# RGS
## Product Specifications

# ASHRAE 90.1 COMPLIANT PACKAGE GAS HEATING/ELECTRIC COOLING, VERTICAL SUPPLY/RETURN AIR CONFIGURATION ONLY R-410A SINGLE PACKAGE ROOFTOP 17.5-27.5 TONS

## BUILT TO LAST, EASY TO INSTALL AND SERVICE

17.5 ton

20 and 25 ton

- One-piece, standard efficiency gas heating and electric cooling with a low profile, prewired, tested, and charged at the factory
- Dedicated vertical air flow duct configuration models
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Fully insulated cabinet
- Two-stage cooling with independent circuits and control on all models
- Redundant gas valve for two stage gas heating capacity control
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay
- High efficiency, gas heat with induced draft flue exhaust design
- Scroll compressors with internal line-break connections on all models
- All units have high and low pressure switches
- Two inch disposable fiberglass type return air filters in dedicated rack
- Refrigerant circuits contain a liquid line filter drier to trap dirt and moisture
- Round tube plate fin evaporator and condenser coil design
- Exclusive non-corrosive composite condensate pan in accordance with ASHRAE 62 Standard, sloping design; end drain
- Belt drive evaporator-fan motor and pulley combinations available to meet most applications
- Access panels with easy grip handles provide quick and easy access to the blower and blower motor, control box, and compressors
- “No-strip” screw system has superior holding power and guides screws into position while preventing the screw from stripping the unit’s metal
- Newly designed terminal board facilitates simple safety circuit troubleshooting and simplified control box arrangement
- Standard outdoor temperature cooling operation range up to 115°F (46°C) and down to 30°F (–1°C)
- Fixed orifice metering devices on all models to precisely control refrigerant flow
- Large, laminated control wiring and power wiring drawings are affixed to unit to make troubleshooting easy
- Single point gas and electrical connections

## WARRANTY

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

## EXTENDED WARRANTY

- 5 year extended parts warranty available

**UNIT PERFORMANCE DATA — 2-STAGE COOLING**

| UNIT | DEDICATED AIRFLOW | NOMINAL TONS | COOLING | | GAS HEATING | | UNIT DIMENSIONS (H x W x L) | SHIPPING WEIGHT lb. [kg] |
|---|---|---|---|---|---|---|---|---|
| | | | NET. CAP (Btuh) | EER | INPUT CAP. (Btuh) STAGE 2 | THERMAL EFFICIENCY (%) | | |
| **RGS210*^AA0AAA** | Vertical | 17.5 | 208,000 | 10.8 | 220,000-400,000 | 81.0 | 49-3/8" x 86-5/8" x 127-7/8" | 1948 [884] |
| **RGS240*^AA0AAA** | Vertical | 20.0 | 242,000 | 9.8 | 220,000-400,000 | 81.0 | 49-3/8" x 86-5/8" x 141-1/2" | 2098 [952] |
| **RGS300*^AA0AAA** | Vertical | 25.0 | 280,000 | 9.8 | 220,000-400,000 | 81.0 | 57-3/8" x 86-5/8" x 141-1/2" | 2234 [1013] |
| **RGS336*^AA0AAA** | Vertical | 27.5 | 330,000 | 10.2 | 220,000-400,000 | 81.0 | 57-3/8" x 86-5/8" x 157-3/4" | 2668 [1210] |

* 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

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# Model number nomenclature

## RGS 210-336 UNITS MODEL NUMBER NOMENCLATURE

| MODEL SERIES | R | G | S | 2 | 1 | 0 | H | D | A | U | 0 | A | A | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Position Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

R = Rooftop

G = Gas/Electric — **Type**

S = Standard ASHRAE 90.1 - 2016 — **Efficiency**

210 = 210,000 = 17.5 Tons Dedicated Vertical SA/RA (SA = Supply Air, RA = Return Air)
240 = 240,000 = 20 Tons Dedicated Vertical SA/RA
300 = 300,000 = 25 Tons Dedicated Vertical SA/RA
336 = 330,000 = 27.5 Tons Dedicated Vertical SA/RA — **Nominal Cooling Capacity**

H = 208/230-3-60
L = 460-3-60
S = 575-3-60 — **Voltage**

D = Low Heat, Aluminum Exchanger
E = Medium Heat, Aluminum Exchanger
F = High Heat, Aluminum Exchanger
S = Low Heat, Stainless Steel Heat Exchanger
R = Medium Heat, Stainless Steel Heat Exchanger
T = High Heat, Stainless Steel Heat Exchanger — **Heating Capacity**

A = Standard Static Option (available on all models)
B = High Static Option (available on all models)
C = Medium Static Option (available on all models)
H = High Static with Hot Gas Re-Heat (available on 210-300 models) — **Motor Option**

A = None
U = Ultra Low Leak Temp Economizer w/Baro-relief
W = Ultra Low Leak Temp Enthalpy Economizer w/Baro-relief — **Outdoor Air Options / Control**

0A = Standard / No Options
4B = Non-fused Disconnect
AA = Hinged Access Panels
AT = Non-powered Convenience Outlet.
BR = Supply Air Smoke Detector — **Other Factory Installed Options**[1]

A = Alum / Cu Cond and Alum / Cu Evap
B = Pre-coated Alum / Cu Cond and Alum / Cu Evap
C = E-coated Alum / Cu Cond and Alum / Cu Evap
D = E-coated Alum / Cu Cond and E-coated Alum / Cu Evap
E = Cu / Cu Cond and Alum / Cu Evap
F = Cu / Cu Cond and Cu / Cu Evap — **Coil Factory Installed Options**

T = 2 Speed Indoor Fan VFD Controller — **Motor Type Option**

[1]A combination of FIOP's are available.

AHRI CERTIFIED™ www.ahridirectory.org
Unitary Large AC
AHRI Standard 340/360
Certification applies only when the complete system is listed with AHRI.

ASHRAE 90.1 COMPLIANT

C ETL LISTED US
Intertek

# AHRI capacity ratings

## AHRI COOLING RATINGS

| RGS MODEL | COOLING STAGES | NOM. CAPACITY (TONS) | NET COOLING CAPACITY (MBH) | TOTAL POWER (kW) | EER | IEER WITH 2-SPEED INDOOR FAN MOTOR | RATED INDOOR AIRFLOW (CFM) |
|---|---|---|---|---|---|---|---|
| **210** | 2 | 17.5 | 208.0 | 19.3 | 10.8 | 12.7 | 6,125 |
| **240** | 2 | 20.0 | 242.0 | 24.7 | 9.8 | 11.7 | 8,000 |
| **300** | 2 | 25.0 | 280.0 | 28.6 | 9.8 | 11.5 | 8,750 |
| **336** | 2 | 27.5 | 330.0 | 32.4 | 10.2 | 11.5 | 9,750 |

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

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 air temp and 95°F (35°C) db outdoor air temp.
   **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 RGS rooftop units meet ASHRAE 90.1-2016, DOE-2018 and IECC[1]-2015 minimum efficiency requirements when equipped with the 2-Speed Indoor Fan Motor System option.
4. RGS units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes or visit the following website: http://bcap-energy.org to determine if compliance with this standard pertains to your state, territory, or municipality.

1. IECC is a registered trademark of International Code Council, Inc.

## HEATING RATING TABLE - NATURAL GAS AND PROPANE

| RGS MODEL | HEAT SIZE | AL/SS HEAT EXCHANGER | | TEMP RISE (°F) | THERMAL EFFICIENCY (%) |
|---|---|---|---|---|---|
| | | INPUT / OUTPUT STAGE 2 (MBH) | INPUT / OUTPUT STAGE 1 (MBH) | | |
| **210** | LOW | 220 / 178 | 176 / 142 | 15 - 55 | 81% |
| | MED | 310 / 251 | 248 / 200 | 25 - 60 | 81% |
| | HIGH | 400 / 324 | 320 / 260 | 30 - 65 | 81% |
| **240** | LOW | 220 / 178 | 176 / 142 | 15 - 55 | 81% |
| | MED | 310 / 251 | 248 / 200 | 20 - 60 | 81% |
| | HIGH | 400 / 324 | 320 / 260 | 30 - 65 | 81% |
| **300** | LOW | 220 / 178 | 176 / 142 | 10 - 55 | 81% |
| | MED | 310 / 251 | 248 / 200 | 15 - 60 | 81% |
| | HIGH | 400 / 324 | 320 / 260 | 20 - 65 | 81% |
| **336** | LOW | 220 / 178 | 176 / 142 | 10 - 55 | 81% |
| | MED | 310 / 251 | 248 / 200 | 15 - 60 | 81% |
| | HIGH | 400 / 324 | 320 / 260 | 20 - 65 | 81% |

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 de-rated by 4% for each 1000 ft (305 m) above sea level.

# AHRI capacity ratings (cont)

## SOUND PERFORMANCE

| RGS MODEL | COOLING STAGES | OUTDOOR SOUND (dB) AT 60 Hz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A-WEIGHTED | AHRI 370 RATING | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| **210** | 2 | 84.1 | 84 | 92.2 | 83.9 | 80.4 | 81.8 | 78.7 | 76.5 | 72.2 | 65.4 |
| **240** | 2 | 86.5 | 87 | 95.6 | 87.5 | 84.2 | 84.2 | 81.7 | 77.9 | 73.2 | 66.3 |
| **300** | 2 | 85.9 | 86 | 97.1 | 88.3 | 84.4 | 83.3 | 80.7 | 77.4 | 73.4 | 67.3 |
| **336** | 2 | 85.9 | 86 | 97.1 | 88.3 | 84.4 | 83.3 | 80.7 | 77.4 | 73.4 | 67.3 |

LEGEND

**dB** — Decibel

NOTES:

1. Outdoor sound data is measured in accordance with AHRI standard 370.
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 370.

## MINIMUM - MAXIMUM AIRFLOW RATINGS - NATURAL GAS AND PROPANE

| RGS MODEL | HEAT LEVEL | COOLING | | | AL HX HEATING | | SS HX HEATING | |
|---|---|---|---|---|---|---|---|---|
| | | MINIMUM 2-SPEED FAN MOTOR (AT HIGH SPEED) | MINIMUM 2-SPEED FAN MOTOR (AT LOW SPEED) | MAXIMUM | MINIMUM | MAXIMUM | MINIMUM | MAXIMUM |
| **210** | LOW | 5250 | 3500 | 9000 | 3000 | 11000 | 3000 | 11000 |
| | MED | | | | 3880 | 9300 | 3880 | 9300 |
| | HIGH | | | | 4620 | 10000 | 4620 | 10000 |
| **240** | LOW | 6000 | 4000 | 10000 | 3000 | 11000 | 3000 | 11000 |
| | MED | | | | 3880 | 11630 | 3880 | 11630 |
| | HIGH | | | | 4620 | 10000 | 4620 | 10000 |
| **300** | LOW | 8450 | 5633 | 12500 | 3000 | 16500 | 3000 | 16500 |
| | MED | | | | 3880 | 15500 | 3880 | 15500 |
| | HIGH | | | | 4620 | 15000 | 4620 | 15000 |
| **336** | LOW | 9450 | 6300 | 13750 | 3000 | 16500 | 3000 | 16500 |
| | MED | | | | 3880 | 15500 | 3880 | 15500 |
| | HIGH | | | | 4620 | 15000 | 4620 | 15000 |

LEGEND

**AL HX** — Aluminum Gas Heat Exchanger
**SS HX** — Stainless Steel Gas Heat Exchanger

# Physical data

## PHYSICAL DATA (COOLING), 17.5 AND 20 TONS

| | | RGS 210 | RGS 210 WITH HOT GAS RE-HEAT | RGS 240 | RGS 240 WITH HOT GAS RE-HEAT |
|---|---|---|---|---|---|
| **REFRIGERATION SYSTEM** | | **RTPF** | **RTPF** | **RTPF** | **RTPF** |
| | # Circuits / # Comp. / Type | 2 / 2 / Scroll | 2 / 2 / Scroll | 2 / 2 / Scroll | 2 / 2 / Scroll |
| | R-410A charge A/B (lbs) | 16.3/17.5 | 24.9/25.7 | 20.6/14.7 | 27.9/20.5 |
| | Metering device | Acutrol™ | TXV | Acutrol | TXV |
| | High-press. Trip / Reset (psig) | 630 / 505 | 630 / 505 | 630 / 505 | 630 / 505 |
| | Low-press. Trip / Reset (psig) | 54 / 117 | 27 / 44 | 54 / 117 | 27 / 44 |
| **EVAP. COIL** | | | | | |
| | Material | Cu / Al | Cu / Al | Cu / Al | Cu / Al |
| | Tube Diameter | 3/8-in. | 3/8-in. | 3/8-in. | 3/8-in. |
| | Rows / FPI | 4 / 15 | 4 / 15 | 4 / 15 | 4 / 15 |
| | Total face area ($ft^2$) | 22.00 | 22.00 | 22.00 | 22.00 |
| | Condensate drain conn. size | 3/4-in. | 3/4-in. | 3/4-in. | 3/4-in. |
| **HOT GAS RE-HEAT COIL** | | | | | |
| | Material | — | Cu / Al | — | Cu / Al |
| | Tube Diameter | — | 3/8-in. | — | 3/8-in. |
| | Rows / FPI | — | 1 / 17 | — | 1 / 17 |
| | Total face area ($ft^2$) | — | 22.00 | — | 22.00 |
| **EVAPORATOR FAN AND MOTOR** | | | | | |
| **STANDARD STATIC** | Motor Qty / Belt Qty / Driver Type | 1/1/Belt | — | 1/1/Belt | — |
| | Max BHP | 2.9 | — | 4.9 | — |
| | RPM range | 514-680 | — | 690-863 | — |
| | Max Blower/Shaft RPM | 1200 | — | 1200 | — |
| | Motor frame size | 56 | — | 56 | — |
| | Fan Qty / Type | 2 / Centrifugal | — | 2 / Centrifugal | — |
| | Fan Diameter (in.) | 15 x 15 | — | 15 x 15 | — |
| **MEDIUM STATIC** | Motor Qty / Belt Qty / Driver Type | 1/1/Belt | — | 1/1/Belt | — |
| | Max BHP | 3.7 | — | 6.5/ 6.9/ 7.0/ 8.3 | — |
| | RPM range | 679-863 | — | 835-1021 | — |
| | Max Blower/Shaft RPM | 1200 | — | 1200 | — |
| | Motor frame size | 56 | — | 184T | — |
| | Fan Qty / Type | 2 / Centrifugal | — | 2 / Centrifugal | — |
| | Fan Diameter (in.) | 15 x 15 | — | 15 x 15 | — |
| **HIGH STATIC** | Motor Qty / Belt Qty / Driver Type | 1/1/Belt | 1/1/Belt | 1/1/Belt | 1/1/Belt |
| | Max BHP | 4.9 | 4.9 | 6.5/ 6.9/ 7.0/ 8.3 | 6.5/ 6.9/ 7.0/ 8.3 |
| | RPM range | 826-1009 | 826-1009 | 835-1021 | 835-1021 |
| | Max Blower/Shaft RPM | 1200 | 1200 | 1200 | 1200 |
| | Motor frame size | 56 | 56 | 184T | 184T |
| | Fan Qty / Type | 2 / Centrifugal | 2 / Centrifugal | 2 / Centrifugal | 2 / Centrifugal |
| | Fan Diameter (in.) | 15 x 15 | 15 x 15 | 15 x 15 | 15 x 15 |

# Physical data (cont)

## PHYSICAL DATA (COOLING), 25 AND 27.5 TONS

| | | RGS 300 | RGS 300 WITH HOT GAS RE-HEAT | RGS 336 |
|---|---|---|---|---|
| **REFRIGERATION SYSTEM** | | **RTPF** | **RTPF** | **RTPF** |
| | # Circuits / # Comp. / Type | 2 / 2 / Scroll | 2 / 2 Scroll | 2 / 2 Scroll |
| | R-410A charge A/B (lbs) | 19.8/20.4 | 27.9/28.9 | 27.0/28.5 |
| | Metering device | Acutrol | TXV | Acutrol |
| | High-press. Trip / Reset (psig) | 630 / 505 | 630 / 505 | 630 / 505 |
| | Low-press. Trip / Reset (psig) | 54 / 117 | 27 / 44 | 54 / 117 |
| **EVAP. COIL** | | | | |
| | Material | Cu / Al | Cu / Al | Cu / Al |
| | Tube Diameter | 3/8-in. | 3/8-in. | 3/8-in. |
| | Rows / FPI | 4 / 15 | 4 / 15 | 4 / 15 |
| | Total face area ($ft^2$) | 23.11 | 23.11 | 26 |
| | Condensate drain conn. size | 3/4-in. | 3/4-in. | 3/4-in. |
| **HOT GAS RE-HEAT COIL** | | | | |
| | Material | — | Cu / Al | — |
| | Tube Diameter | — | 3/8-in. | — |
| | Rows / FPI | — | 1 / 17 | — |
| | Total face area ($ft^2$) | — | 23.11 | — |
| **EVAPORATOR FAN AND MOTOR** | | | | |
| **STANDARD STATIC** | Motor Qty / Belt Qty / Driver Type | 1/1/Belt | — | 1/1/Belt |
| | Max BHP | 4.9 | — | 6.5/ 6.9/ 7.0/ 8.3 |
| | RPM range | 717-911 | — | 751-954 |
| | Max Blower/Shaft RPM | 1200 | — | 1300 |
| | Motor frame size | 56 | — | 56 |
| | Fan Qty / Type | 2 / Centrifugal | — | 2 / Centrifugal |
| | Fan Diameter (in.) | 15 x 15 | — | 15 x 15 |
| **MEDIUM STATIC** | Motor Qty / Belt Qty / Driver Type | 1/1/Belt | — | 1/1/Belt |
| | Max BHP | 6.5/ 6.9/ 7.0/ 8.3 | — | 10.5/ 11.9/ 11.9/ 11 |
| | RPM range | 913-1116 | — | 920-1190 |
| | Max Blower/Shaft RPM | 1200 | — | 1300 |
| | Motor frame size | 184T | — | 184T |
| | Fan Qty / Type | 2 / Centrifugal | — | 2 / Centrifugal |
| | Fan Diameter (in.) | 15 x 15 | — | 15 x 15 |
| **HIGH STATIC** | Motor Qty / Belt Qty / Driver Type | 1/1/Belt | 1/1/Belt | 1/2/Belt |
| | Max BHP | 10.5/ 11.9/ 11.9/ 11 | 10.5/ 11.9/ 11.9/ 11 | 11.9/ 12.9/ 12.9/ 14.1 |
| | RPM range | 941-1176 | 941-1176 | 1015-1299 |
| | Max Blower/Shaft RPM | 1200 | 1200 | 1300 |
| | Motor frame size | 213T | 213T | 213T |
| | Fan Qty / Type | 2 / Centrifugal | 2 / Centrifugal | 2 / Centrifugal |
| | Fan Diameter (in.) | 15 x 15 | 15 x 15 | 15 x 15 |

# Physical data (cont)

**PHYSICAL DATA (COOLING), 15-27.5 TONS**

| | RGS 210 | RGS 210 WITH HOT GAS RE-HEAT | RGS 240 | RGS 240 WITH HOT GAS RE-HEAT | RGS 300 | RGS 300 WITH HOT GAS RE-HEAT | RGS 336 |
|---|---|---|---|---|---|---|---|
| **CONDENSER COIL (CIRCUIT A)** | | | | | | | |
| Coil Type | RTPF | RTPF | RTPF | RTPF | RTPF | RTPF | RTPF |
| Coil length (in.) | 70 | 70 | 82 | 82 | 75 | 75 | 95 |
| Coil height (in.) | 44 | 44 | 44 | 44 | 52 | 52 | 52 |
| Rows / FPI | 2/17 | 2/17 | 2/17 | 2/17 | 2/17 | 2/17 | 2/17 |
| Total face area ($ft^2$) | 21.4 | 21.4 | 25.1 | 25.1 | 27.1 | 27.1 | 34.3 |
| **CONDENSER COIL (CIRCUIT B)** | | | | | | | |
| Coil Type | RTPF | RTPF | RTPF | RTPF | RTPF | RTPF | RTPF |
| Coil length (in.) | 70 | 70 | 57 | 57 | 75 | 75 | 95 |
| Coil height (in.) | 44 | 44 | 44 | 44 | 52 | 52 | 52 |
| Rows / FPI | 2/17 | 2/17 | 2/17 | 2/17 | 2/17 | 2/17 | 2/17 |
| Total face area ($ft^2$) | 21.4 | 21.4 | 17.4 | 17.4 | 27.1 | 27.1 | 34.3 |
| **CONDENSER FAN/MOTOR** | | | | | | | |
| Qty/Motor drive type | 3 / direct | 3 / direct | 4 / direct | 4 / direct | 4 / direct | 4 / direct | 6 / direct |
| Motor HP / RPM | 1/4 / 1100 | 1/4 / 1100 | 1/4 / 1100 | 1/4 / 1100 | 1/4 / 1100 | 1/4 / 1100 | 1/4 / 1100 |
| Fan diameter (in.) | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| **FILTERS** | | | | | | | |
| RA filter #/ size (in.) | 6/ 20 x 25 x 2 | 6/ 20 x 25 x 2 | 6/ 20 x 25 x 2 | 6/ 20 x 25 x 2 | 9/ 16 x 25 x 2 | 9/ 16 x 25 x 2 | 9/ 16 x 25 x 2 |
| OA inlet screen #/ size (in.) | 4/ 16 x 25 x 1 | 4/ 16 x 25 x 1 | 4/ 16 x 25 x 1 | 4/ 16 x 25 x 1 | 4/ 16 x 25 x 1 | 4/ 16 x 25 x 1 | 4/ 16 x 25 x 1 |

# Physical data (cont)

**PHYSICAL DATA (HEATING), 15-27.5 TONS**

| | | RGS 210 | RGS 240 | RGS 300 | RGS 336 |
|---|---|---|---|---|---|
| **GAS CONNECTION** | | | | | |
| | # of Gas Valves | 1 | 1 | 1 | 1 |
| | Natural gas supply line press (in. wg) / (PSIG) | 5-13 / 0.18-0.47 | 5-13 / 0.18-0.47 | 5-13 / 0.18-0.47 | 5-13 / 0.18-0.47 |
| | LP supply line pressure (in. wg) / (PSIG) | 11-13 / 0.40-0.47 | 11-13 / 0.40-0.47 | 11-13 / 0.40-0.47 | 11-13 / 0.40-0.47 |
| **HEAT ANTICIPATOR SETTING (AMPS)** | | | | | |
| | First stage | 0.14 | 0.14 | 0.14 | 0.14 |
| | Second stage | 0.14 | 0.14 | 0.14 | 0.14 |
| **NATURAL GAS HEAT** | | | | | |
| **LOW** | # of stages / # of burners (total) | 2 / 5 | 2 / 5 | 2 / 5 | 2 / 5 |
| | Connection size | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT |
| | Rollout switch opens / closes (°F) | 195 / 115 | 195 / 115 | 195 / 115 | 195 / 115 |
| | Temperature Rise (°F) | 25-55 | 25-55 | 25-55 | 25-55 |
| **MED** | # of stages / # of burners (total) | 2 / 7 | 2 / 7 | 2 / 7 | 2 / 7 |
| | Connection size | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT |
| | Rollout switch opens / closes (°F) | 195 / 115 | 195 / 115 | 195 / 115 | 195 / 115 |
| | Temperature Rise (°F) | 30-60 | 30-60 | 30-60 | 30-60 |
| **HIGH** | # of stages / # of burners (total) | 2 / 10 | 2 / 10 | 2 / 10 | 2 / 10 |
| | Connection size | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT |
| | Rollout switch opens / closes (°F) | 195 / 115 | 195 / 115 | 195 / 115 | 195 / 115 |
| | Temperature Rise (°F) | 35-65 | 35-65 | 35-65 | 35-65 |
| **LIQUID PROPANE HEAT** | | | | | |
| **LOW** | # of stages / # of burners (total) | 2 / 5 | 2 / 5 | 2 / 5 | 2 / 5 |
| | Connection size | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT |
| | Rollout switch opens / closes (°F) | 195 / 115 | 195 / 115 | 195 / 115 | 195 / 115 |
| | Temperature Rise (°F) | 25-55 | 25-55 | 25-55 | 25-55 |
| **MED** | # of stages / # of burners (total) | 2 / 7 | 2 / 7 | 2 / 7 | 2 / 7 |
| | Connection size | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT |
| | Rollout switch opens / closes (°F) | 196 / 115 | 197 / 115 | 198 / 115 | 198 / 115 |
| | Temperature Rise (°F) | 30-60 | 30-60 | 30-60 | 30-60 |
| **HIGH** | # of stages / # of burners (total) | 2 / 10 | 2 / 10 | 2 / 10 | 2 / 10 |
| | Connection size | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT | 3/4-in. NPT |
| | Rollout switch opens / closes (°F) | 195 / 115 | 195 / 115 | 195 / 115 | 195 / 115 |
| | Temperature Rise (°F) | 35-65 | 35-65 | 35-65 | 35-65 |

# Options and accessories

## FACTORY-INSTALLED AND FIELD-INSTALLED ACCESSORIES

| CATEGORY | ITEM | FACTORY INSTALLED OPTION | FIELD INSTALLED ACCESSORY |
|---|---|---|---|
| **CABINET** | Hinged access panels | X | |
| **COIL OPTIONS** | Cu/Cu outdoor & indoor coils | X | |
| | E-coated outdoor & indoor coils | X | |
| | Pre-coated outdoor coils | X | |
| **HUMIDITY CONTROL** | Hot Gas Re-Heat Dehumidification System (210-300 RTPF) | X | |
| **CONDENSER PROTECTION** | Condenser coil hail guard (louvered design) | | X |
| **CONTROLS** | Thermostats, temperature sensors, and subbases | | X |
| | Smoke detector (supply and/or return air) | X | X |
| | Horn/strobe annunciator [6] | | X |
| | Time Guard II compressor delay control circuit | | X |
| | Phase monitor | | X |
| **ECONOMIZERS & OUTDOOR AIR DAMPERS** | EconoMi$er X for electro-mechanical controls, complies with FDD. (Low Leak and Ultra Low Leak air damper models) [5] | X | X |
| | Barometric relief [1] | X | X |
| | Power exhaust-centrifugal blower | | X |
| **ECONOMIZER SENSORS & 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 | |
| | 4-in. filter track assembly | | X |
| **GAS HEAT** | Propane conversion kit | | X |
| | Stainless steel heat exchanger | X | |
| | High altitude conversion kit | | X |
| | Flue discharge deflector | | X |
| **INDOOR MOTOR & DRIVE** | Multiple motor and drive packages | 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 to -20°F (-29°C) [3] | | X |
| **POWER OPTIONS** | Convenience outlet (powered) | X | |
| | Convenience outlet (unpowered): 15 amp factory-installed, 20 amp field-installed | X | X |
| | Non-fused disconnect [4] | X | |
| **ROOF CURBS** | Roof curb 14-in. (356 mm) | | X |
| | Roof curb 24-in. (610 mm) | | X |

NOTES:
1. Included with economizer.
2. Sensors used to optimize economizer performance.
3. See application data for assistance.
4. Non-fused disconnect switch cannot be used when unit FLA rating exceeds 200 amps on 208/230 volt and 100 amps on 460/575 volt units.
5. FDD (Fault Detection and Diagnostic) capability per California Title 24 Section 120.2i, ASHRAE 90.1-2016 and IECC-2015 Fault Detection and Diagnostic (FDD) requirements.
6. Requires a field-supplied 24V transformer for each application.

# Options and accessories (cont)

## Factory-installed options

### Economizer (dry-bulb or enthalpy)

Economizers can reduce operating costs. 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 coupled to $CO_2$ sensors, economizers can limit the ventilation air to only that amount required.

Economizers are available, installed and tested by the factory, with either enthalpy or temperature dry-bulb inputs. There are also models for electro-mechanical controllers and 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 low leak versions.

### $CO_2$ sensor

The $CO_2$ sensor works with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the $CO_2$ sensor detects their presence through increasing $CO_2$ levels, and opens the economizer appropriately.

When the occupants leave, the $CO_2$ 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 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. We will install this service feature at our factory. 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 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.

When selecting a factory-installed non-fused disconnect, note they are sized for unit as ordered from the factory. The sizing of these does not accommodate any power exhaust devices, etc.

### 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.

### Optional Hot Gas Re-Heat dehumidification system

Our Hot Gas Re-Heat dehumidification system is an all-inclusive factory-installed option that can be ordered with any RGS 210-300 rooftop units.

This system expands the envelope of operation of our 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 Re-Heat system includes two new modes of operation.

The RGS 210-300 rooftop coupled with the Hot Gas Re-Heat system is capable of operating in normal design cooling mode, subcooling mode, and hot gas re-heat 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 Re-Heat mode will operate when outdoor temperatures diminish and the need for latent capacity is required for sole humidity control. Hot Gas Re-Heat mode will provide neutral air for maximum dehumidification operation.

### 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.

### 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

# Options and accessories (cont)

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.

**Hinged access panels**

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

**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-bottom connections**

Provisions for thru-the-bottom power connections are standard.

## Field-installed accessories

**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.

Motormaster allows cooling operation down to –20°F (–29°C) ambient conditions.

**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.

**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.

# Options and accessories (cont)

## OPTIONS AND ACCESSORIES — WEIGHT ADDERS

| BASE MODEL WITH OPTIONS AND ACCESSORIES (WEIGHT ADDERS) | MAX WEIGHT ADDER | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | RGS 210 | | RGS 240 | | RGS 300 | | RGS 336 | |
| | lb | kg | lb | kg | lb | kg | lb | kg |
| **Hot Gas Re-Heat System[1]** | 110 | 50 | 120 | 55 | 120 | 55 | — | — |
| **Power Exhaust** | 125 | 57 | 125 | 57 | 125 | 57 | 125 | 57 |
| **EconoMi$er® (X)** | 246 | 112 | 246 | 112 | 246 | 112 | 246 | 112 |
| **Cu/Cu Condenser Coil[2]** | 28 | 13 | 30 | 14 | 34 | 15 | 34 | 15 |
| **Cu/Cu Condenser and Evaporator Coils[2]** | 53 | 24 | 58 | 26 | 64 | 29 | 64 | 29 |
| **Medium Gas Heat** | 90 | 41 | 90 | 41 | 90 | 41 | 90 | 41 |
| **High Gas Heat** | 113 | 51 | 113 | 51 | 113 | 51 | 113 | 51 |
| **Flue Discharge Deflector** | 7 | 3 | 7 | 3 | 7 | 3 | 7 | 3 |
| **Roof Curb 14-in. (356 mm)** | 240 | 109 | 255 | 116 | 255 | 116 | 255 | 116 |
| **Roof Curb 24-in. (610 mm)** | 340 | 154 | 355 | 161 | 355 | 161 | 355 | 161 |
| **Louvered Hail Guard** | 60 | 27 | 120 | 54 | 150 | 68 | 150 | 68 |
| **$CO_2$ Sensor** | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 |
| **Return Smoke Detector** | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 |
| **Supply Smoke Detector** | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 |
| **Fan/Filter Status Switch** | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| **Non-Fused Disconnect** | 15 | 7 | 15 | 7 | 15 | 7 | 15 | 7 |
| **Powered Convenience Outlet** | 35 | 16 | 35 | 16 | 35 | 16 | 35 | 16 |
| **Non-Powered Convenience Outlet** | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 |
| **Enthalpy Sensor** | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| **Differential Enthalpy Sensor** | 3 | 1 | 3 | 1 | 3 | 1 | 3 | 1 |
| **Field Filter Track 4-in. (102 mm)** | 22 | 10 | 22 | 10 | 22 | 10 | 22 | 10 |
| **Motormaster® Controller** | 35 | 16 | 35 | 16 | 35 | 16 | 35 | 16 |
| **Medium Static Motor/Drive** | 6 | 3 | 6 | 3 | 6 | 3 | 10 | 5 |
| **High Static Motor/Drive** | 12 | 5 | 16 | 7 | 16 | 7 | 20 | 9 |
| **2-Speed Indoor Fan Motor System with VFD** | 20 | 9 | 20 | 9 | 20 | 9 | 20 | 9 |

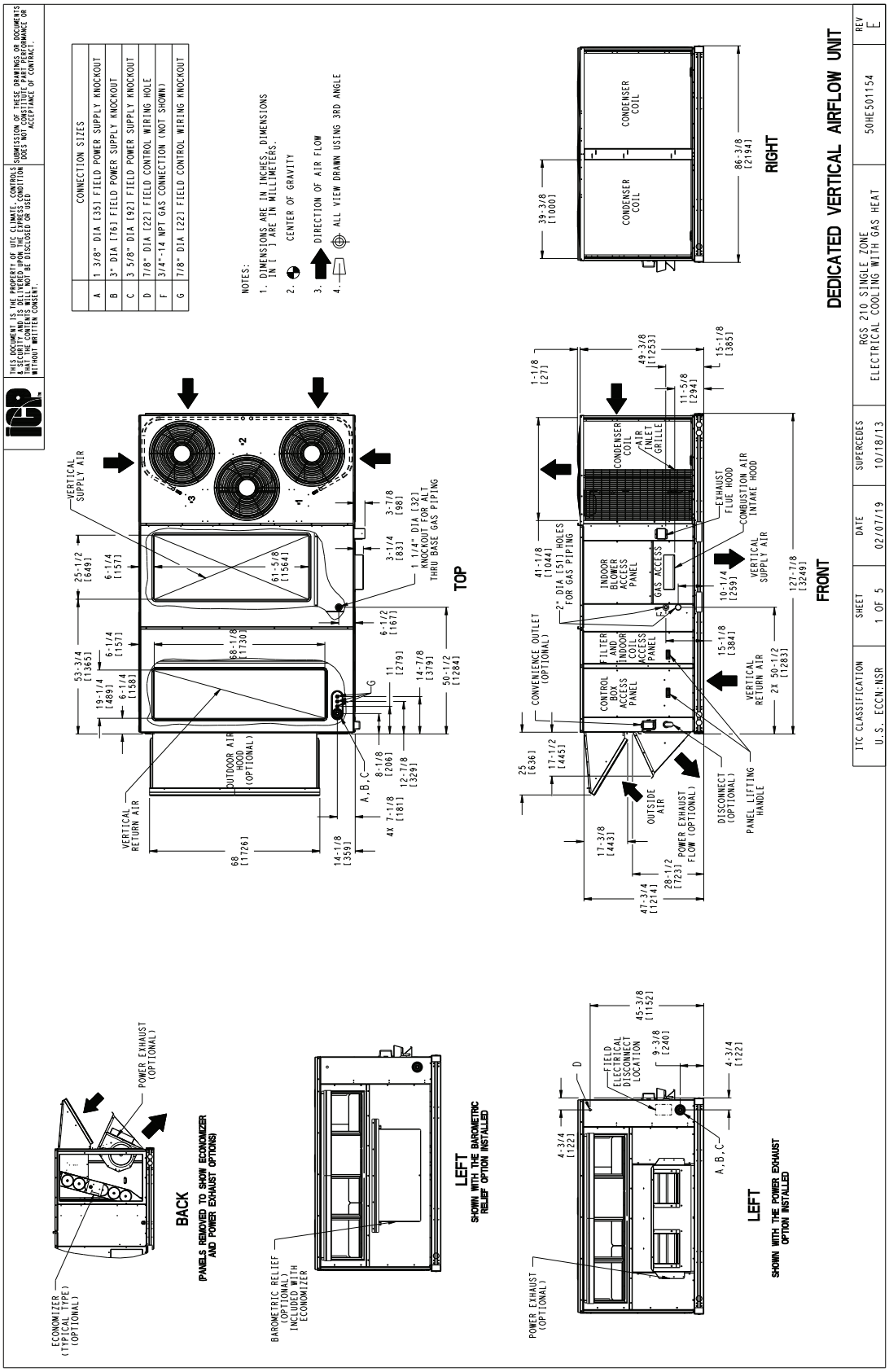
[1] For Hot Gas Re-Heat System, add Motormaster Controller.

[2] Where available.

— Not available

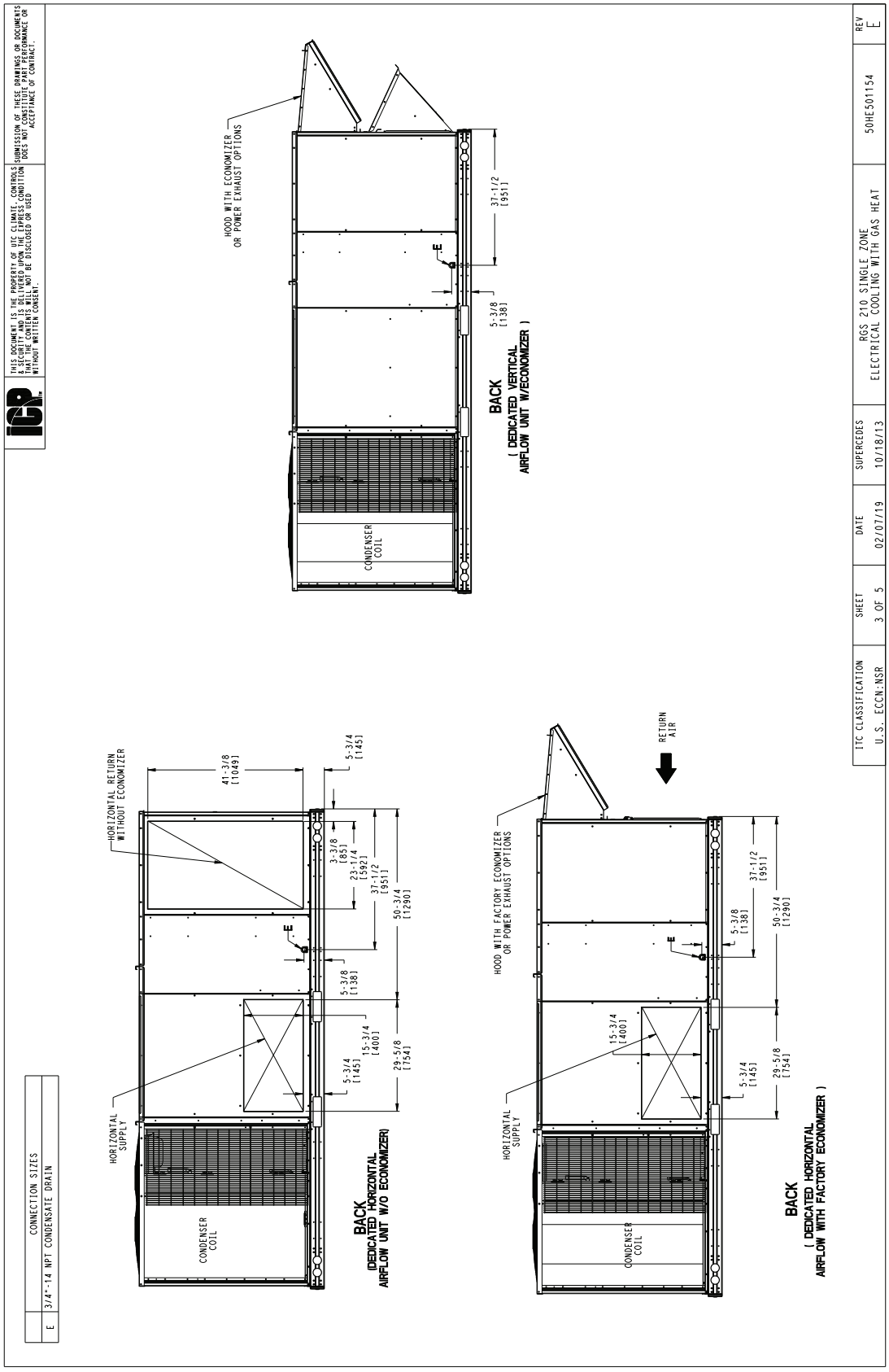
# Dimensions

## RGS 210 VERTICAL AIRFLOW



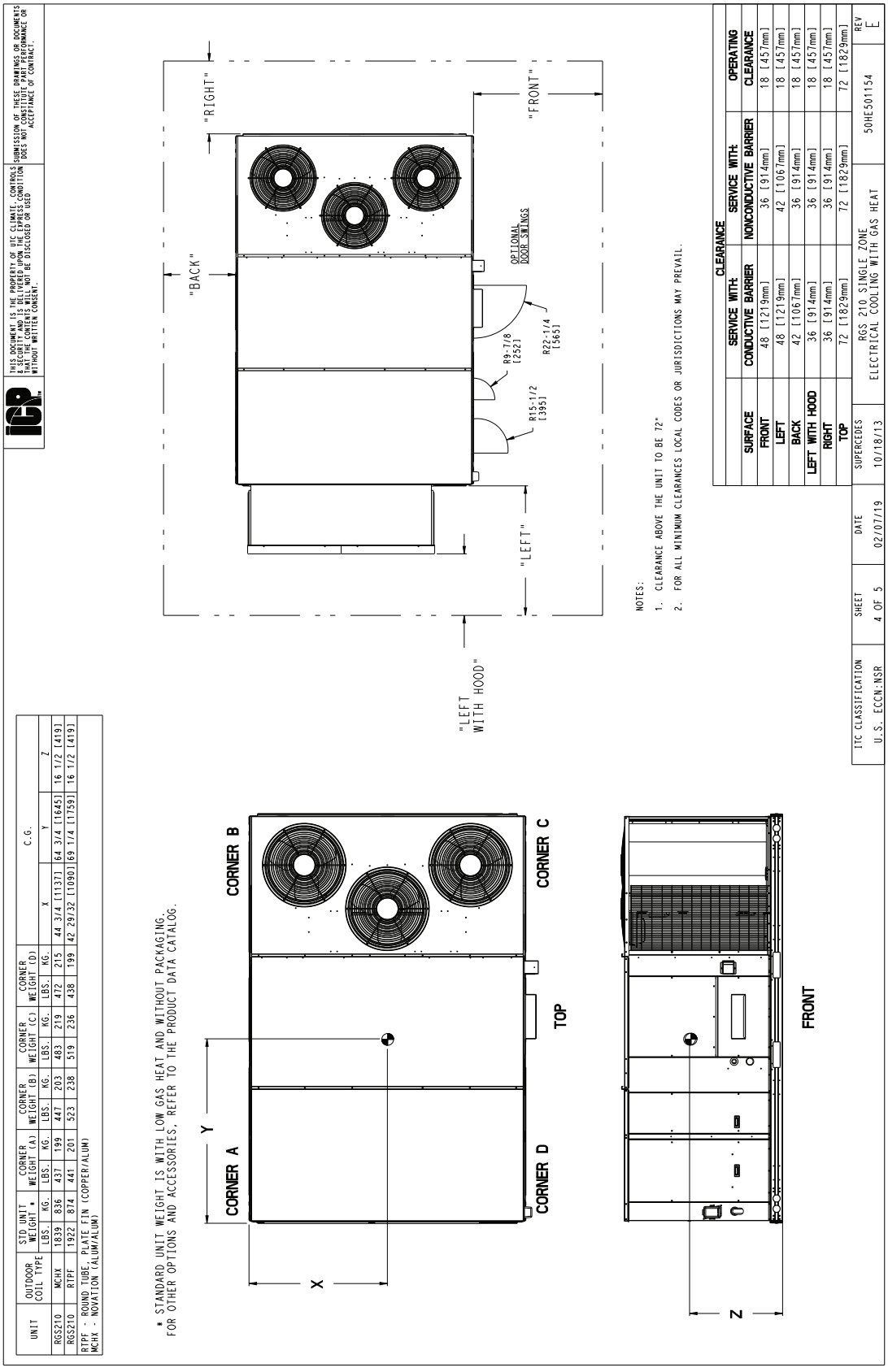
# Dimensions (cont)

## RGS 210 BACK VIEW AND CONDENSATE DRAIN LOCATION



# Dimensions (cont)

## RGS 210 CORNER WEIGHTS AND CLEARANCES




| 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 |
| RGS210 | MCHX | 1839 | 836 | 437 | 199 | 447 | 203 | 483 | 219 | 472 | 215 | 44 | 3/4 [1137] | 64 3/4 [1645] | 16 1/2 [419] |
| RGS210 | RTPF | 1922 | 874 | 441 | 201 | 523 | 238 | 519 | 236 | 438 | 199 | 42 | 29/32 [1090] | 69 1/4 [1759] | 16 1/2 [419] |

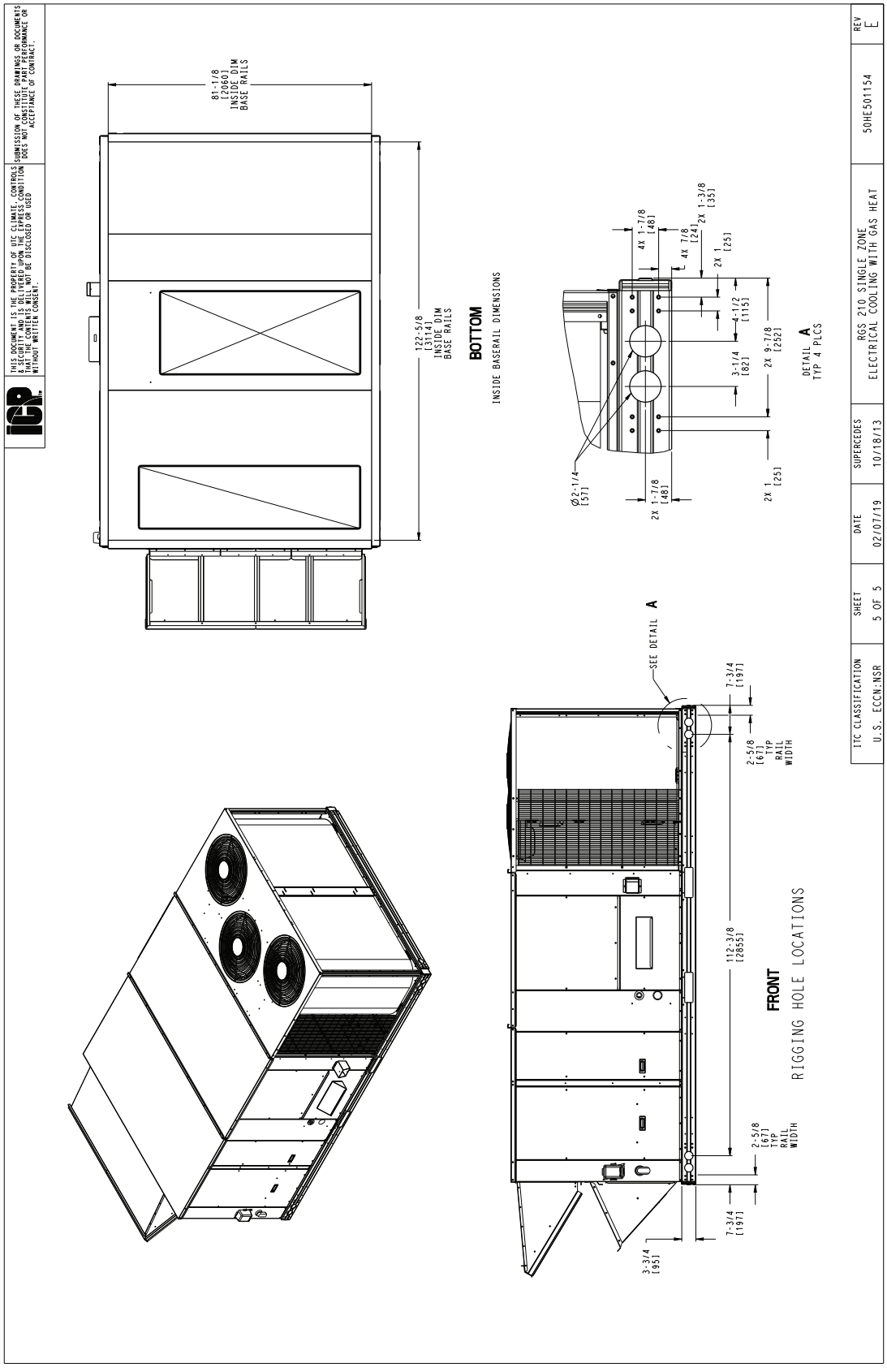
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)
MCHX - NOVATION (ALUM/ALUM)

| CLEARANCE | | |
|---|---|---|
| | SERVICE WITH: | OPERATING |
| SURFACE | CONDUCTIVE BARRIER / NONCONDUCTIVE BARRIER | CLEARANCE |
| FRONT | 48 [1219mm] / 36 [914mm] | 18 [457mm] |
| LEFT | 48 [1219mm] / 42 [1067mm] | 18 [457mm] |
| BACK | 42 [1067mm] / 36 [914mm] | 18 [457mm] |
| LEFT WITH HOOD | 36 [914mm] / 36 [914mm] | 18 [457mm] |
| RIGHT | 36 [914mm] / 36 [914mm] | 18 [457mm] |
| TOP | 72 [1829mm] / 72 [1829mm] | 72 [1829mm] |

| ITC CLASSIFICATION | SHEET | DATE | SUPERCEDES | RGS 210 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT | 50HE501154 | REV |
|---|---|---|---|---|---|---|
| U.S. ECCN:NSR | 4 OF 5 | 02/07/19 | 10/18/13 | | | E |

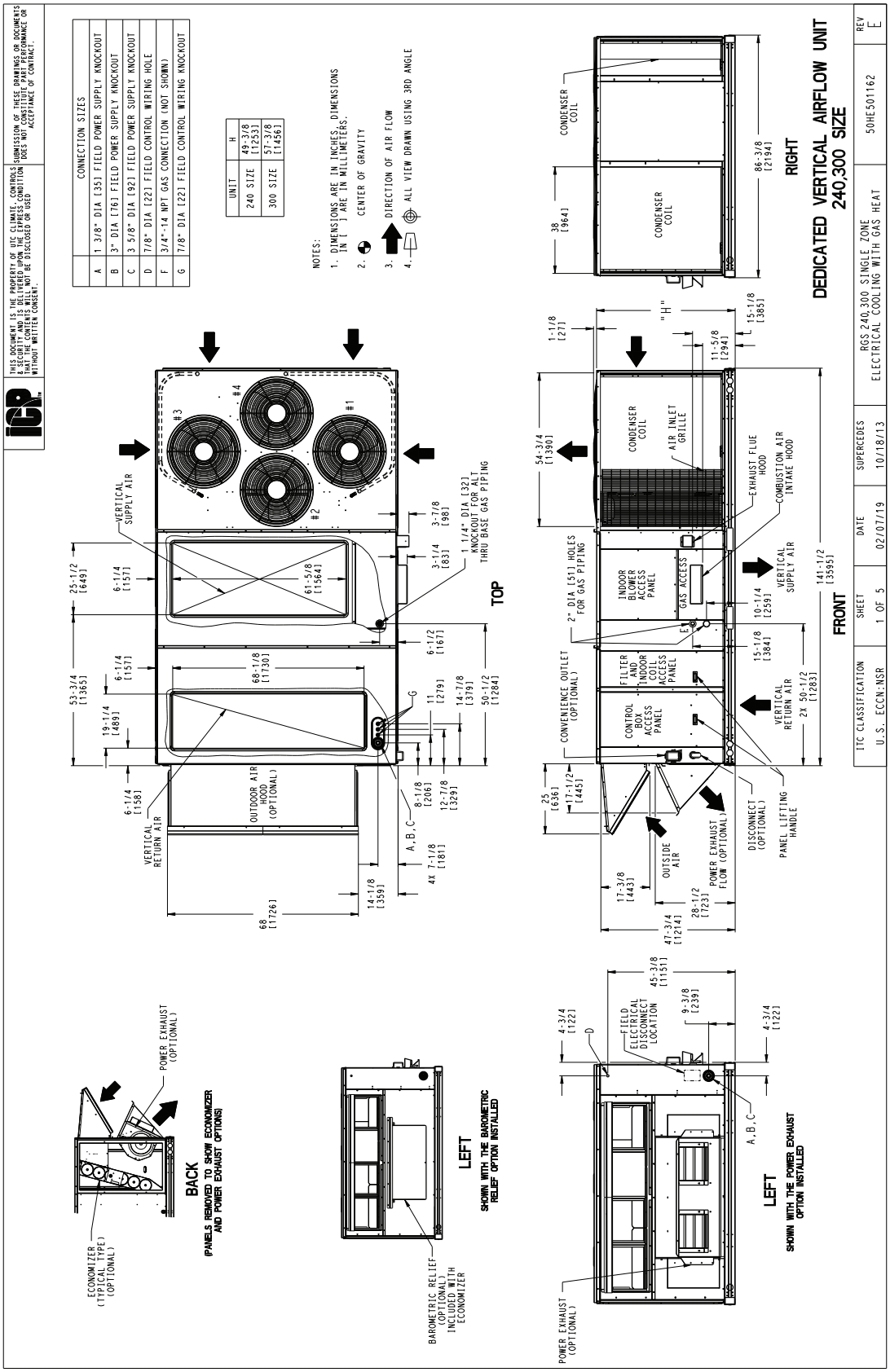
# Dimensions (cont)

**RGS 210 BOTTOM VIEW**



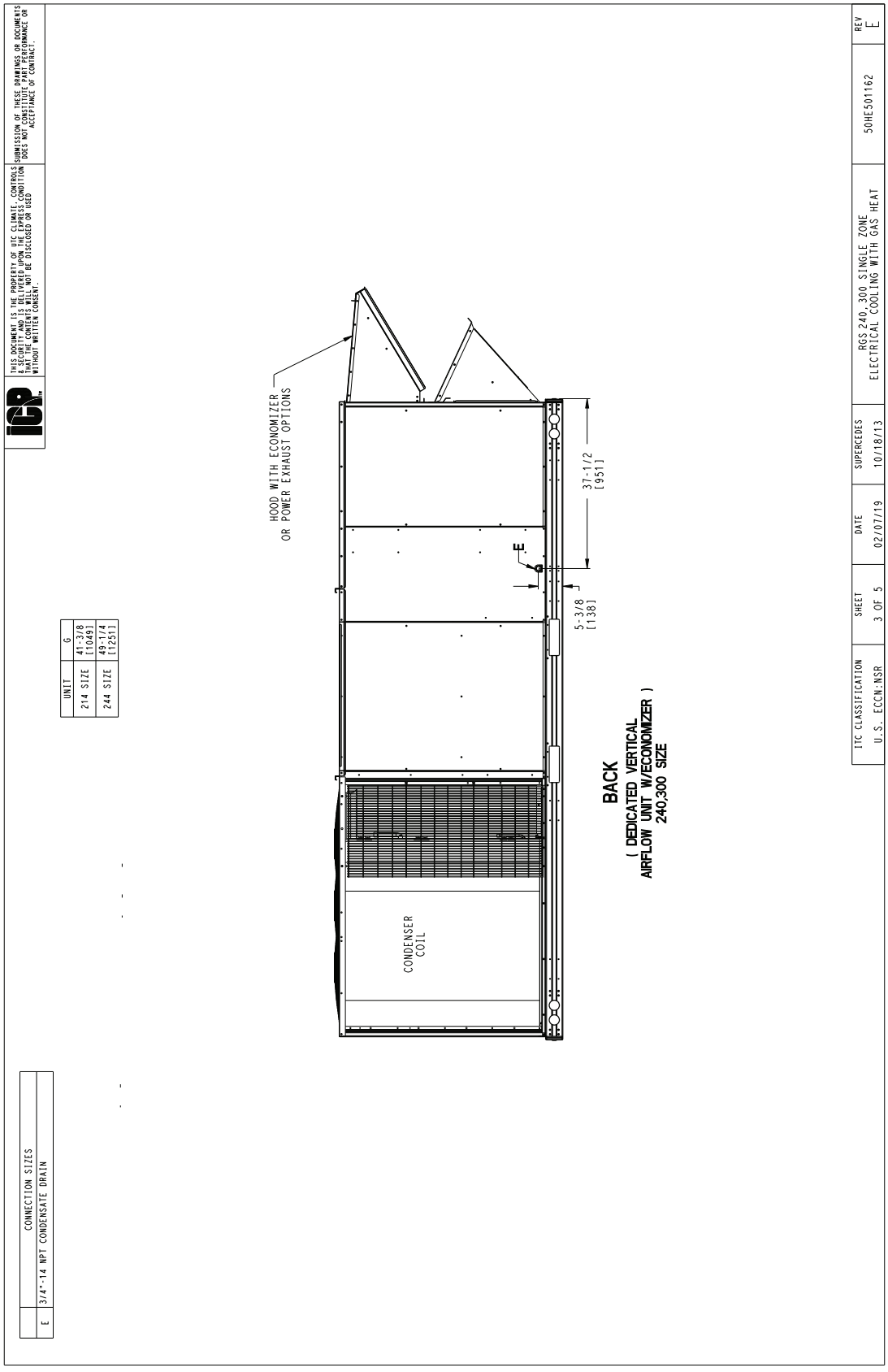
# Dimensions (cont)

## RGS 240/300 VERTICAL AIRFLOW



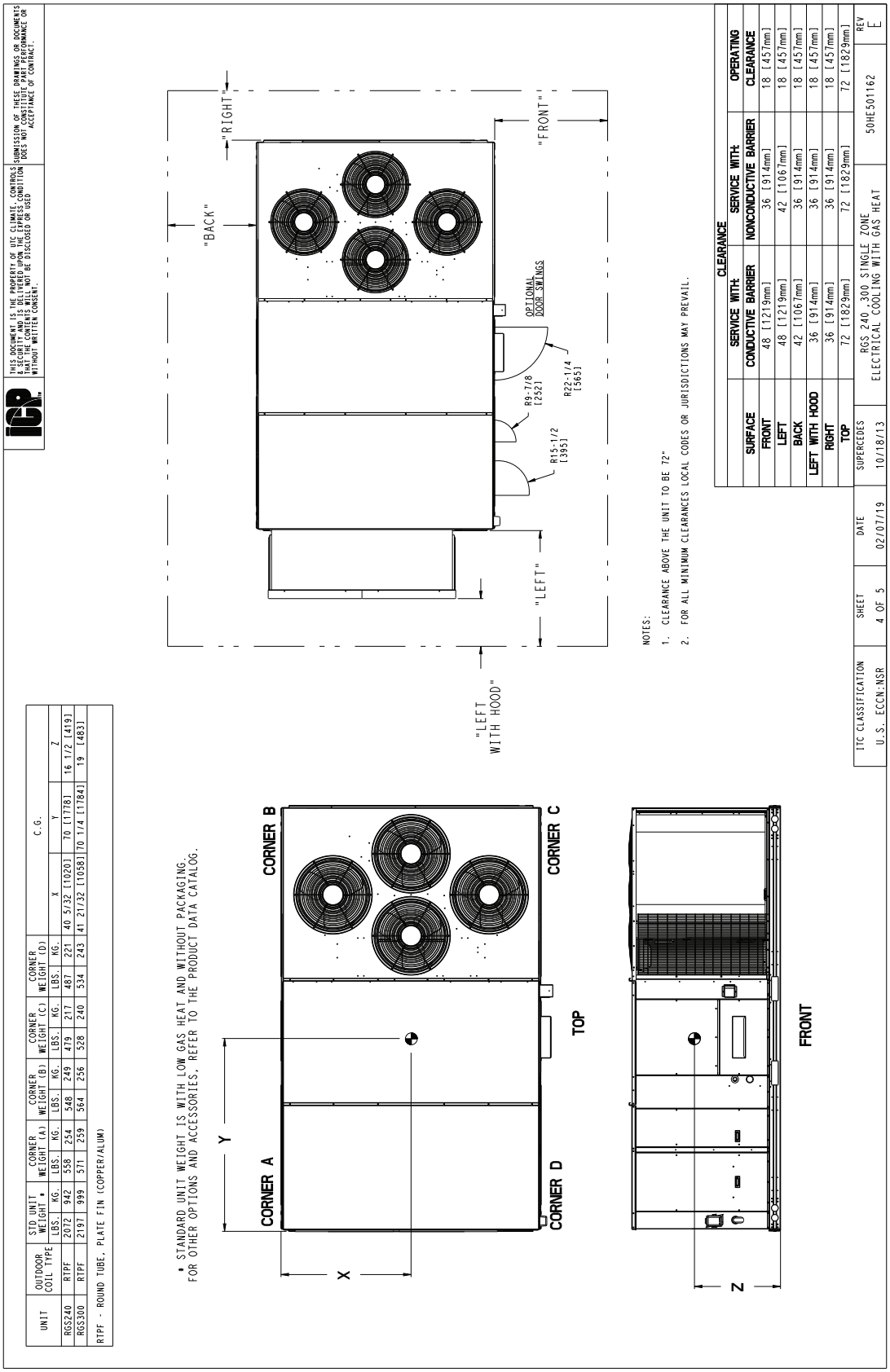
# Dimensions (cont)

## RGS 240/300 BACK VIEW AND CONDENSATE DRAIN LOCATION



# Dimensions (cont)

## RGS 240/300 CORNER WEIGHTS AND CLEARANCES




| 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 |
| RGS240 | RTPF | 2072 | 942 | 538 | 254 | 548 | 249 | 479 | 217 | 487 | 221 | 40 5/32 | [1020] | 70 [1778] | 16 1/2 [419] |
| RGS300 | RTPF | 2197 | 999 | 571 | 259 | 564 | 256 | 528 | 240 | 534 | 243 | 41 21/32 | [1058] | 70 1/4 [1784] | 19 [483] |

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

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

NOTES:
1. CLEARANCE ABOVE THE UNIT TO BE 72"
2. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

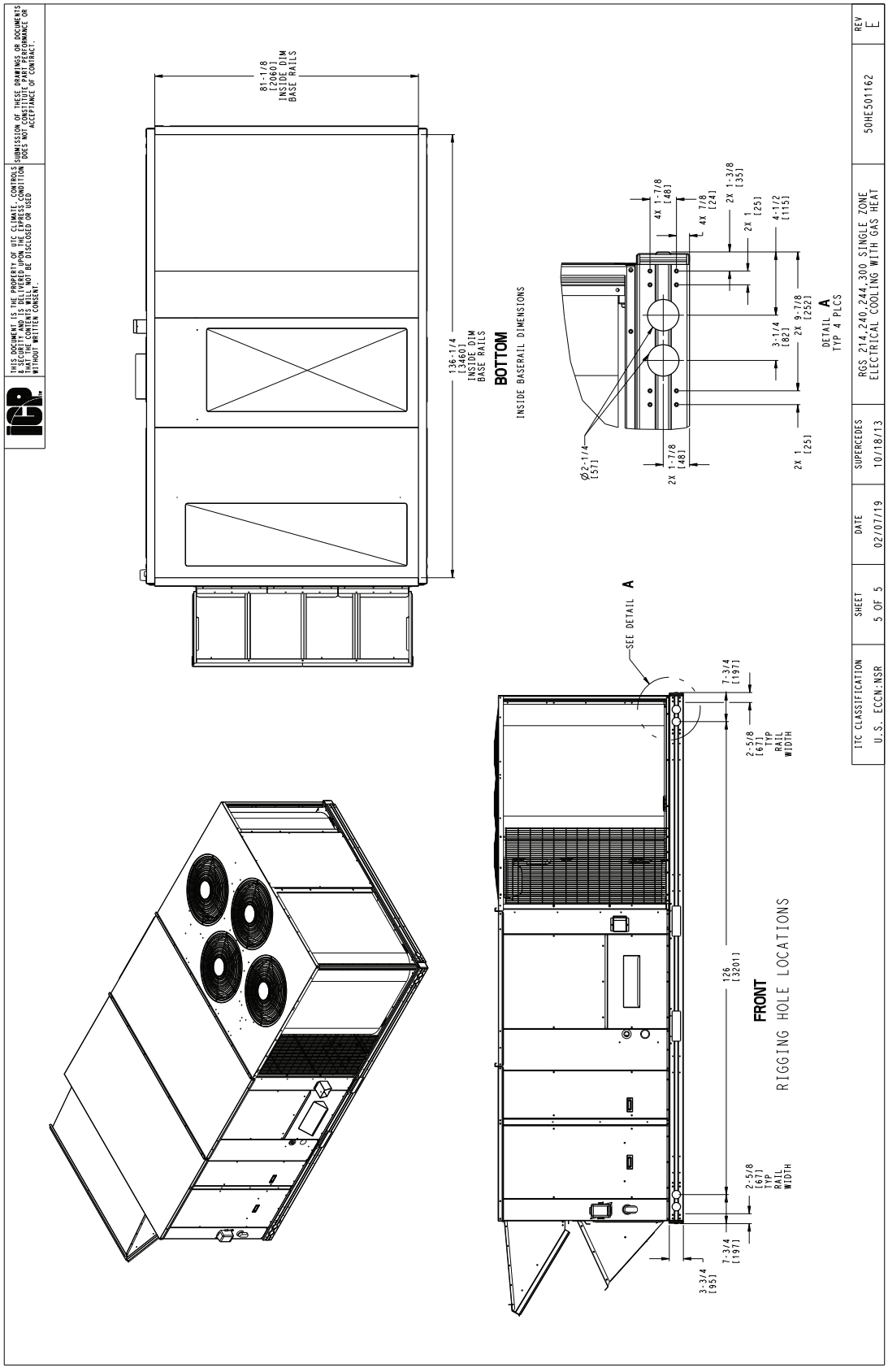
| CLEARANCE | | | |
|---|---|---|---|
| | SERVICE WITH: | SERVICE WITH: | OPERATING |
| SURFACE | CONDUCTIVE BARRIER | NONCONDUCTIVE BARRIER | CLEARANCE |
| FRONT | 48 [1219mm] | 36 [914mm] | 18 [457mm] |
| LEFT | 48 [1219mm] | 42 [1067mm] | 18 [457mm] |
| BACK | 42 [1067mm] | 36 [914mm] | 18 [457mm] |
| LEFT WITH HOOD | 36 [914mm] | 36 [914mm] | 18 [457mm] |
| RIGHT | 36 [914mm] | 36 [914mm] | 18 [457mm] |
| TOP | 72 [1829mm] | 72 [1829mm] | 72 [1829mm] |



| ITC CLASSIFICATION | SHEET | DATE | SUPERCEDES | | REV |
|---|---|---|---|---|---|
| U.S. ECCN:NSR | 4 OF 5 | 02/07/19 | 10/18/13 | RGS 240 .300 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT | 50HE501162 | E |

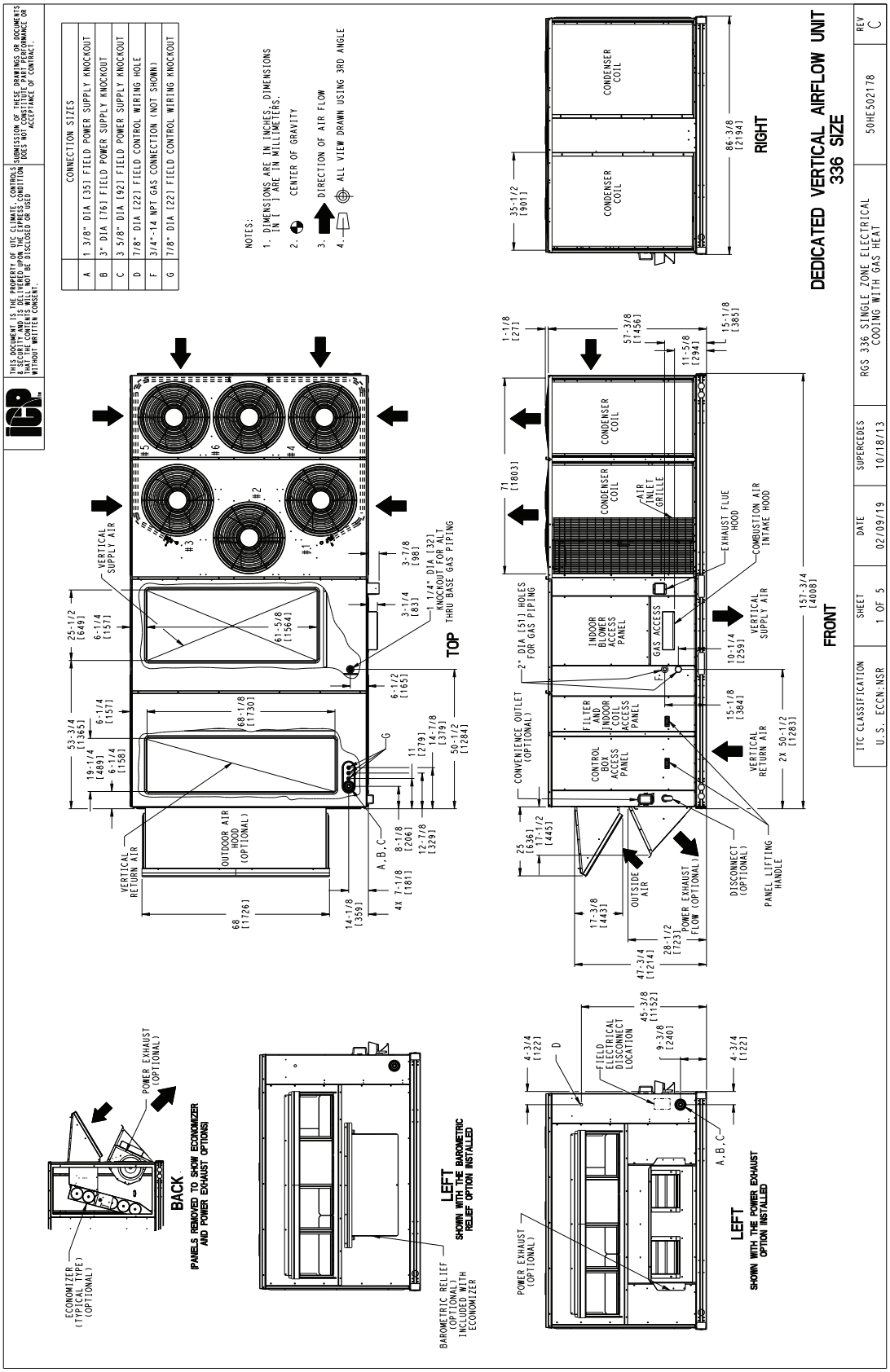
# Dimensions (cont)

**RGS 240/300 BOTTOM VIEW**



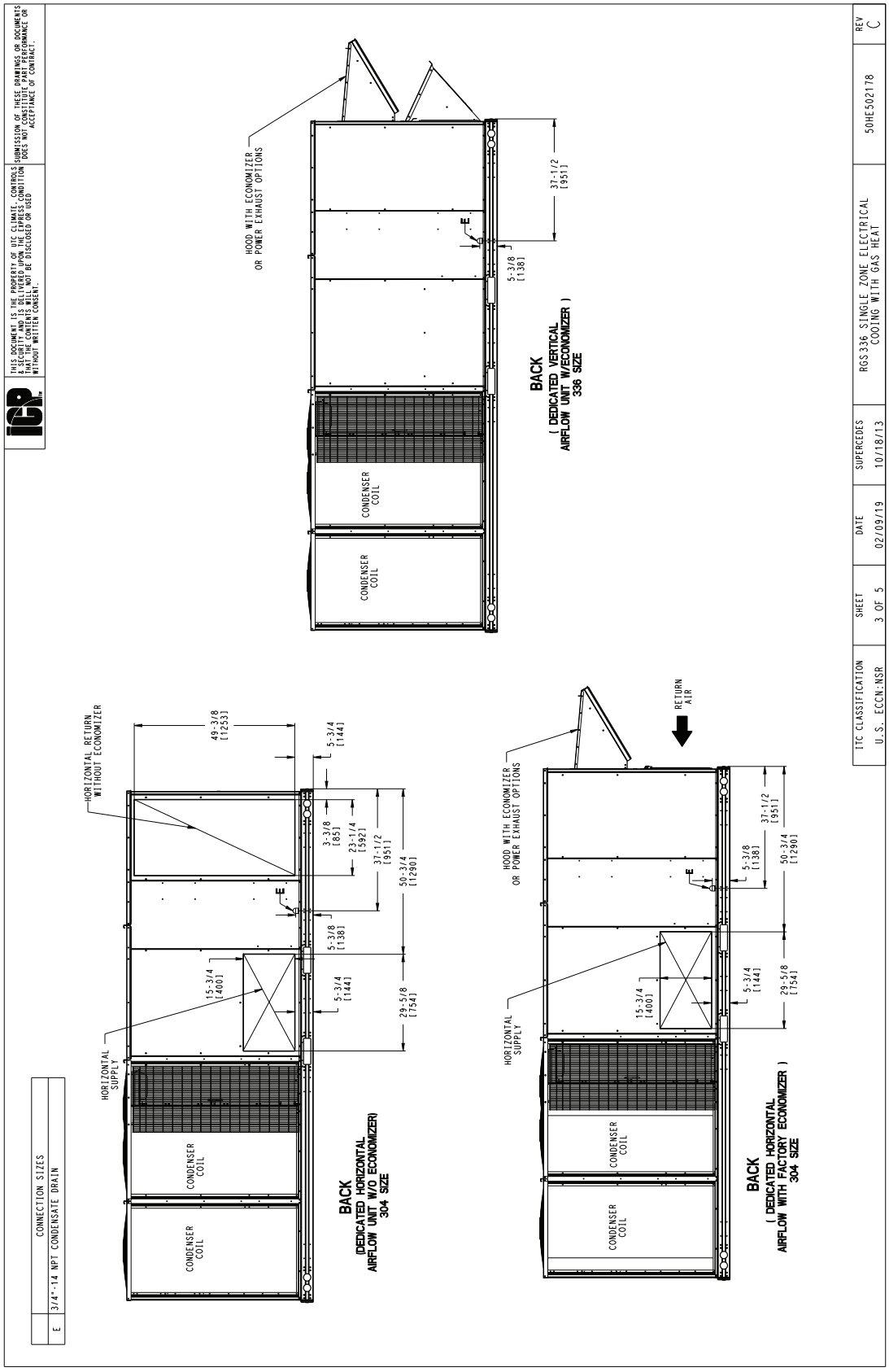
# Dimensions (cont)

## RGS 336 VERTICAL AIRFLOW



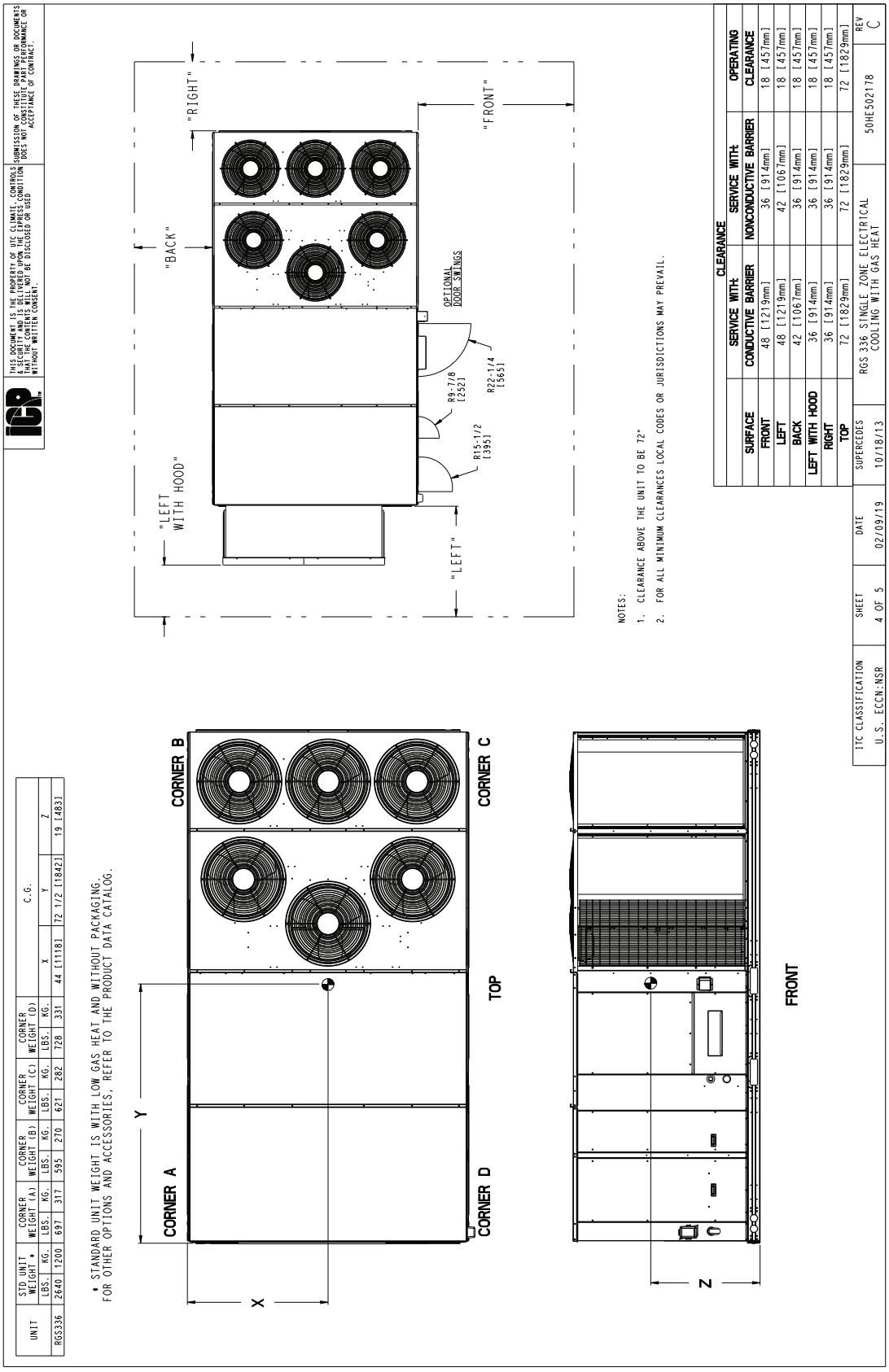
# Dimensions (cont)

## RGS 336 BACK VIEW AND CONDENSATE DRAIN LOCATION



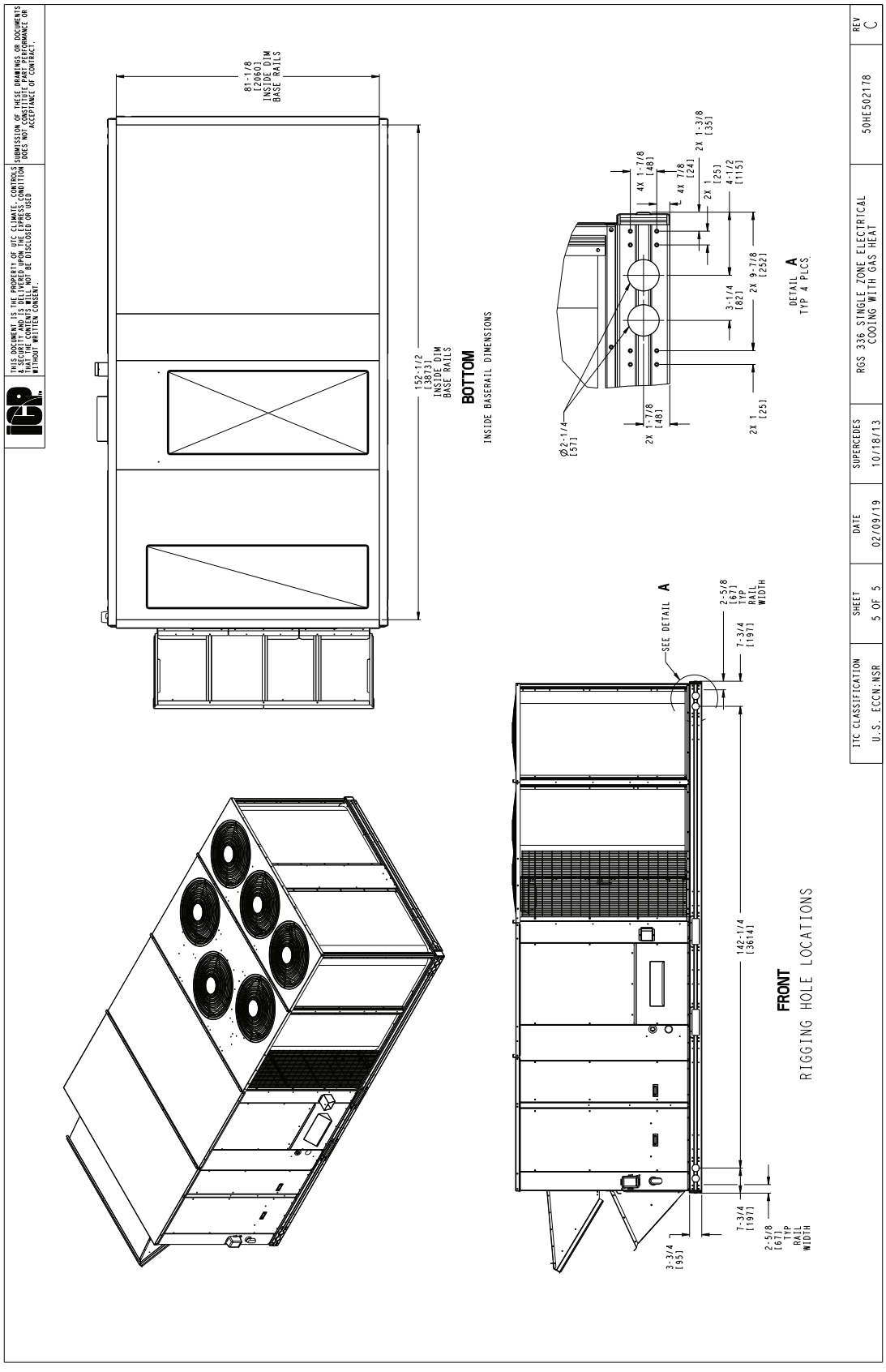
# Dimensions (cont)

## RGS 336 CORNER WEIGHTS AND CLEARANCES



# Dimensions (cont)

**RGS 336 BOTTOM VIEW**



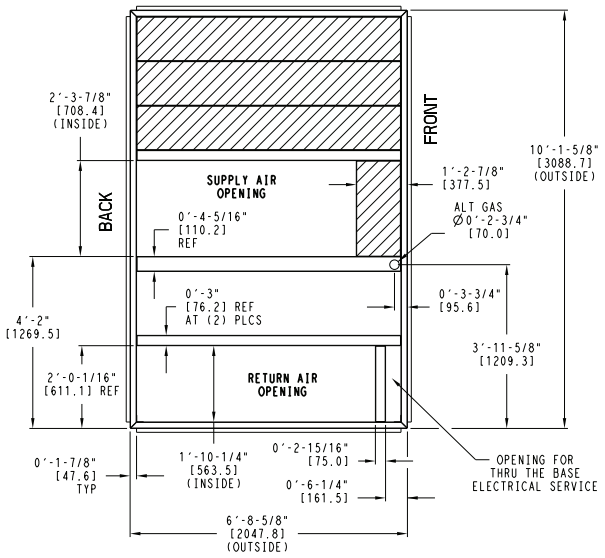
# Dimensions (cont)

## OPERATING WEIGHTS

| RGS | UNIT LB (KG) | | | |
|---|---|---|---|---|
| | 210 | 240 | 300 | 336 |
| **BASE MODEL** | | | | |
| RTPF Coil | 1922 (874) | 2072 (942) | 2197 (999) | 2640 (1200) |
| **ECONOMIZER** | 246 (112) | 246 (112) | 246 (112) | 246 (112) |
| **POWERED OUTLET** | 35 (16) | 35 (16) | 35 (16) | 35 (16) |
| **HOT GAS RE-HEAT SYSTEM** | 110 (50) | 120 (54) | 120 (54) | — |
| **CURB** | | | | |
| 14-in./356 mm | 240 (109) | 255 (116) | 255 (116) | 255 (116) |
| 24-in./610 mm | 340 (154) | 355 (161) | 355 (161) | 355 (161) |

# Dimensions (cont)

## ROOF CURB DETAILS - UNIT MODEL RGS 210




| TONS | "A" | ROOF CURB ACCESSORY |
|---|---|---|
| 15 | 1′-2" [356.0]<br>2′-0" [610.0] | CRRFCURB045A00<br>CRRFCURB046A00 |

NOTES:

1 ROOF CURB ACCESSORY IS SHIPPED UNASSEMBLED.

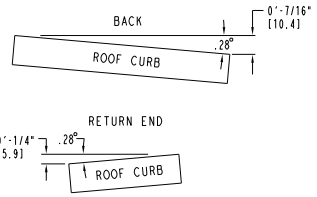
2 DIMENSIONS IN [ ] ARE IN MILLIMETERS.

3 ROOF CURB GALVANIZED STEEL.

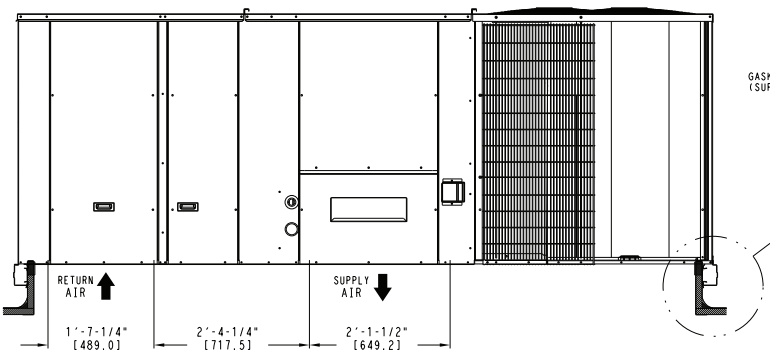
4 ATTACH DUCTWORK TO CURB (FLANGES ON DUCT REST ON CURB)

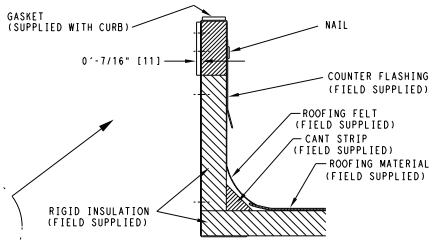
5 SERVICE CLEARANCE 4 ft ON EACH SIDE

➡ DIRECTION OF AIR FLOW

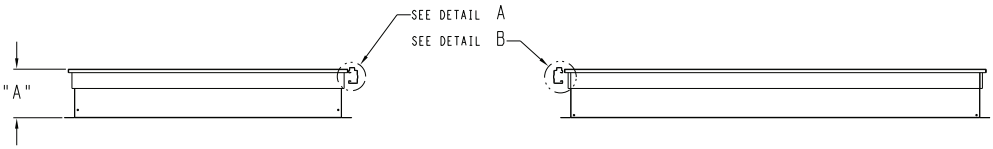


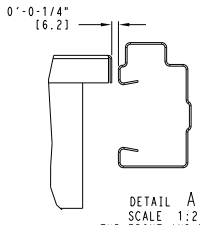

MAX CURB LEVELING TOLERANCES



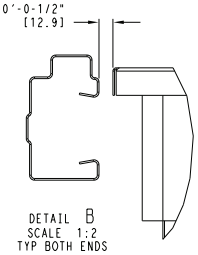




TYPICAL 4 SIDES

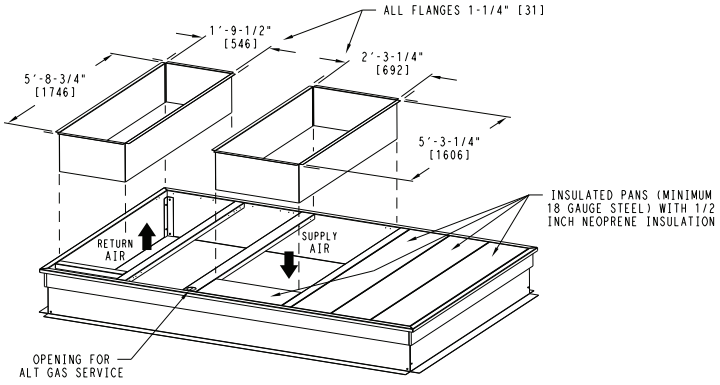



DETAIL A
SCALE 1:2
TYP FRONT AND BACK

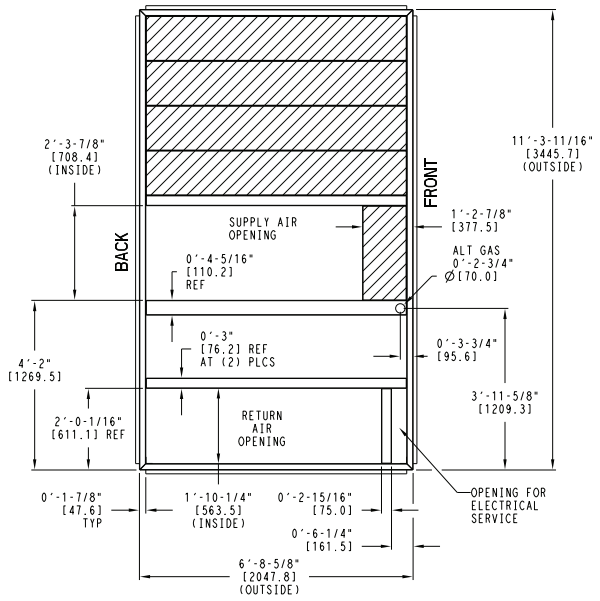



DETAIL B
SCALE 1:2
TYP BOTH ENDS



# Dimensions (cont)

## ROOF CURB DETAILS - UNIT MODEL 240 AND 300




| TONS | "A" | ROOF CURB ACCESSORY |
|---|---|---|
| 20,25 | 1′-2" [356.0]<br>2′-0" [610.0] | CRRFCURB047A00<br>CRRFCURB048A00 |

NOTES:

1 ROOF CURB ACCESSORY IS SHIPPED UNASSEMBLED.

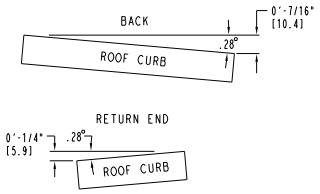
2 DIMENSIONS IN [ ] ARE IN MILLIMETERS.

3 ROOF CURB GALVANIZED STEEL.

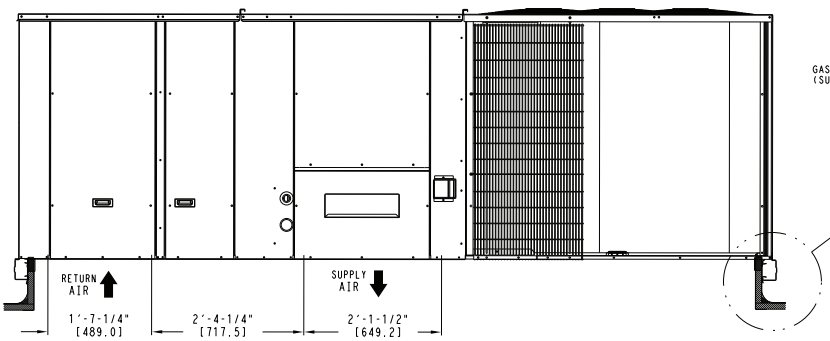
4 ATTACH DUCTWORK TO CURB (FLANGES ON DUCT REST ON CURB)

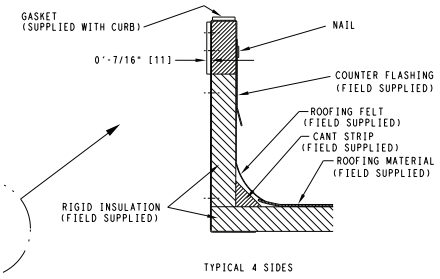
5 SERVICE CLEARANCE 4 ft ON EACH SIDE

➡ DIRECTION OF AIR FLOW

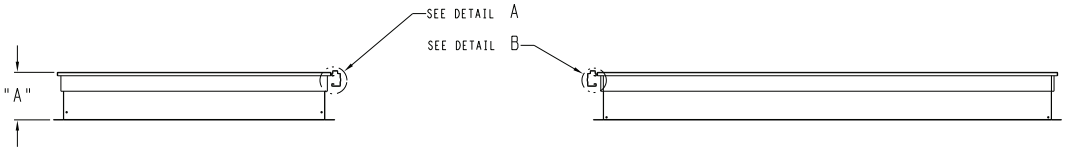


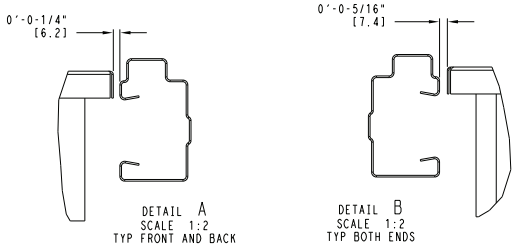

MAX CURB LEVELING TOLERANCES

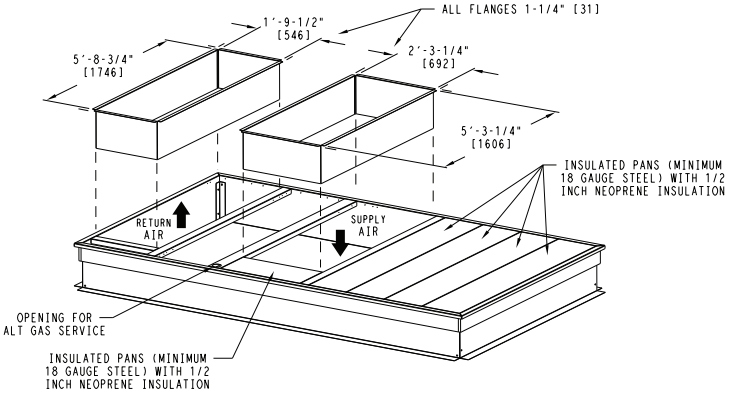



TYPICAL 4 SIDES

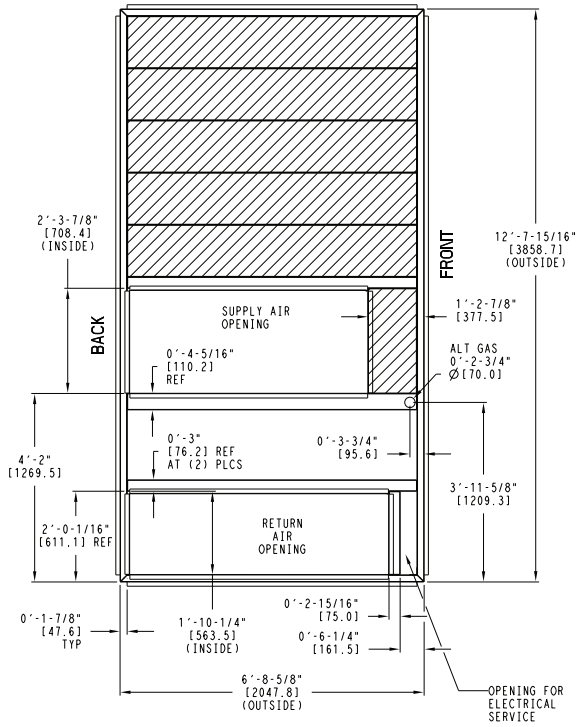


# Dimensions (cont)

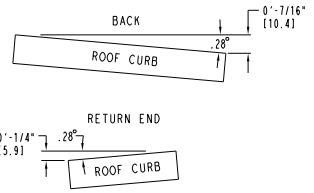
## ROOF CURB DETAILS - UNIT MODEL 336



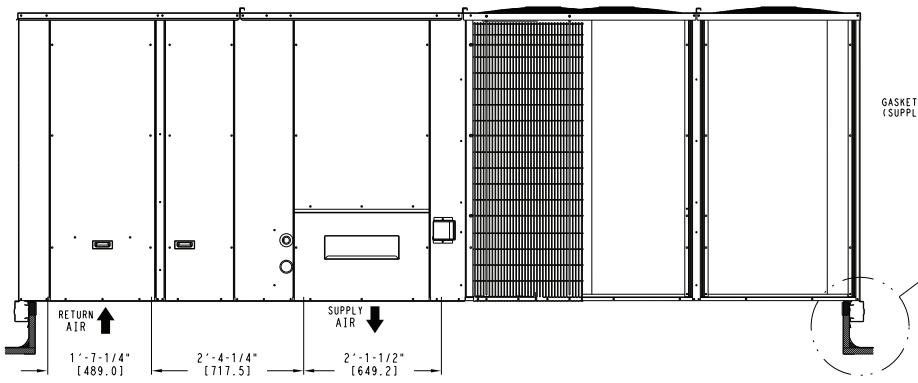

| TONS | "A" | ROOF CURB ACCESSORY |
|---|---|---|
| 336 | 1′-2" [356.0]<br>2′-0" [610.0] | CRRFCURB049A00<br>CRRFCURB050A00 |

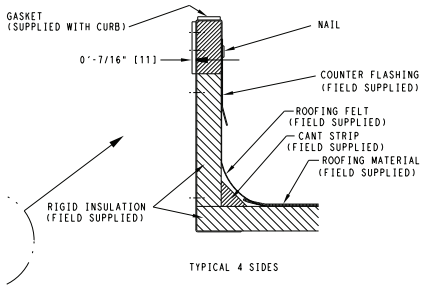
NOTES:
1 ROOF CURB ACCESSORY IS SHIPPED UNASSEMBLED.
2 BOLT HEADS TO BE ON INSIDE OF FLANGE. CLEARANCE IS [11] 0-0-7/16" TYP ALL CORNERS.
3 DIMENSIONS IN [ ] ARE IN MILLIMETERS.
4 ROOF CURB GALVANIZED STEEL.
5 ATTACH DUCTWORK TO CURB (FLANGES ON DUCT REST ON CURB)
6 SERVICE CLEARANCE 4 ft ON EACH SIDE
7 GAS SERVICE PLATE IS PART OF A SEPARATELY SHIPPED ACCESSORY PACKAGE.
8 GAS SERVICE PLATE CAN BE USED WITH EITHER ACCESSORY ROOFCURB.

➡ DIRECTION OF AIR FLOW

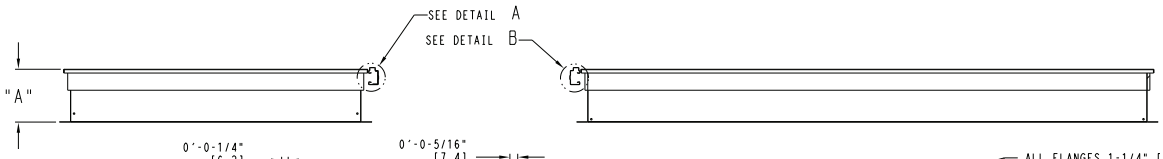


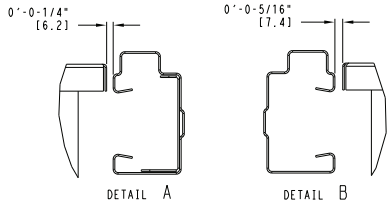

MAX CURB LEVELING TOLERANCES

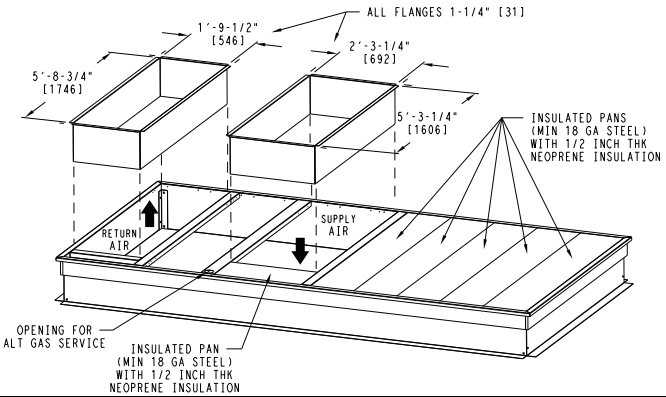



TYPICAL 4 SIDES



# Performance data

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 210, 17.5 TONS

| RGS 210 | | | | 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 |
| 5250 CFM | EAT (wb) | 58 | THC | 180.4 | 185.6 | 196.3 | 167.7 | 176.1 | 186.9 | 154.7 | 165.3 | 176.6 | 142.2 | 153.6 | 164.9 |
| | | | SHC | 166.5 | 185.6 | 196.3 | 160.6 | 176.1 | 186.9 | 152.7 | 165.3 | 176.6 | 142.2 | 153.6 | 164.9 |
| | | 62 | THC | 196.2 | 195.5 | 196.9 | 183.6 | 182.9 | 187.2 | 169.3 | 168.7 | 176.9 | 153.4 | 154.1 | 165.2 |
| | | | SHC | 146.8 | 172.1 | 194.7 | 141.4 | 166.6 | 187.2 | 135.4 | 160.5 | 176.9 | 128.6 | 152.5 | 165.2 |
| | | 67 | THC | 216.7 | 215.9 | 215.2 | 204.9 | 204.1 | 203.1 | 190.6 | 189.7 | 189.0 | 174.8 | 174.0 | 173.3 |
| | | | SHC | 120.0 | 146.1 | 171.8 | 115.4 | 141.5 | 167.1 | 109.8 | 136.1 | 161.7 | 103.8 | 130.2 | 155.6 |
| | | 72 | THC | 237.4 | 236.8 | 236.0 | 226.0 | 225.1 | 224.2 | 212.8 | 211.9 | 211.0 | 197.3 | 196.4 | 195.5 |
| | | | SHC | 92.0 | 118.3 | 144.3 | 87.8 | 114.3 | 140.4 | 83.0 | 109.6 | 135.8 | 77.6 | 104.2 | 130.6 |
| | | 76 | THC | — | 252.9 | 253.0 | — | 242.5 | 241.6 | — | 229.1 | 228.2 | — | 214.1 | 213.1 |
| | | | SHC | — | 95.1 | 121.4 | — | 91.7 | 118.0 | — | 87.3 | 113.8 | — | 82.5 | 107.1 |
| 6125 CFM | EAT (wb) | 58 | THC | 188.8 | 198.5 | 209.3 | 176.5 | 188.2 | 200.2 | 164.5 | 176.7 | 189.0 | 151.9 | 164.2 | 176.7 |
| | | | SHC | 180.4 | 198.5 | 209.3 | 174.4 | 188.2 | 200.2 | 164.5 | 176.7 | 189.0 | 151.9 | 164.2 | 176.7 |
| | | 62 | THC | 205.2 | 204.6 | 209.6 | 191.8 | 191.5 | 200.4 | 176.6 | 177.6 | 189.2 | 159.9 | 164.2 | 176.9 |
| | | | SHC | 159.9 | 188.7 | 209.6 | 154.2 | 183.0 | 200.4 | 147.9 | 174.8 | 189.2 | 141.0 | 164.2 | 176.9 |
| | | 67 | THC | 225.5 | 224.5 | 223.5 | 213.5 | 212.5 | 211.7 | 199.1 | 198.3 | 197.4 | 182.3 | 181.4 | 180.9 |
| | | | SHC | 128.3 | 158.4 | 187.8 | 123.8 | 154.1 | 183.5 | 118.4 | 148.9 | 178.1 | 112.2 | 142.7 | 171.6 |
| | | 72 | THC | 245.6 | 245.3 | 244.6 | 234.7 | 233.6 | 232.6 | 220.9 | 219.9 | 218.8 | 205.5 | 204.4 | 203.4 |
| | | | SHC | 95.4 | 125.9 | 155.7 | 91.7 | 122.2 | 152.4 | 86.9 | 117.7 | 148.1 | 81.7 | 112.5 | 143.1 |
| | | 76 | THC | — | 262.0 | 261.2 | — | 250.7 | 250.1 | — | 237.3 | 236.2 | — | 221.6 | 220.6 |
| | | | SHC | — | 99.5 | 129.4 | — | 95.9 | 126.2 | — | 91.8 | 122.4 | — | 87.0 | 117.8 |
| 7000 CFM | EAT (wb) | 58 | THC | 197.4 | 209.8 | 221.3 | 186.1 | 199.1 | 211.7 | 173.8 | 186.9 | 200.1 | 160.3 | 173.5 | 186.9 |
| | | | SHC | 196.8 | 209.8 | 221.3 | 186.1 | 199.1 | 211.7 | 173.8 | 186.9 | 200.1 | 160.3 | 173.5 | 186.9 |
| | | 62 | THC | 212.7 | 212.4 | 221.5 | 198.4 | 199.8 | 212.0 | 182.3 | 186.9 | 200.3 | 164.7 | 173.8 | 187.1 |
| | | | SHC | 173.4 | 205.1 | 221.5 | 167.4 | 197.4 | 212.0 | 160.8 | 186.8 | 200.3 | 153.4 | 173.8 | 187.1 |
| | | 67 | THC | 233.7 | 232.5 | 231.4 | 220.8 | 219.8 | 218.9 | 205.6 | 204.5 | 204.1 | 187.8 | 186.8 | 188.0 |
| | | | SHC | 138.0 | 172.0 | 205.0 | 133.4 | 167.6 | 200.4 | 127.8 | 162.0 | 194.4 | 121.3 | 155.6 | 185.6 |
| | | 72 | THC | 254.3 | 253.3 | 252.8 | 242.7 | 241.5 | 240.3 | 228.0 | 226.8 | 225.7 | 211.8 | 210.6 | 209.3 |
| | | | SHC | 101.3 | 135.4 | 169.2 | 97.3 | 131.8 | 165.9 | 92.3 | 127.2 | 161.5 | 86.9 | 121.8 | 156.3 |
| | | 76 | THC | — | 270.7 | 269.9 | — | 259.0 | 258.1 | — | 245.0 | 243.6 | — | 228.5 | 227.1 |
| | | | SHC | — | 106.1 | 140.0 | — | 102.4 | 136.5 | — | 98.2 | 132.7 | — | 93.2 | 127.9 |
| 7875 CFM | EAT (wb) | 58 | THC | 205.0 | 217.2 | 229.1 | 193.4 | 206.9 | 219.3 | 180.6 | 194.3 | 207.9 | 166.6 | 180.5 | 194.5 |
| | | | SHC | 205.0 | 217.2 | 229.1 | 193.4 | 206.9 | 219.3 | 180.6 | 194.3 | 207.9 | 166.6 | 180.5 | 194.5 |
| | | 62 | THC | 216.7 | 217.4 | 229.4 | 202.5 | 207.1 | 219.6 | 185.9 | 194.5 | 208.4 | 168.4 | 180.7 | 194.7 |
| | | | SHC | 183.9 | 217.4 | 229.4 | 178.2 | 207.1 | 219.6 | 171.5 | 194.5 | 208.4 | 141.2 | 180.7 | 194.7 |
| | | 67 | THC | 237.8 | 236.7 | 235.7 | 224.7 | 223.5 | 223.0 | 209.5 | 208.3 | 209.2 | 191.5 | 190.3 | 195.0 |
| | | | SHC | 144.6 | 182.4 | 219.3 | 140.3 | 178.2 | 213.7 | 134.9 | 172.7 | 205.9 | 113.6 | 166.2 | 195.0 |
| | | 72 | THC | 258.6 | 257.5 | 256.5 | 246.8 | 245.7 | 244.3 | 231.8 | 230.5 | 229.2 | 215.3 | 213.9 | 212.5 |
| | | | SHC | 103.9 | 141.8 | 179.2 | 100.0 | 138.3 | 176.1 | 95.1 | 133.9 | 172.1 | 89.7 | 128.6 | 142.0 |
| | | 76 | THC | — | 275.4 | 274.2 | — | 262.7 | 261.8 | — | 248.7 | 247.6 | — | 231.9 | 230.5 |
| | | | SHC | — | 109.5 | 147.0 | — | 105.7 | 143.6 | — | 101.5 | 139.9 | — | 96.6 | 135.4 |
| 8750 CFM | EAT (wb) | 58 | THC | 211.3 | 223.6 | 235.9 | 199.7 | 213.4 | 225.7 | 186.4 | 200.7 | 214.3 | 172.1 | 186.5 | 200.9 |
| | | | SHC | 211.3 | 223.6 | 235.9 | 199.7 | 213.4 | 225.7 | 186.4 | 200.7 | 214.3 | 172.1 | 186.5 | 200.9 |
| | | 62 | THC | 220.0 | 223.7 | 236.3 | 206.0 | 213.6 | 226.1 | 189.3 | 200.9 | 214.5 | 172.2 | 186.7 | 201.2 |
| | | | SHC | 194.0 | 223.7 | 236.3 | 188.5 | 213.6 | 226.1 | 181.3 | 200.9 | 214.5 | 172.2 | 186.7 | 201.2 |
| | | 67 | THC | 241.1 | 240.1 | 239.7 | 227.9 | 226.6 | 226.9 | 212.7 | 211.4 | 214.9 | 194.4 | 193.0 | 201.4 |
| | | | SHC | 151.0 | 192.1 | 230.2 | 146.9 | 188.3 | 225.2 | 141.6 | 182.9 | 214.8 | 135.3 | 176.3 | 201.4 |
| | | 72 | THC | 262.2 | 261.0 | 259.7 | 250.0 | 248.8 | 247.7 | 235.0 | 233.5 | 232.1 | 218.1 | 216.6 | 215.2 |
| | | | SHC | 106.5 | 148.1 | 189.0 | 102.5 | 144.5 | 186.0 | 97.8 | 140.4 | 182.1 | 92.4 | 135.3 | 177.1 |
| | | 76 | THC | — | 278.9 | 277.4 | — | 266.0 | 264.8 | — | 251.5 | 250.6 | — | 234.7 | 233.0 |
| | | | SHC | — | 112.7 | 153.7 | — | 108.9 | 150.4 | — | 104.7 | 146.7 | — | 100.0 | 142.4 |

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.

# Performance data (cont)

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 210, 17.5 TONS, WITH HOT GAS RE-HEAT IN SUBCOOLING MODE

| TEMP (°F) AIR ENTERING CONDENSER (Edb) | | AIR ENTERING EVAPORATOR - CFM | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 5,250 | | | 7,000 | | | 8,750 | | |
| | | AIR ENTERING EVAPORATOR - Ewb (°F) | | | | | | | | |
| | | 72 | 67 | 62 | 72 | 67 | 62 | 72 | 67 | 62 |
| 75 | TC | 218.70 | 199.60 | 180.50 | 241.40 | 219.40 | 197.40 | 261.70 | 237.20 | 212.70 |
| | SHC | 99.90 | 123.90 | 147.80 | 112.70 | 136.90 | 161.10 | 122.90 | 147.30 | 171.70 |
| | kW | 11.81 | 11.56 | 11.20 | 13.81 | 13.48 | 13.16 | 14.82 | 14.58 | 14.16 |
| 85 | TC | 206.60 | 187.90 | 169.10 | 224.90 | 203.40 | 181.90 | 241.30 | 217.30 | 193.40 |
| | SHC | 78.90 | 108.40 | 137.90 | 92.20 | 122.10 | 152.00 | 103.00 | 133.10 | 163.30 |
| | kW | 13.18 | 12.53 | 12.53 | 15.18 | 14.85 | 14.52 | 16.21 | 15.85 | 15.54 |
| 95 | TC | 194.70 | 176.20 | 157.80 | 208.40 | 187.40 | 166.40 | 220.80 | 197.40 | 174.10 |
| | SHC | 57.80 | 92.90 | 128.00 | 71.70 | 107.30 | 142.90 | 83.00 | 118.90 | 154.90 |
| | kW | 14.56 | 14.21 | 13.88 | 16.56 | 16.21 | 15.87 | 17.56 | 17.22 | 16.01 |
| 105 | TC | 182.70 | 164.50 | 146.40 | 191.90 | 171.40 | 150.80 | 200.30 | 177.60 | 154.80 |
| | SHC | 36.80 | 77.40 | 118.10 | 51.30 | 92.50 | 133.80 | 63.00 | 104.70 | 146.40 |
| | kW | 15.93 | 15.58 | 15.20 | 17.94 | 17.58 | 17.22 | 18.95 | 18.59 | 18.24 |
| 115 | TC | 170.60 | 152.80 | 135.00 | 175.40 | 155.40 | 135.30 | 179.80 | 157.70 | 135.50 |
| | SHC | 15.70 | 62.00 | 108.20 | 30.80 | 77.80 | 124.70 | 43.00 | 90.50 | 128.00 |
| | kW | 17.31 | 16.95 | 16.58 | 19.32 | 18.95 | 18.58 | 20.32 | 19.96 | 19.59 |

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 210, 17.5 TONS, WITH HOT GAS RE-HEAT IN HOT GAS RE-HEAT MODE

| TEMP (°F) AIR ENTERING CONDENSER (Edb) | | AIR ENTERING EVAPORATOR (°F) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 75 DRY BULB 62.5 WET BULB (50% RELATIVE) | | | 75 DRY BULB 64 WET BULB (56% RELATIVE) | | | 75 DRY BULB 65.3 WET BULB (60% RELATIVE) | | |
| | | AIR ENTERING EVAPORATOR - CFM | | | | | | | | |
| | | 5,250 | 7,000 | 8,750 | 5,250 | 7,000 | 8,750 | 5,250 | 7,000 | 8,750 |
| 80 | TC | 82.20 | 90.50 | 92.40 | 86.70 | 96.40 | 97.80 | 91.60 | 99.80 | 101.20 |
| | SHC | 18.20 | 29.40 | 41.60 | 8.60 | 17.20 | 27.50 | 0.50 | 9.30 | 13.20 |
| | kW | 12.64 | 12.73 | 12.88 | 12.78 | 13.06 | 13.15 | 12.96 | 13.07 | 13.22 |
| 75 | TC | 84.40 | 92.70 | 94.40 | 88.80 | 98.60 | 99.70 | 93.70 | 102.00 | 103.40 |
| | SHC | 19.70 | 31.30 | 43.50 | 10.10 | 18.80 | 29.20 | 12.10 | 10.80 | 15.30 |
| | kW | 12.60 | 12.71 | 12.85 | 12.75 | 13.02 | 13.12 | 12.93 | 13.03 | 13.19 |
| 70 | TC | 86.70 | 94.90 | 96.60 | 91.00 | 100.70 | 102.00 | 95.90 | 104.10 | 105.40 |
| | SHC | 21.30 | 32.80 | 44.80 | 11.60 | 20.40 | 30.70 | 3.80 | 12.30 | 16.50 |
| | kW | 12.56 | 12.66 | 12.82 | 12.70 | 12.99 | 13.08 | 12.89 | 13.00 | 13.14 |
| 60 | TC | 90.90 | 99.10 | 100.80 | 95.20 | 105.00 | 106.30 | 100.20 | 108.30 | 109.70 |
| | SHC | 24.80 | 36.00 | 48.20 | 14.90 | 23.90 | 35.90 | 7.20 | 15.60 | 19.60 |
| | kW | 12.49 | 12.60 | 12.75 | 12.64 | 12.92 | 13.02 | 12.83 | 12.93 | 13.09 |
| 50 | TC | 95.00 | 103.40 | 105.10 | 99.50 | 109.40 | 110.50 | 104.40 | 112.50 | 113.90 |
| | SHC | 28.10 | 39.30 | 51.30 | 18.20 | 27.20 | 37.40 | 10.30 | 18.90 | 23.20 |
| | kW | 12.43 | 12.53 | 12.67 | 12.57 | 12.86 | 12.95 | 12.76 | 12.87 | 13.02 |
| 40 | TC | 99.20 | 107.70 | 109.30 | 103.70 | 113.70 | 114.70 | 108.60 | 116.70 | 118.10 |
| | SHC | 31.40 | 42.50 | 54.40 | 21.30 | 30.40 | 40.50 | 13.40 | 22.00 | 26.50 |
| | kW | 12.35 | 12.45 | 12.61 | 12.50 | 12.79 | 12.87 | 12.68 | 12.80 | 12.94 |

LEGEND

**CFM** — Cubic feet per minute (supply air)
**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

# Performance data (cont)

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 240, 20 TONS

| RGS 240 | | | | 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 |
| 6,000 CFM | EAT (wb) | 58 | THC | 213.1 | 217.2 | 228.7 | 199.9 | 207.5 | 219.4 | 184.8 | 195.8 | 208.4 | 169.6 | 182.6 | 195.6 |
| | | | SHC | 194.3 | 217.2 | 228.7 | 188.0 | 207.5 | 219.4 | 179.0 | 195.8 | 208.4 | 169.6 | 182.6 | 195.6 |
| | | 62 | THC | 230.0 | 229.4 | 230.4 | 217.5 | 217.0 | 219.7 | 202.5 | 201.9 | 208.8 | 184.9 | 184.9 | 195.9 |
| | | | SHC | 170.0 | 199.9 | 225.9 | 164.6 | 194.5 | 219.7 | 158.3 | 187.8 | 208.8 | 150.9 | 178.7 | 195.9 |
| | | 67 | THC | 251.5 | 251.1 | 250.6 | 239.4 | 238.7 | 238.1 | 225.4 | 224.7 | 224.0 | 208.8 | 208.2 | 207.4 |
| | | | SHC | 137.5 | 168.1 | 198.4 | 132.9 | 163.4 | 193.7 | 127.5 | 158.1 | 188.2 | 121.1 | 151.9 | 181.9 |
| | | 72 | THC | 274.0 | 273.8 | 273.5 | 262.3 | 261.7 | 261.0 | 248.2 | 247.4 | 246.6 | 232.2 | 231.3 | 230.5 |
| | | | SHC | 104.3 | 135.1 | 165.6 | 100.1 | 130.9 | 161.4 | 95.1 | 125.9 | 156.6 | 89.6 | 120.5 | 151.3 |
| | | 76 | THC | — | 292.9 | 292.2 | — | 280.5 | 279.9 | — | 266.3 | 265.6 | — | 250.6 | 249.8 |
| | | | SHC | — | 108.1 | 138.6 | — | 104.1 | 134.9 | — | 99.6 | 130.4 | — | 94.6 | 125.5 |
| 7,000 CFM | EAT (wb) | 58 | THC | 220.8 | 229.7 | 241.7 | 208.4 | 219.7 | 232.2 | 194.3 | 208.1 | 221.0 | 180.1 | 194.2 | 207.9 |
| | | | SHC | 211.0 | 229.7 | 241.7 | 203.1 | 219.7 | 232.2 | 194.3 | 208.1 | 221.0 | 180.1 | 194.2 | 207.9 |
| | | 62 | THC | 237.8 | 237.3 | 241.9 | 225.1 | 224.6 | 232.3 | 209.6 | 210.2 | 221.3 | 191.3 | 196.0 | 208.2 |
| | | | SHC | 183.3 | 217.8 | 241.9 | 178.2 | 212.1 | 232.3 | 171.8 | 203.8 | 221.3 | 164.3 | 196.0 | 208.2 |
| | | 67 | THC | 260.0 | 259.2 | 258.5 | 247.2 | 246.4 | 245.7 | 232.7 | 231.9 | 231.7 | 215.8 | 215.0 | 214.3 |
| | | | SHC | 146.0 | 181.0 | 215.7 | 141.3 | 176.5 | 211.2 | 136.0 | 171.3 | 206.3 | 129.8 | 165.3 | 199.4 |
| | | 72 | THC | 283.3 | 282.5 | 281.8 | 270.6 | 269.8 | 268.9 | 255.9 | 255.0 | 254.1 | 240.0 | 238.9 | 238.0 |
| | | | SHC | 107.9 | 143.2 | 178.1 | 103.6 | 139.0 | 174.1 | 98.6 | 134.2 | 169.5 | 93.2 | 129.0 | 164.4 |
| | | 76 | THC | — | 302.3 | 301.6 | — | 289.1 | 288.4 | — | 274.4 | 273.6 | — | 257.9 | 256.8 |
| | | | SHC | — | 112.3 | 147.5 | — | 108.3 | 143.7 | — | 103.9 | 139.4 | — | 98.9 | 134.5 |
| 8,000 CFM | EAT (wb) | 58 | THC | 232.1 | 243.6 | 256.1 | 219.8 | 233.4 | 246.0 | 206.9 | 221.3 | 234.5 | 192.1 | 206.8 | 221.2 |
| | | | SHC | 227.5 | 243.6 | 256.1 | 219.8 | 233.4 | 246.0 | 206.9 | 221.3 | 234.5 | 192.1 | 206.8 | 221.2 |
| | | 62 | THC | 247.8 | 247.1 | 256.4 | 234.7 | 235.5 | 246.2 | 218.7 | 221.1 | 234.7 | 199.5 | 207.0 | 221.4 |
| | | | SHC | 199.5 | 236.7 | 256.4 | 194.3 | 229.1 | 246.2 | 187.8 | 221.1 | 234.7 | 179.9 | 207.0 | 221.4 |
| | | 67 | THC | 270.2 | 269.3 | 268.3 | 257.0 | 256.1 | 255.2 | 242.1 | 241.0 | 240.3 | 224.5 | 223.5 | 223.1 |
| | | | SHC | 157.6 | 197.1 | 235.6 | 152.7 | 192.6 | 231.0 | 147.3 | 187.2 | 225.3 | 141.0 | 181.0 | 215.6 |
| | | 72 | THC | 294.1 | 293.1 | 292.2 | 280.7 | 279.7 | 278.4 | 265.9 | 264.7 | 263.8 | 248.9 | 247.6 | 246.6 |
| | | | SHC | 114.8 | 154.6 | 193.9 | 110.3 | 150.4 | 190.0 | 105.4 | 145.6 | 185.5 | 99.7 | 140.1 | 180.2 |
| | | 76 | THC | — | 313.1 | 312.3 | — | 299.3 | 298.2 | — | 283.8 | 282.8 | — | 266.7 | 265.4 |
| | | | SHC | — | 120.2 | 159.6 | — | 116.0 | 155.9 | — | 111.4 | 151.5 | — | 106.2 | 146.6 |
| 9,000 CFM | EAT (wb) | 58 | THC | 238.5 | 252.5 | 266.0 | 226.8 | 241.6 | 255.6 | 213.1 | 228.2 | 243.0 | 197.5 | 213.0 | 229.2 |
| | | | SHC | 238.5 | 252.5 | 266.0 | 226.8 | 241.6 | 255.6 | 213.1 | 228.2 | 243.0 | 197.5 | 213.0 | 229.2 |
| | | 62 | THC | 253.0 | 254.1 | 266.3 | 238.6 | 241.6 | 255.7 | 221.0 | 228.4 | 243.3 | 201.1 | 213.2 | 229.4 |
| | | | SHC | 211.9 | 249.1 | 266.3 | 206.2 | 241.6 | 255.7 | 199.2 | 228.4 | 243.3 | 164.2 | 213.2 | 229.4 |
| | | 67 | THC | 276.9 | 275.8 | 274.8 | 263.0 | 261.8 | 261.0 | 246.5 | 245.2 | 246.6 | 228.2 | 225.9 | 229.6 |
| | | | SHC | 165.6 | 209.9 | 252.2 | 160.7 | 205.1 | 247.0 | 154.9 | 199.3 | 238.5 | 132.3 | 192.7 | 229.6 |
| | | 72 | THC | 302.2 | 301.0 | 299.7 | 287.9 | 286.6 | 285.4 | 272.3 | 270.9 | 269.6 | 254.3 | 252.9 | 251.6 |
| | | | SHC | 118.2 | 162.8 | 206.8 | 113.5 | 158.4 | 202.9 | 108.5 | 153.4 | 198.0 | 102.7 | 147.8 | 165.1 |
| | | 76 | THC | — | 322.0 | 320.8 | — | 307.7 | 306.1 | — | 291.4 | 289.9 | — | 275.1 | 272.5 |
| | | | SHC | — | 124.5 | 168.7 | — | 120.4 | 164.9 | — | 115.6 | 160.5 | — | 110.9 | 155.3 |
| 10,000 CFM | EAT (wb) | 58 | THC | 245.7 | 259.8 | 273.9 | 233.8 | 248.7 | 263.2 | 219.8 | 235.3 | 250.5 | 203.7 | 219.8 | 236.5 |
| | | | SHC | 245.7 | 259.8 | 273.9 | 233.8 | 248.7 | 263.2 | 219.8 | 235.3 | 250.5 | 203.7 | 219.8 | 236.5 |
| | | 62 | THC | 256.8 | 260.7 | 274.2 | 242.2 | 249.0 | 263.3 | 224.6 | 235.6 | 250.6 | 205.6 | 220.0 | 236.8 |
| | | | SHC | 223.8 | 258.4 | 274.2 | 218.1 | 249.0 | 263.3 | 211.0 | 235.6 | 250.6 | 199.3 | 220.0 | 236.8 |
| | | 67 | THC | 280.8 | 279.6 | 266.3 | 266.6 | 265.4 | 265.8 | 249.9 | 248.6 | 251.0 | 231.4 | 229.8 | 237.3 |
| | | | SHC | 173.2 | 221.8 | 266.3 | 168.3 | 217.0 | 258.7 | 162.6 | 211.4 | 250.7 | 156.4 | 204.7 | 237.3 |
| | | 72 | THC | 306.4 | 305.0 | 274.8 | 292.1 | 290.6 | 289.3 | 276.0 | 274.3 | 273.0 | 257.5 | 256.0 | 254.6 |
| | | | SHC | 121.2 | 170.1 | 252.2 | 116.6 | 165.9 | 214.8 | 111.5 | 161.0 | 210.0 | 105.7 | 155.4 | 204.5 |
| | | 76 | THC | — | 326.2 | 299.7 | — | 311.4 | 310.0 | — | 295.2 | 293.2 | — | 277.0 | 275.3 |
| | | | SHC | — | 128.2 | 206.8 | — | 124.0 | 172.9 | — | 119.5 | 168.9 | — | 114.3 | 163.8 |

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.

# Performance data (cont)

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 240, 20 TONS WITH HOT GAS RE-HEAT IN SUBCOOLING MODE

| TEMP (°F) AIR ENTERING CONDENSER (Edb) | | AIR ENTERING EVAPORATOR - CFM | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 6,000 | | | 8,000 | | | 10,000 | | |
| | | AIR ENTERING EVAPORATOR - Ewb (°F) | | | | | | | | |
| | | 72 | 67 | 62 | 72 | 67 | 62 | 72 | 67 | 62 |
| 75 | TC | 263.00 | 240.40 | 217.70 | 301.00 | 274.00 | 246.90 | 336.90 | 305.60 | 274.40 |
| | SHC | 125.30 | 151.60 | 178.00 | 144.40 | 171.10 | 198.00 | 160.00 | 186.90 | 213.90 |
| | kW | 15.63 | 15.20 | 14.65 | 15.91 | 15.62 | 14.98 | 16.26 | 15.92 | 15.21 |
| 85 | TC | 248.20 | 226.10 | 204.00 | 279.20 | 252.90 | 226.60 | 308.40 | 278.20 | 248.00 |
| | SHC | 98.90 | 131.70 | 164.50 | 118.60 | 152.00 | 185.30 | 134.60 | 168.40 | 202.20 |
| | kW | 17.50 | 17.04 | 16.50 | 17.74 | 17.51 | 16.75 | 18.08 | 17.73 | 17.03 |
| 95 | TC | 233.40 | 211.80 | 190.20 | 257.30 | 231.80 | 206.40 | 279.80 | 250.70 | 221.50 |
| | SHC | 72.40 | 111.80 | 151.10 | 92.70 | 132.80 | 172.90 | 109.30 | 149.90 | 190.60 |
| | kW | 19.36 | 18.96 | 18.35 | 19.61 | 19.37 | 18.67 | 20.02 | 19.62 | 18.97 |
| 105 | TC | 218.60 | 197.50 | 176.50 | 235.40 | 210.70 | 186.10 | 251.30 | 223.20 | 195.10 |
| | SHC | 46.00 | 91.80 | 137.70 | 66.90 | 113.60 | 160.40 | 83.90 | 131.40 | 178.90 |
| | kW | 21.23 | 20.76 | 20.18 | 21.53 | 21.22 | 20.52 | 21.91 | 21.52 | 20.77 |
| 115 | TC | 203.70 | 183.30 | 162.80 | 213.50 | 189.70 | 165.80 | 222.70 | 195.70 | 168.70 |
| | SHC | 19.50 | 71.90 | 124.20 | 41.00 | 94.40 | 147.90 | 58.50 | 112.90 | 157.20 |
| | kW | 23.02 | 22.58 | 22.02 | 23.42 | 23.02 | 22.38 | 23.73 | 23.41 | 22.57 |

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 240, 20 TONS WITH HOT GAS RE-HEAT IN HOT GAS RE-HEAT MODE

| TEMP (°F) AIR ENTERING CONDENSER (Edb) | | AIR ENTERING EVAPORATOR (°F) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 75 DRY BULB 62.5 WET BULB (50% RELATIVE) | | | 75 DRY BULB 64 WET BULB (56% RELATIVE) | | | 75 DRY BULB 65.3 WET BULB (60% RELATIVE) | | |
| | | AIR ENTERING EVAPORATOR - CFM | | | | | | | | |
| | | 6,000 | 8,000 | 10,000 | 6,000 | 8,000 | 10,000 | 6,000 | 8,000 | 10,000 |
| 80 | TC | 91.50 | 100.80 | 109.50 | 95.80 | 105.70 | 112.40 | 102.30 | 110.80 | 118.60 |
| | SHC | 12.30 | 31.20 | 44.50 | 0.90 | 15.10 | 25.70 | -6.50 | 3.60 | 13.90 |
| | kW | 14.82 | 15.01 | 15.24 | 15.35 | 15.45 | 15.52 | 15.56 | 15.65 | 15.73 |
| 75 | TC | 94.00 | 103.40 | 112.00 | 98.70 | 108.10 | 115.10 | 104.70 | 113.10 | 121.10 |
| | SHC | 13.60 | 32.40 | 45.70 | 2.00 | 16.00 | 26.60 | -5.60 | 4.70 | 15.10 |
| | kW | 14.90 | 15.07 | 15.33 | 15.43 | 15.56 | 15.64 | 15.69 | 15.77 | 15.85 |
| 70 | TC | 96.50 | 106.00 | 114.30 | 100.90 | 110.60 | 117.20 | 107.20 | 115.80 | 123.50 |
| | SHC | 14.50 | 33.20 | 45.70 | 3.30 | 17.30 | 28.00 | -4.00 | 5.90 | 16.20 |
| | kW | 14.97 | 15.17 | 15.41 | 15.50 | 15.66 | 15.75 | 15.80 | 15.87 | 15.94 |
| 60 | TC | 101.80 | 111.30 | 119.30 | 106.20 | 115.60 | 122.20 | 112.60 | 119.40 | 128.00 |
| | SHC | 16.70 | 35.50 | 48.60 | 5.60 | 19.40 | 30.30 | -1.80 | 8.20 | 18.50 |
| | kW | 15.14 | 15.32 | 15.58 | 15.66 | 15.88 | 15.97 | 16.05 | 16.10 | 16.19 |
| 50 | TC | 107.20 | 116.40 | 124.30 | 111.50 | 120.70 | 127.30 | 117.70 | 125.20 | 132.90 |
| | SHC | 18.60 | 37.60 | 50.70 | 8.00 | 22.00 | 32.70 | 0.50 | 10.50 | 21.00 |
| | kW | 15.27 | 15.46 | 15.76 | 15.81 | 16.10 | 16.23 | 16.27 | 16.34 | 16.41 |
| 40 | TC | 112.20 | 121.80 | 129.20 | 116.60 | 125.70 | 132.00 | 123.20 | 130.00 | 138.00 |
| | SHC | 21.80 | 39.50 | 52.90 | 10.20 | 24.40 | 35.20 | 2.90 | 13.00 | 23.40 |
| | kW | 15.42 | 15.63 | 15.93 | 15.96 | 16.32 | 16.44 | 16.52 | 16.57 | 16.65 |

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

# Performance data (cont)

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 300, 25 TONS

| RGS 300 | | | | 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 |
| 7,500 CFM | EAT (wb) | 58 | THC | 257.3 | 266.5 | 279.6 | 247.5 | 255.4 | 269.0 | 231.5 | 243.3 | 257.2 | 214.3 | 229.2 | 243.7 |
| | | | SHC | 247.5 | 266.5 | 279.6 | 231.1 | 255.4 | 269.0 | 223.5 | 243.3 | 257.2 | 213.2 | 229.2 | 243.7 |
| | | 62 | THC | 281.4 | 280.5 | 280.6 | 267.5 | 267.0 | 269.3 | 251.3 | 251.0 | 257.6 | 232.7 | 232.5 | 244.1 |
| | | | SHC | 208.2 | 244.0 | 278.0 | 202.3 | 238.4 | 269.3 | 195.8 | 231.5 | 257.6 | 188.1 | 223.4 | 244.1 |
| | | 67 | THC | 307.4 | 306.4 | 305.7 | 293.0 | 292.2 | 291.4 | 276.9 | 276.2 | 275.4 | 259.7 | 259.2 | 258.8 |
| | | | SHC | 168.7 | 205.7 | 242.3 | 163.2 | 200.3 | 236.9 | 157.1 | 194.4 | 230.7 | 150.6 | 188.4 | 224.8 |
| | | 72 | THC | 333.9 | 333.2 | 332.5 | 320.1 | 319.3 | 318.6 | 304.5 | 303.7 | 302.7 | 287.2 | 285.3 | 284.5 |
| | | | SHC | 128.1 | 165.4 | 202.3 | 123.1 | 160.6 | 197.8 | 117.6 | 155.1 | 192.5 | 111.5 | 149.0 | 186.6 |
| | | 76 | THC | — | 356.0 | 355.2 | — | 342.0 | 341.2 | — | 326.0 | 325.2 | — | 308.0 | 307.4 |
| | | | SHC | — | 132.7 | 169.9 | — | 128.1 | 165.6 | — | 123.0 | 160.7 | — | 117.3 | 154.5 |
| 8,750 CFM | EAT (wb) | 58 | THC | 269.8 | 280.2 | 294.4 | 255.3 | 268.9 | 283.2 | 241.1 | 256.1 | 270.7 | 225.5 | 241.3 | 257.3 |
| | | | SHC | 257.9 | 280.2 | 294.4 | 250.4 | 268.9 | 283.2 | 241.1 | 256.1 | 270.7 | 225.5 | 241.3 | 257.3 |
| | | 62 | THC | 289.9 | 289.3 | 294.6 | 275.3 | 274.9 | 283.6 | 258.7 | 258.2 | 271.0 | 238.8 | 241.6 | 257.6 |
| | | | SHC | 224.2 | 265.0 | 294.6 | 218.6 | 258.6 | 283.6 | 212.0 | 251.7 | 271.0 | 203.9 | 241.6 | 257.6 |
| | | 67 | THC | 316.2 | 315.7 | 314.5 | 301.7 | 300.8 | 299.8 | 285.1 | 284.2 | 283.4 | 266.7 | 266.0 | 265.2 |
| | | | SHC | 179.0 | 221.6 | 263.1 | 173.5 | 216.4 | 257.9 | 167.5 | 210.5 | 251.9 | 161.0 | 204.5 | 245.1 |
| | | 72 | THC | 343.7 | 342.7 | 341.6 | 315.3 | 327.9 | 327.0 | 313.1 | 311.4 | 310.4 | 294.3 | 293.2 | 292.2 |
| | | | SHC | 132.4 | 175.4 | 217.7 | 127.6 | 170.7 | 213.3 | 122.0 | 165.3 | 208.3 | 115.6 | 159.2 | 202.5 |
| | | 76 | THC | — | 366.0 | 364.9 | — | 351.2 | 350.1 | — | 334.2 | 333.2 | — | 315.4 | 314.3 |
| | | | SHC | — | 138.0 | 180.7 | — | 133.4 | 176.5 | — | 128.2 | 171.6 | — | 122.5 | 166.1 |
| 10,000 CFM | EAT (wb) | 58 | THC | 277.1 | 291.8 | 306.8 | 264.9 | 280.2 | 295.3 | 251.2 | 267.0 | 282.3 | 235.1 | 252.2 | 268.1 |
| | | | SHC | 275.3 | 291.8 | 306.8 | 264.9 | 280.2 | 295.3 | 251.2 | 267.0 | 282.3 | 235.1 | 252.2 | 268.1 |
| | | 62 | THC | 296.8 | 296.0 | 307.2 | 281.8 | 281.8 | 295.6 | 264.7 | 267.1 | 282.6 | 244.9 | 252.4 | 268.4 |
| | | | SHC | 239.8 | 283.9 | 307.2 | 234.0 | 276.8 | 295.6 | 227.5 | 267.1 | 282.6 | 219.4 | 252.4 | 268.4 |
| | | 67 | THC | 323.5 | 322.6 | 321.4 | 308.5 | 307.4 | 306.5 | 291.3 | 290.2 | 289.3 | 272.5 | 271.5 | 270.8 |
| | | | SHC | 188.8 | 236.9 | 282.9 | 183.5 | 231.9 | 277.4 | 177.5 | 226.1 | 271.2 | 171.2 | 219.7 | 264.3 |
| | | 72 | THC | 351.8 | 350.5 | 349.2 | 336.6 | 335.4 | 334.1 | 319.7 | 318.3 | 317.1 | 300.2 | 298.9 | 297.8 |
| | | | SHC | 136.6 | 185.1 | 232.8 | 131.6 | 180.4 | 228.6 | 126.0 | 175.1 | 223.7 | 119.7 | 169.1 | 217.9 |
| | | 76 | THC | — | 374.2 | 372.8 | — | 358.6 | 357.3 | — | 340.9 | 339.7 | — | 321.3 | 320.1 |
| | | | SHC | — | 143.1 | 191.2 | — | 138.5 | 187.1 | — | 133.3 | 182.3 | — | 127.6 | 176.8 |
| 11,250 CFM | EAT (wb) | 58 | THC | 285.8 | 301.5 | 317.0 | 273.8 | 289.0 | 305.1 | 259.8 | 276.1 | 291.7 | 244.0 | 260.9 | 277.4 |
| | | | SHC | 285.8 | 301.5 | 317.0 | 273.8 | 289.0 | 305.1 | 259.8 | 276.1 | 291.7 | 244.0 | 260.9 | 277.4 |
| | | 62 | THC | 302.2 | 302.3 | 317.4 | 286.3 | 289.5 | 305.4 | 269.6 | 276.4 | 208.4 | 249.3 | 261.1 | 277.6 |
| | | | SHC | 254.3 | 300.2 | 317.4 | 245.8 | 289.5 | 305.4 | 242.1 | 276.4 | 208.4 | 201.5 | 261.1 | 277.6 |
| | | 67 | THC | 328.7 | 327.7 | 326.7 | 313.5 | 312.2 | 311.1 | 296.0 | 294.8 | 294.3 | 277.5 | 275.7 | 277.9 |
| | | | SHC | 197.9 | 251.1 | 301.0 | 192.8 | 246.4 | 295.4 | 187.0 | 240.4 | 288.0 | 160.9 | 234.6 | 277.9 |
| | | 72 | THC | 357.4 | 355.9 | 354.4 | 341.8 | 340.3 | 339.0 | 324.4 | 322.8 | 321.6 | 304.8 | 303.2 | 302.0 |
| | | | SHC | 140.2 | 193.9 | 246.7 | 135.2 | 189.4 | 242.8 | 129.7 | 184.3 | 238.2 | 123.5 | 178.4 | 198.1 |
| | | 76 | THC | — | 379.7 | 378.2 | — | 363.9 | 362.3 | — | 345.7 | 344.2 | — | 327.5 | 324.0 |
| | | | SHC | — | 147.6 | 200.8 | — | 143.1 | 196.9 | — | 138.0 | 192.3 | — | 132.9 | 187.1 |
| 12,500 CFM | EAT (wb) | 58 | THC | 293.7 | 309.8 | 325.6 | 280.3 | 297.3 | 313.5 | 267.0 | 283.5 | 299.8 | 250.8 | 268.3 | 284.8 |
| | | | SHC | 293.7 | 309.8 | 325.6 | 280.3 | 297.3 | 313.5 | 267.0 | 283.5 | 299.8 | 250.8 | 268.3 | 284.8 |
| | | 62 | THC | 310.5 | 310.2 | 326.1 | 290.7 | 297.6 | 313.9 | 273.7 | 283.7 | 300.1 | 253.1 | 268.5 | 285.0 |
| | | | SHC | 264.9 | 310.1 | 326.1 | 262.1 | 297.6 | 313.9 | 255.7 | 283.7 | 300.1 | 246.9 | 268.5 | 285.0 |
| | | 67 | THC | 333.1 | 331.7 | 330.9 | 317.5 | 316.2 | 315.9 | 299.8 | 298.7 | 300.3 | 280.7 | 279.6 | 285.5 |
| | | | SHC | 206.6 | 264.7 | 317.6 | 201.9 | 260.2 | 311.0 | 196.2 | 254.9 | 300.3 | 190.0 | 248.1 | 285.5 |
| | | 72 | THC | 362.1 | 360.3 | 358.7 | 346.0 | 344.3 | 343.0 | 328.2 | 326.6 | 325.1 | 308.4 | 306.6 | 305.3 |
| | | | SHC | 143.6 | 202.4 | 260.2 | 138.7 | 198.1 | 256.5 | 133.2 | 193.2 | 252.1 | 127.1 | 187.5 | 246.5 |
| | | 76 | THC | — | 384.3 | 382.5 | — | 368.1 | 366.3 | — | 349.5 | 347.8 | — | 331.0 | 328.7 |
| | | | SHC | — | 151.9 | 210.1 | — | 147.5 | 206.4 | — | 142.5 | 201.9 | — | 137.4 | 195.2 |

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.

# Performance data (cont)

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 300, 25 TONS UNIT WITH HOT GAS RE-HEAT IN SUBCOOLING MODE

| TEMP (°F) AIR ENTERING CONDENSER (Edb) | | AIR ENTERING EVAPORATOR - CFM | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 7,500 | | | 10,000 | | | 12,500 | | |
| | | AIR ENTERING EVAPORATOR - Ewb (°F) | | | | | | | | |
| | | 72 | 67 | 62 | 72 | 67 | 62 | 72 | 67 | 62 |
| 75 | TC | 335.30 | 305.50 | 275.80 | 368.30 | 334.40 | 300.50 | 398.10 | 360.50 | 322.90 |
| | SHC | 149.60 | 181.70 | 213.70 | 172.80 | 205.50 | 238.20 | 191.70 | 224.90 | 258.20 |
| | kW | 19.50 | 18.70 | 17.70 | 19.50 | 18.70 | 17.70 | 19.70 | 18.80 | 17.90 |
| 85 | TC | 316.30 | 287.00 | 257.70 | 341.50 | 308.40 | 275.30 | 364.30 | 327.80 | 291.20 |
| | SHC | 120.80 | 160.50 | 200.20 | 144.60 | 185.20 | 225.80 | 164.00 | 205.40 | 246.70 |
| | kW | 21.90 | 21.30 | 20.10 | 22.30 | 21.30 | 20.30 | 22.50 | 21.70 | 20.60 |
| 95 | TC | 297.30 | 268.50 | 239.60 | 314.70 | 282.40 | 250.10 | 330.50 | 295.00 | 259.50 |
| | SHC | 92.10 | 139.40 | 186.70 | 116.40 | 164.90 | 213.50 | 136.30 | 185.80 | 235.30 |
| | kW | 24.30 | 23.50 | 22.50 | 24.40 | 23.50 | 22.60 | 24.40 | 23.60 | 22.50 |
| 105 | TC | 278.20 | 249.90 | 221.60 | 287.90 | 256.40 | 224.90 | 296.70 | 262.30 | 227.80 |
| | SHC | 63.30 | 118.20 | 173.20 | 88.30 | 144.70 | 201.10 | 108.70 | 166.30 | 223.90 |
| | kW | 26.70 | 26.00 | 25.00 | 27.30 | 26.00 | 25.00 | 27.30 | 26.10 | 25.10 |
| 115 | TC | 259.20 | 231.40 | 203.50 | 261.10 | 230.40 | 199.70 | 262.90 | 229.50 | 196.10 |
| | SHC | 34.50 | 97.10 | 159.70 | 60.10 | 124.40 | 188.70 | 81.00 | 146.70 | 191.20 |
| | kW | 28.70 | 28.00 | 27.10 | 29.30 | 28.10 | 26.90 | 29.10 | 27.90 | 27.20 |

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 300, 25 TONS UNIT WITH HOT GAS RE-HEAT IN HOT GAS RE-HEAT MODE

| EMP (°F) AIR ENTERING CONDENSER (Edb) | | AIR ENTERING EVAPORATOR (°F) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 75 DRY BULB 62.5 WET BULB (50% RELATIVE) | | | 75 DRY BULB 64 WET BULB (56% RELATIVE) | | | 75 DRY BULB 65.3 WET BULB (60% RELATIVE) | | |
| | | AIR ENTERING EVAPORATOR - CFM | | | | | | | | |
| | | 7,500 | 10,000 | 12,500 | 7,500 | 10,000 | 12,500 | 7,500 | 10,000 | 12,500 |
| 80 | TC | 132.40 | 136.80 | 148.40 | 138.20 | 142.40 | 154.60 | 144.30 | 146.40 | 162.50 |
| | SHC | 37.80 | 61.50 | 85.50 | 21.80 | 44.40 | 52.40 | 16.10 | 32.10 | 48.90 |
| | kW | 17.90 | 18.15 | 18.21 | 18.05 | 18.33 | 18.43 | 18.26 | 18.55 | 18.62 |
| 75 | TC | 138.00 | 142.20 | 154.10 | 143.50 | 148.00 | 160.30 | 148.90 | 151.00 | 167.10 |
| | SHC | 44.20 | 68.00 | 91.80 | 28.10 | 51.50 | 58.80 | 22.70 | 38.20 | 56.00 |
| | kW | 17.77 | 18.00 | 18.07 | 17.92 | 18.19 | 18.29 | 18.14 | 18.40 | 18.48 |
| 70 | TC | 143.80 | 148.10 | 160.00 | 149.30 | 154.00 | 165.90 | 155.50 | 157.60 | 173.80 |
| | SHC | 50.50 | 73.80 | 98.10 | 34.20 | 56.50 | 65.30 | 28.30 | 44.00 | 62.30 |
| | kW | 17.63 | 17.86 | 17.93 | 17.78 | 18.04 | 18.14 | 18.03 | 18.26 | 18.34 |
| 60 | TC | 154.80 | 159.50 | 171.10 | 160.20 | 165.20 | 177.20 | 166.70 | 168.80 | 185.10 |
| | SHC | 63.10 | 84.50 | 110.10 | 46.50 | 69.50 | 75.70 | 41.40 | 56.50 | 74.30 |
| | kW | 17.35 | 17.58 | 17.65 | 17.50 | 17.76 | 17.85 | 17.70 | 17.97 | 18.04 |
| 50 | TC | 166.30 | 170.50 | 181.20 | 171.30 | 176.40 | 188.40 | 178.00 | 180.00 | 196.40 |
| | SHC | 75.80 | 96.50 | 122.20 | 58.30 | 79.80 | 87.80 | 53.70 | 69.10 | 85.90 |
| | kW | 17.06 | 17.30 | 17.37 | 17.22 | 17.46 | 17.56 | 17.42 | 17.69 | 17.76 |
| 40 | TC | 177.50 | 181.70 | 192.30 | 182.40 | 187.60 | 199.70 | 189.30 | 191.20 | 207.70 |
| | SHC | 85.70 | 109.80 | 134.30 | 71.50 | 92.30 | 100.50 | 66.10 | 79.50 | 97.90 |
| | kW | 16.76 | 17.01 | 17.09 | 16.93 | 17.18 | 17.28 | 17.14 | 17.41 | 17.47 |

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

# Performance data (cont)

## COOLING CAPACITIES, 2-STAGE COOLING, RGS 336, 27.5 TONS

| RGS 336 | | | | 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 |
| 7,500 CFM | EAT (wb) | 58 | THC | 298.0 | 298.0 | 336.8 | 285.3 | 285.3 | 322.4 | 270.1 | 270.1 | 305.3 | 253.5 | 253.5 | 286.5 |
| | | | SHC | 259.2 | 298.0 | 336.8 | 248.2 | 285.3 | 322.4 | 235.0 | 270.1 | 305.3 | 220.5 | 253.5 | 286.5 |
| | | 62 | THC | 318.3 | 318.3 | 318.3 | 301.9 | 301.9 | 309.0 | 282.4 | 282.4 | 299.5 | 260.5 | 260.5 | 288.5 |
| | | | SHC | 233.5 | 275.2 | 316.9 | 225.8 | 267.4 | 309.0 | 216.6 | 258.1 | 299.5 | 206.1 | 247.3 | 288.5 |
| | | 67 | THC | 352.3 | 352.3 | 352.3 | 335.9 | 335.9 | 335.9 | 317.1 | 317.1 | 317.1 | 294.0 | 294.0 | 294.0 |
| | | | SHC | 193.3 | 235.0 | 276.8 | 186.4 | 228.3 | 270.1 | 178.7 | 220.5 | 262.4 | 169.3 | 211.1 | 252.9 |
| | | 72 | THC | 383.6 | 383.6 | 383.6 | 368.5 | 368.5 | 368.5 | 350.7 | 350.7 | 350.7 | 329.6 | 329.6 | 329.6 |
| | | | SHC | 149.7 | 191.9 | 234.2 | 144.0 | 186.2 | 228.4 | 137.3 | 179.5 | 221.7 | 129.6 | 171.7 | 213.8 |
| | | 76 | THC | — | 404.0 | 404.0 | — | 390.3 | 390.3 | — | 373.1 | 373.1 | — | 353.4 | 353.4 |
| | | | SHC | — | 154.8 | 200.2 | — | 150.2 | 195.6 | — | 144.5 | 189.9 | — | 138.0 | 183.2 |
| 8,750 CFM | EAT (wb) | 58 | THC | 315.7 | 315.7 | 356.8 | 302.4 | 302.4 | 341.8 | 286.8 | 286.8 | 324.1 | 269.2 | 269.2 | 304.3 |
| | | | SHC | 274.6 | 315.7 | 356.8 | 263.0 | 302.4 | 341.8 | 249.4 | 286.8 | 324.1 | 234.2 | 269.2 | 304.3 |
| | | 62 | THC | 329.7 | 329.7 | 346.7 | 312.7 | 312.7 | 338.3 | 293.0 | 293.0 | 328.0 | 271.1 | 271.1 | 314.6 |
| | | | SHC | 251.3 | 299.0 | 346.7 | 243.3 | 290.8 | 338.3 | 233.7 | 280.9 | 328.0 | 222.0 | 268.3 | 314.6 |
| | | 67 | THC | 363.1 | 363.1 | 363.1 | 346.4 | 346.4 | 346.4 | 327.1 | 327.1 | 327.1 | 303.7 | 303.7 | 303.7 |
| | | | SHC | 204.4 | 252.2 | 299.9 | 197.8 | 245.7 | 293.6 | 190.2 | 238.3 | 286.3 | 181.0 | 229.1 | 277.2 |
| | | 72 | THC | 392.4 | 392.4 | 392.4 | 377.4 | 377.4 | 377.4 | 359.5 | 359.5 | 359.5 | 338.6 | 338.6 | 338.6 |
| | | | SHC | 153.8 | 201.6 | 249.3 | 148.4 | 196.3 | 244.3 | 141.9 | 190.0 | 238.0 | 134.5 | 182.7 | 230.8 |
| | | 76 | THC | — | 410.9 | 410.9 | — | 397.4 | 397.4 | — | 380.0 | 380.0 | — | 359.9 | 359.9 |
| | | | SHC | — | 160.7 | 213.6 | — | 156.2 | 208.9 | — | 150.1 | 201.8 | — | 143.2 | 194.1 |
| 10,000 CFM | EAT (wb) | 58 | THC | 330.4 | 330.4 | 373.4 | 316.6 | 316.6 | 357.8 | 300.7 | 300.7 | 339.9 | 282.3 | 282.3 | 319.0 |
| | | | SHC | 287.4 | 330.4 | 373.4 | 275.4 | 316.6 | 357.8 | 261.6 | 300.7 | 339.9 | 245.6 | 282.3 | 319.0 |
| | | 62 | THC | 338.9 | 338.9 | 373.5 | 321.8 | 321.8 | 364.5 | 301.9 | 301.9 | 354.3 | 282.6 | 282.6 | 331.6 |
| | | | SHC | 267.2 | 320.3 | 373.5 | 258.9 | 311.7 | 364.5 | 249.5 | 301.9 | 354.3 | 233.5 | 282.6 | 331.6 |
| | | 67 | THC | 371.1 | 371.1 | 371.1 | 354.3 | 354.3 | 354.3 | 334.7 | 334.7 | 334.7 | 310.9 | 310.9 | 310.9 |
| | | | SHC | 214.5 | 267.9 | 321.3 | 208.2 | 262.0 | 315.7 | 200.9 | 254.9 | 308.9 | 191.9 | 246.0 | 300.1 |
| | | 72 | THC | 398.6 | 398.6 | 398.6 | 383.8 | 383.8 | 383.8 | 365.7 | 365.7 | 365.7 | 344.9 | 344.9 | 344.9 |
| | | | SHC | 157.3 | 210.1 | 262.8 | 152.2 | 205.4 | 258.7 | 145.8 | 199.4 | 252.9 | 138.7 | 192.5 | 246.3 |
| | | 76 | THC | — | 415.7 | 415.7 | — | 402.3 | 402.3 | — | 384.9 | 384.9 | — | 364.5 | 364.5 |
| | | | SHC | — | 165.2 | 223.6 | — | 160.5 | 218.0 | — | 154.6 | 211.3 | — | 147.8 | 203.9 |
| 11,250 CFM | EAT (wb) | 58 | THC | 342.7 | 342.7 | 387.3 | 328.7 | 328.7 | 371.4 | 312.7 | 312.7 | 353.3 | 293.5 | 293.5 | 331.7 |
| | | | SHC | 298.1 | 342.7 | 387.3 | 285.9 | 328.7 | 371.4 | 272.0 | 312.7 | 353.3 | 255.3 | 293.5 | 331.7 |
| | | 62 | THC | 346.8 | 346.8 | 396.7 | 329.7 | 329.7 | 387.0 | 313.0 | 313.0 | 367.3 | 293.8 | 293.8 | 344.8 |
| | | | SHC | 281.1 | 338.9 | 396.7 | 272.5 | 329.7 | 387.0 | 258.6 | 313.0 | 367.3 | 242.8 | 293.8 | 344.8 |
| | | 67 | THC | 377.2 | 377.2 | 377.2 | 360.4 | 360.4 | 360.4 | 340.7 | 340.7 | 340.7 | 316.6 | 316.6 | 321.8 |
| | | | SHC | 223.7 | 282.5 | 341.2 | 217.9 | 277.2 | 336.5 | 210.8 | 270.5 | 330.2 | 202.1 | 261.9 | 321.8 |
| | | 72 | THC | 403.1 | 403.1 | 403.1 | 388.6 | 388.6 | 388.6 | 370.3 | 370.3 | 370.3 | 349.5 | 349.5 | 349.5 |
| | | | SHC | 160.3 | 217.7 | 275.1 | 155.5 | 213.7 | 271.9 | 149.3 | 208.0 | 266.7 | 142.4 | 201.4 | 260.5 |
| | | 76 | THC | — | 419.3 | 419.3 | — | 406.0 | 406.0 | — | 388.5 | 388.5 | — | 367.8 | 367.8 |
| | | | SHC | — | 168.8 | 231.3 | — | 164.4 | 226.3 | — | 158.6 | 220.0 | — | 151.9 | 212.8 |
| 12,500 CFM | EAT (wb) | 58 | THC | 353.0 | 353.0 | 398.9 | 338.8 | 338.8 | 382.9 | 322.5 | 322.5 | 364.5 | 303.1 | 303.1 | 342.5 |
| | | | SHC | 307.1 | 353.0 | 398.9 | 294.7 | 338.8 | 382.9 | 280.6 | 322.5 | 364.5 | 263.7 | 303.1 | 342.5 |
| | | 62 | THC | 353.9 | 353.9 | 415.3 | 339.1 | 339.1 | 397.9 | 322.8 | 322.8 | 378.9 | 303.4 | 303.4 | 356.0 |
| | | | SHC | 292.4 | 353.9 | 415.3 | 280.2 | 339.1 | 397.9 | 266.8 | 322.8 | 378.9 | 250.7 | 303.4 | 356.0 |
| | | 67 | THC | 381.9 | 381.9 | 381.9 | 365.2 | 365.2 | 365.2 | 345.3 | 345.3 | 350.4 | 321.3 | 321.3 | 342.2 |
| | | | SHC | 232.3 | 296.1 | 360.0 | 227.0 | 291.6 | 356.3 | 220.1 | 285.2 | 350.4 | 211.5 | 276.8 | 342.2 |
| | | 72 | THC | 406.6 | 406.6 | 406.6 | 392.2 | 392.2 | 392.2 | 373.9 | 373.9 | 373.9 | 352.9 | 352.9 | 352.9 |
| | | | SHC | 163.1 | 224.8 | 286.6 | 158.5 | 221.4 | 284.3 | 152.5 | 216.1 | 279.6 | 145.7 | 209.8 | 273.9 |
| | | 76 | THC | — | 422.1 | 422.1 | — | 408.9 | 408.9 | — | 391.2 | 391.2 | — | 370.3 | 370.3 |
| | | | SHC | — | 172.2 | 238.5 | — | 167.9 | 234.0 | — | 162.3 | 228.1 | — | 155.7 | 221.2 |

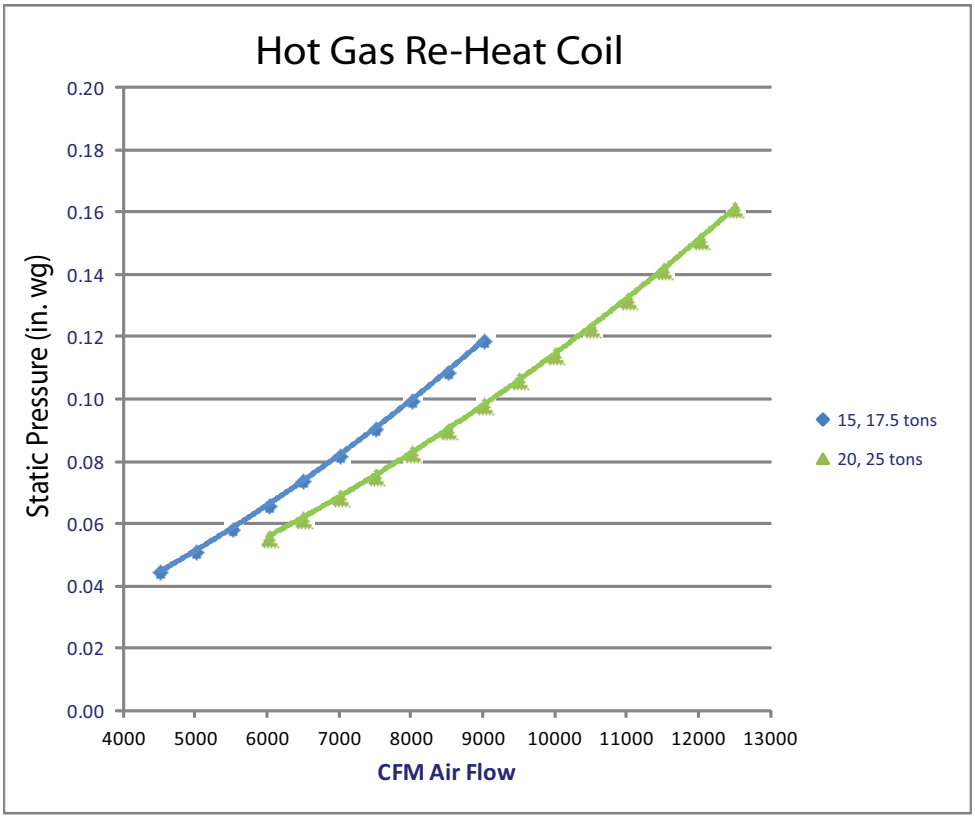
LEGEND

**—** — 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

NOTES:
1. See Minimum-Maximum Airflow - Natural Gas and Propane Ratings on page 5. Do not operate outside these limits.
2. Hot Gas Re-Heat system available for all sizes with high static motor.

# Performance data (cont)

**STATIC PRESSURE ADDERS (IN. WG), HOT GAS RE-HEAT SYSTEM**




**STATIC PRESSURE ADDERS (IN. WG) — FACTORY OPTIONS AND/OR ACCESSORIES**
**VERTICAL DUCT CONFIGURATION**

## Hot Gas Re-Heat Coil

| RGS 210-300 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CFM** | **4500** | **5000** | **5500** | **6000** | **6500** | **7000** | **7500** | **8000** |
| **Static Pressure Adder (in. wg)** | 0.039 | 0.045 | 0.052 | 0.059 | 0.066 | 0.074 | 0.082 | 0.090 |

| RGS 210-300 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CFM** | **8500** | **9000** | **9500** | **10000** | **10500** | **11000** | **11500** | **12000** | **12500** |
| **Static Pressure Adder (in. wg)** | 0.099 | 0.108 | 0.117 | 0.127 | 0.137 | 0.148 | 0.158 | 0.170 | 0.181 |

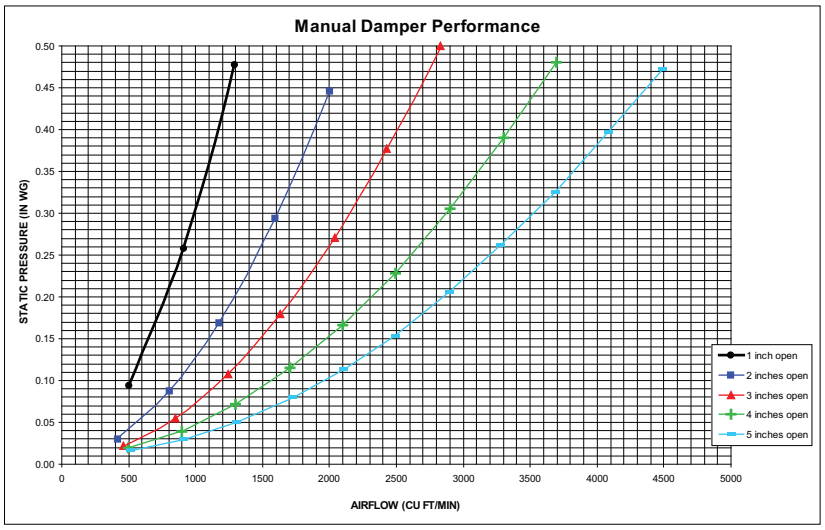
## Economizer-Vertical Duct Configuration

| RGS 210-336 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CFM** | **4500** | **5000** | **5500** | **6000** | **6500** | **7000** | **7500** | **8000** |
| **Static Pressure Adder (in. wg)** | 0.002 | 0.004 | 0.006 | 0.009 | 0.013 | 0.017 | 0.021 | 0.026 |

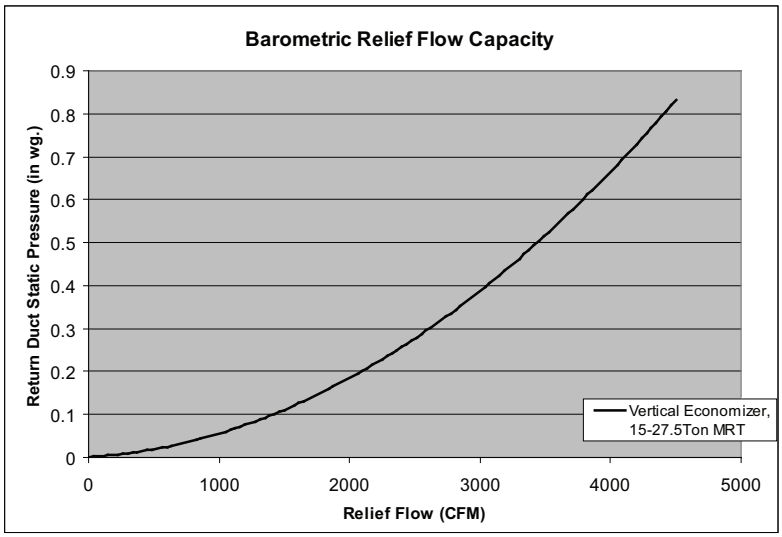
| RGS 210-336 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CFM** | **8500** | **9000** | **9500** | **10000** | **10500** | **11000** | **11500** | **12000** | **12500** |
| **Static Pressure Adder (in. wg)** | 0.031 | 0.026 | 0.042 | 0.048 | 0.055 | 0.062 | 0.070 | 0.078 | 0.086 |

# Performance data (cont)

## DAMPER, BAROMETRIC RELIEF AND PE PERFORMANCE
## MANUAL DAMPER PERFORMANCE

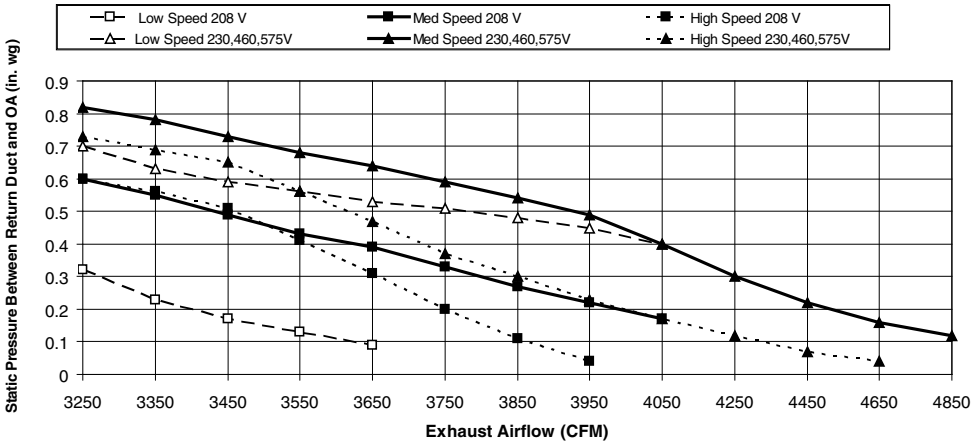



## BAROMETRIC RELIEF FLOW CAPACITY




## POWER EXHAUST FAN PERFORMANCE

Power Exhaust Fan Performance






Specifications subject to change without notice.

# 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, we recommend the lower horsepower option.
5. For information on the electrical properties of our motors, please see the Electrical information section of this book. For more information on the performance limits of our motors, see the application data section of this book.

### RGS 210 — 17.5 TON VERTICAL SUPPLY

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.2 | | 0.4 | | 0.6 | | 0.8 | | 1.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **5250** | **547** | **1.10** | 626 | 1.45 | 700 | 1.84 | 766 | 2.24 | 828 | 2.67 |
| **5700** | **581** | **1.35** | 655 | 1.72 | 724 | 2.12 | 789 | 2.55 | 849 | 3.00 |
| **6150** | **615** | **1.63** | 684 | 2.02 | 750 | 2.44 | 812 | 2.90 | 871 | 3.37 |
| **6550** | 646 | 1.92 | 711 | 2.32 | 774 | 2.77 | 834 | 3.24 | 891 | 3.73 |
| **7000** | 682 | 2.28 | 743 | 2.71 | 803 | 3.17 | 860 | 3.66 | 915 | 4.17 |
| **7450** | 718 | 2.70 | 775 | 3.14 | 832 | 3.62 | 887 | 4.13 | 940 | 4.67 |
| **7900** | 755 | 3.16 | 809 | 3.62 | 863 | 4.12 | 915 | 4.65 | 966 | 5.21 |
| **8300** | 787 | 3.62 | 839 | 4.09 | 891 | 4.61 | 941 | 5.16 | 990 | 5.73 |
| **8750** | 825 | 4.18 | 874 | 4.68 | 923 | 5.22 | 971 | 5.78 | 1018 | 6.38 |

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.2 | | 1.4 | | 1.6 | | 1.8 | | 2.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **5250** | 885 | 3.11 | 939 | 3.57 | 990 | 4.05 | 1038 | 4.54 | *1084* | *5.04* |
| **5700** | 905 | 3.47 | 958 | 3.95 | 1008 | 4.45 | 1055 | 4.96 | *1100* | *5.48* |
| **6150** | 925 | 3.86 | 977 | 4.36 | 1026 | 4.88 | 1073 | 5.42 | *1118* | *5.96* |
| **6550** | 945 | 4.24 | 995 | 4.76 | 1043 | 5.30 | *1090* | *5.86* | *1134* | *6.42* |
| **7000** | 967 | 4.71 | 1017 | 5.26 | 1064 | 5.82 | *1109* | *6.39* | 1153 | 6.98 |
| **7450** | 991 | 5.22 | 1039 | 5.79 | *1085* | *6.38* | 1130 | 6.98 | 1172 | 7.59 |
| **7900** | 1015 | 5.78 | 1062 | 6.38 | 1107 | 6.99 | 1151 | 7.61 | — | — |
| **8300** | 1038 | 6.33 | 1084 | 6.94 | 1128 | 7.57 | 1171 | 8.21 | — | — |
| **8750** | 1064 | 6.99 | 1109 | 7.63 | 1152 | 8.28 | — | — | — | — |

LEGEND

| | |
|---|---|
| | Standard Static - 622-822 RPM, 3.7 Max BHP |
| | Medium Static - 713-879 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3 |
| | High Static - 882-1078 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3 |
| | Requires high static drive package with different motor pulley. Confirm Max BHP based on unit voltage selected. |
| **BOLD** | Requires alternate standard static drive package |
| *Italics* | Requires high static drive package with different motor pulley. All voltages. |
| Underscore | Operation point covered by factory package. Confirm Max BHP based on unit voltage selected. |

# Fan data (cont)

## RGS 240 — 20 TON VERTICAL SUPPLY

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.2 | | 0.4 | | 0.6 | | 0.8 | | 1.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **6,000** | **620** | **1.53** | 689 | 1.84 | 752 | 2.16 | 810 | 2.49 | 865 | 2.83 |
| **6,500** | **660** | **1.88** | 725 | 2.22 | 785 | 2.56 | 841 | 2.92 | 894 | 3.28 |
| **7,000** | 701 | 2.29 | 762 | 2.65 | 819 | 3.02 | 873 | 3.40 | 923 | 3.78 |
| **7,500** | 742 | 2.76 | 800 | 3.15 | 855 | 3.54 | 906 | 3.94 | 955 | 4.34 |
| **8,000** | 784 | 3.30 | 839 | 3.71 | 891 | 4.12 | 940 | 4.55 | 987 | 4.97 |
| **8,500** | 826 | 3.90 | 879 | 4.33 | 928 | 4.78 | 975 | 5.22 | 1021 | 5.67 |
| **9,000** | 869 | 4.57 | 919 | 5.03 | 966 | 5.50 | 1011 | 5.97 | 1055 | 6.44 |
| **9,500** | 911 | 5.32 | 959 | 5.81 | 1005 | 6.30 | 1048 | 6.79 | 1090 | 7.29 |
| **10,000** | 954 | 6.15 | 1000 | 6.66 | 1044 | 7.18 | 1086 | 7.70 | 1126 | 8.22 |

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.2 | | 1.4 | | 1.6 | | 1.8 | | 2.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| **6,000** | 917 | 3.18 | 967 | 3.54 | 1015 | 3.91 | 1061 | 4.30 | 1105 | 4.69 |
| **6,500** | 944 | 3.65 | 992 | 4.03 | 1038 | 4.42 | 1083 | 4.82 | 1126 | 5.23 |
| **7,000** | 972 | 4.17 | 1018 | 4.57 | 1063 | 4.98 | 1106 | 5.40 | 1148 | 5.83 |
| **7,500** | 1001 | 4.76 | 1046 | 5.18 | 1090 | 5.61 | 1131 | 6.05 | 1172 | 6.49 |
| **8,000** | 1032 | 5.41 | 1076 | 5.85 | 1117 | 6.30 | 1158 | 6.76 | — | — |
| **8,500** | 1064 | 6.13 | 1106 | 6.59 | 1147 | 7.07 | *1186* | *7.54* | — | — |
| **9,000** | 1097 | 6.92 | 1138 | 7.41 | 1177 | 7.90 | — | — | — | — |
| **9,500** | 1131 | 7.79 | 1170 | 8.30 | — | — | — | — | — | — |
| **10,000** | 1166 | 8.75 | — | — | — | — | — | — | — | — |

LEGEND

Standard Static - 690-863 RPM, 4.9 Max BHP

Medium Static - 835-1021 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3

High Static - 941-1176 RPM, Voltage 208V/230V/460V/575V, Max BHP 10.5/11.9/11.9/11.0

**BOLD** Requires alternate standard static drive package

*Italics* Requires high static drive package with different motor pulley.

# Fan data (cont)

## RGS 300 — 25 TON VERTICAL SUPPLY

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.2 | | 0.4 | | 0.6 | | 0.8 | | 1.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 7,500 | 731 | 2.21 | 796 | 2.60 | 856 | 3.00 | 911 | 3.40 | 963 | 3.81 |
| 8,150 | 783 | 2.76 | 844 | 3.19 | 901 | 3.61 | 954 | 4.05 | 1003 | 4.49 |
| 8,750 | 832 | 3.35 | 890 | 3.80 | 943 | 4.26 | 994 | 4.73 | 1042 | 5.19 |
| 9,400 | 885 | 4.08 | 940 | 4.57 | 991 | 5.06 | 1039 | 5.55 | 1085 | 6.05 |
| 10,000 | 934 | 4.85 | 986 | 5.36 | 1035 | 5.88 | 1082 | 6.40 | 1126 | 6.93 |
| 10,650 | 988 | 5.78 | 1038 | 6.33 | 1084 | 6.88 | 1129 | 7.44 | 1172 | 8.00 |
| 11,250 | 1038 | 6.74 | 1086 | 7.32 | 1130 | 7.91 | 1173 | 8.49 | — | — |
| 11,900 | 1093 | 7.91 | 1138 | 8.52 | 1181 | 9.14 | — | — | — | — |
| 12,500 | 1144 | 9.10 | 1186 | 9.74 | — | — | — | — | — | — |

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.2 | | 1.4 | | 1.6 | | 1.8 | | 2.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 7,500 | 1011 | 4.23 | 1058 | 4.66 | 1102 | 5.09 | 1145 | 5.53 | *1186* | *5.98* |
| 8,150 | 1050 | 4.94 | 1095 | 5.39 | 1138 | 5.85 | *1180* | *6.32* | — | — |
| 8,750 | 1088 | 5.67 | 1131 | 6.15 | 1173 | 6.64 | — | — | — | — |
| 9,400 | 1129 | 6.56 | 1171 | 7.07 | — | — | — | — | — | — |
| 10,000 | 1169 | 7.47 | — | — | — | — | — | — | — | — |
| 10,650 | — | — | — | — | — | — | — | — | — | — |
| 11,250 | — | — | — | — | — | — | — | — | — | — |
| 11,900 | — | — | — | — | — | — | — | — | — | — |
| 12,500 | — | — | — | — | — | — | — | — | — | — |

LEGEND

| | |
|---|---|
| | Standard Static - 717-911 RPM, 4.9 Max BHP |
| | Medium Static - 913-1116 RPM, Voltage 208V/230V/460V/575V, Max BHP 6.5/6.9/7.0/8.3 |
| | High Static - 941-1176 RPM, Voltage 208V/230V/460V/575V, Max BHP 10.5/11.9/11.9/11.0 |
| *Italics* | Requires high static drive package with different motor pulley. |
| Underscore | Operation point covered by factory package. Confirm Max BHP based on unit voltage selected. |

# Fan data (cont)

## RGS 336 — 27.5 TON VERTICAL SUPPLY

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.2 | | 0.4 | | 0.6 | | 0.8 | | 1.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 8,250 | 791 | 2.86 | 852 | 3.28 | 908 | 3.72 | 960 | 4.16 | 1010 | 4.60 |
| 8,950 | 848 | 3.57 | 905 | 4.03 | 958 | 4.50 | 1008 | 4.97 | 1055 | 5.45 |
| 9,650 | 906 | 4.39 | 959 | 4.89 | 1009 | 5.39 | 1057 | 5.89 | 1102 | 6.41 |
| 10,300 | 959 | 5.26 | 1010 | 5.79 | 1058 | 6.33 | 1104 | 6.87 | 1147 | 7.41 |
| 11,000 | 1018 | 6.33 | 1066 | 6.90 | 1111 | 7.47 | 1155 | 8.04 | 1197 | 8.62 |
| 11,700 | 1076 | 7.54 | 1122 | 8.14 | 1165 | 8.74 | 1207 | 9.35 | 1247 | 9.96 |
| 12,400 | 1135 | 8.90 | 1178 | 9.53 | 1220 | 10.17 | 1260 | 10.82 | 1299 | 11.46 |
| 13,050 | 1190 | 10.30 | 1231 | 10.97 | 1271 | 11.64 | — | — | — | — |
| 13,750 | 1249 | 11.97 | 1289 | 12.67 | — | — | — | — | — | — |

| CFM | AVAILABLE EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.2 | | 1.4 | | 1.6 | | 1.8 | | 2.0 | |
| | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 8,250 | 1056 | 5.05 | 1101 | 5.51 | 1144 | 5.98 | 1185 | 6.45 | 1225 | 6.93 |
| 8,950 | 1100 | 5.93 | 1144 | 6.42 | 1185 | 6.92 | 1225 | 7.42 | 1264 | 7.93 |
| 9,650 | 1146 | 6.92 | 1187 | 7.45 | 1228 | 7.98 | 1266 | 8.51 | — | — |
| 10,300 | 1189 | 7.96 | 1229 | 8.51 | 1268 | 9.07 | — | — | — | — |
| 11,000 | 1237 | 9.20 | 1276 | 9.79 | — | — | — | — | — | — |
| 11,700 | 1286 | 10.58 | — | — | — | — | — | — | — | — |
| 12,400 | — | — | — | — | — | — | — | — | — | — |
| 13,050 | — | — | — | — | — | — | — | — | — | — |
| 13,750 | — | — | — | — | — | — | — | — | — | — |

LEGEND

- Standard Static - 751-954 RPM, 6.5 Max BHP
- Medium Static - 973-1175 RPM, Voltage 208V/230V/460V/575V, Max BHP 10.5/11.9/11.9/11.0
- High Static - 1015-1300 RPM, Voltage 208V/230V/460V/575V, Max BHP 11.9/12.9/12.9/14.1
- Requires high static drive package with different motor pulley. Confirm Max BHP based on unit voltage selected.

## PULLEY ADJUSTMENT — VERTICAL

| RGS MODEL | MOTOR/DRIVE COMBO | MOTOR PULLEY TURNS OPEN (RPM) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |
| 210 | Standard Static | 822 | 802 | 782 | 762 | 742 | 722 | 702 | 682 | 662 | 642 | 622 |
| | Medium Static | 879 | 862 | 846 | 829 | 813 | 796 | 779 | 763 | 746 | 730 | 713 |
| | High Static | 1078 | 1058 | 1039 | 1019 | 1000 | 980 | 960 | 941 | 921 | 902 | 882 |
| 240 | Standard Static | 863 | 846 | 828 | 811 | 794 | 777 | 759 | 742 | 725 | 707 | 690 |
| | Medium Static | 1021 | 1002 | 984 | 965 | 947 | 928 | 909 | 891 | 872 | 854 | 835 |
| | High Static | 1176 | 1153 | 1129 | 1106 | 1082 | 1059 | 1035 | 1012 | 988 | 965 | 941 |
| 300 | Standard Static | 911 | 892 | 872 | 853 | 833 | 814 | 795 | 775 | 756 | 736 | 717 |
| | Medium Static | 1116 | 1096 | 1075 | 1055 | 1035 | 1015 | 994 | 974 | 954 | 933 | 913 |
| | High Static | 1176 | 1153 | 1129 | 1106 | 1082 | 1059 | 1035 | 1012 | 988 | 965 | 941 |
| 336 | Standard Static | 954 | 934 | 913 | 893 | 873 | 853 | 832 | 812 | 792 | 771 | 751 |
| | Medium Static | 1175 | 1155 | 1135 | 1114 | 1094 | 1074 | 1054 | 1034 | 1013 | 933 | 973 |
| | High Static | 1299 | 1271 | 1242 | 1214 | 1185 | 1157 | 1129 | 1100 | 1072 | 1043 | 1015 |

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

Factory settings

# Electrical data

## 2-STAGE COOLING WITH 2-SPEED INDOOR FAN MOTOR, RGS 210-336, 17.5-27.5 TONS

| MODEL | V-PH-HZ | VOLTAGE RANGE | | COMP 1 | | COMP 2 | | OFM (EA) | | IFM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MIN | MAX | RLA | LRA | RLA | LRA | WATTS | FLA | EFFICIENCY TYPE | EFF AT FULL LOAD | FLA |
| RGS 210 | 208-3-60 | 187 | 253 | 29.5 | 195 | 28.2 | 329 | 350 | 1.5 | STD | 87.0% | 10.6 |
| | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | HIGH | 89.5% | 17.1 |
| | 230-3-60 | 187 | 253 | 29.5 | 195 | 28.2 | 164 | 350 | 1.5 | STD | 87.0% | 10.6 |
| | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | HIGH | 89.5% | 17.1 |
| | 460-3-60 | 414 | 506 | 14.7 | 95 | 14.7 | 130 | 277 | 0.9 | STD | 87.0% | 5.3 |
| | | | | | | | | | | MED | 89.5% | 8.6 |
| | | | | | | | | | | HIGH | 89.5% | 8.6 |
| | 575-3-60 | 518 | 633 | 12.2 | 80 | 11.3 | 94 | 397 | 0.6 | STD | 81.1% | 2.8 |
| | | | | | | | | | | MED | 83.6% | 5.6 |
| | | | | | | | | | | HIGH | 89.5% | 7.6 |
| RGS 240 | 208-3-60 | 187 | 253 | 48.1 | 245 | 29.5 | 195 | 350 | 1.5 | STD | 83.6% | 13.6 |
| | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 230-3-60 | 187 | 253 | 48.1 | 245 | 29.5 | 195 | 350 | 1.5 | STD | 83.6% | 12.7 |
| | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 460-3-60 | 414 | 506 | 18.6 | 125 | 14.7 | 95 | 277 | 0.9 | STD | 83.6% | 6.4 |
| | | | | | | | | | | MED | 89.5% | 8.6 |
| | | | | | | | | | | HIGH | 91.7% | 14.3 |
| | 575-3-60 | 518 | 633 | 14.7 | 100 | 12.2 | 80 | 397 | 0.6 | STD | 83.6% | 6.2 |
| | | | | | | | | | | MED | 89.5% | 7.6 |
| | | | | | | | | | | HIGH | 91.7% | 9.5 |
| RGS 300 | 208-3-60 | 187 | 253 | 48.1 | 245 | 48.1 | 245 | 350 | 1.5 | STD | 83.6% | 13.6 |
| | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 230-3-60 | 187 | 253 | 48.1 | 245 | 48.1 | 245 | 350 | 1.5 | STD | 83.6% | 12.7 |
| | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 460-3-60 | 414 | 506 | 18.6 | 125 | 18.6 | 125 | 277 | 0.9 | STD | 83.6% | 6.4 |
| | | | | | | | | | | MED | 89.5% | 8.6 |
| | | | | | | | | | | HIGH | 91.7% | 14.3 |
| | 575-3-60 | 518 | 633 | 14.7 | 100 | 14.7 | 100 | 397 | 0.6 | STD | 83.6% | 6.2 |
| | | | | | | | | | | MED | 89.5% | 7.6 |
| | | | | | | | | | | HIGH | 91.7% | 9.5 |
| RGS 336 | 208-3-60 | 187 | 253 | 51.3 | 300 | 51.3 | 300 | 350 | 1.5 | STD | 89.5% | 17.1 |
| | | | | | | | | | | MED | 91.7% | 28.5 |
| | | | | | | | | | | HIGH | 91.7% | 30.4 |
| | 230-3-60 | 187 | 253 | 51.3 | 300 | 51.3 | 300 | 350 | 1.5 | STD | 89.5% | 17.1 |
| | | | | | | | | | | MED | 91.7% | 28.5 |
| | | | | | | | | | | HIGH | 91.7% | 30.4 |
| | 460-3-60 | 414 | 506 | 23.1 | 150 | 23.1 | 150 | 277 | 0.9 | STD | 89.5% | 8.6 |
| | | | | | | | | | | MED | 91.7% | 14.3 |
| | | | | | | | | | | HIGH | 91.7% | 15.2 |
| | 575-3-60 | 518 | 633 | 19.9 | 109 | 19.9 | 109 | 397 | 0.6 | STD | 89.5% | 7.6 |
| | | | | | | | | | | MED | 91.7% | 9.5 |
| | | | | | | | | | | HIGH | 91.7% | 12.4 |

See Legend and Notes on page 47.

# Electrical data (cont)

**UNIT WIRE/FUSE SIZING DATA WITH FACTORY-INSTALLED 2-SPEED INDOOR FAN OPTION, RGS 210-336**

| MODEL | NOM. V-PH-HZ | IFM TYPE | W/ PWRD C.O. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NO P.E. | | | | W/ P.E. (PWRD FR/ UNIT) | | | |
| | | | MCA | MAX FUSE | DISC. SIZE | | MCA | MAX FUSE | DISC. SIZE | |
| | | | | | FLA | LRA | | | FLA | LRA |
| RGS 210 | 208/230-3-60 | STD | 85.2/84.2 | 100/100 | 89/88 | 525 | 97.0/96.0 | 125/125 | 103/102 | 545 |
| | | MED | 88.0/87.1 | 100/100 | 93/92 | 536 | 99.8/98.9 | 125/125 | 106/105 | 556 |
| | | HIGH | 91.5 | 100 | 97 | 532 | 103.3 | 125 | 110 | 552 |
| | 460-3-60 | STD | 42.9 | 50 | 45 | 272 | 49.1 | 60 | 52 | 284 |
| | | MED | 44.4 | 50 | 47 | 277 | 50.6 | 60 | 54 | 589 |
| | | HIGH | 46.6 | 60 | 49 | 275 | 52.8 | 60 | 56 | 287 |
| | 575-3-60 | STD | 34.6 | 45 | 36 | 204 | 39.4 | 50 | 42 | 212 |
| | | MED | 36.3 | 45 | 38 | 218 | 41.1 | 50 | 44 | 226 |
| | | HIGH | 37.7 | 45 | 40 | 216 | 42.5 | 50 | 45 | 224 |
| RGS 240 | 208/230-3-60 | STD | 114.0/113.1 | 150/150 | 117/116 | 545 | 125.8/124.9 | 105/150 | 131/130 | 565 |
| | | MED | 117.5 | 150 | 121 | 541 | 129.3 | 175 | 135 | 561 |
| | | HIGH | 128.9 | 175 | 134 | 620 | 140.7 | 175 | 148 | 640 |
| | 460-3-60 | STD | 50.2 | 60 | 52 | 274 | 56.4 | 70 | 59 | 286 |
| | | MED | 52.4 | 60 | 55 | 272 | 58.6 | 70 | 62 | 284 |
| | | HIGH | 58.1 | 70 | 61 | 312 | 64.3 | 80 | 69 | 324 |
| | 575-3-60 | STD | 40.9 | 50 | 43 | 226 | 45.7 | 60 | 48 | 234 |
| | | MED | 42.3 | 50 | 44 | 224 | 47.1 | 60 | 50 | 232 |
| | | HIGH | 44.2 | 50 | 47 | 251 | 49.0 | 60 | 52 | 259 |
| RGS 300 | 208/230-3-60 | STD | 132.6/131.7 | 175/175 | 139/138 | 595 | 144.4/143.5 | 175/175 | 152/151 | 615 |
| | | MED | 136.1 | 175 | 143 | 591 | 147.9 | 175 | 156 | 611 |
| | | HIGH | 147.5 | 175 | 156 | 670 | 159.3 | 200 | 169 | 690 |
| | 460-3-60 | STD | 54.1 | 60 | 57 | 304 | 60.3 | 70 | 64 | 316 |
| | | MED | 56.3 | 70 | 59 | 302 | 62.5 | 80 | 66 | 314 |
| | | HIGH | 62.0 | 80 | 66 | 342 | 68.2 | 80 | 73 | 354 |
| | 575-3-60 | STD | 43.4 | 50 | 46 | 246 | 48.2 | 60 | 51 | 254 |
| | | MED | 44.8 | 50 | 47 | 244 | 49.6 | 60 | 53 | 252 |
| | | HIGH | 46.7 | 60 | 49 | 271 | 51.5 | 60 | 55 | 279 |
| RGS 336 | 208/230-3-60 | STD | 146.3 | 175 | 154 | 707 | 158.1 | 200 | 167 | 727 |
| | | MED | 157.7 | 200 | 167 | 786 | 169.5 | 200 | 180 | 806 |
| | | HIGH | 159.6 | 200 | 169 | 817 | 171.4 | 200 | 182 | 837 |
| | 460-3-60 | STD | 68.2 | 90 | 72 | 358 | 74.4 | 90 | 79 | 368 |
| | | MED | 73.9 | 90 | 78 | 396 | 80.1 | 100 | 85 | 408 |
| | | HIGH | 74.8 | 90 | 79 | 411 | 81.0 | 100 | 86 | 423 |
| | 575-3-60 | STD | 57.7 | 70 | 61 | 266 | 62.5 | 80 | 66 | 274 |
| | | MED | 59.6 | 70 | 63 | 293 | 64.4 | 80 | 68 | 301 |
| | | HIGH | 62.5 | 80 | 66 | 304 | 67.3 | 80 | 72 | 312 |

See Legend and Notes on page 47.

# Electrical data (cont)

### 2-STAGE COOLING WITH TWO-SPEED INDOOR FAN MOTOR, RGS 210-336 (17.5-27.5 TONS) — HIGH SCCR

| RGS MODEL | V-PH-HZ | VOLTAGE RANGE | | HIGH SCCR kA | COMP 1 | | COMP 2 | | OFM (EA) | | IFM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MIN | MAX | | RLA | LRA | RLA | LRA | WATTS | FLA | TYPE* | EFF AT FULL LOAD | FLA |
| 210 | 208-3-60 | 253 | 187 | 60 | 29.5 | 195 | 28.2 | 239 | 350 | 1.5 | STD | 81.5% | 10.8 |
| | | | | | | | | | | | MED | 83.6% | 13.6 |
| | | | | | | | | | | | HIGH | 89.5% | 17.1 |
| | 230-3-60 | 253 | 187 | 60 | 29.5 | 195 | 28.2 | 239 | 350 | 1.5 | STD | 81.5% | 9.8 |
| | | | | | | | | | | | MED | 83.6% | 12.7 |
| | | | | | | | | | | | HIGH | 89.5% | 17.1 |
| | 460-3-60 | 506 | 414 | 65 | 14.7 | 95 | 14.7 | 130 | 277 | 0.9 | STD | 81.5% | 4.9 |
| | | | | | | | | | | | MED | 83.6% | 6.4 |
| | | | | | | | | | | | HIGH | 89.5% | 8.6 |
| 240 | 208-3-60 | 253 | 187 | 60 | 48.1 | 245 | 29.5 | 195 | 350 | 1.5 | STD | 83.6% | 13.6 |
| | | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 230-3-60 | 253 | 187 | 60 | 48.1 | 245 | 29.5 | 195 | 350 | 1.5 | STD | 83.6% | 12.7 |
| | | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 460-3-60 | 506 | 414 | 65 | 18.6 | 125 | 14.7 | 95 | 277 | 0.9 | STD | 83.6% | 6.4 |
| | | | | | | | | | | | MED | 89.5% | 8.6 |
| | | | | | | | | | | | HIGH | 91.7% | 14.3 |
| 300 | 208-3-60 | 253 | 187 | 60 | 48.1 | 245 | 48.1 | 245 | 350 | 1.5 | STD | 83.6% | 13.6 |
| | | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 230-3-60 | 253 | 187 | 60 | 48.1 | 245 | 48.1 | 245 | 350 | 1.5 | STD | 83.6% | 12.7 |
| | | | | | | | | | | | MED | 89.5% | 17.1 |
| | | | | | | | | | | | HIGH | 91.7% | 28.5 |
| | 460-3-60 | 506 | 414 | 65 | 18.6 | 125 | 18.6 | 125 | 277 | 0.9 | STD | 83.6% | 6.4 |
| | | | | | | | | | | | MED | 89.5% | 8.6 |
| | | | | | | | | | | | HIGH | 91.7% | 14.3 |
| 336 | 208-3-60 | 253 | 187 | 60 | 51.3 | 300 | 51.3 | 300 | 350 | 1.5 | STD | 89.5% | 17.1 |
| | | | | | | | | | | | MED | 91.7% | 28.5 |
| | | | | | | | | | | | HIGH | 91.7% | 30.4 |
| | 230-3-60 | 253 | 187 | 60 | 51.3 | 300 | 51.3 | 300 | 350 | 1.5 | STD | 89.5% | 17.1 |
| | | | | | | | | | | | MED | 91.7% | 28.5 |
| | | | | | | | | | | | HIGH | 91.7% | 30.4 |
| | 460-3-60 | 506 | 414 | 65 | 23.1 | 150 | 23.1 | 150 | 277 | 0.9 | STD | 89.5% | 8.6 |
| | | | | | | | | | | | MED | 91.7% | 14.3 |
| | | | | | | | | | | | HIGH | 91.7% | 15.2 |

See Legend and Notes on page 47.

NOTE: High SCCR is not available for units with 575v.

# Electrical data (cont)

**UNIT WIRE/FUSE SIZING DATA, TWO-SPEED INDOOR FAN MOTOR, RGS 210-336 (17.5-27.5 TONS) — HIGH SCCR**

| RGS MODEL | NOM. V-PH-HZ | IFM TYPE | HIGH SCCR kA | NO C.O. OR UNPWR C.O. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | NO P.E. | | | | W/ P.E. (PWRD FR/ UNIT) | | | |
| | | | | MCA | FUSE | DISC. SIZE | | MCA | FUSE | DISC. SIZE | |
| | | | | | | FLA | LRA | | | FLA | LRA |
| 210 | 208/230-3-60 | STD | 60 | 80.4/79.4 | 100/100 | 84/83 | 520 | 92.2/91.2 | 100/100 | 98/96 | 540 |
| | | MED | | 83.2/82.3 | 100/100 | 87/86 | 531 | 95.0/94.1 | 110/110 | 101/100 | 551 |
| | | HIGH | | 86.7 | 100 | 91 | 527 | 98.5 | 125 | 105 | 547 |
| | 460-3-60 | STD | 65 | 40.7 | 50 | 43 | 270 | 46.9 | 60 | 50 | 282 |
| | | MED | | 42.2 | 50 | 44 | 275 | 48.4 | 60 | 51 | 287 |
| | | HIGH | | 44.4 | 50 | 47 | 273 | 50.6 | 60 | 54 | 285 |
| 240 | 208/230-3-60 | STD | 60 | 109.2/108.3 | 150/150 | 112/111 | 540 | 121.0/120.1 | 150/150 | 125/124 | 560 |
| | | MED | | 112.7 | 150 | 116 | 536 | 124.5 | 150 | 129 | 556 |
| | | HIGH | | 124.1 | 150 | 129 | 615 | 135.9 | 175 | 142 | 635 |
| | 460-3-60 | STD | 65 | 48.0 | 60 | 50 | 272 | 54.2 | 60 | 57 | 284 |
| | | MED | | 50.2 | 60 | 52 | 270 | 56.4 | 70 | 59 | 282 |
| | | HIGH | | 55.9 | 70 | 59 | 310 | 62.1 | 80 | 66 | 322 |
| 300 | 208/230-3-60 | STD | 60 | 127.8/126.9 | 175/175 | 133/132 | 590 | 139.6/138.7 | 175/175 | 147/146 | 610 |
| | | MED | | 131.3 | 175 | 137 | 586 | 143.1 | 175 | 151 | 606 |
| | | HIGH | | 142.7 | 175 | 150 | 665 | 154.5 | 200 | 164 | 685 |
| | 460-3-60 | STD | 65 | 51.9 | 60 | 54 | 302 | 58.1 | 70 | 61 | 314 |
| | | MED | | 54.1 | 60 | 57 | 300 | 60.3 | 70 | 64 | 312 |
| | | HIGH | | 59.8 | 70 | 63 | 340 | 66.0 | 80 | 70 | 352 |
| 336 | 208/230-3-60 | STD | 60 | 141.5 | 175 | 148 | 702 | 153.3 | 200 | 162 | 722 |
| | | MED | | 152.9 | 200 | 161 | 781 | 164.7 | 200 | 175 | 801 |
| | | HIGH | | 154.8 | 200 | 163 | 812 | 166.6 | 200 | 177 | 832 |
| | 460-3-60 | STD | 65 | 66.0 | 80 | 69 | 354 | 72.2 | 90 | 76 | 366 |
| | | MED | | 71.7 | 90 | 76 | 394 | 77.9 | 100 | 83 | 406 |
| | | HIGH | | 72.6 | 90 | 77 | 409 | 78.8 | 100 | 84 | 421 |

See Legend and Notes on page 47.

NOTE: High SCCR is not available for units with 575v.

# Electrical data (cont)

## LEGEND AND NOTES

### Applicable for Electrical Data Tables on pages 43-46

LEGEND

| | | |
|---|---|---|
| **BRKR** | — | Circuit breaker |
| **C.O.** | — | Convenience outlet |
| **DISC** | — | Disconnect |
| **EFF** | — | Efficiency |
| **FLA** | — | Full load amps |
| **LRA** | — | Locked rotor amps |
| **MCA** | — | Minimum circuit amps |
| **P.E.** | — | Power exhaust |
| **Pwrd fr/unit** | — | Powered from unit |
| **PWRD C.O.** | — | Powered convenience outlet |
| **RLA** | — | Rated load amps |
| **SCCR** | — | Short Circuit Current Rating |
| **UNPWR C.O.** | — | Un-powered 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. Canadian units may be fuse or circuit breaker.
2. For 208/230 v units, where one value is shown it is the same for either 208 or 230 volts.
3. 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


AB = 224 v
BC = 231 v
AC = 226 v

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

Determine maximum deviation from average voltage.

(AB) 227-224 = 3 v

(BC) 231-227 = 4 v

(AC) 227-226 = 1 v

Maximum deviation is 4 v.

Determine percent of voltage imbalance.

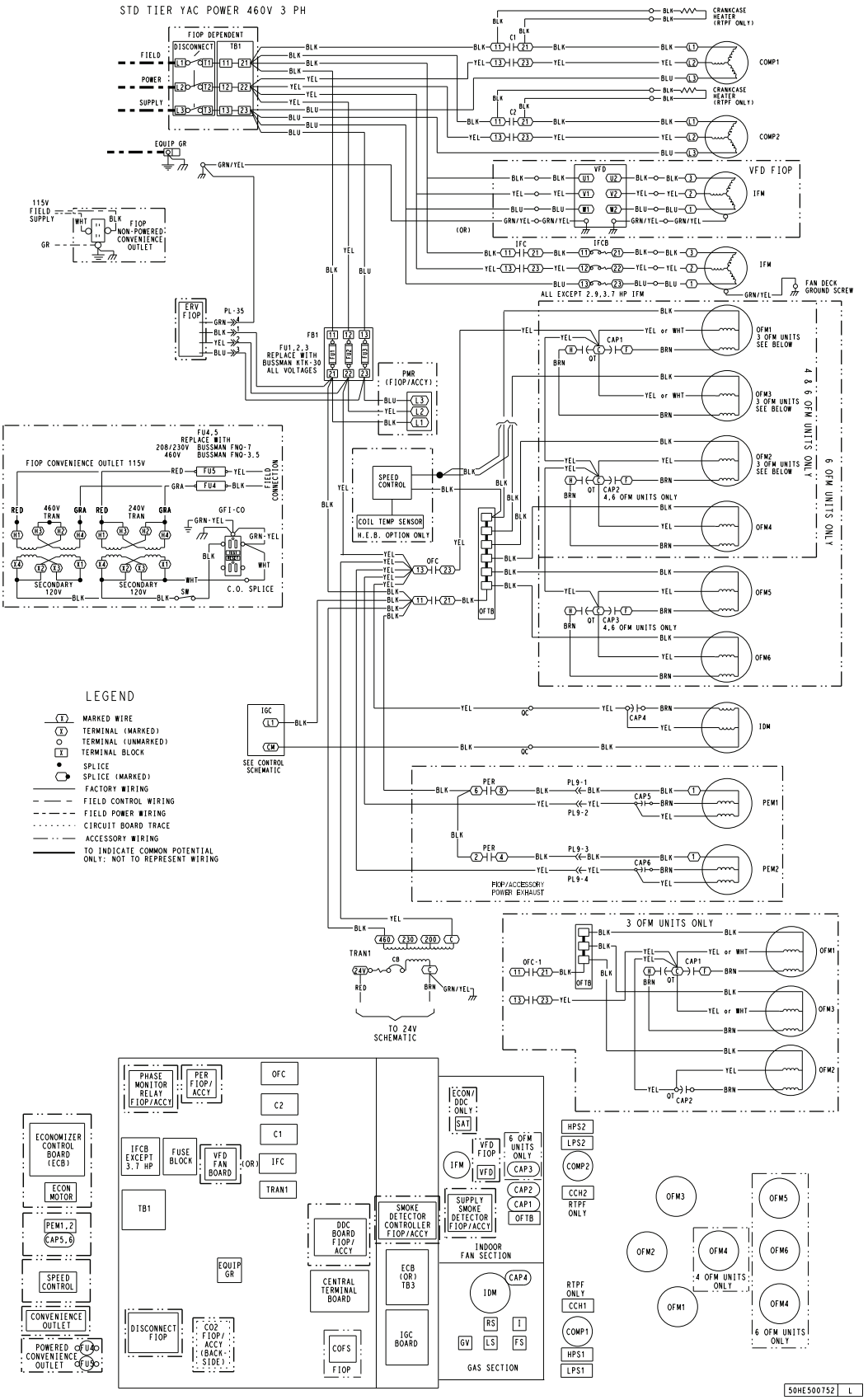
$$\text{\% Voltage Imbalance} = 100x \frac{4}{227} = 1.78\%$$

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.

# Typical wiring diagrams

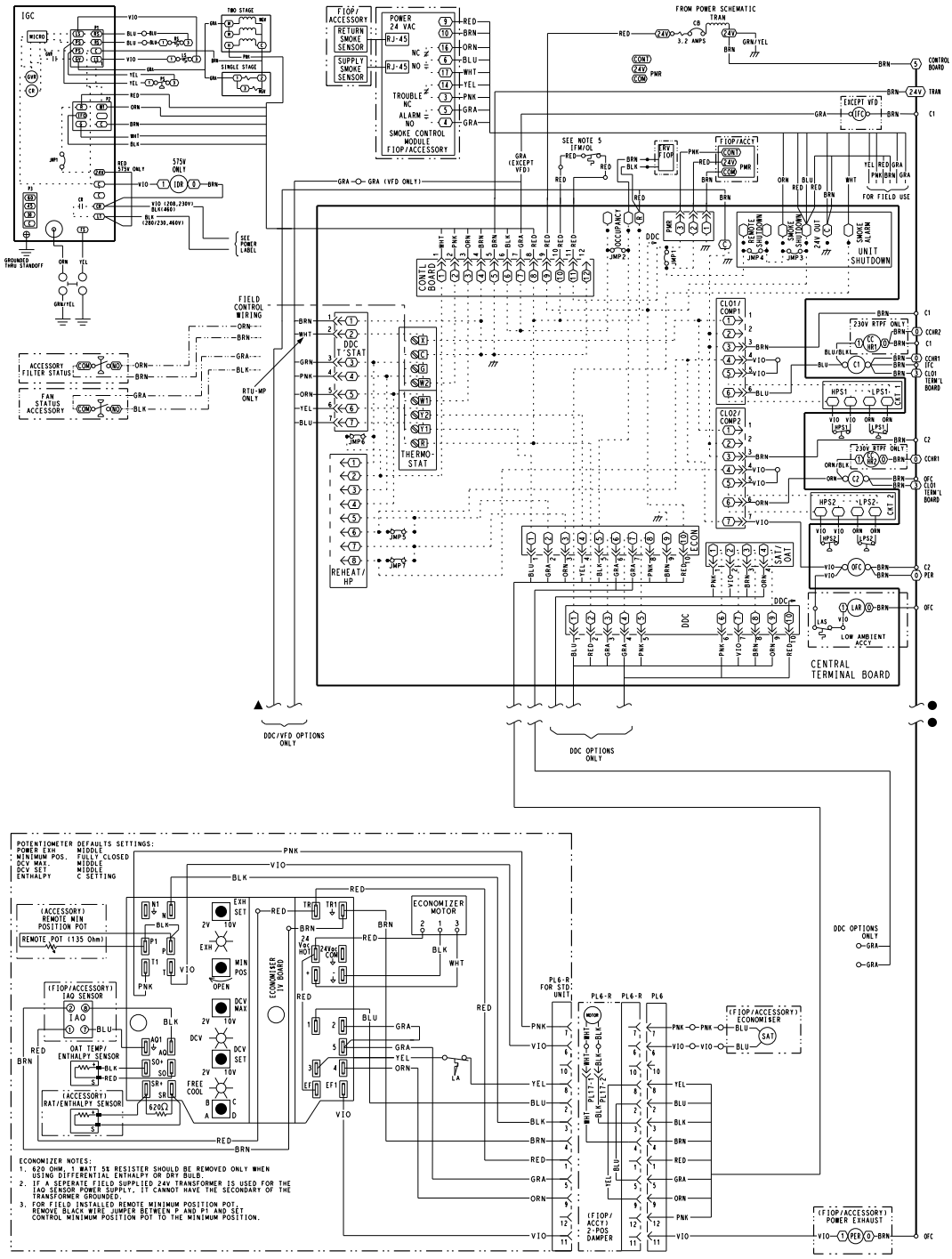
## TYPICAL POWER WIRING DIAGRAM, RGS 210-336 460V SHOWN



# Typical wiring diagrams (cont)

## ELECTRO-MECHANICAL CONTROL WIRING DIAGRAM RGS 210-336

STD TIER YAC CONTROL 208/230V,460V,575V




NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 90 C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED. THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
3. 208/230V UNIT TRAN IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.
4. USE COPPER CONDUCTOR ONLY.
5. IFM OL IS NOT USED ON ALL MODELS. WHEN NOT USED, RED LEADS ARE CONNECTED TOGETHER.

| | |
|---|---|
| C | CONTACTOR,COMPRESSOR |
| CAP | CAPACITOR |
| CB | CIRCUIT BREAKER |
| CCH | CRANKCASE HEATER |
| CCHR | CRANKCASE HEATER RELAY |
| CCN | CARRIER COMFORT NETWORK |
| CMP SAFE | COMPRESSOR SAFFETY |
| COFS | CONDENSATE OVERFLOW SWITCH |
| COMP | COMPRESSOR MOTOR |
| CTB | CENTRAL TERMINAL BOARD |
| DDC | DIRECT DIGITAL CONTROL |
| ERV | ENERGY RECOVERY VENTILATOR |
| FIOP | FACTORY INSTALLED OPTION |
| FSD | FIRE SHUT DOWN |
| FU | FUSE |
| GND | GROUND |
| GVR | GAS VALVE RELAY |
| HPS | HIGH PRESSURE SWITCH |
| HS | HALL EFFECT SENSOR |
| I | IGNITOR |
| IAQ | INDOOR AIR QUALITY SENSORS |
| IDM | INDUCED DRAFT MOTOR |
| IDR | INDUCED DRAFT RELAY |
| IFC | INDOOR FAN CONTACTOR |
| IFM | INDOOR FAN MOTOR |
| IGC | INTEGRATED GAS CONTROL |
| IRH | INDOOR RELATIVE HUMIDITY |
| LA | LOW AMBIENT LOCKOUT |
| LAR | LOW AMBIENT RELAY |
| LAS | LOW AMBIENT SWITCH |
| LOOP PWR | CURRENT LOOP POWER |
| LPS | LOW PRESSURE SWITCH |
| LSM | LIMIT SWITCH (MANUAL RESET) |
| MGV | MAIN GAS VALVE |
| OAQ | OUTDOOR AIR QUALITY |
| OAT | OUTDOOR AIR TEMP. SEN |
| OFC | OUTDOOR FAN CONTACTOR |
| OFM | OUTDOOR FAN MOTOR |
| OFTB | OUTDOOR FAN TERMINAL BLOCK |
| OLR | OVERLOAD RELAY |
| PER | POWER EXHAUST RELAY |
| PL | PLUG ASSEMBLY |
| POT | POTENTIOMETER |
| PMR | PHASE MONITOR RELAY |
| QT | QUADRUPLE TERMINAL |
| R | RELAY |
| RAT | RETURN AIR TEMP. SEN |
| RMT OCC | REMOTE OCCUPANCY |
| RS | ROLLOUT SWITCH |
| RTPF | ROUND TUBE PLATE FIN CONDENSER COIL |
| SAT | SUPPLY AIR TEMP. SENSOR |
| SEN | SENSOR |
| SET | SET POINT OFFSET |
| SFS | SUPPLY FAN STATUS |
| TDR | TIME DELAY RELAY |
| TRAN | TRANSFORMER |
| VFD | VARIABLE FREQUENCY DRIVE |

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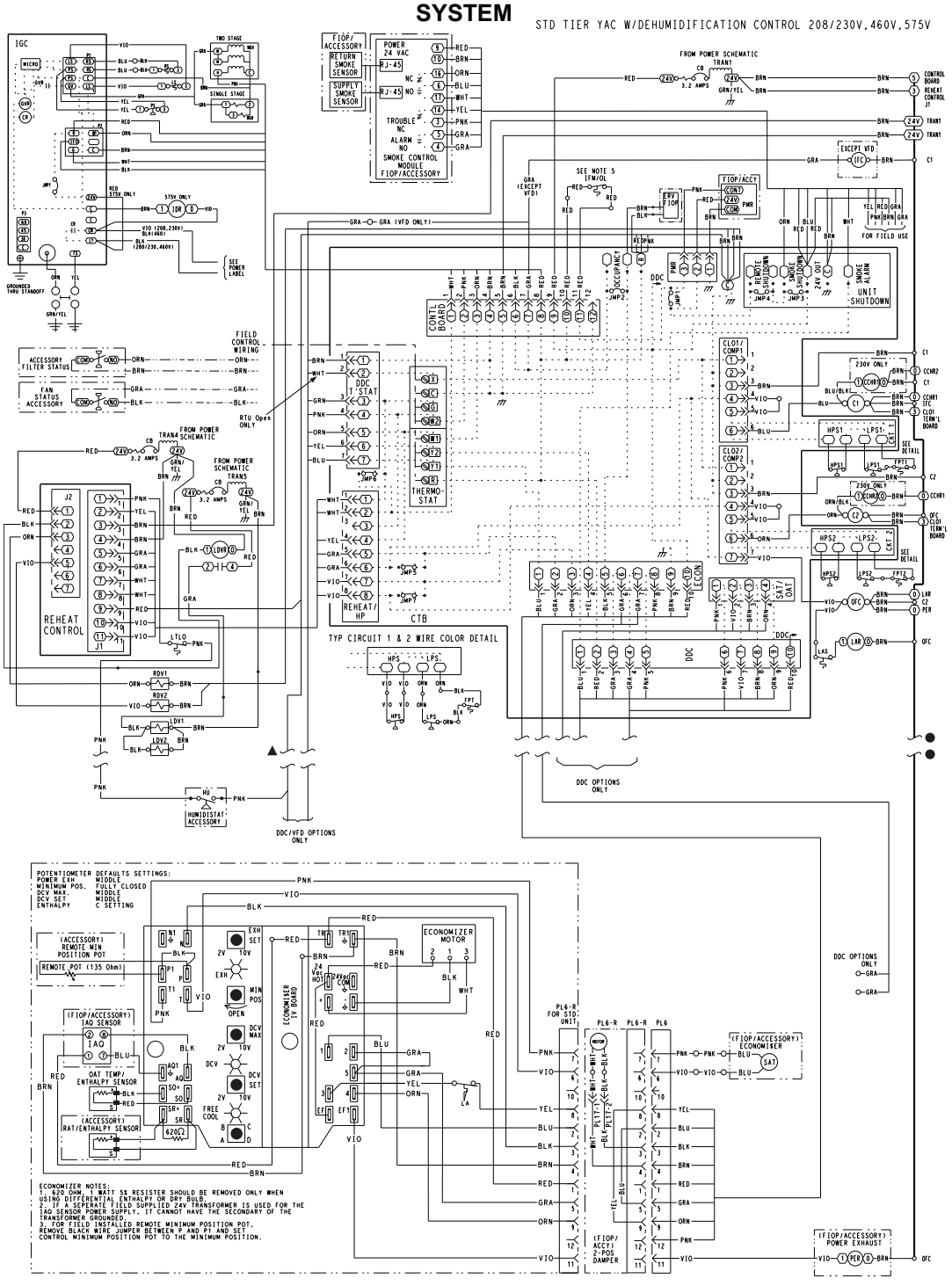
# Typical wiring diagrams (cont)

## ELECTRO-MECHANICAL CONTROL WIRING DIAGRAM RGS 210-336 WITH OPTIONAL HOT GAS RE-HEAT SYSTEM




NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 90 C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED. THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
3. 208/230V UNIT TRAN IS WIRED FOR 230V UNIT. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 200V TAP.
4. USE COPPER CONDUCTOR ONLY.
5. IFM OL IS NOT USED ON ALL MODELS. WHEN NOT USED, RED LEADS ARE CONNECTED TOGETHER.

| | |
|---|---|
| C | CONTACTOR,COMPRESSOR |
| CAP | CAPACITOR |
| CB | CIRCUIT BREAKER |
| CCH | CRANKCASE HEATER |
| CCHR | CRANKCASE HEATER RELAY |
| CCN | CARRIER COMFORT NETWORK |
| CMP SAFE | COMPRESSOR SAFFETY |
| COFS | CONDENSATE OVERFLOW SWITCH |
| COMP | COMPRESSOR MOTOR |
| CTB | CENTRAL TERMINAL BOARD |
| DDC | DIRECT DIGITAL CONTROL |
| ERV | ENERGY RECOVERY VENTILATOR |
| FIOP | FACTORY INSTALLED OPTION |
| FPT | FREEZE PROTECTION THERMOSTAT |
| FSD | FIRE SHUT DOWN |
| FU | FUSE |
| GND | GROUND |
| GVR | GAS VALVE RELAY |
| HPS | HIGH PRESSURE SWITCH |
| HS | HALL EFFECT SENSOR |
| HU | HUMIDISTAT |
| I | IGNITOR |
| IAQ | INDOOR AIR QUALITY SENSORS |
| IDM | INDUCED DRAFT MOTOR |
| IDR | INDUCED DRAFT RELAY |
| IFC | INDOOR FAN CONTACTOR |
| IFM | INDOOR FAN MOTOR |
| IGC | INTEGRATED GAS CONTROL |
| IRH | INDOOR RELATIVE HUMIDITY |
| LA | LOW AMBIENT LOCKOUT |
| LAR | LOW AMBIENT RELAY |
| LAS | LOW AMBIENT SWITCH |
| LDV | LIQUID DIVERTER VALVE (3-WAY) |
| LDVR | LIQUID DIVERTER VALVE RELAY |
| LOOP PWR | CURRENT LOOP POWER |
| LPS | LOW PRESSURE SWITCH |
| LSM | LIMIT SWITCH (MANUAL RESET) |
| LTLO | LOW TEMPERATURE LOCK OUT |
| MGV | MAIN GAS VALVE |
| OAQ | OUTDOOR AIR QUALITY |
| OAT | OUTDOOR AIR TEMP. SEN |
| OFC | OUTDOOR FAN CONTACTOR |
| OFM | OUTDOOR FAN MOTOR |
| OFTB | OUTDOOR FAN TERMINAL BLOCK |
| OLR | OVERLOAD RELAY |
| PER | POWER EXHAUST RELAY |
| PL | PLUG ASSEMBLY |
| POT | POTENTIOMETER |
| PMR | PHASE MONITOR RELAY |
| QT | QUADRUPLE TERMINAL |
| R | RELAY |
| RAT | RETURN AIR TEMP. SEN |
| RDV | REHEAT DISCHARGE VALVE |
| RMT OCC | REMOTE OCCUPANCY |
| RS | ROLLOUT SWITCH |
| RTPF | ROUND TUBE PLATE FIN CONDENSER COIL |
| SAT | SUPPLY AIR TEMP. SENSOR |
| SEN | SENSOR |
| SET | SET POINT OFFSET |
| SFS | SUPPLY FAN STATUS |
| TDR | TIME DELAY RELAY |
| TRAN | TRANSFORMER |
| VFD | VARIABLE FREQUENCY DRIVE |

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# Sequence of operation

The sequence below describes the sequence of operation for an electro-mechanical unit with and without a factory-installed EconoMi$er X (called “economizer” in this sequence).

### Electro-mechanical units with no economizer

### Cooling

Per ASHRAE 90.1-2016, and IECC-2015 standards, during the first stage of cooling operation the VFD 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 VFD will allow the total CFM for the unit established (100%). This is standard on all models installed in the U.S. to meet U.S. Department of Energy - 2018 IEER efficiency rating.

### Heating

RGS units have 2 stages of gas heat. 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 roll-out 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 flue gas pressure switch, 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 roll-out switch, the limit switches, the flue gas pressure switch, as well as the flame sensor. Forty-five 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 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 will be energized and de-energized, if installed, as the outdoor-air damper opens and closes.

If field-installed accessory $CO_2$ sensors are connected to the EconoMi$er X control, a demand controlled ventilation strategy will begin to operate. As the $CO_2$ level in the zone increases above the $CO_2$ setpoint, the minimum position of the damper will be increased proportionally. As the $CO_2$ level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed. For EconoMi$er 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$er X control is in the occupied mode and a call for cooling exists (Y1 on the thermostat), the control will first check for indoor fan operation. If the fan is not on, then cooling will not be activated. If the fan is on, then the control will open the EconoMi$er and damper to the minimum position.

On the initial power to the EconoMi$er 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, then cooling second stage - Y2 is energized, and then the control will bring on compressor stage 1 to maintain the mixed-air temperature setpoint. The EconoMi$er X damper will be open at maximum position. EconoMi$er X operation is limited to a single compressor.

# Sequence of operation (cont)

2-Speed Note: When operating in ventilation mode only, the indoor fan motor will automatically adjust to 66% 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 option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle. The Hot Gas Re-Heat option includes additional valves in the liquid line and discharge line of each refrigerant circuit, a small re-heat 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.

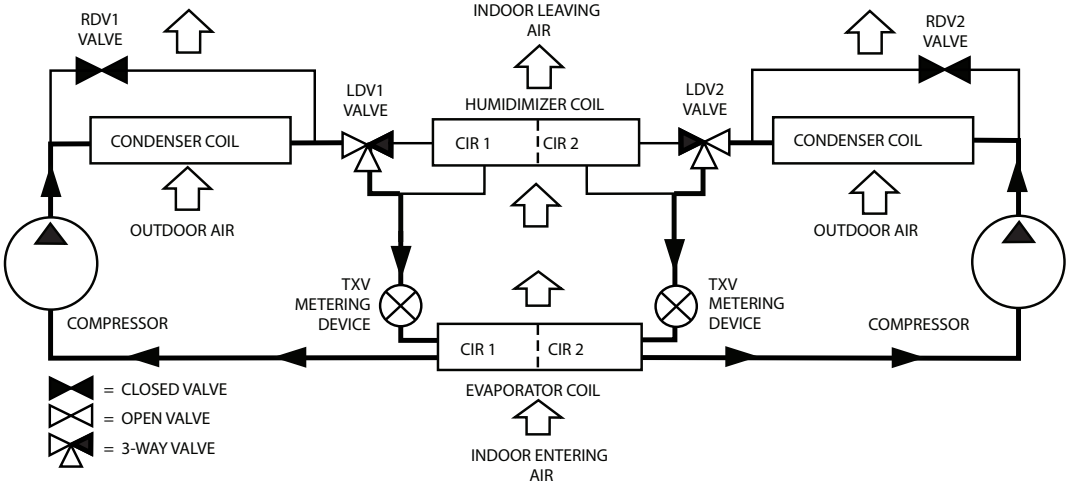
The Hot Gas Re-Heat system provides three sub-modes of operation: Cool, Reheat1, and Reheat2.

- 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.

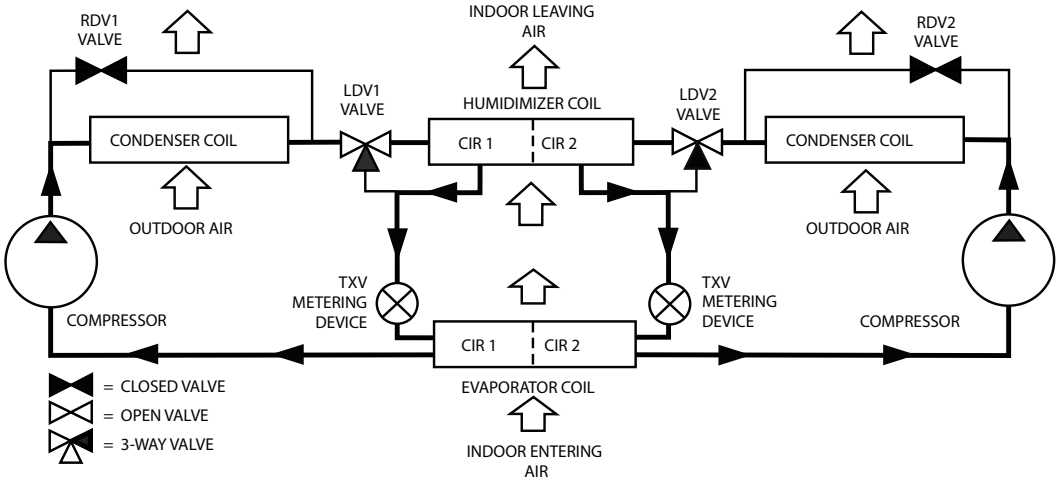
The Reheat1 and Reheat2 modes are a variable when the unit is not in a Heating mode and when the Low Ambient Lockout switch is closed.

# Sequence of operation (cont)

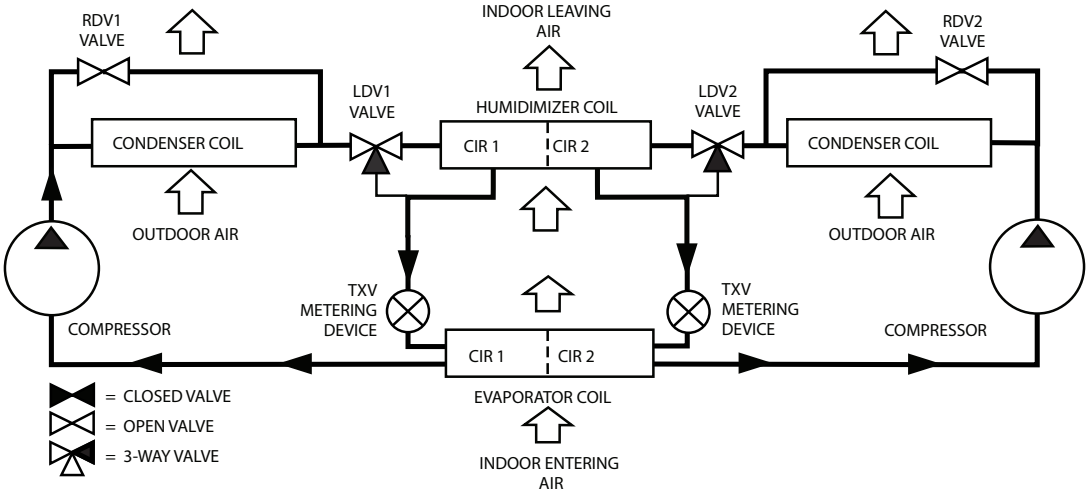
## NORMAL COOLING MODE — HOT GAS RE-HEAT SYSTEM




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




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



# Application data

### Min operating ambient temp (cooling)

In mechanical cooling mode, your rooftop unit can safely operate down to an outdoor ambient temperature of 30°F (–1°C). 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:

- Aluminized
- 50°F (10°C) continuous
- 45°F (7°C) intermittent
- Stainless Steel
- 40°F (4°C) continuous
- 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 one of our local representatives 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. For proper minimum and maximum CFM values see Minimum - Maximum Airflow Ratings - Natural Gas and Propane table 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 one of our local representatives for assistance.

### Motor limits, break horsepower (BHP)

Due to internal design of our 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 our 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, we sells different burner orifices in an easy to install accessory kit. To select the correct burner orifices or determine the heat capacity for an 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/ft$^3$ 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) 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 one of our local representatives 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 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.

### 2-Speed Indoor Fan Motor System with variable frequency drive (VFD)

Our 2-Speed Indoor Fan Motor System utilizes a Variable Frequency Drive (VFD) to automatically adjust 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 VFD 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 VFD will allow the total CFM for the unit established (100%). During the heating mode, the VFD will allow total design CFM (100%) operation and during the ventilation mode the VFD will allow operation to 66% of total CFM.

The VFD used in our 2-Speed Indoor Fan Motor System has soft start capabilities to slowly ramp up the 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 of the VFD.

This 2-Speed Indoor Fan Motor System is available on models with 2-stage cooling operation with electromechanical controls. Both space sensor and conventional thermostats controls can be used to provide accurate control in any application.

The 2-Speed Indoor Fan Motor System is very flexible for initial fan performance set up and adjustment. The standard factory shipped VFD is pre-programmed to automatically stage the fan speed between the first and second stage of cooling. The unit fan performance static pressure and CFM can be easily adjusted using the traditional means of pulley adjustments. The other means to adjust the unit static and CFM performance is to utilize the field-installed display module and adjust the frequency and voltage in the VFD to required performance requirements. In either case, once set up the VFD will automatically adjust the speed between the cooling stage operation.

### Equipment selection program

Our equipment selection program saves time by performing many of the steps above. Contact one of our sales representatives for assistance.

# 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: **15, 17.5, 20, 25, 27.5 Nominal Tons**

Model Number: **RGS 210-336**

### 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 1-1/2-lb 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 12) Instrumentation and control devices for HVAC

3.01 (23 09 12.13) Sensors and Transmitters

A. (23 09 12.13.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, 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 33.13.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.
4. 4-in. filter capabilities shall be capable with pre-engineered and approved filter track field-installed accessory. This kit requires field furnished filters.

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

7.01 (23 81 19.13) Medium-Capacity Self-Contained Air Conditioners

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 start-up.
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 Standard 340/360.
3. Unit shall be designed to conform to ASHRAE 15.
4. Unit shall be ETL-tested and certified in accordance with ANSI Z21.47 Standards and ETL-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 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.
7. Unit casing shall be capable of withstanding 500 hour salt spray exposure per ASTM B117 (scribed specimen).
8. Roof curb shall be designed to conform to NRCA Standards.
9. 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.
10. Unit shall be designed in accordance with UL Standard 1995, ETL listed including tested to withstand rain.
11. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.
12. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.

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 30°F (–1°C), ambient outdoor temperatures. Accessory winter start kit is necessary if mechanically cooling at ambient temperatures below 30°F (–1°C).
3. Unit shall discharge supply air vertically as shown on contract drawings.
4. Unit shall be factory configured and ordered for vertical supply and return configurations.
5. Unit shall be factory furnished for vertical configuration. No field conversion is required.

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 ASTM D523, 60°F / 16°C): 60, Hardness: H to 2H Pencil hardness.
3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standard 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. 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.
5. Base of unit shall have a minimum of four locations for thru-the-base gas and electrical connections standard. Both gas and electric connections shall be internal to the cabinet to protect from environmental issues.
6. 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.
7. 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.-14 NPT drain connection, through the side of the drain pan. Connection shall be made per manufacturer’s recommendations.
8. Top panel:
   a. Shall be a multi-piece top panel linked with water tight flanges and locking systems.
9. Gas connections:
   a. All gas piping connecting to unit gas valve shall enter the unit cabinet at a single location on side of unit (vertical 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.
10. 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) No basepan penetration, other than those authorized by the manufacturer, is permitted.
11. Component access panels (standard):
    a. Cabinet panels shall be easily removable for servicing.
    b. Unit shall have one factory-installed, removable, 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 engauge 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 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 (vertical 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.

l. (23 81 19.13.l.) 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.
   d. Corrosion durability of fin stock shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.
   e. Corrosion durability of fin stock shall be confirmed through testing to have no visible corrosion after a 48-hour immersion in a room temperature solution of 5% salt, 1% acetic acid.
   f. Fin stock coating shall pass 2000 hours of the following: one week exposure in the prohesion chamber followed by one week of accelerated ultraviolet light testing. Prohesion chamber: the solution shall contain 3.5% sodium chloride and 0.35% ammonium sulfate. The exposure cycle is one hour of salt fog application at ambient followed by one hour drying at 95°F (35°C).
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.

# Guide specifications (cont)

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. Fixed orifice metering system (on non-Hot Gas Re-Heat units) provides correct distribution of two-phase refrigerant by including multiple fixed orifice devices in each refrigeration circuit. Each orifice is to be optimized to the coil circuit it serves.

b. Thermostatic Expansion Valve (TXV) shall help provide optimum performance across the entire operating range. Shall contain removable power element to allow change out of power element and bulb without removing the valve body.

c. Refrigerant filter drier - Solid core design.

d. Service gauge connections on suction and discharge lines.

e. Pressure gauge access through a specially designed access screen on the side of the unit.

2. Compressors:

a. Unit shall use fully hermetic, scroll compressor for each independent refrigeration circuit.

b. Models shall be available with 2 compressor/ 2-stage cooling.

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 provided by the factory.

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.

6. 4-in. filter capability is possible with a field-installed pre-engineered slide out filter track accessory. 4-in. filters are field furnished.

L. (23 81 19.13.L.) Evaporator fan and motor:

1. Evaporator fan motor:

a. Shall have inherent automatic-reset thermal overload protection or circuit breaker.

b. 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 and belt break protection system.

b. Shall use rigid pillow block bearing system with lubricant fittings at accessible bearing or lubrication line.

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 fans and 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.

2. Condenser fans:

a. Shall be a direct-driven propeller type fan.

b. Shall have aluminum blades riveted to steel spiders that have corrosion resistant properties and shall be dynamically balanced.

# Guide specifications (cont)

N. (23 81 19.13.N.) Special features options and accessories:

1. Integrated EconoMi$er® X low leak rate models. (Factory or field-installed):
   a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical return configuration shall be available.
   c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
   d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
   e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
   f. Low leak rate models shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.
   g. Economizer controller on EconoMi$er 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 multi-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 and IECC-2015 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 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.
   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 to 10 Vdc $CO_2$ 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.
2. Integrated EconoMi$er X Ultra Low Leak rate models. (Factory or field-installed):
   a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical return configuration shall be available.
   c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
   d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
   e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
   f. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE 90.1-2016 and IECC-2015 requirements of 4 CFM per sq ft on the outside air dampers and 10 CFM per sq ft on the return dampers.
   g. Economizer controller on EconoMi$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

# Guide specifications (cont)

when the economizer is not operating properly, per California Title 24 Fault Detection and Diagnostic (FDD) requirements.
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 and IECC-2015 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 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.
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 to 10 Vdc $CO_2$ 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.

3. Hot Gas Re-Heat dehumidification system (not available on 336 models):
   a. The Hot Gas Re-Heat Dehumidification System shall be factory-installed in RGS 210-336 models with RTPF (round tube plate-fin) condenser coils, and shall provide greater dehumidification of the occupied space by two modes of dehumidification operations besides 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 re-heat 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 for low ambient operation.
4. 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).
5. 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. Kits shall be available for elevations from 0 up to 14,000 ft (4,267m).
6. Condenser coil hail guard assembly:
   a. Shall protect against damage from hail.
   b. Shall be louvered style design.
7. Unit-mounted, non-fused disconnect switch:
   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.

# Guide specifications (cont)

8. 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 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.
      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.
9. 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.
10. Centrifugal propeller power exhaust:
   a. Power exhaust shall be used in conjunction with an integrated economizer.
   b. Independent modules for vertical return configurations shall be available.
   c. 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.
11. 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.
12. 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 3,000 to 10,000 ft (914 to 3048 m) elevation and 10,001 to 14,000 ft (3049 to 4267 m) elevation.
13. 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.
14. 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.
15. Indoor air quality ($CO_2$) 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.
16. Smoke detectors:
   a. Shall be a four-wire controller and detector.
   b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.

# Guide specifications (cont)

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.

17. 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.
18. 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).
19. Time guard:
    a. Shall prevent compressor short cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shutdown for any reason.
    b. One device shall be required per compressor.
20. Display kit for variable frequency drive (VFD):
    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 VFD controller as needed.
21. 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.
22. High Short Circuit Current Rating (SCCR):
    a. An optional SCCR of 65kA shall be provided for 460 volt and 60kA for 208/230 volt units.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