

TO THE INSTALLER:

Please attach these instructions next to the water heater.

TO THE CONSUMER:

Read these and all component instructions. Please keep for future reference. Please remember to return the registration card.

Waranty, registration card & parts list included.



INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

BOCK RESIDENTIAL OIL-FIRED WATER HEATERS

Model numbers: 20e, 20pp, 32E, 32EC, 32PP, 32PPC, 33E, 33PP, 40E, 40PP, 50ES, 50ESC, 51E, 51EC, 51PP, 51PPC, 71E, 120E

WARNING:

Improper installation, adjustment, alteration, service or maintenance can cause serious injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer or service agency.

WARNING:

If the information in these instructions is not followed exactly, fire or explosion may result and can cause property damage, personal injury or death.

WARNING:

Follow minimum combustible clearance as noted on water heater label. Do not install on combustible flooring (see Figure 2, Page 3). Install in accordance with all local codes. In the absence of local codes, refer to NFPA 31 or ANSI Z21.10.1.

CAUTION:

The recommended temperature for normal residential use is 120°F. The dial on the aquastat does not always reflect the outcoming water temperature, which could occasionally exceed 120°F. The variation in outcoming temperature could be based on factors including but not limited to usage patterns and type of installation. Test your water at the tap nearest to the water heater. (See page 5 for measuring the outcoming water temperature).

WARNING:

Hotter water increases the risk of scald injury. Before changing the temperature setting, read the instruction manual. Temperatures at which injury occurs vary with the individual's age and length of exposure.

The slower reaction times of children, elderly and physically or mentally impaired persons increases the scalding hazard to them. It is recommended lower water temperatures be used where these situations exist.

Households with small children or invalids may require a temperature setting less than 120°F to prevent accidental contact with hot water.

To lower water temperature use point-of-use temperature limiting devices.

WARNING:

Flammable vapors may be drawn to this water heater from other areas of the structure by air currents.

Do not store or use any flammable liquids in the vicinity of this heater.

WARNING:

Water heater blankets may restrict air flow to the heater and cause fire, asphyxiation, personal injury or death.

Bock Water Heaters, Inc.

110 South Dickinson Street • P.O. Box 8632 • Madison, WI 53708-8632
Phone: 608/257-2225 • Fax: 608/257-5304 • www.bockwaterheaters.com

CONSUMER RESPONSIBILITIES

FAILURE TO FOLLOW THESE INSTRUCTIONS OR ALL APPLICABLE BUILDING CODES AND REGULATIONS VOIDS THE WARRANTY ON THIS WATER HEATER.

MULTIPLE BURNER INSTALLATION

SELECT THE RIGHT LOCATION

THIS MANUAL HAS BEEN PREPARED TO ACQUAINT YOU WITH THE INSTALLATION, OPERATION, AND MAINTENANCE OF YOUR WATER HEATER AND TO PROVIDE IMPORTANT SAFETY INFORMATION.

Read all instructions thoroughly before attempting installation or operation of the water heater. Keep these and all component instructions for future reference.

The manufacturer of this water heater will not be liable for any damages caused by failure to comply with the installation and operating instructions outlined on the following pages. These instructions are a guide for the correct installation of the water heater.

If the installer lacks the necessary skills or has difficulty following the directions, do not proceed but get help from a qualified person for that part of the installation that is not understood.

Local plumbing and electrical codes must be followed in the installation of this water heater. In the absence of a local code use the UNIFORM PLUMBING CODE and the NFPA Code. Local codes may supersede instructions in this installation manual.

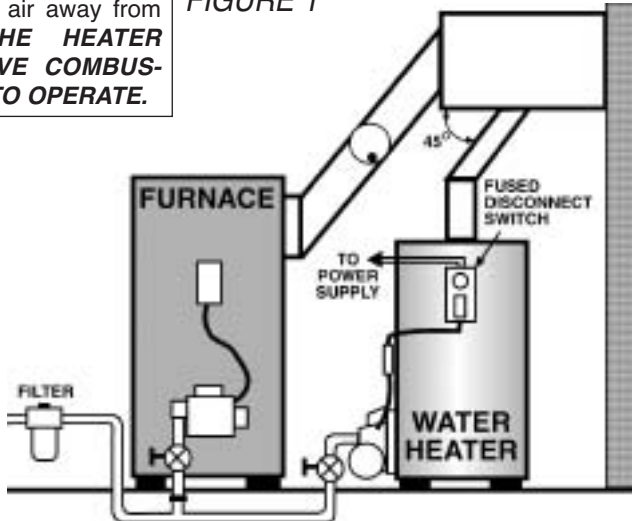
When two or more burners are used, each unit should have a separate supply line to the fuel pump to prevent nuisance lockouts caused by one or both pumps starving for oil. If this is not possible, the use of a priority control is recommended.

Check new equipment to see if all components are in good condition. The water heater and oil burner may be shipped as separate units. The aquastat and immersion well may be packed with the oil burner.

The new water heater requires fuel (#1 or #2 heating oil), electricity and should be close to the chimney and water supply. Locate the heater near a floor drain if possible for easy maintenance and protection if trouble should occur. Allow ample space around the heater for servicing (see combustible clearance warning, page 1). Adequate air for combustion must be available. NOTE: Locate the heater so it is not subject to physical damage by moving vehicles or possible flooding.

Check for exhaust fans in the heater room or adjacent areas which draw combustion air away from heater. **THE HEATER MUST HAVE COMBUSTION AIR TO OPERATE.**

FIGURE 1



WHEN THE WATER HEATER IS USED IN A COMBINED APPLIANCE APPLICATION, PLEASE CONTACT THE LOCAL DISTRIBUTOR OR THE FACTORY FOR INSTALLATION INSTRUCTIONS ON "SYSTEM PLUS".

DO NOT INSTALL THE WATER HEATER ON COMBUSTIBLE FLOORING (see Figure 2). Refer to NFPA 31 or contact Bock Water Heaters with questions concerning proper flooring materials.

Minimum clearance to combustible construction is: SIDES 6"; BACK 6"; FRONT 24". The installation of this water heater must conform with local codes and ordinances. In the absence of local codes, the installation must comply with the National Fire Protection Association (NFPA 31) Code.

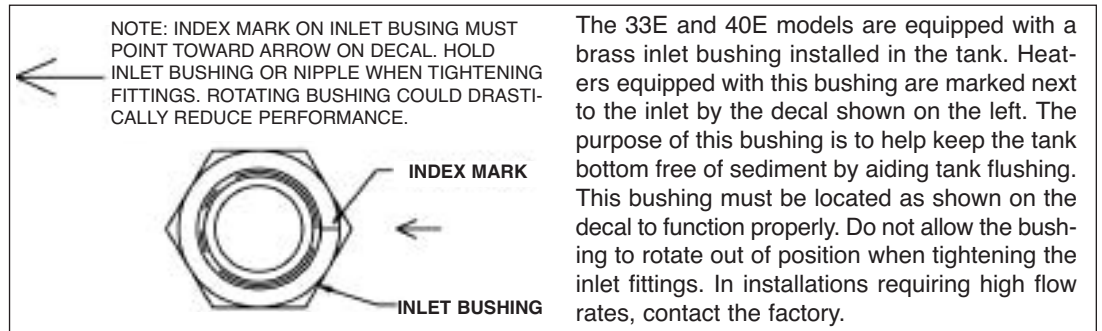
CONNECT WATER PIPING

Hot water outlet (“HOT”) is on tank top. Cold water inlet is on right front bottom of 33E and 40E. On all other models, cold water inlet is on tank top.

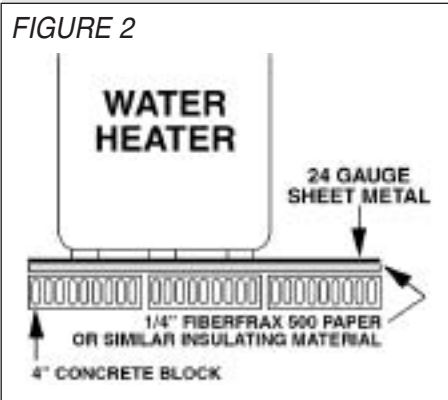
Connect the water piping, being careful not to apply heat to the heater nipples. Install dielectric unions and shut off valves on both hot and cold water lines.

The 40E and all “C” models (example: 32EC, 51PPC) have a 1” NPT tapping located on the front left side of the tank. This is an alternate outlet for use with combined appliance applications. If this fitting is not used, plug it with a fitting suitable for potable water.

A 1” NPT fitting is also located behind the drain valve on the 40E and all “C” models. This is for use as an alternate inlet or a combined appliance return. Your heater is shipped with a reducer in this location to mount the drain valve.

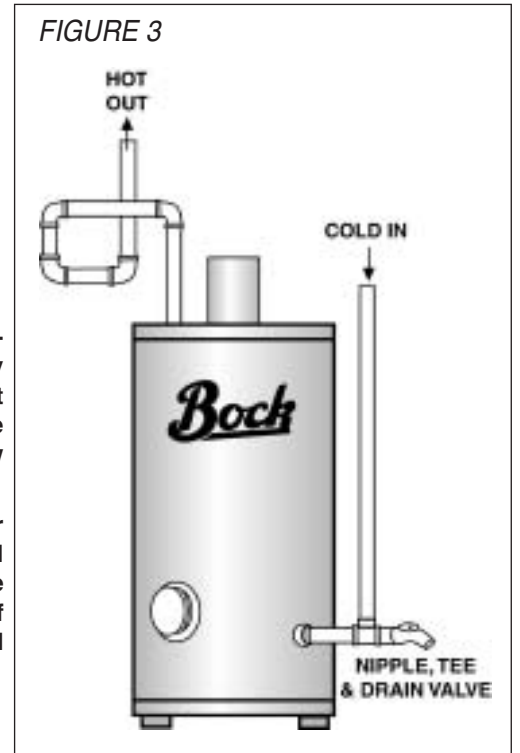


The drain valve fitting may be used as an alternate cold water inlet on heaters equipped with a dip tube, as shown in Figure 3. By plumbing a “T” into the drain fitting, the cold water inlet can be relocated to this point. The dip tube **must** be removed and its fitting plugged. Figure 3 also shows a copper loop heat trap installed on the hot water outlet to reduce standby losses.



Note: When converting to this configuration on an existing heater, visually inspect the heater and make certain it does not have scale buildup on the bottom of the tank. Scale can restrict the flow of water into the tank.

CAUTION!! Scalding injury and/or water damage can occur from either the manual lifting of the lever or the normal operation of the T&P valve if it is not piped to a proper drain. If the valve fails to flow water or reseal, call a plumber.



Inspect the incoming water line for check valves or water pressure reducing valves. Any type of check valve may cause pressure to build up in the heater and cause tank failure. If the heater is installed in a closed system or if backflow preventers and pressure regulators are installed, add an expansion tank. Do not try to heat hard water. Install a water softener if the heater is being used in a hard water area (water hardness more than 7 grains).

An approved temperature and pressure (T&P) relief valve is factory installed in the opening provided in the upper right hand side of the heater. Pipe the T&P to within 6" of the floor or to a floor drain with a free flowing drain pipe. Do not install a check valve in the cold water line.

CONNECT TO CHIMNEY

Using "L" or "A" type venting, connect the heater to the chimney. Use the same size smoke pipe as the heater flue pipe (on models 20e, 20pp, 32E, 32PP and 33E, you may use 4" with a reducer if needed).

WARNING: On Models 40E, 50ES, 50ESC, 51E, 51EC, 51PP, 51PPC, 71E and 120E, do not reduce the smoke pipe diameter. Run a separate smoke pipe from the water heater to the chimney wherever possible.

If it is necessary to tee into an existing smoke pipe, be sure the connector being teed into is large enough to accommodate the products of combustion of all units attached to it. When teeing into another connector, run in at 45° angle (see Figure 1). Install a draft regulator control only if necessary. Overfire draft should not be positive. Stack draft should be -.02" W.C. minimum to -.05" W.C. maximum; CO2 should be a minimum of 11%. If a draft control is installed on the chimney, another one on the heater is not needed.

MOUNT THE OIL BURNER

The oil burner is equipped with a primary relay. An aquastat with immersion well is packed with the burner. The thermostat is factory set at 120°F for residential use (see caution on page 1 regarding temperature variations). Install the immersion well with the aquastat and check the bulb length (see "Burner & Controls" section, page 10).

Remove the cardboard core from the burner opening. Mount the burner on stud bolts and place the gasket (supplied) between the burner flange and the heater. Secure the burner to the heater with 1/4 -20 nuts (supplied). Open the inspection door on the heater and check the burner tube with a mirror before firing to be sure the opening is not blocked (see Maintenance and Service sections on pages 6 and 7 for troubleshooting).

CONNECT THE ELECTRICITY

All wiring must comply with applicable codes and ordinances. The primary relay is wired to the burner at the factory. Install the aquastat well in the 3/4" tapping at the front of the heater. Be sure the sensing bulb is inserted all the way into the well. For Honeywell aquastats, tighten the screw on top of the aquastat to secure the control to the well. For Carlin EZ-Temp aquastats, refer to the pre-packaged installation guide for proper set-up procedure. Refer to drawings for correct models. Connect the power supply to the aquastat and run through a fused disconnect switch (attached to heater in field). See Figure 1.

CONNECT THE OIL LINE

WARNING!! WHEN YOU INSTALL THE BYPASS PLUG YOU MUST RUN A TWO-LINE SYSTEM.

Gravity System: The oil burner is normally equipped with a single-stage pump equipped for one line (gravity) flow. Use 1/2" O.D. soft copper tubing and **attach with flared fittings**. DO NOT USE COMPRESSION FITTINGS. Install the shut off valve and oil filter in the oil line. Follow the pump manufacturer's instructions (attached to the pump).

Lift System: The burner should be ordered with a 2-stage pump. Run a 2-line system (suction and return lines). Install the bypass plug according to the instructions attached to pump (plug is in a bag with an instruction sheet).

For any horizontal run exceeding the maximum length specified in Figure 4, or any lift of more than 10 feet, a booster pump must be used. Booster pumps may be obtained from Sun Tec Hydraulics, Rockford, Illinois. Booster pumps must be installed as close to the oil supply tank as possible. Suction and return lines should be the same diameter and both go within 6" of the bottom of the tank. The return line should stop slightly above the suction line. Use a minimum of fittings. Make bends in the tubing with as large a radius as possible. **DO NOT USE COMPRESSION FITTINGS.** Caution must be used in the final connection to the burner so as not to strain the fuel unit. Before attaching the tubing to the burner, form a coil in the tubing to minimize any vibration. Bury the oil lines in the floor for quiet operation, making sure there are **NO CONNECTIONS OR FITTINGS UNDER THE FLOOR.**

FIGURE 4: MAXIMUM LIFT & HORIZONTAL RUN

1-Pipe System	Single Stage Pump 3/8" O.D.	Horizontal Run 1/2" O.D.	2-Pipe System	Two-Stage Pump 3/8" O.D.	Horizontal Run 1/2" O.D.
Lift	Tube	Tube	Lift	Tube	Tube
0'	65'	100'	0'	75'	100'
4'	45'	100'	4'	64'	100'
7'	31'	100'	7'	55'	100'
8'	16'	64'	10'	47'	100'

Your log (or one similar to this) must be filled out as follows:

Date	Time	Test person's name	Set temp. °F	Outlet temp. °F

PLACE THE WATER SYSTEM IN OPERATION

Warning: Handhole cover may loosen during shipping – check for tightness before putting heater in operation.

1. Fill the tank with water, opening a hot water faucet to allow trapped air to escape from the heater. Open the cold water inlet valve. Shut off each faucet as it delivers water that is free of air. Inspect for leaks. Never operate an empty or partially full heater.

2. Be sure the oil tank is filled with #1 or #2 heating oil. Remove the transformer hold down screw and swing the transformer back open on the hinge. Rotate the blower wheel a few times to loosen the pump shaft. Swing the transformer closed and fasten.

3. Bleed air from the oil line by opening the bleed valve on the fuel pump. Attach a small plastic tube to the bleed valve fitting on the pump and run to a gallon container. Turn on the electricity and set the thermostat so the burner motor runs. The heater will not ignite when the bleed valve is open. Bleed the line until the oil is completely clear, not milky or opaque. The oil must be transparent and free of air bubbles and froth. To keep the burner control from locking out while bleeding the pump, attach a jumper between the flame detector terminals after starting the burner. Remove the jumper when finished. Shut the bleed valve and the burner will ignite. Remove the plastic tubing. Set the pump pressure to 100 PSI for Wayne, Carlin and Beckett burners and 150 PSI for Riello burners.

4. Adjust the burner combustion air in accordance with the burner manufacturer's instructions. Using combustion instruments, check the CO2 and smoke. The CO2 should be at least 10 1/2% minimum with 0-to-trace smoke on the Bacharach scale.

MEASURING THE OUTCOMING WATER TEMPERATURE

5. While the burner is operating, disconnect one of the yellow cad cell wires. Check to see that the burner control locks out in the time specified on the control. Reattach the wire and reset the control. The burner should restart. Note: You may have to wait a minute before resetting the control.

6. The thermostat is factory set at 120°F for residential use. (See caution on page 1 regarding temperature variations. It is the responsibility of the homeowner and installer to verify that the installer follows the recommended quantitative testing for measuring the outgoing water temperature. To make sure that the system works properly after installation and in the future, it is recommended that the heater's performance be measured and monitored. Run water out of the tap nearest the heater until it comes out warm. Using a calibrated thermometer, take a measurement. If the water is not at a suitable temperature for the installation, have a qualified service person adjust the aquastat. Contact Bock for further information on the thermometer if needed.

WARNING: Hydrogen gas can be produced in a hot water system served by a heater that has not been used for a long period of time (generally two weeks or more.) Hydrogen gas is extremely flammable. To reduce the risk of injury, open the hot water faucet at the highest location in the house for several minutes before using any electrical appliance connected to the hot water system. If hydrogen is present, there may be an unusual sound such as air escaping through the pipe as the water begins to flow. Do not smoke or allow an open flame near the faucet at the time it is open.

MAINTENANCE

Have the oil burner serviced once each year by a qualified oil burner service person. Service should comply with the burner manufacturer's recommendations and include:

1. Oil the burner motor (5-10 drops) with #10 SAE motor oil (if applicable).
2. Install a new burner nozzle of the correct rate and angle. (See Chart A, page 11).
3. Clean and adjust the electrodes and inspect for cracks in the porcelain. Check for corrosion on the buss bars and ignitor terminals.
4. Change the fuel oil filter and have the oil tank checked for sediment. Clean the tank if necessary.
5. Keep the oil tank full to prevent water vapor from collecting inside the tank, especially during the summer.
6. Check the smoke pipe and chimney. Clean and repair if necessary.
7. EVERY SIX to 12 MONTHS. Drain water from the heater tank and inspect for sediment or lime accumulation. Flush out if necessary. If lime has accumulated, remove with a commercial compound for dissolving lime or by scraping through the hand hole opening (if supplied). Check water softening equipment if lime is found in the tank. **DO NOT ATTEMPT TO HEAT HARD WATER.** (See maintenance label on heater.)
8. **Change the magnesium anode rods every six to 12 months or when they are reduced to 3/8" diameter** (see maintenance label on heater). We recommend the installer use PermaBond LH-050. Teflon tape should not be used when installing magnesium or aluminum anode rods.
9. Open the relief valve test lever to flush out the tank. Make sure it reseats itself.
10. If the heater is to be shut off in cold weather, drain the tank to prevent freezing.

SERVICE

1. Check the fuel supply, electrical wiring and fuses, and make sure temperature control is calling for heat.

2. If the motor runs but there is no flame, remove the electrode assembly, clean, readjust to the burner manufacturer's specifications, check the electrode porcelain for cracks and replace if necessary. Check the transformer to see if it is producing a strong spark. (Use extreme CAUTION: The transformer has a 10,000 volt output). Check that the coupling between the motor and pump shaft is not slipping. Check the set screw on the blower wheel for tightness. Clean or replace the nozzle with the correct size and spray angle (see Chart A, page 11).

3. Bleed the pump and check for clear, air-free oil. If the oil is milky or frothy, check the line for air leaks at fittings. Tighten all fittings again. Check the filter gaskets and make sure cartridge is clean.

4. If the burner motor does not run, check the motor thermal overload button (red button on end of motor). Reset the primary control by pushing the reset button on the control. If the burner motor still does not run after resetting the control, turn off the electricity and replace the flame detector (with the same make) located in the burner compartment. Reset the primary control. If the motor still does not run, replace the control.

5. If the burner ignites and runs a short time (30-40 seconds), then goes out on safety, replace the flame detector. If the burner still runs only a short time, replace the control.

6. If there is a smell of oil or combustion products, remove and clean the electrode assembly (see No. 2 above). Check the draft in the stack above the heater. Stack draft (pull in) should be $-.02''$ W.C. minimum to $-.05''$ W.C. maximum.

Check for exhaust fans in the heater room or adjacent areas which draw combustion air away from heater. THE HEATER MUST HAVE COMBUSTION AIR TO OPERATE.

For more information, contact your installer, the nearest Bock distributor, or write, call or fax:

BOCK WATER HEATERS, INC.

110 South Dickinson Street, Madison, WI 53703
Phone: 608/257-2225 • Fax: 608/257-5304

WIRING

FIGURE 5: Carlin burner w/ Carlin EZ-Temp
For Models: 32, 33, 40, 50, 51, 71, 120E
 (see burner manufacturer's instructions for 20e;
 60200 primary w/ three wire harness)

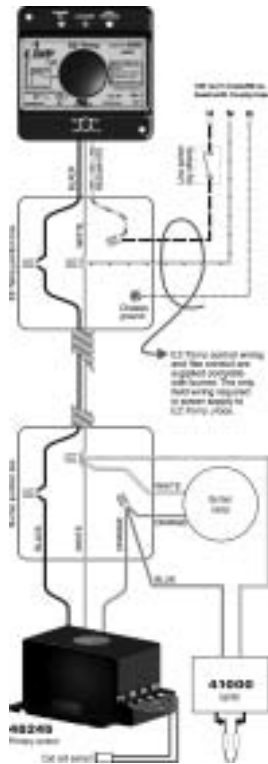


FIGURE 6: Beckett or Wayne burner w/ Carlin EZ-Temp
For Models: 32, 33, 40, 50, 51, 71, 120E

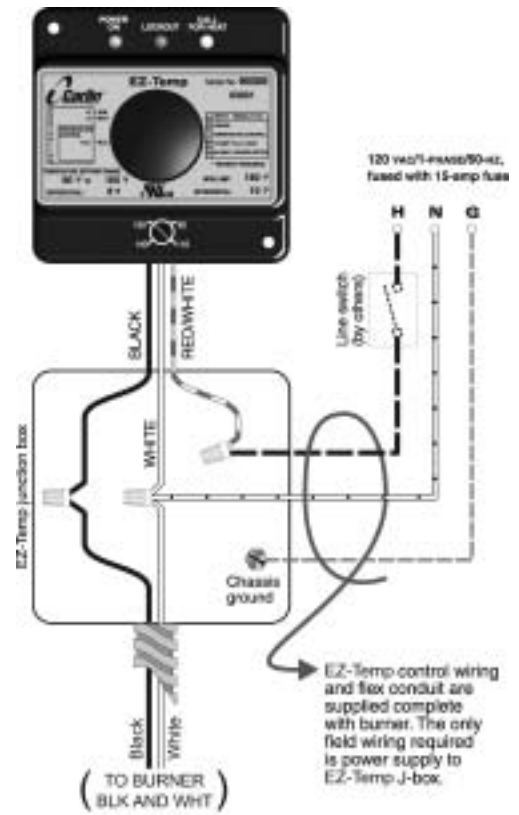


FIGURE 7: Honeywell L4103A-1142
For Models: 32, 33, 40, 51, 71E

FIGURE 7 NOTES:
 Set point 120°

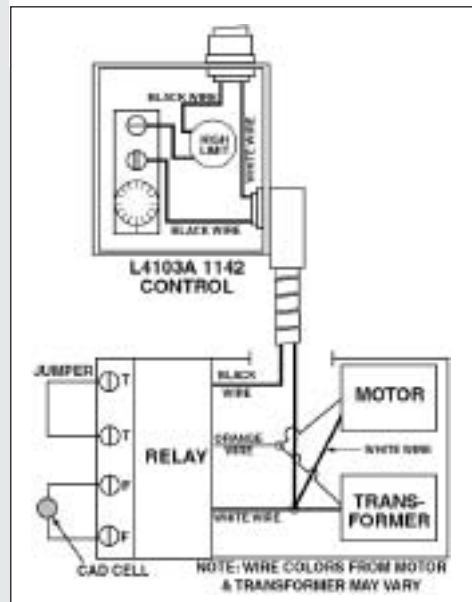
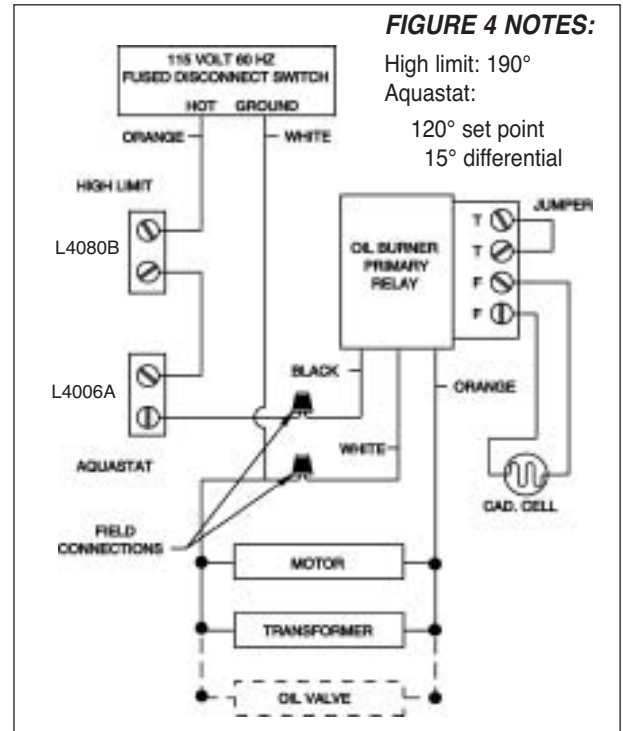
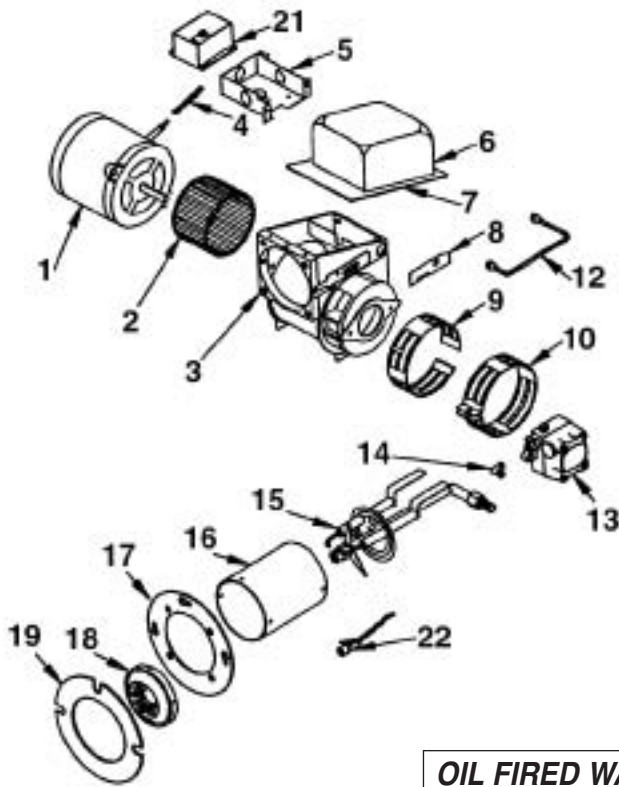


FIGURE 8: Honeywell L4006A w/ L8080B
For Models: 50, 120E



BURNER COMPONENTS



BURNER COMPONENTS LIST

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1.	Motor	12.	Oil Line Assembly
2.	Blower Wheel	13.	Fuel Unit
3.	Burner Housing	14.	Elbow
4.	Motor Cord Cover	15.	Gun Assembly
5.	J-Box	16.	Air Tube
6.	Transformer	17.	Flange
7.	Housing Cover	18.	Air Cone
8.	Slot Cover Plate	19.	Gasket
9.	Inner Air Band	20.	Nozzle (not shown)
10.	Outer Air Band	21.	Relay
11.	Coupling (not shown)	22.	Cad Cell

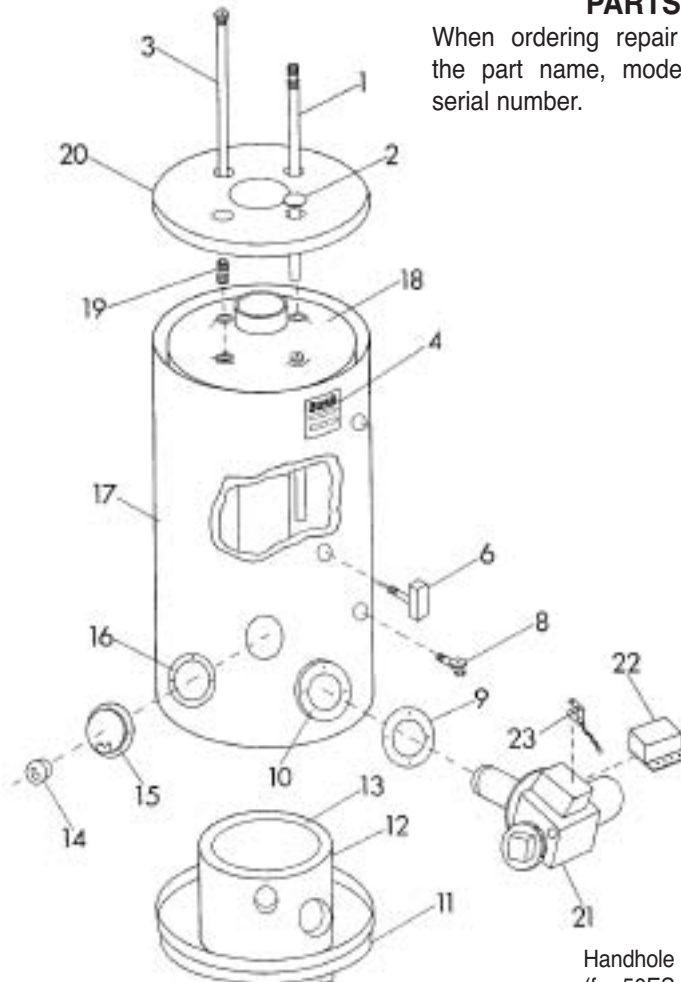
ITEM DESCRIPTION

1. Cold Water Inlet Dip Tube (N/A 33E & 40E)
2. Plastic Cap
3. Magnesium Anode Rod (aluminum available)
4. Name Plate/Rating Label
6. Immersion Well & Aquastat
8. Drain Valve
9. Mounting Bracket Gasket
10. Burner Mounting Bracket (part of jacket assembly on Models 20e, 32E through 51 Series; sold separately on 71E and 120E)
11. Bottom Pan
12. Combustion Chamber Sleeve
13. Combustion Chamber
14. Inspection Block
15. Inspection Door
16. Inspection Door Gasket
17. Heater Jacket
18. Tank
19. Hot Out Nipple
51 Series: 1"
All others: 3/4"
50ES: N/A
20. Top Pan
21. Burner
22. Primary Relay
23. Cad Cell

OIL FIRED WATER HEATER

BOCK TANK ASSEMBLY PARTS LIST

When ordering repair parts, always give the part name, model number, size and serial number.



Handhole cover plate and gasket (for 50ES only) not shown.

LIMITED WARRANTY

WARRANTY COVERAGE

This warranty covers “Bock” Water Heater models 20e, 20pp, 32E, 32EC, 32PP, 32PPC, 33E, 33PP, 40E, 40PP, 50ES, 50ESC, 51E, 51EC, 51PP, 51PPC, 71E and 120E. Bock Water Heaters, Inc., a division of Bock Corporation—a Wisconsin corporation—at 110 South Dickinson Street, Madison, WI 53703 (“Company”), warrants to the owner, the tank of this water heater will not leak due to defective materials or workmanship for FIVE years from the date of original installation. If the water heater is installed in other than a single family dwelling, this warranty is limited to THREE years from the date of original installation. The company also warrants that no other part of this water heater will fail due to a defect in material or workmanship for one year.

COMPANY’S RESPONSIBILITY

The company’s responsibility is to repair or replace, at our option with the prevailing comparable Bock model, any part of the equipment sold by the Company which proves to be defective in material or workmanship, including the tank, during the warranty period when installed in accordance with applicable codes and ordinances, and operated and maintained in accordance with our instructions, subject to the conditions and exceptions indicated below. Our liability, in the event of leakage or other malfunction, is strictly limited to repair or replacement of the defective heater or part, as provided herein. We are not responsible hereunder for incidental property damage or personal injury, consequential costs or damage. Equipment that is repaired or replaced will carry the unexpired portion of the original equipment warranty.

BURNER & CONTROLS

Any burner and/or controls used on a Bock water heater other than the ones recommended by Bock Water Heaters Inc., and listed by Underwriters Laboratories, Inc., will void the warranty.

Bock Water Heaters, Inc. specifies burners and controls on the basis of safety, reliability and performance. Only the following burners and controls have been tested and approved by Bock Water Heaters, Inc. and Underwriters Laboratories, Inc., to meet the stringent standards required by both. (**Refer to chart A, page 11**).

20e, 32E, 33E, 40E, 51E, 71E residential applications:

Honeywell L4103A combination aquastat and high limit controller. One well is needed. Part #138134E. (See figure 7).

White Rodgers 11C30-11 combination aquastat and high limit controller. One well is needed. Part #F89-0214.

Carlin EZ-Temp 90000B — Part #21585. One well is needed — Part #21587. (See Figure 5, 6).

50ES, 120E & commercial applications:

Honeywell L4006A (aquastat) and L4080B (limit control). Two wells are needed. Part #123871B. **Not to be used on 32E series.** (See Figure 8).

Carlin EZ-Temp 90000C — Part #21582. Two wells are needed — Part #21587. (See Figure 5, 6).

Carlin EZ-Temp 90300B — Part #21589. Two wells are needed — Part #21587. (See Figure 5, 6)

OWNER’S RESPONSIBILITY

At the company’s request, the owner is to return to the factory at Madison, WI, any part, including the tank, defective in material or workmanship, and pay all transportation charges for such return parts and for replacement parts sent from the factory to the owner.

EXCEPTIONS

The owner will pay all labor charges for the removal and installation of such parts, including the tank. Any replacement water heater furnished under this warranty shall remain in warranty only for the unexpired portion of the original warranty. The owner will have annual inspections of the anode rods. Bock Water Heaters, Inc. requires paid receipts to show maintenance of anodes on glass lined tank claims.

This warranty will not apply to tanks or parts subject to misuse, abuse, neglect, alteration, accident, excessive temperature, excessive pressure, lime, silt or sediment accumulation, corrosive atmosphere, the removal of magnesium anode rods, noise, odor, rusty water, or the installation of an insulation blanket, installation outside of the United States (excluding Canada), or on which the serial numbers have been altered. The warranty also does not apply when the water heater is installed without a new temperature and pressure relief valve and is not installed in accordance with local codes and ordinances.

TOTAL WARRANTY COMMITMENT

We will not assume, nor authorize any person to assume for us, any other liability in connection with the sale or operation of Bock Water Heaters, Inc. Any implied warranties, including merchantability or fitness for a particular application, imposed on the sale of this heater under laws of the state of sale are limited to one year. Some states do not allow limitations on how long an implied warranty lasts, or for the exclusion of incidental or consequential damages, so the above limitations or exclusions 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.

REGISTRATION CARD

The attached warranty registration card should be returned within 30 (thirty) days of the date of installation, otherwise, the date of manufacture will be recorded as the date of installation for the purpose of this warranty.

TO MAKE A CLAIM

Contact your nearest Bock distributor or:

Bock Water Heaters, Inc.
110 South Dickinson Street • Madison, WI 53703
Phone: 608/257-2225 • Fax: 608/257-5304

CHART A UL LISTED BURNERS

BOCK MODEL (OIL)	BURNER MFR.	MODEL/OEM #	MAX INPUT	MODEL OEM #	MAX INPUT
32E, 32EC, 33E	WAYNE	MSR/371-001B	0.75 X 80A		
32PP, 32PPC	WAYNE	HS/371-009HS	0.75 X 80A		
40E	WAYNE	MSR/371-030B	0.90 X 70A		
51E, 51EC	WAYNE	MSR/371-003B	1.10 X 80A		
50ES, 120E	WAYNE	MSR/371-029B	1.10 X 80A		
51PP, 51PPC	WAYNE	HS/371-011HS	1.10 X 80A		
71E	WAYNE	MSR/371-017B	1.25 X 70B		
32E, 32EC, 33E	BECKETT	AF/BK3	0.75 X 80A		
32PP, 32PPC	BECKETT	AF/BK3	0.75 X 80A		
40E	BECKETT	AF/BK4	0.85 X 80A		
51E, 51EC	BECKETT	AF/BK5	1.00 X 80A		
50ES, 120E	BECKETT	AF/BK5	1.00 X 80A		
51PP, 51PPC	BECKETT	AF/BK5	1.00 X 80A		
71E	BECKETT	AF/BK7	1.25 X 80B		
32E, 32EC, 33E	RIELLO	R35.3/C8511221	0.60 X 60B	40F5/C8512180	0.60 X 60B
32PP, 32PPC	RIELLO	R35.3/C8511221	0.60 X 60B	40F5/C8512180	0.60 X 60B
51E, 51EC	RIELLO	R35.3/C8511223	1.10 X 80A	40F5/C8512181	0.90 X 60B
50ES	RIELLO	R35.3/C8511222	0.85 X 60B	40F5/C8512181	0.90 X 60B
51PP, 51PPC	RIELLO	R35.3/C8511223	1.10 X 80A	40F5/C8512181	0.90 X 60B
120E	RIELLO	R35.3/C8511223	1.00 X 60B	40F5/C8512181	0.90 X 60B
71E	RIELLO	R35.5/C8512220	1.00 X 60B	40F5/C8512182	1.00 X 60B
20e, 20pp	CARLIN	EZ-LF/997843CT	0.40 X 60A		
32E, 32EC, 33E	CARLIN	EZ-1/96828-32E	0.75 X 70A		
32PP, 32PPC	CARLIN	EZ-1/96828-32PP(C)	0.75 X 70A		
51E, 51EC	CARLIN	EZ-1/96828-51E	1.10 X 70A		
50ES	CARLIN	EZ-1/96828-50ES	1.00 X 70A		
51PP, 51PPC	CARLIN	EZ-1/96828-51PP(C)	1.10 X 70A		
71E	CARLIN	EZ-1/96828-71E	1.25 X 60A		

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