

CROWN Boiler Co.

D E S I G N E D T O L E A D

Series 32ECS

Gas-Fired Natural Draft Steam or Water Boilers

INSTALLATION SUPPLEMENT FOR:

32-380ECS

32-475ECS

EQUIPPED WITH 24 VOLT CONTROL SYSTEMS

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury, or loss of life. For assistance or additional information, consult a qualified installer, service agency or the gas supplier. Read these instructions carefully before installing.

CROWN Boiler Co.

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I Product Description

This supplement covers information not included in the standard Series 32 installation manual that is unique to the following models:

32-380WNLECS, 32-475WNLECS
32-380WNTECS, 32-475WNTECS
32-380SNLECS, 32-475SNLECS

Follow the Series 32 installation instructions except where noted in this supplement.

II Specifications

32-380ECS Dimensional Data (Refer to Figure 1 in Installation Manual):

Jacket Overall Length ("A"): 31 1/4"
Vent Collar Dia. ("B"): 12"
Vent Centerline ("N"): 15 5/8"
Number of Flue Outlets: 1

32-380ECS Specifications:

Number of Sections: 5
Input (MBH): 380
I=B=R Gross Output (MBH): 304
I=B=R Net Rating (MBH Water): 264
I=B=R Net Rating (MBH Steam): 228
I=B=R Net Rating (ft² Steam): 950
Combustion Effy. (%): 80.5
Steam Water Volume to Normal Water Line (Gal): 24.51
Water Boiler Volume (Gal): 34.13
Output (BHP): 9.1

Arrangement of Steam Riser Connections, Draft Hoods, and Base Assemblies: The 32-380ECS has the same basic configuration as that shown for the 32-475 in figure 2A of the installation manual.

32-475ECS Specifications - Refer to 32-475 specifications in the installation manual.

III Before Installing

Refer to installation manual. Also note that a CSD-1 compliant gas train is not available for the 32-475ECS.

IV Locating the Boiler

Refer to installation manual. Minimum required room volume for 32-380ECS is 436 ft³ (Table 2).

V. Knockdown Boiler Assembly Instructions - Refer to installation manual

VI Air for Combustion and Ventilation - Refer to installation manual

VII Venting

Refer to installation manual. Vent sizing for the 32-380ECS should always be done in accordance with the National Fuel Gas Code.

A vent damper can be installed on any 32-380ECS or 32-475ECS equipped with a 24 volt control system except for those with tankless heaters. If a vent damper is installed, the following components are required:

- Effikal Model GVD-12 Vent Damper: Crown PN 96-038
- Damper Harness (Steam Boilers): Crown PN 9601300
- Damper Harness (Water Boilers): Crown PN 9601550

To install the damper:

1) Open vent damper carton and remove installation instructions. Read the instructions thoroughly before proceeding. Verify that vent damper is same size as draft diverter outlet (12"). Unpack vent damper carefully. **Do not force closed damper blade.** Forcing vent damper closed may result in damaged gear train.

2) Vent damper is factory shipped having approximately 3/4" diameter hole in the vent damper blade, which **must be left open even though this boiler is equipped with an intermittent ignition system.**

3) Mount the vent damper on the flue collar without modification to either and secure with sheet metal screws. Make sure screws do not interfere with damper blade operation. Vent damper blade position indicator must be visible to users. Maintain at least 6 inches between the vent damper device and combustible construction. Also make sure that there is adequate access to the vent damper for servicing. Figures D and F in the Wiring section show typical damper orientation.

4) Install vent connector pipe and vent fittings from vent damper outlet to chimney or gas vent. Secure with sheet metal screws and support as required.

WARNING

Install the vent damper directly on top of the boiler so that it is servicing only the boiler.

5) See the Wiring section of this supplement for instructions on making damper electrical connections.

VIII Steam Boiler Piping and Trim Installation

Refer to installation manual. The #67 low water cut-off (LWCO) cannot be used as the primary (operating) LWCO on the 380ECS or 475ECS. Instead, a Hydrolevel CG400 is installed in tapping "G" (Figure 22). A #67 LWCO can be used as a redundant LWCO (with or without manual reset) in tappings "E" along with the level glass. The CG400 supplied with this boiler uses the same flangeless probe, and is mounted on the boiler in the same manner, as the CG450 described in the installation manual at the top of page 28. Install the 32-380ECS near boiler piping in accordance with that shown for the 32-475 in Figure 27a in the installation manual.

IX Water Boiler Piping

Refer to installation manual. Boilers covered by this supplement which are not equipped with a tankless heater are supplied with a Honeywell L8148E limit control installed in Tapping "C" (Figure 29) using the 1/2" well and 1/2 x 1-1/2" bushing supplied. Boilers equipped with a tankless heater are supplied with a Honeywell L8124E, which is installed using a 3/4" well in the tankless heater. The L4006A shown in the installation manual is not used.

X Gas Piping - Refer to installation manual

XI Control System Wiring

WARNING

All wiring and grounding must be done in accordance with the authority having jurisdiction or, in the absence of such

Wire the boiler in accordance with the following instructions rather than those in the installation manual. Provide the boiler with a dedicated branch circuit with a fused disconnect. The minimum rating of this circuit must be 15A. Wire the boiler using the appropriate wiring diagram shown in Figures A-C in this supplement. In addition, note the following:

- 1) Steam boiler wiring is shown in Figure A. The junction box, transformer, and thermostat relay are prewired with all low voltage wire harnesses, except the damper harness (if used).
 - a) Mount the junction box assembly to the side jacket panel as shown in Figure D using two #10 x 1/2" sheet metal screws.
 - b) Connect the gray limit harness to terminals R and B on the L404 pressure limit.
 - c) Mount the blocked vent switch (BVS) to the draft hood as shown in Figure E using two #10 x 1/2" sheet metal screws. Route the red BVS harness along the side of the boiler as shown in Figure D and connect the pair of fully insulated quick connects to the BVS.
 - d) Route the other end of the BVS harness to the ignition module . Connect the fully insulated quick connect to the "24 Volt" terminal. Connect the uninsulated connector to the "24 V Ground" piggy back terminal. Secure the BVS harness to the jacket with the nylon clips provided as shown in Figure D.
 - e) If a damper is installed, remove the red jumper wire inside the junction box that is indicated by Note #2 in Figure A. Connect the damper harness to the wiring in the junction box as shown in Figure A. Route the damper harness to the damper as shown in Figure D, using care to make sure that it does not come in contact with the draft hood or steam piping.
 - f) If a redundant LWCO and/or pressure limit are used, wire them so that they interrupt 120VAC power to the boiler.
- 2) Water Boiler wiring is shown in Figure B for boilers without a tankless heater and in Figure C for boilers with a tankless heater. The blocked vent switch (BVS) wire harness is factory wired to B1 and B2 on the "aquastat" (L8148E or L8124E).
 - a) Mount the aquastat to the control well.
 - b) Mount the blocked vent switch (BVS) to the draft hood as shown in Figure E using two #10 x 1/2" sheet metal screws. Route the red BVS harness along the side of the boiler as shown in Figure F and connect the pair of fully insulated quick connects to the BVS.
 - c) Route the other end of the BVS harness to the ignition module . Connect the fully insulated quick connect to the "24 Volt" terminal. Connect the uninsulated connector to the "24 V Ground" piggy back terminal. Secure the BVS harness to the jacket with the nylon clips provided as shown in Figure F.
 - d) A vent damper cannot be used on boilers equipped with tankless heater. If a damper is installed on a boiler without the tankless heater, remove the jumper plug inside the L8148E aquastat. Plug the 6-pole end of the damper harness into the aquastat. Plug the 4-pole end of the harness into the damper. Route the damper harness to the damper as shown in Figure F, using care to make sure that it does not come in contact with the draft hood.
 - e) If a LWCO and/or redundant temperature limit are used, wire them so that they interrupt 120VAC power to the boiler.
- 3) Provide a Class II circuit between the boiler and the thermostat. Make thermostat connections to the boiler in accordance with Figure A-C.
- 4) Make 120VAC connections to the boiler in accordance with Figure A-C.

CAUTION

Make sure that damper and BVS harnesses are secured so that they do not come in contact with draft hood or steam piping.

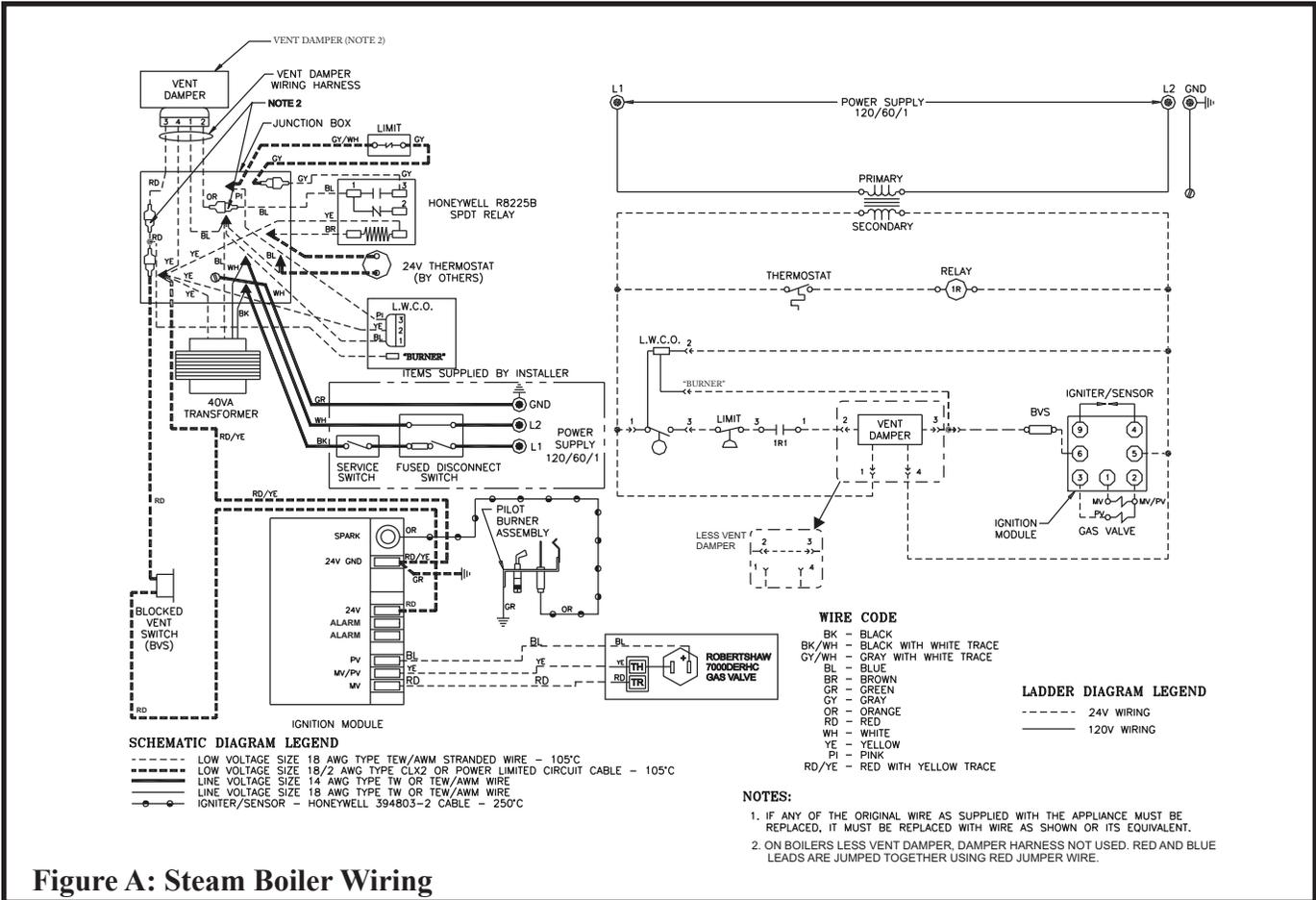


Figure A: Steam Boiler Wiring

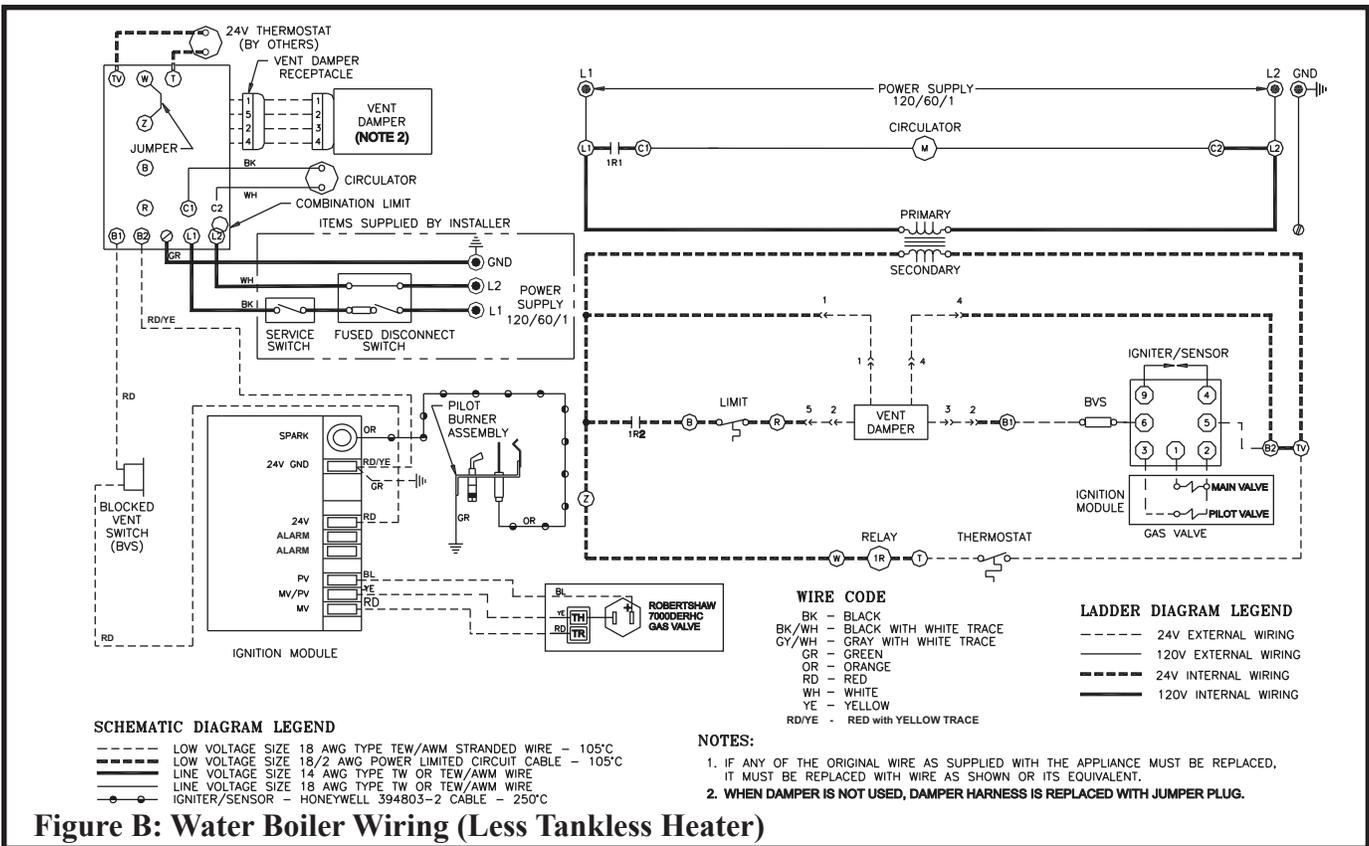


Figure B: Water Boiler Wiring (Less Tankless Heater)

Sequence of Operation - Steam Boiler

- 1) When the boiler is energized, 24 volts is immediately applied to terminals “1” (blue) and “4” (yellow) on the vent damper. Assuming that there is no call for heat, and that the damper switch is in the “automatic” position, the damper will close. On boilers equipped with Hydrolevel CG400A probe type low water cut-offs, voltage is also always applied to terminals “1” (blue) and “2” (yellow) on the low water cut-off to power the water level sensing circuit.
- 2) Assuming that water is above the cut-off level, power will appear at terminal “3” on the CG400 LWCO or terminal “1”.
- 3) Assuming that steam pressure is below the pressure limit setting, power will appear on one side of relay contact 1R1 (Gray lead). Relay 1R is the R8225 mounted under the junction box.
- 4) A call for heat from the thermostat energizes relay coil 1R causing contacts 1R1 to make. Current then flows through contacts 1R1 to pin terminal “2” (orange) at the vent damper (if used) and the damper opens.
- 5) Once the vent damper is fully open, an end switch inside the damper will make, energizing pin “3” (red) at the damper. If a vent damper is not present, current flows through the red jumper indicated by Note 2 in Figure A directly to the blocked vent switch.
- 6) Current passes from terminal “3” on the vent damper through the blocked vent switch. Under normal conditions, this switch is made and voltage will therefore immediately appear across terminals “24V” and “24V (GND)” on the ignition module.
- 7) Upon application of voltage across the “24V” and “24V (GND)” terminals, the ignition module will start an ignition spark at the pilot and apply 24 volts across the pilot valve (terminals “PV” and “MV/PV”).
- 8) Once the pilot is established, the pilot flame will act as a diode, converting the AC current at the electrode to a half wave DC current at the pilot’s ground strap. This DC current flows through the boiler to the “GND (BURNER)” connection on the ignition module. For the ignition module to recognize that a pilot flame is present, the DC current flowing into this terminal must be in excess of approximately 1.0 uA.
- 9) Once the ignition module detects the presence of a pilot flame, voltage is applied across the main valve (terminals “MV” and “MV/PV”), opening the valve and establishing main flame.
- 10) The way in which the ignition module handles failure to establish pilot or the loss of an already established pilot depends upon the exact ignition module supplied with the boiler. For more information on module operation, consult the ignition module instructions supplied with the boiler or the local Crown representative.

Safety Control Operation - Steam Boilers

Hydrolevel CG400A Low Water Cut-off - Interrupts burner operation if the water in the boiler drops below a safe level. As the water drops past the cut-off point, the amber lamp on the CG400 will glow. The CG400 will interrupt power to the burners 15 seconds after the water level drops past the cut-off point. This feature prevents short cycling of the burners due to a bouncing water line. The burners will then remain off until 30 seconds after the water level has been raised above the cut-off point.

The CG400 is also equipped with a feature which will shut down the burners after they have been firing for 20 minutes, regardless of the water level status. The CG400 then keeps the burners off for 90 seconds, allowing the water level and any foam which is present to settle. During this 90 second interval, the green LED on the CG400 will glow. If the water level is still above the cut-off line at the end of this 90 second interval, the CG400 will restart the burners.

The vent damper will close when the low water cut-off interrupts burner operation.

Pressure Limit Control - Interrupts burner operation when the pressure in the boiler exceeds the “Cut-in” setting plus the differential setting. The “Cut-in” setting is shown on the outside of the control and is adjusted using the screw on the top of the control. The differential is adjusted using the white thumb wheel on the inside of the control. Burner operation is restored when the pressure in the boiler drops to the “Cut-in” pressure.

Blocked Vent Switch - Automatically interrupts burner operation in the event of a blocked vent condition. This switch is

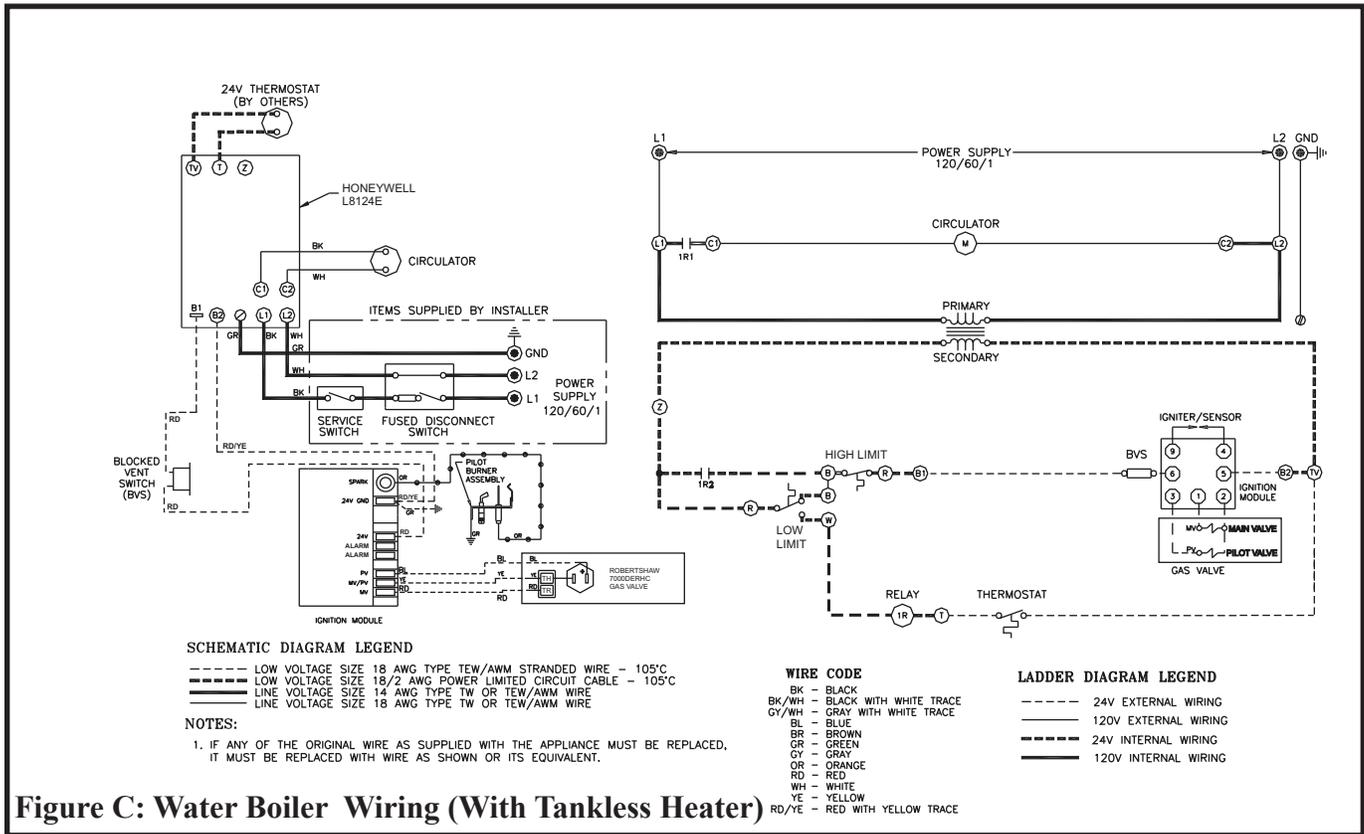


Figure C: Water Boiler Wiring (With Tankless Heater)

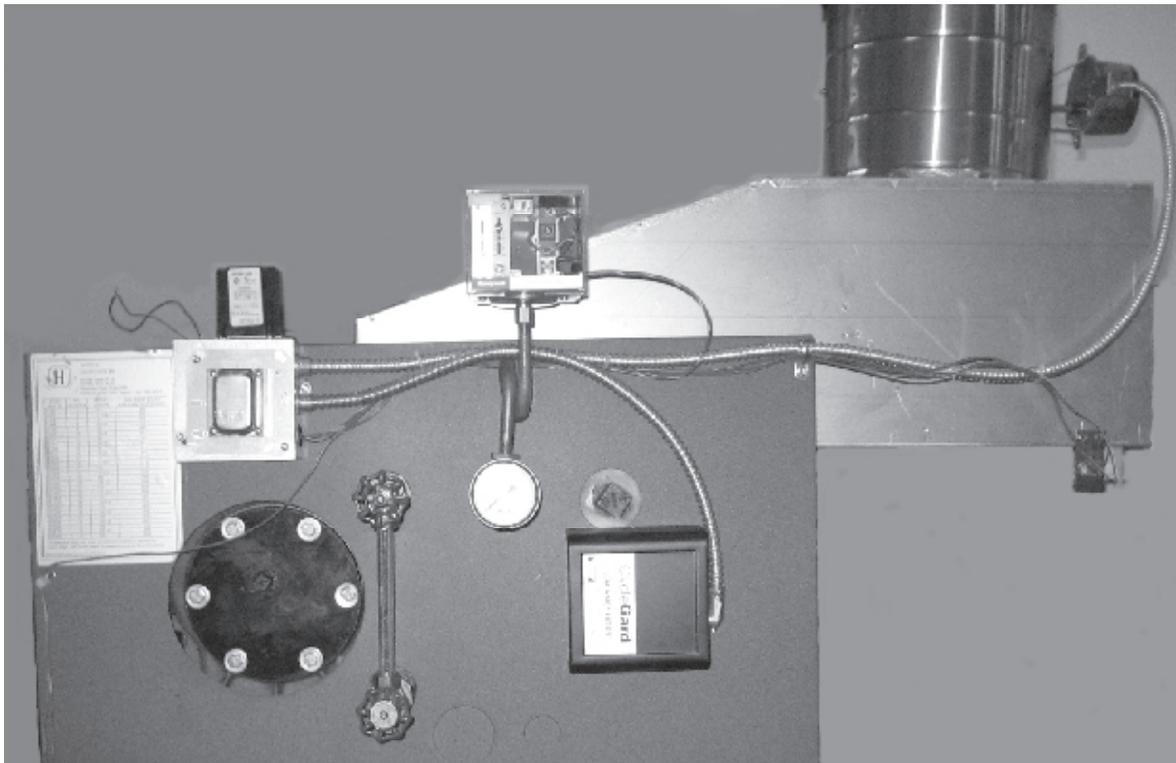


Figure D: Steam Boiler Control Installation

equipped with a reset button which must be pressed to restore normal burner operation. An open blocked vent switch is indicative of a problem with the vent system. If the blocked vent switch opens, the cause of the venting problem must be found and corrected by a qualified gas service technician before the blocked vent switch is reset.

Sequence of Operation - Water Boiler, Less Tankless Heater

- 1) When the boiler is energized, 24 volts is immediately applied to terminals “1” (blue) and “4” (yellow) on the vent damper. Assuming that there is no call for heat, and that the damper switch is in the “automatic” position, the damper (if used) will close.
- 2) A call for heat from the thermostat energizes relay coil 1R (the relay on the L8148E), causing contacts 1R1 and 1R2 to make. Contact 1R1 starts the circulator. Contact 1R2 sends power to the high limit.
- 3) Assuming that the high limit is made, current will flow to pin terminal #2 (orange) at the vent damper (if used) and the damper will open.
- 4) Once the vent damper is fully open, an end switch inside the damper will make, energizing pin #3 (red) at the damper. This pin is connected through the damper harness to terminal “B1” on the L8148E. At this point in the operating sequence, 24 volts is present across “B1” and “B2”.
- 5) Under normal conditions, the blocked vent switch is made. Voltage will therefore immediately appear across the “24V” and “24V (GND)” terminals on the ignition module.
- 6) Upon application of voltage across the “24V” and “24V (GND)” terminals, the ignition module will start an ignition spark at the pilot and apply 24 volts across the pilot valve (terminals “PV” and “MV/PV”).
- 7) Once the pilot is established, the pilot flame will act as a diode, converting the AC current at the electrode to a half wave DC current at the pilot’s ground strap. This DC current flows through the boiler to the “GND (BURNER)” connection on the ignition module. For the ignition module to recognize that a pilot flame is present, the DC current flowing into this terminal must be in excess of approximately 1.0 uA.
- 8) Once the ignition module detects the presence of a pilot flame, voltage is applied across the main valve (terminals “MV” and “MV/PV”), opening the valve and establishing main flame.
- 9) The way in which the ignition module handles failure to establish pilot or the loss of an already established pilot depends upon the exact ignition module supplied with the boiler. For more information on module operation, consult the ignition module instructions supplied with the boiler or the local Crown representative.

Sequence of Operation, Intermittent Ignition, With Tankless Heater

- 1) If the boiler water temperature is less than the low limit setting minus the differential setting, terminals “R” and “B” in the L8124E are made through the low limit switch. The low limit switching action is SPDT with “R” being common. “R” and “W” are therefore open whenever “R” and “B” are made. This means that while “R” and “B” are made relay coil R1 is deenergized, regardless of whether or not there is a call for heat. The circulator will therefore not operate if the boiler water temperature is too low to generate domestic hot water.
- 2) Assuming that the high limit is made, current will flow to terminal “B1” on the L8124E.
- 3) Under normal conditions, the blocked vent switch is made. Voltage will therefore immediately appear across the “24V” and “24V (GND)” terminals on the ignition module.
- 4) Upon application of voltage across the “24V” and “24V (GND)” terminals, the ignition module will start an ignition spark at the pilot and apply 24 volts across the pilot valve (terminals “PV” and “MV/PV”).
- 5) Once the pilot is established, the pilot flame will act as a diode, converting the AC current at the electrode to a half wave DC current at the pilot’s ground strap. This DC current flows through the boiler to the “GND (BURNER)” connection on the ignition module. For the ignition module to recognize that a pilot flame is present, the DC current flowing into this terminal must be in excess of approximately 1.0 uA.

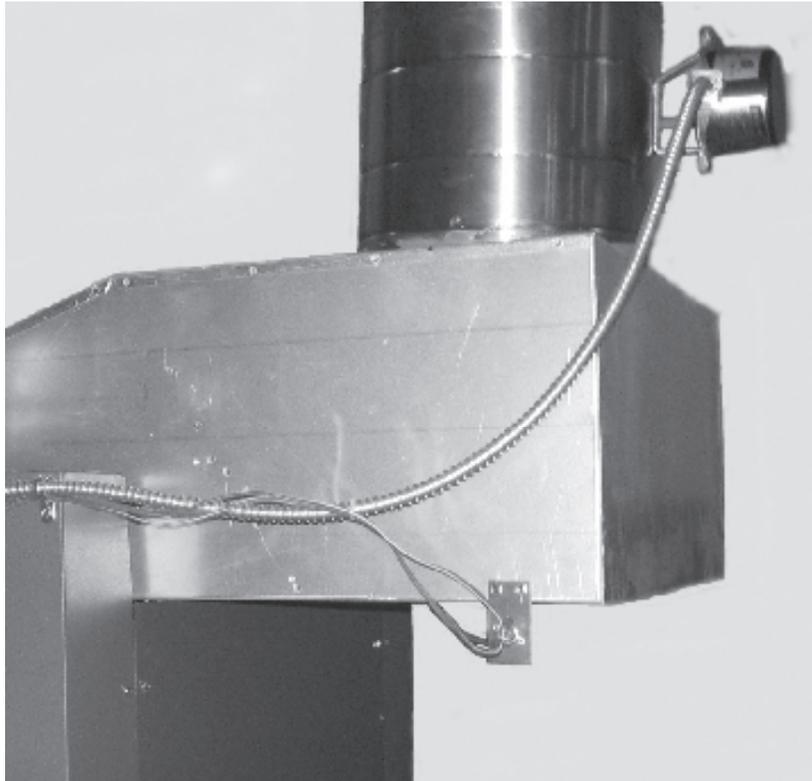


Figure E: Blocked Vent Switch Installation

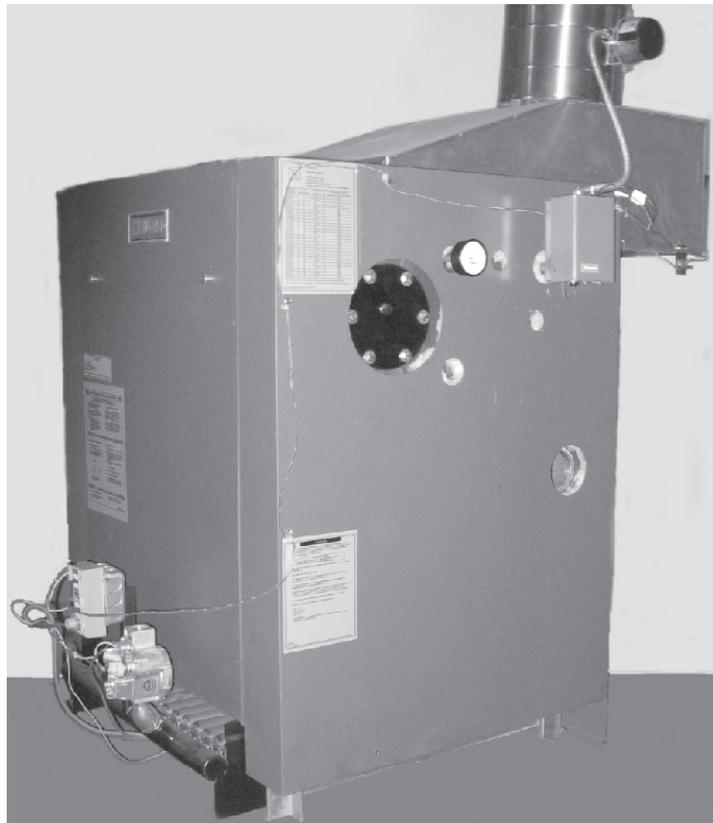


Figure F: Water Boiler Control Installation (Less Tankless Heater Version Shown)

6) Once the ignition module detects the presence of a pilot flame, voltage is applied across the main valve (terminals “MV” and “MV/PV”), opening the valve and establishing main flame.

7) The way in which the ignition module handles failure to establish pilot or the loss of an already established pilot depends upon the exact ignition module supplied with the boiler. For more information on module operation, consult the ignition module instructions supplied with the boiler or the local Crown representative.

8) The boiler will fire until the boiler water temperature is approximately equal to the low limit setting. Once the water temperature reaches this point, “R” and “B” open and “R” and “W” make. At this point, a call for heat from the thermostat will energize 1R, making contacts 1R1 and 1R2. Contacts 1R1 energize the circulator. Contacts 1R2 switch current from the “hot” side of the transformer secondary to the high limit switch. If the high limit is made, current flows to terminal “B1” and the ignition sequence is then the same as it is for a call for burner operation from the low limit (see (3) above).

Safety Control Operation - Water Boilers

High Limit - Interrupts main burner operation when the supply water temperature exceeds set point. Maximum allowable temperature is 250°F. If the high limit opens, the vent damper will close if the damper switch is in the “automatic” position. The circulator will continue to operate as long as there is a call for heat, regardless of the status of the high limit (if the boiler is equipped with a tankless coil, the low limit switch will prevent the circulator from operating if the boiler water temperature is too low). Burner operation automatically resumes when the supply water temperature falls below set point.

Blocked Vent (“Spill”) Switch - Automatically interrupts main burner operation in the event that flue gas spills from the draft diverter opening. This switch is equipped with a reset button which must be pressed to restore normal burner operation. An open blocked vent switch is indicative of a problem with the vent system. If the blocked vent switch opens, the cause of the venting problem must be found and corrected by a qualified gas service technician before the blocked vent switch is reset.

XII - Start-up and Checkout - In addition to start-up procedure shown in the installation manual, also verify that the vent damper (if installed) is in the open position when the burners are firing.

XIII Service in Maintenance - Refer to installation manual.

XIV Parts - Parts lists on following pages describe cartons and components unique to the 32-380ECS and 32-475ECS. Refer to the installation manuals where indicated for universal parts lists.

SERIES 32 MASTER PARTS LIST FOR 32-380ECS & 32-475ECS

DESCRIPTION	SECTIONS			ECS BASE CARTON		INTERMEDIATE CARTON		SECTION JOINER CARTON		BASE SIDE PANEL CARTON	JACKET SIDE PANEL CARTON	ECS WATER TRIM CARTON (LESS TANKLESS HEATER)	ECS WATER TRIM CARTON (WITH TANKLESS HEATER)	ECS STEAM TRIM CARTON	BOILER CARTON (ECS WATER)	BOILER CARTON (ECS STEAM)
	RIGHT END (ALL BOILERS)	LEFT END (ALL BOILERS)	INTERMEDIATE (ALL BOILERS)	380	475	380	475	I	A							
				3110053	3110063	310405	310406	311026	311020							
PART # (STANDARD)	310000	310001	310002	3110053	3110063	310405	310406	311026	311020	311010	310400	311027	311028	311031	1 EA.	1 EA.
BOILER MODEL	QUANTITY														PART #	
32-380ECS	1	1	3	1		1		1		1	1	1	1	1	311035	311037
32-475ECS	1	1	4		1		1		1	1	1	1	1	1	311035	311037

ECS BASE CARTON

DESCRIPTION	PART #	380	475
		380 ECS BASE ASSEMBLY	3131053
475 ECS BASE ASSEMBLY	3131063		1
REAR TIE ROD CHANNEL BRACKET	310311	1	1
5/8 X 4 STUD	900309	1	1
5/8 USS WASHER	900312	2	2
5/8 NUT	900311	2	2
JACKET REAR PANEL SUPPORT BRACKET	310310	1	1
JACKET TOP SUPPORT BRACKET	310320	1	1
#10 X 1/2 HEX HD SHEET METAL SCREW	90-212	12	12
GASKET ROPE	900145	6 ft	7 ft
5/16-18 X 5 CARRIAGE BOLT	900315	2	2
5/16-18 X 3 CARRIAGE BOLT	900313	2	2
5/16-18 WING NUT	900104	2	2
5/16 USS FLAT WASHER	900102	4	4
JACKET KNOBS	90-210	2	2
8-32 X 1/4 SCREW	90-211	2	2
3/8-16 X 3/4 CAP SCREW	90-035	4	4
3/8 USS FLAT WASHER	90-036	4	4
3/8-16 HEX NUT	90-221	4	4

INTERMEDIATE CARTON - See Installation Manual

SECTION JOINER CARTON

DESCRIPTION	PART #	QUANTITY					
		"I"	"A"	"B"	"C"	"D"	"E"
7" PUSHNIPPLE	310005	4	5	6	7	8	9
3" PUSHNIPPLE	310006	4	5	6	7	8	9
5/8 X 9 3/4 TIE ROD	900310	12	15	18	21	24	27
5/8 HEX NUT	900311	24	30	36	42	48	54
5/8 FLAT WASHER	900312	24	30	36	42	48	54
LOCTITE # 592, 50 ml TUBE	900350	2	2	3	3		
LOCTITE # 592, 250 ml TUBE	900355					1	1
"SECTION SEAL", 1 QUART CAN	900360	2	2	2	2	2	2
WOOD WEDGE	970030	2	2	2	2	2	2

BASE SIDE CARTON - See Installation Manual

JACKET SIDE PANEL CARTON- See Installation Manual

WATER AND STEAM BOILER CARTONS - As shown in Installation Manual except that Rating Plate is factory applied to RH Side Jacket Panel.

BASE PARTS - Base parts are identical to those shown in Installation Manual with the following exceptions:

- 1) 24 Volt transformer (KEY #34) is not provided
- 2) 285 base is not used
- 3) CSD-1 gas train is not available.

ECS WATER TRIM CARTON (LESS TANKLESS HEATER)

DESCRIPTION	PART #	QTY
L8148E CONTROL ASSY.	3513200	1
1/2" LONG WELL	35-1006	1
BLOCKED VENT SWITCH ASSY	960128	1
1-1/2 X 1/2 BLK BUSHING	950021	1
TRIDICATOR GAUGE	95-038	1
1/2 X 1/4 BLK BUSHING	95-053	1
BLANK COIL PLATE	270003	2
COIL GASKET	270001	2
3/8 USS FLAT WASHER	90-036	12
3/8-16 X 7/8 HEX HD CAP SCREW	900450	12
#10 X 1/2" SHEET METAL SCREW	90-212	5
NYLON CABLE CLAMP	960030	3
1-1/2" NPT BLK PLUG	95-143	2
1" NPT BLK PLUG	950100	2
3/4" NPT BLK PLUG	95-048	4
1/2" NPT BLK PLUG	95-052	7
3 X 3/4 BLK BUSHING	950035	1
BOILER DRAIN	95-041	1

ECS WATER TRIM CARTON (WITH TANKLESS HEATER)

DESCRIPTION	PART #	QTY
L8124E CONTROL ASSY.	3513205	1
3/4" LONG WELL	35-1020	1
BLOCKED VENT SWITCH ASSY	960128	1
1-1/2 X 1/2 BLK BUSHING	950021	1
TRIDICATOR GAUGE	95-038	1
1/2 X 1/4 BLK BUSHING	95-053	1
BLANK COIL PLATE	270003	1
COIL GASKET	270001	2
3/8 USS FLAT WASHER	90-036	12
3/8-16 X 7/8 HEX HD CAP SCREW	900450	12
#10 X 1/2" SHEET METAL SCREW	90-212	5
NYLON CABLE CLAMP	960030	3
1-1/2" NPT BLK PLUG	95-143	2
1" NPT BLK PLUG	950100	2
3/4" NPT BLK PLUG	95-048	4
1/2" NPT BLK PLUG	95-052	7
3 X 3/4 BLK BUSHING	950035	1
BOILER DRAIN	95-041	1

ECS STEAM TRIM CARTON

DESCRIPTION	PART #	QTY
STEAM PROBE CONTROL SUB ASSY	3513210	1
LWCO, CG400 WITH "P" PROBE	400824	1
BLOCKED VENT SWITCH ASSY	960128	1
GLASS SET (20-104-10, 8" CTR TO CTR)	950080	1
L404F PRESSURE LIMIT	3503805	1
STRAIGHT BRASS PIGTAIL	95-060	1
1/2 X 4 BRASS NIPPLE	950004	1
1/2 BRASS TEE	951441	1
1/2 BRASS PLUG	95-091	1
PRESSURE GAUGE	95-070	1
1/2 X 1/4 BRASS BUSHING	95-146	2
1/2 X 3 BR NIPPLES	95-116	2
1/2" BR. UNION	95-150	2
1/2 X CL BRASS NIPPLES	95-147	2
BLANK COIL PLATE	270003	2
COIL GASKET	270001	2
3/8 USS FLAT WASHER	90-036	12
3/8-16 X 7/8 HEX HD CAP SCREW	900450	12
#10 X 1/2" SHEET METAL SCREW	90-212	7
NYLON CABLE CLAMP	960030	3
1-1/2" NPT BLK PLUG	95-143	3
1" NPT BLK PLUG	950100	2
3/4" NPT BLK PLUG	95-048	4
1/2" NPT BLK PLUG	95-052	5
3 X 3/4 BLK BUSHING	950035	1
BOILER DRAIN	95-041	1

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