

OPERATING INSTRUCTIONS

For

MODEL BK-1 BURNER

on

SLANT/FIN LIBERTY BOILERS

631-345-0447

CAUTION: For your safety do not store or use gasoline or other flammable vapors and liquids in the vicinity of this unit.

No. 2 Fuel firing range 0.5 - 1.35 GPH (US)

Units of No.1 or No. 2 oil (ASTM D396)

Power Supply	120V/ 60Hz/ 1Ph.
Operating Load Of Burner	3.5 amps.
Motor	1/6 HP PSC 1.75 Amps Cap. 20 MFD
Primary Control Phelon	Model 40200
Ignition Transformer Phelon ..	Model 142000 Output 14,000 V 30mA Interrupted Duty
Fuel Units	UL listed 200 PSI
Oil Valve	UL rated for 300 PSI

RECORD THE READINGS:

NOZZLE SIZE	.75	GPH	MANUFACTURER	TYPE	ANGLE
PUMP PRESSURE		PSI	ACTUAL FLOW RATE AT THAT PRESSURE		GPH
DRAFT OVER FIRE	"W.C.		DRAFT IN BREACH	"W.C.	SMOKE "0"
CARBON DIOXIDE	%		STACK TEMPERATURE GROSS		F

DATE _____ INSTALLER _____

FOR SERVICE CALL: _____

Manufactured By:
HEATWISE, Inc., Ridge, New York 11961

1. NOZZLE INSTALLATION

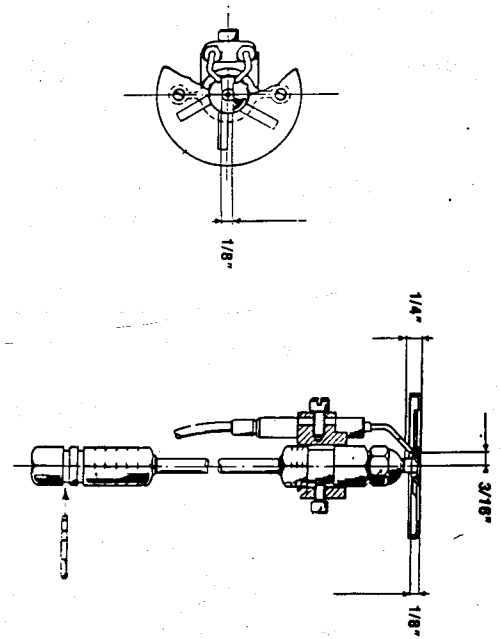
1.1 Model BK-1 burner is designed for easy servicing. For example, when the rear cover lid is removed, the nozzle oil line assembly is visible for servicing (with 7/16" nozzle open end wrench). The oil line should be disconnected near the pump. The two screws holding the nozzle oil line adapter plates should then be loosened. By turning the nozzle oil line assembly slightly to the left, and then pulling the assembly straight out, the flame retention head becomes visible. Next, by disconnecting the quick connections on the transformer, the firing head can be completely isolated from the rest of the burner. (The cad cell lead wires should also be disconnected from the quick telescopic disconnects.) Then the flame retention head can be completely removed by just loosening the screw on the adapter bracket. By using a 5/8" and a 3/4" open end wrench, the nozzle can be removed or installed. The best results are obtained by using suggested specified nozzles. For the nozzle, head and electrode settings, refer Fig. 1. Electrode gaps are already set, and Fig. 1 gives the guidelines. Tolerances on the nozzle to the head can vary +1/16" and -0". The pump is factory adjusted to the proper pressure for the lower firing rate of each boiler model. When the higher firing rate of the particular boiler model is required refer to Table 1.

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QB-180

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ELECTRODE SETTINGS

Fig. 1



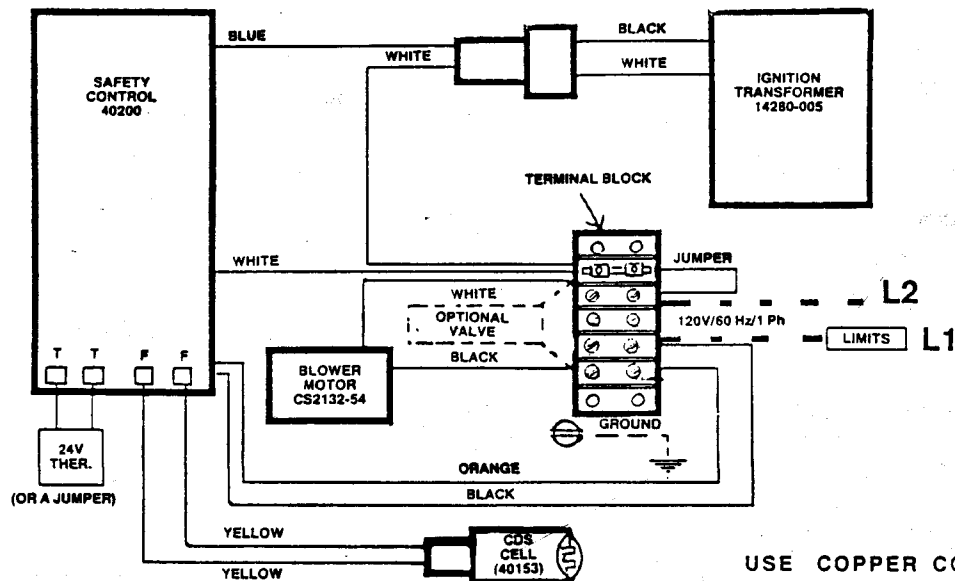
2. WIRING THE BURNER

2.1 The burners are supplied with a wiring strip (mounted to the housing) and pre-wired to the boiler controls. Follow boiler wiring instructions.

2.2 Phelon Interrupted Duty Control/Ignitor System - The burners are supplied with a Phelon 402000 recycling control and an electronic ignitor (Model #14280) which produces an interrupted 14,000V spark, a 15 second trial-for-ignition, and a 10 second ignition overlap after the flame is proven.

2.3 Refer to the Phelon Instruction Manual supplied with the burner for service procedures.

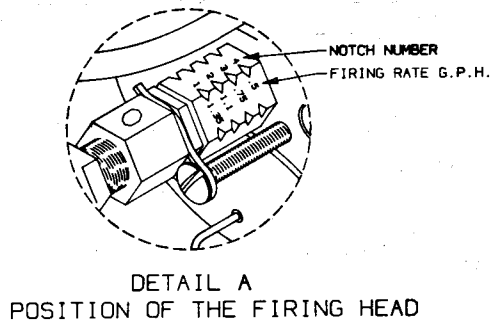
WIRING DIAGRAM



USE COPPER CONDUCTORS ONLY:
 _____ Factory Wiring
 - - - - - Field Wiring

3. FIRING HEAD ADJUSTMENT

3.1 Model BK-1: The head is factory adjusted for the lower firing rate for each boiler model. By burning the firing head adjustment screw clockwise (Ref: Fig. 2), the head may be adjusted to match the firing rate required. Similarly, by turning that same screw counterclockwise, the firing head is ready for a minimum firing rate of 0.50 GPH. The burner head is already adjusted for the firing rate of the boiler. Fig. 2 refers the notch numbers and approximate firing rate.



FIRING HEAD ADJUSTMENT

Fig. 2

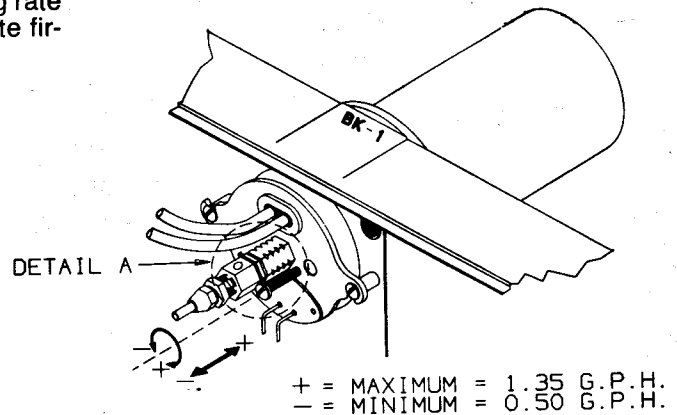


TABLE 1

BOILER MOD	LIBERTY NOZZLE SPECIFICATIONS-BK-I BURNER						APPROXIMATE	
	BOILER MODEL No.	FIRING RATE GPH	NOZZLE SIZE GPH	NOZZLE PRESSURE PSIG	NOZZLE MANUFACTURER		SETTING OF AIR SHUTTER	HEAD NOTCH
L-20	L-20	0.75	0.60	155	----	70°W	2 FULL TURNS	3.+
	L-20	0.75	0.60	155	----	70°A	2 FULL TURNS	3.+
	L-20	0.75	0.60	155	----	80°A	2 FULL TURNS	3.+
L-30	L-20 BK	0.95	0.75	160	60°ES	60°W	3 FULL TURNS	2.5
	L-30	1.10	0.85	167	80°SS	80°W	10 FULL TURNS	2.0
	L-30	1.25	1.00	156	70°SS	70°W	15 FULL TURNS	1.5
	L-30 H	1.00	0.85	136	----	80°W	3 FULL TURNS	2.5

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4. AIR SHUTTER ADJUSTMENT

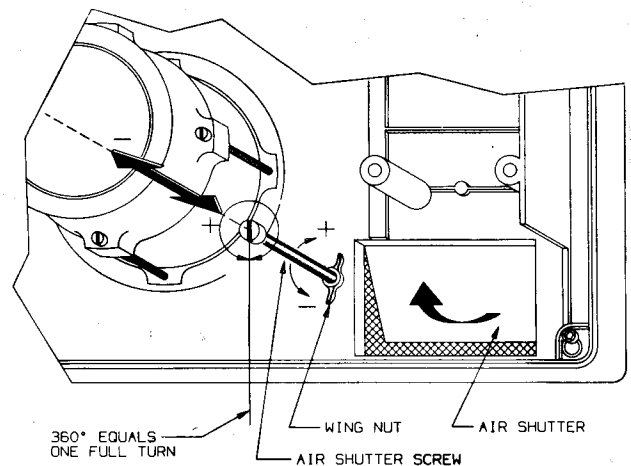
4.1 Air adjustment with respect to firing rate has been factory set for the lower firing rate of each boiler model.

4.2 If the higher firing rate is required then proceed as follows: (Ref: Fig. 3). The wing nut on the screw has to be loosened before turning the screw. First close the air shutter by turning the air adjustment screw counterclockwise until it stops. Set the screw by adjusting the screw clockwise (+ side) counting number of full 360° turns and referring Table 1. Turning the screw clockwise results in opening the air shutter. After getting the smoke level to trace, turn the screw a little at a time clockwise to get the smoke level to '0'. (Check with the smoke scale chart). It is assumed that the draft level*, taken over the fire, adjusted to 0.02" of water column is set before taking the smoke readings. After taking the readings, tighten the wing nut over the screw so that the air adjustment remains intact for that particular firing rate. Reinstall the rear cover lid in its place and take the remaining combustion readings.

*Draft is negative or suction pressure.

AIR SHUTTER ADJUSTMENT

Fig. 3



5. FUEL UNIT AND OIL LINES

5.1 Single-Pipe Oil Lines - These burners are supplied with single-stage fuel units, set for single pipe installations. It is highly recommended installing a single-pipe system (for detailed information, refer to each pump manufacturers recommendation). Single-pipe systems should be absolutely airtight, with flare fittings only.

5.2 Two-Pipe Oil Lines - If the vacuum exceeds 10" of mercury, a two-pipe system is necessary. Follow the local codes in relation to this matter.

5.3 Because of the complexity in properly sizing the fuel supply lines vs. lift conditions and runs from tank to burner for the different manufacturers of fuel units, each burner is supplied with instructions attached to the fuel unit. These instructions should be referred to when sizing oil supply lines for both single and two-pipe systems.

5.4 Filters - Because of the increasing instances of nozzles plugging due to poor filtration of oil, we recommend the use of positive non-bypassing filters.

*sketch
RWB*

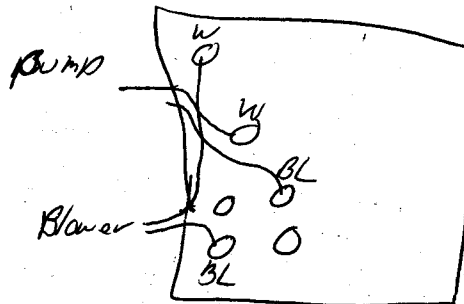


Fig. 4

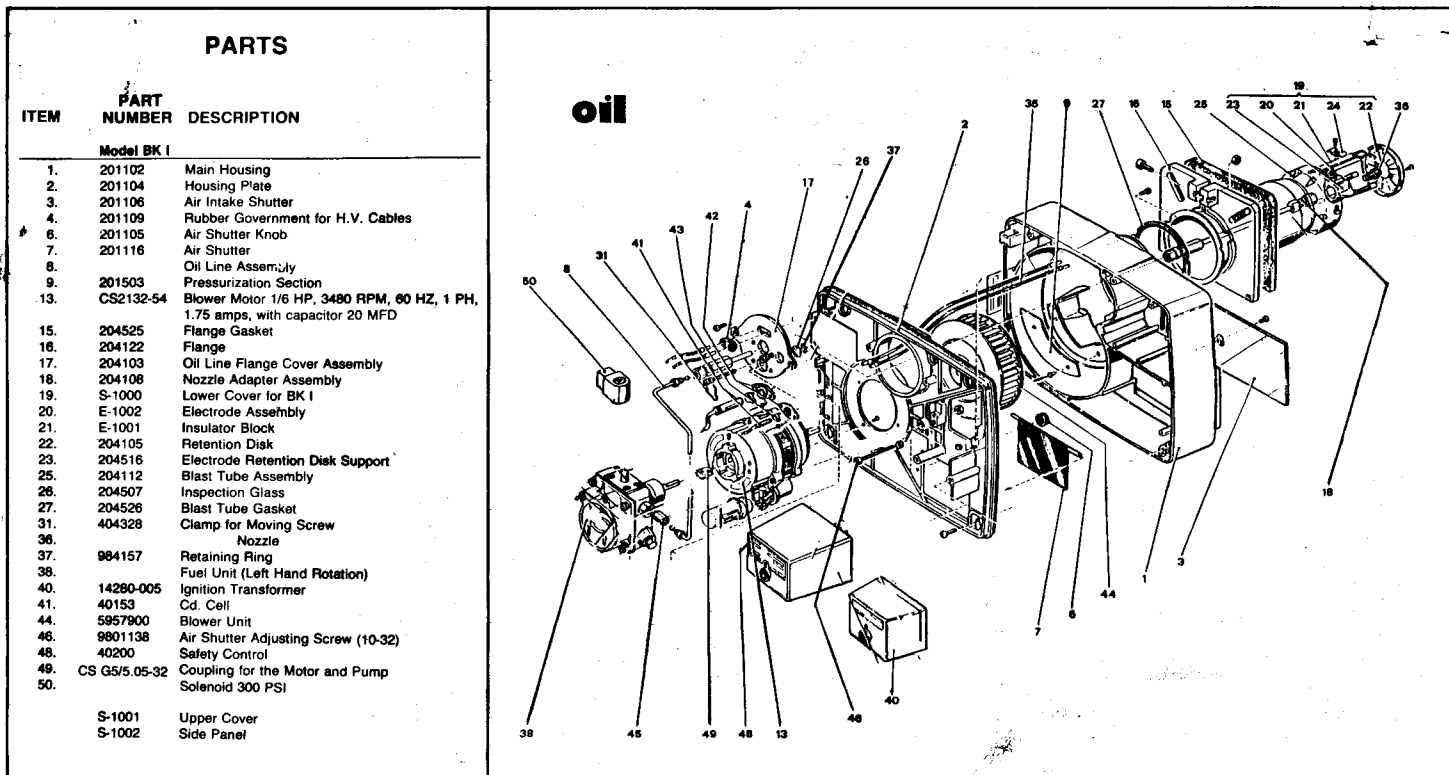


Fig. 4

PARTS

ITEM	PART NUMBER	DESCRIPTION
Model BK I		
1.	201102	Main Housing
2.	201104	Housing Plate
3.	201106	Air Intake Shutter
4.	201109	Rubber Government for H.V. Cables
6.	201105	Air Shutter Knob
7.	201116	Air Shutter
8.		Oil Line Assembly
9.	201503	Pressurization Section
13.	CS2132-54	Blower Motor 1/6 HP, 3480 RPM, 60 HZ, 1 PH, 1.75 amps, with capacitor 20 MFD
15.	204525	Flange Gasket
16.	204122	Flange
17.	204103	Oil Line Flange Cover Assembly
18.	204108	Nozzle Adapter Assembly
19.	S-1000	Lower Cover for BK I
20.	E-1002	Electrode Assembly
21.	E-1001	Insulator Block
22.	204105	Retention Disk
23.	204516	Electrode Retention Disk Support
25.	204112	Blast Tube Assembly
26.	204507	Inspection Glass
27.	204526	Blast Tube Gasket
31.	404328	Clamp for Moving Screw
36.		Nozzle
37.	984157	Retaining Ring
38.		Fuel Unit (Left Hand Rotation)
40.	14280-005	Ignition Transformer
41.	40153	Cd. Cell
44.	5957900	Blower Unit
46.	9801138	Air Shutter Adjusting Screw (10-32)
48.	40200	Safety Control
49.	CS G5/5.05-32	Coupling for the Motor and Pump
50.		Solenoid 300 PSI
	S-1001	Upper Cover
	S-1002	Side Panel

