

YORK[®]

Heating and Air Conditioning

TECHNICAL GUIDE

AFFINITY

MODELS: PV8

GAS-FIRED HIGH EFFICIENCY TWO STAGE VARIABLE UPFLOW/HORIZONTAL FURNACES

STANDARD & LoNO_x

80% AFUE

NATURAL GAS 80 - 120 MBH INPUT



ISO 9000 REGISTRATION
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 rating information can be found at

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

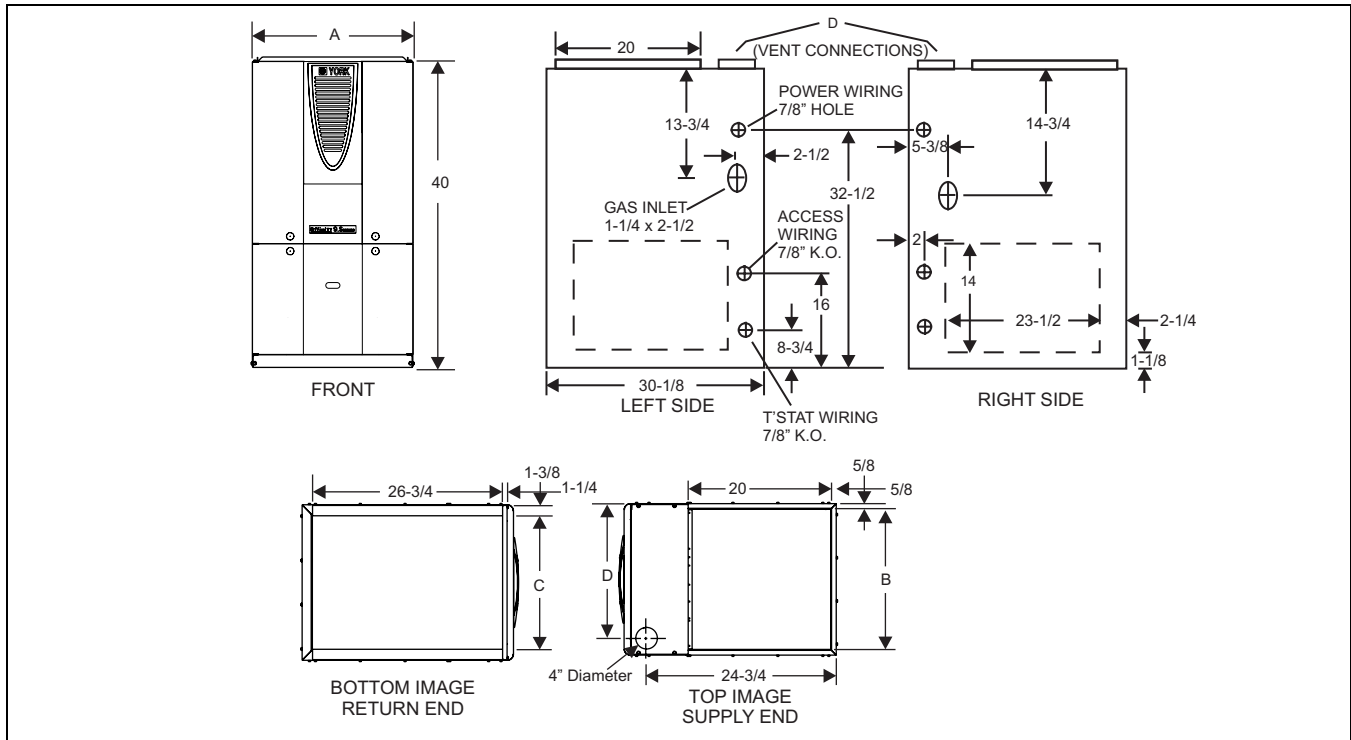
20-year limited warranty on the heat exchanger.

10-year heat exchanger warranty on commercial applications.

5-year limited parts warranty.

FEATURES

- Two stage heating operation includes:
 - Two stage gas valve
 - Two stage inducer operation
 - Variable speed ECM blower operation
- Provides increased comfort level & very quiet unit operation
- Field Selectable delay timer allows two stage operation w/ single stage thermostat
- Acoustically insulated blower compartment for reduced blower sound level
- 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.
- High velocity filter and side -return filter rack provided for easy field installation.
- Electronic Hot Surface Ignition saves fuel cost with increased dependability and reliability.
- Induced combustion system with inshot main burners for quiet, efficient operation.
- 100% shut off main gas valve for extra safety.
- Variable Speed ECM with large, quiet blower.
- ClimaTrak Technology allows dealer to customize comfort settings based on regional location.
- 24V, 40 VA control transformer and blower relay supplied for add-on cooling.
- Hi-tech tubular aluminized steel primary heat exchanger.
- Timed on, adjustable off blower capability for maximum comfort.
- Solid removable bottom panel allows easy application.
- Easy access from front of unit for cleaning, maintenance or service.
- Insulated blower compartment for quiet operation.
- Independent door removal for greater durability and ease of access.
- LoNO_x models have been designed to meet specific code requirements.
- LoNO_x models may not be converted to propane.



CABINET AND DUCT DIMENSIONS

MODEL	CFM	Cabinet Size	Cabinet Dimension			
			A	B	C	D
PV8A12(N,L)080UH11	1200	A	14 1/2	13 1/4	10 1/8	10 1/8
PV8B16(N,L)100UH11	1600	B	17 1/2	16 1/4	15 1/4	11 5/8
PV8C20(N,L)100UH11	2000	C	21	19 3/4	16 5/8	13 3/8
PV8C20(N,L)120UH11	2000	C	21	19 3/4	16 5/8	13 3/8

HORIZONTAL VENTING-MUST USE FIELDS CONTROL MODELS SWG-4Y OR TJERENLAND MODEL GPAK-JT FIELD SUPPLIED POWER VENTING KITS

Heating Input BTU/H	Heating Input BTU/H	Furnace Airflow CFM	Horizontal Vent Length Ft with 4 Elbows		
			Pipe Size	Min. Vent Length	Max. Vent Length
			Inches	Feet	Feet
80,000	64,000	1200	4	4.5	34.5
100,000	80,000	1600	4	4.5	34.5
100,000	80,000	2000	4	4.5	34.5
120,000	104,000	2000	4	4.5	34.5

RATINGS & PHYSICAL / ELECTRICAL DATA

MODEL	Input BTU/H	Output BTU/H	Airflow	Cabinet Width	AFUE	Low Fire Air Temp. Rise	High Fire Air Temp. Rise		
	High/Low	High/Low	CFM	In		°F	°F		
PV8A12(N,L)080UH11	80/59	64/48	1200	14 1/2	80.0	40-70	40-70		
PV8B16(N,L)100UH11	100/65	80/53	1600	17 1/2	80.0	40-70	40-70		
PV8C20(N,L)100UH11	100/65	80/53	2000	21	80.0	40-70	40-70		
PV8C20(N,L)120UH11	120/78	96/64	2000	21	80.0	35-65	35-65		

MODEL	Input BTU/H High/Low	Output BTU/H High/Low	Max. Outlet Air Temp °F	Blower		Blower Size In	Unit Amps	Max Fuse Size	Min Wire Size	Operation Weight Lbs
				Hp	Amps					
PV8A12(N,L)080UH11	80/59	64/48	175	1/2	7.7	10 x 8	9.0	20	14	117
PV8B16(N,L)100UH11	100/65	80/53	170	3/4	9.6	10 x 10	12.0	20	14	128
PV8C20(N,L)100UH11	100/65	80/53	170	1	12.8	11 x 10	14.0	20	12	145
PV8C20(N,L)120UH11	120/78	96/64	170	1	12.8	11 x 10	14.0	20	12	147

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.

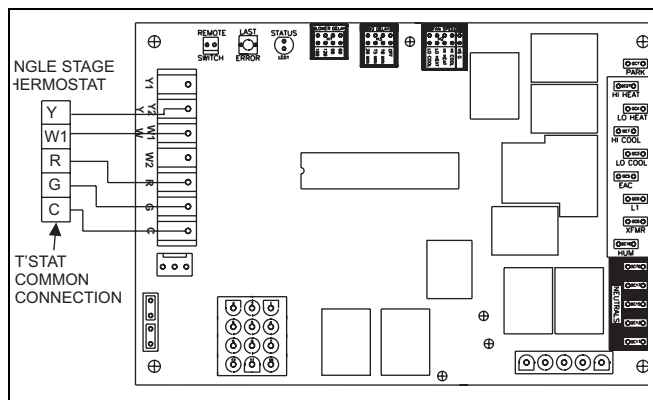
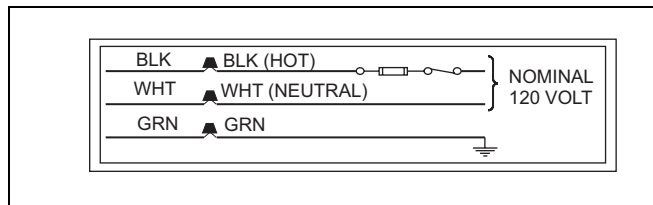
FILTER SIZES

Cabinet Size	Side (in)	Side (cm)	Bottom (in)	Bottom (cm)
A	16 x 26	40.6 x 66.0	14 x 26	35.6 x 66.0
B	16 x 26	40.6 x 66.0	16 x 26	40.6 x 66.0
C	(2) 16 x 26	(2) 40.6 x 66.0	20 x 26	50.8 x 66.0
D	(2) 16 x 26	(2) 40.6 x 66.0	20 x 26	50.8 x 66.0

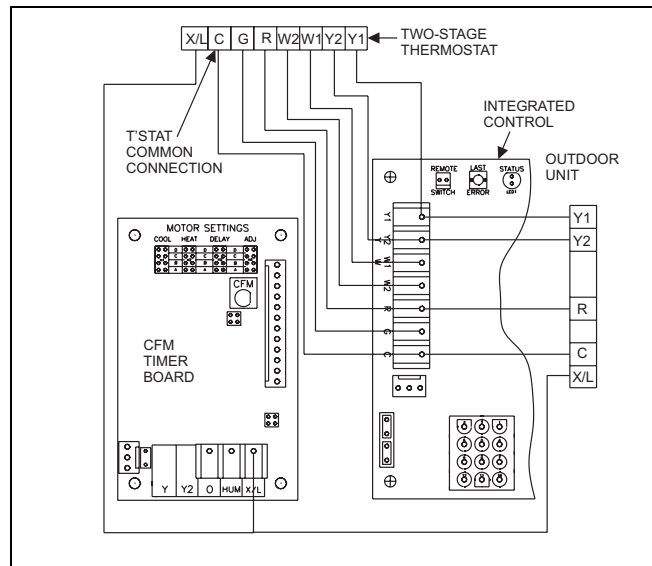
* ESP (External Static Pressure) .5" WG is at furnace outlet ahead of cooling coil.

NOTES:

1. All filters must be high velocity cleanable type.
2. Air flows above 1800 CFM require either return from two sides or one side plus bottom.



Field Wiring for Single Stage Thermostat



Field Wiring for Two Stage Thermostat

AIR FLOW DATA

HIGH / LOW SPEED COOLING AND HEAT PUMP CFM					
INPUT High Fire: 60,000 / Low Fire: 39,000		INPUT High Fire: 80,000 / Low Fire: 52,000		JUMPER SETTINGS	
CFM		CFM		COOL Tap	ADJ Tap
High	Low	High	Low		
1340	740	1675	920	A	B
1155	635	1555	850	B	B
1220	671	1525	830	A	A
1050	578	1410	795	B	A
1100	605	1355	760	A	C
913	502	1330	750	C	B
945	520	1280	710	B	C
726	400	1145	625	D	B
830	456	1235	680	C	A
660	400	1035	555	D	A
747	411	1105	600	C	C
594	400	920	495	D	C
INPUT High Fire: 100,000 / Low Fire: 65,000		INPUT High Fire: 120,000 / Low Fire: 78,000		JUMPER SETTINGS	
CFM		CFM		COOL Tap	ADJ Tap*
High	Low	High	Low		
2050	1135	2020	1130	A	B
1860	980	1855	960	B	B
1945	1035	1920	1010	A	A
1665	910	1680	850	B	A
1740	950	1765	910	A	C
1575	880	1630	820	C	B
1440	830	1485	760	B	C
1325	760	1355	720	D	B
1410	820	1465	745	C	A
1190	725	1210	650	D	A
1245	745	1260	695	C	C
1065	690	1080	595	D	C
HIGH / LOW HEAT CFM					
INPUT High Fire: 60,000 / Low Fire: 39,000		INPUT High Fire: 80,000 / Low Fire: 52,000		JUMPER SETTINGS	
CFM		CFM		COOL Tap	ADJ Tap*
High	Low	High	Low		
1315	880	1490	990	A	Any
1185	795	1350	900	B	Any
1075	720	1240	820	C	Any
990	665	1140	760	D	Any
INPUT High Fire: 100,000 / Low Fire: 65,000		INPUT High Fire: 120,000 / Low Fire: 78,000		JUMPER SETTINGS	
CFM		CFM		COOL Tap	ADJ Tap*
High	Low	High	Low		
1480	975	1950	1330	A	Any
1350	900	1840	1165	B	Any
1235	815	1705	1055	C	Any
1140	770	1535	960	D	Any

All CFM's are shown at 0.5" w.c. external static pressure. These units have variable speed motors that automatically adjust to provide constant CFM from 0.0" to 0.6" w.c. static pressure. From 0.6" to 1.0" static pressure, CFM is reduced by 2% per 0.1" increase in static. Operation on duct systems with greater than 1.0" w.c. external static pressure is not recommended.
NOTE: At some settings, LOW COOL and/or LOW HEAT airflow may be lower than what is required to operate an airflow switch on certain models of electronic air cleaners. Consult the instructions for the electronic air cleaner for further details.
NOTE - The ADJ "D" tap should not be used.

NOTES:

1. Airflow expressed in standard cubic feet per minute (CFM) and in cubic meters per minute (m³/min).
2. Return air is through side opposite motor (left side).
3. Airflows above 1800 CFM (50.97 m³/min) require either return from two sides or one side plus bottom.
4. Motor voltage at 115 V.
5. NR = Operation at this static pressure is not recommended.

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 below.

NOTE: The filter pressure drop values in the “Filter Performance” table shown 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		Filter Type					
			Disposable		WASHABLE FIBER*		Pleated	
	1 Opening	2 Openings	1 Opening	2 Opening	1 Opening	2 Opening	1 Opening	2 Opening
	Sq. in.	Sq. in.	In w.c.	In w.c.	In w.c.	In w.c.	In w.c.	In w.c.
0 - 750	230		0.01		0.01		0.15	
751 - 1000	330		0.04		0.03		0.20	
1001 - 1250	330		0.08		0.07		0.20	
1251 - 1500	330		0.08		0.07		0.25	
1501 - 1750	380	658	0.14	0.08	0.13	0.06	0.30	0.17
1751 - 2000	380	658	0.17	0.09	0.15	0.07	0.30	0.17
2001 & Above	463	658	0.17	0.09	0.15	0.07	0.30	0.17

* Washable fiber 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 w.c. (50 Pa), 0.60 w.c. (150 Pa), 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 w.c. (144 Pa), 0.75 w.c. (187 Pa), 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 (38.06 kW) 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:

Obtain the airflow values at 0.50 w.c. (125 Pa) & 0.60 w.c. (150 Pa) ESP.

Airflow @ 0.50": 2125 CFM (60.17 m³/min)

Airflow @ 0.60": 2035 CFM (57.62 m³/min)

Subtract the airflow @ 0.50 w.c. (125 Pa) from the airflow @ 0.60 w.c. (150 Pa) to obtain airflow difference.

2035 - 2125 = -90 CFM (2.55 m³/min)

Subtract the total system static from 0.50 w.c. (125 Pa) and divide this difference by the difference in ESP values in the table, 0.60 w.c. (150 Pa) - 0.50 w.c. (125 Pa), to obtain a percentage.

$(0.58 - 0.50) / (0.60 - 0.50) = 0.8$

Multiply percentage by airflow difference to obtain airflow reduction.

$(0.8) \times (-90) = -72$

Subtract airflow reduction value to airflow @ 0.50 w.c. (125 Pa) to obtain actual airflow @ 0.58 inwc (144 Pa) ESP.

2125 - 72 = 2053

UNIT CLEARANCES TO COMBUSTIBLES (ALL DIMENSIONS IN INCHES) (ALL SURFACES IDENTIFIED WITH THE UNIT IN AN UPFLOW CONFIGURATION)

APPLICATION	TOP	FRONT	REAR	LEFT SIDE	RIGHT SIDE	FLUE	FLOOR/ BOTTOM	CLOSET	ALCOVE	ATTIC	LINE CONTACT
	In.	In.	In.	In. (cm)	In. (cm)	In. (cm)					
UPFLOW	1	6	0	0	3 ¹	6	COMBUSTIBLE	YES	YES	YES	NO
UPFLOW B-VENT	1	3	0	0	0	1	COMBUSTIBLE	YES	YES	YES	NO
HORIZONTAL	3 ²	6	0	1	0	6	COMBUSTIBLE	NO	YES	YES	YES ³
HORIZONTAL B-VENT	0	3	0	1	0	1	COMBUSTIBLE	NO	YES	YES	YES ³

1 14-1/2" cabinet models only. All other units "0" clearance.

2 14-1/2" cabinet left airflow applications only. All other units and right hand airflow applications "0" clearance.

3 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.

ACCESSORIES

PROPANE (LP) CONVERSION KIT -

1NP0480 - All units

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

EXTERNAL BOTTOM RETURN FILTER RACK W/FILTER -

Provides a cleanable, high velocity type filter and filter rack. Attaches to the bottom of the furnace.

1BR0314 - For 14-1/2" cabinets

1BR0317 - For 17-1/2" cabinets

1BR0321 - For 21" cabinets

1BR0324 - For 24-1/2" cabinets

HIGH ALTITUDE PRESSURE SWITCHES -

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

1PS0313	HIGH ALTITUDE PRESSURE SWITCH KIT (DOES NOT INCLUDE ORIFICES)	FOR APPLICATION INFORMATION SEE FORM 035-14461-000
1PS0314		

FIELD INSTALLED ACCESSORIES - ELECTRICAL		
MODEL NO.	DESCRIPTION	USED WITH
2ET0770010124	THERMOSTAT-Two-stage Heat / Cool, deluxe 24V	ALL MODELS
2TH04701024	THERMOSTAT- Two-stage Heat / Cool, auto or manual changeover. System switch: Heat-Off-Cool-Auto. Fan switch: Auto-On.	ALL MODELS
2ET07700424	THERMOSTAT-Two-stage heat/cool. Programmable electronic (5+1+1), auto or manual changeover. System switch:Heat-Off-Cool-Auto. Fan Switch: Auto-On.	ALL MODELS

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