

Series  
Trombin, 80

# INSTALLATION MANUAL



## MODELS

S-BASIC BURNER USING CAPCITOR DISCHARGE  
CONTROL IGNITION SYSTEM.

S-1-BASIC BURNER USING 10,000 VOLT MID  
POINT GROUND IGNITION TRANSFORMER  
WITH CAD CELL PRIMARY CONTROL.

S-2-BASIC BURNER WITH SHROUD AIR INLET  
FOR COMBUSTION AIR. CAN BE USED  
WITH EITHER OF ABOVE CONTROL  
COMBINATIONS.

# OIL BURNER INSTALLATION AND OPERATING INSTRUCTIONS

## Foreword To Owner

Over forty years of exhaustive oil heating research has gone into the design and engineering of this new oil burner -- an outstanding achievement in the application of advanced engineering techniques. When properly installed, it will provide many years of efficient, trouble free operation.

## Fuel Oil Specifications

The Underwriters' Laboratories, Inc. have listed this model burner for use with #1 or #2 fuel oil, National Bureau of Standards, Commercial Standard No. "CS-12-62".

**WARNING TO BUYER:** Installation must be made in good practice, and according to all local requirements.

The secondary side of all ignition systems (capacitor discharge, or a standard mid-point ground type transformer) emanates high voltage, and should be treated with CAUTION.

## Approvals

This burner is listed by the Underwriters' Laboratories, Inc., the New York Board of Standards and Appeals, the State Fire Marshall of the Commonwealth of Massachusetts, the Department of State Police in Connecticut and others. It is manufactured in accordance with National Bureau of Standards, Commercial Standard No. CS75-56.

## Operating Inspection

Be sure to inspect the installation at least twice within two weeks after it has been placed in operation. Examine and clean, if necessary, the filter and the strainer in the fuel unit. Inspect all tubing and equipment for oil leaks. Check the oil pressure and flame adjustment. Also start and stop the burner several times to see that it and the controls are functioning correctly. Check the setting of all the controls.

## Service And Parts Information

Special pamphlets pertaining to service, the ordering of replacement parts, and the return of parts for repair can be furnished upon request.

## General Specifications

Several ratings (a "rating" is a combination of various air delivery parts and nozzles) are utilized to insure combustion efficiency over the entire capacity range of the burner. The standard Model burner has a maximum capacity of 1.50 GPH. Each standard rating is indicated by a number. It should be noted that there is no difference in the burners for the various ratings except as relates to the air delivery parts and nozzles. Since the rating is not indicated on the nameplate of the burner, the burner may be changed from one rating to another merely by changing certain parts as specified in the burner rating tables on page two. All specifications are subject to change without notice.

## Underwriters' Requirements

Oil burners, oil storage tanks, piping and electrical work must be installed strictly in accordance with the regulations of the National Board of Fire Underwriters and local ordinances.

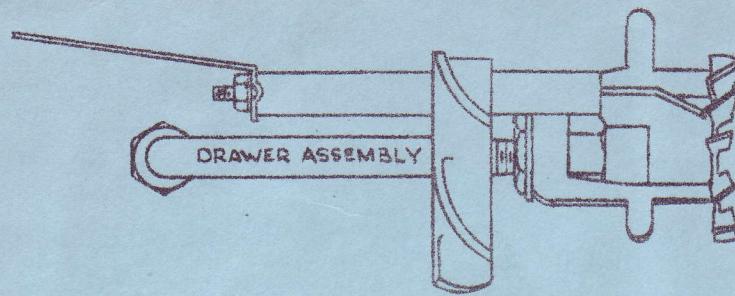
## Unpacking Burners And Controls

While unpacking burner, check for concealed damages, inspect air inlet assembly and housing for breakage or other damage. If controls are packed with burner, remove them from their cartons and inspect. If any damage is found, notify transportation company and supplier immediately.

MODEL S & S-1 OIL BURNERS  
INSTALL NOZZLE AS OUTLINED BELOW

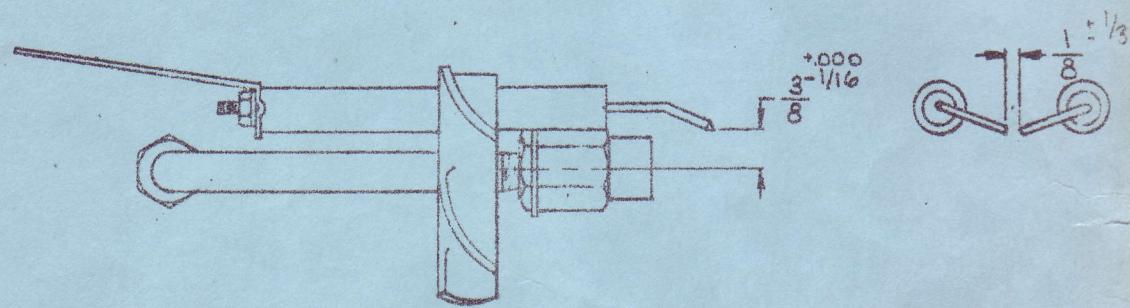
(90 C  
mixer)

STEP ①



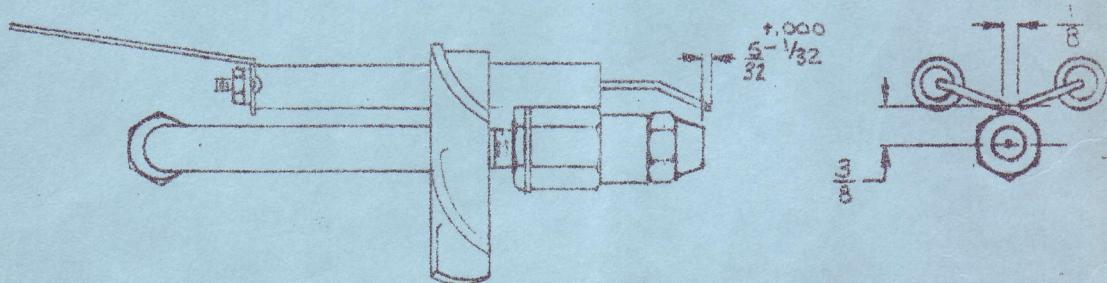
Remove Drawer Assembly from Burner by removing the Oil Line and Loosening the retainer clip.

STEP ②



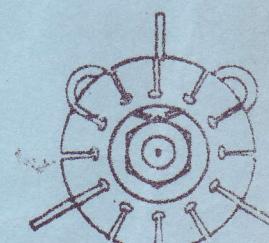
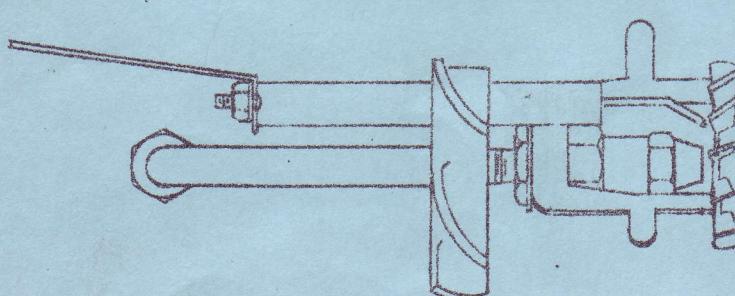
REMOVE 12-BLADE SPINNER from Drawer Assembly; by Loosening #8-32 Screw And Nut on Support Legs of Spinner Assembly.

STEP ③



INSTALL NOZZLE IN ADAPTOR; ADJUST ELECTRODE TIPS to 5/32" ahead of Nozzle;  
3/8" above orifice of nozzle and a 1/8" Gap between the TIPS.

STEP ④



REPLACE the 12-BLADE SPINNER up against the retainer stop; and lock in position. Make sure all dimensions are as outlined above. Install drawer Assembly in burner and lock in place.

WHEN INSTALLING THE MODEL "S" (MITE) OIL BURNER, THE FOLLOWING STEPS SHOULD BE TAKEN TO INSURE A TROUBLE FREE INSTALLATION.

- 1 - REMOVE THE INNER ELECTRODE ASSEMBLY BY REMOVING THE OIL LINE FITTING FROM THE NOZZLE ASSEMBLY AND THE RETAINER CLIP. MAKE SURE THAT THE ELECTRODES ARE ADJUSTED ACCORDING TO THE INSTALLATION MANUAL. THE ADJUSTMENTS SHOULD BE MADE SO THE TIPS ARE NOT LESS THAN 1/8" AHEAD OF THE NOZZLE FACE, THE ELECTRODE TIPS POSITIONED 3/8" UP FROM THE CENTER OF THE NOZZLE, WITH AN 1/8" GAP.
- 2 - INSTALL THE PROPER NOZZLE ACCORDING TO THE EQUIPMENT MANUFACTURERS SPECIFICATIONS OR IF OF THE CONVERSION TYPE, AN 80 DEGREE HOLLOW OR SOLID NOZZLE CAN BE USED ACCORDING TO THE APPLICATION. (HOLLOW UNDER 1.00 G.P.H., SOLID OVER 1.00 G.P.H.). THE BEST RESULTS HAVE BEEN OBTAINED WITH THE DELAVAN, MONARCH AND STEINEN NOZZLES. AFTER THE INSTALLATION OF THE NOZZLE, BE SURE THAT THE 12 BLADE SPINNER IS POSITIONED AND LOCKED IN PLACE UP AGAINST THE STOP ON THE ADAPTOR. RECHECK THE ELECTRODES FOR PROPER POSITIONING.
- 3 - WHEN INSTALLING THE DRAWER ASSEMBLY, MAKE SURE THAT EVERYTHING IS LOCKED IN PLACE AND SECURE. CHECK TO SEE IF BUSS BAR IS MAKING CONTACT WITH TRANSFORMER KNOB.
- 4 - SET THE AIR INLET DAMPER ON A #1 SETTING.
- 5 - BEFORE LIGHTING THE BURNER MAKE SURE THE PUMP IS PRIMED THOROUGHLY THROUGH THE BLEEDER VALVE.
- 6 - TURN THE THERMOSTAT UP UNTIL THE BURNER COMES ON. ADJUST THE FLAME BY MOVING THE DAMPER UNTIL THE SMOKE READING IS NO MORE THAN A #2.
- 7 - ALLOW THE BURNER TO RUN FOR A SUFFICIENT AMOUNT OF TIME UNTIL ALL OF THE AIR IS PURGED OUT OF THE DRAWER ASSEMBLY. THIS CAN BE DETERMINED BY THE SHUT-DOWN CHARACTERISTICS ON THE FLAME. IF THE FLAME IS EXTINGUISHED RAPIDLY ALL THE AIR IS OUT OF THE NOZZLE ASSEMBLY. IF NOT, PRE PURGE AGAIN TILL ALL AIR IS OUT. IF AIR PERSISTS, CHECK ALL OIL LINES AND FITTINGS FOR AIR LEAKS.
- 8 - THE BURNER SHOULD BE CYCLED A NUMBER OF TIMES TO MAKE SURE THAT LIGHTING IS SATISFACTORY. WHERE POSSIBLE, CHECK FLAME RETENTION WITH FLAME MIRROR. FLAME SHOULD BE APPROXIMATELY 1/4" OFF SPINNER.
- 9 - WHEN INSTALLING THE BURNER, MAKE SURE THE CHOKE END IS FLUSH WITH THE INSIDE OF THE COMBUSTION CHAMBER, OR OTHERWISE SPECIFIED BY THE MANUFACTURER.
- 10 - IF A NARROW FLAME IS DESIRED, THE SOLID CONE NOZZLE SHOULD BE USED. IF A SHORT FLAME IS DESIRED, A HOLLOW CONE NOZZLE SHOULD BE USED.
- 11 - IN MAKING FINAL ANALYSIS, USE SMOKE GUN TO DETERMINE # SMOKE, TAKE CO<sub>2</sub> AND DRAFT READINGS AND STACK TEMPERATURE.
- 12 - BEFORE LEAVING, CYCLE BURNER FROM STAIRWAY SWITCH TO INSURE SHUT DOWN AND START UP.

AUTOMATIC BURNER CORPORATION, CHICAGO, ILLINOIS 60612

G. B. C.

MODEL S, S-1 AND S-2 RATING CHART  
115 VOLT/60 CYCLE

RATING	Static Disc	Standard	Choke Filler	Support and Clamp	Spinner Assembly	Air Silencer	Capacity Range
* B	13049-2-3/8" Sheared Solid	12963-2" Taper	12985-2" Taper	13047 13051	SA-10856-2"	12901	.50 - .75
* B-I	13049-2-3/4" Sheared Solid	13116-2-1/16" Stainless Stl.	----	13047-G 13051	SA-10856-2"	12901	.50 - .75
* B1-C	13049-2-3/4" Sheared Solid	SA-13266-2-1/16"	----	13047 13051	SA-10856-2"	12901	.50 - .85
* B2	13049-2-3/4" Sheared Solid	12963-2" Taper	12985-2" Taper	13047G 13051	SA-12957-3"	12901	.50 - .75
** B3	13049-2-3/8" Sheared Solid	12963-2" Taper	12985-2" Taper	12956 13046	SA-12957-3"	12901	.50 - .85
* B4	13049-2-3/4" Sheared Solid		SA-13266-2"	13047G 13051	SA-12957-3"	12901	.50 - .85
* C	13049-2-3/8" Sheared Solid	12963-2-1/8" Taper	12985-2-1/8" Taper	13047 13051	SA-10856-2"	12901	.50 - .85
* C-1	13049-2-3/4" Sheared Solid	12963-2-1/8" Taper	12985-2-1/8" Taper	13047 13051	SA-12957-3"	12901	.50 - .75
* C-2	None	12963-2-1/8" Taper	12985-2-1/8" Taper	13047 13051	SA-10856-2"	None	.50 - .75
** C2-A	None	12963-2-1/8" Taper	----	12956 13046	SA-12957-3"	12901	.50 - .75
* C2-S	None	----	SA-13266-2-1/8	13047G 13051	SA-12957-3"	None	.50 - .85
* C-7	13192-2-3/4" Sheared Solid 13437-2-7/8" Spinner Disc	----	SA-13412-2-1/16	13047 13051	SA-12957-3"	12901	.50 - 1.00
** D	None	12952-2-1/4" Straight	12974-2-1/4" Straight	12956 13046	SA-12957-3"	12901	.75 - 1.00
* D-I	None	12952-2-1/4" Straight	12974-2-1/4" Straight	13047 13051	SA-10856-2"	12901	.75 - 1.00
* D-2	13049-2-3/8" Sheared Solid	12952-2-1/4" Straight	12974-2-1/4" Straight	13047 13051	SA-10856-2"	12901	.75 - 1.00
* D-3	13049-2-3/8" Sheared Solid	12952-2-1/4" Straight	12974-2-1/4" Straight	13047 13051	SA-10856-2"	12988	1.00 - 1.25
* D-4	None	12952-2-1/4" Straight	12974-2-1/4" Straight	13047 13051	SA-10856-2"	12988	1.00 - 1.25
* DD-4-S	None		SA-13411-2-1/4	13047-G 13051	SA-12957-3"	12988	1.00 - 1.25
** D-5	None	12952-2-1/4" Straight	12974-2-1/4" Straight	12956 13046	SA-12957-3"	12988	.75 - 1.00
* D-6	13049-2-3/4" Sheared Solid	12952-2-1/4" Straight	12974-2-1/4" Straight	13047 13051	SA-12957-3"	12988	1.00 - 1.25
** E	None	13113-2-1/2" Straight	13112-2-1/2" Straight	12956 13046	SA-12957-3"	12988	1.00 - 1.25
* E-I	None	13113-2-1/2" Straight	13112-2-1/2" Straight	13047 13051	SA-10856-2"	12988	1.00 - 1.25
** E-3	None	13113-2-1/2" Straight	13112-2-1/2" Straight	12956 13046	SA-12957-3"	12988	1.00 - 1.25
** G	None	13113-2-3/4" Straight	113112-2-3/4" Straight	12956 13046	SA-12957-3"	12988	1.25 - 1.50
* CC2-1	None	----	12985-2" Taper	13047G 13051	SA-12957-3"	None	.65 - 1.00
* C-3	13049-2-3/4" Sheared Solid	12963-2-1/8" Taper	12985-2-1/8" Taper	13047 13051	SA-12957-3"	12988	.65 - 1.00
* CC3-1	13049-2-3/4" Sheared Solid	----	12985-2-1/8" Taper	13047 13051	SA-12957-3"	12988	.75 - 1.00
** C-4	None	12963-2-1/8" Taper	12985-2-1/8" Taper	12956 13046	SA-12957-3"	12901	.65 - 1.00
* C5-S	13049-2-3/4" Sheared Solid	----	SA-13412-2-1/8	13047G 13051	SA-12957-3"	None	.65 - 1.00
* C-6	13437-2-7/8" Spinner Disc.	----	SA-13412-2-1/16	13047G 13051	SA-12957-3"	12901	.50 - .85
* C-6A	13437-2-7/8" Spinner Disc.	----	SA-13412-2-1/8	13047 13051	SA-12957-3"	12901	.50 - .85
* G-I	None	13113-2-3/4" Straight	13112-2-3/4" Straight	13047 13051	SA-10856-2"	12988	1.25 - 1.50
* K	13049-2-3/8" Sheared Solid	10738-1-7/8" Straight	10738-1-7/8" Straight w/10149 Ring	13047 13051	None	12988	.50 - .85
* K-1	None	----	10879-2-1/8"	13047 13051	None	12988	.75 - 1.35
* K-2	None	10115-2 Straight	10115-2" Straight w/10149 Ring	13047 13051	None	12901	.75 - 1.35
* K-3	None	----	10120-2" Straight w/10149 Ring	13047 13051	None	12988	.75 - 1.50

The standard burner is equipped with a 115 volt/60 cycle motor, single stage fuel unit, combination ignition/control (safety combustion) unit, fixed flange mounting and 5-7/16" air tube.

Optional components and air tube lengths available at extra cost are as follows: Two stage fuel unit (when available after completion of satisfactory field testing), adjustable flange mounting, pedestal mounting and air tube lengths up to 11-7/16".

\*Note: Maximum air tube length on ratings marked \* is 7-7/17".

\*\*Note: Maximum air tube length on ratings marked \*\* is 8-7/16".

Special Note: The standard 3-1/8" O.D. choke is used on all ratings identified by a single letter, such as "B", "B-1", "C" etc. The filler 4-1/8" O.D. choke is used on all ratings identified by double letter, such as "BB", "BB-1", "CC", etc.

All of the above capacities are based on operation at sea level, with 115 volt/60 cycle current, 3450 RPM motor, and pump pressure set at 100 p.s.i. Capacity of each rating is applicable up to 1000 feet of altitude. For each additional 1000 feet of altitude, each rating is reduced by 5%. All specifications are subject to change without notice.

## INSTALLATION POINTERS

### OIL TANKS AND PIPING:

Single Line System: This type of installation is used where the tank is above the burner and gravity oil feed to the burner is permitted. It is not recommended where it is necessary to lift the oil. The bypass plug should be removed from the fuel unit. The oil outlet should be taken from the bottom of the tank and the line should have a gradual slope downward of approximately 1/2" per foot or more to a point directly below where it is connected to the burner. Sloping the line will prevent the formation of air pockets and the collection of air bubbles which might interfere with the proper operation of the burner. A shut off valve should be installed in the line. See pump manufacturers installation manual for additional information.

Two Line System: If an oil tank is buried or if suction line is long, it is recommended that a two line (suction and return) installation be installed. Insert the bypass plug per pump manufacturer's instructions and turn tight. Specific information on piping, fuel unit connections, lift capabilities and tank installations are provided in the instructions of the fuel unit manufacturer.

Pressure Test for Buried Oil Lines: It is important that buried oil lines be thoroughly tested for leaks before being covered.

DRAFT REGULATORS: Use a draft regulator on all installations, except where the equipment manufacturer otherwise specifies. Install the draft regulator as close as possible to the chimney. If the smoke pipe is too short to make a satisfactory installation, the draft regulator may be installed in the chimney either above or below the smoke pipe entry into the chimney. There is a considerable difference of opinion as to whether or not the draft regulator may be installed in the chimney; however, many satisfactory installations have been made with the draft regulator installed in the chimney either above or below the smoke pipe.

CHIMNEY: Be sure that the chimney is sufficiently high and large enough to meet specifications of the heating unit installed. It is best that only the heating unit be connected to the chimney, for other units connected to the same flue can cause trouble. The chimney should be clean.

FILTER: A good filter should be installed in the oil supply line on every installation. The filter body should be thoroughly cleaned and a new filter cartridge installed every year.

AIR FOR COMBUSTION: Do not install burners in rooms with insufficient air to support combustion. Occasionally, it is necessary to install windows or cut holes in a door to these rooms to obtain sufficient air. An opening at least twice the area of the smoke pipe is necessary.

COMBUSTION CHAMBER: If the combustion chamber is not furnished with the heating unit, it should be constructed to the proper dimensions for heating load as shown in Nozzle and Combustion Chamber Data Chart. Slight variations can be made in the dimensions when required. Some boilers are fired less chambers -- see manufacturer's requirements.

WIRING: All wiring must be done in accordance with the National Electric Code and local ordinances. In many localities, No. 14 wire run in rigid conduit must be used, but, where permissible, two and three wire BX is recommended, particularly for connections of the controls and burner motor. A cut-off switch for the main 115 volt line to the burner should be mounted on a fire-proof wall in an accessible place close to the burner.

## BURNER INSTALLATION

a. Controls: The safety combustion and ignition unit will be factory mounted and wired on the burner if capacitor discharge type. If a standard primary is used it will be mounted next to the 10,000 volt mid-point ground transformer.

The high limit control must be connected to break the hot line ahead of the safety combustion control. The hot and ground lines are to be connected to the appropriate wires in the junction box in the blower housing.

b. Setting the Burner: The center line of the burner air tube should coincide with the center line of the heating plant. The burner should level across the top of the motor and fuel unit. The air tube should slant slightly downward (2 degrees to 4 degrees) toward the combustion chamber. The end of the burner air tube should be flush with the inside surface of the front wall of the combustion chamber. Be sure that it does not extend into the combustion chamber. For distance of the air tube above the floor of the combustion chamber, refer to Nozzle and Combustion Chamber Data Chart. If combustion chamber is already installed in heater, use opening provided for burner tube. Space between burner tube and refractory should be sealed with asbestos or other insulating material.

c. Installing Nozzle: Make sure that the proper size nozzle for the installation has been selected. Loosen the lock screw indicated on drawing shown on page 12 and slide the control back until the front edge of the mounting plate clears the retainer. Swing the control back. Remove inner assembly and install nozzle in nozzle adaptor.

d. Oil Motor: Oil motor with one or two drops of good motor oil. Twice yearly.

e. To Put The Burner Under Fire: Install a pressure gauge. See that all controls are set in normal starting position. With the heating plant door open and with the air inlet on burner about half open, close the main cut-out switch. Do not stand in front of open door. The burner should start, ignite and burn. Then close the heating plant door. After you have obtained a flame, the oil pressure should be checked and adjusted to a pressure of 100 lbs. (if necessary). This is the normal operating pressure. The air inlet can then be adjusted so that the flame is a clean yellow with slightly smoky tips. It may be necessary to readjust the air inlet after the burner is running twenty minutes or more in order to obtain the proper fire with a hot heating plant. After final adjustment tighten lock screw on air inlet, let unit cool, and start burner once again, in order to be sure burner operates properly on a cold start. Remove pressure gauge and install bleeder fitting.

f. Using Instruments to Set Fire: It is far better to use combustion test instruments when adjusting a flame. We recommend setting the burner to a  $\text{CO}_2$  reading of 10% and a smoke reading no darker than #2. When using instruments to obtain this, adjust the air inlet on burner for minimum air for clean combustion while combustion chamber is hot. Adjust the draft regulator so that there is .02" draft over the fire or as equipment manufacturers recommend. Seal all air leaks around combustion chamber, heater joints, and stack. Take your readings and adjust air so that a minimum of 10%  $\text{CO}_2$  is obtained with the least smoke possible. When using instruments in setting a fire, do not lean towards getting a greater percentage of  $\text{CO}_2$  than a clean fire will give. It is more important to keep the inside of the heating plant clean than to receive a higher  $\text{CO}_2$ . A smoke scale reading of No. 2 may produce some sooting in certain types of units, but rarely will require cleaning more than once a year. A No. 1 reading is preferable to No. 2, as it will produce less sooting and little, if any, increase in flue gas temperature.

g. Nozzle (oil input) Variations: Several nozzles of different manufacture, angles and types of spray should be carried by installer to determine the most suitable for the particular application. Fuel oils vary greatly. Because of this, nozzles will not always deliver the gallonage per hour or angle of spray that is stamped on them. In addition, it has been found that, in certain areas, due to local conditions, nozzles other than those furnished as original equipment give better performance due to the types of oil being delivered.

h. Nozzle Specifications: The hollow type of spray is recommended for the small capacity nozzles and the solid spray types for the larger sizes (refer to Rating Table). Sixty degree spray angle nozzles are usually specified; however, these may vary from 60 to 90 degrees, depending on the design of the combustion chambers and units in which the nozzles are to be fired. The delivery of oil from the nozzles may differ from the marked GPH and spray angle due to variations in the temperature and viscosity of the oil.

i. Draft: Check to be sure that there is sufficient draft for the proper burning of oil. If unit is pressure type, see manufacturer's requirements. At least .02" of draft over the fire is necessary or as equipment manufacturers specify. The draft in the stack also should be checked to determine whether or not there is an abnormally high draft loss through the heating plant for this may cause back pressure (draft) resulting in oil fumes in the building and/or pulsating when the burner starts and stops. It may also result in low  $\text{CO}_2$ , or may cause an excess deposit of soot in the flues of the heating plant in the smoke pipe. High draft loss may also be caused by overfiring or too much excess air. With a draft gauge reading of .02" over the fire, the draft reading in the stack should be .03" to .04" for low inputs (up to 1.25 GPH). These figures are average and do not apply to all heating plants. If in doubt as to some particular heating plant, contact the manufacturer for detailed information on the draft loss of this unit at specified firing rates.

If there is back draft or down draft, do not install the burner until this situation is corrected. Back pressure (back draft or down draft) may also be caused by the chimney being lower than surrounding objects, such as buildings, hills, trees, rooftops, etc. It may also be caused by an exhaust fan in the building where there is too small an air intake in the heater room. The air intake in this room should be of sufficient size so that there is no change in the draft reading in the stack with the exhaust fan running or not running, and at least twice the area of the smoke pipe.

j. Conversion Installations: Clean heating unit thoroughly before starting burner installation and inspect for air leaks and other defects.

k. Inspection: After installation of the burner, check to see if there are any loose parts on the burner, controls or on the heating unit which might cause vibration. Check the operation of all electrical controls and inspect the installation carefully for oil leaks and other defects.

#### FLAME SHAPE ADJUSTMENT

In most combustion chambers the flame shape can be made long and narrow by moving the drawer assembly forward and short and wide by moving the drawer assembly back.

#### TEST FOR CADMIUM CELL RESISTANCE

Cadmium cell resistance must be in accordance with the control manufacturer's requirements.

#### NOZZLE SPECIFICATIONS:

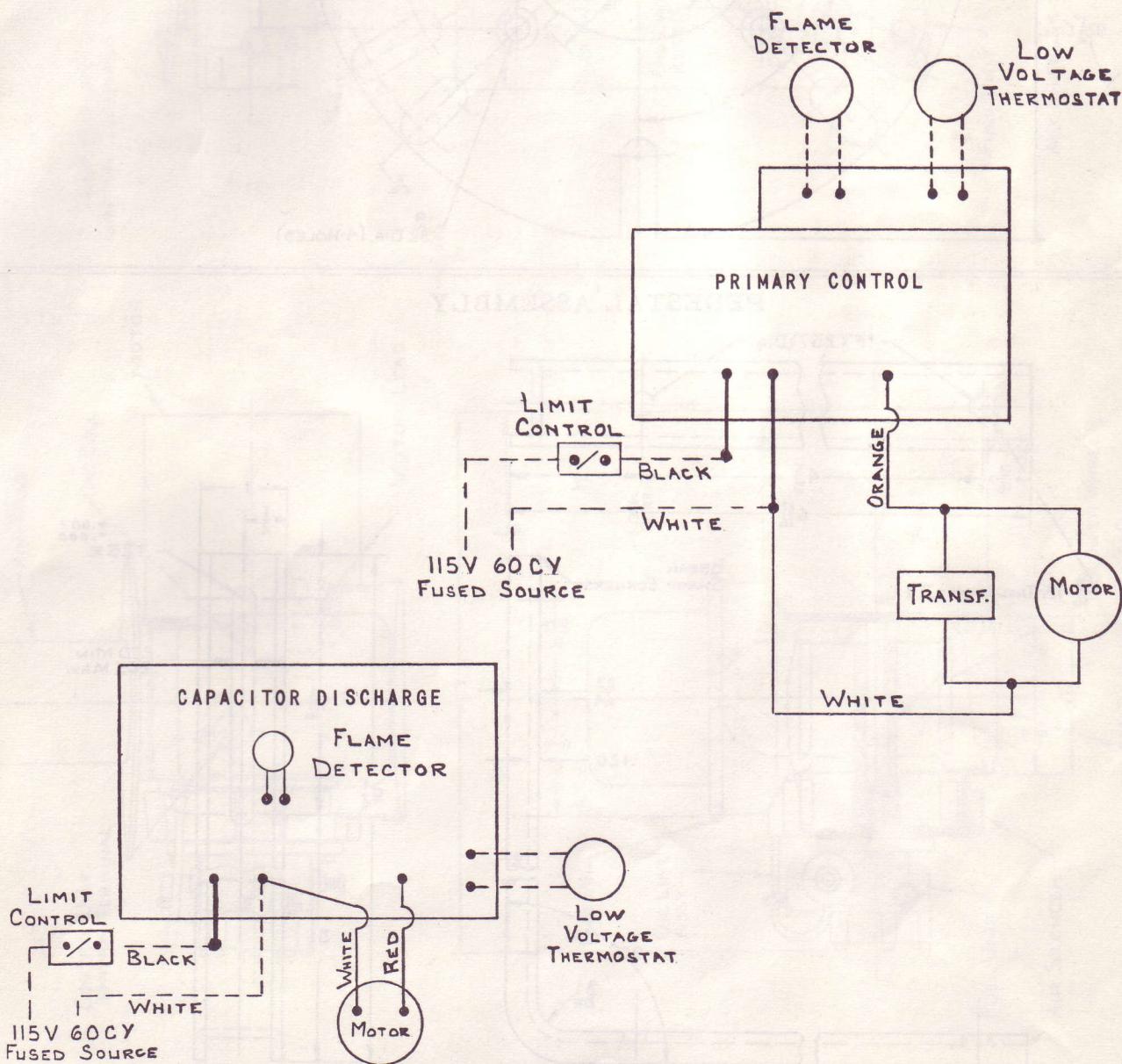
The hollow type of spray is recommended for the small capacity nozzle and the solid spray types for the larger sizes ( refer to Rating Tables ). Sixty degree spray angle nozzles are usually specified; however, these may vary from 60 to 80 degrees, depending on the design of the combustion chamber and the units in which the nozzles are to be fired. The delivery of oil from the nozzles may differ from the marked GPH and spray angle due to variations in the temperature and viscosity of the oil. Pump pressure also has a bearing on the delivery as shown in the following table:

## Nozzle And Combustion Chamber Data

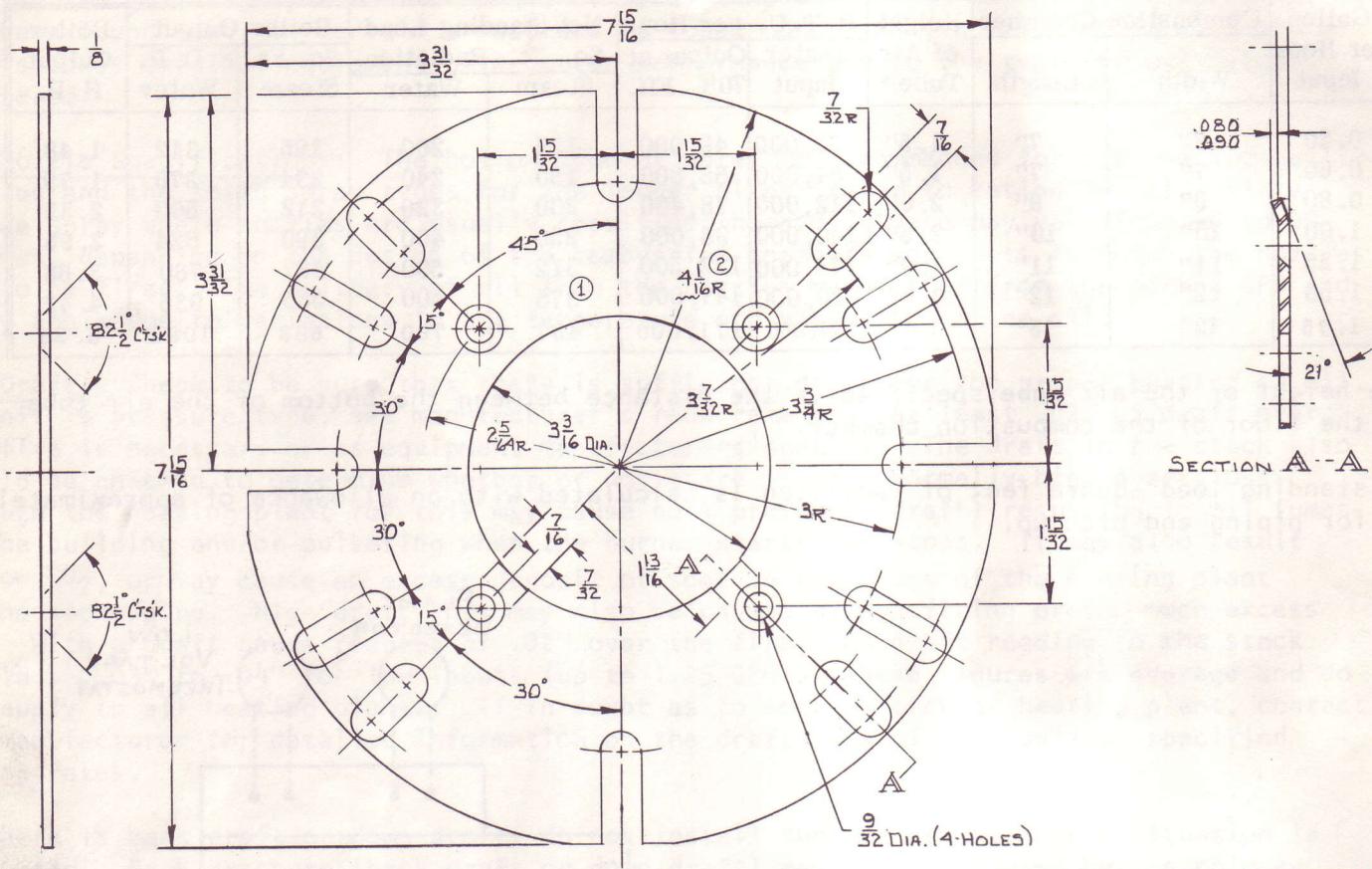
Gallon per Hour Input	Combustion Chamber		Height of Air Tube *	B. T. U. per Hour		Net Standing Load		Boiler Output		Boiler Output H. P.
	Width	Length		Heater Input	Output at 70% Eff.	Sq. Ft. Radiation	Steam	Water	Sq. Ft.	
0.50	7"	7"	1.5"	70,000	49,000	125	200	195	312	1.48
0.60	7"	7"	1.5"	84,000	58,800	150	240	234	375	1.75
0.80	9"	9"	2.0"	112,000	78,400	200	320	312	500	2.35
1.00	10"	10"	2.5"	140,000	98,000	250	400	390	624	2.95
1.25	11"	11"	3.0"	175,000	122,500	312	500	487	780	3.68
1.50	12"	12"	3.0"	210,000	147,000	375	600	585	936	4.42
1.75	12"	15"	3.0"	240,000	171,000	437	700	683	1092	5.25

\*The height of the air tube specified is the distance between the bottom of the air tube and the floor of the combustion chamber.

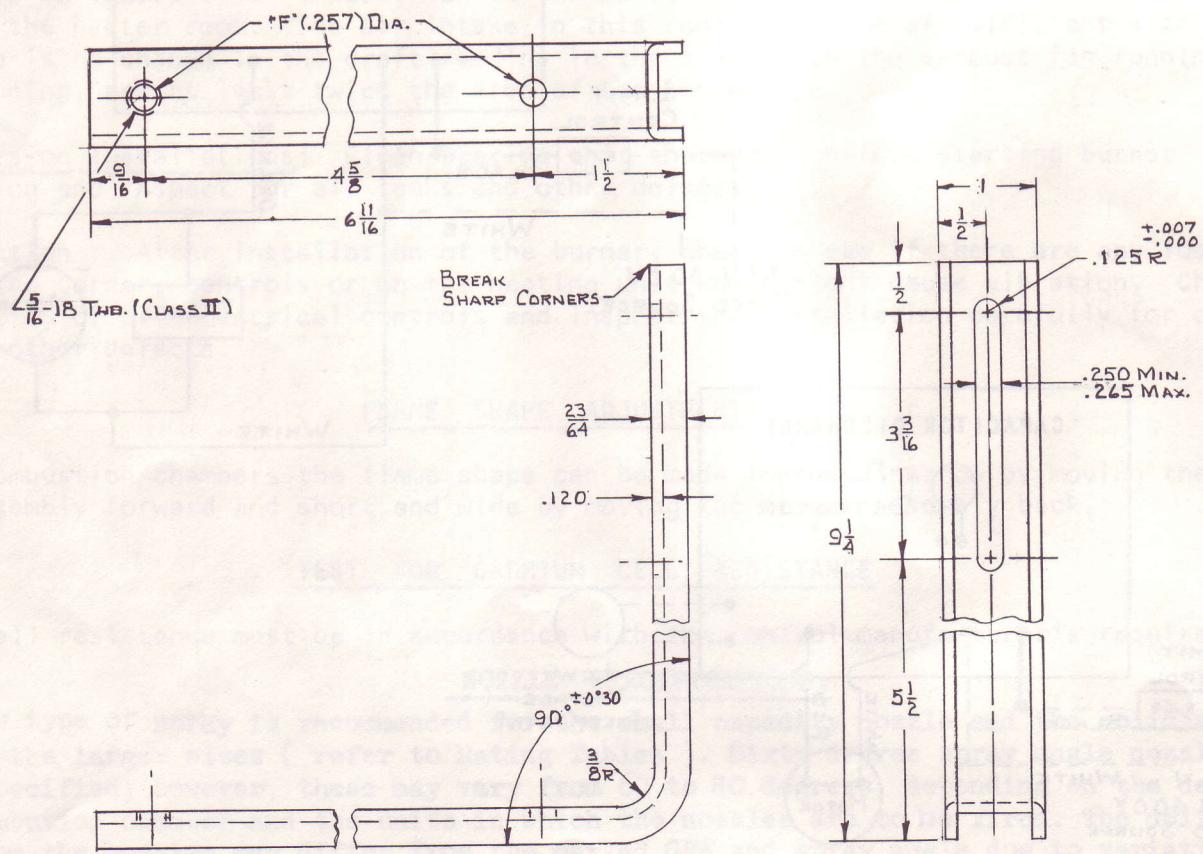
Net standing load square feet of radiation is calculated with an allowance of approximately 50% for piping and pick-up.

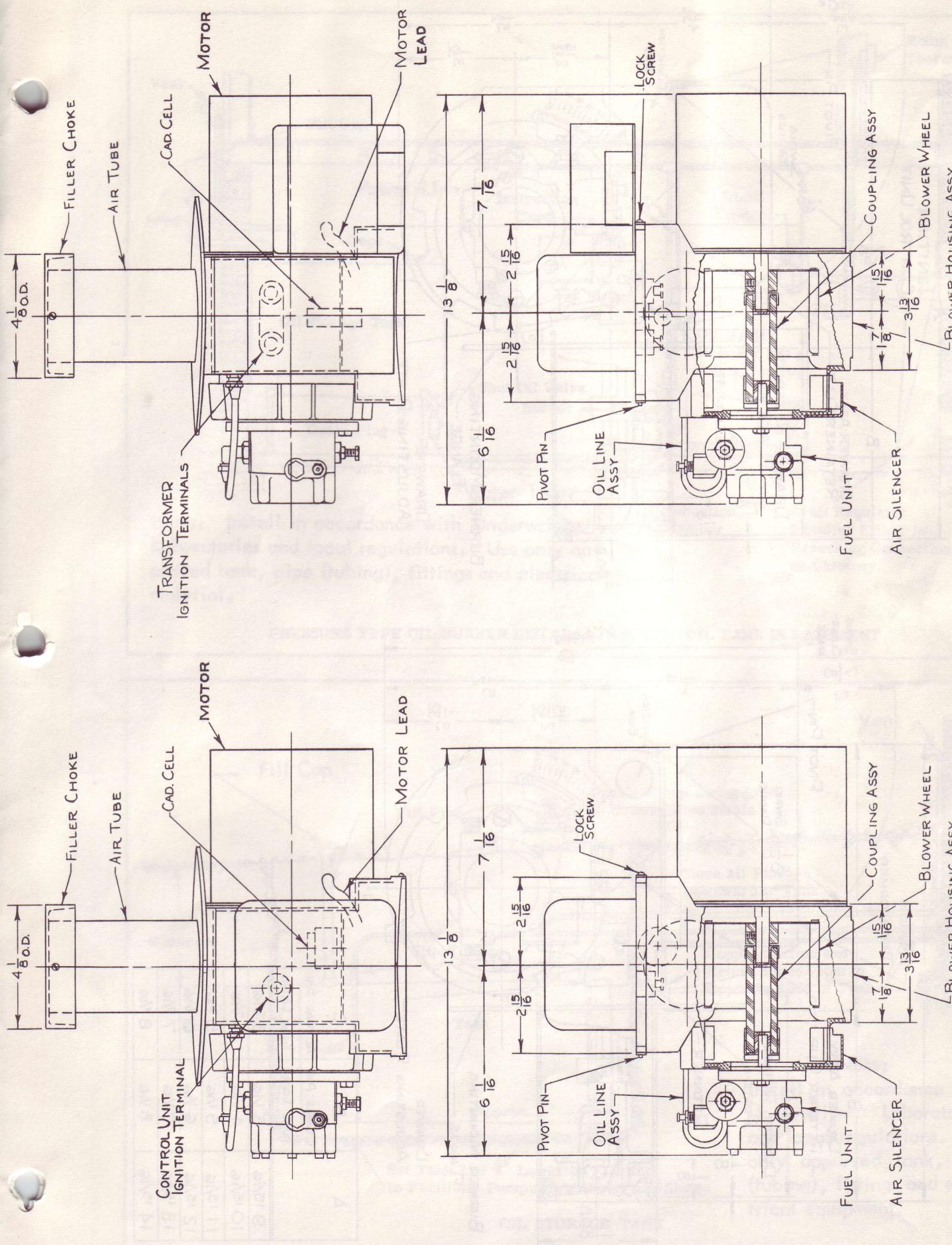


## BURNER MOUNTING FLANGE



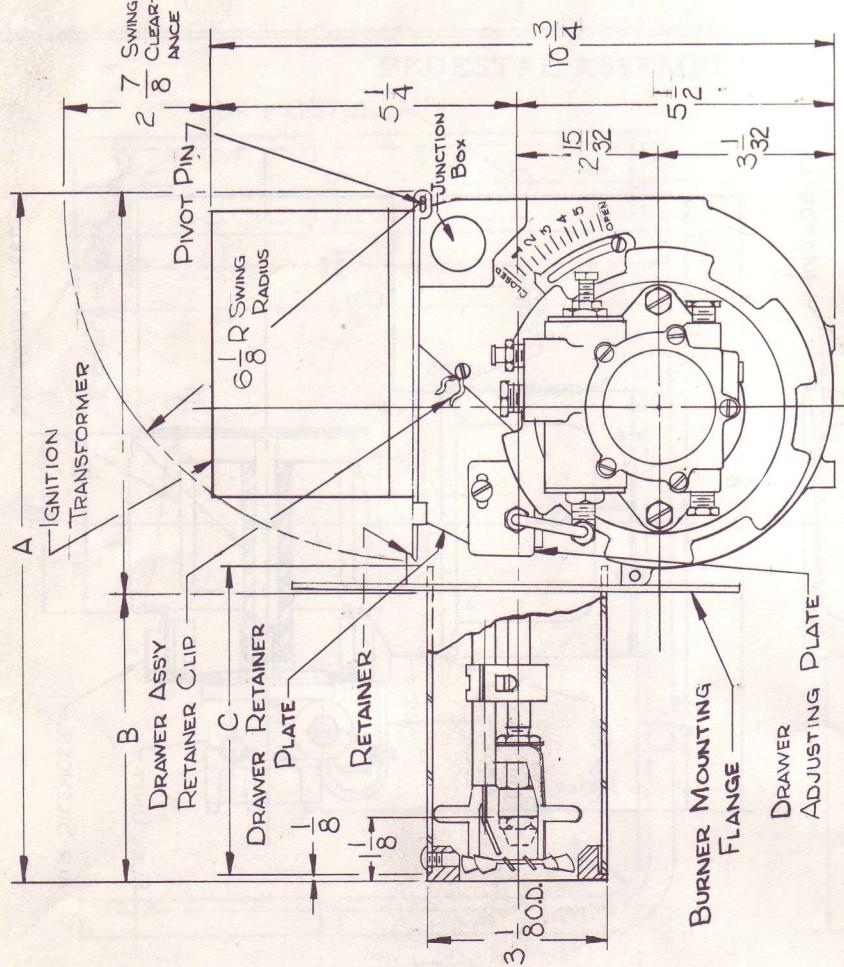
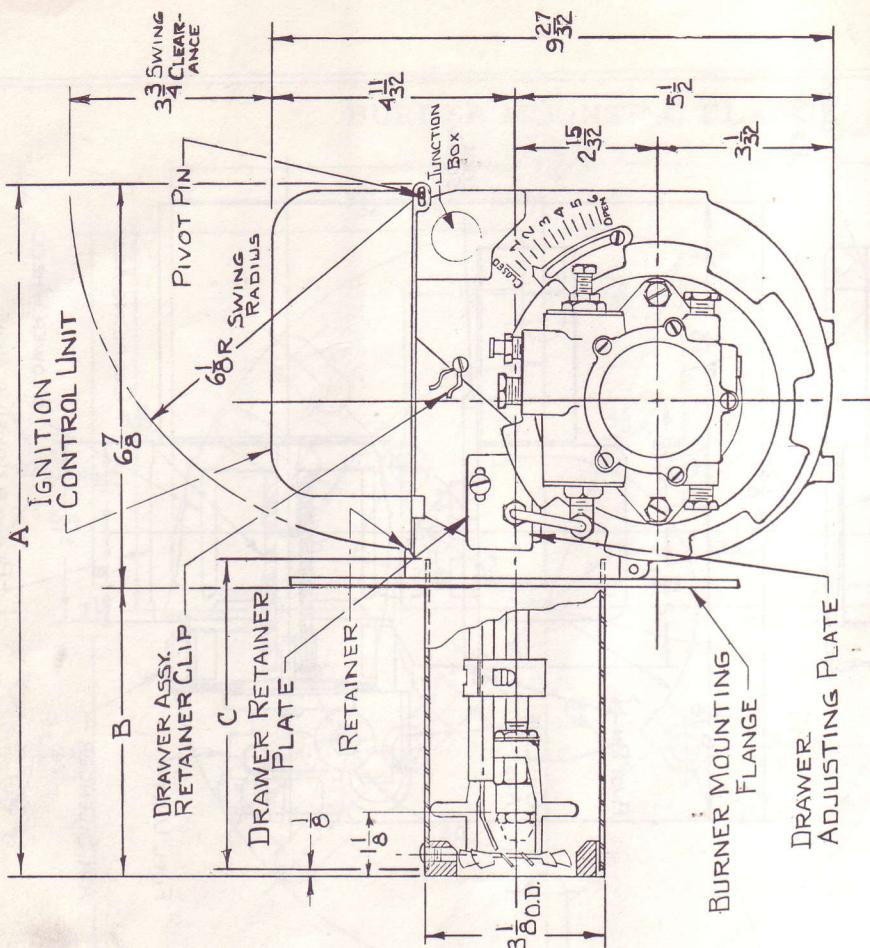
## PEDESTAL ASSEMBLY





CAPACITOR DISCHARGE IGNITION CONTROL COMBINATION

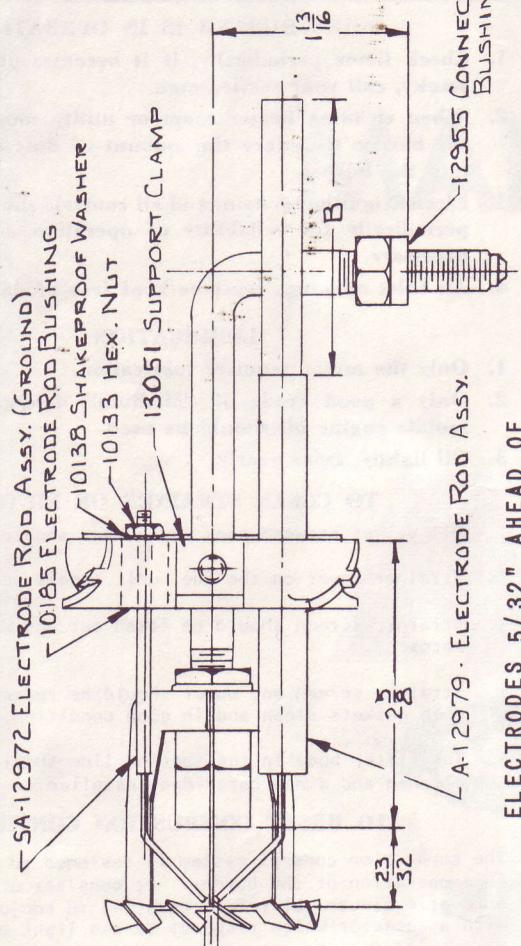
10,000 MID POINT GROUND IGNITION TRANSFORMER  
AND CAD CELL PRIMARY CONTROL



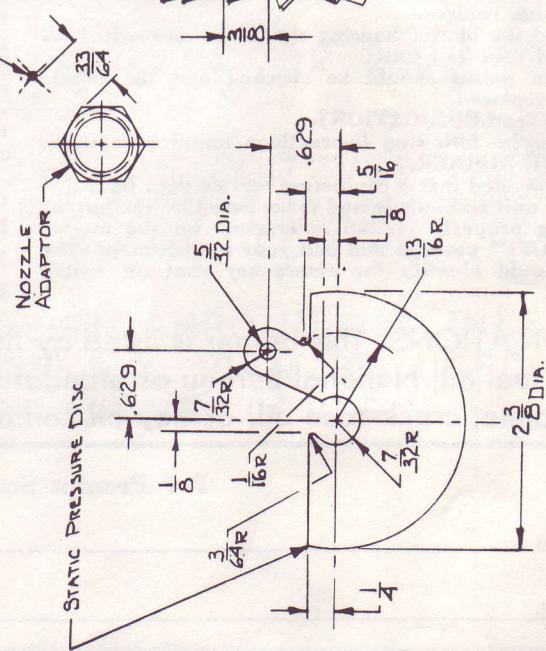
A	B	C
	USABLE AIR TUBE LENGTH	ACTUAL AIR TUBE LENGTH
9 15/16	3 1/16	3 7/16
10 15/16	4 1/16	4 7/16
11 15/16	5 1/16	5 7/16
12 15/16	6 1/16	6 7/16
13 15/16	7 1/16	7 7/16
14 15/16	8 1/16	8 7/16

## DRAWER ASSEMBLY FOR B, C, BB & CC RATINGS

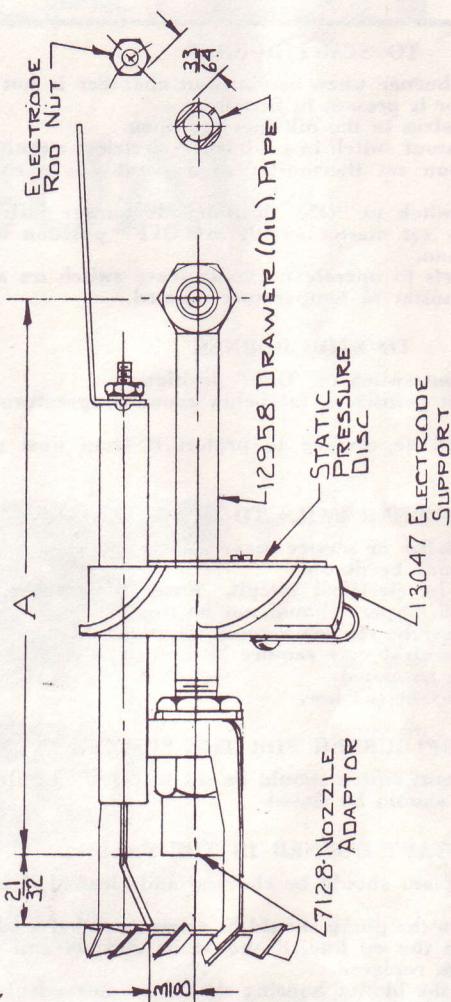
ACTUAL AIR TUBE LENGTH	A OIL PIPE ADAPTER	B CONTACT SPRING LENGTH	SEE NOTE
$3\frac{7}{16}$	$3\frac{1}{16}$	$1\frac{1}{2}$	
$4\frac{7}{16}$	$4\frac{1}{16}$	$2\frac{1}{2}$	
$5\frac{7}{16}$	$5\frac{1}{16}$		
$6\frac{7}{16}$	$6\frac{1}{16}$	$3\frac{1}{2}$	
$7\frac{7}{16}$	$7\frac{1}{16}$	$4\frac{1}{2}$	



NOTE: SPECIAL CONTACT SPRING FOR  
3/16" GTH DRAWER ASSEMBLY



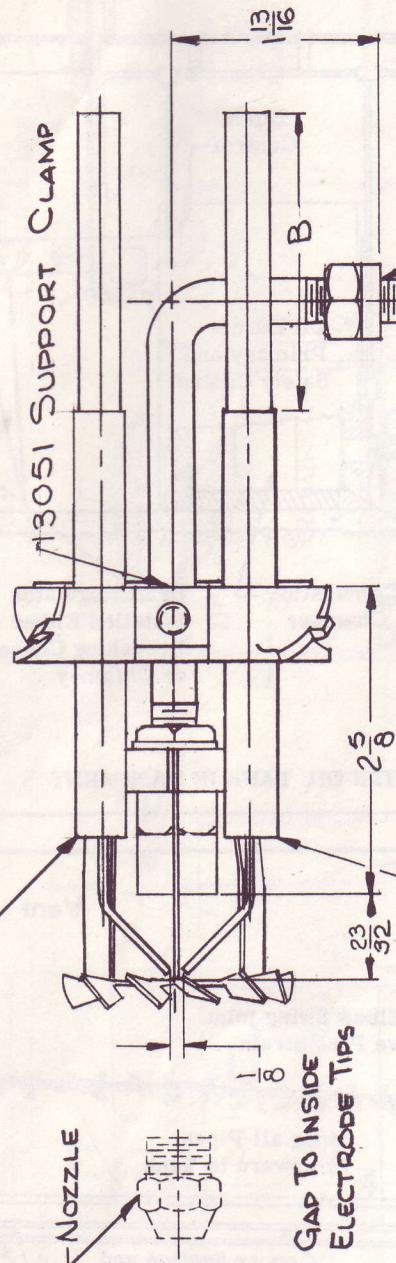
## ELECTRODES 5/32" AHEAD OF THE NOZZLE



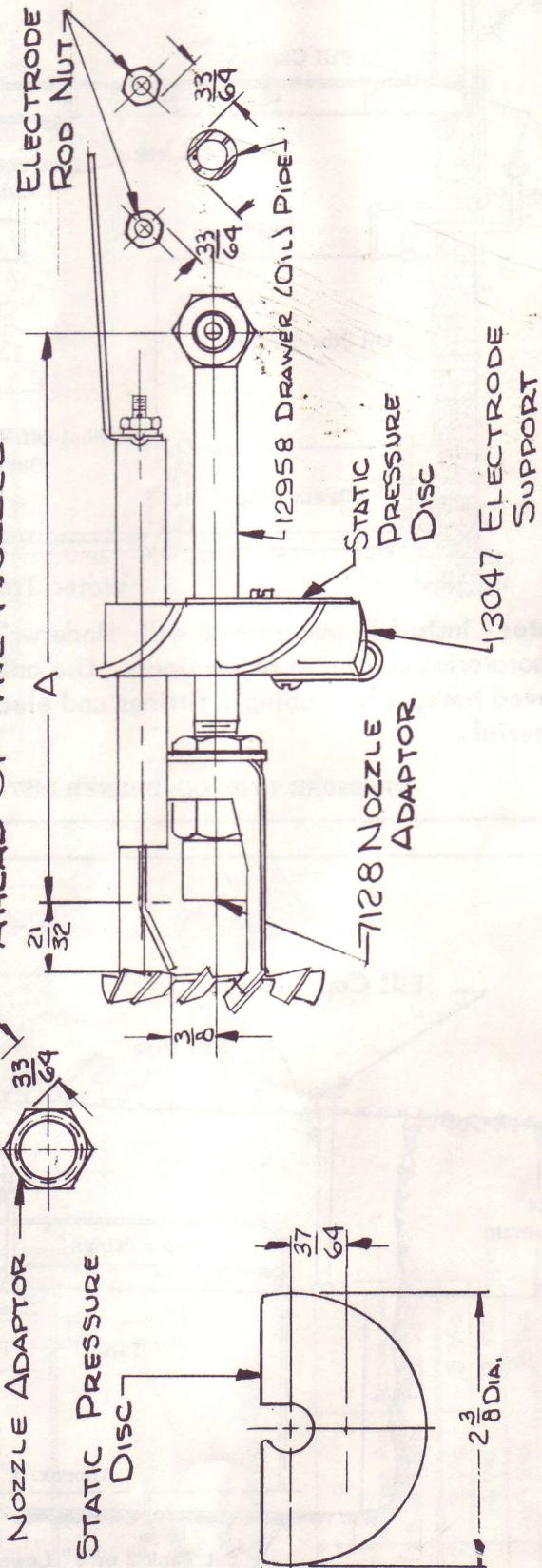
## CONNECTOR BUSHING

ACTUAL AIR TUBE LENGTH	A OIL PIPE INCL. NOZZLE ADAPTOR	B CONTACT SPRING LENGTH
3 7/16	3 1/16	1 1/2
4 7/16	4 1/16	1 1/2
5 7/16	5 1/16	2 1/2
6 7/16	6 1/16	3 1/2
7 7/16	7 1/16	4 1/2

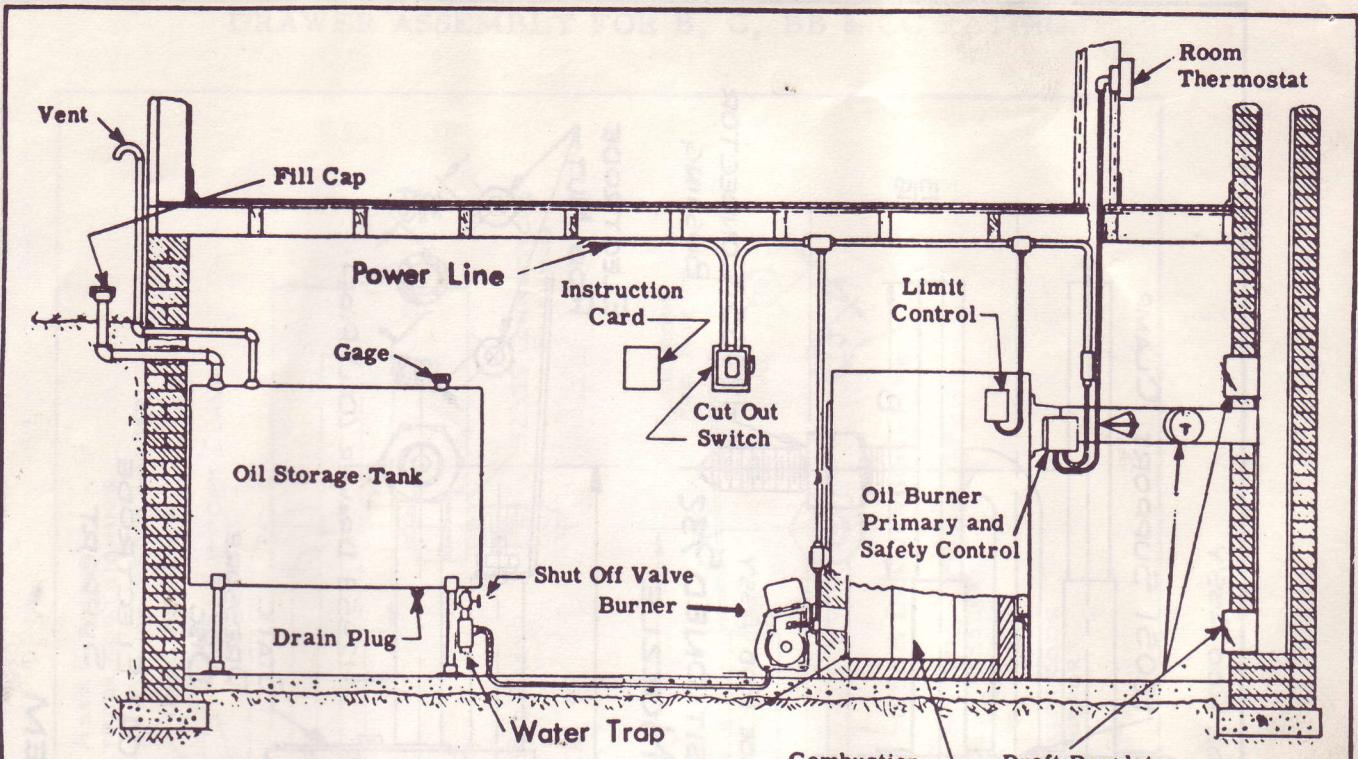
SA12979-R ELECTRODE ROD ASSY



SA12979-L ELECTRODE ROD ASSY  
ELECTRODES POSITIONED 5/32  
AHEAD OF THE NOZZLE

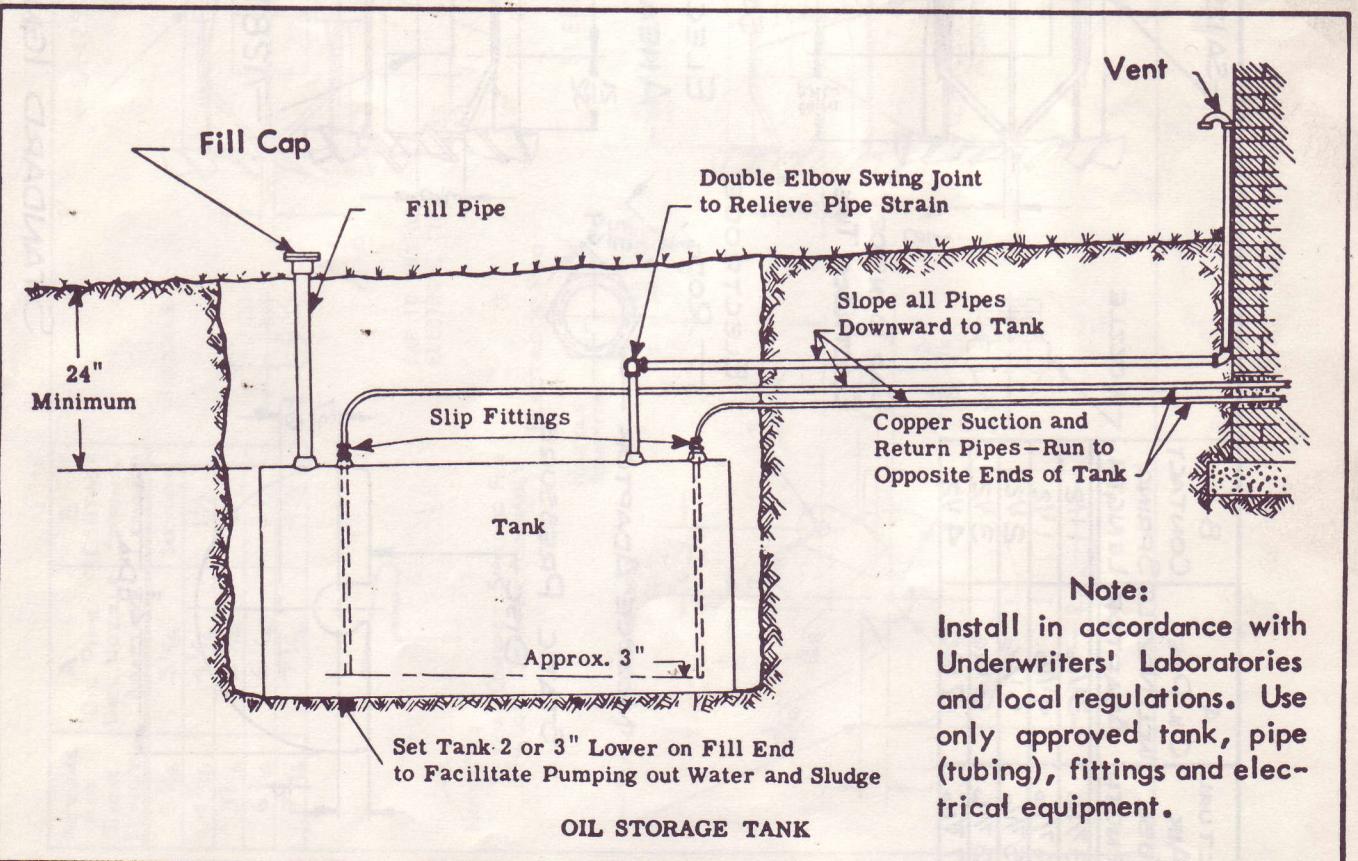


STANDARD IGNITION SYSTEM



Note: Install in accordance with Underwriters' Laboratories and local regulations. Use only approved tank, pipe (tubing), fittings and electrical material.

PRESSURE TYPE OIL BURNER INSTALLATION WITH OIL TANK IN BASEMENT



Note:  
Install in accordance with Underwriters' Laboratories and local regulations. Use only approved tank, pipe (tubing), fittings and electrical equipment.

OIL STORAGE TANK

## HANG NEAR BURNER

# Operating Instructions

### TO START BURNER

1. Do not start burner when combustion chamber is hot or when oil vapor is present in furnace.
2. See that all valves in the oil lines are open.
3. With main cutout switch in oil burner electrical circuit in "OFF" position set thermostat at a point above room temperature.
4. Set electric switch to "ON" position. If burner fails to start instantly set master switch to "OFF" position and call service man.
5. If burner starts to operate normally leave switch on and RESET thermostat to temperature desired.

### TO STOP BURNER

1. Set main cutout switch to "OFF" position.
2. Set thermostat pointer as far below room temperature as possible.
3. Burner should be covered to protect it from dust and dampness.

### IF BURNER FAILS TO OPERATE

Call your installer or service man.

The trouble may be due to:

1. Blown fuses in electrical circuit. Fuses of greater capacity than 15 ampere should not be used.
2. Thermostat may be set below room temperature.
3. Combustion control may require "re-setting".
4. Oil valve may be closed.
5. Oil supply may be too low.

### TO STOP BURNER FOR THE SUMMER

1. The main cutout switch should be set to "OFF" position.
2. All oil valves should be closed.

### TO START BURNER IN THE FALL

1. The heating plant should be checked and cleaned if necessary.
2. The strainer in the pump should be cleaned, and if a filter is installed in the oil line, it should be cleaned and the filter cartridge replaced.
3. The fan and the blower housing should be cleaned of all accumulated dust and lint.
4. The ignition points should be checked and the nozzle cleaned or replaced.
5. Oil motor (See LUBRICATION).
6. Start burner by following instructions under paragraph, "TO START BURNER."
7. It is recommended that a competent service man be called to clean the unit and burner and make sure that the burner is operating properly. In an emergency set the master switch to "OFF" position and call your service man. The installer should identify the emergency shut off switch and valves.

**FUEL SPECIFICATIONS:** This burner is listed by the Underwriters' Laboratories, Inc., for use with Nos. 1 or 2 fuel oil, National Bureau of Standards, Commercial Standard No. "CS-12-48". Do not use gasoline, crank-case oil, or any oil containing gasoline.

For Prompt Service, Phone

Dealer's Name \_\_\_\_\_

Address \_\_\_\_\_

Telephone No. \_\_\_\_\_ Date Installed \_\_\_\_\_

### WHEN BURNER IS IN OPERATION

1. Check flame periodically, if it becomes out of shape or smoky, call your service man.
2. When cleaning heater room or utility room, always stop the burner to reduce the amount of dust and lint drawn into the burner.
3. Electric ignition system, and all controls should be checked periodically for reliability of operation and adjusted if necessary.
4. Air inlet openings must be kept free of dust and lint.

### LUBRICATION

1. Only the motor requires lubrication.
2. Only a good grade of "Medium" detergent free automobile engine oil should be used.
3. Oil lightly, twice yearly.

### TO CLEAN STRAINER OR FILTER

1. Oil valves between tank and burner should be shut.
2. Strainer cover on the fuel unit should be removed.
3. Strainer screen should be taken out and washed in kerosene.
4. Strainer screen and cover should be reassembled with gaskets clean and in good condition.
5. The filter body in the suction line should be cleaned and a new cartridge installed.

### TO RESET COMBUSTION CONTROL

The combustion control system is designed to insure safe operation of the burner. It consists of an automatic electrical relay operating in conjunction with a detector which responds to the light of the flame. If for any reason the burner fails to ignite promptly the control will stop the burner. After being shut off in this manner, the burner cannot be started until the control is reset.

The reset button projects through the cover of the control and must be pushed in to reset.

#### CAUTION:

Never burn garbage or refuse in heater.

Do not leave paper or rags around burner or heater.

DO NOT EXPERIMENT WITH YOUR BURNER.