

**Gas Fired Endothermic Generator**  
**Segregated chambers**  
**Atmosphere Engineering control system & SSI probe**

INSTALLATION

1. UNPACK AND INSPECT THE GENERATOR. IF THERE ARE COMPONENTS DAMAGED OR MISSING CONTACT YOUR CARRIER IMMEDIATELY AND ALSO LET US KNOW.
2. SET GENERATOR IN PLACE AND LEVEL BY SHIMMING UNDER THE FRAME. ALLOW AT LEAST 2 FEET CLEARANCE AT SIDES AND BACK FOR SERVICE AND THE GENERATOR SHOULD BE ACCESSABLE BY FORK LIFT ON AT LEAST ONE SIDE. A MINIMUM OF 7 FEET OF CLEARANCE IS REQUIRED ABOVE THE GENERATOR FOR INSTALLATION / REMOVAL OF THE RETORT(S).
3. WE CANNOT OFFER SPECIFIC CLEARANCE OR LOCATION INFORMATION WITH RESPECT TO FUME HOODS. WE HAVE OBSERVED HOOD CLEARANCES IN THE RANGE OF 3" TO 12" AT VARIOUS INSTALLATIONS. THE INSTALLATION OF THE UNIT AND THE VENTING AND SUPPLY PIPING FOR THE UNIT IS GOVERNED BY FIRE AND ELECTRICAL CODES SPECIFIC TO THE LOCATION THE UNIT IS TO BE USED.
4. THE THERMOCOUPLE ASSEMBLIES ARE SHIPPED IN PLACE. CONFIRM THAT EACH T/C ASSEMBLY IS FULLY INSERTED INTO THE HEATING CHAMBER UNTIL THE T/C HEAD IS AGAINST THE FITTING OF THE GENERATOR SHELL OR AS FAR INTO THE CHAMBER AS IT WILL GO. THE 6 THERMOCOUPLES IN THE SYSTEM ARE IDENTICAL. EACH CHAMBER HAS ONE T/C FOR TEMP CONTROL AND ONE FOR HI TEMP LIMIT.
5. THE CARBON PROBE(S) ARE ALSO SHIPPED IN PLACE. THEY ARE HELD IN POSITION BY A PACKING NUT. PRIOR TO STARTING THE SYSTEM UP THE PROBES SHOULD BE SUBSTANTIALLY WITHDRAWN FROM THE CHAMBERS (AS FAR AS CAN BE DONE WITHOUT ACTUALLY REMOVING THEM FROM THEIR FITTINGS).
6. **IT IS IMPORTANT THAT THE PROBES NOT BE INSERTED ALL THE WAY INTO THE CHAMBERS AT THE TIME OF STARTUP. THE PROBES ARE DESIGNED TO OPERATE AT ABOUT 1550°F +/-150°F. THE CHAMBER OPERATING TEMPERATURE IS GOING TO BE BETWEEN 1700°F AND 1900°F; SUBSTANTIALLY HIGHER THAN THE OPTIMUM PROBE TEMPERATURE. IT IS NECESSARY FIRST GET THE UNIT UP TO OPERATING TEMPERATURE AND THEN TO GRADUALLY INSERT EACH PROBE TO THE POINT AT WHICH IT SEES THE 1550°F OPERATING TEMPERATURE. THIS IS A TRIAL AND ERROR PROCESS. THE PROBE TEMPERATURE IS READ ON THE TOUCH SCREEN.**

ONCE THE PROBES HAVE BEEN POSITIONED THE COMPRESSION NUT ON THE PROBE SHEATH SHOULD BE SNUGGED DOWN BY HAND; IT'S NOT NECESSARY TO USE A WRENCH.

THE TUBES CONNECTING THE PROBE TO THE PROBE PANEL ARE SOFT FLEXIBLE 1/4" LINES. THEY ARE LONG ENOUGH TO REACH FROM THE SAMPLING PANEL TO THE FURTHERST PROBE. CHECK THE LINES AND VERIFY THE CONNECTIONS.

7. CONNECTIONS FOR THE PROBE SIGNAL AND INTEGRAL THERMOCOUPLE ARE MADE THROUGH THE BLACK ELECTRICAL CONNECTOR LOCATED AT THE UNDERSIDE OF THE PROBE COVER.

**NOTE:** THE THERMOCOUPLE EXTENSION WIRES ARE YELLOW VINYL COVERING FOR TYPE "K" THERMOCOUPLE AND IN A GREEN VINYL COVERING FOR TYPE "R" OR "S" THERMOCOUPLE. THE RED LEAD WIRE IS NEGATIVE FOR TYPE "K", "S" OR "R" THERMOCOUPLES.

8. REFERENCE AIR IS TAKEN FROM THE BRASS COLORED PROBE COLLAR FITTING MARKED "REF". SAMPLE GAS IS TAKEN FROM THE PROBE COLLAR FITTING MARKED "BO". EITHER SOFT PLASTIC OR COPPER TUBING CAN BE USED.

**CAUTION:** DO NOT REMOVE AIR FITTING BODY FROM PROBE COVER, BECAUSE PROBE WILL MALFUNCTION.

9. CONNECT NATURAL GAS TO THE GENERATOR GAS INLET. GAS IS REQUIRED AT A PRESSURE OF 5 PSI. A GAS PRESSURE REGULATOR SHOULD BE PROVIDED TO ENSURE A CONSTANT SUPPLY PRESSURE. CHECK FOR PROPER SEAL. ALL CONNECTIONS SHOULD BE MADE BY A QUALIFIED PIPING TECHNICIAN AND IN ACCORDANCE WITH ALL STATE, LOCAL AND NATIONAL CODES. CHECK ALL PIPING FOR LEAKS, INCLUDING PIPING WITHIN THE GENERATOR "PACKAGE". SOME OF THIS PIPING MAY HAVE BECOME LOOSE IN TRANSIT.
10. CONNECT GENERATOR OUTPUT TO FURNACE(S) AS REQUIRED. USE ADEQUATE PIPE SIZE PER THE CHART ON PAGE 3. A SHUTOFF VALVE SHOULD BE INSTALLED IN THE LINE NEAR THE FURNACE(S).

THERE IS A TENDENCY FOR CARBON TO PRECIPITATE FROM ENDOTHERMIC GAS. THIS CAN CAUSE SERIOUS PROBLEMS IN PIPING AND VALVES. TEES OR CROSSES INSTALLED AT EVERY BEND OF THE PIPING WILL FACILITATE THE CLEANING OF THE PIPING WHEN NECESSARY.

11. CONNECT 3 PHASE ELECTRICAL POWER INTO THE GENERATOR ELECTRICAL ENCLOSURE. REFER TO THE ELECTRICAL DIAGRAM FOR VOLTAGE AND AMPERAGE. (480V/3Phase/60Hz/10FLA). ALL ELECTRICAL CONNECTIONS SHOULD BE MADE BY A QUALIFIED ELECTRICAL TECHNICIAN AND IN ACCORDANCE WITH ALL STATE, LOCAL AND NATIONAL ELECTRICAL CODES.
12. ATMOSPHERE PUMP ROTATION IS CLOCKWISE WHEN FACING THE MOTOR END. CHECK MOTOR ROTATION BEFORE STARTUP. REVERSE ANY TWO ELECTRICAL PHASE CONNECTIONS TO THE MOTOR TO REVERSE ROTATION IF REQUIRED. CHECK ROTATION BY MANUALLY, MOMENTARILY DEPRESSING THE CONTACTOR LOCATED INSIDE THE CONTROL PANEL.
13. PROPERLY VENT AND EXHAUST THE GENERATOR TO PREVENT THE ACCUMULATION OF GASSES WITHIN THE BUILDING. PAY PARTICULAR ATTENTION TO THE CLEARANCE REQUIREMENTS OF STEPS 2 AND 3 ABOVE.

GAS CAPACITY CU. FT. PER HOUR  
RECOMMENDED MANIFOLD PIPE SIZE

| LENGTH OF<br>PIPE-FEET | SIZE OF PIPE |           |               |               |           |           |           |
|------------------------|--------------|-----------|---------------|---------------|-----------|-----------|-----------|
|                        | <u>3/4"</u>  | <u>1"</u> | <u>1-1/4"</u> | <u>1-1/2"</u> | <u>2"</u> | <u>3"</u> | <u>4"</u> |
| 15                     | 168          | 350       | 620           | 960           | 2000      | 5400      | 11200     |
| 30                     | 120          | 245       | 430           | 680           | 1400      | 3800      | 7900      |
| 45                     | 98           | 200       | 355           | 530           | 1150      | 3200      | 6500      |
| 60                     | 84           | 175       | 310           | 480           | 1000      | 2700      | 5600      |
| 75                     | 76           | 155       | 275           | 430           | 890       | 2450      | 5000      |
| 90                     | 70           | 145       | 250           | 395           | 810       | 2260      | 4550      |
| 105                    | 64           | 132       | 232           | 370           | 750       | 2100      | 4200      |
| 120                    | 60           | 125       | 215           | 340           | 700       | 1950      | 4000      |
| 150                    | 54           | 110       | 195           | 310           | 630       | 1750      | 3550      |
| 180                    | 49           | 100       | 175           | 280           | 570       | 1600      | 3200      |
| 210                    | 44           | 94        | 165           | 260           | 530       | 1450      | 3000      |
| 240                    | 43           | 88        | 155           | 240           | 500       | 1350      | 2800      |
| 270                    | 38           | 83        | 145           | 230           | 470       | 1300      | 2650      |
| 300                    | 38           | 79        | 138           | 215           | 440       | 1250      | 2500      |
| 450                    | 31           | 64        | 112           | 176           | 360       | 1000      | 2050      |
| 600                    | 56           | 56        | 98            | 152           | 315       | 860       | 1750      |