



Heating and Air Conditioning

TECHNICAL GUIDE

MODELS: P*HU

80 AFUE UPFLOW/HORIZONTAL GAS-FIRED FURNACES

32-104 MBH OUTPUT
HIGH-EFFICIENCY
INDUCED COMBUSTION



This product was manufactured in a plant whose quality system is certified/registered as being in conformity with ISO 9001.

Due to continuous product improvement, specifications are subject to change without notice.

Visit us on the web at www.york.com for the most up-to-date technical information.

Additional information can be found at www.gamanet.org.

DESCRIPTION

These high efficiency, compact units employ induced combustion, reliable hot surface ignition and high heat transfer aluminized tubular heat exchangers. The units are factory shipped for installation in upflow or horizontal applications.

These furnaces are designed for residential installation in a basement, closet, alcove, attic, recreation room or garage and are also ideal for commercial applications. All units are factory assembled, wired and tested to assure safe dependable and economical installation and operation.

These units are Category I listed and may be common vented with another gas appliance as allowed by the National Fuel Gas Code.

WARRANTY

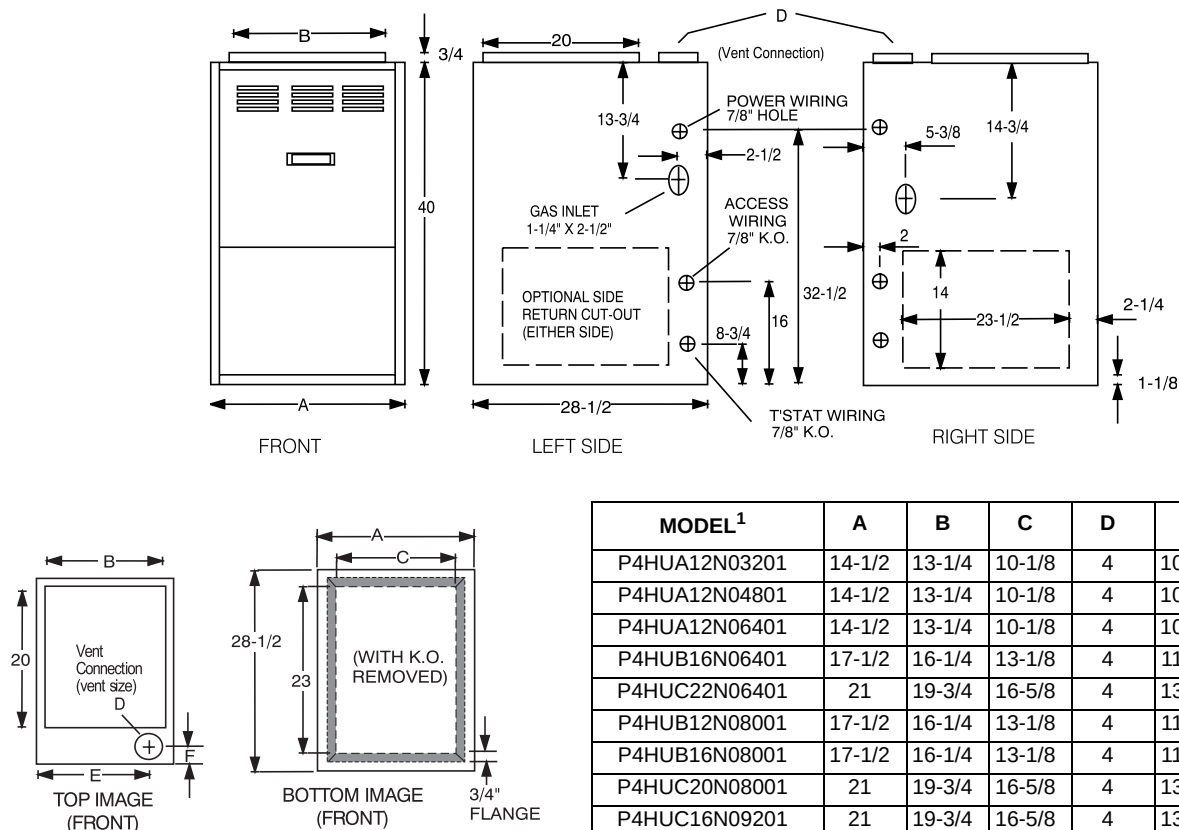
20-year limited warranty on the heat exchanger.

10-year heat exchanger warranty on commercial applications.

5-year limited parts warranty.

FEATURES

- Easily applied in upflow, horizontal left or horizontal right installation with no conversion necessary
- 100% shut off main gas valve for added safety
- Rollout safety control
- Low unit amp requirement for easy application
- High quality inducer motor for quiet operation
- Built-in self diagnostics with fault code display
- "Diamond Tough"™ hot surface igniter
- High velocity filter provided for field installation
- Standard terminals for controlling humidifiers and EAC's
- 40 VA control transformer fuse protected
- Easy to connect power and control wiring
- Efficiency ratings of 80 AFUE attained by using tubular heat exchangers
- Cooling relay supplied for easy installation of add-on cooling
- Multi-speed PSC, direct-drive blower motors to match cooling requirements
- Adjustable fan-off settings to eliminate "cold-blow"
- Compact 40-in height allows installation in small space confines
- Lo NOx models have been designed to meet specific code requirements. Lo NOx units may not be converted to propane.



All dimensions are in inches, and are approximate.

MODEL ¹	A	B	C	D	E	F
P4HUA12N03201	14-1/2	13-1/4	10-1/8	4	10-1/8	3-3/4
P4HUA12N04801	14-1/2	13-1/4	10-1/8	4	10-1/8	3-3/4
P4HUA12N06401	14-1/2	13-1/4	10-1/8	4	10-1/8	3-3/4
P4HUB16N06401	17-1/2	16-1/4	13-1/8	4	11-5/8	3-3/4
P4HUC22N06401	21	19-3/4	16-5/8	4	13-3/8	3-3/4
P4HUB12N08001	17-1/2	16-1/4	13-1/8	4	11-5/8	3-3/4
P4HUB16N08001	17-1/2	16-1/4	13-1/8	4	11-5/8	3-3/4
P4HUC20N08001	21	19-3/4	16-5/8	4	13-3/8	3-3/4
P4HUC16N09201	21	19-3/4	16-5/8	4	13-3/8	3-3/4
P4HUC20N09201	21	19-3/4	16-5/8	4	13-3/8	3-3/4
P4HUD20N10401	24-1/2	23-1/4	20-1/8	4	15-1/8	3-3/4

1. "L" in model number indicates Lo NOx unit

FIGURE 1 : DIMENSIONS

RATINGS & PHYSICAL / ELECTRICAL DATA

MODEL ¹	INPUT MBH	OUTPUT MBH	AFUE ²	AIR TEMP RISE °F	MAX OUTLET TEMP °F	BLOWER			TOTAL UNIT AMPS	MAX OVER-CURRENT PROTECT. ³	MIN. WIRE SIZE (AWG) @ 75 FT. ONE WAY	OPER. WEIGHT. (LBS)
						HP	AMPS	SIZE				
P4HUA12N03201	40	32	80.0	25 - 55	155	1/3	6.2	10 x 7	9.0	20	14	105
P4HUA12N04801	57	46	80.0	25 - 55	155	1/3	6.2	10 x 7	9.0	20	14	110
P4HUA12N06401	80	64	80.0	35 - 65	170	1/3	6.2	10 x 7	9.0	20	14	117
P4HUB16N06401	80	64	80.0	25 - 55	155	3/4	11.5	11 x 8	12.0	20	14	126
P4HUC22N06401	80	64	80.0	25 - 55	165	1	12.2	11 x 10	14.0	20	12	140
P4HUB12N08001	100	80	80.0	40 - 70	170	1/2	7.0	10 x 8	12.0	20	14	128
P4HUB16N08001	100	80	80.0	35 - 65	165	1/2	10.4	10 x 10	12.0	20	14	134
P4HUC20N08001	100	80	80.0	25 - 55	155	1	12.2	11 x 10	14.0	20	12	145
P4HUC16N09201	115	92	80.0	35 - 65	170	1/2	10.4	10 x 10	12.0	20	14	145
P4HUC20N09201	115	92	80.0	30 - 60	170	1	12.2	11 x 10	14.0	20	12	147
P4HUD20N10401	130	105	80.0	35 - 65	165	1	12.2	11 x 10	14.0	20	12	158

- "L" in model designator indicates factory built Lo Nox units.
- AFUE numbers are determined in accordance with DOE test procedures.
- Wire size and overcurrent protection must comply with the National Electrical Code (NFPA-70-latest edition)
 - For altitudes above 2,000 ft., reduce capacity 4% for each 1,000 ft. above sea level.
 - Wire size based on copper conductors, 60°C, 3% voltage drop.
 - Continuous return air temperature must not be below 55°F.

BLOWER PERFORMANCE CFM - UPFLOW/HORIZONTAL (WITHOUT FILTER)

Note: Data below reflects airflows with single return opening, either left or right side or bottom

MODELS ¹	SPEED TAP	EXTERNAL STATIC PRESSURE, INCHES W.C.									
		0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
40 / 32 / 1200 / "A" ² 57 / 46 / 1200 / "A" ² 80 / 64 / 1200 / "A"	HIGH	1580	1530	1470	1405	1330	1245	1150	1045	890	650
	MED-HIGH	1110	1100	1075	1060	1030	980	920	835	680	520
	MED-LOW	845	840	830	815	790	750	670	595	480	320
	LOW	675	665	660	645	620	585	530	455	360	255
100 / 80 / 1200 / "B"	HIGH	1675	1645	1595	1530	1465	1385	1280	1155	1025	810
	MED	1270	1260	1250	1240	1215	1185	1125	1035	910	695
	LOW	955	950	945	935	920	905	865	810	685	510
80 / 64 / 1600 / "B" ²	HIGH	1970	1935	1900	1850	1795	1735	1660	1590	1495	1395
	MED	1445	1435	1425	1415	1405	1375	1350	1300	1240	1160
	LOW	1245	1235	1225	1215	1205	1190	1170	1135	1090	995
100 / 80 / 1600 / "B" ²	HIGH	2050	1990	1935	1860	1770	1680	1580	1490	1370	1255
	MED	1630	1615	1600	1585	1550	1510	1445	1355	1270	1135
	LOW	1340	1325	1310	1295	1285	1270	1245	1195	1125	1005
115 / 92 / 1600 / "C"	HIGH	2040	1975	1925	1855	1780	1695	1610	1505	1380	1225
	MED	1725	1685	1650	1610	1555	1500	1425	1340	1220	1075
	LOW	1365	1355	1325	1290	1265	1250	1210	1140	1045	940
80 / 64 / 2200 / "C"	HIGH	2533	2442	2355	2279	2193	2110	2009	1895	1790	1670
	MED-HIGH	1978	1942	1906	1869	1819	1754	1694	1617	1521	1402
	MED-LOW	1566	1544	1514	1475	1443	1419	1377	1317	1245	1141
	LOW	1281	1262	1243	1198	1168	1135	1103	1047	988	912
100 / 80 / 2000 / "C" ² 115 / 92 / 2000 / "C" ²	HIGH	2400	2320	2275	2200	2115	2025	1930	1825	1700	1570
	MED	2050	2025	1980	1930	1855	1805	1720	1635	1530	1400
	LOW	1690	1675	1660	1630	1610	1560	1500	1430	1330	1225
130 / 105 / 2000 / "D" ²	HIGH	2380	2330	2270	2205	2120	2025	1920	1815	1705	1565
	MED	2040	2010	1980	1920	1875	1790	1705	1610	1515	1385
	LOW	1690	1680	1655	1630	1590	1530	1490	1425	1350	1235
NOTE: Data below reflects airflows with two return openings - two sides or one side and bottom.											
100 / 80 / 2000 / "C" ² 115 / 92 / 2000 / "C" ²	HIGH	2405	2340	2275	2210	2130	2050	1955	1840	1725	1600
	MED	2005	1990	1965	1935	1880	1815	1725	1635	1535	1410
	LOW	1655	1640	1625	1610	1585	1540	1485	1420	1340	1235
130 / 105 / 2000 / "D" ²	HIGH	2385	2335	2275	2195	2120	2040	1935	1820	1700	1555
	MED	2005	1980	1955	1905	1845	1775	1700	1610	1500	1370
	LOW	1640	1635	1620	1605	1575	1540	1480	1400	1330	1225

1. Input / Output / CFM / Cabinet Width (A=14-1/2, B=17-1/2, C=21, D=24-1/2)

NOTES:

- Airflow is expressed in standard cubic feet per minute.
 - Motor voltage at 115V
2. Indicates model available in LoNox.

FILTER PERFORMANCE

The airflow capacity data published in the Blower Performance Tables 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 Table .

NOTE: The filter pressure drop values in the Table below 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.

FILTER PERFORMANCE - PRESSURE DROP INCHES W.C.

Airflow Range	Minimum Opening Size (in. ²)		Filter Type					
			Disposable		Hogs Hair ¹		Pleated	
	1 Opening	2 Openings	1 Opening	2 Openings	1 Opening	2 Openings	1 Opening	2 Openings
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	658	0.15	0.09	0.14	0.08	0.30	0.17
1751 - 2000	380	658	0.19	0.11	0.18	0.10	0.30	0.17
2001 & Above	463	658	0.19	0.11	0.18	0.10	0.30	0.17

1. Hogs Hair Filters are the type supplied with furnace (if supplied).

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. Select the number of return air openings or calculate the return opening size in square inches to determine the proper filter pressure drop.
3. Determine the External System Static Pressure (ESP) without the filter.
4. 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.
5. 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.
6. 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 130,000 Btuh furnace with 2 return openings and 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:

7. Obtain the airflow values at 0.50" & 0.60" ESP.
Airflow @ 0.50": 2120 CFM
Airflow @ 0.60": 2040 CFM
8. Subtract the airflow @ 0.50" from the airflow @ 0.60" to obtain airflow difference.
2040 - 2120 = -80 CFM
9. Subtract the total system static from 0.50" and divide this difference by the difference in ESP values in the table, 0.60" - 0.50", to obtain a percentage.
 $(0.58 - 0.50) / (0.60 - 0.50) = 0.8$
10. Multiply percentage by airflow difference to obtain airflow reduction.
 $(0.8) \times (-80) = -64$
11. Subtract airflow reduction value to airflow @ 0.50" to obtain actual airflow @ 0.58" ESP.
2120 - 64 = 2056

UNIT CLEARANCES TO COMBUSTIBLES

(All surfaces identified with the unit in a vertical position)

APPLICATION	TOP	FRONT	REAR	LEFT SIDE	RIGHT SIDE	FLUE	FLOOR/BOTTOM	CLOSET	ALCOVE	ATTIC	LINE CONTACT
UPFLOW	1	6	0	0	3	6	COMBUSTIBLE	YES	YES	YES	NO
UPFLOW B-VENT	1	3	0	0	0	1	COMBUSTIBLE	YES	YES	YES	NO
HORIZONTAL	1	6	0	0	3	6	COMBUSTIBLE	NO	YES	YES	YES ¹
HORIZ. B-VENT	1	3	0	0	0	1	COMBUSTIBLE	NO	YES	YES	YES ¹

1. Line contact only permitted between lines formed by the intersection of the rear panel and side panel (top in horizontal position) of the furnace jacket and building joists, studs or framing.

FILTER SIZE/ADD-ON COOLING

MODEL*	FILTER SIZE		ADD-ON COOLING	
	SIDE	BOTTOM	TONS	CFM @ .5 ESP ¹
P4HUA12N03201	16 x 26	14 x 26	2, 2- 1/2, 3	1330
P4HUA12N04801	16 x 26	14 x 26	2, 2- 1/2,, 3	1330
P4HUA12N06401	16 x 26	14 x 26	2, 2- 1/2, 3	1330
P4HUB16N06401	16 x 26	16 x 26	3, 3- 1/2, 4	1795
P4HUC22N06401	(2) 16 x 26	20 x 26	3- 1/2, 4, 5	2130
P4HUB12N08001	16 x 26	16 x 26	2, 2- 1/2, 3	1465
P4HUB16N08001	16 x 26	16 x 26	3, 3- 1/2, 4	1770
P4HUC20N08001	(2) 16 x 26	20 x 26	3- 1/2, 4, 5	2130
P4HUC16N09201	16 x 26	20 x 26	3, 3- 1/2, 4	1780
P4HUC20N09201	(2) 16 X 26	20 X 26	3- 1/2, 4, 5	2130
P4HUD20N10401	(2) 16 x 26	24 x 26	3- 1/2, 4, 5	2120

1. ESP (External Static Pressure) .5" W.C. is at furnace outlet ahead of cooling coil, and does not include filter.
- High velocity filters provided
 - "L" in model number indicates Lo NOx unit.

ACCESSORIES

Propane Conversion Kit – 1NP0347 40, 80 & 100 MBH
1NP0348 60, 115 & 130 MBH

This accessory conversion kit may be used to convert natural gas units for propane (LP) operation. Conversion must be made by qualified distributor or dealer personnel.

High Altitude Pressure Switch Kits

These accessory kits may be used to convert units for high altitude operation. Conversion must be made by qualified distributor or dealer personnel.

KIT	APPLICATION	MODELS (INPUT)
1PS0301	2000 - 5500 FT	40, 57 MBH
1PS0302		80 MBH
1PS0312		100, 115, 130 MBH
1PS0301	5500 - 10,000 FT.	40, 60, 80 MBH
1PS0311		100, 115, 130 MBH

NOTE: For high altitude conversion, an orifice change may also be required. See Form 650.74-N1.1V for application information.

External Side Return Filter Rack - 1SR0302 (Upflow)

Provides a 16 x 25 cleanable, high velocity type filter and attaches to the furnace side panel and the return air duct. The filter is easily replaced. Package contains six filter racks with filters.

External Bottom Return Upflow or Horizontal End Return Filter Rack

Provides a cleanable, high velocity type filter and rack. Attaches to the end of the furnace and provides duct flanges.

- 1BR0314 - 14-1/2" "A" cabinet
- 1BR0317 - 17-1/2" "B" cabinet
- 1BR0321 - 21" "C" cabinet
- 1BR0324 - 24-1/2" "D" cabinet

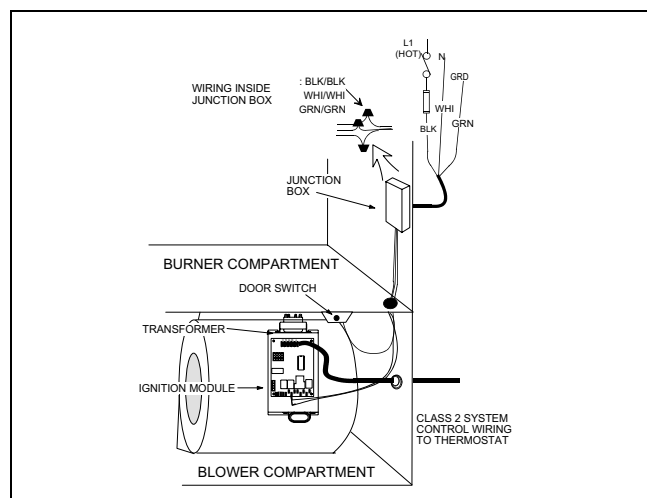


FIGURE 2 : FIELD WIRING

NOTES

