

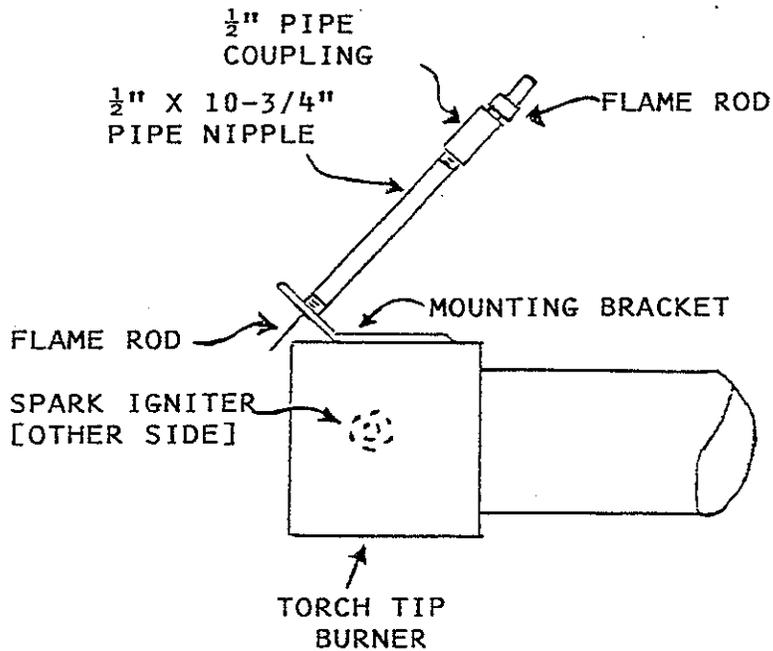


**JOHNSON POWER
BURNER
INSTRUCTION MANUAL**

MATERIAL LIST FOR NO. 345 POWER
BURNER WITH FLAME ROD SAFETY SYSTEM.

<u>SHIPPED</u>	<u>REQUIRED</u>	<u>ITEM</u>
_____	<u>1</u>	NO. 345 POWER BURNER, MOTOR WITH CENTRIFUGAL SWITCH, 2 SOLENOID VALVES AND TWO 2" TORCH TIPS [1 $\frac{1}{4}$ " BORE].
_____	<u>2</u>	TFM-1D BASE, CHASSIS AND COVER
_____	<u>2</u>	69ND1 FLAME ROD 12" LONG
_____	<u>2</u>	IGNITION TRANSFORMERS
_____	<u>2</u>	MOUNTING BRACKETS FOR FLAME RODS
_____	<u>2</u>	SPARK IGNITERS
_____	<u>4</u>	14 GA., GREEN COVERED GROUND LEADS, 10' LONG WITH TERMINAL CONNECTORS.
_____	<u>4</u>	IGNITION LEADS, 10' LONG, WITH TERMINAL CONNECTORS.
_____	<u>2</u>	1" PIPE CLAMPS
_____	<u>2</u>	1/2" X 10-3/4" PIPE NIPPLES
_____	<u>2</u>	1/2" PIPE COUPLINGS

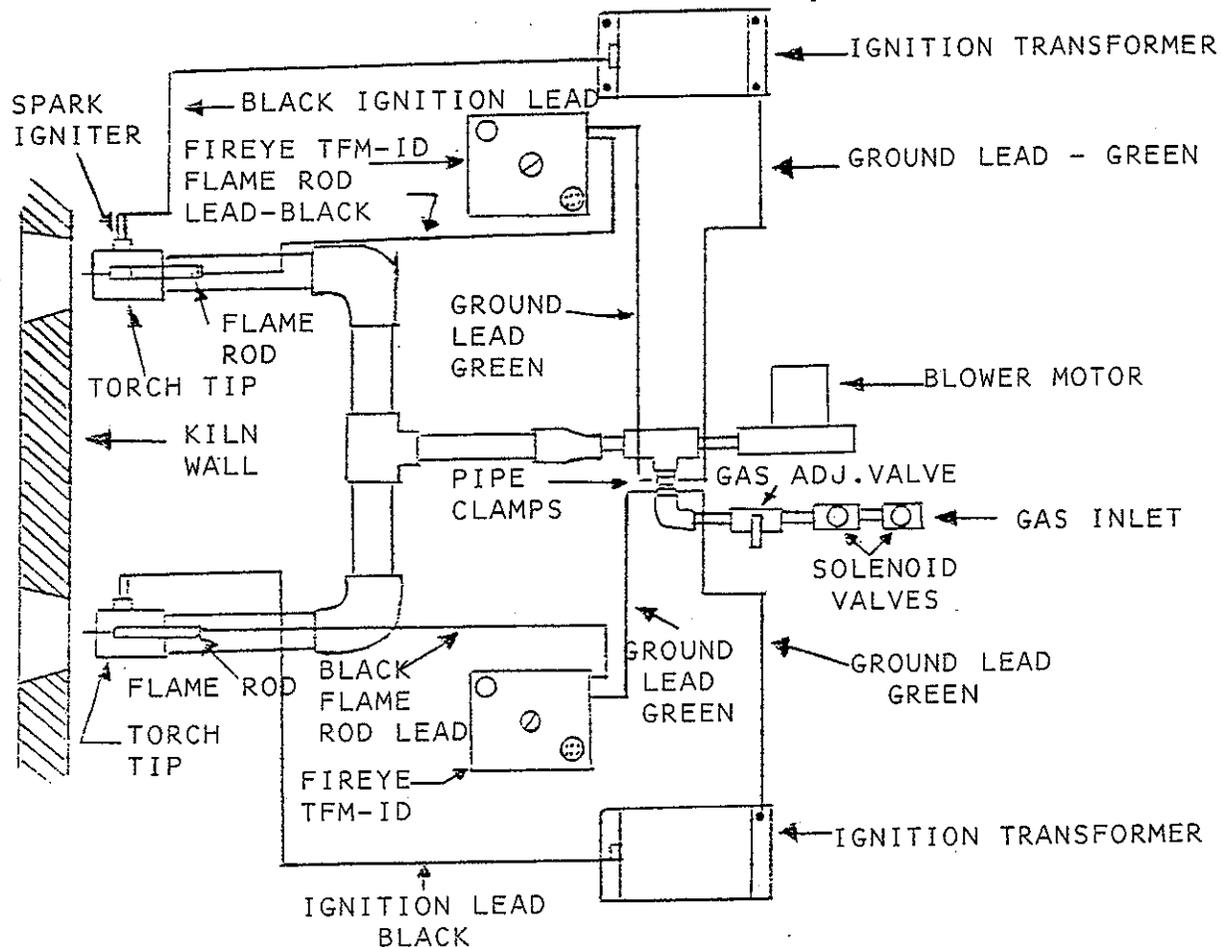
FORMS NO. 1172, 1170, 1173, 1171, 1599



FLAME ROD EXTENDS 1-1/8" BEYOND BRACKET.

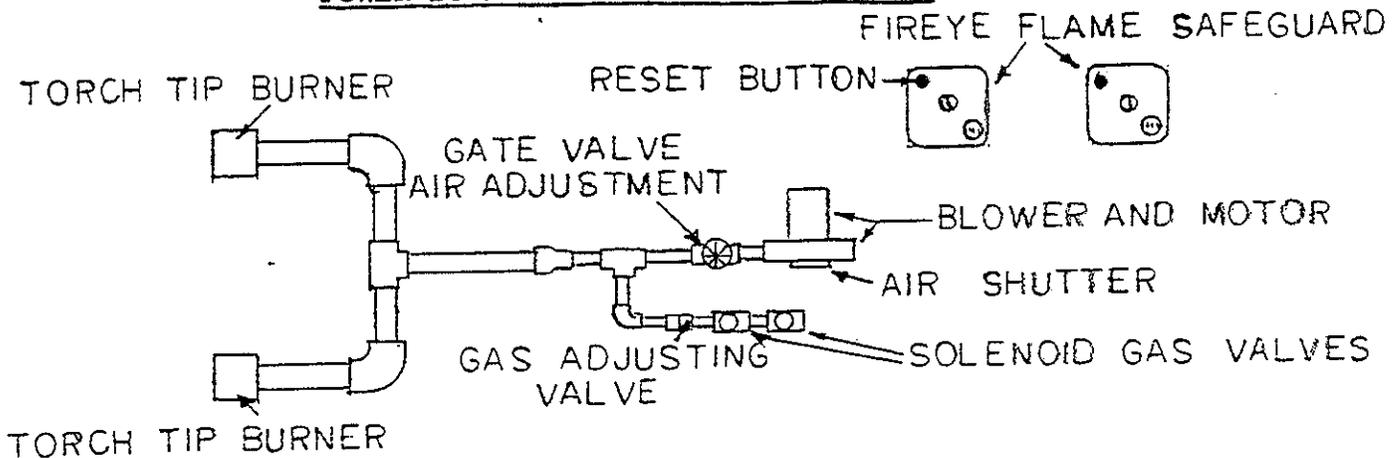
NOTE: FOR CERTAIN TYPE FLAMES YOU MAY WANT THE FLAME ROD TO EXTEND INTO THE FLAME MORE. FOR THIS, THE PIPE NIPPLE CAN BE SHORTENED AND/OR THE BRACKET CAN BE BENT.

INSTALLATION INSTRUCTIONS FOR #345 POWER BURNER
WITH FLAME ROD SAFETY



1. POSITION THE POWER BURNER WITH THE TORCH TIPS ABOUT TWO INCHES AWAY FROM THE OUTSIDE WALL OF THE KILN, SCREW THE SPARK IGNITERS INTO THE SIDE OF THE TORCH TIPS. SCREW THE PIPE NIPPLE, PIPE COUPLING AND FLAME ROD INTO THE MOUNTING BRACKET ON THE TORCH TIPS.
2. MOUNT THE TRANSFORMERS AND FIREYE FLAME SAFEGUARD BASES INTO A CONVENIENT LOCATION, AWAY FROM THE HEAT, ON A PANEL OR WALL. CONNECT THE IGNITION LEADS FROM THE SPARK IGNITERS TO THE TRANSFORMERS. CONNECT THE GROUND LEADS FROM A MOUNTING SCREW ON THE TRANSFORMERS TO CLAMPS ON THE PIPE. CONNECT THE FLAME ROD LEAD FROM THE FLAME RODS TO THE S2 TERMINAL ON THE FIREYE BASES. CONNECT A GROUND LEAD FROM THE S1 TERMINAL ON THE BASES TO A PIPE CLAMP ON PIPING.
3. CONNECT UP THE GAS SUPPLY. ON NATURAL GAS THE REQUIRED PRESSURE IS 4 INCH TO 6 INCH WATER COLUMN. ON PROPANE GAS THE PRESSURE SHOULD BE 11 INCH WATER COLUMN.
4. CONSULT THE WIRING DIAGRAM AND COMPLETE THE WIRING AS SHOWN.
5. CONSULT THE LIGHTING INSTRUCTIONS FOR STARTING THE BURNER.

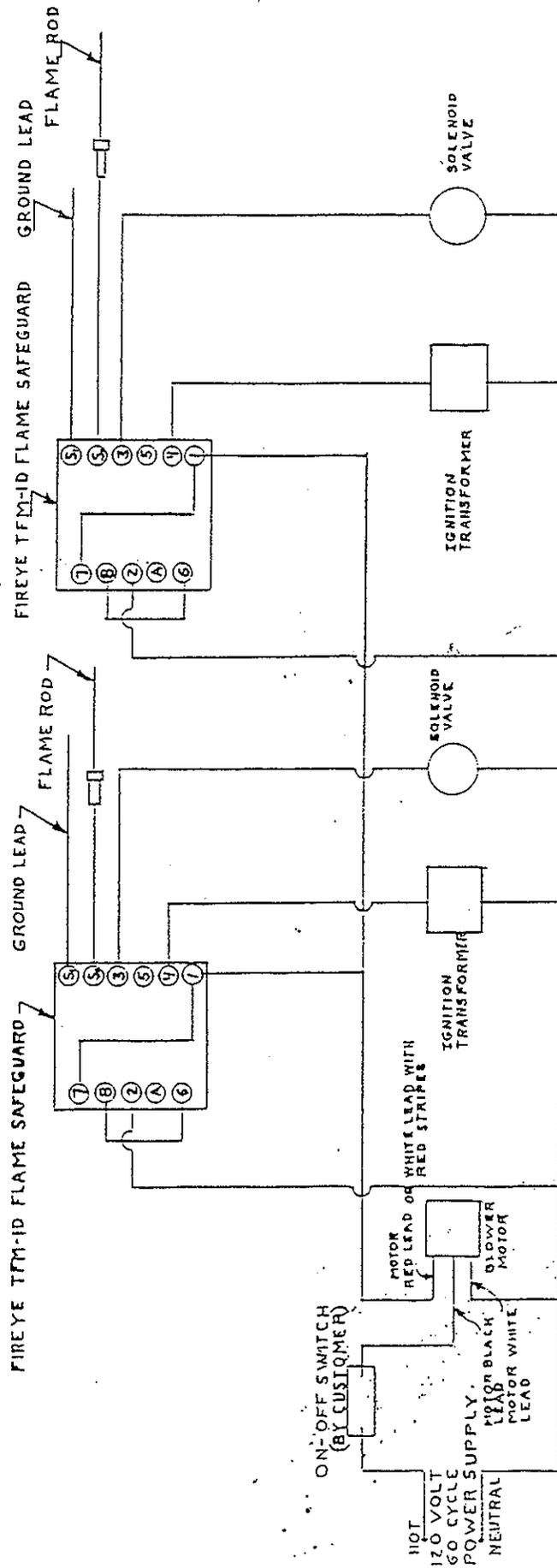
LIGHTING & OPERATING INSTRUCTIONS FOR NO. 345
POWER BURNER WITH FLAME ROD SAFETY



After all wiring and piping are completed:

1. Depress and release the red reset button on the two Fireeye Flame Safeguards.
 2. The gas adjusting valve should be in the closed position.
 3. Fully open the blower air shutter. Open the gate valve (next to the blower) 2 or 3 full turns from the closed position.
 4. Turn the on-off switch to "on". The blower motor will come on. In about 5 seconds, the spark igniters will come on and you will hear the solenoid valves click. At this time, you gradually open the gas adjusting valve until the burners ignite. Make slight adjustments to the valve to obtain the desired flame.
- NOTE: If you take too long to start the burner, the Fireeye safety will shut down the burner. You must then turn the on-off switch off; wait 30 seconds and depress the reset button on the two Fireeye flame safeguards. You can then go through the starting cycle.
5. An increase in gas input is obtained by gradually opening the gate valve, in the air line, and the gas adjusting valve. A smaller gas input is obtained by gradually closing the gate valve and the gas adjusting valve until the desired or minimum gas input is reached.
 6. An oxidizing flame is obtained by increasing the amount of air with the gate valve and/or decreasing the amount of gas. A reducing flame is obtained by decreasing the amount of air with the gate valve and/or increasing the amount of gas.
 7. The safety system should be checked periodically. While the burner is in operation turn off the gas with the manual gas adjusting valve. In about 12 seconds you should hear the solenoid valves close. Attempt to restart the burner. It should not start until you depress the reset buttons on the two Fireeye flame safeguards.

WIRING DIAGRAM FOR NO. 345 POWER BURNER WITH FLAME ROD SAFETY SYSTEM



MAINTENANCE INSTRUCTIONS FOR JOHNSON FURNACES

Johnson equipment is designed to give the longest possible service at the lowest maintenance cost. Due to the high temperatures reached by Johnson furnaces certain repairs are required from time to time to keep them in good operating condition. We are listing below pertinent maintenance information.

OVEN TYPE HEAT TREATING FURNACES [#70, #120, #121, #142, #143, #654, #706]

A. GENERAL MAINTENANCE:

These furnaces are lined with high temperature insulating refractory. This refractory expands and contracts as the furnace heats and cools; and cracks will appear throughout the lining. These are normal and should not be cause for alarm and should NOT be filled with cement as it will cause the brick to spall. The door brick on the #70, #120, #121 & #654 furnaces should be replaced occasionally. It is furnished with inconel screws and washers to withstand the high temperatures. The door should NOT be used as a shelf or parts dragged across the door brick in the process of removing parts from the furnace. Also, avoid striking the sides of the furnace with tongs. The hearth plate will require replacement occasionally, as will the front and back hearth rests on which the plate is set. The hearth plate must be used with the channel edges up. Parts to be heated should be pre-heated or brought up to temperature with the furnace when possible; avoid placing a cold piece on a hot hearth plate. When the gas is turned off to the furnace, turn off the blower at once so the lining will cool gradually.

B. FURNACE RELINING AND FURNACE EXCHANGE:

The furnace should be used until the complete lining is considerably deteriorated. It should then either be replaced with a new lining or new furnace body from the factory. Complete sets of fire brick linings with special shapes to fit the furnace and cement for sealing the brick are available with easy-to-follow installation instructions. Many operators, however, prefer to take advantage of the special price on replacement furnace bodies. Check our repair parts list for prices. This method is popular because it insures an expertly relined furnace in operation at all times; it eliminates the time and trouble of relining the furnace in the customer's shop; and it eliminates the "down" time for returning to the factory for relining. WHEN ORDERING, SPECIFY IF FURNACE IS TO HAVE SAFETY PILOT PORT INSTALLED. FOR ADDITIONAL INFORMATION ON SAFETY EQUIPMENT SEE PAGE 3.

PYROMETER EQUIPMENT:

Occasional replacement must be made of the thermocouple elements, the protection tubes or of the complete thermocouple assembly. We carry replacement parts in stock for immediate delivery.

POT TYPE FURNACES [#920, #950, #568, #580, #565, #565A, #521, #575, #575A, & #575B]

A. FURNACE RELINING:

These furnaces are lined with a high-quality, wear-resistant, castable lining poured with molds used in our factory. These linings are very rugged, and the furnaces should be used until the linings are considerably deteriorated, and then replaced with new furnace bodies. The new bodies are furnished complete less blower equipment and pots or crucibles. Prices for the new bodies are given on the repair parts list. With this method the customers are assured of an expertly lined furnace; and they are never without a furnace to use in their shops. If the lid lining needs replacement before the furnace body, material can be supplied to be mixed with water and molded into the furnace lid or a refractory lid can be supplied.

B. FURNACE RELINING #900 CRUCIBLE FURNACE:

This furnace is lined with a precast lining that can be replaced in the shop or a new replacement body can be supplied.

C. USE OF POTS:

DO NOT use a pressed steel pot for melting aluminum. A graphite crucible is used in the crucible furnaces. A cast iron pot is also suitable when contamination of aluminum by the cast iron is not objectionable.

To extend pot life carry a neutral or slightly reducing flame [more gas than air]. A flame that is too blue is oxidizing and will cause rapid scaling of the pot.

Avoid infiltration of cyanide or other salts into the combustion chamber. If seepage or splashing is occurring, place a ring of dry, powdered fire clay under the flange of the pot.

Turn the pot a little each day so that a different part is exposed to the hottest gases.

Remove sludge or sediment from pot at least once a day. This acts as an insulator, causing local overheating of pot.

Remove the pot at regular intervals and thoroughly clean the inner surface. Also hammer off thin scale that forms on outside.

D. USE OF CRUCIBLES:

Crucibles should be kept in a warm, dry area. Before using a new crucible anneal it by placing it in a warm furnace and gradually raising the temperature at about five minute intervals over a period of forty five minutes until the crucible becomes red.

BLOWER MOTORS:

Motors on the blowers should be oiled occasionally. The brushes should be checked and replaced periodically to avoid wear on the armature.

FORGE FURNACES [#122 & #133]

The forge furnaces are lined with hard firebrick on all wearing surfaces. Individual firebricks can be easily replaced when desired. Lining for the lid or complete lining can be replaced when necessary. Sets of linings are furnished with simple instructions for installation.

SOFT METAL MELTING FURNACES [#379, #313 & #616]

A. FURNACE RELINING:

These furnaces can be relined with brick and castable material supplied by our Company. An instruction sheet accompanies the shipment.

B. GENERAL MAINTENANCE:

Avoid permitting metal to solidify in the pots. If the metal does "freeze" in the pot, turn one burner only on until the metal melts slowly; do not turn all burners on at once or the pot will crack. When melting metal, let small amount of metal form a molten pool before adding additional metal.

SMALL BENCH FURNACES [#101, #112, #108 & #118]

The burner tubes on these furnaces are slotted on the ends to retain the flame, and care should be taken about striking the ends with soldering irons. These tubes are made of cast iron and will give long service, but when the slots are knocked off, the tubes should be replaced to insure good combustion. The #108 and #118 furnaces are equipped with individual valves for each burner. The #101 and #112 furnaces are equipped with double valves. After considerable use the valve plugs will tighten causing the valves to "freeze". When this happens the complete valve will should be replaced as prompt replacement of the complete valve will avoid gas leakage. Linings for all these furnaces are carried in stock. Lining sets are supplied for those in which both hood and bottom are lined. This set consists of material to be molded in to the furnace body and includes a new angle iron.



APPROVED COMPONENTS FOR INDUSTRIAL FURNACES

Approved components used on our industrial furnaces and power burners with flame rod or thermocouple safety and ultra-violet safety.

JOHNSON PARTS	APPROVAL		
	UL	CSA	OTHER
Baso Switch	√		
Baso Valve		√	AGA
Baso Thermocouple			AGA
Baso Pilot w/Orifice		√	AGA
Air Switch	√		
ITT Solenoid Valve	√		Factory Mutual
Transformer	√	√	
Lock Out Light	√		
Ignition Button	√	√	
1/30 Motor Bodine	√	√	
1/7 Carter Motor	√		
1/3 Motor w/ back Contact	√		
P & B Relay	√	√	
Speed Control Switch	√	√	
Start - Stop Switch			Top/Application Only
Ignition Wire	√		
All Other Wire	√		
3/4 Gas Pressure Regulator			AGA
OJ21 Ignitor Plug	√		
Gas Adjustment Valve	√		
Fireeye Control	√		
Flame Rod 12"	√		
Scanner	√		

NOTE: All Johnson Gas Industrial Furnaces are factory tested for proper function of all systems and all piping is leak tested.

JOHNSON GAS APPLIANCE COMPANY • 520 E AVENUE N.W. • CEDAR RAPIDS, IOWA 52405

1-800-553-5422 • 319-365-5267 • FAX 319-365-6282



WARRANTY

We warrant our equipment to be free of workmanship or material defects. Should any material prove defective within one year after shipment due to faulty material or improper workmanship we will furnish without charge to the original purchaser, replacement or repair of said defective part or parts returned freight prepaid to Johnson Gas Appliance Company, Cedar Rapids, Iowa. The foregoing shall not apply to equipment that has been altered or repaired after shipment to you by anyone except our authorized employees, and the Company will not be liable in any event for alterations or repairs except those made with its written consent. On material not of our manufacture, the manufacturer's guarantee to us is extended. This paragraph does not cover ordinary wear and tear, corrosion or improper handling or storage after leaving our point of shipment. If inspection by the Company does not disclose any defect in workmanship or material, the Company's regular charges will apply. Any refractories supplied with this order will be warranted as to quality and will be selected in accordance with good practice for the service intended. The foregoing obligations are in lieu of all other obligations and liabilities including negligence and all warranties, or merchantability or otherwise, express or implied in fact or by law, and state our entire and exclusive liability and buyer's exclusive remedy for any claim or damages in connection with the sale or furnishing of goods or parts, their design, suitability for use, installation or operation. We will in no event be liable for any special or consequential damages whatsoever, and our liability under no circumstances will exceed the contract price for the goods for which liability is claimed.

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