# TECHNICAL GUIDE

## DOWNFLOW HEATING ONLY ELECTRIC FURNACE

## MODELS: EB SERIES

### DESCRIPTION

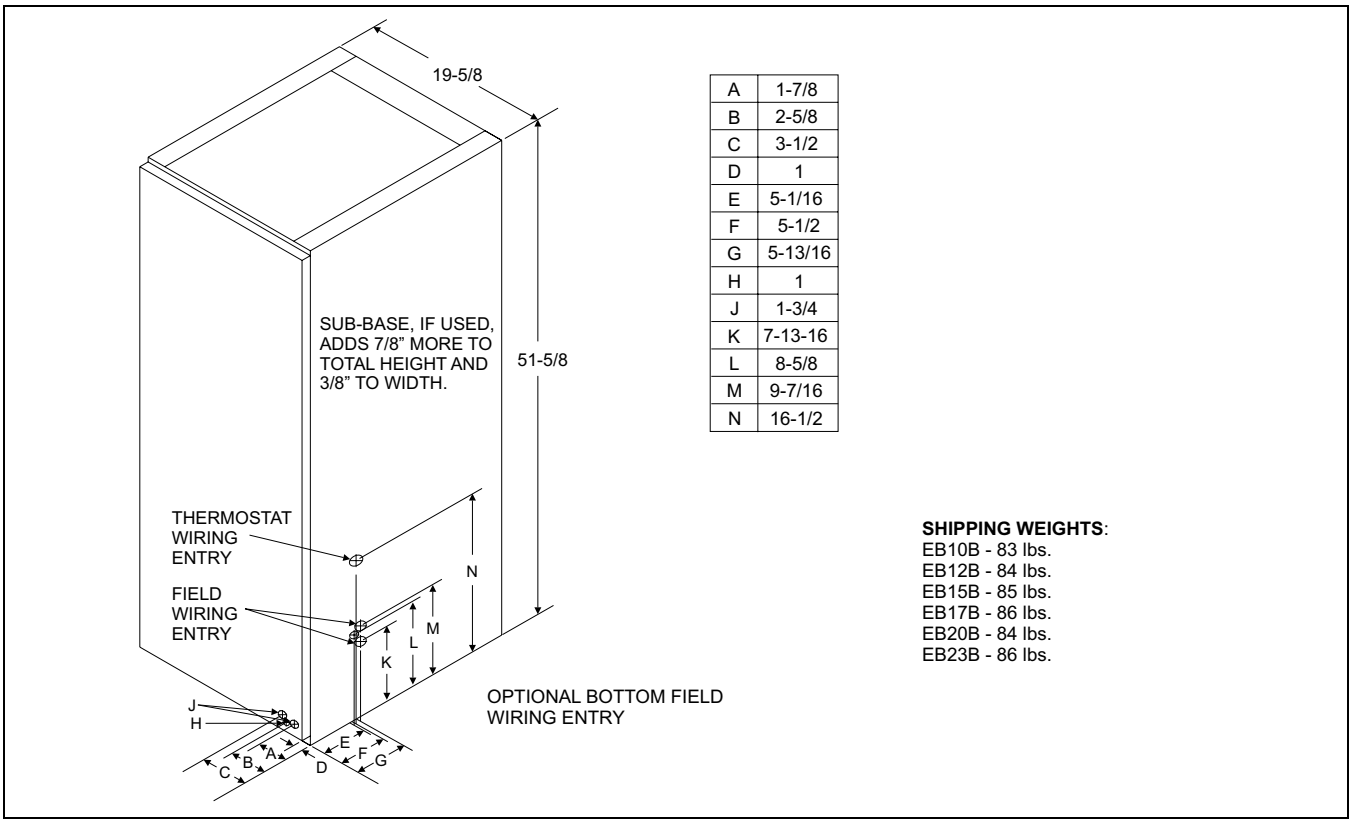
The EB Series Electric Furnace is actually two systems in one. As a powerful air handler, it can handle up to 4 tons cooling and 3-1/2 tons with a heat pump. As an electric furnace, its range of heating capacities makes the EB a perfect match for the heating requirements of almost any manufactured home.

**WARRANTY**

2-year limited parts warranty.

### FEATURES

- ZERO CLEARANCE FEATURE allows the EB to be installed where space is a premium.
- PRE-PAINTED WHITE FRONT PANELS provide a scratch resistant, attractive, easy to clean appliance finish.
- BUILT-IN COIL CABINET is design-matched to work in conjunction with Coleman heat pumps and air conditioners, providing ease of installation and highly efficient operating performance.
- AIR CONDITIONER AND HEAT PUMP OPERATION READY, all models have a multi-speed blower capable of handling up to 4 tons cooling and 3-1/2 tons with a heat pump.
- HEATING PACKAGE includes specifically designed, long lasting nickel/chrome heat elements.
- UNIVERSAL THROW-AWAY FILTER cleans the air, and is easy to replace.




| | |
|---|---|
| A | 1-7/8 |
| B | 2-5/8 |
| C | 3-1/2 |
| D | 1 |
| E | 5-1/16 |
| F | 5-1/2 |
| G | 5-13/16 |
| H | 1 |
| J | 1-3/4 |
| K | 7-13-16 |
| L | 8-5/8 |
| M | 9-7/16 |
| N | 16-1/2 |

**SHIPPING WEIGHTS**:
EB10B - 83 lbs.
EB12B - 84 lbs.
EB15B - 85 lbs.
EB17B - 86 lbs.
EB20B - 84 lbs.
EB23B - 86 lbs.

**FIGURE 1**

| MODEL NUMBER | | | EB23B | EB20B | EB17B | EB15B | EB12B | EB10B |
|---|---|---|---|---|---|---|---|---|
| D.O.E. OUTPUT CAPACITY | 24 VAC 60 Hz. 1 PHASE | BTU | 77,000 | 67,000 | 56,000 | 51,000 | 39,000 | 34,000 |
| | | KW | 22.6 | 19.6 | 16.4 | 15.0 | 11.4 | 10.0 |
| OUTPUT CAPACITY | 230 VAC. 60Hz. 1 PHASE | BTU | 71,000 | 61,000 | 52,000 | 47,000 | 36,000 | 31,000 |
| | | KW | 20.8 | 17.9 | 15.2 | 13.8 | 10.6 | 9.1 |
| | 220 VAC 60Hz. 1 PHASE | BTU | 65,000 | 57,000 | 48,000 | 43,000 | 33,000 | 29,000 |
| | | KW | 19.1 | 16.7 | 14.1 | 12.6 | 9.7 | 8.5 |
| ELEMENT CAPACITY @ 240 VAC | | KW | 21.6 | 19.2 | 16.0 | 14.4 | 11.2 | 9.6 |
| | | AMPS | 90.0 | 80.0 | 66.7 | 60.0 | 46.7 | 40.0 |
| MOTOR AMPS @ 240 V | | | 4.0 MAXIMUM | | | | | |
| CIRCUIT LOAD AMPS @ 240 V | | CKT 1 | 47.3 | 44.0 | 47.3 | 44.0 | 50.7* | 44.0* |
| | | CKT 2 | 46.7 | 40.0 | 23.4 | 20.0 | -- | -- |
| FILTER SIZE | | | 16 x 20 x 1 | | | | | |

* Approved for Single Branch Circuit Service Only.
Casing or Cabinet must be permanently grounded in accordance with N.E.C. or other applicable codes.

## SUPPLY CIRCUIT WIRE SIZES

240 Volt, 60 Cycle, Single Phase - from N.E.C. Table 310-16

| MODELS | EB23B | | EB20B | | EB17B | | EB15B | | EB12B | EB10B |
|---|---|---|---|---|---|---|---|---|---|---|
| **Single Branch Circuit Service *** | 2 Leads + 1 Ground CKT #1 | | 2 Leads + 1 Ground CKT #1 | | 2 Leads + 1 Ground CKT #1 | | 2 Leads + 1 Ground CKT #1 | | 2 Leads + 1 Ground CKT #1 | 2 Leads + 1 Ground CKT #1 |
| Nominal Circuit Load - AMPS | 94.0 | | 84.0 | | 70.7 | | 64.1 | | 50.7 | 44.0 |
| Minimum Wire Size (90º) | #2 | | #3 | | #4 | | #4 | | #6 | #8 |
| Minimum Wire Size (75º) | #1 | | #2 | | #3 | | #4 | | #6 | #6 |
| Minimum Wire Size (60º) | #0 | | #1 | | #2 | | #3 | | #4 | #6 |
| Ground Wire Size | #6 | | #6 | | #8 | | #8 | | #8 | #10 |
| Max. Fuse (or C.B.) - AMPS | 125 | | 110 | | 90 | | 90 | | 70 | 60 |
| **Dual Branch Circuit Service** | 4 Leads + 2 Ground | | 4 Leads + 2 Ground | | 4 Leads + 2 Ground | | 4 Leads + 2 Ground | | | |
| | CKT #1 | CKT #2 | CKT #1 | CKT #2 | CKT #1 | CKT #2 | CKT #1 | CKT #2 | | |
| Branch Circuit Load - AMPS | 47.3 | 46.7 | 44.0 | 40.0 | 47.3 | 23.4 | 44.0 | 20.1 | | |
| Branch Circuit Min. Ampacity | 59.2 | 58.4 | 55.0 | 50.0 | 59.2 | 29.3 | 55.0 | 25.2 | | |
| Minimum Wire Size (90º) | #6 | #6 | #8 | #8 | #6 | #10 | #8 | #10 | | |
| Minimum Wire Size (75º) | #6 | #6 | #6 | #8 | #6 | #10 | #6 | #10 | | |
| Minimum Wire Size (60º) | #4 | #4 | #6 | #6 | #4 | #10 | #6 | #10 | | |
| Ground Wire Size [T] | #10 | #10 | #10 | #10 | #10 | #10 | #10 | #10 | | |
| Max. Fuse (or C.B.) - AMPS | 60 | 60 | 60 | 50 | 60 | 30 | 60 | 30 | | |

* Requires Jumper Bars (P/N 3500-3781) - Dual Supply for U.S. Only.

[T] - Refer to N.E.C. Table 250-95 for non-sheated conductor ground wire.

## EB SERIES BLOWER PERFORMANCE

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Speed Heating Speed Models EB10, 12, 15 | Static Pressure (Inches of WC) | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 |
| | CFM (STD. Air) | 945 | 936 | 936 | 924 | 915 | 889 | 870 | 813 | 705 |
| Medium Speed Heating Speed Models EB17, 20, 23 | Static Pressure (Inches of WC) | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 |
| | CFM (STD. Air) | 1160 | 1145 | 1145 | 1140 | 1129 | 1109 | 1073 | 1027 | 935 |
| Medium High with A-Coil in place | Static Pressure (Inches of WC) | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 |
| | CFM (STD. Air) | 1340 | 1317 | 1290 | 1252 | 1208 | 1158 | 1095 | 1021 | 876 |
| High with A-Coil in place | Static Pressure (Inches of WC) | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 |
| | CFM (STD. Air) | 1573 | 1534 | 1490 | 1435 | 1369 | 1309 | 1237 | 1135 | 1019 |

## LOCATION

Access for servicing is an important factor in the location of any furnace. A minimum of 24 inches should be provided in front of the furnace for access to the heating elements and controls. This access may be provided by a closet door or by locating the furnace 24 inches from a facing wall or partition.

## FURNACE CLEARANCE

Electric furnace is approved for zero (0) in. clearance to combustible material on all or any part of the furnace exterior and the inlet or outlet duct work. Clearances must be provided above the furnace for a minimum of 200 sq. inches free opening for return air. For clearances other than shown above see paragraph on Return Air.

## RETURN AIR

In order for the furnace to work properly, a closet or alcove must have a certain total free area opening for return air.

### FOR HEATING ONLY FURNACE

Minimum 200 $in^2$ free area opening.
Use Return Grille 7900-287P/B,
Or any Return Grille with minimum 200 $in^2$ free area opening.

### FOR A/C UP TO 4-TONS AND HP UP TO 3 1/2-TONS

Minimum 250 $in^2$ free area opening.
Use Return Grille 7900-287P/B, 1FG0620BK (hinged),
Or Louvered Door 3500-1581, 3500-5851 (bulk pack),
Or any Return Grille with minimum 250 $in^2$ free area opening.

### FOR A/C UP TO 5-TONS AND HP UP TO 4-TONS

Minimum 330 $in^2$ free area opening.
Use Return Grille 1RF1025BK, 1FG0125 (hinged),
Or Louvered Door 3500-1591, 3500-5861 (bulk pack),
Or any Return Grille with minimum 330 $in^2$ free area opening.
The return air opening can be located in a closet front door or a sidewall above the furnace casing, or in a louvered door on the furnace. If opening for the return air is located in the floor, side walls or closet door anywhere below furnace casing height, 6 inches minimum clearance must be provided on the furnace side where return is located to provide for proper air flow.
For Upflow installations, a closet that is 32 inches wide by 30 inches deep with a 30-inch wide door is necessary.

## AIR FILTER

The filter supplied with the furnace is of the throw-away type. Filters need to be cleaned frequently. Shake out all loose dirt, and use vacuum cleaner to clean additionally. This method of cleaning will prolong life of filters. DO change filters often since clean filters not only provide added comfort, better and cleaner environment, but increase the efficiency of the furnace as well.
**FILTER LOCATION:** The furnace's front panel must be removed to gain access to the filter of the downflow furnace. (See Figure 2.) However, the filter for the upflow furnace* is located behind the return air grill, adjacent to the furnace closet or any other location in the return air. For EBL series furnaces air filters (20 x 20 x 1) are located inside the front panel.

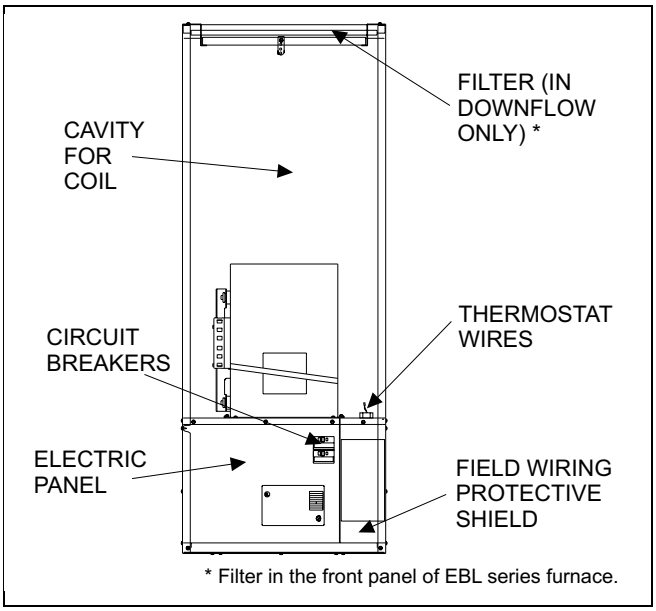



**FIGURE 2**


036-21006-002 Rev. A (1100))
Supersedes: 036-21006-001 REV. A (0300)

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