



JOHNSON FURNACE INSTRUCTION MANUAL

#133 FURNACE - MANUAL TEMPERATURE CONTROL - W/U.V. SAFETY

FORMS - 579, C-2056, 896, 221, 578, 581, 318, A-2072

INSTALLATION INSTRUCTIONS FOR #122 & #133 FORGE WITH
ELECTRIC IGNITION & NO. 890 CONTROL BOX.

CONSULT FORMS 221 & 578 WHILE READING THIS.

WHEN PLACING THE FORGE IN THE DESIRED LOCATION, MAKE SURE THE BACK OF THE FORGE (BURNER SIDE) IS PLACED FAR ENOUGH AWAY FROM ANY WALL SO THE LID CAN SWING AWAY FROM THE TOP SLOT OF THE FORGE AND SPACE IS SUFFICIENT FOR SERVICING. ALLOW ENOUGH SPACE AT THE FRONT OF THE FORGE FOR THE OPERATOR TO PERFORM HIS DUTIES.

TO REMOVE EXHAUST GASES AND FUMES, USE A HOOD WITH AN EXHAUST FAN. THE HOOD SHOULD BE HIGH ENOUGH SO THAT IT DOES NOT INTERFERE WITH THE OPERATOR.

IF NECESSARY, PROTECT NEARBY WALLS AND CEILINGS FROM RADIANT HEAT BY USING INSULATION BOARD, ETC.

CONNECT 115 VOLT ELECTRICAL SOURCE TO THE BLACK AND WHITE LEADS EXTENDING FROM THE CONTROL BOX AT THE SIDE OF THE FURNACE.

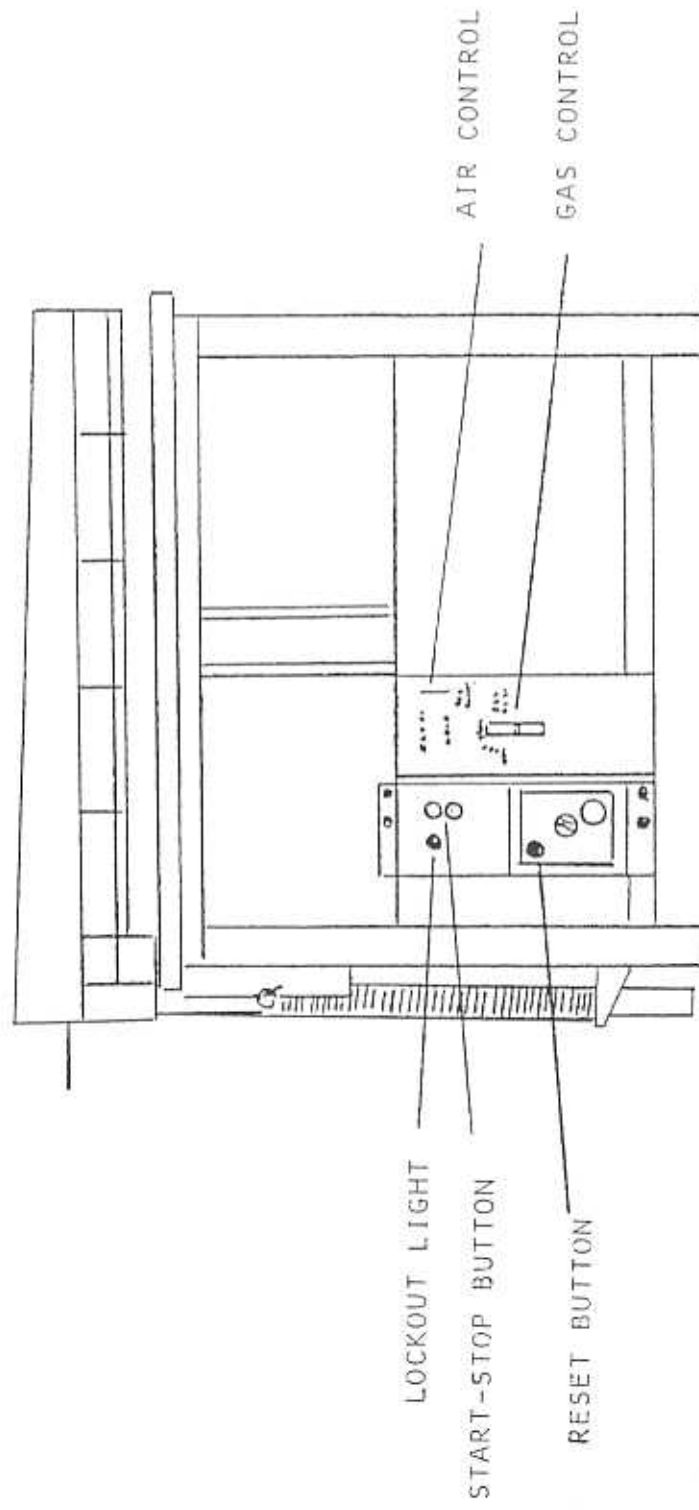
CONNECT GAS LINE TO GAS INLET PIPE. THE GAS PRESSURE SHOULD BE 2 TO 3 OUNCES FOR NATURAL GAS AND 6 OUNCES FOR LP GAS. PRESSURE SHOULD BE CHECKED WHEN THE FORGE IS IN OPERATION AT A HIGH RATE.

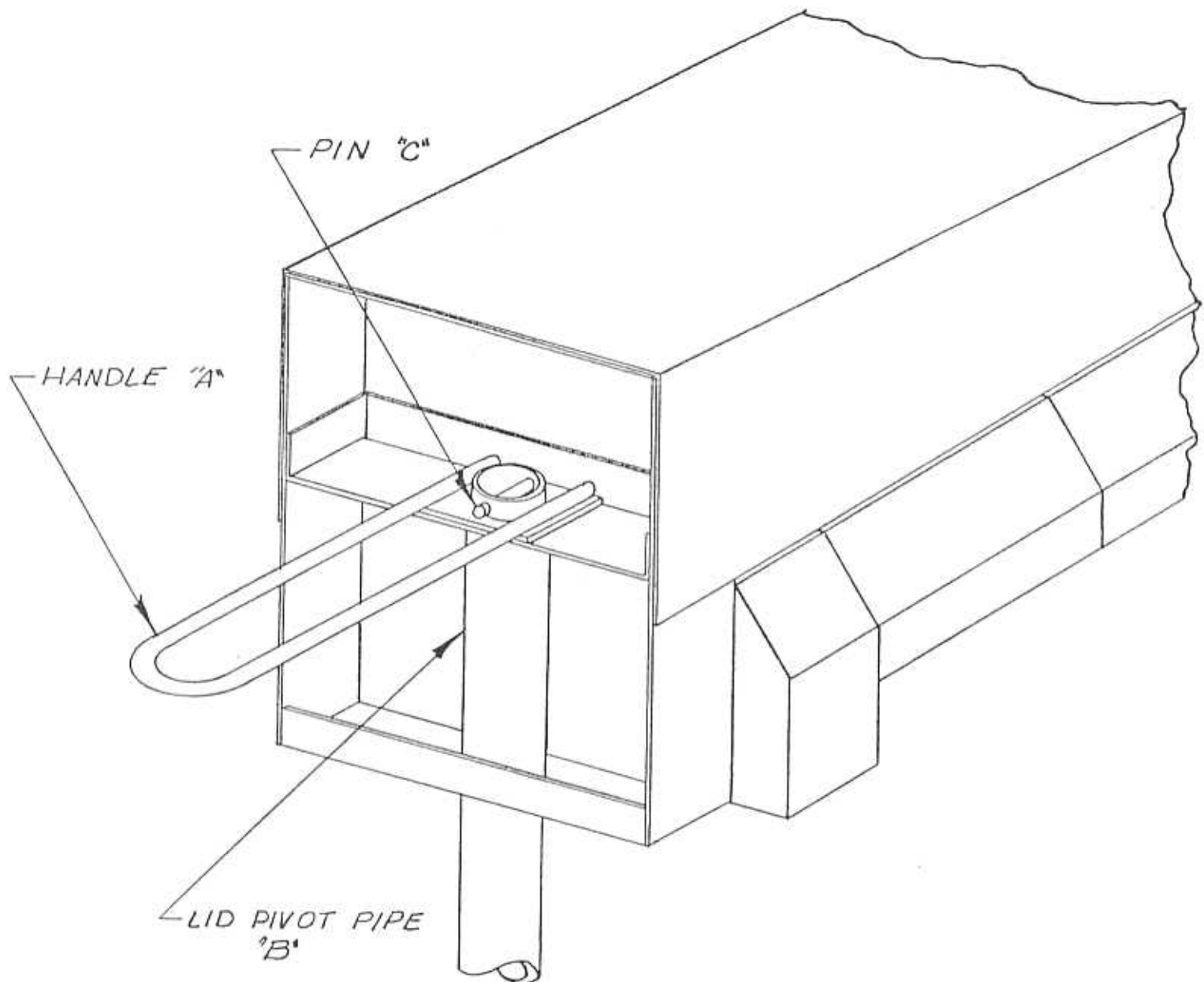
INSTALL THE HANDLE ON THE LID. (SEE FORM 221) TO RAISE OR LOWER THE LID, TURN THE LOCKING LEVER TO THE UN-LOCKED POSITION; ADJUST TO THE DESIRED HEIGHT; THEN RETURN LOCKING LEVER TO THE LOCKED POSITION. (SEE FORM 578).

INSTALL THE SCANNER AND SPARK PLUG IGNITER IN THE BURNER MANIFOLD. (SEE FORM 578).

INSERT THE SPARK PLUG IGNITER IN THE OPENING IN THE BACK OF THE BURNER MANIFOLD AND TIGHTEN IN PLACE WITH A WRENCH. PUSH THE CONNECTOR OVER THE END OF THE SPARK PLUG. MAKE SURE THE PIPE NIPPLE, INSULATING COUPLING, AND SCANNER ARE IN PLACE.

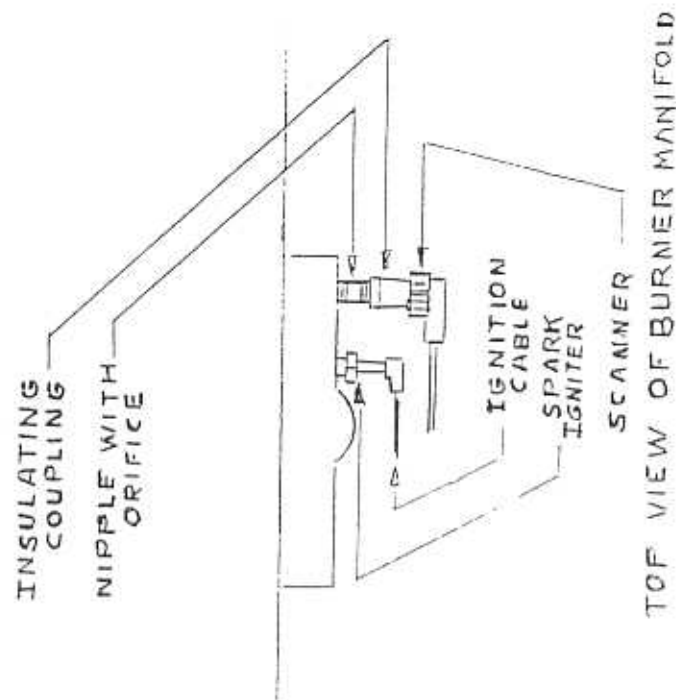
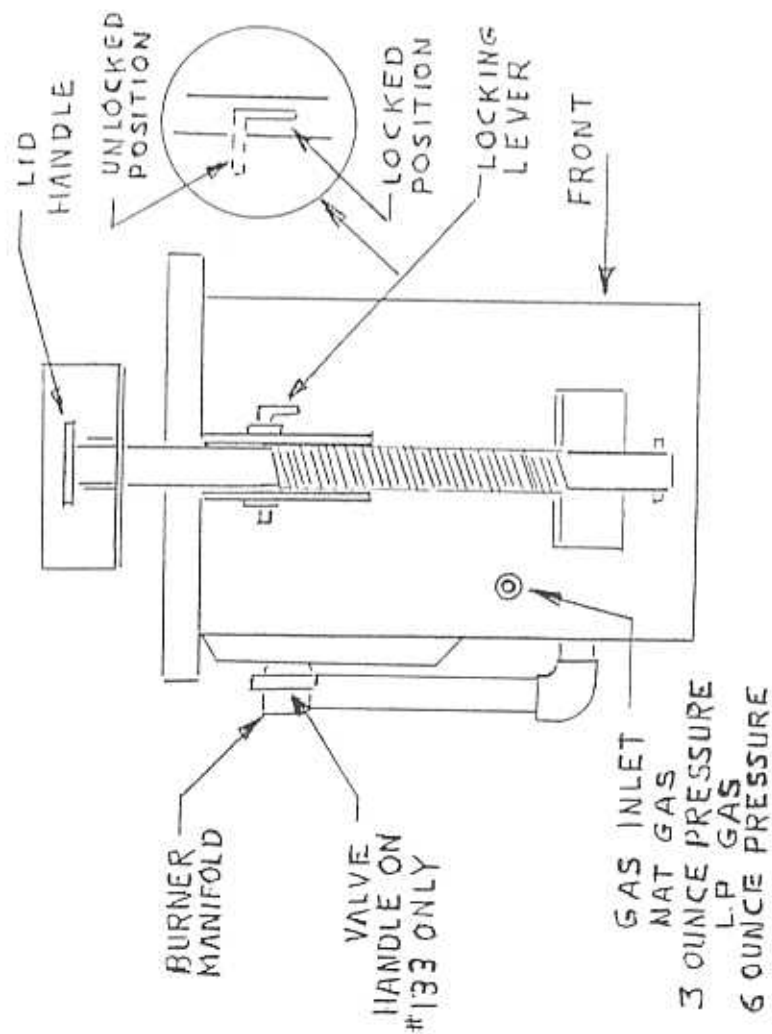
133 FORGE WITH ULTRAVIOLET SAFETY



INSTALLING HANDLE ON #122 & #133 FORGE LIDS

1. PLACE HANDLE "A", PLATE SIDE DOWN, OVER TOP OF LID PIVOT PIPE "B".
2. DRIVE PIN "C" THROUGH DRILLED HOLES PROVIDED.

FORGE WITH ULTRAVIOLET SAFETY



TOP VIEW OF BURNER MANIFOLD

VENTING REQUIREMENTS FOR
JOHNSON FURNACES

1. POT FURNACES, FORGES, AND MELTING FURNACES.

SINGLE UNITS OR MULTIPLE INSTALLATIONS

FOR EXHAUST HOODS APPROXIMATELY 6' 6" TO 7' ABOVE FLOOR, THE EXHAUST FAN SHOULD BE SUFFICIENT TO PROVIDE A 200 FPM FACE VELOCITY AT THE HOOD.

2. OVEN TYPE FURNACES (INCLUDES OVEN FORGES)

A. SINGLE INSTALLATIONS

FOR SINGLE INSTALLATION THE VENT REQUIREMENTS SHOULD REDUCE FLUE GAS TEMPERATURE TO 500 OR BELOW. FOR CFM REQUIREMENTS, DIVIDE BTU INPUT OF THE FURNACE BY 225. (APPLICABLE WHERE THE VENT HOOD IS 6" TO 8" ABOVE EXHAUST OPENING.)

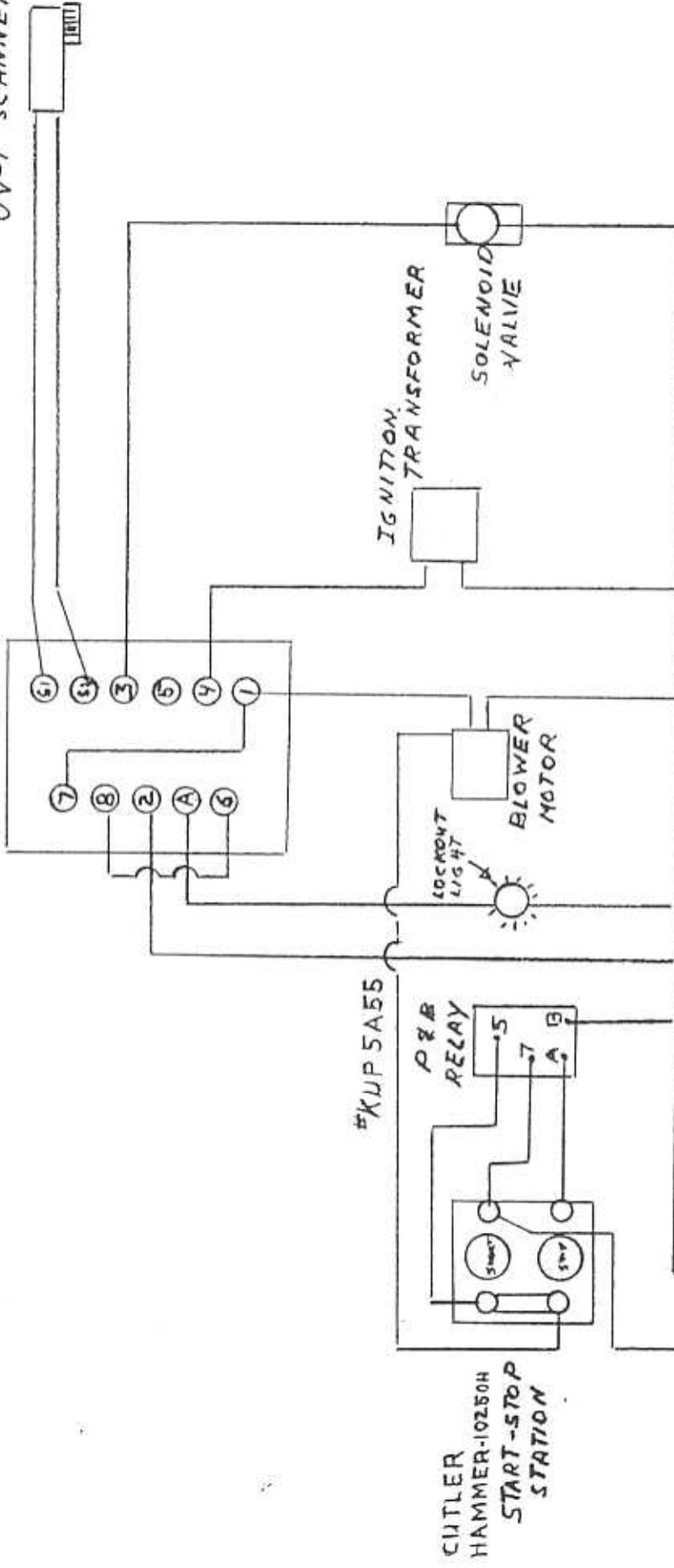
- B. FOR SINGLE OR MULTIPLE INSTALLATIONS WHEN SINGLE EXHAUST HOOD IS 6' 6" TO 7' ABOVE FLOOR, PROVIDE FOR A 200 FPM FACE VELOCITY.

WIRING DIAGRAM FOR NO.133 FORGE WITH ULTRAVIOLET SAFETY

ELECTRONICS CORP. OF AMERICA

FIREYE UVM-10
FLAME SAFEGUARD

UV-1 SCANNER



NOTE: BLOWER MOTOR HAS CENTRIFUGAL SWITCH, SHUTS OFF GAS IF MOTOR FAILS.

CUSTOMER CONNECT BLACK & WHITE LEADS TO 115VOLT, 60 CYCLE POWER SOURCE

LIGHTING AND OPERATING INSTRUCTIONS FOR #133 FORGE
WITH SPARK IGNITION AND ULTRA-VIOLET SAFETY SYSTEM.

1. SET AIR CONTROL HANDLE HALFWAY BETWEEN "OPEN" AND "CLOSED" POSITION. SET GAS CONTROL HANDLE TO "CLOSED" POSITION.
2. SWING LID TOWARD BACK SIDE OF FURNACE SO THAT IT IS NOT OVER TOP SLOT.
3. DEPRESS AND RELEASE START BUTTON. THE BLOWER MOTOR WILL COME "ON" AND IN ABOUT 5 SECONDS, YOU WILL HEAR THE FIREYE CONTACTS CLICK AND THE SPARK IGNITER "BUZZING". YOU THEN GRADUALLY TURN THE GAS CONTROL HANDLE TOWARD THE "OPEN" POSITION JUST TO THE POINT WHERE THE BURNERS IGNITE. NOTE: IF YOU DEPRESS THE START BUTTON AND THE RED LOCKOUT LIGHT IS "ON" OR DURING THE STARTING CYCLE, YOU TAKE TOO LONG AND THE RED LOCKOUT LIGHT COMES ON; YOU MUST DEPRESS THE STOP BUTTON. WAIT 30 SECONDS, DEPRESS THE RESET BUTTON (ON THE FIREYE CONTROL) AND THEN GO THROUGH THE START UP PROCEDURE.
4. AFTER THE FORGE HAS BEEN STARTED, ADJUST THE GAS CONTROL TO GIVE A SHARP TAIL OF FLAME THAT EXTENDS JUST ABOVE THE TOP OF THE FORGE. WORK CAN BE PLACED IN THE FLAME. THE WORK RACK AT THE FRONT OF THE FORGE CAN BE SLID OUT TO SUPPORT THE WORK. THE LID SHOULD BE CENTERED OVER THE TOP SLOT.

TO INCREASE THE AMOUNT OF GAS, TURN THE GAS CONTROL TOWARD THE "OPEN" POSITION TO GET A HIGHER FLAME. THEN, TURN THE AIR CONTROL HANDLE TOWARD THE "OPEN" POSITION TO OBTAIN THE SHARP TAIL OF FLAME. REPEAT THESE STEPS UNTIL THE DESIRED OR MAXIMUM GAS INPUT IS REACHED.

TO DECREASE THE AMOUNT OF GAS, TURN THE GAS CONTROL HANDLE TOWARD THE "CLOSED" POSITION UNTIL THE SHARP TAIL OF FLAME ALMOST DISAPPEARS. THEN, TURN THE AIR CONTROL HANDLE TOWARD THE "CLOSED" POSITION UNTIL THE SHARP TAIL OF FLAME RE-APPEARS. REPEAT THIS PROCEDURE UNTIL THE DESIRED OR MINIMUM GAS INPUT IS REACHED.

ON THE #133 FORGE, THE TWO OUTSIDE BURNER CAN BE TURNED "OFF" BY SCREWING IN THE HANDLES AT EACH END OF THE BURNER MANIFOLD.

NOTE: IF YOU TURN THE GAS TOO HIGH AND GET A HIGH LAZY FLAME OR TOO LOW AND GET AN INTERMITTENT FLAME, THE SAFETY WILL SHUT OFF THE BURNERS. YOU WILL HAVE TO PUSH THE "STOP" BUTTON; WAIT 30 SECONDS; PUSH THE "RESET" BUTTON AND RESTART THE FORGE.

TO SHUT DOWN THE FORGE, TURN THE GAS CONTROL HANDLE TO THE "CLOSED" POSITION AND PUSH THE "STOP" BUTTON.

NOTE: THE WORK PIECES MUST BE LAYED ACROSS THE TOP OF THE FORGE WITH SPACE LEFT BETWEEN THE PIECES FOR EXHAUST AREA. DO NOT COMPLETELY BLOCK THE TOP SLOT. DO NOT PUT WORK PIECES INSIDE THE COMBUSTION CHAMBER (PIT). THIS WILL CAUSE OVERHEATING AND BURN OUT THE FORGE PREMATURELY.

FORM NO. A-2072

SEQUENCE OF EVENTS
WHEN USING THE UVM-1D ULTRA-VIOLET
SAFETY SYSTEM

- 1] PUSH START BUTTON.
- 2] MAIN STARTING RELAY IS ENERGIZED.
- 3] BLOWER MOTOR STARTS AND FLAME SAFEGUARD IS ENERGIZED.
- 4] BLOWER MOTOR COMES UP TO SPEED. AIR SWITCH ON BLOWER MOTOR CLOSSES.
- 5] AT THIS POINT THE FLAME SAFEGUARD BEGINS ITS PROCESS.
- 6] AFTER AN APPROXIMATE 14 SECOND DELAY FOR "PRE-PURGE" AND IGNITION TEST, THE IGNITER PLUG FIRES. A SPLIT SECOND LATER THE GAS SOLENOID VALVE OPENS AND COMBUSTION TAKES PLACE.
- 7] THE ULTRA-VIOLET SAFETY SCANNER SENSES THE ULTRA-VIOLET IN THE FLAME. THE FLAME SAFEGUARD IS SATISFIED AND GOES INTO A "RUN" CIRCUIT.
- 8] THE UNIT WILL CONTINUE TO RUN UNTIL THE STOP BUTTON IS PUSHED.
- 9] A TEMPERATURE CONTROL DEVICE CAN ALSO BE INSTALLED WHICH WILL TURN THE UNIT OFF AND ON AUTOMATICALLY.

TROUBLE SHOOTING

THE FOLLOWING EVENTS CAN OCCUR THAT WILL EFFECT THE NORMAL OPERATION OF THE UVM-1D SAFETY SYSTEM:

1. THE START BUTTON IS PUSHED AND THE BLOWER MOTOR COMES ON, BUT THE UNIT FAILS TO IGNITE. THE FLAME SAFEGUARD WILL GO INTO A SAFETY SHUT-DOWN. A SAFETY SHUT-DOWN IS DESCRIBED AS FOLLOWS:

THE UNIT ATTEMPTS TO LIGHT, BUT THERE IS NO FLAME DETECTED WITHIN THE 4-10 SECOND IGNITION TEST. THE GAS SAFETY SOLENOID VALVE WILL CLOSE. THE FLAME SAFEGUARD STARTS A BI-METAL WARP SWITCH WHICH WILL TAKE FROM 30-90 SECONDS TO WARP OUT. AT THE END OF THIS TIME THE RED LOCKOUT LIGHT WILL COME ON. THE RED LIGHT INDICATES THAT ALL SYSTEMS ARE SHUT DOWN AND OPERATING CORRECTLY EXCEPT THE BLOWER MOTOR WHICH WILL CONTINUE TO OPERATE. AT THIS POINT THE STOP BUTTON SHOULD BE PUSHED. WAIT 3 MINUTES AND PUSH THE RED RESET BUTTON ON THE FLAME SAFEGUARD AND ATTEMPT TO RELIGHT THE UNIT.
2. THE START BUTTON IS PUSHED. THE BLOWER MOTOR COMES ON. THE UNIT LIGHTS AND IS OPERATING PROPERLY, BUT THERE IS A GAS INTERRUPTION. AT THIS TIME THE FLAME SCANNER SENSES THAT THERE IS NO ULTRA-VIOLET OR FLAME IN THE COMBUSTION CHAMBER. THE UNIT WILL ATTEMPT TO RELIGHT FOR A TEST PERIOD OF 4 SECONDS. IF REIGNITION DOES NOT OCCUR WITHIN THE 4 SECOND TIME PERIOD THE GAS SAFETY SOLENOID VALVE WILL CLOSE AND THE FLAME SAFEGUARD WILL GO INTO ITS SAFETY SHUT-DOWN PROCESS.
3. THE START BUTTON IS PUSHED, THE UNIT LIGHTS AND IS OPERATING PROPERLY, BUT THERE IS AN ELECTRICAL INTERRUPTION WHICH CAUSES THE MAIN LATCHING RELAY TO DROP OUT. AT THIS TIME THE UNIT WILL COMPLETELY SHUT DOWN INCLUDING THE BLOWER MOTOR AND IT WILL BE NECESSARY TO RESTART THE UNIT FROM THE BEGINNING. ANY TIME THERE IS AN ELECTRICAL INTERRUPTION THE LATCHING RELAY WILL DROP OUT. THIS IS A SAFETY FACTOR THAT WILL NOT ALLOW THE UNIT TO RESTART ON ITS OWN. FOR INSTANCE IF THE UNIT WAS NOT BEING ATTENDED THE UNIT SHOULD NOT BE ABLE TO COME BACK ON WITHOUT THE OPERATOR KNOWING WHAT HAD HAPPENED TO THE STANDARD PROCESS.

4. THE START BUTTON IS PUSHED. THE UNIT FIRES AND IS OPERATING PROPERLY. BUT, THE BRUSHES ON THE MOTOR ARE WORN OUT, OR THE FAN WHEEL COMES LOOSE FROM THE BLOWER MOTOR SHAFT. AT THIS TIME AIR PRESSURE WILL DROP IN THE BLOWER HOUSING COMPARTMENT AND CAUSE THE AIR SWITCH TO OPEN AND STOP THE ELECTRICITY FLOW TO THE GAS SOLENOID VALVE. THE GAS SOLENOID VALVE WILL CLOSE. AT THIS POINT THE FLAME SCANNER WILL NOT DETECT ANY ULTRA-VIOLET AND THE UNIT WILL GO INTO A SAFETY SHUT-DOWN PROCESS.
5. THE START BUTTON IS PUSHED AND THE UNIT ATTEMPTS TO LIGHT, BUT THERE IS NO SPARK. THE GAS VALVE WILL OPEN FOR A PERIOD OF 4 SECONDS AND ATTEMPT TO LIGHT. AT THIS TIME THERE IS NO ULTRA-VIOLET DETECTED BECAUSE THERE IS NO FLAME AND THE UNIT WILL GO INTO A SAFETY SHUT-DOWN PROCESS.
6. THE START BUTTON IS PUSHED, THE BLOWER MOTOR STARTS AND THE IGNITER COMES ON, BUT THERE IS NO IGNITION. THIS MAY BE DUE TO NOT HAVING ANY GAS SUPPLY; THE BLOWER MOTOR NOT RUNNING DUE TO NEEDING BRUSHES OR BEING BURNED OUT; THE COIL IN THE SOLENOID VALVE BEING BURNED OUT; THE AIR SWITCH NOT BEING CLOSED; THE IMPELLER WHEEL COMING LOOSE FROM THE BLOWER SHAFT, OR THE FLAME SAFEGUARD NOT GIVING A SIGNAL TO OPEN THE SOLENOID VALVE FOR IGNITION. AT THIS TIME THERE IS NO ULTRA-VIOLET DETECTED BECAUSE THERE IS NO FLAME AND THE UNIT WILL GO INTO A SAFETY SHUT-DOWN PROCESS.
7. THE START BUTTON IS PUSHED AND NOTHING HAPPENS AT ALL. A FUSE MAY HAVE BLOWN, A CIRCUIT BREAKER MAY HAVE TRIPPED, OR THE LATCHING RELAY MAY BE DEFECTIVE. THESE WILL NEED TO BE CHECKED OUT.
8. THE START BUTTON IS PUSHED. THE LATCHING RELAY CLICKS IN OR PULLS IN, BUT NOTHING ELSE HAPPENS. THE CHANCES ARE THE CONTACTS ARE DIRTY IN THE LATCHING RELAY. THE RELAY SHOULD BE REPLACED OR THE CONTACTS SHOULD BE CLEANED.
9. THE START BUTTON IS PUSHED. THE BLOWER STARTS AND NOTHING ELSE HAPPENS... A TIME PERIOD OF 2-3 MINUTES MAY GO BY AND THE BLOWER MOTOR CONTINUES TO RUN. CHANCES ARE YOU HAVE WHAT IS DESCRIBED AS A "RUN-A-WAY" SCANNER. A RUN-A-WAY SCANNER IS:

THE START BUTTON IS PUSHED AND THE BLOWER MOTOR COMES ON AND NOTHING ELSE HAPPENS. YOU MAY WAIT FOR 2,3 OR 5 MINUTES AND STILL NOTHING HAPPENS. WITH THE UNIT STILL RUNNING, UNSCREW THE FLAME SCANNER FROM THE SIDE OF THE FURNACE AND CUP IT IN YOUR HANDS OBSERVING THE GLASS EYE END THAT WOULD NORMALLY "SEE" THE FLAME. IF THERE IS A "FLICKER" IN THE SCANNER IT MEANS THAT THE SCANNER IS DEFECTIVE. IT ALSO MEANS THAT IT IS SENDING A PREMATURE SIGNAL TO THE FLAME SAFEGUARD AND IT IS SATISFIED THAT THE UNIT IS BURNING AND IT DOES NOT NEED TO IGNITE OR OPEN ANY GAS VALVE. THIS IS A GOOD FEATURE BECAUSE IT TELLS YOU WHEN THE FLAME SCANNER NEEDS TO BE REPLACED. IT WILL ALSO NOT ALLOW THE COMBUSTION PROCESS TO TAKE PLACE AND POSSIBLY CREATE AN UNSAFE OPERATING CONDITION. THE FLAME SCANNER MUST BE REPLACED.

ANY FURTHER QUESTIONS REGARDING THE OPERATION OF THE ULTRA-VIOLET SAFETY SYSTEM SHOULD BE DIRECTED TO TECHNICAL SALES.

Johnson Gas Appliance Company
520 E. Avenue N.W.
Cedar Rapids, IA 52405

[319] 365-5267 or 1-800-553-5422

FAX 319-365-6282

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.



Form # A-2086

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	√		
Fireye 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

Manufacturers since 1901 / Heat Treating Furnaces / Industrial Gas Burners / Stock Tank Heaters / Concrete Curing Systems



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.

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

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