

ASHRAE 90.1 COMPLIANT PACKAGE GAS HEATING/ELECTRIC COOLING, R-410A SINGLE PACKAGE ROOFTOP 7.5 – 15 TONS

BUILT TO LAST, EASY TO INSTALL and SERVICE

- R-410A HFC refrigerant
- ASHRAE 90.1 energy compliant efficiency levels
- Two stage / two circuit cooling capacity control on 090-180 models
- Two stage /single circuit cooling capacity control on 089, 100, 119 models
- Rated in accordance with AHRI Standard 340/360
- Designed in accordance with Underwriters' Laboratories Standard 1995
- Listed by UL and UL, Canada or ETL and ETL, Canada
- Exclusive non-corrosive composite condensate pan in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- Gas efficiencies up to 82%
- Induced draft combustion
- Redundant gas valve, with 1 or 2 stages of heating
- Pre-painted exterior panels and tested to 500 hours salt spray protection
- Fixed refrigerant metering system
- Fully insulated cabinet
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic.
- Cooling operating range from 40°F up to 115°F.
- Access panels with easy grip handles and no-strip screw feature
- Two-inch disposable return air filters
- Tool-less filter access door
- Standard belt drive, constant torque motor
- Advanced terminal board for simple safety circuit troubleshooting and control box arrangement
- Field Convertible from vertical to horizontal airflow on all models. No special kit required on 089-150 models. Field accessory supply duct kit required for 180 size model only
- Provisions for thru-the-bottom power entry capability
- Single point gas and electric connections
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Scroll compressors with internal line-break overload protection
- Copper tube, aluminum fin coils
- 24-volt control circuit protected with resettable circuit breaker
- Permanently lubricated evaporator-fan motor
- Permanently lubricated, totally enclosed, shaft down condenser motors
- Low pressure, freeze protection, and high pressure switches
- Exclusive IGC anti-cycle protection for gas heat operation
- Solid-state electronic direct spark ignition system
- Flame roll-out safety protector
- Liquid line filter drier

WARRANTY

- 15 Year limited warranty on stainless steel heat exchanger
- 10 Year limited warranty on aluminized heat exchanger
- 5 Year limited warranty on compressor
- 1 Year limited warranty on parts

EXTENDED WARRANTY

- 5 year extended parts warranty available



RGS089-120



RGS180



Table of contents

	PAGE		PAGE
MODEL NUMBER NOMENCLATURE	3	APPLICATION DATA	37
CAPACITY RATINGS	4	PERFORMANCE DATA	39
PHYSICAL DATA	19	FAN DATA	42
OPTIONS AND ACCESSORIES	23	ELECTRICAL DATA	48
DIMENSIONS	27	SEQUENCE OF OPERATION	56
		GUIDE SPECIFICATIONS	59

UNIT PERFORMANCE DATA — Dual Stage Cooling /Single Circuit IEER (With Single Speed Indoor Fan Motor)							
UNIT	Nominal Tons	COOLING		GAS HEATING		Unit Dimensions H x W x L	Shipping Weight lb. [kg]
		Net. Cap (Btuh)	IEER	Input Cap. (Btuh) Stage 2	Thermal Efficiency (%)		
RGS089*^AA0AAA	7 1/2	88,000	12.7	125,000 - 224,000	80 - 82	41 1/4" x 59 1/2" x 88 1/8"	810 [367]
RGS100*^AA0AAA	8 1/2	97,000	12.7	125,000 - 224,000	82	49 3/8" x 59 1/2" x 88 1/8"	910 [413]
RGS119*^AA0AAA	10	117,000	12.7	180,000 - 250,000	80 - 82	49 3/8" x 59 1/2" x 88 1/8"	965 [438]
UNIT PERFORMANCE DATA — Dual Stage Cooling / Two Circuits IEER (With 2-Speed Indoor Fan Motor)							
UNIT	Nominal Tons	COOLING		GAS HEATING		Unit Dimensions H x W x L	Shipping Weight lb. [kg]
		Net. Cap (Btuh)	IEER	Input Cap. (Btuh) Stage 2	Thermal Efficiency (%)		
RGS090*^AA0AAT	7 1/2	83,000	12.8	125,000 - 224,000	82	41 1/4" x 59 1/2" x 88 1/8"	810 [367]
RGS102*^AA0AAT	8 1/2	99,000	12.8	125,000 - 224,000	80 - 82	49 3/8" x 59 1/2" x 88 1/8"	910 [413]
RGS120*^AA0AAT	10	114,000	12.8	180,000 - 250,000	80 - 82	49 3/8" x 59 1/2" x 88 1/8"	965 [438]
RGS150*^AA0AAT	12 1/2	140,000	12.2	180,000 - 250,000	80 - 82	49 3/8" x 59 1/2" x 88 1/8"	1116 [506]
RGS180*^AA0AAT	15	174,000	12.4	180,000 - 350,000	80 - 81	57 3/8" x 63 3/8" x 115 7/8"	1380 [627]

* Indicates Unit voltage: H = 208/230-3-60, L = 460-3-60, S = 575-3-60

^ See model nomenclature listing for gas heating options.

NOTE: BASE MODEL NUMBERS LISTED. SEE MODEL NOMENCLATURE LISTING FOR ADDITIONAL OPTIONS

Model number nomenclature

MODEL SERIES	R	G	S	0	9	0	H	D	A	A	0	A	A	A
Position Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
R = Rooftop	Type		3	4	5	6	7	8	9	10	11	12	13	14
G = Gas/Electric														
S = Standard DOE 2018/ASHRAE 90.1 - 2016			Efficiency											
089 = 90,000 BTUH = 7.5 Tons (1 circuit/two stage cooling)														
090 = 90,000 BTUH = 7.5 Tons (2 compressor)														
100 = 102,000 BTUH = 8.5 Tons (1 circuit/two stage cooling)														
102 = 102,000 BTUH = 8.5 Tons (2 compressor)														
119 = 120,000 BTUH = 10 Tons (1 circuit/two stage cooling)														
120 = 120,000 BTUH = 10 Tons (2 compressor)														
150 = 150,000 BTUH = 12.5 Tons (2 compressor)														
180 = 180,000 BTUH = 15 Tons (2 compressor)			Nominal Cooling Capacity											
H = 208/230-3-60														
L = 460-3-60														
S = 575-3-60					Voltage									
D = Low Heat, Aluminum Heat Exchanger														
E = Medium Heat, Aluminum Heat Exchanger														
F = High Heat, Aluminum Heat Exchanger														
S = Low Heat, Stainless Steel Heat Exchanger														
R = Med Heat, Stainless Steel Heat Exchanger														
T = High Heat, Stainless Steel Heat Exchanger					Heating Capacity									
A = Standard Motor/Drive														
B = High Static Motor/Drive¹														
C = Medium Static Motor/Drive														
H = High Static Motor/Drive with Hot Gas Re-Heat (on all sizes except 089, 100, 119)					Motor Option									
A = None														
B = Low Leak Economizer w/Barometric relief, OA Temperature Sensor														
E = Low Leak Economizer w/Barometric relief and CO₂ Sensor, OA Temperature Sensor														
H = Low Leak Economizer w/Barometric relief, Enthalpy Sensor														
L = Low Leak Economizer w/Barometric relief and CO₂ Sensor, Enthalpy Sensor														
P = 2-Position Damper (non U.S. models only)														
U = Temperature Ultra Low Leak Economizer w/Barometric relief														
W = Enthalpy Ultra Low Leak Economizer w/Barometric relief					Outdoor Air Options									
0A = No Options														
AT = Non-powered 115v Convenience Outlet														
4B = Non-Fused Disconnect														
BB = Powered Convenience Outlet														
BR = Supply Air Smoke Detector														
BP = Return Air Smoke Detector														
AA = Easy Access Hinged Panels					Factory Installed Options²									
A = Aluminum/Copper Condenser and Evaporator Coil														
B = Precoat Alum/Cu Condenser and Alum/CU Evaporator														
C = E-Coated Alum/Cu Condenser and Alum/CU Evaporator														
D = E-Coated Alum/Cu Condenser and Evaporator														
E = Cu/Cu Condenser and Alum/Cu Evaporator														
F = Copper/Copper Condenser and Evaporator					Standard Condenser /Evaporator Coil Configuration									
A = Single-Speed Indoor Fan Motor, for W7212 controls														
B = Two-Speed Indoor Fan Motor, for W7220 controls														
T = Two-Speed Indoor Motor Controller (VFD) - Standard on U.S. models					Indoor Fan Motor									

¹ Not available for RGS089 units.

² Combinations of FIOPS are available. Contact your representative for details.

Capacity ratings

AHRI COOLING RATINGS

RGS MODEL SIZE	COOLING STAGES	REFRIGERANT CIRCUITS	NOM. CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	EER	IEER WITH SINGLE SPEED INDOOR FAN MOTOR	IEER WITH 2-SPEED INDOOR FAN MOTOR
089*	2	1	7.5	88.0	8.0	11.00	12.7	N/A
090	2	2	7.5	83.0	7.5	11.00	11.7	12.8
100	2	1	8.5	97.0	8.8	11.00	12.7	N/A
102	2	2	8.5	99.0	9.0	11.00	11.7	12.8
119	2	1	10.0	117.0	10.4	11.00	12.7	N/A
120	2	2	10.0	114.0	10.4	11.00	11.8	12.8
150	2	2	12.5	140.0	12.9	10.80	11.0	12.2
180	2	2	15.0	174.0	16.1	10.80	11.5	12.4

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute Test Standard.
ASHRAE — American Society of Heating, Refrigerating and Air-Conditioning Engineers.
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio.
IECC — International Energy Conservation Code
N/A — Not Applicable

* 575V option and Hi-Static Fan option for RGS089 are not available.

NOTES:

1. Rated and certified under AHRI Standard 340/360, as appropriate.
2. Ratings are based on:
Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor.
IEER Standard: A measure that expresses cooling part load EER efficiency for commercial unitary air conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
3. The RGS090/102/120/150/180 rooftops meet the DOE-2018 (Department of Energy), ASHRAE 90.1-2016 and IECC†-2015 minimum efficiency requirements when equipped with the 2-speed indoor fan motor option.
4. The RGS089/100/119 rooftops meet the DOE-2018 minimum efficiency requirement without the 2-speed indoor fan motor option.

† IECC is a registered trademark of International Code Council, Inc



HEATING RATING TABLE - NATURAL GAS AND PROPANE

RGS MODEL SIZE	GAS HEAT	AL/SS HEAT EXCHANGER		TEMP RISE (DEG F)	THERMAL EFFICIENCY (%)
		INPUT / OUTPUT STAGE 1 (MBH)	INPUT / OUTPUT STAGE 2 (MBH)		
089/090	LOW	—	125 / 103	20 – 50	82%
	MED	120 / 98	180 / 148	35 – 65	82%
	HIGH	180 / 147	224 / 184	45 – 75	82%
100/102	LOW	—	125 / 103	20 – 50	82%
	MED	120 / 98	180 / 148	30 – 65	82%
	HIGH	180 / 147	224 / 184	40 – 75	82%
119/120	LOW	120 / 98	180 / 148	25 – 65	82%
	MED	180 / 147	224 / 184	30 – 65	82%
	HIGH	200 / 160	250 / 205	35 – 70	80%
150	LOW	120 / 98	180 / 148	20 – 65	82%
	MED	180 / 147	224 / 184	25 – 65	82%
	HIGH	200 / 160	250 / 205	25 – 70	80%
180	LOW	144 / 118	180 / 146	15 – 55	81%
	MED	192 / 156	240 / 195	20 – 60	81%
	HIGH	280 / 224	350 / 280	35 – 65	80%

NOTES:

1. Heat ratings are for natural gas heat exchangers operated at or below 2000 ft (610 m). For information on propane or altitudes above 2000 ft (610 m), see the Application Data section of this book. Accessory Propane/High Altitude kits are also available.
2. The input rating for altitudes above 2000 ft (610 m) must be derated by 4% for each 1000 ft (305 m) above sea level.

Capacity ratings (cont)

SOUND PERFORMANCE

RGS MODEL SIZE	COOLING STAGES	OUTDOOR SOUND (dB) AT 60 Hz								
		A-Weighted	63	125	250	500	1000	2000	4000	8000
089	2	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
090	2	82	85.8	84.3	80.5	78.7	76.4	72.7	68.3	65.1
100	2	83	91.2	86.4	81.9	81.0	78.3	73.9	71.4	67.3
102	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
119	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
120	2	82	89.0	83.1	80.5	78.5	75.5	71.6	69.6	69.3
150	2	87	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9
180	2	87	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9

LEGEND

dB — Decibel

NOTES:

1. Outdoor sound data is measured in accordance with AHRI standard 270.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for units are taken in accordance with AHRI standard 270.

MINIMUM - MAXIMUM AIRFLOW (CFM) RATINGS - NATURAL GAS AND PROPANE

RGS UNIT	HEAT LEVEL	COOLING				AL HX HEATING		SS HX HEATING	
		Minimum	Minimum 2-Speed Fan Motor (at High Speed)	Minimum 2-Speed Fan Motor (at Low Speed)	Maximum	Minimum	Maximum	Minimum	Maximum
089/090	LOW	2250	2250	1500	3750	1900	4750	1900	4750
	MED					2100	3900	2100	3900
	HIGH					2270	3780	2270	3780
100/102	LOW	2550	2873	1915	4250	1900	4750	1900	4750
	MED					2100	4560	2100	4560
	HIGH					2270	4250	2270	4250
119/120	LOW	3000	3380	2253	5000	2100	5470	2100	5470
	MED					2620	5670	2620	5670
	HIGH					2650	5290	2650	5290
150	LOW	3600	4056	2704	6000	2100	6830	2100	6830
	MED					2620	6800	2620	6800
	HIGH					2650	7410	2650	7410
180	LOW	4500	5625	3750	7500	2450	7500	2450	9000
	MED					3000	6750	3000	9000
	HIGH					3990	7200	3990	7410

LEGEND

AL HX — Aluminum Gas Heat Exchanger

SS HX — Stainless Steel Gas Heater Exchanger

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 7.5 TONS

RGS090 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
2250 Cfm	EAT (wb)	58	TC	77.4	77.4	87.8	73.8	73.8	83.8	70.1	70.1	79.5	66.0	66.0	74.9
			SHC	66.9	77.4	87.8	63.9	73.8	83.8	60.6	70.1	79.5	57.1	66.0	74.9
		62	TC	82.2	82.2	83.9	77.5	77.5	81.7	72.6	72.6	79.2	67.3	67.3	76.4
			SHC	60.8	72.4	83.9	58.6	70.1	81.7	56.3	67.7	79.2	53.6	65.0	76.4
		67	TC	90.1	90.1	90.1	86.0	86.0	86.0	81.4	81.4	81.4	75.9	75.9	75.9
			SHC	50.2	61.8	73.3	48.5	60.1	71.6	46.5	58.1	69.7	44.2	55.8	67.4
		72	TC	98.0	98.0	98.0	94.0	94.0	94.0	89.5	89.5	89.5	84.3	84.3	84.3
			SHC	39.1	50.7	62.4	37.5	49.2	60.9	35.8	47.5	59.2	33.8	45.5	57.2
2625 Cfm	EAT (wb)	58	TC	—	104.3	104.3	—	100.4	100.4	—	95.9	95.9	—	90.7	90.7
			SHC	—	41.7	54.0	—	40.3	52.7	—	38.7	51.0	—	36.8	49.0
		62	TC	82.1	82.1	93.2	78.4	78.4	89.0	74.4	74.4	84.4	70.0	70.0	79.5
			SHC	71.0	82.1	93.2	67.8	78.4	89.0	64.3	74.4	84.4	60.6	70.0	79.5
		67	TC	84.9	84.9	91.8	80.4	80.4	89.5	75.4	75.4	86.7	70.2	70.2	82.9
			SHC	65.4	78.6	91.8	63.2	76.3	89.5	60.6	73.7	86.7	57.6	70.2	82.9
		72	TC	92.5	92.5	92.5	88.3	88.3	88.3	83.6	83.6	83.6	78.3	78.3	78.3
			SHC	53.0	66.3	79.5	51.3	64.6	78.0	49.4	62.8	76.1	47.2	60.6	73.9
3000 Cfm	EAT (wb)	58	TC	100.4	100.4	100.4	96.4	96.4	96.4	91.7	91.7	91.7	86.4	86.4	86.4
			SHC	40.2	53.5	66.7	38.7	52.0	65.3	36.9	50.3	63.7	35.0	48.4	61.8
		62	TC	—	106.5	106.5	—	102.6	102.6	—	98.0	98.0	—	92.7	92.7
			SHC	—	43.3	57.6	—	41.8	55.9	—	40.2	54.1	—	38.4	52.2
		67	TC	85.7	85.7	97.3	82.2	82.2	93.3	78.0	78.0	88.6	73.5	73.5	83.4
			SHC	74.1	85.7	97.3	71.1	82.2	93.3	67.5	78.0	88.6	63.6	73.5	83.4
		72	TC	86.9	86.9	98.7	82.8	82.8	96.4	78.2	78.2	92.3	73.6	73.6	86.9
			SHC	69.3	84.0	98.7	67.2	81.8	96.4	64.1	78.2	92.3	60.3	73.6	86.9
3375 Cfm	EAT (wb)	58	TC	94.3	94.3	94.3	90.1	90.1	90.1	85.2	85.2	85.2	79.8	79.8	80.1
			SHC	55.6	70.5	85.4	54.0	68.9	83.9	52.1	67.1	82.2	49.9	65.0	80.1
		62	TC	102.2	102.2	102.2	98.1	98.1	98.1	93.3	93.3	93.3	87.9	87.9	87.9
			SHC	41.2	56.0	70.7	39.7	54.6	69.5	38.0	53.0	68.0	36.0	51.1	66.2
		67	TC	—	108.1	108.1	—	104.2	104.2	—	99.5	99.5	—	94.2	94.2
			SHC	—	44.5	60.2	—	43.2	58.7	—	41.6	57.0	—	39.8	55.2
		72	TC	88.5	88.5	100.4	85.0	85.0	96.4	81.0	81.0	92.0	76.5	76.5	86.8
			SHC	76.5	88.5	100.4	73.5	85.0	96.4	70.1	81.0	92.0	66.1	76.5	86.8
3750 Cfm	EAT (wb)	58	TC	88.9	88.9	103.9	85.1	85.1	100.4	81.1	81.1	95.7	76.5	76.5	90.3
			SHC	72.3	88.1	103.9	69.7	85.1	100.4	66.5	81.1	95.7	62.7	76.5	90.3
		62	TC	95.8	95.8	95.8	91.5	91.5	91.5	86.6	86.6	87.9	81.1	81.1	85.8
			SHC	58.0	74.4	90.9	56.4	73.0	89.6	54.6	71.3	87.9	52.4	69.1	85.8
		67	TC	103.6	103.6	103.6	99.4	99.4	99.4	94.6	94.6	94.6	89.1	89.1	89.1
			SHC	42.0	58.3	74.5	40.6	57.0	73.4	38.9	55.5	72.0	37.0	53.7	70.3
		72	TC	—	109.2	109.2	—	105.4	105.4	—	100.7	100.7	—	95.3	95.3
			SHC	—	45.6	62.6	—	44.4	61.3	—	42.8	59.7	—	41.0	58.0

LEGEND

— Do not operate
 Cfm — Cubic feet per minute (supply air)
 EAT (db) — Entering Air Temperature (dry bulb)
 EAT (wb) — Entering Air Temperature (wet bulb)
 SHC — Sensible Heat Capacity (1000 Btuh) Gross
 TC — Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow Ratings table on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 7.5 TONS (cont)

7.5 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN SUBCOOLING MODE										
Temp (F) Air Ent. Condenser (Edb)		AIR ENTERING EVAPORATOR - CFM								
		2250/0.05			3000/0.07			3750/0.09		
		Air Entering Evaporator - Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	103.05	93.02	83.60	109.77	99.52	90.08	114.01	103.69	95.19
	SHC	43.66	55.34	67.09	50.99	66.29	81.31	57.49	76.27	92.20
	kW	4.90	4.83	4.77	4.82	4.88	4.96	4.99	4.91	4.85
85	TC	95.39	85.83	76.88	101.59	91.89	82.95	105.53	95.76	87.77
	SHC	36.42	48.47	60.60	43.24	58.99	74.40	49.44	68.68	84.90
	kW	5.49	5.42	5.36	5.40	5.47	5.54	5.58	5.50	5.44
95	TC	87.48	78.44	69.97	93.21	84.05	75.61	96.84	87.63	80.14
	SHC	28.98	41.46	53.97	35.32	51.53	67.34	41.21	60.92	77.41
	kW	6.16	6.09	6.03	6.08	6.14	6.21	6.24	6.17	6.11
105	TC	79.35	70.83	62.84	84.57	75.96	68.04	87.88	79.23	72.26
	SHC	21.34	34.26	47.18	27.17	43.86	60.08	32.73	52.95	69.70
	kW	6.93	6.86	6.81	6.85	6.91	6.97	7.00	6.93	6.88
115	TC	70.87	62.89	55.42	75.58	67.54	60.15	78.56	70.51	64.06
	SHC	13.40	26.79	40.14	18.70	35.89	52.54	23.94	44.68	61.67
	kW	7.79	7.74	7.69	7.73	7.78	7.83	7.86	7.80	7.76

7.5 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS REHEAT IN HOT GAS REHEAT MODE										
Temp (F) Air Ent. Condenser (Edb)		Air Entering Evaporator - Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator - CFM								
		2250	3000	3750	2250	3000	3750	2250	3000	3750
80	TC	27.60	32.75	30.19	40.09	39.43	37.73	45.06	45.25	44.25
	SHC	-3.12	5.20	6.71	3.75	5.24	6.75	3.77	5.26	6.78
	kW	4.56	4.51	4.46	4.63	4.60	4.56	4.70	4.67	4.64
75	TC	35.40	33.78	31.20	41.14	40.51	38.80	46.15	46.37	45.38
	SHC	4.67	6.17	7.69	4.71	6.21	7.73	4.74	6.24	7.76
	kW	4.41	4.36	4.39	4.41	4.36	4.36	4.41	4.39	4.36
70	TC	36.36	34.71	32.18	42.10	41.47	39.77	47.08	47.31	46.32
	SHC	5.63	7.14	8.66	5.67	7.18	8.71	5.70	7.21	8.74
	kW	4.43	4.49	4.41	4.44	4.40	4.39	4.49	4.47	4.44
60	TC	38.25	36.64	34.15	43.97	43.37	41.72	48.98	49.22	48.26
	SHC	7.56	9.09	10.62	7.60	9.13	10.66	7.62	9.15	10.69
	kW	4.56	4.55	4.43	4.57	4.53	4.46	4.56	4.55	4.50
50	TC	40.15	38.60	36.14	45.95	45.37	43.73	50.57	50.97	49.56
	SHC	9.48	11.03	12.58	9.52	11.07	12.62	9.54	11.10	12.64
	kW	4.63	4.52	4.38	4.45	4.41	4.33	5.25	4.91	5.60
40	TC	42.18	40.62	38.11	47.80	47.25	45.43	52.65	52.75	51.83
	SHC	11.41	12.98	14.54	11.45	13.02	14.58	11.47	13.04	14.60
	kW	4.32	4.37	4.37	4.65	4.60	4.89	4.96	5.20	5.12

LEGEND

Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
ldb — Leaving Dry-Bulb
lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

Capacity ratings (cont)

COOLING CAPACITIES — 1-CIRCUIT 2-STAGE COOLING, 7.5 TONS

RGS089* (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
2250 Cfm	EAT (wb)	58	TC	79.6	79.6	87.7	76.2	76.2	86.4	73.1	73.1	82.8	69.5	69.5	78.8
			SHC	67.5	77.6	87.7	66.0	76.2	86.4	63.2	73.0	82.8	60.2	69.5	78.8
		62	TC	85.6	85.6	85.6	81.6	81.6	81.6	77.3	77.3	78.5	72.6	72.6	76.4
			SHC	60.8	71.5	82.1	59.0	69.7	80.4	57.0	67.8	78.5	54.9	65.7	76.4
		67	TC	94.5	94.5	94.5	90.0	90.0	90.0	85.2	85.2	85.2	80.0	80.0	80.0
			SHC	50.5	61.0	71.5	48.6	59.2	69.9	46.7	57.3	68.0	44.6	55.3	66.1
		72	TC	104.2	104.2	104.2	99.3	99.3	99.3	94.0	94.0	94.0	88.2	88.2	88.2
			SHC	40.3	50.2	60.0	38.4	48.4	58.5	36.3	46.6	56.8	34.1	44.5	55.0
		76	TC	—	112.4	112.4	—	107.3	107.3	—	101.6	101.6	—	95.3	95.3
			SHC	—	41.6	54.0	—	39.2	51.6	—	37.2	49.6	—	35.5	47.9
2625 Cfm	EAT (wb)	58	TC	84.7	84.7	92.8	80.9	80.9	91.6	77.4	77.4	87.7	73.5	73.5	83.3
			SHC	71.6	82.2	92.8	70.1	80.9	91.6	67.0	77.4	87.7	63.7	73.5	83.3
		62	TC	88.7	88.7	90.4	84.4	84.4	88.6	79.8	79.8	86.3	74.8	74.8	83.6
			SHC	65.7	78.0	90.4	63.8	76.2	88.6	61.7	74.0	86.3	59.2	71.4	83.6
		67	TC	97.6	97.6	97.6	92.9	92.9	92.9	87.8	87.8	87.8	82.3	82.3	82.3
			SHC	53.8	66.1	78.4	51.9	64.2	76.6	49.9	62.3	74.7	47.7	60.2	72.7
		72	TC	107.5	107.5	107.5	102.3	102.3	102.3	96.7	96.7	96.7	90.6	90.6	90.6
			SHC	41.7	53.5	65.3	39.8	51.7	63.7	37.7	49.8	61.9	35.5	47.7	60.0
		76	TC	—	116.1	116.1	—	110.4	110.4	—	104.3	104.3	—	97.7	97.7
			SHC	—	42.7	57.3	—	41.2	55.8	—	39.4	48.5	—	37.4	48.3
3000 Cfm	EAT (wb)	58	TC	87.7	87.7	99.3	84.3	84.3	95.5	80.5	80.5	91.2	76.4	76.4	86.5
			SHC	76.0	87.7	99.3	73.1	84.3	95.5	69.8	80.5	91.2	66.2	76.4	86.5
		62	TC	90.8	90.8	97.0	86.3	86.3	94.8	81.6	81.6	92.1	76.8	76.8	88.4
			SHC	69.6	83.3	97.0	67.5	81.1	94.8	65.1	78.6	92.1	62.2	75.3	88.4
		67	TC	99.8	99.8	99.8	94.9	94.9	94.9	89.6	89.6	89.6	83.8	83.8	83.8
			SHC	56.5	70.3	84.0	54.6	68.4	82.3	52.5	66.4	80.3	50.3	64.3	78.2
		72	TC	109.8	109.8	109.8	104.3	104.3	104.3	98.5	98.5	98.5	92.1	92.1	92.1
			SHC	42.9	56.3	69.6	40.9	54.4	67.9	38.8	52.5	66.1	36.6	50.3	64.1
		76	TC	—	118.4	118.4	—	112.5	112.5	—	106.1	106.1	—	99.3	99.3
			SHC	—	44.6	61.1	—	42.8	54.0	—	40.9	53.1	—	38.9	51.7
3375 Cfm	EAT (wb)	58	TC	91.2	91.2	103.3	87.6	87.6	99.2	83.6	83.6	94.6	79.2	79.2	89.7
			SHC	79.2	91.2	103.3	76.0	87.6	99.2	72.5	83.6	94.6	68.7	79.2	89.7
		62	TC	92.8	92.8	103.4	88.4	88.4	100.6	84.0	84.0	96.7	79.9	79.9	90.6
			SHC	73.5	88.5	103.4	71.0	85.8	100.6	68.1	82.4	96.7	64.0	77.3	90.6
		67	TC	101.8	101.8	101.8	96.7	96.7	96.7	91.2	91.2	91.2	85.2	85.2	85.2
			SHC	59.4	74.9	90.3	57.5	73.0	88.5	55.4	70.9	86.5	53.1	68.7	84.3
		72	TC	111.9	111.9	111.9	106.2	106.2	106.2	100.1	100.1	100.1	93.5	93.5	93.5
			SHC	44.2	59.3	74.4	42.2	57.4	72.6	40.0	55.4	70.7	37.8	53.2	68.7
		76	TC	—	120.5	120.5	—	114.4	114.4	—	107.8	107.8	—	100.7	100.7
			SHC	—	46.4	59.4	—	44.5	58.3	—	42.6	56.9	—	40.5	55.2
3750 Cfm	EAT (wb)	58	TC	93.9	93.9	106.3	90.1	90.1	101.9	85.8	85.8	97.2	81.2	81.2	92.0
			SHC	81.5	93.9	106.3	78.2	90.1	101.9	74.5	85.8	97.2	70.5	81.2	92.0
		62	TC	94.5	94.5	107.9	90.2	90.2	105.9	86.7	86.7	97.9	81.5	81.5	94.8
			SHC	76.2	92.1	107.9	74.3	90.1	105.9	69.3	83.6	97.9	66.6	80.7	94.8
		67	TC	103.3	103.3	103.3	98.0	98.0	98.0	92.3	92.3	92.3	86.2	86.2	89.3
			SHC	61.9	78.7	95.6	59.9	76.8	93.7	57.8	74.7	91.6	55.5	72.4	89.3
		72	TC	113.3	113.3	113.3	107.5	107.5	107.5	101.3	101.3	101.3	94.5	94.5	94.5
			SHC	45.2	61.8	78.3	43.2	59.9	76.5	41.1	57.8	74.6	38.8	55.6	72.5
		76	TC	—	122.0	122.0	—	115.8	115.8	—	109.0	109.0	—	101.7	101.7
			SHC	—	47.8	62.8	—	45.9	61.4	—	44.0	59.8	—	41.8	58.1

LEGEND

—	Do not operate
Cfm	Cubic feet per minute (supply air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

* Not available in 575V models or 208/230/3/60 and 460/3/60 models with high static indoor fan motor.

NOTE: See Minimum-Maximum Airflow Ratings table on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 8.5 TONS

RGS102 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
2550 Cfm	EAT (wb)	58	TC	89.7	89.7	101.6	85.2	85.2	96.5	79.6	79.6	90.1	73.8	73.8	83.6
			SHC	77.8	89.7	101.6	73.9	85.2	96.5	69.0	79.6	90.1	64.0	73.8	83.6
		62	TC	94.3	94.3	97.9	88.7	88.7	95.2	81.3	81.3	91.5	74.3	74.3	86.5
			SHC	71.0	84.4	97.9	68.2	81.7	95.2	64.7	78.1	91.5	60.6	73.6	86.5
		67	TC	105.0	105.0	105.0	99.3	99.3	99.3	92.2	92.2	92.2	84.1	84.1	84.1
			SHC	59.0	72.6	86.1	56.6	70.1	83.7	53.6	67.1	80.7	50.3	63.8	77.3
		72	TC	115.9	115.9	115.9	110.4	110.4	110.4	104.2	104.2	104.2	96.0	96.0	96.0
			SHC	46.4	60.0	73.6	44.3	57.9	71.5	41.9	55.5	69.1	38.8	52.4	65.9
		76	TC	—	123.7	123.7	—	118.3	118.3	—	112.4	112.4	—	105.7	105.7
			SHC	—	49.3	63.3	—	47.3	61.4	—	45.3	59.3	—	42.9	56.7
2975 Cfm	EAT (wb)	58	TC	95.3	95.3	107.9	90.7	90.7	102.7	84.8	84.8	96.1	78.7	78.7	89.1
			SHC	82.6	95.3	107.9	78.6	90.7	102.7	73.5	84.8	96.1	68.2	78.7	89.1
		62	TC	97.9	97.9	107.8	92.1	92.1	104.7	85.4	85.4	99.4	78.8	78.8	92.8
			SHC	76.7	92.2	107.8	73.9	89.3	104.7	69.6	84.5	99.4	64.8	78.8	92.8
		67	TC	108.5	108.5	108.5	102.6	102.6	102.6	95.4	95.4	95.4	86.9	86.9	86.9
			SHC	62.8	78.4	94.1	60.4	76.0	91.7	57.4	73.1	88.8	54.0	69.7	85.3
		72	TC	119.1	119.1	119.1	113.5	113.5	113.5	107.2	107.2	107.2	99.2	99.2	99.2
			SHC	47.9	63.5	79.2	45.8	61.5	77.1	43.5	59.2	74.9	40.6	56.3	72.0
		76	TC	—	126.4	126.4	—	120.8	120.8	—	114.8	114.8	—	108.2	108.2
			SHC	—	51.1	67.4	—	49.2	65.3	—	47.0	63.0	—	44.8	60.7
3400 Cfm	EAT (wb)	58	TC	100.0	100.0	113.3	95.2	95.2	107.9	89.3	89.3	101.1	82.9	82.9	93.9
			SHC	86.7	100.0	113.3	82.6	95.2	107.9	77.4	89.3	101.1	71.8	82.9	93.9
		62	TC	101.1	101.1	115.8	95.7	95.7	111.7	89.4	89.4	105.3	83.0	83.0	97.7
			SHC	81.5	98.7	115.8	78.2	94.9	111.7	73.5	89.4	105.3	68.2	83.0	97.7
		67	TC	111.1	111.1	111.1	105.1	105.1	105.1	97.8	97.8	97.8	89.1	89.1	93.0
			SHC	66.2	83.9	101.6	63.9	81.6	99.3	61.0	78.7	96.5	57.5	75.3	93.0
		72	TC	121.3	121.3	121.3	115.6	115.6	115.6	109.4	109.4	109.4	101.5	101.5	101.5
			SHC	49.2	66.7	84.3	47.1	64.7	82.3	44.9	62.5	80.2	42.1	59.9	77.7
		76	TC	—	128.3	128.3	—	122.6	122.6	—	116.3	116.3	—	109.7	109.7
			SHC	—	52.7	70.7	—	50.7	68.6	—	48.6	66.4	—	46.4	64.2
3825 Cfm	EAT (wb)	58	TC	104.0	104.0	117.8	99.1	99.1	112.3	93.2	93.2	105.5	86.5	86.5	97.9
			SHC	90.2	104.0	117.8	86.0	99.1	112.3	80.8	93.2	105.5	75.0	86.5	97.9
		62	TC	104.2	104.2	122.7	99.3	99.3	116.9	93.3	93.3	109.8	86.6	86.6	101.9
			SHC	85.7	104.2	122.7	81.7	99.3	116.9	76.7	93.3	109.8	71.2	86.6	101.9
		67	TC	113.1	113.1	113.1	107.1	107.1	107.1	99.9	99.9	103.8	91.0	91.0	100.3
			SHC	69.4	89.1	108.8	67.1	86.8	106.5	64.3	84.1	103.8	60.9	80.6	100.3
		72	TC	123.0	123.0	123.0	117.2	117.2	117.2	110.9	110.9	110.9	103.3	103.3	103.3
			SHC	50.3	69.7	89.0	48.3	67.7	87.1	46.1	65.6	85.2	43.5	63.3	83.0
		76	TC	—	129.7	129.7	—	124.0	124.0	—	117.5	117.5	—	110.8	110.8
			SHC	—	54.0	73.7	—	52.1	71.7	—	50.0	69.5	—	47.8	67.4
4250 Cfm	EAT (wb)	58	TC	107.4	107.4	121.7	102.5	102.5	116.1	96.5	96.5	109.3	89.5	89.5	101.4
			SHC	93.1	107.4	121.7	88.9	102.5	116.1	83.7	96.5	109.3	77.6	89.5	101.4
		62	TC	107.5	107.5	126.6	102.6	102.6	120.8	96.6	96.6	113.7	89.6	89.6	105.5
			SHC	88.4	107.5	126.6	84.4	102.6	120.8	79.5	96.6	113.7	73.7	89.6	105.5
		67	TC	114.7	114.7	115.6	108.7	108.7	113.5	101.7	101.7	110.8	92.6	92.6	107.2
			SHC	72.5	94.0	115.6	70.2	91.8	113.5	67.5	89.2	110.8	64.0	85.6	107.2
		72	TC	124.3	124.3	124.3	118.5	118.5	118.5	112.1	112.1	112.1	104.7	104.7	104.7
			SHC	51.3	72.4	93.4	49.3	70.5	91.7	47.2	68.5	89.9	44.7	66.4	88.1
		76	TC	—	130.7	130.7	—	125.0	125.0	—	118.5	118.5	—	111.6	111.6
			SHC	—	55.3	76.5	—	53.5	74.6	—	51.3	72.4	—	49.2	70.3

LEGEND

—	Do not operate
Cfm	Cubic feet per minute (supply air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow Ratings on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 8.5 TONS (cont)

8.5 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN SUBCOOLING MODE										
Temp (F) Air Ent. Condenser (Edb)		Air Entering Evaporator - CFM								
		2550/0.04			3400/0.05			4250/0.07		
		Air Entering Evaporator - Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	119.20	107.40	96.40	127.00	115.00	103.90	131.90	119.80	109.50
	SHC	50.60	63.90	77.40	59.20	76.70	94.20	66.80	88.40	108.20
	kW	5.67	5.57	5.47	5.54	5.63	5.74	5.79	5.68	5.59
85	TC	110.40	99.20	88.80	117.60	106.30	95.80	122.20	110.80	101.10
	SHC	42.40	56.20	70.10	50.40	68.50	86.40	57.70	79.90	99.90
	kW	6.33	6.23	6.14	6.20	6.30	6.40	6.45	6.34	6.25
95	TC	101.40	90.80	80.90	108.10	97.30	87.40	112.30	101.50	92.40
	SHC	34.00	48.20	62.60	41.50	60.00	78.40	48.40	71.10	91.50
	kW	7.08	6.99	6.90	6.96	7.05	7.16	7.20	7.09	7.01
105	TC	92.00	82.10	72.70	98.20	88.10	78.70	102.10	91.90	83.40
	SHC	25.30	40.10	54.90	32.20	51.30	70.20	38.80	62.10	82.70
	kW	7.94	7.85	7.77	7.83	7.91	8.01	8.06	7.95	7.87
115	TC	82.40	73.00	64.20	88.00	78.50	69.70	91.50	81.90	74.10
	SHC	16.40	31.60	47.00	22.70	42.40	61.70	28.90	52.70	73.50
	kW	8.92	8.84	8.77	8.82	8.89	8.98	9.02	8.93	8.86

8.5 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN HOT GAS REHEAT MODE										
Temp (F) Air Ent. Condenser (Edb)		Air Entering Evaporator - Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator - Cfm								
		2550	3400	4250	2550	3400	4250	2550	3400	4250
80	TC	37.61	33.13	26.77	44.74	41.60	36.46	50.96	48.99	44.93
	SHC	-0.52	-0.63	-0.73	-0.46	-0.57	-0.67	-0.42	-0.53	-0.62
	kW	5.88	5.68	5.44	6.13	5.97	5.76	6.35	6.24	6.06
75	TC	38.71	34.24	27.86	45.84	42.73	37.59	52.05	50.11	46.06
	SHC	0.45	0.34	0.25	0.50	0.40	0.31	0.54	0.44	0.36
	kW	5.68	5.47	5.22	5.94	5.78	5.56	6.18	6.07	5.88
70	TC	39.70	35.25	28.83	46.80	43.70	38.59	52.97	51.04	47.02
	SHC	1.41	1.32	1.23	1.47	1.37	1.29	1.50	1.41	1.34
	kW	5.65	5.42	5.24	5.97	5.79	5.53	6.26	6.13	5.91
60	TC	41.77	37.33	30.76	48.86	45.80	40.71	55.00	53.10	49.12
	SHC	3.34	3.26	3.18	3.40	3.32	3.25	3.43	3.36	3.29
	kW	5.42	5.15	5.17	5.80	5.59	5.30	6.16	6.01	5.75
50	TC	43.83	39.27	32.61	50.92	47.89	42.70	57.04	55.16	51.22
	SHC	5.27	5.21	5.14	5.32	5.27	5.21	5.36	5.31	5.25
	kW	5.18	5.15	5.17	5.62	5.39	5.05	6.04	5.87	5.59
40	TC	45.75	41.13	34.50	53.08	50.00	44.64	59.24	57.40	53.44
	SHC	7.20	7.15	6.95	7.26	7.21	7.16	7.29	7.25	7.21
	kW	4.79	4.98	4.80	5.25	5.01	5.23	5.68	5.51	5.21

LEGEND

Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
ldb — Leaving Dry-Bulb
lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{db} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$$t_{lwb} = \text{Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil } (h_{lwb})$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

Capacity ratings (cont)

COOLING CAPACITIES — 1-CIRCUIT/SINGLE CIRCUIT 2-STAGE COOLING, 8.5 TONS

RGS100 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
2550 Cfm	EAT (wb)	58	TC	85.4	85.4	95.6	81.6	81.6	93.2	78.1	78.1	89.2	74.1	74.1	84.6
			SHC	72.2	83.9	95.6	70.1	81.6	93.2	67.0	78.1	89.2	63.5	74.1	84.6
		62	TC	91.1	91.1	91.1	86.5	86.5	88.6	81.7	81.7	86.7	76.2	76.2	84.1
			SHC	65.0	77.7	90.5	63.0	75.8	88.6	61.0	73.8	86.7	58.5	71.3	84.1
		67	TC	101.8	101.8	101.8	96.9	96.9	96.9	91.2	91.2	91.2	85.1	85.1	85.1
			SHC	53.4	66.1	78.8	51.5	64.2	77.0	49.2	62.1	74.9	46.9	59.8	72.7
		72	TC	113.4	113.4	113.4	107.8	107.8	107.8	101.7	101.7	101.7	94.9	94.9	94.9
			SHC	41.7	54.0	66.4	39.6	52.1	64.6	37.3	50.0	62.6	34.9	47.7	60.4
		76	TC	—	123.5	123.5	—	117.3	117.3	—	110.5	110.5	—	103.2	103.2
			SHC	—	43.8	57.9	—	42.0	56.1	—	40.0	51.1	—	37.7	49.6
2975 Cfm	EAT (wb)	58	TC	91.0	91.0	103.7	87.5	87.5	99.7	83.4	83.4	95.1	79.0	79.0	90.0
			SHC	78.3	91.0	103.7	75.2	87.5	99.7	71.8	83.4	95.1	67.9	79.0	90.0
		62	TC	94.9	94.9	100.9	90.0	90.0	98.5	84.6	84.6	95.8	79.3	79.3	92.8
			SHC	71.4	86.1	100.9	69.0	83.7	98.5	66.5	81.2	95.8	63.9	78.4	92.8
		67	TC	105.6	105.6	105.6	100.2	100.2	100.2	94.2	94.2	94.2	87.8	87.8	87.8
			SHC	57.8	72.6	87.4	55.7	70.6	85.4	53.4	68.4	83.3	51.0	66.0	80.9
		72	TC	117.4	117.4	117.4	111.4	111.4	111.4	104.8	104.8	104.8	97.6	97.6	97.6
			SHC	43.9	58.4	73.0	41.7	56.4	71.1	39.4	54.2	68.9	36.9	51.8	66.6
		76	TC	—	127.4	127.4	—	120.9	120.9	—	113.7	113.7	—	106.0	106.0
			SHC	—	46.7	59.3	—	44.7	58.2	—	42.5	56.5	—	40.2	54.5
3400 Cfm	EAT (wb)	58	TC	95.6	95.6	108.9	91.7	91.7	104.4	87.4	87.4	99.5	82.6	82.6	94.0
			SHC	82.4	95.6	108.9	79.1	91.7	104.4	75.3	87.4	99.5	71.1	82.6	94.0
		62	TC	97.4	97.4	108.3	92.6	92.6	106.1	88.2	88.2	101.6	82.9	82.9	97.3
			SHC	75.9	92.1	108.3	73.8	90.0	106.1	70.5	86.1	101.6	67.1	82.2	97.3
		67	TC	108.2	108.2	108.2	102.5	102.5	102.5	96.3	96.3	96.3	89.6	89.6	89.6
			SHC	61.3	77.9	94.6	59.2	75.9	92.5	56.8	73.6	90.3	54.3	71.1	87.9
		72	TC	120.1	120.1	120.1	113.8	113.8	113.8	106.9	106.9	106.9	99.4	99.4	99.4
			SHC	45.6	62.0	78.4	43.4	59.9	76.4	41.0	57.6	74.2	38.5	55.2	71.8
		76	TC	—	130.2	130.2	—	123.4	123.4	—	115.9	115.9	—	107.8	107.8
			SHC	—	48.9	64.1	—	46.8	62.5	—	44.6	60.5	—	42.2	58.4
3825 Cfm	EAT (wb)	58	TC	100.1	100.1	113.8	95.9	95.9	109.0	91.2	91.2	103.7	86.0	86.0	97.8
			SHC	86.3	100.1	113.8	82.7	95.9	109.0	78.6	91.2	103.7	74.1	86.0	97.8
		62	TC	100.6	100.6	116.8	96.8	96.8	111.5	91.3	91.3	107.9	86.1	86.1	101.8
			SHC	81.2	99.0	116.8	77.6	94.5	111.5	74.6	91.3	107.9	70.3	86.1	101.8
		67	TC	110.5	110.5	110.5	104.6	104.6	104.6	98.1	98.1	98.1	91.2	91.2	95.3
			SHC	65.1	83.7	102.3	62.9	81.5	100.1	60.5	79.2	97.9	57.9	76.6	95.3
		72	TC	122.5	122.5	122.5	115.9	115.9	115.9	108.7	108.7	108.7	101.0	101.0	101.0
			SHC	47.4	65.8	84.2	45.2	63.7	82.2	42.7	61.3	79.9	40.2	58.8	77.5
		76	TC	—	132.6	132.6	—	125.6	125.6	—	117.8	117.8	—	109.5	109.5
			SHC	—	51.1	68.6	—	49.0	66.8	—	46.7	64.8	—	44.2	62.5
4250 Cfm	EAT (wb)	58	TC	103.4	103.4	117.5	99.0	99.0	112.5	94.0	94.0	106.8	88.5	88.5	100.7
			SHC	89.3	103.4	117.5	85.5	99.0	112.5	81.2	94.0	106.8	76.4	88.5	100.7
		62	TC	104.2	104.2	120.3	99.1	99.1	117.0	94.1	94.1	111.2	88.6	88.6	104.7
			SHC	83.9	102.1	120.3	81.1	99.1	117.0	77.0	94.1	111.2	72.5	88.6	104.7
		67	TC	112.2	112.2	112.2	106.2	106.2	106.7	99.5	99.5	104.2	92.3	92.3	101.5
			SHC	68.3	88.5	108.8	66.0	86.4	106.7	63.5	83.9	104.2	60.8	81.2	101.5
		72	TC	124.2	124.2	124.2	117.5	117.5	117.5	110.1	110.1	110.1	102.2	102.2	102.2
			SHC	48.9	69.0	89.2	46.6	66.9	87.1	44.1	64.5	84.8	41.5	61.9	82.3
		76	TC	—	134.4	134.4	—	127.2	127.2	—	119.2	119.2	—	110.7	110.7
			SHC	—	53.0	72.4	—	50.9	70.5	—	48.5	68.4	—	46.0	66.1

LEGEND

—	Do not operate
Cfm	Cubic feet per minute (supply air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow Ratings table on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 10 TONS

RGS120 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
3000 Cfm	EAT (wb)	58	TC	107.6	107.6	121.9	102.5	102.5	116.2	96.8	96.8	109.7	90.5	90.5	102.6
			SHC	93.2	107.6	121.9	88.8	102.5	116.2	83.9	96.8	109.7	78.4	90.5	102.6
		62	TC	113.6	113.6	116.5	107.1	107.1	113.4	99.7	99.7	109.8	91.8	91.8	104.9
			SHC	84.6	100.6	116.5	81.5	97.4	113.4	78.0	93.9	109.8	73.7	89.3	104.9
		67	TC	124.4	124.4	124.4	118.4	118.4	118.4	111.5	111.5	111.5	103.3	103.3	103.3
			SHC	69.7	85.7	101.7	67.1	83.2	99.2	64.3	80.3	96.3	60.8	76.8	92.8
		72	TC	135.8	135.8	135.8	129.7	129.7	129.7	122.8	122.8	122.8	115.0	115.0	115.0
			SHC	54.3	70.4	86.6	52.0	68.1	84.2	49.3	65.4	81.6	46.4	62.5	78.6
		76	TC	—	145.3	145.3	—	139.0	139.0	—	131.9	131.9	—	124.1	124.1
			SHC	—	57.8	74.3	—	55.6	72.1	—	53.1	69.6	—	50.4	66.9
3500 Cfm	EAT (wb)	58	TC	114.2	114.2	129.4	108.9	108.9	123.4	102.9	102.9	116.6	96.3	96.3	109.1
			SHC	98.9	114.2	129.4	94.3	108.9	123.4	89.1	102.9	116.6	83.4	96.3	109.1
		62	TC	117.2	117.2	127.9	111.0	111.0	124.7	104.0	104.0	119.5	96.5	96.5	113.7
			SHC	91.1	109.5	127.9	88.1	106.4	124.7	83.9	101.7	119.5	79.3	96.5	113.7
		67	TC	127.8	127.8	127.8	121.7	121.7	121.7	114.5	114.5	114.5	106.6	106.6	106.6
			SHC	73.8	92.3	110.8	71.3	89.8	108.3	68.4	87.0	105.5	65.2	83.8	102.3
		72	TC	139.4	139.4	139.4	133.0	133.0	133.0	125.8	125.8	125.8	117.9	117.9	117.9
			SHC	56.0	74.6	93.1	53.7	72.2	90.8	51.0	69.6	88.2	48.1	66.7	85.4
		76	TC	—	148.8	148.8	—	142.2	142.2	—	134.9	134.9	—	126.8	126.8
			SHC	—	60.2	79.5	—	58.0	77.1	—	55.4	74.5	—	52.7	71.6
4000 Cfm	EAT (wb)	58	TC	119.0	119.0	134.9	114.0	114.0	129.2	108.0	108.0	122.4	101.1	101.1	114.6
			SHC	103.1	119.0	134.9	98.7	114.0	129.2	93.6	108.0	122.4	87.6	101.1	114.6
		62	TC	120.3	120.3	137.1	114.7	114.7	132.8	108.2	108.2	127.5	101.3	101.3	119.3
			SHC	96.5	116.8	137.1	93.0	112.9	132.8	88.9	108.2	127.5	83.2	101.3	119.3
		67	TC	130.5	130.5	130.5	124.1	124.1	124.1	116.8	116.8	116.8	108.7	108.7	111.1
			SHC	77.7	98.6	119.5	75.2	96.2	117.2	72.3	93.3	114.4	69.1	90.1	111.1
		72	TC	142.1	142.1	142.1	135.5	135.5	135.5	128.2	128.2	128.2	120.0	120.0	120.0
			SHC	57.6	78.4	99.3	55.2	76.1	97.1	52.5	73.6	94.6	49.7	70.7	91.8
		76	TC	—	151.4	151.4	—	144.7	144.7	—	137.1	137.1	—	—	—
			SHC	—	62.3	83.8	—	60.0	81.4	—	57.5	78.8	—	—	—
4500 Cfm	EAT (wb)	58	TC	123.0	123.0	139.5	117.8	117.8	133.6	111.9	111.9	126.9	105.3	105.3	119.3
			SHC	106.6	123.0	139.5	102.1	117.8	133.6	97.0	111.9	126.9	91.2	105.3	119.3
		62	TC	123.4	123.4	144.4	117.9	117.9	139.0	112.0	112.0	132.0	105.4	105.4	124.2
			SHC	100.9	122.7	144.4	96.9	117.9	139.0	92.1	112.0	132.0	86.6	105.4	124.2
		67	TC	132.6	132.6	132.6	126.0	126.0	126.0	118.7	118.7	122.9	110.4	110.4	119.6
			SHC	81.4	104.6	127.9	78.9	102.3	125.7	76.1	99.5	122.9	72.9	96.2	119.6
		72	TC	144.2	144.2	144.2	137.4	137.4	137.4	129.9	129.9	129.9	121.6	121.6	121.6
			SHC	59.0	82.1	105.2	56.6	79.8	103.1	54.0	77.3	100.7	51.1	74.5	98.0
		76	TC	—	153.4	153.4	—	146.6	146.6	—	138.9	138.9	—	—	—
			SHC	—	64.1	87.8	—	61.9	85.6	—	59.4	83.0	—	—	—
5000 Cfm	EAT (wb)	58	TC	126.5	126.5	143.3	121.2	121.2	137.4	115.1	115.1	130.5	108.4	108.4	122.8
			SHC	109.6	126.5	143.3	105.0	121.2	137.4	99.8	115.1	130.5	93.9	108.4	122.8
		62	TC	126.5	126.5	149.1	121.3	121.3	142.9	115.2	115.2	135.8	108.5	108.5	127.8
			SHC	104.0	126.5	149.1	99.7	121.3	142.9	94.7	115.2	135.8	89.1	108.5	127.8
		67	TC	134.2	134.2	135.9	127.5	127.5	133.8	120.1	120.1	131.0	111.9	111.9	127.6
			SHC	84.9	110.4	135.9	82.4	108.1	133.8	79.6	105.3	131.0	76.4	102.0	127.6
		72	TC	145.8	145.8	145.8	139.0	139.0	139.0	131.3	131.3	131.3	122.9	122.9	122.9
			SHC	60.3	85.6	110.8	57.9	83.4	108.9	55.3	81.0	106.6	52.5	78.2	104.0
		76	TC	—	155.1	155.1	—	148.2	148.2	—	—	—	—	—	—
			SHC	—	65.9	91.5	—	63.7	89.5	—	—	—	—	—	—

LEGEND

Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
ldb — Leaving Dry-Bulb
lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow Ratings table on page 5. Do not operate outside these limits

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 10 TONS

10 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN SUBCOOLING MODE										
TEMP (F) AIR ENT CONDENSER (Edb)		Air Entering Evaporator - CFM								
		3000/0.04			4000/0.06			5000/0.07		
		Air Entering Evaporator - Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	142.85	129.44	116.93	152.09	138.44	125.76	157.99	144.23	132.06
	SHC	58.38	74.88	91.58	67.96	89.45	111.02	76.63	102.94	127.93
	kW	7.19	6.97	6.79	6.92	7.12	7.35	7.45	7.22	7.02
85	TC	132.33	119.68	107.86	140.92	128.03	116.10	146.41	133.41	121.98
	SHC	48.44	65.56	82.83	57.37	79.50	101.68	65.65	92.58	118.12
	kW	7.98	7.77	7.58	7.72	7.92	8.14	8.25	8.01	7.82
95	TC	121.41	109.52	98.43	129.35	117.22	106.04	134.43	122.20	111.50
	SHC	38.19	55.92	73.78	46.47	69.22	92.01	54.34	81.92	107.96
	kW	8.87	8.66	8.48	8.61	8.80	9.03	9.14	8.90	8.71
105	TC	110.04	98.92	88.56	117.27	105.94	95.53	121.88	110.46	100.54
	SHC	27.59	45.94	64.39	35.16	58.57	81.98	42.56	70.82	97.40
	kW	9.86	9.66	9.48	9.61	9.79	10.02	10.12	9.89	9.70
115	TC	98.09	87.74	78.13	104.62	94.08	84.45	108.76	98.13	89.01
	SHC	16.52	35.47	54.53	23.37	47.44	71.46	30.32	59.25	86.31
	kW	10.95	10.76	10.60	10.72	10.89	11.10	11.19	10.98	10.81

10 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN HOT GAS REHEAT MODE										
Temp (F) Air Ent Condenser (Edb)		Air Entering Evaporator - Ewb (F)								
		75 Dry Bulb			75 Dry Bulb			75 Dry Bulb		
		62.5 Wet Bulb			64 Wet Bulb			65.3 Wet Bulb		
		(50% Relative)			(56% Relative)			(60% Relative)		
		Air Entering Evaporator - CFM								
		3000	4000	5000	3000	4000	5000	3000	4000	5000
80	TC	44.78	39.41	31.89	53.22	49.44	43.38	60.56	58.12	53.32
	SHC	-0.44	-0.57	-0.69	-0.37	-0.51	-0.61	-0.33	-0.46	-0.56
	kW	6.96	6.77	6.52	7.26	7.13	6.91	7.54	7.45	7.27
75	TC	45.84	40.46	32.86	54.28	50.51	44.45	61.61	59.19	54.40
	SHC	0.53	0.40	0.29	0.60	0.47	0.37	0.64	0.52	0.42
	kW	6.77	6.56	6.29	7.11	6.95	6.72	7.41	7.31	7.12
70	TC	46.91	41.48	33.50	55.36	51.59	45.50	62.69	60.28	55.49
	SHC	1.51	1.38	1.27	1.57	1.45	1.35	1.61	1.50	1.40
	kW	6.54	6.32	6.02	6.90	6.74	6.49	7.23	7.13	6.92
60	TC	48.88	43.42	35.76	57.29	53.56	47.48	64.56	62.16	57.42
	SHC	3.44	3.34	3.24	3.51	3.40	3.31	3.55	3.45	3.37
	kW	6.45	6.16	6.70	6.93	6.72	6.39	7.38	7.24	6.96
50	TC	50.83	45.28	37.67	59.22	55.52	49.43	66.05	64.03	59.34
	SHC	5.38	5.29	5.20	5.45	5.36	5.28	5.48	5.40	5.33
	kW	6.46	6.01	6.34	6.98	6.71	6.29	8.15	7.38	7.02
40	TC	52.82	47.29	39.50	61.14	57.48	51.39	68.23	65.88	61.25
	SHC	7.32	7.24	7.20	7.38	7.31	7.24	7.43	7.36	7.29
	kW	6.29	6.09	6.12	7.05	6.72	6.29	7.78	7.55	7.10

LEGEND

Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
ldb — Leaving Dry-Bulb
lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

Capacity ratings (cont)

COOLING CAPACITIES — 1-CIRCUIT/2-STAGE COOLING, 10 TONS

RGS119 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
3000 Cfm	EAT (wb)	58	TC	107.8	107.8	122.1	102.5	102.5	116.3	96.9	96.9	110.2	91.1	91.1	103.7
			SHC	93.4	107.8	122.1	88.7	102.5	116.3	83.7	96.9	110.2	78.5	91.1	103.7
		62	TC	114.4	114.4	114.4	107.9	107.9	110.8	100.8	100.8	106.6	93.8	93.8	102.7
			SHC	83.7	99.0	114.4	80.0	95.4	110.8	76.0	91.3	106.6	72.2	87.5	102.7
		67	TC	125.7	125.7	125.7	118.8	118.8	118.8	111.3	111.3	111.3	103.6	103.6	103.6
			SHC	68.7	83.9	99.1	65.1	80.4	95.6	61.4	76.6	91.9	57.5	72.8	88.1
		72	TC	138.0	138.0	138.0	130.8	130.8	130.8	122.8	122.8	122.8	114.4	114.4	114.4
			SHC	53.8	68.6	83.4	50.3	65.2	80.1	46.6	61.5	76.5	42.7	57.7	72.8
		76	TC	—	148.9	148.9	—	141.1	141.1	—	132.5	132.5	—	123.3	123.3
			SHC	—	55.8	72.3	—	52.7	69.2	—	49.2	62.7	—	45.5	59.7
3500 Cfm	EAT (wb)	58	TC	114.0	114.0	129.1	108.4	108.4	122.9	102.4	102.4	116.3	96.2	96.2	109.4
			SHC	98.9	114.0	129.1	93.9	108.4	122.9	88.6	102.4	116.3	83.0	96.2	109.4
		62	TC	118.1	118.1	125.6	111.3	111.3	121.6	104.1	104.1	117.5	96.9	96.9	112.5
			SHC	90.4	108.0	125.6	86.5	104.1	121.6	82.5	100.0	117.5	78.0	95.3	112.5
		67	TC	129.4	129.4	129.4	122.2	122.2	122.2	114.4	114.4	114.4	106.4	106.4	106.4
			SHC	73.1	90.7	108.2	69.5	87.1	104.6	65.7	83.3	100.9	61.8	79.4	97.0
		72	TC	141.9	141.9	141.9	134.3	134.3	134.3	126.0	126.0	126.0	117.2	117.2	117.2
			SHC	55.8	73.1	90.3	52.3	69.6	86.8	48.5	65.8	83.1	44.6	61.9	79.3
		76	TC	—	152.2	152.2	—	144.5	144.5	—	135.4	135.4	—	126.0	126.0
			SHC	—	58.6	74.0	—	55.3	71.4	—	51.6	68.1	—	47.8	64.6
4000 Cfm	EAT (wb)	58	TC	119.2	119.2	134.9	113.3	113.3	128.4	107.0	107.0	121.5	100.4	100.4	114.1
			SHC	103.5	119.2	134.9	98.2	113.3	128.4	92.6	107.0	121.5	86.6	100.4	114.1
		62	TC	121.0	121.0	135.9	114.3	114.3	131.4	107.5	107.5	125.2	101.1	101.1	117.1
			SHC	96.5	116.2	135.9	92.4	111.9	131.4	87.3	106.2	125.2	81.5	99.3	117.1
		67	TC	132.3	132.3	132.3	124.9	124.9	124.9	117.0	117.0	117.0	108.5	108.5	108.5
			SHC	77.3	97.2	117.0	73.6	93.5	113.3	69.8	89.7	109.5	65.8	85.6	105.5
		72	TC	144.8	144.8	144.8	137.0	137.0	137.0	128.4	128.4	128.4	119.3	119.3	119.3
			SHC	57.6	77.2	96.7	54.1	73.6	93.2	50.2	69.8	89.4	46.2	65.9	85.5
		76	TC	—	155.4	155.4	—	146.8	146.8	—	137.7	137.7	—	127.9	127.9
			SHC	—	61.0	79.4	—	57.5	76.2	—	53.8	72.7	—	49.8	69.0
4500 Cfm	EAT (wb)	58	TC	123.4	123.4	139.6	117.4	117.4	132.9	110.8	110.8	125.6	103.8	103.8	117.9
			SHC	107.2	123.4	139.6	101.8	117.4	132.9	95.9	110.8	125.6	89.7	103.8	117.9
		62	TC	124.0	124.0	143.3	118.1	118.1	136.3	111.2	111.2	129.4	103.9	103.9	122.7
			SHC	101.1	122.2	143.3	95.9	116.1	136.3	90.5	110.0	129.4	85.1	103.9	122.7
		67	TC	134.6	134.6	134.6	127.0	127.0	127.0	118.9	118.9	118.9	110.2	110.2	113.8
			SHC	81.3	103.3	125.4	77.5	99.6	121.6	73.7	95.7	117.8	69.6	91.7	113.8
		72	TC	147.0	147.0	147.0	139.1	139.1	139.1	130.3	130.3	130.3	121.0	121.0	121.0
			SHC	59.3	81.1	102.8	55.7	77.5	99.3	51.9	73.7	95.5	47.8	69.6	91.4
		76	TC	—	157.5	157.5	—	148.9	148.9	—	139.5	139.5	—	129.4	129.4
			SHC	—	63.1	84.0	—	59.6	80.7	—	55.7	77.0	—	51.8	73.1
5000 Cfm	EAT (wb)	58	TC	127.1	127.1	143.8	120.8	120.8	136.8	113.9	113.9	129.2	106.8	106.8	121.3
			SHC	110.5	127.1	143.8	104.8	120.8	136.8	98.7	113.9	129.2	92.4	106.8	121.3
		62	TC	127.7	127.7	148.1	121.2	121.2	141.5	114.0	114.0	134.3	106.9	106.9	126.2
			SHC	104.4	126.3	148.1	99.3	120.4	141.5	93.7	114.0	134.3	87.6	106.9	126.2
		67	TC	136.5	136.5	136.5	128.7	128.7	129.7	120.4	120.4	125.7	111.5	111.5	121.4
			SHC	85.1	109.3	133.5	81.3	105.5	129.7	77.3	101.5	125.7	73.1	97.3	121.4
		72	TC	149.0	149.0	149.0	140.9	140.9	140.9	131.8	131.8	131.8	122.4	122.4	122.4
			SHC	60.9	84.9	108.8	57.3	81.3	105.2	53.4	77.3	101.3	49.4	73.3	97.2
		76	TC	—	159.2	159.2	—	150.5	150.5	—	140.8	140.8	—	130.6	130.6
			SHC	—	65.1	88.3	—	61.5	84.8	—	57.6	81.0	—	53.6	76.9

LEGEND

—	Do not operate
Cfm	Cubic feet per minute (supply air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow Ratings table on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 12.5 TONS

RGS150 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
3600 Cfm	EAT (wb)	58	TC	127.6	127.6	142.9	121.7	121.7	137.6	115.0	115.0	130.0	108.3	108.3	122.6
			SHC	110.3	126.6	142.9	105.8	121.7	137.6	99.9	115.0	130.0	94.1	108.3	122.6
		62	TC	136.1	136.1	136.1	131.1	131.1	131.1	123.8	123.8	124.5	114.9	114.9	120.3
			SHC	96.6	112.8	129.0	94.7	111.2	127.7	91.4	108.0	124.5	87.3	103.8	120.3
		67	TC	146.2	146.2	146.2	142.0	142.0	142.0	136.2	136.2	136.2	128.8	128.8	128.8
			SHC	78.5	94.4	110.3	76.9	93.1	109.2	74.7	91.0	107.3	71.7	88.1	104.6
		72	TC	155.9	155.9	155.9	152.4	152.4	152.4	147.2	147.2	147.2	140.1	140.1	140.1
			SHC	60.1	76.6	93.2	58.7	75.2	91.7	56.8	73.3	89.7	54.2	70.6	87.0
		76	TC	—	163.0	163.0	—	160.0	160.0	—	155.1	155.1	—	148.2	148.2
			SHC	—	62.0	81.8	—	61.1	80.9	—	59.5	79.3	—	57.0	76.3
4200 Cfm	EAT (wb)	58	TC	132.2	132.2	149.5	128.2	128.2	144.9	121.9	121.9	137.8	115.0	115.0	130.1
			SHC	115.0	132.2	149.5	111.5	128.2	144.9	106.0	121.9	137.8	99.9	115.0	130.1
		62	TC	139.6	139.6	139.6	134.7	134.7	138.0	128.0	128.0	135.6	119.1	119.1	131.2
			SHC	102.5	120.8	139.0	100.8	119.4	138.0	98.1	116.8	135.6	93.9	112.6	131.2
		67	TC	149.5	149.5	149.5	145.4	145.4	145.4	139.6	139.6	139.6	132.1	132.1	132.1
			SHC	81.8	99.6	117.4	80.6	98.7	116.8	78.5	96.9	115.2	75.7	94.3	112.8
		72	TC	159.0	159.0	159.0	155.5	155.5	155.5	150.3	150.3	150.3	143.1	143.1	143.1
			SHC	61.4	79.6	97.8	60.2	78.5	96.8	58.3	76.7	95.0	55.8	74.2	92.5
		76	TC	—	165.7	165.7	—	162.8	162.8	—	157.8	157.8	—	150.8	150.8
			SHC	—	64.6	87.7	—	63.5	86.3	—	61.5	83.3	—	58.9	79.9
4800 Cfm	EAT (wb)	58	TC	136.7	136.7	154.5	133.0	133.0	150.3	127.7	127.7	144.3	120.6	120.6	136.4
			SHC	118.9	136.7	154.5	115.7	133.0	150.3	111.0	127.7	144.3	104.9	120.6	136.4
		62	TC	142.2	142.2	147.8	137.4	137.4	147.1	131.0	131.0	144.7	122.8	122.8	140.3
			SHC	107.7	127.8	147.8	106.2	126.7	147.1	103.6	124.2	144.7	99.3	119.8	140.3
		67	TC	152.1	152.1	152.1	148.0	148.0	148.0	142.2	142.2	142.2	134.6	134.6	134.6
			SHC	84.8	104.3	123.7	83.8	103.8	123.7	82.0	102.3	122.6	79.4	99.9	120.4
		72	TC	161.3	161.3	161.3	157.8	157.8	157.8	152.5	152.5	152.5	145.4	145.4	145.4
			SHC	62.6	82.2	101.9	61.4	81.4	101.3	59.7	79.7	99.8	57.2	77.3	97.5
		76	TC	—	167.7	167.7	—	164.9	164.9	—	159.9	159.9	—	152.8	152.8
			SHC	—	66.4	91.4	—	65.0	89.2	—	63.1	86.4	—	60.5	83.1
5400 Cfm	EAT (wb)	58	TC	140.5	140.5	158.8	136.9	136.9	154.7	131.8	131.8	149.0	125.2	125.2	141.6
			SHC	122.2	140.5	158.8	119	136.9	154.7	114.7	131.8	149.0	108.9	125.2	141.6
		62	TC	144.3	144.3	155.7	139.6	139.6	155.0	133.5	133.5	152.4	125.8	125.8	147.8
			SHC	112.2	133.9	155.7	110.9	132.9	155.0	108.1	130.2	152.4	103.9	125.8	147.8
		67	TC	154.2	154.2	154.2	150.0	150.0	150.0	144.2	144.2	144.2	136.7	136.7	136.7
			SHC	87.6	108.6	129.6	86.8	108.5	130.1	85.2	107.3	129.4	82.8	105.1	127.4
		72	TC	163.1	163.1	163.1	159.7	159.7	159.7	154.3	154.3	154.3	147.1	147.1	147.1
			SHC	63.6	84.6	105.6	62.5	83.9	105.4	60.8	82.5	104.2	58.4	80.2	102.0
		76	TC	—	169.3	169.3	—	166.5	166.5	—	161.5	161.5	—	154.2	154.2
			SHC	—	67.6	93.7	—	66.4	91.7	—	64.5	89.2	—	61.9	86.1
6000 Cfm	EAT (wb)	58	TC	143.6	143.6	162.3	140.1	140.1	158.3	135.1	135.1	152.7	128.7	128.7	145.5
			SHC	124.9	143.6	162.3	121.8	140.1	158.3	117.5	135.1	152.7	111.9	128.7	145.5
		62	TC	146.1	146.1	162.4	141.7	141.7	161.5	135.6	135.6	159.2	128.8	128.8	151.2
			SHC	116.1	139.3	162.4	114.7	138.1	161.5	112.1	135.6	159.2	106.4	128.8	151.2
		67	TC	155.8	155.8	155.8	151.6	151.6	151.6	145.9	145.9	145.9	138.3	138.3	138.3
			SHC	90.1	112.6	135.0	89.6	112.8	136.0	88.3	112.0	135.8	85.9	110.0	134.1
		72	TC	164.5	164.5	164.5	161.2	161.2	161.2	155.8	155.8	155.8	148.5	148.5	148.5
			SHC	64.5	86.7	108.9	63.5	86.3	109.1	61.9	85.1	108.2	59.6	82.9	106.3
		76	TC	—	170.6	170.6	—	167.8	167.8	—	162.8	162.8	—	155.5	155.5
			SHC	—	68.7	95.8	—	67.5	94.1	—	65.7	91.8	—	63.3	88.8

LEGEND

— Do not operate
 Cfm — Cubic feet per minute (supply air)
 EAT (db) — Entering Air Temperature (dry bulb)
 EAT (wb) — Entering Air Temperature (wet bulb)
 SHC — Sensible Heat Capacity (1000 Btuh) Gross
 TC — Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow - Natural Gas and Propane Ratings on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 12.5 TONS

12.5 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN SUBCOOLING MODE										
TEMP (F) AIR ENT CONDENSER (Edb)		AIR ENTERING EVAPORATOR - CFM								
		3750/0.02			5000/0.06			6250/0.05		
		AIR ENTERING EVAPORATOR - Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	183.66	166.86	151.43	194.90	177.83	162.05	201.97	184.84	170.53
	SHC	79.39	100.52	121.91	91.70	119.42	147.05	102.94	137.00	166.71
	kW	9.82	9.63	9.46	9.58	9.76	9.96	10.04	9.84	9.67
85	TC	172.71	156.78	142.09	183.32	167.13	152.17	189.98	173.73	160.25
	SHC	69.03	90.92	112.95	80.69	109.17	137.51	91.49	126.33	156.65
	kW	10.82	10.63	10.45	10.57	10.76	10.96	11.04	10.84	10.67
95	TC	161.37	146.24	132.38	171.36	156.04	141.86	177.62	162.22	149.50
	SHC	58.44	81.04	103.77	69.42	98.67	127.71	79.83	115.45	146.15
	kW	11.92	11.73	11.56	11.68	11.86	12.05	12.14	11.93	11.77
105	TC	149.57	135.32	122.21	158.89	144.45	131.10	164.74	150.27	138.35
	SHC	47.57	70.92	94.32	57.85	87.91	117.61	67.79	104.26	135.30
	kW	13.12	12.94	12.77	12.89	13.06	13.24	13.32	13.13	12.97
115	TC	137.22	123.88	111.55	145.85	132.33	119.84	151.27	137.71	126.67
	SHC	36.31	60.47	84.57	45.87	76.77	107.19	55.34	92.66	123.98
	kW	14.41	14.25	14.10	14.20	14.35	14.53	14.59	14.42	14.28

12.5 TON COOLING CAPACITIES, RTPF UNIT WITH HOT GAS RE-HEAT SYSTEM IN HOT GAS REHEAT MODE										
TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR - Ewb (F)								
		75 DRY BULB			75 DRY BULB			75 DRY BULB		
		62.5 WET BULB			64 WET BULB			65.3 WET BULB		
		(50% RELATIVE)			(56% RELATIVE)			(60% RELATIVE)		
		Air Entering Evaporator - CFM								
		3750	5000	6250	3750	5000	6250	3750	5000	6250
80	TC	52.42	45.88	36.99	62.64	58.07	51.07	71.56	68.64	63.23
	SHC	-0.39	-0.54	-0.67	-0.31	-0.46	-0.58	-0.26	-0.40	-0.52
	kW	9.65	9.39	9.07	9.97	9.77	9.50	10.25	10.11	9.89
75	TC	53.45	46.63	36.10	63.77	59.11	51.87	72.76	69.80	64.31
	SHC	0.59	0.44	0.30	0.67	0.52	0.40	0.72	0.58	0.47
	kW	9.09	8.83	8.49	9.39	9.20	8.94	9.67	9.53	9.32
70	TC	54.33	46.91	37.58	64.77	60.01	52.30	73.80	70.80	65.24
	SHC	1.56	1.41	1.29	1.64	1.50	1.38	1.70	1.56	1.45
	kW	8.81	8.53	8.62	9.15	8.94	8.65	9.46	9.31	9.08
60	TC	55.47	49.48	40.48	66.62	62.07	54.88	75.68	72.76	67.28
	SHC	3.50	3.38	3.27	3.59	3.47	3.36	3.65	3.52	3.42
	kW	8.36	8.84	8.98	9.88	9.56	9.10	9.83	9.64	9.31
50	TC	58.33	51.72	42.81	68.72	63.93	55.84	77.74	74.77	69.24
	SHC	5.47	5.35	5.24	5.54	5.43	5.32	5.60	5.49	5.39
	kW	8.98	9.25	9.43	9.33	8.97	8.73	9.55	9.33	9.70
40	TC	60.33	53.69	46.89	70.67	65.93	49.83	79.46	76.62	71.24
	SHC	7.42	7.31	7.22	7.49	7.39	7.23	7.55	7.45	7.37
	kW	9.16	9.88	9.06	9.50	9.05	9.47	10.31	10.00	9.48

LEGEND

Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
ldb — Leaving Dry-Bulb
lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 15 TONS

RGS180 (RTPF)				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
4500 Cfm	EAT (wb)	58	TC	156.6	156.6	175.2	149.4	149.4	169.1	141.6	141.6	160.2	133.3	133.3	150.9
			SHC	134.7	154.9	175.2	129.8	149.4	169.1	123.0	141.6	160.2	115.7	133.3	150.9
		62	TC	166.7	166.7	166.9	158.0	158.0	162.6	147.6	147.6	157.2	136.8	136.8	150.3
			SHC	122.8	144.9	166.9	118.6	140.6	162.6	113.5	135.3	157.2	107.4	128.8	150.3
		67	TC	184.1	184.1	184.1	175.6	175.6	175.6	165.6	165.6	165.6	154.5	154.5	154.5
			SHC	101.6	123.7	145.7	98.1	120.2	142.3	94.0	116.1	138.2	89.4	111.5	133.6
		72	TC	200.3	200.3	200.3	192.0	192.0	192.0	182.9	182.9	182.9	172.2	172.2	172.2
			SHC	78.7	101.1	123.5	75.5	97.9	120.2	72.1	94.4	116.7	68.2	90.5	112.7
		76	TC	—	211.4	211.4	—	203.1	203.1	—	193.8	193.8	—	183.9	183.9
			SHC	—	82.2	107.0	—	79.3	103.8	—	76.0	100.2	—	72.6	96.5
5250 Cfm	EAT (wb)	58	TC	165.2	165.2	186.9	158.2	158.2	179.0	150.0	150.0	169.7	141.3	141.3	160.0
			SHC	143.5	165.2	186.9	137.4	158.2	179.0	130.2	150.0	169.7	122.7	141.3	160.0
		62	TC	172.3	172.3	181.7	163.4	163.4	176.9	153.1	153.1	169.3	143.4	143.4	161.4
			SHC	131.6	156.6	181.7	127.1	152.0	176.9	120.5	144.9	169.3	114.1	137.8	161.4
		67	TC	189.5	189.5	189.5	180.9	180.9	180.9	170.7	170.7	170.7	159.1	159.1	159.1
			SHC	107.2	132.4	157.5	103.8	129.0	154.1	99.9	125.1	150.4	95.3	120.6	145.8
		72	TC	205.0	205.0	205.0	196.5	196.5	196.5	187.1	187.1	187.1	176.4	176.4	176.4
			SHC	80.9	106.1	131.3	77.7	102.9	128.1	74.4	99.5	124.7	70.6	95.8	121.0
		76	TC	—	215.4	215.4	—	206.8	206.8	—	197.1	197.1	—	186.9	186.9
			SHC	—	85.0	113.0	—	82.0	109.8	—	78.8	106.4	—	75.4	102.8
6000 Cfm	EAT (wb)	58	TC	172.7	172.7	195.4	165.5	165.5	187.3	157.1	157.1	177.8	148.1	148.1	167.7
			SHC	150.0	172.7	195.4	143.8	165.5	187.3	136.4	157.1	177.8	128.6	148.1	167.7
		62	TC	176.6	176.6	195.7	168.1	168.1	187.6	158.9	158.9	180.2	148.9	148.9	172.1
			SHC	139.6	167.7	195.7	133.2	160.4	187.6	127.1	153.7	180.2	120.7	146.4	172.1
		67	TC	193.6	193.6	193.6	184.8	184.8	184.8	174.7	174.7	174.7	162.7	162.7	162.7
			SHC	112.3	140.3	168.3	108.9	137.0	165.2	105.2	133.5	161.7	100.7	129.0	157.3
		72	TC	208.4	208.4	208.4	199.6	199.6	199.6	190.2	190.2	190.2	179.5	179.5	179.5
			SHC	82.7	110.5	138.3	79.6	107.3	135.1	76.2	104.0	131.8	72.6	100.6	128.5
		76	TC	—	218.2	218.2	—	209.5	209.5	—	199.5	199.5	—	189.0	189.0
			SHC	—	87.5	118.6	—	84.5	115.2	—	81.1	111.3	—	77.5	107.3
6750 Cfm	EAT (wb)	58	TC	178.8	178.8	202.4	171.6	171.6	194.2	163.1	163.1	184.6	153.8	153.8	174.1
			SHC	155.3	178.8	202.4	149.0	171.6	194.2	141.6	163.1	184.6	133.5	153.8	174.1
		62	TC	181.0	181.0	203.6	173.0	173.0	197.5	163.8	163.8	190.1	153.9	153.9	181.1
			SHC	144.1	173.9	203.6	139.1	168.3	197.5	133.3	161.7	190.1	126.7	153.9	181.1
		67	TC	196.8	196.8	196.8	187.9	187.9	187.9	177.7	177.7	177.7	165.5	165.5	167.9
			SHC	117.0	147.7	178.4	113.7	144.5	175.4	110.1	141.1	172.2	105.6	136.8	167.9
		72	TC	211.0	211.0	211.0	202.2	202.2	202.2	192.5	192.5	192.5	181.8	181.8	181.8
			SHC	84.3	114.5	144.7	81.2	111.5	141.7	77.9	108.1	138.4	74.4	104.9	135.4
		76	TC	—	220.2	220.2	—	211.5	211.5	—	201.3	201.3	—	190.6	190.6
			SHC	—	89.5	122.8	—	86.4	119.4	—	83.0	115.4	—	79.4	111.5
7500 Cfm	EAT (wb)	58	TC	183.9	183.9	208.2	176.6	176.6	199.8	168.2	168.2	190.3	158.6	158.6	179.5
			SHC	159.7	183.9	208.2	153.3	176.6	199.8	146.0	168.2	190.3	137.7	158.6	179.5
		62	TC	185.1	185.1	212.5	177.1	177.1	206.2	168.3	168.3	197.9	158.7	158.7	186.7
			SHC	149.5	181.0	212.5	144.5	175.4	206.2	138.7	168.3	197.9	130.8	158.7	186.7
		67	TC	199.3	199.3	199.3	190.3	190.3	190.3	180.0	180.0	181.7	167.8	167.8	177.8
			SHC	121.3	154.6	187.9	118.1	151.6	185.1	114.4	148.1	181.7	110.1	144.0	177.8
		72	TC	213.0	213.0	213.0	204.1	204.1	204.1	194.2	194.2	194.2	183.5	183.5	183.5
			SHC	85.8	118.2	150.5	82.7	115.2	147.7	79.4	111.9	144.4	76.0	108.8	141.6
		76	TC	—	221.9	221.9	—	213.0	213.0	—	202.7	202.7	—	191.8	191.8
			SHC	—	91.2	126.5	—	88.2	123.1	—	84.7	119.2	—	81.2	115.3

LEGEND

—	Do not operate
Cfm	Cubic feet per minute (supply air)
EAT (db)	Entering Air Temperature (dry bulb)
EAT (wb)	Entering Air Temperature (wet bulb)
SHC	Sensible Heat Capacity (1000 Btuh) Gross
TC	Total Capacity (1000 Btuh) Gross

NOTE: See Minimum-Maximum Airflow - Natural Gas and Propane Ratings on page 5. Do not operate outside these limits.

Capacity ratings (cont)

COOLING CAPACITIES — 2-CIRCUIT/2-STAGE COOLING, 15 TONS

15 TON COOLING CAPACITIES, UNIT WITH HOT GAS RE-HEAT SYSTEM IN SUBCOOLING MODE										
TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR - CFM								
		4500/0.02			6000/0.06			7500/0.05		
		AIR ENTERING EVAPORATOR - Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	204.40	186.30	168.20	218.40	199.60	180.90	229.60	210.40	191.20
	SHC	98.90	118.10	137.20	114.80	133.70	152.60	127.60	146.20	164.90
	kW	11.57	11.22	10.77	11.78	11.45	11.00	12.06	11.64	11.35
85	TC	189.20	171.70	154.10	203.00	184.80	166.70	214.10	195.50	176.90
	SHC	79.50	103.40	127.30	96.50	120.20	144.00	110.20	133.70	157.30
	kW	12.59	12.24	11.81	12.81	12.50	12.03	13.05	12.66	12.47
95	TC	174.00	157.00	140.00	187.60	170.10	152.50	198.60	180.60	162.70
	SHC	60.00	88.70	117.50	78.20	106.80	135.30	92.90	121.30	149.70
	kW	13.68	13.35	12.86	13.91	13.57	13.05	14.15	13.75	13.47
105	TC	158.80	142.30	125.80	172.20	155.30	138.30	183.10	165.70	148.40
	SHC	40.50	74.10	107.70	59.90	93.30	126.70	75.50	108.80	142.00
	kW	14.67	14.41	13.88	14.90	14.55	14.10	15.15	14.73	14.53
115	TC	143.60	127.60	111.70	156.80	140.50	124.10	167.60	150.90	134.20
	SHC	21.00	59.40	97.80	41.60	79.90	118.10	58.10	96.30	134.20
	kW	15.77	15.38	14.88	15.88	15.65	15.10	16.12	15.84	15.54

15 TON COOLING CAPACITIES, UNIT WITH HOT GAS RE-HEAT SYSTEM IN HOT GAS REHEAT MODE										
TEMP (F) AIR ENT CONDENSER (Edb)		AIR ENTERING EVAPORATOR - Ewb (F)								
		75 DRY BULB			75 DRY BULB			75 DRY BULB		
		62.5 WET BULB			64 WET BULB			65.3 WET BULB		
		(50% RELATIVE)			(56% RELATIVE)			(60% RELATIVE)		
		AIR ENTERING EVAPORATOR - CFM								
		4500	6000	7500	4500	6000	7500	4500	6000	7500
80	TC	83.75	84.85	88.95	86.65	91.90	92.90	87.90	91.75	96.30
	SHC	37.50	42.80	55.10	30.90	40.40	44.50	24.80	29.30	34.10
	kW	10.50	11.49	11.60	10.56	10.65	11.70	11.60	11.72	11.77
75	TC	85.00	86.00	90.50	88.05	93.60	94.65	89.20	93.45	97.85
	SHC	40.00	45.00	57.30	33.20	42.30	46.90	26.90	31.50	36.30
	kW	10.16	11.15	11.25	10.21	10.31	11.33	11.26	11.35	11.42
70	TC	86.15	87.35	91.50	89.20	94.30	96.10	90.40	94.10	98.95
	SHC	42.10	47.50	59.80	35.50	45.30	49.50	29.50	33.90	38.70
	kW	9.84	10.83	10.94	10.02	10.13	11.03	10.95	11.05	11.12
60	TC	88.90	90.10	94.25	92.00	97.10	98.20	93.20	96.90	101.75
	SHC	46.80	52.30	64.60	40.20	50.10	54.10	34.10	38.60	43.40
	kW	9.37	10.36	10.44	9.42	9.52	10.55	10.45	10.57	10.64
50	TC	91.70	92.80	97.00	94.80	99.90	101.00	96.10	99.70	104.20
	SHC	51.50	57.10	69.40	44.80	54.80	58.90	38.70	43.20	49.00
	kW	9.12	10.09	10.16	9.17	9.28	10.26	10.17	10.26	10.32
40	TC	94.45	95.60	99.80	97.45	102.55	103.70	98.65	102.35	107.00
	SHC	56.30	61.40	73.70	49.70	59.20	63.30	43.60	48.10	52.90
	kW	9.05	10.02	10.10	9.10	9.21	10.18	10.11	10.20	10.26

LEGEND

Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
ldb — Leaving Dry-Bulb
lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

Physical data

PHYSICAL DATA (COOLING) — 7.5-8.5 TONS

RGS		RGS090	RGS089*	RGS102	RGS100
REFRIGERATION SYSTEM					
# Circuits / # Comp. / Type		2 / 2 / Scroll	1 / 1 / 2-Stage Scroll	2 / 2 / Scroll	1 / 1 / 2-Stage Scroll
RTPF models R-410A charge A/B (lbs-oz)		8-5 / 8-2	12-0	10-5 / 10-12	15-5
Alternate (Hot Gas Reheat) R-410A charge A/B (lbs- oz)		13-3 / 13-3	—	16-13 / 16-13	—
Metering Device		Accutrol	Accutrol + TXV	Accutrol	Accutrol + TXV
Alternate Hot Gas Reheat Metering Device		Accutrol + TXV	—	Accutrol + TXV	—
High-press. Trip / Reset (psig)		630 / 505	630 / 505	630 / 505	630 / 505
Low-press. Trip / Reset (psig)		54 / 117	54 / 117	54 / 117	54 / 117
Compressor Capacity Staging (%)		50% / 100%	66% / 100%	50% / 100%	66% / 100%
EVAP. COIL					
Material		Cu / Al	Cu / Al	Cu / Al	Cu / Al
Coil Type (Tube Dia.)		3/8" RTPF	3/8" RTPF	3/8" RTPF	3/8" RTPF
Rows / FPI		3 / 15	3 / 15	3 / 15	3 / 15
Total Face Area (ft ²)		8.9	8.9	11.1	11.1
Condensate Drain Conn. Size		3/4"	3/4"	3/4"	3/4"
HOT GAS RE-HEAT COIL					
Material		Cu / Al	—	Cu / Al	—
Coil Type (Tube Dia.)		3/8" RTPF	—	3/8" RTPF	—
Rows / FPI		2 / 17	—	2 / 17	—
Total Face Area (ft ²)		3.9	—	5.2	—
EVAPORATOR FAN AND MOTOR					
Standard Static	Motor Qty. / Driver Type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	1.7	1.7	1.7	1.7
	RPM Range	489-747	489-747	518-733	518-733
	Motor Frame Size	56	56	56	56
	Fan Qty. / Type	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal
Medium Static	Fan Diameter (in.)	15 x 15	15 x 15	15 x 15	15 x 15
	Motor Qty. / Driver Type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	2.9 †	2.9	2.9	2.4
	RPM Range	733-949	733-949	690-936	690-936
	Motor Frame Size	56	56	56	56
High Static	Fan Qty. / Type	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal
	Fan Diameter (in.)	15 x 15	15 x 15	15 x 15	15 x 15
	Motor Qty. / Driver Type	1 / Belt	N/A	1 / Belt	1 / Belt
	Max BHP	4.7		3.7	3.7
	RPM Range	909-1102		838-1084	838-1084
	Motor Frame Size	14		56	56
	Fan Qty. / Type	1 / Centrifugal		1 / Centrifugal	1 / Centrifugal
	Fan Diameter (in.)	15 x 15		15 x 15	15 x 15
CONDENSER COIL					
Material (Tube/Fin)		Cu / Al	Cu / Al	Cu / Al	Cu / Al
Coil Type		3/8" RTPF	5/16" RTPF	3/8" RTPF	3/8" RTPF
Rows / FPI		2 / 17	2 / 18	2 / 17	2 / 17
Total Face Area (ft ²)		20.5	20.5	25.1	21.4
COND. FAN / MOTOR					
Qty / Motor Drive Type		2 / Direct	2 / Direct	2 / Direct	2 / Direct
Motor HP / RPM		1/4 / 1100	1/4 / 1100	1/4 / 1100	1/4 / 1100
Fan Diameter (in.)		22	22	22	22
FILTERS					
RA Filter # / Size (in.)		4 / 16 x 20 x 2	4 / 16 x 20 x 2	4 / 20 x 20 x 2	4 / 20 x 20 x 2
OA Inlet Screen # / Size (in.)		1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1

LEGEND

— Not applicable

* RGS089 is not available in 575 volt models.

† 575V motor utilizes 3.7 BHP.

Physical data (cont)

PHYSICAL DATA (COOLING) — 10-15 TONS

RGS		RGS120	RGS119	RGS150	RGS180
REFRIGERATION SYSTEM					
# Circuits / # Comp. / Type		2 / 2 / Scroll	1 / 1 / 2-Stage Scroll	2 / 2 / Scroll	2 / 2 / Scroll
RTPF models R-410A charge A/B (lbs-oz)		10-5 / 10-3	21-0	11-0 / 11-6	15-14 / 16-12
Alternate (Hot Gas Reheat) R-410A charge A/B (lbs- oz)		16-10 / 16-0	—	17-10 / 18-3	—
Metering device		Accutrol	Accutrol + TXV	Accutrol	Accutrol
Alternate Hot Gas Reheat Metering Device		Accutrol + TXV	—	Accutrol + TXV	—
High-press. Trip / Reset (psig)		630 / 505	630 / 505	630 / 505	630 / 505
Low-press. Trip / Reset (psig)		54 / 117	54 / 117	54 / 117	54 / 117
Compressor Capacity Staging (%)		50% / 100%	66% / 100%	50% / 100%	50% / 100%
EVAP. COIL					
Material		Cu / Al	Cu / Al	Cu / Al	Cu / Al
Coil Type (Tube Dia.)		3/8" RTPF	3/8" RTPF	3/8" RTPF	3/8" RTPF
Rows / FPI		4 / 15	4 / 15	4 / 15	3 / 15
Total Face Area (ft ²)		11.1	11.1	11.1	17.5
Condensate Drain Conn. Size		3/4"	3/4"	3/4"	3/4"
HOT GAS RE-HEAT COIL					
Material		Cu / Al	—	Cu / Al	Cu / Al
Coil Type (Tube Dia.)		3/8" RTPF	—	3/8" RTPF	3/8" RTPF
Rows / FPI		2 / 17	—	2 / 17	2 / 17
Total Face Area (ft ²)		8.4	—	8.4	13.8
EVAPORATOR FAN AND MOTOR					
Standard Static	Motor Qty. / Driver Type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	2.4	2.4	2.9*	2.9*
	RPM Range	591-838	591-838	652-843	507-676
	Motor Frame Size	56	56	56	56
	Fan Qty. / Type	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal
	Fan Diameter (in.)	15 x 15	15 x 15	15 x 15	18 x 18
Medium Static	Motor Qty. / Driver Type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	3.7	3.7	3.7	3.7
	RPM Range	838-1084	838-1084	838-1084	627-851
	Motor frame size	56	56	56	56
	Fan Qty. / Type	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal
	Fan Diameter (in.)	15 x 15	15 x 15	15 x 15	18 x 18
High Static	Motor Qty. / Driver Type	1 / Belt	1 / Belt	1 / Belt	1 / Belt
	Max BHP	4.7	4.7	4.7	6.5 / 6.9 / 7.0 / 8.3†
	RPM Range	1022-1240	1022-1240	1022-1240	776-955
	Motor Frame Size	14	14	14	S184T
	Fan Qty. / Type	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal	1 / Centrifugal
	Fan Diameter (in.)	15 x 15	15 x 15	15 x 15	18 x 18
CONDENSER COIL					
Material (Tube/Fin)		Cu / Al	Cu / Al	Cu / Al	Cu / Al
Coil Type		3/8" RTPF	3/8" RTPF	3/8" RTPF	3/8" RTPF
Rows / FPI		2 / 17	2 / 17	3 / 17	2 / 17
Total Face Area (ft ²)		25.1	25.1	25.1	2@23.1
COND. FAN / MOTOR					
Qty / Motor Drive Type		2 / Direct	2 / Direct	1 / Direct	3 / Direct
Motor HP / RPM		1/4 / 1100	1/4 / 1100	1/4 / 1175	1/4 / 1100
Fan Diameter (in.)		22	22	30	22
FILTERS					
RA Filter # / Size (in.)		4 / 20 x 20 x 2	4 / 20 x 20 x 2	4 / 20 x 20 x 2	6 / 18 x 24 x 2 2 / 24 x 27 x 1 (vert.)
OA Inlet Screen # / Size (in.)		1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 20 x 24 x 1	1 / 30 x 39 x 1 (horiz.)

LEGEND

— Not applicable

* 575V motor utilizes 3.7 BHP.

† On RGS180 units, Max BHP for the High Static motor varies with the motor's voltage; see the Voltage/BHP table below

Voltage	BHP
208	6.5
230	6.9
460	7.0
575	8.3

Physical data (cont)

PHYSICAL DATA (HEATING) — 6-10 TONS

RGS		RGS089/090	RGS100/102	RGS119/120
GAS CONNECTION				
# of Gas Valves		1	1	1
Natural Gas Supply Line Press. (in. w.g.)/(PSIG)		4-13 / 0.18-0.47	4-13 / 0.18-0.47	4-13 / 0.18-0.47
LP Supply Line Press. (in. w.g.)/(PSIG)		11-13 / 0.040-0.047	11-13 / 0.040-0.047	11-13 / 0.040-0.047
HEAT ANTICIPATOR SETTING (AMPS)				
1st stage		0.14	0.14	0.14
2nd stage		0.14	0.14	0.14
NATURAL GAS HEAT				
LOW	# of Stages / # of Burners (Total)	1 / 2	1 / 3	2 / 4
	Connection Size	1/2" NPT	1/2" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	195 / 115	195 / 115
	Temperature Rise	20 - 50	20 - 50	25 - 65
MEDIUM	# of Stages / # of Burners (Total)	2 / 4	2 / 4	2 / 5
	Connection Size	3/4" NPT	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	195 / 115	195 / 115
	Temperature Rise	35 - 65	30 - 65	30 - 65
HIGH	# of Stages / # of Burners (Total)	2 / 5	2 / 5	2 / 5
	Connection Size	3/4" NPT	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	195 / 115	195 / 115
	Temperature Rise	45 - 75	40 - 75	35 - 70
LIQUID PROPANE HEAT				
LOW	# of Stages / # of Burners (Total)	1 / 3	1 / 3	2 / 4
	Connection Size	1/2" NPT	1/2" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	195 / 115	195 / 115
	Temperature Rise	20 - 50	20 - 50	20 - 65
MEDIUM	# of Stages / # of Burners (Total)	2 / 4	2 / 4	2 / 5
	Connection Size	1/2" NPT	1/2" NPT	1/2" NPT
	Rollout Switch Opens / Closes	195 / 115	195 / 115	195 / 115
	Temperature Rise	35 - 65	30 - 65	30 - 65
HIGH	# of Stages / # of Burners (Total)	2 / 5	2 / 5	2 / 5
	Connection Size	3/4" NPT	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	195 / 115	195 / 115
	Temperature Rise	45 - 75	45 - 75	35 - 70

Physical data (cont)

PHYSICAL DATA (HEATING) — 12.5-15 TONS

RGS		RGS150	RGS180
GAS CONNECTION			
# of Gas Valves		1	1
Natural Gas Supply Line Press. (in. w.g.) /(PSIG)		4-13 / 0.18-0.47	5-13 / 0.18-0.47
LP Supply Line Press. (in. w.g.) /(PSIG)		11-13 / 0.040-0.047	11-13 / 0.040-0.047
HEAT ANTICIPATOR SETTING (AMPS)			
1st stage		0.14	0.14
2nd stage		0.14	0.14
NATURAL GAS HEAT			
LOW	# of Stages / # of Burners (Total)	2 / 4	2 / 6
	Connection Size	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	225 / 145
	Temperature Rise	25 - 65	20 - 55
MEDIUM	# of Stages / # of Burners (Total)	2 / 5	2 / 8
	Connection Size	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	225 / 145
	Temperature Rise	30 - 65	25 - 60
HIGH	# of Stages / # of Burners (Total)	2 / 5	2 / 10
	Connection Size	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	225 / 145
	Temperature Rise	35 - 70	35 - 65
LIQUID PROPANE HEAT			
LOW	# of Stages / # of Burners (Total)	2 / 4	2 / 6
	Connection Size	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	225 / 145
	Temperature Rise	25 - 65	20 - 55
MEDIUM	# of Stages / # of Burners (Total)	2 / 5	2 / 8
	Connection Size	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	225 / 145
	Temperature Rise	35 - 65	25 - 60
HIGH	# of Stages / # of Burners (Total)	2 / 5	2 / 10
	Connection Size	3/4" NPT	3/4" NPT
	Rollout Switch Opens / Closes	195 / 115	225 / 145
	Temperature Rise	35 - 70	35 - 65

Options and accessories

FACTORY-INSTALLED AND FIELD-INSTALLED ACCESSORIES

CATEGORY	ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
Cabinet	Thru-the-base electrical or gas-line connections	X	X
	Supply Duct Cover (180 size only)		X
	Hinged Access Panels	X	
Coil Options	Cu/Cu indoor and/or outdoor coils	X	
	Pre-coated outdoor coils	X	
	Premium, E-coated outdoor coils	X	
Humidity Control	Hot Gas Re-Heat Dehumidification System	X	
Condenser Protection	Condenser coil hail guard (louvered design)	X	X
Controls	Thermostats, temperature sensors, and subbases		X
	Smoke detector (supply and/or return air)	X	
	Horn/Strobe Annunciator ⁷		X
	Time Guard II compressor delay control circuit		X
	Phase Monitor		X
	Condensate overflow switch	X	X
Economizers and Outdoor Air Dampers	EconoMi\$er® IV for electro-mechanical controls – Non FDD (Standard air leak damper models) ⁵	X	X
	Motorized 2 position outdoor air damper	X	X
	Manual outdoor air damper (25% and 50%)		X
	Barometric relief ¹	X	X
	Power exhaust		X
	EconoMi\$er X for electro-mechanical controls, complies with FDD. (Standard and Ultra Low Leak air damper models) ⁵	X	X
Economizer Sensors and IAQ Devices	Single dry bulb temperature sensors ²	X	X
	Differential dry bulb temperature sensors ²		X
	Single enthalpy sensors ²	X	X
	Differential enthalpy sensors ²		X
	Wall or duct mounted CO ₂ sensor ²		X
	Unit mounted CO ₂ sensor ²	X	
Gas Heat	Propane conversion kit		X
	Stainless steel heat exchanger	X	
	High altitude conversion kit		X
	Flue Shield (089 thru 150 units only)		X
	Flue Discharge Deflector		X
Indoor Motor and Drive	Multiple motor and drive packages	X	
	2-Speed Indoor Fan Motor system w/VFD controller (2-stage cool only with electro-mechanical) ⁶	X	
	Display Kit for 2-speed indoor fan motor system with VFD		X
Low Ambient Control	Winter start kit ³		X
	Motormaster® head pressure controller ³		X
Power Options	Convenience outlet (powered)	X	
	Convenience outlet (un-powered): 15 amps factory-installed, 20 amp field-installed	X	X
	Non-fused disconnect ⁴	X	
	Disconnect Switch Bracket (180 units only)		X
Roof Curbs	Roof curb 14-in. (356mm)		X
	Roof curb 24-in. (610mm)		X

NOTES:

1. Included with economizer.
2. Sensors used to optimize economizer performance.
3. See application data for assistance.
4. Available on units with MOCs of 80 amps or less.

5. FDD (Fault Detection and Diagnostic) capability per California Title 24 120.2i, ASHRAE 90.1-2016 and IECC-2015 Fault Detection and Diagnostic (FDD) requirements.
6. Required on all models to meet DOE-2018.
7. Requires a field-supplied 24V transformer for each application.

Options and accessories (cont)

Economizer

Economizers save energy, money and improve comfort levels in the conditioned space. They bring in fresh, outside air for ventilation; and provide cool outside air to cool your building. This also is the preferred method of low ambient cooling. When integrated with CO₂ sensors, economizers can provide even more savings by coupling the ventilation air to only that amount required based on space occupancy.

Economizers are available, installed and tested by the factory, with either enthalpy or temperature dry-bulb inputs. There are also models for electromechanical, direct digital controllers and single speed fan or 2-speed indoor fan motors. Additional sensors are available as accessories to optimize the economizer.

Economizers include gravity controlled barometric relief that helps equalize building pressure and ambient air pressures. This can be a cost effective solution to prevent building pressurization. Economizers are available in Ultra Low Leak and standard low leak versions.

CO₂ sensor

Improves productivity and saves money by working with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the CO₂ sensor detects their presence through increasing CO₂ levels, and opens the economizer appropriately.

When the occupants leave, the CO₂ levels decrease, and the sensor appropriately closes the economizer. This intelligent control of the ventilation air, called Demand Controlled Ventilation (DCV) reduces the overall load on the rooftop, saving money.

Smoke detectors

Smoke detectors make your rooftop unit application safer and your job easier. Smoke detectors immediately shut down the rooftop unit when smoke is detected. They are available, installed by the factory, for supply air, return air, or both.

Louvered hail guards

Sleek, louvered panels protect the condenser coil from hail damage, foreign objects, and incidental contact.

Convenience outlet (powered or un-powered)

Reduce service and/or installation costs by including a convenience outlet in your specification. This factory-installed service feature provides a convenient, 15 amp, 115v GFCI receptacle with "Wet in Use" cover. The "powered" option allows the installer to power the outlet from the line side of the disconnect side as required by code. The "un-powered" option is to be powered from a separate (non-unit) 115/120v power source. The unpowered convenience outlet is available as a 15 amp factory-installed option or a 20 amp field-installed accessory.

The field installed 20 amp unpowered convenience outlet kit provides a flexible installation method which allows code compliance for height requirements of the GFCI outlet from the finished roof surface as well as the capability to relocate the outlet to a more convenient location, if necessary.

Non-fused disconnect

This OSHA-compliant, factory-installed, safety switch allows a service technician to locally secure power to the rooftop.

Disconnect switch bracket

Provides a pre-engineered and sized mounting bracket for applications requiring a unit mounted fused and non-fused disconnect of greater than 100 amps. Bracket assures that no damage will occur to coils when mounting with screws and other fasteners (180 size only).

Power exhaust with barometric relief

Superior internal building pressure control. This field-installed accessory or factory-installed option may eliminate the need for costly, external pressure control fans.

Time guard II control circuit

This accessory protects your compressor by preventing short-cycling in the event of some other failure, prevents the compressor from restarting for 30 seconds after stopping. Not required with authorized commercial thermostats.

Motorized 2-position damper

The 2-position, motorized outdoor air damper admits up to 100% outside air. Using reliable, gear-driven technology, the 2-position damper opens to allow ventilation air and closes when the rooftop stops, stopping unwanted infiltration.

Manual OA damper

Manual outdoor air dampers are an economical way to bring in ventilation air. The dampers are available in 25% and 50% versions.

Optional Hot Gas Re-Heat dehumidification system

The Hot Gas Re-Heat dehumidification system is an all-inclusive factory-installed option that can be ordered with any RGS rooftop unit equipped with Round Tube-Plate Fin (RTPF) coils. Not available on single circuit, 2-stage cooling models (RGS089/100/119).

This system expands the envelope of operation of RGS rooftop products to provide unprecedented flexibility to meet year round comfort conditions.

The Hot Gas Re-Heat dehumidification system has a unique dual operational mode setting. The Hot Gas Reheat system includes two new modes of operation.

The RGS rooftop coupled with the Hot Gas Re-Heat system is capable of operating in normal design cooling mode, subcooling mode, and hot gas reheat mode. Normal design cooling mode is when the unit will operate under its normal sequence of operation by cycling compressors to maintain comfort conditions.

Subcooling mode will operate to satisfy part load type conditions when the space requires combined sensible and a higher proportion of latent load control. Hot Gas Reheat mode will operate when outdoor temperatures diminish and the need for latent capacity is required for sole humidity control. Hot Gas Reheat mode will provide neutral air for maximum dehumidification operation.

Options and accessories (cont)

2-speed indoor fan motor system

The 2-speed indoor fan motor system saves energy and installation time by automatically adjusting the indoor fan motor speed in sequence with the unit's cooling operation. Per ASHRAE 90.1-2016 standard during the first stage of cooling operation the system will adjust the fan motor to provide 66% of the total cfm established for the unit. When a call for the second stage of cooling is required, the system will allow the total cfm for the unit established (100%). During the heating mode the fan speed will allow total design cfm (100%) operation and during the ventilation mode the fan speed will allow operation to 66% of total cfm.

Compared to single speed indoor fan motor systems, 2-speed indoor fan motor system can save substantial energy, 25%+ versus single speed indoor fan motor systems.

IMPORTANT: Data based on .10 (\$/kWh) in an office application utilizing Rooftop Energy Savings Calculator simulation software program.

The 2-speed indoor fan motor system has soft start capabilities to slowly ramp up the fan speeds, thus eliminating any high inrush air volume during initial start-up. It also has internal over current protection for the fan motor and a field-installed display kit that allows adjustment and in depth diagnostics if required.

This 2-speed indoor fan motor system will allow both space sensor and conventional thermostat controls to be used to provide accurate control in any application.

The 2-speed indoor fan motor system is factory preprogrammed and tested and requires no field adjustment to set up. The unit fan performance static pressure and cfm can be easily adjusted using the traditional means of belt drive pulley adjustments.

Motormaster® head pressure controller

The Motormaster motor controller is a low ambient, head pressure controller kit that is designed to maintain the unit's condenser head pressure during periods of low ambient cooling operation. This device should be used as an alternative to economizer free cooling when economizer usage is either not appropriate or desired. The Motormaster controller will either cycle the outdoor-fan motors or operate them at reduced speed to maintain the unit operation, depending on the model.

Winter start kit

The winter start kit extends the low ambient limit of your rooftop to 25°F (-4°C). The kit bypasses the low pressure switch, preventing nuisance tripping of the low pressure switch. Other low ambient precautions may still be prudent.

Propane heating

Convert your gas heat rooftop from standard natural gas operation to Propane using this field-installed kit.

High altitude heating

High altitudes have less oxygen, which means heat exchangers need less fuel. The new gas orifices in this

field-installed kit make the necessary adjustment for high altitude applications. They restore the optimal fuel to air mixture and maintain healthy combustion at altitudes above 2000 ft (610 m). Kits may not be required in all areas.

Hinged access panels

Allows access to unit's major components with specifically designed hinged access panels. Panels are: filter, control box, and fan motor.

Flue discharge deflector

The flue discharge deflector is a useful accessory when flue gas recirculation is a concern. By venting the flue discharge upwards, the deflector minimizes the chance for a neighboring unit to intake the flue exhaust (089-150 sizes only).

Optional stainless steel heat exchanger

The stainless steel heat exchanger option provides the tubular heat exchanger be made out of a minimum 20 gauge type 409 stainless steel for applications where the mixed air to the heat exchanger is expected to drop below 45°F (7°C). Stainless steel may be specified on applications where the presence of airborne contaminants require its use (applications such as paper mills) or in area with very high outdoor humidity that may result in severe condensation in the heat exchanger during cooling operation.

Flue discharge heat shield

The flue discharge heat shield keeps people from touching the rooftop unit's potentially hot flue discharge. This is especially useful for ground level applications, where more, untrained people could have access to the unit's exterior (089-150 sizes only).

Alternate motors and drives

Some applications need larger horsepower motors, some need more airflow, and some need both. Regardless of the case, we have a factory-installed combination to meet your application. A wide selection of motors and pulleys (drives) are available, factory-installed, to handle nearly any application.

Thru-the-base connections

Thru-the-base connections, available as either an accessory or as a factory option, are necessary to ensure proper connection and seal when routing wire and piping through the rooftop's basepan and curb. These couplings eliminate roof penetration and should be considered for gas lines, main power lines, as well as control power.

Condensate Overflow Switch

Includes electronic controller and sensor. Compressor(s) turn off if the drain trap becomes plugged but the indoor fan motor remains running.

Supply duct cover

This supply duct cover is required when field converting the factory standard vertical duct supply to the horizontal duct supply configuration. One required per unit (180 size only).

Options and accessories (cont)

OPTIONS AND ACCESSORIES — WEIGHT ADDERS

BASE UNIT WITH OPTIONS AND ACCESSORIES (WEIGHT ADDERS)	MAX WEIGHT ADDER									
	089/090		100/102		119/120		150		180	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
Hot Gas Re-Heat System ^{1, 2}	80	36	80	36	80	36	80	36	90	41
Power Exhaust, Vertical	75	34	75	34	75	34	75	34	85	39
Power Exhaust, Horizontal	30	14	30	14	30	14	30	14	75	34
EconoMi\$er® (IV, X)	74	34	74	34	74	34	74	34	103	47
Cu/Cu Condenser Coil ³	28	13	30	14	34	15	34	15	34	15
Cu/Cu Condenser and Evaporator Coils ³	58	26	64	29	64	29	64	29	64	29
Medium Gas Heat	15	7	15	7	18	8	18	8	28	13
High Gas Heat	29	13	29	13	35	16	35	16	50	23
Flue Discharge Deflector	7	3	7	3	7	3	7	3	7	3
Roof Curb 14-in. (356 mm)	143	65	143	65	143	65	143	65	180	82
Roof Curb 24-in. (610 mm)	245	111	245	111	245	111	245	111	255	116
Louvered Hail Guard	34	15	34	15	34	15	34	15	45	20
CO ₂ Sensor	5	2	5	2	5	2	5	2	5	2
Return Smoke Detector	5	2	5	2	5	2	5	2	5	2
Supply Smoke Detector	5	2	5	2	5	2	5	2	5	2
Fan/Filter Status Switch	2	1	2	1	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7	15	7	15	7
Powered Convenience Outlet	35	16	35	16	35	16	35	16	35	16
Non-Powered Convenience Outlet	5	2	5	2	5	2	5	2	5	2
Enthalpy Sensor	2	1	2	1	2	1	2	1	2	1
Differential Enthalpy Sensor	3	1	3	1	3	1	3	1	3	1
Two Position Motorized Damper	58	26	58	26	58	26	58	26	65	29
Manual Outdoor Air Damper	18	8	18	8	18	8	18	8	25	11
Motormaster® Controller	35	16	35	16	35	16	40	18	40	18
Medium Static Motor/Drive	6	3	6	3	6	3	10	5	10	5
High Static Motor/Drive	12	5	16	7	16	7	20	9	20	9
2-Speed Indoor Fan Motor System	20	9	20	9	20	9	20	9	20	9

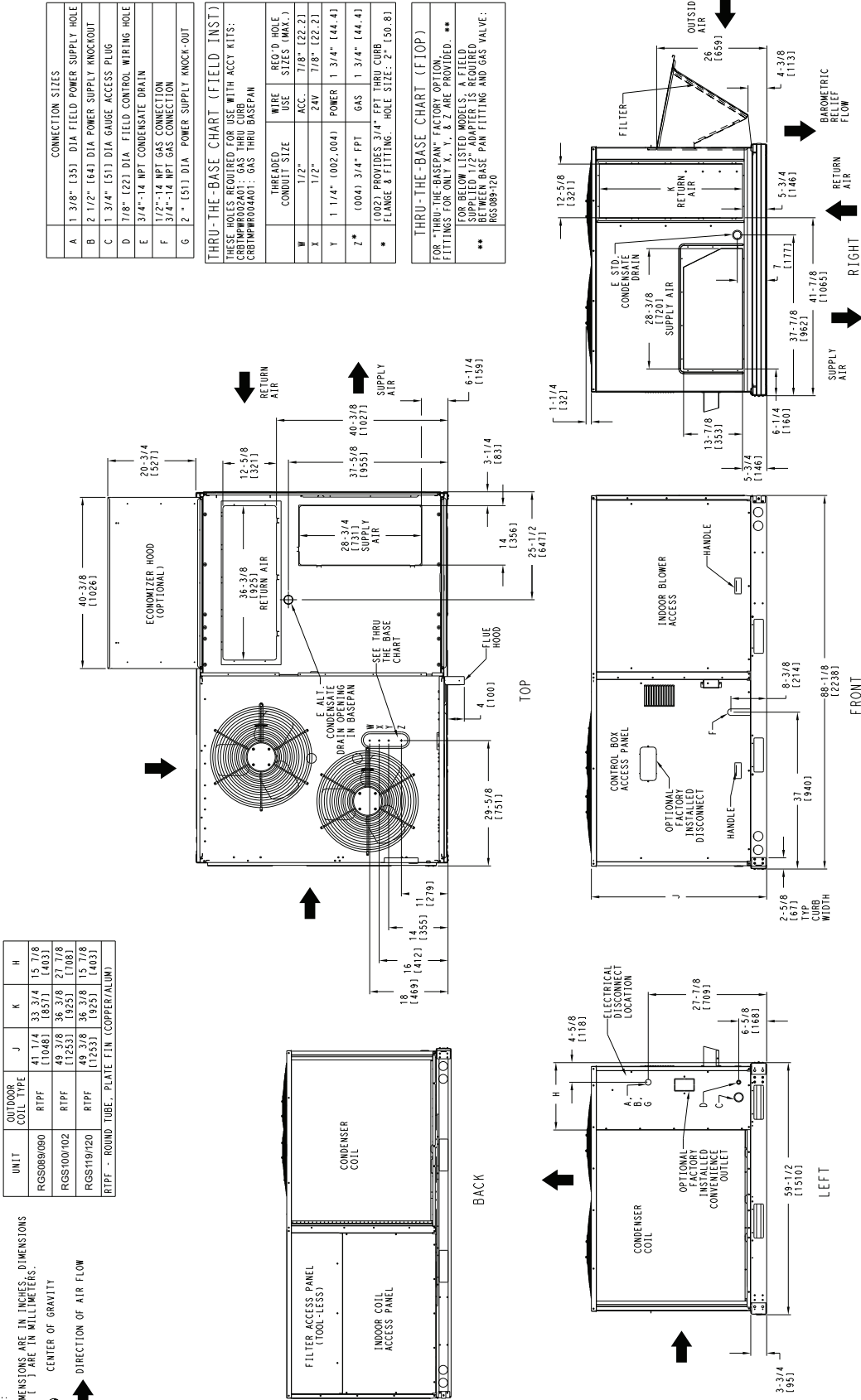
¹ For Hot Gas Re-Heat system add Motormaster controller.

² The Hot Gas Re-Heat system is not available for RGS089/100/119 units.

³ Where available.

Dimensions

UNIT DIMENSIONAL DRAWING - UNIT SIZE 089-120

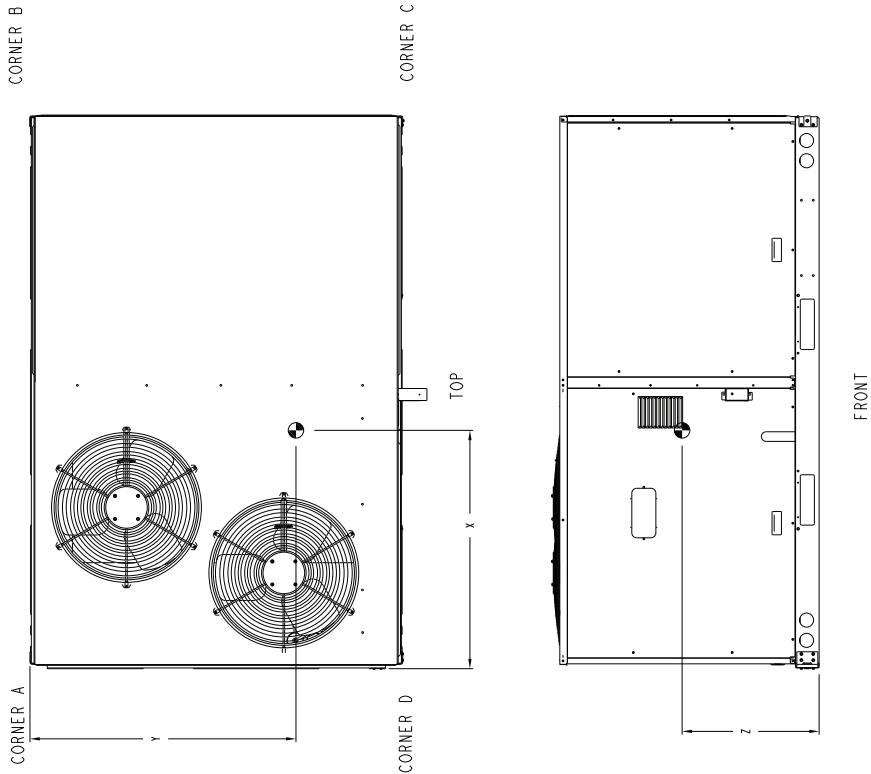


Dimensions (cont)

UNIT DIMENSIONAL DRAWING - UNIT SIZES RGS089-120 (cont)

*** STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.

UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT ***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C. G.			
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
RGS089	RTPF	780	354	178	81	158	72	209	95	236	107	41 1/2 [1034]	33 7/8 [860]	20 1/2 [521]	
RGS100	RTPF	920	418	212	96	183	83	243	110	282	128	40 7/8 [1038]	34 [864]	23 1/8 [587]	
RGS119	RTPF	930	422	215	98	196	89	247	112	272	123.5	42 [1067]	33 1/8 [841]	24 1/4 [616]	
RGS090	RTPF	935	399	164	74.5	170	77.2	255	115.8	246	111.7	44 7/8 [1140]	35 5/8 [905]	19 3/8 [492]	
RGS102	RTPF	930	422	228	103.5	187	85	232	105.3	283	128.5	39 3/4 [1010]	32 7/8 [835]	18 5/8 [473]	
RGS120	RTPF	940	427	231	104.9	189	85.8	234	106.2	286	129.6	39 3/4 [1010]	33 [838]	18 1/2 [470]	
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)															



509 21 3523 02

Specifications subject to change without notice.

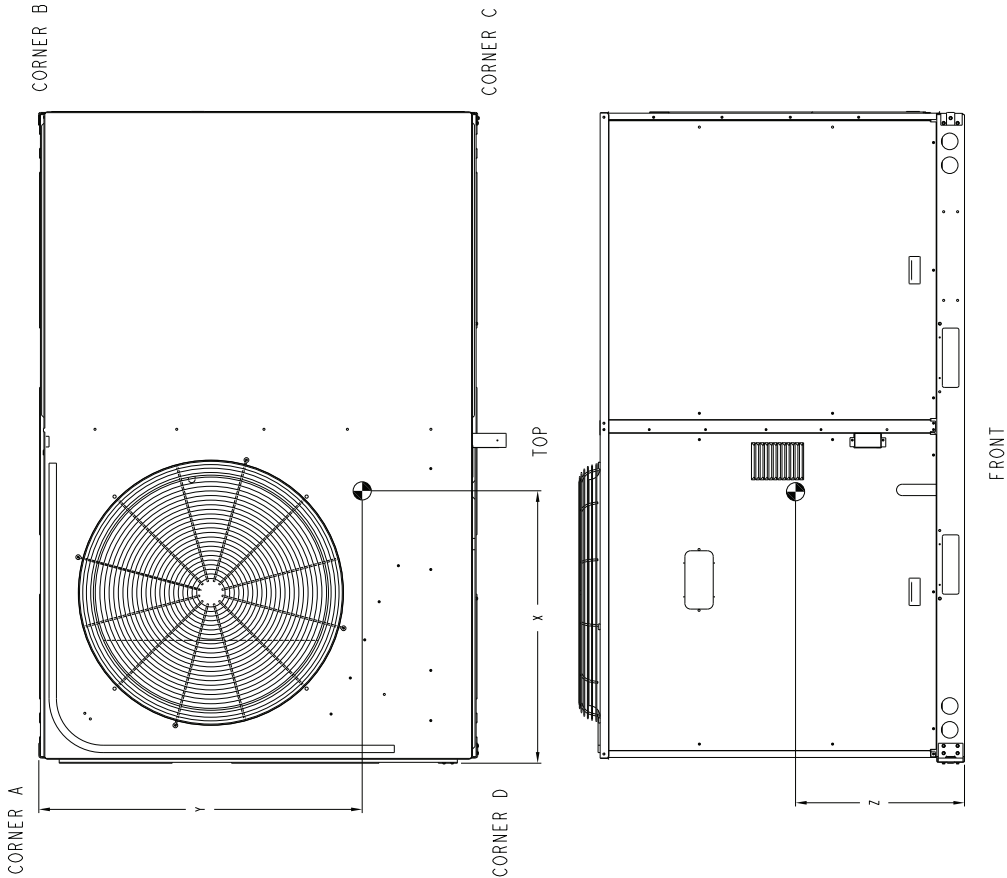


Dimensions (cont)

UNIT DIMENSIONAL DRAWING - UNIT SIZE RGS150 (cont)

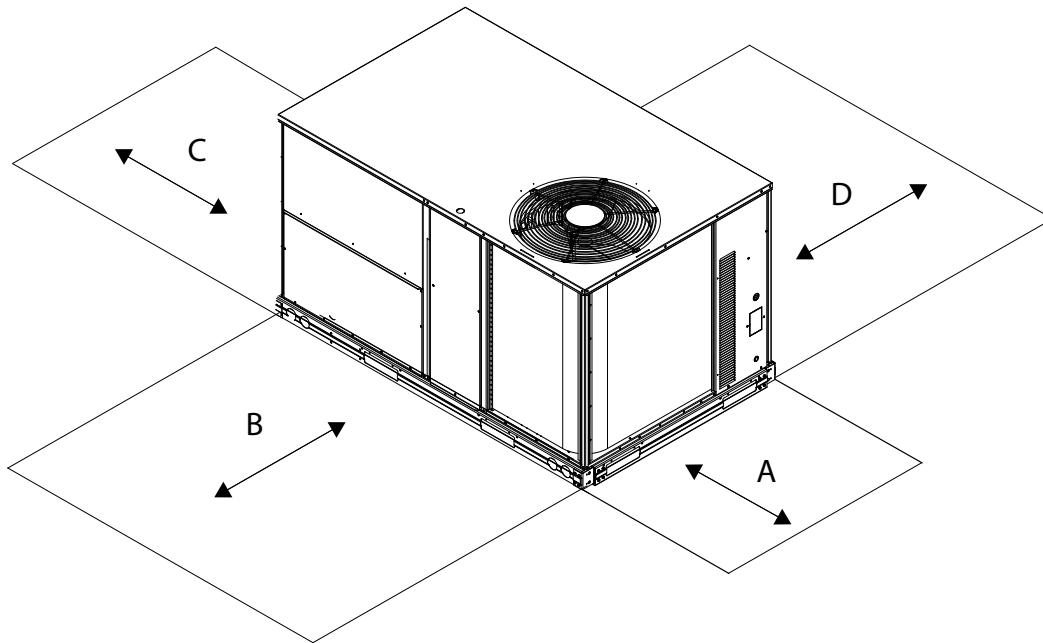
* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.

UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
RGS150	RTPF	1167	530	349	159	167	76	211	96	440	200	31 3/8 [797]	34 3/4 [883]	21 7/8 [556]
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)														



Dimensions (cont)

UNIT DIMENSIONAL DRAWING - UNIT SIZE RGS150 — SERVICE CLEARANCE

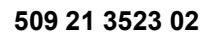


LOC	DIMENSION	CONDITION
A	48-in. (1219 mm) 18-in. (457 mm) 18-in. (457 mm) 12-in. (305 mm)	• Unit disconnect is mounted on panel • No disconnect, convenience outlet option • Recommended service clearance • Minimum clearance
B	42-in. (1067 mm) 36-in. (914 mm) Special	• Surface behind servicer is grounded (e.g., metal, masonry wall) • Surface behind servicer is electrically non-conductive (e.g., wood, fiberglass) • Check for sources of flue products within 10-ft of unit fresh air intake hood
C	36-in. (914 mm) 18-in. (457 mm)	• Side condensate drain is used • Minimum clearance
D	48-in. (1219 mm) 42-in. (1067 mm) 36-in. (914 mm) Special	• No flue discharge accessory installed, surface is combustible material • Surface behind servicer is grounded (e.g., metal, masonry wall, another unit) • Surface behind servicer is electrically non-conductive (e.g., wood, fiberglass) • Check for adjacent units or building fresh air intakes within 10-ft of this unit's flue outlet

NOTE: Unit not designed to have overhead obstruction.
Contact Application Engineering for guidance on any application planning overhead obstruction or vertical clearances.

32

Specifications subject to change without notice.



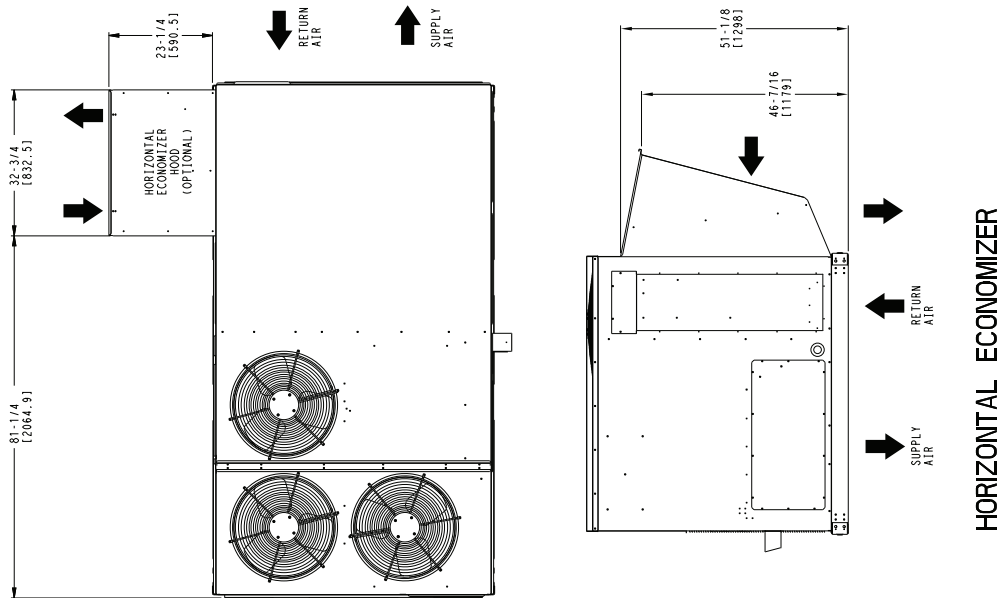
509 21 3523 02

Specifications subject to change without notice.



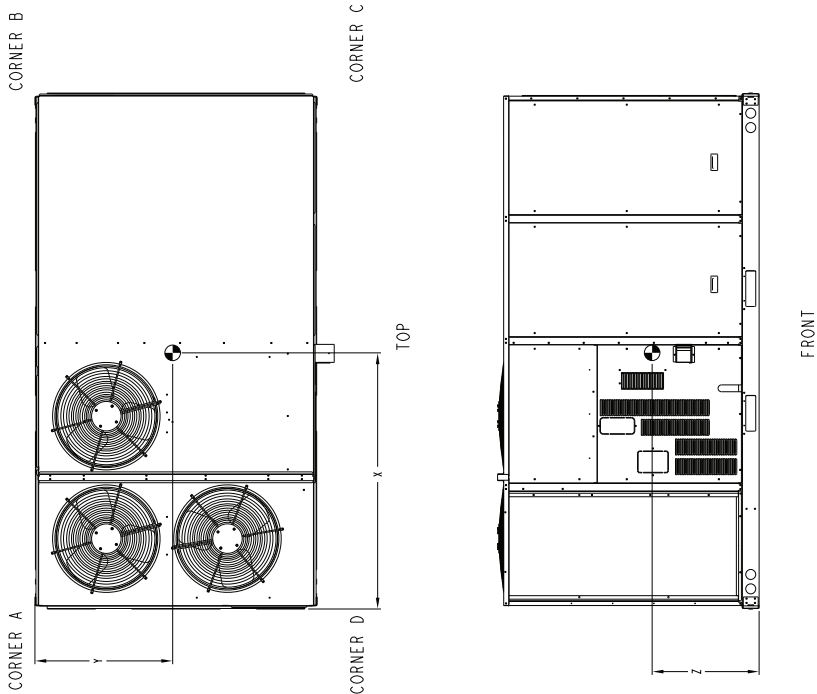
Dimensions (cont)

UNIT DIMENSIONAL DRAWING - UNIT SIZE RGS180 (cont)



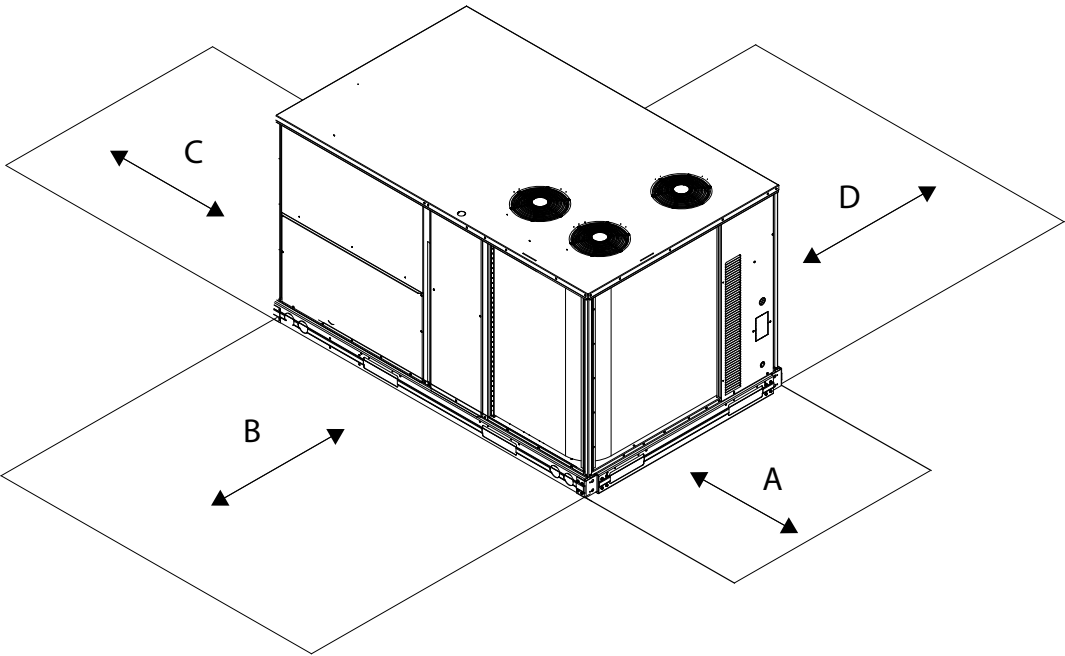
UNIT	STD UNIT		CORNER		CORNER		CORNER		CORNER		C. G.							
	WEIGHT	WEIGHT (A)	WEIGHT (B)	WEIGHT (C)	WEIGHT (D)	WEIGHT (E)	WEIGHT (F)	WEIGHT (G)	WEIGHT (H)	X	Y	Z						
RGS180	1380	627	295	134	276	126	342	156	421	191	64	1/4	[1630]	35	[890]	21	1/8	[537]

STANDARD UNIT WEIGHT IS WITH LOW HEAT & WITHOUT PACKAGING.
FOR OPTIONS & ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



Dimensions (cont)

UNIT DIMENSIONAL DRAWING - UNIT SIZE RGS180 — SERVICE CLEARANCE

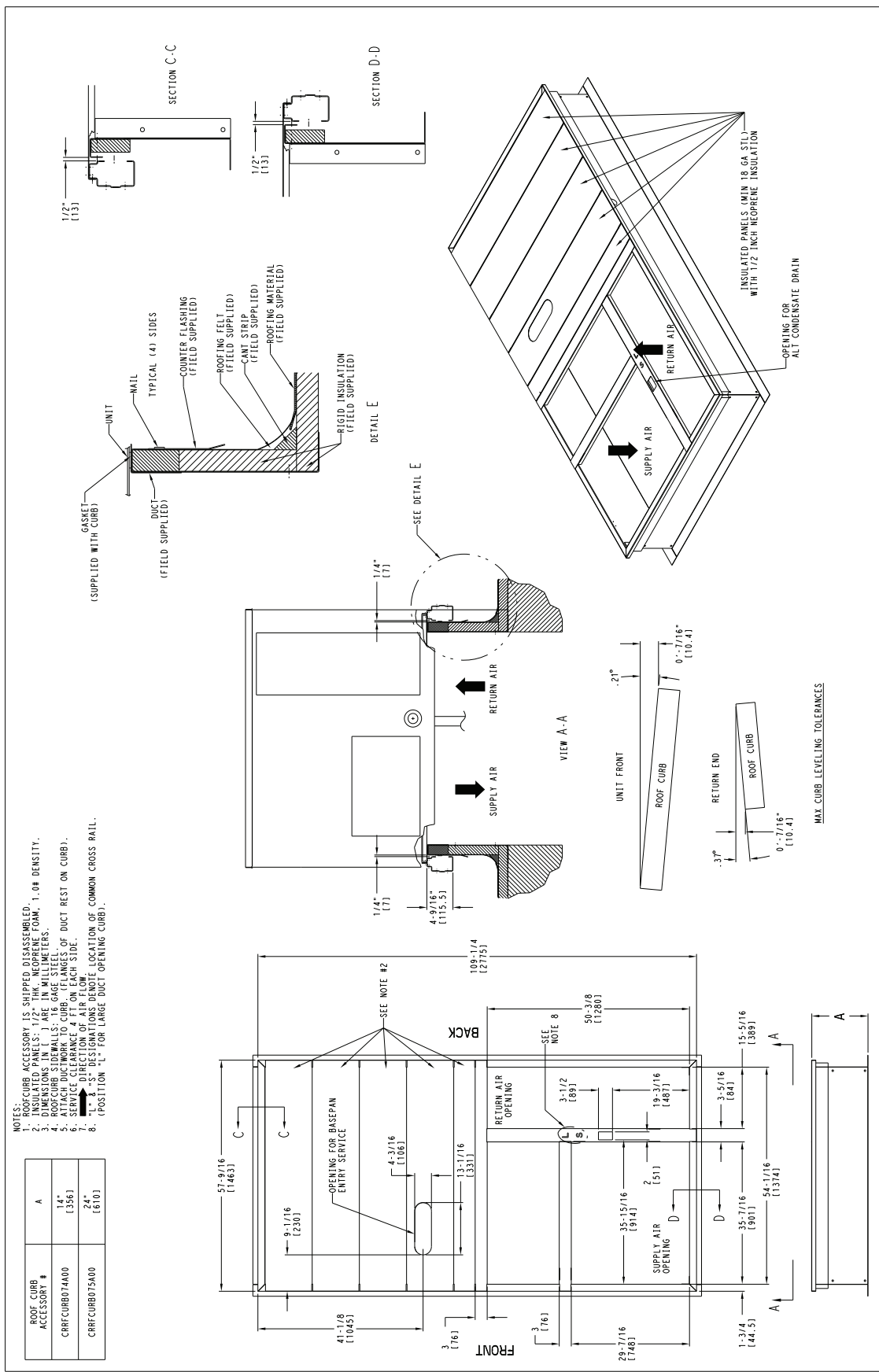


LOC	DIMENSION	CONDITION
A	48-in. (1219 mm) 18-in. (457 mm) 18-in. (457 mm) 12-in. (305 mm)	• Unit disconnect is mounted on panel • No disconnect, convenience outlet option • Recommended service clearance • Minimum clearance
B	42-in. (1067 mm) 36-in. (914 mm) Special	• Surface behind servicer is grounded (e.g., metal, masonry wall) • Surface behind servicer is electrically non-conductive (e.g., wood, fiberglass) • Check for sources of flue products within 10-ft of unit fresh air intake hood
C	36-in. (914 mm) 18-in. (457 mm)	• Side condensate drain is used • Minimum clearance
D	48-in. (1219 mm) 42-in. (1067 mm) 36-in. (914 mm) Special	• No flue discharge accessory installed, surface is combustible material • Surface behind servicer is grounded (e.g., metal, masonry wall, another unit) • Surface behind servicer is electrically non-conductive (e.g., wood, fiberglass) • Check for adjacent units or building fresh air intakes within 10-ft of this unit's flue outlet

NOTE: Unit not designed to have overhead obstruction.
Contact Application Engineering for guidance on any application planning overhead obstruction or vertical clearances.

Dimensions (cont)

UNIT DIMENSIONAL DRAWING - UNIT SIZE RGS180 — ROOF CURB DETAILS



Application data

Min operating ambient temp (cooling)

In mechanical cooling mode, your RGS rooftop unit can safely operate down to an outdoor ambient temperature of 40°F (4°C) and 25°F (−4°C), with an accessory winter start kit. It is possible to provide cooling at lower outdoor ambient temperatures by using less outside air, economizers, and/or accessory low ambient kits.

Max operating ambient temp (cooling)

The maximum operating ambient temperature for cooling mode is 115°F (46°C). While cooling operation above 115°F (46°C) may be possible, it could cause either a reduction in performance, reliability, or a protective action by the unit's internal safety devices.

Min mixed air temp (heating)

Using the factory settings, the minimum temperatures for the mixed air (the combined temperature of the warm return air and the cold outdoor air) entering the dimpled, gas heat exchangers are:

<u>Aluminized</u>	<u>Stainless Steel</u>
50°F (10°C) continuous	40°F (4°C) continuous
45°F (7°C) intermittent	35°F (2°C) intermittent

Operating at lower mixed-air temperatures may be possible, if a field-supplied, outdoor air thermostat initiates both heat stages when the temperature is less than the minimum temperatures listed above. Please contact your local representative for assistance.

Min and max airflow (heating and cooling)

To maintain safe and reliable operation of your rooftop, operate within the heating airflow limits during heating mode and cooling airflow limits during cooling mode. Operating above the max may cause blow-off, undesired airflow noise, or airflow related problems with the rooftop unit. Operating below the min may cause problems with coil freeze-up and unsafe heating operation. Heating and cooling limitations differ when evaluating operating cfm. The minimum value is the HIGHER of the cooling and heating minimum cfm values published on page 5, and the maximum value is the LOWER of the cooling and heating maximum values published on page 5.

Heating-to-cooling changeover

Your unit will automatically change from heating to cooling mode when using a thermostat with an auto-change-over feature.

Airflow

All units are draw-through in cooling mode and blow-through in heating mode.

Outdoor air application strategies

Economizers reduce operating expenses and compressor run time by providing a free source of cooling and a means of ventilation to match application changing needs. In fact, they should be considered for most applications. Also, consider the various economizer control methods and their benefits, as well as sensors required to accomplish your application goals. Please contact your local representative for assistance.

Motor limits, break horsepower (BHP)

Due to internal design of the RGS units, the air path, and specially designed motors, the full horsepower (maximum continuous BHP) band, as listed in Physical Data Table Cooling, can be used with the utmost confidence. There is no need for extra safety factors, as the motors are designed and rigorously tested to use the entire, listed BHP range without either nuisance tripping or premature motor failure.

Propane heating

Propane has different physical qualities than natural gas. As a result, Propane requires different fuel to air mixture. To optimize the fuel/air mixture for Propane, Different burner orifices are available in an easy to install accessory kit. To select the correct burner orifices or determine the heat capacity for a Propane application, use either the selection software, or the unit's service manual.

High altitude heating

High altitudes have less oxygen, which affects the fuel/air mixture in heat exchangers. In order to maintain a proper fuel/air mixture, heat exchangers operating in altitudes above 2000 ft (610 m) require different orifices. To select the correct burner orifices or determine the heat capacity for a high altitude application, use either the selection software, or the unit's service manual.

High altitudes have less oxygen, which means heat exchangers need less fuel. The new gas orifices in this field-installed kit make the necessary adjustment for high altitude applications. They significantly improve fuel to air mixture and maintain healthy combustion on altitudes above 2000 ft (610 m).

NOTE: Typical natural gas heating value ranges from 975 to 1050 Btu/ft³ at sea level nationally. The heating value goes down approximately 1.7% per every thousand feet elevation. Standard factory orifices can typically be used up to 2000 ft (610 m) to 4500 ft (1372 m) elevation without any operational issues.

Sizing a rooftop

Bigger isn't necessarily better. While an air conditioner needs to have enough capacity to meet the design loads, it doesn't need excess capacity. In fact, excess capacity typically results in very poor part load performance and humidity control.

Using higher design temperatures than ASHRAE recommends for your location, adding "safety factors" to the calculated load, are all signs of oversizing air conditioners. Oversizing the air conditioner leads to poor humidity control, reduced efficiency, higher utility bills, larger indoor temperature swings, excessive noise, and increased wear and tear on the air conditioner.

Rather than oversizing an air conditioner, engineers should "right-size" or even slightly undersize air conditioners. Correctly sizing an air conditioner controls humidity better; promotes efficiency; reduces utility bills; extends equipment life, and maintains even, comfortable temperatures. Please contact your local representative for assistance.

Application data (cont)

Low ambient applications

The optional economizer can adequately cool your space by bringing in fresh, cool outside air. In fact, when so equipped, accessory low-ambient kit may not be necessary. In low ambient conditions, unless the outdoor air is excessively humid or contaminated, economizer-based "free cooling" is the preferred less costly and energy conscious method. In low ambient applications where outside air might not be desired (such as contaminated or excessively humid outdoor environments), your RGS rooftop can operate to ambient temperatures down to -20°F (-29°C) using the recommended accessory Motormaster® low ambient controller or down to 25°F (-4°C) with the field-installed Winter Start Package.

Winter Start

The winter start kit extends the low ambient limit of your rooftop to 25°F (-4°C). The kit bypasses the low pressure switch, preventing nuisance tripping of the low pressure switch. Other low ambient precautions may still be prudent.

2-speed indoor fan motor system

The 2-speed fan motor system has soft start capabilities to slowly ramp up the fan speeds, thus eliminating any high inrush air volume during initial start-up. It also has internal over current protection for the fan motor and a field-installed display kit that allows adjustment and in depth diagnostics if required.

The 2-speed fan motor system is factory preprogrammed and tested and requires no field adjustment to set up. The unit fan performance static pressure and cfm can be easily adjusted using the traditional means of belt drive pulley adjustments.

This 2-speed fan motor system is available on models with 2-circuit/2-stage cooling (090, 102, 120, 105, 180 sizes) operation with electro-mechanical controls. Both space sensor and conventional thermostat controls can be used to provide accurate control in any application.

NOTE: The 2-speed indoor fan motor system is not available on sizes 089, 100 or 119.

NOTE: When used with the 2-speed indoor fan motor system, the damper will either over-ventilate or under-ventilate during certain modes of operation. Be aware of the effects that the ventilation rate has on leaving air temperatures. This becomes more noticeable in extreme temperatures (heating and cooling), since the unit is now treating a higher volume of outdoor air. In these scenarios there are greater advantages of using an EconoMiSer® X or 3-Position Damper.

Application/selection option

Selection software saves time by performing many of the steps above. Contact your sales representative for assistance.

RGS 2-SPEED INDOOR FAN MOTOR SYSTEM - VARIABLE FREQUENCY DRIVE (VFD) HP RATING

MODEL SIZE	STATIC OPTION	VOLTAGE	VFD HP
090	STD	208/230	3.0
		460	3.0
		575	3.0
	MED	208/230	3.0
		460	3.0
		575	5.0
	HIGH	208/230	7.5
		460	7.5
		575	7.5
102	STD	208/230	3.0
		460	3.0
		575	3.0
	MED	208/230	3.0
		460	3.0
		575	3.0
	HIGH	208/230	5.0
		460	5.0
		575	5.0
120	STD	208/230	3.0
		460	3.0
		575	3.0
	MED	208/230	5.0
		460	5.0
		575	5.0
	HIGH	208/230	7.5
		460	7.5
		575	7.5
150	STD	208/230	3.0
		460	3.0
		575	5.0
	MED	208/230	5.0
		460	5.0
		575	5.0
	HIGH	208/230	7.5
		460	7.5
		575	7.5
180	STD	208/230	3.0
		460	3.0
		575	5.0
	MED	208/230	5.0
		460	5.0
		575	5.0
	HIGH	208/230	7.5
		460	7.5
		575	7.5

Performance data

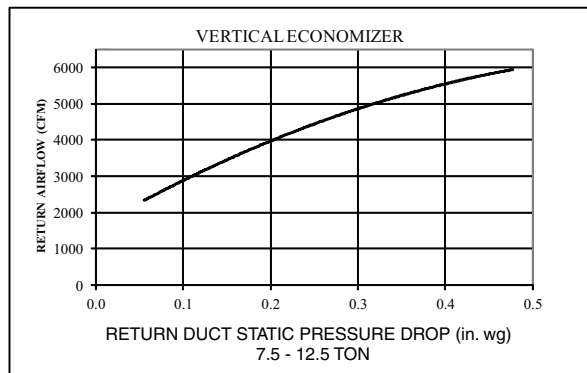
STATIC PRESSURE ADDERS (in. wg.) — FACTORY OPTIONS AND/OR ACCESSORIES

Hot Gas Re-Heat Coil

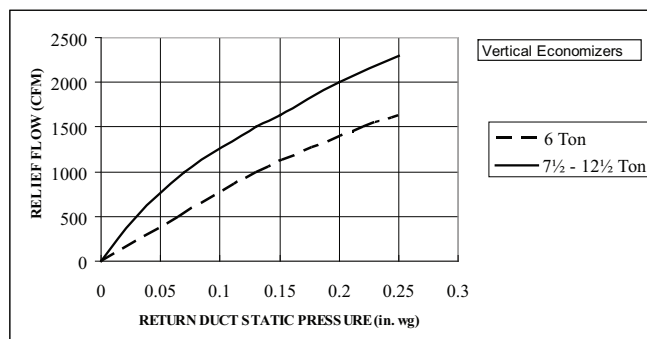
7.5 - 12.5 TONS																
CFM	2250	2500	2750	3000	3250	3500	3750	4000	4250	4500	4750	5000	5250	5500	5750	6000
7.5 Tons 2-Circuit/ 2-Stage Cooling	0.12	0.14	0.16	0.19	0.21	0.23	0.26	—	—	—	—	—	—	—	—	—
8.5 Tons 2-Circuit/ 2-Stage Cooling	—	0.11	0.12	0.13	0.15	0.17	0.18	0.20	0.22	—	—	—	—	—	—	—
10 Tons 2-Circuit/ 2-Stage Cooling	—	—	—	0.13	0.15	0.17	0.18	0.20	0.22	0.24	0.26	0.28	—	—	—	—
12.5 Tons 2-Circuit/ 2-Stage Cooling	—	—	—	—	—	0.17	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.33	0.36	0.39
15 TONS																
CFM	4000	4250	4500	4750	5000	5250	5500	5750	6000	6250	6500	6750	7000	7250		
15 Tons 2-Circuit/ 2-Stage Cooling	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.12	0.12	0.13	0.14	0.15		

Performance data (cont)

ECONOMIZER, BAROMETRIC RELIEF AND PE PERFORMANCE — VERTICAL APPLICATION

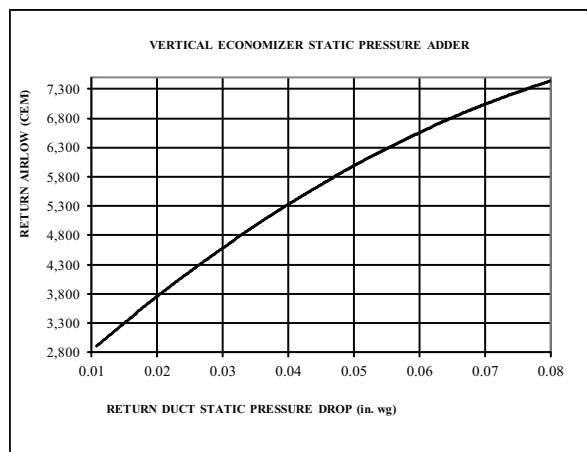


Return air pressure drop — 7½ to 12½ tons

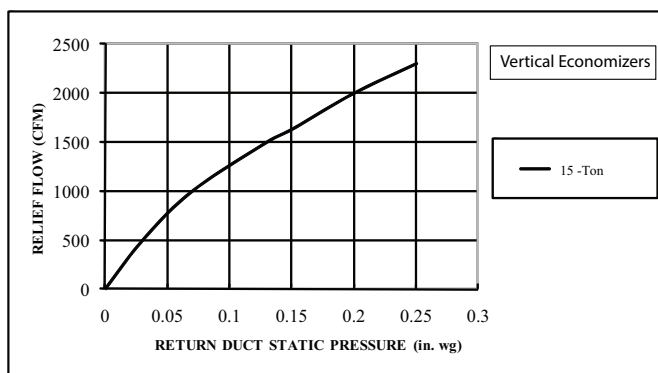


NOTE: 6 ton is unavailable.

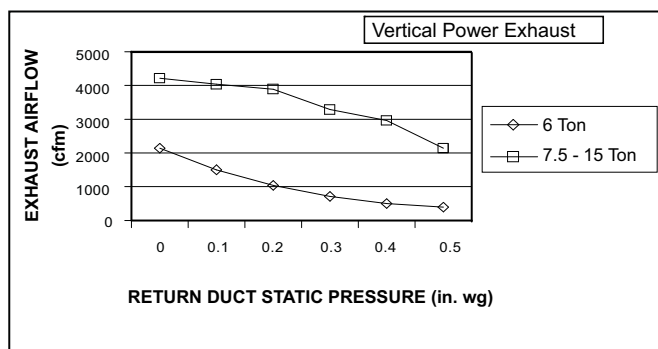
Barometric relief flow capacity — 6 to 12½ tons



Return air pressure drop - vertical 15 tons



Barometric relief flow capacity - vertical 15 tons



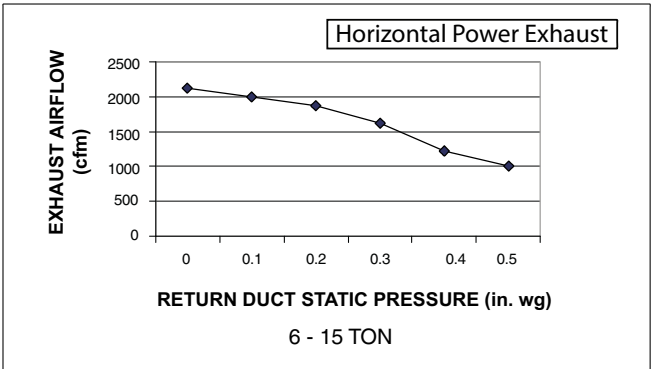
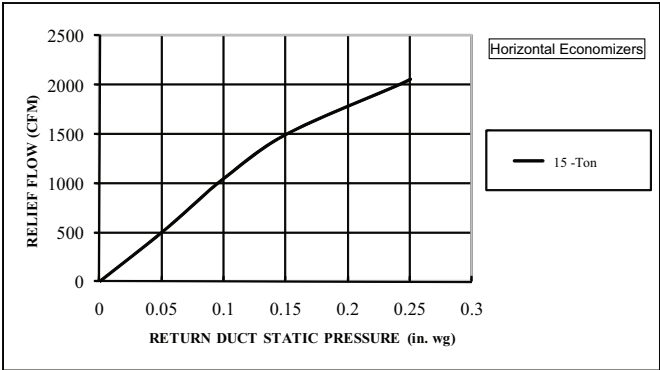
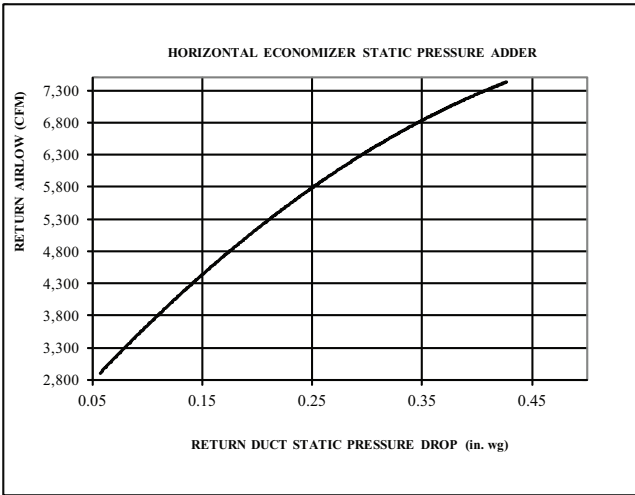
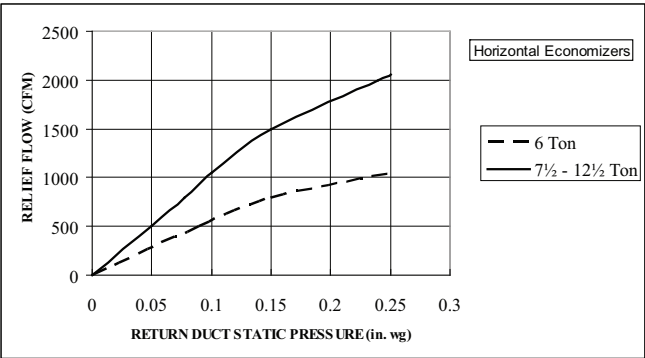
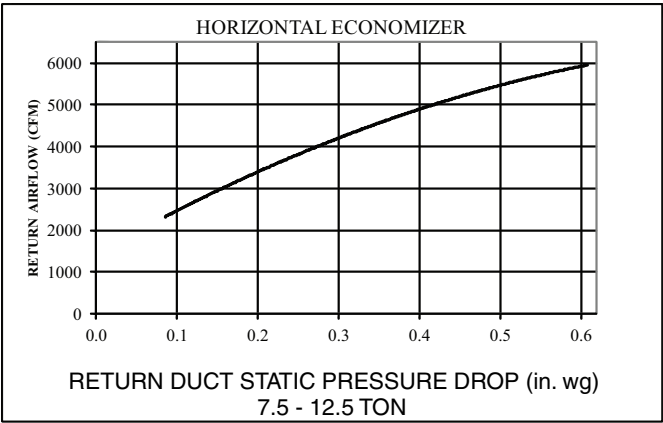
NOTE: 6 ton is unavailable.

Vertical power exhaust performance

All data for both standard and ultra low leak models, where available.

Performance data (cont)

ECONOMIZER, BAROMETRIC RELIEF AND PE PERFORMANCE — HORIZONTAL APPLICATION



All data for both standard and ultra low leak models, where available.

Fan data

GENERAL FAN PERFORMANCE NOTES

1. Interpolation is permissible. Do not extrapolate.
2. External static pressure is the static pressure difference between the return duct and the supply duct plus the static pressure caused by any factory-installed options (FIOPs) or accessories.
3. Tabular data accounts for pressure loss due to clean filters, high gas heat, unit casing, and wet coils. Factory options and accessories may add static pressure losses. Selection software is available, through your salesperson, to help you select the best motor/drive combination for your application.
4. The Fan Performance tables offer motor/drive recommendations. In cases when two motor/drive combinations would work, the lower horsepower option is recommended.
5. For information on the electrical properties of RGS motors, please see the Electrical information section of this book.
6. For more information on the performance limits of RGS motors, see the application data section of this book.
7. The EPACT (Energy Policy Act of 1992) regulates energy requirements for specific types of indoor fan motors. Motors regulated by EPACT include any general purpose, T-frame (three-digit, 143 and larger), single-speed, foot mounted, polyphase, squirrel cage induction motors of NEMA (National Electrical Manufacturers Association) design A and B, manufactured for use in the United States. Ranging from 1 to 200 Hp, these continuous-duty motors operate on 230 and 460 volt, 60 Hz power. If a motor does not fit into these specifications, the motor does not have to be replaced by an EPACT compliant energy efficient motor. Variable speed motors are exempt from EPACT compliance requirements. Therefore, the indoor fan motors for RGS089-180 units are exempt from these requirements.

Fan data (cont)

PULLEY ADJUSTMENT — VERTICAL

RGS UNIT	MOTOR/DRIVE COMBO	MOTOR PULLEY TURNS OPEN (RPM)										
		0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
089/090	Standard Static	747	721	695	670	644	618	592	566	541	515	489
	Medium Static	949	927	906	884	863	841	819	798	776	755	733
	High Static ¹	1102	1083	1063	1044	1025	1006	986	967	948	928	909
100/102	Standard Static	733	712	690	669	647	626	604	583	561	540	518
	Medium Static	936	911	887	862	838	813	788	764	739	715	690
	High Static	1084	1059	1035	1010	986	961	936	912	887	863	838
119/120	Standard Static	838	813	789	764	739	715	690	665	640	616	591
	Medium Static	1084	1059	1035	1010	986	961	936	912	887	863	838
	High Static	1240	1218	1196	1175	1153	1131	1109	1087	1066	1044	1022
150	Standard Static	843	824	805	786	767	748	728	709	690	671	652
	Medium Static	1084	1059	1035	1010	986	961	936	912	887	863	838
	High Static	1240	1218	1196	1175	1153	1131	1109	1087	1066	1044	1022
180	Standard Static	676	659	642	625	608	592	575	558	541	524	507
	Medium Static	851	829	806	784	761	739	717	694	672	649	627
	High Static	955	937	919	901	883	866	848	830	812	794	776

NOTE(S):

1. High static option not available on RGS089 units.

NOTE: Do not adjust pulley further than 5 turns open.

■ — Factory settings

Fan data (cont)

RGS089/090 — 7.5 TON HORIZONTAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2250	505	0.52	586	0.73	657	0.97	722	1.22	782	1.50	838	1.81	891	2.12	941	2.46	988	2.82	1033	3.19
2438	533	0.62	610	0.85	679	1.09	742	1.36	800	1.65	854	1.96	906	2.28	955	2.63	1001	2.99	1046	3.37
2625	562	0.74	635	0.98	701	1.23	762	1.51	819	1.81	872	2.12	922	2.46	970	2.81	1016	3.17	1060	3.56
2813	591	0.88	661	1.13	725	1.39	783	1.68	839	1.98	890	2.31	940	2.65	986	3.01	1031	3.38	1074	3.77
3000	621	1.03	688	1.29	749	1.57	806	1.87	859	2.18	910	2.51	958	2.86	1004	3.23	1048	3.61	1090	4.01
3188	652	1.21	715	1.48	774	1.77	829	2.07	881	2.40	930	2.74	977	3.10	1022	3.47	1065	3.86	1107	4.26
3375	682	1.40	743	1.68	800	1.98	853	2.30	903	2.63	951	2.99	997	3.35	1041	3.74	1083	4.13	1124	4.54
3563	713	1.61	772	1.91	826	2.22	878	2.55	927	2.89	973	3.26	1018	3.63	1061	4.02	1103	4.43	—	—
3750	745	1.85	801	2.15	853	2.48	903	2.82	951	3.18	996	3.55	1040	3.93	1082	4.34	—	—	—	—

LEGEND

—	Standard static 489-747 RPM, 1.7 Max BHP
—	Medium static 733-949 RPM, 2.9 Max BHP
—	High static 909-1102 RPM, 4.7 Max BHP
BOLD	Indicates field supplied drive.

RGS089/090 — 7.5 TON VERTICAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2250	513	0.54	595	0.76	665	1.01	728	1.27	786	1.56	839	1.86	889	2.18	935	2.52	980	2.87	1022	3.23
2438	541	0.65	620	0.89	688	1.14	750	1.42	806	1.71	858	2.02	907	2.35	953	2.70	997	3.06	1039	3.43
2625	570	0.77	645	1.02	712	1.29	772	1.58	827	1.88	878	2.20	926	2.54	972	2.89	1015	3.26	1056	3.64
2813	600	0.91	672	1.18	736	1.46	794	1.76	848	2.07	899	2.40	946	2.75	991	3.11	1033	3.49	1074	3.88
3000	629	1.07	699	1.35	761	1.64	818	1.95	871	2.28	920	2.62	966	2.98	1010	3.35	1052	3.74	1093	4.14
3188	660	1.25	726	1.54	787	1.85	842	2.17	894	2.51	942	2.86	987	3.23	1031	3.61	1072	4.01	1112	4.42
3375	690	1.45	754	1.75	813	2.07	867	2.41	917	2.76	964	3.12	1009	3.50	1052	3.89	1093	4.30	—	—
3563	721	1.67	783	1.98	840	2.32	892	2.67	941	3.03	988	3.41	1032	3.80	1074	4.20	1114	4.61	—	—
3750	752	1.91	812	2.24	867	2.59	918	2.95	966	3.32	1011	3.71	1054	4.11	1096	4.53	—	—	—	—

—	Std static - 489-747 RPM, 1.7 Max BHP
—	Med static - 733-949 RPM, 2.9 Max BHP
—	High static - 909-1102 RPM, 4.7 Max BHP
BOLD	Indicates field supplied drive.

RGS100/102 — 8.5 TON HORIZONTAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2550	497	0.48	579	0.61	651	0.75	717	0.90	777	1.05	833	1.21	886	1.38	936	1.56	984	1.74	1029	1.93
2763	524	0.58	602	0.72	671	0.87	735	1.03	794	1.19	849	1.36	900	1.53	950	1.72	996	1.90	1041	2.10
2975	551	0.70	626	0.86	693	1.01	754	1.18	812	1.35	865	1.52	916	1.70	964	1.89	1010	2.09	1054	2.29
3188	580	0.84	651	1.00	716	1.17	775	1.34	831	1.52	883	1.70	933	1.89	980	2.09	1025	2.29	1068	2.50
3400	609	1.00	677	1.17	739	1.35	797	1.53	851	1.71	902	1.90	950	2.10	996	2.30	1041	2.51	1083	2.73
3613	638	1.17	703	1.35	763	1.54	819	1.73	871	1.93	921	2.13	969	2.33	1014	2.54	1057	2.76	1099	2.98
3825	668	1.37	730	1.56	788	1.76	842	1.96	893	2.16	941	2.37	988	2.58	1032	2.80	1075	3.02	1116	3.25
4038	698	1.59	758	1.79	813	2.00	866	2.20	915	2.42	963	2.63	1008	2.86	1051	3.08	1093	3.31	1133	3.55
4250	728	1.83	786	2.04	839	2.26	890	2.47	938	2.70	984	2.92	1029	3.15	1071	3.39	1112	3.63	—	—

—	Std static - 518-733 RPM, 1.7 Max BHP
—	Med static - 690-936 RPM, 2.4 Max BHP
—	High static - 838-1084 RPM, 3.7 Max BHP
BOLD	Indicates field supplied drive.

Fan data (cont)

RGS100/102 — 8.5 TON VERTICAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2550	526	0.51	600	0.65	666	0.79	727	0.93	783	1.07	836	1.20	886	1.34	934	1.48	979	1.61	1022	1.74
2763	557	0.62	627	0.77	690	0.92	749	1.08	804	1.23	855	1.37	904	1.52	950	1.67	995	1.82	1037	1.97
2975	588	0.75	655	0.91	716	1.08	772	1.24	825	1.40	875	1.56	923	1.72	968	1.88	1012	2.04	1053	2.20
3188	621	0.90	684	1.07	743	1.25	797	1.42	848	1.60	897	1.77	943	1.94	987	2.11	1030	2.29	1071	2.46
3400	653	1.06	714	1.25	770	1.44	822	1.62	872	1.81	919	1.99	964	2.18	1007	2.36	1049	2.55	1089	2.73
3613	687	1.25	744	1.45	798	1.65	849	1.84	897	2.04	943	2.24	986	2.44	1029	2.63	1069	2.83	1108	3.02
3825	720	1.45	775	1.67	827	1.88	876	2.09	922	2.30	967	2.51	1010	2.71	1051	2.92	1090	3.13	1129	3.34
4038	754	1.69	807	1.91	856	2.13	904	2.35	949	2.57	992	2.80	1034	3.02	1074	3.24	1112	3.46	1150	3.68
4250	788	1.94	839	2.17	886	2.41	932	2.64	976	2.88	1018	3.11	1058	3.34	1097	3.57	—	—	—	—

—	Std static - 518-733 RPM, 1.7 Max BHP
—	Med static - 690-936 RPM, 2.4 Max BHP
—	High static - 838-1084 RPM, 3.7 Max BHP
BOLD	Indicates field supplied drive.

RGS119/120 — 10 TON HORIZONTAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3000	579	0.70	660	0.89	732	1.09	799	1.29	860	1.50	917	1.70	970	1.91	1021	2.13	1070	2.34	1117	2.56
3250	613	0.85	690	1.06	760	1.27	823	1.49	883	1.71	938	1.93	991	2.16	1041	2.38	1089	2.61	1134	2.85
3500	648	1.03	721	1.25	788	1.48	850	1.71	907	1.95	961	2.18	1013	2.42	1062	2.66	1108	2.91	1153	3.15
3750	683	1.23	753	1.47	817	1.71	877	1.96	933	2.21	985	2.46	1035	2.71	1083	2.97	1129	3.23	1173	3.49
4000	719	1.45	786	1.71	848	1.97	905	2.23	959	2.50	1011	2.76	1059	3.03	1106	3.30	1151	3.58	1194	3.85
4250	756	1.71	819	1.98	879	2.26	934	2.53	987	2.81	1037	3.09	1084	3.38	1130	3.66	1174	3.95	1216	4.24
4500	792	1.99	853	2.28	910	2.57	964	2.87	1015	3.16	1064	3.46	1110	3.76	1155	4.06	1198	4.36	1239	4.66
4750	830	2.31	888	2.62	943	2.92	995	3.23	1044	3.54	1091	3.85	1137	4.16	1180	4.48	—	—	—	—
5000	867	2.66	923	2.98	976	3.30	1026	3.63	1074	3.95	1120	4.28	1164	4.61	—	—	—	—	—	—

—	Std static - 591-838 RPM, 2.4 Max BHP
—	Med static - 838-1084 RPM, 3.7 Max BHP
—	High static - 1022-1240 RPM, 4.7 Max BHP

RGS119/120 — 10 TON VERTICAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3000	616	0.79	689	0.97	757	1.16	821	1.36	882	1.57	939	1.79	994	2.01	1047	2.24	1098	2.47	1147	2.71
3250	655	0.96	724	1.16	788	1.37	849	1.58	907	1.80	962	2.03	1015	2.26	1066	2.50	1115	2.75	1163	3.00
3500	695	1.17	760	1.38	821	1.60	879	1.83	934	2.06	987	2.30	1038	2.54	1088	2.80	1135	3.05	1181	3.32
3750	736	1.41	797	1.63	855	1.86	910	2.10	963	2.35	1014	2.60	1063	2.86	1111	3.12	1157	3.39	1202	3.66
4000	777	1.68	834	1.91	889	2.16	942	2.41	993	2.67	1042	2.93	1090	3.20	1136	3.48	1180	3.76	1224	4.04
4250	818	1.98	873	2.23	925	2.49	976	2.75	1025	3.02	1072	3.30	1118	3.58	1162	3.87	1205	4.16	1247	4.46
4500	860	2.32	912	2.58	962	2.85	1010	3.13	1057	3.41	1103	3.70	1147	4.00	1190	4.29	1232	4.60	—	—
4750	902	2.69	951	2.97	999	3.26	1046	3.55	1091	3.84	1135	4.14	1177	4.45	—	—	—	—	—	—
5000	944	3.11	991	3.40	1037	3.70	1082	4.00	1125	4.31	1167	4.63	—	—	—	—	—	—	—	—

—	Std static - 591-838 RPM, 2.4 Max BHP
—	Med static - 838-1084 RPM, 3.7 Max BHP
—	High static - 1022-1240 RPM, 4.7 Max BHP

Fan data (cont)

RGS150 — 12.5 TON HORIZONTAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3438	639	0.98	713	1.20	781	1.43	843	1.65	901	1.88	955	2.12	1007	2.35	1056	2.59	1103	2.83	1148	3.08
3750	683	1.23	753	1.47	817	1.71	877	1.96	933	2.21	985	2.46	1035	2.71	1083	2.97	1129	3.23	1173	3.49
4063	728	1.52	794	1.78	855	2.04	912	2.31	966	2.57	1017	2.84	1066	3.12	1112	3.39	1157	3.67	1200	3.95
4375	774	1.85	836	2.13	894	2.41	949	2.70	1001	2.98	1050	3.27	1097	3.56	1142	3.86	1186	4.15	1228	4.45
4688	820	2.23	879	2.53	935	2.83	987	3.14	1037	3.44	1084	3.75	1130	4.06	1174	4.37	1216	4.68	—	—
5000	867	2.66	923	2.98	976	3.30	1026	3.63	1074	3.95	1120	4.28	1164	4.61	—	—	—	—	—	—
5313	914	3.15	967	3.49	1018	3.83	1066	4.17	1112	4.52	—	—	—	—	—	—	—	—	—	—
5625	962	3.69	1012	4.05	1061	4.42	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5938	1009	4.30	1058	4.68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	Std static - 652-843 RPM, 2.9 Max BHP
—	Med static - 838-1084 RPM, 3.7 Max BHP
—	High static - 1022-1240 RPM, 4.7 Max BHP
BOLD	Indicates field supplied drive.

RGS150 — 12.5 TON VERTICAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3438	685	1.12	751	1.32	813	1.54	871	1.76	927	1.99	981	2.23	1032	2.47	1082	2.72	1130	2.97	1177	3.23
3750	736	1.41	797	1.63	855	1.86	910	2.10	963	2.35	1014	2.60	1063	2.86	1111	3.12	1157	3.39	1202	3.66
4063	787	1.75	844	1.99	898	2.24	951	2.49	1001	2.75	1049	3.02	1097	3.29	1142	3.57	1186	3.85	1230	4.14
4375	839	2.14	892	2.40	943	2.67	993	2.94	1041	3.21	1087	3.49	1132	3.78	1176	4.08	1218	4.37	1260	4.68
4688	891	2.60	941	2.87	990	3.15	1037	3.44	1082	3.73	1126	4.03	1169	4.33	1211	4.64	—	—	—	—
5000	944	3.11	991	3.40	1037	3.70	1082	4.00	1125	4.31	1167	4.63	—	—	—	—	—	—	—	—
5313	997	3.69	1042	4.00	1085	4.32	1128	4.64	—	—	—	—	—	—	—	—	—	—	—	—
5625	1051	4.34	1093	4.67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5938	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	Std static - 652-843 RPM, 2.9 Max BHP
—	Med static - 838-1084 RPM, 3.7 Max BHP
—	High static - 1022-1240 RPM, 4.7 Max BHP
BOLD	Indicates field supplied drive.

Fan data (cont)

RGS180 — 15 TON HORIZONTAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4500	479	0.97	540	1.23	596	1.50	651	1.80	703	2.13	755	2.48	805	2.87	853	3.28	900	3.72	945	4.17
4875	508	1.19	566	1.47	619	1.75	670	2.06	719	2.39	768	2.75	815	3.14	862	3.55	907	3.99	951	4.45
5250	537	1.43	592	1.73	643	2.03	691	2.35	737	2.69	783	3.06	828	3.45	872	3.86	916	4.30	958	4.77
5625	566	1.71	619	2.03	667	2.35	713	2.68	757	3.03	800	3.40	843	3.80	885	4.21	926	4.66	967	5.12
6000	596	2.02	646	2.36	692	2.70	736	3.05	778	3.41	819	3.79	860	4.19	900	4.61	939	5.06	978	5.53
6375	625	2.36	674	2.73	718	3.09	760	3.46	800	3.83	840	4.23	878	4.63	916	5.06	954	5.51	991	5.98
6750	655	2.75	701	3.14	744	3.52	785	3.91	824	4.30	861	4.70	898	5.12	935	5.56	971	6.01	—	—
7125	685	3.17	729	3.58	771	3.99	810	4.40	848	4.81	884	5.23	919	5.66	—	—	—	—	—	—
7500	715	3.64	758	4.07	798	4.50	836	4.93	872	5.36	907	5.79	—	—	—	—	—	—	—	—

- Std static - 507-676 RPM, 2.9 Max BHP
- Med static - 627-851 RPM, 3.7 Max BHP
- High static - 776-955 RPM, 6.1 Max BHP
- BOLD** — Indicates field supplied drive.

RGS180 — 15 TON VERTICAL UNIT

(For more information, see General Fan Performance Notes on page 42.)

CFM	Available External Static Pressure (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4500	487	0.98	552	1.26	610	1.55	665	1.86	718	2.20	769	2.56	819	2.95	866	3.36	912	3.79	957	4.24
4875	515	1.18	578	1.49	633	1.80	685	2.13	735	2.47	784	2.84	831	3.23	877	3.65	921	4.09	964	4.54
5250	544	1.42	604	1.75	657	2.09	707	2.43	754	2.78	800	3.16	845	3.56	889	3.98	932	4.43	974	4.89
5625	572	1.68	631	2.05	682	2.40	730	2.76	775	3.13	819	3.52	862	3.93	903	4.36	944	4.81	985	5.28
6000	601	1.98	657	2.37	707	2.75	753	3.13	797	3.52	839	3.92	880	4.34	920	4.77	959	5.23	997	5.70
6375	630	2.31	684	2.73	733	3.13	777	3.53	819	3.94	860	4.36	899	4.79	937	5.23	975	5.70	—	—
6750	659	2.68	711	3.12	759	3.55	802	3.98	843	4.40	882	4.84	920	5.28	957	5.74	—	—	—	—
7125	689	3.09	739	3.55	785	4.01	827	4.46	867	4.91	904	5.36	941	5.82	—	—	—	—	—	—
7500	718	3.53	766	4.02	811	4.51	852	4.98	891	5.46	928	5.93	—	—	—	—	—	—	—	—

- Std static - 507-676 RPM, 2.9 Max BHP
- Med static - 627-851 RPM, 3.7 Max BHP
- High static - 776-955 RPM, 6.1 Max BHP
- BOLD** — Indicates field supplied drive.

Electrical data

LEGEND AND NOTES

Applicable for Electrical Data Tables on pages 49-55

LEGEND

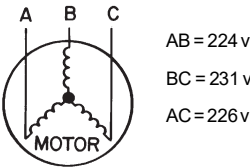
BRKR	— Circuit Breaker
C.O.	— Convenience Outlet
DISC	— Disconnect
EFF	— Efficiency
FLA	— Full Load Amps
IFM	— Indoor Fan Motor
LRA	— Locked Rotor Amps
MCA	— Minimum Circuit Amps
OFM	— Outdoor Fan Motor
P.E.	— Power Exhaust
Pwr'd fr/unit	— Powered From Unit
PWRD C.O.	— Powered Convenience Outlet
RLA	— Rated Load Amps
UNPWR C.O.	— Unpowered Convenience Outlet

NOTES:

1. In compliance with NEC requirements for multi-motor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. Unbalanced 3-Phase Supply Voltage
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 230-3-60



$$\begin{aligned} \text{Average Voltage} &= \frac{(224 + 231 + 226)}{3} = \frac{681}{3} \\ &= 227 \end{aligned}$$

Determine maximum deviation from average voltage.

$$(AB) 227 - 224 = 3 \text{ v}$$

$$(BC) 231 - 227 = 4 \text{ v}$$

$$(AC) 227 - 226 = 1 \text{ v}$$

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{4}{227}$$

$$= 1.76\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Electrical data (cont)

SINGLE SPEED INDOOR FAN MOTOR, 6-15 TONS

UNIT SIZE	V-Ph-Hz	VOLTAGE RANGE		COMP 1		COMP 2		OFM (ea)		IFM		
		Min	Max	RLA	LRA	RLA	LRA	Watts	FLA	TYPE	EFF at Full Load	FLA
RGS090 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	13.6	83	13.6	83	325	1.5	STD	87%	5.2
								325	1.5	MED	89%	8.4
								325	1.5	HIGH	83%	13.6
	230-3-60	187	253	13.6	83	13.6	83	325	1.5	STD	87%	4.9
								325	1.5	MED	89%	8.3
								325	1.5	HIGH	83%	12.7
	460-3-60	414	506	6.1	41	6.1	41	325	0.8	STD	87%	2.5
								325	0.8	MED	89%	4.2
								325	0.8	HIGH	83%	6.4
	575-3-60	518	633	4.2	33	4.2	33	325	0.6	STD	87%	2.8
								325	0.6	MED	77%	2.8
								325	0.6	HIGH	81%	5.6
RGS089 (1-Circuit/ 2-Stage Cooling)	208-3-60	187	253	28.8	164	—	—	325	1.5	STD	87%	5.2
								325	1.5	MED	89%	8.4
								325	1.5	HIGH	83%	13.6
	230-3-60	187	253	26.8	164	—	—	325	1.5	STD	87%	4.9
								325	1.5	MED	89%	8.3
								325	1.5	HIGH	83%	12.7
	460-3-60	414	506	12.0	94	—	—	325	0.8	STD	87%	2.5
								325	0.8	MED	89%	4.2
								325	0.8	HIGH	83%	6.4
	575-3-60	518	633	6.0	41	4.8	33	325	1.5	STD	75%	5.2
								325	1.5	MED	87%	6.9
								325	1.5	HIGH	87%	10.6
RGS102 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	14.5	98	13.7	83	325	1.5	STD	75%	5.2
								325	1.5	MED	87%	6.9
								325	1.5	HIGH	87%	10.6
	230-3-60	187	253	14.5	98	13.7	83	325	1.5	STD	75%	5.2
								325	1.5	MED	87%	6.7
								325	1.5	HIGH	87%	10.6
	460-3-60	414	506	6.3	55	6.2	41	325	0.8	STD	75%	2.6
								325	0.8	MED	87%	3.4
								325	0.8	HIGH	87%	5.3
	575-3-60	518	633	6.0	41	4.8	33	325	0.6	STD	72%	1.6
								325	0.6	MED	78%	2.0
								325	0.6	HIGH	77%	2.8
RGS100 (1-Circuit/ 2-Stage Cooling)	208-3-60	187	253	28.8	223	—	—	325	1.5	STD	75%	5.2
								325	1.5	MED	87%	6.9
								325	1.5	HIGH	87%	10.6
	230-3-60	187	253	28.8	223	—	—	325	1.5	STD	75%	5.2
								325	1.5	MED	87%	6.7
								325	1.5	HIGH	87%	10.6
	460-3-60	414	506	12.5	100	—	—	325	0.8	STD	75%	2.6
								325	0.8	MED	87%	3.4
								325	0.8	HIGH	87%	5.3
	575-3-60	518	633	9.7	70	—	—	325	0.6	STD	72%	1.6
								325	0.6	MED	78%	2.0
								325	0.6	HIGH	77%	2.8

See: Legend and Notes on page 48.

Electrical data (cont)

SINGLE SPEED INDOOR FAN MOTOR, 6-15 TONS (cont)

UNIT SIZE	V-Ph-Hz	VOLTAGE RANGE		COMP 1		COMP 2		OFM (ea)		IFM		
		Min	Max	RLA	LRA	RLA	LRA	Watts	FLA	TYPE	EFF at Full Load	FLA
RGS120 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	15.6	110	15.9	110	325	1.5	STD	69%	5.2
								325	1.5	MED	87%	10.6
								325	1.5	HIGH	83%	13.6
	230-3-60	187	253	15.6	110	15.9	110	325	1.5	STD	69%	5.2
								325	1.5	MED	87%	10.6
								325	1.5	HIGH	83%	12.7
	460-3-60	414	506	7.7	52	7.7	52	325	0.8	STD	69%	2.6
								325	0.8	MED	87%	5.3
								325	0.8	HIGH	83%	6.4
	575-3-60	518	633	5.8	39	5.7	39	325	0.6	STD	78%	2.0
								325	0.6	MED	77%	2.8
								325	0.6	HIGH	81%	5.6
RGS119 (1-Circuit/ 2-Stage Cooling)	208-3-60	187	253	32.5	240	—	—	325	1.5	STD	69%	5.2
								325	1.5	MED	87%	10.6
								325	1.5	HIGH	83%	13.6
	230-3-60	187	253	32.5	240	—	—	325	1.5	STD	69%	5.2
								325	1.5	MED	87%	10.6
								325	1.5	HIGH	83%	12.7
	460-3-60	414	506	14.8	130	—	—	325	0.8	STD	69%	2.6
								325	0.8	MED	87%	5.3
								325	0.8	HIGH	83%	6.4
	575-3-60	518	633	11.1	94	—	—	325	0.6	STD	78%	2.0
								325	0.6	MED	77%	2.8
								325	0.6	HIGH	81%	5.6
RGS150 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	19.6	136	22.4	149	1070	6.2	STD	89%	8.4
								1070	6.2	MED	87%	10.6
								1070	6.2	HIGH	83%	13.6
	230-3-60	187	253	19.6	136	22.4	149	1070	6.2	STD	89%	8.3
								1070	6.2	MED	87%	10.6
								1070	6.2	HIGH	83%	12.7
	460-3-60	414	506	8.2	66	10.6	75	1070	3.1	STD	89%	4.2
								1070	3.1	MED	87%	5.3
								1070	3.1	HIGH	83%	6.4
	575-3-60	518	633	6.6	55	7.7	54	1070	2.5	STD	77%	2.8
								1070	2.5	MED	77%	2.8
								1070	2.5	HIGH	81%	5.6
RGS180 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	25.0	164	25.0	164	280	1.5	STD	89%	8.4
								280	1.5	MED	87%	10.6
								280	1.5	HIGH	87%	17.0
								280	1.5	HIGH EFF	90%	20.4
	230-3-60	187	253	25.0	164	25.0	164	280	1.5	STD	89%	8.3
								280	1.5	MED	87%	10.6
								280	1.5	HIGH	87%	15.0
								280	1.5	HIGH EFF	90%	20.4
	460-3-60	414	506	12.2	100	12.8	100	280	0.8	STD	89%	4.2
								280	0.8	MED	87%	5.3
								280	0.8	HIGH	87%	7.6
								280	0.8	HIGH EFF	90%	10.2
	575-3-60	518	633	9.8	78	9.6	78	280	0.6	STD	77%	2.8
								280	0.6	MED	77%	2.8
								280	0.6	HIGH	90%	6.1
								280	0.6	HIGH EFF	94%	9.0

See Legend and Notes on page 48.

Electrical data (cont)

TWO-SPEED INDOOR FAN MOTOR, 7.5-15 TONS

UNIT SIZE	V-Ph-Hz	VOLTAGE RANGE		COMP 1		COMP 2		OFM (ea)		IFM		
		Min	Max	RLA	LRA	RLA	LRA	Watts	FLA	TYPE	EFF at Full Load	FLA
RGS090 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	13.6	83	13.6	83	325	1.5	STD	0.84	5.8
								325	1.5	MED	0.85	8.6
								325	1.5	HIGH	0.84	13.6
	230-3-60	187	253	13.6	83	13.6	83	325	1.5	STD	0.84	5.6
								325	1.5	MED	0.85	7.8
								325	1.5	HIGH	0.84	12.7
	460-3-60	414	506	6.1	41	6.1	41	325	0.8	STD	0.79	2.9
								325	0.8	MED	0.85	3.8
								325	0.8	HIGH	0.84	6.4
	575-3-60	518	633	4.2	33	4.2	33	325	0.6	STD	0.81	2.8
								325	0.6	MED	0.84	4.5
								325	0.6	HIGH	0.83	6.2
RGS102 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	14.5	98	13.7	83	325	1.5	STD	0.84	5.8
								325	1.5	MED	0.77	7.1
								325	1.5	HIGH	0.82	10.8
	230-3-60	187	253	14.5	98	13.7	83	325	1.5	STD	0.84	5.6
								325	1.5	MED	0.77	6.8
								325	1.5	HIGH	0.82	9.8
	460-3-60	414	506	6.3	55	6.2	41	325	0.8	STD	0.79	2.9
								325	0.8	MED	0.77	3.4
								325	0.8	HIGH	0.82	4.9
	575-3-60	518	633	6.0	41	4.8	33	325	0.6	STD	0.81	2.8
								325	0.6	MED	0.80	3.5
								325	0.6	HIGH	0.84	4.5
RGS120 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	15.6	110	15.9	110	325	1.5	STD	0.77	7.1
								325	1.5	MED	0.82	10.8
								325	1.5	HIGH	0.84	13.6
	230-3-60	187	253	15.6	110	15.9	110	325	1.5	STD	0.77	6.8
								325	1.5	MED	0.82	9.8
								325	1.5	HIGH	0.84	12.7
	460-3-60	414	506	7.7	52	7.7	52	325	0.8	STD	0.77	3.4
								325	0.8	MED	0.82	4.9
								325	0.8	HIGH	0.84	6.4
	575-3-60	518	633	5.8	39	5.7	39	325	0.6	STD	0.80	3.5
								325	0.6	MED	0.84	4.5
								325	0.6	HIGH	0.83	6.2

See Legend and Notes on page 48.

Electrical data (cont)

TWO-SPEED INDOOR FAN MOTOR, 7.5-15 TONS (cont)

UNIT SIZE	V-Ph-Hz	VOLTAGE RANGE		COMP 1		COMP 2		OFM (ea)		IFM		
		Min	Max	RLA	LRA	RLA	LRA	Watts	FLA	TYPE	EFF at Full Load	FLA
RGS150 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	19.6	136	22.4	149	1070	6.2	STD	0.85	8.6
								1070	6.2	MED	0.82	10.8
								1070	6.2	HIGH	0.84	13.6
	230-3-60	187	253	19.6	136	22.4	149	1070	6.2	STD	0.85	7.8
								1070	6.2	MED	0.82	9.8
								1070	6.2	HIGH	0.84	12.7
	460-3-60	414	506	8.2	66	10.6	75	1070	3.1	STD	0.85	3.8
								1070	3.1	MED	0.82	4.9
								1070	3.1	HIGH	0.84	6.4
	575-3-60	518	633	6.6	55	7.7	54	1070	2.5	STD	0.84	4.5
								1070	2.5	MED	0.84	4.5
								1070	2.5	HIGH	0.83	6.2
RGS180 (2-Circuit/ 2-Stage Cooling)	208-3-60	187	253	25.0	164	25.0	164	280	1.5	STD	0.85	8.6
								280	1.5	MED	0.82	10.8
								280	1.5	HIGH	0.90	20.4
	230-3-60	187	253	25.0	164	25.0	164	280	1.5	STD	0.85	7.8
								280	1.5	MED	0.82	9.8
								280	1.5	HIGH	0.90	20.4
	460-3-60	414	506	12.2	100	12.8	100	280	0.8	STD	0.85	3.8
								280	0.8	MED	0.82	4.9
								280	0.8	HIGH	0.90	10.2
	575-3-60	518	633	9.8	78	9.6	78	280	0.6	STD	0.84	4.5
								280	0.6	MED	0.84	4.5
								280	0.6	HIGH	0.94	9.0

See Legend and Notes on page 48.

Electrical data (cont)

UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA - 1-SPEED INDOOR FAN MOTOR, 6-15 TONS

SIZE/ CIRCUIT / STAGE	NOM. V-Ph-Hz	IFM TYPE	NO CONVENIENCE OUTLET (C.O.) or UNPWR C.O.								w/ PWRD C.O.							
			NO Power Exhaust (P.E.)				w/ P.E. (pwrdr fr/ unit)				NO P.E.				w/ P.E. (pwrdr fr/ unit)			
			MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE	
					FLA	LRA			FLA	LRA			FLA	LRA			FLA	LRA
RGS090 (2-circuit / 2-stage cool)	208/230-3-60	STD	39	50	41	193	43	50	45	197	44	50	46	198	48	60	51	202
		MED	42/42	50/50	44/44	246	46/46	50/50	49/49	250	47/47	60/60	50/50	251	51/51	60/60	54/54	255
		HIGH	48/47	60/50	50/49	262	51/51	60/60	55/54	266	52/52	60/60	56/55	267	56/55	60/60	60/59	271
	460-3-60	STD	18	20	19	95	20	25	21	97	21	25	21	97	22	25	23	99
		MED	20	25	21	122	22	25	23	124	22	25	23	124	24	30	25	126
		HIGH	22	25	23	130	24	30	25	132	24	30	26	132	26	30	28	134
	575-3-60	STD	13	15	13	77	17	20	17	81	14	15	15	79	18	20	19	83
		MED	14	15	14	92	18	20	19	96	16	20	16	94	19	25	21	98
		HIGH	17	20	17	106	21	25	22	110	19	20	19	108	23	25	24	112
RGS089 (1-circuit / 2-stage cool)	208/230-3-60	STD	42/42	60/60	40/40	208	46/46	60/60	45/44	212	47/47	60/60	46/45	213	51/50	60/60	50/50	217
		MED	45/45	60/60	44/44	244	49/49	60/60	48/48	248	50/50	60/60	49/49	249	54/54	80/80	54/54	253
	460-3-60	STD	20	30	19	116	21	30	21	118	22	30	21	118	24	30	23	120
		MED	21	30	20	134	23	30	23	136	23	30	23	136	25	30	25	138
	575-3-60	STD	16	20	15	84	20	25	19	88	17	25	17	86	21	25	21	90
		MED	16	20	15	91	20	25	19	95	17	25	17	93	21	25	21	97
RGS102 (2-circuit / 2-stage cool)	208/230-3-60	STD	40	50	42	208	44	50	46	212	45	50	47	213	49	60	52	217
		MED	42/42	50/50	44/44	246	46/46	60/50	48/48	250	47/47	60/60	49/49	251	51/51	60/60	54/53	255
		HIGH	46	50	48	275	50	60	52	279	51	60	54	280	54	60	58	284
	460-3-60	STD	19	20	19	109	21	25	21	111	21	25	22	111	23	25	24	113
		MED	20	25	20	128	21	25	22	130	22	25	23	130	24	25	25	132
		HIGH	21	25	22	143	23	25	24	145	24	25	25	145	25	30	27	147
	575-3-60	STD	16	20	16	85	19	25	20	89	17	20	18	87	21	25	22	91
		MED	16	20	16	89	20	25	20	93	18	20	18	91	21	25	22	95
		HIGH	17	20	17	100	21	25	21	104	18	20	19	102	22	25	23	106
RGS100 (1-circuit / 2-stage cool)	208/230-3-60	STD	45	60	43	250	48	60	47	254	49	60	48	255	53	80	52	259
		MED	46/46	60/60	45/44	288	50/50	60/60	49/49	292	51/51	60/60	50/50	293	55/55	80/80	54/54	297
		HIGH	50	60	49	317	54	80	53	321	55	80	54	322	59	80	59	326
	460-3-60	STD	20	30	19	113	22	30	21	115	22	30	22	115	24	30	24	117
		MED	21	30	20	132	23	30	22	134	23	30	23	134	25	30	25	136
		HIGH	23	30	22	147	25	30	24	149	25	30	25	149	27	30	27	151
	575-3-60	STD	15	20	14	81	19	25	19	85	17	25	16	83	21	30	21	87
		MED	16	25	15	85	20	25	19	89	17	25	17	87	21	30	21	91
		HIGH	17	25	16	96	20	25	20	100	18	25	18	98	22	30	22	102

See Legend and Notes on page 48.

Electrical data (cont)

UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA - 1-SPEED INDOOR FAN MOTOR, 6-15 TONS (cont)

SIZE / CIRCUIT / STAGE	NOM. V-Ph-Hz	IFM TYPE	NO CONVENIENCE OUTLET (C.O.) or UNPWR C.O.								w/ PWRD C.O.							
			NO Power Exhaust (P.E.)				w/ P.E. (pwrdr fr/ unit)				NO P.E.				w/ P.E. (pwrdr fr/ unit)			
			MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE	
					FLA	LRA			FLA	LRA			FLA	LRA			FLA	LRA
RGS120 (2-circuit / 2-stage cool)	208/230-3-60	STD	44	50	46	258	48	60	50	262	49	60	51	263	53	60	56	267
		MED	50	60	52	314	53	60	56	318	54	60	57	319	58	70	62	323
		HIGH	53/52	60/60	55/54	316	56/55	60/60	60/59	320	57/56	70/60	61/60	321	61/60	70/70	65/64	325
	460-3-60	STD	22	25	23	123	24	30	25	125	24	30	25	125	26	30	27	127
		MED	25	30	26	151	26	30	28	153	27	30	28	153	29	35	30	155
		HIGH	26	30	27	152	28	30	29	154	28	30	29	154	30	35	32	156
	575-3-60	STD	17	20	17	93	20	25	21	97	18	20	19	95	22	25	23	99
		MED	17	20	18	104	21	25	22	108	19	25	20	106	23	25	24	110
		HIGH	20	25	21	118	24	30	25	122	22	25	23	120	26	30	27	124
RGS119 (1-circuit / 2-stage cool)	208/230-3-60	STD	49	60	47	278	53	80	51	282	54	80	52	283	58	80	57	287
		MED	55	80	53	334	58	80	57	338	59	80	59	339	63	80	63	343
		HIGH	58/57	80/80	56/55	336	61/61	80/80	61/60	340	62/62	80/80	62/61	341	66/65	80/80	66/65	345
	460-3-60	STD	23	30	22	149	25	30	24	151	25	30	24	151	27	40	26	153
		MED	26	30	25	177	28	40	27	179	28	40	27	179	30	40	30	181
		HIGH	27	40	26	178	29	40	28	180	29	40	29	180	31	45	31	182
	575-3-60	STD	18	25	16	109	21	30	21	113	19	25	18	111	23	30	23	115
		MED	18	25	17	120	22	30	22	124	20	30	19	122	24	30	24	126
		HIGH	21	30	21	134	25	30	25	138	23	30	23	136	27	30	27	140
RGS150 (2-circuit / 2-stage cool)	208/230-3-60	STD	63/63	80/80	65/65	389	66/66	80/80	69/69	393	67/67	80/80	71/70	394	71/71	80/80	75/75	398
		MED	65	80	68	403	69	80	72	407	70	80	73	408	73	80	78	412
		HIGH	68/67	80/80	71/70	405	72/71	80/80	75/74	409	—	—	—	—	—	—	—	—
	460-3-60	STD	29	35	30	193	31	40	32	195	31	40	33	195	33	40	35	197
		MED	30	40	31	200	32	40	33	202	33	40	34	202	34	40	36	204
		HIGH	31	40	33	201	33	40	35	203	34	40	35	203	35	45	37	205
	575-3-60	STD	22	25	23	147	26	30	27	151	24	30	24	149	27	30	29	153
		MED	22	25	23	147	26	30	27	151	24	30	24	149	27	30	29	153
		HIGH	25	30	26	161	29	35	30	165	26	30	28	163	30	35	32	167
RGS180 (2-circuit / 2-stage cool)	208/230-3-60	STD	70/70	80/80	72/72	412	73/73	80/80	77/77	416	74/74	90/90	78/78	417	78/78	100/100	82/82	421
		MED	72	80	75	426	76	100	79	430	77	100	80	431	80	100	85	435
		HIGH-High Effi- ciency	82	100	86	432	85	100	91	436	86	100	92	437	90	100	96	441
	460-3-60	STD	35	45	36	242	37	45	38	244	37	45	39	244	39	50	41	246
		MED	36	45	38	249	38	50	40	251	39	50	40	251	40	50	42	253
		HIGH-High Effi- ciency	41	50	43	252	43	50	45	254	43	50	46	254	45	50	48	256
	575-3-60	STD	27	30	28	184	31	40	32	188	29	35	30	186	32	40	34	190
		MED	27	30	28	184	31	40	32	188	29	35	30	186	32	40	34	190
		HIGH-High Effi- ciency	33	40	35	196	37	45	39	200	35	40	37	198	39	45	41	202

See Legend and Notes on page 48.

Electrical data (cont)

UNIT WIRE/FUSE OR HACR BREAKER SIZING DATA - 2-SPEED BLOWER INDOOR FAN MOTOR, 6-15 TONS

SIZE/ CIRCUIT / STAGE	NOM. V-Ph-Hz	IFM TYPE	NO CONVENIENCE OUTLET (C.O.) or UNPWR C.O.								w/ PWRD C.O.							
			NO Power Exhaust (P.E.)				w/ P.E. (pwrdr fr/ unit)				NO P.E.				w/ P.E. (pwrdr fr/ unit)			
			MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE		MCA	Fuse or Hacr Brkr	DISC. SIZE	
					FLA	LRA			FLA	LRA			FLA	LRA			FLA	LRA
RGS090 (2-circuit / 2-stage cool)	208/230-3-60	STD	40/40	50/50	41/41	197	44/43	50/50	46/46	201	45/44	50/50	47/47	202	48/48	60/60	51/51	206
		MED	43/42	50/50	45/44	227	46/46	50/50	49/48	231	47/47	60/50	50/49	232	51/50	60/60	55/54	236
		HIGH	48/47	60/50	50/49	262	51/51	60/60	55/54	266	52/52	60/60	56/55	267	56/55	60/60	60/59	271
	460-3-60	STD	19	20	19	97	20	25	21	99	21	25	22	99	23	25	24	101
		MED	20	25	20	113	21	25	22	115	22	25	23	115	24	25	25	117
		HIGH	22	25	23	130	24	30	25	132	24	30	26	132	26	30	28	134
	575-3-60	STD	14	15	14	79	18	20	19	83	16	20	16	81	19	25	21	85
		MED	16	20	16	92	19	25	21	96	17	20	18	94	21	25	23	98
		HIGH	18	20	18	106	22	25	23	110	20	25	20	108	23	25	24	112
RGS102 (2-circuit / 2-stage cool)	208/230-3-60	STD	41/41	50/50	43/42	212	45/45	50/50	47/47	216	46/46	50/50	48/48	217	50/49	60/60	52/52	221
		MED	42/42	50/50	44/44	216	46/46	60/50	48/48	220	47/47	60/60	50/49	221	51/51	60/60	54/54	225
		HIGH	46/45	60/50	48/47	266	50/49	60/60	53/52	270	51/50	60/60	54/53	271	55/54	60/60	58/57	275
	460-3-60	STD	19	25	20	111	21	25	22	113	21	25	22	113	23	25	24	115
		MED	20	25	20	114	21	25	22	116	22	25	23	116	24	25	25	118
		HIGH	21	25	22	139	23	25	24	141	23	25	24	141	25	30	26	143
	575-3-60	STD	17	20	17	87	21	25	21	91	18	20	19	89	22	25	23	93
		MED	17	20	18	91	21	25	22	95	19	25	20	93	23	25	24	97
		HIGH	18	20	19	100	22	25	23	104	20	25	21	102	24	30	25	106
RGS120 (2-circuit / 2-stage cool)	208/230-3-60	STD	46/46	60/60	48/47	255	50/50	60/60	52/52	259	51/51	60/60	53/53	260	55/54	60/60	58/57	264
		MED	50/49	60/60	52/51	305	54/53	60/60	56/55	309	55/54	60/60	58/56	310	58/57	70/70	62/61	314
		HIGH	53/52	60/60	55/54	316	56/55	60/60	60/59	320	57/56	70/60	61/60	321	61/60	70/70	65/64	325
	460-3-60	STD	23	30	23	122	25	30	26	124	25	30	26	124	27	30	28	126
		MED	24	30	25	147	26	30	27	149	26	30	28	149	28	30	30	151
		HIGH	26	30	27	152	28	30	29	154	28	30	29	154	30	35	32	156
	575-3-60	STD	18	20	19	95	22	25	23	99	20	25	21	97	24	25	25	101
		MED	19	25	20	104	23	25	24	108	21	25	22	106	25	30	26	110
		HIGH	21	25	22	118	25	30	26	122	23	25	24	120	26	30	28	124
RGS150 (2-circuit / 2-stage cool)	208/230-3-60	STD	63/62	80/80	65/64	370	67/66	80/80	70/69	374	68/67	80/80	71/70	375	71/71	80/80	75/74	379
		MED	65/64	80/80	68/67	394	69/68	80/80	72/71	398	70/69	80/80	73/72	399	74/73	80/80	78/77	403
		HIGH	68/67	80/80	71/70	405	72/71	80/80	75/74	409	—	—	—	—	—	—	—	—
	460-3-60	STD	29	35	30	184	31	40	32	186	31	40	32	186	33	40	34	188
		MED	30	40	31	196	32	40	33	198	32	40	33	198	34	40	35	200
		HIGH	31	40	33	201	33	40	35	203	34	40	35	203	35	45	37	205
	575-3-60	STD	24	30	24	147	27	30	29	151	25	30	26	149	29	35	31	153
		MED	24	30	24	147	27	30	29	151	25	30	26	149	29	35	31	153
		HIGH	25	30	26	161	29	35	31	165	27	30	28	163	31	35	33	167
RGS180 (2-circuit / 2-stage cool)	208/230-3-60	STD	70/69	80/80	73/72	393	74/73	80/80	77/76	397	75/74	90/80	78/77	398	78/78	100/100	82/82	402
		MED	72/71	80/80	75/74	417	76/75	100/90	79/78	421	77/76	100/100	81/79	422	81/80	100/100	85/84	426
		HIGH	82	100	86	432	85	100	91	436	86	100	92	437	90	100	96	441
	460-3-60	STD	35	45	36	233	37	45	38	235	37	45	38	235	39	50	40	237
		MED	36	45	37	245	38	50	39	247	38	50	40	247	40	50	42	249
		HIGH	41	50	43	252	43	50	45	254	43	50	46	254	45	50	48	256
	575-3-60	STD	29	35	30	184	32	40	34	188	30	35	32	186	34	40	36	190
		MED	29	35	30	184	32	40	34	188	30	35	32	186	34	40	36	190
		HIGH	33	40	35	196	37	45	39	200	35	40	37	198	39	45	41	202

See Legend and Notes on page 48.

Sequence of operation

General

The sequence below describes the sequence of operation for an electro-mechanical unit with and without a factory-installed EconoMi\$er® IV and X (called “economizer” in this sequence). For information regarding a direct digital controller, see the start-up, operations, and troubleshooting manual for the applicable controller.

Electro-mechanical units with no economizer Cooling (single speed indoor fan motor)

When the thermostat calls for cooling, terminals G and Y1 are energized. As a result, the indoor fan contactor (IFC) and the compressor contactor (C1) are energized, causing the indoor fan motor (IFM), compressor #1, and outdoor fan to start. If the unit has 2 stages of cooling, the thermostat will additionally energize Y2. The Y2 signal will energize compressor contactor #2 (C2), causing compressor #2 to start. Regardless of the number of stages, the outdoor fan motor runs continuously while unit is cooling. When 2-Speed Indoor Fan Motor system is utilized, indoor fan motor runs at design CFM (full speed) during the heating operation. On 1-circuit/2-stage cooling model from 7.5 to 10 ton, the 2-speed fan motor system is not available. Efficiencies to meet the U.S. Department of Energy - 2018 IEER efficiency rating are achieved by using a precision 2-stage compressor operation sequencing with one indoor fan motor speed.

Cooling (2-speed indoor fan motor)

Per ASHRAE 90.1-2016 standard, during the first stage of cooling operation the 2-speed indoor fan motor system will adjust the fan motor to provide 66% of the total cfm established for the unit. When a call for the second stage of cooling is required, the 2-speed fan motor system will allow the total cfm for the unit established (100%). This is standard on all U.S. installed models with 2 circuit/2 stage cooling, to meet U.S. Department of Energy - 2018 IEER efficiency rating.

The 2-speed indoor fan motor system automatically adjusts the indoor fan motor speed in sequence with the units cooling operation. Per ASHRAE 90.1-2016 standard, during the first stage of cooling operation, the 2-speed controller will adjust the fan motor to provide 66% of the total cfm established for the unit. When a call for the second stage of cooling is required, the 2-speed fan motor controller will allow the total cfm for the unit established (100%). During the heating mode, the 2-speed fan controller will allow total design cfm (100%) operation and during the ventilation mode, will allow operation to 66% of total cfm.

Heating (Single or 2-speed indoor fan motor)

NOTE: RGS units have either 1 or 2 stages of gas heat. When 2-Speed Indoor Fan Motor system is utilized, indoor fan motor runs at design cfm (full speed) during the heating operation.

When the thermostat calls for heating, power is sent to W on the Integrated Gas Controller (IGC) board. An LED (light-emitting diode) on the IGC board turns on and remains on during normal operation. A check is made to ensure that the rollout switch and limit switch are closed. If the check was successful, the

induced-draft motor is energized, and when its speed is satisfactory, as proven by the “hall effect” sensor, the ignition activation period begins. The burners will ignite within 5 seconds. If the burners do not light, there is a 22-second delay before another 5-second attempt. This sequence is repeated for 15 minutes or until the burners light. If, after the 15 minutes, the burners still have not lit, heating is locked out. To reset the control, break 24-v power to the thermostat.

When ignition occurs, the IGC board will continue to monitor the condition of the rollout switch, the limit switches, the “hall effect” sensor, as well as the flame sensor. 45 seconds after ignition occurs, assuming the unit is controlled through a room thermostat set for fan auto, the indoor fan motor will energize (and the outdoor air dampers will open to their minimum position). If, for some reason, the over-temperature limit opens prior to the start of the indoor fan blower, the unit will shorten the 45-second delay to 5 seconds less than the time from initiation of heat to when the limit tripped. Gas will not be interrupted to the burners and heating will continue. Once the fan-on delay has been modified, it will not change back to 45 seconds until power is reset to the control.

On units with 2 stages of heat, when additional heat is required, W2 closes and initiates power to the second stage of the main gas valve. When the thermostat is satisfied, W1 and W2 open and the gas valve closes, interrupting the flow of gas to the main burners.

If the call for W1 lasted less than 1 minute, the heating cycle will not terminate until 1 minute after W1 became active. If the unit is controlled through a room thermostat set for fan auto, the indoor fan motor will continue to operate for an additional 45 seconds then stop. If the over-temperature limit opens after the indoor motor is stopped, but within 10 minutes of W1 becoming inactive, on the next cycle the time will be extended by 15 seconds. The maximum delay is 3 minutes. Once modified, the fan off delay will not change back to 45 seconds unless power is reset to the control. A LED indicator is provided on the IGC to monitor operation.

Electro-mechanical units with an economizer

Cooling

When free cooling is not available, the compressors will be controlled by the zone thermostat. When free cooling is available, the outdoor-air damper is modulated by the EconoMi\$er IV and X control to provide a 50°F (10°C) to 55°F (13°C) mixed-air temperature into the zone. As the mixed air temperature fluctuates above 55°F (13°C) or below 50°F (10°C) dampers will be modulated (open or close) to bring the mixed-air temperature back within control. If mechanical cooling is utilized with free cooling, the outdoor-air damper will maintain its current position at the time the compressor is started. If the increase in cooling capacity causes the mixed-air temperature to drop below 45°F (7°C), then the outdoor-air damper position will be decreased to the minimum position. If the mixed-air temperature continues to fall, the outdoor-air damper will close. Control returns to normal once the mixed-air temperature rises above 48°F (9°C). The power exhaust fans

Sequence of operation (cont)

will be energized and de-energized, if installed, as the outdoor-air damper opens and closes.

If field-installed accessory CO₂ sensors are connected to the EconoMi\$er® IV and X control, a demand controlled ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ setpoint, the minimum position of the damper will be increased proportionally. As the CO₂ level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed. For EconoMi\$er IV and X operation, there must be a thermostat call for the fan (G). If the unit is occupied and the fan is on, the damper will operate at minimum position. Otherwise, the damper will be closed.

When the EconoMi\$er IV and X control is in the occupied mode and a call for cooling exists (Y1 on the thermostat), the control will first check for indoor fan operation. If the fan is not on, then cooling will not be activated. If the fan is on, then the control will open the EconoMi\$er IV and X damper to the minimum position.

When the EconoMi\$er IV and X control is in the occupied mode and a call for cooling exists (Y1 on the thermostat), the control will first check for indoor fan operation. If the fan is not on, then cooling will not be activated. If the fan is on, then the control will open the EconoMi\$er IV and X damper to the minimum position.

On the initial power to the EconoMi\$er IV and X control, it will take the damper up to 2-1/2 minutes before it begins to position itself. After the initial power-up, further changes in damper position can take up to 30 seconds to initiate. Damper movement from full closed to full open (or vice versa) will take between 1-1/2 and 2-1/2 minutes. If free cooling can be used as determined from the appropriate changeover command (switch, dry bulb, enthalpy curve, differential dry bulb, or differential enthalpy), then the control will modulate the dampers open to maintain the mixed air temperature setpoint at 50°F (10°C) to 55°F (13°C). If there is a further demand for cooling (cooling second stage - Y2 is energized), then the control will bring on compressor stage 1 to maintain the mixed air temperature setpoint.

The EconoMi\$er IV and X damper will be open at maximum position.

2-Speed NOTE: When operating in ventilation mode only, the indoor fan motor will automatically adjust to two-thirds of the total cfm established.

Heating

The sequence of operation for the heating is the same as an electro-mechanical unit with no economizer. The only difference is how the economizer acts. The economizer will stay at the Economizer Minimum Position while the evaporator fan is operating. The outdoor-air damper is closed when the indoor fan is not operating. Refer to Service and Maintenance Manual for further details.

Optional Hot Gas Re-Heat dehumidification system

Units with the factory equipped Hot Gas Re-Heat system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle. The Hot Gas Re-Heat system option includes additional valves in the liquid line and discharge line of each refrigerant circuit, a small reheat condenser coil downstream of the evaporator, and Motormaster® variable-speed control of some or all outdoor fans. Operation of the revised refrigerant circuit for each mode is described below.

The Hot Gas Re-Heat system provides three sub-modes of operation: Cool, Reheat1, and Reheat2.

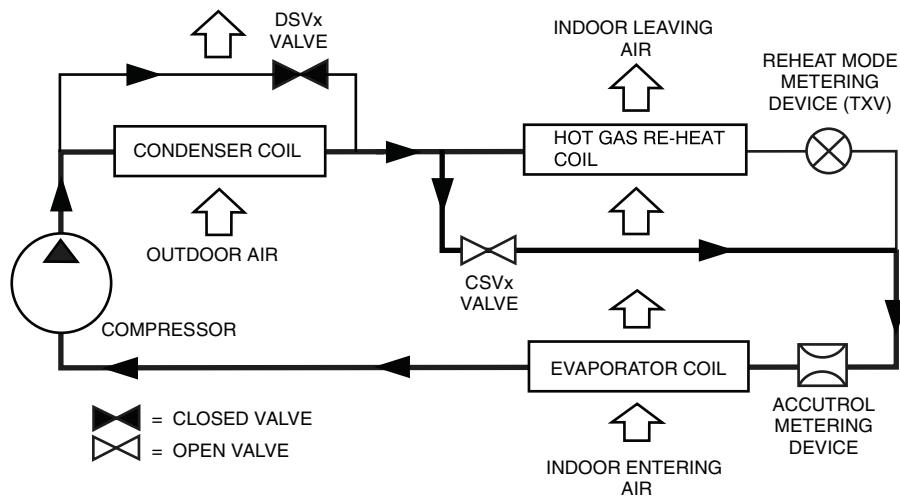
- Cool mode - provides a normal ratio of Sensible and Latent Cooling effect from the evaporator coil.
- Reheat1 - provides increased Latent Cooling while slightly reducing the Sensible Cooling effect.
- Reheat2 - provides normal Latent Cooling but with null or minimum Sensible Cooling effect delivered to the space.

The Reheat1 and Reheat2 modes are a variable when the unit is not in a Heating mode and when the Low Ambient Lockout switch is closed.

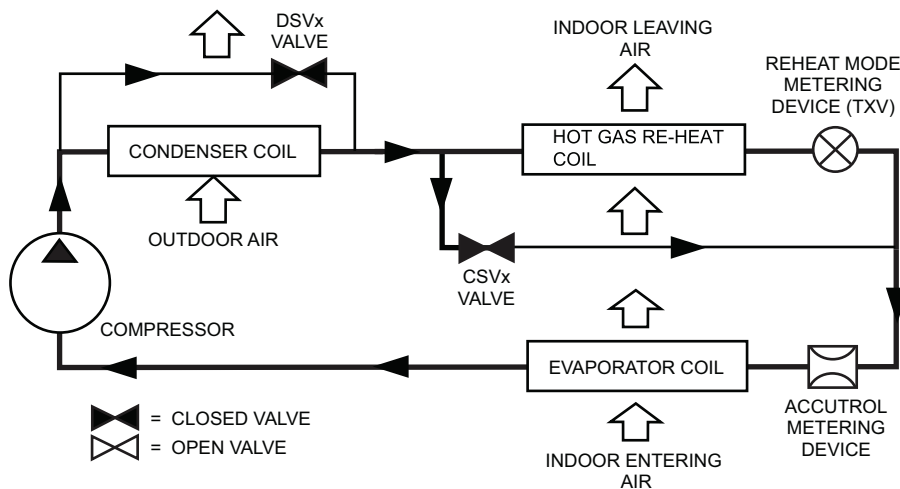
The following diagrams depict piping for Single Stage cooling units.

Sequence of operation (cont)

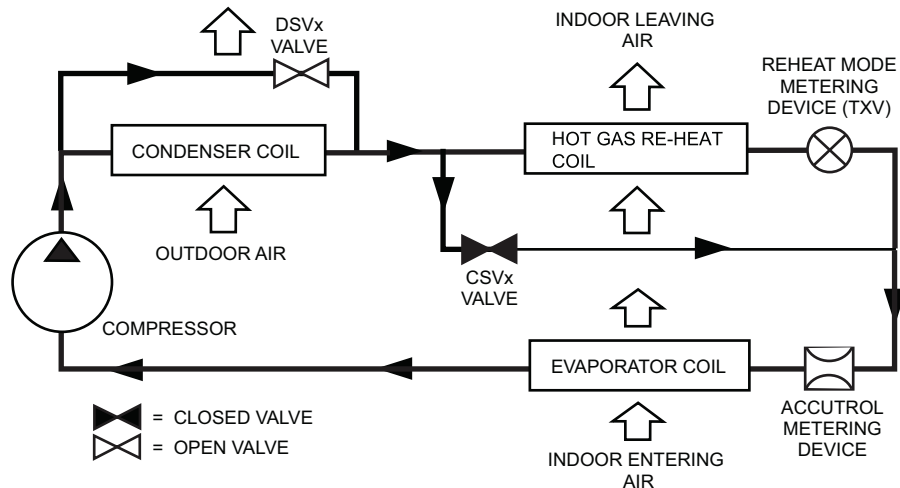
NORMAL COOLING MODE — HOT GAS RE-HEAT SYSTEM



SUBCOOLING MODE (REHEAT 1) — HOT GAS RE-HEAT SYSTEM



SUBCOOLING MODE (REHEAT 2) — HOT GAS RE-HEAT SYSTEM



Guide specifications

Note about this specification: These specifications are written in “Masterformat” as published by the Construction Specification Institute. Please feel free to copy this specification directly into your building spec.

Gas heat/electric cooling packaged rooftop

HVAC guide specifications

Size range: **6 to 15 Nominal Tons**

Part 1 — (23 06 80) Schedules for decentralized HVAC equipment

1.01 (23 06 80.13) Decentralized Unitary HVAC Equipment Schedule

A. (23 06 80.13.A.) Rooftop unit (RTU) schedule

1. Schedule is per the project specification requirements.

Part 2 — (23 07 16) HVAC equipment insulation

2.01 (23 07 16.13) Decentralized, Rooftop Units:

A. (23 07 16.13.A.) Evaporator fan compartment:

1. Interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, minimum 1-1/2lb. density, flexible fiberglass insulation bonded with a phenolic binder, neoprene coated on the air side.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
3. Unit internal insulation linings shall be resistant to mold growth in accordance with “mold growth and humidity” test in ASTM C1338, G21, and UL 181 or comparable test method. Air stream surfaces shall be evaluated in accordance with the “Erosion Test” in UL 181, as part of ASTM C1071.

B. (23 07 16.13.B.) Gas heat compartment:

1. Aluminum foil-faced fiberglass insulation shall be used.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

Part 3 — (23 09 13) Instrumentation and control devices for HVAC

3.01 (23 09 13.23) Sensors and Transmitters

A. (23 09 13.23.A.) Thermostats

1. Thermostat must
 - a. energize both “W” and “G” when calling for heat.
 - b. have capability to energize 2 different stages of cooling, and 2 different stages of heating.
 - c. include capability for occupancy scheduling.

Part 4 — (23 09 33) Electric and electronic control system for HVAC

4.01 (23 09 33.13) Decentralized, rooftop units

A. (23 09 33.13.A) General:

1. Shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-v transformer side. Transformer shall have 75VA capability.
2. Shall utilize color-coded wiring.
3. Shall include a central control terminal board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, gas controller, economizer, thermostat, DDC control options, and low and high pressure switches.
4. The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor. See heat exchanger section of this specification.
5. Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.

B. (23 09 33.23.B) Safeties:

1. Compressor over-temperature, over-current. High internal pressure differential.
2. Low-pressure switch.
 - a. Units shall have different sized connectors for the circuit 1 and circuit 2 low and high pressure switches. They shall physically prevent the cross-wiring of the safety switches between circuits 1 and 2.
 - b. Low-pressure switch shall use different color wire than the high-pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
3. High-pressure switch.
 - a. Units shall have different sized connectors for the circuit 1 and circuit 2 low and high-pressure switches. They shall physically prevent the cross-wiring of the safety switches between circuits 1 and 2.
 - b. High-pressure switch shall use different color wire than the low-pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
4. Automatic reset, motor thermal overload protector.
5. Heating section shall be provided with the following minimum protections:
 - a. High-temperature limit switches.
 - b. Induced draft motor speed sensor.
 - c. Flame roll-out switch.
 - d. Flame proving controls.

Guide specifications (cont)

Part 5 — (23 09 93) Sequence of operations for HVAC controls

5.01 (23 09 93.13) Decentralized, Rooftop Units:

A. (23 09 93.13.A.) INSERT SEQUENCE OF OPERATION

Part 6 — (23 40 13) Panel air filters

6.01 (23 40 13 13) Decentralized rooftop units:

A. (23 40 13 13.A.) Standard filter section

1. Shall consist of factory-installed, low velocity, disposable 2-in. thick fiberglass filters of commercially available sizes.
2. Unit shall use only one filter size. Multiple sizes are not acceptable.
3. Filters shall be accessible through a dedicated, weather tight access panel with "no-tool" removal as described in the unit cabinet section of this specification (23 81 19 13.G.).

Part 7 — (23 81 19) Self-contained air conditioners

7.01 (23 81 19.13) Small-Capacity Self-Contained Air Conditioners (RGS089-180)

A. (23 81 19.13.A.) General

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a fully hermetic scroll compressor(s) for cooling duty and gas combustion for heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field startup.
3. Unit shall use R-410A refrigerant.
4. Unit shall be installed in accordance with the manufacturer's instructions.
5. Unit must be selected and installed in compliance with local, state, and federal codes.

B. (23 81 19.13.B.) Quality Assurance

1. Unit meets Department of Energy 2018 ASHRAE 90.1-2016 and IECC 2015 minimum efficiency requirements.
2. Unit shall be rated in accordance with AHRI Standards 340/360.
3. Unit shall be designed to conform to ASHRAE 15.
4. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
5. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
6. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).

7. Roof curb shall be designed to conform to NRCA Standards.

8. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.

9. Unit shall be designed in accordance with UL Standard 1995, ETL listed including tested to withstand rain.

10. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.

11. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.

12. High Efficiency Motors listed shall meet section 313 of the Energy Independence and Security Act of 2007 (EISA 2007).

C. (23 81 19.13.C.) Delivery, storage, and handling

1. Unit shall be stored and handled per manufacturer's recommendations.
2. Lifted by crane requires either shipping top panel or spreader bars.
3. Unit shall only be stored or positioned in the upright position.

D. (23 81 19.13.D.) Project conditions

1. As specified in the contract.

E. (23 81 19.13.E.) Operating characteristics

1. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 340/360 at ± 10% voltage.
2. Compressor with standard controls shall be capable of operation down to 40°F (4°C), ambient outdoor temperatures. Accessory winter start kit is necessary if mechanically cooling at ambient temperatures below 25°F (-4°C).
3. Unit shall be field convertible from factory furnished vertical to horizontal airflow on all models. No special kit required on 089-150 models. Supply duct kit required for 180 size model only.
4. Unit shall be capable of field mixed operation: vertical supply with horizontal return or horizontal supply with vertical return.

F. (23 81 19.13.F.) Electrical Requirements

1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

G. (23 81 19.13.G.) Unit cabinet

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a pre-painted baked enamel finish on all externally exposed surfaces.
2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 inches minimum, gloss (per

Guide specifications (cont)

- ASTM D523, 60°F / 16°C): 60, Hardness: H to 2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum 1/2-in. thick, 1-lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
 4. Base of unit shall have a minimum of four locations for thru-the-base gas and electrical connections standard.
 5. Base rail
 - a. Unit shall have base rails on a minimum of 2 sides.
 - b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
 - c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
 - d. Base rail shall be a minimum of 16-gauge thickness.
 6. Condensate pan and connections:
 - a. Shall be a sloped condensate drain pan made of a non-corrosive material.
 - b. Shall comply with ASHRAE Standard 62.
 - c. Shall use a 3/4-in. to 14 NPT drain connection, through the side of the drain pan. Connection shall be made per manufacturer's recommendations.
 7. Top panel:

Shall be a single piece top panel on 089 thru 120 sizes, two piece on 150 and 180 sizes.
 8. Gas connections:
 - a. All gas piping connecting to unit gas valve shall enter the unit cabinet at a single location on side of unit (horizontal plane).
 - b. Thru-the-base capability
 - 1) Standard unit shall have a thru-the-base gas-line location using a raised, embossed portion of the unit basepan.
 - 2) Thru-the-base provisions / connections are available as standard with every unit. When bottom connections are required, field furnished couplings are required.
 - 3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
 9. Electrical connections
 - a. All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
 - b. Thru-the-base capability
 - 1) Thru-the-base provisions / connections are available as standard with every unit. When bottom connections are required, field furnished couplings are required.
 - 2) Optional, factory approved, water-tight connection method must be used for thru-the-base electrical connections.
 - 3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
 10. Component access panels (standard)
 - a. Cabinet panels shall be easily removable for servicing.
 - b. Unit shall have one factory-installed, removable, tool-less filter access panel.
 - c. Panels covering control box and filter shall have molded composite handles while the blower access door shall have an integrated flange for easy removal.
 - d. Handles shall be UV modified, composite. They shall be permanently attached, and recessed into the panel.
 - e. Screws on the vertical portion of all removable access panel shall engage into heat resistant, molded composite collars.
 - f. Collars shall be removable and easily replaceable using manufacturer recommended parts.
- H. (23 81 19.13.H.) Gas heat
1. General
 - a. Heat exchanger shall be an induced draft design. Positive pressure heat exchanger designs shall not be allowed.
 - b. Shall incorporate a direct-spark ignition system and redundant main gas valve.
 - c. Gas supply pressure at the inlet to the rooftop unit gas valve must match that required by the manufacturer.
 2. The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor.
 - a. IGC board shall notify users of fault using an LED (light-emitting diode).
 - b. IGC board shall contain algorithms that modify evaporator-fan operation to prevent future cycling on high temperature limit switch.
 - c. Unit shall be equipped with anti-cycle protection with one short cycle on unit flame roll-out switch or 4 continuous short cycles on the high temperature limit switch. Fault indication shall be made using an LED.
 3. Standard heat exchanger construction
 - a. Heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gauge steel coated with a nominal

Guide specifications (cont)

- 1.2-mil aluminum-silicone alloy to aid with corrosion resistance.
- b. Burners shall be of the inshot type constructed of aluminum-coated steel.
- c. Burners shall incorporate orifices for rated heat output up to 2000 ft (610 m) elevation. Additional accessory kits may be required for applications above 2000 ft (610 m) elevation, depending on local gas supply conditions.
- d. Each heat exchanger tube shall contain multiple dimples for increased heating effectiveness.
- 4. Optional stainless steel heat exchanger construction
 - a. Use energy saving, direct-spark ignition system.
 - b. Use a redundant main gas valve.
 - c. Burners shall be of the inshot type constructed of aluminum-coated steel.
 - d. All gas piping shall enter the unit cabinet at a single location on side of unit (horizontal plane).
 - e. The optional stainless steel heat exchanger shall be of the tubular-section type, constructed of a minimum of 20-gauge type 409 stainless steel.
 - f. Type 409 stainless steel shall be used in heat exchanger tubes and vestibule plate.
 - g. Complete stainless steel heat exchanger allows for greater application flexibility.
- 5. Induced draft combustion motor and blower
 - a. Shall be a direct-drive, single inlet, forward-curved centrifugal type.
 - b. Shall be made from steel with a corrosion-resistant finish.
 - c. Shall have permanently lubricated sealed bearings.
 - d. Shall have inherent thermal overload protection.
 - e. Shall have an automatic reset feature.
- I. (23 81 19.13.I.) Coils
 - 1. Standard aluminum fin/copper tube coils:
 - a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
 - b. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
 - c. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
 - 2. Optional pre-coated aluminum-fin condenser coils:
 - a. Shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments.
 - b. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.
 - c. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.
 - 3. Optional copper-fin evaporator and condenser coils:
 - a. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.
 - b. Galvanized steel tube sheets shall not be acceptable.
 - c. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.
 - 4. Optional E-coated aluminum-fin, evaporator and condenser coils:
 - a. Shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins.
 - b. Coating process shall ensure complete coil encapsulation of tubes, fins, and headers.
 - c. Color shall be high gloss black with gloss per ASTM D523-89.
 - d. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges.
 - e. Superior harness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93.
 - f. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93).
 - g. Humidity and water immersion shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92).
 - h. Corrosion durability shall be confirmed through testing to be no less than 6000 hours salt spray per ASTM B117-90.
- J. (23 81 19.13.J.) Refrigerant components
 - 1. Refrigerant circuit shall include the following control, safety, and maintenance features:
 - a. Dual circuit — two stage cooling models (090, 102, 120, 150, 180) shall use fixed orifice metering system shall prevent maldistribution of two-phase refrigerant by

Guide specifications (cont)

- including multiple fixed orifice devices in each refrigeration circuit. Each orifice is to be optimized to the coil circuit it serves.
- b. Single circuit — two stage cooling models 089, 100, and 119 shall use one fixed orifice and one TXV metering device to assist in optimum latent heat removal from a single circuit design.
 - c. Refrigerant filter drier - Solid core design.
 - d. Service gauge connections on suction and discharge lines.
2. Pressure gauge access through a specially designed access port in the top panel of the unit.
3. There shall be gauge line access port in the skin of the rooftop, covered by a black, removable plug.
- a. The plug shall be easy to remove and replace.
 - b. When the plug is removed, the gauge access port shall enable maintenance personnel to route their pressure gauge lines.
 - c. This gauge access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.
 - d. The plug shall be made of a leak proof, UV-resistant, composite material.
4. Compressors
- a. Unit shall use fully hermetic, scroll compressor for each independent refrigeration circuit.
 - b. Models 090, 102, 120, 150, 180 with dual refrigerant circuit shall contain two scroll compressors (one per circuit), models 089, 100, and 119 with single circuit and two stage cooling shall contain one dual stage compressor.
 - c. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
 - d. Compressors shall be internally protected from high discharge temperature conditions.
 - e. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.
 - f. Compressor shall be factory-mounted on rubber grommets.
 - g. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.
 - h. Crankcase heaters shall not be required for normal operating range, unless required by the manufacturer due to refrigerant charge limits.
- K. (23 81 19.13.K.) Filter section
- 1. Filters access is specified in the unit cabinet section of this specification.
 - 2. Filters shall be held in place by a preformed, slide-out filter tray, facilitating easy removal and installation.
 - 3. Shall consist of factory-installed, low velocity, throw-away 2-in. thick fiberglass filters.
 - 4. Filters shall be standard, commercially available sizes.
 - 5. Only one size filter per unit is allowed.
- L. (23 81 19.13.L.) Evaporator fan and motor
- 1. Evaporator fan motor:
 - a. Shall have permanently lubricated bearings.
 - b. Shall have inherent automatic-reset thermal overload protection or circuit breaker.
 - c. Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating shall be required.
 - 2. Belt-driven evaporator fan:
 - a. Belt drive shall include an adjustable-pitch motor pulley.
 - b. Shall use sealed, permanently lubricated ball-bearing type.
 - c. Blower fan shall be double-inlet type with forward-curved blades.
 - d. Shall be constructed from steel with a finish that aids with corrosion resistance and that is dynamically balanced.
- M. (23 81 19.13.M.) Condenser and fan motors
- 1. Condenser fan motors:
 - a. Shall be a totally enclosed motor.
 - b. Shall use permanently lubricated bearings.
 - c. Shall have inherent thermal overload protection with an automatic reset feature.
 - d. Shall use a shaft-down design on 089 to 120 and 180 models and shaft-up on 150 size with rain shield.
 - 2. Condenser fans:
 - a. Shall be a direct-driven propeller type fan.
 - b. Shall have galvalum blades riveted to steel spiders that have corrosion-resistant properties and shall be dynamically balanced.
- N. (23 81 19.13.N.) Special features options and accessories
- 1. The 2-speed indoor fan motor system shall be standard on all models with dual stage cooling to meet the Department of Energy 2018 mandatory IEER efficiency requirement.

Guide specifications (cont)

Not available on models - 089, 100, 119 with single circuit - two stage cooling:

a. Evaporator fan motor:

- 1) Shall have permanently lubricated bearings.
- 2) Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating.
- 3) Shall be Variable Frequency duty and 2-speed control.
- 4) Shall contain motor shaft grounding ring to prevent electrical bearing fluting damage by safely diverting harmful shaft voltages and bearing currents to ground.

2. Variable frequency drive (VFD):

- a. Factory-supplied VFDs qualify, through ABB, for a 12-month warranty from date of commissioning or 18 months from date of sale, whichever occurs first.
- b. Shall be installed inside the unit cabinet, mounted, wired and tested.
- c. Shall contain Electromagnetic Interference (EMI) frequency protection.
- d. Insulated gate bi-polar transistors (IGBT) used to produce the output pulse width modulated (PWM) waveform, allowing for quiet motor operation.
- e. Self-diagnostics with fault and power code LED indicator. Field accessory Display Kit available for further diagnostics and special setup applications.
- f. RS485 capability standard.
- g. Electronic thermal overload protection.
- h. 5% swinging chokes for harmonic reduction and improved power factor.
- i. All printed circuit boards shall be conformal coated.

3. Integrated EconoMi\$er® IV and EconoMi\$er X low and ultra low leak rate models:

- a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
- b. Independent modules for horizontal return configuration shall be available.
- c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
- d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
- e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.

f. Low leak rate models shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.

g. Economizer controller on EconoMi\$er IV models shall be Honeywell W7212 that provides:

- 1) Combined minimum and DCV maximum damper position potentiometers with compressor staging relay.
- 2) Functions with solid state analog enthalpy or dry bulb changeover control sensing.
- 3) Contain LED indicates for: when free cooling is available, when module is in DCV mode, when exhaust fan contact is closed.

h. Economizer controller on EconoMi\$er® X models shall be the Honeywell W7220 that provides:

- 1) 2-line LCD interface screen for setup, configuration and troubleshooting.
- 2) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24.
- 3) Sensor failure loss of communication identification.
- 4) Automatic sensor detection.
- 5) Capabilities for use with multiple-speed indoor fan systems.
- 6) Utilize digital sensors: Dry bulb and Enthalpy.

i. Shall be capable of introducing up to 100% outdoor air.

j. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1-2016 and IECC-2015 requirements.

k. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.

l. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available for factory-installed economizers only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C.) Additional sensor options shall be available as accessories.

m. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.

n. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.

Guide specifications (cont)

- o. Dampers shall be completely closed when the unit is in the unoccupied mode.
 - p. Economizer controller shall accept a 2-10 Vdc CO₂ sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.
 - q. Compressor lockout temperature on W7220 is adjustable from -45°F to 80°F (-43°C to 27°C), set at a factory default of 32°F (0°C). Others shall open at 35°F (2°C) and closes at 50°F (10°C).
 - r. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
 - s. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
4. Integrated EconoMi\$er X Ultra Low Leak rate models.
- a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
 - b. Independent modules for horizontal return configuration shall be available. Vertical return modules shall be available as a factory-installed option.
 - c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
 - d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
 - e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
 - f. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE 90.1-2016 requirements of 4 cfm per sq. ft. on the outside air dampers and 10 cfm per sq. ft. on the return dampers. Also meets AMCA Class 1A economizer damper test standards and labeling.
 - g. Economizer controller on EconoMi\$er X models shall be the Honeywell W7220 that provides:
 - 1) 2-line LCD interface screen for setup, configuration and troubleshooting.
 - 2) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24. Also meets AMCA Class 1A economizer damper test standards and labeling.
 - 3) Sensor failure loss of communication identification.
 - 4) Automatic sensor detection.
 - 5) Capabilities for use with multiple-speed indoor fan systems.
 - 6) Utilize digital sensors: Dry bulb and Enthalpy.
 - h. Shall be capable of introducing up to 100% outdoor air.
 - i. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1-2016 requirements.
 - j. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.
 - k. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available for factory-installed economizers only. Outdoor air sensor set-point shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.
 - l. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.
 - m. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.
 - n. Dampers shall be completely closed when the unit is in the unoccupied mode.
 - o. Economizer controller shall accept a 2-10 Vdc CO₂ sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.
 - p. Compressor lockout temperature on W7220 is adjustable from -45°F to 80°F (-43°C to 27°C), set at a factory default of 32°F (0°C). Others shall open at 35°F (2°C) and closes at 50°F (10°C).
 - q. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.
 - r. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.
5. Two-Position Motorized Damper:
- a. Damper shall be a 2-position damper. Damper travel shall be from the full closed position to the field adjustable %-open set-point.
 - b. Damper shall include adjustable damper travel from 25% to 100% (full open).

Guide specifications (cont)

- c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
 - d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
 - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
 - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
 - g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
 - h. Outside air hood shall include aluminum water entrainment filter.
6. Three-Position Motorized Damper:
- a. Damper shall be a 3-position damper. Damper travel shall be from the full closed position to the field adjustable %-open set-point. One setting to align the first stage of indoor fan motor operation, the second to align with the full stage operation of the indoor fan motor operation. The last fully closed for the off mode.
 - b. Damper shall include adjustable damper travel from 25% to 100% (full open).
 - c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
 - d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
 - e. Damper will admit up to 100% outdoor air for applicable rooftop units.
 - f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
 - g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
 - h. Outside air hood shall include aluminum water entrainment filter.
7. Manual damper
- a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% or 50% outdoor air for year round ventilation.
8. Hot Gas Re-Heat dehumidification system
- a. The Hot Gas Re-Heat dehumidification system shall be factory-installed in RGS090/102/120/150/180 models with RTPF (round tube plate fin) condenser coils, and shall provide greater dehumidification of the occupied space by two modes of dehumidification operations in addition to its normal design cooling mode:
 - 1) Subcooling mode further sub cools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
 - 2) Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create a two-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
 - 3) Includes head pressure controller.
9. Head pressure control package (Motormaster®)
- a. Controller shall control coil head pressure by condenser-fan speed modulation or condenser-fan cycling and wind baffles.
 - b. Shall consist of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90°F (32°C) and 110°F (43°C) at outdoor ambient temperatures down to -20°F (-29°C).
10. Propane conversion kit
- a. Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane up to 2000 ft (610m) elevation
 - b. Additional accessory kits may be required for application above 2000 ft (610m) elevation.
11. Flue shield (089-150 sized only)
- a. Flue shield shall provide protection from the hot sides of the gas flue hood.
12. Condenser coil hail guard assembly (factory-installed on 3-Phase models only. Field-installed on all 3-Phase models)
- a. Shall protect against damage from hail.
 - b. Shall be louvered style design.
13. Unit-mounted, non-fused disconnect switch (available on units with MOCs of 80 amps or less):
- a. Switch shall be factory-installed, internally mounted.
 - b. National Electric Code (NEC) and UL approved non-fused switch shall provide unit power shutoff.
 - c. Shall be accessible from outside the unit.
 - d. Shall provide local shutdown and lockout capability.
 - e. Sized only for the unit as ordered from the factory. Does not accommodate field-installed devices.
14. Convenience outlet:
- a. Powered convenience outlet.
 - 1) Outlet shall be powered from main line power to the rooftop unit.
 - 2) Outlet shall be powered from line side of disconnect by installing contractor, as

Guide specifications (cont)

- required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be ETL certified and rated for additional outlet amperage.
- 3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
- 4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
- 5) Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer.
- 6) Outlet shall be accessible from outside the unit.
- 7) Outlet shall include a field-installed "Wet in Use" cover.
- b. Factory-installed non-powered convenience outlet.
 - 1) Outlet shall be powered from a separate 115/120v power source.
 - 2) A transformer shall not be included.
 - 3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
 - 4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
 - 5) Outlet shall be accessible from outside the unit.
 - 6) Outlet shall include a field-installed "Wet in Use" cover.
- c. Field-Installed Non-powered convenience outlet.
 - 1) Outlet shall be powered from a separate 115-120v power source.
 - 2) A transformer shall not be included.
 - 3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
 - 4) Outlet shall include 20 amp GFI receptacles. This kit provides a flexible installation method which allows code compliance for height requirements of the GFCI outlet from the finished roof surface as well as the capability to relocate the outlet to a more convenient location.
 - 5) Outlet shall be accessible from outside the unit.
 - 6) Outlet shall include a field-installed "Wet in Use" cover.
- 15. Flue discharge deflector:
 - a. Flue discharge deflector shall direct unit exhaust vertically instead of horizontally.
 - b. Deflector shall be defined as a "natural draft" device by the National Fuel and Gas (NFG) code.
- 16. Thru-the-base connectors:
 - a. Kits shall provide connectors to permit gas and electrical connections to be brought to the unit through the unit basepan.
 - b. Minimum of four connection locations per unit.
- 17. Supply duct cover: (180 size only.)
 - a. Required when field converting the factory standard vertical duct supply to horizontal duct supply configuration. One required per unit.
- 18. Propeller power exhaust:
 - a. Power exhaust shall be used in conjunction with an integrated economizer.
 - b. Independent modules for horizontal return configurations shall be available.
 - c. Horizontal power exhaust shall be mounted in return ductwork.
 - d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0-100% adjustable setpoint on the economizer control.
- 19. Roof curbs (vertical):
 - a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
 - b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
 - c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
- 20. High altitude gas conversion kit:
 - a. Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit to operate from 2,000 to 7,000 ft (610 to 2134 m) elevation with natural gas from 0 to 7,000 ft (90 to 2134 m) elevation with liquefied propane.
- 21. Outdoor air enthalpy sensor:
 - a. The outdoor air enthalpy sensor shall be used to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the unit will provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.
- 22. Return air enthalpy sensor:
 - a. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.

Guide specifications (cont)

23. Indoor air quality (CO₂) sensor:
 - a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
 - b. The IAQ sensor shall be available in duct mount, wall mount, or wall mount with LED display. The setpoint shall have adjustment capability.
24. Smoke detectors (factory-installed only):
 - a. Shall be a four-wire controller and detector.
 - b. Shall be environmentally compensated with differential sensing for reliable, stable, and drift-free sensitivity.
 - c. Shall use magnet-activated test/reset sensor switches.
 - d. Shall have tool-less connection terminal access.
 - e. Shall have a recessed momentary switch for testing and resetting the detector.
 - f. Controller shall include:
 - 1) One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
 - 2) Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
 - 3) One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
 - 4) Capable of direct connection to two individual detector modules.
 - 5) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.
25. Horn/Strobe Annunciator
 - a. Provides an audible/visual signaling device for use with factory-installed option or field-installed accessory smoke detectors.
 - 1) Requires installation of a field-supplied 24-v transformer suitable for 4.2 VA (AC) or 3.0 VA (DC) per horn/strobe accessory.
 - 2) Requires field-supplied electrical box, North American 1-gang box, 2-in. (51 mm) x 4-in. (102 mm).
 - 3) Shall have a clear colored lens.
26. Winter start kit
 - a. Shall contain a bypass device around the low pressure switch.
 - b. Shall be required when mechanical cooling is required down to 25°F (−4°C).
 - c. Shall not be required to operate on an economizer when below an outdoor ambient of 40°F (4°C).
27. Time guard
 - a. Shall prevent compressor short-cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shut-down for any reason.
 - b. One device shall be required per compressor.
28. Disconnect switch bracket (180 size only)
 - a. Provides a pre-engineered and sized mounting bracket for applications requiring a unit mounted fused and non-fused disconnect of greater than 100 amps. Bracket assures that no damage will occur to coils when mounting with screws and other fasteners.
29. Hinged access panels
 - a. Shall provide easy access through hinged access doors with vinyl coated door retainers.
 - b. Shall be on major panels of: filter, control box, and fan motor.
30. Display kit for variable frequency drive
 - a. Kit allows the ability to access the VFD controller programs to provide special setup capabilities and diagnostics.
 - b. Kit contains display module and communication cable.
 - c. Display Kit can be permanently installed in the unit or used on any 2-speed indoor fan motor system controller as needed.
31. Condensate overflow switch:
 - a. This sensor and related controller monitors the condensate level in the drain pan and shuts down compression operation when overflow conditions occur. It includes:
 - 1) Indicator light — solid red (more than 10 seconds on water contact - compressors disabled), blinking red (sensor disconnected).
 - 2) 10 second delay to break — eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping).
 - 3) Disables the compressor(s) operation when condensate plug is detected, but still allows fans to run for Economizer.

© 2021 Carrier

Lewisburg, Tennessee 37091 USA

www.GoTempstar.com

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.