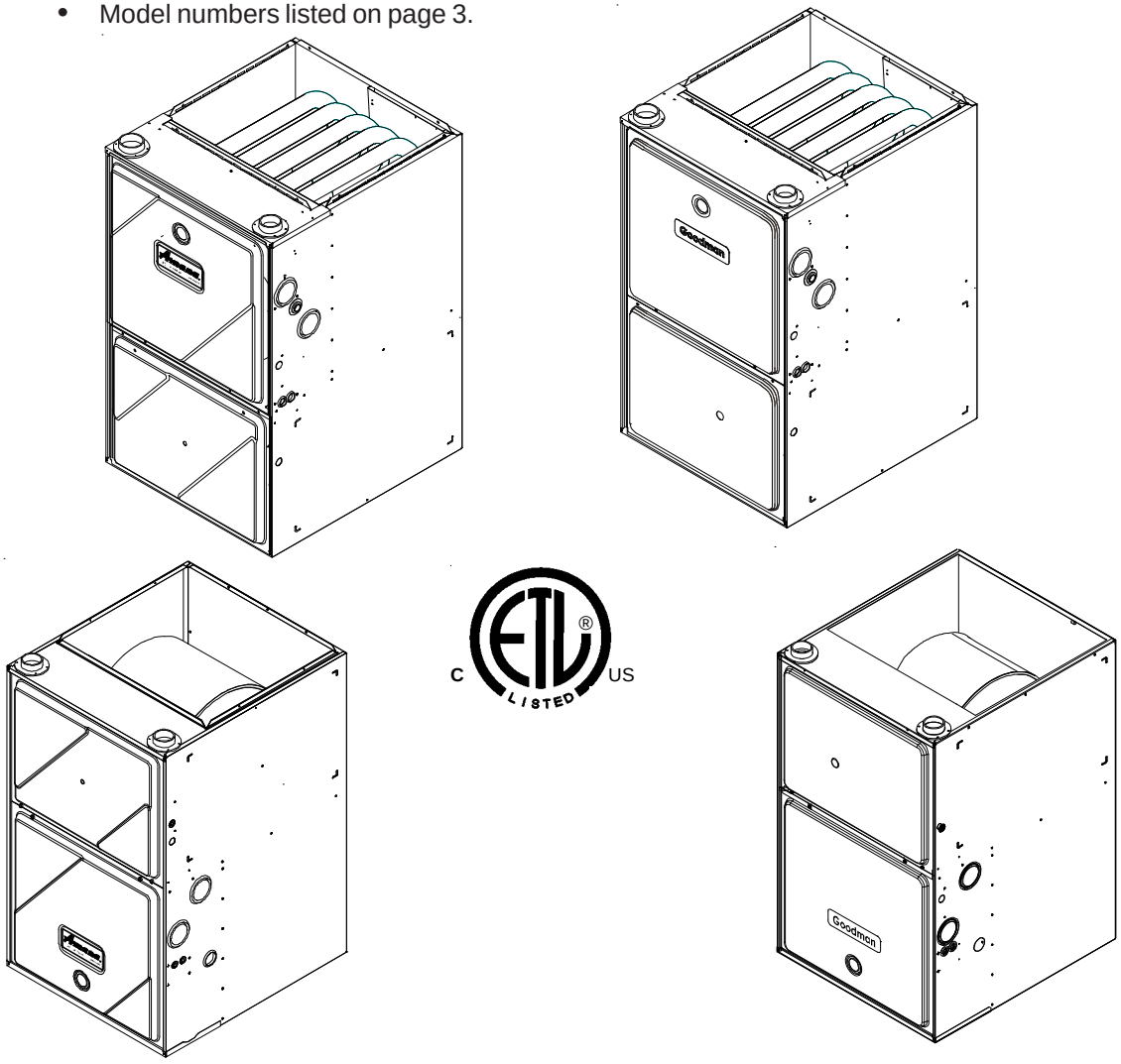
Goodman® TECHNICAL MANUAL

*CVM96 & *MVM96
40" 96% Gas Furnace

- Refer to Service Manual RS6612001 for installation, operation, and troubleshooting information.
- All safety information must be followed as provided in the Service Manual.
- Refer to the appropriate Parts Catalog for part number information.
- Model numbers listed on page 3.



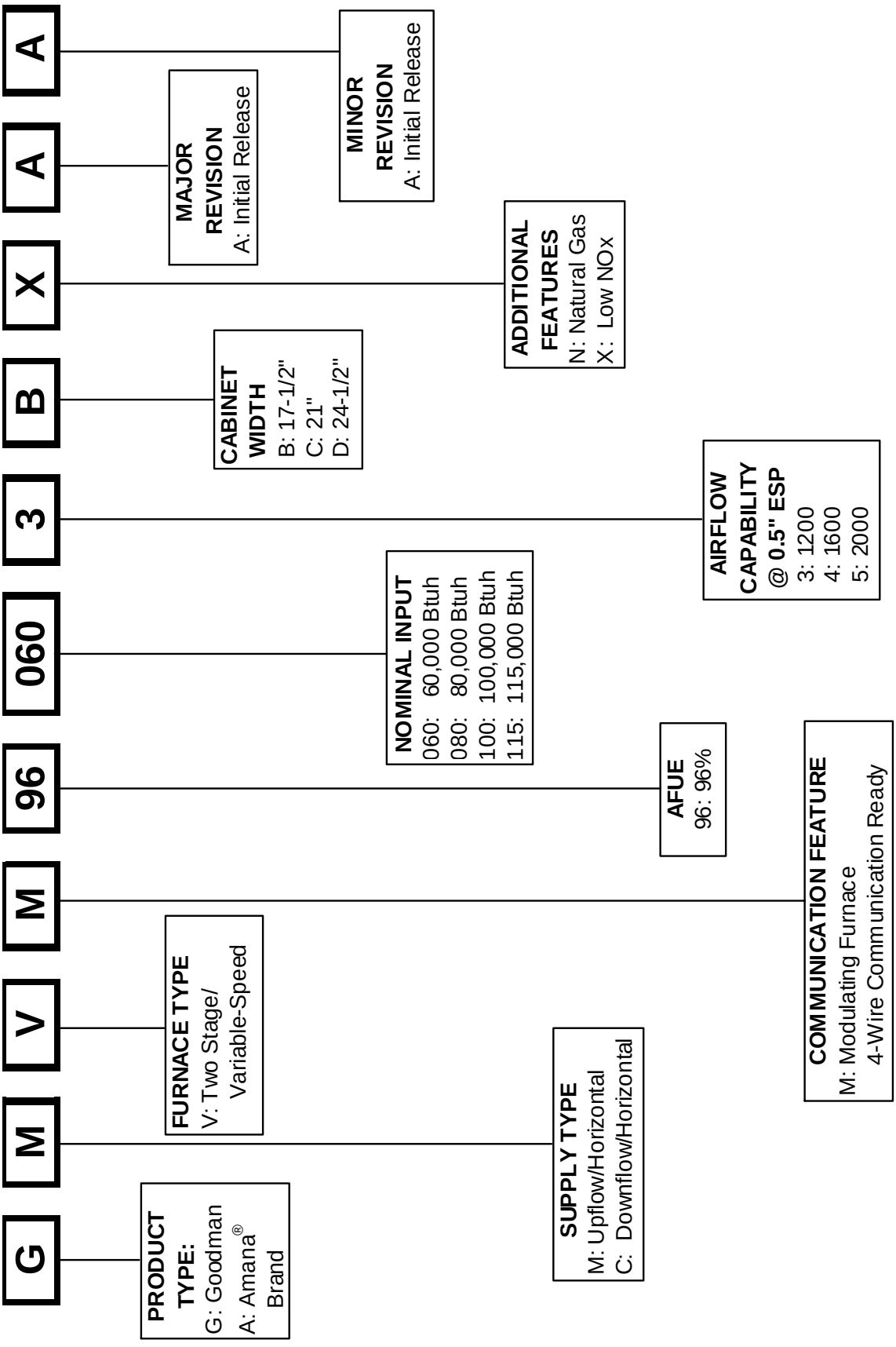
This manual is to be used by qualified, professionally trained HVAC technicians only. Goodman does not assume any responsibility for property damage or personal injury due to improper service procedures or services performed by an unqualified person.

RT6612023
June 2011

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PRODUCT IDENTIFICATION

The model and manufacturing number are used for positive identification of component parts used in manufacturing. Please use these numbers when requesting service or parts information.



PRODUCT IDENTIFICATION

The model and manufacturing number are used for positive identification of component parts used in manufacturing. Please use these numbers when requesting service or parts information.

GCVM960604CXA*
GCVM960805DXA*
GCVM961005DXA*
GMVM960603BXA*
GMVM960805CXA*
GMVM961005DXA*
GMVM961155DXA*

ACVM960604CXA*
ACVM960805DXA*
AMVM960603BXA*
AMVM960805CXA*
AMVM961005DXA*
AMVM961155DXA*

⚠ WARNING

HIGH VOLTAGE!

Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.



⚠ WARNING

Goodman will not be responsible for any injury or property damage arising from improper service or service procedures. If you install or perform service on this unit, you assume responsibility for any personal injury or property damage which may result. Many jurisdictions require a license to install or service heating and air conditioning equipment.

⚠ WARNING

Installation and repair of this unit should be performed ONLY by individuals meeting the requirements of an "entry level technician", at a minimum, as specified by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). Attempting to install or repair this unit without such background may result in product damage, personal injury or death.

⚠ WARNING

The United States Environmental Protection Agency ("EPA") has issued various regulations regarding the introduction and disposal of refrigerants introduced into this unit. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary by jurisdiction. Should questions arise, contact your local EPA office.

⚠ WARNING

Do not connect or use any device that is not design certified by Goodman for use with this unit. Serious property damage, personal injury, reduced unit performance and/or hazardous conditions may result from the use of such non-approved devices.

⚠ WARNING

To prevent the risk of property damage, personal injury, or death, do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this appliance.

PRODUCT DESIGN

General Operation

Models covered by this manual come with a new 4-wire communicating PCB. When paired with a compatible communicating indoor unit and a CTK0*AA communicating thermostat, these models can support 4-wire communication protocol and provide more troubleshooting information. These models are also backward compatible with the non-communicating thermostat wiring.
The *CVM96 and *MVM96 furnaces are equipped with an electronic ignition device used to light the burners and an induced draft blower to exhaust combustion products.

An interlock switch prevents furnace operation if the blower door is not in place. Keep the blower access door in place except for inspection and maintenance.

This furnace is also equipped with a self-diagnosing electronic control module. In the event a furnace component is not operating properly, the control module LED will flash on and off in a factory-programmed sequence, depending on the problem encountered. This light can be viewed through the observation window in the blower access door. Refer to the *Troubleshooting Chart* for further explanation of the LED codes and *Abnormal Operation - Integrated Ignition Control* section in the Service Instructions for an explanation of the possible problem.

The rated heating capacity of the furnace should be greater than or equal to the total heat loss of the area to be heated. The total heat loss should be calculated by an approved method or in accordance with “ASHRAE Guide” or “Manual J-Load Calculations” published by the Air Conditioning Contractors of America.

*Obtain from: American National Standards Institute 1430 Broadway New York, NY 10018

Location Considerations

- The furnace should be as centralized as is practical with respect to the air distribution system.
- Do not install the furnace directly on carpeting, tile, or combustible material other than wood flooring.
- When suspending the furnace from rafters or joists, use 3/8" threaded rod and 2” x 2” x 3/8” angle as shown in the Installation and Service Instructions. The length of the rod will depend on the application and clearance necessary.
- When installed in a residential garage, the furnace must be positioned so the burners and ignition source are located not less than 18 inches (457 mm) above the floor and protected from physical damage by vehicles.

Notes:

1. Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2” or 3” in diameter, depending upon furnace input, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2” or 3” diameter PVC.
2. Line voltage wiring can enter through the right or left side of the furnace. Low voltage wiring can enter through the right or left side of furnace.
3. Conversion kits for propane gas operation are available.
4. Installer must supply the following gas line fittings, depending on which entrance is used:

   Left -- Two 90º Elbows, one close nipple and one 2.5" nipple, straight pipe.

   Right -- Straight pipe to reach gas valve.

Accessibility Clearances (Minimum)

MVM96 MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS (INCHES)						
POSITION*	**FRONT**	**SIDES**	**REAR**	**TOP**	**FLUE**	**FLOOR**
Upflow	3	0	0	1	0	C
Horizontal	Alcove	6	0	4	0	C

*= All positioning is determined as installed unit is viewed from the front.

C= If placed on combustible floor, floor MUST be wood only.

NC= For instalaltion on non-combustible floors only. A combustible subbase must be used for installations on combustible flooring.

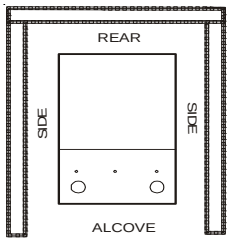
*CVM96 MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS (INCHES)						
POSITION*	**FRONT**	**SIDES**	**REAR**	**TOP**	**FLUE**	**FLOOR**
Upflow	1	0	0	1	0	NC
Horizontal	Alcove	6	0	4	0	C

*= All positioning is determined as installed unit is viewed from the front.

C= If placed on combustible floor, floor MUST be wood only.

NC= For instalaltion on non-combustible floors only. A combustible subbase must be used for installations on combustible flooring.

Alcove Illustration



24" at front is required for servicing or cleaning.

Note: In all cases accessibility clearance shall take precedence over clearances from the enclosure where accessibility clearances are greater. All dimensions are given in inches.

PRODUCT DESIGN

High Altitude Derate

Altitude certification of the *CVM96 and *MVM96 furnaces is up to 10,000 ft.

Gas	Altitude	Kit	Orifice	Manifold Pressure		Pressure Switch Change
				High Stage	Low Stage	
Natural	0-10,000	None	#45[1]	3.5" w.c.	1" w.c.	None
Propane		LPKMOD*****	1.25MM[2]	10.0" w.c.	2.6" w.c.	None

NOTE: In Canada, gas furnaces are only certified to 4500 feet.

[1] Except 115,000 BTU: #43

[2] Except 115,000 BTU: #55

Furnace Model	LP Kit
A/GMVM960603BX	LPKMOD060UF
A/GMVM960805CX	LPKMOD080UF
A/GMVM961005DX	LPKMOD100UF
A/GMVM961155DX	LPKMOD115UF
A/GCVM960604CX	LPKMOD060CF
A/GCVM960805DX	LPKMOD080CF
GCVM961005DX	LPKMOD100CF

24 Volt Thermostat Wiring

IMPORTANT NOTE

WIRE ROUTING MUST NOT INTERFERE WITH CIRCULATOR BLOWER OPERATION, FILTER REMOVAL OR ROUTINE MAINTENANCE.
A REMOVABLE PLUG CONNECTOR IS PROVIDED WITH THE CONTROL TO MAKE THERMOSTAT WIRE CONNECTIONS. THIS PLUG MAY BE REMOVED, WIRE CONNECTIONS MADE TO THE PLUG, AND REPLACED. IT IS STRONGLY RECOMMENDED THAT MULTIPLE WIRES INTO A SINGLE TERMINAL BE TWISTED TOGETHER PRIOR TO INSERTING INTO THE PLUG CONNECTOR. FAILURE TO DO SO MAY RESULT IN INTERMITTENT OPERATION.

IMPORTANT NOTE

DIP SWITCH #13 MUST BE SET TO MATCH THERMOSTAT TYPE. TO USE THE CTK01AA COMMUNICATING THERMOSTAT, DIP SWITCH #13 MUST BE SET TO ON POSITION. THIS IS ALSO THE CORRECT SETTING FOR A NON-COMMUNICATING 2-STAGE THERMOSTAT. TO USE CTK02AA MODULATING THERMOSTAT, CHECK TO MAKE SURE DIP SWITCH #13 IS IN THE OFF POSITION (FACTORY POSITION). THIS IS ALSO THE CORRECT POSITION WHEN USING A NON-COMMUNICATING SINGLE-STAGE THERMOSTAT.

As a two-stage non-communicating furnace, the furnace integrated control module provides terminals for both "W1" and "W2", and "Y1" and "Y2" thermostat connections. This allows the furnace to support the following system applications: 'Two-Stage Heating Only', 'Two-Stage Heating with Single Stage Cooling', and 'Two-Stage Heating with Two-Stage Cooling'. Refer to the following figures for proper connections to the integrated control module.

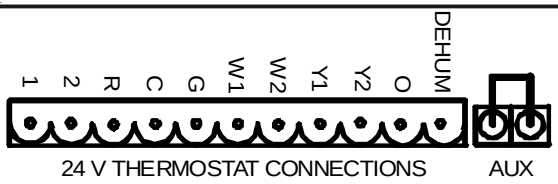
Low voltage connections can be made through either the right or left side panel. Thermostat wiring entrance holes are located in the blower compartment. The following figure shows connections for a "heat/cool system".

This furnace is equipped with a 40 VA transformer to facilitate use with most cooling equipment. Consult the wiring diagram, located on the blower compartment door, for further details of 115 Volt and 24 Volt wiring.

NOTE: Use of ramping profiles requires a jumper between Y1 and O.

IMPORTANT NOTE

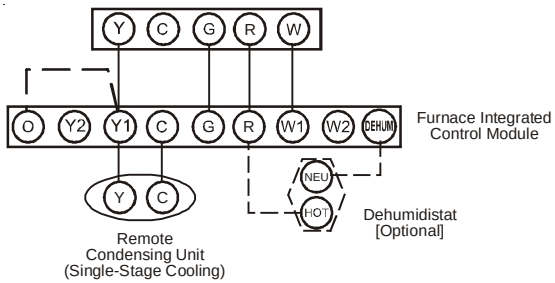
THERMOSTAT "R" REQUIRED IF OUTDOOR UNIT IS EQUIPPED WITH A COMFORT ALERT™ MODULE OR IF THE OUTDOOR UNIT IS A PART OF THE COMFORTNET™ FAMILY OF EQUIPMENT.



Low Voltage Connections with Auxiliary Terminals

The auxiliary contacts are shipped with a factory installed jumper. As an option, the auxiliary contacts may be wired to a normally closed float switch. In the event of open contacts, the furnace will be disabled until the condition is corrected. These are 24 volt terminals fed internally, do not apply another voltage source to these terminals.

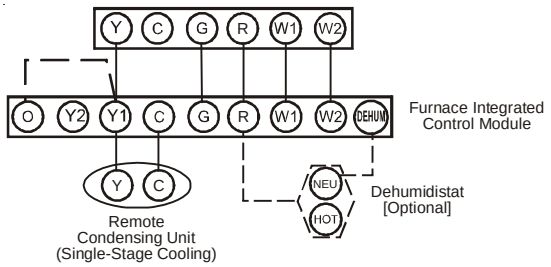
PRODUCT DESIGN



Thermostat - Single-Stage Heating with Single-Stage Cooling

IMPORTANT NOTE

TO APPLY A SINGLE-STAGE HEATING THERMOSTAT, THE THERMOSTAT SELECTOR SWITCH ON THE INTEGRATED CONTROL MODULE MUST BE SET ON SINGLE-STAGE.

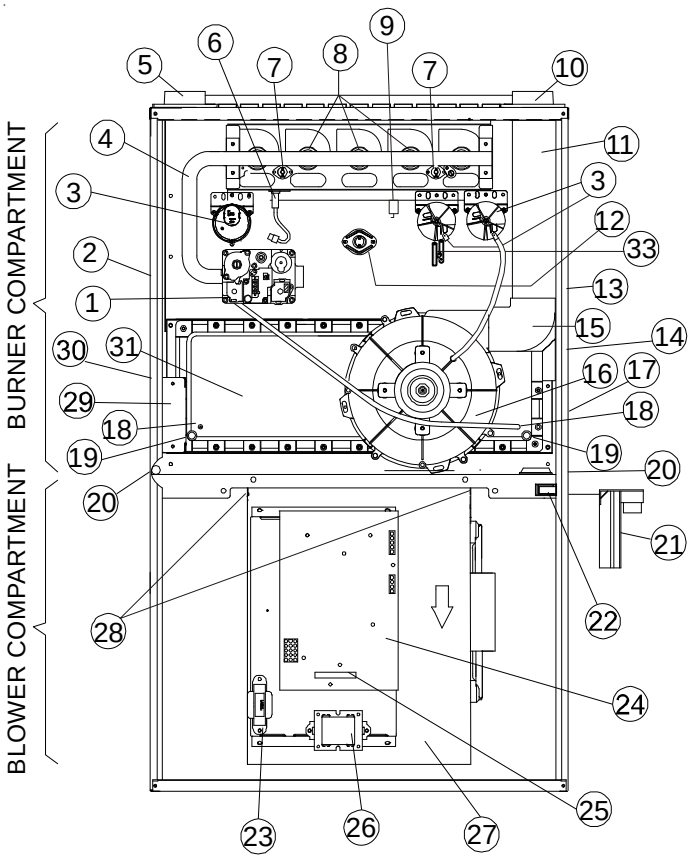


Thermostat - Two-Stage Heating with Single-Stage Cooling

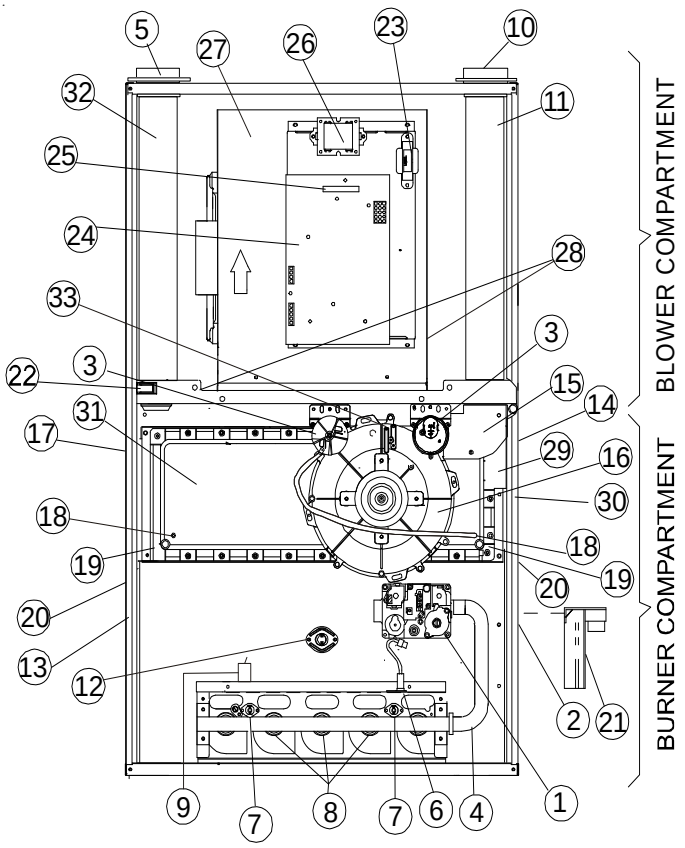
Thermostat

The modulating line of furnaces may be operated with CTK0*AA communicating thermostats or with a single or 2 stage non-communicating thermostat. Dip switch #13 must be checked and set for proper orientation regardless of the thermostat chosen. Factory setting is ON position which is correct for a CTK02AA or single stage heating thermostat. To use a CTK01AA or a 2 stage thermostat; switch #13 must be turned to the off position.

COMPONENT IDENTIFICATION

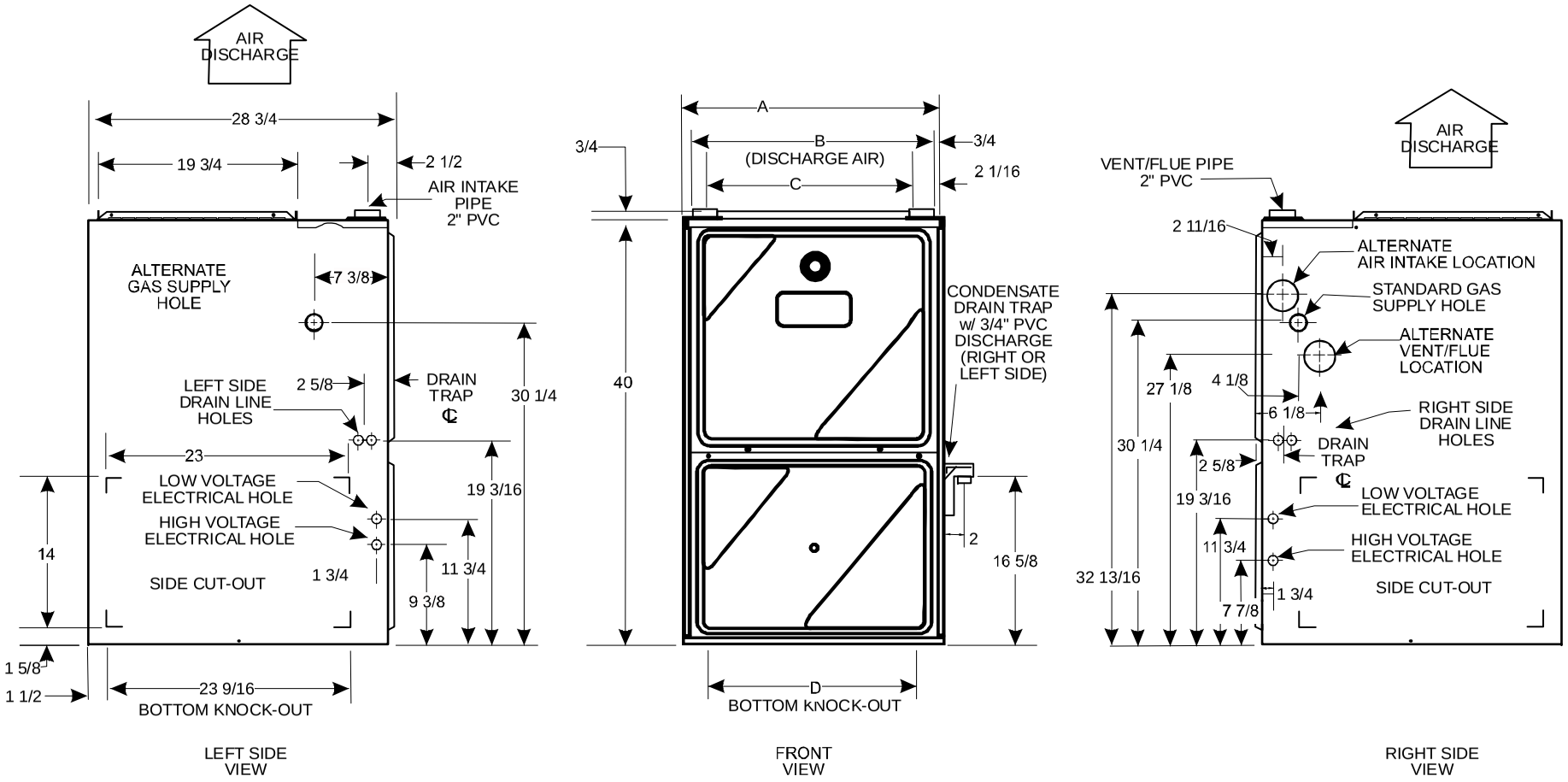


Upflow/Horizontal



Counterflow /Horizontal

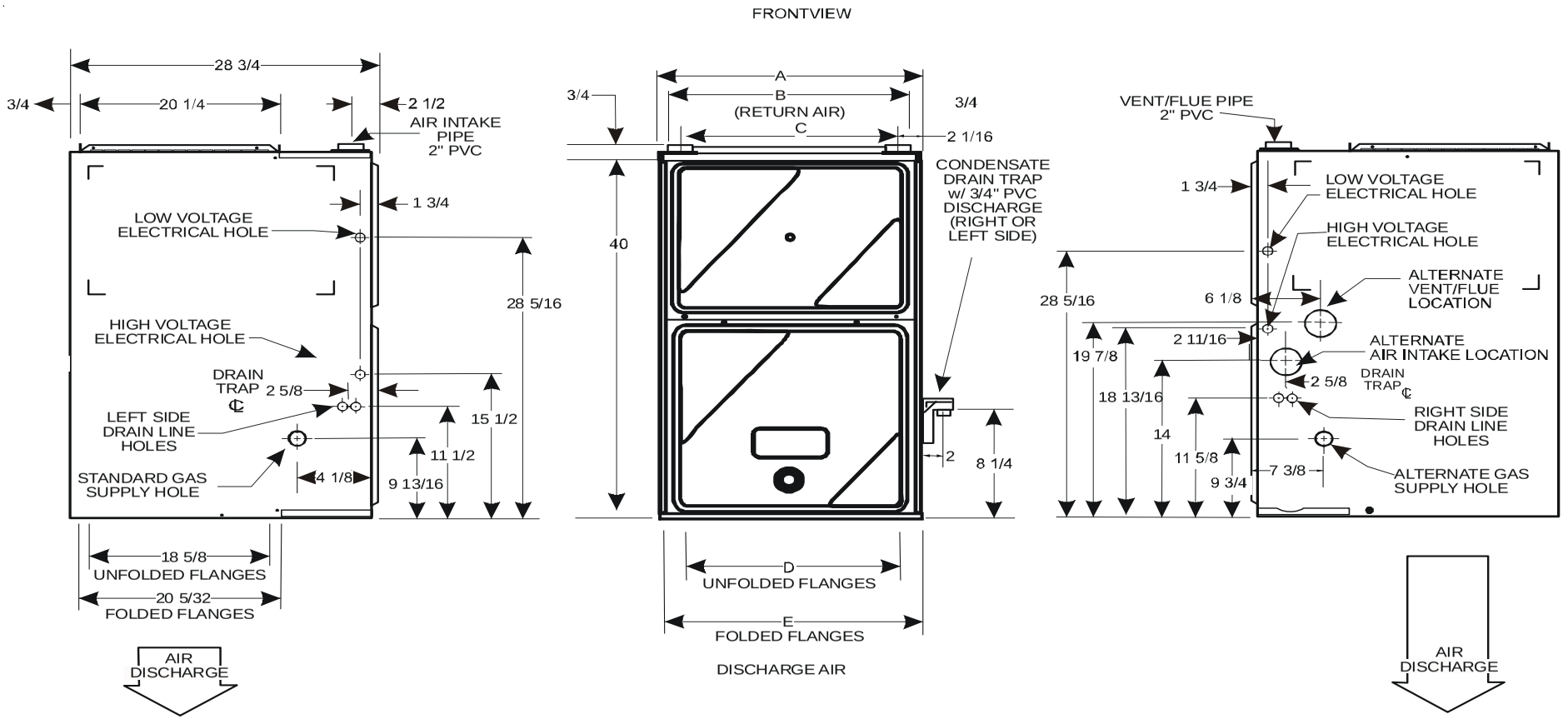
1 Gas Valve
2 Gas Line Entrance (Alternate)
3 Pressure Switch(es)
4 Gas Manifold
5 Combustion Air Intake Connection
6 Hot Surface Igniter
7 Rollout Limit
8 Burners
9 Flame Sensor
10 Flue Pipe Connection
11 Flue Pipe
12 Primary Limit
13 Gas Line Entrance
14 Flue Pipe Connection (Alternate)
15 Rubber Elbow
16 Variable-Speed Induced Draft Blower
17 Electrical Connection Inlets (Alternate)
18 Coil Front Cover Pressure Tap
19 Coil Front Cover Drain Port
20 Drain Line Penetrations
21 Drain Trap
22 Blower Door Interlock Switch
23 Inductor (Not All Models)
24 Two-Stage Integrated Control Module (with fuse and diagnostic LED)
25 24 Volt Thermostat Connections
26 Transformer (40 VA)
27 ECM Variable Speed Circulator Blower
28 Auxiliary Limit
29 Junction Box
30 Electrical Connection Inlets
31 Coil Front Cover
32 Combustion Air Inlet Pipe (*CVM96 only)
33 "H" Fitting



CABINET SIZE	UNITS	A	B	C	D
SMALL	0603BX*	17 1/2	15	12 3/8	12 5/8
MEDIUM	0805CX*	21	19	16 3/8	14 5/8
LARGE	1005DX* 1155DX*	24 1/2	23	20 3/8	18 5/8

All dimensions are in inches.

NOTE: *Airflow area will be reduced by approximately 18% if duct flanges are not unfolded. This could cause performance issues and noise issues.*



CABINET SIZE	UNITS	A	B	C	D	E
MEDIUM	0604CX*	21	19	16 3/8	14 5/8	17 1/2
LARGE	0805DX* 1005DX*	24 1/2	23	20 3/8	18 5/8	20 7/8

NOTE: *Airflow area will be reduced by approximately 18% if duct flanges are not unfolded. This could cause performance issues and noise issues.*

PRESSURE SWITCH TRIP POINTS AND USAGE CHART								
MODEL	NEGATIVE PRESSURE ID BLOWER WITH FLUE NOT FIRING TYPICAL SEA LEVEL DATA(1)	NEGATIVE PRESSURE ID BLOWER WITH FLUE FIRING TYPICAL SEA LEVE DATA(2)	NEGATIVE PRESSURE COIL COVER WITH FLUE NOT FIRING TYPICAL SEA LEVEL DATA(1)	NEGATIVE PRESSURE COIL COVER WITH FLUE FIRING TYPICAL SEA LEVE DATA(2)	PRESSURE SWITCH TRIP POINTS AND USAGE			
					TRIP POINT COIL COVER PRESSURE SWITCH	COIL COVER PRESSURE SWITCH PART #	TRIP POINT ID BLOWER PRESSURE SWITCH	ID BLOWER PRESSURE SWITCH PART #
A/GMVM960603BX	-0.96	-0.81	-0.25	-0.10	-0.10	20197308	-0.81	0130F00155
A/GMVM960805CX	-0.96	-0.81	-0.25	-0.10	-0.10	20197308	-0.81	0130F00155
A/GMVM961005DX	-0.85	-0.70	-0.25	-0.10	-0.10	20197308	-0.70	0130F00154
A/GMVM961155DX	-1.01	-0.86	-0.25	-0.10	-0.10	20197308	-0.86	0130F00156
A/GCVM960604CX	-1.01	-0.86	-0.25	-0.10	-0.10	0130F00070	-0.86	0130F00156
A/GCVM960805DX	-0.96	-0.81	-0.25	-0.10	-0.10	0130F00070	-0.81	0130F00155
GCVM961005DX	-0.85	-0.70	-0.25	-0.10	-0.10	0130F00070	-0.70	0130F00154

(1) Data given is least negative pressure required for pressure switch to close.

(2) Data given is the least negative pressure required for pressure switch to remain closed.

PRODUCT DESIGN

PRIMARY LIMIT				
Part Number	0130M00063	20162905	20162907	20162903
Open Setting (°F)	140	145	155	160
A/GMVM960603BX	1	---	---	---
A/GMVM960805CX	---	1	---	---
A/GMVM961005DX	---	1	---	---
A/GMVM961155DX	---	---	1	---
A/GCVM960604CX	---	---	1	---
A/GCVM960805DX	---	1	---	---
GCVM961005DX	---	---	---	1

ROLLOUT LIMIT SWITCHES	
Part Number	**0130F00123**
Open Setting (°F)	**250**
A/GMVM960603BX	2
A/GMVM960805CX	2
A/GMVM961005DX	2
A/GMVM961155DX	2
A/GCVM960604CX	2
A/GCVM960805DX	2
GCVM961005DX	2

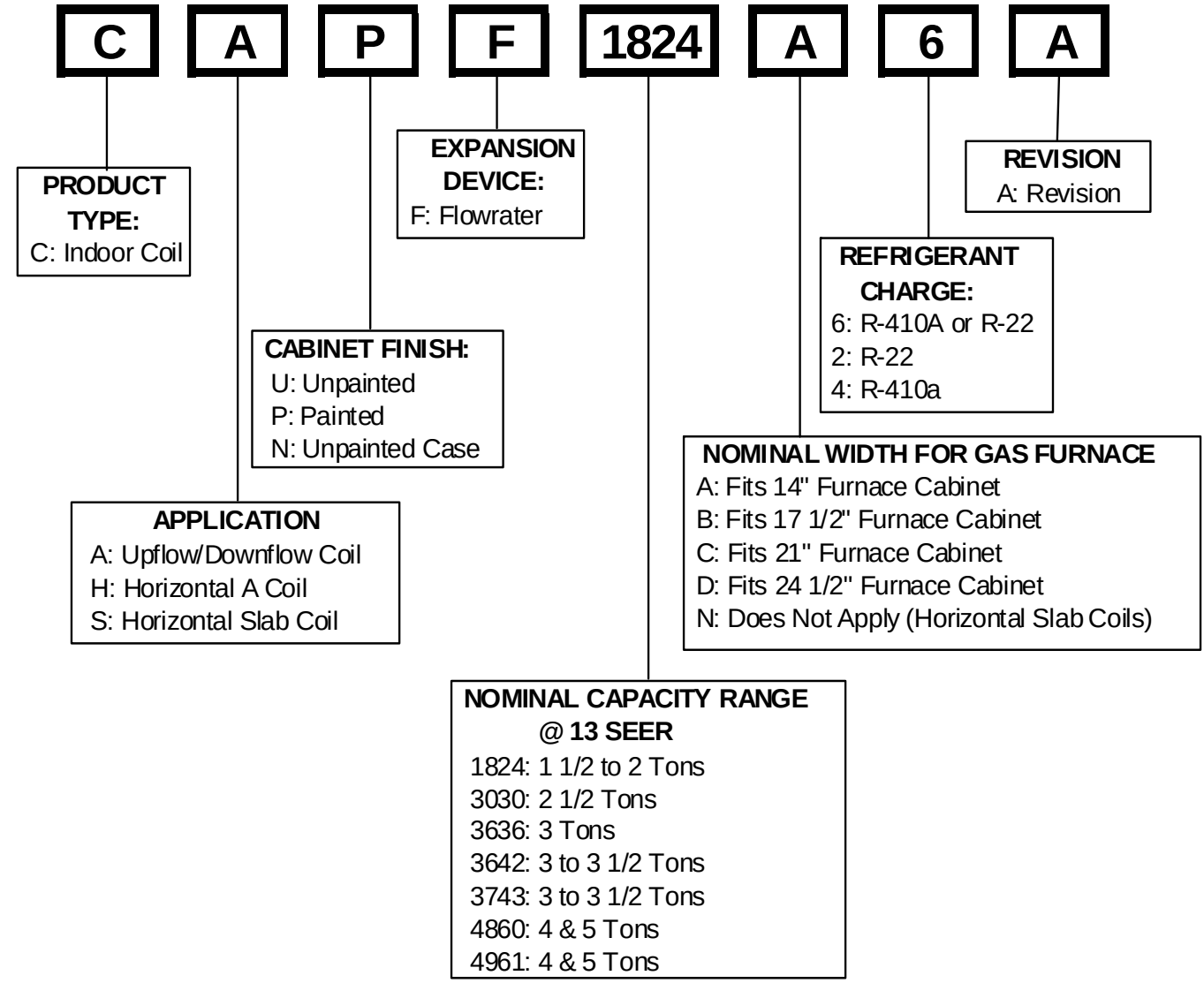
AUXILIARY LIMIT SWITCHES	
Part Number	**0130F00038**
Open Setting (°F)	120
A/GMVM960603BX	1
A/GMVM960805CX	1
A/GMVM961005DX	1
A/GMVM961155DX	1
A/GCVM960604CX	1
A/GCVM960805DX	1
GCVM961005DX	1

PRODUCT DESIGN

Coil Matches:

A large array of Amana® brand coils are available for use with the GMH95 furnaces, in either upflow or horizontal applications. These coils are available in both cased and uncased models (with the option of a field installed TXV expansion device). These 95%+ furnaces match up with the existing Amana® brand coils as shown in the chart below.

Coil Matches (for Goodman® units using R22 and R-410A):



- All CAPF coils in B, C, & D widths have insulated blank off plates for use with one size smaller furnaces.
- All CAPF coils have a CAUF equivalent.
- All CHPF coils in B, C & D heights have an insulated Z bracket for use with one size smaller furnace.
- All proper coil combinations are subject to being ARI rated with a matched outdoor unit.

PRODUCT DESIGN

Thermostats:

NOTE: *Complete lineup of thermostats can be found in the Thermostat Specification Sheets.*

Filters:

Filters are required with this furnace and must be provided by the installer. The filters used must comply with UL900 or CAN/ULCS111 standards. Installing this furnace without filters will void the unit warranty.

Upflow Filters

This furnace has provisions for the installation of return air filters at the side and/or bottom return. The furnace will accommodate the following filter sizes depending on cabinet size:

SIDE RETURN		
Cabinet Width (in.)	Nominal Filter Size (in.)	Approx. Flow Area (in^2)
All	16 x 25 x 1	400

BOTTOM RETURN (1)		
Cabinet Width (in.)	Nominal Filter Size (in.)	Approx. Flow Area (in^2)
17-1/2	14 x 25 x 1	350
21	16 x 25 x 1	400
24-1/2	20 x 25 x 1	500

(1) Flanges on bottom return must be unfolded

Refer to Minimum Filter Area tables to determine filter area requirement. **NOTE:** Filters can also be installed elsewhere in the duct system such as a central return.

		UPFLOW COOLING AIRFLOW REQUIREMENT (CFM)						
		600	**800**	**1000**	**1200**	**1400**	**1600**	**2000**
Input Airflow	0603__XA	---	---	564*	564*	672	768	
	0805__XA	---	---	---	752*	752*	768	960
	1005__XA 1155__XA	---	---	---	940*	940*	940*	960

		COUNTERFLOW COOLING AIRFLOW REQUIREMENT (CFM)						
		600	**800**	**1000**	**1200**	**1400**	**1600**	**2000**
Input Airflow	0604__XA	---	---	641*	641*	672	768	---
	0805__XA 1005__XA	---	---	---	854*	854*	854*	960

*Minimum filter area dictated by heating airflow requirement.

Disposable Minimum Filter Area (in^2)

[*Based on a 300 ft/min filter face velocity]*

PRODUCT DESIGN

		UPFLOW COOLING AIRFLOW REQUIREMENT (CFM)						
		600	800	1000	1200	1400	1600	2000
Input Airflow	0603__XA	---	---	627*	627*	672	768	---
	0805__XA	---	---	---	836*	836*	836*	960
	1005__XA 1155__XA	---	---	---	940*	940*	940*	960

		COUNTERFLOW COOLING AIRFLOW REQUIREMENT (CFM)						
		600	800	1000	1200	1400	1600	2000
Input Airflow	0604__XA	---	---	320*	320*	336	384	---
	0805__XA 1005__XA	---	---	---	427*	427*	427*	480

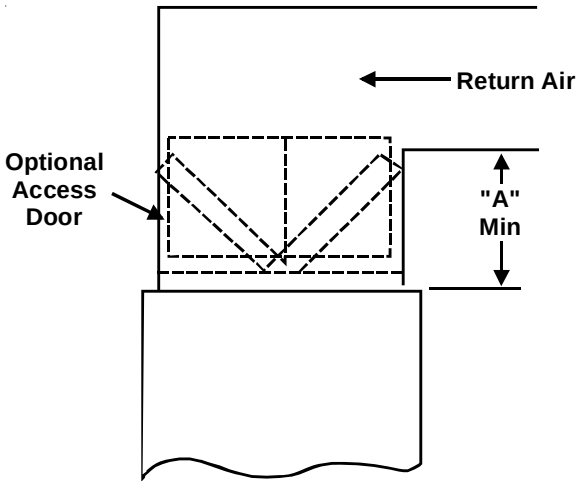
*Minimum filter area dictated by heating airflow requirement.

Permanent Minimum Filter Area (in^2)

[*Based on a 600 ft/min filter face velocity]*

Counterflow Filters

Return air filters may be installated at the at the counterflow top return. A field supplied center filter support must be provided by the installer in order to use the top return. The furnace will accommodate the following counterflow top return filter sizes depending on cabinet size:



Counterflow Top Return				
Cabinet Width	Filter Area (in^2)	Qty	Filter Size (in)	Dimension "A" (in)
17 1/2	600	2	15 X 20 X 1	14.2
21				13.0
24 1/2				11.3
17 1/2	800	2	20 X 20 X 1	19.7
21				18.8
24 1/2				17.7
17 1/2	1000	2	25 X 20 X 1	25.0
21				24.3
24 1/2				23.4

Refer to Minimum Filter Area tables to determine filter area requirement. **NOTE:** Filters can also be installed elsewhere in the duct system such as a central return.

FURNACE SPECIFICATIONS *MVM96 / *CVM96

MODEL	*MVM960603BXA*	*MVM960805CXA*	*MVM961005DXA*	*MVM961155DXA*	*CVM960604CXA*	*CVM960805DXA*	GCVM961005DXA*
Btuh							
Input (US)	60,000	80,000	100,000	115,000	60,000	80,000	100,000
Output (US)	57,600	76,800	96,000	109,250	57,600	76,800	96,000
Input (CAN)	60,000	80,000	100,000	115,000	60,000	80,000	100,000
Output (CAN)	57,600	76,800	96,000	109,250	57,600	76,800	96,000
A.F.U.E.	96.0%	96.0%	96.0%	95.0%	96.0%	96.0%	95.0%
Rated External Static (" w.c.)	.20 - .50	.20 - .50	.20 - .50	.20 - .50	.20 - .50	.20 - .50	.20 - .50
Temperature Rise (°F)	20-50	35-65	35 - 65	35-65	20-50	20-50	25-55
ID Blower Pressure Switch Trip Point (" w.c.)	-0.81	-0.81	-0.70	-0.86	-0.86	-0.81	-0.70
Front Cover Pressure Switch Trip Point (" w.c.)	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
Blower Wheel (D" x W")	10 x 8	11 x 10	11 x 10	11 x 10	10 x 10	11 x 10	11 x 10
Blower Horsepower	3/4	1	1	1	3/4	1	1
Blower Speeds	Variable	Variable	Variable	Variable	Variable	Variable	Variable
Max CFM @ 0.5 E.S.P.	1400	2200	2200	2200	1760	2200	2200
Power Supply	115-60-1	115-60-1	115-60-1	115-60-1	115-60-1	115-60-1	115-60-1
Minimum Circuit Ampacity (MCA)[1]	6.0	14.2	14.2	14.2	6.0	14.2	14.2
Maximum Overcurrent Device[2]	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Transformer (VA)	40	40	40	40	40	40	40
Primary Limit Setting (°F)	140	145	145	155	155	145	160
Auxiliary Limit Setting (°F)	120	120	120	120	120	120	120
Rollout Limit Setting (°F)	250	250	250	250	250	250	250
Fan Delay On Heating	30 secs.	30 secs.	30 secs.	30 secs.	30 secs.	30 secs.	30 secs.
Off Heating [3]	150 secs.	150 secs.	150 secs.	150 secs.	150 secs.	150 secs.	150 secs.
Fan Delay On Cooling	6 sec.	6 sec.	6 sec.	6 sec.	6 sec.	6 sec.	6 sec.
Off Cooling	45 secs.	45 secs.	45 secs.	45 secs.	45 secs.	45 secs.	45 secs.
Gas Supply Pressure (Natural/Propane) ("w.c.)	7 / 11	7 / 11	7 / 11	7 / 11	7 / 11	7 / 11	7 / 11
Manifold Pressure (Natural/Propane) ("w.c.)	3.5 / 10	3.5 / 10	3.5 / 10	3.5 / 10	3.5 / 10	3.5 / 10	3.5 / 10
Orifice Size (Natural/Propane)	45 / 1.25mm	45 / 1.25mm	45 / 1.25mm	43 / 55	45 / 1.25mm	45 / 1.25mm	45 / 1.25mm
Number of Burners	3	4	5	5	3	4	5
Vent Connector Diameter (inches)[4]	2	3	3	3	2	3	3
Combustion Air Connector Diameter (inches)[5]	2	2	2	2	2	2	2
Shipping Weight (lbs.)	135	145	170	170	139	165	170

[1] Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.
[2] Maximum Overcurrent Protection Device: May use Time Delay Fuse or HACR type Circuit Breaker of the same size as noted.
[3] Off Heating - this fan delay timing is adjustable (100 and 150 seconds). Furnaces are shipped with 150 second off delay.
[4] See Installation Instructions for appropriate vent diameter, length and number of elbows.
[5] See Installation Instructions for appropriate combustion air pipe diameter, length and number of elbows.

NOTE: This data is provided as a guide, it is important to electrically connect the unit and properly size fuses/circuit breakers and wires in accordance with all national and/or local electrical codes. Use copper wire only.

1. These furnaces are manufactured for natural gas operation. Optional kits are available for conversion to propane operation.
2. For elevations above 2000 feet the rating should be reduced by 4% for each 1000 feet above sea level. The furnace must not be derated, orifice changes should only be made if necessary for altitude.
3. The total heat loss from the structure as expressed in TOTAL BTU/HR must be calculated by the manufacturers method or in accordance with the "A.S.H.R.A.E. GUIDE" or "MANUAL J-LOAD CALCULATIONS" published by the AIR CONDITIONING CONTRACTORS OF AMERICA. The total heat loss calculated should be equal to or less than the heating capacity. Output based on D.O.E. test procedures.
4. Minimum Circuit Ampacity calculated as: (1.25 x Circulator Blower Amps) + I.D. Blower Amps.

Unit specifications are subject to change without notice. **ALWAYS** refer to the units serial plate for the most up-to-date general and electrical information.

BLOWER PERFORMANCE SPECIFICATIONS

GMVM96 / AMVM96 Heating Speed Charts

GMVM960603BX / AMVM960603BX (Rise Range: 20 - 50°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	576	855	62
	Normal	640	950	56
	Plus (+)	704	1,045	51
B	Minus(-)	639	945	56
	Normal	710	1,050	51
	Plus (+)	781	1,155	46
C	Minus(-)	711	1,053	50
	Normal	790	1,170	45
	Plus (+)	869	1,287	41
D	Minus(-)	765	1,143	46
	Normal	850	1,270	42
	Plus (+)	935	1,397	38

GMVM960805CX / AMVM960805CX Rise Range: 35 - 65°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	1,026	1,440	49
	Normal	1,140	1,600	44
	Plus (+)	1,254	1,760	40
B	Minus(-)	1,071	1,521	47
	Normal	1,190	1,690	42
	Plus (+)	1,309	1,859	38
C	Minus(-)	1,143	1,620	44
	Normal	1,270	1,800	39
	Plus (+)	1,397	1,980	36
D	Minus(-)	1,197	1,701	42
	Normal	1,330	1,890	37
	Plus (+)	1,463	2,079	34

* @ .1" - .5" w.c. ESP

GMVM961005DX / AMVM961005DX (Rise Range: 35 - 65°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	1,107	1,629	54
	Normal	1,230	1,810	49
	Plus (+)	1,353	1,991	44
B	Minus(-)	1,134	1,665	53
	Normal	1,260	1,850	48
	Plus (+)	1,386	2,035	43
C	Minus(-)	1,170	1,701	52
	Normal	1,300	1,890	47
	Plus (+)	1,430	2,079	43
D	Minus(-)	1,197	1,746	51
	Normal	1,330	1,940	46
	Plus (+)	1,463	2,134	41

GMVM961155DX / AMVM961155DX (Rise Range: 35 - 65°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	1,107	1,629	62
	Normal	1,230	1,810	56
	Plus (+)	1,353	1,991	51
B	Minus(-)	1,134	1,665	60
	Normal	1,260	1,850	54
	Plus (+)	1,386	2,035	49
C	Minus(-)	1,170	1,701	59
	Normal	1,300	1,890	53
	Plus (+)	1,430	2,079	48
D	Minus(-)	1,197	1,746	58
	Normal	1,330	1,940	52
	Plus (+)	1,463	2,134	47

* @ .1" - .5" w.c. ESP

BLOWER PERFORMANCE SPECIFICATIONS

GMVM96 / AMVM96 Cooling Speed Charts

GMVM960603BX / AMVM960603BX

High Stage			Low Stage		
Tap	Adjust	CFM*	Tap	Adjust	CFM*
A	Minus(-)	567	A	Minus(-)	351
	Normal	630		Normal	390
	Plus (+)	693		Plus (+)	429
B	Minus(-)	720	B	Minus(-)	495
	Normal	800		Normal	550
	Plus (+)	880		Plus (+)	605
C	Minus(-)	900	C	Minus(-)	612
	Normal	1000		Normal	680
	Plus (+)	1100		Plus (+)	748
D	Minus(-)	1089	D	Minus(-)	720
	Normal	1210		Normal	800
	Plus (+)	1331		Plus (+)	880

GVMV960805CX / AVMV960805CX

High Stage			Low Stage		
Tap	Adjust	CFM*	Tap	Adjust	CFM*
A	Minus(-)	747	A	Minus(-)	486
	Normal	830		Normal	540
	Plus (+)	913		Plus (+)	594
B	Minus(-)	981	B	Minus(-)	675
	Normal	1090		Normal	750
	Plus (+)	1199		Plus (+)	825
C	Minus(-)	1314	C	Minus(-)	882
	Normal	1460		Normal	980
	Plus (+)	1606		Plus (+)	1078
D	Minus(-)	1620	D	Minus(-)	1089
	Normal	1800		Normal	1210
	Plus (+)	1980		Plus (+)	1331

* @ .1" - .8" w.c. ESP

GMVM961005DX / AMVM961005DX

High Stage			Low Stage		
Tap	Adjust	CFM*	Tap	Adjust	CFM*
A	Minus(-)	711	A	Minus(-)	459
	Normal	790		Normal	510
	Plus (+)	869		Plus (+)	561
B	Minus(-)	990	B	Minus(-)	639
	Normal	1100		Normal	710
	Plus (+)	1210		Plus (+)	781
C	Minus(-)	1269	C	Minus(-)	819
	Normal	1410		Normal	910
	Plus (+)	1551		Plus (+)	1001
D	Minus(-)	1647	D	Minus(-)	1044
	Normal	1830		Normal	1160
	Plus (+)	2013		Plus (+)	1276

GMVM961155DX / AMVM961155DX

High Stage			Low Stage		
Tap	Adjust	CFM*	Tap	Adjust	CFM*
A	Minus(-)	711	A	Minus(-)	459
	Normal	790		Normal	510
	Plus (+)	869		Plus (+)	561
B	Minus(-)	990	B	Minus(-)	639
	Normal	1100		Normal	710
	Plus (+)	1210		Plus (+)	781
C	Minus(-)	1269	C	Minus(-)	819
	Normal	1410		Normal	910
	Plus (+)	1551		Plus (+)	1001
D	Minus(-)	1647	D	Minus(-)	1044
	Normal	1830		Normal	1160
	Plus (+)	2013		Plus (+)	1276

* @ .1" - .8" w.c. ESP

Notes:

All furnaces ship as high speed for cooling. Installer must adjust blower speed as needed.

For most jobs, about 400 CFM per ton when cooling is desirable.

Do not operate above .5" w.c. ESP in heating mode. Operating CFM between .5" and .8" w.c. is tabulated for cooling purposes only.

BLOWER PERFORMANCE SPECIFICATIONS

GCVM96 / ACVM96 High (Single) Stage Cooling Speed Charts

High- or Single-Stage Cooling Speeds

GCVM960604CX ACVM960604CX		
Cooling Speed Tap	**Adjust Tap**	**CFM ***
A	Minus(-)	594
	Normal	660
	Plus (+)	726
B	Minus(-)	774
	Normal	860
	Plus (+)	946
C	Minus(-)	1035
	Normal	1150
	Plus (+)	1265
D	Minus(-)	1323
	Normal	1470
	Plus (+)	1617

GCVM960805DX ACVM960805DX		
Cooling Speed Tap	**Adjust Tap**	**CFM ***
A	Minus(-)	810
	Normal	900
	Plus (+)	990
B	Minus(-)	990
	Normal	1100
	Plus (+)	1210
C	Minus(-)	1287
	Normal	1430
	Plus (+)	1573
D	Minus(-)	1692
	Normal	1880
	Plus (+)	2068

GCVM961005DX High-Stage Cooling		
Cooling Speed Tap	**Adjust Tap**	**CFM ***
A	Minus(-)	702
	Normal	780
	Plus (+)	858
B	Minus(-)	963
	Normal	1070
	Plus (+)	1177
C	Minus(-)	1242
	Normal	1380
	Plus (+)	1518
D	Minus(-)	1602
	Normal	1780
	Plus (+)	1958

* @ .1" - .8" w.c. ESP

Notes:

All furnaces ship as high speed for cooling. Installer must adjust blower speed as needed.

For most jobs, about 400 CFM per ton when cooling is desirable.

Do not operate above .5" w.c. ESP in heating mode. Operating CFM between .5" and .8" w.c. is tabulated for cooling purposes only.

BLOWER PERFORMANCE SPECIFICATIONS

GCVM96 / ACVM96 Low Stage Cooling Speed Charts

Low-Stage Cooling Speeds

GCVM960604CX ACVM960604CX		
Cooling Speed Tap	**Adjust Tap**	**CFM ***
A	Minus(-)	333
	Normal	370
	Plus (+)	407
B	Minus(-)	486
	Normal	540
	Plus (+)	594
C	Minus(-)	711
	Normal	790
	Plus (+)	869
D	Minus(-)	882
	Normal	980
	Plus (+)	1078

GCVM960805DX ACVM960805DX		
Cooling Speed Tap	**Adjust Tap**	**CFM ***
A	Minus(-)	477
	Normal	530
	Plus (+)	583
B	Minus(-)	657
	Normal	730
	Plus (+)	803
C	Minus(-)	837
	Normal	930
	Plus (+)	1023
D	Minus(-)	1098
	Normal	1220
	Plus (+)	1342

GCVM961005DX Low-Stage Cooling		
Cooling Speed Tap	**Adjust Tap**	**CFM ***
A	Minus(-)	450
	Normal	500
	Plus (+)	550
B	Minus(-)	666
	Normal	740
	Plus (+)	814
C	Minus(-)	828
	Normal	920
	Plus (+)	1012
D	Minus(-)	1044
	Normal	1160
	Plus (+)	1276

* @ .1" - .8" w.c. ESP

Notes:

All furnaces ship as high speed for cooling. Installer must adjust blower speed as needed.

For most jobs, about 400 CFM per ton when cooling is desirable.

Do not operate above .5" w.c. ESP in heating mode. Operating CFM between .5" and .8" w.c. is tabulated for cooling purposes only.

BLOWER PERFORMANCE SPECIFICATIONS

GCVM96 / ACVM96 Heating Speed Charts

GCVM960604CX / ACVM960604CX Rise Range: 20 - 50°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	792	1,098	48
	Normal	880	1,220	44
	Plus (+)	968	1,342	40
B	Minus(-)	873	1,206	44
	Normal	970	1,340	40
	Plus (+)	1,067	1,474	36
C	Minus(-)	936	1,314	40
	Normal	1,040	1,460	36
	Plus (+)	1,144	1,606	33
D	Minus(-)	1,008	1,431	37
	Normal	1,120	1,590	33
	Plus (+)	1,232	1,749	30

GCVM960805DX / ACVM960805DX Rise Range: 20 - 50°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	999	1,440	49
	Normal	1,110	1,600	44
	Plus (+)	1,221	1,760	40
B	Minus(-)	1,080	1,539	46
	Normal	1,200	1,710	41
	Plus (+)	1,320	1,881	38
C	Minus(-)	1,143	1,620	44
	Normal	1,270	1,800	39
	Plus (+)	1,397	1,980	36
D	Minus(-)	1,197	1,719	41
	Normal	1,330	1,910	37
	Plus (+)	1,463	2,101	34

GCVM961005DX Rise Range: 25 - 55°F)				
Heating Speed Tap	**Adjust Tap**	**Low-Stage CFM (70%) ***	**High-Stage CFM ***	**Rise (°F)**
A	Minus(-)	1,098	1,557	56
	Normal	1,220	1,730	51
	Plus (+)	1,342	1,903	46
B	Minus(-)	1,125	1,593	55
	Normal	1,250	1,770	49
	Plus (+)	1,375	1,947	45
C	Minus(-)	1,170	1,656	53
	Normal	1,300	1,840	48
	Plus (+)	1,430	2,024	43
D	Minus(-)	1,179	1,683	52
	Normal	1,310	1,870	47
	Plus (+)	1,441	2,057	43

Notes

All furnaces ship as high speed for cooling. Installer must adjust blower speed as needed.

For most jobs, about 400 CFM per ton when cooling is desirable.

Do not operate above .5" w.c. ESP in heating mode. Operating CFM between .5" and .8" w.c. is tabulated for cooling purposes only.

BLOWER PERFORMANCE SPECIFICATIONS

Circulator Blower Speed Adjustment Switches

There are dual 7-segment LED's adjacent to the selection dipswitches. The airflow rounded to the nearest 100 CFM, is displayed on the dual 7-segment LED's. The CFM display alternates with the operating mode.

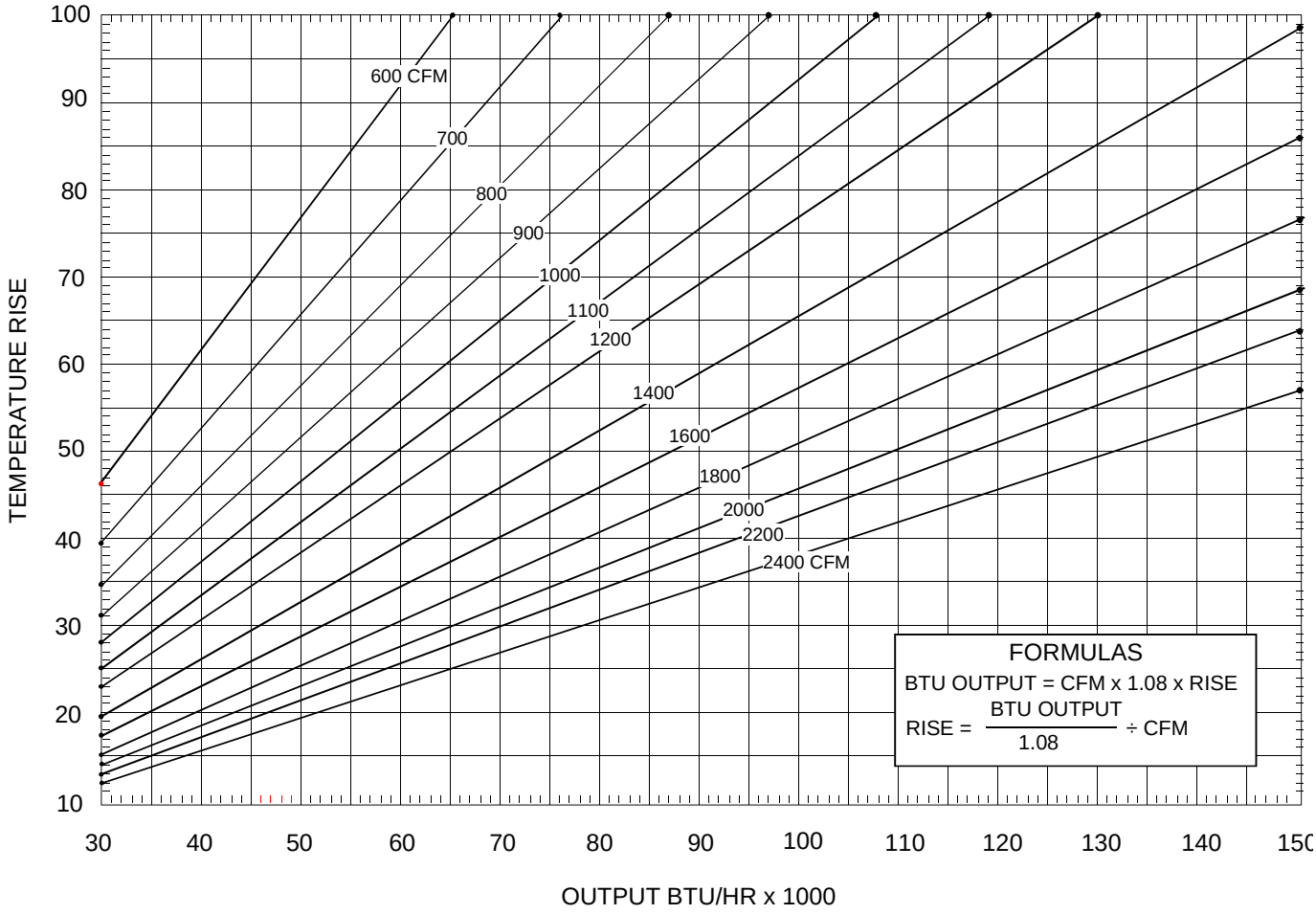
Example:

If the airlfow demand is 1230 CFM, the LED's will display 12. If the airflow demand is 1275 CFM, the LED's will display 13.

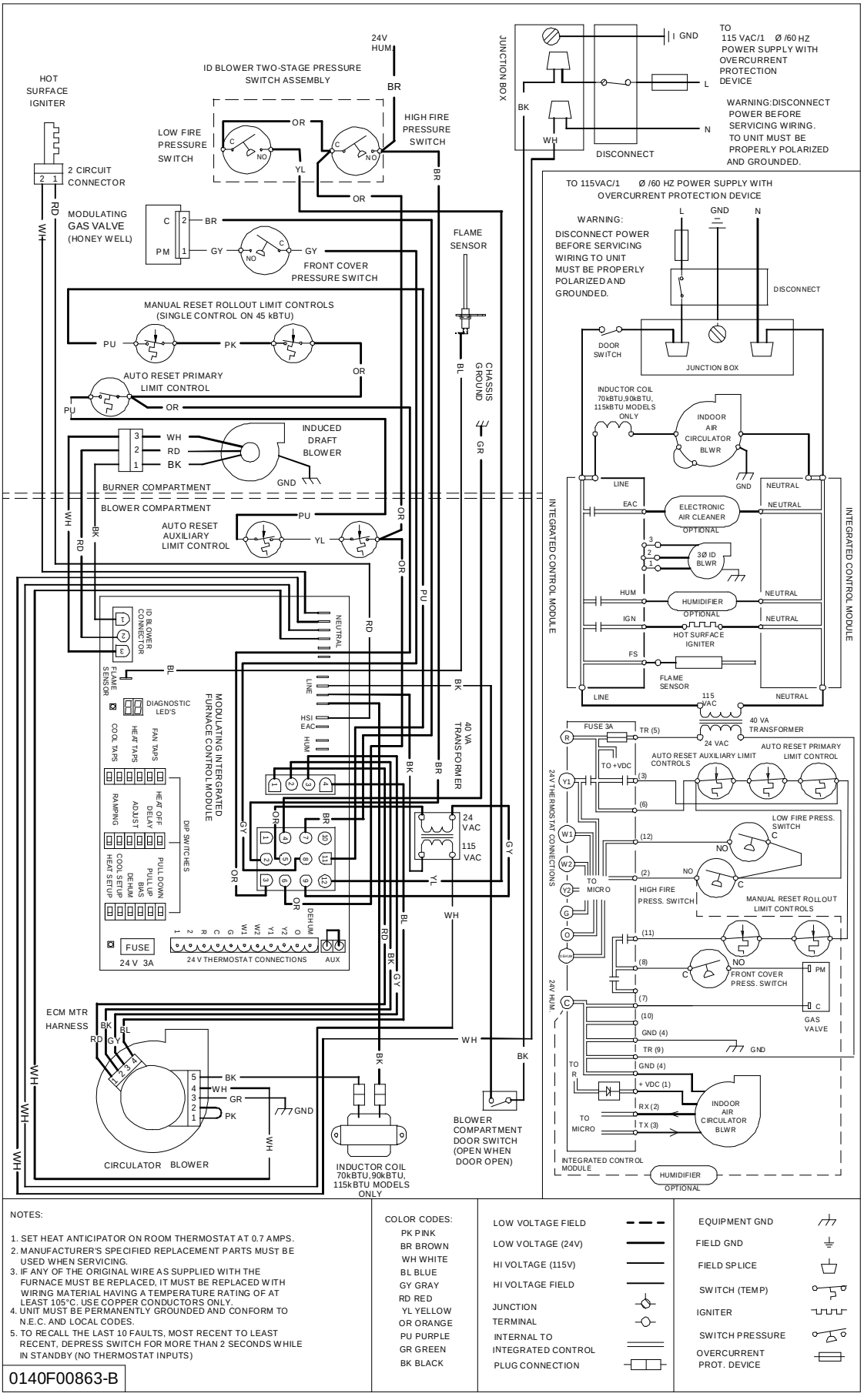
Note: Continuous fan speed is selectable on dip switches 5 & 6. Choices are 25, 50, 75, and 100 % of max CFM.

Note: The optional usage of a dehumidistat allows the furnace's circulator blower to operate at a slightly lower speed (85% of desired speed) during a combined thermostat call for cooling and dehumidistat call for dehumidification. This can be done through an independent dehumidistat or through a thermostat's DEHUM terminal (if available). This lower blower speed enhances dehumidification of the conditioned air as it passes through the AC coil. For proper function, a dehumidistat applied to this furnace must operate on 24 VAC and utilize a switch which *opens on humidity rise.*

BTU OUTPUT vs TEMPERATURE RISE CHART



WIRING DIAGRAMS *CVM96, *MVM96



HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

WARNING

NOTES:

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.7 AMPS.
2. MANUFACTURER'S SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE FURNACE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105°C. USE COPPER CONDUCTORS ONLY.
4. UNIT MUST BE PERMANENTLY GROUNDED AND CONFORM TO N.E.C. AND LOCAL CODES.
5. TO RECALL THE LAST 10 FAULTS, MOST RECENT TO LEAST RECENT, DEPRESS SWITCH FOR MORE THAN 2 SECONDS WHILE IN STANDBY (NO THERMOSTAT INPUTS)

COLOR CODES:
PK PINK
BR BROWN
WH WHITE
BL BLUE
GY GRAY
RD RED
YL YELLOW
OR ORANGE
PU PURPLE
GR GREEN
BK BLACK

LOW VOLTAGE FIELD
LOW VOLTAGE (24V)
HI VOLTAGE (115V)
HI VOLTAGE FIELD
JUNCTION
TERMINAL
INTERNAL TO INTEGRATED CONTROL
PLUG CONNECTION

EQUIPMENT GND
FIELD GND
FIELD SPLICE
SWITCH (TEMP)
IGNITER
SWITCH PRESSURE
OVERCURRENT PROT. DEVICE

0140F00863-B

Wiring is subject to change, always refer to the wiring diagram on the unit for the most up-to-date wiring.