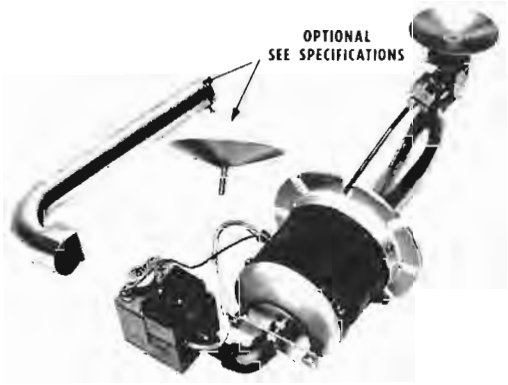
INSTALLATION INSTRUCTIONS

ATTACH ON OR NEAR APPLIANCE

TELESCOPING INSHOT
ADJUSTABLE VENTURI & TARGET



TELESCOPING UPSHOT
ADJUSTABLE VENTURI

IMPORTANT NOTE: If the distance from the front mounting plate to the entrance of the combustion chamber (with hearth removed) is 4½" or less the short fixed venturi burner is of the proper length. If this distance is over 4½" use the telescoping model.

INTRODUCTION

These instructions were prepared for the guidance of those installing atmospheric gas burners, while they apply in principle to all installations, they should not be interpreted as meaning the only safe and economical way to install a conversion burner. It may be necessary to deviate from these instructions in some instances in order to comply with local gas company rules or codes in effect in the area in which the installation is made. It is recommended that dealers confer with the local gas company and with the proper municipal officials regarding any specific rules or regulations governing the installation of gas conversion burners. It is also recommended that in applying these instructions, reference be made to American Gas Association requirements Z 21-8-1958, and ANS Z 21.17.

Safe and economical operation of the burner throughout its service life is dependent to a large extent upon its proper installation in the heating appliance. Therefore, may we impress the dealer that good clean workmanlike installations mean satisfied customers. Any questions or problems relative to the installation or operation of these burners, not contained herein, will be welcomed by the-

INSPECTION OF HEATING SYSTEM AND APPLIANCE

It is recommended that the heating appliance be inspected at the time the heat loss survey is made.

The burner should not be installed in a worn out or burned out appliance, nor in an appliance located in a room where the normal facilities for ventilation will not permit proper combustion of the gas, unless special provisions such as outlined in Fig. 1, are made for supplying sufficient air.

Where a building is of unusually tight construction or where a ventilating fan is used for exhausting air to the outside, it is recommended that combustion air be supplied to the furnace room through intakes extending to the outside and terminating in down-turned fittings arranged to prevent obstructions from snow or rain, and equipped with a protective screen over the opening.

Before installing the burner it should be determined that the heating system is sufficient to properly heat the building. Through inquiry it should be determined that all rooms have been heated adequately in the past without wide variations in temperature or objectionable drafts, and without excessive fuel cost. If the heating system is deficient with respect to the above, the deficiencies should be corrected.

The burner should be installed in such a manner that the burner and controls are readily accessible for servicing.

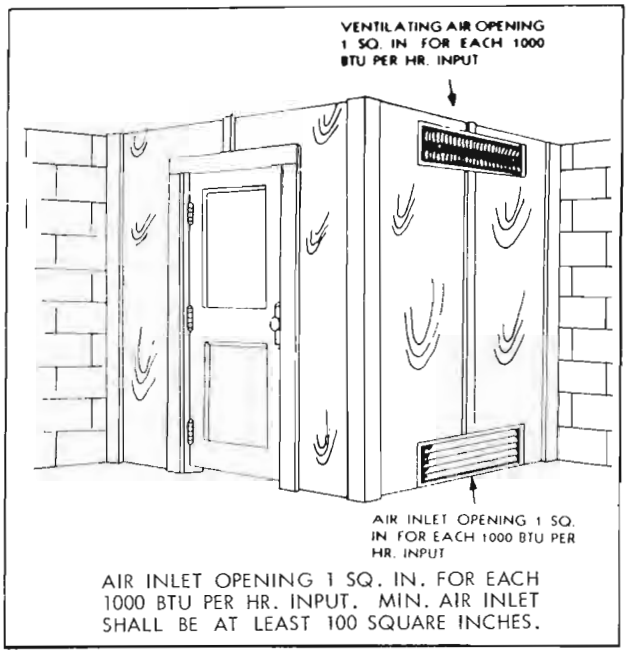


Figure 1

It may be necessary in some instances to replace obsolete parts, storm windows, insulation, etc. in order to reduce the heat loss to a point where the existing heat system will be adequate.

Gravity Warm Air Systems

The supply and return ducts and registers should be so sized and arranged that the house can be heated without excessive furnace temperatures. The industries standards of good practice are outlined in detail in the National Warm Air Heating and Air Conditioning Association's Bulletin No. 5, "Gravity Code and Manual for the Design and Installation of Gravity Warm Air Heating Systems."

Forced Warm Air Systems

Inspection should also show whether the electrical characteristics of the fan and limit switch are satisfactory and whether the air filters and fan are in condition for continued proper service with the gas burner.

Hot Water Systems

The boiler thermometer and altitude gauge should be in good order. On a closed system, the feed and pressure relief valves must be in proper operating condition. If there is an expansion tank on a closed system, inspection should show it to be substantially empty of water. Where there is an existing water temperature limiting switch, its operating and electrical characteristic should be checked to determine its suitability to the gas control circuit. For common piping systems reference can be made to the American Society of Heating and Ventilating Engineers' - Heating, Ventilating, and Air Conditioning Guide and to the Institute of Boiler and Radiator Manufacturers' (IBR) Guides.

Steam or Vapor Systems

The system should be pressure tight, with pressure gauge and pop safety valve in good condition and with an existing water glass which permits clear observation of boiler water level. Where there is a pressure limit switch or a low-water cut-off, inspection should determine whether either device can be utilized in the gas burner control circuit. Reference should be made to the A.S.H.V.E. and I.B.R. guides. Traps and air vents should be of adequate capacity, in good condition, and correctly placed in the system. (Coal firing tends to maintain a slight but continuous steam pressure which prevents air from being drawn back into the steam system. Intermittent gas burner operation and resultant intermittent steam supply usually introduces the need for repurging the system of air each time the boiler is steamed if satisfactory heat distribution is to be achieved.)

NOTE: Copies of the A.S.H.V.E. guides may be purchased from the American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York 10, N. Y. Copies of the I.B.R. guides may be purchased from The Institute of Boiler and Radiator Mfgs., 60 East 42nd Street, New York 17, N. Y.

Flue Pipe and Chimney

The flue pipe should be carefully examined and replaced if deemed necessary in connection with installation of a draft hood and neutral pressure point adjuster.

The flue pipe entrance into the chimney should be at least two feet above the clean-out opening of the chimney.

The chimney should extend high enough above the dwelling or other neighboring obstructions so that wind from any direction will not strike the chimney from an angle above horizontal. Unless the obstruction is of great magnitude, it is the usual experience that a chimney extending at least two feet above flat roofs or above fire-wall parapets, and peaked roofs within 30 feet, will be reasonably free of downdrafts.

Where the chimney is unlined or where local experience indicates that flue gas condensate might be a problem, the local gas company should be consulted.

INSPECTION OF HEATING APPLIANCE

A careful inspection of furnace or boiler should be made. If cracked heating sections, leaking soft plugs or any other condition which might make the unit unsatisfactory for gas conversion is found, proper arrangements should be made for replacement or repair before proceeding with the burner installation. Cracked heating sections should be replaced.

PREPARATION OF FURNACE OR BOILER

Clean combustion chamber thoroughly. Scrape and brush all heating surfaces and flue ways. Soot and fly ash are excellent insulators and unless removed the efficiency of the heating plant will be impaired.

Be sure water column and gauge glass on boiler is clean and water level is visible. In all cases make sure the pigtail to limit control is clear. Safety pop valves on steam boilers and automatic relief valves on closed water systems should be thoroughly checked to make sure they are in good working condition.

PREPARATION OF COMBUSTION CHAMBER

These inshot and upshot burners are designed especially for use in small wet base boilers, gravity and forced furnaces designed for oil burners. Where heating surfaces have either circulating water or air on one side, refactory or stainless steel combustion chambers, as normally used with oil burners, are not required for gas firing. In converting with the atmospheric burner, first remove the refactory or stainless steel combustion chamber used with the oil burner. In the case of a boiler or furnace where the base does not have water or circulating air on the other side but the side

walls are water or air backed, the base which is subject to overheating, must be protected by at least 2 1/2" of refactory brick or cement.

Flue Pipe and Draft Hood

An A.G.A. type draft hood or its equivalent shall be placed in and made part of the flue pipe from the appliance. (See Fig. 2). At no time should the draft hood be located at a point lower than the highest flue passage in the appliance. The draft hood should be installed in the position for which it was designed and in no case installed in a false ceiling, separate room from the heating system, or in any other manner that will permit a difference in pressure between the draft hood relief opening and the combustion air supply.

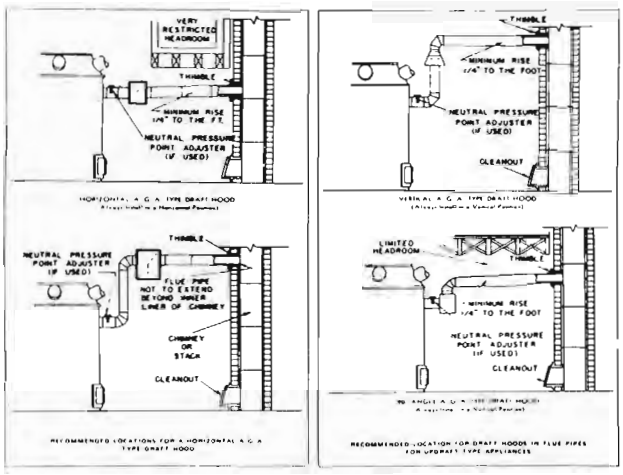


Figure 2

A neutral pressure point adjuster, similar to the one shown in Fig. 3, may be installed in the flue pipe between the furnace and a conventional type A.G.A. draft hood. The neutral pressure point adjustment should be left in the fully open position until after the burner rating has been established. The material used for flue pipe should be resistant to corrosion.

The flue pipe used should be the same size as the furnace flue collar. It is recommended that a rise as great as possible or at least 1/4 inch to the foot (horizontal length) be maintained in the flue pipe from the appliance to the chimney. The flue pipe should be relocated, where possible, to avoid sharp turns.

The necessity for installing a neutral pressure point adjuster as outlined above, may be eliminated by reducing the flue pipe and draft hood to the sizes shown in table Fig. 4.

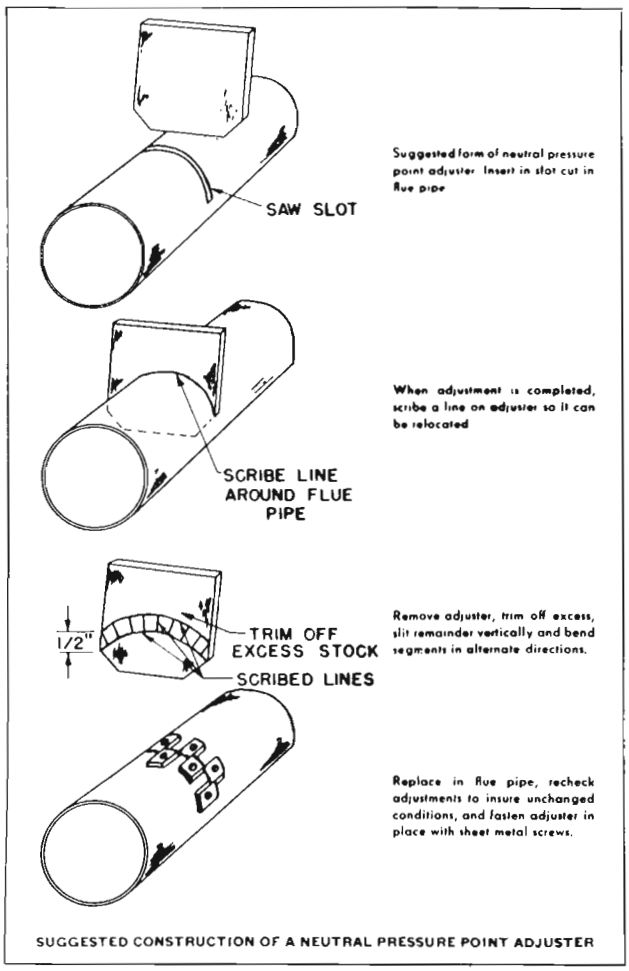
Revertible Flue (Down Draft or Diving Flue) Type Furnaces or Boilers.

When installing the burner in the above type furnaces or boilers, the draft hood (or draft diverter) should be located at least one foot higher than the top of the highest point of the appliance flue passage or combustion chamber. It is also recommended that a vent pipe, not less than one inch in diameter, be provided from the highest point in the flue passage, directly to the flue pipe. The gas company serving the area should be consulted in regards to their recommendations for converting this type of furnace or boiler.

The flue pipe should be securely supported and the joints fastened with sheet metal screws or riveted to prevent sagging, and in no case should it be located in a manner that it will present a hazard to combustible building material. (Refer to Local Building Code).

CHIMNEYS

The chimney should be examined and thoroughly cleaned, if necessary, before installation is made to make sure it will freely conduct the flue gases to the outside.



SUGGESTED CONSTRUCTION OF A NEUTRAL PRESSURE POINT ADJUSTER

Figure 3

Flue pipe should extend through the chimney wall to inner face of chimney liner but not beyond, and should be firmly cemented to masonry. A thimble may be used to facilitate removal of flue pipe for cleaning, in which event the thimble should be permanently cemented in place with mortar or other fireproof material that will not crack or check. The flue pipe or thimble, whichever is used, should be sealed into the chimney liner.

Flue connections from two or more appliances should not enter opposing or adjacent sides of the chimney at the same level.

Under no circumstances should the flue pipe be connected into a flue of an open fireplace.

DRAFT HOOD & FLUE PIPE SIZES FOR GAS CONVERSION BURNERS IN UP-DRAFT COAL FURNACES AND BOILERS	
Not more than 6500 Btu per square inch of flue area	
Input - Btu Per Hour	Draft Hood and Flue Pipe Size
Up to 120,000	5 inch
120,000 --- 180,000	6 inch
180,000 --- 250,000	7 inch
250,000 --- 320,000	8 inch
320,000 --- 410,000	9 inch

Note: If the flue pipe exceeds 10 ft. in length, or contains more than two elbows, use next size larger pipe and draft hood.

Figure 4

NO MOVABLE FLUE PIPE DAMPER SHOULD BE USED ON ANY INSTALLATION.

Sizing of Burner in Relation to Combustion Chamber

The B.T.U. input of the burner should never exceed the following when installed in coal fired furnaces or boilers having the following firebox dimensions. It is also recommended that one of our upshot models be used when converting coal fired equipment in these input ranges.

Max. B.T.U. Input	Min. Firebox Dimension at Grate Level	Max. B.T.U. Input	Min. Firebox Dimension at Grate Level
90,000	16 In. Diam.	198,000	24 In. Diam.
110,000	18 In. Diam.	235,000	26 In. Diam.
140,000	20 In. Diam.	275,000	28 In. Diam.
157,000	22 In. Diam.		and up

Figure 5

INSTALLATION OF BURNER AND CONTROLS

INPUT FIRING RATE: For Oil furnace figure 120,000 B.T.U. per gallon -- EXAMPLE: Furnace firing rate 0.85 G.P.H. -- then -- 0.85 x 120,000, 102,000 B.T.U.'s input rate. For coal fired equipment, figure 70,000 B.T.U. per sq. foot of grate area. See Figure 5.

These burners are equipped with a flange for convenient mounting on the front plate of the boiler or furnace. The end of the mixer and pilot can be inserted through the round opening provided for the entrance of the draft tube of a gun type oil burner. The opening must be at least 4-1/4" in diameter to accommodate the burner parts.

Measure the distance from the flange mounting studs on the furnace or boiler being converted (with combustion refractory removed) and pick the short or long burner that will put the flame target approximately in the center of the combustion chamber. If using the adjustable venturi and target inshot burner, adjust the venturi and target so that the target will be approximately in the center of the combustion chamber. On low inputs, adjust the target near the minimum length and on higher inputs, adjust it nearer the maximum distance from the end of the venturi. The tube must overlap venturi by at least 2 inches.

If using the adjustable venturi upshot burner adjust the venturi to put the flame spreader in the center of the combustion chamber. This burner is available with two lengths of venturis and both a 4-1/8" and 7-1/8" flame spreader. Normally the short venturi and 4-1/8" spreader should be used in converting an oil designed furnace or boiler and the longer venturi and larger spreader for converting a coal designed furnace and larger boilers.

Attach gas burner to front plate of furnace. Where studs or bolts were used to attach the oil burner they may be used for attaching the gas burner.

The orifice spud supplied with all burners with fixed orifice is the size for the minimum B.T.U. input of the burner for the type gas shown on the requirements plate. The following table shows the different size orifice spuds for various inputs.

B.T.U. Per Hr.	Drill Size No. Natural 3-1/2" W.C.	Drill Size No. Propane 11" W.C.
75,000	17	37
85,000	13	35
100,100	7	31
130,000	15/64	29
160,000	17/64	26
180,000	9/32	22
200,000	19/64	19
225,000	N	16

NOTE: The above B.T.U. input values show the approximate Hr. B.T.U. input of the burner for the various orifice sizes shown in the above column. To determine the actual B.T.U. input of the burner, multiply the number of cubic feet of gas per hour being consumed by the burner, by the B.T.U. rating per cubic foot of the gas being used. This can be done by clocking the meter. In no case shall the input be less than the minimum, nor greater than the maximum shown on the plate. Nor should the input exceed the burner being replaced; nor should a gas be used other than that called for on the plate of the burner.

NOTE: Be sure stresses on pilot tubing are such as to hold pilot in proper location.

ELECTRICAL WIRING

The safety pilot, automatic main gas control valve, limit control, Thermostat and (low water cut-out if used) should be wired in series as shown in Fig. 6. All wiring and connections must conform with the rules of the National Electrical Code or the code legally authorized in the locality where the installation is being made. The wiring should be installed in a neat and orderly manner and secured well to prevent sagging. Where wiring is along the gas supply drop it should be securely attached to the piping. In no case should the wire be carried through leaders, cold air returns or clothes chutes. When the burner is supplied with a transformer for operating the automatic main gas valve, it is recommended that the transformer be mounted with knock-out box and a switch with "on" and "off" markings mounted on the hot wire of the supply circuit.

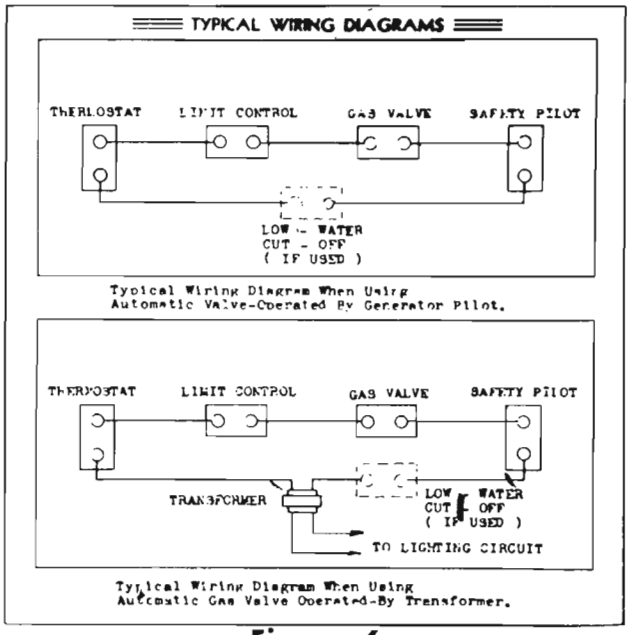


Figure 6

The thermostat should be installed on an inside wall where sudden changes in temperature are not apt to occur. It should be located in the natural circulating path of room air. Locations which would expose the thermostat to cold air infiltration, or drafts from windows, doors, or other openings leading to the outside, or to air currents from cold or warm air registers, or where the natural circulation of air is shut off such as behind doors, above or below mantels, shelves, or in corners, should be avoided. The thermostat should not be exposed to heat from nearby radiators, lamps, rays of the sun, or mounted on a wall near pipes, warm air ducts or chimney flue. Any hole in the plaster or panel through which the thermostat wires pass should be sealed to prevent drafts.

The maximum comfort to be obtained from any automatic heating installation is dependent to a great extent upon the proper installation and adjustment of the room thermostat.

Limit Control Switches

Warm Air furnaces (Gravity and Forced Air) should be equipped with an automatic temperature limit control switch, the heat sensitive element of which should be mounted in the warm air plenum of the furnace. The limit control switch must be of the low voltage type that will open the electrical circuit on temperature rise.

Hot water boilers (Forced or Gravity) should be equipped with an automatic temperature limit control switch of the low voltage type that will open the electrical circuit on temperature rise.

Steam and vapor boilers should be equipped with an automatic pressure limit control switch of the low voltage type that opens the electrical circuit on pressure rise.

Recommended limit control settings are as follows:

Hot water system (Gravity)	180 F.
Hot water system (Forced)	160 F.
Warm Air . . . . . (Forced)	200 F.
Warm Air . . . . . (Gravity)	300 F.
Steam System	"off" 3 lbs. - "on" 1 lb.
Vapor System	"off" 4-oz. - "on" 2-oz.

It is recommended that on a steam or vacuum vapor boiler, means be provided to guard against firing a dry boiler or one in which the water is dangerously low.

GAS PIPING

A ground joint union should be placed in the gas line upstream from pressure regulator. A tee fitting with the bottom plugged or capped must be used at the bottom of the burner riser instead of an ell to catch any foreign material. When required by local code, the main manual control valve supplied with the burner should be placed in the riser approximately 5 feet above floor level. The pilot valve supplied with the burner should be installed on the inlet side of the main manual gas valve. Connect one end of the 1/4 O.D. tubing, also supplied with the burner, to the pilot supply line junction of the air duct box. Run the tubing along the gas riser to the pilot valve.

The gas line should be a separate supply direct from the meter to the burner. It is recommended that new pipe

Table 2

SPECIFICATIONS FOR THREADING PIPE

Nominal Size of Pipe (Inches)	Approx. Length of Threaded Portion (Inches)	Approx. Number of Threads to be Cut
¾	¾	10
1	⅞	10
1¼	1	11
1½	1	11
2	1	11

* See AGA Requirements and Recommended Practice for House Piping and Appliance Installation.

Table 3

PIPE CAPACITY TABLE

Length of Pipe in Feet	Nominal Diameter of Pipe in Inches					
	¾	1	1¼	1½	2	
	Capacity—Cu Ft Per Hr with a 0.6 Sp Gr Gas and Pressure Drop of 0.3" Water Column					
15	172	345	750			
30	120	241	535	850		
45	99	199	435	700		
60	86	173	380	610		
75	77	155	345	545		
90	70	141	310	490		
105	65	131	285	450	920	
120		120	270	420	860	
150		109	242	380	780	
180		100	225	350	720	

To convert the figures given in Table 3 to capacities for another gas of different specific gravity, multiply the tabular values by the multipliers shown in Table 4.

Table 4

MULTIPLIERS FOR VARIOUS SPECIFIC GRAVITIES

Specific Gravity	Multiplier	Specific Gravity	Multiplier
.35	1.31	1.00	.775
.40	1.23	1.10	.740
.45	1.16	1.20	.707
.50	1.10	1.30	.680
.55	1.04	1.40	.655
.60	1.00	1.50	.633
.65	.962	1.60	.612
.70	.926	1.70	.594
.75	.895	1.80	.577
.80	.867	1.90	.565
.85	.841	2.00	.547
.90	.817	2.10	.535

Figure 7

always be used and located so that a minimum amount of work will be required in future servicing. The piping should be so installed as to be durable, substantial and gas tight. It should be clear and free from cutting burrs and defects in structure or threading. The most common material for house piping is wrought iron or steel and malleable iron pipe fittings. Cast iron fittings or aluminum tubing should not be used for the main gas circuit, nor should sweated or soldered connections be used. Joint compounds of the type that is resistant to the action of L.P. gases (pipe dope) should be used sparingly on male threads only and be of the type approved for all gases. The correct number of threads for any length pipe is shown in Table 2, Fig. 7.

Taking into consideration a various number of factors, including an ordinary number of fittings, it is recommended that Tables 3 and 4, Fig. 7 be used in determining the size pipe to use from the meter to the burner. The figures shown in Table 3 are based on a 0.3 inch (water column) pressure drop for a gas of 0.60 specific gravity. For other specific gravity gases use multipliers in Table 4 to correct the figures in Table 3.

To obtain the cubic feet per hour of gas required by the burner, divide the B.T.U. input at which the burner was adjusted by the average B.T.U. heating valve of the gas being used.

The building structure should not be weakened by installation of the gas piping. The piping should not be supported by other piping, but should be firmly supported with pipe hooks, straps, bands or hangers. Butt or Lap welded pipe should not be bent. Fittings should be used at all turns.

The gas piping should be so installed as to prevent an accumulation of condensation and it must be protected against freezing. A horizontal pipe should be pitched so that it grades toward the meter and is free from sags. The pipe should not be run through or in an air duct or clothes chute. A drip leg should be installed at the gas inlet to the burner or the appliance.

TESTING PIPING FOR LEAKS

Before turning gas under pressure into the piping, all openings from which gas can escape including all pilot burners should be closed.

Immediately after turning gas under pressure into the piping, the system should be checked to ascertain that no gas is escaping. This can be done by carefully watching the 1/2 cubic foot test dial (a small dial usually above the regular dials) to determine if gas is passing through the meter. To assist in observing any movement of the dial hand, wet a small piece of paper and paste its edge directly over the center of the hand as soon as the gas is turned on. Allow five minutes for the 1/2 foot dial to show any movement. If a larger dial is used, allow a proportionate longer time.

In case the test hand shows any movement, the meter cock should be turned off and the necessary repairs made, after which the above test should be repeated.

Defective pipes or fittings should be replaced and not repaired. Never use flame or fire in any form to locate leaks. A soap solution should be used.

Before pronouncing the piping system gas tight, check the test dials by turning on and lighting a small burner to see that the dial hand moves with the burner on. If the hand does not move with the burner on, the meter should be replaced.

After the piping and meter have been checked, all piping and appliances receiving gas through the meter should be completely purged of air.

CAUTION: Do not bleed the air inside the furnace. Be sure to re-light the pilots on all other appliances connected to the meter.

ADJUSTMENT OF BURNER

After the piping has been thoroughly purged of air, the burner should be put into operation as outlined on the instruction plate.

The window in the secondary (or combustion) air shutter is of the correct size when wide open for 225,000 B.T.U. input. If the burner was adjusted for 125,000 B.T.U. input, the shutter should be adjusted to where the window is half open. Using the above as a guide, set the secondary air shutter in the correct position and lock in place with stud.

Primary Air

Adjust the primary air, by starting from the almost closed position. Then gradually open the shutter on burner mixer head until the flame turns to a bluish red with slight yellow tips, then gradually open till the yellow tips have just disappeared. Now lock in place with lock nut.

Neutral Pressure Point - Adjustment of Combustion Air

METHOD 1. Reduced flue pipe size.

a. Combustion Air Adjustment—With the firing door cracked open slightly, the combustion air adjustment means shall be set to a position so that a "pull in" on a match flame test will occur up to the middle of the door. If the "pull in" goes above center of the door, the combustion air door should be opened further and if it "blows out" below the latch the combustion air door opening should be decreased.

CAUTION: If combustion air openings become abnormally great or small, be absolutely sure there is no leakage of air around base of boiler or furnace or in through ash pit shield, and also that openings in chimney are closed.

If under these conditions, the neutral pressure point is below the door latch, increase flue size as necessary to obtain the required neutral level.

b. Check flame characteristcs, ignition, and extinction of flame—the burner should be inspected for flame characteristics after all adjustments have been made by closing the firing door for one minute and then opening quickly to see that no floating or change in flame characteristcs has occurred. The burner should then be turned on and off with the firing door closed and tested for ignition and extinction. The ignition should be instantaneous and quiet—the extinction should not cause flash back to the orifice, objectionable concussion, or extinction of pilot.

METHOD 2. Full size flue pipe and a neutral pressure point adjuster.

a. The combustion air admitted through the conversion burner shall be adjusted to prevent excessive aeration and yet provide sufficient air to prevent smothering of the burner flames. This adjustment is made with the firing door cracked open. Observe the flame through the crack in the firing door, close the combustion air door until further closure tends to create a floating flame. This adjustment is checked by quickly opening the firing door; if the flame shortens, open the combustion air door slightly. Repeat these observations and readjustments until no change in flame length occurs.

CAUTION: If combustion air openings become abnormally great or small, be absolutely sure there is no leakage of air around base of boiler or furnace, or in through ash pit shield, and also that any openings in chimney are closed.

b. The next step in burner adjustment is the setting of the neutral pressure point at the proper location. For an atmospheric injection type burner installation, the neutral pressure point shall be adjusted within the limits of the firing door latch and 1 inch below the top of the firing door.

The following procedure is recommended when adjusting the neutral pressure point:

(1) Close the firing door, leaving a crack of about 1/8 inch.

(2) Starting with the flue pipe wide open, progressively close the neutral point adjuster, observing the level of the neutral pressure point with a lighted match until the neutral pressure point is at the desired position. (The match flame will be blown outward or extinguised above the neutral pressure point and drawn in below the neutral point).

(3) Close the firing door completely and allow the burner to operate for about 30 seconds. Quickly open the firing door wide and immediately observe the top of the burner flame. This can best be done by sighting approximately horizontally into the fire pot at the level of the bottom of the firing door. If there is evidence of initial floating or if there is any noticeable shortening of the flame after the door has been opened a few seconds, increase the supply of combustion air slightly so that there is no floating or noticeable shortening of the flame when steps 1, 2 and 3 are repeated.

Before leaving the installation, the safety pilot should be turned off a few times to see that it is functioning properly. The main burner should automatically turn off within 3 minutes after the pilot flames go out. The balance of the automatic controls should also be tested several times to see that they are functioning properly.

CAUTION: Thoroughly instruct the customer how to properly and safely operate the burner. Also warn customer to be sure to keep all air registers or radiators open. The gas company should be notified of the installation immediately.

FOR BURNERS SUPPLIED WITH ADJUSTABLE ORIFICE ASSEMBLY:

TO CHANGE INPUT:

REMOVE CAP SCREW FROM BRASS PLUG IN PIPE TEE HOLDING ORIFICE HOLDER. (BE CAREFUL NOT TO LOSE THE GASKET SUPPLIED). INSERT SCREWDRIVER IN PIN SLOT AND TURN CLOCKWISE UNTIL PIN SETS. THE ORIFICE IS NOW FULLY CLOSED. TURN COUNTER CLOCKWISE TO DESIRED INPUT THEN REPLACE CAP SCREW. THE FOLLOWING CHART IS FOR APPROXIMATING INPUTS ONLY, IN ANY ADJUSTMENT THE GAS METER SHOULD BE CLOCKED TO DETERMINE EXACT INPUT.

Number of Turns	Approximate Input
1 ½	75,000 BTU/HR
2	90,000 BTU/HR
2 ½	120,000 BTU/HR
3	145,000 BTU/HR
3 ½	170,000 BTU/HR
4	200,000 BTU/HR

NOTE:
THIS CHART IS FOR NATURAL GAS ONLY. A FIXED ORIFICE MUST BE USED ON BURNERS EQUIPPED FOR USE WITH L.P. GAS. ON BURNERS WITH A MAXIMUM INPUT OF 160,000, THAT MAXIMUM WILL BE REACHED BETWEEN 3 and 3½ TURNS.

GAS RATE—CUBIC FEET PER HOUR

Seconds for One Revolution	Size of Test Dial ½ cu. ft.	Size of Test Dial 1 cu. ft	Seconds for One Revolution	Size of Test Dial ½ cu. ft.	Size of Test Dial 1 cu. ft.
10	180	360	35		103
11	164	327	36	50	100
12	150	300	37		97
13	138	277	38	47	95
14	129	257	39		92
15	120	240	40	45	90
16	113	225	41		
17	106	212	42	43	86
18	100	200	43		
19	95	189	44	41	82
20	90	180	45	40	80
21	86	171	46		78
22	82	164	47	38	
23	78	157	48		75
24	75	150	49		
25	72	144	50	36	72
26	69	138	51		
27	67	133	52		69
28	64	129	53	34	
29	62	124	54		67
30	60	120	55		
31		116	56	32	64
32	56	113	57		
33		109	58	31	62
34	53	106	59		
35		103	60	30	60

GAS RATE—CUBIC FEET PER HOUR

Seconds for One Revolution	Size of Test Dial 2 cu. ft.	Size of Test Dial 5 cu. ft.	Seconds for One Revolution	Size of Test Dial 2 cu. ft	Size of Test Dial 5 cu. ft.
10	720	1800	55	131	327
11	655	1636	56	129	321
12	600	1500	57	126	316
13	555	1385	58	124	310
14	514	1286	59	122	305
15	480	1200	60	120	300
16	450	1125	62	116	290
17	424	1059	64	112	281
18	400	1000	66	109	273
19	379	947	68	106	265
20	360	900	70	103	257
21	343	857	72	100	250
22	327	818	74	97	243
23	313	783	76	95	237
24	300	750	78	92	231
25	288	720	80	90	225
26	277	692	82	88	220
27	267	667	84	86	214
28	257	643	86	84	209
29	248	621	88	82	205
30	240	600	90	80	200
31	232	581	92	78	196
32	225	563	94		192
33	218	545	96	75	188
34	212	529	98		184
35	206	514	100	72	180
36	200	500	102		176
37	195	486	104	69	173
38	189	474	106		170
39	185	462	108	67	167
40	180	450	110		164
41	176	439	112	64	161
42	172	429	116	62	155
43	167	419	120	60	150
44	164	409	125		144
45	160	400	130		138
46	157	391	135		132
47	153	383	140		129
48	150	375	145		124
49	147	367	150		120
50	144	360	155		116
51	141	353	160		113
52	138	346	165		109
53	136	340	170		106
54	133	333	175		103
55	131	327	180		100