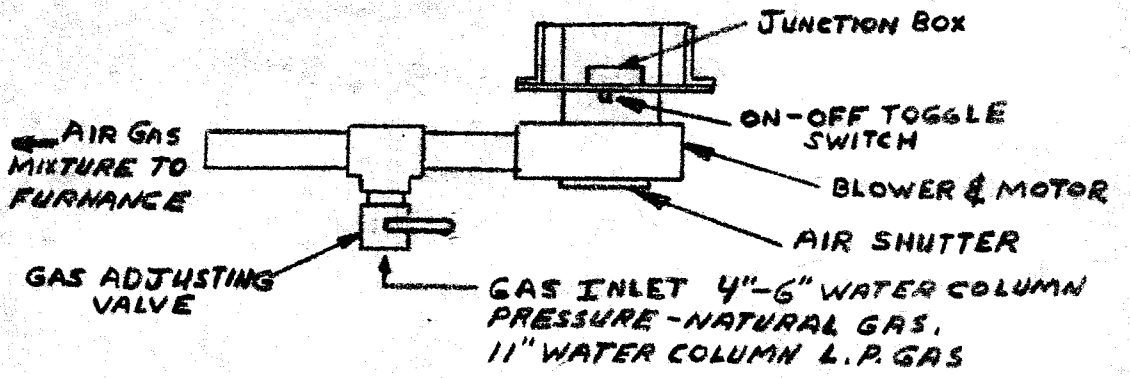
DATE _____ BY _____ ENGINEERING NO. _____

SUBJECT _____ PART NO. FORM NO. 298

OPERATING INSTRUCTIONS FOR BLOWER TYPE FURNACE, MANUAL CONTROL & SPARK IGNITION - 515-520-521-565-529



AFTER ALL WIRING AND PIPING ARE COMPLETED: SCREW SPARK IGNITER INTO BACK OF BURNER PORT CASTING. CONNECT LEAD WIRE FROM TRANSFORMER (Above Blower Motor) TO SPARK IGNITER. (SEE SKETCH BELOW)

1. MAKE SURE THE GAS ADJUSTING VALVE IS IN THE CLOSED POSITION.

2. SET THE BLOWER AIR SHUTTER ABOUT 3/4" OPEN.

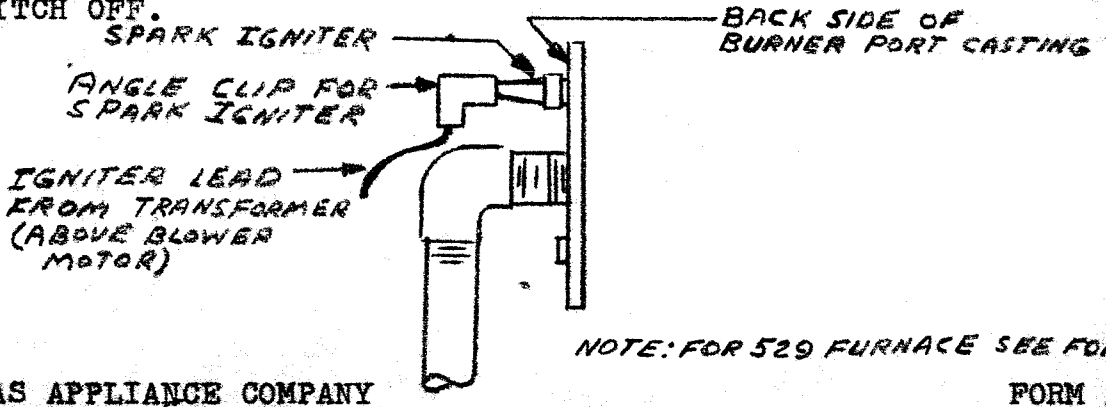
3. TURN ON TOGGLE SWITCH. THE BLOWER WILL BE RUNNING AND YOU SHOULD HEAR THE BUZZING OF THE SPARK IGNITER.

4. SLOWLY, OPEN THE GAS ADJUSTING VALVE UNTIL THE BURNERS IGNITE. MAKE SLIGHT ADJUSTMENTS TO THE VALVE TO OBTAIN A STEADY BURNER ROAR. AFTER THE FURNACE HAS WARMED UP ABOUT 15 MINUTES, ADJUST THE GAS VALVE TO OBTAIN A SHARP TAIL OF FLAME OUT THE STACK OPENING. IF YOU DO NOT HAVE ANY TAIL OF FLAME, INCREASE THE AMOUNT OF GAS. IF YOU HAVE A HIGH TAIL OF FLAME, DECREASE THE AMOUNT OF GAS.

5. IF YOU DESIRE TO INCREASE THE AMOUNT OF GAS INPUT TO THE FURNACE, OPEN THE BLOWER SHUTTER GRADUALLY UNTIL THE TAIL OF FLAME OUT THE STACK DISAPPEARS, THEN ADJUST THE GAS VALVE TO OBTAIN THE SHARP TAIL OF FLAME AGAIN. REPEAT THIS PROCEDURE UNTIL THE DESIRED OR MAXIMUM GAS INPUT IS REACHED.

6. TO DECREASE THE AMOUNT OF GAS INPUT, CLOSE THE BLOWER SHUTTER GRADUALLY TO OBTAIN A HIGH TAIL OF FLAME, THEN DECREASE THE AMOUNT OF GAS TO OBTAIN THE SHARP TAIL OF FLAME. REPEAT THIS PROCEDURE UNTIL THE DESIRED OR MINIMUM GAS INPUT IS REACHED.

7. TO SHUT DOWN THE FURNACE, TURN OFF THE GAS VALVE AND THEN TURN THE TOGGLE SWITCH OFF.



NOTE: FOR 529 FURNACE SEE FORM 290

FOR MAXIMUM SERVICE FROM STEEL POTS

1. Carry a neutral or slightly reducing flame at all times. A short tail of flame should be visible from the stack of the furnace when you have a reducing flame.

2. While the pot is cooling down, see that all openings are closed. If left open, currents of air circulate through the furnace, forming a scale of oxide on the pot. Under no circumstances, use the air line to accomplish more rapid cooling of the furnace.

3. Infiltration of cyanide or other salts into the combustion chamber should be prevented. At the temperatures found in the combustion chamber, the salts will decompose and attack both pot and furnace lining. If there is a tendency for the salts to seep or splash into the combustion chamber, this can be overcome by placing a ring of dry, powdered fire clay under the flange of the pot when it is placed in service.

4. Should a salt pot accidentally give out in the furnace, spilling its contents into the combustion chamber, see that all of the salt is cleaned out before installing a replacement and resuming operation.

5. Remove all sludge or sediment from the pot at least once a day and even more often if the furnace is being operated continuously. If allowed to remain, it acts as a heat insulator, causing local over-heating and premature failure of the pot.

6. Never force the furnace in bringing the bath up to temperature or in an attempt to speed up production. See that flue gas temperature is at a minimum. Forcing the fire results in excessive combustion chamber temperatures, shortening the life of the pot and of the furnace lining.

7. Turn the pot around each day so that a different part is exposed to the hottest gases. (For round pots only)

8. Remove the pot from the furnace at regular intervals and thoroughly clean the inner surface.

9. While carrying a slightly reducing atmosphere reduces scale formation to a minimum, a thin scale will continue to form on the outside of the pot. Hammer this off, for, if allowed to remain, it materially lessens the heat conductivity of the container.

10. Proper operating conditions are extremely important for satisfactory pot life. Be sure to have a tail of flame visible from the furnace stack opening. Follow furnace venting instructions.

VENTING REQUIREMENTS

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)

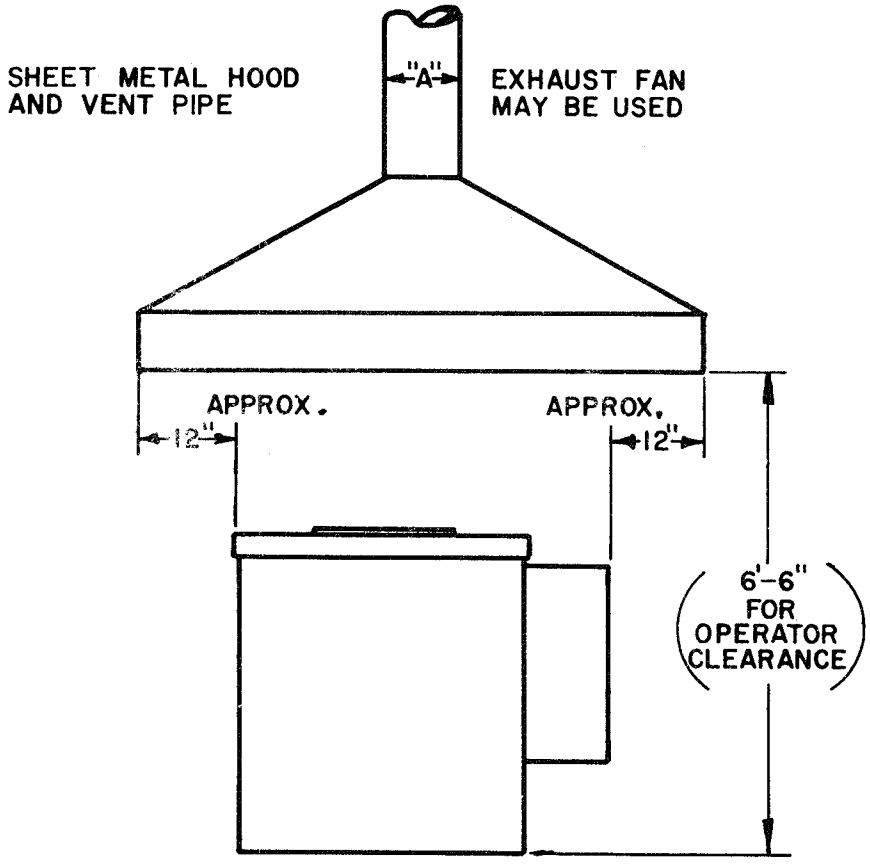
   A. SINGLE INSTALLATIONS

   FOR SINGLE INSTALLATIONS 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 OPENINGS)

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

TWO SUGGESTED METHODS OF VENTING JOHNSON POT FURNACES

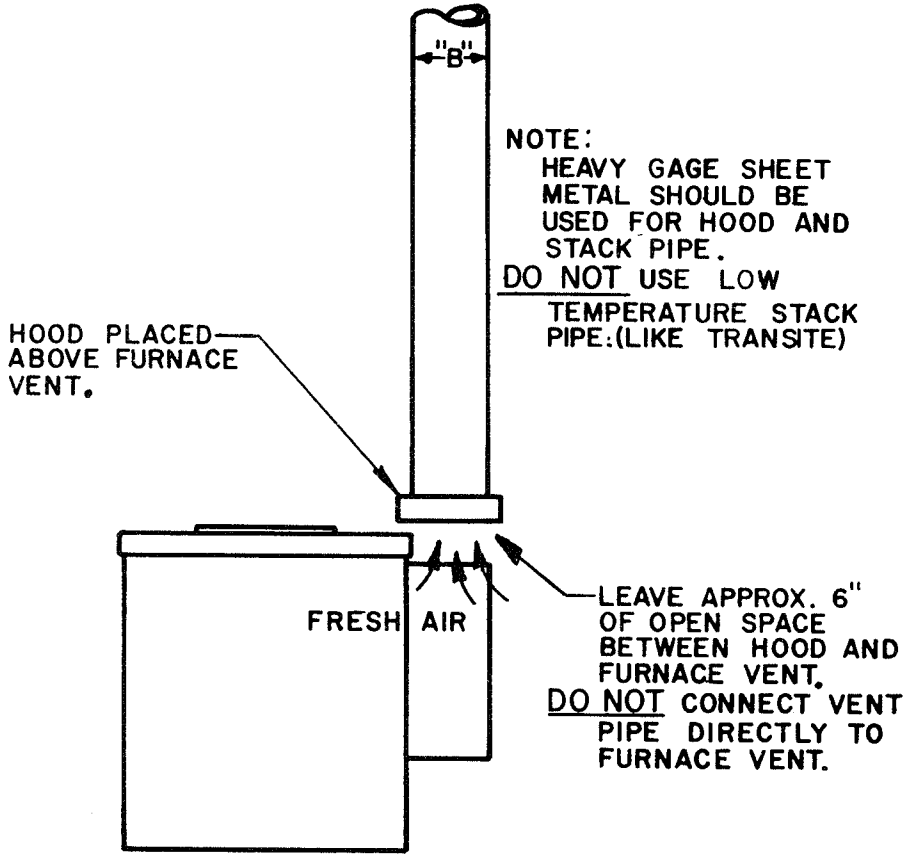
METHOD "1": FOR VENTING FURNACE EXHAUST AND FUMES FROM POT.



DIAMETER FOR VENT PIPE

FURNACE NO.	DIMENSION "A"
510, 568, 580, F-900	8"
520, 565	10"
575	12"

METHOD "2": FOR VENTING FURNACE EXHAUST ONLY.



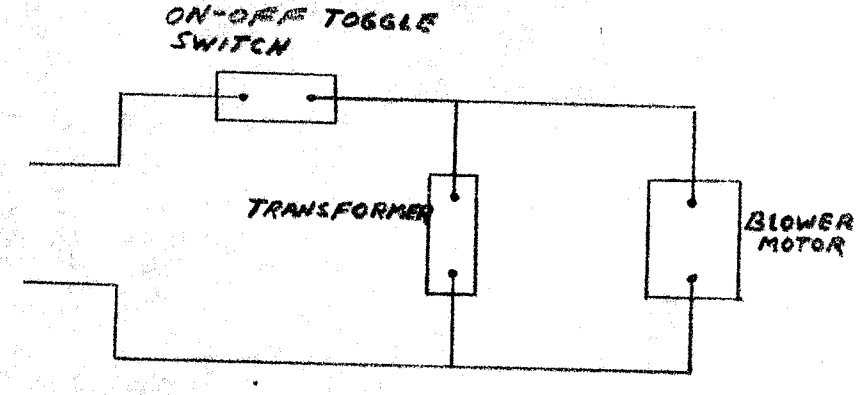
DIAMETER FOR VENT PIPE

FURNACE NO.	DIMENSION "B"
510, 568, 580	6"
520, 565	8"
575	10"

FORM NO. 297

575-520-521-565-529

WIRING DIAGRAM FOR BLOWER TYPE FURNANCE WITH MANUAL CONTROL & SPARK IGNITION



CUSTOMER CONNECT 115 VOLT 60 CYCLE POWER SOURCE TO BLACK & WHITE LEADS EXTENDING FROM JUNCTION BOX.

ENGINEERING NO. FORM NO. 297

PART NO.

DATE

BY

SUBJECT

ENG. 101-782