

MODELS

701CRD & 801CRD

Commerical Burners

Instruction Manual

WARNING Installer/servicer – Except where specifically stated otherwise, this manual must be used only by a qualified service technician. Failure to comply with this or other requirements in this manual could result in severe personal injury, death or substantial property damage.

WARNING User – The burner Instruction Manual is intended only for your service technician. The burner and heat exchanger must be inspected and started at least annually by your service technician.

NOTICE The National Oilheat Research Alliance (NORA) recommends single pipe oil systems and high-quality filtration for all fuel types. This should include at least a 10 micron Spin-on filter. Double filtration provides even greater assurance clean fuel will get to the pump. Contaminants in the tank that enter the fuel supply to the burner can cause pump sticking/seizing. These contaminants may increase in the early stages of transitioning to modern fuels (Ultra Low Sulfur and Bio Blends). High quality filtration adds protection against pump sticking.

NOTICE

BEST PRACTICES FOR BIODIESEL FUELS

When using Higher Bio Blends, we recommend reviewing our “Best Practices” guides at the end of this manual to achieve best results.

Carlin®

Combustion Technology

Firing Range 702CRD: 6.00 – 13.00 GPH
..... 801CRD: 11.40 – 19.80 GPH

Fuel Specification..... No. 1 or No.2 Fuel Oil
Including Bio Blends not exceeding B20 (U.S ONLY)

Electrical: Motor for 701CRD: 1/2 HP, 3450 rpm, 115/208-230V, 60hz
Motor for 801CRD: 3/4 HP, 3450 rpm, 115/208-230V, 60 hz,
1 Phase
Optional: (3 Phase, 208-230/460V)

Control: Carlin Pro-X 70200, 120V, 60Hz

Ignitor: Carlin Pro-X 45000 Solid State Ignitor, 19,000 volts

Blower Wheel Dia. x Width – 701CRD 6½ x 3¾"
801CRD 7" x 5"

2-Stage Oil Valve Pressure 150 psi



Certification

701CRD and 801CRD burners are U.L. listed for the U.S. and Canada, certified to comply with ANSI/UL 296, for use with #1 or #2 heating oil as well as bio blends not exceeding B20 (U.S. Only) (per standard ASTM D396).

Burner labels list compliance, when required, with special local, state or provincial approvals.

NOTICE

Install this burner in accordance with all local codes and authorities having jurisdiction. Regulations of these authorities take precedence over the general instructions provided in this manual.

United States Installations

Burner/appliance installations in the United States must comply with the latest editions of NFPA 31 (Standard for the Installation of Oil-Burning Equipment), ANSI/NFPA 70 (National Electrical Code), and all applicable local codes.

Canadian Installations

Burner/appliance installations in Canada must comply with the latest editions of CSA B139 (Installation Code for Oil Burning Equipment), CSA standard C22, Part 1 (Canadian Electrical Code), and all applicable local codes.

126 Bailey Road • North Haven, CT 06473

Phone 203-680-9401 • Fax 203-764-1714

TECH SUPPORT 800-989-2275 • carlincombustion.com

© Copyright 2021 — Carlin Combustion Technology

FIRING BOILERS WITH COMBUSTION CHAMBERS

The Models 701CRD and 801CRD 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.

Tables 1 and 2, show the recommended minimum inside dimensions for refractory brick, refractory pre-cast and

pre-formed refractory fiber chambers. Due to their quick warm-up properties, the light, 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 2600°F (1427°C) or higher.

The notes accompanying Table 1 and 2 provide further details relative to variations in dimensions and geometry.

TABLE 1 701CRD MINIMUM DIMENSIONS RECOMMENDED IN REFRACTORY COMBUSTION CHAMBERS—(Inches)					
1 High Fire Oil Delivery Rate GPH @ 150 PSI	2 Length L	3 Width W	4 Dimens. C	5 Suggested Height H	6 Minimum Dia. Vertical Cyl.
6.00	19	13.5	7.0	13	17
6.60	22	14.0	7.0	14	20
7.20	24	14.5	7.5	14	24
7.80	27	15.0	7.5	15	25
8.40	30	15.5	8.0	15	28
9.00	33	15.5	8.0	15	31
9.60	34	16.0	8.0	16	32
10.20	35	16.0	8.0	16	33
10.80	36	16.0	8.0	16	34
11.40	37	16.5	8.5	16	35
12.00	48	16.5	8.5	16	46
12.60	52	16.5	8.5	16	50
13.20	55	16.5	8.5	16	53

Note: These are MINIMUM dimensions and each may be exceeded without much effect.

TABLE 3 701CRD MINIMUM DIMENSIONS RECOMMENDED BOILERS FIRED WITHOUT COMBUSTION CHAMBERS—(Inches)					
1 High Fire Oil Delivery Rate GPH @ 150 PSI	2 L With Target	3 L Without Target	4 Width W	5 Dimens. C	6 Dimens. D
6.00	19	23	15.5	8.0	10.0
6.60	22	26	16.0	8.0	10.0
7.20	24	28	16.5	8.5	10.5
7.80	27	32	17.0	8.5	10.5
8.40	30	35	17.5	9.0	11.0
9.00	33	38	17.5	9.0	11.0
9.60	34	40	18.0	9.0	11.0
10.20	35	41	18.0	9.0	11.0
10.80	36	42	18.0	9.0	11.0
11.40	37	43	18.5	9.5	11.5
12.00	48	54	18.5	9.5	11.5
12.60	52	58	18.5	9.5	11.5
13.20	55	60	16.5	9.5	11.5

TABLE 2 801CRD MINIMUM DIMENSIONS RECOMMENDED IN REFRACTORY COMBUSTION CHAMBERS—(Inches)					
1 High Fire Oil Delivery Rate GPH @ 150 PSI	2 Length L	3 Width W	4 Dimens. C	5 Suggested Height H	6 Minimum Dia. Vertical Cyl.
11.4	33	15	7.5	15	31
12.0	34	16	8.0	16	32
12.6	35	16	8.0	16	33
13.2	36	17	8.5	17	34
13.2	38	17	8.5	17	36
14.4	39	18	9.0	18	37
15.0	40	18	9.0	18	38
15.6	41	19	9.5	19	39
16.2	43	19	9.5	19	41
16.8	44	20	10.0	20	42
17.4	46	20	10.0	20	44
18.0	47	21	10.5	21	45
18.6	49	21	10.5	21	47
19.2	51	22	11.0	22	49
19.8	52	22	11.0	22	50

Note: These are MINIMUM dimensions and each may be exceeded without much effect.
Refer to Fig. 2 for details showing L, C & H.

TABLE 4 801CRD MINIMUM DIMENSIONS RECOMMENDED BOILERS FIRED WITHOUT COMBUSTION CHAMBERS—(Inches)					
1 High Fire Oil Delivery Rate GPH @ 150 PSI	2 L With Target	3 L Without Target	4 Width W	5 Dimens. C	6 Dimens. D
11.4	33	38	17	7.5	9.5
12.0	34	39	18	8.0	10.0
12.6	35	40	18	8.0	10.0
13.2	36	41	19	8.5	10.5
13.8	38	43	19	8.5	10.5
14.4	39	44	20	9.0	11.0
15.0	40	46	20	9.0	11.0
15.6	41	47	21	9.5	11.5
16.2	43	49	21	9.5	11.5
16.8	44	50	22	10.0	12.0
17.4	46	52	22	10.0	12.0
18.0	47	54	23	10.5	12.5
18.6	49	56	23	10.5	12.5
19.2	51	58	24	11.0	13.0
19.8	52	59	24	11.0	13.0

Refer to Figs. 3 and 4 for details showing L, C & D

FIRING BOILERS WITHOUT REFRACTORY CHAMBERS

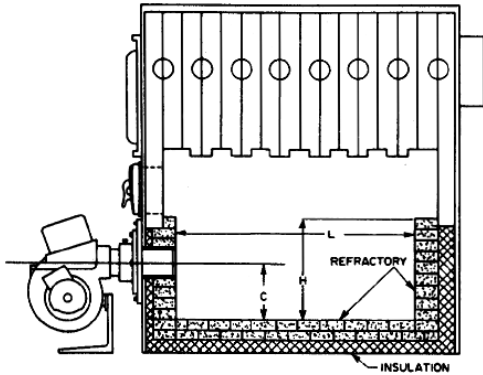
Depending upon the geometry of the combustion space some units perform better than others without refractory. When the back wall of the unit coincides approximately with the end of the flame, a target of refractory material is usually required.

Tables 3 and 4 show MINIMUM dimensions required for good combustion. They may be exceeded without much effect.

INSTALLING THE BURNER: FLANGE MOUNTED

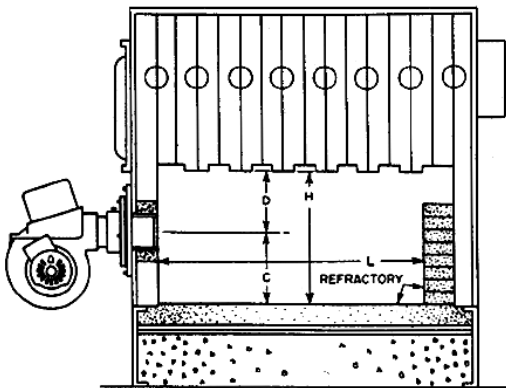
1. Measure, in the burner opening, the distance from the inside of the combustion chamber to the outside of the mounting plate to find the insertion length of air tube needed. Position flange with sleeve inside on air tube at a point from end of burner corresponding to this measurement. Tighten set screws 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.
2. Slide the end of the air tube into the opening and secure the flange to the front plate.

FIG. 2



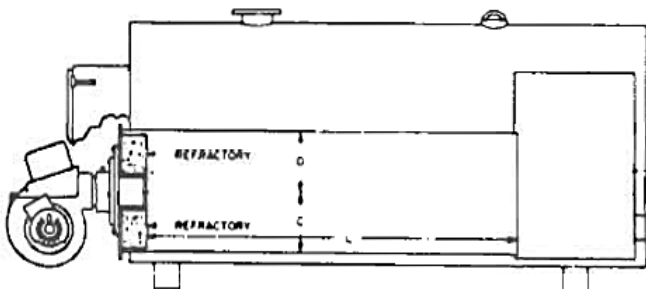
Brick combustion chamber, side view.

FIG. 3



Wet leg boiler. No combustion chamber, side view.

FIG. 4



Scotch Marine boiler. No combustion chamber.

INSTALLING THE BURNER: PEDESTAL MOUNTED

1. Adjust 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.
3. From the outside of the unit, seal the space around the air tube with refractory cement or equivalent.

FIG. 5

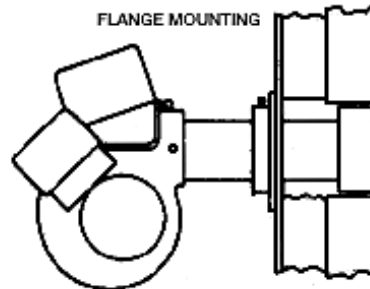
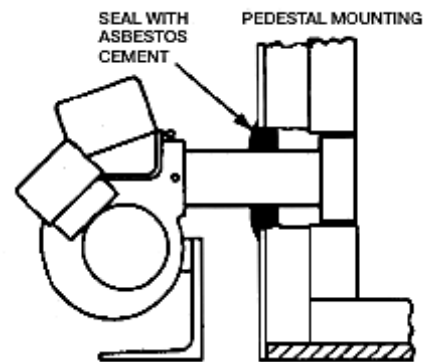


FIG. 6



HOW TO ADJUST THE COMBUSTION HEAD

The retention ring position ahead of the throttle ring is adjustable from zero (flush) to 1¼ inches (Dimension "A" Figs. 7 and 8). Turning the adjusting screw in (clockwise) increases the distance "A" ahead. This distance is indicated by lifting the housing cover and reading the scale on the nozzle line across the corners on sides of the channel guiding the nozzle line. Each division is 1/16 inch.

Refer to "A" dimension given in Table 5 and 6 for corresponding nozzle selection. (If alternate nozzle sizes are used select "A" dimension from the high fire oil delivery rate. Column 5). EXAMPLE: 701CRD firing at 11.40 GPH high fire. "A" column setting reads 1/4".

1. Turn adjusting screw counterclockwise until zero on scale is aligned with rear of housing ("A" equals zero see Fig. 8).
2. Now turn adjusting screw clockwise until the '1/4' graduation on the scale coincides with rear of housing. Each mark (or line) is 1/16 inch. (See Fig. 8).
3. The retention ring will now be exactly 1/4" ahead of the throttle ring. (See "A" dimension. Fig. 7).

CAUTION: Housing cover should be raised slightly when attempting to change retention ring setting ("A" dimension) otherwise scale will be torn or distorted. This can be done by backing out the two hold-down screws 2 to 3 turns, and then lifting cover slightly while adjusting. Be sure to tighten screws after adjusting.

FIG. 7

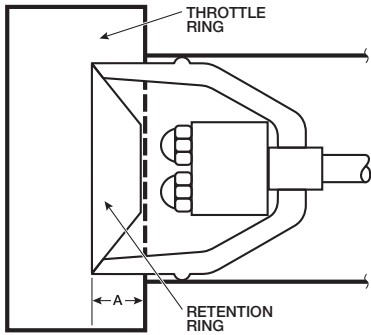
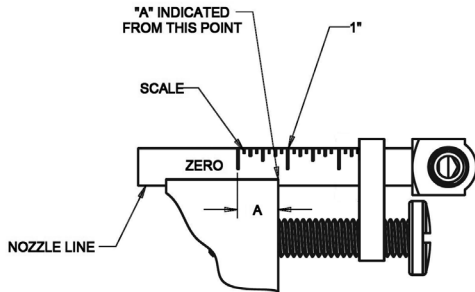


FIG. 8



COMBUSTION HEAD ADJUSTMENT FOR COMBUSTION AIR

When adjusting the combustion head forward or back, the space around the rim of the retention ring is increased or decreased which increases or decreases the amount of combustion air to correspond with the nozzle sizes used.

Also, by using the specified nozzle combinations for low and high fire (Tables 5 and 6), the air fuel ratio for both low and high fire are optimized by the automatic damper actuator and its associated linkage. THIS LINKAGE HAS BEEN PRE-SET AT THE FACTORY AND SHOULD NOT BE ADJUSTED. It is set to be in the fully open position when the burner is in high fire.

By adjusting the combustion head according to Tables 5 and 6, for the firing rate delivered by the particular nozzles, the burner should deliver very close to the proper amount of combustion air and CO₂. Slight increases or decreases will usually be required depending upon the draft. Normally a draft of 0.02 to 0.04 inches W.C. (negative pressure) is recommended over the fire for natural draft applications.

NOTE: Be sure you are using a primary control with a minimum 10-second post purge to ensure air damper closes after a call-for heat (see warning on page 2).

Model 701CRD is provided with a low fire air shutter. Adjust the Blue Cam (Low-Fire) to limit the amount of shutter closure which thereby increases or decreases the amount of combustion air required for proper burning.*

Model 801CRD is supplied with separate low fire and high fire air shutters. The low fire air shutter should be adjusted with the low fire adjusting screw (Blue Cam should be set to 0) to get a clean, low fire. The high fire air shutter is not adjustable and moves with the linkage that is preset at the factory.*

*Damper actuator is set at the factory. If adjustment is needed, please reference the included supplement (Part # MNSQN71) for all settings and operation.

TABLE 5 701CRD NOZZLE DATA AND COMBUSTION HEAD SETTINGS							
Nozzle Specifications		Spray	Oil Delivery Rate GPH @ 150 PSI		"A"*** Approximate Retention Ring Setting On Scale	Low Fire Air Shutter	Blue Cam Set- ting
1st Stage	2nd Stage		Low Fire	High Fire			
3.00	2.00	60°H	3.60	6.00	1/16"	1/8"	10
3.25	2.25	60°H	3.90	6.60	3/16"	1/8"	10
3.25	2.75	60°H	3.90	7.20	1/4"	1/8"	10
3.50	3.00	60°H	4.20	7.80	5/16"	1/4"	15
3.50	3.50	60°H	4.20	8.40	3/8"	1/4"	15
3.75	3.75	60°H	4.50	9.00	7/16"	3/8"	25
4.00	4.00	60°H	4.80	9.60	1/2"	1/2"	30
4.00	4.50	60°H	4.80	10.20	9/16"	1/2"	30
4.50	4.50	60°H	5.40	10.80	5/8"	5/8"	37
4.50	5.00	60°H	5.40	11.40	3/4"	3/8"	37
5.00	5.00	45°H	6.00	12.00	7/8"	3/4"	40
5.00	5.50	45°H	6.00	12.60	1 1/8"	3/4"	40
5.00	6.00	45°H	6.00	13.20	1 1/4"	3/4"	40

TABLE 6 801CRD NOZZLE DATA AND COMBUSTION HEAD SETTINGS					
Nozzle Specifications 45H, 45B, 45A		Oil Delivery Rate GPH @ 150 PSI		"A"*** Approximate Retention Ring Setting On Scale	Low Fire Air Shutter
1st Stage	2nd Stage	Low Fire	High Fire		
5.50	4.00	6.60	11.40	1/16"	1/4"
5.50	4.50	6.60	12.00	1/16"	1/4"
5.50	5.00	6.60	12.60	1/48"	1/4"
5.50	5.50	6.60	13.20	3/16"	1/4"
6.00	5.50	7.20	13.80	1/4"	3/8"
6.00	6.00	7.20	14.40	5/16"	3/8"
6.00	6.50	7.20	15.00	3/8"	3/8"
6.50	6.50	7.80	15.60	7/16"	1/2"
6.50	7.00	7.80	16.20	1/2"	1/2"
6.50	7.50	7.80	16.80	3/8"	1/2"
6.50	8.00	7.80	17.40	3/4"	1/2"
6.50	8.50	7.80	18.00	7/8"	1/2"
7.00	8.50	8.40	18.60	1"	5/8"
7.00	9.00	8.40	19.20	1 1/8"	5/8"
7.00	9.50	8.40	19.80	1 1/4"	5/8"

*When field conditions are unusual or if the load requires it, the low fire and high fire may be altered such that the low fire is increased and the high fire decreased as needed. The low fire air shutter adjusting screw will require turning to the revised nozzle sizes.

***A"-See Figs. 7 and 8, Page 5.

NOZZLE SPECIFICATIONS

The nozzles shown in Tables 5 and 6 are standard and usually provide the best fire. Substitutions are not normally recommended.

Other makes of nozzles may or may not prove satisfactory.

For special applications, other specifications might provide a more desirable pattern.

FORCED DRAFT FIRING

Due to the back pressure in forced draft units the maximum firing rate of a burner is reduced. The greater the pressure, the lower the maximum GPH capability becomes. Table 7 shows this. Note that the Table stops at 0.50 inches W.C.: the maximum recommended back pressure for these models.

TABLE 7 MAXIMUM FIRING RATES (GPH)–FORCED DRAFT								
Burner Model	Combustion Chamber Pressure							W.C.
	0.00	0.10	0.20	0.30	0.40	0.50	INS.	
701CRD	13.20	12.70	12.30	11.80	11.30	10.90		
801CRD	19.80	19.40	19.00	18.60	18.20	17.80		

The combustion head settings for forced draft firing would be somewhat greater than those shown in Tables 5 and 6 which are for zero pressure or natural draft.

FUEL UNITS AND OIL LINES

Standard burners are provided with a two-stage 3450 rpm fuel unit set at 150 PSI.

A single-pipe system is recommended whenever the bottom of the fuel tank is above the burner or is at the same level as the burner. This includes outdoor fuel tanks that are at such levels. The length of run should not exceed 100 ft. and the vacuum should not exceed 12" mercury. Be sure the by-pass plug has been removed for single-pipe systems.

A two-pipe system is recommended when the fuel tank is below the level of the burner and the fuel unit must pull (lift) the fuel up to the burner. The vacuum reading should not exceed 12" mercury. For two-pipe installations the by-pass plug must be installed.

Table 8 shows, for the standard two-stage fuel unit, the allowable lift and lengths of 1/2" and 5/8" OD tubing for both suction and return lines in two-pipe systems.

TABLE 8 MODEL 701CRD & MODEL 801CRD TWO-STAGE UNITS–TWO-PIPE SYSTEMS			
Lift (feet)	Length of Tubing (feet)		
	1/2" OD	5/8" OD	
0	100	100	
2	88	100	
4	78	100	
6	69	100	
8	59	100	
10	49	100	
12	39	100	
14	29	82	
15	24	68	

Be sure that all oil line connections are absolutely air tight. Check all connections and joints. Flared fittings are required. Do not use compression fittings.

Open the air-bleed valve and start the burner. For clean bleed, slip a 1/16" 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 the burner and close the bleed valve.

LIGHT-OFF AND ADJUSTMENT

NOTE: WHEN STARTING THIS BURNER THE FIRST TIME OR AFTER CHANGING NOZZLES, THE FLAME MAY GO OUT DURING THE SWING FROM LOW TO HIGH. BE READY TO SHUT THE BURNER DOWN JUST AFTER THE FLAME GOES OUT. REPEAT THIS UNTIL THE AIR IS PURGED OUT OF THE HIGH FIRE OIL LINE.

Before starting the burner, pre-set the retention ring position for the particular firing rate according to Table 5 for the 701CRD or Table 6 for the 801CRD.

If the fire is a little too rich, move the combustion head forward by increasing dimension "A" (Fig. 7 and 8). At the lower inputs, a very slight change is usually enough. DO NOT ALTER THE LINKAGE. IT IS PRE-SET AT THE FACTORY.

Model 701CRD is provided with a low fire air shutter. Adjust the Blue Cam (Low-Fire) to limit the amount of shutter closure which thereby increases or decreases the amount of combustion air required for proper burning.

Model 801CRD is supplied with separate low fire and high fire air shutters. The low fire air shutter has an adjusting screw which should be adjusted to get a clean, low fire. The high fire air shutter is not adjustable and moves with the linkage that is pre-set at the factory.

Adjust draft to 0.02 to 0.04 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 retention ring is made, reset the draft to 0.02 to 0.04 inches W.C. over the fire.

Check CO₂. This should be 12 to 12½ percent, and will often be over 13 percent, in a well-sealed unit.

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.

For different boiler applications, it is sometimes necessary to have the high-fire pull in earlier or later than normal during the swing to achieve a smooth, cleaner transition.

If the swing from low-fire to high-fire is rough, i.e. bangs or rumbles or is extremely smoky, the orange cam of the damper actuator is possibly not set correctly. Please reference included MNSQN71 supplement for all Damper Actuator Cam Settings. The high-fire should pull in as the air shutter is about half way through its swing.

If the fire is lean all the way to high-fire, the high-fire valve should be energized earlier. If during the swing, the fire gets very smoky, then cleans up again, the high-fire valve should be energized later.

The linkage between the damper actuator arm and the air shutter crank is set at the factory and should only need adjustment if the damper actuator or damper rod is replaced.

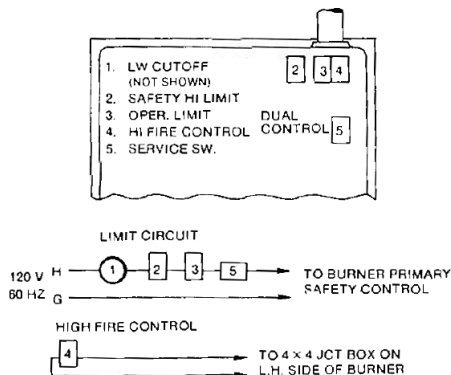
WIRING FOR LOW-HIGH-LOW STEP MODULATION

In order to take full advantage of the energy savings potential of these burners they should be wired to operate with low-high-low cycles. Hence the firing cycle would be much longer by going from low to high to low once or several times before shutting off.

In the following illustrations are two examples: 1. Water Boiler. 2. Steam Boiler. In each case, we have a limit circuit which starts and stops the burner and a high fire control which brings the high fire on and off.

Also, prewired and built into the burner is a manual high fire switch which enables the installer or operator to hold the burner on low fire if so desired.

Refer to the appropriate example for your installation.



Example: Water Boiler

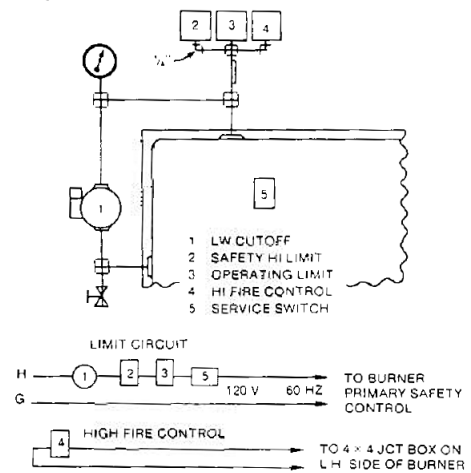
Operating Range 170°-190°F

2. Set Safety Hi Limit: Cut in 200 / Cut out 210
3. Set Operating Limit: Cut in 180 / Cut out 190
4. Set Hi Fire Control: Cut in 170 / Cut out 180

Operation:

1. Call for heat: cold start. Burner starts on low and goes to high fire.
2. When the temperature rises to 130°F, the burner goes to low fire.
3. If temperature drops to 170°, burner returns to high fire.
4. If temperature rises to 190°, burner shuts off.

NOTE: Since the calibrations on the limit controls are seldom exact, it will be necessary to readjust the settings during operation.



Example: Steam Boiler

Operating Range 3 to 6 PS1

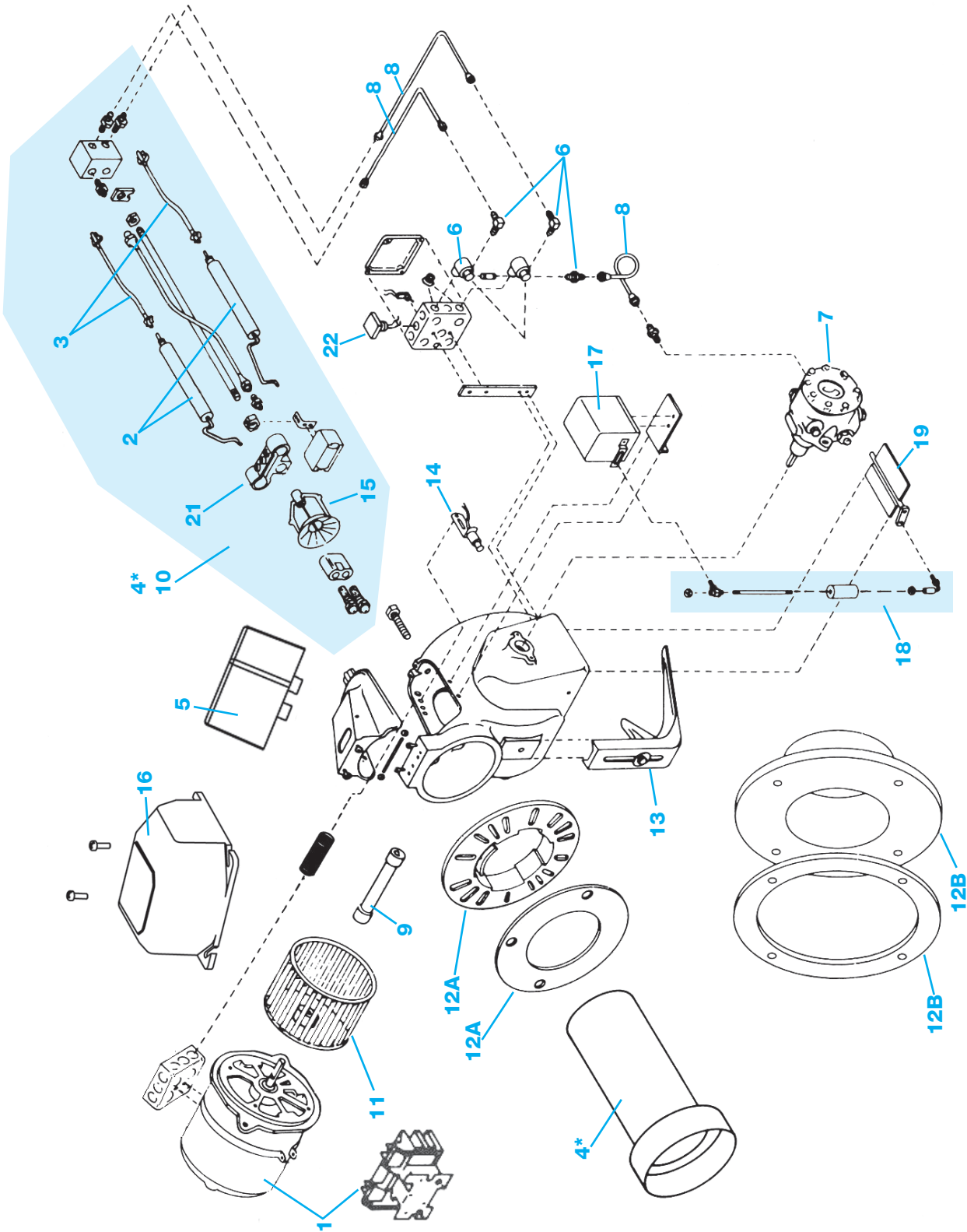
2. Set Safety Hi Limit: Cut in 8 PSI / Cut out 10 PSI
3. Set Operating Limit: Cut in 8 PSI / Cut out 6 PSI
4. Set Hi Fire Control: Cut in 3 PSI / Cut out 4 PSI

Operation:

1. Call for heat: cold start. Burner starts on low and goes to high fire.
2. When pressure rises to 4 PSI, the burner goes to low fire.
3. If pressure drops to 3 PSI burner returns to high fire.
4. If pressure rises to 6 PS1 burner shuts off.

NOTE: Since the calibrations on the limit controls are seldom exact, it will be necessary to readjust the settings during operation.

Replacement Parts – 701CRD

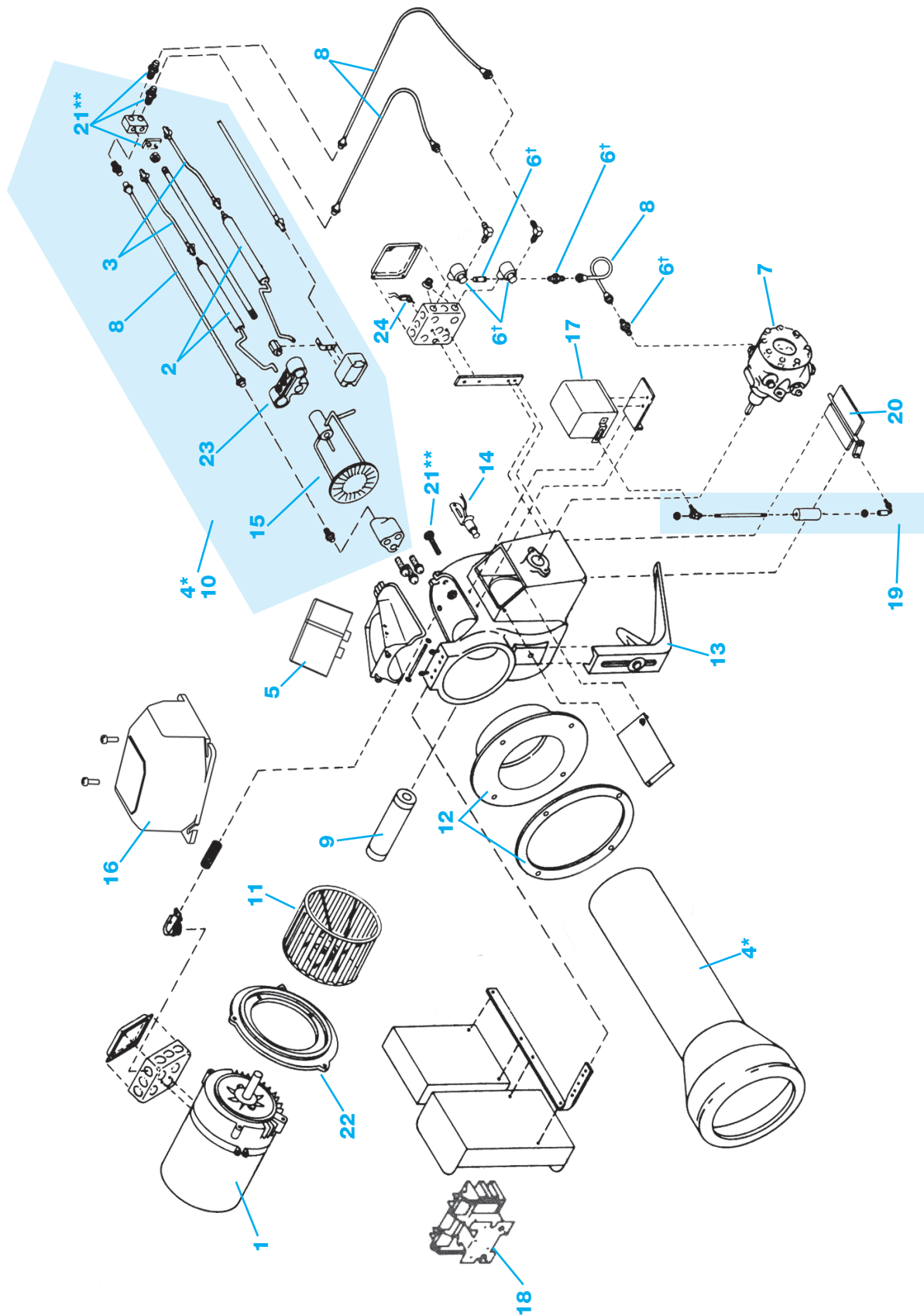


*4 includes selected air tube and combustion head assembly

ITEM	PART NO.	DESCRIPTION	701CRD
1	27706S	1/2 Hp, 115/230V, 60HZ, 1 Phase, 3450 rpm Motor	•
	35824S	Motor Contactor 20 AMP R4242B1005	•
2	98507S	Electrode Set (2), Approx. 9-1/4" OAL	•
3	56069S	Ignition Wire 9-1/4" OAL, for Nominal 12" Air Tube (2 req'd)	•
	56036S	Ignition Wire 10-3/4" OAL for Nominal 14" Air Tube (2 req'd)	•
	56085S	Ignition Wire 8-3/8" OAL, for Nominal 10" Air Tube (2 req'd)	•
4	22632S	701CRD 10" Standard Air Tube/Combustion Head Assy	•
	22665S	701CRD 12" Standard Air Tube/Combustion Head Assy	•
	22699S	701CRD 14" Standard Air Tube/Combustion Head Assy	•
5	41000S	110V Ignitor	•
	41000SOLC	110V Ignitor on Baseplate	•
6	41004S	Instant Oil Valve 32Z0078TSCV 3 Way	•
	61150KITS	Oil Valve Fitting Kit (44560, 29678, 44461, 29728, 44545)	•
7	74468S	Fuel Unit, 2 Stage, NYC, J4PB-B1000G	•
	98042S	Fuel Unit, 2 Stage, B27A-8260	•
	98126S	Fuel Unit, 2 Stage, NYC, B27A-8260	•
8	75291S	Oil line kit	•
9	28738S	Coupling 1/2" ID x 7/16" ID x 4 7/8" L, H or J Pump	•
	28761S	Coupling 1/2" ID x 5/16" ID x 6 11/32" L, B Pump	•
10	57349S	10" Nominal 20-3/4" OAL Combustion Head Assy	•
	57539S	12" Nominal 22-3/4" OAL Combustion Head Assy	•
	57596S	14" Nominal 25-3/4" OAL Combustion Head Assy	•
11	98857S	Blower Wheel Only, 6 1/2" OD x 3 3/4" W, 1/2" Bore	•
	98857KITS	Blower Wheel, Coupling, Augmentor, 6-1/2" OD x 3-3/4" W, 1/2" Bore	•

ITEM	PART NO.	DESCRIPTION	701CRD
12A	23259S	4" Universal Flange & Gasket	•
12B	23184S	4" Pressure Flange & Gasket	•
12C	59444UJS	4" Pressure Flange & Gasket – Ultra Violet (not shown)	•
13	23382S	Pedestal w/ hardware	•
14	14407S0ES	CAD Cell Kit	•
15	56697S	Retention Ring Assy 701CRD	•
16	70200S	Universal Primary w/ Display 70200	•
	4020002S	Model 40200 Primary 30/15/30	•
	5020002S	Model 50200 Primary 30/15/30	•
	6020002S	Model 60200 Primary 15/15/15	•
17	35808S	Damper Motor – M436A	•
	51317S	Damper Motor SQN71	•
	51527S	Damper Motor Bracket SQN7	•
	51512S	Relay SPDT-NO	•
18	22871S	Damper Motor Linkage Kit - Honeywell	•
	51542S	Damper Motor Linkage Arm w/swivel - Siemens	•
19	48108S	Air Shutter Assembly	•
20	6702KITS	Hardware Kit (54916, 29694, 47167, 29892, 29728)	•
21	59881S	Electrode Bracket	•
22	35741S	4 Second Time Delay	•
	51543S	Time Delay set @ 15 Seconds	•

Replacement Parts – 801CRD



*4 includes selected air tube and combustion head assembly
16 includes multiple parts **21 includes multiple parts

ITEM	PART NO.	DESCRIPTION
1	27730S	Motor: 3/4HP 115/208-230V 60HZ, 1 Phase, 3450 RPM
	27748S	Motor: 3/4HP 115/208-230V 60HZ, 3 Phase, 3450 RPM
2	98507S	Electrode Set of 2, Approx. 9-1/4" OAL
3	56069S	Ignition Wire: 9-1/4" OAL, for Nominal 10" Air Tube (2 req'd)
	56127S	Ignition Wire: 10-1/8" OAL for Nominal 12" Air Tube (2 req'd)
	56135S	Ignition Wire: 11-5/8" OAL, for Nominal 15" Air Tube (2 req'd)
	22756S	801CRD 10" Standard Air Tube/Combustion Head Assy
4	22780S	801CRD 12" Standard Air Tube/Combustion Head Assy
	22814S	801CRD 15" Standard Air Tube/Combustion Head Assy
5	41000S	110V Ignitor
	41000S0LC	110V Ignitor on Baseplate
6	41004S	Instant Oil Valve 32Z0078TSCV 3 Way
	61150KITS	Oil Valve Fitting Kit (44560, 29678, 44461 (047), 44545, 29694)
7	98042S	Fuel Unit, 2 Stage, B2TA-8260
	98126S	Fuel Unit, 2 Stage, B2TA-8260, NYC
	23507S	Fuel Unit, 2 Stage, J4PB-B1000G
	74484S	Fuel Unit, 2 Stage, NYC, J4PB-B1000G
8	34785KITS	Oil line kit (incl. all oil lines)
9	98229S	Coupling: 1/2" ID x 5/16" ID x 6-1/2" L, B Pump
	28779S	Coupling: 1/2" ID x 7/16" ID x 5-13/16" L, H or J Pump
10	58032S	10" Nominal 22-1/4" OAL Combustion Head Assy
	58081S	12" Nominal 24-1/4" OAL Combustion Head Assy
	58123S	15" Nominal 27-1/4" OAL Combustion Head Assy
11	28548S	Blower Wheel/Fan: 7" OD x 5 W, 5/8" Bore
12	23283S	5" Universal Flange & Gasket
	23218S	5" Pressure Flange & Gasket
	59576S	5" Pressure Flange & Gasket – For use with Ultra Violet Control

ITEM	PART NO.	DESCRIPTION
13	23382S	Pedestal w/ hardware
14	14407S0ES	CAD Cell Kit
15	56812S	Retention Ring Assy 801CRD
16	70200S	Universal Primary W/ Display 70200*
	4020002S	Model 40200 Primary 30/15/30*
	5020002S	Model 50200 Primary 30/15/30*
	6020002S	Model 60200 Primary 15/15/15*
	99822S	ENMX43UV – Control Set Honeywell RM7840L
	99822CS	ENMX43UVSC – Control Set Honeywell RM7840L
	*Cannot use on burners firing 20GPH or greater	
17	35808S	Damper Motor – M436A
	51317S	Damper Motor SQN71
	51527S	Damper Motor Bracket SQN7
	51512S	Relay SPDT-NO
18	35824S	Motor Contactor 20 AMP R4242B1005
19	22889S	Damper Motor Linkage Kit - Honeywell
	51541S	Damper Motor Linkage Arm w/swivel - Siemens
20	48504S	Air Shutter Assembly**
	**Includes 48405S & 50252S and all components to adjust air	
21	81150KITS	Hardware Kit (Includes 54916, 47167, 29728, 29892)
22	46771S	Motor Mounting Ring
23	59881S	Electrode bracket with screws
24	33910S	Toggle Switch (Not shown)
25	51543S	Time delay Set @ 15S Service

701CRD & 801CRD Burners User Care and Maintenance

WARNING

Should overheating occur:

1. Shut off the oil supply to the burner.
2. DO NOT shut off the control switch to the circulator or blower.
3. Contact your oil dealer or service technician and the fire department (if needed).

WARNING

The burner must be cleaned, tested and adjusted annually by a qualified oil burner service technician.

WARNING

Refer only to the information on this page, intended for your use. The remainder of this manual is intended only for your service technician. Failure to comply could result in severe personal injury, death or substantial property damage.

For other than routine maintenance, contact a qualified service company. Perform the following as needed.

- Keep the area around the burner clear and free from combustible vapors and liquids.
- Do not obstruct the flow of combustion and ventilating air.
- Most motors currently used on residential type burners use permanently-lubricated bearings, and do not require field lubrication. Read the label on the motor to determine oiling needs, if any. Do not over-lubricate. This can cause as much trouble as not lubricating at all.

WARNING

Never attempt to use gasoline as a fuel for this burner, as it is more combustible and could result in a serious explosion. Never attempt to burn refuse or use any fuel other than #1 or #2 heating oil or bio blends including B100 (U.S. Only) (ASTM D396).



Biodiesel Best Practices

For ALL Biodiesel blends

- **Single Pipe Systems:** The National Oilheat Research Alliance (NORA) recommends single pipe oil systems to reduce the amount of oil that circulates through the pump.
- **Improved Filtration:** NORA also recommends 10-micron Spin-on filters. Converting to biodiesel can mobilize sludge and other contaminants that have built up in the tank over time. This 'cleaning' process is short-term and occurs early in the biodiesel transition. During this time, it is important to protect the burner/pump with improved filtering. More frequent filter changes may also be needed during this transitional phase.

For Biodiesel Blends above B20

- **Upgrade Older Carlin Burners:** Instructions for Field Conversion can be found in the "All Blends" section of our Online OEM Guide (<https://oemguide.carlincombustion.com/new-home/>). This upgrade will include a redesigned combustion head assembly, higher pump pressures, a B100 rated pump and alternate primary control settings – All designed to minimize head coking with high blend biodiesel.
- **Burner Setup:** Prior to significant increases in bio content, set your customers burners to the high end of the CO₂ range (recommended no less than 11.5%). Higher blends will reduce CO₂, so ensuring a high level in advance will help to prevent combustion issues during the transition.