



GE APPLIANCES

Product Specifications

NS21H*5
VARIABLE SPEED SPLIT
SYSTEM HEAT PUMP - R454B



**READ CAREFULLY.
KEEP THESE INSTRUCTIONS.**

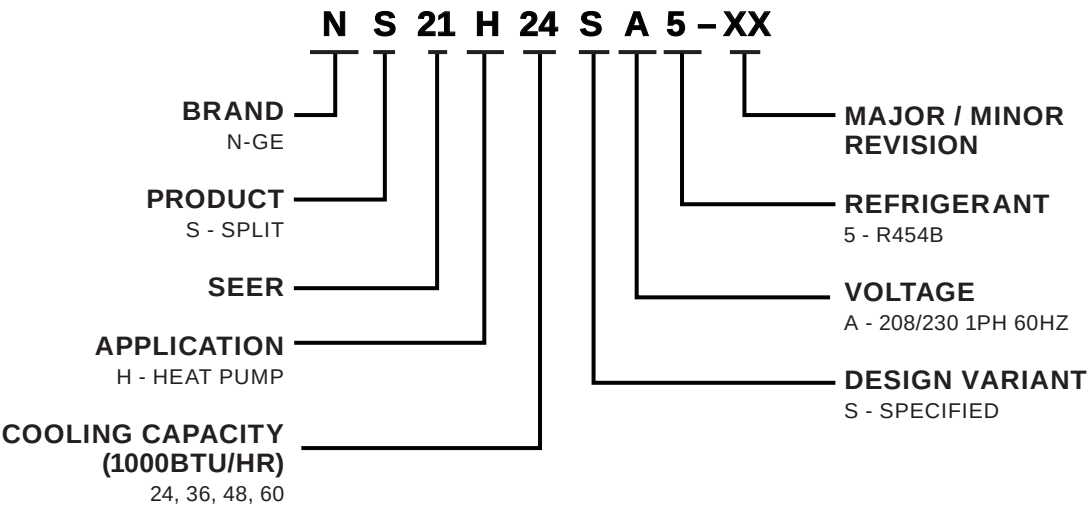
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NS21H*5

PRODUCT SPECIFICATIONS

MODEL NUMBER GUIDE



APPROVALS

- AHRI Standard 210-240-2023 certified
- AHRI Certified system match-ups and expanded ratings, visit **AHRIDirectory.org**

NOTE - AHRI certified ratings are based on the following control conditions:

Any conventional non-communicating thermostat matched with a conventional “non-communicating” indoor unit.

- ENERGY STAR® Certified
- Sound rated to AHRI Standard 270-2008 test conditions
- ISO 9001 Registered Manufacturing Quality System

APPLICATIONS

- 2 to 5 tons
- Sound levels as low as 62 dBA
- Cold climate heating operation down to –15°F
- Single phase power supply
- Shipped completely factory assembled
- Applicable to indoor air handlers or gas furnaces with indoor add-on coils

NOTE - When heat pumps are used with gas furnaces, a dual-fuel compatible thermostat or zone control system with dual-fuel capabilities must be used (order separately)

REFRIGERANT SYSTEM

R-454B Refrigerant

- Low GWP (Global Warming Potential)
- Zero ODP (Ozone Depletion Potential)
- Low Toxicity/Lower Flammability - A2L
- Unit is factory pre-charged

NOTE - Total system refrigerant charge is dependent on outdoor unit size, indoor unit size and refrigerant line length.

NOTE - Refer to the unit-mounted charging sticker to determine correct amount of charge required.

Outdoor Coil Fan

- Direct drive fan
- ECM motor
- Vertical air discharge
- Totally enclosed fan motor
- Ball bearings
- Inherently protected
- PVC (polyvinyl chloride) coated steel fan guard

Corrosion Resistant Coil

- Enhanced aluminum alloy tube/enhanced fin coil
- Superior corrosion resistance
- Ripple-edged aluminum fins
- Aluminum tube construction
- Lanced fins for maximum fin surface exposure
- Entire coil is accessible for cleaning

Electronic Check/Expansion Valve (EEV) - Outdoor Unit

- Designed and sized for heat pump systems
- Precise refrigerant flow
- Measures pressure and temperature for precise superheat control

Discharge Temperature Switch

- Shuts off unit if operating conditions cause the compressor discharge line temperature to rise above setpoint
- Protects compressor from excessive pressure / temperature
- Automatic reset when temperature drops below setpoint

High-Capacity Line Drier

- Protects the system from high pressure conditions
- Automatic reset

REFRIGERANT SYSTEM (CONT)

Low Pressure Transducer

- Shuts off unit if suction pressure falls below setting
- Provides loss of charge and freeze-up protection
- Automatic reset

High Pressure Suction Transducer

- Factory installed in the suction line
- Drier traps moisture or dirt that could contaminate the system.
- 100% molecular-sieve, bead type, drier

Four-Way Reversing Valve

- Rapid changeover of refrigerant flow direction from cooling to heating and vice versa
- Operates on pressure differential between outdoor unit and indoor coil

OPTIONAL REFRIGERANT SYSTEM ACCESSORIES

Check/Expansion Valve Kits

- Field installed on indoor units (if required)
- See TXV Usage table
- Chatleff style fitting

Freezestat

- Senses suction line temperature
- Cycles compressor off when suction line temperature falls below freezestat setpoint
- Opens at 29°F and closes at 58°F
- Installs on or near the discharge line of the evaporator or on the suction line

INDOOR REFRIGERANT DETECTION SYSTEM (RDS)

- Complies with **UL 60335-2-40 approved standard**
- Required for all systems using **R-454B** refrigerant
- Factory or field installed on all indoor units
- Consists of a **RDS** refrigerant detection sensor and a mitigation control in the indoor unit
- Ensures safe operation for systems equipped with **R-454B** refrigerant
- Indoor sensor will detect any **R-454B** refrigerant
- If **R-454B** refrigerant is detected, the refrigerant detection system will stop compressor operation and operate the blower to reduce concentrations in the conditioned space
- Once safe levels are reached the HVAC system will resume normal operation
- Refer to indoor unit Product Specifications documents for additional details

COMPRESSOR

Variable Capacity Compressor

- High volumetric efficiency
- Uniform suction flow
- Constant discharge flow
- Quiet operation
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Compressor is installed in the unit on resilient rubber mounts for vibration free operation

Compressor Crankcase Heater

- Protects against refrigerant migration that can occur during low ambient operation
- Factory Installed

Compressor Sound Dampening System

- Polyethylene compressor cover
- 2 inch thick batt fiberglass insulation
- All open edges are sealed with a one-inch wide hook and loop fastening tape

CONTROLS

DC Inverter Control

- Converts AC line voltage into filtered variable DC voltage
- Provides continuous compressor operation, while adjusting the capacity according to indoor temperature
- Adjusts compressor output in increments as small as 1%
- The accurate sensing of the cooling or heating load prevents frequent changes in capacity and ensures efficient, economical operation
- Power Factor Correction (PFC) circuit monitors the DC bus for high, low and abnormal voltage conditions to protect the compressor
- Two LEDs (red and green) indicate inverter operating status and aid in troubleshooting
- Noise filter reduces unwanted electromagnetic interference (EMI)
- The inverter reactor (mounted separately) adds inductance to the line between the inverter and the compressor to limit current rise and protect the compressor

Control Features

- Connections for connecting a conventional heating/cooling thermostat are provided on the control
 - Control also features:
 - **Seven-Segment Display** - Shows information about outdoor unit type and capacity and also displays alerts for common fault conditions (electrical and mechanical)
 - **Low Voltage Protection** - Prevents compressor operation when voltage is not within the specified range
 - High and low pressure switch monitoring with provisions for lockout
 - Five-Strike lockout protection protects compressor
 - Liquid line temperature and sensor monitoring
 - EEPROM storage of all local configurations
 - Non-volatile memory storage of 100 alarm codes with display of last 10 codes for troubleshooting
 - Built-in low-ambient control
- NOTE** - Two RAST connectors for a conventional heating/cooling thermostat are also provided for connecting to the control. A two-stage or singlestage thermostat can be used.

Low Ambient Cooling Operation

- Unit can operate down to 0°F outdoor air temperature in the cooling mode
- NOTE** - A freezestat is recommended for extra protection during low ambient cooling operation.

Cold Climate Heating Operation

- Unit can operate down to -15°F in the heating mode

Outdoor Air Temperature Sensor

- The NS21H Heat Pump can be used with a conventional non-communicating thermostat matched with a “non-communicating” indoor unit.

Thermostat	Model No.	Indoor Unit Type
Non-Communicating	Conventional thermostat	Non-Communicating

CABINET

- Heavy gauge steel cabinet
- Composite unit base and top resists corrosion
- Pre-painted powder paint finish for all metal surfaces
- Control box conveniently located with all controls factory wired
- Corner patch plate allows compressor access
- Drainage holes provided in base section for moisture removal
- Composite base raises the unit off of the mounting surface, away from damaging moisture

Louvered Steel Coil Protection

- Heavy gauge steel louvered panels provides complete coil protection
- Lift-off panels are easily removed to allow easy cleaning and servicing of coils

Refrigerant Line Connections, Electrical Inlets, Service Valves

- Sweat connection vapor and liquid lines
- Located on corner of unit cabinet
- Vapor valve can be fully shut off, while liquid valve may be front seated to manage refrigerant charge while servicing system
- Refrigerant line connections and field wiring inlets are located in one central area of cabinet for easy access
- See dimension drawing

Braze-Free/Press Fitting Flexibility

- Units can accommodate braze-free or press fittings for installation versatility

OPTIONAL CABINET ACCESSORIES**Snow Guards**

- For use in locations where the possibility of heavy snow or freezing rain accumulation may occur
- Custom injection molded snow guard deflects snow and ice away from the outdoor fan and prevents build-up on the fan guard

Stand-Off Guard-Edge Raiser Kit

- High density polyethylene feet raise unit off of mounting surface
- Available in 3 in. (76 mm) and 6 in. (152 mm) heights
- Four feet are furnished per accessory kit

SPECIFICATIONS					
Size		024	036	048	060
Nominal Tonnage		2	3	4	5
Sound Rating Number	dBA	63-68	62-72	63-75	63-78
Connections (Sweat)	Liquid line (OD) - in.	3/8			
	Vapor line (OD) - in.	3/4	7/8		1-1/8
Compressor Type		Variable Rotary			
Refrigerant Type	¹ R-454B charge furnished @ 15 FT	9 lbs. 3 oz.	9 lbs. 4 oz.	10 lbs. 6 oz.	13 lbs. 7 oz.
	¹ R-454B charge furnished @ 30 FT	9 lbs. 12 oz.	9 lbs. 13 oz.	10 lbs. 15 oz.	14 lbs. 0 oz.
Indoor Unit Expansion Valve (TXV)		26Z70		26Z71	26Z72
Outdoor Coil	Net face area - ft. ²	Outer coil	30.5		26.1
		Inner coil	---	---	25.4
	Tube diameter - in.		5/16		
	Rows		1		2
	Fins - in		22		
Outdoor Fan	HP		1/3		
	Diameter - in.		28		
	Blades		2		
	Cfm - minimum speed		1216		2532
	maximum speed		5011		5450
	Rpm - minimum speed		206		415
	maximum speed		855		945
	Watts - minimum speed		10		40
	maximum speed		236		282
Shipping Data - lbs.		263		284	318
ELECTRICAL DATA					
Line voltage data (Volts-Phase-Hz)		208/230-1-60			
² Maximum overcurrent protection (MOCP) amps (unit)		20	30	45	50
³ Minimum circuit ampacity (MCA) (unit)		15.0	20.1	26.9	32.5
Compressor	Input amps	9.9	14.0	19.5	24.0
Fan Motor	Full load amps	2.6			
OPTIONAL ACCESSORIES - ORDER SEPARATELY					
Freezestat - 3/8 in	93G35	•	•	•	•
*Snow Guard - 35-3/8 x 35-3/8 in. (893x897mm)	27G70	•	•	•	•
Stand-Off Guard-Edge Raiser Kit	27X34	•	•	•	•
	27X35	•	•	•	•

NOTE - Extremes of operating range are plus 10% and minus 5% of line voltage.

¹ Refrigerant charge is sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the Installation Instructions for information about line set length and additional refrigerant charge required.

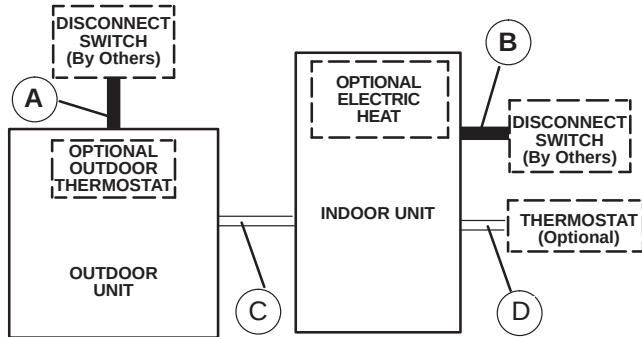
² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

⁴ Adds 12 - 1/2 inches (318 mm) to unit height.

EXPANDED SOUND DATA													
SIZE	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts Center Frequency - HZ							¹ Sound Rating Number (dBA)	² Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
024 min	51	59.5	52.5	52	53.5	49	48	63	56	51	45	42	31
024 max	52.5	60.5	64	58.5	59.5	60.5	54	68	61	56	50	47	36
036 min	50.5	59.5	52.5	51	53.5	49.5	49	62	55	50	44	41	30
036 max	54.5	62.5	64.5	66.5	63.5	65	56	72	65	60	54	51	40
048 min	53	56.5	58.5	54.5	53	46	38.5	63	56	51	45	42	31
048 max	57.5	66	71	67	65.5	66.5	57	75	68	63	57	54	43
060 min	51.5	57.5	59	53.5	53	47	46.5	63	56	51	45	42	31
060 max	60	72.5	72	68.5	70.5	66	57	78	71	66	60	57	46
NOTE - the octave sound power data does not include tonal correction. ¹ Tested according to AHRI Standard 270-2008 test conditions. ² Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.													

FIELD WIRING



A - Two Wire Power

B - Two or Three Wire Power (size to heater capacity)

C - Conventional Thermostat:

- Maximum of Eight Wire Low Voltage, 18AWG
- Maximum of Ten Wire Low Voltage, 18AWG with Optional Outdoor Thermostat

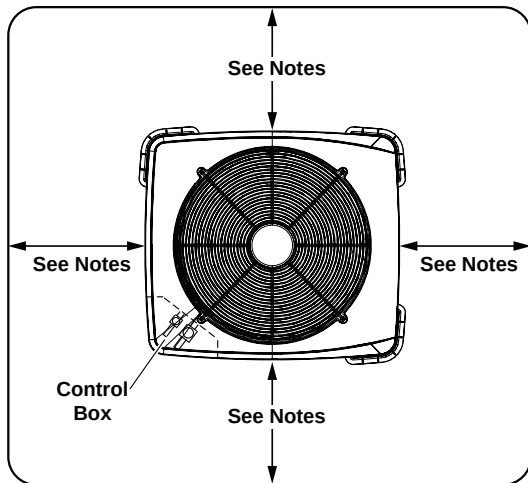
D - Conventional Thermostat:

- Maximum of Twelve Wire Low Voltage, 18AWG
- Maximum of Fourteen Wire Low Voltage, 18AWG with Optional Outdoor Thermostat

NOTE - All wiring must conform to NEC or CEC and local electrical codes.

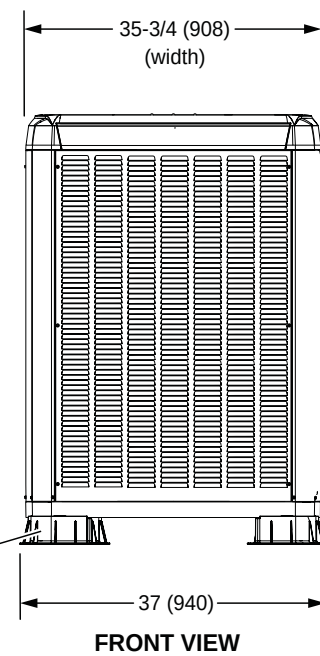
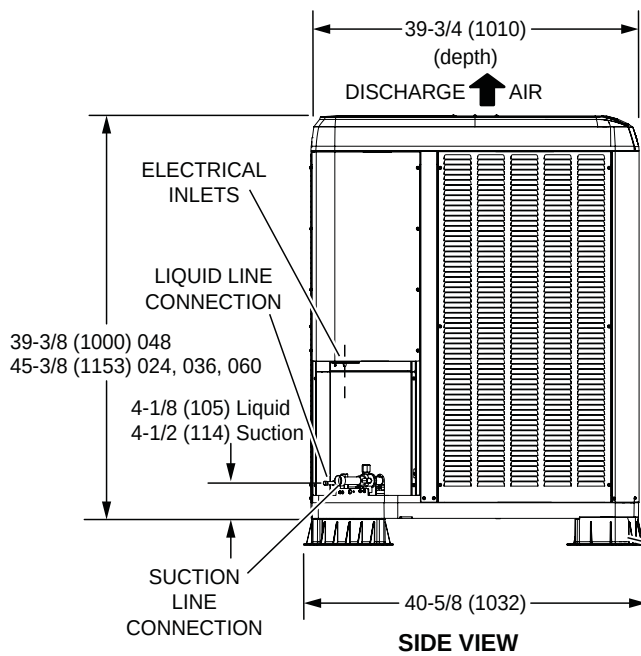
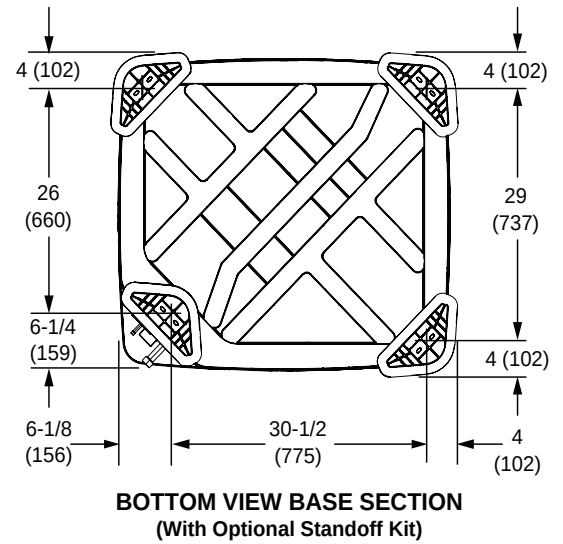
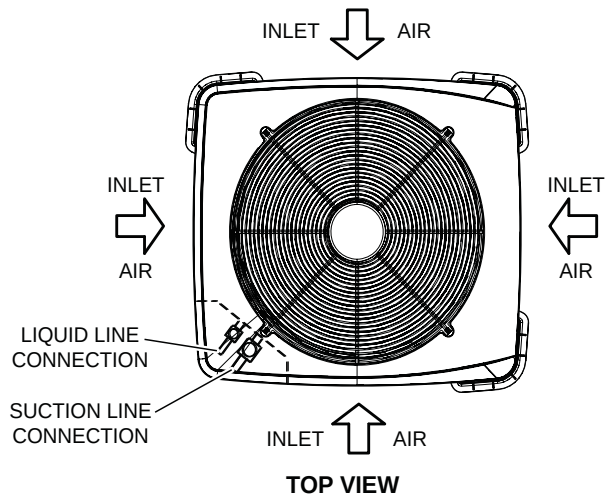
NOTE - Field wiring is not furnished.

INSTALLATION CLEARANCES

**NOTES:**

- Service Clearance – 30 in. (762 mm) on one of the sides adjacent to the Control Box.
- One of other three sides must be 36 in. (914 mm).
- One of the two remaining sides may be 12 in. (305 mm).
- The remaining side may be 6 in. (152 mm).
- 48 in. (1219 mm) clearance required on top of unit
- 24 in. (610 mm) required between two units

DIMENSIONS - UNIT



¹ Adds 3 in. (76 mm) or 6 in. (152 mm) to unit height

TXV USAGE

All **GE Appliances** coils and air handlers are shipped with a factory installed TXV. In most cases, no substitution is needed.

If a different size TXV is required, it will be listed in the **TXV SUBSTITUTION** table by size. The correct TXV must be ordered separately and field installed.

Size	Order No.
024	26Z70
036	26Z70
048	26Z71
060	26Z72

AHRI STANDARD 210-240-2023

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat. Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

Units which do not have an indoor air-circulating blower furnished as part of the model, i.e., split system with indoor coil only, is established by subtracting from the total cooling capacity 1250 Btu/h per 1,000 cfm, and by adding the same amount to the heating capacity.

Total power input for both heating and cooling is increased by 365 W per 1,000 cfm of indoor air circulated.

TXV SUBSTITUTION - R-454B

A general guide for replacing the factory installed R-454B TXV if the indoor unit (coil/air handler) is larger or smaller than the outdoor unit.

Outdoor Unit		Indoor Unit		Indoor TXV Furnished	Indoor TXV Replacement
Size	Tons	Size	Tons		
024	2	42	3.5	26Z71	26Z70
		48	4		
		49	4		
		50/60	4/5		
		51/61	4/5		
		60	5	26Z72	
036	3	42	3.5	26Z71	26Z70
		48	4		
		49	4		
		50/60	4/5		
		51/61	4/5		
		60	5	26Z72	
048	4	30/36	2.5/3	26Z70	26Z71
		36	3		26Z72
		60	5	26Z72	
060	5	50/60	4/5	26Z71	26Z72
		51/61	4/5		

TXV Ranges:

26Z70 - 2 to 3 ton systems - Use on 3 ton (036) and lower systems.

26Z71 - 4 ton systems - Use on 4 ton (048).

26Z72 - 5 ton systems - Use on 5 ton (060) systems only.



GE APPLIANCES

All specifications and illustrations subject
to change without notice and without
incurring obligations.

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