# WDF Direct-Fired Gas Heaters
## Technical Guide


*A COST-EFFECTIVE, RELIABLE HEATING SOLUTION FOR COMMERCIAL, INSTITUTIONAL, AND INDUSTRIAL APPLICATIONS*

LJ ING®

Since 1875, L.J. Wing has been providing cost effective, reliable heating solutions. Our proven WDF series of direct-fired heaters add warm, fresh and clean air to your work environment for greater comfort and productivity. This technical guide will help you select the proper WDF heater for your application. If you have questions, please contact your local L.J. Wing representative; he will be glad to assist you.

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www.ljwing.com

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# *SELECTION AND MODEL DESCRIPTION*

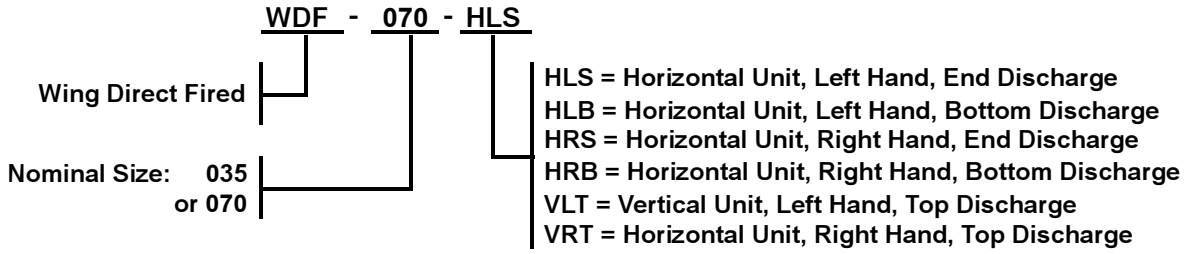
## Selection Procedure and Example

1. Determine the required amount of replacement air in SCFM by computing the total volume of air being exhausted. (Note: For restaurant applications, it is recommended that the unit be sized for 90% of the exhaust air to minimize food odors.)
2. Determine the static pressure losses from any accessories and the burner from the Air Pressure Drop Tables on page 6.
3. Add the result of Step 2 to the given air external static pressure loss for any attached ducts to obtain the total external air static pressure loss for the unit.
4. Enter Air Delivery Table with SCFM of step 1 and the total external air static pressure loss for the unit of step 3 to select the model size and motor HP required.
5. Calculate the required air temperature rise, ATR, through the unit by subtracting the winter design temperature, WDT, from the desired indoor temperature, DIT:
   ATR = DIT – EAT
6. Calculate the required burner heat input rate, MBH Input, using the Burner Performance tables of page 7 or use the following formula:
   MBH = (0.6210 x SCFM x ATR)/(460 + ATR + WDT)
7. Choose cabinet arrangement from page 16.
8. Develop unit model number using description shown below.

**Example:**
Select WDF unit for:
SCFM = 3000
WDT = -10 degrees F
DIT = 70 degrees F
Duct static pressure loss = 0.75 inches w.c.
Accessories: Filter section with 1” pleated filters

**Solution:**
1. SCFM = 3000 as given.
2. From Air Pressure Drop Tables, air static pressure loss are:
   For 1” pleated filter = 0.15 inches w.c.
   For burner: 0.680 inches w.c.
3. Total external air static pressure loss = 0.75 + 0.15 + 0.68 = 1.58 inches w.c.
4. From Air Delivery Table at SCFM = 3000 and Total Static Pressure loss = 1.58 inches w.c., select Model 035 with 3 HP motor.
5. ATR = 70 – (-10) = 80 degrees F.
6. Calculate required burner heat input rate:
   Using formula:
   MBH input = (0.6210 x 3000 x 80)/(460 + 80 + (-10)) = 281
   Using tables:
   Base rate for –40 degrees F: 298 MBH
   Correction factor for WDT = -10 and ATR = 70: BICF = 0.943.
   MBH input = 298 x 0.943 = 281
7. Cabinet arrangement HRS is selected.
8. Model number is WDF-035-HRS.

## Model Number Description



# *PERFORMANCE*

## Air Delivery Table

| Unit Model | SCFM | Motor HP at Total Static Pressure (inches w.c.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 1/4" | 1 1/2" | 1 3/4" | 2" | 2 1/4" | 2 1/2" | 2 3/4" | 3" | 3 1/4" | 3 1/2" |
| Model 035 10 x 10 Wheel | 2000 | 1 | 1 1/2 | 1 1/2 | — | — | — | — | — | — | — |
| | 2250 | 1 1/2 | 1 1/2 | 1 1/2 | 2 | 2 | — | — | — | — | — |
| | 2500 | 1 1/2 | 2 | 2 | 2 | 3 | 3 | 3 | — | — | — |
| | 2750 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 |
| | 3000 | 2 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 5 |
| | 3250 | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 3500 | 3 | 3 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Model 070 12 x 12 Wheel | 3750 | 3 | 3 | 3 | 3 | — | — | — | — | — | — |
| | 4000 | 3 | 3 | 3 | 3 | 5 | — | — | — | — | — |
| | 4250 | 3 | 3 | 5 | 5 | 5 | 5 | — | — | — | — |
| | 4500 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 7 1/2 | — |
| | 4750 | — | — | 5 | 5 | 5 | 5 | 5 | 7 1/2 | 7 1/2 | 7 1/2 |
| | 5000 | — | — | — | 5 | 5 | 5 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 |
| | 5250 | — | — | — | — | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 |
| | 5500 | — | — | — | — | — | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 |
| | 5750 | — | — | — | — | — | 7 1/2 | 7 1/2 | 7 1/2 | — | — |
| | 6000 | — | — | — | — | — | — | — | — | — | — |
| | 6250 | — | — | — | — | — | — | — | — | — | — |
| | 6500 | — | — | — | — | — | — | — | — | — | — |
| | 6750 | — | — | — | — | — | — | — | — | — | — |
| | 7000 | — | — | — | — | — | — | — | — | — | — |
| Model 070 15 x 15 Wheel | 3750 | — | — | — | — | — | — | — | — | — | — |
| | 4000 | — | — | — | — | — | — | — | — | — | — |
| | 4250 | — | — | — | — | — | — | — | — | — | — |
| | 4500 | — | — | — | — | — | — | — | — | — | — |
| | 4750 | 3 | 3 | — | — | — | — | — | — | — | — |
| | 5000 | 3 | 3 | 5 | — | — | — | — | — | — | — |
| | 5250 | 3 | 5 | 5 | 5 | — | — | — | — | — | — |
| | 5500 | 3 | 5 | 5 | 5 | 5 | — | — | — | — | — |
| | 5750 | 5 | 5 | 5 | 5 | 5 | — | — | — | — | — |
| | 6000 | 5 | 5 | 5 | 5 | 5 | 7 1/2 | 7 1/2 | — | — | — |
| | 6250 | 5 | 5 | 5 | 5 | 7 1/2 | 7 1/2 | 7 1/2 | — | — | — |
| | 6500 | 5 | 5 | 5 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | — | — |
| | 6750 | 5 | 5 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 10 | — |
| | 7000 | 5 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 7 1/2 | 10 | 10 | 10 |

# *PERFORMANCE*

## Air Pressure Drop Table

**Air Pressure Drop for Options (inches w.c.)**

| Unit Mode | SCFM | Inlet Hood | | | Filter Sectio | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No Filter | With 1" Cleanable Filters | With 2" Cleanable Filters | No Filters | With 1" TAW Filters | With 1" Pleated Filters | With 1" Cleanable Filters | With 2" TAW Filters | With 2" Pleated Filters | With 2" Cleanable Filters | Discharge Nozzle |
| 035 | 2000 | 0.010 | 0.044 | 0.050 | 0.010 | 0.030 | 0.055 | 0.024 | 0.030 | 0.028 | 0.035 | 0.130 |
| | 2250 | 0.010 | 0.060 | 0.070 | 0.010 | 0.042 | 0.080 | 0.035 | 0.045 | 0.045 | 0.048 | 0.160 |
| | 2500 | 0.010 | 0.079 | 0.090 | 0.010 | 0.050 | 0.105 | 0.046 | 0.060 | 0.063 | 0.060 | 0.200 |
| | 2750 | 0.010 | 0.095 | 0.110 | 0.010 | 0.062 | 0.125 | 0.056 | 0.075 | 0.078 | 0.073 | 0.240 |
| | 3000 | 0.010 | 0.115 | 0.130 | 0.010 | 0.073 | 0.150 | 0.067 | 0.090 | 0.095 | 0.085 | 0.290 |
| | 3250 | 0.010 | 0.130 | 0.150 | 0.010 | 0.083 | 0.175 | 0.078 | 0.105 | 0.113 | 0.098 | 0.340 |
| | 3500 | 0.010 | 0.148 | 0.170 | 0.010 | 0.093 | 0.200 | 0.088 | 0.120 | 0.130 | 0.110 | 0.390 |
| 070 | 3750 | 0.009 | 0.060 | 0.040 | 0.000 | 0.065 | 0.100 | 0.048 | 0.060 | 0.105 | 0.058 | 0.170 |
| | 4000 | 0.010 | 0.065 | 0.055 | 0.000 | 0.078 | 0.120 | 0.060 | 0.075 | 0.120 | 0.070 | 0.190 |
| | 4250 | 0.012 | 0.073 | 0.070 | 0.000 | 0.090 | 0.139 | 0.072 | 0.088 | 0.140 | 0.081 | 0.220 |
| | 4500 | 0.013 | 0.080 | 0.080 | 0.000 | 0.102 | 0.158 | 0.083 | 0.100 | 0.155 | 0.092 | 0.240 |
| | 4750 | 0.014 | 0.090 | 0.095 | 0.000 | 0.115 | 0.175 | 0.095 | 0.114 | 0.175 | 0.105 | 0.270 |
| | 5000 | 0.015 | 0.100 | 0.110 | 0.000 | 0.125 | 0.194 | 0.110 | 0.128 | 0.190 | 0.118 | 0.300 |
| | 5250 | 0.017 | 0.110 | 0.125 | 0.000 | 0.138 | 0.213 | 0.120 | 0.140 | 0.205 | 0.130 | 0.330 |
| | 5500 | 0.018 | 0.125 | 0.135 | 0.000 | 0.150 | 0.231 | 0.133 | 0.153 | 0.225 | 0.140 | 0.370 |
| | 5750 | 0.019 | 0.135 | 0.150 | 0.000 | 0.163 | 0.250 | 0.145 | 0.168 | 0.245 | 0.153 | 0.400 |
| | 6000 | 0.021 | 0.150 | 0.163 | 0.000 | 0.175 | 0.269 | 0.158 | 0.180 | 0.260 | 0.165 | 0.310 |
| | 6250 | 0.022 | 0.170 | 0.175 | 0.000 | 0.185 | 0.275 | 0.170 | 0.192 | 0.275 | 0.178 | 0.330 |
| | 6500 | 0.024 | 0.185 | 0.190 | 0.000 | 0.200 | 0.305 | 0.183 | 0.205 | 0.295 | 0.189 | 0.360 |
| | 6750 | 0.025 | 0.195 | 0.205 | 0.000 | 0.210 | 0.325 | 0.195 | 0.220 | 0.310 | 0.200 | 0.390 |
| | 7000 | 0.026 | 0.210 | 0.215 | 0.000 | 0.223 | 0.345 | 0.210 | 0.232 | 0.330 | 0.212 | 0.420 |

| Burner | |
|---|---|
| Model | Air Pressure Drop (inches w.c.) |
| 035 | 0.680 |
| 070 | 0.710 |

# *PERFORMANCE*

## Burner Performance Table

| | | Burner Heat Input Rate (MBH) at Air Temperature Rise (degrees F) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Unit Size | SCFM | 70° F | 80° F | 90° F | 100° F | 110° F | 120° F | 130° F |
| Model 035 | 2000 | 177 | 199 | 219 | 239 | 258 | 276 | 294 |
| | 2250 | 200 | 224 | 247 | 269 | 290 | 311 | 330 |
| | 2500 | 222 | 248 | 274 | 299 | 322 | 345 | 367 |
| | 2750 | 244 | 273 | 301 | 328 | 354 | 380 | 404 |
| | 3000 | 266 | 298 | 329 | 358 | 387 | 414 | 440 |
| | 3250 | 288 | 323 | 356 | 388 | 419 | 449 | 477 |
| | 3500 | 311 | 348 | 384 | 418 | 451 | 483 | 514 |
| Model 070 | 3750 | 333 | 373 | 411 | 448 | 483 | 518 | 550 |
| | 4000 | 355 | 397 | 438 | 478 | 516 | 552 | 587 |
| | 4250 | 377 | 422 | 466 | 508 | 548 | 587 | 624 |
| | 4500 | 399 | 447 | 493 | 537 | 580 | 621 | 661 |
| | 4750 | 421 | 472 | 521 | 567 | 612 | 656 | 697 |
| | 5000 | 444 | 497 | 548 | 597 | 644 | 690 | 734 |
| | 5250 | 466 | 522 | 575 | 627 | 677 | 725 | 771 |
| | 5500 | 488 | 546 | 603 | 657 | 709 | 759 | 807 |
| | 5750 | 510 | 571 | 630 | 687 | 741 | 794 | 844 |
| | 6000 | 532 | 596 | 658 | 717 | 773 | 828 | 881 |
| | 6250 | 554 | 621 | 685 | 746 | 806 | 863 | 917 |
| | 6500 | 577 | 646 | 712 | 776 | 838 | 897 | 954 |
| | 6750 | 599 | 671 | 740 | 806 | 870 | 932 | 991 |
| | 7000 | 621 | 696 | 767 | 836 | 902 | 966 | 1027 |

**Burner Heat Input Rate Correction Factors**

| WDT | Air Temperature Rise - degrees F | | | | | | |
|---|---|---|---|---|---|---|---|
| deg. F | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
| **-40** | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| **-30** | 0.980 | 0.980 | 0.981 | 0.981 | 0.981 | 0.982 | 0.982 |
| **-20** | 0.961 | 0.962 | 0.962 | 0.963 | 0.964 | 0.964 | 0.965 |
| **-10** | 0.942 | 0.943 | 0.944 | 0.945 | 0.946 | 0.947 | 0.948 |
| **0** | 0.925 | 0.926 | 0.927 | 0.929 | 0.930 | 0.931 | 0.932 |
| **10** | 0.907 | 0.909 | 0.911 | 0.912 | 0.914 | 0.915 | 0.917 |
| **20** | 0.891 | 0.893 | 0.895 | 0.897 | 0.898 | 0.900 | 0.902 |

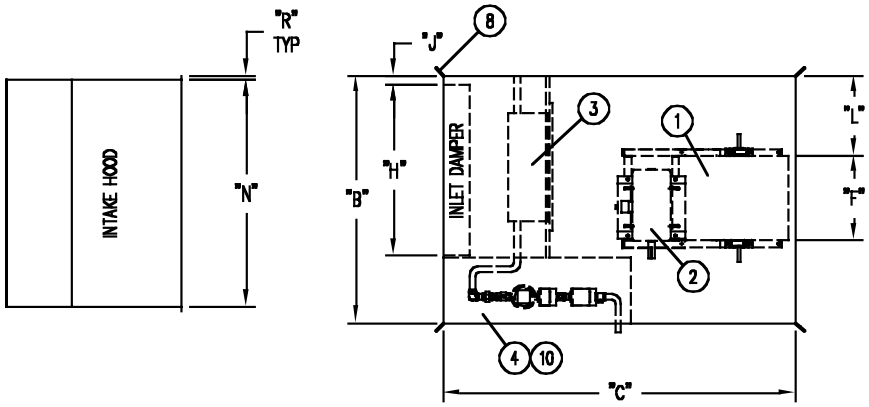
# *DIMENSIONS*

## Horizontal Base Unit without V-Bank

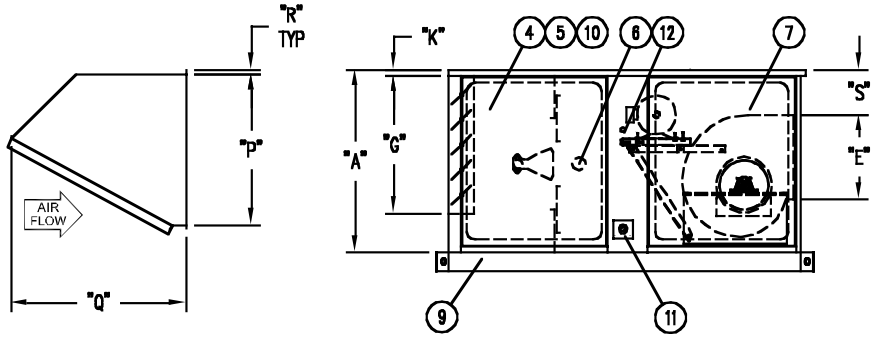
C000506

UNIT COMPONENTS

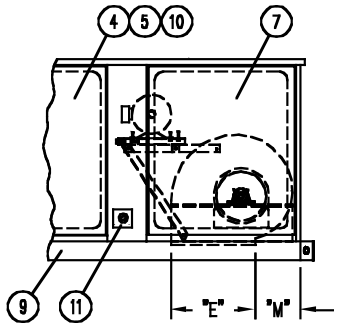
1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Lifting lug
9. Unit base
10. Manifold compartment
11. Gas connection
12. Electrical connection




PLAN VIEW




FRONT VIEW
(SIDE DISCHARGE)




FRONT VIEW
(BOTTOM DISCHARGE)

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

| Model | Blower Size | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | E | F | G | H | J | K |
| 035 | 10″ x 10″ | 36 | 42 | 68 | 11 3/8 | 13 1/8 | 25 1/2 | 27 | 1 1/4 | 1 5/16 |
| 070 | 12″ x 12″ | 40 | 52 | 76 | 13 7/16 | 15 5/8 | 30 1/4 | 37 1/2 | 1 1/4 | 1 5/16 |
| | 15″ x 15″ | 40 | 52 | 76 | 15 7/8 | 18 5/8 | 30 1/4 | 37 1/2 | 1 1/4 | 1 5/16 |

| Model | Blower Size | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | M | N | P | Q | R | S | Filters Hood Qty - Size |
| 035 | 10″ x 10″ | 14 7/16 | 8 1/8 | 40 1/16 | 25 5/8 | 27 7/16 | 7/8 | 16 7/16 | 2) 20″ x 25″ |
| 070 | 12″ x 12″ | 18 3/16 | 9 5/16 | 50 1/16 | 30 5/8 | 41 13/16 | 7/8 | 17 3/16 | 6) 16″ x 20″ |
| | 15″ x 15″ | 16 11/16 | 10 11/16 | 50 1/16 | 30 5/8 | 41 13/16 | 7/8 | 13 5/16 | |

*NOTE: All dimensions in inches subject to manufacturing tolerances.*

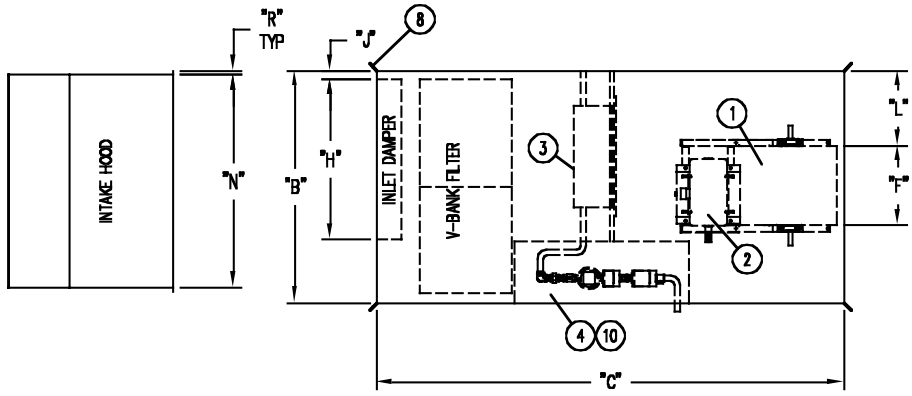
# *DIMENSIONS*

## Horizontal Base Unit with V-Bank

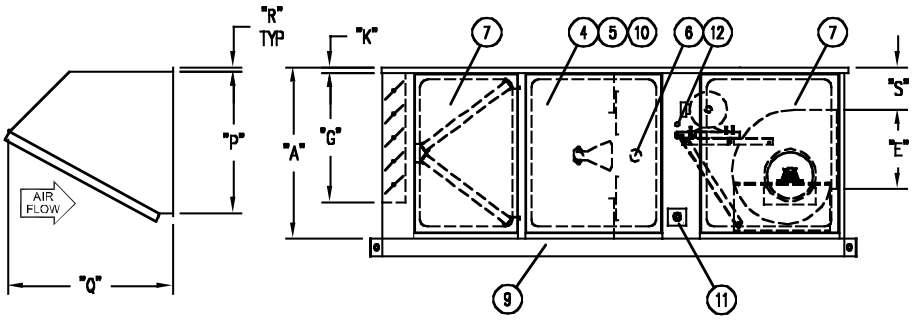
C000505

UNIT COMPONENTS

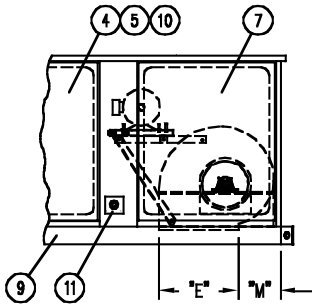
1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Lifting lug
9. Unit base
10. Manifold compartment
11. Gas connection
12. Electrical connection




PLAN VIEW




FRONT VIEW
(SIDE DISCHARGE)




FRONT VIEW
(BOTTOM DISCHARGE)

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

| Model | Blower Size | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | E | F | G | H | J | K |
| 035 | 10″ x 10″ | 36 | 42 | 100 | 11 3/8 | 13 1/8 | 25 1/2 | 27 | 1 1/4 | 1 5/16 |
| 070 | 12″ x 12″ | 40 | 52 | 108 | 13 7/16 | 15 5/8 | 30 1/4 | 37 1/2 | 1 1/4 | 1 5/16 |
| | 15″ x 15″ | 40 | 52 | 108 | 15 7/8 | 18 5/8 | 30 1/4 | 37 1/2 | 1 1/4 | 1 5/16 |

| Model | Blower Size | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | M | N | P | Q | R | S | Filter Hood Qty - Size | Filter V-Bank Qty - Size |
| 035 | 10″ x 10″ | 14 7/16 | 8 1/8 | 40 1/16 | 25 5/8 | 27 7/16 | 7/8 | 16 7/16 | 2) 20″ x 25″ | 4) 20″ x 20″ |
| 070 | 12″ x 12″ | 18 3/16 | 9 5/16 | 50 1/16 | 30 5/8 | 41 13/16 | 7/8 | 17 3/16 | 6) 16″ x 20″ | 6) 16″ x 25″ |
| | 15″ x 15″ | 16 11/16 | 10 11/16 | 50 1/16 | 30 5/8 | 41 13/16 | 7/8 | 13 5/16 | | |

*NOTE:All dimensions in inches subject to manufacturing tolerances.*

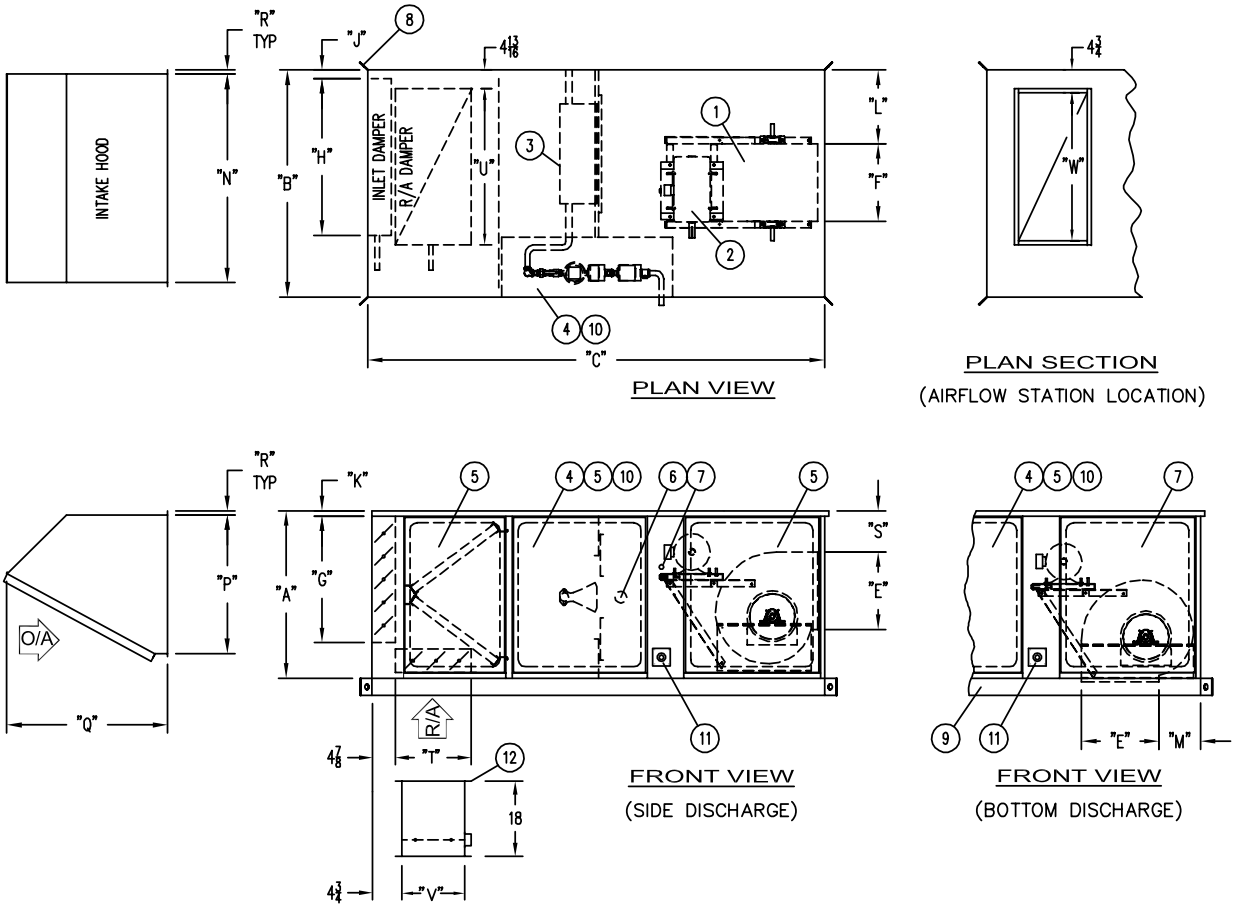
# *DIMENSIONS*

## Horizontal Base Unit with V-Bank and Mixing Dampers

C000544

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged access door
6. Observation port
7. Electrical connection
8. Lifting lug
9. Unit base
10. Manifold compartment
11. Gas connection
12. Airflow station




RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

| Model | Blower Size | Dimensions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | E | F | G | H | J | K | L | M |
| 035 | 10″ x 10″ | 36 | 42 | 100 | 11 3/8 | 13 1/8 | 25 1/2 | 27 | 1 1/4 | 1 5/16 | 14 7/16 | 8 1/8 |
| 070 | 12″ x 12″ | 40 | 52 | 108 | 13 7/16 | 15 5/8 | 30 1/4 | 37 1/2 | 1 1/4 | 1 5/16 | 18 3/16 | 9 5/16 |
| | 15″ x 15″ | 40 | 52 | 108 | 15 7/8 | 18 5/8 | 30 1/4 | 37 1/2 | 1 1/4 | 1 5/16 | 16 11/16 | 10 11/16 |

| Model | Blower Size | Dimensions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | P | Q | R | S | T | U | V | W | Filter Hood Qty - Size | Filter V-Bank Qty - Size |
| 035 | 10″ x 10″ | 40 1/16 | 25 5/8 | 27 7/16 | 7/8 | 16 7/16 | 18 7/8 | 26 7/8 | 19 | 27 | 2) 20″ x 25″ | 4) 20″ x 20″ |
| 070 | 12″ x 12″ | 50 1/16 | 30 5/8 | 41 13/16 | 7/8 | 17 3/16 | 18 7/8 | 37 7/8 | 19 | 38 | 6) 16″ x 20″ | 6) 16″ x 25″ |
| | 15″ x 15″ | 50 1/16 | 30 5/8 | 41 13/16 | 7/8 | 13 5/16 | 18 7/8 | 37 7/8 | 19 | 38 | | |

*Notes:*

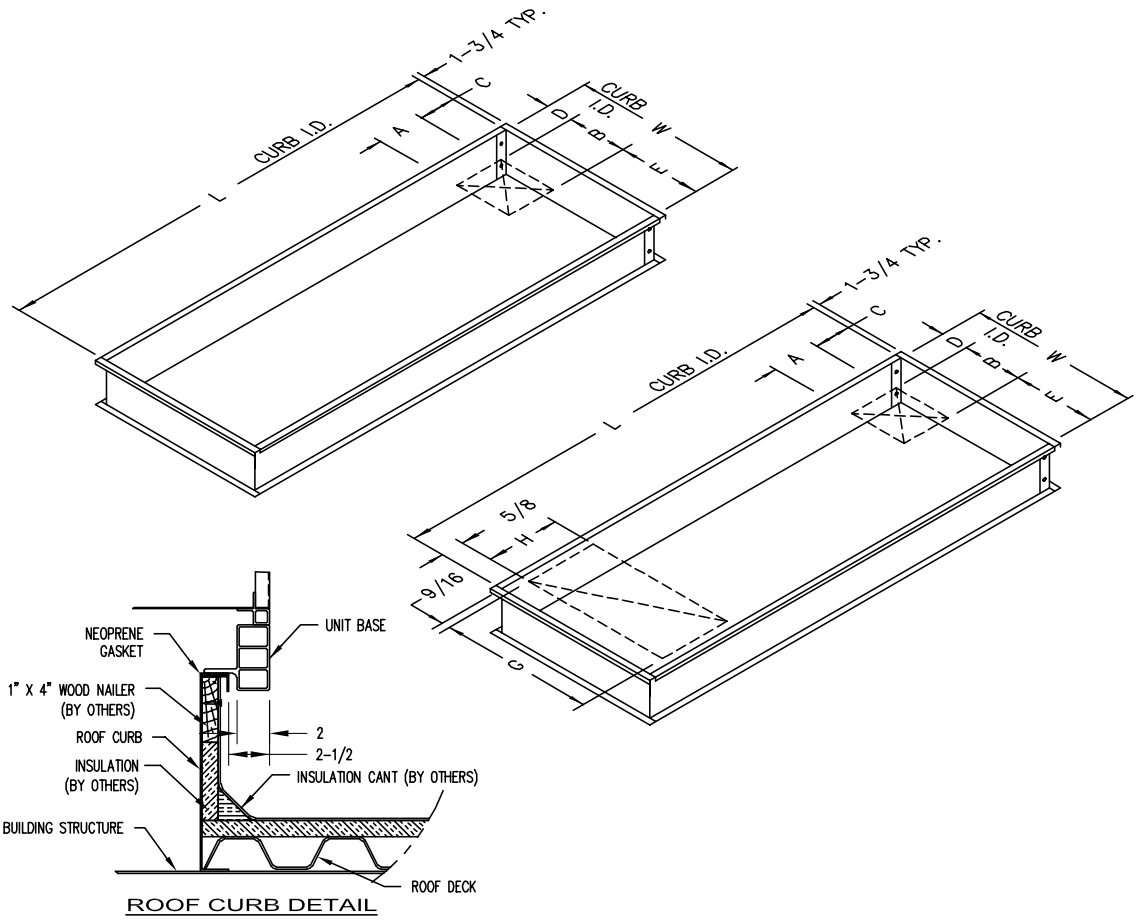
*1. All dimensions in inches subject to manufacturing tolerances.*

*2. Canadian standards do not allow recirculation on direct-fired heaters.*

# *DIMENSIONS*

## Roof Curbs

C000507




ROOF CURB DETAIL

| Model | Blower Size | Dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | $F_1$ Standard Height | $F_2$ Optional Height |
| 035 | 10″ x 10″ | 11 3/8 | 13 1/8 | 3 7/8 | 10 3/16 | 10 3/16 | 12 | 18 |
| 070 | 12″ x 12″ | 13 7/16 | 15 5/8 | 5 1/16 | 13 15/16 | 13 15/16 | 12 | 18 |
| | 15″ x 15″ | 15 7/8 | 18 5/8 | 6 7/16 | 12 7/16 | 12 7/16 | | |

| Model | Blower Size | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Base Unit Only | | Base Unit w/V-Bank | | Base Unit w/V-Bank & Return Air | | | |
| | | $L_1$ | $W_1$ | $L_2$ | $W_2$ | G | H | $L_3$ | $W_3$ |
| 035 | 10″ x 10″ | 59 1/2 | 33 1/2 | 91 1/2 | 33 1/2 | 26 7/8 | 18 7/8 | 91 1/2 | 33 1/2 |
| 070 | 12″ x 12″ | 67 1/2 | 43 1/2 | 99 1/2 | 43 1/2 | 37 7/8 | 18 7/8 | 99 1/2 | 43 1/2 |
| | 15″ x 15″ | | | | | | | | |

*Note: All dimensions in inches subject to manufacturing tolerances.*

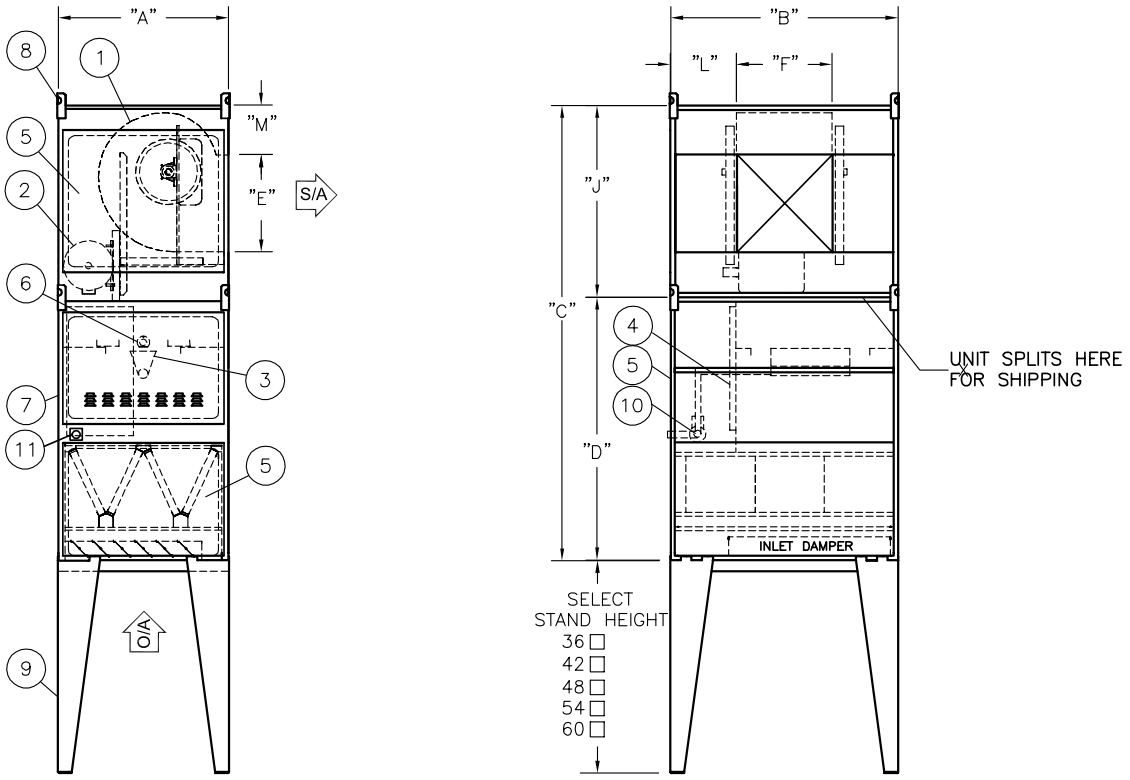
# *DIMENSIONS*

## Vertical Base Unit with V-Bank

C000547

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged access door
6. Observation port
7. Electrical connection
8. Lifting lug
9. Support stand
10. Manifold compartment
11. Gas connection




FRONT VIEW SIDE VIEW

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

| Model | Blower Size | Dimensions | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| 035 | 10″ x 10″ | 36 | 42 | 106 | 76 | 11 3/8 |
| 070 | 12″ x 12″ | 40 | 52 | 124 | 84 | 13 7/16 |
| | 15″ x 15″ | 40 | 52 | 124 | 84 | 15 7/8 |

| Model | Blower Size | | | Dimensions | | |
|---|---|---|---|---|---|---|
| | | F | J | L | M | Filters V-Bank Qty - Size |
| 035 | 10″ x 10″ | 13 1/8 | 30 | 14 7/16 | 8 1/8 | 4) 20″ x 20″ |
| 070 | 12″ x 12″ | 15 5/8 | 40 | 18 3/16 | 9 5/16 | 6) 16″ x 25″ |
| | 15″ x 15″ | 18 5/8 | 40 | 16 11/16 | 10 11/16 | |

*NOTE: All dimensions in inches subject to manufacturing tolerances.*

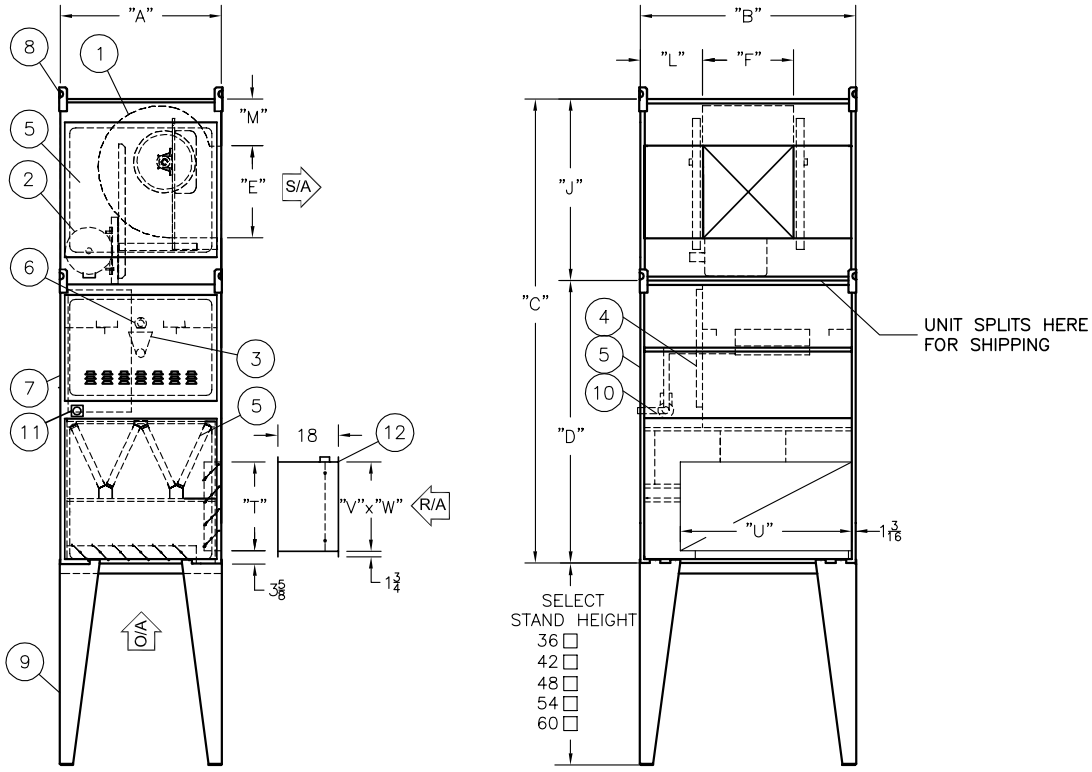
# *DIMENSIONS*

## Vertical Base Unit with V-Bank and Mixing Dampers

C000548

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged access door
6. Observation port
7. Electrical connection
8. Lifting lug
9. Support stand
10. Manifold compartment
11. Gas connection
12. Airflow station




FRONT VIEW SIDE VIEW

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

| Model | Blower Size | Dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | J |
| 035 | 10″ x 10″ | 36 | 42 | 106 | 76 | 11 3/8 | 13 1/8 | 30 |
| 070 | 12″ x 12″ | 40 | 52 | 124 | 84 | 13 7/16 | 15 5/8 | 40 |
| | 15″ x 15″ | 40 | 52 | 124 | 84 | 15 7/8 | 18 5/8 | 40 |

| Model | Blower Size | Dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | L | M | T | U | V | W | Filters V-Bank Qty - Size |
| 035 | 10″ x 10″ | 14 7/16 | 8 1/8 | 20 1/2 | 28 1/2 | 19 | 27 | 4) 20″ x 20″ |
| 070 | 12″ x 12″ | 18 3/16 | 9 5/16 | 20 1/2 | 39 1/2 | 19 | 38 | 6) 16″ x 25″ |
| | 15″ x 15″ | 16 11/16 | 10 11/16 | 20 1/2 | 39 1/2 | 19 | 38 | |

*Notes:*

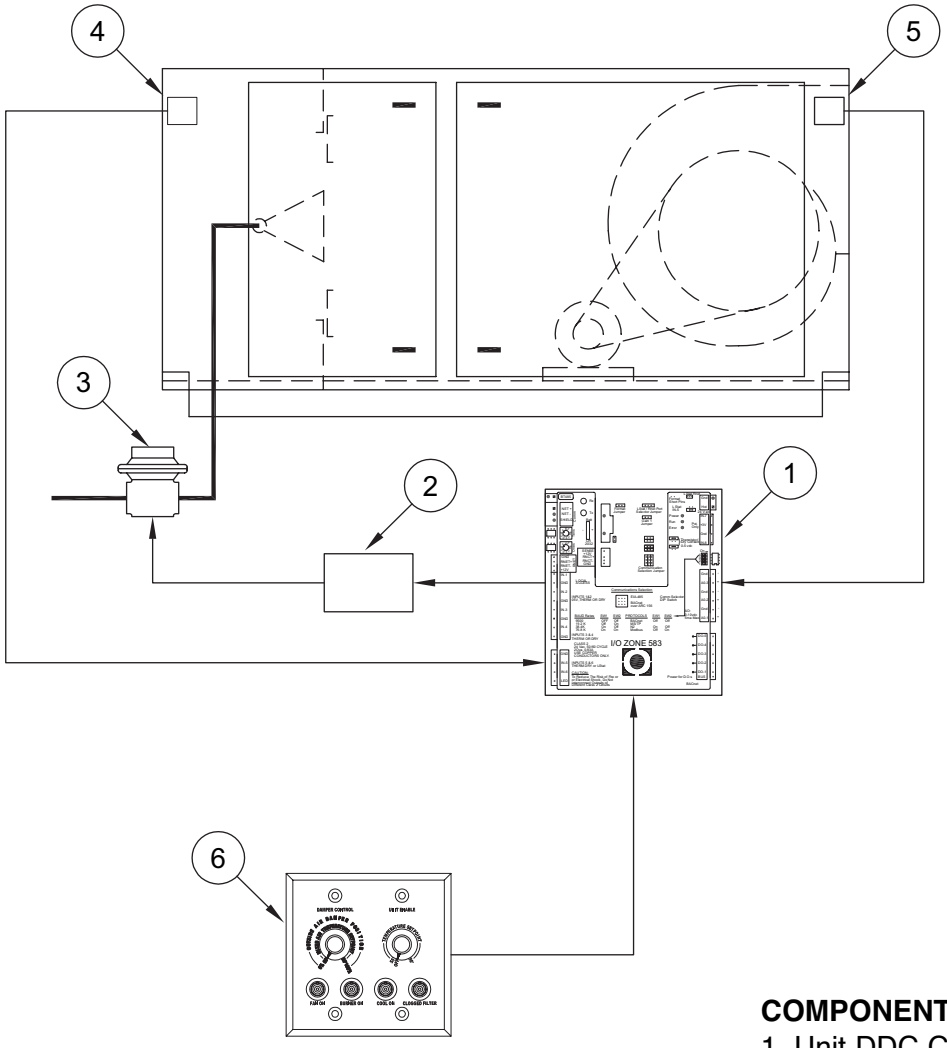
*1. All dimensions in inches subject to manufacturing tolerances.*

*2. Canadian standards do not allow recirculation on direct-fired heaters.*

## MDT Control System

C000634

| Application: | Includes: |
|---|---|
| Modulating Discharge Temperature Control | Discharge air sensor (5) mounted in unit discharge with remote mounted 4 x 4 box cover (6) including manual potentiometer to enable unit and adjust temperature setpoint, Fan On Light, Burner On Light and Cool On Light. Additional potentiometer is provided if optional return air damper section for manual or mixed air control is ordered. |



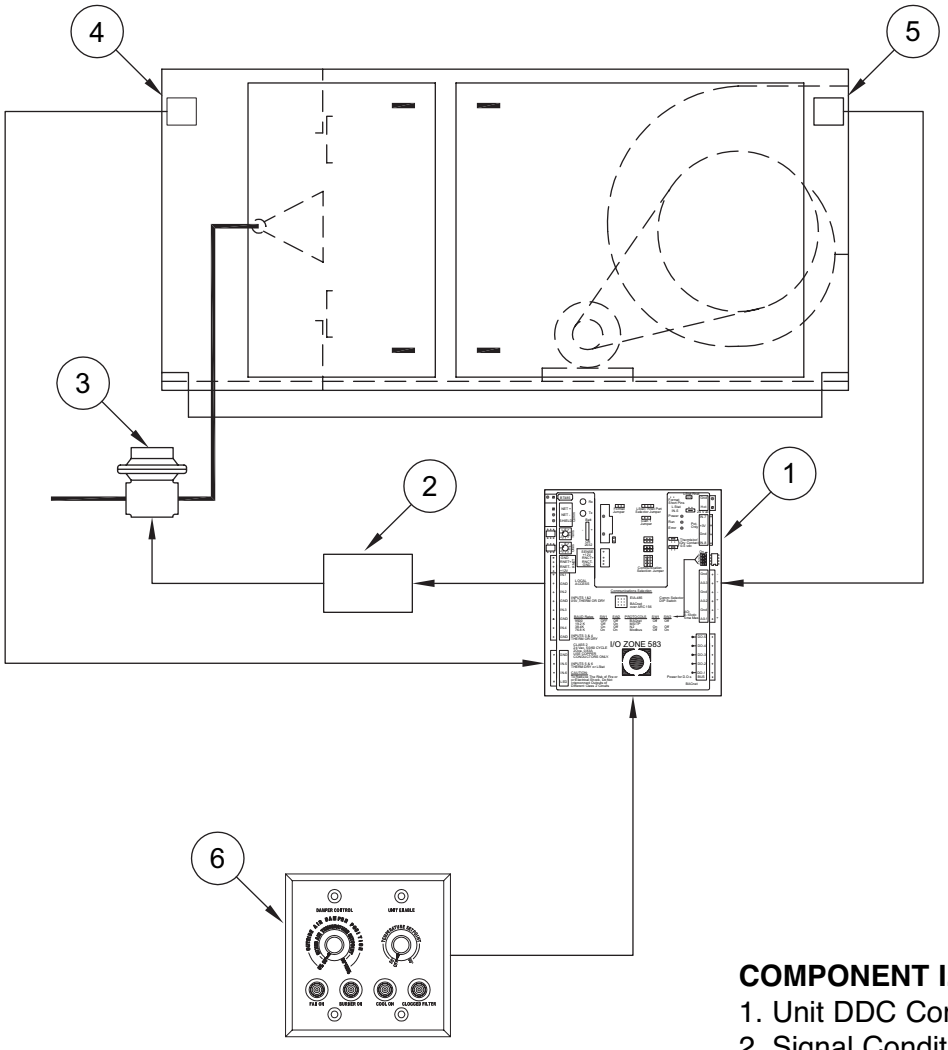

Discharge Temperature
SET Here

**COMPONENT I.D.**
1. Unit DDC Controller
2. Signal Conditioner
3. Modulating Gas Valve
4. Inlet Air Sensor
5. Discharge Air Sensor
6. Room Control Station

## MRT Control System

C000635

| Application: | Includes: |
|---|---|
| Modulating Room Temperature Control | Discharge air sensor (5) mounted in unit discharge with remote mounted 4 x 4 box cover (7) including manual potentiometer to enable unit and adjust temperature setpoint, Fan On Light, Burner On Light and Cool On Light. Also includes RS-std room sensor (6) (does not allow remote room setpoint adjustment). Additional potentiometer is provided if optional return air damper section for manual or mixed air control is ordered. |




Discharge Temperature SET Here

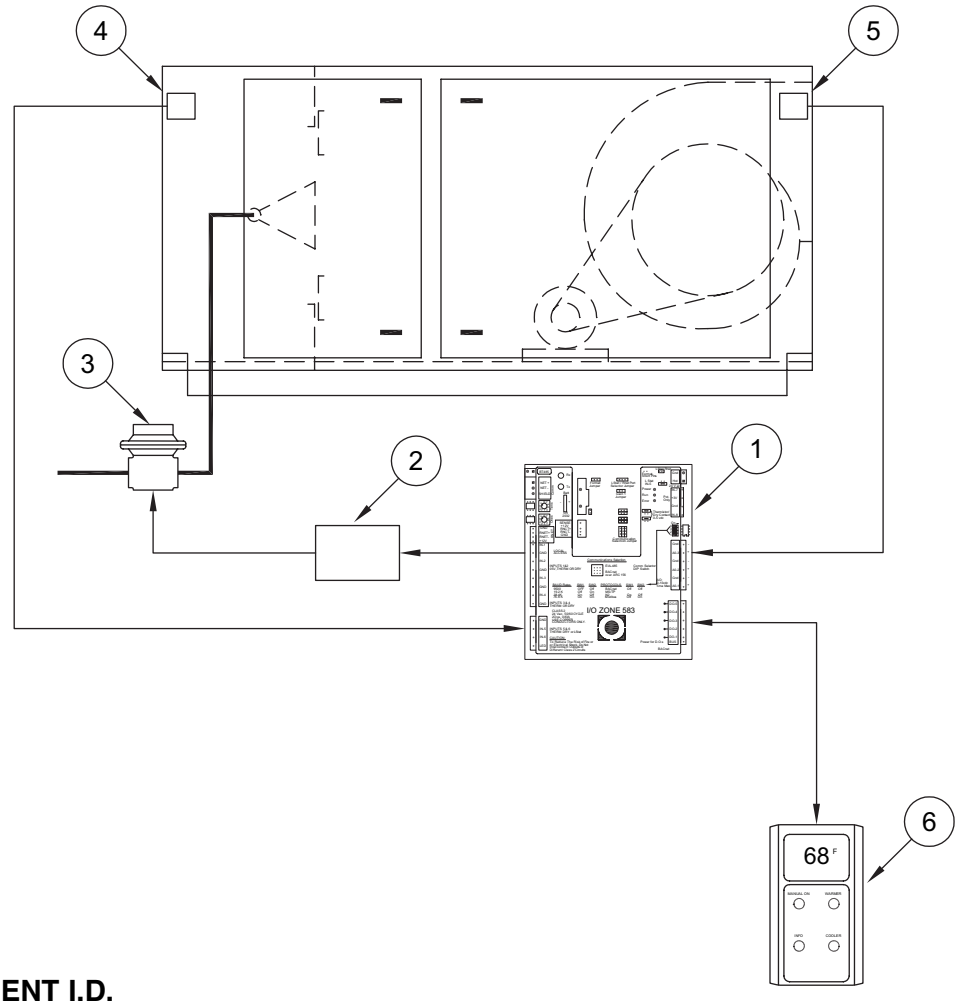
**COMPONENT I.D.**

1. Unit DDC Controller
2. Signal Conditioner
3. Modulating Gas Valve
4. Inlet Air Sensor
5. Discharge Air Sensor
6. Room Control Station

## MRT Pro Control System

C000633

| Application: | Includes: |
|---|---|
| Modulating Room Temperature Control with RS-Pro room sensor allowing after hours unit enable, room setpoint ajustment, and digital temperature readout. | Discharge air sensor (5) mounted in unit discharge with remote mounted RS-Pro room sensor (6) with push buttons for room setpoint adjustment and digital temperature readout. On units with optional return air damper section a remote mounted 4 x 4 box cover is provided with potentiometer for manual or mixed air control. |




Space Temperature
SET And SENSED Here

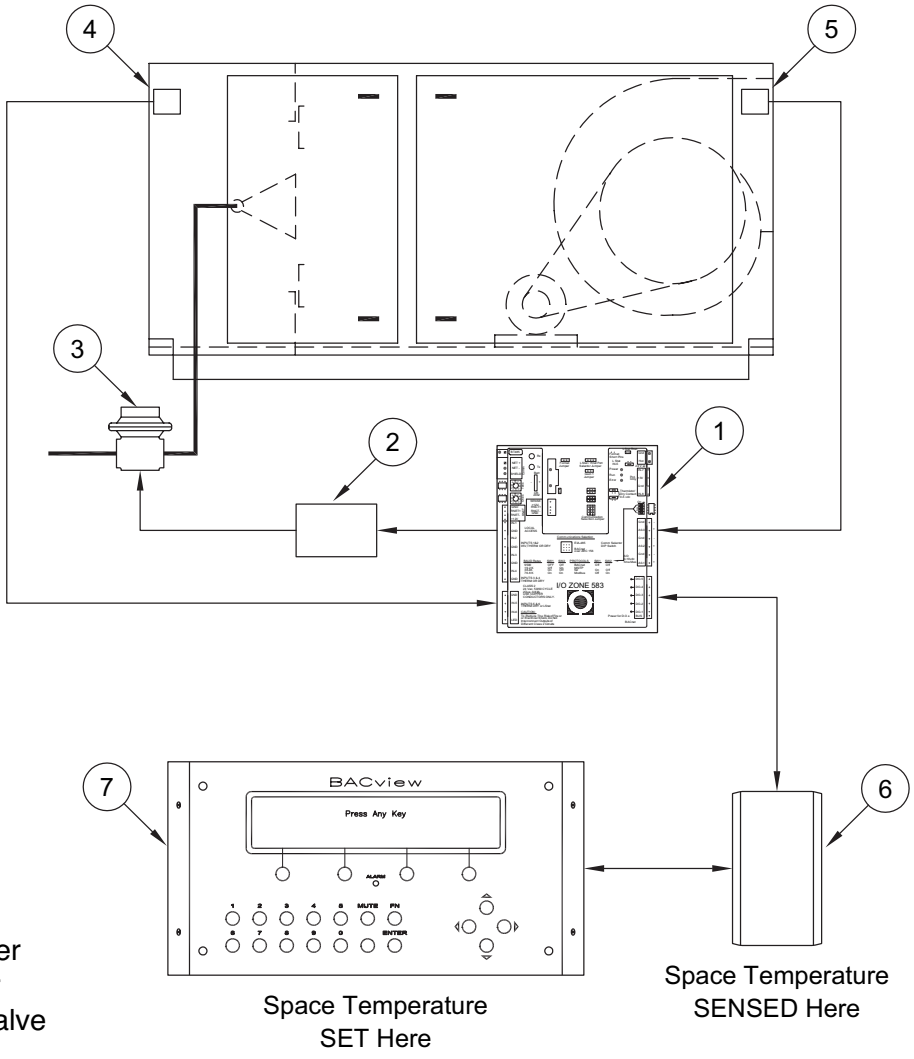
**COMPONENT I.D.**

1. Unit DDC Controller
2. Signal Conditioner
3. Modulating Gas Valve
4. Inlet Air Sensor
5. Discharge Air Sensor
6. Room Thermostat

## MRT Expert Control System

C000632

| Application: | Includes: |
|---|---|
| Modulating Room Temperature Control with BACview controller allowing after hours unit enable, room setpoint adjustment, operating feedback, monitoring of alarm status and digital temperature readout with RS-std room sensor. | Discharge air sensor (5) mounted in unit discharge with remote mounted BACview controller (7) to set space temperature, operating schedules, and optional damper control setpoints. Service information, operating feedback and alarm status can also be monitored. Also includes a RS-std room sensor (6). |

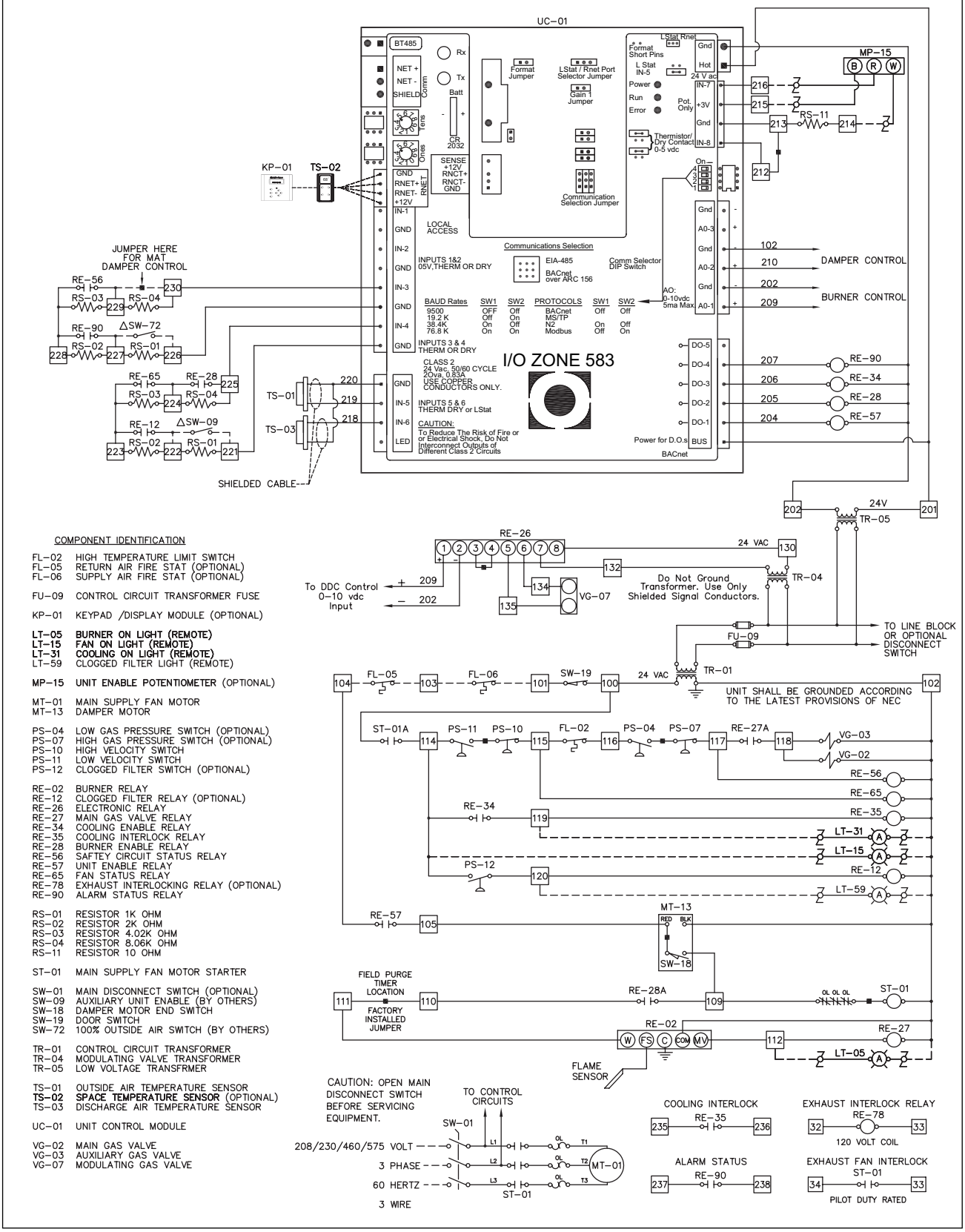



**COMPONENT I.D.**

1. Unit DDC Controller
2. Signal Conditioner
3. Modulating Gas Valve
4. Inlet Air Sensor
5. Discharge Air Sensor
6. Room Thermostat
7. BACView Interface

# Typical Wiring Diagram - Make-Up Unit

C000628




COMPONENT IDENTIFICATION

FL–02 HIGH TEMPERATURE LIMIT SWITCH
FL–05 RETURN AIR FIRE STAT (OPTIONAL)
FL–06 SUPPLY AIR FIRE STAT (OPTIONAL)

FU–09 CONTROL CIRCUIT TRANSFORMER FUSE

KP–01 KEYPAD /DISPLAY MODULE (OPTIONAL)

**LT–05 BURNER ON LIGHT (REMOTE)**
**LT–15 FAN ON LIGHT (REMOTE)**
**LT–31 COOLING ON LIGHT (REMOTE)**
LT–59 CLOGGED FILTER LIGHT (REMOTE)

**MP–15 UNIT ENABLE POTENTIOMETER** (OPTIONAL)

MT–01 MAIN SUPPLY FAN MOTOR
MT–13 DAMPER MOTOR

PS–04 LOW GAS PRESSURE SWITCH (OPTIONAL)
PS–07 HIGH GAS PRESSURE SWITCH (OPTIONAL)
PS–10 HIGH VELOCITY SWITCH
PS–11 LOW VELOCITY SWITCH
PS–12 CLOGGED FILTER SWITCH (OPTIONAL)

RE–02 BURNER RELAY
RE–12 CLOGGED FILTER RELAY (OPTIONAL)
RE–26 ELECTRONIC RELAY
RE–27 MAIN GAS VALVE RELAY
RE–34 COOLING ENABLE RELAY
RE–35 COOLING INTERLOCK RELAY
RE–28 BURNER ENABLE RELAY
RE–56 SAFTEY CIRCUIT STATUS RELAY
RE–57 UNIT ENABLE RELAY
RE–65 FAN STATUS RELAY
RE–78 EXHAUST INTERLOCKING RELAY (OPTIONAL)
RE–90 ALARM STATUS RELAY

RS–01 RESISTOR 1K OHM
RS–02 RESISTOR 2K OHM
RS–03 RESISTOR 4.02K OHM
RS–04 RESISTOR 8.06K OHM
RS–11 RESISTOR 10 OHM

ST–01 MAIN SUPPLY FAN MOTOR STARTER

SW–01 MAIN DISCONNECT SWITCH (OPTIONAL)
SW–09 AUXILIARY UNIT ENABLE (BY OTHERS)
SW–18 DAMPER MOTOR END SWITCH
SW–19 DOOR SWITCH
SW–72 100% OUTSIDE AIR SWITCH (BY OTHERS)

TR–01 CONTROL CIRCUIT TRANSFORMER
TR–04 MODULATING VALVE TRANSFORMER
TR–05 LOW VOLTAGE TRANSFRMER

TS–01 OUTSIDE AIR TEMPERATURE SENSOR
**TS–02 SPACE TEMPERATURE SENSOR** (OPTIONAL)
TS–03 DISCHARGE AIR TEMPERATURE SENSOR

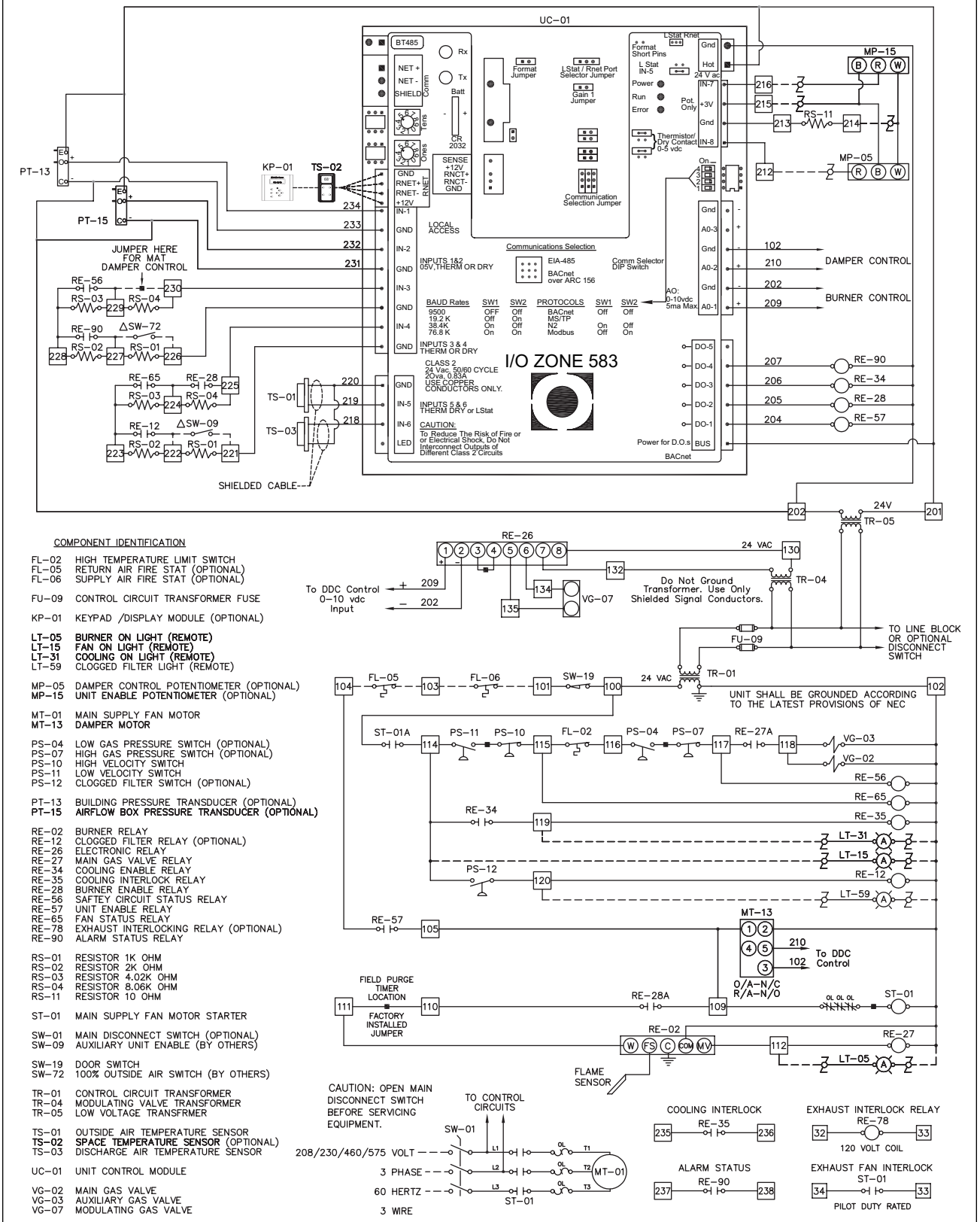
UC–01 UNIT CONTROL MODULE

VG–02 MAIN GAS VALVE
VG–03 AUXILIARY GAS VALVE
VG–07 MODULATING GAS VALVE

# ELECTRICAL

## Typical Wiring Diagram - Return Air Unit

C000629




COMPONENT IDENTIFICATION

FL-02 HIGH TEMPERATURE LIMIT SWITCH
FL-05 RETURN AIR FIRE STAT (OPTIONAL)
FL-06 SUPPLY AIR FIRE STAT (OPTIONAL)

FU-09 CONTROL CIRCUIT TRANSFORMER FUSE

KP-01 KEYPAD /DISPLAY MODULE (OPTIONAL)

**LT-05 BURNER ON LIGHT (REMOTE)**
**LT-15 FAN ON LIGHT (REMOTE)**
**LT-31 COOLING ON LIGHT (REMOTE)**
LT-59 CLOGGED FILTER LIGHT (REMOTE)

MP-05 DAMPER CONTROL POTENTIOMETER (OPTIONAL)
**MP-15 UNIT ENABLE POTENTIOMETER** (OPTIONAL)

MT-01 MAIN SUPPLY FAN MOTOR
**MT-13 DAMPER MOTOR**

PS-04 LOW GAS PRESSURE SWITCH (OPTIONAL)
PS-07 HIGH GAS PRESSURE SWITCH (OPTIONAL)
PS-10 HIGH VELOCITY SWITCH
PS-11 LOW VELOCITY SWITCH
PS-12 CLOGGED FILTER SWITCH (OPTIONAL)

PT-13 BUILDING PRESSURE TRANSDUCER (OPTIONAL)
**PT-15 AIRFLOW BOX PRESSURE TRANSDUCER (OPTIONAL)**

RE-02 BURNER RELAY
RE-12 CLOGGED FILTER RELAY (OPTIONAL)
RE-26 ELECTRONIC RELAY
RE-27 MAIN GAS VALVE RELAY
RE-34 COOLING ENABLE RELAY
RE-35 COOLING INTERLOCK RELAY
RE-28 BURNER ENABLE RELAY
RE-56 SAFTEY CIRCUIT STATUS RELAY
RE-57 UNIT ENABLE RELAY
RE-65 FAN STATUS RELAY
RE-78 EXHAUST INTERLOCKING RELAY (OPTIONAL)
RE-90 ALARM STATUS RELAY

RS-01 RESISTOR 1K OHM
RS-02 RESISTOR 2K OHM
RS-03 RESISTOR 4.02K OHM
RS-04 RESISTOR 8.06K OHM
RS-11 RESISTOR 10 OHM

ST-01 MAIN SUPPLY FAN MOTOR STARTER

SW-01 MAIN DISCONNECT SWITCH (OPTIONAL)
SW-09 AUXILIARY UNIT ENABLE (BY OTHERS)

SW-19 DOOR SWITCH
SW-72 100% OUTSIDE AIR SWITCH (BY OTHERS)

TR-01 CONTROL CIRCUIT TRANSFORMER
TR-04 MODULATING VALVE TRANSFORMER
TR-05 LOW VOLTAGE TRANSFRMER

TS-01 OUTSIDE AIR TEMPERATURE SENSOR
**TS-02 SPACE TEMPERATURE SENSOR** (OPTIONAL)
TS-03 DISCHARGE AIR TEMPERATURE SENSOR

UC-01 UNIT CONTROL MODULE

VG-02 MAIN GAS VALVE
VG-03 AUXILIARY GAS VALVE
VG-07 MODULATING GAS VALVE

***NOTE:*** *DDC Control package includes burner control with room temperature sensor and high and low discharge limits, inlet on-off ductstat, and timed freeze protection.*

# *ELECTRICAL AND CABINET ARRANGEMENTS*

## Amp Draw Table

| ITEM | SOURCE | AMPS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Motor HP | 1 | 1½ | 2 | 3 | 5 | 7½ | 10 | 15 | 20 |
| A | Blower Motor | AMPS for 115V 1 Ph. | 12.4 | 18.0 | 24.0 | 32.0 | NA | NA | NA | NA | NA |
| | | AMPS for 230V 1 Ph. | 6.2 | 9.0 | 12.0 | 16.0 | NA | NA | NA | NA | NA |
| | | AMPS for 208V 3 Ph. | 3.1 | 4.5 | 5.9 | 8.7 | 13.7 | 22.2 | 28.2 | 44.8 | 61.2 |
| | | AMPS for 230V 3 Ph. | 2.8 | 4.2 | 5.6 | 8.0 | 13.2 | 21.6 | 28.0 | 40.6 | 50.0 |
| | | AMPS for 460V 3 Ph. | 1.4 | 2.1 | 2.8 | 4.0 | 6.6 | 10.8 | 14.0 | 20.3 | 25.0 |
| | | AMPS for 575V 3 Ph. | 1.1 | 1.7 | 2.2 | 3.2 | 5.3 | 8.2 | 11.0 | 16.2 | 20.0 |
| B | Controls | Allow 2 AMPS Maximum | | | | | | | | | |

To size optional disconnect switch, add amps from ITEM A and B from above table, then muliply by 1.15

## Pre-Purge Timing

The standard WDF unit is furnished with a timer that allows the fan to run for ten seconds prior to burner activation. This “pre-purge” timer permits purging of any combustible gases that may have accumulated in the unit. The standard timer is suitable for all units without inlet ducts.

If an inlet duct is attached to the WDF unit, then ANSI requirements stipulate that a purge timer must be provided and set to purge four times the inlet duct volume prior to trial for ignition.

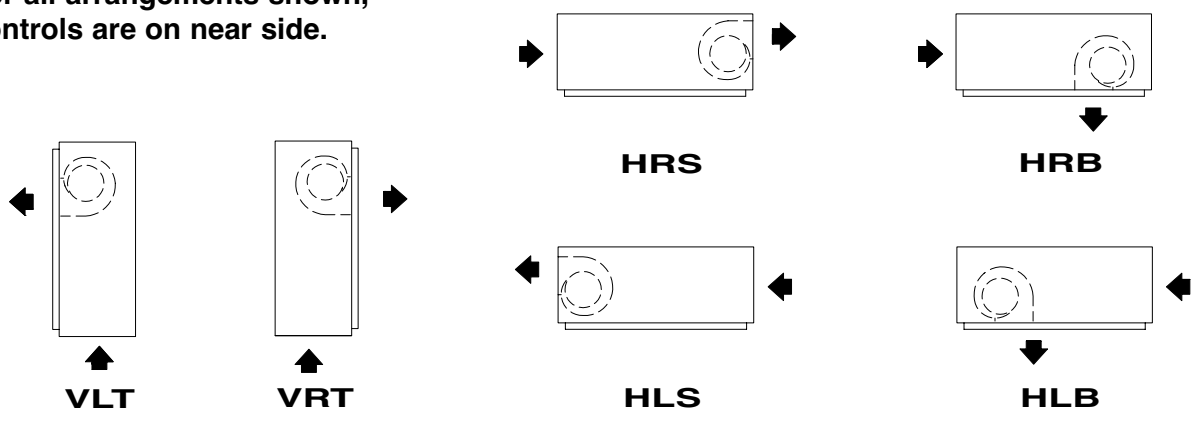
Depending on the duct size, more than ten seconds could be required for adequate purging. To calculate the required purge time for a given inlet duct use:

Purge time (seconds) = 240 x L x W x H/SCFM
Where: L = duct length in feet; W = duct width in feet; and H = duct height in feet.

If the calculated purge time exceeds ten seconds, then either decrease the duct size or consult factory for an additional timer.

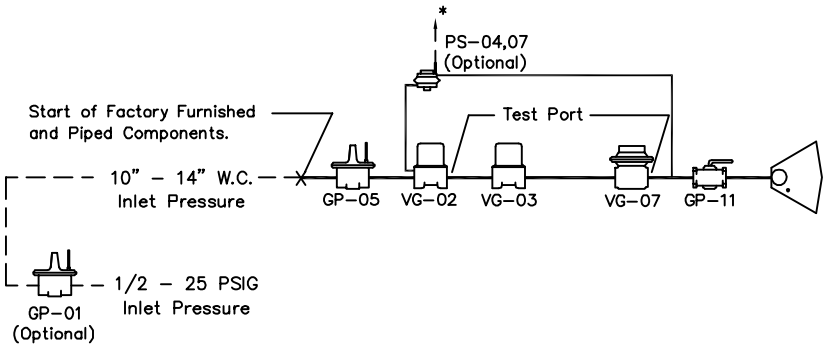
## Cabinet Arrangements

**For all arrangements shown, controls are on near side.**

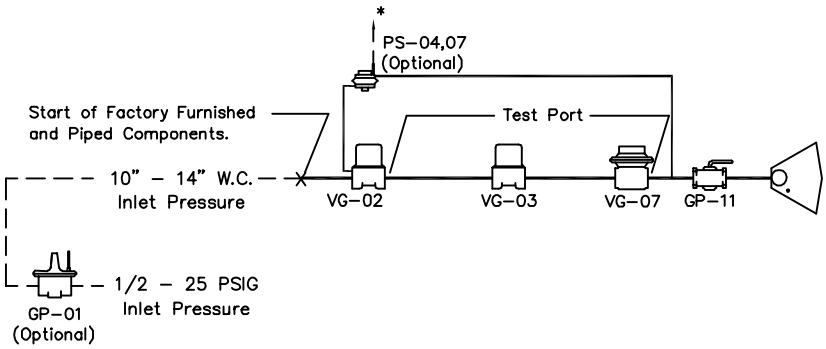


## Schematic Component Diagrams

C000504




MODULATING GAS TRAIN UP TO 950 MBH




MODULATING GAS TRAIN OVER 950 MBH

**COMPONENT IDENTIFICATION**

| | |
|---|---|
| GP–01 | HIGH GAS PRESSURE REGULATOR |
| GP–05 | MAIN GAS PRESSURE REGULATOR |
| GP–11 | MAIN GAS SHUT–OFF VALVE |
| VG–02 | MAIN GAS VALVE |
| VG–03 | AUXILIARY GAS VALVE |
| VG–07 | MODULATING VALVE |
| VG–08 | HIGH–LOW–OFF GAS VALVE |
| PS–04 | LOW GAS PRESSURE SWITCH |
| PS–07 | HIGH GAS PRESSURE SWITCH |

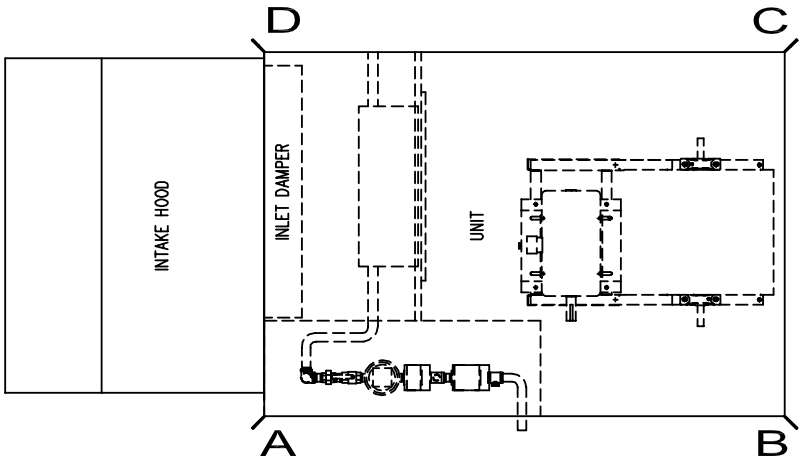
**NOTES:**

1. Vent limiting devices provided wherever possible, when venting is required the venting to outside is by others on indoor units and furnished by factory on outdoor units.
2. For inlet pressures under 10" W.C. – Please consult factory.
3. **The standard ETL listed unit meets ANSI, FM and IRI requirements. Note that units with an A200 option are not ETL listed and therefor do not meet FM and IRI requirements.**

# *WEIGHTS*

## Horizontal Unit Weights (Approximate)

C000508




PLAN VIEW HORIZONTAL UNIT
WITHOUT V-BANK

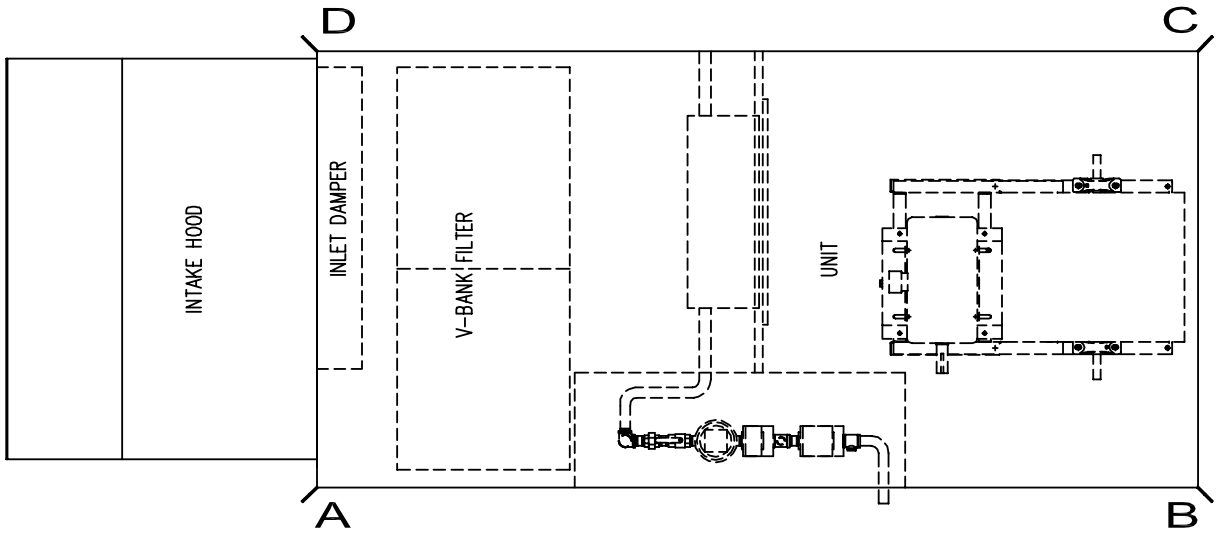
| Model | Base Unit without V-Bank | | | | Shipping Crate | Inlet Hood (No Filters) |
|---|---|---|---|---|---|---|
| | A | B | C | D | | |
| 035 | 199<br>White | 195<br>White | 141<br>Red | 150<br>Red | 253 | 65 |
| 070 | 256<br>White | 260<br>White | 192<br>White | 204<br>White | 311 | 120 |

*NOTE: Color shown under corner weights indicates proper optional hanger isolator.*

# *WEIGHTS*

## Horizontal Unit Weights (Approximate)

C000508




PLAN VIEW HORIZONTAL UNIT
WITH V-BANK

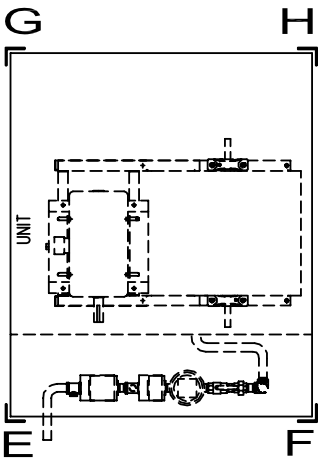
| Model | Base Unit with V-Bank | | | | Base Unit with V-Bank & Return Damper | | | | Shipping Crate | Inlet Hood (No Filters) |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | A | B | C | D | | |
| 035 | 223 White | 259 White | 183 White | 173 Red | 235 White | 259 White | 183 White | 185 Red | 316 | 65 |
| 070 | 297 White | 334 White | 242 White | 234 White | 314 White | 334 White | 242 White | 251 White | 402 | 120 |

*NOTE: Color shown under corner weights indicates proper optional hanger isolator.*

# *WEIGHTS*

## Vertical Unit Weights (Approximate)

C000508




PLAN VIEW VERTICAL UNIT

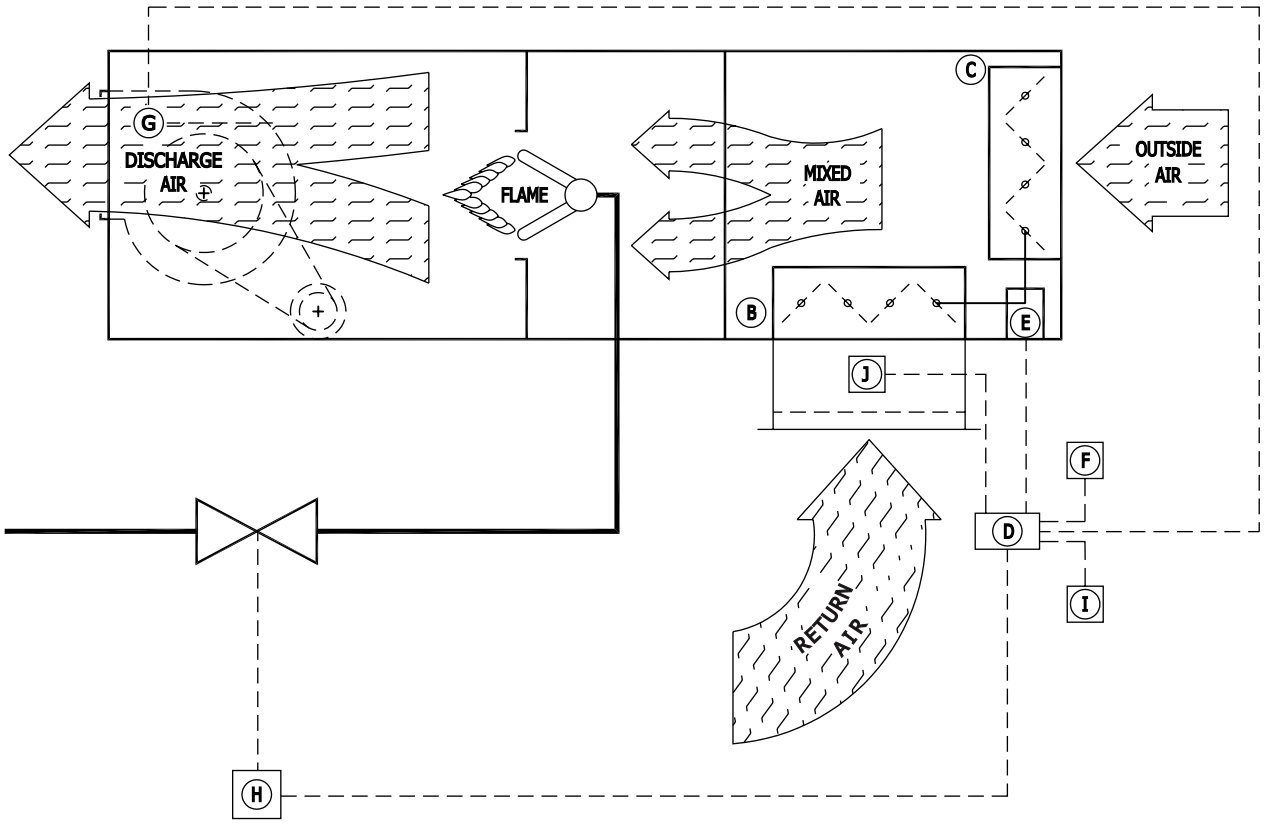
| Model | Base Unit with V-Bank | | | | Base Unit with V-Bank & Return Damper | | | | Shipping Crate | 36" Stand (See Note) |
|---|---|---|---|---|---|---|---|---|---|---|
| | E | F | G | H | E | F | G | H | | |
| 035 | 234 | 214 | 151 | 180 | 239 | 219 | 164 | 180 | 316 | 178 |
| 070 | 354 | 337 | 263 | 264 | 363 | 346 | 271 | 272 | 402 | 183 |

*NOTE: Multiply times following factors for other heights: 42" - 1.17, 48" - 1.33, 54" - 1.50, 60" - 1.67*

# *SCHEDULE AND RETURN AIR UNIT OPERATION SEQUENCE*

## Sequence of Operation - Return Air Units

P000621




Signal from remote control (I) to AireLogic controller (D) sets operational parameters for the return air damper (B), outside air damper (C), and the burner. Damper operation can be controlled manually, by building pressure, or by mixed air temperature.

Return air dampers and outside air dampers are interlocked to operate opposite to one another. As the return air dampers open to allow more return air to enter the WDF unit, the outside air dampers move toward the closed position, thus decreasing the amount of outside air. The pressure sensor and flow station (J) senses the change in the return airflow and signals the AireLogic controller.

Modulating gas valve (H) regulates the gas supply in response to the signal from the AireLogic controller. That signal varies based on input from the room temperature sensor (F), discharge temperature sensor (G), and airflow sensor (J). The gas valve can provide approximately 4% to 100% of rated burner capacity.

# *SPECIFICATIONS*

## Typical Unit Specification

Furnish as base bid L.J. Wing model WDF make–up air units designed for outdoor application as shown in the schedule. The unit discharge shall be designed for easy adaptation to external ducts or optional accessories. The unit shall be capable of delivering the required heating performance at the scheduled airflow and external static pressure using not more than the scheduled horsepower.

**Burner Section**
The standard ETL listed unit will meet ANSI, FM, and IRI requirements. Both burner and blower shall be compensated for the altitude as shown in the schedule. Manifold to be located outside of air stream and shielded from atmospheric conditions by means of a protective compartment with hinged access. An observation port shall be located to provide view of main flame.

Unit shall be supplied with a wide range burner with a modulating turndown ratio of 25:1. Adjustable profile plates shall be provided and sized to maintain the required velocity across the line burner. The operation of the burner shall be programmed through the ignition controller with timed pre-purge and flame-sensed by means of a flame rod The burner assembly and gas manifold shall be completely pre-piped and factory tested prior to shipment.

The unit shall be controlled by the AireLogic DDC control module with full BACnet compatibility. Unit shall have (MDT Modulating Discharge Temperature control system)(MRT Modulating Room Temperature Control system)(MRT-Pro Modulating Room Pro Temperature Control System)(MRT-Expert Modulating Room Expert Temperature Control System). The Airelogic DDC control system shall include but not be limited to the following controls required for standard operation:

- Electronic time clock with normal, holiday, and override schedules. (Not available on MDT or MRT Control Systems).
- Timed freeze protection to prevent heater from discharging unheated air into the building
- Inlet on-off ductstat that will turn the burner off when the inlet temperature equals the desired discharge air temperature as fuel saving mode.
- On-off night setback thermostat for lower operating temperatures in unoccupied mode as fuel savings mode. (Not available on MDT or MRT Control Systems),

**Unit Casing**
Unit casing and accessories shall be fabricated from heavy-gauge galvanized steel. The base of the unit shall be constructed of rigidly formed 12 gauge galvanized steel with built-in curb adapter (horizontal units only). All casings shall be airtight and weatherproof. Roof panels shall be convex to prevent standing water, and designed with a standing seam to prevent water entrainment. Cabinet shall be designed with roof eaves to prevent water from getting into wall panels. Complete access shall be provided to all components through gasketed, hinged access doors. This includes the motor, blower, burner, electrical components and manifold sections.

**Blower section**
Each unit shall be supplied with centrifugal forward curved, DWDI fan rated in accordance with AMCA standards. The fan shall be mounted on a heavy-duty polished steel shaft designed for a maximum operating speed not to exceed 75% of its first critical speed. Bearings are to be heavy-duty industrial prelubricated type. Blowers are to be driven by a V-belt package sized with a capacity of 25% greater than the motor horsepower. Multiple belt applications will be matched sets. Drives are to be (fixed)(adjustable). Motor is to be mounted on an adjustable slide base. Door safety interlock shall be provided for protection when the blower access door is opened.

**Control Enclosure**
The unit(s) shall be supplied with a control compartment and all controls mounted within this compartment are to be wired to a numbered terminal strip. All wiring is to be color-coded in accordance with the NEC. A circuit diagram is to be laminated to the inside of the control cabinet door. All electrical components shall bear a recognized label.

**Controls**
1. Main fan starters and overloads
2. Control circuit fuse
3. High temperature limit switch
4. Flame rod sensor
5. Ignition module
6. Main gas automatic shut-off valves
7. MDT control system
8. Air proving differential switches
9. Factory wired motorized inlet damper complete with end switch
10. Control transformer
11. Remote control panel

## Typical Unit Specification, continued

**Optional Accessories:**

1. V-bank filter box with filters
2. Inlet hood and birdscreen with or without filters
3. Insulation
4. Full perimeter roof curb (horizontal unit only)
5. Vibration hangers
6. Clogged filter switch
7. Disconnect switch
8. Twenty gauge cabinet liner
9. High pressure regulator (required over 1/2 psig)
10. Vertical arrangement with support stand and inlet birdscreen
11. Mixing dampers with return air flow station
12. Internal blower/motor isolation (horizontal units only)
13. Discharge nozzles
14. Firestat
15. 115 volt service receptacle
16. BACview controller

**Mixing Dampers with return Air flow Station (optional)**

Unit shall have outside air and return air dampers with modulating actuator controlled by a AireLogic DDC control system. The AireLogic DDC control system shall have capability to digitally control the outside air quantity from a nominal minimum of 20% to 100% with integrated gas valve control at all room concentrations of CO2.

The return air inlet shall include a self-calibrating flow measuring station with a grid of velocity pressure probes with spacing no greater than 12" over the entire face of the return air opening and sampled every two seconds. Samples will be added to a twenty-five point rolling average to provide smooth accurate data that is delivered to the AireLogic DDC control system every two seconds. The DDC control system shall be capable of electronically displaying the return air/outside air ratio within 5% accuracy at all damper positions.

The AireLogic DDC control module shall have full BACNET compatibility. Display shall have a minimum of two line, sixteen character display.

The AireLogic DDC control system shall be capable of controlling mixing dampers in the following modes of operation:

- Manual Mode: Allows manual positioning of the outside air (O.A.) damper and return air (R.A.) damper by changing the damper position setpoint.
- Mixed Air Temperature Mode: Shall provide automatic control of the mixed air temperature by modulating the O.A. damper and R.A. damper to maintain the mixed air temperature setpoint. As the mixed air temperature increases above the setpoint more outside air will be introduced.
- Building Pressure Mode: Provides automatic building pressure control by modulating the O.A. damper and return air damper to maintain the indoor building pressure setpoint. As the building pressure decreases below the setpoint more outside air will be introduced.

**BACview Controller Display (optional)**

The remote keypad display for the AireLogic DDC control system shall have a minimum of two lines, sixteen characters shown which shall include but not be limited to the following:

- Return air temperature
- Outside air temperature
- Discharge air temperature
- Mixed air temperature
- Maximum allowable temperature rise
- Actual temperature rise
- Current percent of outside air
- Current building pressure (optional)
- Current damper input voltage (optional)
- Current burner input voltage
- Fan operating hours since last rest
- Fan start cycle count since last reset
- Burner operating hours since last reset
- Burner start cycle count since last rest
- Cooling interlock operating hours since last reset
- Cooling interlock cycle count since last reset
- Critical alarm conditions;
  - ⇨ Airflow switch failure
  - ⇨ Unit on, fan off
  - ⇨ Unit off, fan on
  - ⇨ Low discharge temperature
  - ⇨ Safety circuit open
  - ⇨ Burner jumped

The control settings available on the remote keypad display for the AireLogic DDC control system shall include, but not be limited to, the following:

- Heating setpoint
- Cooling setpoint
- Economizer options
- Setback setpoint
- Freeze protection setpoint
- Maximum discharge air setpoint
- Minimum discharge air setpoint
- Minimum ventilation option and setpoint
- Time of day schedule selection and setpoints
  - ⇨ Normal 5/7 schedule
  - ⇨ Holiday schedule
  - ⇨ Manual override

## Typical Schedule

From example on page 4:

| Model no. | Airflow Rate (SCFM) | Winter Design Temp. (degrees F) | Air Temp. Rise (degrees F) | Burner Input Rate (MBH) | Total Static Pressure (inches w.c.) | Motor Horsepower (HP) | Electrical Service (volt/ph./Hz) |
|---|---|---|---|---|---|---|---|
| WDF-035-HRS | 3,000 | -10 | 80 | 281 | 1.58 | 3 | 230/3/60 |





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