MANUAL NO. 20134-1M-8/84

INSTALLATION AND SERVICE INSTRUCTIONS

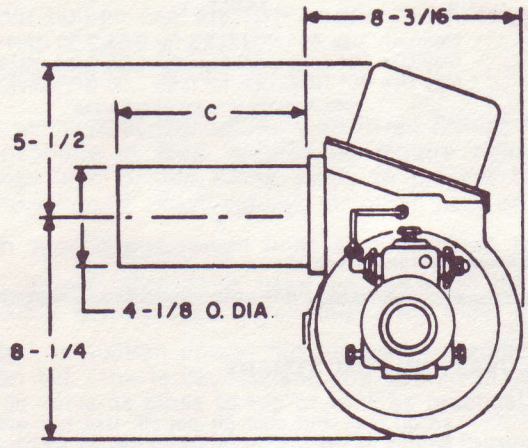
"DC"

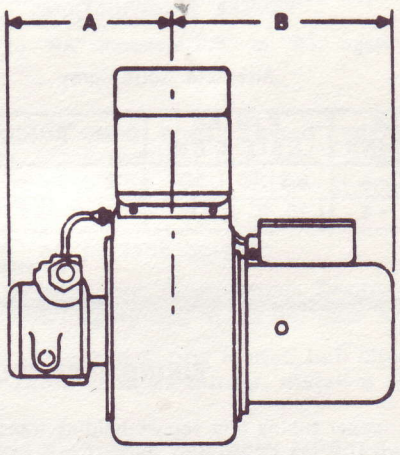
GOLDEN CUP SERIES

APPROVED FOR NO. 2 FUEL OIL SPEC. CS12-48

These flame retention oil burners are listed and approved by Underwriters' Laboratories, Inc. MP1039, New York City Board of Standards and Appeals 748-48 SA, State Fire Marshal of Commonwealth of Massachusetts #988, Department of State Police of Connecticut, CSA of Canada and leading Governmental agencies throughout the world.

In All Communications State Burner Model and Serial Numbers





BURNER MODEL	A	B	*C (USABLE TUBE LENGTH)		
			STD. SHORT	STANDARD	STD. LONG
DC-1 AND DC-2	9 MAX.	8 MAX	6	10	16

*Other tube lengths available.

AMERICAN BURNER CORPORATION
ABC/SUNRAY • ŒRTLI

85 Austin Boulevard • Commack, NY 11725
(516) 543-4600

"DC" SERIES BURNER SPECIFICATIONS

BURNER MODEL			DC-1	DC-2	
CAPACITY, GPH		Min. Max.	.65 1.50 *	1.25 2.50 *	
MOTOR, HP RPM			⅛ 1725	⅛ 1725	
FUEL UNIT	Standard	Sundstrand Webster	ONE STAGE	ONE STAGE	
	Optional	Sundstrand Webster	TWO STAGE	TWO STAGE	
SOLENOID VALVES	Optional	M-H or Equal	YES	YES	
TRANSFORMER			Constant Duty, 10,000-volt		

*Capacities are UL-approved. Ratings may be reduced up to 25% when fired in certain boilers or furnaces.

Note: Specifications subject to change without notice.

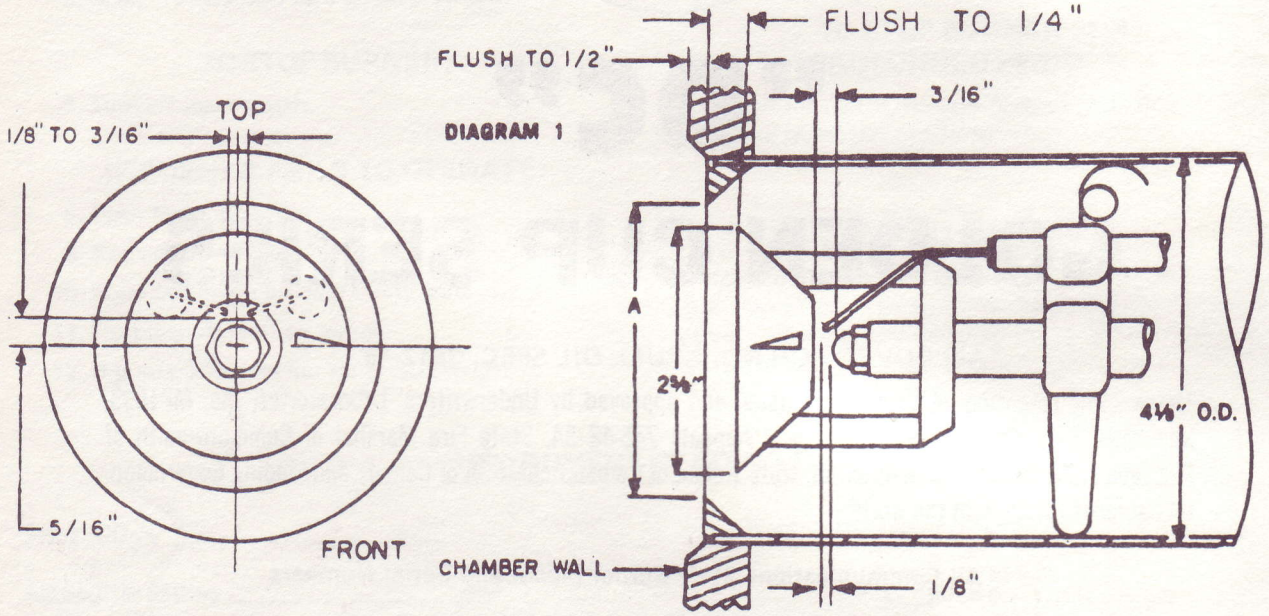


DIAGRAM 1

NOZZLE SPECIFICATIONS

Hago "ES" or "P," Monarch "AR" or Equal
Alternate: Solid Spray

MODEL BURNER	FIRING RATE G.P.H.	DIM. "A" (CONE)
DC-1	.65 TO 1.50	2 – 3/4"
DC-2	1.25 TO 2.50	3"

TABLE 1

Normally Use 45° NOZZLES for 0.65-2.50 GPH*
May Use 60° NOZZLES for 0.65-1.35 GPH ONLY
May Use 80° NOZZLES for 0.65-1.00 GPH ONLY
*30° Nozzles May Be Substituted

†Part #H40071 Setting Gauge available on request

FIRING ASSEMBLY — REMOVAL AND ADJUSTMENT

1. Remove copper tubing and screws holding transformer and oil pipe. Raise transformer slightly and disengage buss bars before opening fully. Holding the buss bars and oil pipe, carefully pull out the firing assemble. DO NOT force or bend the pipe and/or cup. Spring pressure will cause some resistance when removing the firing assembly.
2. Determine the proper nozzle from Table 1.
3. To install the nozzle, BOTH the firing assembly and the cup MUST be removed. Loosen clamp screw on the cup bracket and, holding by the bracket legs, slide the cup off over the nozzle or nozzle adapter. Inspect the nozzle adapter seat for any defects. If the seat is scored or dirty, the nozzle will not make an oil-tight seal. A loose or improperly seated nozzle will cause an oil leak and poor oil cut-off. **Use two wrenches to tighten nozzle.**
4. Examine cup for distortion. A bent cup will alter the firing characteristics of the burner.
5. Replace cup, sliding it over the nozzle, with the leg having the part number centered between the electrodes. Set cup to dimensions given as 3/16". Set electrodes as shown in Diagram 1.
6. Reinstall the complete assembly by reversing the above procedures.
7. Index the assembly fore and aft for maximum efficiency.
8. Tighten all screws and copper tube fittings.
9. Check for leaks and oil cut-off before leaving premises.

INSTALLATION INSTRUCTIONS

#2 FUEL OIL BURNERS

UNPACKING

When unpacking burner be sure all loose packages are inspected for contents. When burner is equipped with electronic controls, the relay is in a separate box packed with burner. Check packing list, voltage, cycles, and for concealed damage.

TANK

1. All oil storage tanks must be U.L. approved and installed according to National Board of Fire Underwriters or local ordinances whichever has precedence.
2. All pipe connections on underground buried tanks must have swing joints except the sounding well (stick well).
3. The fill line must pitch toward tank ¼" per ft.
4. The vent line should not be less than 1¼" I.P.S. and equipped with an approved vent cap. Pitch toward tank ¼" per ft.
5. The tank gauge should be installed so that the float will not be under the fill line. On underground tanks protect bulb and gauge line inside tank with rigid iron pipe.

OIL LINES

A. 275-Gal. Basement Tanks

1. Use ½" O.D. copper tubing with flared fittings. Consult pump manufacturer specifications for other sizes and iron pipe substitution.
2. Install an approved hand valve in the tank outlet and close to burner pump before the filter. Connect from filter to pump with a copper tube pigtail. Do not connect rigid pipe directly to pump.
3. A return line is not required for this type installation.
4. If more than one burner is connected to suction line the tank bottom must be above both burner pumps and the size of line and filter must be increased.

B. Underground Or Vaulted Tanks

1. Use ½" O.D. copper tubing with flared fittings for suction and return lines to avoid underground connections. If local regulations require rigid pipe, use black wrought iron and malleable fittings with double swing joints to prevent breakage in case the tank settles. (Consult pump manufacturer's specifications for other sizes and iron pipe substitutions.)
2. Both suction and return lines should extend to within 4" of the tank bottom.
3. Slip fittings should be used on the tank for copper suction and return lines. Double-tapped bushings can be used with wrought-iron pipe; however, a bushing welded to the dip tube is preferred.
4. Install, in suction line at outside wall, an approved hand valve and spring loaded ball check. When the tank is vaulted and the bottom of tank is on same level as burner, install a vertical check valve as close to top of tank as practical.
5. If bottom of tank is above the level of the burner, an anti-syphon valve is usually required at the highest point.

In All Communications State Burner Model and Serial Numbers

Printed in U.S.A.

6. Install an approved hand valve close to burner pump, before the filter, and connect from filter to pump with a copper tube pigtail.
7. Install a copper tube pigtail between pump and spring-loaded ball check in return line.
8. Avoid fastening suction and return lines to floor beams. If necessary to do so, use loose fittting hangers with soft rubber lining to prevent noise transmission.
9. A separate suction line must be used for each burner. A common return line may be used, provided a spring-loaded ball check is installed in the return pipe from each fuel unit.

FILTER

1. A filter is recommended in the suction line.
2. Size filter according to g.p.h. of nozzle on single pipe installations.
3. Use large filters on 2-pipe systems (20 to 30 g.h.p. rating).

BURNER SETTING

1. Use base or flange mounting, whichever is most practical for the installation. Follow heating unit manufacturer's recommendations where applicable.
2. Level burner across the top.
3. Pitch draft tube down approximately 2° to 4° toward nozzle end.
4. End of draft tube should be 0" (flush) - ¼" from the inside of chamber wall. Improper insertion will distort fire.
5. Insulate around draft tube to prevent overheating of tube, nozzle and components. Make sure all cement is cleaned from inside of tube, drain hole in air cone and firing head. Pieces of insulation or cement in tube or head will distort the flame.

NOZZLES

1. Use nozzle of the proper size, type and spray pattern as indicated for the model. (See inside front cover.)
2. Always remove nozzle assembly to install or replace nozzle.
3. Use an "IDEAL" nozzle wrench or two wrenches to tighten nozzle.
4. Nozzle must be tight to prevent an oil leak and after fire.

ADJUSTING NOZZLE ASSEMBLY

1. Set nozzle and electrodes according to specifications (see inside front cover).
2. The electrode points must be set out of the spray, and the spark should contact oil mist.
3. Use flame mirror to check the setting.

CHIMNEY

1. Follow the recommendations of the heating unit manufacturer.
2. Chimney should be above the surrounding objects, tile-lined, with no obstructions and be in a good state of repair.
3. The smoke pipe should be set flush with inside of tile, and cemented in place.
4. All cleanout doors should be sealed.

In All Communications State Burner Model and Serial Numbers

INSTALLATION INSTRUCTIONS

#2 FUEL OIL BURNERS

DRAFT REGULATORS

1. The use of a draft regulator is recommended and should preferably be mounted in the smoke pipe.
2. Use draft gauge to adjust to proper opening. See "draft" below.
3. The above does not apply to pressurized fire box boilers.

AIR FOR COMBUSTION

1. A separate fresh air inlet to the boiler room is required for proper combustion.
2. An opening of 1½ to 2 times the area of the smoke outlet is necessary.
3. If the opening is screened the area should be increased by as much as 50%.
4. Boiler room must be closed off from any area where exhaust fans are installed.

COMBUSTION CHAMBERS

Does not apply to packaged units where the chamber is supplied.

1. Refer to chart for correct chamber dimensions.
2. Chambers may vary slightly but should maintain approximately the same square inches of floor area.

WIRING

1. All wiring must comply with the National Electric Code and local ordinances.
2. Refer to diagram supplied with burner or controls.
3. Use 105°C thermoplastic wire — Do not use less than #14 AWG wire.
4. Do not fasten conduit or BX cable to hot surfaces.
5. Photocell wires must be thermoplastic and in separate conduit.

STARTING BURNER

1. Be sure boiler and oil tank are filled, all valves open and controls set for operation.
2. Open air adjustment partially, open fire door and turn on switch.
3. Prime pump according to manufacturer's recommendations and check pressure.
4. If safety lockout occurs, reset after 1 to 2 minutes.
5. Do not run fuel unit dry for more than 5 minutes.
6. Prime pump with oil on long suction lines.
7. When fire is established make a temporary air adjustment to clear any smoke. Leave fire door open until combustion chamber is dry. When normal temperatures are reached adjust draft and air shutter for a clean fire.

DRAFT

1. After boiler and chamber are up to normal operating temperature set draft to —.02" to —.03" W.C. **over the fire.** Use a draft gauge.

FINAL CHECKOUT

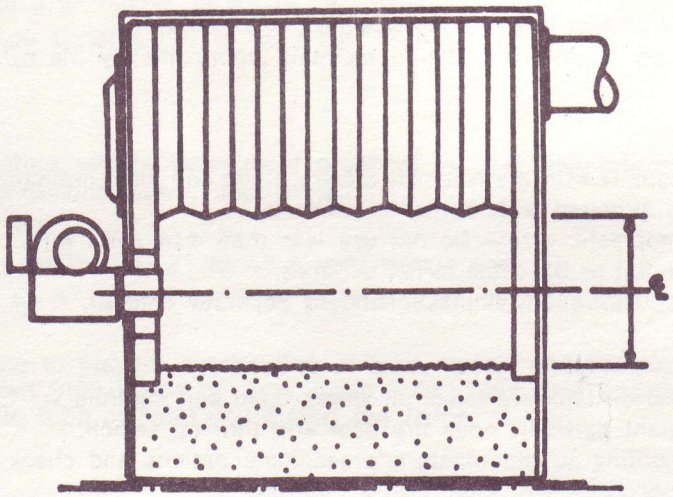
1. Use smoke tester and set burner air adjustment for not more than # 1 smoke (Shell Bacharach scale).
2. Recheck draft and take CO_2 readings over fire and in breeching.
3. If a large differential between CO_2 readings is noted, air leakage is the most common cause. Reseal unit.
4. Open fire door, turn off oil valve and check out safety timing of combustion control.
5. Check operation of limit controls and thermostat.
6. Check for oil leaks.

   All installations should be reinspected after 1 to 2 weeks of normal operation.

In All Communications State Burner Model and Serial Numbers

MINIMUM COMBUSTION AREA FOR CONVERSION

FIRING RATE	NOT APPLICABLE FOR I/B/R OR S/B/I RATED BOILER/BURNER UNITS						RADIATION	
G.P.H.	LENGTH (IN.)	WIDTH (IN.)	HEIGHT (IN.)	BOILER CROWN SHEET TO CENTER OF NOZZLE & FLOOR TO CENTER OF NOZZLE (IN.)	FLOOR AREA (SQ. IN.)	STEAM (SQ. IN.)	WATER (SQ. FT.)	AIR BTU x 1000
0.50	9	8	8	6	72	200	240	55
0.75	9	9	9	6	81	300	480	84
1.00	10	9	9	7	90	400	640	112
1.25	11	10	10	7	110	500	800	140
1.35	11	11	11	7	121	540	864	151
1.50	12	11	11	7	132	600	960	168
1.65	13	12	12	7	156	660	1056	185
1.75	13	13	13	7	169	700	1120	196
2.00	15	13	13	7	195	800	1280	224
2.50	16	14	14	7	224	1000	1600	280
3.00	17	15	15	8	255	1200	1920	336



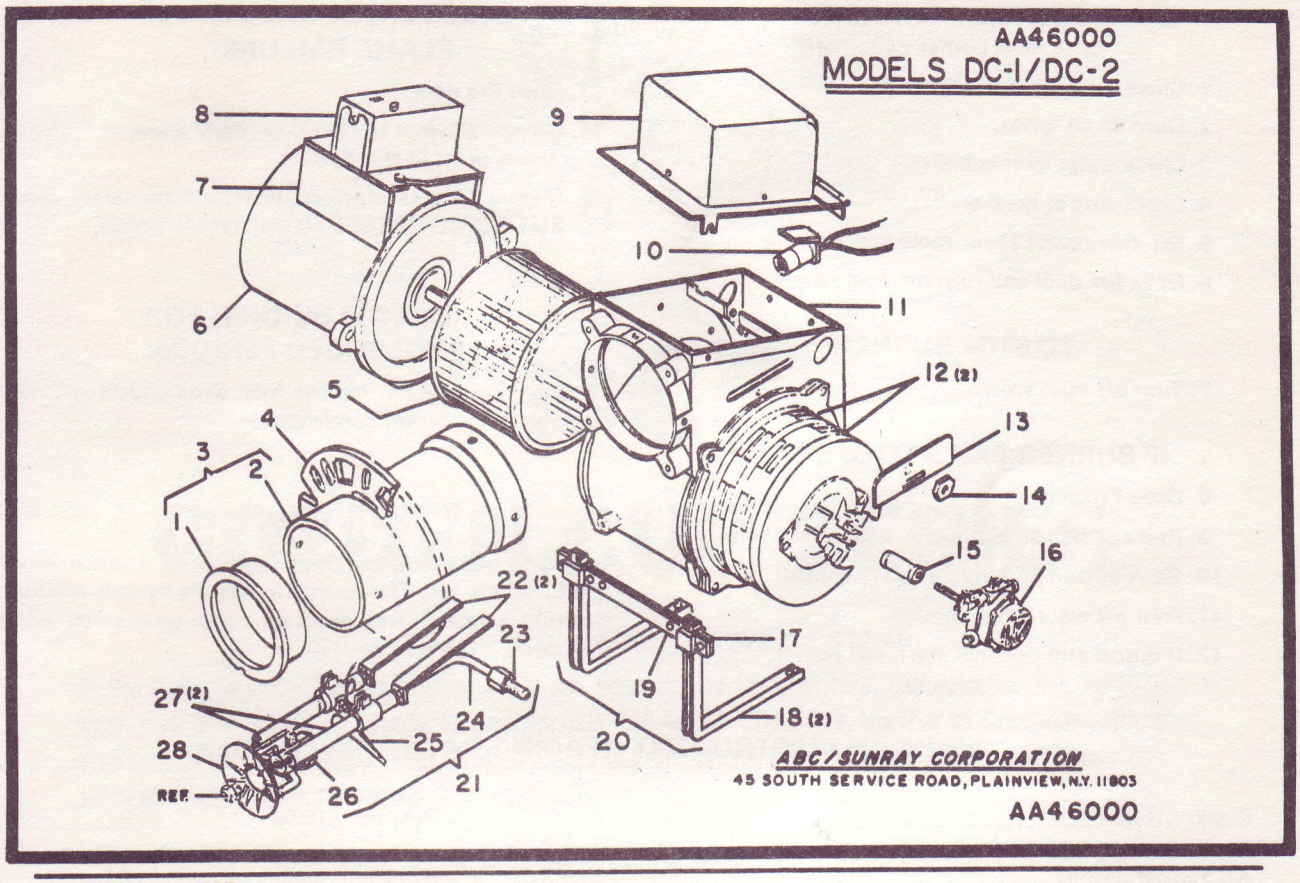
Through-the-Fire-Door Firing

SERVICE NOTES

"DC" GOLDEN CUP SERIES OIL BURNERS

BURNER PARTS LIST

Ordering Information: State full Model Number, Serial Number, Part Number, Air Tube Length and Voltage



ITEM NO.	PART NO.	DESCRIPTION	DC-1	DC-2
1	CA40281	End Cone—2¾" I.D.	X	
	CA40291	End Cone—3" I.D.		X
2	YA46621	Air Tube—4⅛" O.D. (Specify Length)	X	X
3	AA46002	Air Tube Assembly With 2¾" End Cone	X	
	AA46003	Air Tube Assembly With 3" End Cone		X
4	AA42811	Universal Flange Assembly (Optional)	X	X
5	FA40191	Blower Wheel—5¾" x 3½"	X	
	FA40251	Blower Wheel—6 5/16" x 3 13/16"		X
6	MA40251	Burner Motor	X	X
7	SA46441	Motor Junction Box	X	X
8	EA41281	Combustion Control	X	X
9	AA46211	Ignition Transformer	X	X
10	EA41251	Cad Cell	X	X
11	AA46786	Blower Housing Assembly	X	X
12	AA46608	Air Band Assembly (2 Required)	X	X
13	SA46010	Drawer Adjustment Plate (1 Each Required)	X	X
	SA46011	Drawer Adjustment Plate (1 Each Required)	X	X
14	YA42829	Drawer Pipe Jam Nut	X	X
15	GA46064	Coupling 5¼" x ½" x 5/16"	X	X
	GA46092	Coupling 4" x ½" x 7/16"	X	X
16	PA46027	Pump—Webster 1R162D	X	X
	PA46028	Pump—Webster M17DB	X	X
	PA46216	Pump—Sundstrand J3BB	X	X
	PA40292	Pump—Sundstrand A1VA—7012	X	X
17	SA46818	Pedestal Mounting Bracket (Back)	X	X
18	SA46819	Pedestal Leg (2 Required)	X	X
19	SA46817	Pedestal Mounting Bracket	X	X
20	AA46817	Pedestal Assembly Complete (Items 17, 18, 19) (Optional)	X	X
21	AA41262	Firing Head Assembly DC-1, DC-2 (Items 22 through 28)	X	X
22	EA41461	Bus Bar Flat (2 Required) (Specify Length)	X	X
23	TA46020	Drawer Pipe Connector Bushing	X	X
24	YA46249	Drawer Oil Pipe (Specify Length)	X	X
25	AA41182	Electrode Support Assembly With Spring	X	X
26	SA41851	Nozzle Adapter	X	X
27	EA40393	Electrode Assembly 5" Long (2 Required)	X	X
28	AA40752	Golden Cup Assembly 2⅛" O.D.	X	X

In All Communications State Burner Model and Serial Numbers

OIL BURNER OPERATING INSTRUCTIONS

This Burner is listed by UNDERWRITERS' LABORATORIES, INC., and other agencies for fuel oil not heavier than No. 2 commercial standard CS-12-48.

TO START BURNER:
(with main burner switch off)

1. Check oil level in storage tank.
2. Open all oil valves.
3. Check water level in boiler.
4. Check fuse or breaker.
5. Set thermostat above room temperature.
6. Open fire door and turn on main switch.

TO STOP BURNER:

7. Turn off main switch.

IF BURNER FAILS TO OPERATE:

8. Open fire door.
9. Recheck Items 1-6
10. Reset button on primary safety control.
11. Press manual reset on motor.
12. If burner still does not start, call service.

STARTING BURNER AFTER FLAME FAILURE:

13. Open fire door.
14. Do not attempt to start if chamber is hot or if there are fumes or oil in chamber.
15. If Item 14 is satisfactory, reset primary safety control, BUT DO NOT RESET MORE THAN TWICE.

TO STOP BURNER FOR PROLONGED PERIODS:

Turn off main switch, remove fuse, close oil line valves and fill oil tank to prevent condensation.

MAINTENANCE:

Lubricate burner motor twice yearly with 4 drops of #10 S.A.E. motor oil. The complete heating system should be cleaned, adjusted and checked by a serviceman before the start of each heating season.

INSTRUMENT READING DATA

Date _____

Stack CO_2% _____

Over fire CO_2% _____

Air Shutter Setting _____

Smoke Spot No. _____

Stack Temp. F.° _____

Room Temp. F.° _____

Net Stack Temp. F.° _____

Stack Draft H_2O _____

Overfire Draft H_2O _____

Nozzle Installed gal./hr. _____

Spray Angle ° _____

Boiler Mfg. _____

Chamber Size _____

Combustion Efficiency _____

WHEN SERVICE OR REPAIRS ARE REQUIRED

Call _____

Day telephone _____ Night telephone _____

Always give the following information:

Burner Model _____ Serial No. _____

Date installed _____

CAUTION

DO NOT use gasoline, crankcase oil or any oil containing gasoline.

DO NOT incinerate garbage or refuse in this unit.

DO NOT tamper with burner or controls – CALL YOUR SERVICE MAN.

HANG NEAR BURNER