

TECHNICAL GUIDE

Water Source Heat Pumps



BY JOHNSON CONTROLS

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INTRODUCTION

Performance and dependability in a no-nonsense heat pump.

The R-Series units by YORK are completely self-contained heat pumps. This equipment employs a water-to-refrigerant heat exchanger to extract (heating cycle) or reject (cooling cycle) heat from/to a circulating water-loop.

The high-quality feature set delivers robust construction and reliable performance that exceeds ASHRAE 90.1 requirements. Available with an insulated refrigerant-circuit, the R-Series is equally suited for water-loop and low-temperature, geothermal applications.

For commercial installations ranging from schools to multi-story office space, R-Series Water Source Heat Pumps by YORK provide the performance and dependability necessary to suit today's demanding installation requirements.

Listings / Certifications



PRODUCT OVERVIEW

Refrigerant

R-410A

Sizes

.5 – 6 Tons (1.76 – 21.1 kW)

Model

RSH (Horizontal)

RSV (Vertical)

SPECIFICATIONS

GENERAL

All R-series models ½ - 6 ton ship as factory-charged packages, complete with R-410A refrigerant. Horizontal (RSH) units are designed for suspended ceiling mounting. RSH models are shipped with 'straight-through' evaporator fan discharge as standard. Fan orientation is field convertible to side discharge.

Vertical (RSV) units are designed for free-standing floor mounting. All units are completely factory wired and pre-piped. Water supply, water outlet, and condensate drain connections are via flush-mounted female pipe thread fittings (no back-up wrench required).

CABINET

All cabinets are completely constructed of corrosion resistant galvanized steel. The RSH units are complete with integral hanger channels. The entire unit interior (both evaporator and condensing section) is insulated with 1/2" thick, 2 lb density acoustical insulation. Service panels are equipped with lifting handles for ease of removal and handling. All units provide service access to the reversing valve, thermal expansion valve, and compressor with the unit remaining in location. An integral duct collar is provided on the blower discharge opening.

REFRIGERATION CIRCUITS

All models utilize high efficiency rotary, hermetic reciprocating or scroll compressors. Compressors are mounted with rubber isolators on acoustically tuned bases to minimize vibration transmission. Internal overload protection is provided. External high pressure and low pressure cutout switches are included in each compressor control circuit. Each refrigeration circuit includes an adjustable bi-flow thermal expansion valve (with external equalizer), bi-flow liquid line filter drier, and service gauge ports. The reversing valve is a pilot operated, sliding piston type with a replaceable magnetic solenoid coil.

The refrigerant-to-air heat transfer coils are constructed of internally enhanced copper tubes mechanically bonded to enhanced aluminum plate fins. The evaporator coil is employed in a draw-through configuration. Large evaporator coil face area minimizes potential water blow-off. A fully-insulated, corrosion resistant condensate drain pan is provided.

- Optional anti-corrosion protective evaporator coil coating.

- Optional stainless steel drain pan.

The coaxial refrigerant-to-water heat exchangers feature a convoluted inner tube design for high heat transfer efficiency. Standard models feature a copper inner tube surrounded by a steel outer tube, and carry a 400 psig water side working pressure rating. Units shall be capable of operation with an entering fluid temperature range of 20°F to 110°F.

- Optional cupro-nickel condenser water coil.
- Optional condenser insulation package for low-water temperature, geothermal applications.

INDOOR FAN

Forward curved, double inlet and double width, direct-drive centrifugal blowers are used for air movement. Large diameter wheels are employed to provide required airflow performance at minimum noise levels. Blower wheels are fabricated of galvanized steel. Fan motors are PSC type, with minimum three speeds. The PSC motors feature permanently lubricated bearings and internal thermal overload protection.

ELECTRICAL/CONTROLS

All units are completely factory wired with all necessary operating controls. A 24 volt control circuit, with oversized transformer, is provided for field connection. Units are designed to operate with conventional heat pump thermostat control interface. The reversing valve solenoid coil shall be energized in cooling mode only. A manual reset is provided on each compressor control circuit in the event of high/low pressure cutout.

- Optional solid-state electronic condensate overflow switch.
- Optional remote management package allows the unit to be controlled by an external source.

FILTERS

All models are shipped with 1-inch thick throwaway filters, factory installed. Filters are accessible from either side of unit.

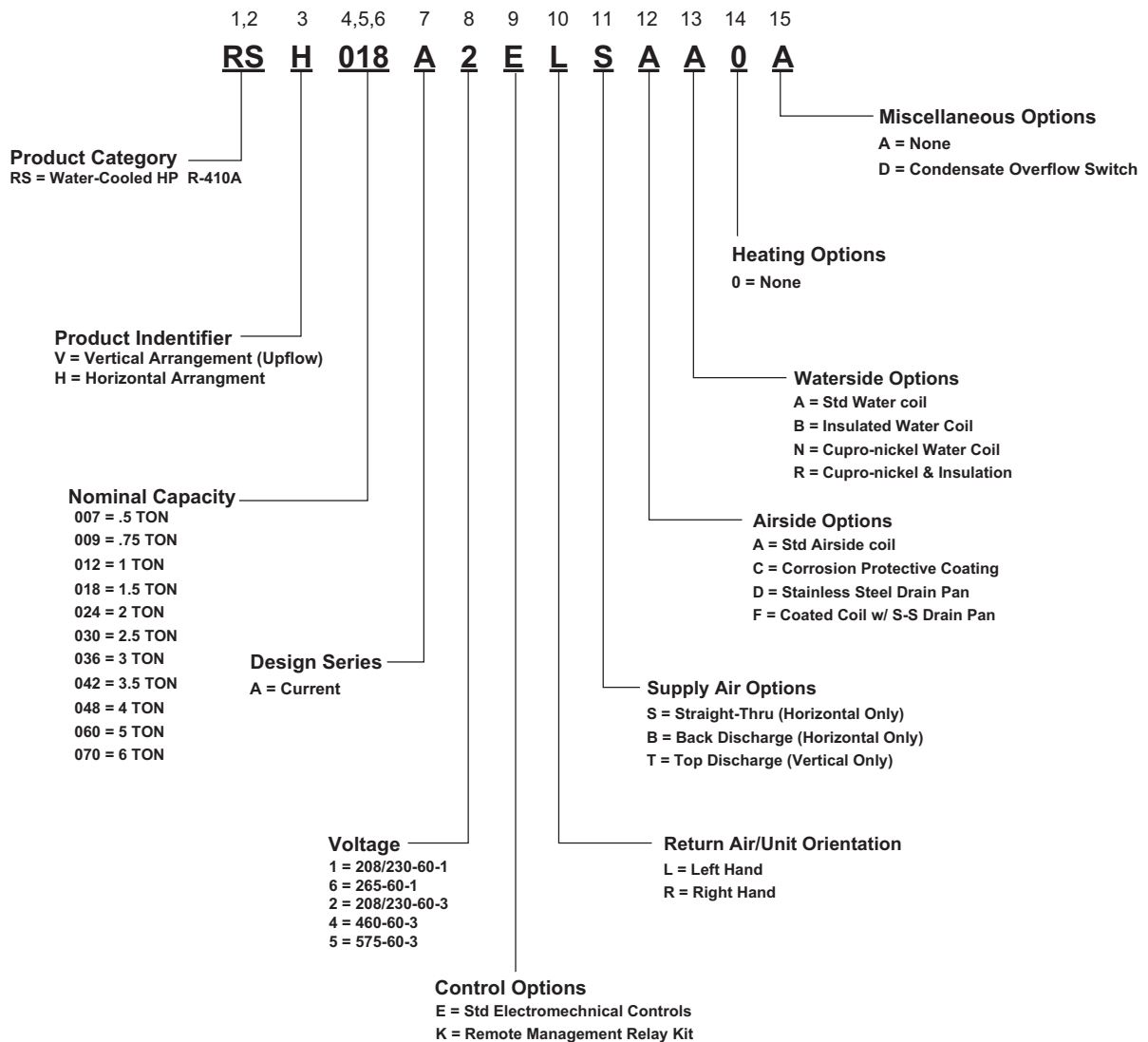
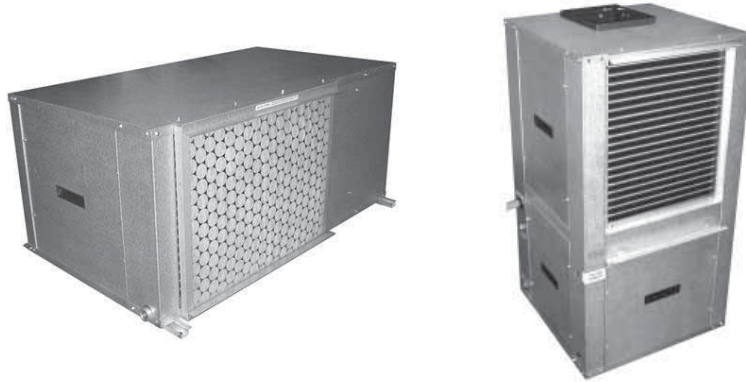
FIELD INSTALLED ACCESSORIES

The following options are available field installation:

- 24" braided stainless steel hose kit with fittings. (qty 2 hoses per kit)
- Manual isolation ball-valves (600 psi full port).
- Thermostat (programmable or non-programmable)

NOMENCLATURE

WATER SOURCE HEAT PUMP



PHYSICAL DATA

Model Series	007	009	012	018	024	030	036	042	048	060	070
Nominal Cooling (Ton) ¹	0.5	0.75	1.0	1.5	2.0	2.5	3	3.5	4	5	6
Compressor-Type	Rotary			Reciprocating				Scroll			
Air Coil-Type	Enhanced Copper tubes, Enhanced Aluminum Fins										
Face Area(sq ft)	1.17	1.17	1.33	2.56	2.88	2.88	3.47	4.44	4.44	6.11	6.11
Rows/FPI	3/13	3/13	3/15	3/15	3/15	3/15	3/15	3/15	3/15	3/15	3/15
Water Coil-Type	Enhanced Surface Co-Axial										
Water Connection (in)	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4	3/4	1	1
Standard Blower/Motor	DWDI Forward-Curved Centrifugal / PSC Direct-Drive										
Diameter x Width (in)	6x5	6x5	6x6	9x7	9x7	10x7T	10x7T	11x8T	11x8T	11x10T	11x10T
Motor HP	0.10/3	0.10/3	0.13/3	0.17/3	0.25/3	0.33/3	0.50/3	0.50/3	0.75/3	1.0/3	1.0/3
RSH Filter Quantity-Size(in)	1-12x16	1-12x16	1-12x20	1-18x24	1-18x24	1-18x24	2-14x20	2-18x20	2-18x20	2-22x22	2-22x22
RSV Filter Quantity-Size(in)	1-12x20	1-12x20	1-12x20	1-18x24	1-20x25	1-20x25	1-24x24	2-14x25	2-14x25	2-16x30	2-16x30
RSH Cabinet Weight (lb)	130	135	145	195	210	215	240	310	320	370	385
RSV Cabinet Weight (lb)	120	125	135	185	200	210	230	305	315	375	390

NOTE:

1) Nominal Capacity calculated in accordance with ARI / ISO Standard 13256-1 for Water Loop Application

OPERATING LIMITS*

	COOLING	HEATING
Min. Entering Water	30°F	20°F
Max. Entering Water	110°F	90°F

*Units are capable of operation with an entering fluid temperature range of 20°F to 110°F

ARI/ISO PERFORMANCE DATA

PERFORMANCE DATA - ARI/ISO 13256-1 WATER LOOP CONDITIONS*

Unit Model	Flow Rate (USGPM)	Air Flow (SCFM)	Cooling Capacity (Btuh)	EER	Heating Capacity (Btuh)	COP
007	1.8	260	6,800	12.5	8,700	4.5
009	2.4	320	8,900	12.4	11,600	4.4
012	3.0	400	12,400	12.2	15,600	4.2
018	4.8	640	19,100	13.2	23,400	4.5
024	6.0	800	24,600	13.5	29,300	4.4
030	7.8	1000	29,800	13.3	35,300	4.5
036	9.0	1200	36,200	13.0	45,100	4.6
042	10.4	1400	42,700	12.7	50,600	4.4
048	12.0	1600	48,300	13.1	57,200	4.5
060	15.0	2000	60,500	13.4	70,800	4.6
070	17.5	2200	67,700	12.9	79,500	4.3

*Water Loop capacities are rated at 86°F EWT Cooling, 68°F EWT Heating.

PERFORMANCE DATA - ARI/ISO 13256-1 GROUND WATER CONDITIONS*

Unit Model	Flow Rate (USGPM)	Air Flow (SCFM)	Cooling Capacity (Btuh)	EER	Heating Capacity (Btuh)	COP
007	1.8	260	7,700	18.4	6,900	3.9
009	2.4	320	10,100	18.3	9,100	3.8
012	3.0	400	14,200	18.1	12,900	3.6
018	4.8	640	22,900	20.2	18,800	3.9
024	6.0	800	28,700	20.8	23,600	3.8
030	7.8	1000	33,600	20.0	29,100	3.8
036	9.0	1200	39,800	18.8	37,200	3.9
042	10.4	1400	45,800	19.1	42,300	3.9
048	12.0	1600	52,500	19.3	47,400	3.8
060	15.0	2000	66,400	19.8	59,000	4.0
070	17.5	2200	73,600	18.7	66,800	3.8

*Ground Water capacities are rated at 59°F EWT Cooling, 50°F EWT Heating.

PERFORMANCE DATA - ARI/ISO 13256-1 GROUND LOOP CONDITIONS*

Unit Model	Flow Rate (USGPM)	Air Flow (SCFM)	Cooling Capacity (Btuh)	EER	Heating Capacity (Btuh)	COP
007	1.8	260	7,100	14.6	5,500	3.4
009	2.4	320	9,300	14.5	6,900	3.3
012	3.0	400	13,000	14.3	10,200	3.1
018	4.8	640	20,600	15.7	13,900	3.4
024	6.0	800	26,400	16.1	17,400	3.3
030	7.8	1000	31,100	15.3	22,500	3.3
036	9.0	1200	37,500	14.8	28,600	3.3
042	10.4	1400	43,900	14.6	32,300	3.4
048	12.0	1600	49,800	15.0	37,800	3.3
060	15.0	2000	62,900	15.6	47,200	3.5
070	17.5	2200	70,100	14.7	52,400	3.3

*Ground Loop capacities are rated at 77°F EFT Cooling, 32°F EFT Heating.

NOTE:

- 1) All Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
- 2) All Heating capacities based upon 68°F DB, 59°F WB entering air temperature.

PERFORMANCE DATA

RS*007 — 320 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	1.8	4.8	11.0						4.1	0.44	2.6	80	2.7
30	1.0	2.1	4.9	8.5	6.0	0.30	9.5	28.0	5.0	0.45	3.5	82	3.3
	1.4	2.8	6.4	8.7	6.1	0.28	9.7	30.8	5.3	0.47	3.7	83	3.3
	1.8	4.2	9.8	8.8	6.1	0.26	9.7	33.7	5.4	0.47	3.8	84	3.4
40	1.0	1.8	4.3	8.1	5.8	0.34	9.2	24.1	5.5	0.47	3.9	84	3.4
	1.4	2.4	5.6	8.3	5.9	0.32	9.4	25.9	5.7	0.47	4.1	84	3.5
	1.8	3.7	8.5	8.4	6.0	0.31	9.5	26.8	5.9	0.48	4.3	85	3.6
50	1.0	1.6	3.8	7.7	5.5	0.36	8.9	21.5	6.4	0.50	4.7	87	3.8
	1.4	2.1	4.9	7.8	5.6	0.35	9.0	22.6	6.6	0.50	4.9	87	3.9
	1.8	3.3	7.5	8.0	5.7	0.34	9.2	23.4	6.9	0.52	5.1	88	3.9
60	1.0	1.4	3.3	7.4	5.4	0.44	8.9	17.0	7.5	0.51	5.8	90	4.3
	1.4	1.8	4.3	7.6	5.5	0.42	9.0	17.9	7.7	0.52	5.9	90	4.4
	1.8	2.8	6.5	7.7	5.6	0.42	9.1	18.4	8.2	0.54	6.3	92	4.4
70	1.0	1.3	3.0	7.0	5.2	0.50	8.7	14.0	8.4	0.57	6.4	92	4.3
	1.4	1.7	3.9	7.2	5.3	0.48	8.8	15.1	8.8	0.59	6.8	93	4.4
	1.8	2.6	6.0	7.3	5.3	0.47	8.9	15.6	9.0	0.59	7.0	94	4.5
80	1.0	1.1	2.6	6.8	5.3	0.56	8.7	12.2	9.5	0.60	7.5	95	4.7
	1.4	1.5	3.5	6.9	5.3	0.54	8.8	12.7	9.9	0.61	7.8	97	4.7
	1.8	2.3	5.3	7.0	5.3	0.53	8.8	13.1	10.3	0.63	8.1	98	4.8
90	1.0	1.0	2.3	6.4	5.1	0.65	8.6	9.9	10.7	0.65	8.5	99	4.8
	1.4	1.3	3.1	6.5	5.1	0.63	8.6	10.4	11.0	0.66	8.8	100	4.9
	1.8	2.0	4.7	6.6	5.2	0.60	8.6	11.0	11.2	0.66	8.9	100	4.9
100	1.0	0.9	2.1	5.9	4.9	0.71	0.7	8.3					
	1.4	1.2	2.7	6.1	5.1	0.69	0.7	8.9					
	1.8	1.8	4.2	6.2	5.1	0.67	0.7	9.2					
110	1.0	0.8	1.9	5.4	4.6	0.77	0.8	7.0					
	1.4	1.1	2.4	5.6	4.7	0.75	0.8	7.5					
	1.8	1.6	3.7	5.7	4.7	0.73	0.7	7.8					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*009 — 320 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	2.4	7.0	16.1						5.6	0.57	3.7	84	2.9
30	1.2	2.6	6.0	12.8	9.0	0.47	14.4	27.4	6.1	0.74	3.6	86	2.4
	1.8	4.1	9.6	13.1	9.1	0.43	14.6	30.6	6.6	0.72	4.2	87	2.7
	2.4	6.0	13.9	13.2	9.1	0.40	14.6	33.0	6.8	0.62	4.7	88	3.2
40	1.2	2.3	5.2	12.5	8.9	0.54	14.4	23.0	7.0	0.62	4.9	88	3.3
	1.8	3.6	8.3	12.7	9.0	0.51	14.4	24.8	7.3	0.63	5.2	89	3.4
	2.4	5.2	12.1	12.9	9.2	0.48	14.6	26.6	7.6	0.65	5.4	90	3.4
50	1.2	2.0	4.6	10.0	7.2	0.52	11.8	19.2	8.3	0.68	6.0	92	3.6
	1.8	3.2	7.4	10.4	7.4	0.48	12.0	21.7	8.7	0.69	6.3	93	3.7
	2.4	4.6	10.7	10.6	7.5	0.46	12.2	23.2	9.1	0.70	6.7	94	3.8
60	1.2	1.7	4.0	9.6	7.1	0.57	11.6	16.7	9.5	0.71	7.1	95	3.9
	1.8	2.8	6.4	9.9	7.2	0.56	11.8	17.8	10.1	0.74	7.6	97	4.0
	2.4	4.0	9.3	10.1	7.3	0.55	12.0	18.2	10.6	0.76	8.0	99	4.1
70	1.2	1.6	3.7	9.3	6.9	0.65	11.5	14.4	10.2	0.71	7.8	98	4.2
	1.8	2.6	5.9	9.5	7.0	0.60	11.6	15.8	11.1	0.76	8.5	100	4.3
	2.4	3.7	8.5	9.7	7.1	0.58	11.7	16.7	11.8	0.77	9.2	102	4.5
80	1.2	1.4	3.2	8.6	6.6	0.69	10.9	12.5	11.8	0.77	9.2	102	4.5
	1.8	2.2	5.2	8.9	6.8	0.66	11.2	13.4	12.7	0.79	10.0	105	4.7
	2.4	3.3	7.5	9.2	7.0	0.66	11.4	14.0	13.3	0.81	10.5	106	4.8
90	1.2	1.2	2.9	8.0	6.3	0.74	10.5	10.8	13.4	0.80	10.7	107	4.9
	1.8	2.0	4.6	8.2	6.4	0.70	10.6	11.7	14.4	0.83	11.6	110	5.1
	2.4	2.9	6.7	8.4	6.6	0.69	10.7	12.2	14.7	0.84	11.8	111	5.1
100	1.2	1.1	2.6	7.4	6.2	0.80	10.1	9.2					
	1.8	1.8	4.1	7.6	6.3	0.77	10.2	9.9					
	2.4	2.6	5.9	7.8	6.4	0.76	10.4	10.3					
110	1.2	1.0	2.3	8.4	7.1	1.08	12.1	7.8					
	1.8	1.6	3.7	8.7	7.3	1.04	12.2	8.4					
	2.4	2.3	5.3	8.9	7.4	1.01	12.4	8.8					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*012 — 400 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	3.0	3.9	9.0						8.2	0.86	5.3	87	2.8
30	1.5	2.0	4.5	16.9	11.8	0.53	18.7	32.0	9.0	0.91	5.9	89	2.9
	2.3	2.6	6.1	17.1	11.9	0.49	18.8	34.7	9.5	0.93	6.3	90	3.0
	3.0	3.4	7.9	17.2	11.9	0.48	18.8	36.0	9.9	0.94	6.7	91	3.1
40	1.5	1.7	3.9	16.2	11.6	0.63	18.3	25.8	9.8	0.90	6.7	91	3.2
	2.3	2.3	5.3	16.5	11.7	0.60	18.5	27.6	10.2	0.91	7.1	92	3.3
	3.0	3.0	6.9	16.6	11.8	0.58	18.6	28.7	10.9	0.97	7.6	93	3.3
50	1.5	1.5	3.5	15.5	11.2	0.74	18.0	21.0	11.7	1.01	8.3	95	3.4
	2.3	2.0	4.7	15.8	11.3	0.71	18.2	22.3	12.3	1.03	8.8	96	3.5
	3.0	2.6	6.1	15.9	11.3	0.69	18.2	23.1	12.9	1.05	9.3	98	3.6
60	1.5	1.3	3.0	14.9	11.0	0.85	17.8	17.6	12.0	0.90	8.9	96	3.9
	2.3	1.8	4.1	15.1	11.0	0.81	17.9	18.6	12.5	0.92	9.4	97	4.0
	3.0	2.3	5.3	14.2	10.3	0.79	16.9	18.0	12.9	0.92	9.8	98	4.1
70	1.5	1.2	2.8	13.1	9.8	0.89	16.1	14.8	14.6	1.04	11.0	102	4.1
	2.3	1.6	3.8	13.4	9.8	0.86	16.3	15.6	15.1	1.03	11.6	103	4.3
	3.0	2.1	4.9	13.5	9.9	0.84	16.4	16.1	15.8	1.08	12.1	105	4.3
80	1.5	1.1	2.4	12.1	9.4	0.98	15.5	12.3	14.8	0.94	11.6	102	4.6
	2.3	1.4	3.3	12.5	9.6	0.96	15.8	13.0	15.6	0.97	12.3	104	4.7
	3.0	1.8	4.3	12.8	9.8	0.95	16.0	13.5	16.2	0.99	12.8	106	4.8
90	1.5	0.9	2.2	11.8	9.3	1.11	15.6	10.6	16.1	0.98	12.7	105	4.8
	2.3	1.3	2.9	12.0	9.4	1.08	15.7	11.1	16.9	0.99	13.5	107	5.0
	3.0	1.6	3.8	12.2	9.6	1.06	15.8	11.5	17.6	1.01	14.1	109	5.1
100	1.5	0.8	1.9	10.9	9.1	1.21	15.0	9.0					
	2.3	1.1	2.6	11.3	9.4	1.19	15.4	9.5					
	3.0	1.5	3.4	11.5	9.5	1.17	15.5	9.8					
110	1.5	0.7	1.7	10.0	8.5	1.32	14.5	7.6					
	2.3	1.0	2.3	10.3	8.7	1.29	14.7	8.0					
	3.0	1.3	3.0	10.6	8.8	1.28	15.0	8.3					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*018 — 640 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	4.8	8.4	19.4						10.4	1.09	6.7	83	2.8
30	2.4	3.1	7.1	26.6	18.6	0.96	29.9	27.7	12.0	1.17	8.0	85	3.0
	3.6	4.9	11.3	27.3	19.1	0.90	30.4	30.2	12.4	1.21	8.3	86	3.0
	4.8	7.3	16.9	27.7	19.1	0.87	30.7	32.0	12.7	1.20	8.6	86	3.1
40	2.4	2.7	6.2	24.9	17.7	1.05	28.5	23.8	14.7	1.23	10.5	89	3.5
	3.6	4.3	9.8	25.6	18.0	1.00	29.0	25.5	15.2	1.27	10.9	90	3.5
	4.8	6.4	14.7	25.9	18.1	0.96	29.2	27.0	15.7	1.28	11.3	91	3.6
50	2.4	2.4	5.5	24.3	17.5	1.15	28.2	21.1	17.3	1.33	12.7	93	3.8
	3.6	3.8	8.7	24.5	17.5	1.14	28.4	21.5	18.0	1.35	13.4	94	3.9
	4.8	5.6	13.0	24.9	17.7	1.09	28.6	22.8	18.8	1.41	14.0	95	3.9
60	2.4	2.1	4.8	21.3	15.7	1.22	25.5	17.4	19.2	1.41	14.4	96	4.0
	3.6	3.3	7.5	22.0	16.1	1.21	26.1	18.2	20.1	1.44	15.2	97	4.1
	4.8	4.9	11.3	22.8	16.6	1.13	26.7	20.2	20.8	1.45	15.8	98	4.2
70	2.4	1.9	4.4	20.2	15.0	1.34	24.8	15.1	22.0	1.47	17.0	100	4.4
	3.6	3.0	6.9	20.5	15.1	1.27	24.8	16.2	23.1	1.50	18.0	101	4.5
	4.8	4.5	10.4	21.0	15.3	1.24	25.2	17.0	23.9	1.56	18.6	103	4.5
80	2.4	1.7	3.9	18.6	14.4	1.44	23.5	12.9	23.3	1.48	18.2	102	4.6
	3.6	2.6	6.1	19.3	14.8	1.39	24.0	13.9	24.6	1.50	19.5	104	4.8
	4.8	4.0	9.1	19.8	15.1	1.37	24.5	14.5	25.4	1.51	20.2	105	4.9
90	2.4	1.5	3.4	17.4	13.7	1.55	22.7	11.2	25.8	1.49	20.7	105	5.1
	3.6	2.3	5.4	18.1	14.2	1.52	23.3	11.9	27.0	1.52	21.8	107	5.2
	4.8	3.5	8.1	18.6	14.6	1.50	23.7	12.4	28.1	1.55	22.8	109	5.3
100	2.4	1.3	3.1	16.6	13.8	1.84	22.9	9.7					
	3.6	2.1	4.8	17.2	14.3	1.82	23.4	10.3					
	4.8	3.1	7.2	17.7	14.6	1.79	23.8	10.6					
110	2.4	1.2	2.7	15.1	13.1	1.91	21.6	8.4					
	3.6	1.9	4.3	15.8	13.5	1.87	22.2	8.9					
	4.8	2.8	6.5	16.1	13.5	1.84	22.4	9.2					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*024 — 800 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	6.0	9.7	22.4						13.3	1.50	8.2	83	2.6
30	3.0	3.4	7.9	35.1	24.6	1.07	38.8	32.7	15.9	1.50	10.8	86	3.1
	4.5	5.2	12.0	35.9	25.0	1.01	39.4	35.4	16.4	1.50	11.3	87	3.2
	6.0	8.3	19.1	36.4	25.2	0.99	39.8	36.8	16.8	1.54	11.6	87	3.2
40	3.0	3.0	6.9	33.4	23.9	1.13	37.3	29.5	18.4	1.59	13.0	89	3.4
	4.5	4.5	10.5	34.3	24.4	1.07	37.9	32.1	19.1	1.60	13.6	90	3.5
	6.0	7.2	16.7	34.8	24.7	1.04	38.4	33.4	19.7	1.60	14.2	91	3.6
50	3.0	2.6	6.1	31.4	22.6	1.30	35.8	24.2	21.6	1.71	15.8	93	3.7
	4.5	4.0	9.2	32.2	23.0	1.23	36.4	26.1	22.6	1.79	16.5	94	3.7
	6.0	6.4	14.7	32.8	23.3	1.21	36.9	27.0	23.6	1.82	17.4	95	3.8
60	3.0	2.3	5.3	27.8	20.4	1.49	32.9	18.7	25.1	1.71	19.3	97	4.3
	4.5	3.5	8.0	28.4	20.7	1.48	33.4	19.2	26.4	1.72	20.5	99	4.5
	6.0	5.5	12.8	29.0	21.1	1.45	33.9	20.0	27.4	1.78	21.3	100	4.5
70	3.0	2.1	4.9	27.2	20.3	1.64	32.8	16.6	27.8	1.77	21.8	100	4.6
	4.5	3.2	7.4	28.0	20.6	1.60	33.5	17.5	29.3	1.83	23.1	102	4.7
	6.0	5.1	11.8	28.5	20.8	1.56	33.8	18.3	30.4	1.86	24.1	103	4.8
80	3.0	1.8	4.3	24.8	19.2	1.77	30.8	14.0	31.5	1.85	25.2	104	5.0
	4.5	2.8	6.5	25.1	19.3	1.70	30.9	14.8	31.8	1.86	25.4	105	5.0
	6.0	4.5	10.4	26.0	19.9	1.70	31.8	15.3	33.0	1.90	26.5	106	5.1
90	3.0	1.6	3.8	23.1	18.2	1.96	29.8	11.8	32.1	1.84	25.8	105	5.1
	4.5	2.5	5.8	23.9	18.8	1.90	30.4	12.6	33.9	1.91	27.4	107	5.2
	6.0	4.0	9.2	24.4	19.1	1.86	30.8	13.1	35.3	1.95	28.6	109	5.3
100	3.0	1.5	3.4	20.6	17.2	2.06	27.6	10.0					
	4.5	2.2	5.1	21.6	17.9	2.04	28.6	10.6					
	6.0	3.5	8.2	22.1	18.3	2.01	29.0	11.0					
110	3.0	1.3	3.0	18.7	15.9	2.17	26.1	8.6					
	4.5	2.0	4.6	19.5	16.4	2.14	26.8	9.1					
	6.0	3.2	7.3	20.0	16.6	2.13	27.3	9.4					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*030 — 1000 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	7.8	7.8	18.0						17.5	1.97	10.8	84	2.6
30	3.9	4.2	9.8	38.6	27.0	1.43	43.5	26.9	19.2	1.88	12.8	86	3.0
	5.8	5.4	12.4	39.5	27.5	1.41	44.3	28.0	20.3	1.92	13.8	87	3.1
	7.8	6.7	15.4	40.0	27.7	1.39	44.8	28.7	22.0	2.01	15.1	88	3.2
40	3.9	3.7	8.5	37.1	26.5	1.53	42.3	24.2	22.3	1.87	15.9	89	3.5
	5.8	4.7	10.8	38.0	27.1	1.49	43.1	25.5	23.2	1.94	16.6	89	3.5
	7.8	5.8	13.4	38.6	27.4	1.48	43.6	26.1	23.9	1.95	17.3	90	3.6
50	3.9	3.3	7.5	34.4	24.8	1.65	40.0	20.8	27.1	2.15	19.8	93	3.7
	5.8	4.1	9.5	35.2	25.2	1.62	40.7	21.7	28.2	2.23	20.6	94	3.7
	7.8	5.1	11.8	35.8	25.4	1.55	41.1	23.1	29.1	2.24	21.4	95	3.8
60	3.9	2.8	6.5	32.1	23.6	1.75	38.1	18.3	29.5	2.11	22.3	95	4.1
	5.8	3.6	8.3	32.9	24.0	1.70	38.7	19.3	30.9	2.16	23.5	97	4.2
	7.8	4.4	10.3	33.5	24.4	1.70	39.3	19.7	32.0	2.18	24.6	98	4.3
70	3.9	2.6	6.0	31.0	23.1	1.86	37.3	16.7	33.1	2.20	25.6	99	4.4
	5.8	3.3	7.6	31.8	23.4	1.82	38.0	17.5	34.7	2.26	27.0	100	4.5
	7.8	4.1	9.5	32.3	23.6	1.80	38.5	17.9	36.0	2.34	28.0	101	4.5
80	3.9	2.3	5.3	29.0	22.4	2.04	36.0	14.2	36.4	2.32	28.5	102	4.6
	5.8	2.9	6.7	29.7	22.8	2.01	36.5	14.8	38.2	2.38	30.1	103	4.7
	7.8	3.6	8.3	30.2	23.1	2.00	37.0	15.1	39.7	2.42	31.4	105	4.8
90	3.9	2.0	4.7	28.0	22.1	2.33	36.0	12.0	40.7	2.43	32.4	106	4.9
	5.8	2.6	5.9	28.7	22.5	2.30	36.5	12.5	42.8	2.51	34.2	108	5.0
	7.8	3.2	7.4	29.2	22.9	2.28	37.0	12.8	44.5	2.56	35.8	109	5.1
100	3.9	1.8	4.2	25.8	21.5	2.50	34.3	10.3					
	5.8	2.3	5.3	26.5	22.0	2.45	34.9	10.8					
	7.8	2.9	6.6	27.0	22.3	2.45	35.4	11.0					
110	3.9	1.6	3.7	23.6	20.1	2.65	32.7	8.9					
	5.8	2.1	4.8	24.3	20.5	2.64	33.3	9.2					
	7.8	2.6	5.9	24.7	20.5	2.63	33.7	9.4					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*036 — 1200 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	9.0	10.1	23.3						19.9	1.94	2.0	83	3.0
30	4.5	3.4	7.9	45.6	31.9	1.27	49.9	35.9	23.2	2.06	16.2	86	3.3
	6.8	6.3	14.6	47.5	33.1	1.26	51.8	37.8	24.0	2.13	16.7	86	3.3
	9.0	8.6	19.9	48.8	33.8	1.26	53.1	38.8	24.5	2.11	17.3	87	3.4
40	4.5	3.0	6.9	44.0	31.5	1.44	48.9	30.6	28.2	2.23	20.6	90	3.7
	6.8	5.5	12.8	45.0	32.0	1.40	49.8	32.2	29.4	2.27	21.7	91	3.8
	9.0	7.5	17.3	45.7	32.4	1.38	50.4	33.1	30.2	2.33	22.3	91	3.8
50	4.5	2.6	6.1	41.7	30.0	1.72	47.6	24.3	34.0	2.43	25.7	94	4.1
	6.8	4.9	11.3	42.8	30.6	1.67	48.5	25.7	35.6	2.48	27.1	95	4.2
	9.0	6.6	15.3	43.3	30.7	1.64	48.9	26.4	37.2	2.58	28.4	97	4.2
60	4.5	2.3	5.3	38.0	27.9	1.84	44.3	20.7	37.6	2.50	29.1	97	4.4
	6.8	4.2	9.8	38.9	28.4	1.79	45.0	21.8	39.5	2.57	30.7	98	4.5
	9.0	5.7	13.3	39.6	28.8	1.77	45.6	22.4	40.8	2.66	31.7	99	4.5
70	4.5	2.1	4.9	34.4	25.6	2.02	41.3	17.0	41.5	2.64	32.5	100	4.6
	6.8	3.9	9.0	35.3	25.9	1.97	42.0	17.9	43.7	2.72	34.4	102	4.7
	9.0	5.3	12.2	36.0	26.3	1.96	42.7	18.4	45.3	2.77	35.9	103	4.8
80	4.5	1.8	4.3	36.1	27.9	2.56	44.8	14.1	46.7	2.85	37.0	104	4.8
	6.8	3.4	7.9	36.5	28.0	2.50	45.0	14.6	49.1	2.94	39.1	106	4.9
	9.0	4.7	10.8	37.1	28.3	2.69	46.3	13.8	50.4	3.04	40.0	107	4.9
90	4.5	1.6	3.8	34.9	27.5	2.96	45.0	11.8	50.8	2.98	40.6	107	5.0
	6.8	3.0	7.0	35.4	27.7	2.90	45.2	12.2	53.6	3.08	43.1	109	5.1
	9.0	4.1	9.5	35.6	27.9	2.87	45.4	12.4	55.6	3.13	44.9	111	5.2
100	4.5	1.5	3.4	32.8	27.4	3.16	43.6	10.4					
	6.8	2.7	6.3	33.3	27.6	3.11	43.9	10.7					
	9.0	3.7	8.5	33.5	27.6	3.10	44.0	10.8					
110	4.5	1.3	3.0	31.7	26.9	3.37	43.2	9.4					
	6.8	2.4	5.6	32.1	27.1	3.31	43.4	9.7					
	9.0	3.3	7.6	32.4	26.9	3.30	43.6	9.8					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*042 — 1400 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	10.4	12.3	28.4						26.7	3.32	15.4	86	2.5
30	5.2	4.1	9.4	48.6	34.0	1.97	55.3	24.7	31.2	3.30	19.9	89	2.8
	7.8	6.7	15.4	49.1	34.2	1.86	55.4	26.4	31.9	3.31	20.6	89	2.8
	10.4	10.6	24.4	50.0	34.6	1.80	56.1	27.6	32.2	3.32	20.9	89	2.8
40	5.2	3.5	8.2	47.2	33.7	2.22	54.8	21.2	35.5	3.36	24.0	91	3.1
	7.8	5.8	13.4	47.8	34.0	2.12	55.0	22.5	36.5	3.38	25.0	92	3.2
	10.4	9.2	21.3	48.1	34.2	2.05	55.1	23.4	37.3	3.39	25.7	93	3.2
50	5.2	3.1	7.2	45.8	33.0	2.39	54.0	18.4	39.3	3.44	27.6	94	3.4
	7.8	5.1	11.8	46.5	33.2	2.38	54.6	19.5	40.7	3.46	28.9	95	3.4
	10.4	8.1	18.8	46.9	33.3	2.31	54.7	20.3	42.3	3.48	30.4	96	3.6
60	5.2	2.7	6.3	44.3	32.6	2.76	53.7	16.0	44.0	3.52	32.0	97	3.7
	7.8	4.4	10.3	45.0	32.9	2.65	54.0	17.0	45.7	3.55	33.6	98	3.8
	10.4	7.0	16.3	45.4	33.0	2.58	54.2	17.6	47.0	3.57	34.8	99	3.9
70	5.2	2.5	5.8	43.5	32.4	3.06	53.9	14.2	48.9	3.61	36.6	100	4.0
	7.8	4.1	9.5	45.6	33.5	2.96	55.7	15.4	51.1	3.65	38.6	102	4.1
	10.4	6.5	15.0	46.1	33.7	2.89	56.0	16.0	52.7	3.68	40.1	103	4.2
80	5.2	2.2	5.1	42.7	33.0	3.46	54.5	12.4	55.5	3.71	42.8	105	4.4
	7.8	3.6	8.3	43.5	33.4	3.32	54.8	13.1	58.1	3.76	45.3	106	4.5
	10.4	5.7	13.2	44.0	33.6	3.23	55.0	13.6	60.1	3.80	47.1	108	4.6
90	5.2	1.9	4.5	40.5	32.0	3.91	53.8	10.4	61.1	3.82	48.1	108	4.7
	7.8	3.2	7.4	41.4	32.5	3.74	54.2	11.1	63.6	3.89	50.3	110	4.8
	10.4	5.1	11.7	41.9	32.8	3.64	54.3	11.5	65.9	3.94	52.5	112	4.9
100	5.2	1.7	4.0	38.1	31.8	4.36	53.0	8.7					
	7.8	2.9	6.6	39.0	32.3	4.17	53.2	9.4					
	10.4	4.5	10.4	39.6	32.7	4.06	53.5	9.8					
110	5.2	1.6	3.6	36.2	30.8	4.89	52.9	7.3					
	7.8	2.6	5.9	37.1	31.3	4.67	53.0	7.8					
	10.4	4.1	9.4	37.8	31.4	4.54	53.3	8.2					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*048 — 1600 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	12.0	15.1	34.9						30.5	3.32	19.1	86	2.8
30	6.0	4.4	10.1	61.3	42.9	2.33	69.3	26.3	33.4	3.30	3.3	88	3.0
	9.0	8.5	19.5	62.2	43.4	2.29	70.0	27.2	35.6	3.32	3.3	89	3.1
	12.0	13.2	30.4	62.8	43.5	2.27	70.5	27.7	36.7	3.34	3.3	89	3.2
40	6.0	3.8	8.8	58.0	41.5	2.46	66.4	23.6	39.8	3.33	3.6	91	3.5
	9.0	7.4	17.0	58.8	41.9	2.40	67.0	24.5	41.5	3.38	3.6	92	3.6
	12.0	11.5	26.5	59.4	42.2	2.37	67.5	25.1	43.6	3.55	3.6	93	3.6
50	6.0	3.4	7.8	55.4	39.9	2.69	64.6	20.6	44.2	3.63	3.6	94	3.6
	9.0	6.5	15.0	56.5	40.4	2.62	65.4	21.6	45.8	3.66	3.7	95	3.7
	12.0	10.1	23.4	57.6	40.9	2.50	66.1	23.0	47.4	3.68	3.7	95	3.8
60	6.0	2.9	6.8	51.1	37.6	2.97	61.2	17.2	51.1	3.62	3.6	97	4.1
	9.0	5.6	13.0	51.7	37.7	2.82	61.3	18.3	53.1	3.65	3.7	98	4.3
	12.0	8.8	20.3	52.3	38.0	2.73	61.6	19.2	54.6	3.70	3.7	99	4.3
70	6.0	2.7	6.2	49.8	37.1	3.39	61.4	14.7	58.8	3.84	3.8	100	4.5
	9.0	5.2	12.0	50.2	36.9	3.26	61.3	15.4	59.8	3.87	3.9	101	4.5
	12.0	8.1	18.7	50.8	37.1	3.11	61.4	16.3	61.3	3.90	3.9	102	4.6
80	6.0	2.4	5.5	48.1	37.2	3.98	61.7	12.1	63.2	4.05	4.1	103	4.6
	9.0	4.6	10.6	48.6	37.3	3.78	61.5	12.9	64.6	4.11	4.1	105	4.6
	12.0	7.1	16.5	49.4	37.7	3.66	61.9	13.5	67.2	4.16	4.2	106	4.7
90	6.0	2.1	4.9	46.4	36.7	4.51	61.8	10.3	70.3	4.28	4.3	107	4.8
	9.0	4.1	9.4	47.2	37.1	4.26	61.7	11.1	72.4	4.32	4.3	108	4.9
	12.0	6.3	14.6	47.7	37.3	4.12	61.8	11.6	73.3	4.34	4.3	109	4.9
100	6.0	1.9	4.3	43.6	36.4	5.05	60.8	8.6					
	9.0	3.6	8.4	45.0	37.3	4.76	61.2	9.5					
	12.0	5.6	13.0	45.9	37.9	4.59	61.6	10.0					
110	6.0	1.7	3.9	39.9	33.9	5.70	59.4	7.0					
	9.0	3.2	7.5	41.3	34.8	5.36	59.6	7.7					
	12.0	5.0	11.7	42.2	35.0	5.16	59.8	8.2					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*060 — 2000 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	15.0	17.8	41.1						38.2	3.32	26.8	86	2.9
30	7.5	5.9	13.5	72.6	50.8	2.77	82.1	26.2	43.2	3.90	29.9	88	3.2
	11.2	7.5	17.3	73.8	51.4	2.60	82.7	28.4	45.2	3.96	31.7	89	3.3
	15.0	15.6	36.0	74.5	51.6	2.48	83.0	30.0	46.0	4.00	32.3	89	3.4
40	7.5	5.1	11.8	68.9	49.3	3.25	80.0	21.2	50.3	4.05	36.5	91	3.6
	11.2	6.5	15.1	70.1	49.9	3.08	80.6	22.8	52.0	4.12	37.9	92	3.7
	15.0	13.6	31.4	71.9	51.0	2.96	82.0	24.3	53.5	4.17	39.3	93	3.8
50	7.5	4.5	10.4	66.2	47.7	3.60	78.5	18.4	54.2	4.21	39.8	93	3.8
	11.2	5.8	13.3	67.5	48.3	3.43	79.2	19.7	56.8	4.28	42.2	94	3.9
	15.0	12.0	27.7	68.2	48.4	3.32	79.5	20.5	59.0	4.35	44.2	95	4.0
60	7.5	3.9	9.0	63.3	46.5	3.85	76.4	16.4	61.4	4.39	46.4	96	4.1
	11.2	5.0	11.5	65.6	47.9	3.67	78.1	17.9	63.4	4.44	48.2	97	4.2
	15.0	10.4	24.0	66.4	48.3	3.35	77.8	19.8	64.9	4.47	49.6	98	4.3
70	7.5	3.6	8.3	62.5	46.6	4.38	77.4	14.3	66.3	4.52	50.9	99	4.3
	11.2	4.6	10.6	63.8	46.9	4.18	78.1	15.3	69.8	4.56	54.2	100	4.5
	15.0	9.6	22.2	64.7	47.2	3.90	78.0	16.6	72.9	4.62	57.1	102	4.6
80	7.5	3.2	7.3	59.4	45.9	4.84	75.9	12.3	73.2	4.70	57.2	102	4.6
	11.2	4.0	9.3	60.8	46.6	4.60	76.5	13.2	78.1	4.84	61.6	104	4.7
	15.0	8.4	19.5	61.7	47.1	4.46	76.9	13.8	82.3	5.01	65.2	106	4.8
90	7.5	2.8	6.5	56.9	45.0	5.33	75.1	10.7	84.2	5.09	66.8	107	4.8
	11.2	3.6	8.3	57.5	45.1	5.20	75.2	11.1	88.6	5.25	70.7	109	4.9
	15.0	7.5	17.3	58.4	45.7	5.05	75.6	11.6	93.5	5.37	75.2	111	5.1
100	7.5	2.5	5.8	51.9	43.3	6.04	72.5	8.6					
	11.2	3.2	7.4	53.6	44.4	5.75	73.2	9.3					
	15.0	6.7	15.4	54.5	45.0	5.57	73.5	9.8					
110	7.5	2.5	5.7	48.6	41.3	6.65	71.3	7.3					
	11.2	3.2	7.3	49.2	41.5	6.41	71.1	7.7					
	15.0	6.6	15.2	50.3	41.7	6.21	71.5	8.1					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

See performance correction tables for conditions beyond what is listed.

Extrapolation is not permissible.

Shaded areas indicate conditions where operation is not recommended.

PERFORMANCE DATA

RS*070 — 2200 CFM

EWT (F)	GPM	WPD		COOLING					HEATING				
		PSI	FT	TC	SC	kW	HR	EER	HTG	kW	HE	LAT (F)	COP
20	17.5	20.8	48.0						42.1	3.32	30.7	86	2.6
30	8.8	8.3	19.1	82.7	57.9	3.22	93.7	25.7	47.9	4.86	31.3	88	2.9
	13.1	12.5	28.9	83.4	58.1	3.14	94.1	26.6	49.4	4.92	32.6	89	2.9
	17.5	16.4	37.9	83.8	58.0	3.14	94.5	26.7	50.7	4.98	33.7	89	3.0
40	8.8	7.2	16.7	79.0	56.5	3.85	92.1	20.5	54.8	4.93	38.0	91	3.3
	13.1	10.9	25.2	79.9	56.9	3.68	92.5	21.7	56.6	5.01	39.5	92	3.3
	17.5	14.3	33.1	80.5	57.2	3.56	92.7	22.6	58.1	5.08	40.8	92	3.4
50	8.8	6.4	14.7	75.1	54.1	3.99	88.7	18.8	62.4	5.02	45.3	94	3.6
	13.1	9.6	22.2	76.2	54.5	3.95	89.7	19.3	65.2	5.11	47.8	95	3.7
	17.5	12.6	29.2	76.9	54.6	3.85	90.0	20.0	66.8	5.16	49.2	96	3.8
60	8.8	5.5	12.8	71.4	52.5	4.30	86.1	16.6	67.9	5.10	50.5	97	3.9
	13.1	8.3	19.3	72.6	53.0	4.20	86.9	17.3	70.6	5.17	53.0	98	4.0
	17.5	10.9	25.3	73.0	53.1	4.01	86.7	18.2	72.7	5.33	54.5	99	4.0
70	8.8	5.1	11.8	73.1	54.5	4.87	89.7	15.0	75.0	5.21	57.2	100	4.2
	13.1	7.7	17.8	74.5	54.8	4.72	90.6	15.8	78.3	5.31	60.2	101	4.3
	17.5	10.1	23.3	75.4	55.0	4.71	91.5	16.0	80.8	5.44	62.2	102	4.4
80	8.8	4.5	10.4	66.7	51.6	5.09	84.1	13.1	82.0	5.28	64.0	103	4.6
	13.1	6.8	15.6	68.2	52.3	4.91	84.9	13.9	85.8	5.47	67.1	104	4.6
	17.5	8.9	20.5	69.2	52.9	4.81	85.6	14.4	88.9	5.54	70.0	105	4.7
90	8.8	4.0	9.2	63.5	50.2	5.62	82.7	11.3	90.8	5.39	72.4	106	4.9
	13.1	6.0	13.9	64.3	50.5	5.31	82.4	12.1	95.4	5.59	76.3	108	5.0
	17.5	7.9	18.2	65.3	51.1	5.27	83.3	12.4	99.0	5.69	79.6	110	5.1
100	8.8	3.5	8.2	59.0	49.2	6.02	79.5	9.8					
	13.1	5.4	12.4	60.8	50.4	5.79	80.6	10.5					
	17.5	7.0	16.2	61.9	51.1	5.73	81.5	10.8					
110	8.8	3.5	8.1	54.7	46.5	6.59	77.2	8.3					
	13.1	5.3	12.2	56.7	47.8	6.37	78.4	8.9					
	17.5	6.9	16.0	57.9	48.1	6.29	79.4	9.2					

Cooling Performance is tabulated at 80.6 F DB and 66.2 F WB entering air. Heating performance tabulated at 68 F EAT

Tabulated data does not include ARI/ISO corrections for fan and pump power.

All capacities are expressed in MBH.

Insulated water circuit is recommended for operation below 60F EWT.

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CORRECTION FACTORS

ANTIFREEZE CORRECTION TABLE

		Antifreeze Concentration						
		5%	10%	15%	20%	25%	30%	40%
Ethylene Glycol	Cooling	0.998	0.995	0.993	0.991	0.989	0.987	0.984
	Heating	0.995	0.990	0.985	0.980	0.974	0.969	0.964
	PD	1.040	1.055	1.080	1.105	1.135	1.165	1.210
Propylene Glycol	Cooling	0.995	0.992	0.987	0.983	0.979	0.975	0.970
	Heating	0.989	0.982	0.975	0.967	0.958	0.951	0.943
	PD	1.035	1.055	1.100	1.145	1.200	1.260	1.320
Methanol	Cooling	0.999	0.995	0.990	0.986	0.982	0.980	0.978
	Heating	0.989	0.985	0.979	0.971	0.963	0.954	0.946
	PD	1.050	1.072	1.094	1.116	1.140	1.165	1.196

AIRFLOW CORRECTION TABLE

Airflow %	Cooling				Heating		
	TC	SC	Power	THR	HC	Power	HE
70	0.931	0.847	0.964	0.946	0.942	1.075	0.940
75	0.941	0.872	0.969	0.956	0.953	1.059	0.949
80	0.950	0.896	0.979	0.961	0.960	1.039	0.958
85	0.966	0.923	0.983	0.971	0.970	1.023	0.969
90	0.977	0.948	0.989	0.981	0.979	1.015	0.979
95	0.989	0.974	0.995	0.990	0.989	1.007	0.989
100	1.000	1.000	1.000	1.000	1.000	1.000	1.000
105	1.008	1.025	1.006	1.010	1.009	0.994	1.010
110	1.018	1.048	1.013	1.017	1.019	0.992	1.018
115	1.026	1.070	1.019	1.026	1.029	0.991	1.028

COOLING PERFORMANCE CORRECTION TABLE

Entering Air WB (F)	Total Clg Capacity	Entering Air DB (F) - Sensible Capacity						Heat Rejection
		70	75	80.6	85	90	95	
60	0.845	0.86	1.1	1.305	S	S	S	0.904
65	0.948	0.628	0.865	1.082	1.312	S	S	0.979
66.2	1	0.539	0.777	1	1.22	1.475	S	1
70	1.061		0.631	0.855	1.081	1.331	1.543	1.039
75	1.162			0.618	0.848	1.09	1.296	1.107

S = Sensible cooling is equal to Total Cooling

HEATING PERFORMANCE CORRECTION TABLE

EAT DB (F)	Heating Capacity	Power	Heat Extraction
45	1.101	0.785	1.162
50	1.080	0.832	1.125
55	1.059	0.878	1.079
60	1.039	0.926	1.064
65	1.019	0.960	1.023
68	1.000	1.000	1.000
70	0.990	1.028	0.983
75	0.974	1.064	0.957
80	0.951	1.111	0.918

BLOWER PERFORMANCE

BLOWER PERFORMANCE

Unit Size	Rated CFM	Min. CFM	Max. CFM	Motor Speed	External Static Pressure (in w.g.)								
					0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
007	260	182	299	High	-	-	-	-	-	-	-	-	-
				Med	-	-	300	270	235	200	-	-	-
				Low	275	260	240	210	180	-	-	-	-
009	320	235	368	High	-	-	380	360	330	290	240	-	-
				Med	340	325	300	270	235	-	-	-	-
				Low	-	-	-	-	-	-	-	-	-
012	400	300	460	High	-	475	450	420	385	345	300	-	-
				Med	470	455	430	400	365	325	-	-	-
				Low	385	370	355	330	300	-	-	-	-
018	640	495	736	High	-	750	710	660	610	555	495	-	-
				Med	690	660	625	585	540	490	-	-	-
				Low	600	570	535	495	-	-	-	-	-
024	800	560	920	High	-	-	-	950	890	820	740	650	550
				Med	925	905	875	840	790	730	660	590	-
				Low	810	795	780	765	725	660	590	-	-
030	1000	730	1150	High	-	-	1170	1120	1060	985	905	820	730
				Med	1150	1125	1090	1045	990	925	850	765	-
				Low	980	970	955	935	905	855	785	-	-
036	1200	865	1380	High	-	1390	1330	1270	1210	1140	1055	960	865
				Med	1355	1320	1270	1215	1155	1085	1005	920	-
				Low	1200	1190	1170	1130	1085	1020	950	-	-
042	1400	980	1480	High	-	1175	1160	1120	1075	1015	930	-	-
				Med	1370	1320	1275	1210	1150	1070	925	-	-
				Low	1480	1410	1350	1290	1220	1140	1050	950	-
048	1600	1160	1880	High	-	-	-	1915	1835	1750	1660	1550	1415
				Med	1880	1860	1820	1770	1710	1640	1550	1450	1320
				Low	1495	1490	1485	1480	1460	1420	1360	1285	1160
060	2000	1560	2300	High	-	2320	2260	2200	2120	2040	1920	1840	1700
				Med	2040	2030	2005	1970	1925	1860	1785	1700	1610
				Low	1760	1750	1730	1700	1660	1610	1560	-	-
070	2200	1700	2400	High	2400	2320	2260	2200	2120	2040	1920	1840	1700
				Med	2040	2030	2005	1970	1925	1860	1785	1700	-
				Low	-	-	-	-	-	-	-	-	-

Units are shipped pre-wired for Medium speed.

All airflow ratings are at lowest voltage rating of dual rating (ie. 208 volt)

Airflow ratings include resistance of wet coil and clean air filters.

ELECTRICAL DATA

RSH/RSV ELECTRICAL DATA

Unit Size	SUPPLY VOLTAGE	COMPRESSOR				BLOWER		MIN. CCT. AMPACITY	MAX FUSE / CCT. BKR. AMP
		QTY		RLA	LRA	HP	FLA		
007	208-230/1/60	1	@	3.4	22.0	0.10	0.8	5.05	15
009	208-230/1/60	1	@	4.6	28.0	0.10	0.8	6.55	15
012	208-230/1/60	1	@	5.6	29.0	0.13	1.0	8.00	15
	265/1/60	1	@	4.6	20.0	0.13	0.9	6.65	15
018	208-230/1/60	1	@	6.9	48.0	0.17	1.4	10.03	15
	265/1/60	1	@	6.1	44.0	0.17	0.8	8.43	15
024	208-230/1/60	1	@	8.2	48.0	0.25	1.5	11.75	15
	265/1/60	1	@	7.0	44.0	0.25	1.3	10.05	15
	208-230/3/60	1	@	6.1	58.0	0.25	1.3	8.93	15
030	208-230/1/60	1	@	10.1	60.0	0.33	2.6	15.23	25
	265/1/60	1	@	8.7	58.0	0.33	1.9	12.78	20
	208-230/3/60	1	@	7.2	58.0	0.33	2.6	11.60	15
036	208-230/1/60	1	@	13.5	83.0	0.50	3.2	20.08	30
	265/1/60	1	@	11.6	79.0	0.50	2.2	16.70	25
	208-230/3/60	1	@	8.7	78.0	0.50	3.2	14.08	20
	460/3/60	1	@	4.3	40.0	0.50	2.5	7.88	15
042	208-230/1/60	1	@	19.9	109.0	0.50	3.2	28.08	45
	208-230/3/60	1	@	13.6	81.0	0.50	3.2	20.20	30
	460/3/60	1	@	6.1	41.0	0.50	2.5	10.13	15
	575/3/60	1	@	4.2	33.0	0.50	1.8	7.05	15
048	208-230/1/60	1	@	23.1	144.0	0.75	4.9	33.78	50
	208-230/3/60	1	@	16.0	91.0	0.75	4.9	24.90	40
	460/3/60	1	@	7.1	46.0	0.75	2.2	11.08	15
	575/3/60	1	@	5.6	37.0	0.75	1.8	8.80	15
060	208-230/1/60	1	@	26.3	134.0	1.00	5.1	37.98	60
	208-230/3/60	1	@	15.6	110.0	1.00	5.1	24.60	40
	460/3/60	1	@	7.8	52.0	1.00	3.2	12.95	20
	575/3/60	1	@	5.8	38.9	1.00	2.6	9.85	15
070	208-230/3/60	1	@	19.0	123.0	1.00	5.1	28.85	45
	460/3/60	1	@	9.7	62.0	1.00	3.2	15.33	25
	575/3/60	1	@	7.4	50.0	1.00	2.6	11.85	15

DIMENSIONAL DATA

RSH SERIES

LEFT HAND RETURN

RIGHT HAND RETURN

TOP VIEW

ELEVATION VIEW

FRONT VIEW

BACK VIEW

SERVICE DOORS

- ① - ELECTRICAL BOX SERVICE DOOR
- ② - COMPRESSOR AND CONDENSER SERVICE DOOR
- ③ - BLOWER SERVICE DOOR

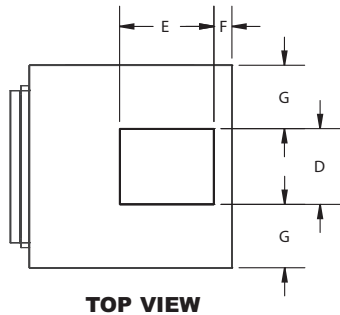
Model	A	B	C	D	E	RETURN AIR		K	SUPPLY AIR		N
						G	J		L	M	
RSH007	34.00	19.00	13.00	31.75	21.50	16.50	10.50	5.75	6.44	4.13	3.75
RSH009	34.00	19.00	13.00	31.75	21.50	16.50	10.50	5.75	6.44	4.13	3.75
RSH012	34.00	19.00	13.00	31.75	21.50	18.50	10.50	5.75	7.44	4.13	3.75
RSH018	40.00	21.00	19.00	37.75	23.50	23.00	16.50	6.50	9.19	10.31	3.75
RSH024	44.00	21.00	19.00	41.75	23.50	24.50	16.50	6.50	9.19	10.31	4.81
RSH030	44.00	21.00	19.00	41.75	23.50	24.50	16.50	6.50	9.69	11.38	4.81
RSH036	48.00	22.00	21.00	45.75	24.50	27.50	18.50	6.50	9.69	11.38	5.88
RSH042	52.00	26.00	21.00	49.75	28.50	35.50	18.50	6.50	10.50	13.63	5.88
RSH048	52.00	26.00	21.00	49.75	28.50	35.50	18.50	6.50	10.50	13.63	5.13
RSH060	56.00	26.00	23.00	53.75	28.50	43.50	20.50	6.00	13.12	13.63	5.13
RSH070	56.00	26.00	23.00	53.75	28.50	43.50	20.50	6.00	13.12	13.63	5.13

ALL DIMENSIONS IN INCHES

DIMENSIONAL DATA

RSV SERIES

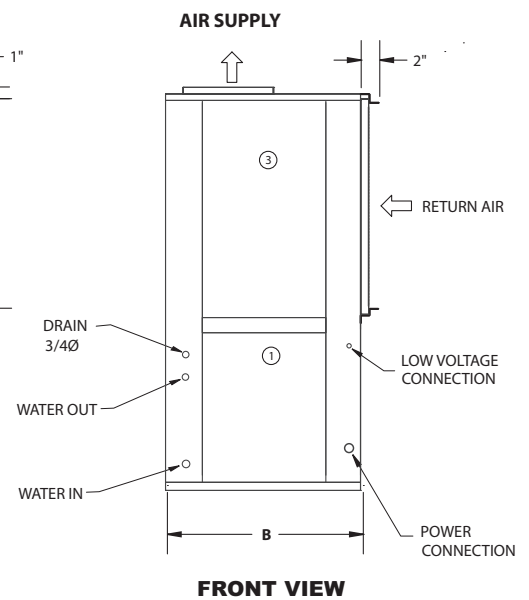
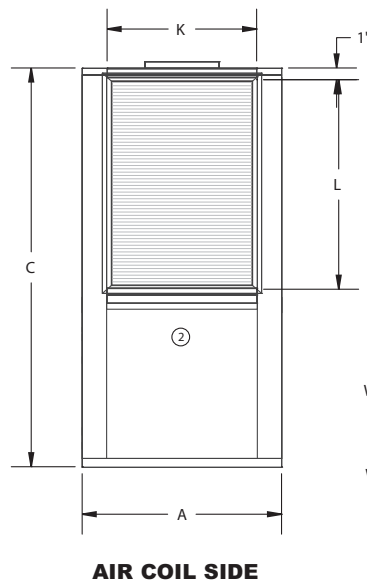
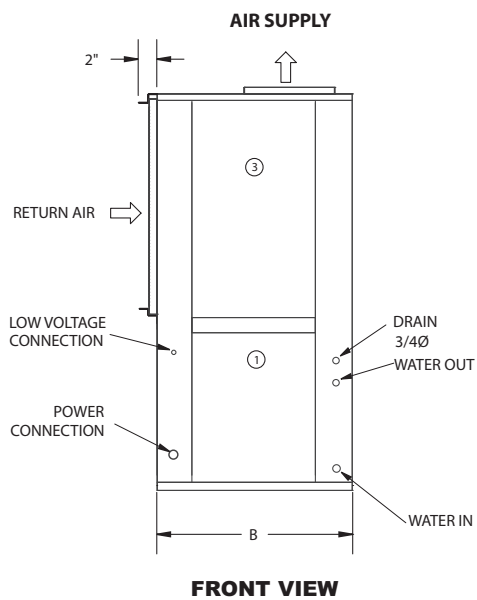
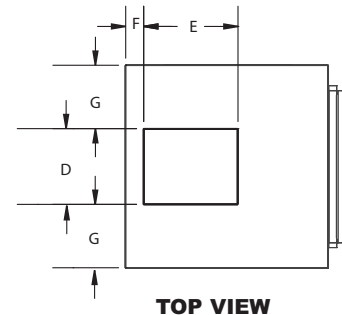
LEFT HAND RETURN



SERVICE DOORS

- ① - ELECTRICAL BOX SERVICE DOOR
- ② - COMPRESSOR AND CONDENSER SERVICE DOOR
- ③ - BLOWER SERVICE DOOR

RIGHT HAND RETURN



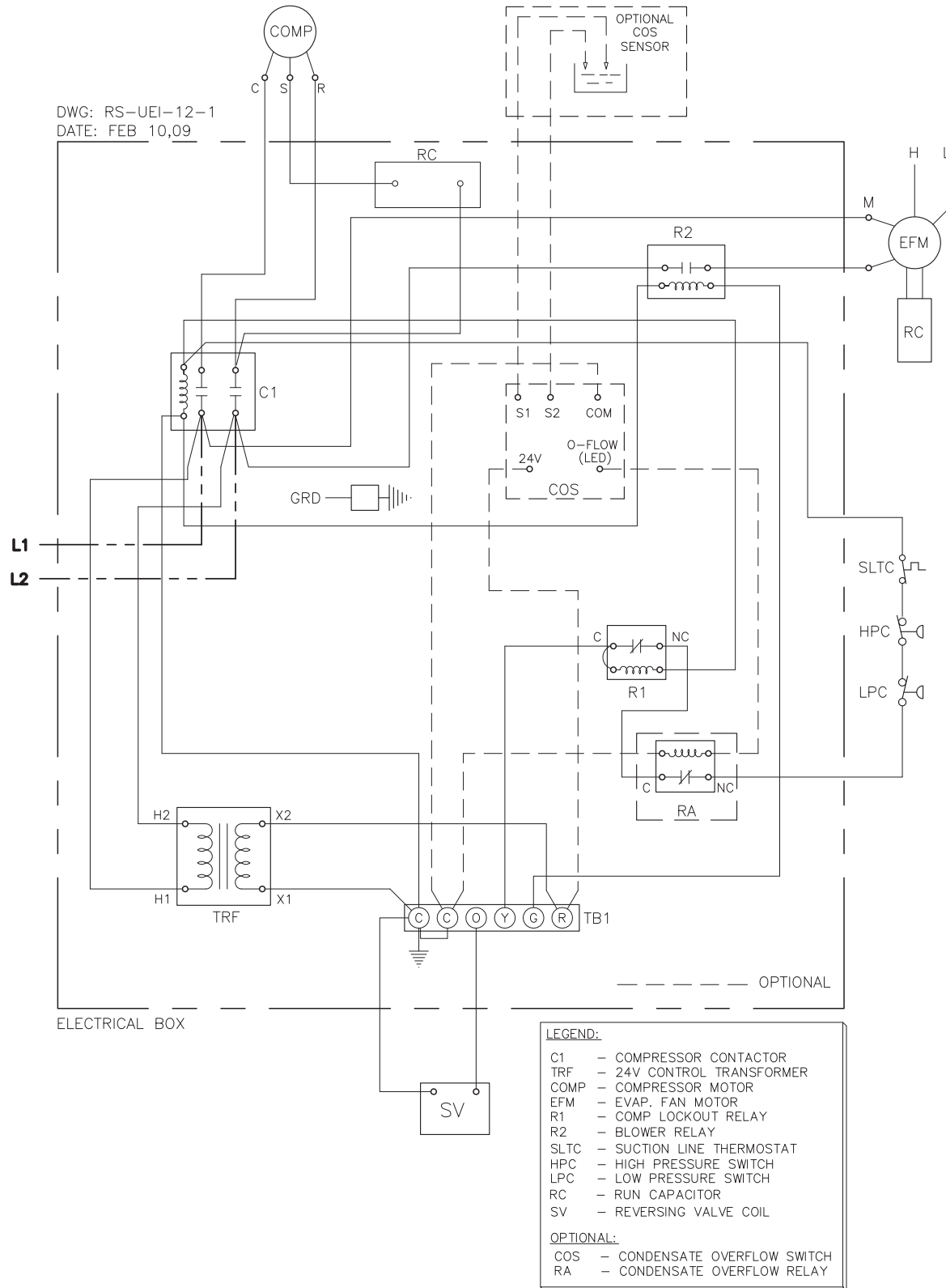
Model	A	B	C	SUPPLY AIR		F	G	RETURN AIR	
				D	E			K	L
RSV007	21.50	21.50	31.50	6.44	4.13	2.00	7.53	20.00	10.50
RSV009	21.50	21.50	31.50	6.44	4.13	2.00	7.53	20.00	10.50
RSV012	21.50	21.50	31.50	7.44	4.13	2.00	7.03	20.00	10.50
RSV018	25.50	23.00	40.00	9.19	10.31	2.00	8.16	25.00	16.50
RSV024	25.50	23.00	40.00	9.19	10.31	2.00	8.16	25.00	18.50
RSV030	25.50	23.00	40.00	9.69	11.38	2.00	7.91	25.00	18.50
RSV036	25.50	23.00	44.00	9.69	11.38	2.00	7.91	25.00	22.50
RSV042	28.00	25.50	46.00	10.50	13.63	2.00	8.75	25.00	26.00
RSV048	28.00	25.50	46.00	10.50	13.63	2.00	8.75	25.00	26.00
RSV060	32.50	27.50	50.00	13.12	13.63	3.00	9.69	30.00	30.00
RSV070	32.50	27.50	50.00	13.12	13.63	3.00	9.69	30.00	30.00

ALL DIMENSIONS IN INCHES

WIRING DIAGRAM

SINGLE PHASE

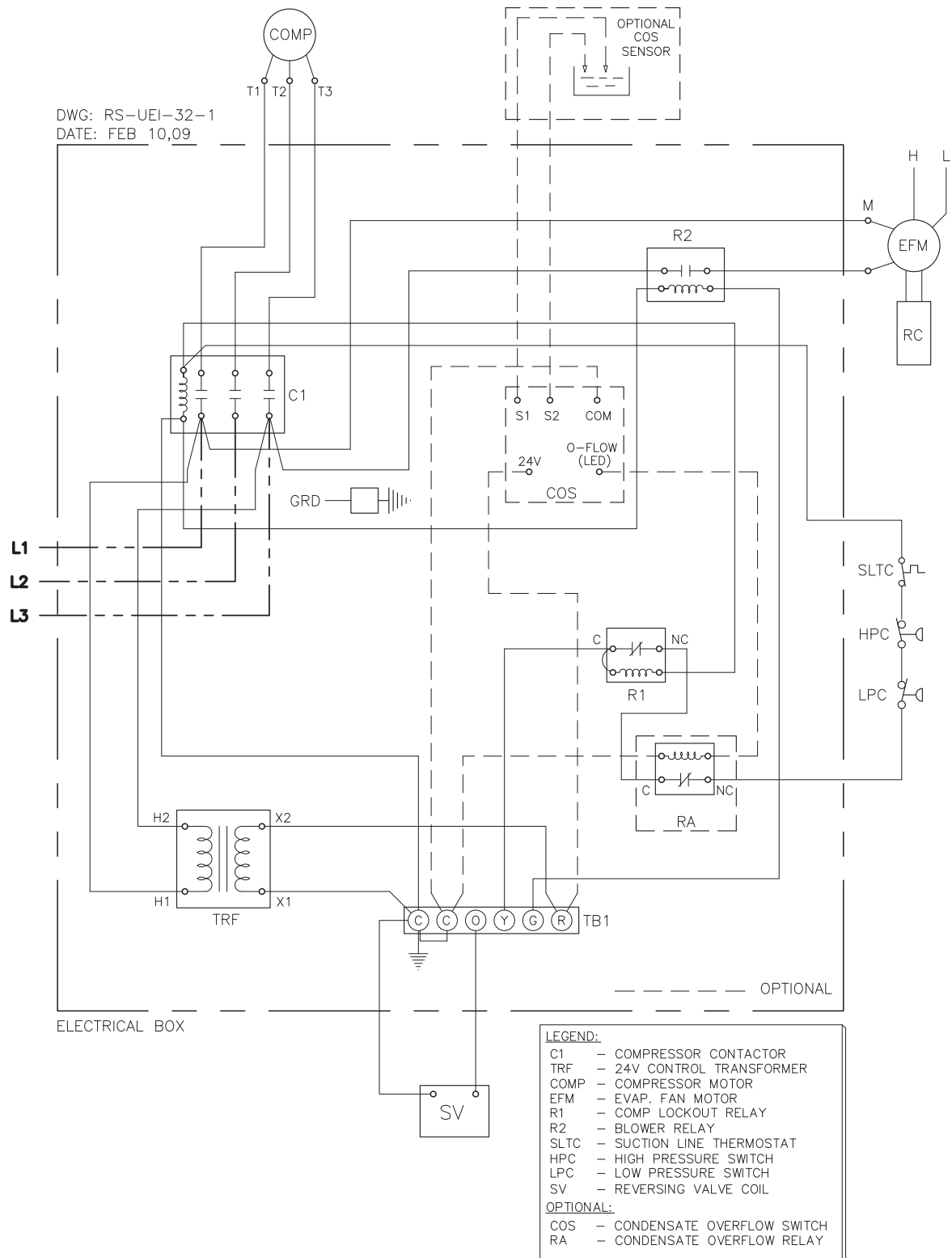
RS* UNITS: 208-230V/1Ph/60Hz
265V/1PH/60Hz



WIRING DIAGRAM

3 PHASE

RS* UNITS: 208-230V/3Ph/60Hz
460V/3Ph/60Hz
575V/3Ph/60Hz



NOTES

NOTES

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