reaches either the maximum or minimum speed, the fan will respond with 2 quick beeps to indicate this.

ARROW KEYS PRESSED TOGETHER: *Automatic Lift Models Only*

Press the (+) & (-) Arrow keys at the same time to Open or Close the lid. The fan motor will remain in its current state.



REMOTE CONTROL OPERATING GUIDE

WIRELESS REMOTE CONTROL FOR

MAXXFAN® Deluxe MODELS 7000K • 7500K

Optional for 8000K, 8500K, 8700K, 8900K Models



FAN ON/OFF

FAN ON & POWER OFF - Press this button:

- To start the fan
- To turn the fan off
- To exit Auto Mode



VENT LID POSITION - Press this button to open or close the vent lid

• While the fan is running in Manual Mode press once to close the vent lid and enter "Ceiling Fan" Mode.

NOTE: This button is not active in Auto Mode. If the fan loses 12volt RV power or power is removed from the fan, use the knob located at the ceiling to manually open or close the vent lid if desired.



AIR EXHAUST / INTAKE - Press this button to reverse the fan from intake or exhaust

NOTE: In Auto Mode, the fan direction is automatically positioned to Exhaust, but may be overridden and changed to Intake by depressing this key.



FAN AUTO MODE - Press this button to enter Auto Mode

• Auto Mode allows the fan lid to automatically open and the fan motor to operate as dictated by the thermostat set point temperature. Once the cabin temperature cools and reaches the set point temperature, the fan lid will close and the fan motor will shut off.

• Pressing this button while in Auto Mode will shut off Auto Mode, close the vent lid and shut off the fan motor.



THERMOSTAT SET TEMPERATURE

TEMP + ~ Press this button to increase the Set Temperature for Auto Mode.

TEMP - ~ Press this button to decrease the Set Temperature for Auto Mode.

NOTE: The thermostat temperature range is from 29°F to 99°F or -2°C to 37°C. To change from Fahrenheit to Celsius on the temperature display, press and hold both set temperature keys simultaneously.



FAN SPEED

Fan Speed + ~ Press this button to increase the fan speed. The fan has ten speeds.

Fan Speed - ~ Press this button to decrease the fan speed. The fan has ten speeds.

NOTE: When the fan speed reaches either the maximum or minimum speed, the fan will respond with 2 quick beep sounds to indicate this.



LOW BATTERY INDICATOR

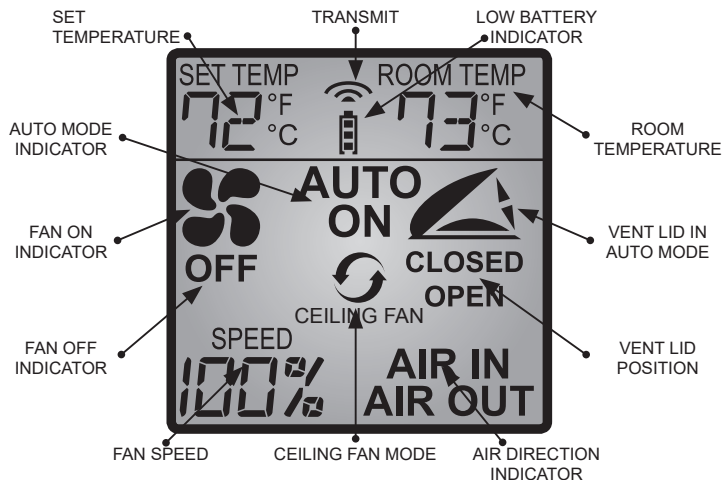
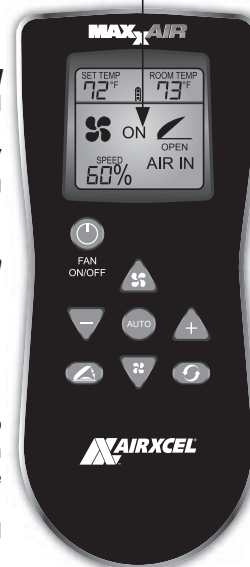
- When the battery is at full charge, three black power bars are displayed.
- One or zero power bars displayed indicates the batteries need replacement.



TRANSMISSION SIGNAL

- This symbol is displayed on the screen when any button is pressed to indicate the signal was transmitted to the fan.
- A beep sound from the ceiling unit indicates the signal from the remote control was received by the fan.

Remove protective film from Display Screen





REMOTE CONTROL OPERATING GUIDE

WIRELESS REMOTE CONTROL FOR MAXXFAN® Deluxe MODELS 7001K • 7501K Optional for 8001K, 8501K Models



FAN ON/OFF

FAN ON & POWER OFF - Press this button:

- To start the fan
- To turn the fan off
- To exit Auto Mode



VENT LID POSITION - Press this button to open or close the vent lid

- While the fan is running in Manual Mode press once to close the vent lid and enter "Ceiling Fan" Mode.

NOTE: This button is not active in Auto Mode. If the fan loses 12volt RV power or power is removed from the fan, use the knob located at the ceiling to manually open or close the vent lid if desired.



FAN AUTO MODE - Press this button to enter Auto Mode

- Auto Mode allows the fan lid to automatically open and the fan motor to operate as dictated by the thermostat set point temperature. Once the cabin temperature cools and reaches the set point temperature, the fan lid will close and the fan motor will shut off.
- Pressing this button while in Auto Mode will shut off Auto Mode, close the vent lid and shut off the fan motor.



THERMOSTAT SET TEMPERATURE

TEMP + ~ Press this button to increase the Set Temperature for Auto Mode.



TEMP - ~ Press this button to decrease the Set Temperature for Auto Mode.

NOTE: The thermostat temperature range is from 29°F to 99°F or -2°C to 37°C. To change from Fahrenheit to Celsius on the temperature display, press and hold both set temperature keys simultaneously.



FAN SPEED

Fan Speed + ~ Press this button to increase the fan speed. The fan has ten speeds.



Fan Speed - ~ Press this button to decrease the fan speed. The fan has ten speeds.

NOTE: When the fan speed reaches either the maximum or minimum speed, the fan will respond with 2 quick beep sounds to indicate this.



LOW BATTERY INDICATOR

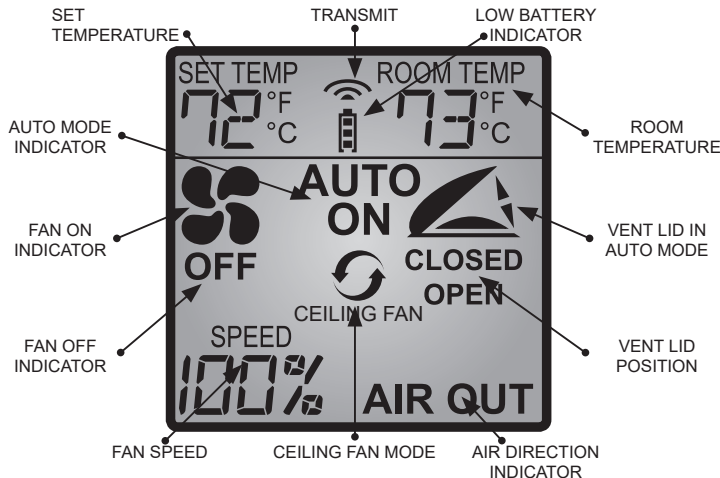
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TRANSMISSION SIGNAL

- This symbol is displayed on the screen when any button is pressed to indicate the signal was transmitted to the fan.
- A beep sound from the ceiling unit indicates the signal from the remote control was received by the fan.

Remove protective film from Display Screen





Installation and Owner's Manual

For N3000 models with touchscreen



FIRE OR EXPLOSION HAZARD

If you smell gas:

1. Open Windows
2. Do not attempt to light appliance.
3. Do not touch electrical switches.
4. Extinguish any open flame
5. Shut off fuel supply.
6. Evacuate immediately and call emergency services.

Failure to follow these instructions could result in fire or explosion, which could cause property damage, personal injury, or death.



Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, contact a qualified installer, service agency, or the gas supplier.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquid in the vicinity of this or any other appliance.



DO NOT install this refrigerator in below deck marine applications. Do not install this refrigerator in a fixed indoor cabin or other dwelling applications. This refrigerator must use only NORCOLD designed and approved outside air intake and exhaust ventilation for correct and safe operation. Any other ventilation could cause lethal combustion exhaust fumes and/or explosive propane gas fumes to be in the living area and/or to be below deck.

English

NORCOLD, Inc.
P.O. Box 4248
Sidney, OH 45365-4248

Norcold Customer Support Dept.
Telephone: 800-543-1219
Fax: 734-769-2332
Web Site: www.norcold.com

Part No. 635607M (5/31/2018)



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Owner's Manual

Safety Awareness

Read this manual carefully and understand the contents before you use the refrigerator.

Be aware of possible safety hazards when you see the safety alert symbol on the refrigerator and in this manual. A signal word follows the safety alert symbol and identifies the danger of the hazard. Carefully read the descriptions of these signal words to fully know their meanings. They are for your safety.



This signal word means a hazard, which if ignored, can cause dangerous personal injury, death, or much property damage.



This signal word means a hazard, which if ignored, can cause small personal injury or much property damage.

Safety Instructions



- The storage of flammable materials behind or around the refrigerator creates a fire hazard. Do not use the area behind the refrigerator to store anything, especially flammable materials (gasoline, cleaning supplies, etc.)
- Do not remove the round ground prong from any of the AC power cords. Do not use a two prong adapter or an extension cord with any of the AC power cords.
- A circuit overload can result in an electrical fire if the wires and/or fuses are not the correct size. Use only the wire and fuse sizes as written in the "Installation Manual".
- Incorrect installation, adjustment, change to, or maintenance of this refrigerator can cause personal injury, property damage, or both. Have service and maintenance work done by your dealer or by a Norcold authorized service center.
- Disconnect both the AC and DC power sources before doing any maintenance work on the refrigerator. All service work on this refrigerator must be done by a qualified service technician.
- Do not bypass or change the refrigerator's electrical components or features.
- When you discard an appliance, remove all doors to prevent accidental entrapment and suffocation.
- Do not spray liquids near electrical outlets, connections, or the refrigerator components. Many liquids are electrically conductive and can cause a shock hazard, electrical shorts, and in some cases fire.
- The refrigerator cooling system is under pressure. Do not try to repair or to recharge a defective cooling system. The cooling system contains sodium chromate. The breathing of certain chromium compounds can cause cancer. The cooling system contents can cause severe skin and eye burns, and can ignite and burn with an intense flame. Do not bend, drop, weld, move, drill, puncture, or hit the cooling system.
- At regular intervals, make sure that the refrigerator flue the burner, the vent areas, and the ventilation air pathway between the vents is completely free from any flammable material or blockage. After a period of storage, it is especially important to check these areas for any flammable material or blockage caused by animals.

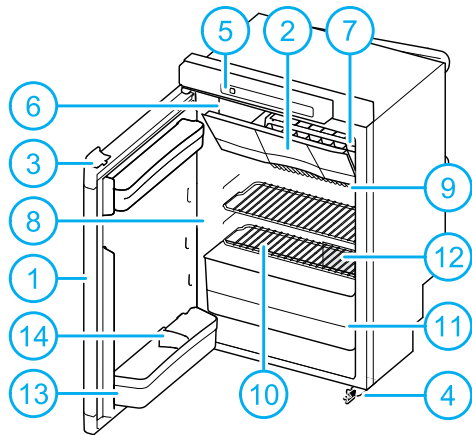


- The rear of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, be careful and wear cut resistant gloves.

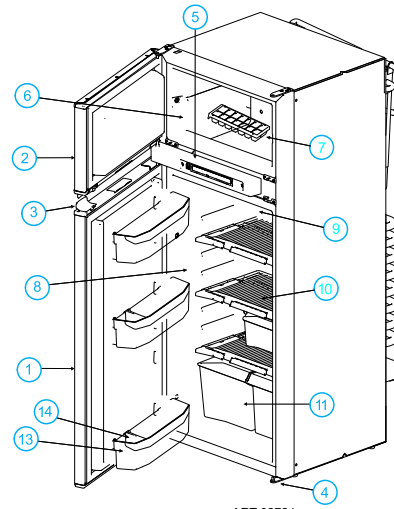


About Your Refrigerator

model N3104

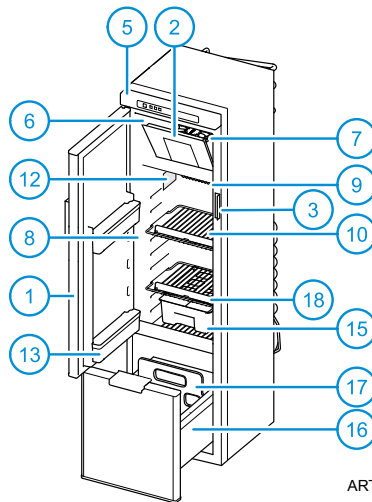


model N3150



Art02363

model N3141



ART 02593

Refrigerator components

- 1.....Refrigerator door
- 2.....Freezer door
- 3.....Door lock
- 4.....Security lock (dependent on model)
- 5.....Control panel with LCD touchscreen
- 6.....Freezer compartment
- 7.....Ice cube tray
- 8.....Refrigerator compartment
- 9.....Cooling fins
- 10.....Storage shelves
- 11.....Vegetable bin
- 12.....Serial label
- 13.....Door bins
- 14.....Bottle retainer
- 15.....Slide out Box
- 16.....Bottom Drawer
- 17.....Bottle Retainer

Storage volume

This refrigerator is made for storage of foods and frozen food and for making ice.

Total capacity: model N3104 - 3.7 cubic feet model N3150 - 5.3 cubic feet model N3141 - 5.0 cubic feet



NORCOLD REFRIGERATOR FOR LEGACY ELITE

Leveling



The refrigerator is made to operate within 3° off level side-to-side and 6° off level front-to-back (as looking at the front of the refrigerator). Operating it at more than these limits can cause damage to the cooling system and create a risk of personal injury or property damage. Make sure the vehicle is level before you operate the refrigerator.

Operation during travel

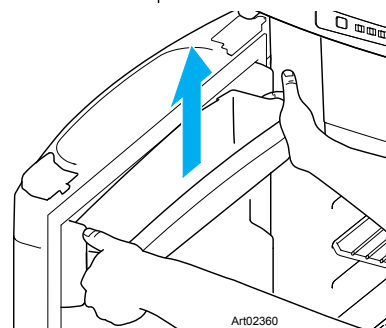
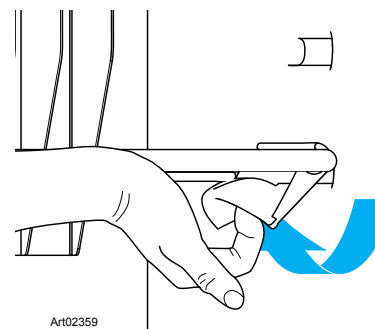
While the refrigerator should be level when the vehicle is stopped, performance during travel is not usually affected.

Use of refrigerator compartment

You can organize your refrigerator as desired by moving the storage shelves and door bins. Make sure the door can still be closed after reorganizing shelves and bins.

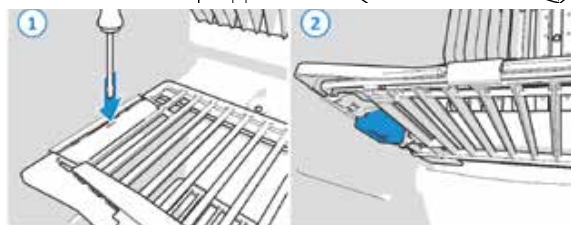
Moving storage shelves(N3141 and N3104 Models only)

Remove and save the screw below the plastic clamp on the right side of the storage. Turn the plastic clamp upwards, as illustrated. Lift the right side a bit, and move the storage shelf to the desired position. First place the left side of the storage shelf in the refrigerator wall, then the right side in the corresponding groove. Turn the plastic clamp downwards, and replace the screw underneath.(See Art02359)



Moving storage shelves(N3150 Model only)

Place a tool with a flat end firmly inside the oval opening of the clip (1). Hold the block under the clip with your free hand (2). (See Art02726) Gently move the tool away from the fridge wall (approximately 30 degrees) while keeping its end on the bottom of the oval opening(3). After removing the safety block, rotate the clip upwards to release the shelf (4). Move the storage shelf to the desired position. Rotate the clip downwards until the shelf snaps into place. Place the block at the bottom of the shelf until you hear a click sound.(See Art02727)



Moving door bins

Push a door bin out of the locking with both hands, as illustrated. Place this door bin back in the desired position and push it back on the locking. (See Art02360)



For the best cooling performance:

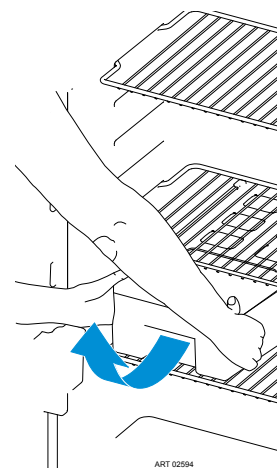
- Let air move freely inside the entire food compartment.
- Do not cover the shelves with plastic, paper, etc.

To decrease the amount of ice that collects on the cooling fins:

- Cover all liquids and moist foods.
- Let all hot foods cool before putting them in the refrigerator.
- Do not open the door any longer than necessary.

Using slide out- N3141

You may use the slide out box as a tray for all your breakfast or lunch items. Slide out the complete box and put it directly on the table.To remove the slide out box, pull the box until it stops. Then lift the box at the front, as illustrated [Art02594]. The box is now free to remove.



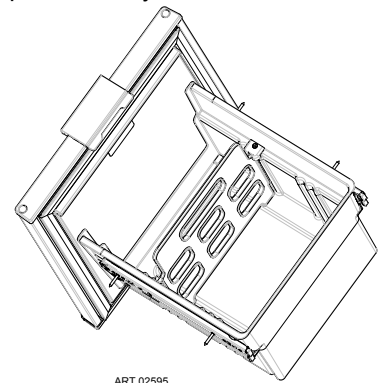


Using drawer- N3141

The drawer is specially designed for bottle , cans, vegetables and is divided into two compartments by the bottle retainer. [See Art02595]

NOTICE The bottle retainer is secured into position and should not be relocated.

CAUTION The maximum storage capacity of the drawer is 33lbs.



ART 02595

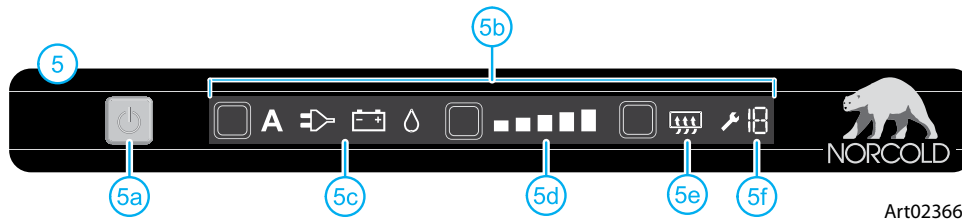
Freezer compartment

The freezer compartment is made to keep pre-frozen food frozen and not to quick freeze food. Keep pre-frozen foods in the freezer compartment.

NOTICE Do not put other items on the ice tray while the water is freezing. The water freezes more rapidly if the thermostat is at the COLDEST position.

NOTICE Do not wash the vegetable bins, door bins, or bin slides in a dishwasher. The vegetable bins, door bins, and bin slides are not dishwasher safe.

Control Panel With Touchscreen



Art02366

- 5..... Control panel with LCD touchscreen
- 5a..... On/off switch
- 5b..... Touchscreen
- 5c..... Mode symbols
- 5d..... Cooling level indicators
- 5e..... Symbol 'anti-condensation' (only for model N3150)
- 5f..... Error code

Turn refrigerator on

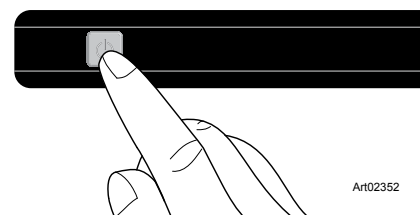
Start up the refrigerator and let it cool for eight hours before loading with food. If the refrigerator does not start to cool down after about two hours, contact your dealer or a Norcold authorized service center.

For best cooling performance, level your vehicle before operating the refrigerator.

To turn the refrigerator on, push the on/off switch and hold it for 1 second, as illustrated. A light in the on/off switch will turn green.(See Art02352)

After 10 seconds the settings will dim. The green light indicates the refrigerator is still functioning.

To check the settings push the on/off button again. The currently active settings will light up. For optimal performance, turn the refrigerator on eight hours before placing food.



Art02352

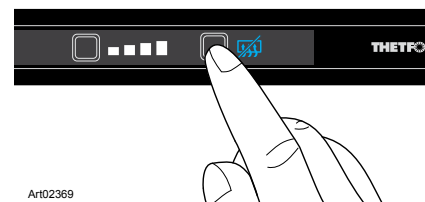
Anti-condensation heater (present on refrigerator model N3150 & N3141)



To prevent condensation from forming on the control panel , the anti-condensation function is automatically turned on (no symbol visible). Only turn this function off when it is necessary to conserve vehicle battery charge.

To turn OFF the anti-condensation heater, push on the anti-condensation button. The symbol on the control panel will light up, indicating that the anti-condensation heater has been turned OFF. (See Art02369)

To turn the anti-condensation heater back on, push the anti-condensation button again. The symbol on the control panel will go off, indicating that the anti-condensation heater has been turned ON.



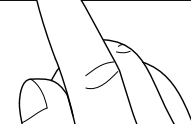
Art02369



NORCOLD REFRIGERATOR FOR LEGACY ELITE





Selecting a source

After turning the refrigerator on, push the source button several times, as illustrated. Push until the desired source is selected. (See Art02367)



Art02367

Sources

- Auto  The refrigerator automatically selects the best source available (in order: AC, DC, gas)
- AC  The refrigerator is powered by AC.
- DC  The refrigerator is powered by the battery of your vehicle.
- Gas  The refrigerator is powered by propane gas.

Always use the gas or AC mode to start up and cool. Operating on 12V DC is only effective while the engine of the vehicle is running.

If the 'auto' function on the refrigerator is selected, but no source is available, a light in the on/off switch blinks red.

The performance of the refrigerator operating on 12V DC is dependent on the thickness and length of the wiring and the overall installation of the vehicle.

Select cooling level

After turning the refrigerator on, push the cooling level button several times, as illustrated. Push until the desired level is selected. (See Art 02368)

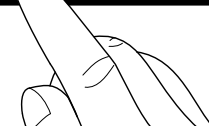


Art02368

We advise to set the refrigerator on cooling level 3, with an ambient temperature between 60°F and 75°F. A higher temperature needs a higher cooling level, a lower temperature a lower level.

Turn refrigerator off

Before defrosting the refrigerator or storing your vehicle, turn the refrigerator off. Push the on/off switch, as illustrated, and hold it for 2 seconds to turn off the refrigerator. All lights will go out. (See Art02353)



Art02353

NOTICE

If storing the vehicle for an extended period of time, make sure to disconnect the fan at the rear of the refrigerator, as explained in section entitled "Refrigerator Storage".



Temperature Control System

Although the refrigerator is not frost-free, it is made to limit frost on the cooling fins. At regular intervals, the temperature control system automatically melts most of the frost from the cooling fins. The water from the cooling fins drains into a collection cup that is attached to the back of the refrigerator. The heat of the cooling system evaporates the water from the collection cup.

Effects of High Altitude on Propane Gas Operation

When you operate the refrigerator on propane gas at altitudes higher than 5500 feet above sea level:

- You may experience reduced cooling performance of the refrigerator.
- You may experience burner outages.

To avoid these possible problems, Norcold recommends that you operate the refrigerator on AC when at altitudes higher than 5500 feet above sea level.

Effects of Freezing Temperatures on Refrigerator Operation

A gas absorption refrigerator is not designed to operate in freezing temperatures. If the refrigerator is not equipped for low temperature operation, and if the cooling system of the refrigerator is exposed to temperatures of 32° F or lower for an extended period of time, the refrigerator operation may be disrupted. The refrigerator operation will resume when the cooling system of the refrigerator warms sufficiently.

Disrupted operation of the refrigerator, due to extended exposure to temperatures of 32° F or lower, and any costs incurred to warm the cooling system of the refrigerator are not covered by the Norcold limited warranty. Please contact your local RV dealer for information about how to resume refrigerator operation or about how to equip your refrigerator for operation in freezing temperatures.

Do not change the installation or the venting of your refrigerator. Refrigerator failures, which are the result of changes to either the refrigerator installation or to the venting, are not covered by the Norcold limited warranty.

Refrigerator Care Checklist

Your refrigerator will give you years of trouble free service if you do these simple checks every three to six months:

- Keep the food compartment and the freezer clean. See "Cleaning".
- Defrost the refrigerator as necessary. See "Defrosting".
- Make sure the door seals correctly. See "Door Sealing".
- Be aware of any cooling changes that are not because of weather, loading, or gas control changes. If changes occur, contact your dealer or service center.
- Make sure the gas supply is propane gas only and not butane or a butane mixture.
- When in propane gas operation, examine the appearance of the flame. See "Gas Flame Appearance".
- Make sure the air flow in the lower intake vent, through the refrigerator coils and condenser, and out the upper exhaust vent is not blocked or decreased.
- Make sure the area behind the refrigerator is clear. Do not use the area behind the refrigerator for storage of anything, especially gasoline and other flammable vapors and liquids.



Defrosting

The cooling fins of the refrigerator operate at below freezing temperature and will naturally form frost from humidity, which is always present in the air. The humidity inside the refrigerator increases:

- with higher outside temperature and humidity.
- with the storage of non-sealed fresh foods or warm foods.
- with the amount of time that the door(s) are open.
- with any air leakage into the refrigerator.

Although the refrigerator is not frost-free, it is made to limit frost on the cooling fins. At regular intervals, the temperature control system automatically melts most of the frost from the cooling fins. The water from the cooling fins drains into a collection cup that is attached to the back of the refrigerator. The heat of the cooling system evaporates the water from the collection cup.

It is normal for frost to collect inside the freezer. Excess frost decreases the cooling performance of the refrigerator. Defrost the refrigerator and freezer as necessary:

- Remove all food from the refrigerator.
- Turn the refrigerator OFF.

NOTICE *Defrosting the refrigerator makes excess water inside the refrigerator.*

- Remove the drain hose from the drip cup at the rear of the refrigerator.
- Put the drain hose into a half-gallon or larger container to capture water.
- Put dry towels (etc.) inside the refrigerator and freezer to absorb melted frost.



High temperatures can cause the inside surfaces of the refrigerator to warp or melt. Do not use pans of HOT water, hair dryer, or any other high temperature devices to defrost the refrigerator. Do not use any hard or sharp objects to remove frost. Damage to the interior of the refrigerator can occur.

- To increase the speed of defrosting, put pans of WARM water in the refrigerator and freezer.
- Remove the wet towels (etc.) and dry the interior.
- Remove the drain hose from the large container and put the drain hose back into the drip cup.
- Remove the large container from the enclosure.
- Start up the refrigerator.
- Allow the refrigerator to cool down.
- Return all food to the refrigerator.

Cleaning

A good time to clean the refrigerator is just after you defrost it. Clean the inside of the refrigerator as often as necessary to avoid food odors:

- Remove all food from the refrigerator.

NOTICE *Do not use abrasive cleaners, chemicals, or scouring pads because they can damage the interior of the refrigerator. -*

- Wash the interior with a mild cleaner or a solution of liquid dish detergent and warm water.
- Rinse with a solution of baking soda and clean water.
- Dry with clean cloth.
- Put all food in the refrigerator.

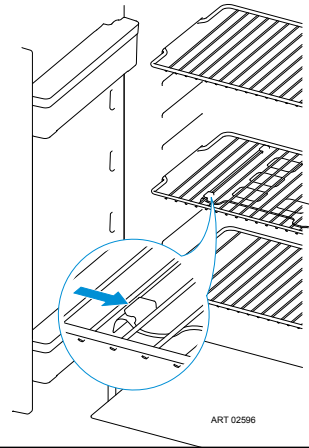


Remove Slide out Box System (Art02596)

- Open the refrigerator door.
- Remove slide out box
- Slide the rail system to the right.
- Remove slide out box.
- Once area is clean, move the rail system to the left.
- Place the slide out box back into refrigerator.

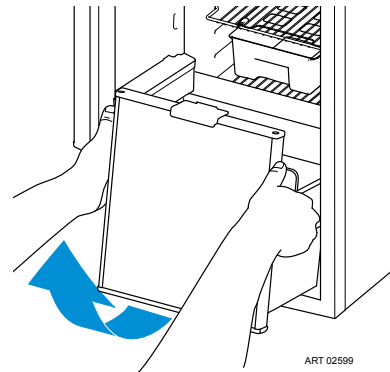
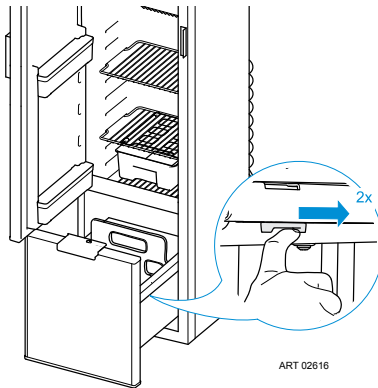
NOTICE

Make sure the slide out box snaps into place.



Remove Drawer

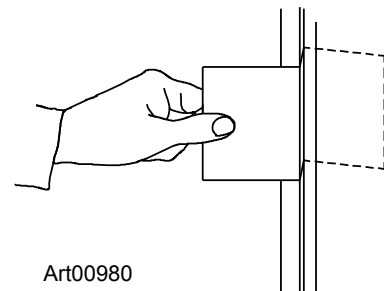
- Open the refrigerator door
- Pull the drawer until it stops.
- Push it a little bit back and push the guide locks backwards. (See Art02616)
- Pull the drawer towards you and lift the wheels over the curves. (See Art02599)
- Clean the desired area and place the drawer back into the refrigerator.
 - Push the guide locks forward
 - Tilt the drawer over the wheels.
 - Push the drawer into the refrigerator.



Check the Seal of the Doors

If either door does not seal correctly, excess frost will collect inside the refrigerator. Make sure the doors seal correctly (See Art00980):

- Close each door on a piece of paper that is about the size and thickness of a dollar bill.
- Gently pull the paper.
 - You should feel a slight drag between the gasket and the cabinet.
 - Do this on all four sides of the door.
 - If you do not feel a slight drag on the paper, the door does not seal correctly.
 - Have your dealer or an authorized Norcold Service Center correct the seal of the door.

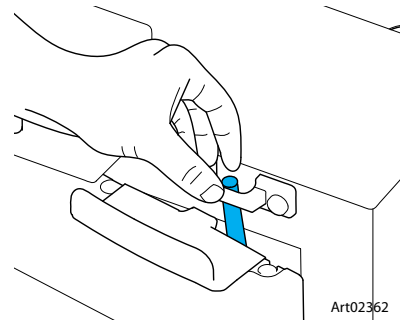




Refrigerator Storage

Before the refrigerator is stored for an extended (seasonal) period of time:

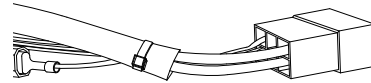
- Defrost and clean the interior of the refrigerator.
- To prevent odors and mold in the refrigerator, keep all doors open during storage. Rotate the hook at door lock 45 degrees and lock it in place by using the strike plate, as illustrated.
- Disconnect the fan at the rear of the refrigerator. Unplug the connector on the red wire of the DC power cord, where shown as illustrated. (Art02362)



Art02362

If the refrigerator is stored for an extended period of time, before start up:

- Make sure there are no obstructions in the vents, the ventilation air pathway, the burner, the orifice, or the flue area.
- Reconnect the fan at the rear of the refrigerator. Plug together the connectors on the red wire of the DC power cord, where shown as illustrated. (Art02331)



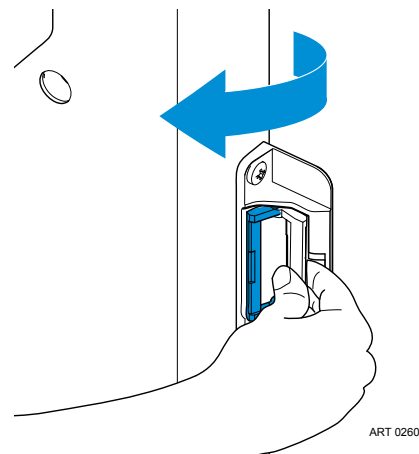
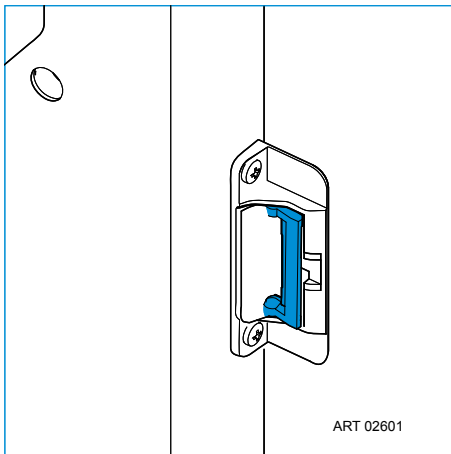
N3141 Storage Lock

Open the door and rotate the storage lock as illustrated. (See Art2600)

- Then close the door until you here the first click.
- Make sure the door is still part way open.

Art02331

When you use the refrigerator after storage, always make sure to rotate the storage lock back to its original position. (See Art02601)





Refrigerator Maintenance Checklist

Read and understand the following maintenance sections of this manual.

NOTICE

Norcold is not responsible for installation, adjustment, alteration, service, or maintenance performed by anyone other than a qualified RV dealer or a Norcold authorized service center.

Have a qualified RV dealer or a Norcold authorized service center do these annual safety and maintenance checks:

- Examine the gas supply lines for leaks
 - Replace or repair if needed.
- Make sure the propane gas pressure is 11 inches of water column.
 - Adjust if needed.
- Make sure the combustion seal is complete and intact.
 - Replace or repair it if needed.
- Make sure the burner and the burner orifice are clean.
 - Clean if needed.
- Make sure the electrode spark gap is 1/8 - 3/16 inch.
 - Adjust if needed.
- Make sure the AC voltage is 108 - 132 volts and the DC voltage is 10.5 - 15.4 volts.
- Make sure the area at the rear of the refrigerator is free of any combustible materials, gasoline, and other flammable vapors and liquids.

Refrigerator Maintenance

Gas flame appearance:

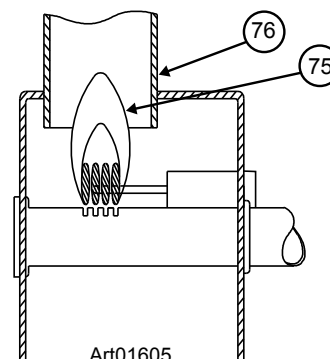


While in GAS operation, examine the appearance of the gas flame:

- Turn the refrigerator on, select manual gas mode, and coldest temperature setting.
- Open the lower intake vent.

The burner box cover can be hot. Wear gloves to avoid burns.

- Remove the burner box cover by removing the screw.
- Look at the gas flame [75] (See Art01605).
- The flame should be:
 - a darker blue color on the inside of the flame and a lighter blue color on the outside of the flame.
 - a constant shape without flickering.
 - Contact your dealer or Norcold authorized service center if the flame is:
 - yellow
 - flickering or changing shape.
 - Make sure the flame does not touch the inside of the flue tube [76].
 - If the flame touches the inside of the flue tube, contact your dealer or Norcold authorized service center.
 - Close the burner box door.



Art01605



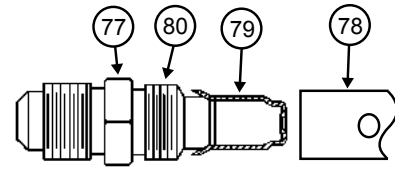
NORCOLD REFRIGERATOR FOR LEGACY ELITE

Remove and clean the burner orifice

Your dealer or Norcold authorized service center must do this procedure.

Remove and clean the burner orifice (See Art00956):

- Close the valve at the propane gas tank(s).
- Push the on/off switch and hold it for 2 seconds to turn off the refrigerator.



Art 00956



The burner box cover can be hot. Wear gloves to avoid burns.

- Open the lower intake vent.
- Remove the burner box cover by removing the screw.



To avoid possible propane gas leaks, always use two wrenches to loosen and tighten the gas supply line connections.

- Remove the flare nut from the orifice assembly [77] (See Art00956).
- Remove the orifice assembly from the burner [78].

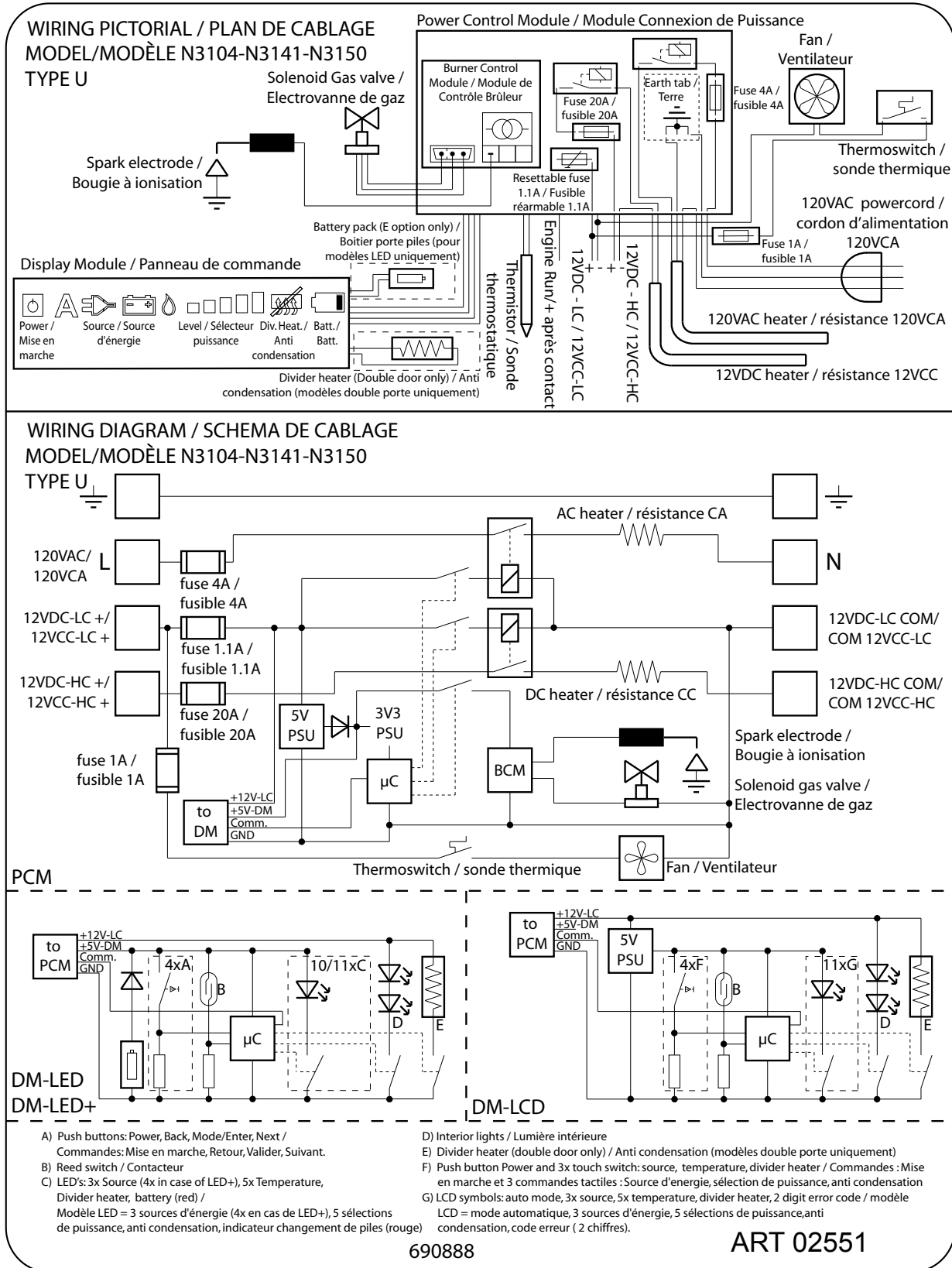


Do not try to remove the orifice [79] from the orifice adapter [80] when cleaning. Removal will damage the orifice and seal of the orifice and can cause a propane gas leak. Leaking propane gas can ignite or explode which can result in dangerous personal injury or death. Do not clean the orifice with a pin or other objects.

- Clean the orifice assembly with air pressure and alcohol only.
- Using a wrench, assemble the orifice assembly to the burner.
- Assemble the flare nut to the orifice assembly.
- Examine all of the connections for gas leaks.
- Clean the burner box.
- Assemble the burner box cover.



Wiring Diagram and Pictorial





Replacement Parts

You may purchase replacement parts through your local RV dealer or authorized Norcold Service Center.

Troubleshooting

In case of a problem, an error code on the control panel can light up. When error codes 1, 2, 4, 5, 8, 9, 12 or 13 are visible, directly contact your dealer or a Norcold Service Center.

For below error codes, first read the associated instructions. If this will not solve the problem, contact your dealer or a Norcold Service Center.



The refrigerator does not work on gas: check if the gas bottle is not empty • check if the valve of the gas bottle and all shut-off valves are open • turn the refrigerator off and on again • try to run the refrigerator on another power source



The refrigerator does not work on 12V: make sure the engine is running • try to run the refrigerator on another power source



The refrigerator does not work on 12V: make sure the engine is running • try to run the refrigerator on another power source.



The refrigerator does not work on 120V: check if 120V AC is available • try to run the refrigerator on another power source



The refrigerator does not work in AUTO mode: check if the sources are connected • try to run the refrigerator manually on a power source



All symbols on the control panel light up: wait a few seconds until the refrigerator starts normal.

Frequently Asked Questions

What can I do, when the refrigerator does not start?

Check if you turned on the refrigerator according to the instructions, if the vehicle stands level or if there is an available energy source to start the refrigerator with. If none of this is the case, please contact your dealer or a Norcold Service Center.

The refrigerator does not cool sufficiently, what can I do?

Check if the vents aren't covered or blocked from the outside, if the refrigerator stands level, if the highest cooling level of the refrigerator is selected, if the door of the refrigerator still closes properly, if there is not too much ice on the cooling fins, or if the fan wire is disconnected at the rear of the refrigerator. If none of this is the case, please contact your dealer or a Norcold Service Center.

All lights on the control panel are blinking, what should I do?

Please contact your dealer or a Norcold Service Center.



Installation Manual

Safety Awareness

Read this manual carefully and understand the contents before you install the refrigerator.

Be aware of possible safety hazards when you see the safety alert symbol on the refrigerator and in this manual. A signal word follows the safety alert symbol and identifies the danger of the hazard. Carefully read the descriptions of these signal words to fully know their meanings. They are for your safety.



This signal word means a hazard, which if ignored, can cause dangerous personal injury, death, or much property damage.



This signal word means a hazard, which if ignored, can cause small personal injury or much property damage.

Safety Instructions



- This refrigerator is not approved for use as a free standing refrigerator. It is equipped for the use of propane gas only and cannot be changed to use any other fuels (natural gas, butane, etc.).
- Incorrect installation, adjustment, alteration, or maintenance of this refrigerator can cause personal injury, property damage, or both.
- Obey the instructions in this manual to install intake and exhaust vents.
- Do not install the refrigerator directly on carpet. Put the refrigerator on a metal or wood panel that extends the full width and depth of the refrigerator.
- Do not allow anything to touch the refrigerator cooling system.
- Propane gas can ignite and cause an explosion that can result in property damage, personal injury, or death. Do not smoke or create sparks. Do not use an open flame to examine the propane gas supply line for leaks. Always use two wrenches to tighten or loosen the propane gas supply line connections.
- Make sure the electrical installation obeys all applicable codes. See “Certification and Code Requirements” section.
- Do not bypass or change the refrigerator’s electrical components or features.
- Do not spray liquids near electrical outlets, connections, or the refrigerator components. Many liquids are electrically conductive and can cause a shock hazard, electrical shorts, and in some cases fire.
- The refrigerator cooling system is under pressure. Do not try to repair or to recharge a defective cooling system.
- The cooling system contains sodium chromate. The breathing of certain chromium compounds can cause cancer. The cooling system contents can cause severe skin and eye burns, and can ignite and burn with an intense flame. Do not bend, drop, weld, move, drill, puncture, or hit the cooling system.



The rear of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, use caution and wear cut resistant gloves.



NORCOLD REFRIGERATOR FOR LEGACY ELITE

Certification and Code Requirements

This refrigerator is certified by CSA International as meeting the latest edition of ANSI Z21.19 / CSA 1.4 standards for installation in mobile homes or recreational vehicles.

The refrigerator must be installed in accordance with this "Installation Manual" in order for the Norcold limited warranty to be in effect. In addition, the installation must conform to the following, as applicable:



Art01290



In the United States and Canada:

- Local codes, or in the absence of local codes, the National Fuel Gas Code, ANSI Z223.1/NFPA 54, the Natural Gas and Propane installation Code, CSA B149.1, ANSI A119.2 Recreational Vehicles Code, and CSA Z240 RV Series, Recreational Vehicles.
- A manufactured home (mobile home) installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 [formerly the Federal Standard for Mobile Home Construction and Safety, Title 24 (part 280), and the current CSA Z240.4, Gas-equipped Recreational Vehicles and Mobile Housing.
- If an external power source is utilized, the appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, the National Electrical code, and ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2. Parts 1 and 2.

All propane gas supply piping and fittings must obey local, state, and national codes about type and size. These components must also obey the current NFPA 1192 section 2-4, and in Canada with the current CAN 1-6.10 Standard.

Ventilation Requirements



The completed installation must:

- **Make sure there is sufficient intake of fresh air for combustion.**
- **Make sure the living space is completely isolated from the combustion system of the refrigerator.**
- **Make sure there is complete and unrestricted ventilation of the flue exhaust which, in gas mode, can produce carbon monoxide. The breathing of carbon monoxide fumes can cause dizziness, nausea, or in extreme cases, death.**
- **Make sure the refrigerator is completely isolated from its heat generating components through the correct use of baffles and panel construction.**

Certified installation needs one lower intake vent and one upper exhaust vent. Install the vents exactly as written in this manual. Any other installation method voids both the certification and the factory warranty of the refrigerator.

The bottom of the opening for the lower intake vent, which is also the service access door, must be even with or immediately below the floor level. This allows any leaking propane gas to escape to the outside and not to collect at floor level.

CSA International certification allows the refrigerator to have zero (0) inch minimum clearance at the sides, rear, top, and bottom. While there are no maximum clearances specified for certification, the following maximum clearances are necessary for correct refrigerator performance:

Bottom	0 inch min.	0 inch max.
Each Side	0 inch min	1/2 inch max.
Top	0 inch min.	1/4 inch max.
Rear	0 inch min.	1 inch max.



These clearances plus the lower and upper vents cause the natural air draft that is necessary for good refrigeration. Cooler air comes in through the lower vent, goes up around the refrigerator coils where it removes the excess heat from the refrigerator components, and goes out through the upper vent. If this air flow is blocked or decreased, the refrigerator will not cool correctly.

Each NORCOLD model is certified by CSA International for correct ventilation. Install only the certified vents that are listed in this manual.

Key Refrigerator Dimensions

	Height* (in.)	Width (in.)	Depth* (in.)	Total Volume (cu. ft.)	Freezer Volume (cu. ft.)	Net Weight (lb.)
N3104Axx	32 5/16	20 11/16	23 3/8	3.7	0.39	61
N3150Axx	49 1/16	20 11/16	22 7/8	5.3	0.88	85
N3141Axx	59 1/16	16 15/32	22 3/32	5.0	0.52	84

* Height dimension includes feet. Depth dimension includes the door.

Assemble the Enclosure for the Refrigerator

1. Use the table below, and associated figures, to determine the enclosure size.

Model	Height (in.)	Width (in.)	Depth (in.)	Door Depth "FC" (in.)
N3104Axx	32 1/2	20 13/16 min. to 20 15/16 max.	20 3/8 min.	3 1/16
N3150Axx	49 3/16	20 13/16 min. to 20 15/16 max.	19 7/8 min.	3 1/16
N3141Axx	59 3/16	16 5/8 min. to 16 3/4 max.	21 1/16 min	

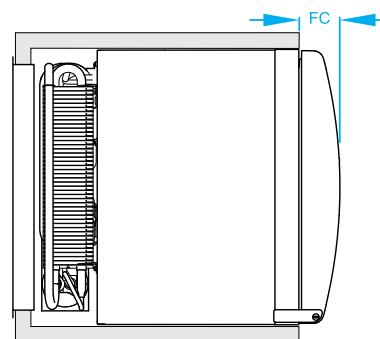
2. Make sure the floor is solid and level.

- The floor must be metal or a wood panel and extend the full width and depth of the enclosure.
- The floor must be able to support the weight of the refrigerator and its contents.
- The Minimum distance between the bottom of the enclosure and the floor is 12mm. (N3141Only)

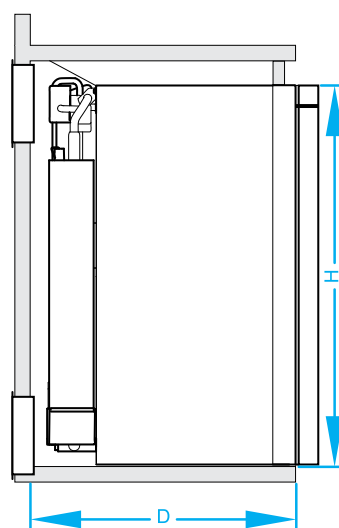
3. Make sure there are no adjacent heat sources such as a furnace vent, a hot water heater vent, etc.

4. If there is more than 1/2 inch between either side of the refrigerator and the inside of the enclosure:

- Fill the space with fiberglass insulation or add a baffle to eliminate the excess clearance.
 - Make sure that the batt-type insulation extends from the enclosure face, to the combustion seal at the rear of the refrigerator cabinet.
 - Securely attach the batt-type insulation to the enclosure so that it remains in this position during refrigerator installation, if it becomes wet, and in windy conditions.



Art02343



Art02344



Install the Lower and Upper Vents

1. Using the following chart, decide which vents and rough opening (RO) sizes to use:

Certified Vent	P/N	RO Height	RO Width	Overall Vent Size
Upper Roof Exhaust Cap	622293	N/A	N/A	10½ in. x 33 in.
Upper Roof Exhaust Vent	616319	24 in.	5 1/4 in.	7 7/16 in. x 26 7/32 in.
Large Vent (3 Louver)	621156xx	13 ¾ in.	21 ½ in.	16 15/32 in. x 24 7/32 in.
Large Vent (10 Louver)	690136xx	9 13/16 in.	19 5/16 in.	11 1/16 in. x 21 in.
Small Vent	633588xx	6 5/32 in.	17¾ in.	7 11/32 in. X 19 1/32 in.
Universal Upper and Lower Vent	620505xx	6 3/16 in.	17 13/16 in.	8 5/32 in. X 19 5/8 in.
N3141 ONLY	691100xx (690577 & 690680)	9 in.	15 3/4 in.	10 1/8 in X 17inches

Install the vents exactly as described. Any other method will invalidate the warranty for the refrigerator.

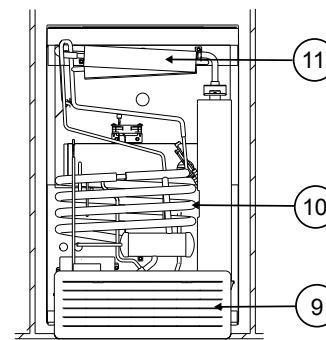
NOTICE

2. Install the lower intake vent (See Art02337, Art02338, and Art02339):

The lower intake vent is also the service access opening for the components on the rear of the refrigerator.

WARNING

Make sure the bottom of the opening of the lower intake vent is even with or immediately below the floor level. This allows any leaking propane gas to escape to the outside and not to collect at floor level.



Art02339

- Make sure the bottom of the opening of the lower intake vent [9] is even with or immediately below the floor level.
- Align the lower intake vent vertically below the coils [10] and the condenser [11] of the refrigerator.

3. Install the upper exhaust vent:

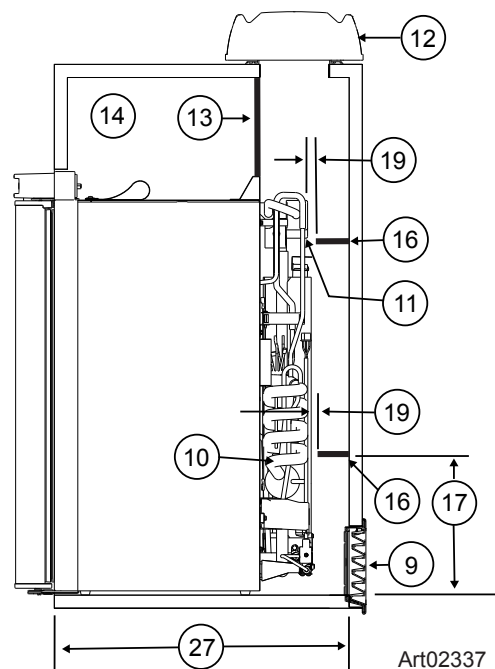
CAUTION

Make sure that no sawdust, insulation, or other construction debris is on the refrigerator or in the enclosure. Debris can cause a combustion hazard and prevent the refrigerator from operating correctly.

NOTICE

Tighten the screws of the upper roof exhaust cap to 10 inch-pounds max. Also make sure that the air flow around the upper roof exhaust cap is not blocked or decreased by other roof mounted features such as a luggage carrier, an air conditioner, a solar panel, etc.

- If the design of the vehicle allows, install the roof exhaust vent [12] directly above the condenser [11] of the refrigerator (See Art02337):
 - Install a baffle [13] to prevent stagnant hot air in the area [14] above the refrigerator.



Art02337



- Make sure the baffle is the full width of the inside of the enclosure.



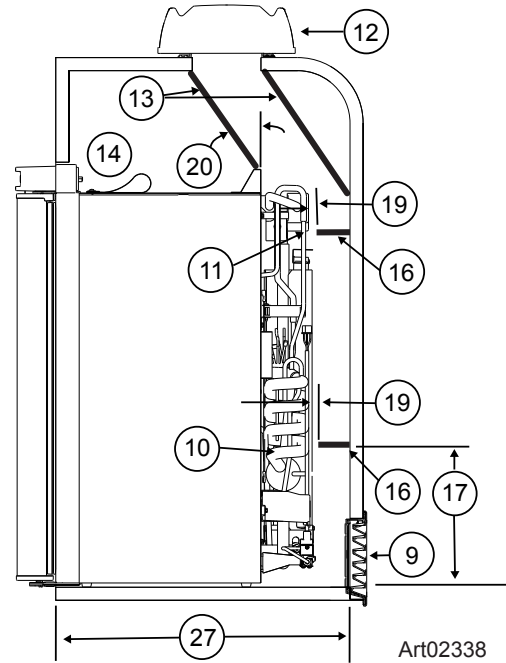
The front baffle [13] completes the combustion seal at the top of the refrigerator. Make sure that the baffle is sealed around all edges (against the top edge of the refrigerator, against the enclosure side walls, and against enclosure ceiling in front of the vent). See also section entitled "Combustion Seal".

- If the design of the vehicle does not allow you to install the roof exhaust vent directly above the condenser [11] of the refrigerator (See Art02338):
 - Align the roof exhaust vent [12] above the condenser [11] of the refrigerator and move it inboard as necessary.
 - Install two baffles [13] to prevent stagnant hot air in the area [14] above the refrigerator.
 - Make sure the baffles are the full width of the inside of the enclosure.
 - Make sure that the baffles are no more than 45° from vertical [20].
 - Put one baffle between the top rear edge of the refrigerator and the inside edge of the upper exhaust vent opening.

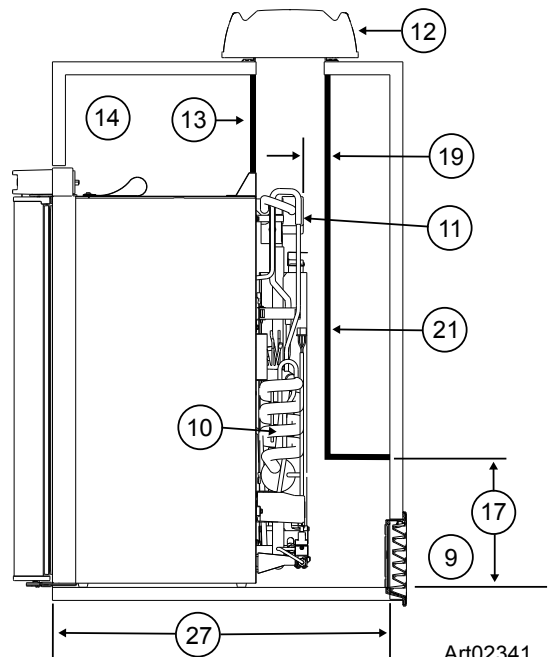


The front baffle [13] completes the combustion seal at the top of the refrigerator. Make sure that the baffle is sealed around all edges (against the top edge of the refrigerator, against the enclosure side walls, and against enclosure ceiling in front of the vent). See also section entitled "Combustion Seal".

- Put the other baffle between the outside edge of the upper exhaust vent opening and the side wall of the vehicle.
- If the depth of the enclosure is 20 3/8 inches or more and is less than 21 3/8 inches [27], no baffles are necessary at the rear of the enclosure.



Art02338



Art02341



NORCOLD REFRIGERATOR FOR LEGACY ELITE

- If the depth of the enclosure is 21 3/8 inches or more and is less than 22 3/8 inches [27], add two baffles [16] to the rear of the enclosure (See Art02337 and Art02338).

- For model N3104, put one baffle 10 inches above the bottom of the enclosure [17], or at the top of the lower intake vent opening, whichever is higher.

- For model N3150, put one baffle 12 inches above the bottom of the enclosure [17], or at the top of the lower intake vent opening, whichever is higher.

- Put the other baffle at the lowest edge of the condenser [11] of the refrigerator.

- Make sure that the baffles are 1 inch or less [19] from the coils [10] and condenser [11] of the refrigerator.

- Make sure that the baffles are the full width of the inside of the enclosure.

- If the depth of the enclosure is more than 22 3/8 inches [27], install a wood or an aluminum or galvanized sheet solid box baffle [21] in the rear of the enclosure (See Art02341 and Art02342).

- Make sure that the horizontal bottom of the solid box baffle is even with or above the top edge of the lower exhaust vent [9].

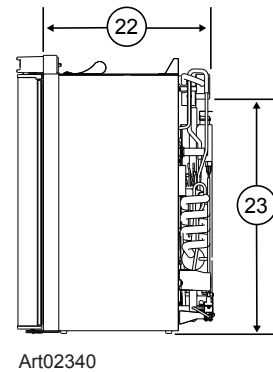
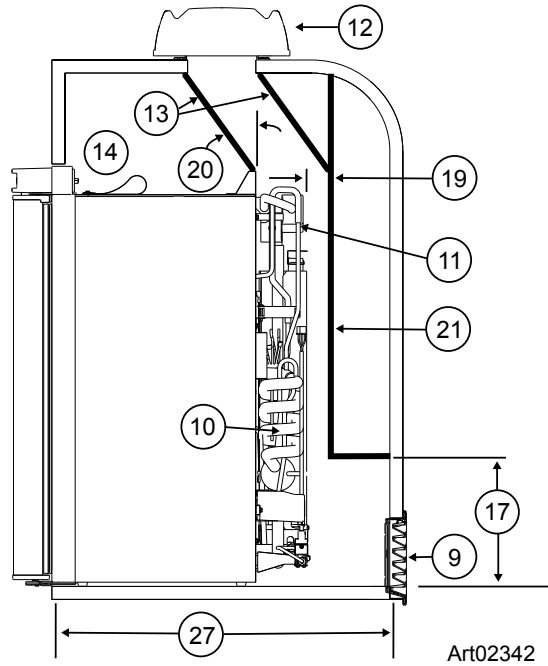
- Make sure that distance from the enclosure floor to the vertical bottom edge of the solid box baffle [17] is 10 in. for N3104 models and 12 in. for N3150 models.

- Make sure that the back of the solid box baffle is perpendicular to the bottom of the enclosure.

- Make sure that the back of the solid box baffle is either against the top of the enclosure or against the angled baffle [13] (depending on the vehicle design).

- Make sure that the solid box baffle is one inch or less [19] from the coils [10] and condenser [11] of the refrigerator.

- Make sure that the solid box baffle is the full width of the inside of the enclosure.





- If the design of the vehicle does not allow you to install a roof exhaust vent, install an upper side-wall exhaust vent.

NOTICE

The distance from the front of the breaker to the rear of the condenser [22] (See Art02340) is 19 11/32 in. for N3104 and 19 1/16 for N3150. For the N3141 it is 19 5/8inches.

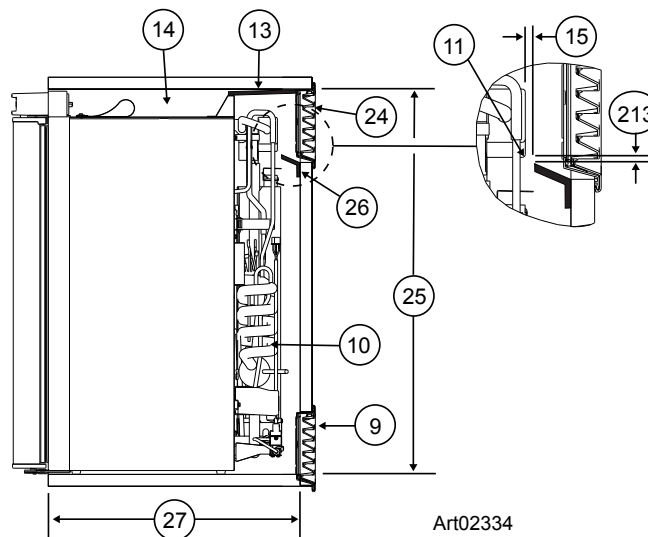
NOTICE

The distance from the bottom of the refrigerator (including feet) to the bottom of the condenser [23] (See Art02340) is 27 1/4 in. for N3104 and 42 9/16 for N3150. For the N3141 it is 53 1/4 inches.

CAUTION

Only use an upper side-wall exhaust vent on refrigerator models that are equipped with a fan. If you use an upper side wall exhaust vent on a refrigerator model that is not equipped with a fan, the refrigerator cooling performance will be poor.

- Make sure the refrigerator model is equipped with a fan.
- Install the upper side-wall exhaust vent [24] (See Art02334 and Art02335).
- Make sure the distance [25] from the bottom of the enclosure to the top of the rough opening for the upper exhaust vent is at least 32 1/2 in. for N3104 and 49 3/16 for N3150.
- Make sure the distance [25] from the bottom of the enclosure to the top of the rough opening for the upper exhaust vent is at least 64 in. for N3141

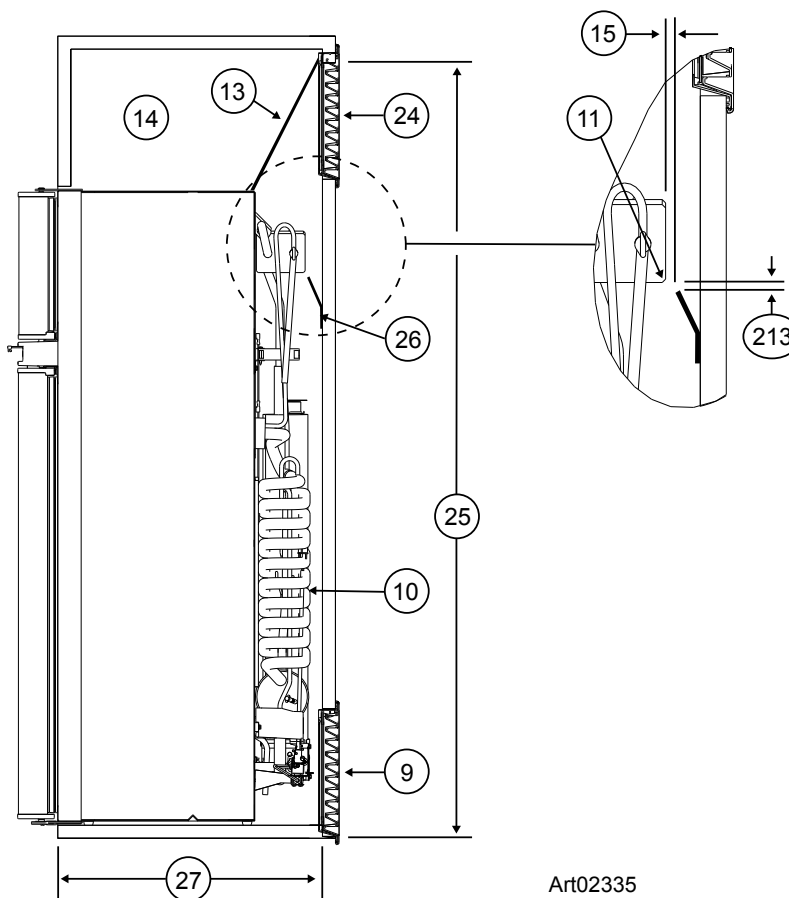


Art02334

- Align the upper exhaust vent [24] horizontally above the lower intake vent [9] of the refrigerator.
- To prevent stagnant hot air in the area above the refrigerator [14], install an aluminum or galvanized steel sheet baffle [13] between the top of the refrigerator and the top of the upper exhaust vent.
- Make sure the baffle is the full width of the inside of the enclosure.

The top baffle [13] completes the combustion seal at the top of the refrigerator. Make sure that the baffle is sealed around all edges (against the top edge of the refrigerator, against the enclosure side walls, and against vehicle wall or enclosure ceiling above the vent). See also section entitled "Combustion Seal".

WARNING



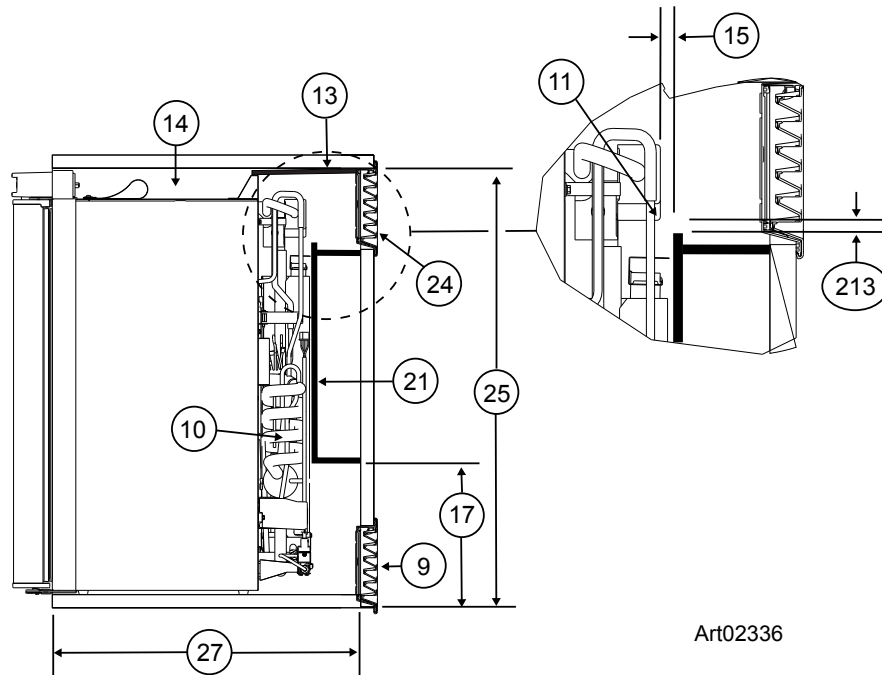
Art02335



NORCOLD REFRIGERATOR FOR LEGACY ELITE

- When using an upper side-wall exhaust vent:
 - If the depth of the enclosure is 20 3/8 inches or more and is less than 22 3/8 inches [27], install a bent aluminum or galvanized steel sheet baffle [26] to the rear of the enclosure (See Art02334 and Art02335).
 - If the depth of the enclosure (for N3141) is 21 1/16 inches or more and is less than 23 1/16 inches [27], install a bent aluminum or galvanized steel sheet baffle [26] to the rear of the enclosure (See Art02334 and Art02335).
 - Make sure that the bend of the baffle is the full width of the inside of the enclosure.
 - Make sure that the bend of the baffle is even with or below the bottom edge of the upper intake vent door frame.
 - Make sure that the top edge of the baffle is between 1/4 inch [213] below the condenser and 1 1/2 inches above the bottom of the condenser and that there is 1/4 inch or less clearance [15] between the rear of the condenser and the baffle.
 - For the best cooling performance, the baffle should be 1/4 inch below the bottom of the condenser.

- If the depth of the enclosure is more than 22 3/8 inches [27], install a wood or an aluminum or galvanized steel sheet solid box baffle [21] between the lower intake vent and the upper exhaust vent (See Art02336).
- If the depth of the enclosure is more than 23 1/16 inches (For N3141) [27], install a wood or an aluminum or galvanized steel sheet solid box baffle [21] between the lower intake vent and the upper exhaust vent (See Art02336).



Art02336

- Make sure that the solid box baffle is the full width of the inside of the enclosure.
- Make sure that the horizontal bottom of the solid box baffle is even with or above the top edge of the lower exhaust vent [9].
- Make sure that distance from the enclosure floor to the vertical bottom edge of the solid box baffle [17] is 10 in. for N3104 and 12 in. for N3150 and 21 in. for N3141.
- Make sure that the back of the solid box baffle is perpendicular to the bottom of the enclosure.
- Make sure that the horizontal top of the solid box baffle is even with or below the bottom edge of the upper exhaust vent [24].
- Make sure that the vertical top edge of the baffle is between 1/4 inch [213] below the condenser and 1 1/2 inches above the bottom of the condenser.
- Make sure that there is 1/4 inch or less clearance [15] between the rear of the condenser and the baffle.

Reverse the Door Swing (optional)

NOTICE

N3000 series refrigerators are designed so that door swing can be reversed in the field, using kits that can be purchased separately. Door swing reversal should be done before installing the refrigerator in the vehicle.

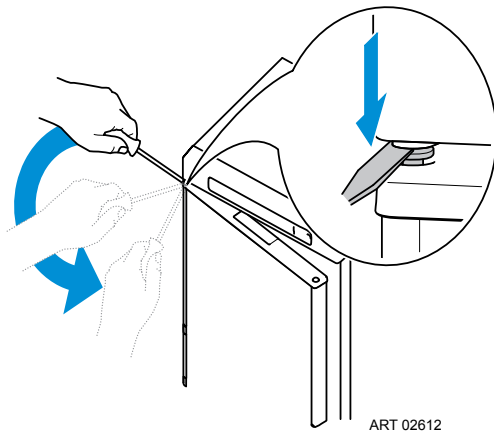


Install Door Panels - N3141

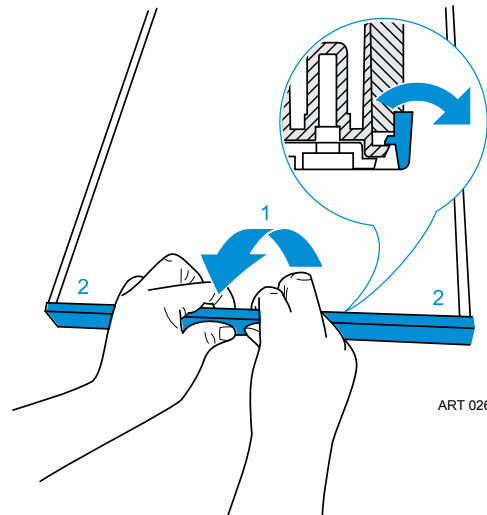
NOTICE

The doors are made to accept decorative panels. The decorative panels must be 0.12 inches or less in thickness. Install the decorative door panels in the refrigerator doors and drawers before installing the refrigerator in the vehicle.

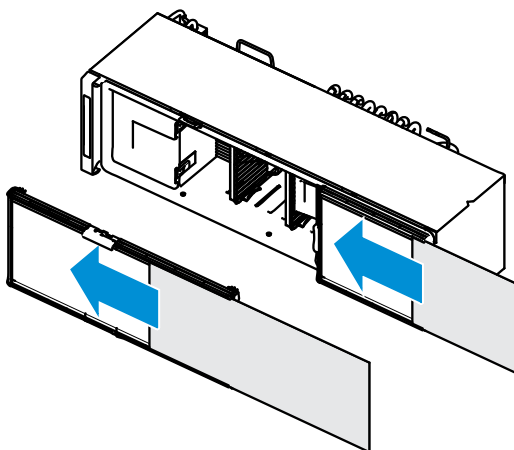
1. To make a door panel for a flat cabinet, the panel needs to be 15.47inches wide x 37.40inches high.
2. To make a door panel for a flat drawer, the panel needs to be 15.47inches wide x 17.83inches high.
3. Install the decorative panels:
 - Remove door from refrigerator. (See Art02612)
 - Remove panel retainer. (See Art02615)
 - Pull and rotate the panel reatainer. Rotate the middle, then the left and right side.
 - Slide panels in the door and drawer.(See Art02613)
 - Click the panel retainers in place. (See Art02614)
 - Place door back onto the refrigerator.



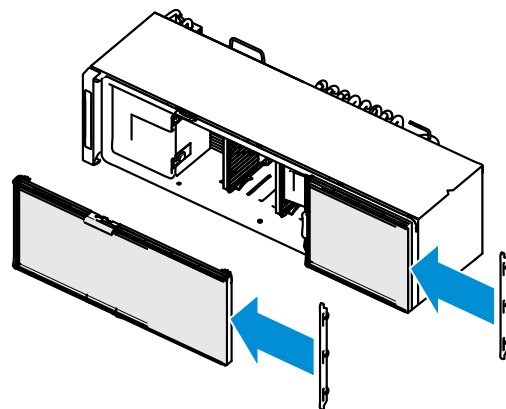
ART 02612



ART 02615



ART 02613



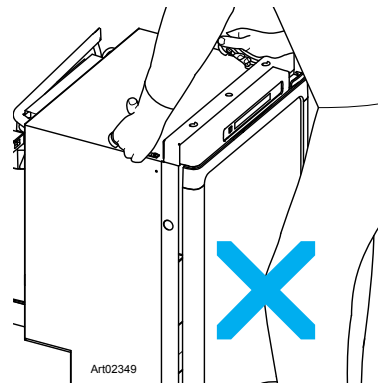
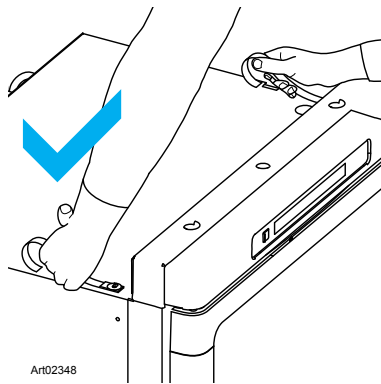
ART 02614



NORCOLD REFRIGERATOR FOR LEGACY ELITE

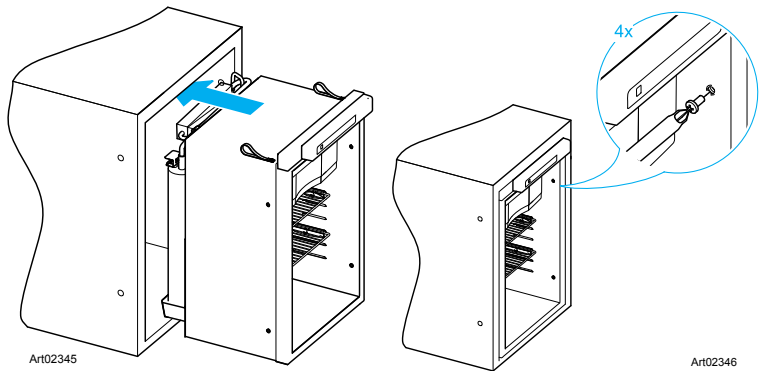
Handling

Only carry the refrigerator at the strap handles on top (1), if equipped. Do not use your knee to lift the refrigerator (2).



Install the Refrigerator

- Push the refrigerator completely into the enclosure.
- Use screws to fix the refrigerator, and the white caps for finishing.
 - For the N3104, 4 screws and 4 white caps are supplied.
 - For the N3150, 6 screws and 6 white caps are supplied.
 - For the N3141, 6 screws and 6 white caps are supplied.

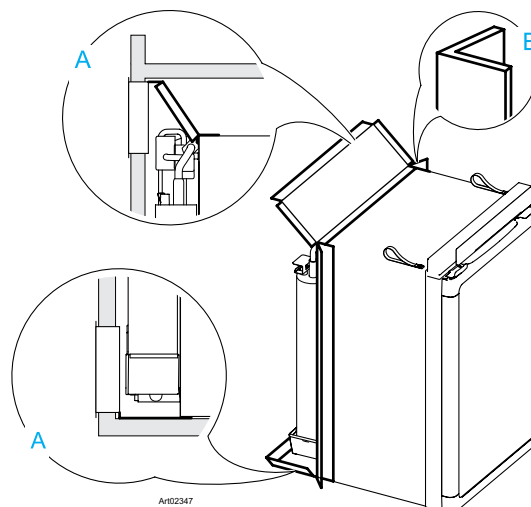


Combustion Seal

Position sealing as shown in the figure.

Fix the strips to the sides of the refrigerator (B) in a vertical direction at the rear of the refrigerator.

Fix the upper and lower flap of the combustion sealing (A) as the drawing shows.





NOTICE

Upper flap (A) may have already been installed as a ventilation baffle. See also section entitled "Install the Lower and Upper Vents", Step 3.

The sealing area must be separated air-tight from the living area.



If the combustion seals are not being used or fail to seal properly in the unit, use a different kind of sealing to keep hazardous combustion gases out of the living area of the vehicle. If the seal is not complete, exhaust fumes can be present in the living area of the vehicle. The breathing of exhaust fumes can cause dizziness, nausea, or in extreme cases, death.

Connect the Electrical Components

AC Operation, 120 volts AC voltage (132 volts max. - 108 volts min.)

DC Operation, 12 volts DC control voltage (15.4 volts max. - 10.5 volts min.)

This refrigerator operates on these electrical sources. Operation out of these limits may damage the refrigerator's electrical circuit parts and will void the warranty.



The rear of the refrigerator cooling system has hot surfaces and sharp surfaces that can damage electrical wiring. Make sure that there is a good clearance between all electrical wiring and the cooling system of the refrigerator. Position any electrical wiring within the refrigerator enclosure opposite the burner side of the refrigerator. Do not put any electrical wiring through the roof exhaust vent. Failure to correctly position electrical wiring can result in electrical shock or fire.

Connect the 120 volts AC supply



Connect the AC power cord(s) only to a grounded three-prong receptacle. Do not remove the round ground prong from any of the AC power cords. Do not use a two prong adapter or an extension cord with any of the AC power cords. Operation of the refrigerator without correct ground can cause dangerous electrical shock or death if you are touching the metal parts of the refrigerator.

Plug the AC power cord(s) into a grounded three-prong receptacle:

- Make sure the receptacle is positioned within easy reach of the lower intake vent.
- Make sure the power cord(s) does not touch the burner cover, the flue pipe, or any hot component that could damage the insulation of the power cord.

Connect the 12 volts DC supply

As the distance from the vehicle battery to the refrigerator increases, the correct AWG wire size and fuse size also increases. If the wire size is too small for the distance, a voltage drop occurs. The voltage drop decreases the output of the system heater and causes poor cooling performance.



If you use an incorrect wire size and/or fuse size, electrical fire can result.

1. Determine the min. wire size and the max. fuse size to use:

- Measure the distance from the vehicle battery to the refrigerator.
 - If the distance is 0 - 20 feet, use a minimum of 10 AWG wire and a maximum 30 Amp fuse.
 - If the distance is over 20 feet, use a minimum of 8 AWG wire and a maximum 40 Amp fuse.
 - If the wire size is larger than the min. size, use the correct fuse per RVIAA119.2 standard or local codes.



NORCOLD REFRIGERATOR FOR LEGACY ELITE

2. Install a fuse in DC power supply wires between the battery and the refrigerator:

- Put fuse as close to the battery as possible.

3. Connect the DC power supply wires:

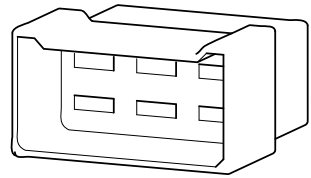
These models have 2 connection points to prevent the battery from being discharged by the refrigerator when the engine is not running.

High current supply red cable (+) and white cable (-) for heating element. Only turned on if signal on D+

Low current supply purple (+) and black (-) for electronics.

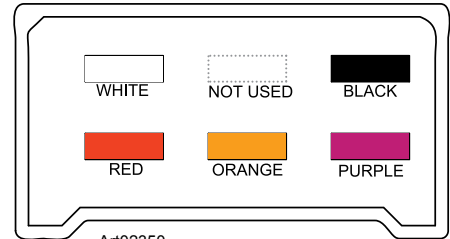
D+ signal orange, + when engine runs

Use Stocko / Tyco / Amp 6-pole housing, or equivalent, with Lear connectors, or equivalent, wired as shown.



Art02370

TYCO / AMP 180906



Art02350

TYCO / AMP 280314

NOTICE

Do not use the chassis of the refrigerator or the vehicle frame as one of the conductors. Attach the DC power supply wires only to the battery and the DC power cord of the refrigerator.

Connect the Propane Gas Components

This refrigerator operates on propane gas at a pressure of 11 inches Water Column Propane.

The controls operate on 12 volts DC (10.5 volts min. - 15.4 volts max.). Operation out of these limits can damage the refrigerator electrical circuit parts and will void the warranty.

Connect the propane gas supply system:



Be very careful when working on or near the propane gas system.

- Do not smoke, or use an open flame near the propane gas system.
- Do not use an open flame to examine for leaks.
- Do not connect the refrigerator to the propane gas tank without a pressure regulator between them.
- To avoid a propane gas leak, always use two wrenches to tighten or loosen the propane gas supply line connections.
- Leaking propane gas leak can ignite or explode and result in dangerous personal injury or death.

Connect the gas supply line to the refrigerator:

- Make sure that all tubing and fittings obey all local, state, and national codes about size and type.
- Make sure that all flexible metal connectors obey the current CAN1-6.10 Standard.



- Make sure that the materials used for the gas supply line obey both the current ANSI A 119.2 (NFPA 1192) and CSA Z240 Standards on Recreational Vehicles. Norcold recommends the use of 3/8 inch copper tubing as the gas supply line and requires a 3/8 inch SAE (UNF 5/8-18) male flare fitting as the connection to the refrigerator.
- Put the propane gas supply line up through the floor of the enclosure.
- Make sure the hole through the floor is large enough allow clearance for the gas supply line.
- Put a weather resistant seal (grommet, sealant, etc.) around the gas supply line where it goes through the floor to prevent vibration and abrasion.
- To prevent vibration and abrasion, make sure that the gas supply line is not against anything in the enclosure.
- Attach the gas supply line to the bulkhead fitting of the refrigerator.

Examine the gas supply system for leaks:



Do not allow the leak detecting solution to touch the electrical components. Many liquids are electrically conductive and can cause electrical shorts and in some cases, fire.

Use a leak detecting solution to examine the gas supply line and all propane gas connections for leaks. If you use compressed air for the test:

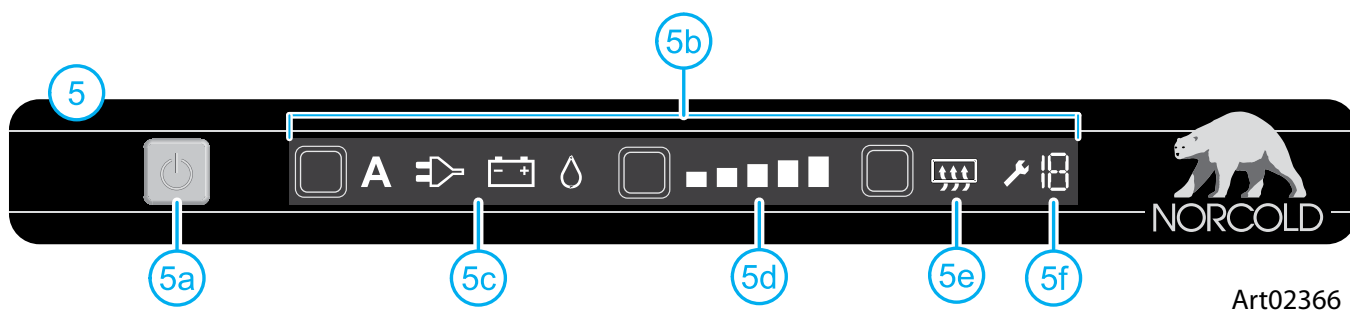
- The pressure of the compressed air at the manual shut off valve of the refrigerator must not be more than 1/2 psig (14 inches Water Column).
- If the pressure of the compressed air is more than 1/2 psig (14 inches Water Column), remove the gas supply line from the bulkhead fitting of the refrigerator before the test.
- If the pressure of the compressed air is equal to or less than 1/2 psig (14 inches Water Column), close the manual shut off valve of the refrigerator before the test.

Ignition and Start Up

Before ignition or start up of the refrigerator:

- Make sure the air flow in the lower intake vent, through the refrigerator coils and condenser, and out the upper exhaust vent is not blocked or decreased.
- Make sure there are no combustible materials in or around the refrigerator.

Control Panel with Touchscreen





Control panel with LCD touchscreen.....	5
On/off switch.....	5a
Touchscreen.....	5b
Mode symbols.....	5c
Cooling level indicators.....	5d
Symbol 'anti-condensation' (only for model N3150).....	5e
Error code.....	5f

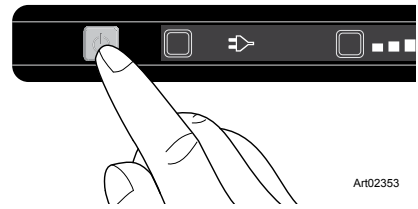
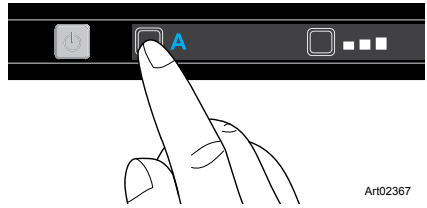
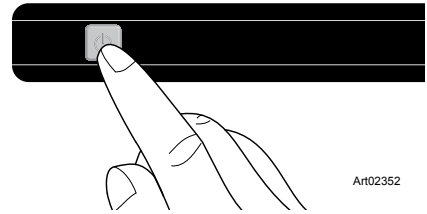


Removing Air From the Propane Gas Supply Lines

For safety reasons, the burner is made to ignite on propane gas within a specified amount of time. When starting the refrigerator for the first time, after storage, or after replacing propane gas tank, the propane gas supply lines can have air in them. Due to the air in the gas supply lines, the burner may not ignite on propane gas within the specified amount of time.

To remove the air from the propane gas supply lines:

- Make sure that all of the gas valves are open.
- To turn the refrigerator on, push the on/off switch and hold it for 1 second, as illustrated. A light in the on/off switch will turn green.
- Push the source button several times, as illustrated. Push until the flame  appears on the display. This means that the refrigerator is operating on propane gas.
- The refrigerator will start a 30 second trial for ignition. During the 30 second trial for ignition, the refrigerator controls open the gas safety valve and the igniter sparks. After 30 seconds, the refrigerator controls close the gas safety valve and the igniter stops sparking.
- If the air in the propane gas supply lines prevents the burner from ignition on propane gas, the fault code  **3** will appear in the center display.
- Push the on/off switch, as illustrated, and hold it for 2 seconds to turn the refrigerator off. All lights will go out.
- To start another trial for ignition, push the on/off switch and hold it for 1 second to turn the refrigerator on. A light in the on/off switch will turn green.
- The refrigerator will start another 30 second trial for ignition. During the 30 second trial for ignition, the refrigerator controls open the gas safety valve and the igniter sparks. After 30 seconds, the refrigerator controls close the gas safety valve and the igniter stops sparking.
- When the flame appears on the display and no fault code remains, this means that the refrigerator is operating on propane gas.
- At this time, all of the air is removed from the propane gas supply lines and you may select AUTO mode of operation if you wish.
- Depending on how much air may be in the propane gas supply lines, you may need to repeat the 30 second trial for ignition two or three times.
- If the burner does not ignite on propane gas after three attempts, refer to the "Troubleshooting" section of this manual; consult your local dealer or an authorized Norcold Service Center, if necessary.





Set the Controls to Automatic Mode Operation

Push the source button several times, as illustrated. Push until the desired source (A, 'auto') is selected and displayed. **A**

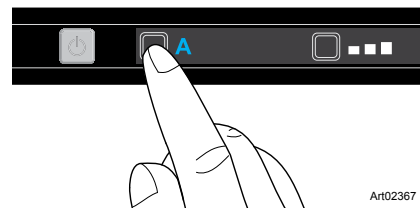
If the engine is running, DC mode will be selected and displayed.

If the engine is not running, and 120 volts AC is available to the refrigerator, AC mode will be selected and displayed.

If the engine is not running, and 120 volts AC is NOT available to the refrigerator, gas mode will be selected and displayed.

If the gas does not ignite after several attempts, refer to the "Troubleshooting" section of this manual.

If the 'auto' function on the refrigerator is selected, but no source is available, a light in the on/off switch blinks red.



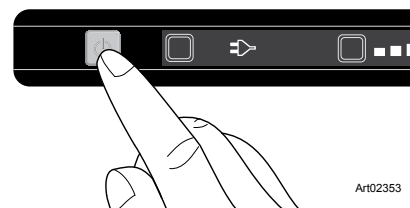
Art02367

Turn Refrigerator Off

Before defrosting the refrigerator or storing your vehicle, turn the refrigerator off. Push the on/off switch, as illustrated, and hold it for 2 seconds to turn the refrigerator off. All lights will go out.

NOTICE

If storing the vehicle for an extended period of time, make sure to disconnect the fan at the rear of the refrigerator, as explained in section entitled "Refrigerator Storage".



Art02353

Remove the Refrigerator

Your dealer or Norcold authorized service center must do this procedure.



The rear of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, be careful and wear cut resistant gloves.

1. Close the valve at the propane gas tank(s).



To avoid possible propane gas leaks, always use two wrenches to loosen and tighten the gas supply line connections.

2. Open the lower intake vent, and remove the refrigerator AC power cord from the receptacle.

3. Remove the DC wiring from the refrigerator:

- Remove the DC fuse or remove the DC wiring from the battery or the converter.
- Remove the refrigerator DC power cord from the vehicle wiring plug.

4. Remove the gas supply line from the bulkhead fitting of the refrigerator.

5. Remove the white plastic plugs from the sides of the refrigerator interior.

6. Remove the screws from the sides of the refrigerator interior.

7. Remove the refrigerator from the opening.



Owner's Manual

For N41X models - 4.5 cu. ft., 2-way or 3-way, refrigerators.
For N51X models - 5.5 cu. ft., 2-way or 3-way, refrigerators.

The model numbers of 3-way refrigerators include “.3”. The model numbers of 2-way models do not.

The letter “X” in the model number above, stands for a letter or a numeral which means a refrigerator option.



FIRE OR EXPLOSION HAZARD

If you smell gas:

1. Open Windows
2. Do not attempt to light appliance.
3. Do not touch electrical switches.
4. Extinguish any open flame
5. Shut off fuel supply.
6. Evacuate immediately and call emergency services.

Failure to follow these instructions could result in fire or explosion, which could cause property damage, personal injury, or death.



Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, contact a qualified installer, service agency, or the gas supplier.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquid in the vicinity of this or any other appliance.

English



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For defined warranty terms, please see the one page warranty statement included in the product information packet.

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Safety Awareness

Read this manual carefully and understand the contents before you use the refrigerator.

Be aware of possible safety hazards when you see the safety alert symbol on the refrigerator and in this manual. A signal word follows the safety alert symbol and identifies the danger of the hazard. Carefully read the descriptions of these signal words to fully know their meanings. They are for your safety.



WARNING This signal word means a hazard, which if ignored, can cause dangerous personal injury, death, or much property damage.



CAUTION This signal word means a hazard, which if ignored, can cause small personal injury or much property damage.



NORCOLD REFRIGERATOR FOR LEGACY ELITE II

Safety Instructions



- The storage of flammable materials behind or around the refrigerator creates a fire hazard. Do not use the area behind the refrigerator to store anything, especially flammable materials (gasoline, cleaning supplies, etc.)
- Do not remove the round ground prong from the refrigerator AC power cord. Do not use a two prong adapter or extension cord on the AC power cord.
- A circuit overload can result in an electrical fire if the wires and/or fuses are not the correct size. Either use the wire and fuse sizes as written in the "Installation Manual" or refer to your local codes or the applicable RVIA Standards for the correct wire and fuse sizes.
- Incorrect installation, adjustment, change to, or maintenance of this refrigerator can cause personal injury, property damage, or both. Have service and maintenance work done by your dealer or by an Norcold authorized service center.
- Disconnect both the AC and DC power sources before doing any maintenance work on the refrigerator. All service work on this refrigerator must be done by a qualified service technician.
- Do not bypass or change the refrigerator's electrical components or features.
- When you discard an appliance, remove all doors to prevent accidental entrapment and suffocation.
- Do not spray liquids near electrical outlets, connections, or the refrigerator components. Many liquids are electrically conductive and can cause a shock hazard, electrical shorts, and in some cases fire.
- The refrigerator cooling system is under pressure. Do not try to repair or to recharge a defective cooling system. The cooling system contains sodium chromate. The breathing of certain chromium compounds can cause cancer. The cooling system contents can cause severe skin and eye burns, and can ignite and burn with an intense flame. Do not bend, drop, weld, move, drill, puncture, or hit the cooling system.
- At regular intervals, make sure that the refrigerator flue the burner, the vent areas, and the ventilation air pathway between the vents are completely free from any flammable material or blockage. After a period of storage, it is especially important to check these areas for any flammable material or blockage caused by animals.



- The rear of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, be careful and wear cut resistant gloves.

About Your Refrigerator

Storage Volume:

This refrigerator is made to store fresh and frozen foods and for making ice.

	N41X	N51X
Total capacity	4.50 cubic feet	5.50 cubic feet
Freezer capacity	.81 cubic feet	.81 cubic feet
Food compartment capacity	3.69 cubic feet	4.69 cubic feet

Leveling:



The refrigerator is made to operate within 3° off level side-to-side and 6° off level front-to-back (as looking at the front of the refrigerator). Operating it at more than these limits can cause damage to the cooling system and create a risk of personal injury or property damage. Make sure the vehicle is level before you operate the refrigerator.



Operation during travel:

While the refrigerator should be level when the vehicle is stopped, performance during travel is not usually effected.

Food compartment:

Ignite or start up the refrigerator and let it cool for eight hours before loading with food. If the refrigerator does not start to cool down after about two hours, contact your dealer or an authorized Norcold Service Center.

For the best cooling performance:

- Let air move freely inside the entire food compartment.
- Do not cover the shelves with plastic, paper, etc.

To decrease the amount of ice that collects on the cooling fins:

- Cover all liquids and moist foods.
- Let all hot foods cool before putting them in the refrigerator.
- Do not open the door any longer than necessary.

Flip-up shelf:

The flip-up shelf supplies a space to store tall bottles. To use the flip-up shelf, lift the center of the shelf and fold it up against the inside wall of the refrigerator.

Door Bins:

You may put the door bins [52] of the fresh food compartment in a location that best meets your need (See Art01114). To remove the bins, lift them over the locator and pull them forward. To install the bins, push them onto the locator.

NOTICE

Do not wash the door bins in a dishwasher. The door bins are not dishwasher safe.

Freezer compartment:

The freezer compartment is made to keep pre-frozen food frozen and not to quick freeze food. Keep pre-frozen foods in the freezer compartment.

NOTICE

Do not put other items on the ice tray while the water is freezing. The water freezes more rapidly if the thermostat is at the coldest temperature setting.

Door latch for travel and storage:

During travel, the door latch prevents the door from opening. There are no chains, slides, or any devices that you must engage.

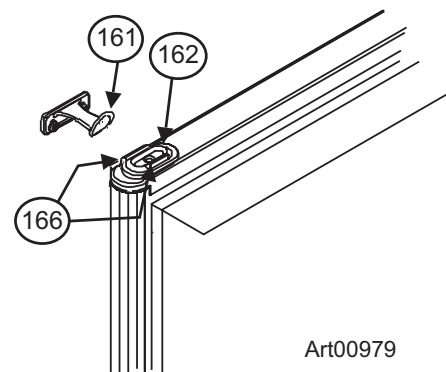
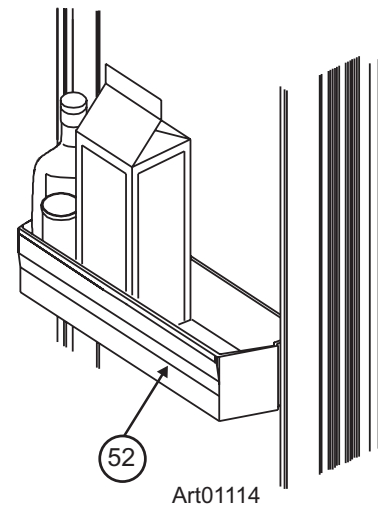
During storage, the door latch prevents the door from completely closing. Use it to prevent odors when the refrigerator is shut down for a long period of time.

To use the door latch for storage (See Art00979):

- Open the door just so the door latch [161] is between the ribs [166] of the latch plate [162].

Temperature control system:

Although the refrigerator is not frost-free, it is made to limit frost on the cooling fins. At regular intervals, the temperature control system automatically melts most of the frost from the cooling fins. The water from the cooling fins drains into a collection cup that is attached to the back of the refrigerator. The heat of the cooling system evaporates the water from the collection cup.





Operating the Refrigerator Controls

Control panel:

The refrigerator control panel (see Art01562) is above the refrigerator door. A 12 volt DC power supply is necessary for the control functions of the refrigerator to operate. The refrigerator receives DC power from the 12 volt system of the vehicle; either an auxiliary battery, a converter, or the vehicle engine battery.

The ON / OFF button [30] starts and shuts down the refrigerator:

- To turn on the refrigerator, push and release the ON / OFF button.
- To turn off the refrigerator, push the ON / OFF button for one second and then release.

The TEMP SET button [32] controls the temperature adjustment of the freezer and the fresh food compartment. The temperature adjustment that you select does not change if the mode of operation of the refrigerator changes.

- Push the TEMP SET button and the temperature setting "1-9" appears in the center display [33].
- Push and hold the TEMP SET button and the temperature setting changes.
 - When the desired temperature setting shows, release the TEMP SET button.
 - The temperature setting shows for ten seconds and then the current operation mode of the refrigerator shows.
 - The number "9" is the coldest temperature setting.

The MODE button [31] controls the operation mode of the refrigerator.

- Push and hold the MODE button and a light bar shows in the center display beside each of the four operating modes of the refrigerator, one at a time.
 - There is one automatic mode of operation and two manual modes of operation.

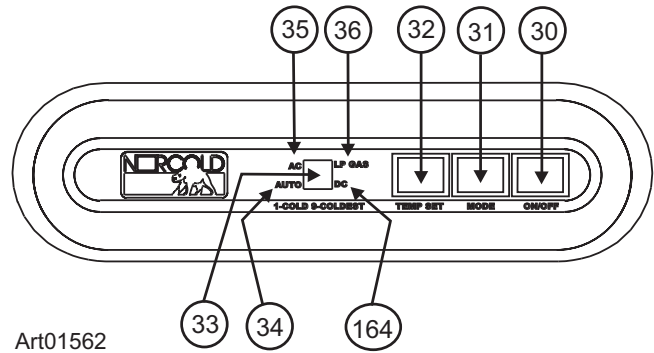
NOTICE On 3-way models only, there are three manual modes of operation.

- When the light bar shows beside the mode of operation that you choose, release the MODE button to operate the refrigerator in that mode.

Automatic mode operation:

When the refrigerator is in AUTO mode, it automatically uses the most efficient energy source that is available for operation. During operation, if a more efficient energy source becomes available, the refrigerator controls change from the current energy source to the more efficient energy source as follows:

- The first choice is AC operation if 120 volts AC is available to the refrigerator.
- The second choice is propane gas operation if 120 volts AC is not available to the refrigerator.
- The third choice is DC operation (3-way models only) if neither 120 volts AC nor propane gas is available to the refrigerator.





Removing air from the propane gas supply lines:

For safety reasons, the burner is made to ignite on propane gas within a specified amount of time. When starting the refrigerator for the first time, after storage, or after replacing propane gas tank, the propane gas supply lines can have air in them. Due to the air in the gas supply lines, the burner may not ignite on propane gas within the specified amount of time.

To remove the air from the propane gas supply lines:

- Make sure that all of the gas valves are open.
- Push the ON / OFF button to turn the refrigerator on.
- Push and hold the MODE button until the light bar beside LP GAS [36] shows.
 - This means that the refrigerator is operating on propane gas.
 - If the air in the propane gas supply lines prevents the burner from ignition on propane gas, the fault code "F" will appear in the center display.
 - Push and hold the ON / OFF button for one second and then release to turn the refrigerator off.
 - Push the On / Off button to turn the refrigerator on.
 - The refrigerator will start a 30 second trial for ignition.
 - During the 30 second trial for ignition, the refrigerator controls open the gas safety valve and the igniter sparks.
 - After 30 seconds, the refrigerator controls closes the gas safety valve and the igniter stops sparking.
- When the light bar beside the LP GAS shows and no fault code remains, this means that the refrigerator is operating on propane gas.
 - At this time, all of the air is removed from the propane gas supply lines and you may select AUTO mode of operation if you wish.
- Depending on how much air may be in the propane gas supply lines, you may need to repeat the 30 second trial for ignition two or three times.
- If the burner does not ignite on propane gas after two or three attempts, stop and consult your local dealer or an authorized Norcold Service Center.

Set the controls to automatic mode operation:

- Push the ON / OFF button to turn the refrigerator on.
- Push and hold the MODE button until the light bar shows beside AUTO [34] and then release.
- If 120 volts AC is available to the refrigerator:
 - The light bar beside AC [35] also shows in the center display.
 - After ten seconds, the light bar beside AC goes off and only the light bar beside AUTO remains.
 - This means that the refrigerator is operating on AC electric.
- If 120 volts AC is not available to the refrigerator:
 - The light bar beside AC also shows in the center display.
 - After a few seconds, the light bar beside AC goes off and the light bar beside LP GAS shows.



NORCOLD REFRIGERATOR FOR LEGACY ELITE II

- After 10 seconds, the light bar beside LP GAS goes off and only the light bar beside AUTO remains.
- This means that the refrigerator is operating on propane gas.
- On 2 way models only, if neither 120 volts AC nor propane gas is available to the refrigerator:
 - The fault codes “F” and then “A” show in the center display.
- On 3-way models only, if neither 120 volts AC nor propane gas is available to the refrigerator:
 - The refrigerator control will automatically change to DC electric operation.

NOTICE

DC electric operation is less efficient than AC electric and propane gas. Use DC electric operation only to maintain the refrigerator temperature while in transit and if the other energy sources are not available. Do not use DC electric to initially decrease the temperature of the refrigerator.

If an energy source is available to the refrigerator, but is not operating correctly:

- A fault code shows in the center display.
- The refrigerator controls try to change to a less efficient energy source.
- If a less efficient energy source is not available:
 - A fault code shows in the center display.
 - Refer to the “Fault Codes” section of this manual.

Set the controls to manual mode operation:

- Push the ON / OFF button to turn the refrigerator on.
- Push and hold the MODE button until the light bar shows beside AC [35] and then release.
 - This means that the refrigerator is operating on AC electric.
- Push and hold the MODE button until the light bar shows beside LP GAS [36] and then release.
 - This means that the refrigerator is operating on propane gas.
- Push and hold the MODE button until the light bar shows beside DC [164] and then release.
 - This means that the refrigerator is operating on AC electric.

If the energy source is interrupted:

- A fault code shows in the center display.
- Refer to the “Fault Codes” section of this manual.

Cooling unit sensing:

The controls have the ability to sense the operation of the cooling unit. If the controls sense that the cooling unit has stopped cooling:

- The heat sources to the cooling unit are turned off and are locked out by the controls.
- A fault code “n” shows in the Center display.



You can reset the controls and remove this fault code one time. To reset the controls, shut off and then start the refrigerator.

- To turn off the refrigerator, push the ON / OFF button for one second and then release.
- To turn on the refrigerator, push and release the ON / OFF button.

If you reset the controls and the fault occurs again before the refrigerator completes a full cooling cycle:

- The heat sources to the cooling unit are turned off and are locked out.
- A fault code "n" shows in the Center display.
- This time you can not reset the fault. Have the refrigerator serviced by your dealer or a Norcold authorized Service Center as soon as possible.

Backup operating system:

This refrigerator has a backup operating system. The backup operating system allows the refrigerator to continue to cool if the temperature sensor of the refrigerator should fail.

If this failure occurs:

- The refrigerator automatically changes to the backup operating system.
 - When you push the TEMP SET button, the temperature setting flashes in the center display for ten seconds.
 - After the temperature setting flashes, the mode of operation appears in the center display.
- The backup operating system can overfreeze or thaw the contents of the freezer and the fresh food compartment.
 - Make sure the temperatures of the freezer and the fresh food compartment are satisfactory.

NOTICE

If you open the door(s) too often, the temperatures inside the freezer and fresh food compartment do not become stable. Allow the refrigerator to operate for about one hour after each adjustment change before you examine the contents. The number "9" is the coldest temperature setting.

- If the temperature is too warm, push and hold the TEMP SET button to raise the temperature setting by one number.
- If the temperature is too cold, push and hold the TEMP SET button to lower the temperature setting by one number.
- Have the refrigerator serviced by your dealer or an Norcold authorized Service Center as soon as possible.

DC Operation Precautions (3-way models only)

This refrigerator is made to operate on DC power while your vehicle is "in transit" and AC power or propane gas sources are not available. Operate the refrigerator on DC power only when the vehicle engine is running.

For the refrigerator to operate correctly on DC power, the battery must be maintained in a fully charged condition.

For the battery to be fully charged at all times during refrigerator operation on DC, the vehicle engine must be running and the battery charging system must be in good operating condition.

Keep in mind the following electrical precautions for DC operation of the refrigerator:

- Good battery condition is necessary for correct DC operation.
- The capacity of the battery charging system must be more than what is necessary for the refrigerator and other DC appliances.
- While the vehicle engine is running, make sure the voltage of the DC power supply leads at the refrigerator is more than 11.5 VDC.



DC Operation Guidelines (3-way models only)

DC operation is intended only to maintain the temperature of the refrigerator and its contents when they are already cool.

The DC operation is not intended for the initial start up and cooling of the refrigerator. Always use either the AC operation or propane gas operation to initially start up and cool the refrigerator. The refrigerator must be cooled and the temperature must be steady before you operate the refrigerator on DC.

Keep in mind the following guidelines for DC operation of the refrigerator:

- Use DC operation of the refrigerator while the vehicle is in transit.
- Do not use DC operation until the refrigerator and its contents are completely cooled.
- Only use DC operation if the vehicle battery and battery charging system are in good operating condition.

Effects of High Altitude on Propane Gas Operation

When you operate the refrigerator on propane gas at altitudes higher than 5500 feet above sea level:

- You may experience reduced cooling performance of the refrigerator.
- You may experience burner outages.

To avoid these possible problems, Norcold recommends that you operate the refrigerator on AC when at altitudes higher than 5500 feet above sea level.

Effects of Freezing Temperatures on Refrigerator Operation

A gas absorption refrigerator is not designed to operate in freezing temperatures. If the refrigerator is not equipped for low temperature operation, and if the cooling system of the refrigerator is exposed to temperatures of 32° F. or lower for an extended period of time, the refrigerator operation may be disrupted. The refrigerator operation will resume when the cooling system of the refrigerator warms sufficiently.

If the refrigerator is equipped for low temperature operation, the refrigerator will operate in temperatures down to 0° F.

Disrupted operation of the refrigerator, due to extended exposure to temperatures of 32° F. or lower, and any costs incurred to warm the cooling system of the refrigerator are not covered by the Norcold limited warranty. Please contact your local RV dealer for information about how to resume refrigerator operation or about how to equip your refrigerator for operation in freezing temperatures.

Do not change the installation or the venting of your refrigerator. Refrigerator failures, which are the result of changes to either the refrigerator installation or to the venting, are not covered by the Norcold limited warranty.

Refrigerator Care Checklist

Your refrigerator will give you years of trouble free service if you do these simple checks every three to six months:

- Keep the food compartment and the freezer clean. See "Cleaning".
- Defrost the refrigerator as necessary. See "Defrosting".
- Make sure the door seals correctly. See "Door Sealing".



- Be aware of any cooling changes that are not because of weather, loading, or gas control changes. If changes occur, contact your dealer or an authorized Norcold Service Center.
- Make sure the gas supply is propane gas only and not butane or a butane mixture.

Defrosting

The cooling fins of the refrigerator operate at below freezing temperature and will naturally form frost from humidity, which is always present in the air. The humidity inside the refrigerator increases:

- with higher outside temperature and humidity.
- with the storage of non-sealed fresh foods or warm foods.
- with the amount of time that the door(s) are open.
- with any air leakage into the refrigerator.

Although the refrigerator is not frost-free, it is made to limit frost on the cooling fins. At regular intervals, the temperature control system automatically melts most of the frost from the cooling fins. The water from the cooling fins drains into a collection cup that is attached to the back of the refrigerator. The heat of the cooling system evaporates the water from the collection cup.

It is normal for frost to collect inside the freezer. Excess frost decreases the cooling performance of the refrigerator. Defrost the refrigerator and freezer as necessary:

- Remove all food from the refrigerator.
- Turn the refrigerator OFF.

NOTICE

Defrosting the refrigerator makes excess water inside the refrigerator.

- Remove the drain hose from the drip cup at the rear of the refrigerator.
- Put the drain hose into a half-gallon or larger container to capture water.
- Put dry towels (etc.) inside the refrigerator and freezer to absorb melted frost.



High temperatures can cause the inside surfaces of the refrigerator to warp or melt. Do not use pans of HOT water, a hair dryer, or any other high temperature devices to defrost the refrigerator. Do not use any hard or sharp objects to remove frost. Damage to the interior of the refrigerator can occur.

- To increase the speed of defrosting, put pans of WARM water in the refrigerator and freezer.
- Remove the wet towels (etc.) and dry the interior.
- Remove the drain hose from the large container and put the drain hose back into the drip cup.
- Remove the large container from the enclosure.
- Start up the refrigerator.
- Allow the refrigerator to cool down.
- Return all food to the refrigerator.



Cleaning

A good time to clean the refrigerator is just after you defrost it.

Clean the inside of the refrigerator as often as necessary to avoid food odors:

- Remove all food from the refrigerator.

NOTICE

Do not use abrasive cleaners, chemicals, or scouring pads because they can damage the interior of the refrigerator.

- Wash the interior with a solution of liquid dish detergent and warm water.
- Rinse with a solution of baking soda and clean water.
- Dry with a clean cloth.
- Put all food in the refrigerator.

Drip tray:

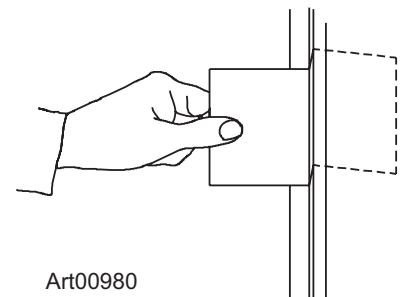
To remove and clean the drip tray:

- Locate the plastic clip that is around the wire shelf in front of the drip tray.
- Remove and save the screw that attaches the plastic clip to the inside of the refrigerator cabinet.
- Pull the shelf forward to remove from the refrigerator
- Make sure that the drip tray is empty of water.
- Pull the drain tube plug out from the inside of the drip tray and out of the drain hose.
- Pull the drip tray forward to remove from the slots in the refrigerator cabinet.
- Clean the drip tray.
- Put the drain tube plug down into the drip tray and push the drip tray back into the original position.
- Push the drain hose back onto the drain tube plug.
- Put the wire shelf and plastic clip back in the original position.
- Attach the plastic clip with the screw.

Door Sealing

If the door does not seal correctly, excess frost will collect inside the refrigerator. Make sure the door seals correctly:

- Close the door on a piece of paper that is about the size and thickness of a dollar bill (See Art00980).
- Gently pull the paper.
 - You should feel a slight drag between the gasket and the cabinet.
 - Do this on all four sides of the door.



Art00980



- If you do not feel a slight drag on the paper, the door is not sealing correctly:
 - Make sure the screws of the hinges are tight.
 - Make sure the door gasket does not touch the door latch:
 - If the door gasket touches the door latch, loosen the screws of the door latch.
 - Raise the door latch just so it does not touch and tighten the screws of the door latch.
 - Make sure the door latch holds the door closed.

Refrigerator Maintenance Checklist

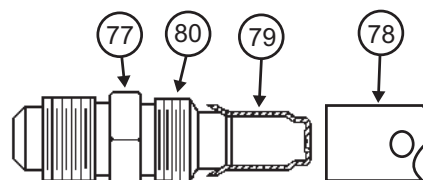
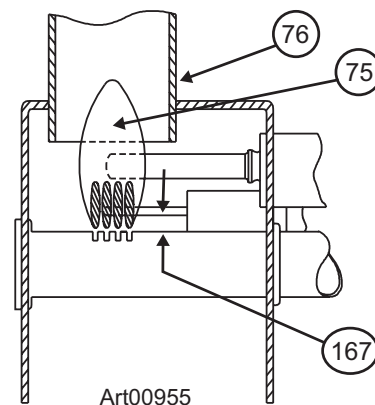
Read and understand the following maintenance sections of this manual.

NOTICE

Norcold is not responsible for installation, adjustment, alteration, service, or maintenance performed by anyone other than a qualified RV dealer or an authorized Norcold Service center.

Have a qualified RV dealer or an authorized Norcold Service Center do these annual safety and maintenance checks:

- Examine the gas supply lines for leaks.
 - Replace or repair if necessary.
- Make sure the propane gas pressure is 11 inches of water column.
 - Adjust if necessary.
- Make sure the combustion seal is complete and intact.
 - Replace or repair it if necessary.
- Make sure the burner and the burner orifice are clean (See Art00956).
 - Clean if necessary.
- Make sure the electrode spark gap [167] is 1/8 - 3/16 inch (See Art00955).
 - Adjust if necessary.
- Make sure the AC voltage is 108 - 132 volts and the DC voltage is 10.5 - 15.4 volts.
- Make sure the thermocouple tip is clean and secure.
- Make sure the area at the rear of the refrigerator is free of any combustible materials, gasoline, and other flammable vapors and liquids.



Art 00956

Refrigerator Storage

Before the refrigerator is stored for an extended (seasonal) period of time:

- Defrost and clean the interior of the refrigerator.
- Close the doors with the storage latch.

If the refrigerator is stored for an extended period of time, before start up:

- Make sure there are no obstructions in the vents, the ventilation air pathway, the burner, the orifice, or the flue area.



Refrigerator Maintenance

Gas flame appearance:

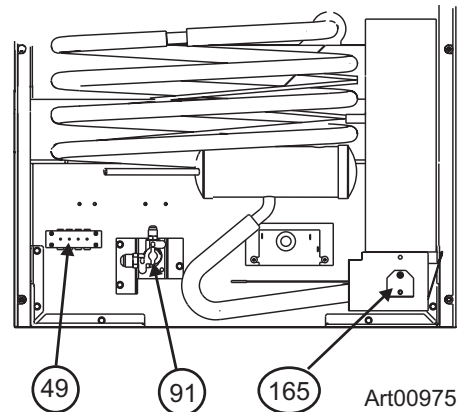
While in propane gas operation, examine the appearance of the gas flame:

- Push and hold temperature setting button until the "9" shows and then release.
- Open the lower intake vent.



The burner box cover can be hot. Wear gloves to avoid burns.

- Open the burner box door [165] and look at the gas flame [75] (See Art00955 and Art00975).
 - The flame should be:
 - a darker blue color on the inside of the flame and a lighter blue color on the outside of the flame.
 - a constant shape without flickering.
 - Contact your dealer or Norcold authorized service center if the flame is:
 - yellow
 - flickering or changing shape.
 - Make sure the flame does not touch the inside of the flue tube [76].
 - If the flame touches the inside of the flue tube, contact your dealer or an authorized Norcold Service Center.
- Close the burner box door.



Remove and clean the burner orifice:



Your dealer or an authorized Norcold Service Center must do this procedure.

To remove and clean the burner orifice:

- Close the valve at the propane gas tank(s).
- Close the manual shut off valve of the refrigerator.
- Shut down the refrigerator.
- Open the lower intake vent.



The burner box cover can be hot. Wear gloves to avoid burns.

- Remove the burner box cover by removing one screw.



To avoid possible propane gas leaks, always use two wrenches to loosen and tighten the gas supply line at the refrigerator's manual shut off valve.

- Remove the flare nut from the orifice assembly [77] (See Art00956).
- Remove the orifice assembly from the burner [78].



Do not try to remove the orifice [79] from the orifice adapter [80] when cleaning. Removal will damage the orifice and seal of the orifice and can cause a propane gas leak. Leaking propane gas can ignite or explode which can result in dangerous personal injury or death. Do not clean the orifice with a pin or other objects.



- Clean the orifice assembly with air pressure and alcohol only.
- Using a wrench, assemble the orifice assembly to the burner.
 - Assemble the flare nut to the orifice assembly.
 - Tighten the flare nut by hand.
 - Hold the orifice assembly securely and, using a wrench, tighten the flare nut 1/4 revolution only.
- Examine all of the connections for gas leaks.

Remove the Refrigerator

NOTICE

Your dealer or an authorized Norcold Service Center must do this procedure.



The rear of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, be careful and wear cut resistant gloves.

1. Close the valve at the propane gas tank(s).



To avoid possible propane gas leaks, always use two wrenches to loosen and tighten the gas supply line at the refrigerator's manual shut off valve.

2. Open the lower intake vent and remove the gas supply line from the manual shut off valve of the refrigerator.
3. Remove the AC power cord from the receptacle.
4. Remove the DC wiring from the refrigerator:
 - Remove the DC wiring from the battery or the converter of the vehicle.
 - Put a mark on the DC wires so you can put them back in the correct location.
5. Remove the DC wires from the refrigerator.
5. Remove the screws which fasten the refrigerator to the floor.
6. Remove the door from the refrigerator.
7. Remove the screws which fasten the refrigerator to the wall.
8. Remove the refrigerator from the opening.
9. Attach the door to the refrigerator.

Reinstall the Refrigerator

NOTICE

Your dealer or an authorized Norcold Service Center must do this procedure.



Make sure the combustion seal is not broken, is completely around the refrigerator mounting flanges, and is between the mounting flanges and the wall of the enclosure. If the combustion seal is not complete, exhaust fumes can be present in the living area of the vehicle. The breathing of exhaust fumes can cause dizziness, nausea, and in extreme cases, death.

1. Push the refrigerator completely into the enclosure.
2. Remove the door from the refrigerator.



NORCOLD REFRIGERATOR FOR LEGACY ELITE II

- Put the screws through the mounting flanges and into the wall.
- Attach the door to the refrigerator



The rear of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, be careful and wear cut resistant gloves.

- Open the lower intake vent and put the screws through refrigerator and into the floor.



To avoid possible propane gas leaks, always use two wrenches to loosen and tighten the gas supply line at the refrigerator's manual shut off valve.

- Attach the gas supply line to the manual shut off valve of the refrigerator.
- Open the valve at the propane gas tank(s).



Do not allow the leak checking solution to touch the electrical components. Many liquids are electrically conductive and can cause a shock hazard, electrical shorts, and in some cases fire.

- Examine the gas supply line for leaks.
- Connect the DC wiring to the refrigerator:
 - Install the DC fuse or connect the DC wiring to the battery or the converter.
 - Connect the DC wires from the refrigerator.
- Connect the AC power cord to the receptacle.

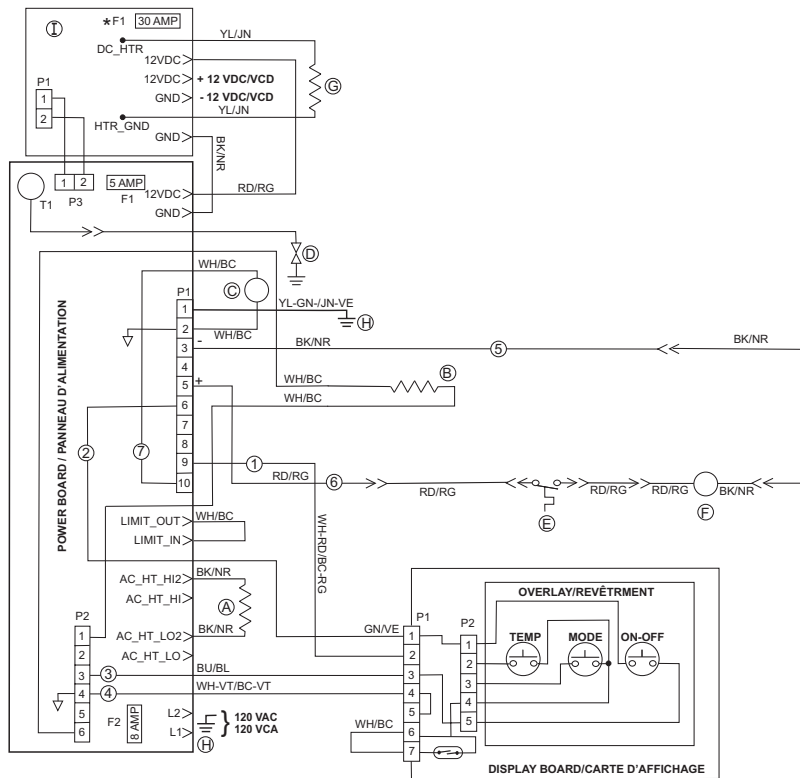
Replacement Parts

You may purchase replacement parts through your local RV dealer or an authorized Norcold Service Center.

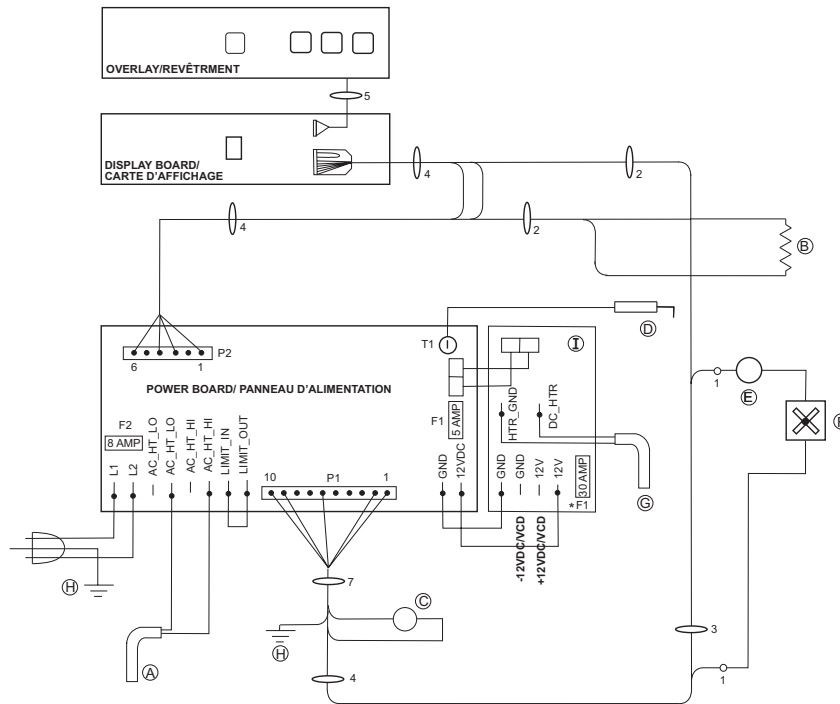
Wiring Diagram and Pictorial

The parts of the wiring diagram are (See Art01775):
The parts of the wiring pictorial are (See Art01776):

AC heater	A
Thermister	B
Gas valve.....	C
Igniter.....	D
Temperature switch (optional)	E
Fan (optional)	F
DC heater (optinal)	G
Chassis ground.....	H
DC board (optional)	I
Switched 12 VDC	1
Fused continuous 12 VDC.....	2
Communications.....	3
Display ground.....	4
Auxiliary ground (optional).....	5
Auxiliary +12 VDC (optional)	6
Gas valve +12 VDC.....	7
5 A Fuse DC	F1
8A Fuse AC.....	F2
30 A Fuse DC	F3



Art01775



Art01776



NORCOLD REFRIGERATOR FOR LEGACY ELITE II

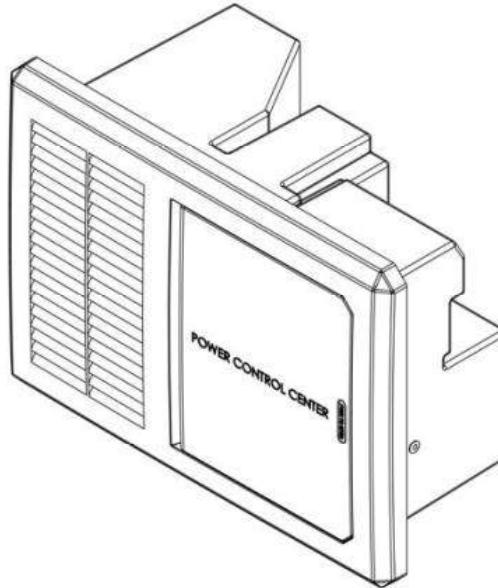
Fault Codes

Fault Code	Fault Code Meaning	Corrective Actions
No display.	DC voltage is unavailable to the refrigerator control panel or the refrigerator is OFF.	Check: - That the refrigerator is ON. - That the battery charging equipment of the vehicle is operational. - The the AC/DC converter is operational (if applicable). - See your dealer or authorized Norcold Service Center.
"F"	The burner did not ignite or re-ignite.	Check: - That the valve of the propane gas tank(s) is open. - That the propane gas is at the correct pressure. - That the manual shut off valve of the refrigerator is open. - That there is no air in the propane gas supply line. See "Removing air from the propane gas supply lines" section of this manual.
"A"	AC voltage is unavailable to the refrigerator control.	Check: - That the refrigerator is plugged into a serviceable outlet. - That the fuse or circuit breaker is intact. - That the vehicle generator is operational (if applicable). - See your dealer or authorized Norcold Service Center.
"C"	DC voltage to the refrigerator control panel is too low.	Check: - That the battery charging equipment of the vehicle is operational. - The the AC/DC converter is operational (if applicable). - See your dealer or authorized Norcold Service Center.
"n"	The refrigerator cooling unit has stopped cooling.	1st time - Before reset Check: - That the vents are not blocked. - That a door(s) is not open. Close door(s). - That the vehicle is level. 2nd time - After reset. This is not owner serviceable. See your dealer or authorized Norcold Service Center.
Temperature setting flashes for ten seconds and mode appears.	The refrigerator is operating on the "Back Up Operating System".	This is not owner serviceable. See your dealer or authorized Norcold Service Center.
"H"	This is a fault within the refrigerator controls.	This is not owner serviceable. See your dealer or authorized Norcold Service Center.
"r"	This is a fault within the refrigerator controls.	This is not owner serviceable. See your dealer or authorized Norcold Service Center.
"S"	This is a fault within the refrigerator controls.	This is not owner serviceable. See your dealer or authorized Norcold Service Center.



Installation and Operation Guide for PD4000 Series Power Control Center

Extended warranties
are available for purchase at
www.progressivedyn.com



Thank you for selecting Progressive Dynamics as your choice for your RV power needs. We'd like to welcome you to a full line of industry leading and time tested products including our newest addition to the PDI family, the PD4000 Series POWER CONTROL CENTER.

The PD4000 Series POWER CONTROL CENTER offers break-through technologies that help maintain and lengthen the life of your batteries such as our patented Charge Wizard.

The heart of the PD4000 is the INTELI-POWER Converter. The built-in Charge Wizard® microprocessor constantly monitors the battery voltage then automatically adjusts the converter output voltage to provide the proper charging voltage for fast recharges and long-term maintenance.

The intelligent way to charge and maintain your RV battery.

With enough AC and DC branches you'll have plenty of options for your growing RV needs.

Progressive Dynamics, Inc.

507 Industrial Rd.
Marshall, MI 49068

www.progressivedyn.com

Patent Numbers: 5,687,066 - 5,600,550 - 5,982,643 - 6,184,649 - 7,782,002



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LIMITED WARRANTY

- I. **LIMITED WARRANTY:** Progressive Dynamics, Inc. warrants its power control center to be free from defects in material or workmanship under normal use and service; and limits the remedies to repair or replacement.
- II. **DURATION:** This warranty shall extend for a period of two years from the original date of purchase, and is valid only within the continental limits of the United States and Canada.
- III. **WARRANTY EXCLUSIONS:** This warranty specifically does not apply to:
 - A. Any product which has been repaired or altered in any way by an unauthorized person or service station;
 - B. Damage caused by excessive input voltage, misuse, negligence or accident; or an external force;
 - C. Any product which has been connected, installed or adjusted or used other than in accordance with the instructions furnished, or has had the serial number altered, defaced or removed;
 - D. Cost of all services performed in removing and re-installing the power converter; and
 - E. ANY LOST PROFITS, LOST SAVINGS, LOSS OF USE OF ENJOYMENT OR OTHER INCIDENTAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE PRODUCT. THIS INCLUDES DAMAGES TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- IV. **PROOF OF PURCHASE:** A warranty claim must be accompanied by proof of the date of purchase.
- V. **CLAIM PROCEDURE:** Upon discovery of any defect, Progressive Dynamics, Inc. shall be supplied the following information at the address listed in this manual:
 - A. Name and address of the claimant;
 - B. Name and model of the product;
 - C. Name, year and model of the recreational vehicle in which the product was installed;
 - D. Date of purchase; and
 - E. Complete description of the claimed defect.

Upon determination that a warranty claim exists (a defect in material or workmanship occurring under normal use and service,) the converter section shall be shipped postage prepaid to Progressive Dynamics, Inc. together with proof of purchase. The product will be repaired or replaced and returned postage prepaid.

For Warranty Service Call: (269) 781-4241



Installation Instructions

The PD4000 series POWER CONTROL CENTER should be installed horizontally (converter section to the left).

Unit is NOT ignition protected. Do not mount in the LP gas or the battery compartment.

Cut mounting hole to approximately 10 3/4" wide X 7 1/4" high.

Connect wiring system using proper connections and appropriately sized cable clamp. A closure plug kit for any unused Romex connectors may be purchased from Progressive Dynamics, Inc. Part Number PD812374.

For installations without an external DC disconnect switch connect battery POS (+) to the BATTERY POS. + lug. The ALTERNATE BATTERY POS. + lug is not used. (see wiring diagram for lug locations)

DC DISCONNECT: For installations incorporating an external DC disconnect switch, connect battery POS (+) and the BATTERY POS. + lug to the same pole on the external disconnect switch. Remove the JUMPER. Connect the ALTERNATE BATTERY POS. + to other pole on the external disconnect switch. (see wiring diagram for component locations)

The OEM should test the POWER CONTROL CENTER converter under full load conditions in its intended mounting location to ensure proper ventilation. Failure to provide adequate ventilation will prevent the converter from supplying full output power.

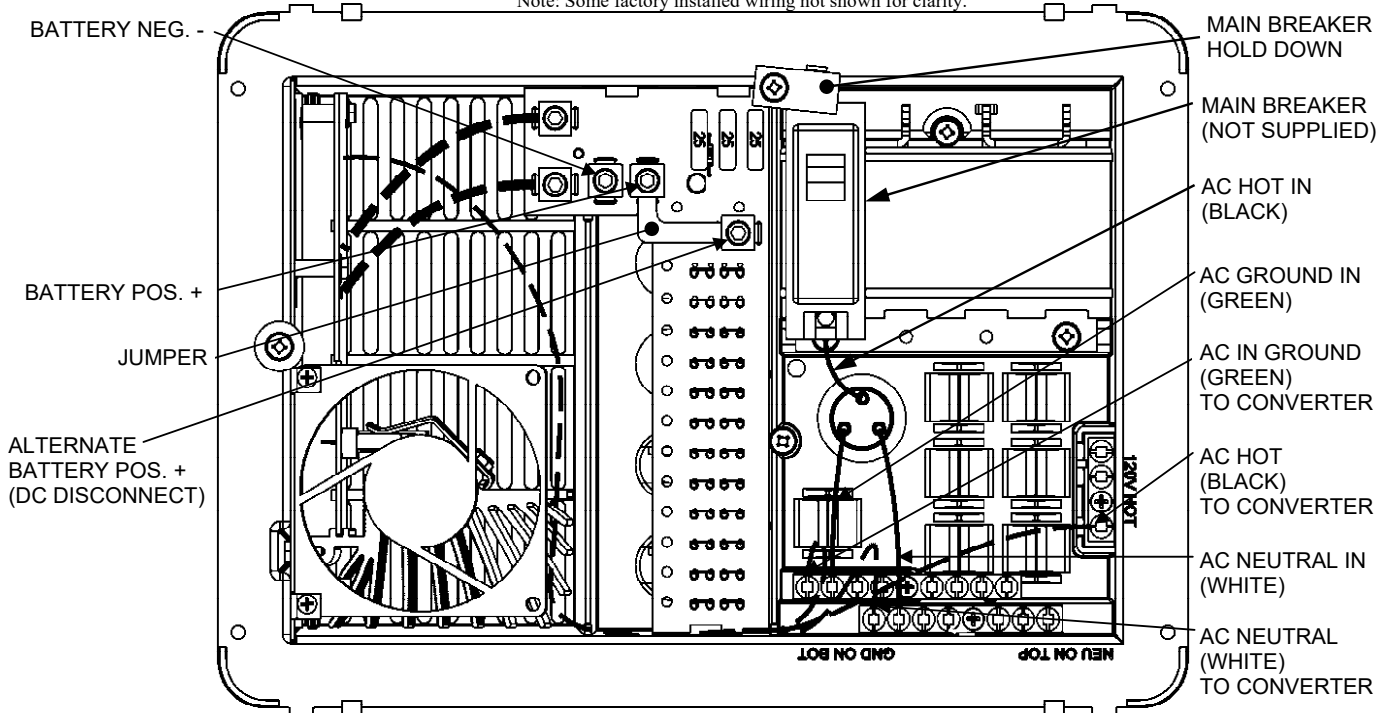
The INTELI-POWER converters are not designed for zero clearance compartments.

The POWER CONTROL CENTER was not designed for wet or damp locations. Install in an interior / dry location.

The following breakers are suitable for MAIN and BRANCH breakers	MAIN	Branch	Filler Plate
ITE/Siemens—QP,QT	30A	15A	ITE/Siemens QF3 GE TQLFPI
Thomas & Betts—TB & TBBD Series			
Square D—HOM, HOMT			
Cutler Hammer/Bryant—BR,BRD Series			
GE—HACR			

Detailed Wiring Diagram

Note: Some factory installed wiring not shown for clarity.



Note: Above image may vary, depending on model.

Consult a licensed electrician or an RV technician for installation assistance



User Information

Many options will be installed prior to the purchase of your new RV, however there are a few options that you should be aware of while operating your new POWER CONTROL CENTER.

The PD4000 series incorporates a microprocessor to provide a three-stage charge profile to ensure rapid, yet safe recharging of 12 volt batteries. These three separate stages BOOST, NORMAL, and STORAGE modes ensure that the battery is automatically recharged and maintained with minimum maintenance (i.e. reduced need to add water).

BOOST MODE: If the converter senses that the battery voltage has dropped below a preset level the output voltage is increased to approximately 14.4 volts DC to rapidly recharge the battery.

NORMAL MODE: Output voltage set at approximately 13.6 volts DC.

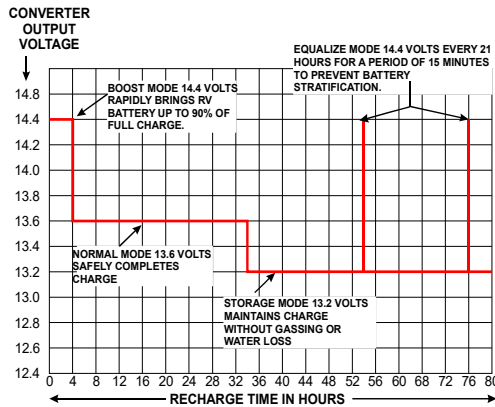
STORAGE MODE: When the converter senses that there has been no significant battery usage for 30 hours the output voltage is reduced to 13.2 volts DC for minimal water usage. When in storage mode the microprocessor automatically increases the output voltage to 14.4 volts DC for 15 minutes every 21 hours to help reduce sulfation of the battery plates.

- All times and voltages provided above are approximate. -

CAUTION

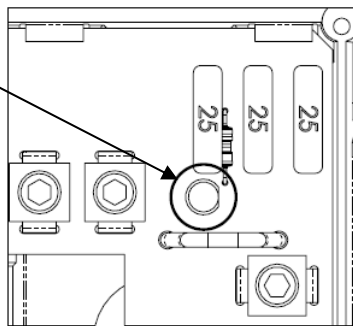
IT IS IMPORTANT THAT THE FLUID LEVEL OF ANY CONNECTED BATTERIES BE CHECKED ON A REGULAR BASIS. ALL BATTERIES WILL "GAS" AND LOSE SOME FLUID WHEN CONTINUOUSLY CONNECTED TO ANY CHARGING SOURCE.

~Does not apply to "gel-cell" batteries~



REVERSE BATTERY PROTECTION CIRCUIT

If a battery is accidentally hooked up backwards, the converter will be protected. Easily accessible ATC type fuses will blow when a battery is connected in reverse. Correct battery wiring and replace fuses with same type and rating. The LED will glow if one of the fuses blow. Appropriate fuse size is indicated on the circuit board.



The DC Section:

The DC panel features up to 12 fused positions rated for up to 30 amps for accessories.



AC RATING

COPPER WIRE ONLY. RATED 75 C MIN
 MAXIMUM SERVICE: 30 AMPS, 120V 50/60 HZ SINGLE PHASE
 LINE TERMINALS SIZE 6-14 AWG
 LOAD TERMINALS SIZE 6-14 AWG
 NEUTRAL AND GROUND SIZE 6 - 14 AWG
 SHORT CIRCUIT CURRENT RATING:
 SUITABLE FOR USE ON NO MORE THAN
 120 VOLTS AC, 10,000 AMPERES MAX,
 LIMITED TO THE LOWEST INTERRUPTING
 CAPACITY OF ANY BREAKER INSTALLED

MAXIMUM CONTINUOUS LOADS ON
 MAINS OR BRANCH CIRCUITS NOT TO
 EXCEED 80% OF THE CIRCUIT
 BREAKER RATINGS

NEUTRAL/GND WIRE COMBINATIONS:

- (1) #12 STRANDED & (1) #14 SOLID
- (1) #12 STRANDED & (1) #14 STRANDED
- (1) #12 SOLID & (1) #14 STRANDED
- (1) #12 SOLID & (1) #14 SOLID
- (2) #14 STRANDED OR (2) #14 SOLID
- (2) #12 STRANDED OR (2) #12 SOLID
- (2) #10 STRANDED OR (2) #10 SOLID

TORQUE DATA

LINE TERMINAL: SEE CIRCUIT BREAKER
 NEUTRAL BAR & GROUND:
 #4 - #6 35 IN. LBS
 #8 30 IN. LBS
 #10 - #14 25 IN. LBS

Specifications (Specifications subject to change without notice)		
Model	PD4045	PD4060
AC Section	120 VAC 30 Amps Maximum - 7 Branch Circuits Max *	
DC Section	12 VDC 60A Max. - 12 Branch Circuits	12 VDC 75A Max - 12 Branch Circuits
Converter Section	Input: 105-130 VAC 50/60 Hz 725 Watts Output: 13.6 VDC, 45 Amps Weight: 5.70 lbs	Input: 105-130 VAC 50/60 Hz 1000 Watts Output: 13.6 VDC, 60 Amps Weight: 6.35 lbs

* Consult local regulatory authority for possible branch circuit restrictions

TROUBLE SHOOTING GUIDE

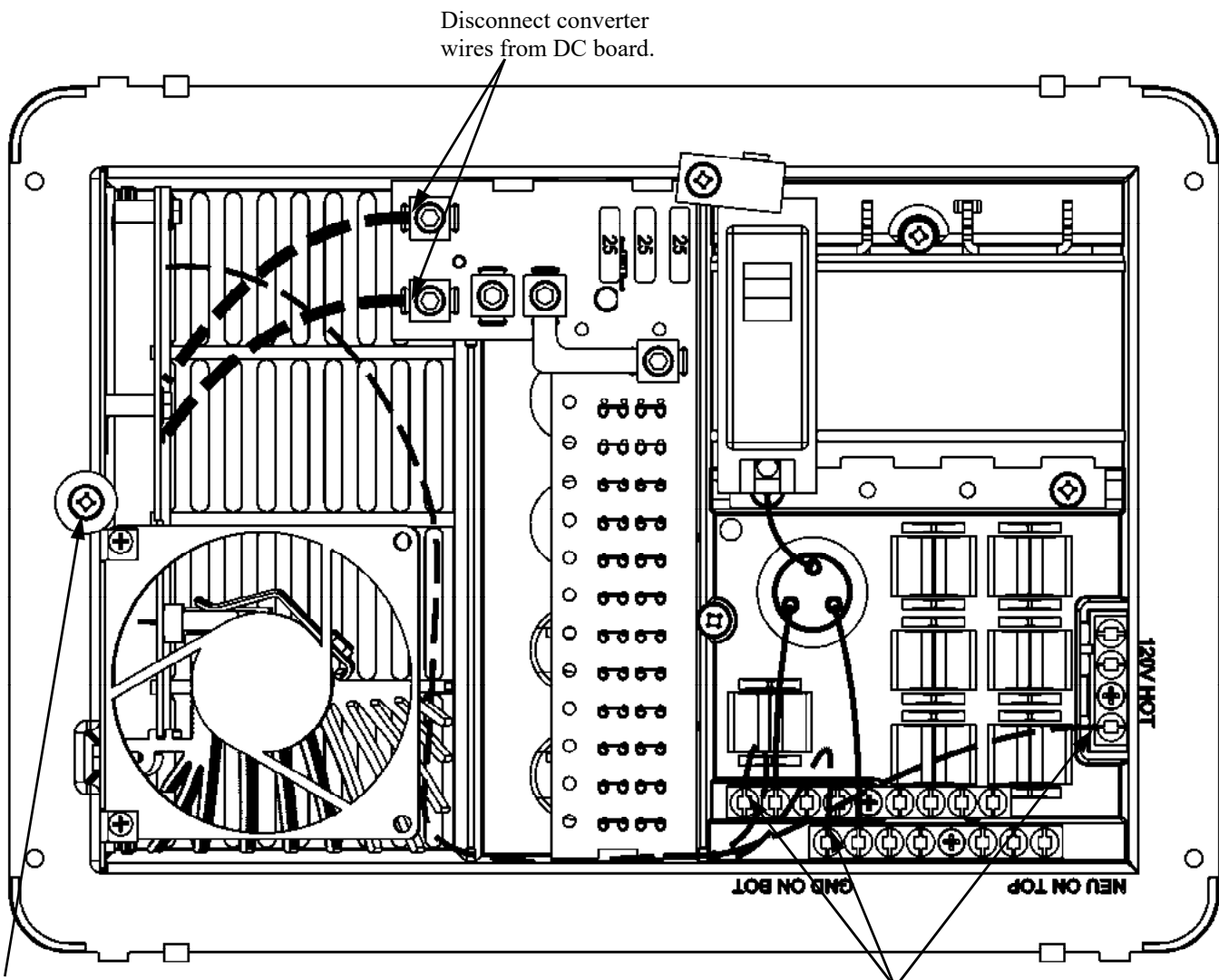
<u>PROBLEM</u>	<u>POSSIBLE CAUSES</u>	<u>ACTION</u>
No Output	120 VAC supply not connected	Connect power supply Check AC distribution panel for proper operation
	Reverse battery fuses blown (See page 2 for location)	Check for reverse battery connection. Replace fuses with same type and rating (See page 2)
	Short circuit	Trace RV circuits for possible fault
	Unit has shutdown due to overheating	Check air flow Allow unit to cool
	Unit has shutdown due to over voltage (Converter will shut down if the input voltage exceeds 132 VAC)	Check input voltage Correct input voltage
	Low Output	Compartment gets too hot
Excessive load for converter		Reduce load requirements or install larger converter
Input voltage not between 105-130 VAC		Correct input supply voltage
Bad battery cell(s)		Replace battery
Intermittent or no Output on Generator, works on Shore Power	Unit has shutdown due to over voltage.	Add another load to the generator, this may reduce the "spikes" to an acceptable level
	Some generators exhibit excessive voltage spikes on the AC power output, this may cause the over voltage protection to shut the unit down	Contact generator manufacturer for possible defect in the generator

Consult a licensed electrician or an RV technician for installation assistance



Do not replace the converter section unless the following checks have been performed:

1. Use an AC voltmeter to check for the proper voltage at the 120 VAC breaker that the converter is connected to. This voltage should be between 105 and 130 volts.
2. Remove the reverse battery fuses and check the converter output from the CONVERTER GND to the CONVERTER POS terminals on the DC board. This should be 13.6 VDC.
3. Check the Reverse Battery fuses . These fuses will only blow if the battery or DC output leads were connected in reverse, even for a moment. If they are blown check the polarity of the battery connections before replacing them.
4. If the Converter output is not present and there is AC to the converter , the converter is defective.



Remove screw that secures metal plate to housing.

If you should need to replace the power converter for any reason, follow these steps to safely remove the converter section.

Make sure all power is disconnected before proceeding.

1. Remove the neutral, ground, and hot wires that lead to the converter on the AC side.
2. Remove the converter output wires from the DC board, ground and positive.
3. Finally unscrew the screw that holds the metal converter plate to the plastic housing.

For factory repairs, return only the converter section.

Make sure you use proper packaging to ensure the product's safe arrival.

Disconnect converter wires from AC hot, NEU, and GND bar connections.



Progressive Dynamics, Inc.

507 Industrial Rd
Marshall MI 49068

Visit us on the web for other great products.

www.progressivedyn.com



Progressive Industries

Electrical Management System (EMS) EMS-HW30C & EMS-HW50C

Installation & Operating Guide for:

Model **EMS-HW30C**

Rated at 120V/30A

and

Model **EMS-HW50C**

Rated at 240V/50A



**“Surgio Says”
Lifetime Warranty on
all EMS & SSP Surge
Protection Models**

SurgioSays.com



Features

High/Low Voltage Protection | Whenever AC power lowers below 104 volts, or rises above 132 volts, the EMS automatically shuts down power to the RV. The EMS will monitor the power and once the AC power rises above 104 volts, or drops below the 132 volt level the time delay indicator flashes for the preset time and then automatically restores power to the RV.

Time Delay for A/C Compressor | If AC power is interrupted or the EMS detects a fault condition, the built in time delay is activated. There are two settings on the EMS: one is 136 seconds (02:16), and the other is 15 seconds. Consult your air conditioner manual to see if it has a time delay built in. If so, use the 15 second delay, if not, use the 136-seconds delay. The factory setting is 15 seconds.

3-Mode Surge Protection (EMS-HW30C) | This feature provides full surge protection L-N, L-G, and N-G. Total Joule rating is 1,790J and 44,000A surge current. Response time <1 Nano second.

5-Mode Surge Protection (EMS-HW50C) | This feature provides full surge protection L-N, L-N, L-G, L-L, and N-G. Joule rating is 3,580J and 88,000A surge current. Response time <1 Nano second

Surge Indicator | In the event of a power surge and the surge protector circuit is damaged within the EMS-L-N or L-G the digital error code will read E10. This indicates the EMS needs to be serviced.

Reverse Polarity Protection | If AC power has a reverse polarity condition, the EMS will not allow power to the RV and the error code will read E 1

Open Neutral Protection |

If AC power has an open neutral, the display will not light and the EMS will not allow power to the RV.



Open Ground Protection | If AC power has an open ground condition, the EMS will read an error code of E2, and power will not be allowed to the RV.

AC Frequency Protection | If AC power frequency deviates plus/minus 9 hertz from 60 cycles per second, the EMS will shut down AC power. An Error code of E 7 will be displayed when the frequency is high; and an Error code of E 8 will be displayed when frequency is low.

Accidental 240V Protection | If 240 volts is detected when plugging into AC power the EMS will **NOT** allow power to the RV. If this condition occurs while power is applied to the RV, the EMS shuts off power instantly. The display will read the voltage and E 3 for the error. **NEVER BYPASS THE EMS WHEN THIS OCCURS**

Remote Display | Continuously scrolls the AC power information, including voltage, current, frequency, error codes and previous errors. Each reading is displayed for two (2) seconds.

Previous Error Code | Previous error code (PE) indicates what error occurred and why power was interrupted. To delete code, disconnect power from EMS.

ByPass | This switch is located on the remote display and allows the user to bypass the EMS in the event of failure, thus allowing AC power into the RV. This **does not** disable the surge protection portion of the EMS; however, all other features are disabled.

Modular Design | Replacement parts are designed for simple plug-and-play making repairs extremely user friendly.

Microprocessor Controlled | The computer and remote display are driven by state-of-the-art microprocessors that are programmed with software to drive the entire EMS unit.



Warnings

- Do not exceed the rating on the EMS for any reason. These devices are designed to be reduced down to 120V/15A and maintain full protection.
- Do not modify the EMS in any way as this will void the warranty, compromise protection and could result in possible shock, and/or a fire hazard.
- It is important to always check the pedestal power outlet for charring;; this condition means the AC receptacle is providing a weak connection. Should this condition exists, **DO NOT USE** as it could result in possible melting of the RV power plug.
- Progressive Industries recommends you have a certified electrician or an authorized dealer perform the installation of the EMS.
- All AC power extension cords in conjunction with your EMS unit should be rated 10 gauge for 120V, 30A systems or 6 gauge for 240V, 50A systems and rated for outdoor use to reduce the risk of electrical shock. Small gauge cable will have a higher resistance and can result in voltage loss or an electrical fire.
- Whenever servicing or installing the EMS, or any other AC powered device, make sure AC power is disconnected.
- RV wiring is different than wiring found in homes; the neutral and ground conductors are isolated in the RV, unlike in a home where they are tied at the service panel. Therefore, **never** connect neutral and ground together for any reason. This could result in a ground fault condition, and may result in electric shock and/or a fire hazard.
- Never solder the ends of the wires you attach during installation. This includes the Red, Black and White whites
- **Never** plug the EMS into an inverter.



Installation Instructions *Before* Transfer Box

HW50C Visual Photo Library on page 11 | Wiring Diagram on page 13

HW30C Visual Photo Library on page 12 | Wiring Diagram on page 13

For installation, in addition to the EMS Kit, you will need:

- 6 mounting screws
 - In some cases you will need a jumper cable, length to be determined based on the placement of the EMS
 - **Always** use #10 wire.
1. Unplug RV from AC power and be sure generator is off.
 2. Determine a location for the EMS control box.
 3. Cut the RV power cord about three (3) inches greater than the distance from the junction box to the desired location of the EMS control box. Then strip back the outer insulation three (3) inches on input, and three (3) inches on output cable. (See visual references on pages 11-13).
 4. Strip back each conductor 3/8" on both stripped ends. (See visual references on pages 11-13) and attach ring terminals to green ground wires. If this wire is a solid wire, do not use ring terminals. Loop the wire around the ground screw.
 5. Remove the lid from the EMS. Next ,remove the display, cable and pack of screws and then back off the six set screws from top of contactor (L1, L2, etc.)
 6. Take your long cable with the plug end and connect it to the input side by sliding through the wire restraint on the end of the EMS control box. Then connect the wires to the contactor by attaching black to L1, white to L2, red to L3, and green to ground screw on side of box. (See visual references on pages 11-13). Torque down set screws and ground nut to secure connections.
 7. Take the short cable coming from the junction box by sliding it through the wire restraint output side of the EMS control box. Next slide the black wire through the current sensor containing the green tape and connect to T1, then connect the white wire to T2. Now slide the red wire through the other sensor and attach to T3. The arrow side off the sensor needs to fact T1 and T3.

[Continued on page 5]



Installation *Before* Transfer Box Cont'd

Attach the green ground wire to the ground screw on side of box. (See visual references on pages 11-13). Make sure the wire colors match up from each other. Torque down set screws and ground nut to secure connections.

8. Double check all connections and make sure they are secure.
9. Remove the two screws on contactor where marked L1, L2, etc. Next remove the top plastic plate with markings. Examine inside ensuring there are no loose plastic pieces inside the contactor. If so, remove and re-install cover with two screws. (See visual references on pages 11-13).

Caution: If you break off a tab and do not remove it, this may stop the contactor from working and allow 240 volts in the RV.

10. Secure cable ends by tightening down strain reliefs over the input and output wires. Do not over tighten as this could bit through the insulation and cause a short.
11. Set time delay jumper on the circuit board. The factory setting is for 15 seconds. Remove jumper to set for 136 seconds (02:16). See Features Section on time delay to determine which to use. (See visual references on pages 11-13).
12. Plug in remote display and cable. (This cable is not a phone cable, but rather a data cable). **NEVER PLUG IN DISPLAY WHILE RV POWER IS ON.**
13. Attach EMS lid with the six black machine screws provided.
14. Mount the EMS control box.
15. Installation is complete. Next, plug in and follow operating instructions.



Installation *After* Transfer Box for Protection from both Generator and AC Power

HW50C Visual Photo Library on page 11 | Wiring Diagram on page 13
HW30C Visual Photo Library on page 12 | Wiring Diagram on page 13

For installation, in addition to the EMS Kit, you will need:

- 6 mounting screws
- In some cases you will need a jumper cable, length to be determined based on the placement of the EMS
- Always use #10 wire

1. Unplug RV from the AC power and be sure generator is off.
2. Locate transfer switch box; determine where the EMS control box will be mounted.
3. Measure the distance between the transfer switch and the control box and add one (1) foot. This is the length of cable that will be required for the installation. Make sure 6-gauge, 4 conductor cables are used.
4. Remove lid from transfer box, disconnect and remove the output cable.
5. Take jumper cable and strip back one end three (3) inches and the other end the same as the end removed from the transfer box. The cable removed from the transfer box must have at least three (3) inches of the outer insulation removed. (See visual references on pages 11-13).
6. Strip back all conductors 3/8" and attach ring terminals to green ground wires. (See visual references on pages 11-13). If this wire is solid wire, do not use ring terminals. Loop the wire around the screw.
7. Remove the lid from EMS. Remove the digital display, cable and pack of screws and then back off the six set screws from top of contactor. (L1, L2, etc.)
8. Take the jumper cable and connect it to the input side by sliding through the wire restraint on the end of the EMS control box and then connect black to L1; white to L2; red to L3, green to ground screw. (See visual references on pages 11-13). Torque down set screws and ground nut to secure connections.

[Continued on page 7]



Installation *After* Transfer Box for Protection from both Generator and AC Power Continued from page 6

9. The cable that came from the transfer box connects to the output side of the EMS control box in the same manner. Next slide the black wire through the current sensor containing the green tape and connect to T1, then connect the white wire to T2. Now slide the red wire through the other current sensor and attach to T3. The arrow side off the sensor needs to face T1 and T3. Next, attach the green ground wire to the ground screw on side of box. (See visual references on pages 11-13). Make sure the conductor's colors match up across from each other. Torque down the set screws and ground nut to secure connections.
10. Connect the loose end of the jumper cable to the transfer switch. See wiring diagram on transfer switch if needed.
11. Double check all connections to ensure they are secure.
12. Secure cable ends by tightening down strain reliefs over the input and output wires. Do not over tighten as this could bite through insulation and cause a short.
13. Set time delay jumper on the circuit board. Factory setting is for 15 seconds. Remove jumper to change setting to 136 seconds (02:16). See Features Section on time delay to determine which to use. (See visual references on pages 11-13).
14. Plug in digital remote and cable. (This cable is not a phone cable, but rather a data cable.) **NEVER PLUG IN DISPLAY WHILE RV POWER IS ON.**
15. Attach lid with the six black machine screws provided and attach transfer switch lid.
16. Mount the EMS control box.
17. Installation is complete. Next, plug in and follow operating instructions.



Operating Instructions

1. Plug into A/C power.
2. Digital display will read 888 for one second and then begin scrolling the voltage, amps, line frequency and error code, if any. In addition, the time delay light will flash while the EMS is going through its countdown and will stop when the unit engages (Bottom right hand corner.) If delay light does not flash, a fault condition is present. Look at the Error code chart to determine what the AC power problem is.
3. You may notice when first plugging in, the display may read E 9. This indicates the display has not received the data from the computer yet. Do not be alarmed, this is normal. By the next scroll through, it should read E 0 if the AC power is normal.
4. The digital display will give you a three digit number indicating your line voltage. Next, it will give you a “0A” reading indicating current (amps) Current (amps) will read zero until the time delay is complete (136 seconds or 15 seconds, depending on your settings). Then you will notice a number between 0 and 50. This number indicates how many amps the RV is drawing. Next, you will notice “60H”, indicating your line frequency. This number should remain fairly consistent; however, it may read plus/minus one or two. Lastly, note the E code. E 0 is normal and only when E 0 or E10 is present will the delay light flash and allow power to the RV. Refer to the Error code chart card that was provided or see Error Code Chart for additional information.
5. Verify the error code E 0 is displayed and set up is now complete.

IMPORTANT: The display will only read voltages between approximately 78 volts and 255 volts.

NOTE: If the wiring reads anything different than correct, the EMS will not turn on and we recommend you move to a different source of AC power or use your generator power. Also, if power is below 104 volts or above 132 volts, the EMS will not turn on, and we recommend using your generator power.



Error Code Chart

- E 0 - Normal Operating Condition**
- E 1 - Reverse Polarity (hot and neutral wires reversed)**
- E 2 - Open Ground (no ground wire connection)**
- E 3 - Line 1 High Voltage (line voltage above 132V)**
- E 4 - Line 1 Low Voltage (line voltage below 104V)**
- E 5*- Line 2 Voltage High (Line voltage above 132V)**
- E 6*- Line 2 Voltage Low (Line voltage below 104V)**
- E 7 - Line Frequency High (line frequency above 69 cycles per second)**
- E 8 - Line Frequency Low (line frequency below 51 cycles per second)**
- E 9 - Data Link Down (call technical support)**
- E10 - Replace Surge Protector Module (call Progressive Industries Tech support)**

** Code only apply to EMS-HW50C models*

Note: If the EMS cuts the power to the RV it will show a PE code following the E code. This denotes the previous error or why the EMS shut down. Example: The EMS cuts power for low voltage on Line 1, and then the power is restored. The Error Code reads E 0, but the PE code reads PE 4 which tells the user low voltage was the reason for the EMS previously cutting power. This PE error code will be deleted when power is disconnected from the EMS.

Accidental 240 volt Protection: Should this condition occur, the display will read 240 volts instead of displaying the voltage and the error code message will read E 3. AC power will shut down instantly. **DO NOT UNDER ANY CIRCUMSTANCES BYPASS THE EMS; OTHERWISE, THIS WILL RESULT IN SEVERE DAMAGE TO THE RV.**



Troubleshooting Guide

Common installation mistakes:

1. Check connections. Input is the plug side of the RV and black should be attached to L1, white to L2. Output (going to the RV) should match up. T1 is black, T2 white. The green ground gets attached to the input and output on the side of the box.
2. Make sure the input wires are, in fact, the input wires. Connecting the output to the input of the EMS will cause the device to malfunction.
3. If the EMS is still not functioning at this point, follow instructions below prior to calling Progressive Industries Technical Support.

In order for the on-call Technician to help troubleshoot the problem(s) you are experiencing and render the best possible solution, it is necessary you be at your RV when you place your call.

1. If the display is illuminated and scrolling information, note the Error Code. If there is an Error code of 1-9, the device will interrupt the power. See Error Chart for definition of AC power problem. The device being off when an Error Code is present indicates the product is working properly and protecting your coach.
2. If the display is illuminated and reading Error code E 0, and yet no power is present in the coach, please contact Progressive Industries Tech Support. You must wait for the time delay light to stop flashing.
3. If the display is not illuminated and power is in the coach there is a connection issue between the display and the main control box. Contact Technical Support.

Progressive Industries Tech Support can only help if the above information is provided; therefore, please do not call until this information is obtained. Again, it is necessary for your to be at the RV when you place your call. To recap...

- 1. Are the connections correct?**
- 2. What is the Error Code message being displayed?**
- 3. Is the delay indicator flashing?**

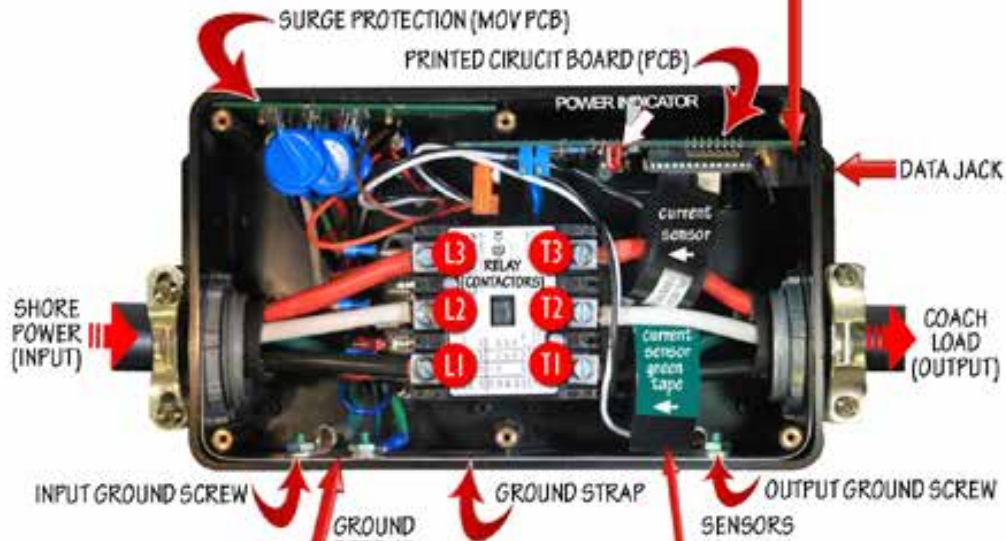
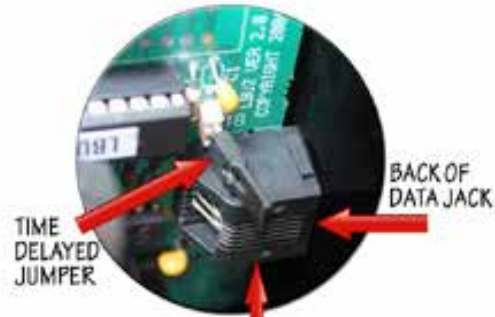
Technical Support 919-267-6964 | 10



Photo Library for the EMS-HW50C



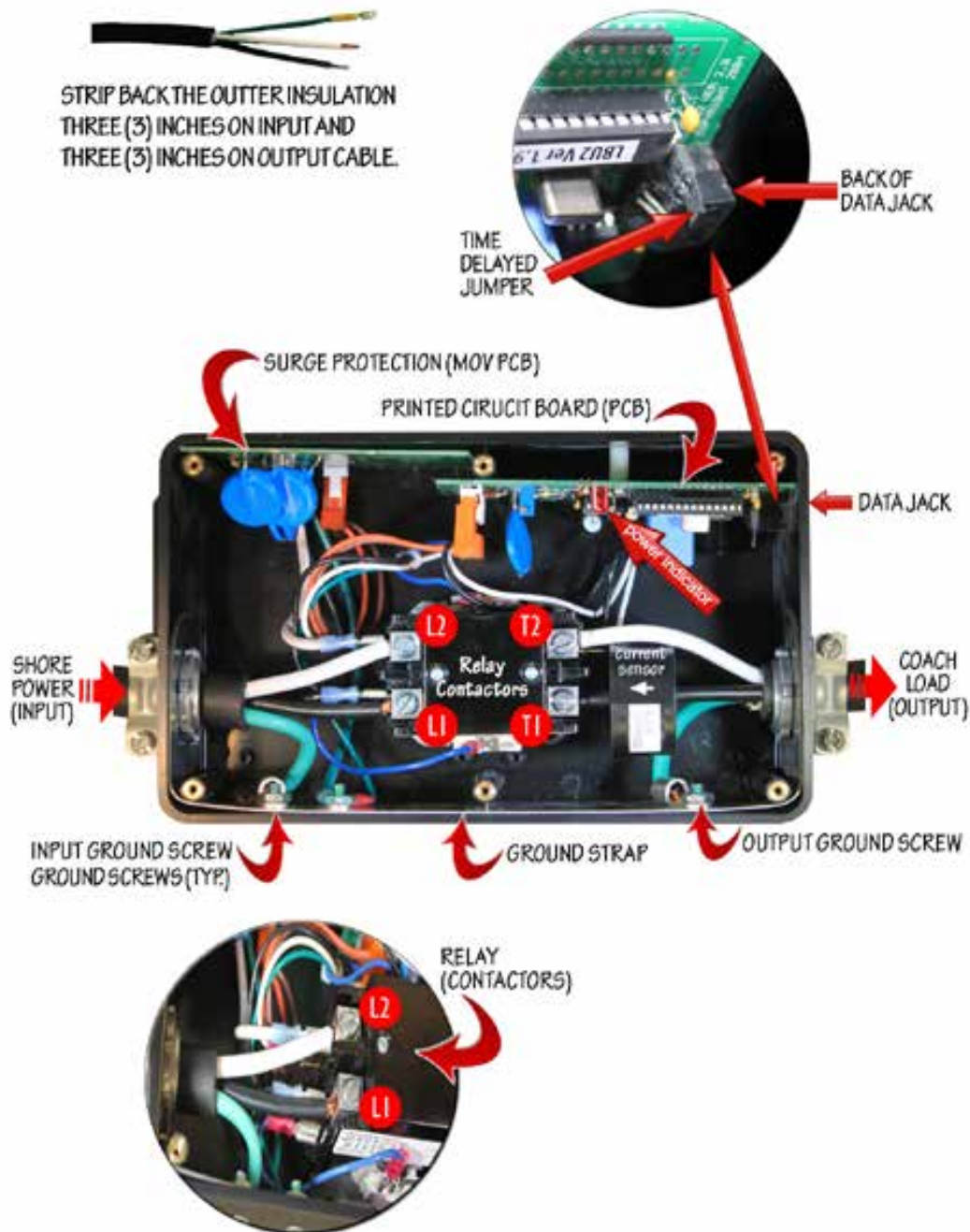
Strip back the outer insulation three (3) inches on input, and three (3) inches on output cable.



NOTE: Only one (1) wire through each sensor. Black wire goes through current sensor (with green tape) to T1. Red wire goes through current sensor to T3.

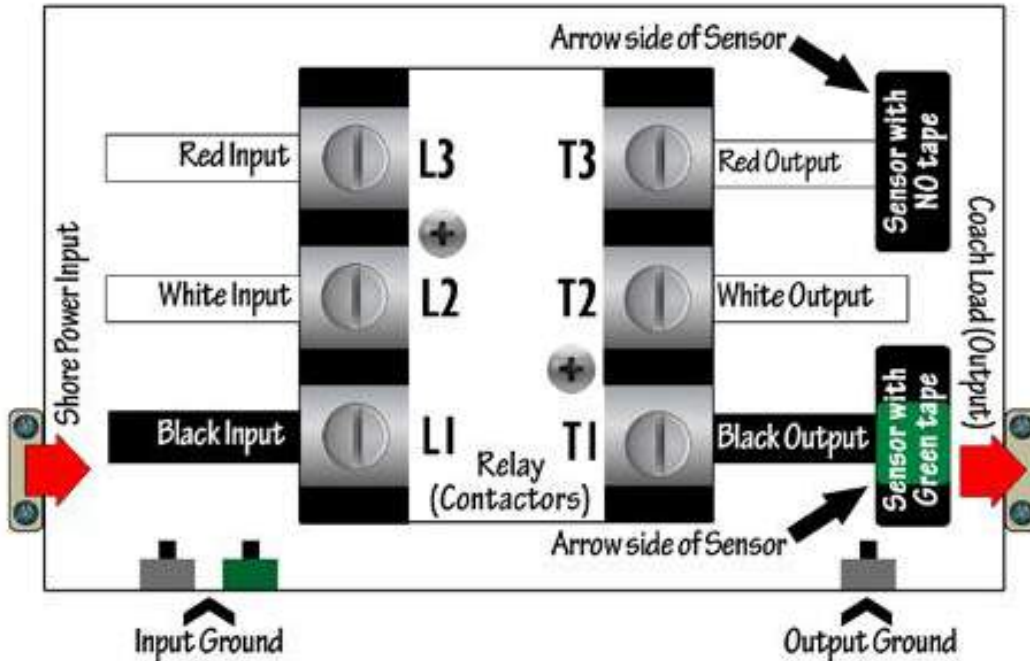


Photo Library for the EMS-HW30C

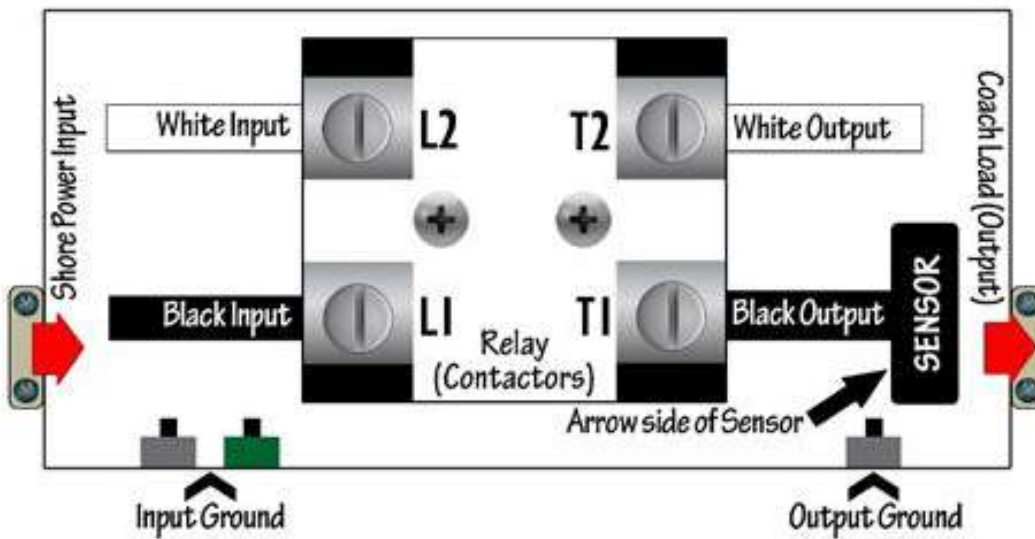




Wiring Diagram for EMS-HW50C



Wiring Diagram for EMS-HW30C





Progressive Industries Warranty

Lifetime Warranty Information for Models:
EMS-PT30C | EMS-PT50C | EMS-HW30C | EMS-HW50C
EMS-LCHW30 | EMS-LCHW50 | SSP-30 | SSP-50

Progressive Industries, Inc. (PII) offers a Lifetime Warranty on all models listed above to be free from defects in material and workmanship. Products must be properly installed and maintained. PII cannot be responsible for neglect or misuse of product(s). In the event a properly installed unit proves defective under normal use, PII will repair or replace the defective unit at its discretion.

This warranty is exclusive to PII and in lieu of all other warranties, obligations or liabilities implied by PII.

This is a non-transferable Lifetime Warranty and is exclusive to the original owner and covers those products purchased from an authorized dealer, retailer or seller. This warranty does not cover unauthorized labor. Technical Support is available seven days a week, by phone to assist in diagnosing and directing the replacement of appropriate components.

Unforeseen circumstances whereby your EMS or SSP products are not covered include:

- Natural disasters: i.e., hurricanes, floods, earthquakes, etc.;
- Vehicle accidents on highways, streets or off-road;
- Failure to remove or unplug product prior to driving off; and,
- Failure to ensure pedestal plug is clean and maintains a snug fit when you plug in, and make sure your cord is clean when plugging into the portable unit.

For additional information regarding Progressive Industries' Warranty and/or information on returning your unit for repair please visit our website at www.progressiveindustries.net

Technical Support is available 7 Days a Week!

Technical Support 919-267-6964 | 14



Congratulations!

Thank you for your new Progressive Industries purchase. We take great pride in the quality and workmanship of our Made in the USA products and trust you will be pleased with your purchase. But should you experience a problem with our product(s) or if you are missing any parts please contact Progressive Industries directly and we'll do everything in our power to assist you.



Our Customer Service Team is excellent and we'd like to prove it to you; therefore, DO NOT return your product to the retailer/vendor where purchased. Simply give us a call because we can and will help you!

Call us Monday - Friday 9am - 5pm EST at:

919-267-6964

Technical Support is available seven days a week.

Progressive Industries, Inc.

1020 Goodworth Drive

Apex, NC 27539

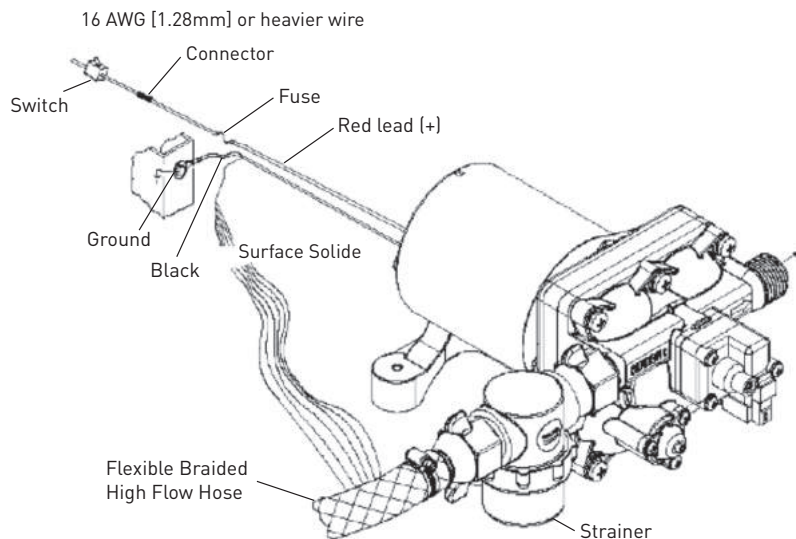
919.267.6948

ProgressiveIndustries.net



Our products are proudly made in the U.S.A.

SHURFLO® 4008 RV REVOLUTION™ BY-PASS PUMP INSTALLATION & OPERATION MANUAL



Typical Pump Installation

INSTALLATION GUIDELINES

- Solid Surface within 6' of tank.
- Minimize flow restrictions in the system.
- No Accumulator needed.
- Flexible hose on inlet and outlet.
- Minimize plumbing elbows and valves.
- Accessible location.
- Strainer on pump inlet.
- Properly Sized wiring.
- Properly electrical protection.
- Properly sized plumbing.

INSTALLATION PREPARATION

The goal of installation is to provide a quiet, easy-to-maintain installation with good flow and low backpressure. This can be accomplished with the following guidelines:

- Mount on a **solid surface** in an **accessible location** for strainer cleaning and pump maintenance.
- 1/2" Male threaded models are intended to be used with SHURFLO swivel barb fittings which seal with an internal taper when hand tightened. **CAUTION:** Sealers and Teflon tape may act as lubricant causing cracked housings or stripped threads due to over-tightening. Sealer may enter the pump inhibiting valve action, causing no prime or no shut-off. A failure due to foreign debris is not covered under warranty.
- Use **flexible high-pressure hose** on the pump inlet and outlet [such as **SHURFLO Kit 94-591-01**]. The pumps ports and **strainer should not be connected to plastic or rigid pipe, or the pump's normal motion will transmit through rigid plumbing causing noise, and possibly loosening or cracking components.**

- Pump must use an adequate 50-mesh strainer [such as SHURFLO 255 series strainers].
- Use a minimum of **1/2" [13mm] Inner Diameter** plumbing. Smaller ID plumbing will cause cavitation, high back pressure, low flow and noise.
- **No need for an accumulator** with by-pass pumps.
- Pump is designed for **intermittent duty** only: Do not use these pumps for running a Reverse-Osmosis [RO] Filtration System. High pressure-continuous duty usage will shorten the life of the pump and is not covered under warranty.
- Wire Size is 16 GA **MINIMUM**, 12GA is recommended—**See Wire Chart** in Electrical Section for minimum sizing.
- Minimum power requirement is a 10 Amp circuit.
- **Reduce restrictions on inlet and outlet.** This includes small inner diameter shut-off valves, winterizing valves and elbows.

- If the RV has an **Intellitac Pump Controller**, it must be rated at 10 or 15 amps; If the controller is rated at 7.5 Amps, a new controller or a high-amp relay must be used.

MOUNTING

- Mount the pump within 6 feet of the tank for best performance and pump life. The pump will pull farther, but the farther it pulls the more work it does, increasing vibration and noise, and reducing the output and pump life.
- Mount pump in a space of at least 1 cubic foot for adequate ventilation to prevent overheating.
- Pump may be mounted in any position.
- Mount pump for easy access for cleaning strainer, maintenance and service.
- Mount pump on a solid surface to prevent vibration and noise.



ELECTRICAL

■ The pump works best on an individual filtered circuit, protected by the recommended fuse or breaker specified on the label.

■ A 15-Amp switch is recommended and should be on the positive lead (red wire).

■ **Wire Sizing:** Proper wire sizing is required for good pump operation. If the wire is too small, low voltage will affect the pump performance and can create a fire hazard. **SHUT OFF POWER TO THE PUMP WHEN LEAVING THE RV UNATTENDED.**

Ft. [m]		AWG [mm ²]	
0-25	[0-7.6]	16	[1.3]
25-50	[7.6-15.2]	14	[2.1]
50-70	[15.2-21.3]	12	[3.3]
70-110	[21.3-33.5]	10	[5.3]

Minimum Wire Size for a 10% voltage drop on a 12VDC, 15 Amp Circuit. Length is the distance from the power source to pump and back to ground.

PLUMBING

Installation of a strainer is required to prevent debris from entering the pump. For noise and vibration reduction we recommend at least 18 in. [4.5 M] of 1/2" [13mm] I.D. flexible high-pressure hose to both ports. The pump ports and strainer **should not** be connected to plastic or rigid pipe. This hose should be anchored where it meets the hard plumbing to reduce plumbing vibration.

OPERATION

This pump is designed for intermittent duty only. The pump operates normally up to about 40-psi, where a spring-loaded by-pass valve opens, allowing flow back from the output side to the input side, providing smooth, steady flow with virtually no cycling, all the way down to a trickle. As a faucet is opened back up, the pressure will drop, the by-pass will close and full flow is again obtained. This allows good flow, even with today's restrictive showers and pullout sprayer faucets. Performance will vary, of course, depending on the voltage to the pump; lower voltage = lower flow, higher voltage = higher flow. Remember your electrical safety: It is always best to shut power to the pump OFF when leaving the RV unattended.

2

ABOUT THE BY-PASS

NOTE: By-pass adjustment should only be performed by a professional technician with proper gauges and equipment.

The by-pass is a spring loaded diaphragm that opens up allowing water from the discharge side back to the inlet side. The by-pass is set to begin opening at about 40 psi and creating full by-pass at about 62 psi (lower pressure pumps will vary depending on the by-pass and pressure shut-off settings). The pressure switch on the pump is set to shut off at 55 psi. If the switch or by-pass are adjusted too much, the by-pass and switch shut-off can overlap and **THE PUMP WILL NOT SHUT OFF.** Screw-

ing the switch screw in clockwise will raise the shut-off pressure. Unscrewing the switch screw counterclockwise will lower the pump shut-off pressure. Screwing the by-pass screw in will raise the pressure at which the by-pass starts and raise the full by-pass pressure. Unscrewing the by-pass screw counterclockwise will lower the pressure at which by-pass starts and lower the full by-pass pressure.

WARNING: If full by-pass is reached before the shut-off setting, the pump will not shut off. Full by-pass pressure setting should be at least 10 psi higher than pump shut off pressure.

SANITIZING

Potable water systems require periodic maintenance to keep components working properly and deliver a consistent flow of fresh water. Sanitizing is recommended: prior to storing, after a period of storage, or any time the system is opened or contaminated, as follows:

NOTE: Check your Vehicle Owner's Manual for specific instructions. By-pass any filters or remove filter cartridges.

1. Determine the amount of common household bleach needed to sanitize the tank.

A) 2 ounces of bleach per 15 gallons tank size: 60 gallon tank [15 x 4] = 4 x 2 ounces = 8 ounces of bleach.

B) 1 ml bleach per 1 liter tank size: 300 liter tank = 300 milliliters of bleach.

2. Mix the bleach with water in a container such as a gallon jug. If tank is filled through a pressurized fitting, pour the bleach into the hose before attaching the hose to the city water entry.

3. Pour the bleach solution into the tank and fill the tank with potable water. Rock the RV back and forth to coat top and sides of potable water tank.

4. Open all faucets (Hot & Cold) allowing the water to run until the odor of chlorine is detected. Allow four (4) hours of contact time to disinfect completely. Doubling the solution concentration allows for a contact time of one (1) hour.

5. Drain the tank. Refill the tank and flush the system once or twice until the odor has decreased. The residual chlorine odor and taste is not harmful.

WINTERIZING

Refer to the vehicle owner's manual for specific winterizing instructions.

If water is allowed to freeze in the system, serious damage to the plumbing and pump may occur. Failures of this type will void the warranty. The best guarantee against damage is to completely drain the pump and perform the following:

1. Drain the water tank. If the tank doesn't have a drain valve, open all faucets allowing the pump to operate until the tank is empty.

2. Open all the faucets (including the lowest valve or drain in the plumbing), allow the pump to purge the water from the plumbing, and then turn the pump OFF.

3. Using a pan to catch the remaining water, remove the plumbing at the pump's inlet/outlet ports. Turn the pump ON, allowing it to operate until the water is expelled. Turn OFF power to the pump once the plumbing is emptied. Do not reconnect the pump plumbing. Make a note at tank filler as a reminder: "Plumbing is disconnected".

4. All faucets must be left open to guard against any damage.

5. Potable anti-freeze may be poured down drains and toilets to protect p-traps and toilet seals. Sanitize the plumbing system before putting the plumbing system back in service.



TROUBLESHOOTING

Vibration induced by driving can loosen plumbing, strainers and pump hardware. Check for system components that are loose. Also, refer to the chart below for trouble-shooting tips.

PUMP WILL NOT START/ BLOWS CIRCUIT

- ✓ Electrical connections, fuse or breaker, main switch, and ground connection.
- ✓ Is the motor hot? Thermal breaker may have triggered; it will reset when cool.
- ✓ Is voltage present at the switch? Bypass pressure sw. Does the pump operate?
- ✓ Charging System for correct voltage ($\pm 10\%$) and good ground.
- ✓ For an open or grounded circuit, or motor; or improperly sized wire.
- ✓ For seized or locked diaphragm assembly (water frozen?).

WILL NOT PRIME/SPUTTERS (No discharge/Motor runs)

- ✓ Is the strainer clogged with debris?
- ✓ Is there water in the tank, or has air collected in the hot water heater?
- ✓ Is the inlet tubing/plumbing sucking in air at plumbing connections (vacuum leak)?
- ✓ Is inlet/outlet plumbing severely restricted or kinked? Restrictive valves?
- ✓ Proper voltage with the pump operating ($\pm 10\%$).
- ✓ For debris in pump inlet/outlet valves or swollen/dry valves.
- ✓ Pump housing for cracks or loose drive assembly screws.

RAPID CYCLING

- ✓ For restrictive plumbing and flow restrictions in faucets/shower heads.
- ✓ Water filter/purifier should be on separate feed line.
- ✓ Shut-off pressure set too low.

PUMP WILL NOT SHUT-OFF / RUNS WHEN FAUCET IS CLOSED

- ✓ Output side (pressure) plumbing for leaks, and inspect for leaky valves or toilet.
- ✓ For air trapped in outlet side (water heater) or pump head.
- ✓ For correct voltage to pump ($\pm 10\%$).
- ✓ For loose drive assembly or pump head screws.
- ✓ Are the valves held open by debris or is the rubber swollen?
- ✓ Pressure switch operation. By-pass set higher than shut-off.

NOISY OR ROUGH OPERATION

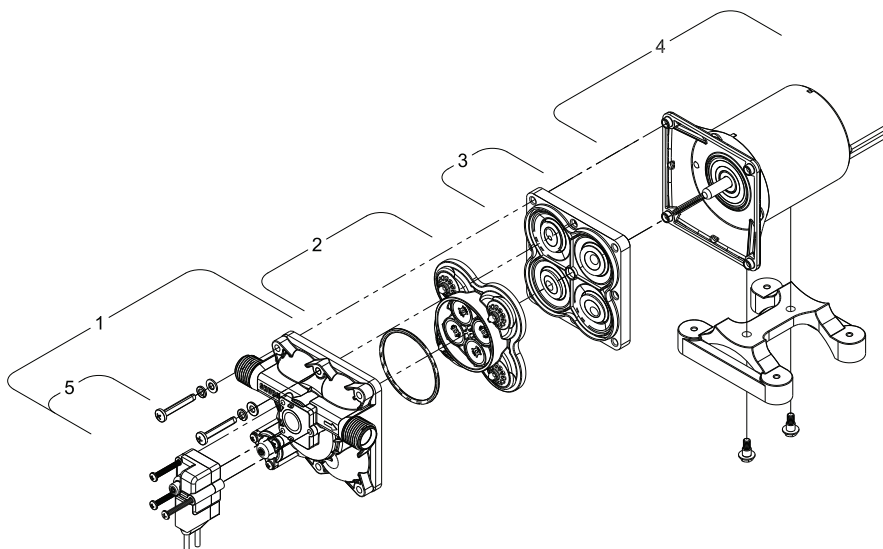
- ✓ For plumbing which may have vibrated loose.
- ✓ For a restricted inlet (clogged strainer, kinked hose, restrictive valves).
- ✓ Is the pump plumbed with rigid pipe causing noise to transmit?
- ✓ Does the mounting surface amplify noise (flexible)? Does it bang like a drum?
- ✓ For mounting feet that are loose or are compressed too tight.
- ✓ For air in the system. Check all fixtures for air and bleed system.
- ✓ The motor with pump head removed. Is noise from motor or pump head?

LEAKS FROM PUMP HEAD OR SWITCH

- ✓ For loose screws at switch or pump head.
- ✓ Switch diaphragm ruptured or pinched.
- ✓ For punctured diaphragm if water is present in drive assembly.

MAINTENANCE

Normal pump maintenance is all that is needed: Checking and cleaning of the strainer, normal sanitizing and winterizing and occasionally checking all plumbing hardware and fittings for tightness. Lack of sanitizing is the number one reason for premature pump failure and poor performance over time. Lack of sanitizing will cause scale build-up on the diaphragm and valves, causing low flow and leak back [occasional pump cycling with no faucets open or tank filling up when hooked up to city water].



REPAIR KITS

ITEM	COMPONENT	PARTS KIT
1, 5	Upper Assembly	94-800-00
2	Valve Assembly	94-800-01
3	2.5" Drive Assembly	94-800-02
4	Motor	94-11-302-00
N/S	Check Valve	94-800-03
1, 2, 3, 5	Pump Head	94-800-04
N/S	Pressure Switch	94-800-05



FLOW MANAGEMENT SOLUTIONS

3545 HARBOR GATEWAY SOUTH, SUITE 103, COSTA MESA, CA 92626, (800) 854-3218 WWW.SHURFLO.COM

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SMOKE DETECTOR

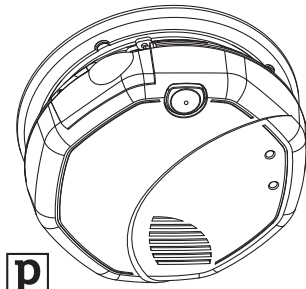
First Alert®

USER'S MANUAL

COMBINATION CARBON MONOXIDE & SMOKE ALARM

Features:

- Separate sensors to detect smoke and CO; the two alarm systems work independently
- Powered by two "AA" batteries
- Side access drawer for easy battery replacement



IMPORTANT! PLEASE READ CAREFULLY AND SAVE.

This user's manual contains important information about your Combination Carbon Monoxide & Smoke Alarm's operation. If you are installing this Alarm for use by others, you must leave this manual—or a copy of it—with the end user.

CONFORMS TO
UL STD 217
AND
UL STD 2034

Model SCO5

M08-0117-011 Q 06/12 Printed in Mexico

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Consumer Affairs: (800) 323-9005 • www.firstalert.com

All First Alert® Smoke Alarms conform to regulatory requirements, including UL217 and are designed to detect particles of combustion. Smoke particles of varying number and size are produced in all fires.

I Ionization technology is generally more sensitive than photoelectric technology at detecting small particles, which tend to be produced in greater amounts by flaming fires, which consume combustible materials rapidly and spread quickly. Sources of these fires may include paper burning in a wastebasket, or a grease fire in the kitchen.

P Photoelectric technology is generally more sensitive than ionization technology at detecting large particles, which tend to be produced in greater amounts by smoldering fires, which may smolder for hours before bursting into flame. Sources of these fires may include cigarettes burning in couches or bedding.

For maximum protection, use both types of Smoke Alarms on each level and in every bedroom of your home.

INTRODUCTION

FIRE SAFETY TIPS

Follow safety rules and prevent hazardous situations: 1) Use smoking materials properly. Never smoke in bed. 2) Keep matches or lighters away from children; 3) Store flammable materials in proper containers; 4) Keep electrical appliances in good condition and don't overload electrical circuits; 5) Keep stoves, barbecue grills, fireplaces and chimneys grease- and debris-free; 6) Never leave anything cooking on the stove unattended; 7) Keep portable heaters and open flames, like candles, away from flammable materials; 8) Don't let rubbish accumulate.

Keep alarms clean, and test them weekly. Replace alarms immediately if they are not working properly. Smoke Alarms that do not work cannot alert you to a fire. Keep at least one working fire extinguisher on every floor, and an additional one in the kitchen. Have fire escape ladders or other reliable means of escape from an upper floor in case stairs are blocked.

BASIC SAFETY INFORMATION

IMPORTANT!

- Dangers, Warnings, and Cautions alert you to important operating instructions or to potentially hazardous situations. Pay special attention to these items.
- This Smoke/CO Alarm is approved for use in single-family residences. It is NOT designed for marine or RV use.

CAUTION!

- This combination Smoke/Carbon Monoxide Alarm has two separate alarms. The CO Alarm is not designed to detect fire or any other gas. It will only indicate the presence of carbon monoxide gas at the sensor. Carbon monoxide gas may be present in other areas. The Smoke Alarm will only indicate the presence of smoke that reaches the sensor. The Smoke Alarm is not designed to sense gas, heat or flames.

WARNING!

- This Smoke/CO Alarm cannot operate without working batteries. Removing the batteries for any reason, or failing to replace the batteries at the end of their service life, removes your protection.
- NEVER ignore any alarm. See "If Your Smoke/CO Alarm Sounds" for more information on how to respond to an alarm. Failure to respond can result in injury or death.

- The Silence Features are for your convenience only and will not correct a problem. See "Using the Silence Features" for details. Always check your home for a potential problem after any alarm. Failure to do so can result in injury or death.
- Test this Smoke/CO Alarm once a week. If the Alarm ever fails to test correctly, have it replaced immediately! If the Alarm is not working properly, it cannot alert you to a problem.
- This product is intended for use in ordinary indoor locations of family living units. It is not designed to measure CO levels in compliance with Occupational Safety and Health Administration (OSHA) commercial or industrial standards. Individuals with medical conditions that may make them more sensitive to carbon monoxide may consider using warning devices which provide audible and visual signals for carbon monoxide concentrations under 30 ppm. For additional information on carbon monoxide and your medical condition contact your physician.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio or TV technician for help.

Warning: Changes or modifications to the product, not expressly approved by First Alert / BRK Brands, Inc., could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

INSTALLATION

WHERE TO INSTALL THIS ALARM

Minimum coverage for Smoke Alarms, as recommended by the National Fire Protection Association (NFPA), is one Smoke Alarm on every floor, in every sleeping area, and in every bedroom (See "Regulatory Information For Smoke Alarms" for details on the NFPA recommendations).

For CO Alarms, the National Fire Protection Association (NFPA) recommends that a CO Alarm should be centrally located outside of each separate sleeping area in the immediate vicinity of the bedrooms. For added protection, install additional CO Alarms in each separate bedroom, and on every level of your home.

NOTE: For added protection, install an additional Smoke/CO Alarm at least 15 feet (4.6 meters) away from the furnace or fuel burning heat source where possible. In smaller homes or in manufactured homes where this distance cannot be maintained, install the Alarm as far away as possible from the furnace or other fuel burning source. Installing the Alarm closer than 15 feet (4.6 meters) will not harm the Alarm, but may increase the frequency of unwanted alarms.

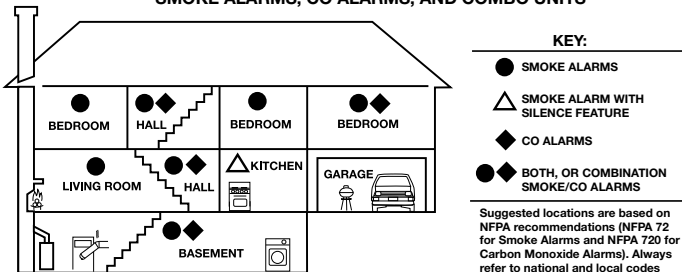
In general, install combination Smoke and Carbon Monoxide Alarms:

- On every level of your home, including finished attics and basements.
- Inside every bedroom, especially if people sleep with the door partly or completely closed.
- In the hall near every sleeping area. If your home has multiple sleeping areas, install a unit in each. If a hall is more than 40 feet (12 meters) long, install a unit at each end.
- At the top of first-to-second floor stairs.
- At the bottom of the basement stairs.
- For additional coverage, install Alarms in all rooms, halls, and storage areas, where temperatures normally remain between 40° F and 100° F (4.4° C and 37.8° C).



RECOMMENDED PLACEMENT

SUGGESTED AREAS FOR INSTALLING SMOKE ALARMS, CO ALARMS, AND COMBO UNITS



In new construction AC and AC/DC smoke alarms **MUST** be interconnected to meet NFPA recommendations.

- When installing on the wall, the top edge of Smoke Alarms should be placed between 4 inches (102 mm) and 12 inches (305 mm) from the wall/ceiling line.
- When installing on the ceiling, place the alarm as close to the center as possible.
- In either case, install at least 4 inches (102 mm) from where the wall and ceiling meet. See "Avoiding Dead Air Spaces" for more information.

NOTE: For any location, make sure no door or other obstruction could keep carbon monoxide or smoke from reaching the Alarm.

Installing Smoke/CO Alarms in Mobile Homes

For minimum security install one Smoke/CO Alarm as close to each sleeping area as possible. For more security, put one unit in each room. Many older mobile homes (especially those built before 1978) have little or no insulation. If your mobile home is not well insulated, or if you are unsure of the amount of insulation, it is important to install units on inside walls only.

WHERE THIS ALARM SHOULD NOT BE INSTALLED

Do NOT locate this Smoke/CO Alarm:

- In garages, furnace rooms, crawl spaces and unfinished attics. Avoid extremely dusty, dirty or greasy areas.
- Where combustion particles are produced. Combustion particles form when something burns. Areas to avoid include poorly ventilated kitchens, garages, and furnace rooms. Keep units at least 20 feet (6 meters) from the sources of combustion particles (stove, furnace, water heater, space heater) if possible. In areas where a 20-foot (6 meter) distance is not possible – in modular, mobile, or smaller homes, for example – it is recommended the Smoke Alarm be placed as far from these fuel-burning sources as possible. The placement recommendations are intended to keep these Alarms at a reasonable distance from a fuel-burning source, and thus reduce "unwanted" alarms. Unwanted alarms can occur if a Smoke Alarm is placed directly next to a fuel-burning source. Ventilate these areas as much as possible.
- Within 5 feet (1.5 meters) of any cooking appliance. In air streams near kitchens. Air currents can draw cooking smoke into the smoke sensor and cause unwanted alarms.
- In extremely humid areas. This Alarm should be at least 10 feet (3 meters) from a shower, sauna, humidifier, vaporizer, dishwasher, laundry room, utility room, or other source of high humidity.
- In direct sunlight.
- In turbulent air, like near ceiling fans or open windows. Blowing air may prevent CO or smoke from reaching the sensors.
- In areas where temperature is colder than 40° F (4.4° C) or hotter than 100° F (37.8° C). These areas include non-airconditioned crawl spaces, unfinished attics, uninsulated or poorly insulated ceilings, porches, and garages.
- In insect infested areas. Insects can clog the openings to the sensing chamber.
- Less than 12 inches (305 mm) away from fluorescent lights. Electrical "noise" can interfere with the sensor.
- In "dead air" spaces. See "Avoiding Dead Air Spaces".

AVOIDING DEAD AIR SPACES

"Dead air" spaces may prevent smoke from reaching the Smoke/CO Alarm. To avoid dead air spaces, follow installation recommendations below.

On ceilings, install Smoke/CO Alarms as close to the center of the ceiling as possible. If this is not possible, install the Smoke/CO Alarm at least 4 inches (102 mm) from the wall or corner.

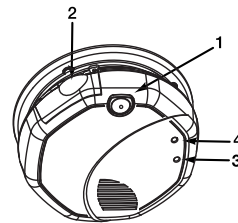
For wall mounting (if allowed by building codes), the top edge of Smoke/CO Alarms should be placed between 4 inches (102 mm) and 12 inches (305 mm) from the wall/ceiling line, below typical "dead air" spaces.

On a peaked, gabled, or cathedral ceiling, install first Smoke/CO Alarm within 3 feet (0.9 meters) of the peak of the ceiling, measured horizontally. Additional Smoke/CO Alarms may be required depending on the length, angle, etc. of the ceiling's slope. Refer to NFPA 72 for details on requirements for sloped or peaked ceilings.

HOW TO INSTALL THIS ALARM

IMPORTANT!

This combination Smoke/CO Alarm was designed to be mounted on the ceiling or wall. It is not a tabletop device. You must install this device on the ceiling or wall as outlined below. Read "Where To Install This Alarm" before starting.



PARTS OF THIS SMOKE/CO ALARM

- 1 Test/Silence Button
- 2 Battery Compartment
- 3 Power/Smoke Alarm LED
- 4 CO Alarm LED

Tools you will need: pencil, drill with 3/16" or 5mm drill bit, flathead screwdriver, hammer.

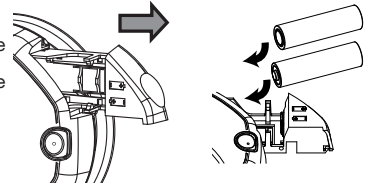
CAUTION!

- Do not connect this unit to any other alarm or auxiliary device. It is a single-station unit that cannot be linked to other devices. Connecting anything else to this unit may prevent it from working properly.
- Do not install this unit over an electrical junction box. Air currents around junction boxes can prevent smoke from reaching the sensing chamber and prevent the unit from alarming. Only AC powered units are intended for installation over junction boxes.

IMPORTANT!

If you want to lock the battery compartment, or lock the Smoke/CO Alarm to the mounting bracket, please read the "Optional Locking Features" section.

1. Hold base firmly and twist the mounting bracket counterclockwise (left) to separate it from the unit.
2. Hold the mounting bracket against the ceiling (or wall) so the vertical mounting slot is aligned in the 12 o'clock position and trace around the inside of the mounting slots (vertical and horizontal mounting).
3. Put the unit where it won't get covered with dust when you drill the mounting holes.
4. Using a 3/16" (5 mm) drill bit, drill a hole through the center of the oval outlines you traced.
5. Insert the plastic screw anchors (in the plastic bag with screws) into the holes. Tap the screw anchors gently with a hammer, if necessary, until they are flush with the ceiling or wall.
6. Line the mounting bracket up over the plastic screw anchors.
7. Screw the mounting bracket to the ceiling or wall through the mounting slots using the two screws provided.
8. Before attaching the Alarm to the bracket, insert the two (2) AA batteries (included) into the battery compartment. Match the terminals on the end of the battery with the terminals on the unit. Match "+" to "+" and "-" to "-." If the batteries are not fully inserted, the unit cannot receive battery power.

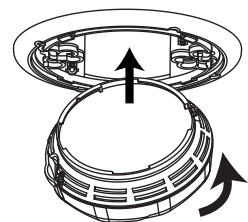


NOTE: The unit may beep briefly when you install the batteries. This is normal. The GREEN Light flashes about every 60 seconds when the unit is receiving battery power.

WARNING!

The battery door will resist closing unless batteries are installed. This warns you the unit will not operate without batteries.

9. Attach the Smoke/CO Alarm to the mounting bracket. Line up the guides on the alarm's base with the guides on the mounting bracket. When guides are lined up, turn the base clockwise (right) until it snaps into place.
- NOTE:** Once the Smoke/CO Alarm is snapped onto the mounting bracket, you can rotate the Smoke/CO Alarm to adjust the alignment.
10. Test the Smoke/CO Alarm. See "Weekly Testing" for details.



REGULAR MAINTENANCE

This unit has been designed to be as maintenance-free as possible, but there are a few simple things you must do to keep it working properly.

- Test it at least once a week.
- Clean the Smoke/CO Alarm at least once a month; gently vacuum the outside of the Smoke/CO Alarm using your household vacuum's soft brush attachment. A can of clean compressed air (sold at computer or office supply stores) may also be used. Follow manufacturer instructions for use. Test the Smoke/CO Alarm. Never use water, cleaners or solvents since they may damage the unit.
- If the Smoke/CO Alarm becomes contaminated by excessive dirt, dust and/or grime, and cannot be cleaned to avoid unwanted alarms, replace the unit immediately.

Continued...



SMOKE DETECTOR

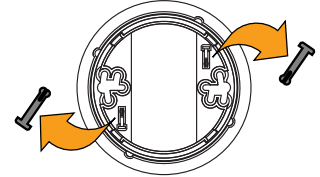
OPTIONAL LOCKING FEATURES

The optional locking features are designed to discourage unauthorized removal of the batteries or Alarm. It is not necessary to activate the locks in single-family households where unauthorized battery or Alarm removal is not a concern.

This Smoke/CO Alarm has two separate locking features: one to lock the battery compartment, and the other to lock the Smoke/CO Alarm to the mounting bracket. You can choose to use either feature independently, or use them both.

Tools you will need: • Needle-nose pliers or utility knife • Standard flathead screwdriver.

Both locking features use locking pins, which are molded into the mounting bracket. Depending on which locking features you use, remove one or both pins from the mounting bracket using needle-nose pliers or a utility knife.



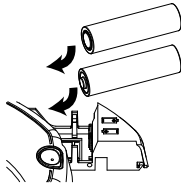
IMPORTANT!

To permanently remove either locking pin, insert a flathead screwdriver between the locking pin and the lock, and pry the pin out of the lock.

TO LOCK THE BATTERY COMPARTMENT

Do not lock the battery compartment until you activate the battery and test the Smoke/CO Alarm.

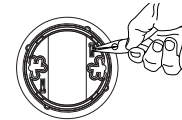
1. Install the batteries before attaching the Alarm to the bracket. Insert the two (2) AA batteries (included) into the battery compartment. Match the terminals on the end of the battery with the terminals on the unit. Match "+" to "+" and "-" to "-." If the batteries are not fully inserted, the unit cannot receive battery power.



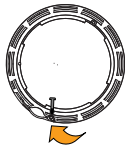
2. Push and hold Test/Silence button until the alarm sounds.

IMPORTANT!

If the unit does not alarm during testing, DO NOT lock the battery compartment! Install new batteries and test again. If the unit still does not alarm, replace it immediately.

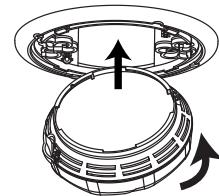
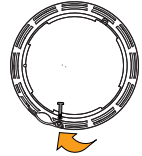
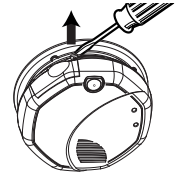


3. Using needle-nose pliers or a utility knife, detach one locking pin from the mounting bracket.
4. Push the locking pin through the hole near the battery door latch on the back of the Smoke/CO Alarm.



TO UNLOCK THE BATTERY COMPARTMENT

1. Remove the Smoke/CO Alarm from the mounting bracket. If the unit is locked to the bracket, see the section "To Unlock the Mounting Bracket."
2. Insert a flathead screwdriver under the head of the locking pin, and gently pry it out of the battery compartment lock. (If you plan to relock the battery compartment, save the locking pin.)
3. To relock the battery compartment, close the battery door and reinsert locking pin in lock.
4. Reattach the Smoke/CO Alarm to the mounting bracket.

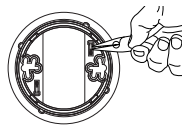


IMPORTANT!

When replacing the batteries, always test the Smoke/CO Alarm before relocking the battery compartment.

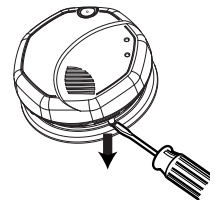
TO LOCK THE MOUNTING BRACKET

1. Using needle-nose pliers or a utility knife, detach one locking pin from the mounting bracket.
2. Insert the locking pin through the hole on the back of the Smoke/CO Alarm as shown in the diagram.
3. When you attach the Smoke/CO Alarm to the mounting bracket, the locking pin's head will fit into a notch on the bracket.



TO UNLOCK THE MOUNTING BRACKET

1. Insert a flathead screwdriver into the rectangular cut-out on the mounting bracket nearest to the locking pin.
2. Pry the Smoke/CO Alarm away from the bracket by pushing up on the screwdriver and turning the Smoke/CO Alarm counterclockwise (left) at the same time.



WEEKLY TESTING

⚠ WARNING!

- NEVER use an open flame of any kind to test this unit. You might accidentally damage or set fire to the unit or to your home. The built-in test switch accurately tests the unit's operation as required by Underwriters Laboratories, Inc. (UL). NEVER use vehicle exhaust! Exhaust may cause permanent damage and voids your warranty.
- DO NOT stand close to the Alarm when the horn is sounding. Exposure at close range may be harmful to your hearing. When testing, step away when horn starts sounding.

⚠ CAUTION!

It is important to test this unit every week to make sure it is working properly. Using the test button is the recommended way to test this Smoke/CO Alarm.

You can test this Smoke/CO Alarm: Press and hold the Test/Silence button 3-5 seconds until unit starts to alarm.

During testing, you will see and hear the following sequence:

- The **Horn** will sound 3 beeps, pause, 3 beeps. The **Power/Smoke LED** flashes Red and the **CO LED** will be Off.
- Next the **Horn** will sound 4 beeps, pause, 4 beeps. The **Power/Smoke LED** will be Off and the **CO LED** flashes Red.

If the unit does not alarm, make sure the batteries are correctly installed, and test again. If the unit still does not alarm, replace it immediately.

REGULAR MAINTENANCE, Continued

- Relocate the unit if it sounds frequent unwanted alarms. See “Where This Alarm Should Not Be Installed” for details.

Choosing a replacement battery:

Your Smoke/CO Alarm requires two standard AA batteries. The following batteries are acceptable as replacements: Duracell MN1500. These batteries are available at many local retail stores.

▲WARNING!

- Always use the exact batteries specified by this User's Manual. DO NOT use rechargeable batteries. Clean the battery contacts and also those of the device prior to battery installation. Install batteries correctly with regard to polarity (+ and -).
- Please dispose of or recycle used batteries properly, following any local regulations. Consult your local waste management authority or recycling organization to find an electronics recycling facility in your area. DO NOT DISPOSE OF BATTERIES IN FIRE. BATTERIES MAY EXPLODE OR LEAK.

▲WARNING!

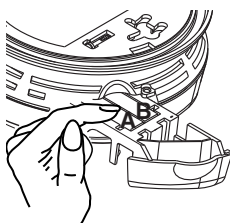
- Keep battery out of reach of children. In the event a battery is swallowed, immediately contact your poison control center, your physician, or the National Battery Ingestion hotline at 202-625-3333 as serious injury may occur.

IMPORTANT!

Actual battery service life depends on the Smoke/CO Alarm and the environment in which it is installed. All the batteries specified above are acceptable replacement batteries for this unit. Regardless of the manufacturer's suggested battery life, you MUST replace the battery immediately once the unit starts “chirping” (the “low battery warning”).

To replace the batteries (without removing Alarm from the ceiling or wall):

- Open the battery compartment.
- Press tabs A and B as shown in the diagram and remove each battery.
- Insert the new batteries, making sure they snap completely into the battery compartment. Match the terminals on the ends of the batteries with the terminals on the unit.
- Close the battery compartment, and then test the unit by pressing the Test/Silence button.



IF YOUR SMOKE/CO ALARM SOUNDS

WHAT TO DO FIRST—IDENTIFY THE TYPE OF ALARM

Type of Alarm	What You See and Hear
Carbon Monoxide (CO)	CO LED: Flashes Red Horn: 4 beeps, pause, 4 beeps, pause Power/Smoke LED: Off
Smoke	Power/Smoke LED: Flashes Red Horn: 3 beeps, pause, 3 beeps, pause CO LED: Off

IF THE CO ALARM SOUNDS

“ALARM—MOVE TO FRESH AIR”

If you hear the CO alarm horn and the CO red light is flashing, move everyone to a source of fresh air. DO NOT remove the batteries!

▲WARNING!

Actuation of your CO Alarm indicates the presence of carbon monoxide (CO) which can kill you. In other words, when your CO Alarm sounds, you must not ignore it!

IF THE CO ALARM SIGNAL SOUNDS:

- Operate the Test/Silence button.
- Call your emergency services, fire department or 911. Write down the number of your local emergency service here:

- Immediately move to fresh air—outdoors or by an open door or window. Do a head count to check that all persons are accounted for. Do not re-enter the premises, or move away from the open door or window until the emergency services responder has arrived, the premises have been aired out, and your CO Alarm remains in its normal condition.
- After following steps 1-3, if your CO Alarm reactivates within a 24-hour period, repeat steps 1-3 and call a qualified appliance technician to investigate for sources of CO from fuel-burning equipment and appliances, and inspect for proper operation of this equipment. If problems are identified during this inspection have the equipment serviced immediately. Note any combustion equipment not inspected by the technician, and consult the manufacturers' instructions, or contact the manufacturers directly, for more information about CO safety and this equipment. Make sure that motor vehicles are not, and have not, been operating in an attached garage or adjacent to the residence. Write down the number of a qualified appliance technician here:

NOTE: A qualified appliance technician is defined as “a person, firm, corporation, or company that either in person or through a representative, is engaged in and responsible for the installation, testing, servicing, or replacement of heating, ventilation, air conditioning (HVAC) equipment, combustion appliances and equipment, and/or gas fireplaces or other decorative combustion

equipment.”

IF THE SMOKE ALARM SOUNDS

RESPONDING TO AN ALARM

▲WARNING!

- If the unit alarms and you are not testing the unit, it is warning you of a potentially dangerous situation that requires your immediate attention. NEVER ignore any alarm. Ignoring the alarm may result in injury or death.
- Never remove the batteries from a battery operated Smoke/CO Alarm to stop an unwanted alarm (caused by cooking smoke, etc.). Removing batteries disables the alarm so it cannot sense smoke, and removes your protection. Instead open a window or fan the smoke away from the unit. The alarm will reset automatically.
- If the unit alarms get everyone out of the house immediately.

WHAT TO DO IN CASE OF FIRE

- Don't panic; stay calm. Follow your family escape plan.
- Get out of the house as quickly as possible. Don't stop to get dressed or collect anything.
- Feel doors with the back of your hand before opening them. If a door is cool, open it slowly. Don't open a hot door. Keep doors and windows closed, unless you must escape through them.
- Cover your nose and mouth with a cloth (preferably damp). Take short, shallow breaths.
- Meet at your planned meeting place outside your home, and do a head count to make sure everybody got out safely.
- Call the Fire Department as soon as possible from outside. Give your address, then your name.
- Never go back inside a burning building for any reason.
- Contact your Fire Department for ideas on making your home safer.

▲WARNING!

Alarms have various limitations. See "General Limitations of Smoke/CO Alarms" for details.

USING THE SILENCE FEATURES

▲WARNING!

Never remove the batteries to quiet an unwanted alarm. Removing the batteries disables the alarm and removes your protection.

The Silence Feature is intended to temporarily silence the horn while you identify and correct the problem. Do not use the Silence Feature in emergency situations. It will not correct a CO problem or extinguish a fire.

The Silence Feature can temporarily quiet an unwanted alarm for several minutes. Press the Test/Silence button on the alarm cover for at least 3-5 seconds.

After the Test/Silence button is released, the Red LED blinks during the silence mode.

When the Smoke Alarm is Silenced	When the CO Alarm is Silenced
The Smoke Alarm will remain silent for up to 15 minutes, then return to normal operation.	The CO alarm will remain silent for up to 4 minutes.
If the smoke has not cleared—or continues to increase—the device will go back into alarm.	After 4 minutes, if CO levels remain potentially dangerous the horn will start sounding again.

SILENCING THE LOW BATTERY WARNING

This silence feature can temporarily quiet the low battery warning “chirp” for up to 8 hours. Press the Test/Silence button on the alarm cover.

Once the low battery warning “chirp” silence feature is activated, the unit continues to flash the Green light once a minute for 8 hours. After 8 hours, the low battery “chirp” will resume. **Replace the batteries as soon as possible; this unit will not operate without battery power!**

To deactivate this feature: Press the Test/Silence button again. The unit will go into Test Mode and the low battery warning will resume (LED flashes and unit sounds “chirp” once a minute).

SILENCING THE END OF LIFE SIGNAL

This silence feature can temporarily quiet the End of Life warning “chirp” for up to 2 days. You can silence the End of Life warning “chirp” by pressing the Test/Silence button. The horn will chirp, acknowledging that the End of Life silence feature has been activated.

After approximately 2 days, the End of Life “chirp” will resume.



SMOKE DETECTOR

WHAT YOU NEED TO KNOW ABOUT CO WHAT IS CO?

CO is an invisible, odorless, tasteless gas produced when fossil fuels do not burn completely, or are exposed to heat (usually fire). Electrical appliances typically do not produce CO.

These fuels include: Wood, coal, charcoal, oil, natural gas, gasoline, kerosene, and propane.

Common appliances are often sources of CO. If they are not properly maintained, are improperly ventilated, or malfunction, CO levels can rise quickly. CO is a real danger now that homes are more energy efficient. “Air-tight” homes with added insulation, sealed windows, and other weatherproofing can “trap” CO inside.

SYMPTOMS OF CO POISONING

These symptoms are related to CO POISONING and should be discussed with ALL household members.

Mild Exposure: Slight headache, nausea, vomiting, fatigue (“flu-like” symptoms).

Medium Exposure: Throbbing headache, drowsiness, confusion, fast heart rate.

Extreme Exposure: Convulsions, unconsciousness, heart and lung failure. Exposure to Carbon Monoxide can cause brain damage, death.

IMPORTANT!

This CO Alarm measures exposure to CO over time. It alarms if CO levels are extremely high in a short period of time, or if CO levels reach a certain minimum over a long period of time. The CO Alarm generally sounds an alarm before the onset of symptoms in average, healthy adults. Why is this important? Because you need to be warned of a potential CO problem while you can still react in time. In many reported cases of CO exposure, victims may be aware that they are not feeling well, but become disoriented and can no longer react well enough to exit the building or get help. Also, young children and pets may be the first affected. The average healthy adult might not feel any symptoms when the CO Alarm sounds. However, people with cardiac or respiratory problems, infants, unborn babies, pregnant mothers, or elderly people can be more quickly and severely affected by CO. If you experience even mild symptoms of CO poisoning, consult your doctor immediately!

FINDING THE SOURCE OF CO AFTER AN ALARM

Carbon monoxide is an odorless, invisible gas, which often makes it difficult to locate the source of CO after an alarm. These are a few of the factors that can make it difficult to locate sources of CO:

- House well ventilated before the investigator arrives.
- Problem caused by “backdrafting.”
- Transient CO problem caused by special circumstances.

Because CO may dissipate by the time an investigator arrives, it may be difficult to locate the source of CO. **BRK Brands, Inc. shall not be obligated to pay for any carbon monoxide investigation or service call.**

POTENTIAL SOURCES OF CO IN THE HOME

Fuel-burning appliances like: portable heater, gas or wood burning fireplace, gas kitchen range or cooktop, gas clothes dryer.

Damaged or insufficient venting: corroded or disconnected water heater vent pipe, leaking chimney pipe or flue, or cracked heat exchanger, blocked or clogged chimney opening.

Improper use of appliance/device: operating a barbecue grill or vehicle in an enclosed area (like a garage or screened porch).

Transient CO Problems: “transient” or on-again-off-again CO problems can be caused by outdoor conditions and other special circumstances.

The following conditions can result in transient CO situations:

1. Excessive spillage or reverse venting of fuel appliances caused by outdoor conditions such as:
 - Wind direction and/or velocity, including high, gusty winds. Heavy air in the vent pipes (cold/humid air with extended periods between cycles).
 - Negative pressure differential resulting from the use of exhaust fans.
 - Several appliances running at the same time competing for limited fresh air.
 - Vent pipe connections vibrating loose from clothes dryers, furnaces, or water heaters.
 - Obstructions in or unconventional vent pipe designs which can amplify the above situations.
2. Extended operation of unvented fuel burning devices (range, oven, fireplace).
3. Temperature inversions, which can trap exhaust close to the ground.
4. Car idling in an open or closed attached garage, or near a home.

These conditions are dangerous because they can trap exhaust in your home. Since these conditions can come and go, they are also hard to recreate during a CO investigation.

HOW CAN I PROTECT MY FAMILY FROM CO POISONING?

A CO Alarm is an excellent means of protection. It monitors the air and sounds a loud alarm before Carbon Monoxide levels become threatening for average, healthy adults.

A CO Alarm is not a substitute for proper maintenance of home appliances.

To help prevent CO problems and reduce the risk of CO poisoning:

- Clean chimneys and flues yearly. Keep them free of debris, leaves, and nests for proper air flow. Also, have a professional check for rust and corrosion, cracks, or separations. These conditions can prevent proper air movement and cause backdrafting. Never “cap” or cover a chimney in any way that would block air flow.

- Test and maintain all fuel-burning equipment annually. Many local gas or oil companies and HVAC companies offer appliance inspections for a nominal fee.
- Make regular visual inspections of all fuel-burning appliances. Check appliances for excessive rust and scaling. Also check the flame on the burner and pilot lights. The flame should be blue. A yellow flame means fuel is not being burned completely and CO may be present. Keep the blower door on the furnace closed. Use vents or fans when they are available on all fuel-burning appliances. Make sure appliances are vented to the outside. Do not grill or barbecue indoors, or in garages or on screen porches.
- Check for exhaust backflow from CO sources. Check the draft hood on an operating furnace for a backdraft. Look for cracks on furnace heat exchangers.
- Check the house or garage on the other side of shared wall.
- Keep windows and doors open slightly. If you suspect that CO is escaping into your home, open a window or a door. Opening windows and doors can significantly decrease CO levels.

In addition, familiarize yourself with all enclosed materials. Read this manual in its entirety, and make sure you understand what to do if your CO Alarm sounds.

REGULATORY INFORMATION FOR SMOKE/CO ALARMS

REGULATORY INFORMATION FOR CO ALARMS

WHAT LEVELS OF CO CAUSE AN ALARM?

Underwriters Laboratories Inc. Standard UL2034 requires residential CO Alarms to sound when exposed to levels of CO and exposure times as described below. They are measured in parts per million (ppm) of CO over time (in minutes).

UL2034 Required Alarm Points*:

- If the alarm is exposed to 400 ppm of CO, IT MUST ALARM BETWEEN 4 and 15 MINUTES.
- If the alarm is exposed to 150 ppm of CO, IT MUST ALARM BETWEEN 10 and 50 MINUTES.
- If the alarm is exposed to 70 ppm if CO, IT MUST ALARM BETWEEN 60 and 240 MINUTES.

* Approximately 10% COHb exposure at levels of 10% to 95% Relative Humidity (RH).

The unit is designed not to alarm when exposed to a constant level of 30 ppm for 30 days.

IMPORTANT!

CO Alarms are designed to alarm before there is an immediate life threat. Since you cannot see or smell CO, never assume it’s not present.

- An exposure to 100 ppm of CO for 20 minutes may not affect average, healthy adults, but after 4 hours the same level may cause headaches.
- An exposure to 400 ppm of CO may cause headaches in average, healthy adults after 35 minutes, but can cause death after 2 hours.

Standards: Underwriters Laboratories Inc. Single and Multiple Station carbon monoxide alarms UL2034.

According to Underwriters Laboratories Inc. UL2034, Section 1-1.2: “Carbon monoxide alarms covered by these requirements are intended to respond to the presence of carbon monoxide from sources such as, but not limited to, exhaust from internal-combustion engines, abnormal operation of fuel-fired appliances, and fireplaces. CO Alarms are intended to alarm at carbon monoxide levels below those that could cause a loss of ability to react to the dangers of Carbon Monoxide exposure.” This CO Alarm monitors the air at the Alarm, and is designed to alarm before CO levels become life threatening. This allows you precious time to leave the house and correct the problem. This is only possible if Alarms are located, installed, and maintained as described in this manual.

Gas Detection at Typical Temperature and Humidity Ranges: The CO Alarm is not formulated to detect CO levels below 30 ppm typically. UL tested for false alarm resistance to Methane (500 ppm), Butane (300 ppm), Heptane (500 ppm), Ethyl Acetate (200 ppm), Isopropyl Alcohol (200 ppm) and Carbon Dioxide (5000 ppm). Values measure gas and vapor concentrations in parts per million.

Audible Alarm: 85 dB minimum at 10 feet (3 meters).

REGULATORY INFORMATION FOR SMOKE ALARMS

RECOMMENDED LOCATIONS FOR SMOKE ALARMS

Installing Smoke Alarms in Single-Family Residences

The National Fire Protection Association (NFPA), recommends one Smoke Alarm on every floor, in every sleeping area, and in every bedroom. In new construction, the Smoke Alarms must be AC powered and interconnected. See “Agency Placement Recommendations” for details.

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RECOMMENDED LOCATIONS FOR SMOKE ALARMS, Continued

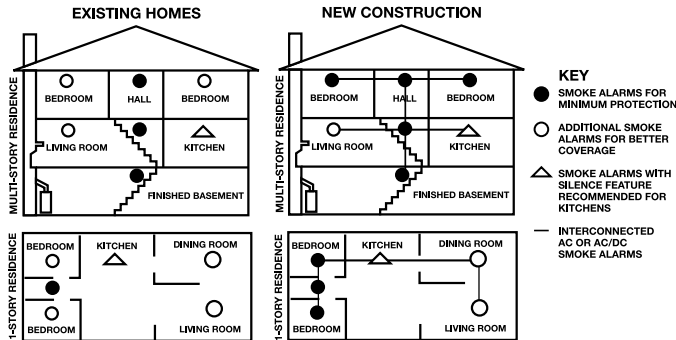
For additional coverage, it is recommended that you install a Smoke Alarm in all rooms, halls, storage areas, finished attics, and basements, where temperatures normally remain between 40° F (4.4° C) and 100° F (37.8° C). Make sure no door or other obstruction could keep smoke from reaching the Smoke Alarms.

More specifically, install Smoke Alarms:

- On every level of your home, including finished attics and basements.
- Inside every bedroom, especially if people sleep with the door partly or completely closed.
- In the hall near every sleeping area. If your home has multiple sleeping areas, install a unit in each. If a hall is more than 40 feet long (12 meters), install a unit at each end.
- At the top of the first-to-second floor stairway, and at the bottom of the basement stairway.

IMPORTANT!

Specific requirements for Smoke Alarm installation vary from state to state and from region to region. Check with your local Fire Department for current requirements in your area. **It is recommended AC or AC/DC units be interconnected for added protection.**



AGENCY PLACEMENT RECOMMENDATIONS

Standards: Underwriters Laboratories Inc. Single and Multiple Station Smoke Alarms 217.

NFPA 72 Chapter 29

“For your information, the **National Fire Alarm and Signaling Code, NFPA 72**, reads as follows:”

29.5.1* Required Detection.

29.5.1.1* Where required by other governing laws, codes, or standards for a specific type of occupancy, approved single and multiple-station smoke alarms shall be installed as follows:

- (1)*In all sleeping rooms and guest rooms
- (2)*Outside of each separate dwelling unit sleeping area, within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel
- (3) On every level of a dwelling unit, including basements
- (4) On every level of a residential board and care occupancy (small facility), including basements and excluding crawl spaces and unfinished attics
- (5)*In the living area(s) of a guest suite
- (6) In the living area(s) of a residential board and care occupancy (small facility)

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Continued...

GENERAL LIMITATIONS OF SMOKE/CO ALARMS

This Smoke/CO Alarm is intended for residential use. It is not intended for use in industrial applications where Occupational Safety and Health Administration (OSHA) requirements for Carbon Monoxide Alarms must be met. The Smoke Alarm portion of this device is not intended to alert hearing impaired residents. Special purpose Smoke Alarms should be installed for hearing impaired residents (CO Alarms are not yet available for the hearing impaired).

Smoke/CO Alarms may not waken all individuals. Practice the escape plan at least twice a year, making sure that everyone is involved – from kids to grandparents. Allow children to master fire escape planning and practice before holding a fire drill at night when they are sleeping. If children or others do not readily awaken to the sound of the Smoke/CO Alarm, or if there are infants or family members with mobility limitations, make sure that someone is assigned to assist them in fire drill and in the event of an emergency. It is recommended that you hold a fire drill while family members are sleeping in order to determine their response to the sound of the Smoke/CO Alarm while sleeping and to determine whether they may need assistance in the event of an emergency.

Smoke/CO Alarms cannot work without power. Battery operated units cannot work if the batteries are missing, disconnected or dead, if the wrong type of batteries are used, or if the batteries are not installed correctly. AC units cannot work if the AC power is cut off for any reason (open fuse or circuit breaker, failure along a power line or at a power station, electrical fire that burns the electrical wires, etc.). If you are concerned about the limitations of battery or AC power, install both types of units.

AGENCY PLACEMENT RECOMMENDATIONS, Continued

California State Fire Marshal (CSFM)

Early warning detection is best achieved by the installation of fire detection equipment in all rooms and areas of the household as follows: A Smoke Alarm installed in each separate sleeping area (in the vicinity, but outside bedrooms), and Heat or Smoke Alarms in the living rooms, dining rooms, bedrooms, kitchens, hallways, finished attics, furnace rooms, closets, utility and storage rooms, basements, and attached garages.

ABOUT SMOKE ALARMS

Battery (DC) operated Smoke Alarms: Provide protection even when electricity fails, provided the batteries are fresh and correctly installed. Units are easy to install, and do not require professional installation.

AC powered Smoke Alarms: Can be interconnected so if one unit senses smoke, all units alarm. They do not operate if electricity fails.

AC with battery (DC) back-up: will operate if electricity fails, provided the batteries are fresh and correctly installed. AC and AC/DC units must be installed by a qualified electrician.

Smoke/CO Alarms for Solar or Wind Energy users and battery backup power systems: AC powered Smoke/CO Alarms should only be operated with true or pure sine wave inverters. Operating this Alarm with most battery-powered UPS (uninterruptible power supply) products or square wave or “quasi sine wave” inverters **will damage the Alarm**. If you are not sure about your inverter or UPS type, please consult with the manufacturer to verify.

Smoke Alarms for the hearing impaired: Special purpose Smoke Alarms should be installed for the hearing impaired. They include a visual alarm and an audible alarm horn, and meet the requirements of the Americans With Disabilities Act. Can be interconnected so if one unit senses smoke, all units alarm.

Smoke alarms are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.

All these Smoke Alarms are designed to provide early warning of fires if located, installed and cared for as described in the user’s manual, and if smoke reaches the Alarm. If you are unsure which type of Smoke Alarm to install, refer the National Fire Protection Association (NFPA) Standard 72 (National Fire Alarm and Signaling Code) and NFPA 101 (Life Safety Code). National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269-9101. Local building codes may also require specific units in new construction or in different areas of the home.

SPECIAL COMPLIANCE CONSIDERATIONS

This Smoke Alarm is suitable for use in apartments, condominiums, townhouses, hospitals, day care facilities, health care facilities, boarding houses, group homes and dormitories provided a primary fire detection system already exists to meet fire detection requirements in common areas like lobbies, hallways, or porches. Using this Smoke Alarm in common areas may not provide sufficient warning to all residents or meet local fire protection ordinances/regulations.

This Smoke Alarm alone is not a suitable substitute for complete fire detection systems in places housing many people—like apartment buildings, condominiums, hotels, motels, dormitories, hospitals, health care facilities, nursing homes, day care facilities, or group homes of any kind. It is not a suitable substitute for complete fire detection systems in warehouses, industrial facilities, commercial buildings, and special-purpose non-residential buildings which require special fire detection and alarm systems. Depending on the building codes in your area, this Smoke Alarm may be used to provide additional protection in these facilities.

In new construction, most building codes require the use of AC or AC/DC powered Smoke Alarms only. In existing construction, AC, AC/DC, or DC powered Smoke Alarms can be used as specified by local building codes. Refer to NFPA 72 (National Fire Alarm and Signaling Code) and NFPA 101 (Life Safety Code), local building codes, or consult your Fire Department for detailed fire protection requirements in buildings not defined as “households”.

HUD MAP Program

Certain HUD battery powered Smoke Alarm applications, especially those that fall under HUD 223(f) MAP (Multi-family Accelerated Processing), may require a 10 Year sealed tamper resistant battery. This alarm does not meet that requirement. Substitute First Alert SA340B.

adequate early warning. Recommended minimum protection is one alarm device in every sleeping area, every bedroom, and on every level of your home. Some experts recommend battery powered Smoke and CO Alarms be used in conjunction with interconnected AC powered Smoke Alarms. For details, see “About Smoke Alarms” for details.

Smoke/CO Alarms may not be heard. The alarm horn loudness meets or exceeds current UL standards of 85 dB at 10 feet (3 meters). However, if the Smoke/CO Alarm is installed outside the bedroom, it may not wake up a sound sleeper or one who has recently used drugs or has been drinking alcoholic beverages. This is especially true if the door is closed or only partly open. Even persons who are awake may not hear the alarm horn if the sound is blocked by distance or closed doors. Noise from traffic, stereo, radio, television, air conditioner, or other appliances may also prevent alert persons from hearing the alarm horn. This Smoke/CO Alarm is not intended for people who are hearing impaired.

The Alarm may not have time to alarm before the fire itself causes damage, injury, or death, since smoke from some fires may not reach the unit immediately. Examples of this include persons smoking in bed, children playing with matches, or fires caused by violent explosions resulting from escaping gas.

This Smoke/CO Alarm is not a substitute for life insurance. Though this Smoke/CO Alarm warns against increasing CO levels or the presence of smoke, BRK Brands, Inc. does not warrant or imply in any way that they will protect lives. Homeowners and renters must still insure their lives.



SMOKE DETECTOR

This Smoke/CO Alarm will not sense smoke or CO that does not reach the sensors. It will only sense smoke or CO at the sensor. Smoke or CO may be present in other areas. Doors or other obstructions may affect the rate at which CO or smoke reaches the sensors. If bedroom doors are usually closed at night, we recommend you install an alarm device (Combination CO and Smoke Alarm, or separate CO Alarms and Smoke Alarms) in each bedroom and in the hallway between them.

This Smoke/CO Alarm may not sense smoke or CO on another level of the home. Example: This alarm device, installed on the second floor, may not sense smoke or CO in the basement. For this reason, one alarm device may not give

This Smoke/CO Alarm has a limited life. Although this Smoke/CO Alarm and all of its parts have passed many stringent tests and are designed to be as reliable as possible, any of these parts could fail at any time. Therefore, you must test this device weekly. The unit should be replaced immediately if it is not operating properly.

This Smoke/CO Alarm is not foolproof. Like all other electronic devices, this Smoke/CO Alarm has limitations. It can only detect smoke or CO that reaches the sensors. It may not give early warning of the source of smoke or CO in a remote part of the home, away from the alarm device.

TROUBLESHOOTING GUIDE

If the Alarm...	Problem...	You should...
Horn "chirps" about once per minute.	Low battery warning.	Install two new AA batteries*.
Horn does three "chirps" every minute; LED has 3 rapid flashes with "chirps".	MALFUNCTION SIGNAL. Device is not working properly, and needs to be replaced.	Units under warranty should be returned to manufacturer for replacement. See "Limited Warranty" for details.
The light flashes GREEN and the horn sounds 5 "chirps" every minute.	END OF LIFE SIGNAL. Alarm needs to be replaced.	Immediately replace the Alarm.
Carbon Monoxide Alarm ONLY:		
CO Alarm goes back into alarm 4 minutes after you Silence it.	CO levels indicate a potentially dangerous situation.	IF YOU ARE FEELING SYMPTOMS OF CO POISONING, EVACUATE your home and call 911 or the Fire Department. Refer to "If The CO Alarm Sounds" for details.
CO Alarm sounds frequently even though no high levels of CO are revealed in an investigation.	The CO Alarm may be improperly located. Refer to "Where to Install This Alarm" for details.	Relocate your Alarm. If frequent alarms continue, have home rechecked for potential CO problems. You may be experiencing an intermittent CO problem.
Smoke Alarm ONLY:		
Smoke Alarm sounds when no smoke is visible.	Unwanted alarm may be caused by non-emergency source like cooking smoke.	Silence Alarm using Test/Silence button; clean the Alarm's cover with a soft, clean cloth. If frequent unwanted alarms continue, relocate your Alarm. Alarm may be too close to a kitchen, cooking appliance, or steamy bathroom.

*For a list of acceptable replacement batteries, see "Regular Maintenance."

If you have questions that cannot be answered by reading this manual, call Consumer Affairs at 1-800-323-9005, M-F 7:30 a.m. to 5:00 p.m. (CST)

LIMITED WARRANTY

BRK Brands, Inc., ("BRK") the maker of First Alert® brand products warrants that for a period of seven years from the date of purchase, this product will be free from defects in material and workmanship. BRK, at its option, will repair or replace this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. If the product is no longer available, replacement may be made with a similar product of equal or greater value. This is your exclusive warranty. This warranty is valid for the original retail purchaser from the date of initial retail purchase and is not transferable. Keep the original sales receipt. Proof of purchase is required to obtain warranty performance. BRK dealers, service centers, or retail stores selling BRK products do not have the right to alter, modify or any way change the terms and conditions of this warranty.

This warranty does not cover normal wear of parts or damage resulting from any of the following: negligent use or misuse of the product, use on improper voltage or current, use contrary to the operating instructions, disassembly, repair or alteration by anyone other than BRK or an authorized service center. Further, the warranty does not cover Acts of God, such as fire, flood, hurricanes and tornadoes or any batteries that are included with this unit.

BRK shall not be liable for any incidental or consequential damages caused by the breach of any express or implied warranty. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose is limited in duration to the duration of the above warranty. Some states, provinces or jurisdictions do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state or province to province.

How to Obtain Warranty Service

Service: If service is required, do not return the product to your retailer. In order to obtain warranty service, contact the Consumer Affairs Division at 1-800-323-9005, 7:30 AM - 5:00 PM Central Standard Time, Monday through Friday. To assist us in serving you, please have the model number and date of purchase available when calling.
For Warranty Service return to: BRK Brands, Inc., 25 Spur Drive, El Paso, TX 79906

Battery: BRK Brands, Inc. make no warranty, express or implied, written or oral, including that of merchantability or fitness for any particular purpose with respect to battery.

For your records, please record:

Date Purchased: _____ Where Purchased: _____

Date Installed: _____ / _____ Month/Year

Replace alarm 7 years after installation. Please write the date in the space provided: _____ / _____ Month/Year

The alarm will also provide an audible End-of-Life Signal approximately 7 years after installation to remind you to replace the unit.

The End-of-Life Signal can be silenced for up to 2 days. Do not unplug the alarm or remove the batteries until you get replacement.



INSTALLATION AND OPERATION MANUAL



**DIRECT VENT
GAS WATER HEATER**



**MODELS
SW6D • SW6DE • SW6DM • SW6DEM**

**FOR INSTALLATION IN RECREATIONAL
VEHICLES AND MOBILE HOUSING**

FOR YOUR SAFETY

WHAT TO DO IF YOU SMELL GAS

- DO NOT TRY TO LIGHT ANY APPLIANCE.
- DO NOT TOUCH ANY ELECTRIC SWITCH: DO NOT USE ANY PHONE IN YOUR VEHICLE.
- IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBOR'S PHONE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
- IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT.

FREEZE WARNING

DRAIN HEATER IF SUBJECT TO FREEZING TEMPERATURES.

WARNING: IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE INJURY OR PROPERTY DAMAGE. REFER TO THIS MANUAL. FOR ASSISTANCE OR ADDITIONAL INFORMATION, CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER COMBUSTIBLE MATERIALS OR LIQUIDS NEAR OR ADJACENT TO THIS HEATER OR ANY OTHER APPLIANCE. THIS APPLIANCE SHALL NOT BE INSTALLED IN ANY LOCATION WHERE FLAMMABLE LIQUIDS OR VAPORS ARE LIKELY TO BE PRESENT.

AN ODORANT IS ADDED TO THE GAS USED BY THIS WATER HEATER.

INSTALLER: AFFIX THESE INSTRUCTIONS TO OR ADJACENT TO WATER HEATER.
OWNER: RETAIN THESE INSTRUCTIONS AND WARRANTY FOR FUTURE REFERENCE.

ALL TECHNICAL AND WARRANTY QUESTIONS SHOULD BE DIRECTED TO THE COMPANY LISTED ON THE WARRANTY, OR RATING PLATE WHICH CAME WITH YOUR WATER HEATER.



Suburban
Manufacturing Company

a division of AIRXCEL, Inc.

SUBURBAN MANUFACTURING COMPANY
676 Broadway Street
Dayton, Tennessee 37321
423-775-2131
Fax: 423-775-7015



SUBURBAN WATER HEATER

INSTALLATION REQUIREMENTS

WARNING! Installation of this appliance must be made in accordance with the written instructions provided in this manual. No agent, representative or employee of Suburban or other person has the authority to change, modify or waive any provision of the instructions contained in this manual.

CAUTION: If possible, do not install the water heater to where the vent can be covered or obstructed when any door on the trailer is opened. If this is not possible, then the travel of the door must be restricted in order to provide a 6" minimum clearance between the water heater vent and any door whenever the door is opened.

CAUTION: Due to the differences in vinyl siding, this appliance should not be installed on vinyl siding without first consulting with the manufacturer of the siding or cutting the siding away from the area around the appliance vent.

CAUTION: In any installation in which the vent of this appliance can be covered due to the construction of the RV or some special feature of the RV such as slide out, pop-up etc., always insure that the appliance cannot be operated by setting the thermostat to the positive "OFF" position and shutting off all electrical and gas supply to the appliance.

CAUTION: Do not install this appliance to where the vent terminates below a slide-out. This appliance is not to be installed under any overhang. It must be free and clear of any type overhang.

This installation must conform with the requirements of the authority having jurisdiction or in the absence of such requirements with the latest edition of the National Fuel Gas Code ANSI Z223.1; and the latest edition of the American National Standard for Recreational Vehicles-501C. In Canada the installation should conform with the following standards.

- A. For installation in Recreational Vehicle
 1. Gas - CSA standard CSA Z240.4.2 Installation Requirements for Propane Appliances and Equipment in Recreations Vehicles.
 2. Electrical - CSA standard C22.2 No. 148/Z240.6.2 Electrical Requirements for Recreational Vehicles.
 3. Plumbing - CSA standard CSA Z240.3.2 Plumbing Requirements for Recreational Vehicles.
- B. For installation in Mobile Housing
 1. Gas - CSA standard CSA Z240.4.1 Installation Requirements for Gas Burning Appliances and Equipment in Mobile Homes.
 2. Electrical - CSA standard CSA C22.1 Canadian Electrical Code Part 1.
 3. Plumbing - CSA standard CSA Z240.3.1 Plumbing Requirements for Mobile Homes.

The appliance shall be disconnected from the gas supply piping system during any pressure testing of the system.

The appliance and its gas connections shall be leak tested before placing the appliance in operation.

All air for combustion must be supplied from outside the structure. Air for combustion must not be supplied from occupied spaces.

INSTALLATION INSTRUCTIONS

Minimum clearance from combustible construction on sides, top, floor and rear = 0 inches. Provide room for access to rear of heater for servicing.

Provide an opening flush with floor in outer wall of coach as shown. Wall of coach should be framed as shown in Figure 1. Maintain inside dimensions listed below. Do not install on carpet unless the carpet is covered by a metal or wood shield covering the entire area underneath the water heater. If you prefer, you may cut away the carpet from this area.

INSTALLATION USING FLUSH MOUNT FRAME & DOOR (See Figure 2 for illustration)

A. Position heater into framed opening as illustrated. Slide unit into opening until the front of the control housing is flush with the exterior coach skin.

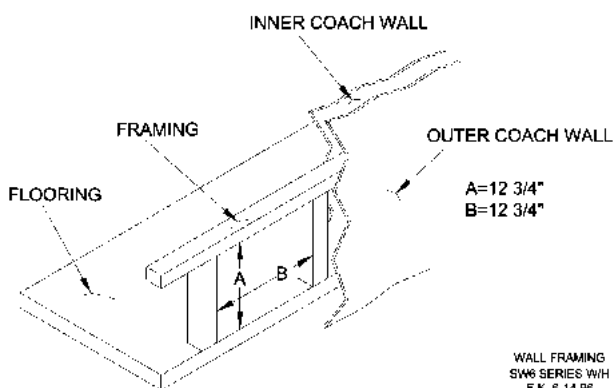


Figure 1

WALL FRAMING
SW6 SERIES WHH
F.K 6-14-98

B. Secure the control housing to the coach wall (framed opening) at the top and sides of control housing compartment using screws or other suitable fasteners. Recess the screws or fasteners back far enough from the front edge of control housing (approximately 1 1/2") in order to clear the flange on door frame. The door frame, when installed, must not overlap onto screw or other fastener head. If due to the wall thickness, it is not possible to secure the water heater without covering the fastener head with the door frame, it is important to not over tighten the fastener and distort the control housing. Over tightening of the fastener may cause water heater leaks between the control housing and the door frame.

NOTE: Caulk around screw or fastener heads to assure water tight seal.

- C. Install chocks, one on each side of water heater, as illustrated in Figure 1A.
- D. On mesa or yoder type sidewalls, flatten the wall area around the opening.
- E. Caulk around framed opening (trailer skin) as illustrated.
- F. Caulk around door frame using 2 beads of silicone caulking (or suitable caulking) - one on flange to seal to control housing and one around back side of frame to seal to coach skin. (See detail A in illustration.)
- G. Insert door frame into control housing and secure with three (3) No. 8-15 x 3 1/2" screws provided.
- H. To install door, place the two holes in the bottom of the door over the door pins on the frame. Close the door so that the latch protrudes through the slot in the door. Turn latch 90 degrees to fasten door.
- I. The module board on models SW6D and SW6DE is not secured to the water heater. It is to be permanently mounted by the installer.

The module board must be mounted to where it is accessible for service yet out of way of children. It should be located in a place where it cannot be subjected to moisture, cleaning chemicals, flammable vapors and liquids, etc.

The board and all wiring to the board must be protected in order to prevent damages and accidental contact with these parts. The module board may be mounted with two (2) No. 6 x 5/8 screws or other suitable hardware.

INSTALLATION USING HINGED DOOR (See Figure 3 for illustration)

- A. Position heater into framed opening as illustrated.
- B. On mesa or yoder type sidewalls, flatten the wall area around the opening.
- C. Caulk around framed opening (trailer skin) as illustrated.
- D. Lay a bead of silicone caulking (or suitable caulking) around the inner edge of the control housing (top, bottom and sides). See detail "A" in illustration. This will seal frame to control housing.
- E. Apply a bead of silicone caulking (or suitable caulking) around back side of door frame. See detail "A" in illustration. This will seal frame to coach skin.
- F. Fit the door frame into control housing (over the caulking already applied) and pull frame tight to control housing using the three (3) No. 8-15 x 3 1/2" screws provided.
- G. Push water heater into framed opening until back side of door frame (now attached to control housing) is against the side of the coach and firmly attach with screws around the perimeter of the frame. NOTE: The two (2) holes in bottom of frame identified as "A" in Figure 3 are also used to mount door hinge to the frame.
- H. Install chocks, one on each side of water heater, as illustrated in Figure 1A.
- I. Attach door to frame as illustrated.
- J. Close the door so that the door latch protrudes through the slot in the door. Turn latch 90 degrees to fasten door.
- K. The module board on models SW6D and SW6DE is not secured to the water heater. It is to be permanently mounted by the installer.

The module board must be mounted to where it is accessible for service yet out of way of children. It should be located in a place where it cannot be subjected to moisture, cleaning chemicals, flammable vapors and liquids, etc.

The board and all wiring to the board must be protected in order to prevent damages and accidental contact with these parts. The module board may be mounted with two (2) No. 6 x 5/8 screws or other suitable hardware.

WATER HEATER AS VIEWED FROM INSIDE R. V.

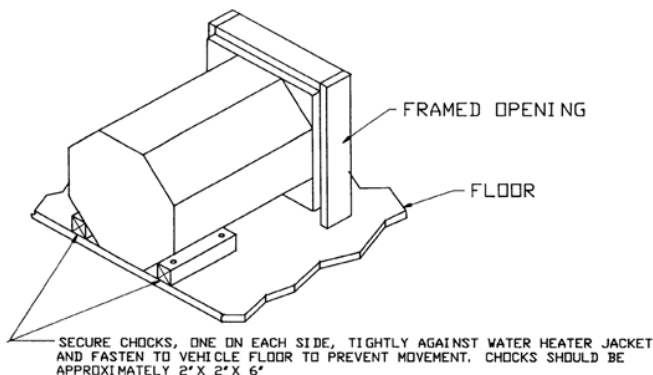


Figure 1A

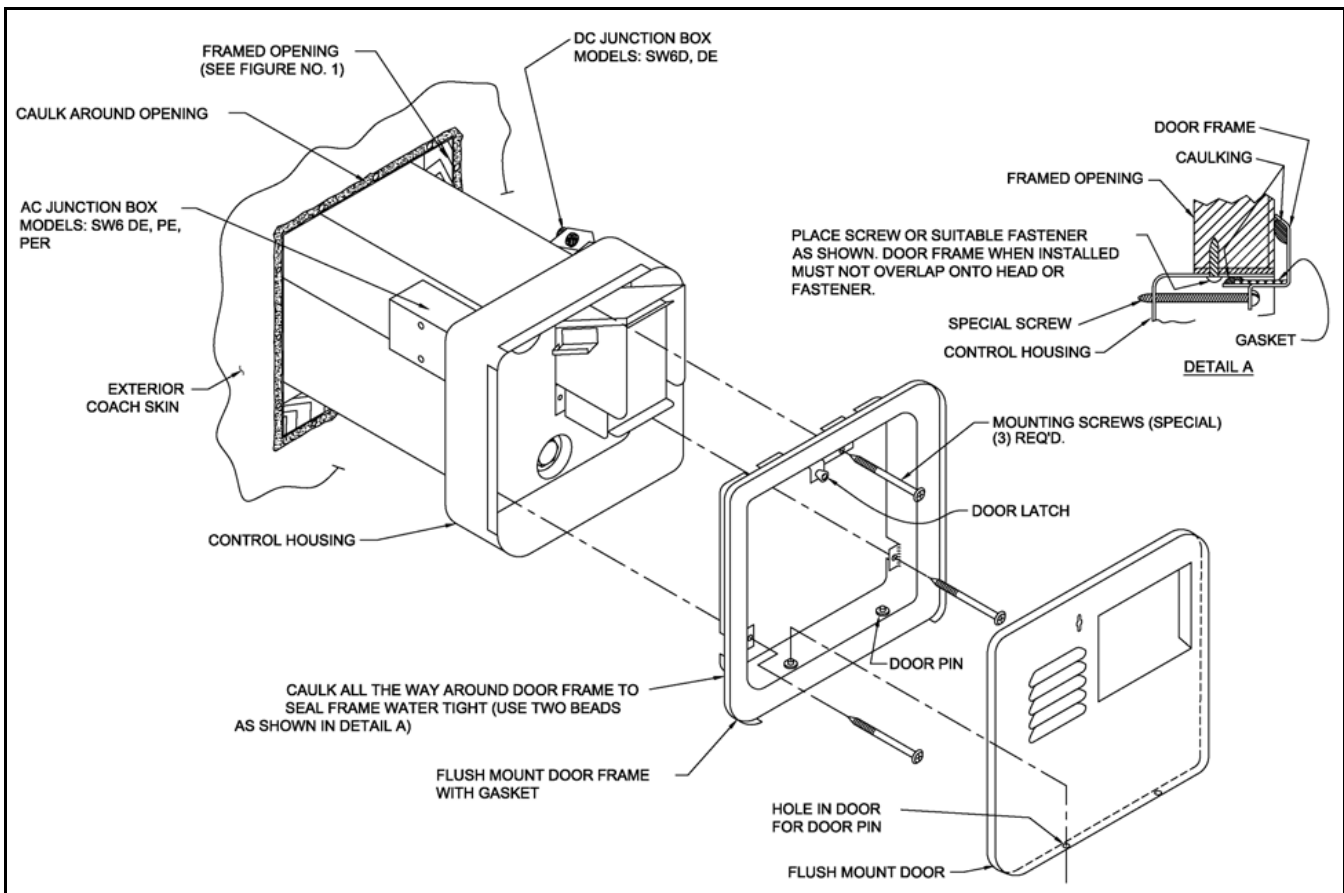


Figure 2

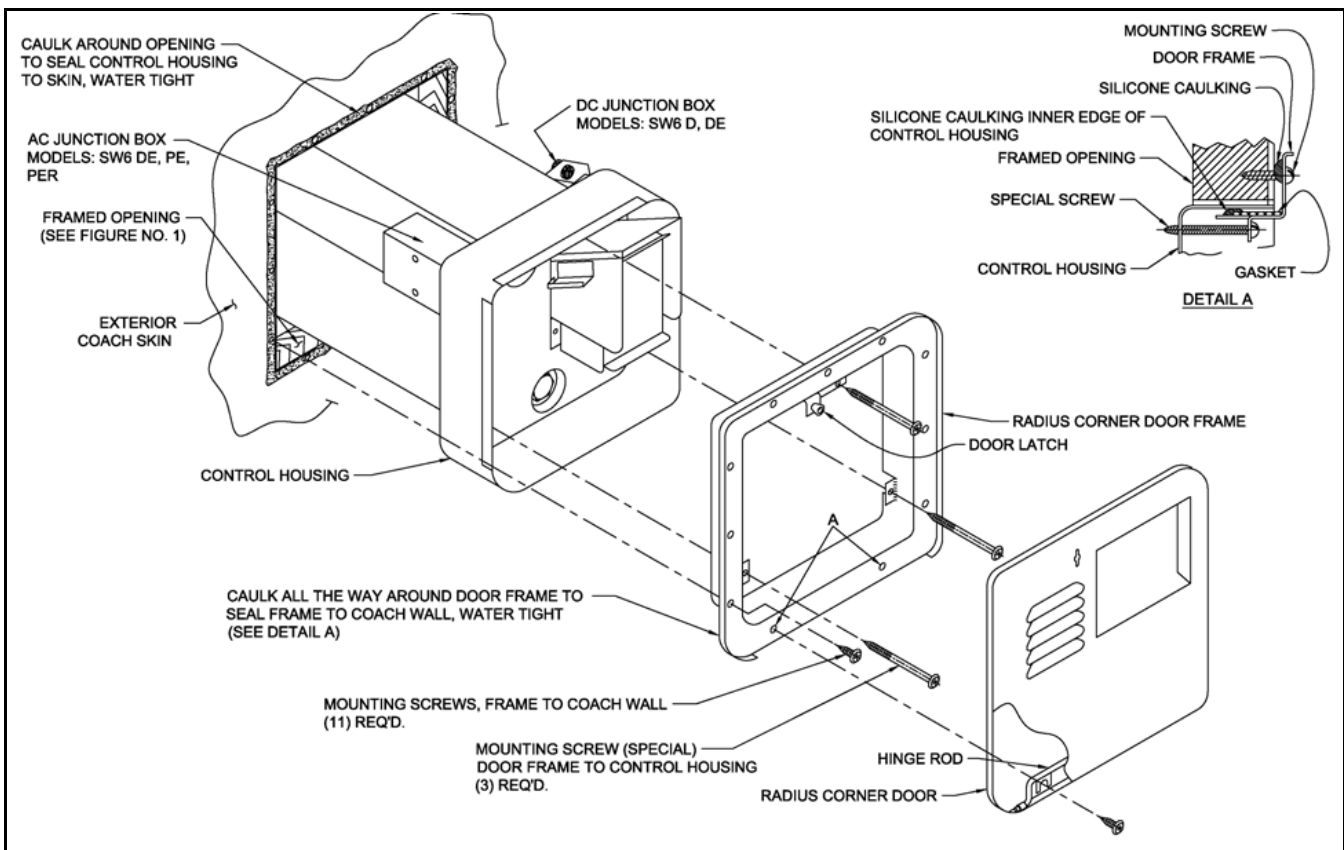


Figure 3



SUBURBAN WATER HEATER

MAKING WATER CONNECTIONS

A. Water connections are made at the rear of the water heater. Refer to Figure 4 for all models except SW6DM and SW6DEM. For SW6DM and SW6DEM, refer to Figure 5 or 6. Connect the hot and cold water lines to the 1/2" female pipe fitting provided on rear of tank. These fittings are marked "HOT" and "COLD". NOTE: Inside each fitting is a plastic fill tube. Its purpose is to enhance water circulation. **DO NOT REMOVE PLASTIC FILL TUBE.**

IMPORTANT: Use a pipe thread compound suitable for potable water or pipe thread tape on all connections to assure they will not leak.

B. For ease of removal, it is suggested that a pipe union be installed in each water line.

C. Fill tank with water. Open both hot and cold water faucets to expel air from tank. When tank is filled and water flows from faucets, close both faucets and check all connections for leaks.

CAUTION: If you use air pressure to check for leaks, the pressure must not exceed 30 PSI (in accordance with 4-9.1.1 of ANSI A119.2).

NOTE: After leak testing, drain water from tank.

MAKING GAS CONNECTIONS

A. Connect a 3/8" gas supply line to the 3/8 flare fitting at gas valve located in the control housing. When making the gas connection, hold the gas fitting on the valve with a wrench when tightening the flare nut. Failure to hold fitting secure could result in a gas leak due to fitting being damaged. NOTE: It will be necessary to remove the grommet from the control housing, make the gas connection at the valve, then reinstall grommet.

WARNING! It is imperative that grommet and gas line through grommet be caulked air tight. If not tightly sealed, moisture and potential harmful flue products could vent through opening and into living area of trailer. (See Figure 7.)

B. Turn on gas and check all fittings and connections for leaks, using a soap and water solution. Correct even the slightest leak immediately.

WARNING! Do not use an open flame to check for leaks!

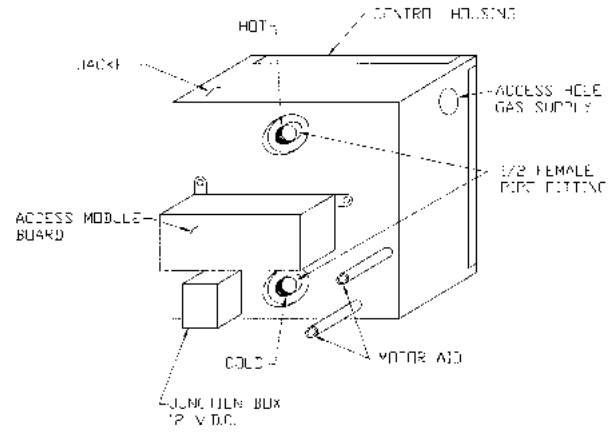
HIGH ALTITUDE DERATING

Suburban water heaters are certified by nationally recognized testing laboratories for operation without modifications at altitudes up to 4,500 feet. Operation above this elevation may require derating by 4 percent for every 1,000 feet above sea level. For example, at 8,000 feet, the water heater should be derated approximately 32 percent.

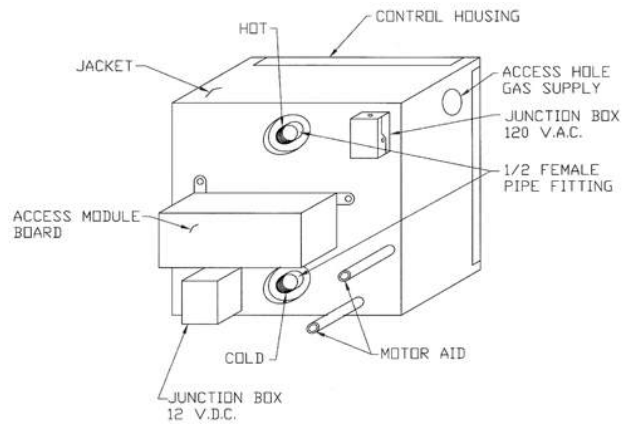
If the unit is not properly derated, lack of sufficient oxygen for combustion may produce improper burner operation. Pilot outage caused by burner lift-off or sooting from a yellow burner may occur indicating the possibility of carbon monoxide. You may also notice a lack of efficiency in heating the water because of incomplete combustion of the burner at these higher altitudes.

Consult with the local gas company, your dealer, an RV service agency or Suburban Manufacturing Company for proper derating of the unit. Change-out of the orifice (derating) should be done by the dealer or a qualified service agency.

NOTE: It is important that once the unit has returned to lower elevation (below 4,500 feet), this high altitude derating and pilot adjustments (if equipped) be reversed for proper operation of the unit.



Model SW6DM
Figure 5



Model SW6DEM
Figure 6

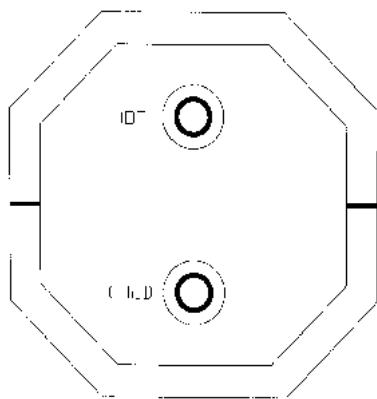


Figure 4

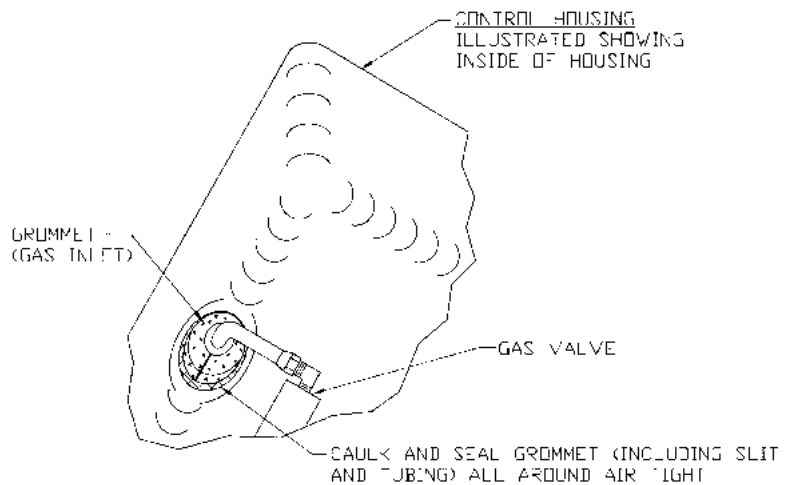


Figure 7



MAKING ELECTRICAL CONNECTIONS 12 VOLTS D.C.

- A. Applicable to following models: SW6D, SW6DE, SW6DM and SW6DEM.
- B. Refer to Figure 2 for location of D.C. junction box on models SW6D and SW6DE. Refer to Figure 5 and 6 for location of D.C. junction box on models SW6DM and SW6DEM.
- C. The electrical connections must be made in accordance with local codes and regulations. In the absence of local codes and regulations, refer to the latest edition of the National Electrical Code ANSINFPA No. 70.
- In Canada, the electrical installation should conform with CSA standard CSA C22.2 No. 148/Z240.6.2 Electrical Requirements for Recreational Vehicles and CSA C22.1 Canadian Electrical Code Part 1 when installing the unit in recreational vehicles and mobile homes respectively.
- D. Make the 12 Volt D.C. electrical connections following the wiring diagram illustrated in Figure 8.

If the power supply is to be from a convertor, we recommend that the converter system be wired in parallel with the battery. This will serve two purposes:

1. Provide a constant voltage supply
2. Filter any A.C. spikes or volt surges

We recommend insulated terminals be used for all electrical connections.

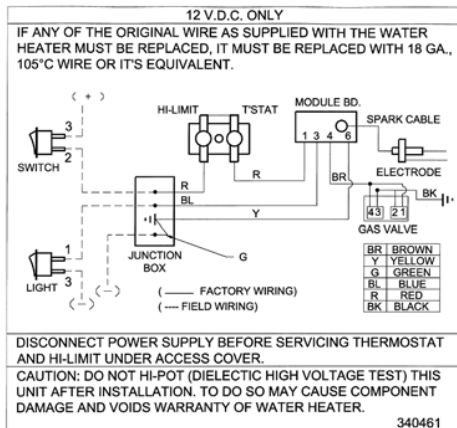


Figure 8

MAKING ELECTRICAL CONNECTIONS 120 VOLTS A.C.

- A. Applicable to following models SW6DE and SW6DEM.
- B. Refer to Figure 2 for location of A.C. junction box on model SW6DE. Refer to Figure 6 for A.C. junction box on model SW6DEM.
- C. The electrical connections must be made in accordance with local codes and regulations. In the absence of local codes and regulations, refer to the latest edition of the National Electrical Code ANSI/NFPA No. 70.
- In Canada, the electrical installation should conform with CSA standard CSA C22.2 No. 148/Z240.6.2. Electrical requirements for Recreational Vehicles and CSA C22.1 Canadian Electrical Code Part 1 when installing the unit in recreational vehicles and mobile homes respectively.
- D. Check rating plate and wiring diagram (Figure 9) before proceeding. Install a fused safety switch or circuit breaker of adequate capacity between heater and electrical power source. Attach the black and white wires from the fused switch or breaker to corresponding colored wires in heater junction box. A green wire from a well grounded source must be attached to the green nut in the junction box.

CAUTION: Before applying the 120 VAC power to the water heater junction box, be sure the switch for electric element is in the "OFF" position.

WARNING! Before the switch for the electric element is turned to the "ON" position, the water heater tank must be filled with water. See "Safety Warnings".

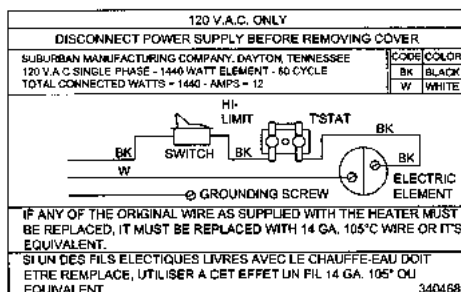
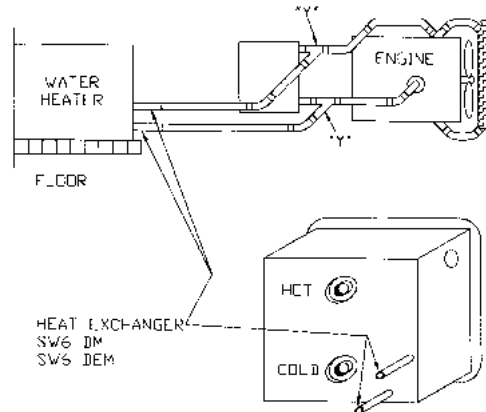


Figure 9

INSTALLATION OF MOTOR AID HEAT EXCHANGER

- A. Place copper "Y"s in heater as shown in Figure 10.
- B. Secure hoses to "Y"s with hose clamps.
- C. Attach hose from motor-aid heat exchanger to "Y"s.
- D. Secure hoses to motor-aid and "Y"s with clamps.
- E. Check all connections for water leaks and proper water circulation through motor-aid heat exchanger, with engine running.

The system should be checked annually for deterioration of heater hose and hose connections. Replace as needed.

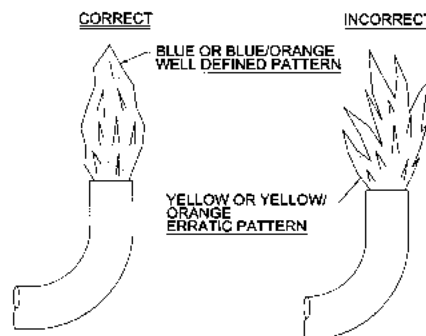


MAINTENANCE

WARNING! If the user of this appliance fails to maintain it in the condition in which it was shipped from the factory or if the appliance is not used solely for its intended purpose or if appliance is not maintained in accordance with the instructions in this manual, then the risk of a fire and/or the production of carbon monoxide exists which can cause personal injury, property damage or loss of life.

WARNING: For your safety, all repairs should be performed by your dealer or a qualified service person.

- A. Main Burner: Do not allow the burner to burn with a yellow flame, because sooting will occur. (See Safety Warnings). If the burner flame is yellow and has an erratic pattern, shut unit down and contact a qualified service agency. Do not continue operating unit with improper burner flame. (See Figure 11 for correct and incorrect burner flame appearance.)
- B. Periodically inspect unit for soot. If soot is present anywhere on water heater, immediately shut unit down and contact your dealer or a qualified service person. Soot is a sign of incomplete combustion and must be corrected before operating water heater. Areas to check would include:
 1. Check for an obstruction in burner or the flue box.
 2. Check the screen in the door to see that no foreign material has accumulated to prevent flow of combustion and ventilating air.
 3. Check to be sure there is no flame present at burner orifice or burner whenever main gas valve is closed. This can be checked by turning the OFF/ON switch to the "OFF" position.
- C. Frequent checks should be made of the grommet on the gas inlet to assure tight seal. (See "Making Gas Connections").
- D. Periodically check wiring and wire connection to be sure wiring is not damaged/frayed and that all terminals and connections are tight and in compliance with codes (See "Making Wire Connections").





SUBURBAN WATER HEATER

SAFETY WARNINGS

WARNING! It is imperative that the water heater tank be filled with water before operating the water heater. Operation of the water heater without water in the tank may result in damage to the tank and/or controls. This type of damage is not covered by the limited warranty.

WARNING! Hydrogen gas may result if you have not used this heater for two weeks or more. **HYDROGEN GAS IS EXTREMELY FLAMMABLE.** To reduce the risk of injury under these conditions, open the hot water faucet for several minutes at the kitchen sink before you use any electrical appliance connected to the hot water system. If hydrogen is present, you probably will hear an unusual sound such as air escaping through the pipe as the water begins to flow.

Hydrogen gas may be present even after water has been drained from the tank. Open faucet at sink and allow system to vent for several minutes (5-10 minutes).

Do not smoke or have any open flame near the open faucet. Do not attempt to light pilot or main burner. On DSI models, be sure the switch is "OFF".

Should overheating occur, or the gas supply fail to shut off, shut off the manual gas valve to the appliance before shutting off the electrical supply. Do not use this appliance if any part has been submerged under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control that has been submerged under water.

Do not alter the operation of your water heater nor change the design/construction of your water heater. Accessories are being marketed for RV products which we do not recommend. For your safety, only factory authorized parts are to be used on your water heater.

Periodically inspect the vent for obstructions or presence of soot. Soot is formed whenever combustion is incomplete. This is your visual warning that the water heater is operating in an unsafe manner. If soot is present, immediately shut the water heater down and contact your dealer or a qualified service person.

When considering add-on rooms, porch or patio, attention must be given to the venting of your water heater. For your safety, do not terminate the vent on your water heater inside add-on rooms, screen porch or onto patios. Doing so will result in products of combustion being vented into the rooms or occupied areas.

Never operate the heater if you smell gas. Do not assume that the smell of gas in your RV is normal. Any time you detect the odor of gas, it is to be considered life threatening and corrected immediately. Extinguish any open flames including cigarettes and evacuate all persons from the vehicle. Shut off gas supply at LP gas bottle. (See Safety notice on front cover of this manual.)

NOTE: Always open both the cold and hot water faucets when filling vehicle water tank to allow air pockets to be forced out of the water heater. When water flows from the heater faucets, close both faucets.

WARNING! Do not store or use combustible materials or liquids near or adjacent to this heater. The appliance shall not be installed in any location where flammable liquids or vapors are likely to be present.

Be sure the power is "OFF" to the water heater ignition system during any type of refueling and while vehicle is in motion or being towed.

The thermostat on your water heater is not adjustable. It is a temperature sensing limit designed to maintain a water temperature of 130°F (54°C). Water temperatures over 130°F (54°C) can cause severe burns instantly or death from scalds; therefore, be careful when using hot water. Children, disabled and elderly are at highest risk of being scalded. Always feel water before bathing or showering.

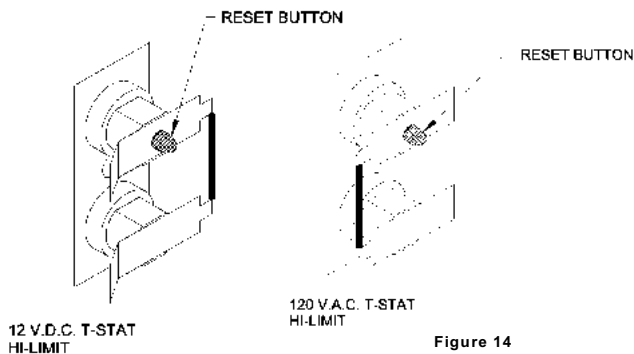


Figure 13

Figure 14

ANODE PROTECTION

The tank in this water heater is protected by a magnesium or aluminum anode to prolong the life of the tank by absorbing the corrosive action of hot water. Under normal use, the anode rod will deteriorate and because of this, we recommend it be replaced yearly. **NOTE:** Water with high levels of iron and/or sulfate will increase the rate of deterioration; therefore, more frequent replacement may be required. If anode rod is mostly eaten away, replace it with a new one. (See Figure 12)

To prevent a water leak when replacing the anode rod, a pipe thread sealant approved for potable water (such as Teflon tape) must be applied to the threads of the anode rod. Proper application of a thread sealant will not interfere with the anode's tank protection.

Operating the water heater without proper anode protection will decrease tank life and will void your warranty on the tank. **NOTE:** Tank is drained by removing anode rod (See "Drain and Storage" instructions).

To extend anode life, drain water from tank whenever RV is not being used. Avoid any extended time of non use with water in tank.

Also, refer to section on winterizing.

WARNING! Do not replace the anode rod with any non-Suburban accessory part, such as an "add-on" electric heating element. Items such as these are not approved to be installed in Suburban products. They could create an unsafe condition and will also void all warranties.

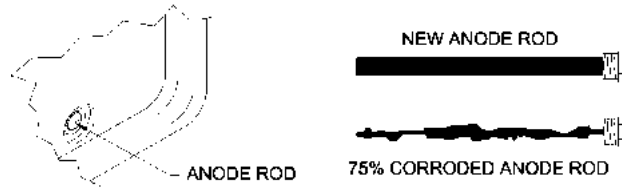


Figure 12

PRESSURE RELIEF VALVE

The temperature and pressure relief valve is designed to open if the temperature of the water within the heater reaches 210°F, or if the water pressure in the heater reaches 150 pounds. Recreational vehicle water systems are closed systems and during the water heating cycle the pressure build-up in the water system will reach 150 pounds. When this pressure is reached, the pressure relief valve will open and water will drip from the valve. This dripping will continue until the pressure is reduced to below 150 pounds, and the valve closes. This condition is normal and does not indicate a defective relief valve.

WARNING! Do not place a valve between the relief valve and the tank. Do not plug the relief valve under any circumstances.

WATER WEEPING OR DRIPPING FROM PRESSURE RELIEF VALVE

You may experience water weeping or dripping from your water heater's Pressure and Temperature (P & T) Relief Valve when your water heater is operating. Water weeping or dripping from the P & T Valve does not always mean the P & T Valve is defective. As water is heated, it expands. The water system in a recreational vehicle is a closed system and does not allow for the expansion of heated water. When the pressure of the water system exceeds the relieving point of the P & T Valve, the valve will relieve the excess pressure.

Suburban recommends that a check valve not be installed directly at the inlet to the water heater tank. This will increase weeping of the pressure relief valve.

WARNING! Do not remove or plug the relief valve.

One way to reduce the frequency of this occurrence is to maintain an air pocket at the top of the water heater tank. This air pocket will form in the tank by design. However, it will be reduced over time by the everyday use of your water heater.

To replenish this air pocket:

1. Turn off water heater.
2. Turn off cold water supply line.
3. Open a faucet in the RV.
4. Pull out on the handle of the Pressure Relief (P & T) Valve and allow water to flow from the valve until it stops.
5. Release handle on P & T Valve - it should snap closed.
6. Close faucet and turn on cold water supply; as the tank fills, the air pocket will develop.

Repeat this procedure as often as needed to reduce the frequency of the weeping of the P & T Valve. If the weeping persists after following this procedure, you may elect to install an expansion or accumulator tank in the cold water line between the tank and check valve to relieve the pressure caused by thermal expansion. Contact your local dealer for assistance.

THERMOSTAT AND MANUAL RESET

MODELS: SW6D, SW6DE, SW6DM and SW6DEM (See Figure 13)

The model water heaters listed above are equipped with a high temperature limit as a cut-off device. Temperature above 180°F will cause manual reset button to trip shutting down main burner.

To activate burner, the water temperature must be below 110°F, push reset button to re-activate burner.



THERMOSTAT AND MANUAL RESET

MODELS SW6DE and SW6DEM (See Figure 14)

The model water heaters listed above are equipped with a high temperature limit as a cut-off device. Temperature above 180°F will cause manual reset button to trip shutting down the electric element.

To activate element, the water temperature must be below 110°F, push reset button to re-activate the electric element.

DRAINING AND STORAGE INSTRUCTIONS

If RV is to be stored during winter months, the water heater must be drained to prevent damage from freezing.

1. Turn off electrical power to water heater either at the switch from the electrical element or at breaker.
2. Shut off gas supply to water heater.
3. Turn off pressure pump on water system.
4. Open both hot and cold water faucets.
5. Remove anode rod from tank.
6. Follow RV manufacturer's instructions for draining entire water system.

NOTE: Be certain to refill water heater with water and remove all air from tank and lines before re-lighting or before turning on electrical power.

ODOR FROM HOT WATER SYSTEM

Odor from the hot water system is not a service problem and many water supplies contain sufficient amounts of sulphur to produce an odor. The odor is similar to rotten eggs and is often referred to as "sulphur water". It is not harmful - only unpleasant to smell. Sulphur water can be caused by a chemical action or by bacteria. The solution to eliminate is chlorination of the water system. Add about six (6) ounces of chlorinated common household liquid bleach to each 10 gallons in the water tank. Then run the chlorinated water throughout the system,

opening each faucet one at a time until you smell the chlorine. Let the RV sit for a few days and the chlorine should take care of the problem. Then you will need to take care of the chlorine. Remove the chlorine by flushing the system with fresh water. This may take several attempts. You may consider adding a filtering system that removes chlorine and prevents sulphur water. If the sulphur or rotten egg smell continues, flush the system once again as described above and replace anode rod as necessary.

REMOVING WATER HEATER

1. Shut off gas supply and disconnect gas supply line from water heater.
2. On all Electric Models, disconnect 120 V.A.C. supply at junction box mounted on heater.
3. On all DSI Models, disconnect 12 V.D.C. power supply at junction box on heater.
4. On Models SW6D and SW6DE disconnect all wires at module board.
5. Shut off water supply. Drain water from tank following instructions under "Draining and Storage".
6. Disconnect hot and cold water lines from water heater.
7. Remove screws or nails securing control housing to framed opening.
8. Slide heater out. To reinstall, follow instructions in manual under "Installation Instructions".

WINTERIZING

If your water heater plumbing system is equipped with a bypass kit, use it to close off the water heater, drain the water heater completely and leave the water heater closed off (out of the system) in the bypass position particularly if you are introducing antifreeze into the plumbing system. Antifreeze can be very corrosive to the anode rod creating premature failure and heavy sediment in the tank. If the plumbing system is not equipped with a bypass kit, and you intend to winterize by adding antifreeze to the system, remove the anode rod (storing it for the winter) and replace it with a 3/4" drain plug.

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING! If the user of this appliance fails to maintain it in the condition in which it was shipped from the factory or if the appliance is not used solely for its intended purpose or if appliance is not maintained in accordance with the instructions in this manual, then the risk of a fire and/or the production of carbon monoxide exists which can cause personal injury, property damage or loss of life.

OPERATING INSTRUCTIONS

WARNING! If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

WARNING: Before operating water heater, be sure tank is filled with water. See "Safety Warnings".

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
 - Do not touch any electric switch.
 - Do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- C.** This is an automatic gas valve, no adjustments are necessary. Do not attempt to repair the gas valve. This may result in a fire or explosion.
- D.** Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- E.** Before operating water heater, check the location of the vent to make sure it will not be blocked by the opening of any door on the trailer. If it can be blocked, do not operate the water heater with the door open.

OPERATING INSTRUCTIONS

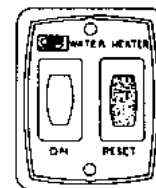
1. STOP! Read the safety information provided.
2. Turn off all electric power to the appliance.
3. Turn "OFF" gas supply.
4. Wait five minutes for gas to clear the area. If you smell gas then STOP! Follow instructions in item B of the safety information. If you don't smell gas, go to next step.
5. Turn "ON" gas supply.
6. Turn on electrical power to the appliance.
7. Turn switch to "ON" position. If the burner does not light, the system will automatically attempt two more tries for ignition before lock-out.

NOTE: Each ignition cycle will have a 15 second purge before spark cycle if system is a three try system.

8. If lockout occurs before main burner lights, turn switch to "OFF", wait five seconds and turn switch to "ON" position. This will restart the ignition cycle. The first start-up of the heater may require several ignition cycles before all air is purged from the gas lines.

If the burner will not come on, the following items should be checked before calling a service person.

1. Switch turned off.
2. Gas supply to heater is empty or turned off.
3. Reset button on ECO is tripped.



OPERATING INSTRUCTIONS FOR UNITS WITH ELECTRIC ELEMENT

Electric water heaters are designed to operate with a minimum amount of service problems; however, proper operation and care is essential.

By far the most common trouble with electric water heaters results from energizing the water heater before it is filled with water. Even brief operation of the electric element without water in the tank will burn-out the electric heating element.

To energize the electric heating element, turn the switch to "ON". The switch is located behind the water heater door in the lower left corner of the control housing. The water temperature will be regulated by the thermostat.

TO TURN OFF WATER HEATER

1. Turn switch to "OFF" position.
2. Turn off electrical power to the appliance.
3. Turn off gas supply.
4. If vehicle is to be stored or heater is going to be turned off while subject to freezing temperature, drain water heater. (See "Draining and Storage Instructions.")



PARTS ILLUSTRATION AND REPLACEMENT PARTS LIST

Only factory authorized parts are to be used. Do not attempt to repair defective parts.

When ordering repair parts from your dealer or a distributor, always give the following information:

1. Part Number (Not Item No.)
2. Part Description
3. Model No. and Serial No. of your Heater
4. Number of Parts Required

PARTS LIST FOR MODELS SW6D • SW6DE (Figure 15)

Item No.	Description	Part Number	
		SW6D	SW6DE
1	Module Board	520814	520814
3	Cover, Module Board	090487	090487
6	Bushing, Snap 1/2"	070270	070270
7	Bushing, Strain Relief 5/8"	230216	230216
8	D.C. Junction Box Assembly	090517	090517
10	Back Assembly, Flue Collector	101682	101682
11	Front, Flue Collector	101776	101776
12	Valve, Pressure Relief	161157	161157
13	Screw #10 x 1/4	121577	121577
15	Cover, Thermostat/Hi-Limit	090562	090562
16	Gasket, Thermostat Cover	070987	070987
18	Grommet	070874	070874
20	Bracket, Electrode Mounting	063187	063187
21	Electrode	232258	232258
24	Cover, Element	-----	090445
25	Gasket, Element Cover	-----	070988
26	Burner Assembly with orifice	010843	010843
28	Electric Element with Gasket	-----	520789
29	Anode	232767	232767
31	Grommet	071246	071246
32	Bushing, Snap 1/2"	-----	070270
33	Switch, Electric Element	-----	232362
34	Gas Fitting	170374	170374
35	Bracket, Valve Mounting	063243	063243
36	Valve, Gas (LP)	161109	161109
37	Manifold, Outlet	171420	171420
38	#10 x 1/4 (4 Required)	121577	121577
39	Screw #8-32 x 3/8 Hex HD. (2 Required)	121958	121958
41	Switch Assembly, 12 V.D.C. T-Stat/Hi-Limit	232282	232282
42	Switch Assembly, 120 V.A.C. T-Stat/Hi Limit	-----	232306
44	Cover, Junction Box	-----	090576
45	Grommet, Gas Inlet	070989	070989
46	Bushing, Snap 7/8"	-----	230218
47	A.C. Junction Box Assembly	-----	090575
48	Nut, 10-24 Keps (Green)	121576	121576
49	Bushing, Snap 7/8"	-----	230218
50	Foam Jacket Assembly Complete	520868	520868
51	Switch, Lamp and Plate Assembly	232589	232589
52	Screw 8mm - 4.0 x 1/2 Hex Washer Head (2 Required)	121943	121943
53	Burner Bracket	063444	063444
55	1/4 Loxit Nut (Manifold to Burner)	171463	171463
56	1/4 Loxit Nut (Manifold to Valve)	171463	171463
57	Electrode Wire (Not Shown)	232456	232456

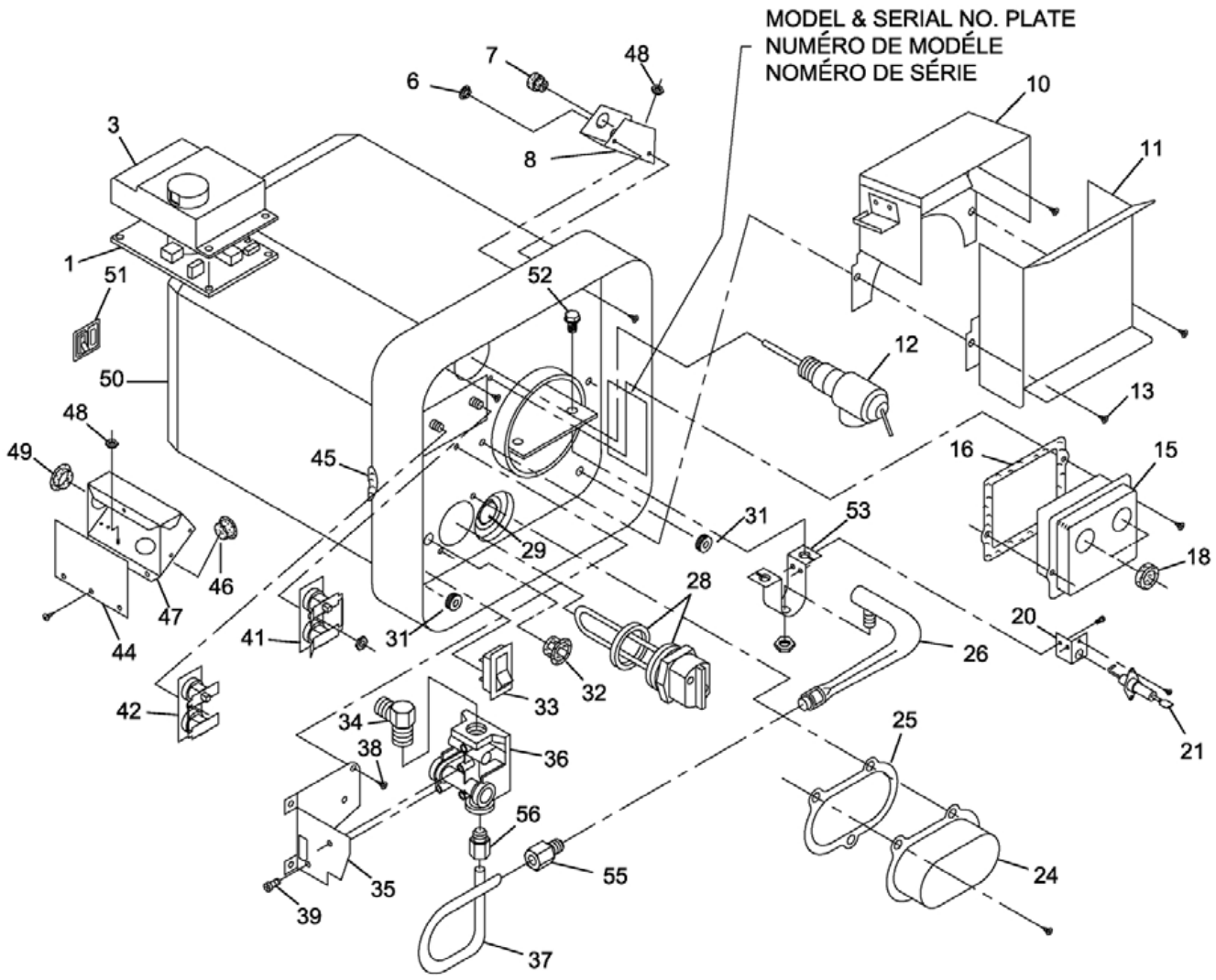


Figure 15

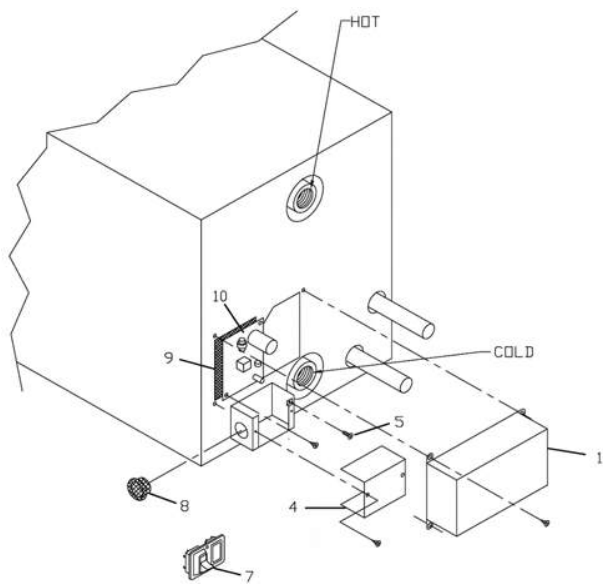


SUBURBAN WATER HEATER

PARTS LIST FOR MODEL SW6DM (Figures 16 and 17)

Item No.	Description	Part Number
1	Cover, Module Board	090340
4	Cover Junction Box	090344
5	Screw 10-32 x 3/8 (Green)	121702
7	Switch, Lamp and Plate Assembly	232589
8	Bushing, Snap 7/8"	230218
9	Insulator, Module Board	070807
10	Module Board	520814
11	Back Assembly, Flue Collector	101682
12	Valve, Pressure Relief	161157
13	Gasket, Thermostat Cover	070987
14	Cover, Thermostat/Hi-Limit	090562
17	Front, Flue Collector	101776
18	Screw 10 x 1/4	121577
19	Grommet	070874

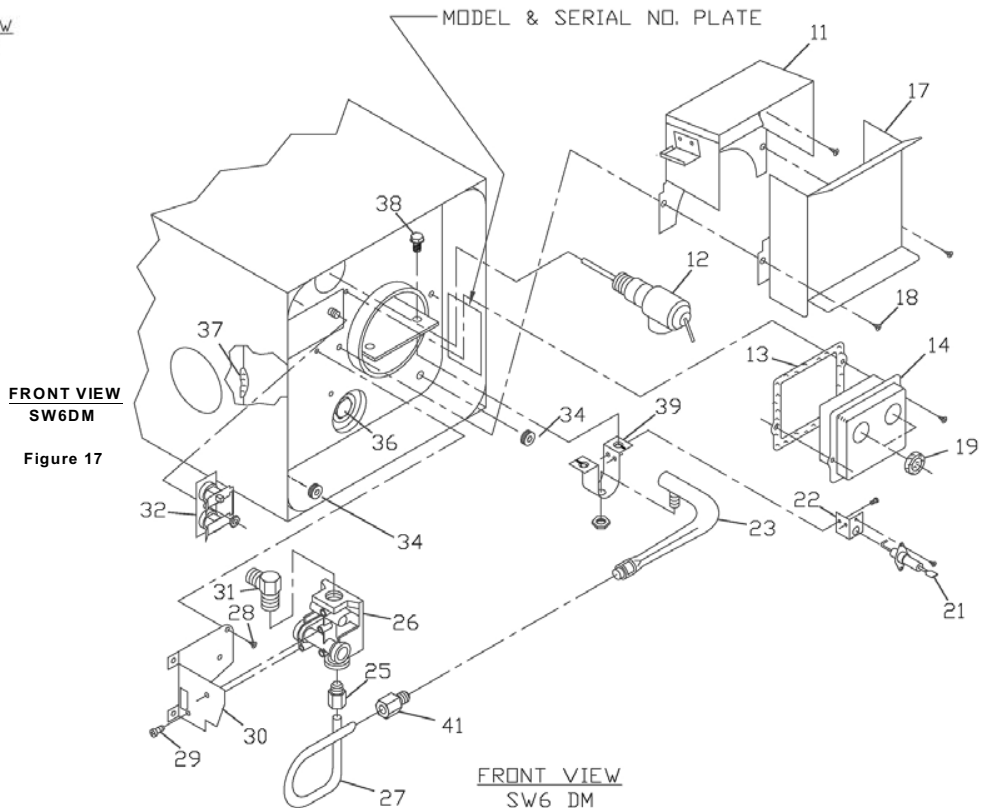
Item No.	Description	Part Number
21	Electrode	232258
22	Bracket, Electrode Mounting	063187
23	Burner Assembly with orifice	010843
25	1/4 Loxit Nut (Manifold to Valve)	171463
26	Valve, Gas (LP)	161109
27	Manifold Outlet	171420
28	Screw 10 x 1/4 (4 Required)	121577
29	Screw 8-32 x 3/8 Hex HD (2 Required)	121958
30	Bracket, Valve Mounting	063243
31	Gas Fitting	170374
32	Switch Assembly 12 V.D.C. T-Stat/Hi-Limit	232282
34	Grommet	071246
36	Anode	232767
37	Grommet, Gas Inlet	070989
38	Screw 8mm - 4.0 x 1/2 Hex Washer Head (2 Required)	121943
39	Burner Bracket	063444
41	1/4 Loxit Nut (Manifold to Burner)	171463
42	Electrode Wire (Not Shown)	232454



REAR VIEW
SW6DM

Figure 16

REAR VIEW
SW10 DM



FRONT VIEW
SW6DM

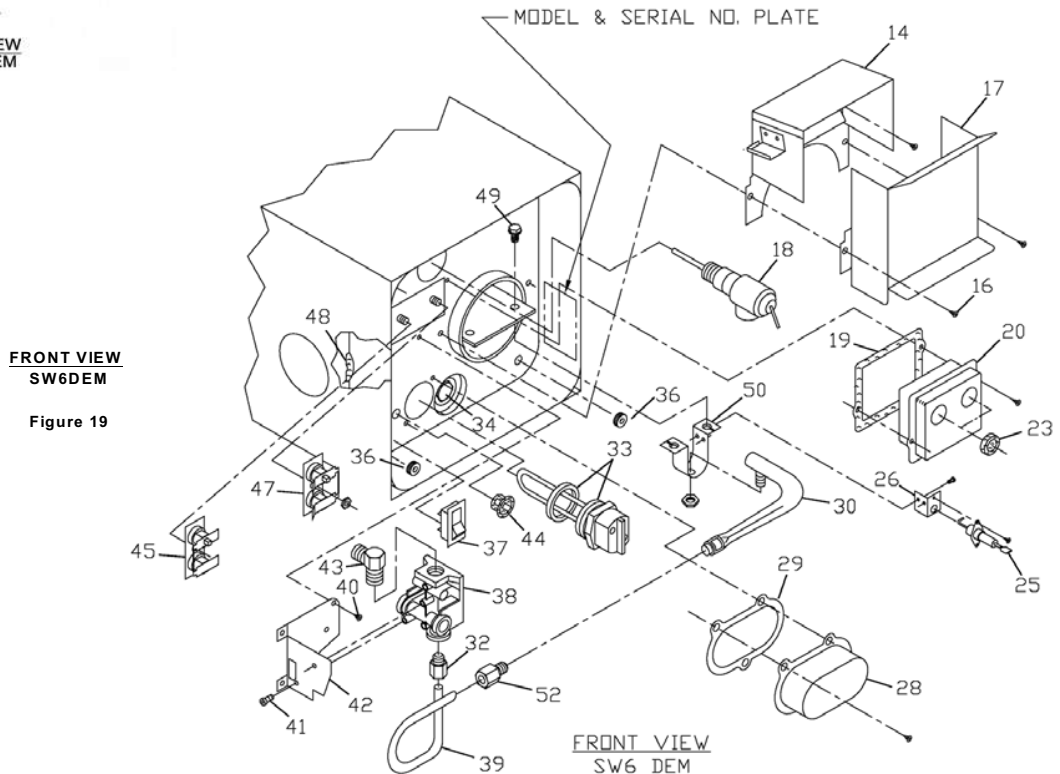
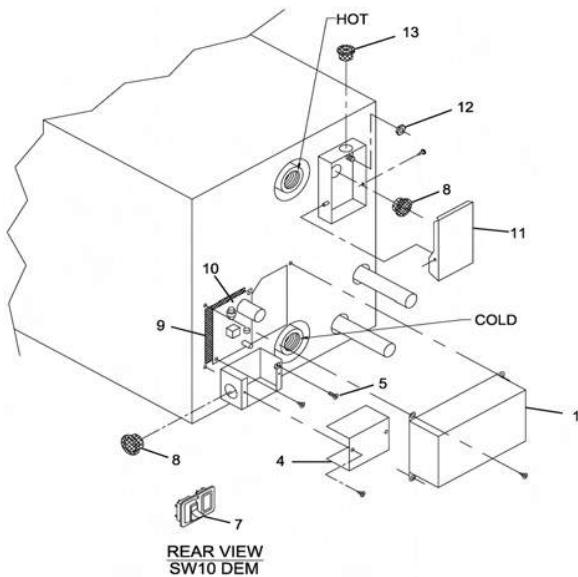
Figure 17

FRONT VIEW
SW6 DM



PARTS LIST FOR MODEL SW6DEM (Figures 18 and 19)

Item No.	Description	Part Number SW6DEM	Item No.	Description	Part Number SW6DEM
1	Cover, Module Board	090340	28	Cover, Element	090445
4	Cover, Junction Box (12 V.D.C.)	090344	29	Gasket, Element Cover	070988
5	Screw 10-32 x 3/8 (Green)	121702	30	Burner Assembly with orifice	010843
7	Switch, Lamp and Plate Assembly	232589	32	1/4 Loxit Nut (Manifold to Valve)	171463
8	Bushing, Snap	230218	33	Electric Element with Gasket	520789
9	Insulator, Module Board	070807	34	Anode	232767
10	Module Board	520814	36	Grommet	071246
11	Cover, Junction Box	090464	37	Switch, Electric Element	232362
12	Nut 10-24 Keps (Green)	121576	38	Valve, Gas (LP)	161109
13	Bushing	070486	39	Manifold, Outlet	171420
14	Back, Flue Collector	101682	40	Screw 10 x 1/4 (4 Required)	121577
16	Screw #10 x 1/4	121577	41	Screw #8-32 x 3/8 Hex HD	121958
17	Front, Flue Collector	101776		Bracket, Valve Mounting	063243
18	Valve, Pressure Relief	161157	43	Gas Fitting	170374
19	Gasket, Thermostat Cover	070987	44	Bushing, Snap 1/2"	070270
20	Cover, Thermostat/Hi-Limit	090562	45	Switch Assembly, 120 V.A.C. T-Stat/Hi-Limit	232306
23	Grommet (2 Required)	070874	47	Switch Assembly, 12 V.D.C. T-Stat/Hi-Limit	232282
25	Electrode	232258	48	Grommet, Gas Inlet	070989
26	Bracket, Electrode Mounting	063187	49	Screw 8mm - 4.0 x 1/2 Hex Washer Head (2 Required)	121943
			50	Burner Bracket	063444
			52	1/4 Loxit Nut (Manifold to Burner)	171463
			53	Electrode Wire (Not Shown)	232454





SUBURBAN WATER HEATER

TWO YEAR LIMITED WARRANTY SUBURBAN RECREATIONAL VEHICLE WATER HEATER

TWO YEAR LIMITED WARRANTY

This Suburban product is warranted to the original purchaser to be free from defects in material and workmanship under normal use and maintenance for a period of two years from date of purchase whether or not actual use begins on that date. It is the responsibility of the consumer/owner to establish the warranty period. Suburban does not use warranty registration cards for its standard warranty. You are required to furnish proof of purchase date through a Bill of Sale or other payment records.

Suburban will replace any parts that are found defective within the first two years and will pay a warranty service allowance directly to the recommended Suburban Service Center at rates mutually agreed upon between Suburban and its recommended service centers. Replacement parts will be shipped FOB the shipping point within the Continental United States, Alaska and Canada to the recommended service center performing such repairs. All freight, shipping and delivery costs shall be the responsibility of the owner. The exchanged part or unit will be warranted for only the unexpired portion of the original warranty. Before having warranty repairs made, confirm that the service agency is a recommended service center for Suburban. **DO NOT PAY THE SERVICE AGENCY FOR WARRANTY REPAIRS; SUCH PAYMENTS WILL NOT BE REIMBURSED.**

Suburban reserves the right to examine the alleged defect in the water heater or component parts, and it is the owner's obligation to return the water heater and/or component parts to Suburban or its representative. When returning a water heater, it must include all component parts and the serial number plate. Returned component parts must be individually tagged and identified with the water heater's model number, serial number and date of installation.

For warranty service, the owner/user should contact the nearest recommended Suburban Service Center, advising them of the model and serial numbers (located on the water heater) and the nature of the defect. Transportation of the RV to and from the Service Center and/or travel expenses of the Service Center to your location is the responsibility of the owner/user. A current listing of recommended service center may be obtained from Suburban's website: www.rvcomfort.com. If you cannot locate a recommended service center locally, the service agency chosen to perform warranty repairs must contact our Service Department at 423-775-2131 for authorization before making repairs. Unauthorized repairs made will not be paid by Suburban.

THREE YEAR LIMITED WARRANTY ON TANK

The inner tank is further warranted to be free from defects in material and workmanship during the third year after the date of original purchase. A replacement water heater will be provided under the same conditions as stated in the two year warranty EXCEPT no labor reimbursement will be provided.

LIMITATION OF WARRANTIES

ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH EACH LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER OR OTHER PERSON WHOMSOEVER.

SUBURBAN WILL NOT BE RESPONSIBLE FOR:

- . Normal maintenance as outlined in the installation, operating and service instructions owner's manual including cleaning of component parts and cleaning or replacement of the burner orifice. Any water damage arising, directly or indirectly, from any defect in the water heater or component parts or from its use.
 - . Initial checkouts and subsequent checkouts which indicate the water heater is operating properly, or diagnosis without repair.
 - . Damage or repairs required as a consequence of faulty or incorrect installation or application not in conformance with Suburban instructions.
 - . Failure to start and/or operate due to loose or disconnected wires; water or dirt in controls, fuel lines and gas tanks; improper gas pressure; low voltage.
 - . Cleaning or adjustment of components; electrode, burner tube, pilot and thermocouple.
 - . Costs incurred in gaining access to the water heater.
 - . Parts or accessories not supplied by Suburban.
 - . Freight charges incurred from parts replacements.
 - . Damage or repairs needed as a consequence of any misapplication, abuse, unreasonable use, unauthorized alteration, improper service, improper operation or failure to provide reasonable and necessary maintenance.
- 0.** Suburban products whose serial number has been altered, defaced or removed.
- 1.** Suburban products installed or warranty claims originating outside the Continental U.S.A., Alaska, Hawaii and Canada.
 - 2.** Damage as a result of floods, winds, lightning, accidents, corrosive atmosphere or other conditions beyond the control of Suburban.
 - 3.** ANY SPECIAL, INDIRECT OR CONSEQUENTIAL PROPERTY, ECONOMIC OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you.
- NO REPRESENTATIVE, DEALER, RECOMMENDED SERVICE CENTERS OR OTHER PERSON IS AUTHORIZED TO ASSUME FOR SUBURBAN MANUFACTURING COMPANY ANY ADDITIONAL, DIFFERENT OR OTHER LIABILITY IN CONNECTION WITH THE SALE OF HIS SUBURBAN PRODUCT.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

IF YOU HAVE A PRODUCT PROBLEM

FIRST:

If your RV has its original water heater and is still under the RV manufacturer's warranty, follow the steps suggested by your dealer or manufacturer of the RV.

SECOND:

Contact a conveniently located recommended Suburban Service Center. Describe to them the nature of your problem, make an appointment, if necessary, and provide for delivery of your RV to the selected service center.

THIRD:

For the location of the nearest Service Center, refer to the listing provided or contact:

Suburban Manufacturing Company
Customer Service Department
676 Broadway Street
Dayton, Tennessee 37321
(423) 775-2131, Ext. 7101
www.rvcomfort.com

For future reference, you should record the following information
MODEL NUMBER _____
SERIAL NUMBER _____
STOCK NUMBER _____
DATE OF PURCHASE _____



SERVICE DEPARTMENT

609 SWAN AVE

HOHENWALD, TENNESSEE 38462

TOLL FREE: 866-205-2621

EMAIL: SERVICE@OLIVERTRAVELTRAILERS.COM

SEE OUR VIDEOS AT OLIVERTRAVELTRAILERS.COM