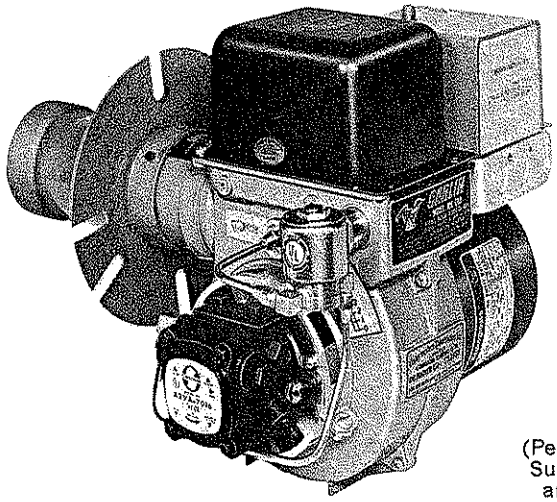
INSTALLATION and OPERATING INSTRUCTIONS

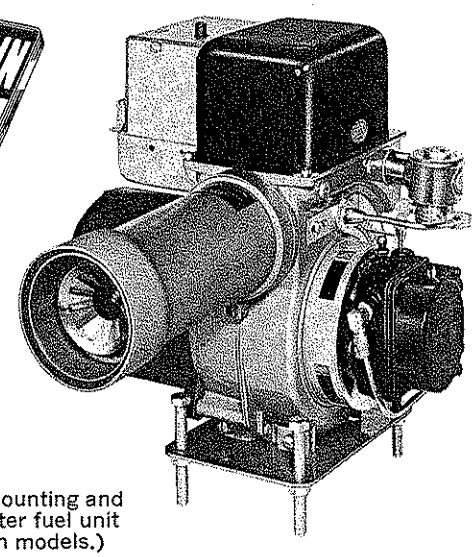
For Use By Qualified Service Technicians Only

CARLIN OIL BURNERS

Models 100CRD and 101CRD (60-Hz)



Flange mounted model with Sundstrand fuel unit.



Pedestal mounted model with Webster fuel unit.

(Pedestal or flange mounting and Sundstrand or Webster fuel unit are optional on both models.)

DESCRIPTION

"CRD" burners feature a combustion head incorporating a new design concept which provides a means to control the air pattern to match the nozzle requirements. The aerodynamics for optimum combustion are easily adjusted for any nozzle size without changing the air-handling hardware. The flame front is initiated inside the air tube so that no erratic recirculating gasses from the main chamber area can quench the flame at the retention ring.

The letters "CRD" stand for "Controlled Retention — Double Speed."

Use of a small, narrow blower wheel (fan) operating at 3450 rpm provides a more positive, yet quiet, air flow which does not yield to normal draft variations and therefore assures a more constant air-fuel ratio for dependably clean combustion day after day.

Models 100CRD and 101CRD are identical in design except that the 101CRD has a larger diameter blower wheel and a higher firing range.

Model No.	Fan Size	Firing Range
100CRD	4¼" dia. x 2⅞" wide	0.50 - 2.25 GPH
101CRD	4¾" dia. x 2⅞" wide	1.75 - 2.75 GPH

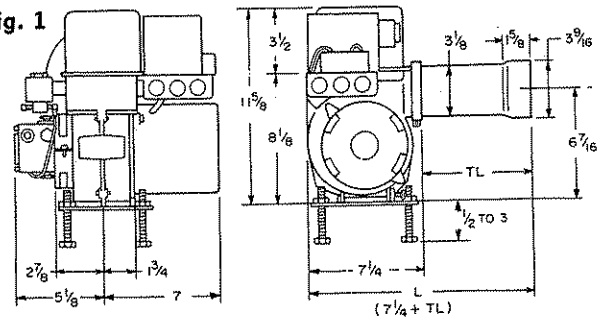
ASSEMBLING THE BURNER (TWO-PAK)

1. Remove the air tube and nozzle line assembly from the smaller carton. If nozzle is not installed, see instructions under (6), page 2.
2. Remove the main housing assembly from the larger carton.
3. Slide the flange and gasket onto the air tube before installing the air tube in the housing. Note that the flange (Figures 2 and 3) can be assembled with the hub facing either way so that an additional inch of usable air tube is available when the hub faces the end of the air tube.
4. If the pedestal is included, assemble it to the bottom of the burner by tightening the two 1/4-20 slotted cap screws against the front feet of the housing. See Figure 4, page 2. Install the four legs (3/8-16 x 3" hex-head cap screws) and adjust to the proper height. Lock in place after final adjustment using jam nuts provided.
5. Loosen the air tube holding clamp. Insert the air tube into the housing. Tighten the air tube holding clamp making sure that the tube is bottomed in the bored opening and that the "CAUTION" label is facing up.

(Continued, page 2)

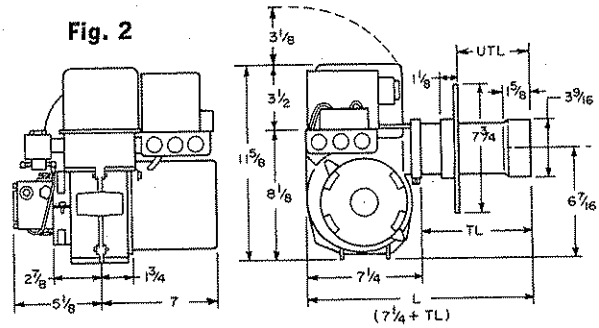
It is important that the installation of the oil burner, piping and fittings, safety devices, controls, electrical wiring and equipment be done in accordance with national and/or local regulations of the authorities having jurisdiction over such installation.

Fig. 1



DIMENSIONS ARE APPROXIMATE

Fig. 2



DIMENSIONS ARE APPROXIMATE

Fig. 3

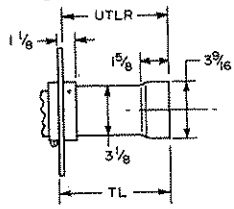
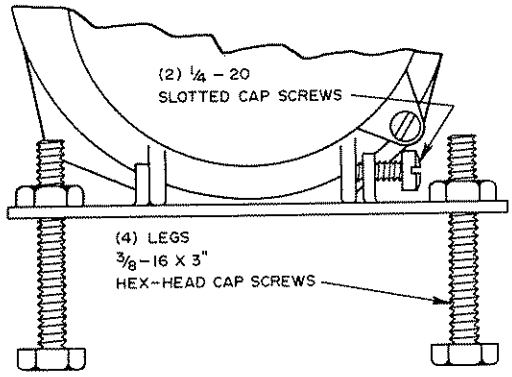


Table 1. (Applying to Figs. 1, 2, 3 above)

TUBE DIMENSIONS	LENGTH (Inches)				
TL - USABLE TUBE LENGTH (Max.) Fig. 1, 2, 3	5	7	9	11	13
UTL - USABLE TUBE LENGTH (Max.) Flange in normal position Fig. 2	3⅜	5⅜	7⅜	9⅜	11⅜
UTLR - USABLE TUBE LENGTH (Max.) Flange reversed Fig. 3	4⅜	6⅜	8⅜	10⅜	12⅜

ASSEMBLING THE BURNER (Cont.)

Fig. 4



6. Install the nozzle.
   a. Loosen the clamping screw on the retention ring assembly and slide the retention ring off the adapter.
   b. Install and tighten the proper nozzle (see Table 6, page 5) in the adapter. Be careful not to damage the electrode insulators or to bend the wires.
   c. Replace the retention ring assembly, slipping one of the riveted arms through the 1/8" gap between the electrode ends. This top arm should be straight up. Also be sure that the retention ring clamp is tight against the shoulder on the adapter. Then tighten the clamping screw.
   d. Check the electrode settings specified as follows:

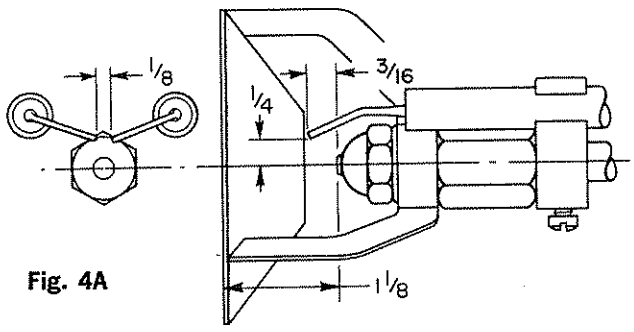


Fig. 4A

1/8-inch gap, 1/4-inch above the nozzle centerline, and 3/16-inch ahead of the nozzle tip. See Fig. 4A.

7. Swing open the transformer, and slide the nozzle line assembly into the air tube. *Do not force it.* The flame retention ring must be lifted and guided through the throttle ring (a reduced diameter) in the end of the air tube. Then the threaded adapter on the end of the nozzle line is passed through the opening in the left side of the housing.
8. Run the aluminum (knurled) thumb-nut onto the nozzle line and tighten hand-tight.
9. Connect the flared fitting on the copper oil line to the nozzle line and tighten.
10. Swing the transformer to the closed position.

ABOUT COMBUSTION CHAMBERS

Models 100CRD and 101CRD operate with superior efficiency and cleanliness in properly designed refractory-type combustion chambers. Very wide tolerance to burner adjustments and other variables is found when these chambers are used. Noise levels are also reduced.

Table 2 shows the recommended *minimum* inside dimensions for refractory brick, refractory pre-cast, and preformed refractory fiber chambers. Due to their quick warm-up properties, the lightweight insulating-type materials are slightly preferable although these burners show less dependence upon refractory temperature than previous models. Refractory materials in boilers and furnaces should be capable of withstanding the following temperatures:

Inputs from 0.50 to 1.20 GPH	2000°F (1100°C)
Inputs from 1.25 to 2.75 GPH	2300°F (1260°C)

The notes accompanying Table 2 provide further details relative to variations in dimensions and geometry.

FIRING BOILERS WITHOUT REFRACTORY CHAMBERS

Depending upon the geometry of the combustion space, some units perform better than others without refractory. When the back wall of the unit coincides approximately with the end of the flame, a target of refractory material is essential. Close to zero smoke readings are possible if a refractory fiber "rug" or fill material is used on the base under the flame.

At the lowest inputs (0.50 to 0.75 gph) refractory-type combustion chambers (or stainless steel in designed units) are recommended. "Wet-pack" chambers or areas completely lined with fibrous blankets can also be used.

Table 3, together with its footnotes, gives the essential dimensions and information needed to provide conditions for satisfactory operation without complete chambers.

Table 2. RECOMMENDED MINIMUM INSIDE DIMENSIONS OF REFRACTORY-TYPE COMBUSTION CHAMBERS

1 Firing Rate (GPH)	2 Length (L)	3 Width (W)	4 Dimension (C)	5 Suggested Height (H)	6 Minimum Dia. Vertical Cyl.
0.50	7	6	3	8	7
0.65	7.5	7	3.5	9	7.5
0.75	8	7	3.5	9	8
0.85	9	7	3.5	9	8.5
1.00	10	8	4	10	9
1.10	11	8	4	10	9.5
1.25	12	8	4	10	10
1.35	13	8	4	10	11
1.50	14	9	4.5	11	12
1.65	15	9	4.5	11	13
1.75	16	9	4.5	11	14
2.00	17	9	4.5	11	15
2.25	18	10	5	12	16
2.50	19	10	5	12	17
2.75	20	10	5	12	18

NOTES:

1. Flame lengths are approximately as shown in column (2). Often, tested boilers or furnaces will operate well with chambers shorter than the lengths shown in column (2).
2. As a general practice any of these dimensions can be exceeded without much effect on combustion.
3. Chambers in the form of horizontal cylinders should be at least as large in diameter as the dimension in column (3). Horizontal stainless steel cylindrical chambers should be 1 to 4 inches larger in diameter than the figures in column (3).
4. Wing walls are not recommended. Corbels are not necessary although they might be of benefit to good heat distribution in certain boiler or furnace designs.

Fig. 5

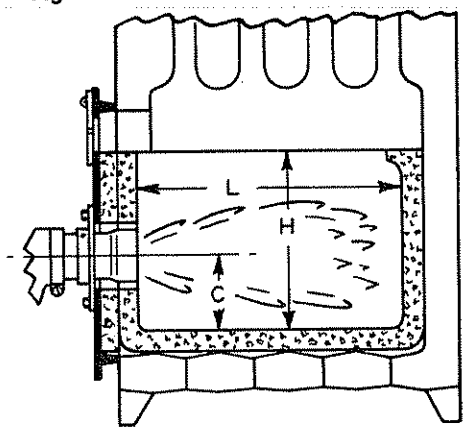
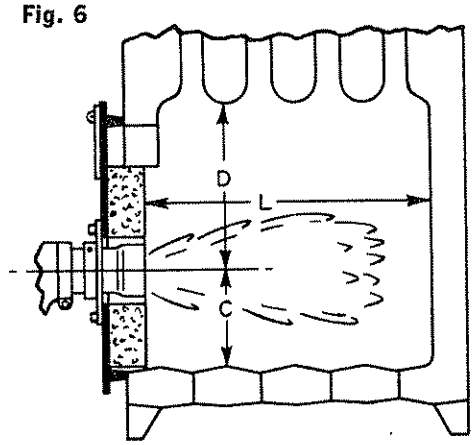


Table 3. MINIMUM DIMENSIONS RECOMMENDED IN BOILERS FIRED WITHOUT REFRACTORY CHAMBERS

1 Firing Rate (GPH)	2 Length (L) With Target	3 Length (L) Without Target	4 Width (W)	5 Dimension (C)	6 Dimension (D)
0.50	Use a combustion chamber		See Table 2, above		
0.65	Use a combustion chamber		See Table 2, above		
0.75	Use a combustion chamber		See Table 2, above		
0.85	10-11	12	8	4	5
1.00	11-12	13	9	4.5	6
1.10	12-13	14	9	4.5	6
1.25	13-14	15	9	4.5	6
1.35	14-15	16	9	4.5	6
1.50	15-17	18	10	5.0	7
1.65	16-18	19	10	5.0	7
1.75	17-19	20	11	5.0	7
2.00	18-21	22	11	5.0	7
2.25	19-22	23	12	5.5	7.5
2.50	20-23	24	12	5.5	7.5
2.75	21-24	25	12	5.5	7.5

Fig. 6

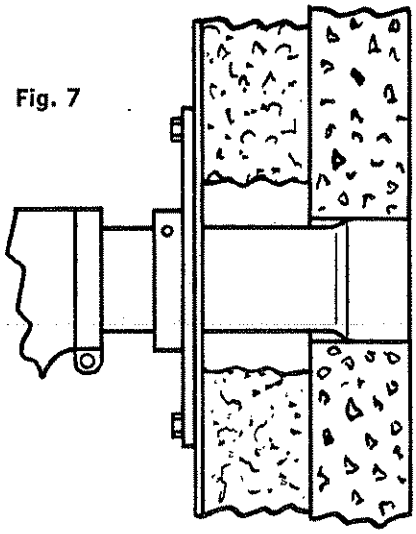


NOTES:

1. As a general practice any of these dimensions can be exceeded without much effect on combustion.
2. A fiber-type refractory "rug" or fill material to cover the floor area of the combustion space is recommended for cleaner combustion and to protect the base.
3. When a refractory or refractory fiber target is used, the lengths in column (2) apply. If the lengths are equal to or longer than in column (3) no target material is needed unless recommended by the boiler manufacturer.

INSTALLING THE BURNER: FLANGE MOUNTED

Fig. 7



1. Measure, in the burner opening, the distance from the inside of the combustion chamber to the outside of the mounting plate to find the length of air tube needed. (Refer to Figures 2 and 3 and Table 1, page 2, to determine maximum usable air tube length.) Position flange on air tube at a point from end of burner corresponding to this measurement. Tighten set screws to anchor flange. The flange is now located so that the end of the burner will be flush, or almost flush, with the inside of the combustion chamber. See Fig. 7 above.
2. Slide the end of the air tube into the opening and secure the flange to the front plate using three 3/8-16 cap screws (or studs and nuts) provided.

INSTALLING THE BURNER: PEDESTAL MOUNTED

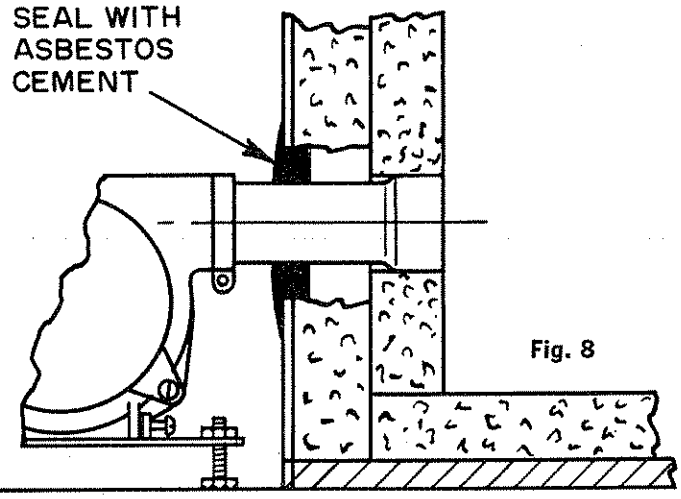


Fig. 8

1. Adjust the legs on the pedestal so that the height of the air tube matches the location of the burner opening.
2. Slide the end of the air tube into the opening so that it is flush or nearly flush with the inside of the combustion chamber. See Figure 8.
3. From the outside of the unit, seal the space around the air tube with asbestos cement or equivalent.

NOTE: CONSTANT IGNITION—Spark "ON" during entire burning cycle.
INTERMITTENT IGNITION—Spark "ON" only at burner start.

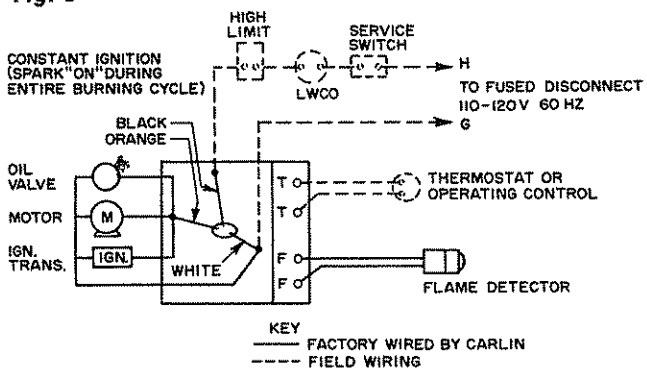
WIRING

When the burner is furnished with a burner-mounted primary control, field connections are to be made in the 4″ x 4″ junction box under the control. The motor, transformer, oil valve and flame detector are pre-wired. High limit, low water cut-off, firematic switch, emergency and service switches are wired in series between the hot supply lead and going to the unwired black lead in the control. The thermostat or operating control, if used, is wired to "T" and "T." Otherwise, jumper "T" and "T."

When the primary control is mounted on the boiler or furnace or on the transformer hinge plate, the motor and transformer are connected in the compartment under the transformer hinge.

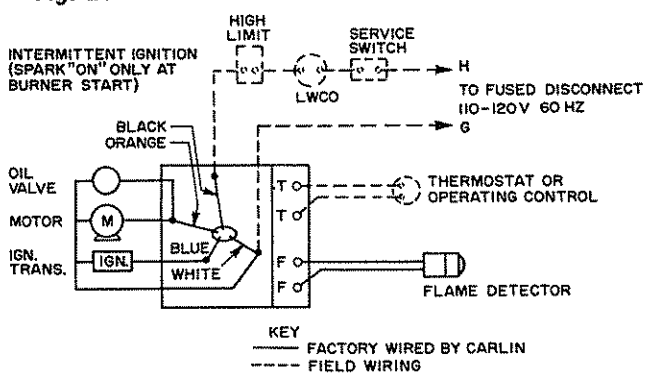
HONEYWELL TYPE R8184G
PRIMARY CONTROL

Fig. 9



HONEYWELL TYPE R8185E
PRIMARY CONTROL

Fig. 10



HOW TO ADJUST THE AIR SHUTTER AND AIR BAND

For more precise regulation of air, these models have an air shutter for fine control plus an air band for coarse control.

The air shutter has a pointer which indicates the percent of opening against a calibrated scale (9 = 90%, fully open = 100%). Lock in place by a screw just above the ear on the fuel unit after final adjustment.

The air band is adjusted by loosening the 1/4-20 screw and nut. Lock in place after final adjustment. See Tables 4 and 5 for approximate settings.

HOW TO ADJUST THE COMBUSTION HEAD

By moving the electrode and combustion head assembly forward or backward, the location of the flame retention ring relative to the throttle ring can be controlled. See Figure 11. By reading the scale on the nozzle line slide plate, which is calibrated in 1/16-inch divisions (see dimension "A", Figure 11A), the position of the flame retention ring in relation to the throttle ring can be determined at a

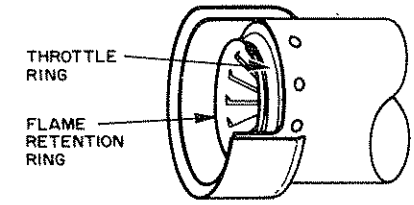


Fig. 11

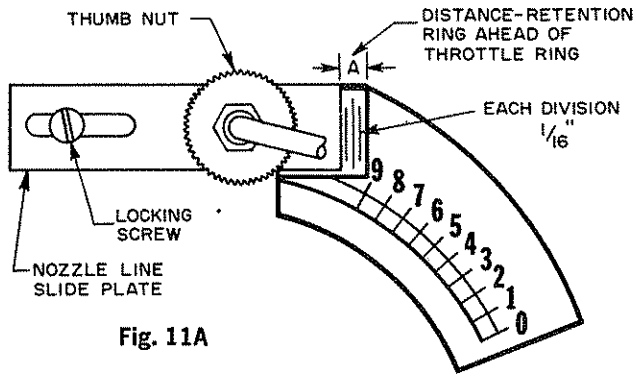


Fig. 11A

glance. By loosening the locking screw and the thumb-nut and pushing on the thumb-nut, the assembly can be moved to the required position. To lock in place, first tighten the thumb-nut and then the locking screw. For the lower inputs, the position should be close to zero. Tables 4 and 5 give approximate settings for each firing rate.

RETENTION RING AND AIR SHUTTER ADJUSTMENTS

Tables 4 and 5 show for each firing rate the minimum and maximum recommended positions of the flame retention ring with the corresponding amounts of air shutter opening. With the retention ring set at the minimum recommended distance ahead, more air pressure is needed, and the fire is more intense, therefore better for operating without refractory chambers. For instance, at 1.25 gph with the retention ring at 1/8" ahead and both air shutters at 100% open a very intense, hot flame would be developed so that it should be optimum for clean burning with no chamber. A softer, quieter flame (somewhat longer, too) would be developed by pushing the assembly further ahead and reducing the air pressure [closing the air shutter(s)]. In this case (1.25 gph) the maximum position would be 5/16" ahead; the fine air shutter would be wide open and the air band completely closed. This latter combination of settings would require a refractory chamber for clean combustion. Settings in between those shown can also be used. Tables 4 and 5 are provided only as a guide.

Table 4.
RECOMMENDED SETTINGS FOR MODEL 100CRD

Firing Rate (GPH)	Retention Ring Setting, Inches on Scale (Dimension "A," Figure 11)	Air Control Settings	
		Percent Opening Air Shutter	Percent Opening Air Band
0.50	0	0	0
0.65	Min. 0	0	0
	Max. 1/16	0	0
0.75	Min. 0	100	0
	Max. 3/32	30	0
0.85	Min. 1/16	100	0
	Max. 1/8	50	0
1.00	Min. 1/16	100	100
	Max. 3/16	50	0
1.10	Min. 3/32	100	100
	Max. 1/4	70	0
1.25	Min. 1/8	100	100
	Max. 5/16	100	0
1.35	Min. 5/32	100	100
	Max. 3/8	100	0
1.50	Min. 3/16	100	100
	Max. 7/16	100	20
1.65	Min. 1/4	100	100
	Max. 1/2	100	30
1.75	Min. 5/16	100	100
	Max. 9/16	100	40
2.00	Min. 7/16	100	100
	Max. 5/8	100	50
2.25	Min. 5/8	100	100
	Max. 11/16	100	100

Table 5.
RECOMMENDED SETTINGS FOR MODEL 101CRD

Firing Rate (GPH)	Retention Ring Setting, Inches on Scale (Dimension "A," Figure 11)	Air Control Settings	
		Percent Opening Air Shutter	Percent Opening Air Band
1.75	Min. 1/4	100	50
	Max. 1/2	100	0
2.00	Min. 5/16	100	100
	Max. 9/16	100	20
2.25	Min. 3/8	100	100
	Max. 5/8	100	40
2.50	Min. 1/2	100	100
	Max. 11/16	100	60
2.75	Min. 5/8	100	100
	Max. 11/16	100	100

Table 6. NOZZLE SPECIFICATIONS— MODELS 100CRD AND 101CRD

Firing Rates (GPH)	Spray Type	Make
0.50, 0.60, 0.65, 0.75	70° H (hollow)	Hago
0.85 through 2.75	60° SS (semi-solid)	Hago

The above specifications are based upon exhaustive tests and offer the best choice for most conditions. For special applications, other nozzle specifications might provide a more desirable pattern.

Other makes of nozzles may or may not prove satisfactory. Sufficient test data is not available to make other recommendations. The correlation of nozzle sprays between different manufacturers is not consistent.

FUEL UNITS AND OIL LINES

Single-Pipe Oil Lines — Standard burners are provided with single-stage 3450 rpm fuel units with the by-pass plug removed for single-pipe installations.

The single-stage fuel unit may be installed single-pipe with gravity feed or lift. Maximum allowable lift is 8 feet. See Fig. 12.

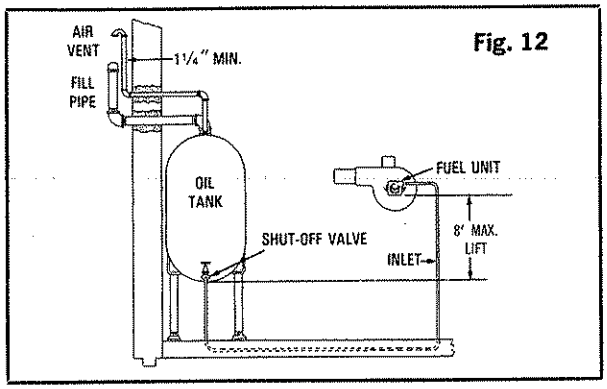


Fig. 12

IMPORTANT: Single-pipe installations must be absolutely airtight or leaks or loss of prime may result. Bleed line and fuel unit completely.

Two-Pipe Oil Lines — For two-pipe systems where more lift is required, the two-stage fuel unit is recommended. Tables 6 (single-stage) and 7 (two-stage) show allowable lift and lengths of ⅜-inch and ½-inch OD tubing for both suction and return lines. Refer to Fig. 13.

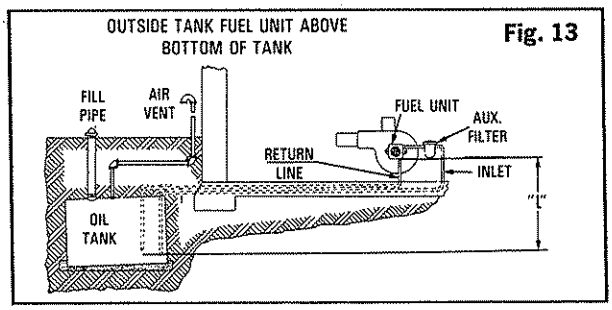


Fig. 13

Table 6. SINGLE-STAGE UNITS (3450 RPM) — TWO-PIPE SYSTEMS

Lift "L" (feet) See Fig. 13	Length of Tubing *(feet)	
	⅜" OD	½" OD
0	53	100
1	49	100
2	45	100
3	41	100
4	37	100
5	33	100
6	29	100
7	25	99
8	21	83
9	17	68
10	13	52

* Line lengths include *both* vertical and horizontal lengths.

Be sure that all oil line connections are absolutely airtight. Check all connections and joints. Flared fittings are recommended. Do not use compression fittings.

Open the air-bleed valve and start the burner. For clean bleed, slip a 3/16" ID hose over the end of the bleed valve and bleed into a container. Continue to bleed for 15 seconds after oil is free of air bubbles. Stop burner and close valve.

Table 7. TWO-STAGE UNITS (3450 RPM) — TWO-PIPE SYSTEMS

Lift "L" (feet) See Fig. 13	Length of Tubing *(feet)	
	⅜" OD	½" OD
0	68	100
2	63	100
4	58	100
6	53	100
8	48	100
10	42	100
12	37	100
14	32	100
16	27	100
18	22	88

*Line lengths include *both* vertical and horizontal lengths.

LIGHT-OFF AND ADJUSTMENT

Before restarting the burner, preset the air shutter, the air band, and the retention ring position for your particular firing rate according to Table 4 for 100CRD or Table 5, page 5, for 101CRD.

If the fire is a little too rich, move the combustion head forward by increasing dimension "A," Figure 11A, page 5. At the lower inputs, a very slight change is usually enough.

Adjust draft to 0.01 to 0.03 inches W.C. over the fire for natural draft units.

Run a smoke test. Strive for zero or a trace. Each time further adjustment of air or retention ring is made, reset the draft to 0.01 to 0.03 inches W.C. over the fire.

Check CO_2. This should be over 10 percent, and will often be over 12 percent, in a well-sealed unit at inputs of 1.00 gph and higher.

Check for good ignition and clean cut-off. If cut-off continues to be poor, look for air leaks in the suction line and correct them.

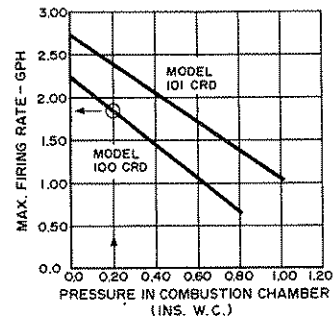
EFFECT OF BACK PRESSURE ON MAXIMUM FIRING RATES

The maximum firing range for "CRD" models (2.25 gph for Model 100CRD and 2.75 gph for Model 101CRD) is based on operation with zero to slightly negative pressure such as 0.01 inches to 0.03 inches W.C. draft over the fire as normally encountered in a natural draft unit.

When a unit is designed for forced draft operation with a positive pressure (back pressure) over the fire, the maximum air capacity of the burner is reduced in proportion to the amount of pressure. As a result, the maximum firing rate is also reduced. Figure 14 shows the maximum firing rate in gph of each model with various amounts of pressure in the combustion chamber.

As an example, the Model 100CRD has a maximum firing rate of just over 1.75 gph when fired against a back pressure of 0.20 inches W.C.

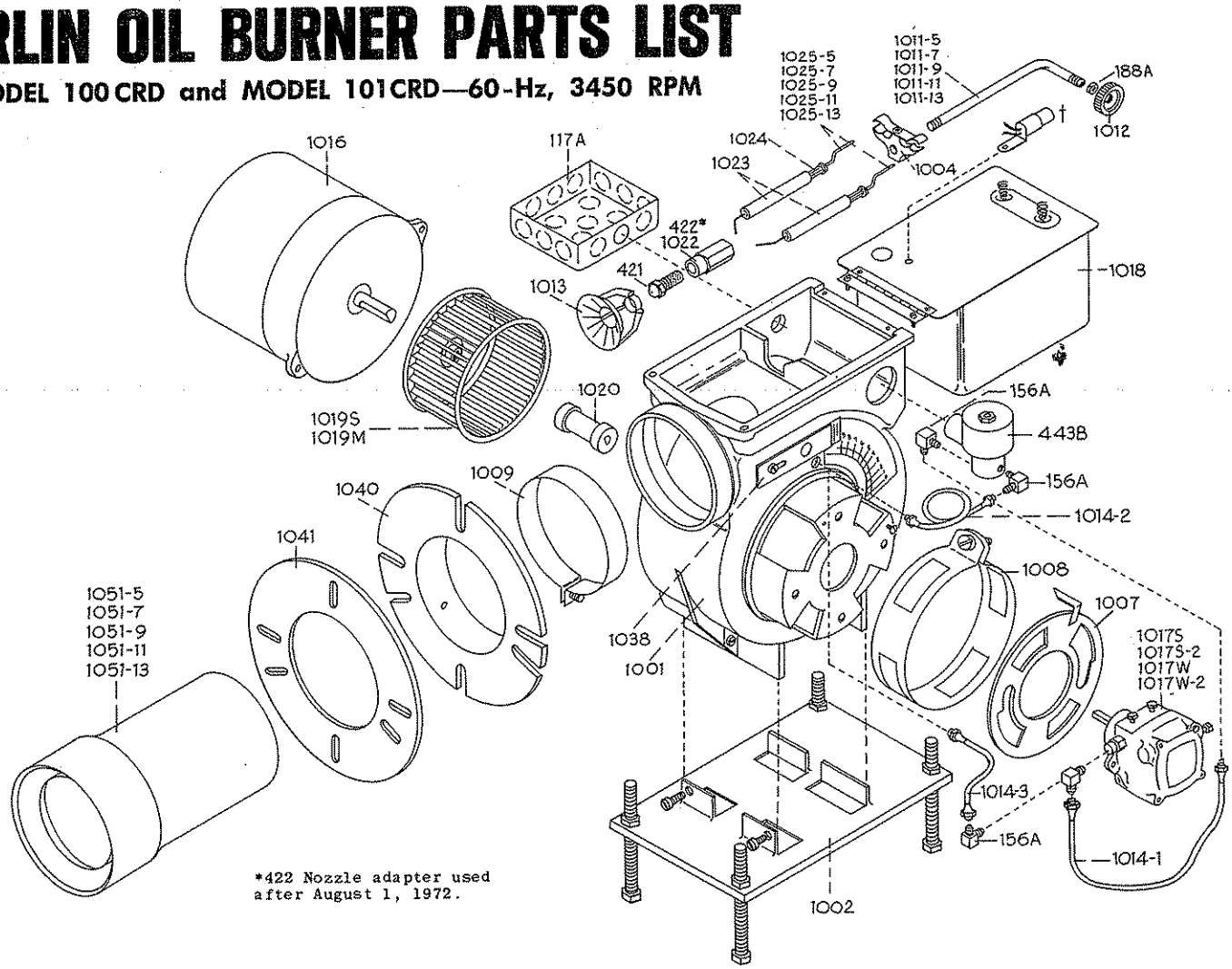
Fig. 14



THE CARLIN COMPANY Manufacturers of OIL BURNERS and OIL-FIRED WATER HEATERS
912 Silas Deane Highway • Wethersfield, Connecticut 06109 U.S.A. • (203) 529-2501

CARLIN OIL BURNER PARTS LIST

MODEL 100CRD and MODEL 101CRD—60-Hz, 3450 RPM



*422 Nozzle adapter used after August 1, 1972.

PART NUMBER	DESCRIPTION
117A	Junction box, 4" x 4" x 1-1/2"
156A	Elbow, 1/8" NPT x 3/16" flare
188A	Jam nut, 3/8"-24 NPS
421	Nozzle. Specify GPH, angle and type of spray
422*	Nozzle adapter, 1/8"-27 NPT
443B	Magnetic oil valve, instant-opening, 120-volt, 60-Hz
1001	Housing only
1002	Pedestal with mounting and adjusting screws
1004	Electrode bracket assembly
1007	Air shutter
1008	Air control band
1009	Air tube-housing clamp
1011-5	Nozzle line, 7-7/16" long for nominal 5" air tube model
1011-7	Nozzle line, 9-7/16" long for nominal 7" air tube model
1011-9	Nozzle line, 11-7/16" long for nominal 9" air tube model
1011-11	Nozzle line, 13-7/16" long for nominal 11" air tube model
1011-13	Nozzle line, 15-7/16" long for nominal 13" air tube model
1012	Nozzle line thumb nut, 3/8"-24 NPS
1013	Flame retention ring assembly
1014-1	Oil line from fuel unit to oil valve, 3/16" copper tube x 11" long with flared nuts
1014-2	Oil line from oil valve to nozzle line, 3/16" copper tube x 10" long with flared nuts
1014-3	Oil line from fuel unit to nozzle line (only for burner without oil valve), 3/16" copper tube x 6-3/8" long with flared nuts
1016	Motor, 1/7 HP, 115-volt, 60 Hz, 1-phase, 3450 RPM, 1/2" shaft, CCW rotation facing shaft
1017S	Fuel unit, Sundstrand single-stage A2VA-7016
1017S-2	Fuel unit, Sundstrand two-stage B2YA-8216. (Not shown)
1017W	Fuel unit, Webster single-stage M34DA
1017W-2	Fuel unit, Webster two-stage 2M34DA. (Not shown)
1018	Transformer, 120-volt, 60-Hz, 10,000-volt secondary, spring terminals

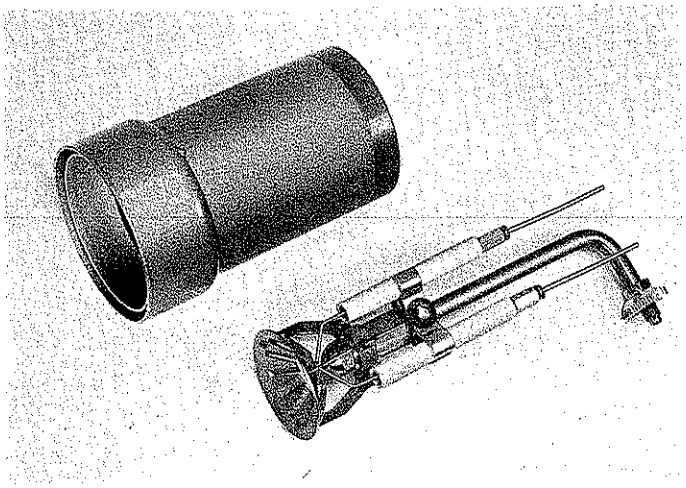
PART NUMBER	DESCRIPTION
1019M	Fan, 4-3/4" OD x 2-15/16" wide, 7/16" hub, 1/2" bore, CW rotation facing closed end. For Model 101CRD
1019S	Fan, 4-1/4" OD x 2-15/16" wide, 7/16" hub, 1/2" bore, CW rotation facing closed end. For Model 100CRD
1020	Coupling, 1/2" ID x 5/16" ID x 2-3/8" long, neoprene with nylon flanged ends
1022	Nozzle adapter, 1/16"-27 NPT
1023	Electrode assembly with insulator 7/16" diam. x 3-1/4" long
1024	Bus bar extension nut
1025-5	Bus bar, 2-5/8" long for nominal 5" air tube model
1025-7	Bus bar, 4-5/8" long for nominal 7" air tube model
1025-9	Bus bar, 6-5/8" long for nominal 9" air tube model
1025-11	Bus bar, 8-5/8" long for nominal 11" air tube model
1025-13	Bus bar, 10-5/8" long for nominal 13" air tube model
1038	Nozzle line adjusting slide
1040	Mounting flange
1041	Gasket for mounting flange
1051-5	Air tube, heat shield, and throttle ring assembly for nominal 5" air tube model. Overall length 5-5/8". Air tube is 3" ID x 3-1/8" OD x 4-1/8" long. Heat shield is 3-3/8" ID x 3-1/2" OD x 1-9/16" long. Available only as an assembly.
1051-7	Refer to 1051-5 above. For nominal 7" air tube model. Overall length 7-5/8". Air tube length 6-1/8"
1051-9	Refer to 1051-5 above. For nominal 9" air tube model. Overall length 9-5/8". Air tube length 8-1/8"
1051-11	Refer to 1051-5 above. For nominal 11" air tube model. Overall length 11-5/8". Air tube length 10-1/8"
1051-13	Refer to 1051-5 above. For nominal 13" air tube model. Overall length 13-5/8". Air tube length 12-1/8"

† Cadmium cell flame detector and bracket (standard equipment).

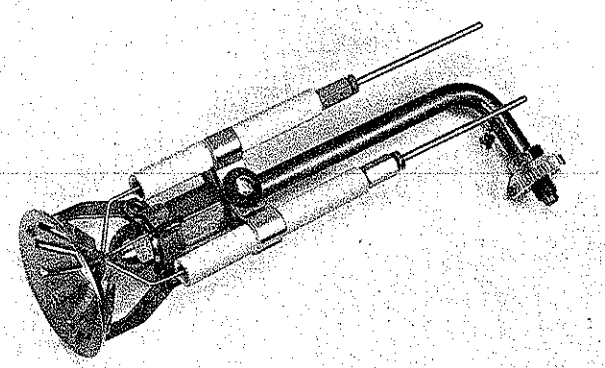
SEE REVERSE SIDE FOR ASSEMBLIES AVAILABLE

CARLIN OIL BURNER PARTS LIST

MODEL 100CRD and MODEL 101CRD—60-Hz, 3450 RPM



AIR TUBE, HEAT SHIELD, AND THROTTLE RING ASSEMBLIES WITH ELECTRODE-COMBUSTION HEAD ASSEMBLIES -- Refer to Assembly No. 1053 (see below) for components included in assemblies.



ELECTRODE AND COMBUSTION HEAD ASSEMBLIES -- Refer to description immediately preceding Assembly No. 1052 (see below) for components of complete assemblies.

AIR TUBE, HEAT SHIELD, AND THROTTLE RING ASSEMBLIES WITH ELECTRODE-COMBUSTION HEAD ASSEMBLIES

Assembly Number	Air Tube, Heat Shield, Throttle Ring Part Number*	Electrode-Combustion Head Assembly Number
1053-5	1051-5	1052-5
1053-7	1051-7	1052-7
1053-9	1051-9	1052-9
1053-11	1051-11	1052-11
1053-13	1051-13	1052-13

*Part No. 1051 is listed on reverse side

ELECTRODE AND COMBUSTION HEAD ASSEMBLIES

(Includes 1022 nozzle adapter, 1013 flame retention ring assembly, 1004 electrode bracket assembly, 1011 nozzle line, two 1023 electrode assemblies, two 1025 bus bars, and two 1024 bus bar extension nuts.)

Assembly Number	
1052-5	For use with Part No. 1051-5
1052-7	For use with Part No. 1051-7
1052-9	For use with Part No. 1051-9
1052-11	For use with Part No. 1051-11
1052-13	For use with Part No. 1051-13

(Part No. 1051 is listed on reverse side)

NOTE: Screws, nuts, washers, BX, etc. not included in this parts list as these are standard items which can be obtained locally.

Outsells CARLIN HEATING EQUIPMENT *because it Excels*

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