



## TECHNICAL GUIDE

### AFFINITY

MODELS: PV9\*UP

**GAS-FIRED  
CONDENSING / HIGH EFFICIENCY  
TWO STAGE VARIABLE  
UPFLOW FURNACES**

**UP TO 95% AFUE**

**NATURAL GAS  
40 - 120 MBH INPUT**



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

Visit us on the web at [www.york.com](http://www.york.com) for the most up-to-date technical information.

Additional rating information can be found at [www.gamanet.org](http://www.gamanet.org).

## DESCRIPTION

These Category IV, highly efficient, compact, condensing type furnaces are designed for residential and commercial installations in a basement, closet, alcove, recreation room or garage where the ambient temperature is above 32°F, or higher. They may be either side wall or thru-roof vented using approved plastic type combustion air and vent piping. All units are factory assembled, wired and tested to assure dependable and economical installation and operation.

## WARRANTY

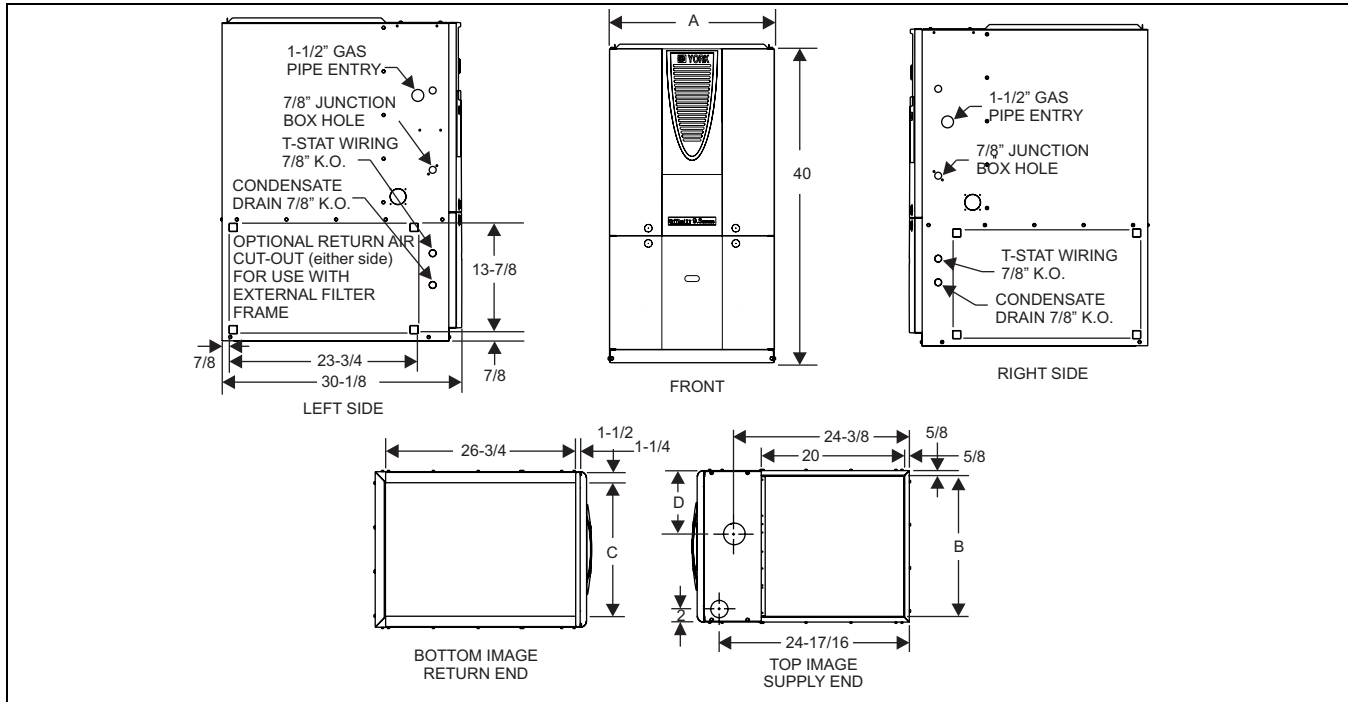
*Lifetime limited warranty on both heat exchangers to the original purchaser; a 20-year limited warranty from original installation date to subsequent purchaser.*

*10-year warranty on the heat exchanger in 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
- Adjustable delay timer allows two stage operation with single stage thermostat
- 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.
- May be installed as either two-pipe (sealed combustion) or single pipe vent (using indoor combustion air)
- Top intake & vent connection allows 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.
- 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.
- Solid removable bottom panel allows easy application.
- Easy access from front of unit for cleaning, maintenance or service.
- Protection from intake, exhaust or condensate blockage.
- Insulated blower compartment for quiet operation.
- ClimaTraK comfort system allows dealer to customize comfort settings based on regional location.



**CABINET AND DUCT DIMENSIONS**

Models	Nominal CFM	Cabinet Size	Cabinet Dimension			
			A (in.)	B (in.)	C (in.)	D (in.)
PV9A12N040UP11	1200	A	14-1/2	13-1/2	11-1/2	6-1/4
PV9B12N060UP12	1200	B	17-1/2	16-1/4	14-1/2	8-1/2
PV9B12N080UP11	1200	B	17-1/2	16-1/4	14-1/2	8-1/2
PV9C16N080UP12	1600	C	21	19-3/4	18	8-7/8
PV9C20N100UP12	2000	C	21	19-3/4	18	8-7/8
PV9D20N120UP12	2000	D	24-1/2	23-1/4	21-1/2	10-5/8

**ELECTRICAL AND PERFORMANCE DATA**

Models	Input High/Low	Output High/Low	Nominal Airflow*	Cabinet Width	Total Unit	AFUE	High Fire Air Temp. Rise	Low Fire Air Temp. Rise
	MBH	MBH						
PV9A12N040UP11	40/26	38/24	1200	14-1/2	9	94.0	35 - 65	35 - 65
PV9B12N060UP12	60/39	56/36	1200	17-1/2	9	95.0	40 - 70	20 - 50
PV9B12N080UP11	80/52	75/49	1200	17-1/2	9	92.5	45 - 75	45 - 75
PV9C16N080UP12	80/52	75/49	1600	21	12	95.0	45 - 75	20 - 50
PV9C20N100UP12	100/65	93/60	2000	21	14	95.0	45 - 75	20 - 50
PV9D20N120UP12	120/78	112/73	2000	24-1/2	14	95.0	40 - 70	20 - 50

Models	Input High/Low	Max. Outlet Air Temp.	Blower		Blower Size	Max. Over-current Protect	Min. Wire Size (awg) @ 75 ft. One Way	Operating Wgt.
	MBH	°F	HP	Amps	In.			Lbs.
PV9A12N040UP11	40/26	165	1/2	7.7	11 x 8	20	14	121
PV9B12N060UP12	60/39	170	1/2	7.7	11 x 8	20	14	135
PV9B12N080UP11	80/52	175	1/2	7.7	11 x 8	20	14	142
PV9C16N080UP12	80/52	175	3/4	9.6	11 x 10	20	14	157
PV9C20N100UP12	100/65	175	1	12.8	11 x 11	20	12	164
PV9D20N120UP12	120/78	170	1	12.8	11 x 11	20	12	180

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.

**AIR FLOW DATA**

<b>HIGH / LOW SPEED COOLING AND HEAT PUMP CFM</b>					
<b>PV9A12N040UP11</b>		<b>PV9B12N060UP12</b>		<b>Jumper Settings</b>	
High	Low	High	Low	COOL Tap	ADJ Tap*
1340	995	1330	900	A	B
1205	885	1130	800	B	B
1255	920	1220	850	A	A
1150	835	1040	730	B	A
1170	855	1120	770	A	C
1025	755	920	650	C	B
1045	780	950	660	B	C
835	625	740	540	D	B
950	705	860	610	C	A
785	590	690	540	D	A
865	665	790	570	C	C
725	605	630	530	D	C
<b>PV9B12N080UP11</b>		<b>PV9C16N080UP12</b>		<b>JUMPER SETTINGS</b>	
High	Low	High	Low	COOL Tap	ADJ Tap*
1310	890	1660	1110	A	B
1100	740	1550	1050	B	B
1220	830	1610	1070	A	A
1000	670	1440	960	B	A
1090	720	1470	990	A	C
900	610	1370	920	C	B
880	610	1290	850	B	C
680	510	1130	790	D	B
810	580	1230	850	C	A
630	500	1050	720	D	A
730	530	1110	760	C	C
590	500	950	660	D	C
<b>PV9C20N100UP12</b>		<b>PV9D20N120UP12</b>		<b>Jumper Settings</b>	
High	Low	High	Low	COOL Tap	ADJ Tap*
2210	1480	2280	1510	A	B
1780	1180	1860	1190	B	B
2040	1350	2090	1370	A	A
1620	1050	1630	1060	B	A
1840	1250	1880	1250	A	C
1560	1010	1620	1030	C	B
1470	940	1500	960	B	C
1370	890	1410	880	D	B
1460	930	1490	920	C	A
1250	790	1290	790	D	A
1310	810	1360	840	C	C
1090	690	1140	690	D	C
<b>HIGH / LOW HEAT CFM</b>					
<b>PV9A12N040UP11</b>		<b>PV9B12N060UP12</b>		<b>Jumper Settings</b>	
High	Low	High	Low	HEAT Tap	ADJ Tap*
1045	740	1110	710	A	Any
905	645	960	640	B	Any
825	595	870	600	C	Any
765	590	830	570	D	Any
<b>PV9B12N080UP11</b>		<b>PV9C16N080UP12</b>		<b>Jumper Settings</b>	
High	Low	High	Low	HEAT Tap	ADJ Tap*
1330	880	1490	990	A	Any
1180	810	1350	900	B	Any
1100	730	1220	820	C	Any
1010	670	1120	770	D	Any
<b>PV9C20N100UP12</b>		<b>PV9D20N120UP12</b>		<b>Jumper Settings</b>	
High	Low	High	Low	HEAT Tap	ADJ Tap*
1880	1230	2150	1420	A	Any
1670	1080	1930	1290	B	Any
1530	980	1850	1190	C	Any
1430	900	1660	1070	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 that 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.

\* The ADJ "D" tap should not be used.

## 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 SIZES

Input/Output BTU/H	CFM	Cabinet Size	Side Return Filter in.	Bottom Return Filter in.
40/38	1200	A	16 x 25	14 x 25
60/56	1200	B	16 x 25	16 x 25
80/75	1200	B	16 x 25	16 x 25
80/75	1600	C	16 x 25	20 x 25
100/93	2000	C	16 x 25	20 x 25
120/112	2000	D	(2) 16 x 25	22 x 25

## 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.

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

Airflow Range	Minimum Opening Size		Filter Type					
			Disposable		Washable Fiber		Pleated	
	1 Opening Sq. in.	2 Openings Sq. in.	1 Opening In w.c.	2 Opening In w.c.	1 Opening In w.c.	2 Opening In w.c.	1 Opening In w.c.	2 Opening 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

## UNIT CLEARANCES TO COMBUSTIBLES

Application	Top	Front	Rear	Left Side	Right Side	Flue	Floor/ Bottom	Closet Alcove	Attic
	In.	In.	In.	In.	In.	In.			
Upflow	1	3	0	0	0	0	Combustible	Yes	Yes





**ACCESSORIES****PROPANE (LP) CONVERSION KIT -**

1NP0347 - 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.

**CONCENTRIC VENT TERMINATION -**

1CT0302 (2")

1CT0303 (3")

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.

**SIDEWALL VENT TERMINATION KIT -**

1HT0901 (3")

1HT0902 (2")

For use on sidewall, two-pipe installations only. Provide a more attractive termination for locations where the terminal is visible on the side of the home.

**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).

**EXTERNAL SIDE RETURN FILTER RACK -**

1SF0101 - Fits all cabinet sizes

Attaches to side of furnace cabinet in side return applications. Holds any 16x25x1 permanent or disposable filter.

**SIDE RETURN FILTER RACK -**

1SR0302 - All Models

1SR0200 - All Models

**BOTTOM RETURN FILTER RACK -**

1BR0114 or 1BR0214 - For 14-1/2" cabinets

1BR0117 or 1BR0217 - For 17-1/2" cabinets

1BR0121 or 1BR0221 - For 21" cabinets

1BR0124 or 1BR0224 - For 24-1/2" cabinets

**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.

1PS0501 - 060 MBH

1PS0502 - 080/1200 MBH

1PS0503 - 080/1600, 120 MBH

1PS0505 - 100 MBH

1PS0506 - 040 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.

# NOTES