

TECHNICAL GUIDE

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MODELS: DGAD, DGAE, DGAF

**GAS-FIRED
CONDENSING / HIGH EFFICIENCY
DOWNFLOW FURNACES**

92% AFUE

**NATURAL GAS
60 - 100 MBH INPUT**



ISO 9001
Certified Quality
Management System

DESCRIPTION

These Category IV, highly efficient, direct vent, compact, condensing type furnaces are designed for residential installation in mobile homes or manufactured buildings. All units are factory assembled, wired and tested to assure dependable and economical installation and operation.

These units may be installed in downflow applications without any conversion required.

WARRANTY

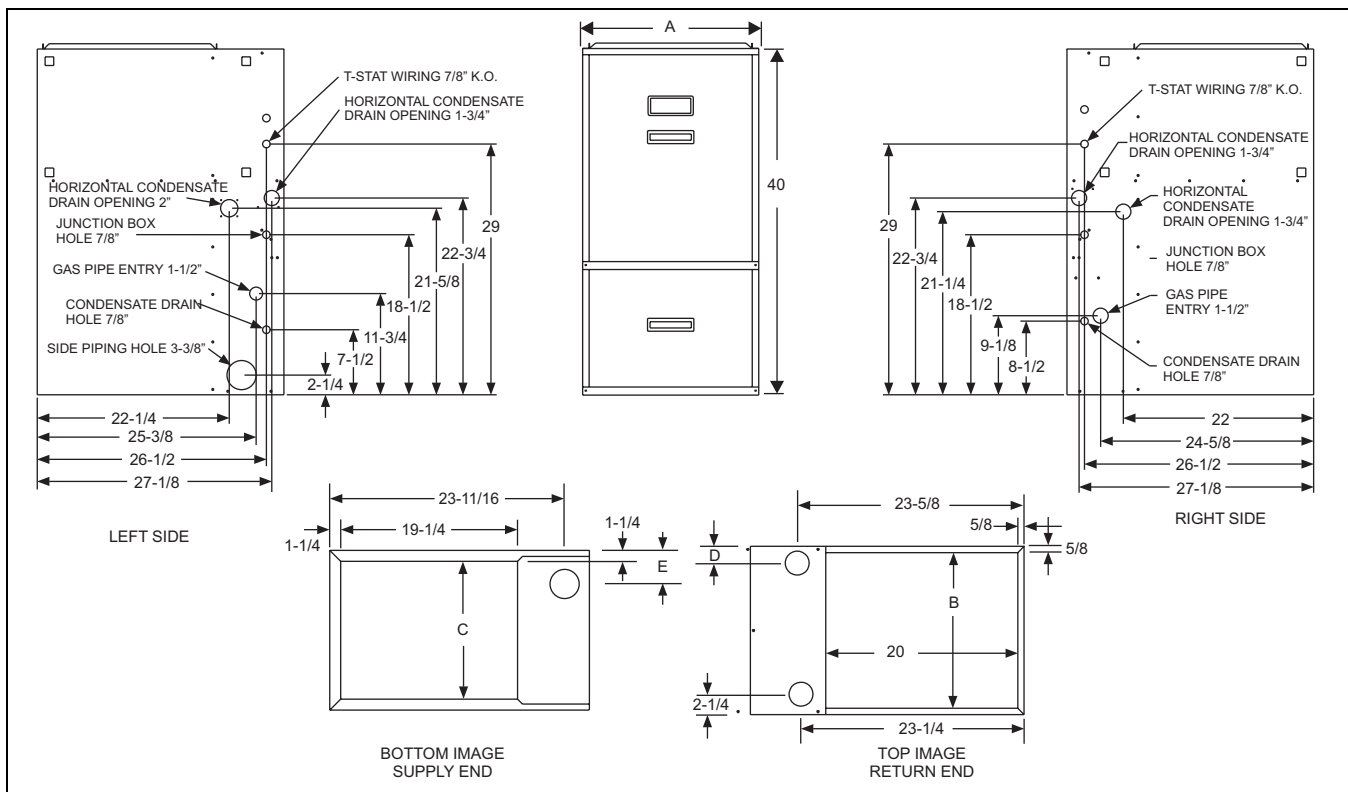
15- year limited warranty on the heat exchanger.

1-year limited parts warranty for Evcon and Red-T.

2-year limited parts warranty for Coleman and Vexar.

FEATURES

- Compact, easy to install, ideal height 40" cabinet
- Blower-off delay for cooling SEER improvement.
- Easy to connect power/control wiring.
- Built-in, high level self diagnostics with fault code display.
- Low unit amp requirement for easy replacement application.
- Integrated control module for reliable, economical operation.
- Installed as a two-pipe (sealed combustion) using outdoor combustion air.
- Top intake & vent connection allows downflow installation in narrow locations.
- Electronic Hot Surface Ignition saves fuel cost with increased dependability and reliability.
- Induced combustion system with inshot main burners for quiet, efficient operation.
- No special vent termination kit required.
- 100% shut off main gas valve for extra safety.
- PSC four speed, direct drive motor with large, quiet blower.
- 24V, 40 VA control transformer and blower relay supplied for add-on cooling.
- Hi-tech tubular aluminized steel primary heat exchanger.
- Secondary (condensing) heat exchanger of 29-4C high-grade stainless steel.
- Timed on, adjustable off blower capability for maximum comfort.
- Easy access from front of unit for cleaning, maintenance or service.
- Protection from intake, exhaust or condensate blockage.
- Propane (LP) convertible.



CABINET AND DUCT DIMENSIONS

| Models | CFM | Cabinet Size | Cabinet Dimension | | | | |
|-----------|------|--------------|-------------------|---------|---------|---------|---------|
| | | | A (in.) | B (in.) | C (in.) | D (in.) | E (in.) |
| DGAD060CD | 1200 | B | 17-1/2 | 16-1/4 | 15-1/8 | 1-3/4 | 2-3/8 |
| DGAE080CD | 1600 | C | 21 | 19-3/4 | 18-1/2 | 2-1/8 | 2-3/4 |
| DGAF100CD | 2000 | C | 21 | 19-3/4 | 18-1/2 | 2-1/8 | 2-3/4 |

ELECTRICAL AND PERFORMANCE DATA

| Model | Input/Cabinet | Output | Nominal Airflow | Cabinet Width | Total Unit | AFUE | Air Temp. Rise |
|-----------|---------------|--------|-----------------|---------------|------------|------|----------------|
| | MBH | MBH | CFM | In. | Amps | % | °F |
| DGAD060CD | 60/B | 55 | 1200 | 17-1/2 | 9 | 92 | 35 - 65 |
| DGAE080CD | 80/C | 74 | 1600 | 21 | 12 | 92 | 35 - 65 |
| DGAF100CD | 100/C | 93 | 2000 | 21 | 14 | 92 | 35 - 65 |

| Model | Input/Cabinet | Max. Outlet Air Temp. | Blower | | Blower Size | Max. Over-current Protect | Min. Wire Size (awg) @ 75 ft. One Way | Operation Weight |
|-----------|---------------|-----------------------|--------|------|-------------|---------------------------|---------------------------------------|------------------|
| | MBH | °F | HP | Amps | In. | | | Lbs. |
| DGAD060CD | 60/B | 165 | 1/2 | 7.0 | 11 x 8 | 20 | 14 | 130 |
| DGAE080CD | 80/C | 165 | 3/4 | 10.2 | 11 x 10 | 20 | 14 | 155 |
| DGAF100CD | 100/C | 165 | 1 | 12.7 | 11 x 11 | 20 | 12 | 175 |

Annual Fuel Utilization Efficiency (AFUE) numbers are determined in accordance with DOE Test procedures. Wire size and over current protection must comply with the National Electrical Code (NFPA-70-latest edition) and all local codes. The furnace shall be installed so that the electrical components are protected from water.

* Wire size and overcurrent protection must comply with the National Electric Code.

NOTES:

1. For altitudes above 2000 ft. reduce capacity 4% for each 1000 ft. above sea level.
2. Wire size based on copper conductors, 60°C, 3% voltage drop.
3. Continuous return air temperature must not be below 55°F.
4. All filters must be high velocity cleanable type.

BLOWER PERFORMANCE CFM

| AIRFLOW WITH TOP RETURN - WITHOUT FILTERS | | | | | | | | | | | |
|---|-------------|---------------------------------------|------|------|------|------|------|------|------|------|------|
| MODEL NUMBER | SPEED TAP | EXTERNAL STATIC PRESSURE, INCHES W.C. | | | | | | | | | |
| | | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| | | CFM | CFM | CFM | CFM | CFM | CFM | CFM | CFM | CFM | CFM |
| DGAD060CD | High | 1687 | 1652 | 1631 | 1595 | 1557 | 1511 | 1456 | 1382 | 1313 | 1211 |
| | Medium High | 1193 | 1183 | 1173 | 1162 | 1142 | 1115 | 1076 | 1036 | 982 | 950 |
| | Medium Low | 933 | 933 | 921 | 911 | 902 | 872 | 825 | 793 | 771 | 712 |
| | Low | 752 | 745 | 731 | 718 | 698 | 652 | 602 | 580 | 536 | 496 |
| DGAE080CD | High | 2071 | 2026 | 1981 | 1935 | 1864 | 1796 | 1713 | 1625 | 1532 | 1401 |
| | Medium High | 1583 | 1590 | 1569 | 1554 | 1532 | 1502 | 1457 | 1409 | 1327 | 1221 |
| | Medium Low | 1256 | 1275 | 1275 | 1288 | 1275 | 1265 | 1232 | 1187 | 1126 | 1023 |
| | Low | 937 | 939 | 936 | 945 | 942 | 936 | 912 | 874 | 810 | 726 |
| DGAF100CD | High | 2404 | 2320 | 2225 | 2138 | 2034 | 1924 | 1816 | 1692 | 1559 | 1422 |
| | Medium High | 2018 | 1955 | 1883 | 1815 | 1750 | 1670 | 1586 | 1497 | 1394 | 1246 |
| | Medium Low | 1626 | 1581 | 1531 | 1488 | 1418 | 1363 | 1291 | 1225 | 1123 | 964 |
| | Low | 1336 | 1291 | 1249 | 1205 | 1155 | 1091 | 1018 | 951 | 884 | 759 |

NOTES:

- Airflow expressed in standard cubic feet per minute (CFM).
- Motor voltage at 115 V.

FILTER PERFORMANCE

The airflow capacity data published in the "Blower Performance" table listed above represents blower performance WITHOUT filters. To determine the approximate blower performance of the system, apply the filter drop value for the filter being used or select an appropriate value from the "Filter Performance" table shown.

NOTE: The filter pressure drop values in the "Filter Performance" table shown are typical values for the type of filter listed and should only be used as a guideline. Actual pressure drop ratings for each filter type vary between filter manufacturer.

RECOMMENDED FILTER SIZES

| Cabinet Size | Top Return Filter |
|--------------|-------------------|
| B | (2) 14 x 20 |
| C | (2) 14 x 20 |

NOTES:

- Air velocity through throwaway type filters may not exceed 300 feet per minute. All velocities over this require the use of high velocity filters.

FILTER PERFORMANCE - PRESSURE DROP INCHES W.C. AND (KPA)

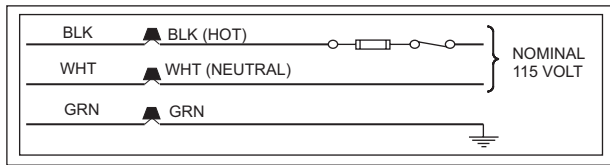
| Airflow Range | Minimum Opening Size | Filter Type | | |
|---------------|----------------------|-------------|----------------|---------|
| | | Disposable | Washable Fiber | Pleated |
| CFM | in ² | In W.C. | In W.C. | In W.C. |
| 0 - 750 | 230 | 0.01 | 0.01 | 0.15 |
| 751 - 1000 | 330 | 0.05 | 0.05 | 0.20 |
| 1001 - 1250 | 330 | 0.10 | 0.10 | 0.20 |
| 1251 - 1500 | 330 | 0.10 | 0.10 | 0.25 |
| 1501 - 1750 | 380 | 0.15 | 0.14 | 0.30 |
| 1751 - 2000 | 380 | 0.19 | 0.18 | 0.30 |
| 2001 & Above | 463 | 0.19 | 0.18 | 0.30 |

UNIT CLEARANCES TO COMBUSTIBLES

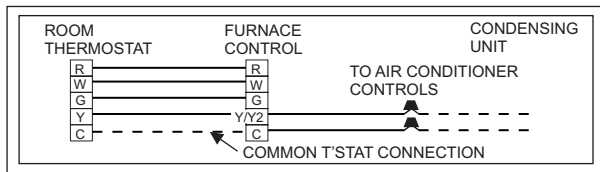
| Application | Top | Front | Rear | Left Side | Right Side | Flue | Floor/Bottom | Closet | Alcove | Attic |
|-------------|-----|-------|------|-----------|------------|------|--------------|--------|--------|-------|
| Downflow | 1 | 3 | 0 | 0 | 0 | 0 | 1"* | Yes | Yes | Yes |

* Special floor base or air conditioning coil required for use on combustible floor.

LINE WIRING CONNECTIONS



SINGLE STAGE HEAT T' STAT CONNECTIONS



APPLYING FILTER PRESSURE DROP TO DETERMINE SYSTEM AIRFLOW

To determine the approximate airflow of the unit with a filter in place, follow the steps below:

1. Select the filter type.
2. Determine the External System Static Pressure (ESP) without the filter.
3. Select a filter pressure drop from the table based upon the number of return air openings or return air opening size and add to the ESP from Step 3 to determine the total system static.
4. If total system static matches a ESP value in the airflow table (i.e. 0.20, 0.60, etc.) the system airflow corresponds to the intersection of the ESP column and Model/ Blower Speed row.
5. If the total system static falls between ESP values in the table (i.e. 0.58, 0.75, etc.), the static pressure may be rounded to the nearest value in the table determining the airflow using Step 5 or calculate the airflow by using the following example.

Example: For a 100,000 BTUH furnace operating on high-speed blower, it is found that total system static is 0.58" w.c. To determine the system airflow, complete the following steps:

1. Obtain the airflow values at 0.50 w.c. & 0.60 w.c. ESP.
Airflow @ 0.50": 2034 CFM
Airflow @ 0.60": 1924 CFM
2. Subtract the airflow @ 0.50 w.c. from the airflow @ 0.60 w.c. to obtain airflow difference.
1924 - 2034 = -110 CFM
3. Subtract the total system static from 0.50 w.c. and divide this difference by the difference in ESP values in the table, 0.60 w.c. - 0.50 w.c., to obtain a percentage.
 $(0.58 - 0.50) / (0.60 - 0.50) = 0.8$

4. Multiply percentage by airflow difference to obtain airflow reduction.
 $(0.8) \times (-110) = -88$
5. Subtract airflow reduction value to airflow @ 0.50 w.c. to obtain actual airflow @ 0.58 inwc ESP.
 $2034 - 88 = 1946 \text{ CFM}$

ACCESSORIES

CONCENTRIC VENT TERMINATION -

- 1CT0302 (2")
- 1CT0303 (3")

HORIZONTAL SIDEWALL VENT TERMINATION -

- 1HT0901 (3")
- 1HT0902 (2")

For use through rooftop, sidewall. Allows combustion air to enter and exhaust to exit through single common hole. Eliminates unsightly elbows for a cleaner installation.

COMBUSTIBLE FLOOR BASE -

- 1CB0317 - 17 1/2" Cabinet
- 1CB0321 - 21" Cabinet

COIL TRANSITION KIT -

- 1TK0917 - 17" Furnace
- 1TK0921 - 21" Furnace

These kits are required in downflow application when using G*F* series coils. These kits are not required with MC/FC series coils, but please ensure that the coil and furnace are secured and that there are no air leaks.

CONDENSATE NEUTRALIZER KIT - 1NK0301

Neutralizer cartridge has a 1/2" plastic tube fittings for installation in the drain line. Calcium carbonate refill media is also available from the Source 1 Parts (p/n 026-30228-000).

HIGH ALTITUDE PRESSURE SWITCHES -

For installation where the altitude is less than 8,000 feet it is not required that the pressure switch be changed. For altitudes above 8,000 feet see kits below. Conversion must be made by qualified distributor or dealer personnel.

- 1PS0901 - 060, 100 MBH
- 1PS0903 - 080 MBH

ROOM THERMOSTATS - A wide selection of compatible thermostats are available to provide optimum performance and features for any installation.

- 1H/1C, manual change-over electronic non-programmable thermostat.
- 1H/1C, auto/manual changeover, electronic programmable, deluxe 7-day, thermostat.
- 1H/1C, auto/manual changeover, electronic programmable.

* For the most current accessory information, refer to the price book or consult factory.