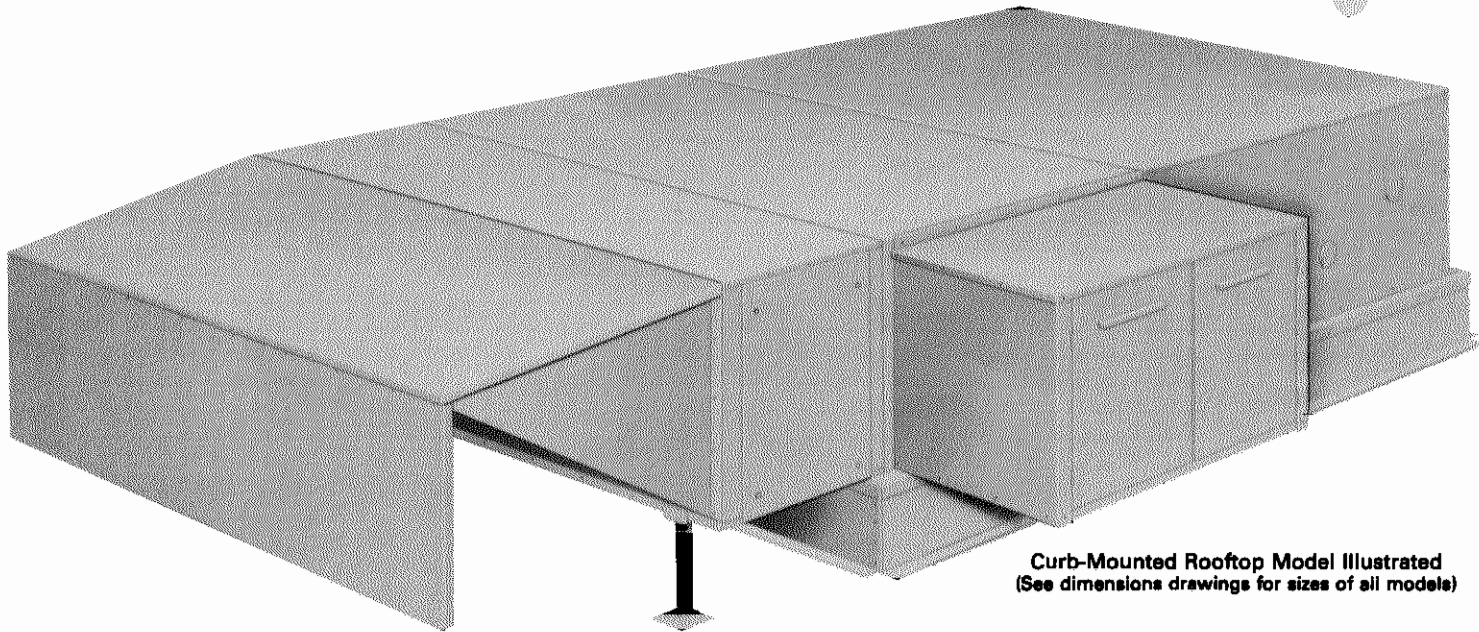




**MAKE-UP AIR SYSTEMS  
DIRECT GAS FIRED**  
Indoor or Outdoor Models Available  
96,000 to 10,450,000 Btuh Input  
2,000 to 75,000 cfm Air Volume Range

ENGINEERING DATA  
HEATING UNITS  
EAS  
Page 99  
September 15, 1982  
Supersedes 1-15-80



Curb-Mounted Rooftop Model Illustrated  
(See dimensions drawings for sizes of all models)

**LSBD DIRECT GAS-FIRED MAKE-UP HEATERS  
LSBDR DIRECT GAS-FIRED HEATERS WITH RETURN AIR CAPABILITY  
LSBDF DIRECT GAS-FIRED DUCT FURNACES**

**Make-up Air:**  
Permits exhaust fans and systems to operate efficiently without pulling freezing air into the building.

**Completely Safe:**  
Exceeds by 500% the minimum safety factor for carbon monoxide content as established by the U.S. Public Health Service.

**Air Delivery Range:**  
2,000 to 75,000 CFM.

**100% Combustion Efficiency:**  
No "pick-up" or flue losses.

**Economy of Operation:**  
"Make-Up Air" is provided without extra fuel cost since load on regular heating system is correspondingly reduced.

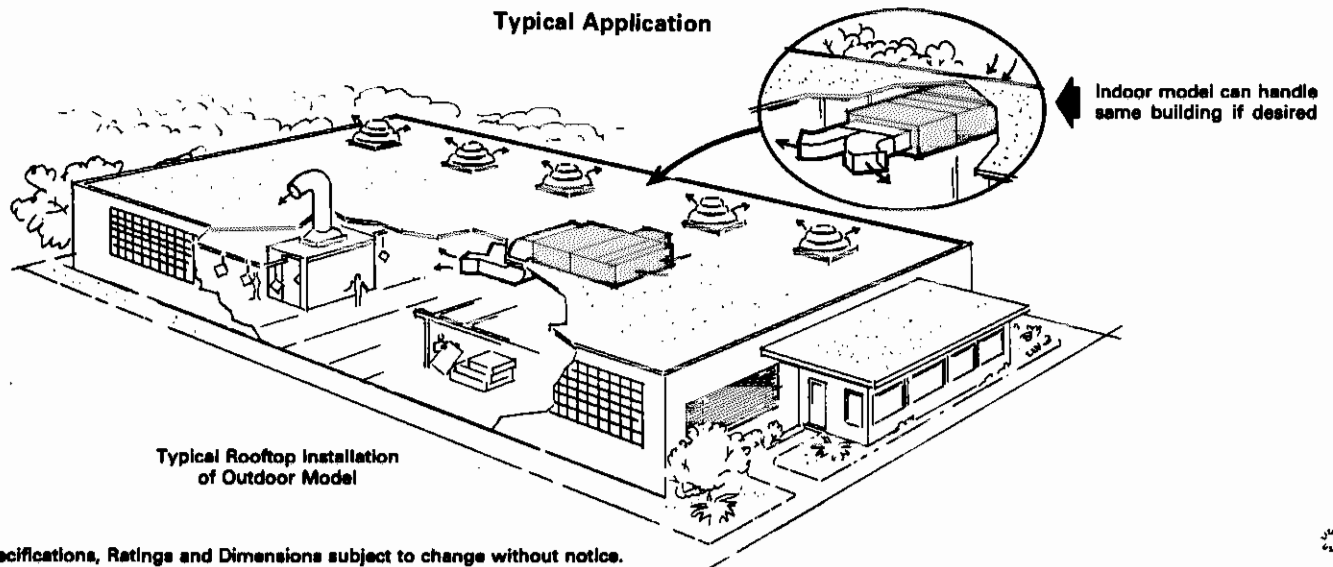
**Completely Assembled and Tested:**  
Every unit is fire-tested for combustion and operation of all controls.

**Blowers:**  
Forward curved fans.

**Model Flexibility:**  
Indoor or weatherproof.

**Eliminates Air Starvation and Contaminated Air:**  
In factories chemical plants, foundries, restaurants, laundries, garages, kitchens, auditoriums, dry cleaning plants, hospitals and boiler rooms.

**Typical Application**



Typical Rooftop Installation of Outdoor Model

# LSBD AND LSBDR SERIES SELECTION TABLE

**LSBDF SERIES . . . Same as below except that fan size and HP data not applicable.**

| Model Prefix and *Fan Size | Air Delivery<br>—<br>**SCFM | Disch. Velocity<br>—<br>FPM | LSBD Approx. Ship. Wt. (lbs.) | LSBDR Approx. Ship. Wt. (lbs.) | LSBDF Approx. Ship. Wt. (lbs.) | MBH INPUT  |        |        |        |        |        |          |          | MOTOR HORSEPOWER  |       |        |       |       |
|----------------------------|-----------------------------|-----------------------------|-------------------------------|--------------------------------|--------------------------------|--|--------|--------|--------|--------|--------|----------|----------|---|-------|--------|-------|-------|
|                            |                             |                             |                               |                                |                                | Air Temperature Rise "Range"<br>shaded area indicate burner operating at full capacity.<br>Light figures indicate burner operating at reduced capacity to provide desired T.R. |        |        |        |        |        |          |          | Use TSP column that will overcome total system resistance. Required unit allowances are: burner 1/2"; filter (dirty) 1/4"; intake hood 1/4"; discharge louver 1/8". Damper resistance may be ignored. |       |        |       |       |
|                            |                             |                             |                               |                                |                                | 40/49°   | 50/59° | 60/69° | 70/79° | 80/89° | 90/99° | 100/109° | 110/119° | Total Static Pressure<br>Inches w.c.  |       |        |       |       |
|                            |                             |                             |                               |                                |                                | 3/4"   | 1"     | 1 1/4" | 1 1/2" | 1 3/4" | 2"     | 2 1/2"   | 3"       | 3 1/2"  | 4"    | 4 1/2" |       |       |
| LSBD<br>LSBDR<br>112       | 2000                        | 1325                        | 480                           | 680                            | 230                            | 96   | 120    | 144    | 168    | 192    | 216    | 240      | 275      | 3/4   | 3/4   | 1      | 1     | NA    |
|                            | 3000                        | 1988                        | 490                           | 690                            | 240                            | 144  | 180    | 216    | 275    | 288    | 324    | 360      | 396      | 1 1/2   | 1 1/2 | 1 1/2  | 2     | NA    |
| LSBD<br>LSBDR<br>115       | 4000                        | 1775                        | 700                           | 920                            | 450                            | 192  | 275    | 288    | 336    | 384    | 432    | 480      | 550      | 1 1/2   | 1 1/2 | 2      | 2     | 3     |
|                            | 5000                        | 2219                        | 700                           | 920                            | 450                            | 275  | 300    | 360    | 420    | 480    | 550    | 600      | 660      | 2   | 2     | 3      | 3     | 3     |
|                            | 6000                        | 2663                        | 725                           | 945                            | 475                            | 287  | 360    | 430    | 550    | 574    | 645    | 720      | 825      | 3   | 3     | 5      | 5     | 5     |
|                            | 7000                        | 3107                        | 735                           | 955                            | 485                            | 335  | 420    | 550    | 575    | 670    | 750    | 825      | 925      | 5   | 5     | 5      | 5     | 7 1/2 |
|                            | 8000                        | 3551                        | 735                           | 955                            | 485                            | 383  | 550    | 574    | 670    | 825    | 860    | 960      | 1100     | 5   | 7 1/2 | 7 1/2  | 7 1/2 | 7 1/2 |
| LSBD<br>LSBDR<br>215       | 6000                        | 1206                        | 1200                          | 1640                           | 760                            | 287  | 360    | 430    | 550    | 574    | 645    | 720      | 825      | 1 1/2   | 1 1/2 | 2      | 3     | 3     |
|                            | 7000                        | 1407                        | 1200                          | 1640                           | 760                            | 335  | 420    | 550    | 575    | 670    | 750    | 825      | 925      | 1 1/2   | 2     | 3      | 3     | 3     |
|                            | 8000                        | 1608                        | 1200                          | 1640                           | 760                            | 383  | 550    | 574    | 670    | 825    | 860    | 960      | 1100     | 1 1/2   | 2     | 3      | 3     | 5     |
|                            | 9000                        | 1809                        | 1200                          | 1640                           | 760                            | 430  | 550    | 645    | 825    | 865    | 965    | 1100     | 1190     | 2   | 3     | 3      | 5     | 5     |
|                            | 10000                       | 2010                        | 1225                          | 1475                           | 785                            | 550  | 600    | 718    | 825    | 960    | 1100   | 1200     | 1375     | 3   | 3     | 5      | 5     | 5     |
|                            | 12000                       | 2211                        | 1230                          | 1480                           | 790                            | 575  | 825    | 860    | 1100   | 1150   | 1375   | 1440     | 1650     | 5   | 5     | 5      | 7 1/2 | 7 1/2 |
|                            | 14000                       | 2412                        | 1230                          | 1480                           | 790                            | 670  | 840    | 1100   | 1180   | 1375   | 1505   | 1650     | 1925     | 5   | 7 1/2 | 7 1/2  | 7 1/2 | 7 1/2 |
|                            | 16000                       | 2613                        | 1275                          | 1525                           | 835                            | 825  | 1100   | 1150   | 1375   | 1650   | 1720   | 1925     | 2200     | 7 1/2   | 7 1/2 | 10     | 10    | 10    |
| LSBD<br>LSBDR<br>218       | 10000                       | 1441                        | 1720                          | 2000                           | 805                            | 550  | 600    | 718    | 825    | 960    | 1100   | 1200     | 1375     | 3   | 5     | 5      | 5     | 7 1/2 |
|                            | 12000                       | 1729                        | 1730                          | 2010                           | 815                            | 575  | 825    | 860    | 1100   | 1150   | 1375   | 1440     | 1650     | 5   | 5     | 5      | 7 1/2 | 7 1/2 |
|                            | 14000                       | 2017                        | 1730                          | 2010                           | 815                            | 670  | 840    | 1100   | 1180   | 1375   | 1505   | 1650     | 1925     | 5   | 5     | 7 1/2  | 7 1/2 | 10    |
|                            | 16000                       | 2305                        | 1775                          | 2055                           | 860                            | 825  | 1100   | 1150   | 1375   | 1650   | 1720   | 1925     | 2200     | 7 1/2   | 7 1/2 | 7 1/2  | 10    | 10    |
|                            | 18000                       | 2594                        | 1775                          | 2055                           | 860                            | 860  | 1100   | 1375   | 1650   | 1720   | 1925   | 2200     | 2475     | 7 1/2   | 7 1/2 | 10     | 10    | 15    |
|                            | 20000                       | 2882                        | 1800                          | 2080                           | 885                            | 1100   | 1375   | 1436   | 1650   | 1925   | 2200   | 2475     | 2750     | 10  | 10    | 15     | 15    | 15    |
| LSBD<br>LSBDR<br>222       | 18000                       | 1765                        | 2730                          | 3430                           | 1430                           | 860  | 1100   | 1375   | 1650   | 1720   | 1925   | 2200     | 2475     | 5   | 5     | 7 1/2  | 7 1/2 | 7 1/2 |
|                            | 20000                       | 1961                        | 2730                          | 3430                           | 1430                           | 1100   | 1375   | 1436   | 1650   | 1925   | 2200   | 2475     | 2750     | 5   | 7 1/2 | 7 1/2  | 7 1/2 | 10    |
|                            | 22000                       | 2157                        | 2780                          | 3480                           | 1480                           | 1100   | 1375   | 1650   | 1925   | 2200   | 2475   | 2750     | 3025     | 7 1/2   | 7 1/2 | 10     | 10    | 15    |
|                            | 24000                       | 2353                        | 2800                          | 3500                           | 1500                           | 1375   | 1650   | 1925   | 2200   | 2475   | 2750   | 3025     | 3300     | 10  | 10    | 10     | 15    | 15    |
|                            | 26000                       | 2549                        | 2800                          | 3500                           | 1500                           | 1375   | 1650   | 1925   | 2200   | 2475   | 2750   | 3025     | 3300     | 10  | 15    | 15     | 15    | 15    |
|                            | 28000                       | 2745                        | 2850                          | 3550                           | 1550                           | 1375   | 1925   | 2200   | 2475   | 2750   | 3025   | 3300     | 3575     | 15  | 15    | 15     | 20    | 20    |
| LSBD<br>LSBDR<br>227       | 30000                       | 2941                        | 2875                          | 3575                           | 1575                           | 1650   | 1925   | 2200   | 2750   | 3025   | 3300   | 3575     | 4125     | 20  | 20    | 20     | 20    | 25    |
|                            | 28000                       | 2014                        | 3600                          | 4600                           | 1600                           | 1375   | 1925   | 2200   | 2475   | 2750   | 3025   | 3300     | 3575     | 7 1/2   | 10    | 10     | 15    | 15    |
|                            | 30000                       | 2158                        | 3620                          | 4620                           | 1620                           | 1650   | 1925   | 2200   | 2750   | 3025   | 3300   | 3575     | 4125     | 10  | 10    | 15     | 15    | 15    |
|                            | 35000                       | 2518                        | 3685                          | 4685                           | 1685                           | 1925   | 2200   | 2750   | 3025   | 3300   | 3575   | 3850     | 4400     | 15  | 15    | 15     | 20    | 20    |
|                            | 40000                       | 2878                        | 3685                          | 4685                           | 1685                           | 2200   | 2750   | 3300   | 3575   | 3850   | 4400   | 4950     | 5500     | 15  | 20    | 20     | 20    | 25    |
|                            | 45000                       | 3237                        | 3720                          | 4720                           | 1720                           | 2200   | 2750   | 3300   | 3850   | 4400   | 4950   | 5500     | 6050     | 20  | 25    | 25     | 25    | 30    |
|                            | 50000                       | 3597                        | 3810                          | 4810                           | 1810                           | 2750   | 3300   | 3850   | 4400   | 4950   | 5500   | 6050     | 6600     | 30  | 30    | 30     | 30    | 40    |
| LSBD<br>LSBDR<br>233       | 40000                       | 1914                        | 5100                          | 6550                           | 2400                           | 2200   | 2750   | 3300   | 3575   | 3850   | 4400   | 4950     | 5500     | 10  | 15    | 15     | 15    | 20    |
|                            | 45000                       | 2153                        | 5100                          | 6550                           | 2400                           | 2200   | 2750   | 3300   | 3850   | 4400   | 4950   | 5500     | 6050     | 15  | 15    | 20     | 20    | 20    |
|                            | 50000                       | 2392                        | 5140                          | 6590                           | 2440                           | 2750   | 3300   | 3850   | 4400   | 4950   | 5500   | 6050     | 6600     | 15  | 20    | 20     | 25    | 25    |
|                            | 55000                       | 2632                        | 5200                          | 6650                           | 2500                           | 2750   | 3300   | 4400   | 4950   | 5500   | 6050   | 6600     | 7700     | 20  | 20    | 25     | 25    | 30    |
|                            | 60000                       | 2871                        | 5235                          | 6685                           | 2535                           | 3300   | 3850   | 4400   | 5500   | 6050   | 6600   | 7700     | 8250     | 20  | 25    | 30     | 30    | 40    |
|                            | 65000                       | 3110                        | 5330                          | 6780                           | 2630                           | 3300   | 4400   | 4950   | 5500   | 6050   | 7150   | 8250     | 8800     | 25  | 30    | 30     | 40    | 40    |
|                            | 70000                       | 3349                        | 5330                          | 6780                           | 2630                           | 3850   | 4400   | 5500   | 6050   | 7150   | 7700   | 8800     | 9350     | 30  | 40    | 40     | 40    | 50    |
|                            | 75000                       | 3589                        | 5380                          | 6830                           | 2680                           | 3850   | 4950   | 6050   | 6600   | 7700   | 8250   | 9350     | 10450    | 40  | 40    | 40     | 50    | 50    |

\*LSBD-115 has one 16" fan; LSBDR-215 has two 15" fans etc. \*\*Interpolation is permissible for intermediate air deliveries.

## MODEL DESCRIPTION

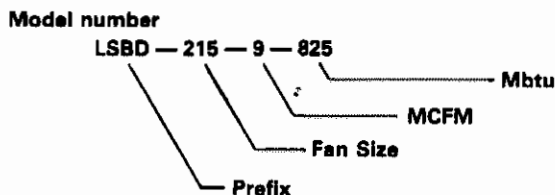
**Procedure:**

Add MCFM air delivery and MBH input to prefix.

Specify type of gas and gas pressure, mounting location, blower arrangement, motor characteristics and air delivery requirements.

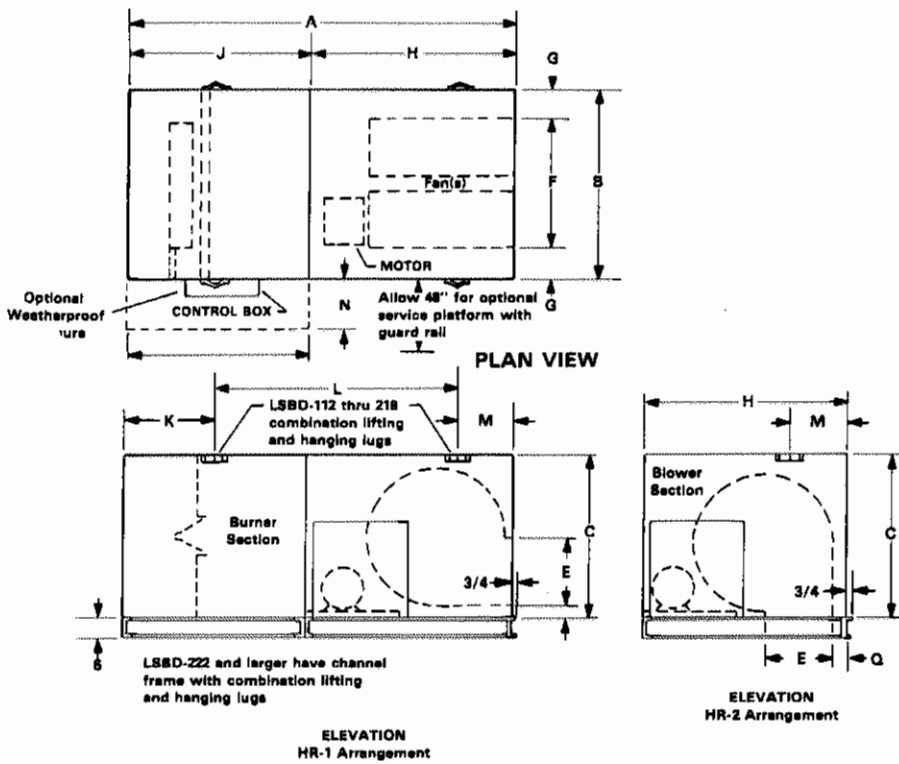
Describe remaining options and accessories.

**Example:**



- NG at 1 PSIG
- Indoor floor mounted
- HR-1 arrangement
- 3 HP, 230/60/3 motor to deliver 9,000 CFM at 1" TSP w/throwaway filters, w/inlet shut-off damper

# HORIZONTAL MODEL BASE UNIT DIMENSIONS (inches)

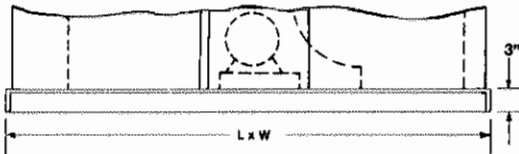


**LSBD Models**

| Model No. | 112              | 115              | 215              | 218              | 222               | 227               | 233              |
|-----------|------------------|------------------|------------------|------------------|-------------------|-------------------|------------------|
| A         | 76 $\frac{1}{2}$ | 83 $\frac{1}{2}$ | 88 $\frac{1}{2}$ | 94 $\frac{1}{2}$ | 103 $\frac{1}{2}$ | 120               | 125              |
| B         | 33               | 40               | 75 $\frac{1}{2}$ | 79 $\frac{1}{2}$ | 96 $\frac{1}{2}$  | 114 $\frac{1}{2}$ | 141              |
| C         | 26 $\frac{1}{2}$ | 35               | 35               | 39               | 49                | 58                | 67               |
| D         | 2 $\frac{1}{2}$  | 2 $\frac{1}{2}$  | 2 $\frac{1}{2}$  | 2 $\frac{1}{2}$  | 6                 | 4 $\frac{1}{2}$   | 4                |
| E         | 13 $\frac{1}{2}$ | 16 $\frac{1}{2}$ | 18 $\frac{1}{2}$ | 20 $\frac{1}{2}$ | 27 $\frac{1}{2}$  | 29 $\frac{1}{2}$  | 34 $\frac{1}{2}$ |
| F         | 16 $\frac{1}{4}$ | 19 $\frac{1}{4}$ | 55 $\frac{1}{2}$ | 61 $\frac{1}{2}$ | 72 $\frac{1}{2}$  | 89 $\frac{1}{2}$  | 115              |
| G         | 8 $\frac{1}{2}$  | 10 $\frac{1}{2}$ | 9 $\frac{1}{2}$  | 9                | 12                | 12 $\frac{1}{2}$  | 13               |
| H         | 38 $\frac{1}{2}$ | 43 $\frac{1}{2}$ | 48 $\frac{1}{2}$ | 54 $\frac{1}{2}$ | 63 $\frac{1}{2}$  | 80                | 85               |
| J         | 40               | 40               | 40               | 40               | 40                | 40                | 40               |
| K         | 12 $\frac{1}{2}$ | 12 $\frac{1}{2}$ | 12 $\frac{1}{2}$ | 12 $\frac{1}{2}$ | ---               | ---               | ---              |
| L         | 53 $\frac{1}{2}$ | 57 $\frac{1}{2}$ | 60 $\frac{1}{2}$ | 64 $\frac{1}{2}$ | ---               | ---               | ---              |
| M         | 11               | 13 $\frac{1}{2}$ | 15 $\frac{1}{2}$ | 17 $\frac{1}{2}$ | ---               | ---               | ---              |
| N         | 26               | 26               | 26               | 26               | 26                | 26                | 26               |
| P         | 39 $\frac{1}{2}$ | 39 $\frac{1}{2}$ | 39 $\frac{1}{2}$ | 39 $\frac{1}{2}$ | 39 $\frac{1}{2}$  | 39 $\frac{1}{2}$  | 39 $\frac{1}{2}$ |
| Q         | 1 $\frac{1}{2}$  | 1 $\frac{1}{2}$  | 1 $\frac{1}{2}$  | 1 $\frac{1}{2}$  | 4 $\frac{1}{2}$   | 5 $\frac{1}{2}$   | 4                |

## OPTIONAL ROOF CURB DIMENSIONS (inches)

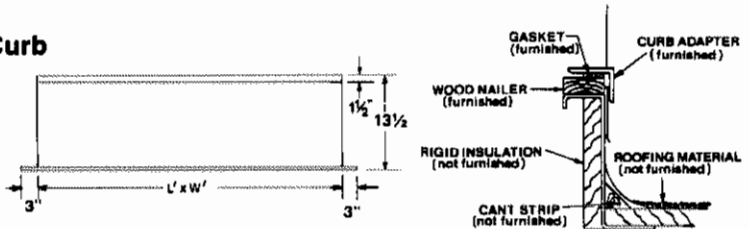
### Curb Adapter Frame



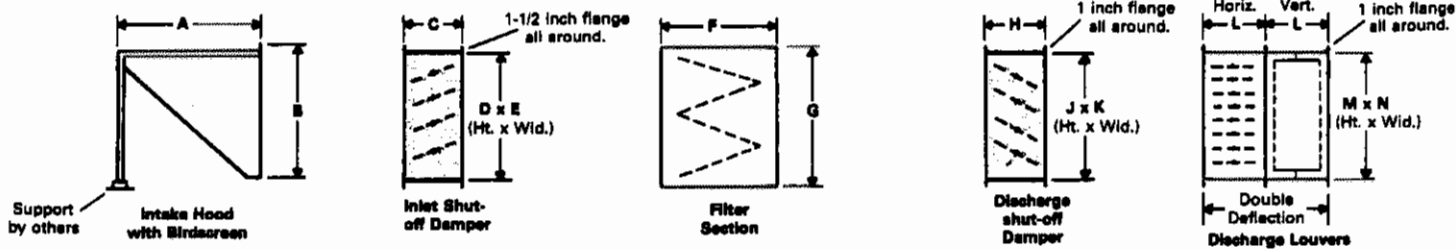
| Model No. | LSBD & LSBDR     |                  |                  |                  | LSBD              |                   |                   | LSBDR             |                   |                   |
|-----------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|           | 112              | 115              | 215              | 218              | 222               | 227               | 233               | 222               | 227               | 233               |
| L         | 82 $\frac{1}{2}$ | 89 $\frac{1}{2}$ | 93 $\frac{1}{2}$ | 99 $\frac{1}{2}$ | 109 $\frac{1}{2}$ | 125 $\frac{1}{2}$ | 130 $\frac{1}{2}$ | 147 $\frac{1}{2}$ | 175 $\frac{1}{2}$ | 191 $\frac{1}{2}$ |
| W         | 34               | 41               | 76 $\frac{1}{2}$ | 80 $\frac{1}{2}$ | 97 $\frac{1}{2}$  | 115 $\frac{1}{2}$ | 142               | 97 $\frac{1}{2}$  | 115 $\frac{1}{2}$ | 142               |

### Roof Curb

| Model No. | LSBD & LSBDR     |                  |                  |                  | LSBD              |                   |                   | LSBDR             |                   |                   |
|-----------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|           | 112              | 115              | 215              | 218              | 222               | 227               | 233               | 222               | 227               | 233               |
| L'        | 81 $\frac{1}{2}$ | 87 $\frac{1}{2}$ | 92 $\frac{1}{2}$ | 98 $\frac{1}{2}$ | 107 $\frac{1}{2}$ | 124 $\frac{1}{2}$ | 129 $\frac{1}{2}$ | 145 $\frac{1}{2}$ | 174               | 189 $\frac{1}{2}$ |
| W'        | 32 $\frac{1}{2}$ | 39 $\frac{1}{2}$ | 74 $\frac{1}{2}$ | 78 $\frac{1}{2}$ | 96 $\frac{1}{2}$  | 113 $\frac{1}{2}$ | 140 $\frac{1}{2}$ | 96 $\frac{1}{2}$  | 113 $\frac{1}{2}$ | 140 $\frac{1}{2}$ |



## ACCESSORY ITEMS DIMENSIONS (inches)



| Model No. | Intake Hood with Birdscreen |                  |                   | Inlet Shutoff Damper |                  |                   |                   | Filter Section   |                  |                                     | Discharge Shutoff Damper |                 |                  |                   | Discharge Louvers |                 |                  |                   |                   |
|-----------|-----------------------------|------------------|-------------------|----------------------|------------------|-------------------|-------------------|------------------|------------------|-------------------------------------|--------------------------|-----------------|------------------|-------------------|-------------------|-----------------|------------------|-------------------|-------------------|
|           | A                           | B                | *Ship. Wt. (lbs.) | C                    | D                | E                 | *Ship. Wt. (lbs.) | F                | G                | Filters (No.) & Size                | *Ship. Wt. (lbs.)        | H               | J                | K                 | *Ship. Wt. (lbs.) | L               | M                | N                 | *Ship. Wt. (lbs.) |
| LSBD-112  | 16 $\frac{1}{2}$            | 26 $\frac{1}{2}$ | 80                | 8 $\frac{1}{2}$      | 23 $\frac{1}{2}$ | 29 $\frac{1}{2}$  | 85                | 24 $\frac{1}{2}$ | 26 $\frac{1}{2}$ | (4) 16 x 20 x 2                     | 90                       | 8 $\frac{1}{2}$ | 20               | 21 $\frac{1}{2}$  | 40                | 8 $\frac{1}{2}$ | 20               | 21 $\frac{1}{2}$  | 60                |
| LSBD-115  | 36 $\frac{1}{2}$            | 35               | 100               | 8 $\frac{1}{2}$      | 31 $\frac{1}{2}$ | 38 $\frac{1}{2}$  | 85                | 21 $\frac{1}{2}$ | 35               | (4) 20 x 20 x 2                     | 90                       | 8 $\frac{1}{2}$ | 20               | 21 $\frac{1}{2}$  | 40                | 8 $\frac{1}{2}$ | 20               | 21 $\frac{1}{2}$  | 60                |
| LSBD-215  | 45                          | 35               | 225               | 8 $\frac{1}{2}$      | 31 $\frac{1}{2}$ | 72                | 180               | 26               | 35               | (12) 20 x 25 x 2                    | 120                      | 8 $\frac{1}{2}$ | 20 $\frac{1}{2}$ | 64 $\frac{1}{2}$  | 100               | 8 $\frac{1}{2}$ | 20 $\frac{1}{2}$ | 64 $\frac{1}{2}$  | 180               |
| LSBD-218  | 44 $\frac{1}{2}$            | 37 $\frac{1}{2}$ | 240               | 8 $\frac{1}{2}$      | 35 $\frac{1}{2}$ | 77                | 180               | 26               | 39               | (12) 20 x 25 x 2                    | 235                      | 8 $\frac{1}{2}$ | 22 $\frac{1}{2}$ | 64 $\frac{1}{2}$  | 100               | 8 $\frac{1}{2}$ | 22 $\frac{1}{2}$ | 64 $\frac{1}{2}$  | 180               |
| LSBD-222  | 66 $\frac{1}{2}$            | 47 $\frac{1}{2}$ | 325               | 8 $\frac{1}{2}$      | 45 $\frac{1}{2}$ | 93 $\frac{1}{2}$  | 225               | 30               | 49               | (24) 16 x 25 x 2                    | 470                      | 8 $\frac{1}{2}$ | 33 $\frac{1}{2}$ | 78                | 160               | 8 $\frac{1}{2}$ | 33 $\frac{1}{2}$ | 78                | 300               |
| LSBD-227  | 76 $\frac{1}{2}$            | 56 $\frac{1}{2}$ | 450               | 8 $\frac{1}{2}$      | 54 $\frac{1}{2}$ | 111 $\frac{1}{2}$ | 260               | 30 $\frac{1}{2}$ | 58               | (30) 20 x 25 x 2<br>(6) 16 x 25 x 2 | 625                      | 8 $\frac{1}{2}$ | 33 $\frac{1}{2}$ | 100 $\frac{1}{2}$ | 190               | 8 $\frac{1}{2}$ | 33 $\frac{1}{2}$ | 100 $\frac{1}{2}$ | 360               |
| LSBD-233  | 102                         | 65 $\frac{1}{2}$ | 680               | 8 $\frac{1}{2}$      | 63 $\frac{1}{2}$ | 137 $\frac{1}{2}$ | 300               | 30 $\frac{1}{2}$ | 67               | (49) 20 x 25 x 2                    | 775                      | 8 $\frac{1}{2}$ | 43               | 119               | 235               | 8 $\frac{1}{2}$ | 43               | 119               | 450               |

\*Approximate

# THE LSBDR RETURN AIR CONCEPT (Typical Applications)

## Make-Up Air with Supplementary Space Heating

Manual, two-position selector switch provides 100% fresh air or 50% fresh air and 50% return air. The 100% fresh-air position is used when exhaust fan is operating. The 50% fresh-air and 50% return-air position can be used at all other times.

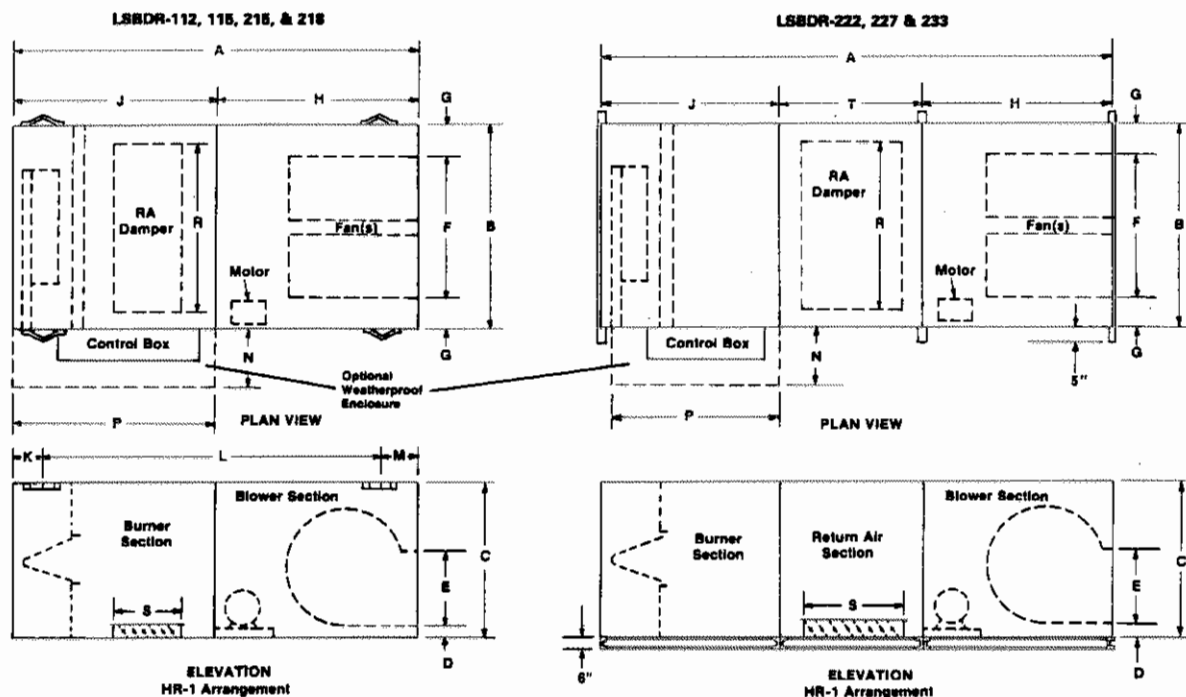
Since the heat output of the burner at 50% fresh-air and 50% return-air position must not be allowed to exceed one-half that of the 100% fresh-air position, the unit selected must be capable of providing needed supplementary heat at the reduced firing rate.

## Multiple Exhaust Fan Jobs

Manual, two-position selector switch provides 100% fresh air or 50% fresh air and 50% return air. The 100% fresh-air position is used when both exhaust fans are operating.

The 50% fresh-air and 50% return-air position is used when one exhaust fan is operating.

## HORIZONTAL MODEL BASE UNIT DIMENSIONS (inches)



Same Blower Arrangements and Accessory Items as Shown for LSB Models.

### LSBDR Models

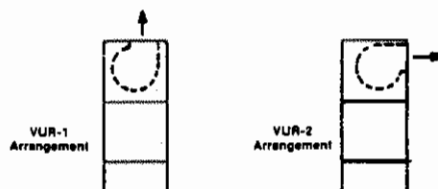
| Model No. | A                 | B                 | C                | D               | E                | F                | G                | H                | J  | K                | L                | M                | N  | P                | R                 | S                | T                |
|-----------|-------------------|-------------------|------------------|-----------------|------------------|------------------|------------------|------------------|----|------------------|------------------|------------------|----|------------------|-------------------|------------------|------------------|
| LSBDR-112 | 76 $\frac{1}{8}$  | 33                | 28 $\frac{1}{2}$ | 2 $\frac{1}{8}$ | 13 $\frac{1}{2}$ | 18 $\frac{1}{8}$ | 8 $\frac{3}{8}$  | 38 $\frac{3}{8}$ | 40 | 12 $\frac{1}{2}$ | 53 $\frac{3}{8}$ | 11               | 28 | 39 $\frac{3}{8}$ | 23                | 8                | ---              |
| LSBDR-115 | 83 $\frac{3}{8}$  | 40                | 35               | 2 $\frac{1}{8}$ | 16 $\frac{1}{8}$ | 19 $\frac{3}{8}$ | 10 $\frac{1}{8}$ | 43 $\frac{3}{8}$ | 40 | 12 $\frac{1}{2}$ | 57 $\frac{1}{8}$ | 13 $\frac{3}{8}$ | 26 | 39 $\frac{3}{8}$ | 30 $\frac{1}{2}$  | 15 $\frac{1}{8}$ | ---              |
| LSBDR-215 | 88 $\frac{1}{8}$  | 75 $\frac{5}{8}$  | 35               | 2 $\frac{1}{8}$ | 18 $\frac{3}{8}$ | 55 $\frac{5}{8}$ | 9 $\frac{1}{8}$  | 48 $\frac{1}{8}$ | 40 | 12 $\frac{1}{2}$ | 60 $\frac{1}{2}$ | 15 $\frac{5}{8}$ | 26 | 39 $\frac{3}{8}$ | 65 $\frac{5}{8}$  | 14 $\frac{1}{4}$ | ---              |
| LSBDR-218 | 94 $\frac{1}{8}$  | 79 $\frac{1}{8}$  | 39               | 2 $\frac{1}{8}$ | 20 $\frac{1}{8}$ | 61 $\frac{1}{8}$ | 9                | 54 $\frac{1}{8}$ | 40 | 12 $\frac{1}{2}$ | 64 $\frac{1}{2}$ | 17 $\frac{1}{8}$ | 26 | 39 $\frac{3}{8}$ | 69 $\frac{1}{8}$  | 14 $\frac{1}{4}$ | ---              |
| LSBDR-222 | 141 $\frac{1}{8}$ | 98 $\frac{3}{8}$  | 49               | 6               | 27 $\frac{1}{8}$ | 72 $\frac{1}{8}$ | 12               | 63 $\frac{1}{2}$ | 40 | ---              | ---              | ---              | 26 | 39 $\frac{3}{8}$ | 88                | 32 $\frac{1}{4}$ | 38 $\frac{1}{4}$ |
| LSBDR-227 | 169 $\frac{1}{8}$ | 114 $\frac{3}{8}$ | 58               | 4 $\frac{1}{2}$ | 29 $\frac{1}{8}$ | 89 $\frac{3}{8}$ | 12 $\frac{1}{2}$ | 80               | 40 | ---              | ---              | ---              | 26 | 39 $\frac{3}{8}$ | 104               | 44 $\frac{1}{2}$ | 49 $\frac{1}{8}$ |
| LSBDR-233 | 185 $\frac{1}{8}$ | 141               | 67               | 4               | 34               | 115              | 13               | 85               | 40 | ---              | ---              | ---              | 26 | 39 $\frac{3}{8}$ | 130 $\frac{1}{2}$ | 55               | 60 $\frac{1}{8}$ |

NOTE: LSBDR System Not Available with Two Speed Motors, Propane or Propane Standby.

## VERTICAL MODELS — LSB and LSBDR

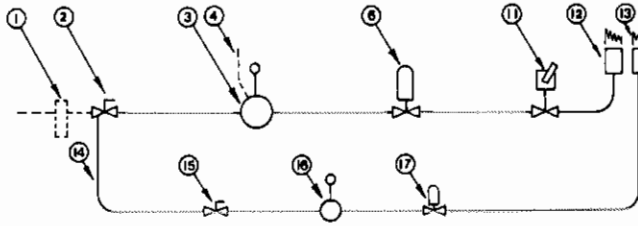
The channel frame shown above for LSBD-222 and larger models is omitted. All other standard and accessory components are held in place by a special base frame with vertical support members.

Detailed drawings will be furnished on request.

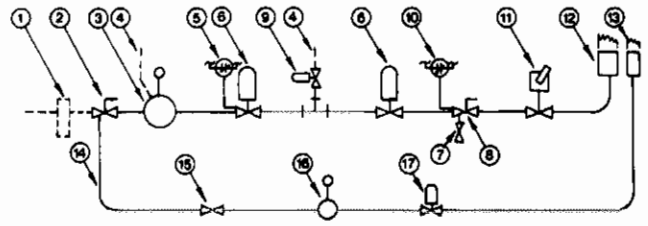


# SCHEMATIC PIPING DIAGRAMS

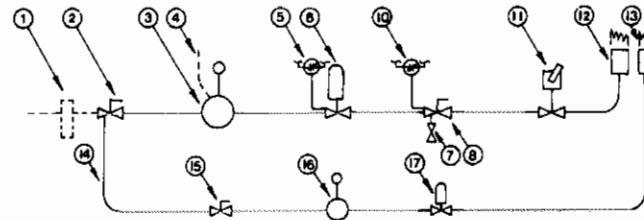
**Standard Manifold – Any Input without FM or IRI Approval**



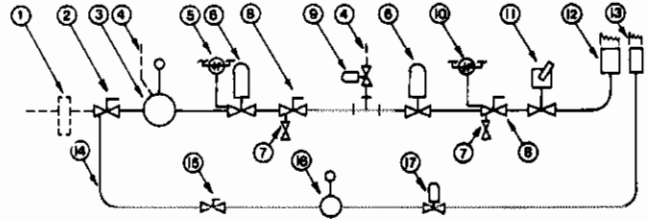
**IRI Manifold – Over 1,000,000 Input**



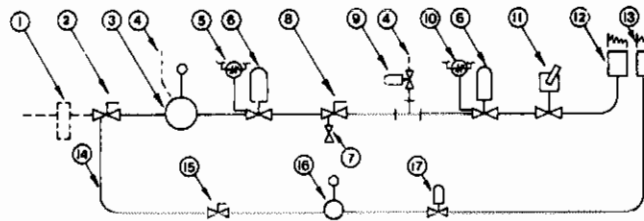
**FM Manifold – Any Input without inlet damper or filters  
IRI Manifold – Under 1,000,000 Input**



**FM/IRI Manifold – Any input with either inlet damper or filters**

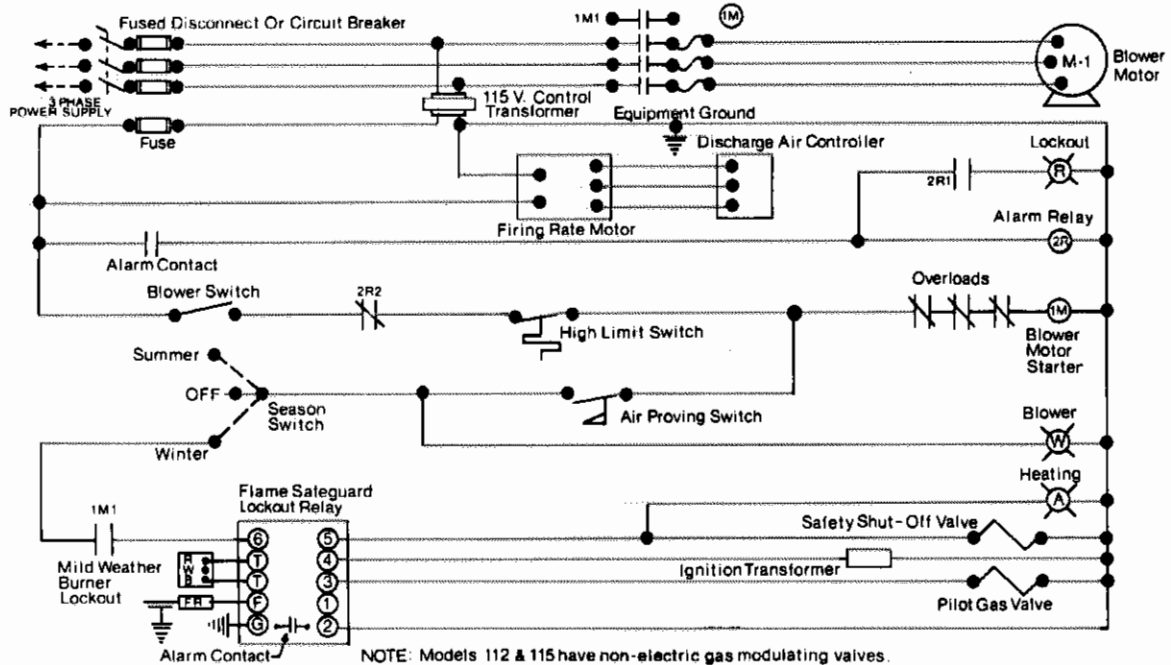


**FM Manifold – Any Input with either inlet damper or filters**



| Furnished & Installed by Others           |   |   |   |
|---|---|---|---|
| Furnished by Factory, Installed by Others |   |   |   |
| Factory Furnished & Installed             |   |   |   |
| ITEM                                      | DESCRIPTION                                 |   |   |
| 1   | Drip Leg                                    |   | X |
| 2   | Main Gas Hand Shut-off Valve                | X |   |
| 3   | Main Gas Pressure Regulator                 | X |   |
| 4   | Vent Line Thru Roof to Outside Atmosphere   |   | X |
| 5   | Low Gas Pressure Switch                     | X |   |
| 6   | Safety Shut-off Valve                       | X |   |
| 7   | Leak Test Petcock w/Plugged Test Connection | X |   |
| 8   | Manual Leak Test Hand Valve                 | X |   |
| 9   | Vent Valve (Normally Open)                  | X |   |
| 10  | High Gas Pressure Switch                    | X |   |
| 11  | Modulating Valve                            | X |   |
| 12  | Main Gas Burner                             | X |   |
| 13  | Pilot Gas Burner                            | X |   |
| 14  | Pilot Gas Supply Line                       | X |   |
| 15  | Pilot Gas Hand Valve                        | X |   |
| 16  | Pilot Pressure Regulator                    | X |   |
| 17  | Pilot Gas Solenoid Valve                    | X |   |

## TYPICAL SCHEMATIC WIRING (Standard Manifold and Temperature Control)



## STANDARD EQUIPMENT

### General:

Horizontal unit with choice of HR-1 or HR-2 blower discharge arrangement.

### Cabinet:

Aluminized steel. Outside surface is primed with zinc-chromate and a finish coat of enamel.

### Blowers:

Centrifugal DWDI forward curved fan(s) with one piece thru shaft and self-aligning ball bearings. Wheels are statically and dynamically balanced. Prelubricated ball bearings. Adjustable drives thru 10 HP.

### Burner:

Direct-fired line burner with spark ignited intermittent pilot for natural gas at inlet pressures from 6 oz. thru 2 PSIG. 25:1 turndown ratio.

### Motor:

T-frame, ODP prelubricated ball bearing type for all standard voltages.

### Gas and Electric Controls:

- Main gas hand shut-off valve.
- Main and pilot gas pressure regulators.
- Pilot controls
- Electric safety shut-off valve.
- Self-contained gas modulating valve for models up to 500,000 Btu/hr.
- Motorized modulating gas valve with temperature controller for models above 500,000 Btu/hr.

- Motor starter.
- Control transformer.
- High temperature limit switch.
- Air flow switch.
- Automatic mild weather burner lockout.
- Ignition transformer.
- Electronic flame safeguard system.
- NEMA 1 control box w/dead front fused disconnect switch or circuit breaker.
- Remote control station with switches and indicating lights.

## OPTIONS AND ACCESSORIES

### General:

Vertical up, VUR-1 and VUR-2

### Components:

- Unit weatherproofing including hinged and latched weatherproof service enclosure.
- Insulated blower section.
- Inlet or discharge shut-off dampers with motor and end switch (discharge damper recommended for outdoor units).
- Weatherhood with rainshield and intake birdscreen.
- Filter section with throwaway or cleanable filters and clogged filter switch with indicating light.
- Discharge louvers; horizontal, vertical or both for double deflection.
- Service platform with guard rail — OSHA standards.
- Vibration isolators.

- Extended grease lines for remote fan bearings (model 215 and larger).
- Variable pitch sheave for motors 15 HP and larger.

### Motors:

Totally enclosed, two speed, explosion proof or chemical duty.

### Burners:

Propane or propane standby.

### Gas and Electrical Controls:

- FM or IRI approved controls.
- High gas pressure regulator — 2 to 60 PSIG.
- Motorized modulating gas valve with temperature controller for models up to 500,000 Btu/hr.
- Ultra violet flame sensor.
- Low outlet temperature shut-off.
- Blocked intake switch and light.
- Circuit analyzer with indicating lights.

- Over-riding room thermostat (motorized modulating valve required with this option).
- Maxitrol Selectra Control System:
  - a. Series 14. Includes discharge air sensor and remote temperature selector. Two position room overriding thermostat and/or indoor-outdoor reset control also available.
  - b. Series 44. Includes discharge air monitor and space temperature selector and sensor.
- J.I.C. construction standards.

### Roof Curbs:

Adapter frames and roof curbs available for horizontal units. Curbs are shipped factory assembled or knocked down.

### Duct Furnace — Model LSBDF:

LSBD burner sections can be furnished as indoor or weatherproof duct furnaces with control options listed above.