

TECHNICAL GUIDE

MODELS: GM8S/LM8S

GAS-FIRED HIGH EFFICIENCY SINGLE STAGE UPFLOW/HORIZONTAL FURNACES STANDARD & LoNOx

NATURAL GAS
40 - 130 MBH INPUT



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 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

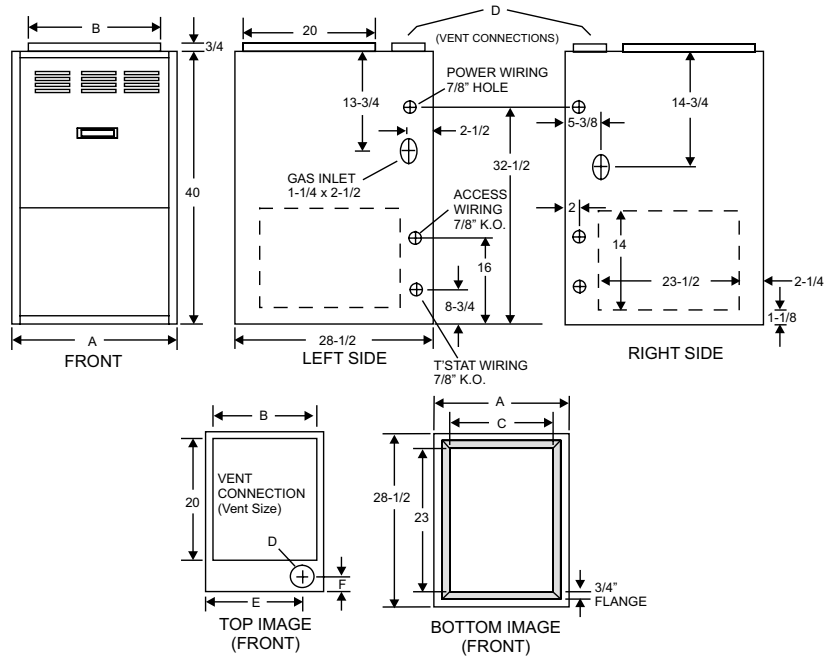
20-year limited warranty on the heat exchanger.

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
- Electronic hot surface ignition with high reliability and dependability
- 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
- 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.



CABINET AND DUCT DIMENSIONS

BTUH Input/Output	CFM	Cabinet Size	Cabinet Dimension					
			A	B	C	D	E	F
40/32*	1200	A	14 1/2	13 1/4	10 1/8	4.0	10 1/8	3 3/4
60/48*	1200	A	14 1/2	13 1/4	10 1/8	4.0	10 1/8	3 3/4
80/64*	1200	A	14 1/2	13 1/4	10 1/8	4.0	10 1/8	3 3/4
80/64*	1600	B	17 1/2	16 1/4	13 1/8	4.0	11 5/8	3 3/4
80/64*	2200	C	21	19 3/4	16 5/8	4.0	13 3/8	3 3/4
100/80*	1200	B	17 1/2	16 1/4	13 1/8	4.0	11 5/8	3 3/4
100/80*	1600	B	17 1/2	16 1/4	13 1/8	4.0	11 5/8	3 3/4
100/80*	2000	C	21	19 3/4	16 5/8	4.0	13 3/8	3 3/4
115/92	1600	C	21	19 3/4	16 5/8	4.0	13 3/8	3 3/4
115/92*	2000	C	21	19 3/4	16 5/8	4.0	13 3/8	3 3/4
130/104*	2000	D	24 1/2	23 1/4	20 1/8	4.0	15 1/8	3 3/4

* Models available in LoNOx.

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

Heating Input	Heating Output	Furnace Airflow	Horizontal Vent Length Ft (m) with 4 Elbows		
			Pipe Size Inches	Min. Vent Length Feet	Max. Vent Length Feet
40,000	32,000	1200	4	4.5	34.5
60,000	48,000	1200	4	4.5	34.5
80,000	64,000	1200	4	4.5	34.5
80,000	64,000	1600	4	4.5	34.5
80,000	64,000	2200	4	4.5	34.5
100,000	80,000	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
115,000	92,000	1600	4	4.5	34.5
115,000	92,000	2000	4	4.5	34.5
130,000	104,000	2000	4	4.5	34.5

RATINGS & PHYSICAL / ELECTRICAL DATA - UPFLOW MODELS

Input MBH	Output MBH	Nominal CFM	Cabinet Width In.	AFUE	Air Temp. Rise °F			
40	32	1200	14-1/2	80.0	25-55			
60	48	1200	14-1/2	80.0	25-55			
80	64	1200	14-1/2	80.0	35-65			
80	64	1600	17 1/2	80.0	25-55			
80	64	2200	21	80.0	25-55			
100	80	1200	17 1/2	80.0	40-70			
100	80	1600	17 1/2	80.0	35-65			
100	80	2000	21	80.0	25-55			
115	92	1600	21	80.0	35-65			
115	92	2000	21	80.0	30-60			
130	104	2000	24-1/2	80.0	35-65			
Input MBH	Max. Outlet Air Temp °F	Blower		Blower Size In.	Total Unit Amps	Max Over-current Size (awg) @ 75 ft. protect	Min. Wire one way	Operation WGT. LBS
40	155	1/2	7.1	10 x 8	9.0	20	14	105
60	155	1/2	7.1	10 x 8	9.0	20	14	110
80	170	1/2	7.1	10 x 8	9.0	20	14	117
80	155	3/4	11.5	11 x 8	12.0	20	14	126
80	165	1.0	14	11 x 11	14.0	20	12	140
100	170	1/2	7.1	10 x 8	12.0	20	14	128
100	165	3/4	11.5	11 x 8	12.0	20	14	134
100	155	1.0	14	11 x 11	14.0	20	12	145
115	170	3/4	11.5	10 x 10	12.0	20	14	145
115	170	1.0	14	11 x 11	14.0	20	12	147
130	165	1.0	14	11 x 11	14.0	20	12	158

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

BTU/H Input / Output	CFM	Cabinet Size	Side (in)	Bottom (in)
40/32	1200	A	16 x 25	14 x 25
60/48	1200	A	16 x 25	14 x 25
80/64	1200	A	16 x 25	14 x 25
80/64	1600	B	16 x 25	16 x 25
80/64	2200	C	(2) 16 x 25	20 x 25
100/80	1200	B	16 x 25	16 x 25
100/80	1600	B	16 x 25	16 x 25
100/80	2000	C	(2) 16 x 25	20 x 25
115/92	1600	C	16 x 25	20 x 25
115/92	2000	C	(2) 16 x 25	20 x 25
130/104	2000	D	(2) 16 x 25	22 x 25

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

1. Airflows above 1800 CFM (50.97 m³/min) require either return from two sides or one side plus bottom.
2. Motor voltage at 115 V.
3. NR = Operation at this static pressure is not recommended.

BLOWER PERFORMANCE CFM - UPFLOW (WITHOUT FILTER) - BOTTOM RETURN

MODELS Input / CFM	Speed	Single Stage Bottom Airflow Data (SCFM)									
		Ext. Static Pressure (in. H2O)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
40/1200/A †	High	1610	1540	1460	1360	1290	1200	1110	1020	900	760
	Medium High	1430	1390	1330	1250	1190	1110	1030	940	840	710
	Medium Low	1200	1180	1140	1100	1050	1000	930	850	750	620
	Low	980	980	960	920	890	840	790	720	620	530
60/1200/A †	High	1570	1490	1420	1340	1250	1180	1090	990	870	700
	Medium High	1410	1360	1310	1250	1190	1090	1020	920	810	650
	Medium Low	1200	1180	1150	1100	1050	990	920	830	700	580
	Low	960	960	950	930	900	840	800	720	610	500
80/1200/A †	High	1590	1520	1460	1380	1300	1240	1150	1050	930	800
	Medium High	1400	1360	1310	1260	1200	1140	1070	960	860	740
	Medium Low	1180	1160	1130	1090	1040	990	920	840	750	640
	Low	940	940	940	920	880	840	790	710	630	530
80/1600/B †	High	1850	1820	1790	1750	1690	1630	1570	1500	1430	1330
	Medium	1470	1450	1440	1430	1390	1360	1310	1270	1220	1150
	Low	1260	1260	1260	1260	1250	1200	1150	1110	1070	1010
80/2200/C †	High	2490	2410	2320	2230	2130	2030	1900	1790	1630	1470
	Medium High	2120	2060	2000	1970	1840	1730	1680	1570	1460	1260
	Medium Low	1720	1700	1670	1620	1570	1500	1430	1310	1160	1000
	Low	1410	1390	1360	1330	1280	1220	1170	1060	930	840
100/1200/B †	High	1700	1620	1560	1480	1390	1300	1210	1110	970	820
	Medium High	1430	1400	1350	1300	1230	1160	1080	980	870	710
	Medium Low	1180	1170	1160	1130	1080	1030	1000	860	750	510
	Low	950	950	930	920	880	840	790	720	620	530
100/1600/B †	High	1880	1850	1770	1720	1650	1560	1490	1420	1320	1210
	Medium	1470	1460	1420	1390	1360	1300	1250	1190	1110	1000
	Low	1250	1240	1220	1190	1150	1130	1070	1030	970	880
100/2000/C †	High	2590	2500	2400	2280	2180	2080	1970	1840	1720	1560
	Medium High	2180	2120	2040	1980	1900	1810	1720	1600	1480	1320
	Medium Low	1750	1720	1680	1640	1580	1520	1440	1350	1220	1060
	Low	1450	1420	1380	1330	1300	1240	1160	1070	970	860
115/1600/C	High	2020	1930	1820	1730	1640	1540	1400	1250	1090	920
	Medium	1750	1710	1650	1590	1490	1390	1290	1160	1010	810
	Low	1540	1500	1460	1410	1350	1260	1180	1060	910	750
115/2000/C †	High	2500	2400	2320	2220	2110	2000	1870	1750	1610	1450
	Medium High	2130	2070	1990	1920	1840	1760	1660	1570	1460	1320
	Medium Low	1700	1680	1650	1620	1560	1500	1410	1320	1210	1070
	Low	1420	1390	1360	1330	1290	1240	1150	1060	950	840
130/2000/D †	High	2640	2550	2440	2340	2230	2110	2010	1870	1750	1580
	Medium High	2120	2070	2010	1950	1890	1810	1730	1610	1490	1320
	Medium Low	1690	1660	1640	1600	1550	1490	1410	1330	1240	1100
	Low	1370	1360	1340	1310	1270	1230	1150	1070	990	850

NOTES

- Airflow expressed in standard cubic feet per minute (CFM) and in cubic meters per minute (m³/min).
- Motor voltage at 115 V.

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

† Indicates model available in LoNOx.

BLOWER PERFORMANCE CFM - UPFLOW (WITHOUT FILTER) - LEFT SIDE RETURN

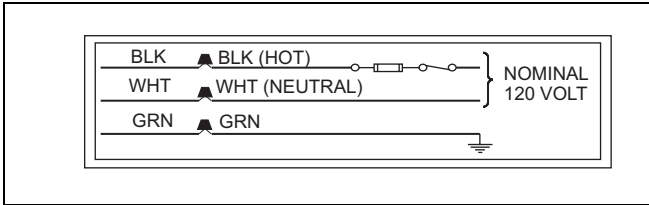
MODELS Input / CFM	Speed	Single Stage Left Side Airflow Data (SCFM)									
		Ext. Static Pressure (in. H2O)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
40/1200/A †	High	1810	1730	1660	1570	1480	1390	1300	1200	1090	930
	Medium High	1390	1390	1350	1320	1270	1210	1150	1080	970	790
	Medium Low	1120	1120	1120	1110	1080	1080	1020	930	830	690
	Low	880	910	920	920	910	870	820	740	650	510
60/1200/A †	High	1770	1690	1630	1560	1490	1390	1290	1190	1050	920
	Medium High	1400	1380	1350	1320	1280	1230	1160	1060	930	780
	Medium Low	1120	1130	1150	1130	1120	1080	1000	950	790	630
	Low	880	900	900	900	880	850	790	730	660	530
80/1200/A †	High	1790	1720	1670	1590	1530	1450	1350	1260	1140	1000
	Medium High	1420	1370	1350	1320	1280	1230	1170	1090	990	840
	Medium Low	1080	1120	1110	1100	1080	1040	1000	920	820	690
	Low	N/A	900	900	890	870	850	800	730	670	560
80/1600/B †	High	2000	1960	1930	1900	1800	1760	1710	1640	1550	1460
	Medium	1440	1440	1430	1420	1400	1380	1340	1300	1220	1150
	Low	1220	1230	1230	1230	1200	1190	1170	1160	1110	1050
80/2200/C †	High	2710	2640	2560	2480	2360	2260	2160	2010	1860	1650
	Medium High	2110	2110	2070	2030	1980	1910	1850	1710	1570	1300
	Medium Low	1690	1690	1650	1610	1540	1480	1410	1280	1170	1030
	Low	1350	1330	1310	1290	1260	1220	1150	1050	970	860
100/1200/B †	High	1780	1710	1640	1560	1490	1390	1290	1180	1030	820
	Medium High	1430	1410	1370	1340	1280	1220	1140	1040	890	730
	Medium Low	1140	1170	1150	1120	1080	1040	970	890	760	630
	Low	920	940	950	940	920	890	850	770	660	560
100/1600/B †	High	1950	1890	1840	1790	1730	1660	1570	1480	1390	1300
	Medium	1440	1420	1400	1390	1350	1320	1270	1210	1150	1060
	Low	1230	1210	1190	1180	1150	1130	1090	1050	990	920
100/2000/C †	High	2770	2670	2610	2540	2450	2340	2210	2070	1890	1730
	Medium High	2120	2060	2030	2000	1950	1880	1810	1720	1580	1370
	Medium Low	1690	1660	1630	1610	1560	1490	1420	1350	1240	1070
	Low	1390	1370	1330	1290	1250	1200	1120	1010	910	850
115/1600/C	High	2160	2070	1990	1900	1800	1690	1580	1430	1260	1000
	Medium	1760	1720	1690	1630	1560	1480	1390	1250	1080	890
	Low	1510	1490	1470	1440	1380	1300	1210	1110	950	780
115/2000/C †	High	2740	2650	2560	2480	2380	2280	2170	1990	1840	1650
	Medium High	2120	2090	2040	2000	1940	1870	1780	1680	1550	1370
	Medium Low	1690	1670	1650	1610	1560	1510	1440	1310	1160	1030
	Low	1390	1360	1330	1300	1250	1190	1100	1020	940	840
130/2000/D †	High	2680	2600	2520	2410	2300	2180	2050	1910	1730	1550
	Medium High	2140	2110	2070	1990	1930	1850	1770	1670	1530	1370
	Medium Low	1660	1640	1620	1570	1530	1470	1400	1310	1220	1090
	Low	1370	1350	1320	1290	1240	1190	1140	1040	930	860

NOTES

- Airflow expressed in standard cubic feet per minute (CFM).
- Return air is through side opposite motor (left side).
- Motor voltage at 115 V.

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

† Indicates model available in LoNOx.



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 Fibers*		Pleated	
	1 Opening	2 Openings	1 Opening	2 Openings	1 Opening	2 Openings	1 Opening	2 Openings
CFM	In ³	In ³	inwc	inwc	inwc	inwc	inwc	inwc
0 - 750	230		0.01		0.01		0.15	
751 - 1000	330		0.05		0.2			
1001 - 1250	330		0.1		0.2			
1251 - 1500	330		0.1		0.25			
1501 - 1750	380	658	0.15	0.09	0.14	0.08	0.3	0.17
1751 - 2000	380	658	0.19	0.11	0.18	0.1	0.3	0.17
2001 & Above	463	658	0.19	0.11	0.18	0.1	0.3	0.17

* Washable Fibers 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) X (-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 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.

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.

Input (MBH)	Output (MBH)	2,000 Ft. to 5,500 Ft.	>5,500 Ft. to 10,000 Ft.
40	32	1PS0301	1PS0301
60	48	1PS0301	1PS0301
80	64	1PS0302	1PS0302
100	80	1PS0312	1PS0311
115	92	1PS0312	1PS0311
130	104	1PS0312	1PS0311

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

FIELD INSTALLED ACCESSORIES - ELECTRICAL		
MODEL NO.	DESCRIPTION	USED WITH
2TB17700424	SUBBASE (24V) -One-stage Heat / Cool. Manual changeover. System Switch: Cool-Off-Heat. Fan Switch: Auto-On.	ALL MODELS
6TH13700524	THERMOSTAT-One-stage heat. Deluxe 24V with heat only sub-base, does not include fan switch. NOTE: For one-stage cool or one-stage heat/cool, must be used with subbase 2TB17700424.	ALL MODELS
6ET03700324	THERMOSTAT- Hardwired, 1 Heat / 1 Cool. Manual changeover. System Switch: Cool-Off-Heat. Fan Switch: Auto-On.	ALL MODELS
6ET03701224	THERMOSTAT-Power Stealing, 1 Heat / 1 Cool. Manual changeover. System Switch: Cool-Off-Heat. Fan Switch: Auto-On.	ALL MODELS
6ET03700124	THERMOSTAT-Hardwired, 1 Heat / 1 Cool. Programmable, Auto changeover. System Switch: Cool-Off-Heat. Fan Switch: Auto-On.	ALL MODELS
6ET03701024	THERMOSTAT-Power Stealing, 1 Heat / 1 Cool. Programmable, Auto changeover. System Switch: Cool-Off-Heat. Fan Switch: Auto-On.	ALL MODELS
2TC03700124	TWINNING CONTROL	ALL MODELS

NOTES

Subject to change without notice. Printed in U.S.A.
Copyright © by Unitary Products Group 2004. All rights reserved.

036-21619-002 Rev. A (1004)
Supersedes: 036-21619-001 Rev. A (0804)

**Unitary
Products
Group**

**5005
York
Drive**

**Norman
OK
73069**