Goodman GDVT96 Two Stage Variable Speed ECM Gas Furnace Owner's Manual

Contents

Goodman GDVT96 Two Stage Variable Speed ECM Gas Furnace

Product Usage Instructions

- **Installation**
  Follow the installation guidelines provided in the user manual. Ensure proper wiring as per the wiring diagrams.
- **Operation**
  Turn on the gas furnace using the control panel. Adjust the settings for desired temperature and fan speed.
- **Maintenance**
  Regularly clean and replace air filters to ensure efficient operation. Schedule professional maintenance checks annually.

Features

Standard Features

- Integrated communicating ComfortBridge™ Technology
- Commissioning and diagnostics via on board Bluetooth with the CoolCloud phone and tablet application
- Heavy-duty aluminized-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Two-stage gas valve provides quiet, economical heating
- Durable Silicon Nitride igniter
- Quiet two-speed induced draft blower
- Compatible with any single-stage thermostat
- Self-diagnostic control board with constant memory fault code history output to a triple 7-segment display
- Color-coded low-voltage terminals with provisions for electronic air cleaner
- Efficient and quiet variable-speed airflow system gently ramps up or down according to heating or cooling demand

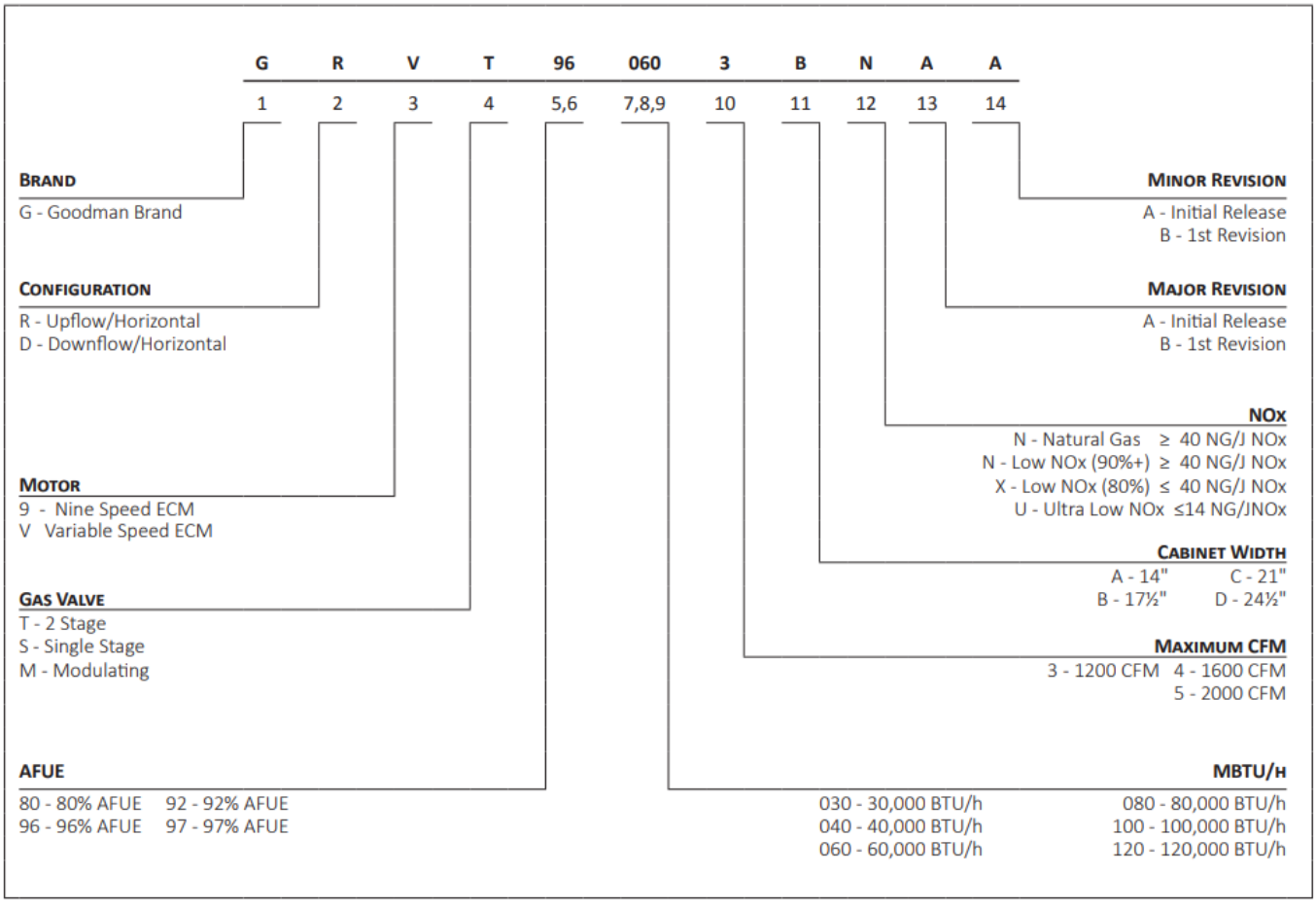
- Multiple continuous fan speed options offer quiet air circulation
- Auto-Comfort and enhanced dehumidification modes available
- All models comply with California 40 ng/J Low NOx emissions standard
- Can no longer be installed in California's South Coast
- Air Quality Management District (SCAQMD) on or after October 1, 2019.

Cabinet Features

- Designed for multi-position installation — upflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy to install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (QLeak) ≤ 2%
- Heavy-gauge steel cabinet with durable baked-enamel finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side-return with easy-cut tabs for effortless removal in bottom air-inlet applications

* Complete warranty details available from your local dealer or at www.goodmanmfg.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), 10-Year Unit Replacement Limited Warranty and 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration and some of the additional requirements are not required in Florida, California, or Québec. The duration of warranty coverage in Texas and Florida differs in some cases. Other limitations and exclusions apply; refer to complete warranty details for a full list of limitations and exclusions

Nomenclature



	GRVT96 0403BN	GRVT96 0603BN	GRVT96 0803BN	GRVT96 0 804CN	GRVT9 6 1005 CN	GRVT9 6 1005 DN	GRVT9 6 1205 DN
HEATING DATA							
High Fire Input1	40,000	60,000	80,000	80,000	100,000	100,000	120,000
High Fire Output1	38,440	57,660	76,880	76,880	96,100	96,100	115,320
Low-Fire Input1	28,000	42,000	56,000	56,000	70,000	70,000	84,000
Low-Fire Output1	26,908	40,362	53,816	53,816	67,270	67,270	80,724
AFUE2	96.1	96.1	96.1	96.1	96.1	96.1	96.1
Temperature Rise Range (°F) High/Low Fire	20-50 / 2 0-50	35-65 / 3 5-65	35-65 / 35 -65	35-65 / 35- 65	35-65 / 35-65	30-60 / 30-60	35-65 / 35-65
Vent Diameter3	2″ – 3″	2″ – 3″	2″ – 3″	2″ – 3″	2″ – 3″	2″ – 3″	2″ – 3″
No. of Burners	2	3	4	4	5	5	6
CIRCULATOR BLOWER							
Available AC @ 0.5” ESP	1.5 – 3	1.5 – 3	1.5 – 3	1.5 – 4	2 – 5	2 – 5	2 – 5
Size (D x W)	10″ x 8″	11″ x 8″	11″ x 8″	11″ x 10″	11″ x 1 0″	11″ x 1 1″	11″ x 1 1″
Horsepower @ 1075 RPM	1/2	1/2	1/2	3/4	1	1	1
Speed	VS ECM	VS ECM	VS ECM	VS ECM	VS EC M	VS EC M	VS EC M
FILTER SIZE (IN²) (QTY)	(1) 16 x 2 5 (side or b ottom)	(1) 16 x 2 5 (side or b ottom)	(1) 16 x 25 (side or b ottom)	(1) 16 x 25 (side or bot tom)	(1) 20 x 25 (bottom) or (2) 16 x 25 (side)	(1) 20 x 25 (bottom) or (2) 16 x 25 (side)	(1) 20 x 25 (bottom) or (2) 16 x 25 (side)
ELECTRICAL DATA							
Min. Circuit Ampacity 4	7.6	7.6	7.6	10.9	13.9	13.9	13.9
Max. Overcurrent Device (am ps) 5	15	15	15	15	20	20	20
SHIPPING WEIGHT (LBS)	114	117	120	141	143	153	156

1. Natural Gas BTU/h; for altitudes 0-4500′ above sea level, reduce input rating by 4% for each 1000′ above 4500′ altitude.
2. DOE AFUE based upon Isolated Combustion System (ICS)
3. Vent and combustion air diameters may vary depending upon vent length. Refer to the latest editions of the National Fuel Gas Code NFPA 54/ANSI Z223.1 (in the USA) and the Canada National Standard of Canada, CAN/CSA B149.1 and CAN/CSA B142.2 (in Canada).
4. Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be

determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

5. Maximum Overcurrent Protection Device refers to the maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

Notes

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½” FPT
- **Important**: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24” front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

GDVT96 Product Specifications

	GDVT96 0 403BN	GDVT96 0 603BN	GDVT96 0 804CN	GDVT96 1005 CN	GDVT96 1205 DN
Heating Data					
High Fire Input[1]	40,000	60,000	80,000	100,000	120,000
High Fire Output[1]	38,440	57,660	76,880	96,100	115,320
Low-Fire Input[1]	28,000	42,000	56,000	70,000	84,000
Low-Fire Output[1]	26,908	40,362	53,816	67,270	80,724
AFUE[2]	96.1	96.1	96.1	96.1	96.1
Temperature Rise Range (°F) High/Low Fire	35-65 / 25-55	20-50 / 20-50	35-65 / 35-65	35-65 / 35-65	35-65 / 35-65
Vent Diameter[3]	2″ – 3″	2″ – 3″	2″ – 3″	2″ – 3″	2″ – 3″
No. of Burners	2	3	4	5	6
Circulator Blower					
Available AC @ 0.5″ ESP	1.5 – 3	1.5 – 3	1.5 – 4	2 – 5	2 – 5
Size (D x W)	10″ x 8″	11″ x 8″	11″ x 10″	11″ x 10″	11″ x 11″
Horsepower @ 1075 RPM	1/2	1/2	3/4	1	1
No. of Speeds	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM
FILTER SIZE (IN²) (QTY)	(2) 10 x 20 or (1) 16 x 25 (top return)	(2) 10 x 20 or (1) 16 x 25 (top return)	(2) 10 x 20 or (1) 16 x 25 (top return)	(1) 14 x 20 (bottom) or (1) 20 x 25 (top return)	(1) 14 x 20 (bottom) or (1) 20 x 25 (top return)
Electrical Data					
Min. Circuit Ampacity [3]	7.6	7.6	10.9	13.9	13.9
Max. Overcurrent Device (amps) [4]	15	15	15	20	20
Shipping Weight (lbs)	116	119	143	145	158

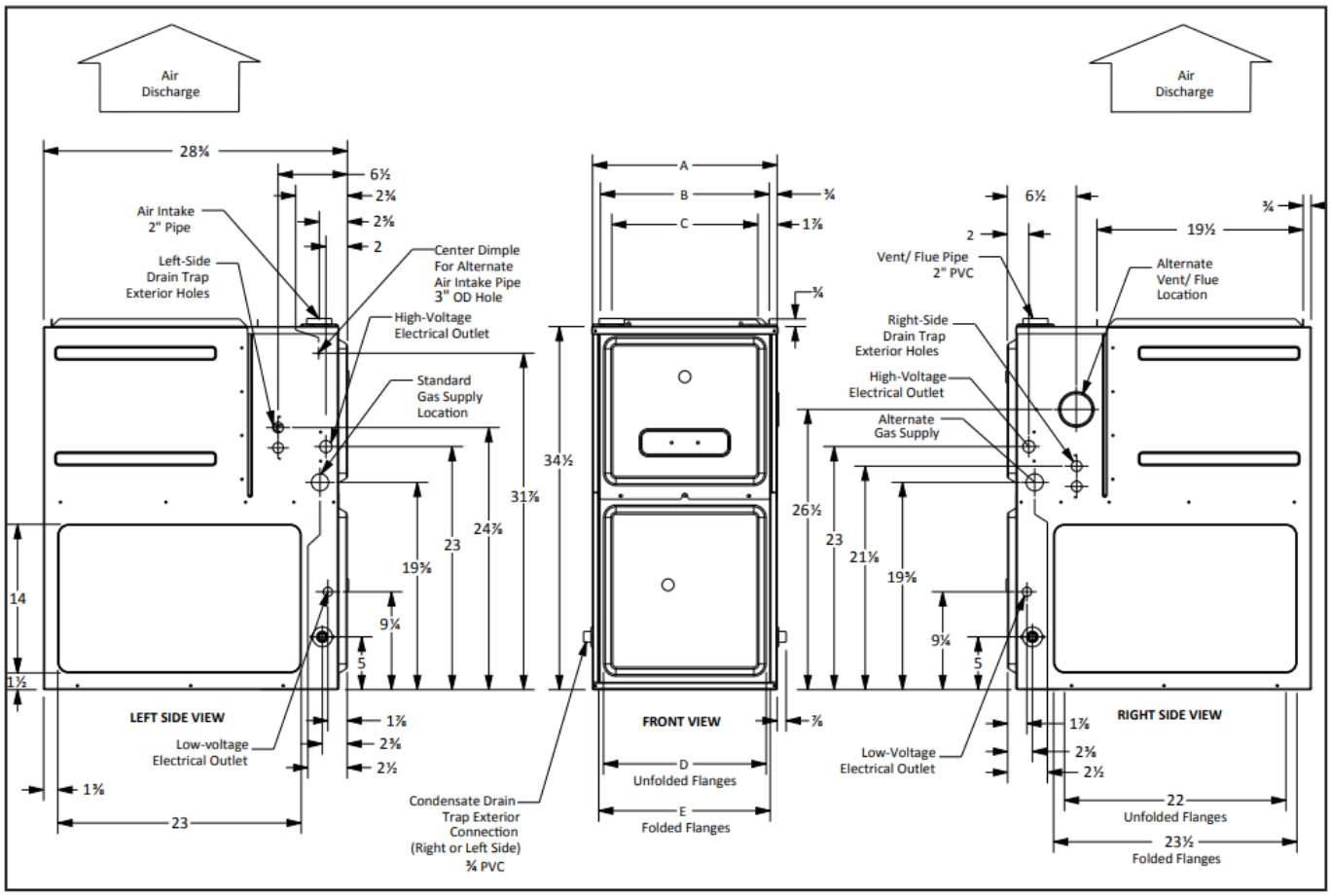
1. Natural Gas BTU/h; for altitudes 0-4500′ above sea level, reduce input rating by 4% for each 1000′ above 4500′ altitude.
2. DOE AFUE based upon Isolated Combustion System (ICS)
3. Vent and combustion air diameters may vary depending upon vent length. Refer to the latest editions of the National Fuel Gas Code NFPA 54/ANSI Z223.1 (in the USA) and the Canada
4. Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.
5. Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

Notes

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.

- Gas Service Connection ½” FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24” front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

GRVT96 Dimensions



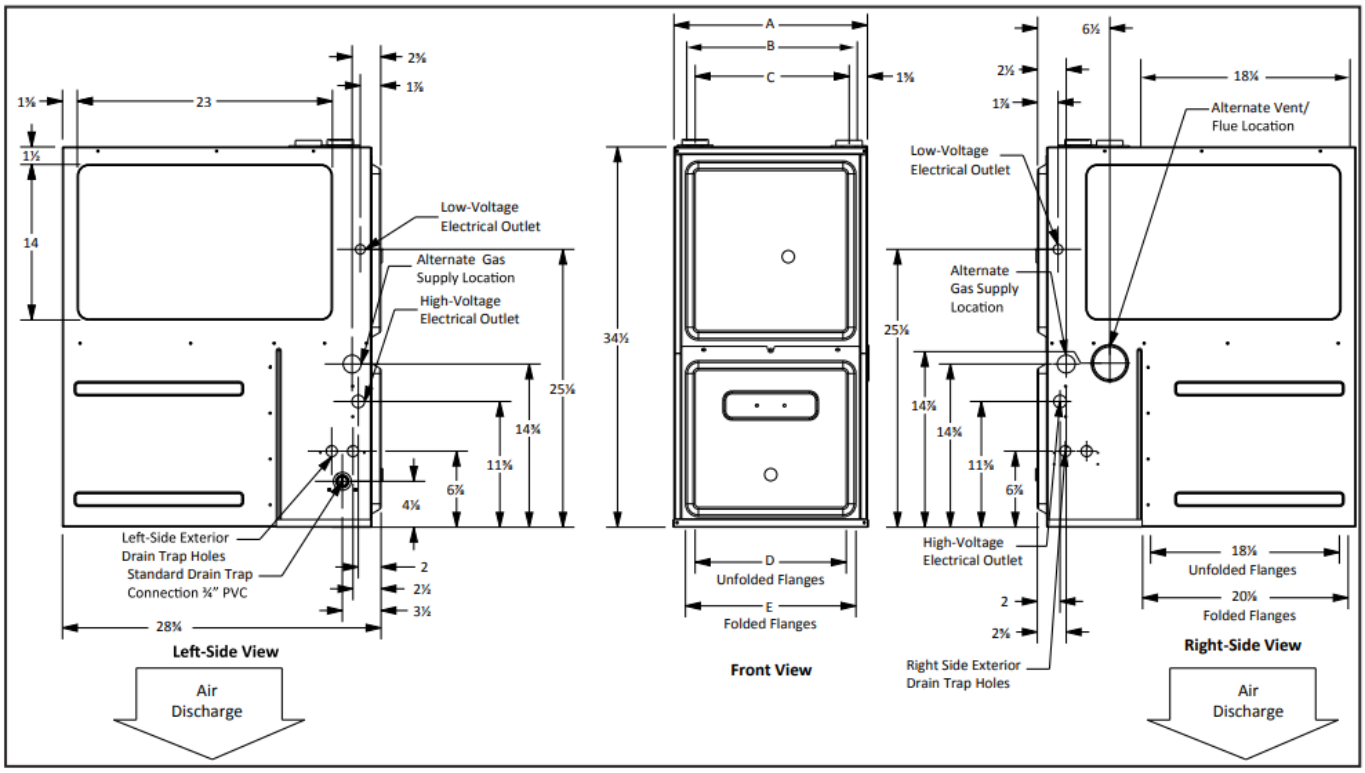
Model	W	D	H
GRVT960403BN	17½”	28⅞”	34½”
GRVT960603BN	17½”	28⅞”	34½”
GRVT960803BN	17½”	28⅞”	34½”
GRVT960804CN	21”	28⅞”	34½”
GRVT961005CN	21”	28⅞”	34½”
GRVT961005DN	24½”	28⅞”	34½”
GRVT961205DN	24½”	28⅞”	34½”

	Air Discharge			Air Return
A	**B**	**C**	**D**	**E**
17½”	16”	13⅞”	12⅛”	13⅝”
17½”	16”	13⅞”	12⅛”	13⅝”
17½”	16”	13⅞”	12⅛”	13⅝”
21”	19½”	17⅞”	16″	17½”
21”	19½”	17⅞”	16″	17½”
24½”	23″	20⅞”	19⅜”	20⅞”
24½”	23″	20⅞”	19⅜”	20⅞”

Minimum Clearances to Combustible Materials

Position	Sides	Rear	Front	Bottom	Flue	Top
Upflow	0″	0″	3″	C	0″	1″
Horizontal	6″	0″	3″	C	0″	6″

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



Model	W	D	H
GDVT960403BN	17½”	28⅞”	34½”
GDVT960603BN	17½”	28⅞”	34½”
GDVT960804CN	21”	28⅞”	34½”
GDVT961005CN	21”	28⅞”	34½”
GDVT961205DN	24½”	28⅞”	34½”

	Air Return			Air Discharge
A	B	C	D	E
17½”	14⅝”	14″	14½”	16”
17½”	14⅝”	14″	14½”	16”
21”	18⅛”	17½”	18″	19½”
21”	18⅛”	17½”	18″	19½”
24½”	21⅝”	21”	21½”	23″

Minimum Clearances to Combustible Materials

Position	Sides	Rear	Front	Bottom	Flue	Top
Downflow	0″	0″	3″	NC	0″	1″
Horizontal	6″	0″	3″	C	0″	6″

- **C** = If placed on combustible floor, the floor MUST be wood ONLY.
- **NC** = For installation on non-combustible floors only. A combustible floor sub-base must be used for installations on combustible flooring.

GRVT96_GDVT96 Airflow Data

MODEL/TEMP RISE RANGE (MID-RISE)	**GDVT960403BNA* 35-65 (50)**		**GDVT960603BNA* 20-50 (35)**		**GDVT960804CNA* 35-65 (50)**		**GDVT961005CNA* 35-65 (50)**		**GDVT961205DNA* 35-65 (50)**		**GRVT960403BNA* 20-50 (35)**	
	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE
Recommended CFM for High Heat/ Expected Temperature Rise	710	50	1400	38	1425	50	1770	50	2150	50	1010	35
Lowest Recommended CFM for High Heat/Expected Temperature Rise	548	65	1072	50	1095	65	1360	65	1650	65	710	50

MODEL/TEMP RISE RANGE (MID-RISE)	**GRVT960603BNA* 35-65 (50)**		**GRVT960803BNA* 35-65 (50)**		**GRVT960804CNA* 35-65 (50)**		**GRVT961005CNA* 35-65 (50)**		**GRVT961005DNA* 30-60 (45)**		**GRVT961205DNA* 35-65 (50)**	
	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE
Recommended CFM for High Heat/ Expected Temperature Rise	1072	50	1400	50	1425	50	1770	50	1980	45	2150	50
Lowest Recommended CFM for High Heat/Expected Temperature Rise	820	65	1090	65	1095	65	1360	65	1480	60	1650	65

NOTE: Low Heat CFM = High Heat CFM X .7. Low Heat Temperature Rise Is Expected to Equal High Heat Temparatue Rise ± 5%

GRVT960403BNA*, GRVT960603BNA* GRVT960803BNA*, GDVT960403BNA* GDVT960603BNA* COOLING SPEED (@ 0.1” – 0.8” w.c. ESP)

TONS	**HIGH-STAGE CFM**	**LOW-STAGE CFM**
1.5	600	420
2	800	560
2.5	1,000	700
3	1,200	840
MAX	1,400	

GRVT960804CNA* GDVT960804CNA* COOLING SPEED (@ 0.1” – 0.8” w.c. ESP)

TONS	HIGH-STAGE CFM	LOW-STAGE CFM
2	800	560
2.5	1,000	700
3	1,200	840
4	1,600	1,120
MAX	1,760	

GRVT961005CNA*, GRVT961005DNA* GRVT961205DNA* COOLING SPEED (@ 0.1” – 0.8” w.c. ESP)

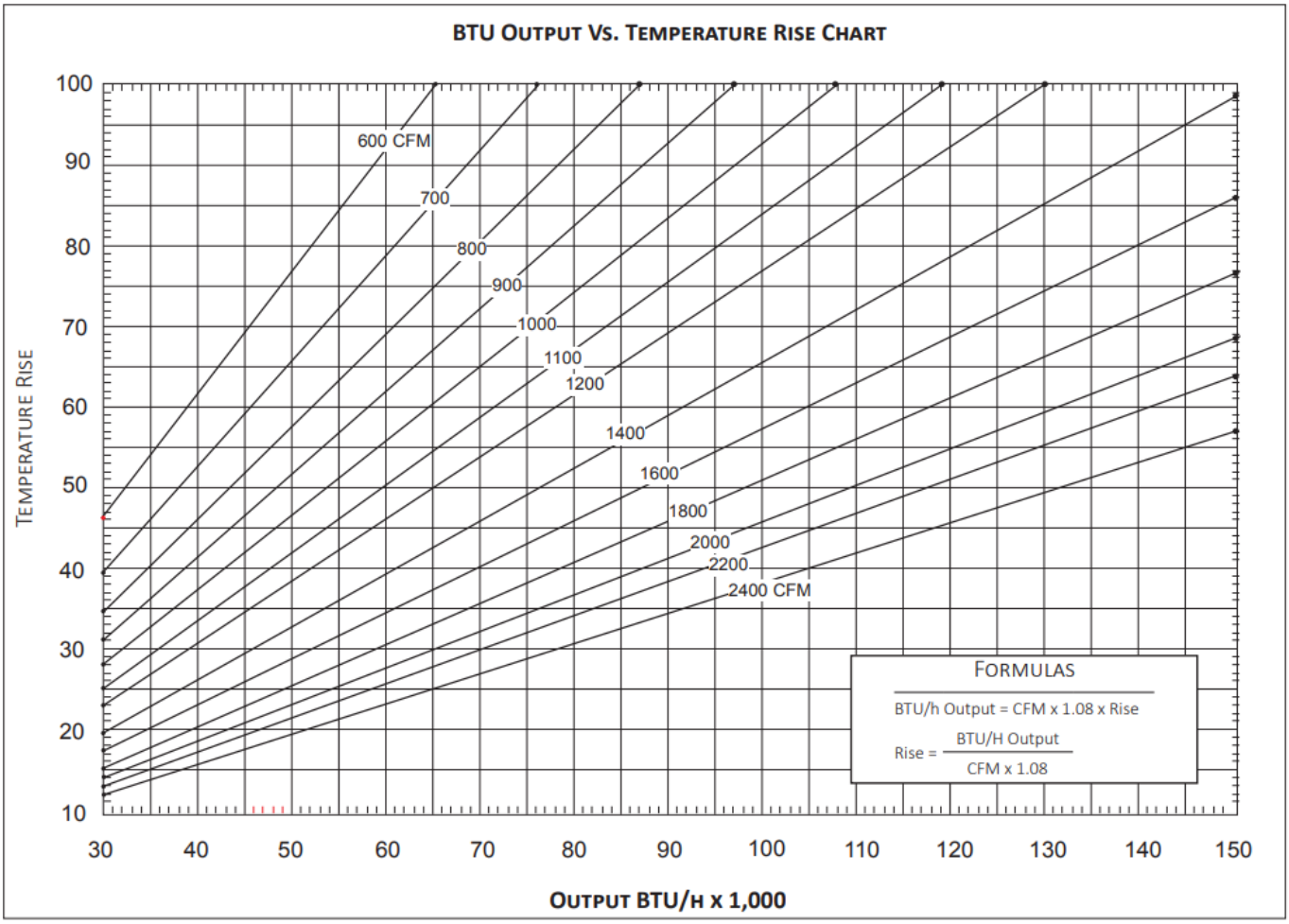
TONS	HIGH-STAGE CFM	LOW-STAGE CFM
2	800	560
3	1,200	840
4	1,600	1,120
5	2,000	1,400
MAX	2,200	

GDVT961005CNA* GDVT961205DNA* COOLING SPEED (@ 0.1” – 0.8” w.c. ESP)

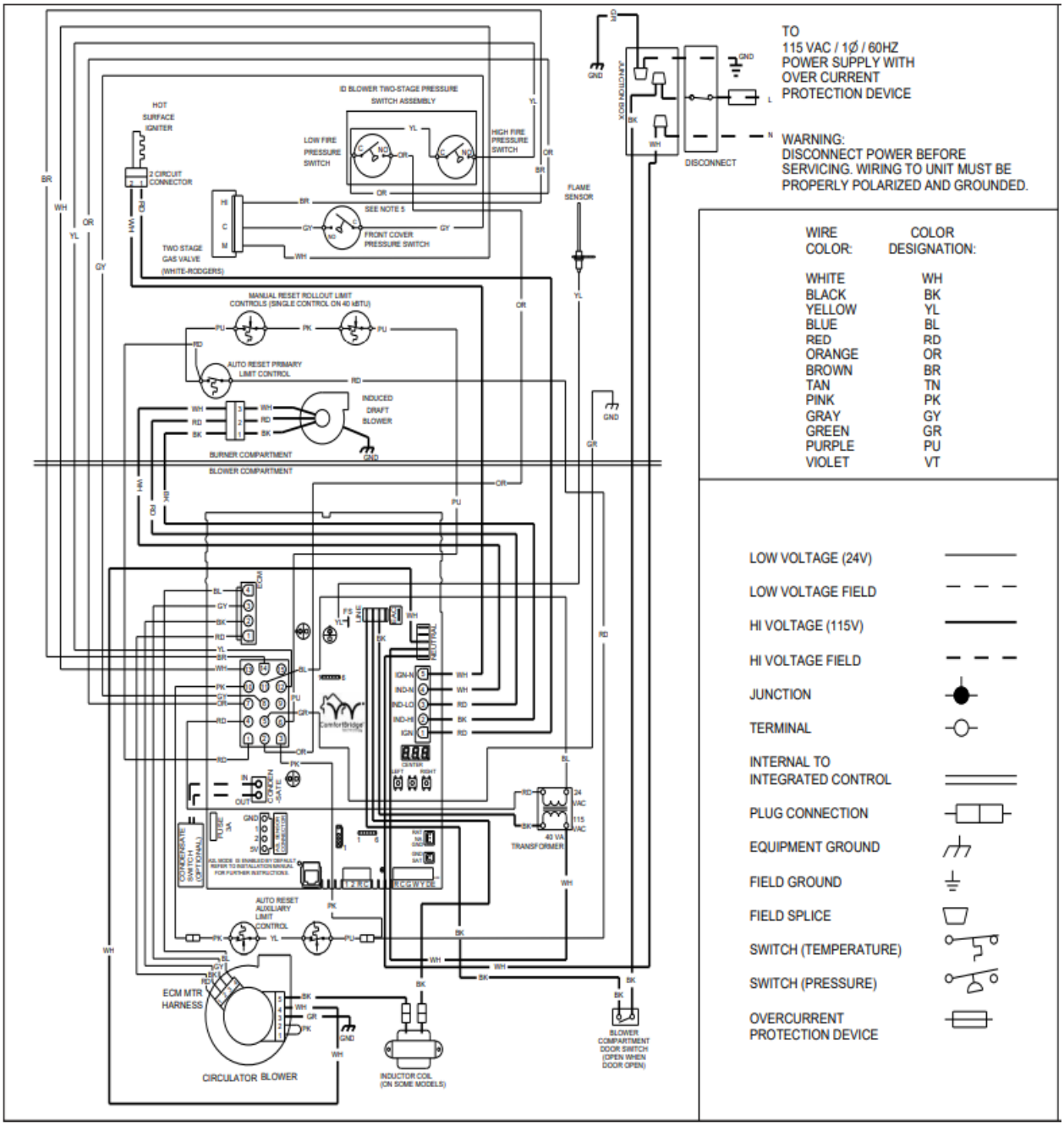
TONS	HIGH-STAGE CFM	LOW-STAGE CFM
2	800	560
3	1,200	840
4	1,600	1,120
5	2,000	1,400
MAX	2,200	

- 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

Temperature Rise Range Chart



Wiring Diagram



MENU NAVIGATION AND SELECTION INSTRUCTIONS USING PHONE APPLICATION OVER BLUETOOTH NETWORK:

1. CONNECT TO THE FURNACE (INSTRUCTIONS PROVIDED BY PHONE DURING THE CONNECTION PROCESS).
2. SELECT DESIRED SETTINGS MENU
3. SELECT ITEM THAT REQUIRES ADJUSTMENT AND MAKE NECESSARY SELECTION
4. SUBMIT CHANGES

USING ON-BOARD PUSH BUTTONS:

1. USE THE RIGHT AND LEFT BUTTONS TO SCROLL BETWEEN MENUS
2. USE THE CENTER BUTTON TO SELECT DESIRED MENU WHEN MENU CODE IS SHOWN ON 7-SEGMENT DISPLAYS
3. USE THE LEFT AND RIGHT BUTTONS TO SCROLL THROUGH OPTIONS WITHIN THE DESIRED MENU

(THE DISPLAY WILL FLASH WHILE SCROLLING THROUGH OPTIONS FOR SELECTION)

4. USE THE CENTER BUTTON TO SELECT THE DISPLAYED OPTION (WHEN SELECTED THE DISPLAY WILL STOP FLASHING)
5. USE THE CENTER BUTTON TO FINALIZE SELECTION AND RETURN

TO THE MAIN MENU

AIRFLOW SETTINGS INSTRUCTIONS

1. FOR NON-COMMUNICATING INSTALLATIONS, SELECT THE TYPE OF UNIT INSTALLED IN THE ODS MENU (1AC = SINGLE-STAGE AIR CONDITIONER,
    1. 1HP = SINGLE-STAGE HEAT PUMP, 2AC = 2 STAGE AIR CONDITIONER,
    2. 2HP = 2 STAGE HEAT PUMP) DEFAULT = OFF (NO OUTDOOR UNIT).
2. THE TONNAGE MENU MUST BE USED TO SELECT COOLING/HEAT PUMP AIRFLOW (NON-COMMUNICATING INSTALLATION). TONNAGE SELECTION OPTIONS AND CORRESPONDING AIRFLOW CFM CAN BE FOUND TO THE RIGHT. [AIRFLOW = TONNAGE SELECTION X 400] DEFAULT SELECTION IS 6.0 TONS.
3. [OPTIONAL] USE THE COOLING TRIM MENU (CTF) TO ADJUST THE COOLING AIRFLOW FROM -10% TO +10% (2% INCREMENTS). THIS APPLIES FOR 2 STAGE COMMUNICATING OUTDOOR UNITS AND SINGLE OR 2 STAGE NON-COMMUNICATING OUTDOOR UNITS.
4. [OPTIONAL] USE THE HEATING TRIM MENU (HTF) TO ADJUST THE HEAT PUMP AIRFLOW FROM -10% TO +10% (2% INCREMENTS). THIS APPLIES FOR 2 STAGE COMMUNICATING OUTDOOR UNITS AND SINGLE OR 2 STAGE NON-COMMUNICATING OUTDOOR UNITS.
5. [OPTIONAL] USE THE CONSTANT FAN MENU (FSD) TO SELECT THE PERCENTAGE OF MAXIMUM AIRFLOW FOR CONTINUOUS FAN
6. [OPTIONAL] USE THE COOLING AIRFLOW PROFILE MENU (CAP) TO SELECT BETWEEN 5 COOLING AIRFLOW PROFILES. PROFILE OPTIONS 1-4 ARE LISTED ABOVE (OPTION 5 IS ADJUSTABLE). SEE INSTALLATION MANUAL FOR FURTHER DETAILS

NOTES:

1. MANUFACTURER'S SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING
2. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE FURNACE MUST BE REPLACED, AT LEAST 105%DG C. USE COPPER CONDUCTORS ONLY.
3. UNIT MUST BE PERMANENTLY GROUNDED AND CONFORM TO N.E.C. AND LOCAL CODES.
4. WHEN THIS FURNACE IS PAIRED WITH NON R-32 REFRIGERANT SYSTEMS, DEFAULT SETTINGS WILL NEED TO BE CHANGED. REFER TO INSTALLATION MANUAL FOR FURTHER INSTRUCTIONS

TONNAGE MENU				
TONNAGE SELECTION	AIR FLOW		TONNAGE SELECTION	AIR FLOW
1.0	400		3.6	1440
1.1	440		3.7	1480
1.2	480		3.8	1520
1.3	520		3.9	1560
1.4	560		4.0	1600
1.5	600		4.1	1640
1.6	640		4.2	1680
1.7	680		4.3	1720
1.8	720		4.4	1760
1.9	760		4.5	1800
2.0	800		4.6	1840
2.1	840		4.7	1880
2.2	880		4.8	1920
2.3	920		4.9	1960
2.4	960		5.0	2000
2.5	1000		5.1	2040
2.6	1040		5.2	2080
2.7	1080		5.3	2120
2.8	1120		5.4	2160
2.9	1160		5.5	2200
3.0	1200		5.6	2240
3.1	1240		5.7	2280
3.2	1280		5.8	2320
3.3	1320		5.9	2360
3.4	1360		6.0	2400
3.5	1400			

MAXIMUM AIRFLOW OUTPUT

- 3 TON 60K BTUH = 1,400 CFM
- 3 TON 80K BTUH = 1,650 CFM
- 4 TON MODELS = 1,760 CFM

- 5 TON MODELS = 2,200 CFM

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

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.

Accessories – GRVT96 / GDVT96

Model	Description	GRVT96 0403 BN	GRVT96 0603 BN	GRVT96 0803 BN	GRVT96 0804 CN	GRVT96 1005 CN	GRVT96 1005 DN	GRVT96 1205 DN
72950	Concentric Vent Kit (2″)	√	√	√	√	√	√	—
72951	Concentric Vent Kit (3″)	√	√	√	√	√	√	√
RF000142	Drain Kit Horizontal Left Vertical Flue	√	√	√	√	√	√	√
EFR02	External Filter Rack with 16″ x25″ Permanent Filter	√	√	√	√	√	√	√
0170K00000S	Flush Mount Vent Kit – 3″ or 2″	√	√	√	√	√	√	√
0170K00001S	Flush Mount Vent Kit – 2″	√	√	√	√	√	√	—
HASFK	High-Altitude Natural Gas Kit	HASFK-1	HASFK-1	HASFK-1	HASFK-2	HASFK-3	TBD	HASFK-2
HASFK	High-Altitude LP Gas Kit	HASFK-1	HASFK-1	HASFK-1	HASFK-2	HASFK-2	TBD	HASFK-2
0270F05404	Horizontal Drain Tubing Kit	√	√	√	√	√	√	√
LPM-34	LP Conversion Kits	√	√	√	√	√	√	√

Model	Description	ADVT96 0403BN	ADVT96 0603BN	ADVT96 0804CN	ADVT96 1005CN	ADVT96 1205DN
72950	Concentric Vent Kit (2″)	√	√	√	√	—
72951	Concentric Vent Kit (3″)	√	√	√	√	√
CFSB17	Downflow Sub-Base 17.5″	√	√	—	—	—
CFSB21	Downflow Sub-Base 21″	—	—	√	√	—
CFSB24	Downflow Sub-Base 24″	—	—	—	—	√
RF000142	Drain Kit Horizontal Left Vertical Flue	√	√	√	√	√
0170K00000S	Flush Mount Vent Kit – 3″ or 2″	√	√	√	√	√
0170K00001S	Flush Mount Vent Kit – 2″	√	√	√	√	—
HASFK	High-Altitude Natural Gas Kit	HASFK-1	HASFK-1	HASFK-2	HASFK-3	HASFK-3
HASFK	High-Altitude LP Gas Kit	HASFK-1	HASFK-1	HASFK-2	HASFK-2	HASFK-3
0270F05405	Horizontal Drain Tubing Kit	√	√	√	√	√
LPM-34	LP Conversion Kits	√	√	√	√	√

Notes
√ Indicates available for this model

Our continuing commitment to quality products may mean a change in specifications without notice.

• Houston, Texas • Printed in the USA.

www.goodmanmfg.com

FAQ

Q: How often should I replace the air filters?
A: Air filters should be checked monthly and replaced every 1-3 months depending on usage.

Q: What should I do if I encounter a fault code on the display?
A: Refer to the user manual to interpret the fault code. If needed, contact customer support for further assistance.

Documents / Resources

	Goodman GDVT96 Two Stage Variable Speed ECM Gas Furnace [pdf] Owner's Manual GDVT961005CN, GRVT96 0403BN, GRVT96 0603BN, GRVT96 0803BN, GRVT96 0804CN, GRVT96 1005CN, GRVT96 1005DN, GRVT96 1205DN, GDVT96 Two Stage Variable Speed ECM Gas Furnace, Two Stage Variable Speed ECM Gas Furnace, Variable Speed ECM Gas Furnace, Speed ECM Gas Furnace, Gas Furnace

References

- Air Conditioning and Heating Systems| HVAC | Goodman
- User Manual