ENGINEERING GUIDE SPECIFICATION
WSH - WATER SOURCE HORIZONTAL AIR CONDITIONERS

GENERAL

Ranger WSH series water cooled packaged units are horizontal cooling only units that range in capacity from 1-5 tons. All the units in the WSH series are shipped as factory charged packages utilizing *"Ozone Friendly"* refrigerants. All units utilize a low-profile cabinet and can pass through standard doorways and be transported in standard capacity elevators. The WSH series are designed for ceiling hung applications and include unit mounted, hanging rod connections. The units can be installed above ceiling tiles or hung above existing equipment in mechanical rooms, optimizing limited floor space. All units are shipped factory wired for single point power connection and the water in/out connections are piped for use with standard MNPT fittings. Optional stainless steel hose fittings can ship installed on the unit. All units in the WSH series are shipped with horizontal evaporator fan discharge and can be employed in a front or right supply air discharge.

CABINET

The Ranger unit cabinets are constructed from 20-gauge galvanized sheet metal, optional finish with a durable rust resistant electro-statically applied powder coat and baked to an attractive hard semi gloss finish. The entire unit interior (evaporator and condenser section) is insulated with ½" think acoustic insulation for sound attenuation. All WSH series units have factory mounted hanging rod connections.

REFRIGERATION CIRCUITS

The Ranger WSH series utilize one high efficiency, fully hermetic compressor. All models ship factory charged with *"Ozone Friendly"* refrigerants and comply with ARI/ASHREA/ISO#13256-1. Compressors are mounted on rubber isolators minimizing vibrations transmitted through the cabinet. Overload protection is provided internal to each compressor. All WSH series units are sealed single refrigeration circuits, controlled by an adjustable thermal expansion valve. Each unit includes an external high pressure and low pressure cut out control and easily accessible refrigerant service gauge ports for system testing and balancing. The supply air coil is constructed of copper tubes mechanically bonded into rippled aluminum fins. The evaporator coil is mounted in the return air stream and employed in a draw through configuration which provides for increased air, evenly covering the entire coil. The large evaporator coil face area helps to minimize resistance on the blower, resulting in higher efficiencies and quieter operation. The high efficiency tube-in-tube condenser coil features a riffled inner tube designed for maximum heat transfer between water and the coil. Standard condensers carry a 400psig working pressure rating. All units may be ordered with extended range packages for low water/glycol temperature applications.

INDOOR FANS

Centrifugal forward curved, double inlet - double width blowers achieve optimum CFM performance. Large diameter wheels are employed in a draw through configuration to provide required CFM at minimum motor rpm and reduced air noise levels. Blower wheels are fabricated of galvanized steel. All models utilize a multi-speed, direct drive blower and motor assembly allowing for easy fan speed adjustment when balancing the system after installation.

ELECTRICAL/CONTROLS

All units are factory wired with all necessary standard controls allowing for single point power connection. Each circuit has built into it an external high pressure and low pressure cut out control and a solid state lockout control. To reset the low voltage control circuit, the demand for cooling must be removed (turn thermostat off then on or reset the unit power). Each unit is furnished with a low voltage terminal block for connection of the thermostat to the unit using standard 24 volt thermostat wire.

FILTERS

All WSH series units are shipped with a 1" medium efficiency pleated throw away return air filter.

1 – 5 Ton Horizontal Water Source	WSH 12
Engineering Specification Data	1 TON

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 12 – 1 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	12.421	Gallons Per Minute	3.3
Total Sensible Heat	10,222	H_2O in connection FPT	¾"
Total Heat Rejection	17,512	H_2O out connection FPT	¾"
Total Power Input - KW	1	Condenser ΔT (PSI)	0.3
Energy Efficiency Ratio	14.1	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	26	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	135	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	150	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horse Power	¼
Number Used – Size (in)	(1) 15x29	CFM	400

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
500	460	420	385	360	325	300	285	250	HI
455	427.5	397.5	370	345	315	295			MED
410	395	375	355	330	305				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH12-1 208/230/1/60	4.8	29	2.2	¼	7	8.2	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/8	3	2	3/8	1	0.40

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1 – 5 Ton Horizontal Water Source	WSH 18
Engineering Specification Data	**1.5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 18 – 1.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	18,200	Gallons Per Minute	4.9
Total Sensible Heat	14,889	H_2O in connection FPT	¾"
Total Heat Rejection	22,499	H_2O out connection FPT	¾"
Total Power Input - KW	1.26	Condenser ΔT (PSI)	0.4
Energy Efficiency Ratio	14.5	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.7
Factory Charge	26	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	165	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	180	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horse Power	¼
Number Used – Size (in)	(1) 15x29	CFM	600

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
770	700	680	650	610	570	530	505	480	HI
720	675	648	610	570	535	500			MED
670	650	615	570	530					LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH18-1 208/230/1/60	5.5	48	2.2	1/4	7.7	10.0	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	4.5	3.5	3/8	1.1	0.6

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1 – 5 Ton Horizontal Water Source	WSH 24
Engineering Specification Data	**2 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 24 – 2 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	24,800	Gallons Per Minute	6.4
Total Sensible Heat	20,180	H_2O in connection FPT	¾"
Total Heat Rejection	30,381	H_2O out connection FPT	¾"
Total Power Input - KW	1.63	Condenser ΔT (PSI)	0.9
Energy Efficiency Ratio	15.3	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	32	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	170	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	185	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horse Power	¼
Number Used – Size (in)	(1) 15x29	CFM	800

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
930	890	810	760	710	690	680	660	630	HI
840	805	750	715	675	635	600			MED
750	720	690	670	640					LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH24-1 208/230/1/60	7.2	58.3	2.2	1/4	9.6	11.2	20	12

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	6	4.6	3/8	1.5	1

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1 – 5 Ton Horizontal Water Source	WSH 30
Engineering Specification Data	**2.5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 30 – 2.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	29,900	Gallons Per Minute	8.2
Total Sensible Heat	23,600	H_2O in connection FPT	¾"
Total Heat Rejection	36,792	H_2O out connection FPT	¾"
Total Power Input - KW	2.02	Condenser ΔT (PSI)	2.1
Energy Efficiency Ratio	14.8	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	32	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	180	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	195	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horse Power	¼
Number Used – Size (in)	(1) 19x20	CFM	1000

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1250	1170	1120	1070	940	830	740	710	680	HI
1150	1175	1020	950	850	790	720			MED
1050	980	920	830	760	710				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH30-1 208/230/1/60	9.3	72.5	2.2	1/4	11.5	14.2	25	10

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	7.5	6.3	3/8	1.8	1.2

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1 – 5 Ton Horizontal Water Source	WSH 36
Engineering Specification Data	3 TON

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 36 – 3 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	36,400	Gallons Per Minute	8.9
Total Sensible Heat	29,957	H_2O in connection FPT	¾"
Total Heat Rejection	44,315	H_2O out connection FPT	¾"
Total Power Input - KW	2.35	Condenser ΔT (PSI)	2.2
Energy Efficiency Ratio	15.6	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	2.63
Factory Charge	36	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	210	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	225	Diameter x Width	9x9
FILTERS	Med Eff Disposable	Motor Horse Power	½
Number Used – Size (in)	(1) 15x29	CFM	1200

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1500	1440	1370	1290	1210	1120	1000	910		HI
1455	1395	1330	1255	1180	1090	900			MED
1410	1350	1290	1220	1150	1060				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH36-1 208/230/1/60	10.3	79	5	½	15.3	17.9	30	10
WSH36-3 208/230/3/60	7.6	73	5	½	12.6	14.0	20	12
WSH36-5 575/3/60	3.1	36.5	1.9	¾	5.0	5.5	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	9	8.5	3/8	2.5	1.8

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1 – 5 Ton Horizontal Water Source	WSH 42
Engineering Specification Data	**3.5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 42 – 3.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	42,000	Gallons Per Minute	10.3
Total Sensible Heat	34,566	H_2O in connection FPT	¾"
Total Heat Rejection	55,420	H_2O out connection FPT	¾"
Total Power Input - KW	2.76	Condenser ΔT (PSI)	7.2
Energy Efficiency Ratio	15.22	**CONDENSATE FPT**	3/4"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – A2.44luminum Fins
Number Used	1	Face Area (sq ft)	2.63
Factory Charge	42	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	215	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	230	Diameter x Width	9x9
FILTERS	Med Eff Disposable	Motor Horse Power	½
Number Used – Size (in)	(1) 15x29	CFM	1400

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1560	1500	1420	1340	1260	1170	1070	950		HI
1515	1455	1380	1305	1230	1040	1003			MED
1470	1410	1340	1270	1200	1110	935			LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH42-1 208/230/1/60	13	105	5	½	18.0	20.0	40	8
WSH42-3 208/230/3/60	8.9	88	5	½	13.9	15.0	25	10
WSH42-5 575/3/60	3.7	34	1.9	¾	5.6	6.5	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	10.5	3.9	3/8	3	2

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1 – 5 Ton Horizontal Water Source	WSH 48
Engineering Specification Data	**4 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 48 – 4 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	48,900	Gallons Per Minute	12.6
Total Sensible Heat	40,245	H_2O in connection FPT	¾"
Total Heat Rejection	59,480	H_2O out connection FPT	¾"
Total Power Input - KW	3.1	Condenser ΔT (PSI)	8.1
Energy Efficiency Ratio	16.1	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	3.5
Factory Charge	55	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	230	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	245	Diameter x Width	12x8
FILTERS	Med Eff Disposable	Motor Horse Power	¾
Number Used – Size (in)	(2) 15 ¼ x 23 ½	CFM	1600

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1850	1800	1700	1650	1600	1500	1400	1280	1200	HI
1780	1720	1645	1580	1510	1440	1365	1340		MED
1710	1640	1590	1510	1420	1380	1330			LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH48-1 208/230/1/60	14	117	5.4	¾	19.4	22.9	40	8
WSH48-3 208/230/3/60	9	83.1	5.4	¾	14.4	16.7	25	10
WSH48-5 575/3/60	3.7	33	1.9	¾	5.6	6.5	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1	12	7.4	½	4	3

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1 – 5 Ton Horizontal Water Source	WSH 60
Engineering Specification Data	**5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSH 60 – 5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	60,500	Gallons Per Minute	15.9
Total Sensible Heat	52,261	H_2O in connection FPT	¾"
Total Heat Rejection	77,391	H_2O out connection FPT	¾"
Total Power Input - KW	4.07	Condenser ΔT (PSI)	9.6
Energy Efficiency Ratio	15.6	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	3.5
Factory Charge	55	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	235	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	230	Diameter x Width	12x8
FILTERS	Med Eff Disposable	Motor Horse Power	1
Number Used – Size (in)	(2) 15 ¼ x 23 ½	CFM	2000

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
2250	2200	2100	2050	2000	1900	1800	1675		HI
2180	2120	2045	1980	1910	1830	1770			MED
2110	2040	1990	1910	1820	1760				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSH60-1 208/230/1/60	18.3	158	5.4	¾	23.7	28.3	50	6
WSH60-3 208/230/3/60	12.8	107	5.4	¾	18.2	21.4	40	8
WSH60-5 575/3/60	5.1	50	1.9	¾	7.0	8.3	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
¾	15	9.6	½	4.9	4.2

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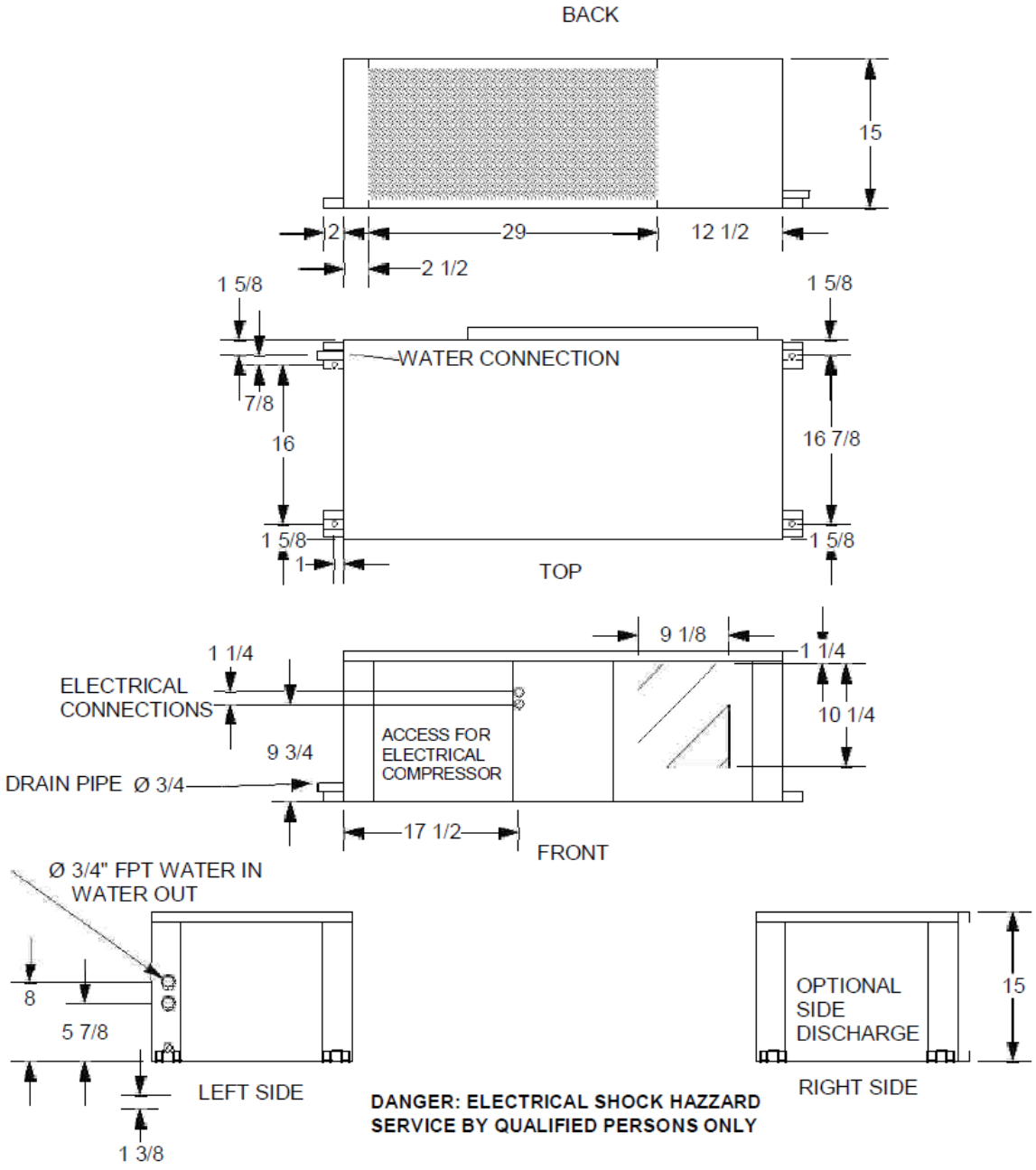


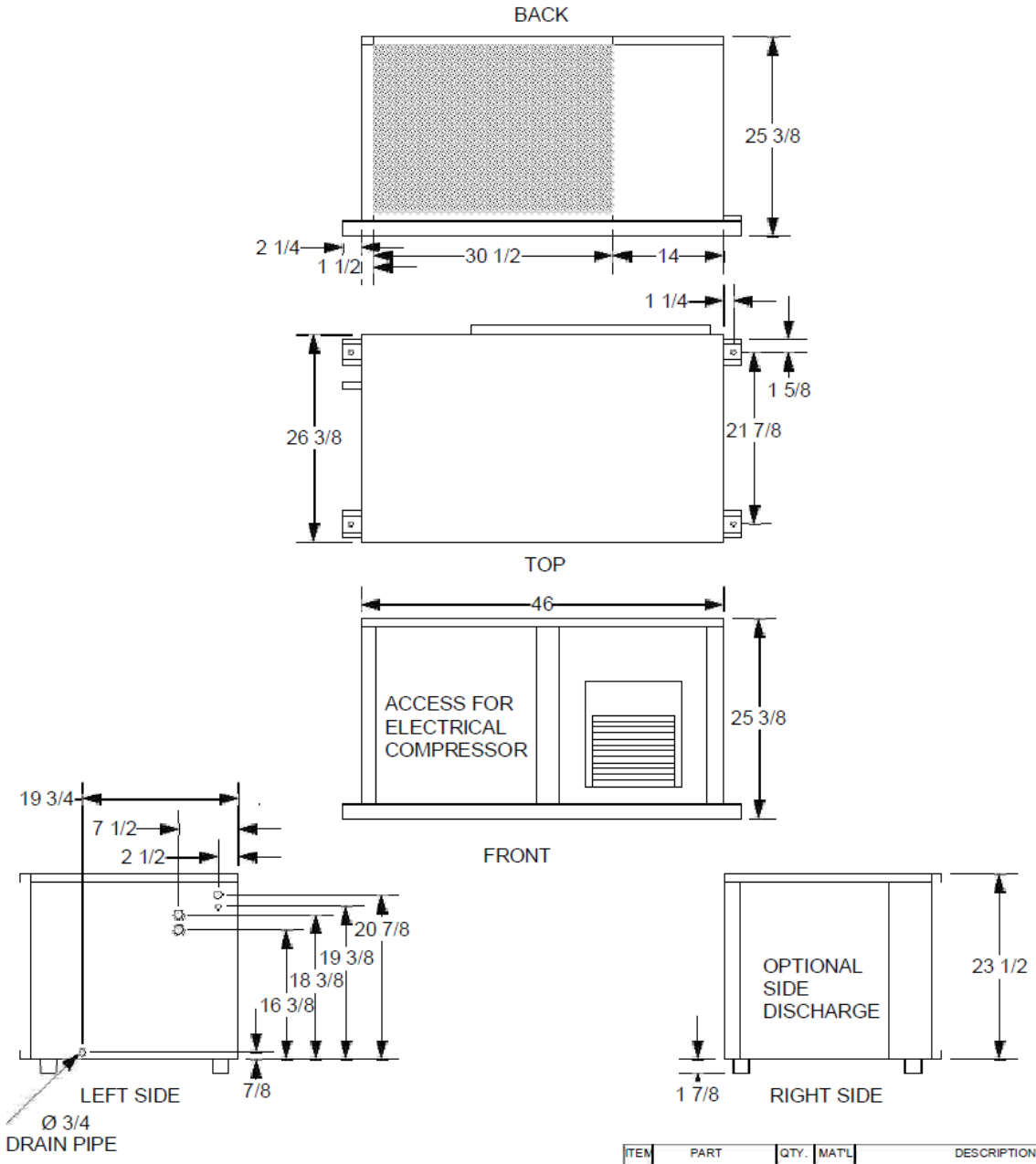
ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER Heating & Air Conditioning Products Inc.

WSH 12-42

Units Inches

DR. BY	GS	DATE 01/01/05	SCALE	DWG. NO.	REV 2
APPR.		DATE			



ITEM	PART	QTY.	MATL	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

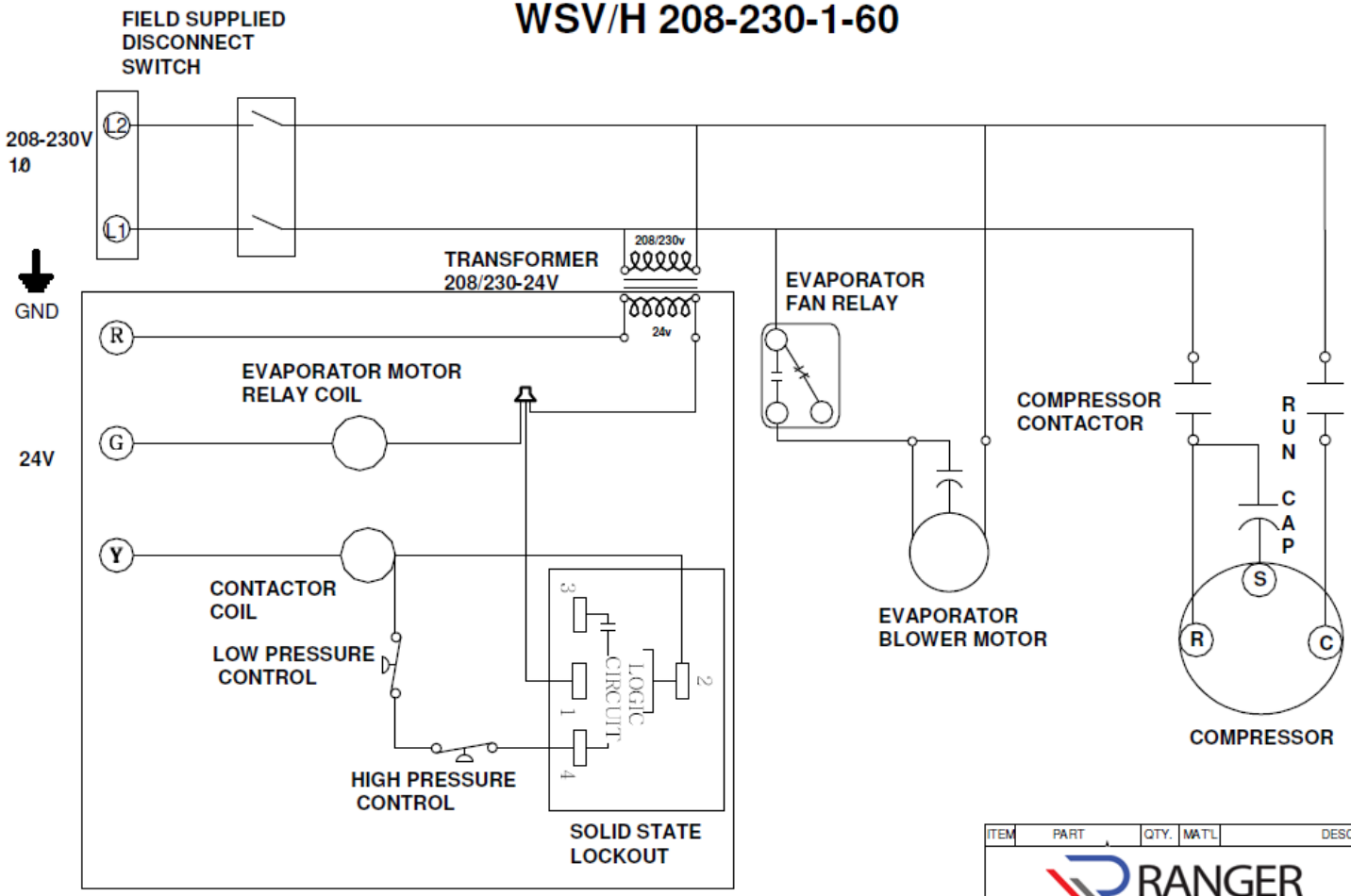
WSH48-60

Units Inches

DR. BY	GS	DATE 01/01/05	SCALE	DWG. NO.	REV
APPR.		DATE			2

MAT'L		TOLERANCES UNLESS NOTED OTHERWISE X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"
PT #	REQ'D	

WSV/H 208-230-1-60



DANGER: ELECTRICAL SHOCK HAZARD
SERVICE BY QUALIFIED PERSONS ONLY

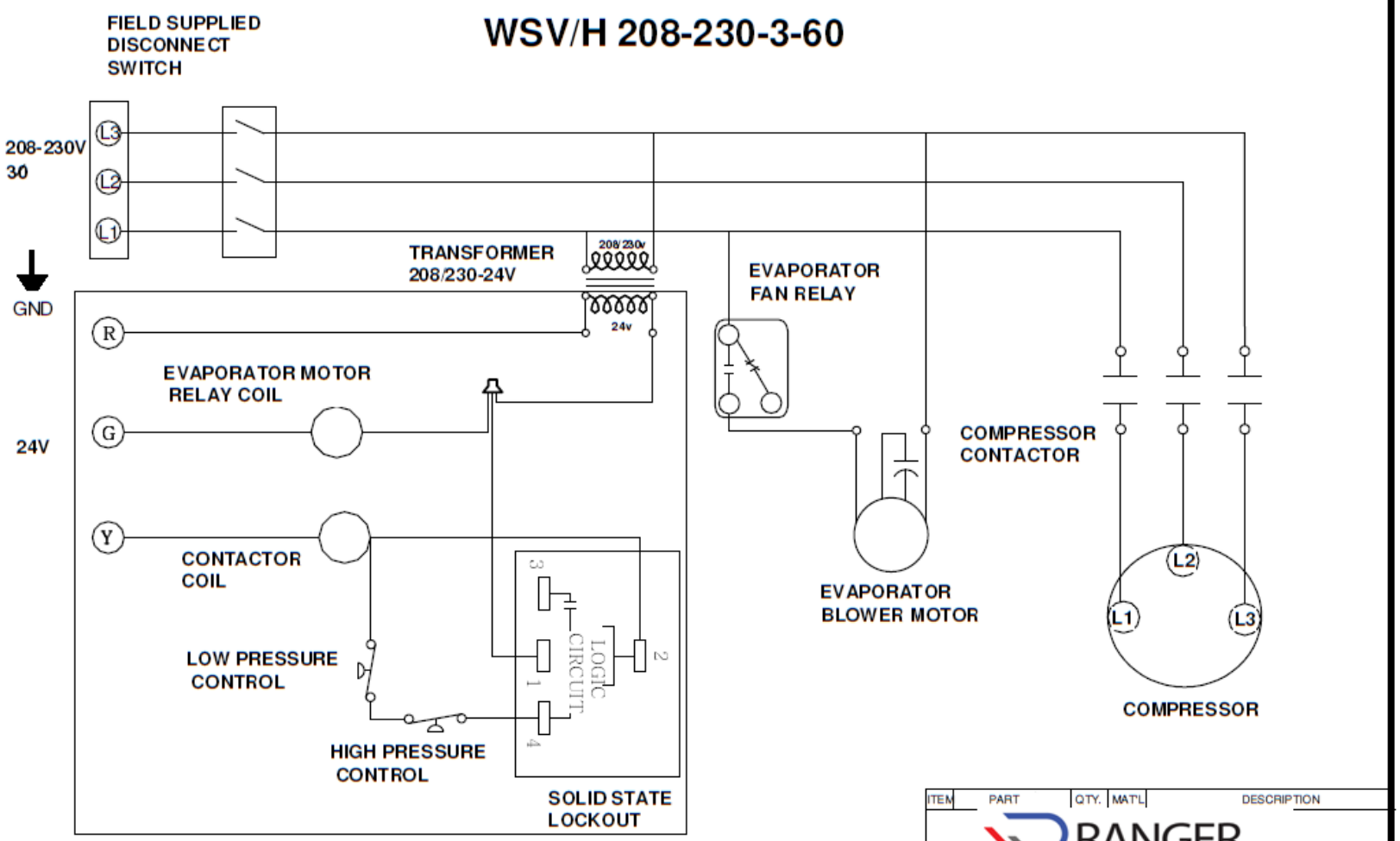
ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

MAT'L		TOLERANCES UNLESS NOTED OTHERWISE X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"
PT #	REQ'D	

WSV/H 208-230-3-60



DANGER: ELECTRICAL SHOCK HAZZARD
SERVICE BY QUALIFIED PERSONS ONLY

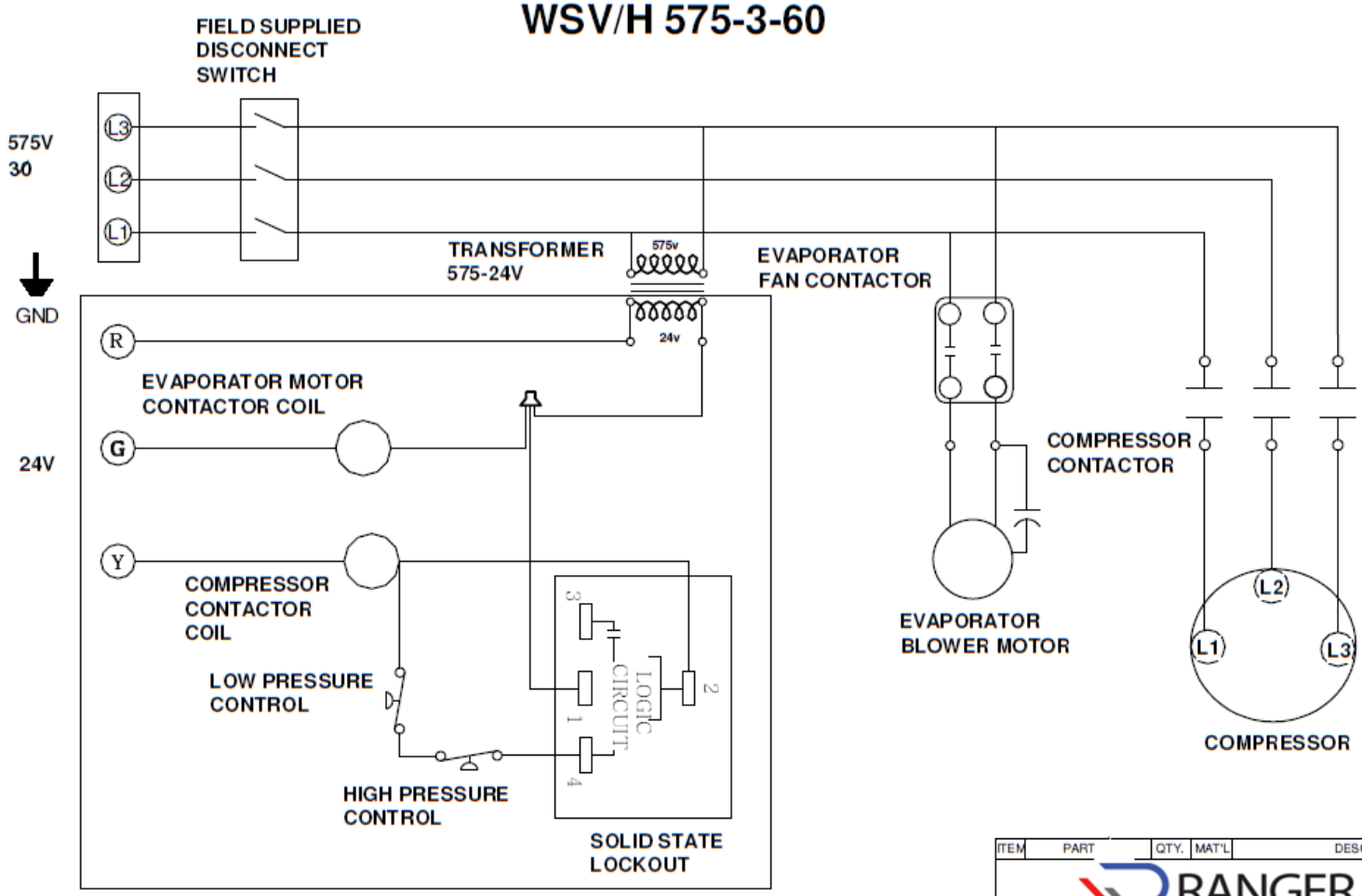
ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

MAT'L		TOLERANCES UNLESS NOTED OTHERWISE X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"
PT #	REQ'D	

WSV/H 575-3-60



DANGER: ELECTRICAL SHOCK HAZARD
SERVICE BY QUALIFIED PERSONS ONLY

ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

ENGINEERING GUIDE SPECIFICATION

WSV - WATER SOURCE VERTICAL AIR CONDITIONERS

GENERAL

Ranger WSV series water cooled packaged units are vertical cooling only units that range in capacity from 1-10 tons. All the units in the WSV series are shipped as factory charged packages utilizing *"Ozone Friendly"* refrigerants. All units utilize a small footprint cabinet and can pass through standard doorways and be transported in standard capacity elevators. The WSV series is designed for free standing or floor stand mounting. The unit can be maneuvered into narrow closets and mechanical rooms, or utilize the optional factory plenum, and be installed in an open area. Units are shipped factory wired for single point power connection and the water in/out connections are piped for use with standard MNPT fittings. Optional stainless steel hose fittings can ship installed on the unit. All units in the WSV series are shipped with vertical evaporator fan discharge and can be employed with an optional factory supplied discharge plenum.

CABINET

The Ranger unit cabinets are constructed from 20-gauge galvanized sheet metal, optional finish with a durable rust resistant electro-statically applied powder coat and baked to an attractive hard semi gloss finish. All cabinets have conveniently located service access doors for easy removal. The entire unit interior (evaporator and condenser section) is insulated with ½" think acoustic insulation for sound attenuation.

REFRIGERATION CIRCUITS

The WSV units 1-5 tons utilize one high efficiency, fully hermetic compressor. Units 7.5 – 10 tons utilize two high efficiency, fully hermetic compressors. Compressors are mounted on rubber isolators, minimizing vibrations transmitted through the cabinet. Overload protection is provided internally to each compressor. All WSV series units are sealed, single 1-5 ton or dual 7.5-10 refrigeration circuits, controlled by an optional adjustable thermal expansion valve. An optional liquid line drier may be installed to ensure the system remains free of contaminants. Each unit includes an external high pressure and low pressure cut out control, and easily accessible refrigerant service gauge ports for system testing and balancing. The supply air coil is constructed with copper tubes which are mechanically bonded into rippled aluminum fins. The evaporator coil is mounted in the return air stream and employed in a draw through configuration which provides for increased air, evenly covering the entire coil. The large evaporator coil face area helps to minimize resistance on the blower, resulting in higher efficiencies and quieter operation. The high efficiency tube-in-tube condenser coil features a rifled and enhanced inner tube designed for maximum heat transfer between water and the refrigerant coil. Standard condensers carry a 400psig working pressure rating. All units may be ordered with extended range packages for low water/glycol temperature applications.

INDOOR FANS

Centrifugal forward curved, double inlet - double width blowers achieve optimum CFM performance. Large diameter wheels are employed in a draw through configuration to provide required CFM at minimum motor rpm and reduced air noise levels. Blower wheels are fabricated of galvanized steel. All models 1-5 ton utilize a multi speed direct drive blower and motor assembly allowing for easy fan speed adjustment when balancing the system after installation. Models 7.5-10 tons utilize belt drive blower and motor assembly allowing for easy fan speed adjustment when balancing the system after installation.

ELECTRICAL/CONTROLS

All units are factory wired with all necessary standard controls allowing for single point power connection. Each circuit has built into it an external high pressure and low pressure cut out control and an optional drain pan overflow safety cut-out may be installed. To reset the low voltage control circuit the demand for cooling must be removed (turn thermostat off then on or reset the unit power). Each unit is furnished with a low voltage terminal block for connection of the thermostat to the unit using standard 24-volt thermostat wire.

FILTERS

All WSV series units are shipped with a 1" medium efficiency, pleated throw away return air filter.

1 – 10 Ton Vertical Water Source	WSV 12
Engineering Specification Data	**1 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 12 -1 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	12,421	Gallons Per Minute	3.5
Total Sensible Heat	10,222	H_2O in connection FPT	¾"
Total Heat Rejection	17,512	H_2O out connection FPT	¾"
Total Power Input - KW	1	Condenser ΔT (PSI)	0.3
Energy Efficiency Ratio	14.1	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	26	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	155	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	165	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horsepower	¼
Number Used – Size (in)	(1) 21x24	CFM	400

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
500	460	420	385	360	325	300	270		HI
455	428	398	370	345	315	288	250		MED
410	395	375	355	330	305	275			LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV12-1 208/230/1/60	4.8	29	2.2	¼	7	8.2	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/8	3	2	3/8	1	0.8

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1 – 10 Ton Vertical Water Source	**WSV 18**
Engineering Specification Data	**1.5TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 18 – 1 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	18,200	Gallons Per Minute	4.5
Total Sensible Heat	14,979	H_2O in connection FPT	¾"
Total Heat Rejection	22,499	H_2O out connection FPT	¾"
Total Power Input - KW	1.26	Condenser ΔT (PSI)	0.4
Energy Efficiency Ratio	14.5	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	28	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	170	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	185	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horsepower	¼
Number Used – Size (in)	(2) 21x24	CFM	600

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
770	700	680	650	610	570	530	490		HI
720	675	648	610	570	528	480			MED
670	650	615	570	530	485				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV18-1 208/230/1/60	5.5	48	2.2	¼	7.7	10	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	4.5	3.3	3/8	1.5	1.4

NOTES:	**PROJECT:**	
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1 – 10 Ton Vertical Water Source	WSV 24
Engineering Specification Data	**2 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 24 – 2 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	24,800	Gallons Per Minute	6.0
Total Sensible Heat	20,410	H_2O in connection FPT	¾"
Total Heat Rejection	30,381	H_2O out connection FPT	¾"
Total Power Input - KW	1.63	Condenser ΔT (PSI)	0.9
Energy Efficiency Ratio	15.3	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	30	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	175	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	190	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horsepower	¼
Number Used – Size (in)	(1) 21x24	CFM	800

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
930	890	810	760	710	690	680	660	635	HI
840	805	750	715	675	660	640			MED
750	720	690	670	650					LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV24-1 208/230/1/60	7.2	58.3	2.2	¼	9.4	11.2	20	12

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	6	4.5	3/8	2	1.8

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1 – 10 Ton Vertical Water Source	WSV 30
Engineering Specification Data	**2.5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 30 – 2.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	29,900	Gallons Per Minute	7.4
Total Sensible Heat	23,600	H_2O in connection FPT	¾"
Total Heat Rejection	36,792	H_2O out connection FPT	¾"
Total Power Input - KW	2.02	Condenser ΔT (PSI)	2.1
Energy Efficiency Ratio	14.8	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	1.77
Factory Charge	32	Rows/FPI	3/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	200	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	185	Diameter x Width	9x7
FILTERS	Med Eff Disposable	Motor Horsepower	1/3
Number Used – Size (in)	(1) 21x24	CFM	1000

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1250	1170	1120	1070	940	830	740	660		HI
1150	1175	1020	950	850	765	640			MED
1050	980	920	830	760	700				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV30-1 208/230/1/60	9.3	72.5	2.2	1/4	11.5	15	25	10

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
½	7.5	6.3	3/8	3	2.4

7.5

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1 – 10 Ton Vertical Water Source	WSV 36
Engineering Specification Data	**3 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 36 – 3 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	36,400	Gallons Per Minute	8.9
Total Sensible Heat	29,957	H_2O in connection FPT	¾"
Total Heat Rejection	44,315	H_2O out connection FPT	¾"
Total Power Input - KW	2.35	Condenser ΔT (PSI)	2.2
Energy Efficiency Ratio	15.6	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	2.63
Factory Charge	37	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	225	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	240	Diameter x Width	9x9
FILTERS	Med Eff Disposable	Motor Horsepower	½
Number Used – Size (in)	(1) 21x24	CFM	1200

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1500	1440	1370	1290	1210	1120	1000	900		HI
1455	1395	1330	1255	1180	1090	1020			MED
1410	1350	1290	1220	1150	1060				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV36-1 208/230/1/60	10.3	79	5	½	15.3	18	30	10
WSV36-2 208/230/3/60	7.6	73	5	½	12.6	14.0	20	12
WSV36-5 575/3/60	3.1	36.5	1.9	¾	5	5.8	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	9	3.2	3/8	3.6	3.5

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1 – 10 Ton Vertical Water Source	WSV 42
Engineering Specification Data	**3.5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 42 – 3.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	42,000	Gallons Per Minute	10.3
Total Sensible Heat	34,566	H_2O in connection FPT	¾"
Total Heat Rejection	51,420	H_2O out connection FPT	¾"
Total Power Input - KW	2.76	Condenser ΔT (PSI)	7.2
Energy Efficiency Ratio	15	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	2.63
Factory Charge	44	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	330	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	245	Diameter x Width	9x9
FILTERS	Med Eff Disposable	Motor Horsepower	½
Number Used – Size (in)	(2) 21x24	CFM	1400

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1560	1500	1420	1340	1260	1170	1070	1000		HI
1515	1455	1380	1305	1230	1040	1050			MED
1470	1410	1340	1270	1200	1110				LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV42-1 208/230/1/60	13	105	5	½	18	20.0	40	8
WSV42-3 2/8/230/3/60	8.9	88	5	½	13.9	15.0	25	10
WSV42-5 575/5/60	3.7	34	19	¾	5.5	6.5	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	10.5	3.8	1/2	4.5	3.3

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1 – 10 Ton Vertical Water Source	WSV 48
Engineering Specification Data	**4 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 48 – 4 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	48,900	Gallons Per Minute	12.6
Total Sensible Heat	40,245	H_2O in connection FPT	¾"
Total Heat Rejection	59,480	H_2O out connection FPT	¾"
Total Power Input - KW	3.1	Condenser ΔT (PSI)	8.1
Energy Efficiency Ratio	16.1	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	3.5
Factory Charge	54	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	250	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	265	Diameter x Width	12x8
FILTERS	Med Eff Disposable	Motor Horsepower	1
Number Used – Size (in)	(1) 25x29	CFM	1600

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1850	1800	1700	1650	1600	1500	1400	1280	1200	HI
1780	1720	1645	1580	1510	1440	1365	1340		MED
1710	1640	1590	1510	1420	1380	1330			LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV48-1 208/230/1/60	14	117	5.4	¾	19.4	22.9	40	8
WSV48-3 208/230/3/60	9	83.1	5.4	¾	14.4	16.7	25	10
WSV48-5 575/3/60	3.7	33	1.9	¾	5.6	6.5	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	12	7.4	1/2	3	2.9

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
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**Specifications and performance data subject to change without notice.

1 – 10 Ton Vertical Water Source	WSV 60
Engineering Specification Data	**5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 60 - 5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	63,500	Gallons Per Minute	15.9
Total Sensible Heat	52,261	H_2O in connection FPT	¾"
Total Heat Rejection	77,391	H_2O out connection FPT	¾"
Total Power Input - KW	4.07	Condenser ΔT (PSI)	9.6
Energy Efficiency Ratio	15.6	**CONDENSATE FPT**	¾"
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	1	Face Area (sq ft)	3.5
Factory Charge	54	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	255	**EVAPORATOR FAN**	3 Speed Direct Drive
Shipping	270	Diameter x Width	12x8
FILTERS	Med Eff Disposable	Motor Horsepower	1
Number Used – Size (in)	(1) 25x29	CFM	2000

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
2250	2200	2100	2050	2000	1900	1800	1680	1600	HI
2180	2120	2045	1980	1910	1840	1765	1740		MED
2110	2040	1990	1910	1820	1780	1730			LO

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV60-1 208/230/1/60	18.3	158	5.4	¾	23.7	28.3	50	6
WSV60-3 208/230/3/60	12.8	137	5.4	¾	18.2	21.4	40	8
WSV60-5 575/3/60	5.1	50	1.9	¾	7	8.3	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	15	9.6	1/2	4	3.2

NOTES:	**PROJECT:**	
	ENGINEER:	
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**Specifications and performance data subject to change without notice.

1 – 10 Ton Vertical Water Source	WSV 90
Engineering Specification Data	**7.5 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 90 – 7.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	97,800	Gallons Per Minute	23.8
Total Sensible Heat	80,489	H_2O in connection FPT	1”
Total Heat Rejection	118,960	H_2O out connection FPT	1”
Total Power Input - KW	6.2	Condenser ΔT (PSI)	7.2
Energy Efficiency Ratio	16.1	**CONDENSATE FPT**	1”
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	2	Face Area (sq ft)	7
Factory Charge	55x2	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	650	**EVAPORATOR FAN**	Belt Drive
Shipping	690	Diameter x Width	15x10
FILTERS	Med Eff Disposable	Motor Horsepower	1
Number Used – Size (in)	(2) 23x32x1	CFM	3000

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)								
BELT DRIVE		**0.10**	**0.20**	**0.30**	**0.40**	**0.50**	**0.60**	**0.70**
		RPM BPH	RPM BPH	RPM BPH	RPM BPH	RPM BPH	RPM BPH	RPM BPH
WSV90	3000	480 0.54	503 0.58	528 0.62	556 0.67	586 0.73	616 0.79	646 0.84

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV90-3 208/230/3/60	9.0x2	83x2	5.6	1.5	23.6	30.0	40	8
WSV90-5 575/3/60	3.7x2	33x2	1.7	1.5	9.1	15.0	20	12

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2x2	26	13	1/2x2		

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
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**Specifications and performance data subject to change without notice.

1 – 10 Ton Vertical Water Source	WSV 120
Engineering Specification Data	**10 TON**

Test Conditions: Evaporator Air - 80˚F dry bulb / 67˚F wet bulb@ CFM listed – condenser water - 85˚F EWT. / 95˚ LWT Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop. All units shipped as tested on MED speed. For higher sensible applications units must be changed to HI speed. Refer to manual. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSV 120 – 10 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	127,000	Gallons Per Minute	30.9
Total Sensible Heat	104,521	H_2O in connection FPT	1”
Total Heat Rejection	154,372	H_2O out connection FPT	1”
Total Power Input - KW	8.02	Condenser ΔT (PSI)	9.6
Energy Efficiency Ratio	15.8	**CONDENSATE FPT**	1”
COMPRESSOR TYPE	Fully Hermetic	**EVAPORATOR COIL**	Copper Tube – Aluminum Fins
Number Used	2	Face Area (sq ft)	7
Factory Charge	55x2	Rows/FPI	4/14
WEIGHT	(LBS)	Refrigerant Control	TXV
Operating	640	**EVAPORATOR FAN**	Belt Drive
Shipping	700	Diameter x Width	15x10
FILTERS	Med Eff Disposable	Motor Horsepower	3
Number Used – Size (in)	(2)23x32x1	CFM	4000

Blower Performance (CFM):

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)								
BELT DRIVE		**0.10**	**0.20**	**0.30**	**0.40**	**0.50**	**0.60**	**0.70**
		RPM BPH	RPM BPH	RPM BPH	RPM BPH	RPM BPH	RPM BPH	RPM BPH
WSV120	4000	621 1.21	637 1.25	653 1.31	670 1.36	690 1.43	709 1.46	725 1.5

Electrical Data:

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSV120-3 208/230/3/60	12.8x2	137x2	8.8	3	34.4	34.4	40.0	6
WSV120-5 575/3/60	5.1x2	50x2	3.6	3	13.85	13.9	20.0	10

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2x2	33	21	1/2x2		

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
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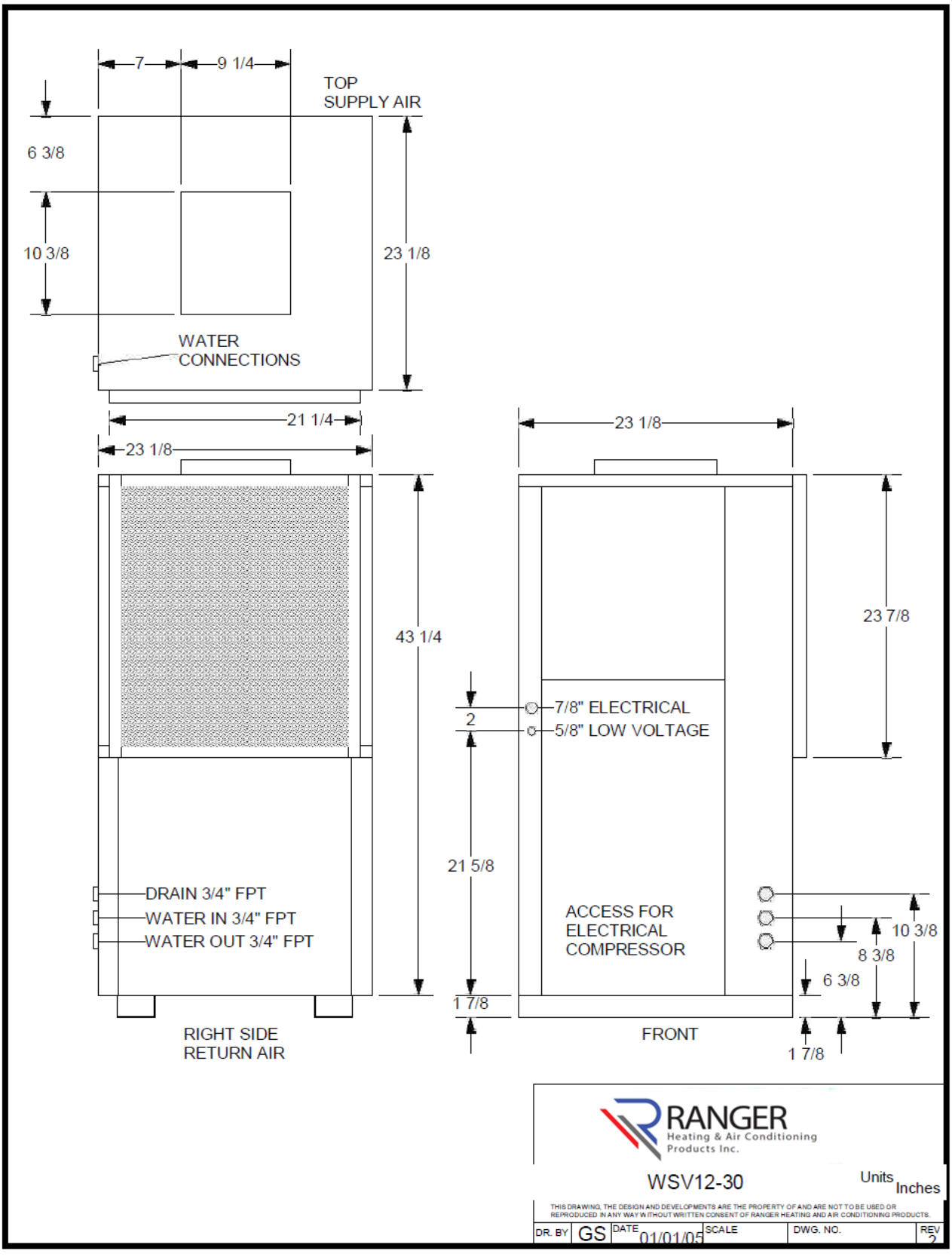
**Specifications and performance data subject to change without notice.

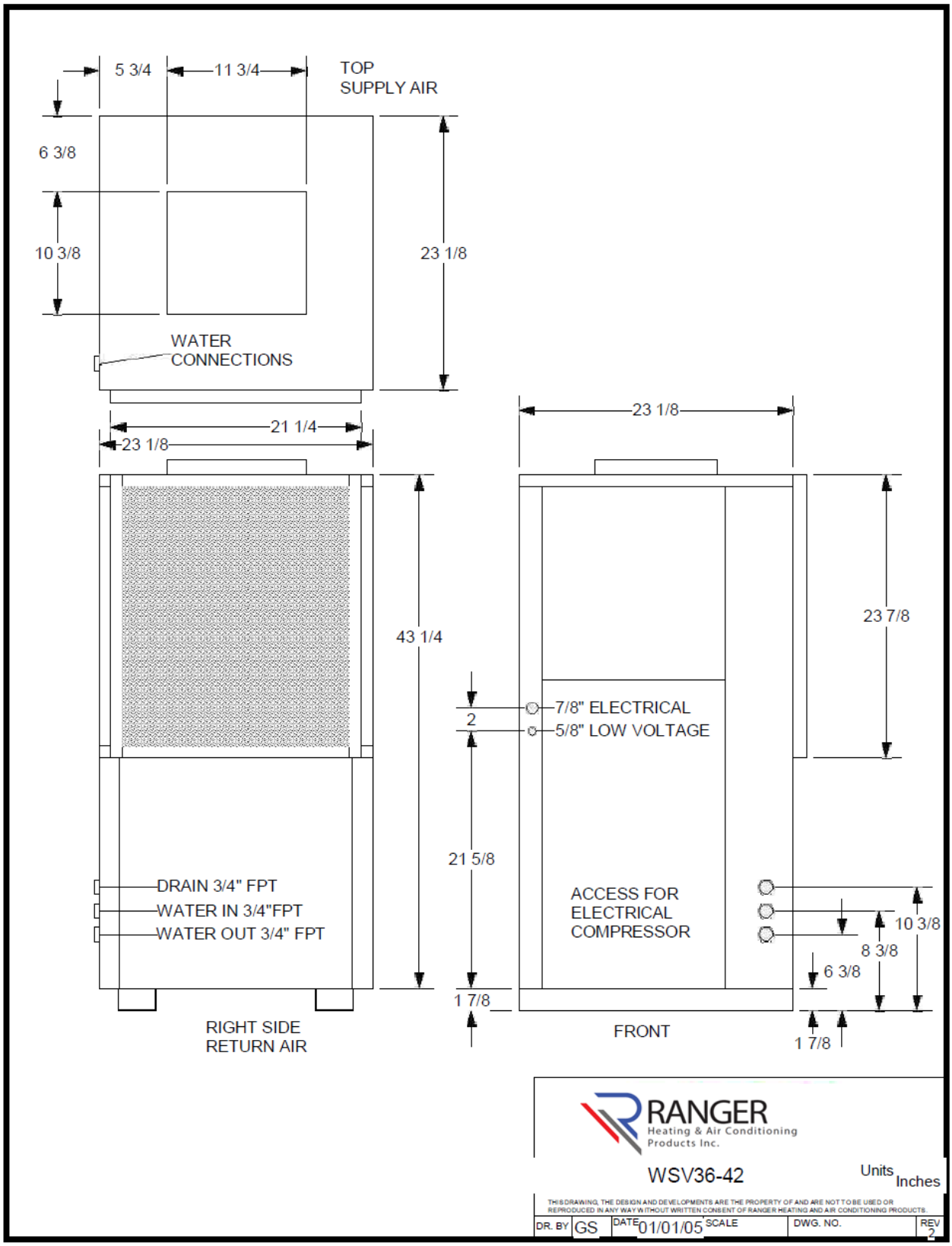


RANGER
Heating & Air Conditioning
Products Inc.

WSV12-30

Units Inches

DR. BY	DATE	SCALE	DWG. NO.	REV
GS	01/01/05			2

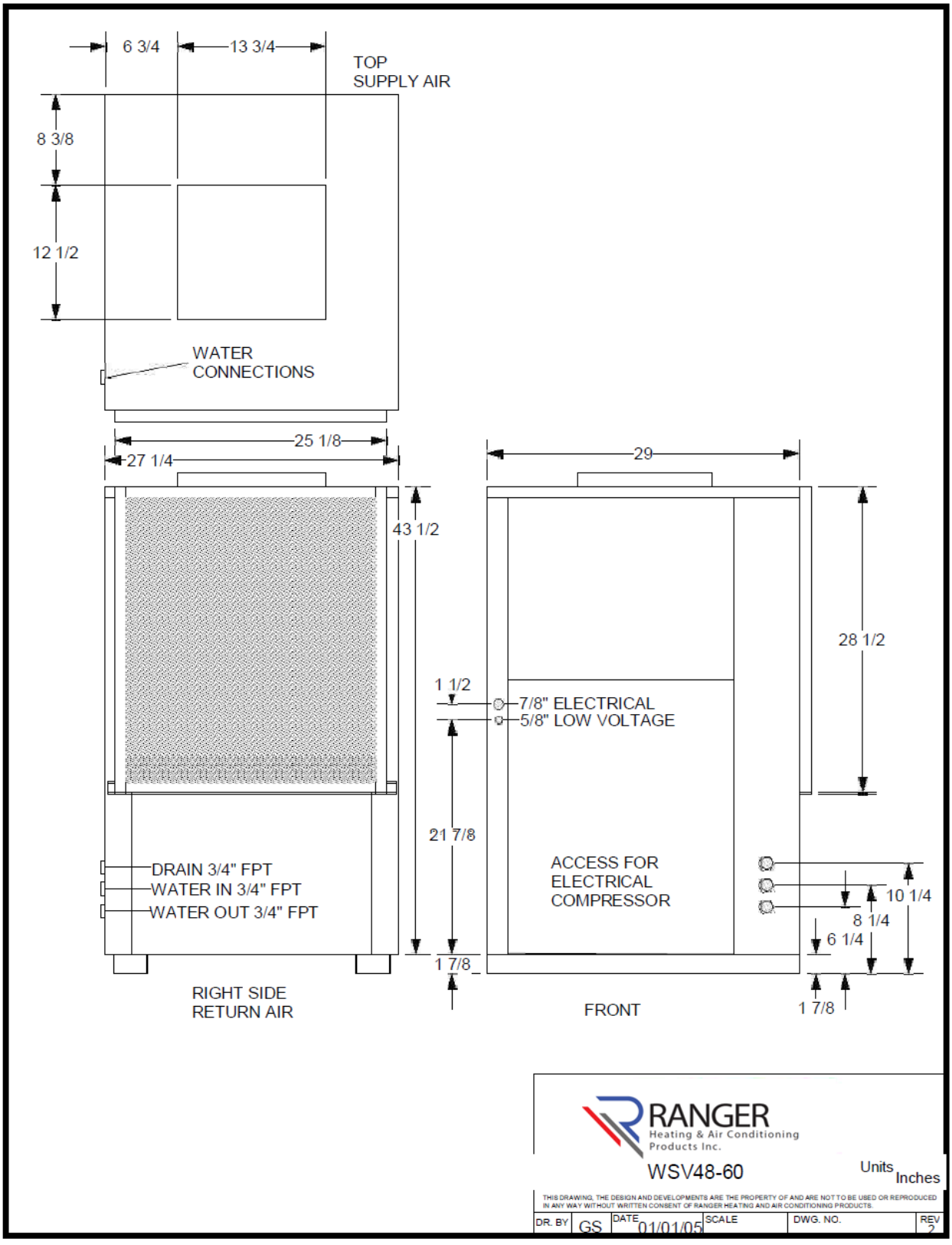


RANGER
Heating & Air Conditioning
Products Inc.

WSV36-42

Units Inches

DR. BY	DATE	SCALE	DWG. NO.	REV
GS	01/01/05			2

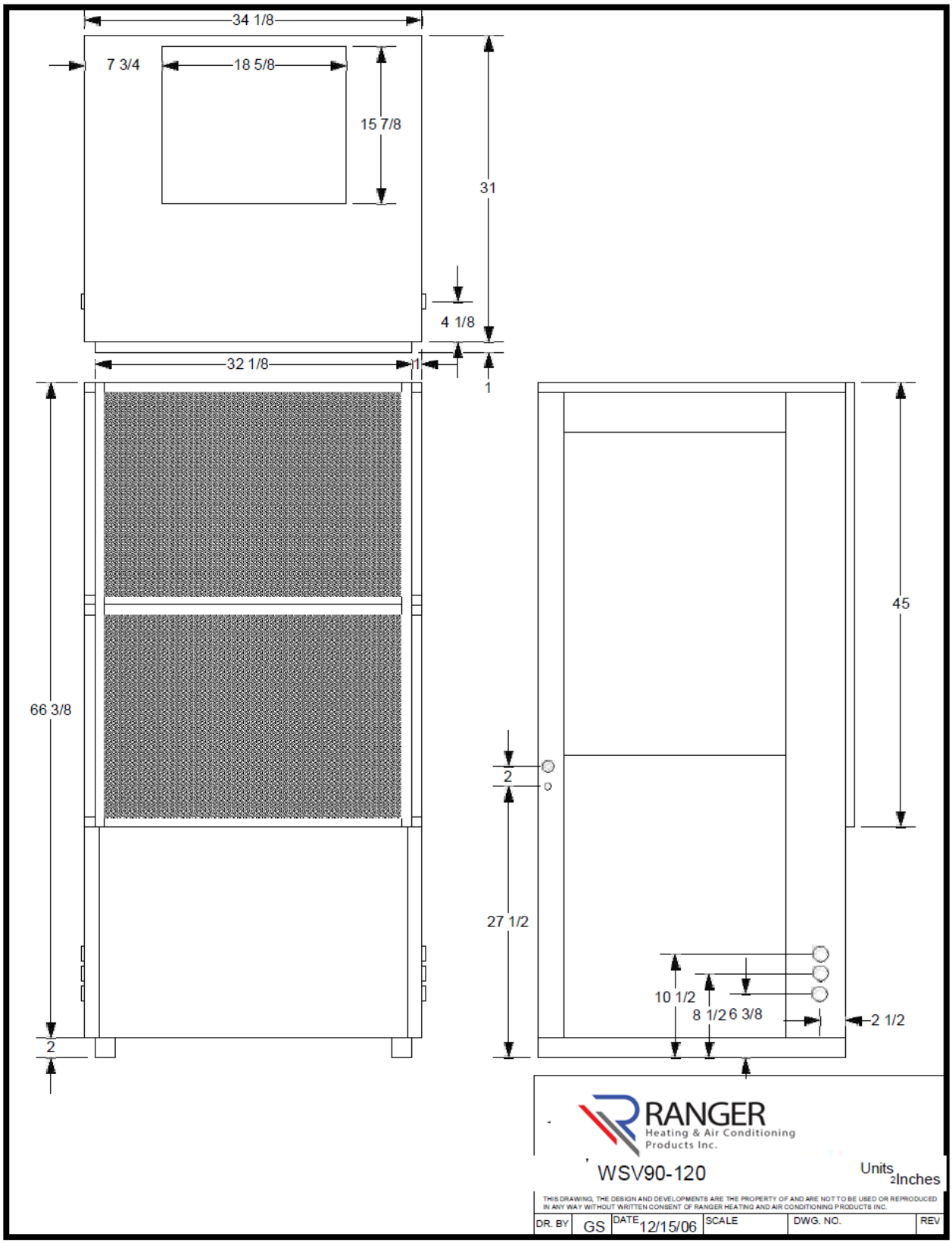


RANGER
Heating & Air Conditioning
Products Inc.

WSV48-60

Units Inches

DR. BY	DATE	SCALE	DWG. NO.	REV
GS	01/01/05			2



RANGER
Heating & Air Conditioning
Products Inc.

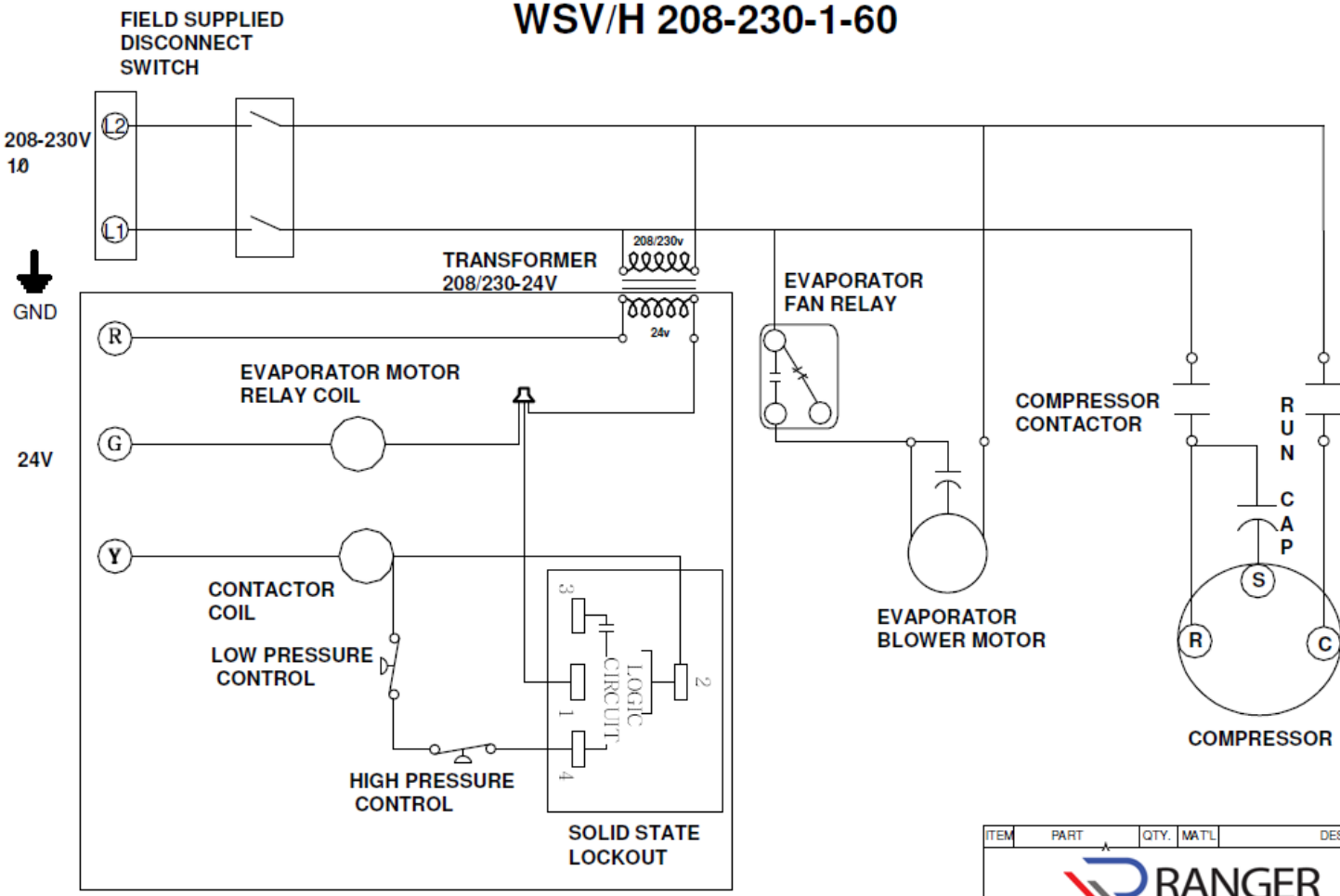
WSV90-120

Units Inches

DR. BY	DATE	SCALE	DWG. NO.	REV
GS	12/15/06			

MAT'L		TOLERANCES UNLESS NOTED OTHERWISE X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"
PT #	REQ'D	

WSV/H 208-230-1-60



DANGER: ELECTRICAL SHOCK HAZARD
SERVICE BY QUALIFIED PERSONS ONLY

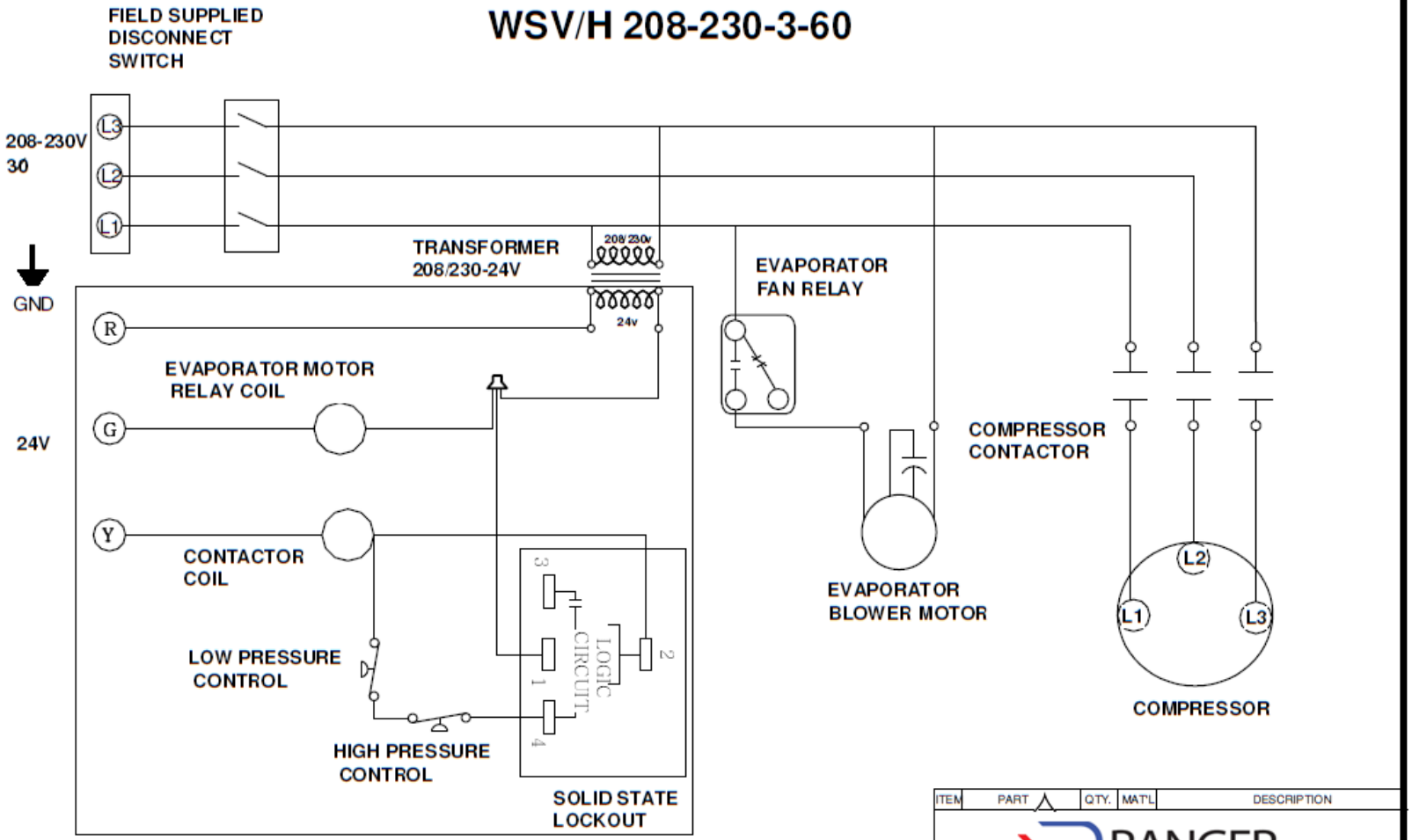
ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

MAT'L	TOLERANCES UNLESS NOTED OTHERWISE
PT # / REQ'D	X.X ±.060" ANGLE X.X ± 0.5°
	X.XX ±.030"
	X.XXX ±.015"

WSV/H 208-230-3-60



DANGER: ELECTRICAL SHOCK HAZZARD
SERVICE BY QUALIFIED PERSONS ONLY

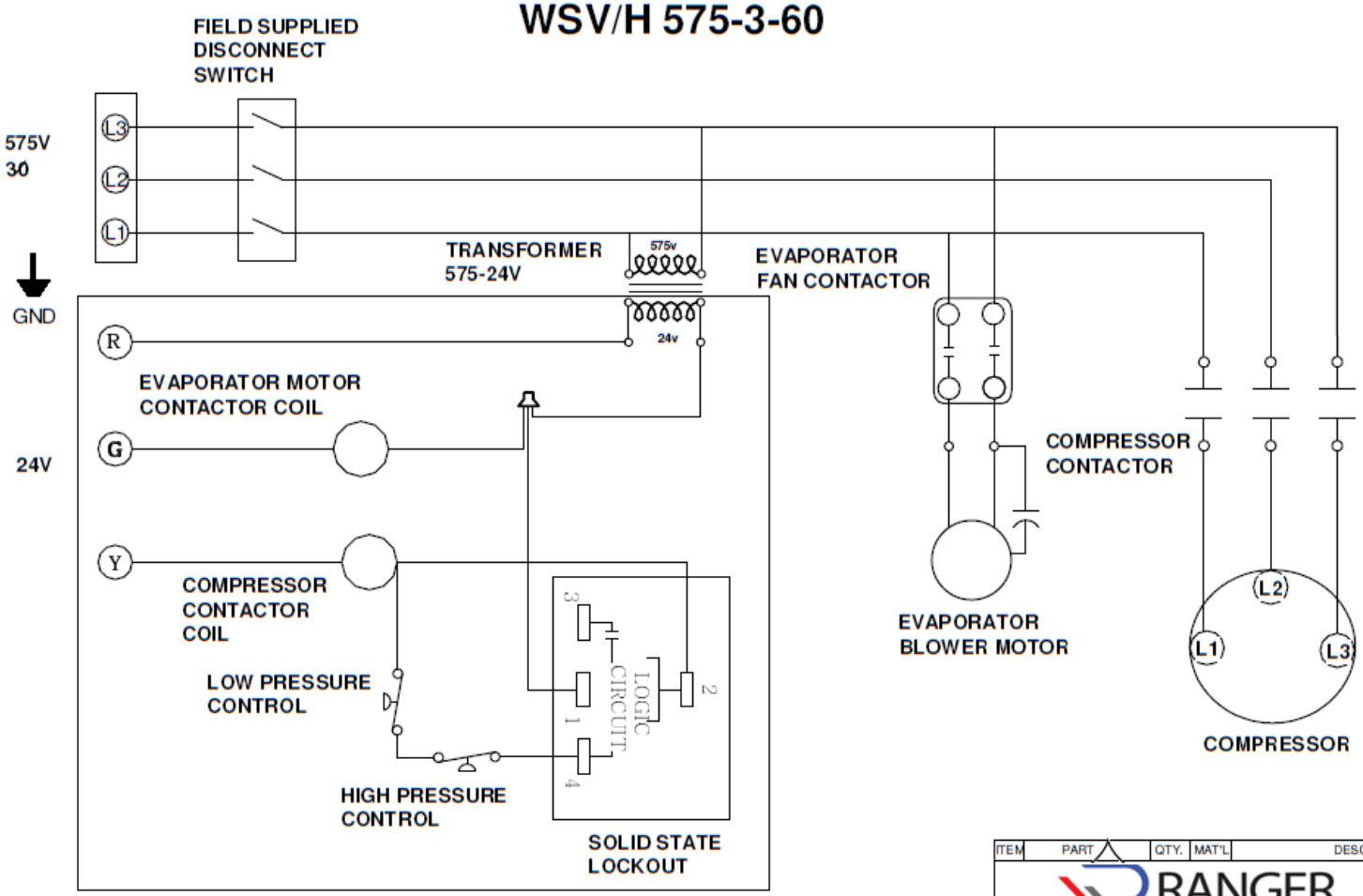
ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

MAT'L	TOLERANCES UNLESS NOTED OTHERWISE X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"
PT # / REQ'D	

WSV/H 575-3-60



DANGER: ELECTRICAL SHOCK HAZARD
SERVICE BY QUALIFIED PERSONS ONLY

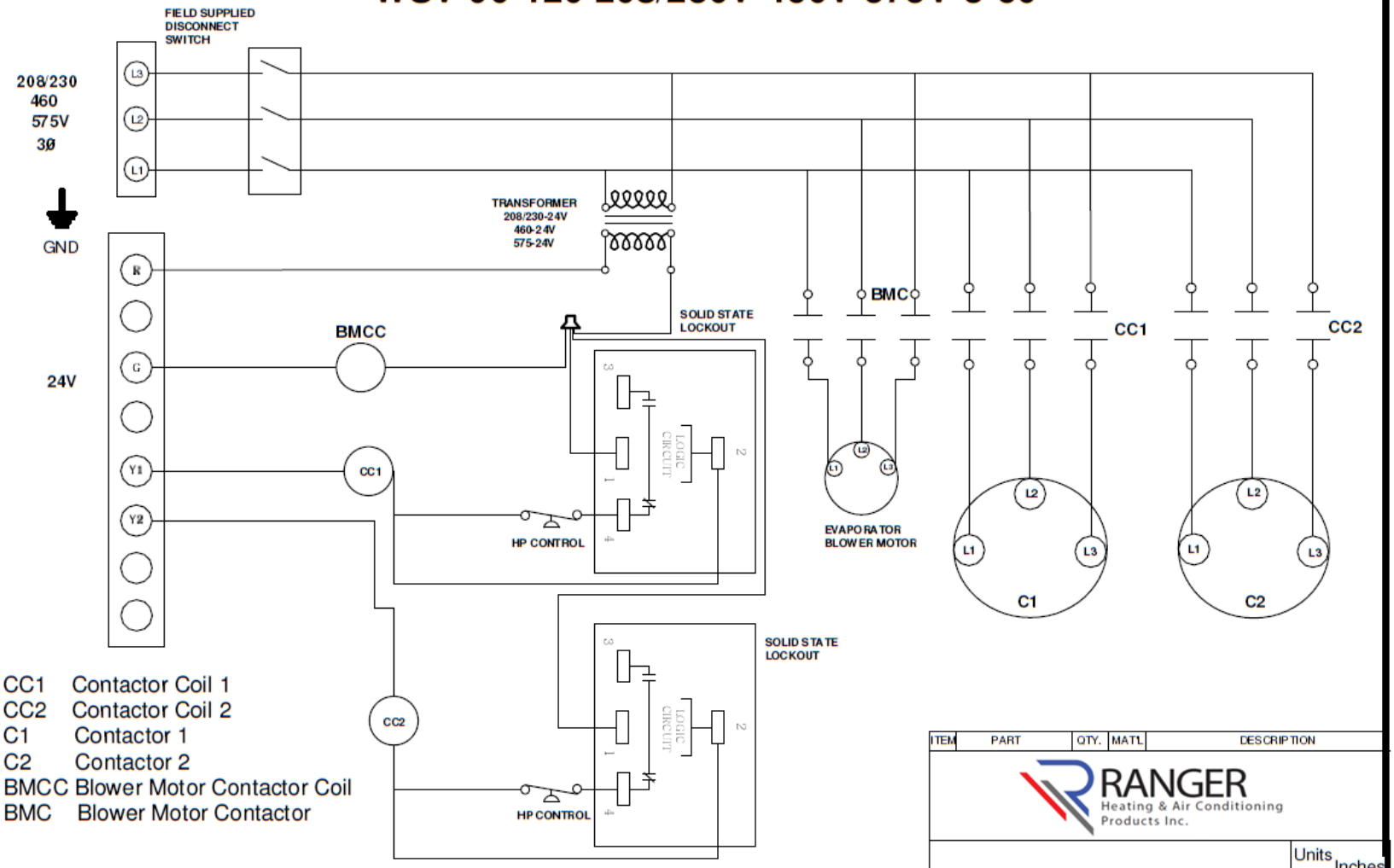
ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

MAT'L	TOLERANCES UNLESS NOTED OTHERWISE
PT # / REQ'D	X.X ±.060" ANGLE X.X ±0.5°
	X.XX ±.030"
	X.XXX ±.015"

WSV 90-120 208/230V-460V-575V-3-60



CC1 Contactor Coil 1
CC2 Contactor Coil 2
C1 Contactor 1
C2 Contactor 2
BMCC Blower Motor Contactor Coil
BMC Blower Motor Contactor

DANGER:ELECTRICAL SHOCK HAZARD
SERVICE BY AUTHORIZED PERSONS ONLY

ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER Heating & Air Conditioning Products Inc.

Units Inches

DR. BY	DATE	SCALE	DWG. NO.	REV
APPR.	DATE			

REV.	DESCRIPTION	DATE	BY

ENGINEERING GUIDE SPECIFICATION

WSS - WATER SOURCE CONDENSER
SPLIT SYSTEM AIR CONDITIONERS

GENERAL

Ranger WSS series water cooled condensing units are cooling only condensers that range in capacity from 1-5 tons. The condensing section is designed to be employed with an equal capacity evaporator section or ductless split, connected by refrigerant lines. All the units in the WSS series are shipped as factory charged packages utilizing *"Ozone Friendly"* refrigerants. All units utilize a small footprint cabinet and can pass through standard doorways and be transported in standard capacity elevators. The WSS series are designed for free standing or floor stand mounting. The unit can be furred into narrow closets and mechanical rooms or located on top of a drop ceiling. Units are shipped factory wired for single point power connection. All WSS unit are designed to operate utilizing ground source, mains, and cooling tower water. Treated swimming pool water can also be used to transfer heat, and the WSS series can be employed as supplement heating for any indoor or outdoor swimming pool in a residential or commercial application when specified at time of order for an additional fee.

CABINET

The Ranger unit cabinets are constructed from 20-gauge sheet metal, can be finished with a durable rust resistant electro-statically applied powder coat and baked to an attractive hard semi gloss finish as an option. The entire condensing unit interior is insulated with ½" think acoustic insulation for sound attenuation.

REFRIGERATION CIRCUITS

The Ranger WSS series utilize one high efficiency, fully hermetic compressor. All models ship factory charged with *"Ozone Friendly"* refrigerants and comply with ARI/ASHREA/ISO#13256-1. Liquid line and suction line shut off valves are standard on the WSS series units and contain the correct refrigerant charge for the Condenser section. Field connection of the evaporator unit is required, and specified refrigerant must be added to the system according to ASREA and evaporator manufacture guidelines. Easily accessible refrigerant service gauge ports for system charging and balancing are conveniently located on the evaporator side on the refrigerant line shut off valves. Compressor is mounted on rubber isolators minimizing vibrations transmitted through the cabinet. Overload protection is provided internal to each compressor. All WSS series units are a sealed single refrigeration circuit. Each unit includes an external high pressure and may include a low pressure cut out control.

The high efficiency tube-in-tube condenser coil features a riffled inner tube designed for maximum heat transfer between water and the coil. Standard condensers carry a 400psig working pressure rating. All units may be ordered with extended range packages for low water/glycol temperature applications.

INDOOR FANS

The condensing section is designed to be employed with an equal capacity evaporator section or ductless split, connected by refrigerant lines. Field connection of the evaporator unit is required, and specified refrigerant must be added to the system according to ASREA and evaporator manufacture guidelines.

ELECTRICAL/CONTROLS

All units are factory wired with all necessary standard controls allowing for single point power connection. Each circuit has built into it an external high pressure and low pressure cut out control. To reset the low voltage control circuit the demand for cooling must be removed (turn thermostat off then on or reset the unit power).

1 – 5 TON WATER SOURCE CONDENSER	WSS 12
Engineering Specification Data	**1 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 12 – 1 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling **	12,421	Gallons Per Minute	3.5
Total Sensible Heat	10,222	H_2O in connection	½"OD
Total Heat Rejection	17,512	H_2O out connection	½"OD
		Condenser ΔT (PSI)	0.3
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	125
Factory Charge	32	Shipping	135

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
500	460	420	385	360	325	300	270		HI
455	428	398	370	345	315	288	250		MED
410	395	375	355	330	305	275			LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS12-1 208/230/1/60	4.8	29			4.8	6	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/8	3	2	3/8	1	0.8

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
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**Specifications and performance data subject to change without notice.

1 – 5 TON WATER SOURCE CONDENSER	WSS 18
Engineering Specification Data	**1.5 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 18 – 1.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	18,200	Gallons Per Minute	4.5
Total Sensible Heat	14,979	H_2O in connection	½" OD
Total Heat Rejection	22,499	H_2O out connection	½" OD
		Condenser ΔT (PSI)	0.4
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	130
Factory Charge	32	Shipping	140

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
770	700	680	650	610	570	530	490		HI
720	675	648	610	570	528	480			MED
670	650	615	570	530	485				LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS18-1 208/230/1/60	5.5	48			5.5	6.9	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	4.5	3.3	3/8	1.5	1.4

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
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**Specifications and performance data subject to change without notice.

1 – 5 TON WATER SOURCE CONDENSER	WSS 24
Engineering Specification Data	**2 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 24 – 2 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	24,800	Gallons Per Minute	6.1
Total Sensible Heat	20,410	H_2O in connection	½"OD
Total Heat Rejection	30,381	H_2O out connection	½"OD
		Condenser ΔT (PSI)	0.9
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	140
Factory Charge	32	Shipping	150

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
930	890	810	760	710	690	680	660	635	HI
840	805	750	715	680	660	640			MED
750	720	690	670	650					LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS24-1 208/230/1/60	7.2	58.3			7.2	9	15	14

Recommended Water Regulating Valve Sizes: 2.15

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	6	4.5	3/8	2	1.8

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
www.rangerhvac.com	**SUBMITTED BY:**	**DATE:**

**Specifications and performance data subject to change without notice.

1 – 5 TON WATER SOURCE CONDENSER	WSS 30
Engineering Specification Data	2.5 TON

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 30 – 2.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	29,900	Gallons Per Minute	7.4
Total Sensible Heat	23,600	H_2O in connection	½"OD
Total Heat Rejection	36,972	H_2O out connection	½"OD
		Condenser ΔT (PSI)	2
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	145
Factory Charge	32	Shipping	155

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1250	1170	1120	1070	940	830	740	660		HI
1150	1075	1020	950	850	765	640			MED
1050	980	920	830	760	700				LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS30-1 208/230/1/60	9.3	72.5			9.3	12	20	12

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	7.5	6.3	3/8	3	2.4

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
www.rangerhvac.com	**SUBMITTED BY:**	**DATE:**

**Specifications and performance data subject to change without notic

1 – 5 TON WATER SOURCE CONDENSER	WSS 36
Engineering Specification Data	**3 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 36 – 3 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	36,400	Gallons Per Minute	8.9
Total Sensible Heat	29,957	H_2O in connection	½"OD
Total Heat Rejection	44,315	H_2O out connection	½"OD
		Condenser ΔT (PSI)	2.2
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	155
Factory Charge	48	Shipping	165

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1500	1440	1370	1290	1210	1120	1000	900		HI
1455	1395	1330	1255	1180	1090	1020			MED
1410	1350	1290	1220	1150	1060				LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS36-1 208/230/1/60	10.3	79			10.3	12	25	10
WSS36-3 208/230/3/60	7.6	73			7.6	9.5	15	14
WSS36-5 575/3/60	3.1	36.5			3.1	3.9	10	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
1/2	9	3.2	3/8	3.6	3.5

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
www.rangerhvac.com	**SUBMITTED BY:**	**DATE:**

**Specifications and performance data subject to change without notice.

1 – 5 TON WATER SOURCE CONDENSER	WSS 42
Engineering Specification Data	**3.5 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 42 – 3.5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	42,000	Gallons Per Minute	10.3
Total Sensible Heat	34,566	H_2O in connection	½"OD
Total Heat Rejection	51,420	H_2O out connection	½"OD
		Condenser ΔT (PSI)	7.2
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	170
Factory Charge	48	Shipping	180

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1560	1500	1420	1340	1260	1170	1070	1000		HI
1515	1455	1380	1305	1230	1140	1050			MED
1470	1410	1340	1270	1200	1110				LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS42-1 208/230/1/60	13	105			13	16.3	30	10
WSS42-3 208/230/3/60	8.9	88			8.9	8.9	25	10
WSS42-5 575/3/60	3.7	34			3.7	3.7	10	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	10.5	3.8	1/2	4.5	3.3

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
www.rangerhvac.com	**SUBMITTED BY:**	**DATE:**

**Specifications and performance data subject to change without notice.

1 – 5 TON WATER SOURCE CONDENSER	WSS 48
Engineering Specification Data	**4 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 48 – 4 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	48,400	Gallons Per Minute	12.6
Total Sensible Heat	40,245	H_2O in connection	5/8”OD
Total Heat Rejection	59,480	H_2O out connection	5/8”OD
		Condenser ΔT (PSI)	8.1
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	185
Factory Charge	48	Shipping	195

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
1850	1800	1700	1650	1600	1500	1400	1280	1200	HI
1780	1720	1645	1580	1510	1440	1365	1340		MED
1710	1640	1590	1510	1420	1380	1330			LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS 48-1 208/230/1/60	14	117			14	17.5	30	10
WSS 48-3 208/230/3/60	9	83.1			9	11.3	25	10
WSS48-5 575/3/60	3.7	33			3.7	4.6	10	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	12	7.4	1/2	3	2.9

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
www.rangerhvac.com	**SUBMITTED BY:**	**DATE:**

**Specifications and performance data subject to change without notice.

1 – 5 TON WATER SOURCE CONDENSER	WSS 60
Engineering Specification Data	**5 TON**

Test Conditions: Evaporator Air - 85˚F EWT. / 95˚F LWT
Total unit pressure drop (valve installed) = Condenser coil drop + water regulating valve pressure drop.
Refer to Installation and Operating Manual (IOM) for evaporator recommendations and applications.
* Blower performance and electrical data published are based on Ranger IOM recommended motor and coil selections. ** Cooling capacities published are rated in accordance to recommended blower and evaporator selection published in IOM. All units rated based on ARI/ASHREA/ISO#13256-1 – and certified to conform to appropriate UL standards by ENTELLA(NRTL)

COOLING	**WSS 60 – 5 TON**	**CONDENSER COIL – TYPE**	Coaxial – Tube in tube
Total Cooling	63,500	Gallons Per Minute	15.9
Total Sensible Heat	52,261	H_2O in connection	5/8"OD
Total Heat Rejection	77,391	H_2O out connection	5/8"OD
		Condenser ΔT (PSI)	9.6
COMPRESSOR TYPE	Fully Hermetic	**WEIGHT**	(LBS)
Number Used	1	Operating	215
Factory Charge	48	Shipping	225

Blower Performance (CFM):
* Refer to Installation and Operating Manual for recommended blower selection.
Evaporator Air - 80˚F dry bulb / 67˚F wet bulb @ CFM listed.

Available External Static Pressure (Inches H_2O including allowance for filter and wet coil)									FAN SPEED
0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	
2250	2200	2100	2050	2000	1900	1800	1680	1600	HI
2180	2120	2045	1980	1910	1840	1765	1740		MED
2110	2040	1990	1910	1820	1780	1730			LO

Electrical Data:
* Refer to Installation and Operating Manual for recommended motor selection

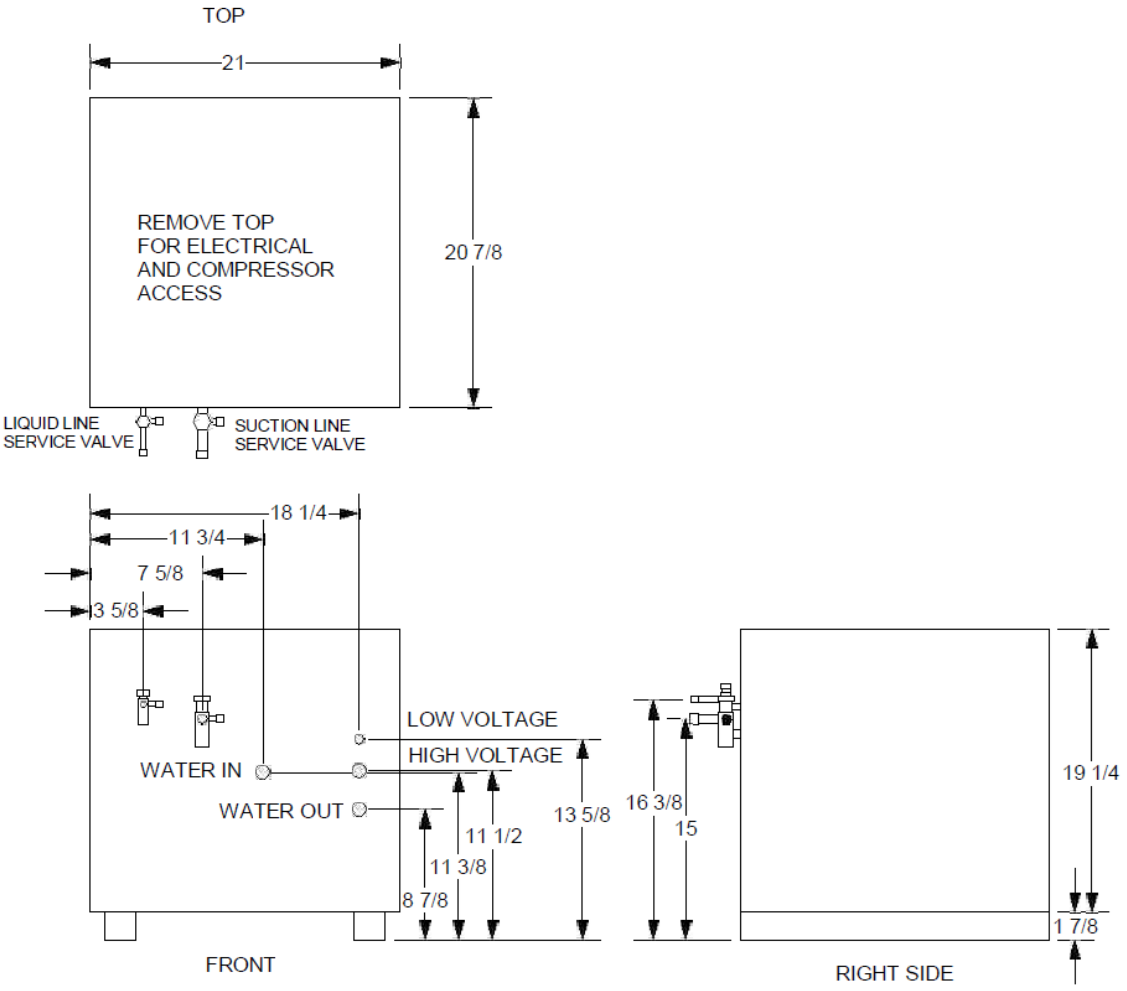
Electrical Characteristics	Compressor		Blower Motor		Unit Total	Min. Circuit Ampacity	Maximum Fuse/Breaker	Minimum Wire Size
	RLA	LRA	FLA	HP	FLA			
WSS60-1 208/230/1/60	18.3	158			18.3	22.9	40	8
WSS60-3 208/230/3/60	12.8	137			12.8	16.0	30	10
WSS60-5 575/3/60	5.1	50			5.1	6.4	15	14

Recommended Water Regulating Valve Sizes:

Cooling Tower Application EWT 60˚F through to 90˚F			**Mains/Chilled Water Application** EWT 40˚F through to 60˚F		
Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)	Water Regulating Valve Size	Nominal GPM	Water Reg Valve Pressure Drop (PSI)
3/4	15	9.6	1/2	4	3.2

NOTES:	**PROJECT:**	
	ENGINEER:	
	CONTRACTOR:	
www.rangerhvac.com	**SUBMITTED BY:**	**DATE:**

**Specifications and performance data subject to change without notice.



ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

WSS12-60

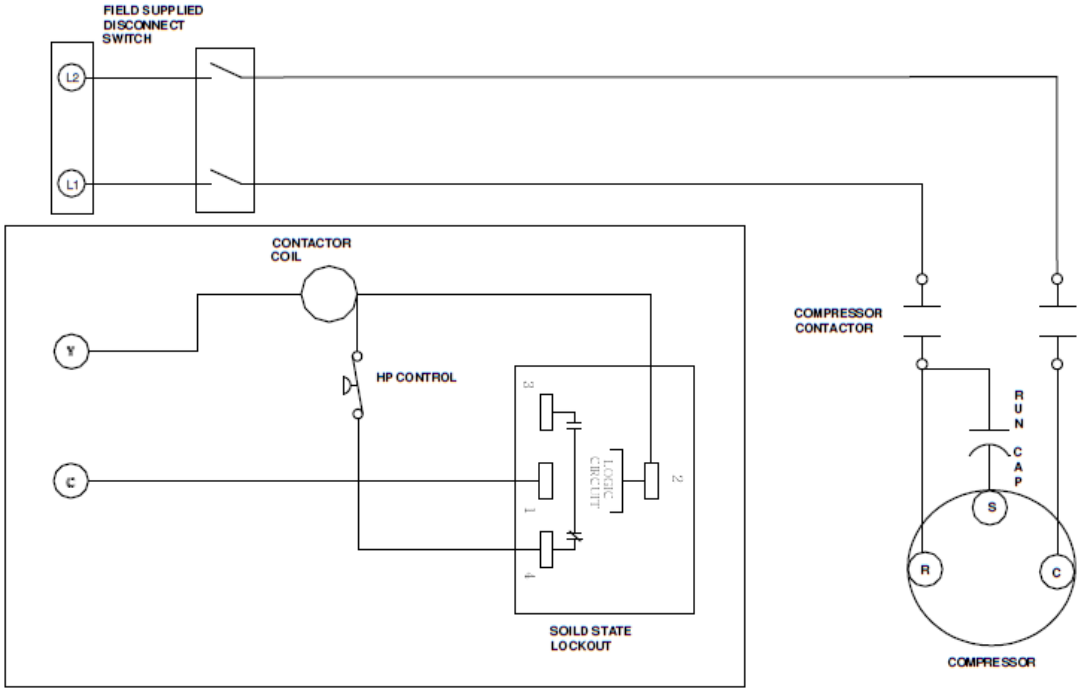
Units Inches

DR. BY	GS	DATE 01/01/05	SCALE	DWG. NO.	REV
APPR.		DATE			2

MAT'L	
PT #	REQ'D

TOLERANCES UNLESS NOTED OTHERWISE
X.X ±.060" ANGLE X.X ± 0.5°
X.XX ±.030"
X.XXX ±.015"

WSS 208-230-1-60



DANGER: ELECTRICAL SHOCK HAZARD
SERVICE BY AUTHORIZED PERSONS ONLY

ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

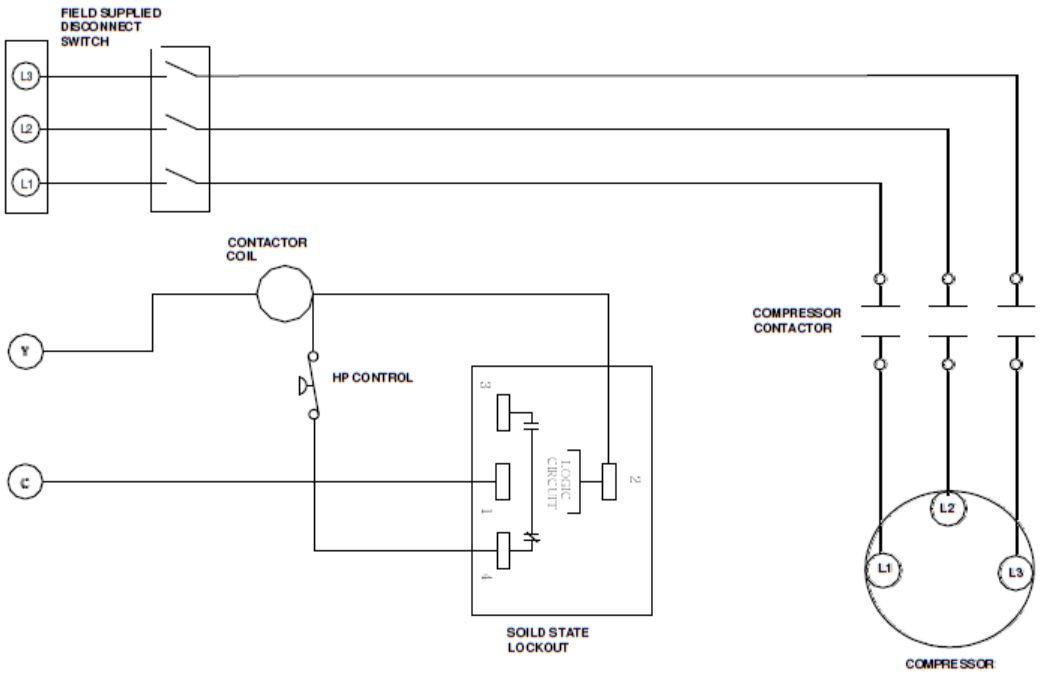
Units Inches

DR. BY		DATE	SCALE	DWG. NO.	REV
APPR.		DATE			

REV.	DESCRIPTION	DATE	BY

MAT'L	TOLERANCES UNLESS NOTED OTHERWISE
PT # / REQ'D	X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"

WSS 208-230-3-60



ATTN: SERVICE BY AUTHORIZED PERSONS ONLY

ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

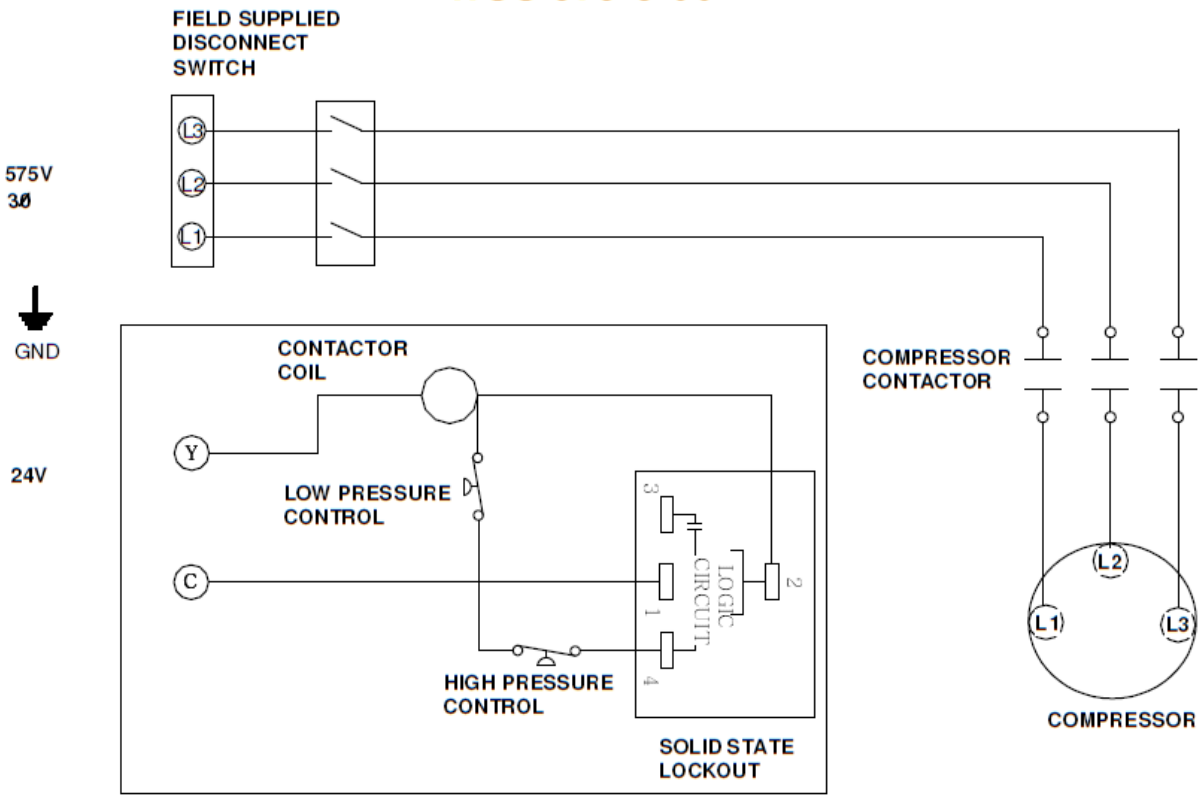
Units Inches

DR. BY	DATE	SCALE	DWG. NO.	REV
APPR.	DATE			

REV.	DESCRIPTION	DATE	BY

MAT'L	TOLERANCES UNLESS NOTED OTHERWISE
PT # / REQ'D	X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"

WSS 575-3-60



DANGER: ELECTRICAL SHOCK HAZARD
SERVICE BY AUTHORIZED PERSONS ONLY

ITEM	PART #	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning
Products Inc.

DR. BY	DATE	SCALE	DWG. NO.	REV
APPR.	DATE			

RANGER
Heating & Air Conditioning
Products Inc.

Air Cooled Remote Condenser

Models:

VES54-5
VES72.5
RCU54-1
RCU72-1

Commercial
Air Conditioning

Installation & Maintenance Manual
Revision: 1.01

Safety

Warnings, cautions and notices appear throughout this manual. Read these items carefully before attempting any installation, service or troubleshooting of the equipment.

DANGER: Indicates an immediate hazardous situation, which if not avoided will result in death or serious injury.

DANGER labels on unit access panels must be observed.

WARNING: Indicates a potentially hazardous situation, which if not avoided could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation or an unsafe practice, which if not avoided could result in minor or moderate injury or product or property damage.

NOTICE: Notification of installation, operation or maintenance information, which is important, but which is not hazard-related.

WARNING
Electric Shock Hazard
To avoid possible injury or death due to electrical shock, disconnect power during installation.

WARNING
Personal Injury And Unit Operation Hazard- Failure to follow this warning may result in personal injury or death.
Relieve pressure and recover all refrigerant before system repair or final unit disposal.
Use all service ports and open all flow-control devices, including solenoid valves.

WARNING
All refrigerant discharged from this unit must be recovered. To avoid release of refrigerant into the atmosphere, the refrigerant circuit of this unit must only be serviced by technicians who meet all required local and federal qualifications.

CAUTION
Do not use equipment for construction heating or cooling. Doing so will introduce construction dirt and debris, shortening equipment life and voiding motor and/or compressor warranty.

WARNING
Electrical Hazard
Electrical components may hold charge. To avoid possible injury or death due to electrical shock, DO NOT remove control box cover for 2 minutes after power has been removed from unit.

CAUTION
CUT HAZARD! Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses, and gloves when handling parts and servicing the units.

General Information

Inspection
Upon receipt of the equipment, carefully check the shipment against the bill of lading. Make sure all the units have been received. Inspect the carton or crating of each unit, and inspect each unit for damage. Assure the carrier makes notation of any shortages or damage on all copies of the freight bill and completes a common carrier inspection report. Concealed damage not discovered during unloading must be reported to the carrier within 15 days of receipt of shipment. If not filed within 15 days, the freight company can deny the claim without recourse. Note: It is the responsibility of the purchaser to file all necessary claims with the carrier.

Storage
Equipment should be stored in its original packaging in a clean, dry area. Store units in an upright position at all times.

Unit Protection
Use shipping cartons, vinyl film, or an alternative form of covering that can adequately protect the unit on the job site. Open ends of piping should always be capped. Avoid causing physical damage to areas where painting, plastering, and/or spraying has not been completed. Take necessary precautions to avoid contamination by foreign materials. Physical damage and contamination may require the equipment to be cleaned or other costly repairs as this can prevent proper start-up.

Examine all pipes, fittings, and valves before installing any of the system components. Remove any dirt or trash found in or on these components.

Pre-Installation
Installation, Operation and Maintenance instructions are provided with each unit. Be sure to completely read and understand these before beginning installation. The installation site chosen should include adequate service clearance around the unit. Before unit start-up, read all manuals and become familiar with the unit and its operation. Check the system thoroughly before operation.
Prepare the units for installation as follows:
Compare the electrical data on the unit nameplate with the ordering and shipping information to verify that the correct unit has been shipped.
Keep the cabinet covered with the shipping carton until the installation, plastering, painting, etc. is complete.
Check the refrigerant tubing. Ensure it is free of any dents or kinks, and verify that it is not in contact with any other parts in the unit.
Check wire harnesses and control wiring to ensure that plugs are securely seated and wires were not damaged during shipping.
Inspect all electrical connections. Connections must be clean and tight at the terminals.
Loosen compressor bolts on units equipped with compressor spring vibration isolation until the compressor rides freely on the springs. Remove shipping restraints.

NOTICE Failure to remove shipping brackets (if installed) from spring-mounted compressors will cause excessive noise, and could cause failure due to added vibration.

CAUTION
Do not store or install units in corrosive environments or in locations subject to temperature or humidity extremes (e.g. attics, garages, rooftops, etc.). Such conditions can significantly reduce performance, reliability, and service life of equipment.

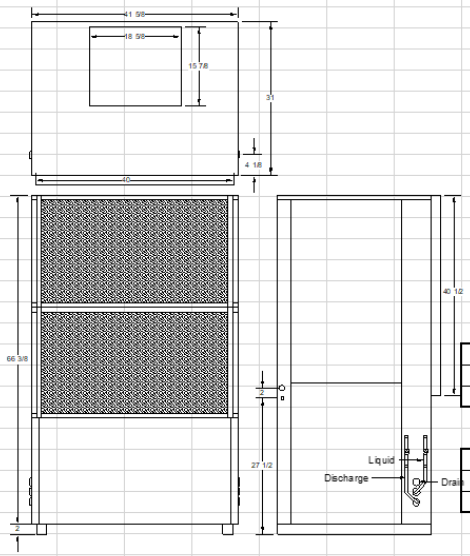
CAUTION
Always move and store units in an upright position. Tilting units on their sides may cause equipment damage.
Strap equipment securely to appliance truck before moving. Denting bottom of unit from improper handling voids warranty for sheet metal parts. Improper handling will result in poor fit of doors and access panels.

Specifications

RANGER Heating & Air Conditioning Products Inc.

SUBMITTAL

VES72-5 Vertical Series Condtioners Remote Condenser



Liquid & Suction	1/2" SWT
Drain Connection	1" FIPT
FILTER	(2) 20 X 20 X 2

Model VES	Shipping Weight (Lb)
54	475
72	520

PERFORMANCE DATA

NOMINAL CAPACITY	DATA TC	TSC	THR	KW	EER	Condesor Coil ΔP (PSI)
54	54,000	44,442	74,597	6.20	16.1	7.2
72	72,000	59,256	92,113	8.02	15.8	9.6

TC -Total Capacity
TSC -Total Sensible Capacity
THR -Total Heat of Rejection
KW -Total Power Input
EER -Energy Efficiency Ratio

(A) Cooling capacity rating test conditions: Evaporator Air - 80°F db/67°F wb, Condenser Air - 95°F

(B) Units are shipped in standard sensible format. For high sensible application, motor speed must be changed to the high speed tap.

BELT DRIVE		STATIC PRESSURE						
Model		0.1	0.2	0.3	0.4	0.5	0.6	0.7
	CFM	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
VES54-5	1800 DD	2250	2200	2100	2050	2000	1900	1800
VES72-5	2600 BD	730 0.8	770 0.9	820 0.9	860 1.0	920 1.1	970 1.2	1020 1.3

ELECTRICAL DATA

Model	Electrical Characteristics	Compressor RLA	Compressor LRA	Blower Motor RLA	Blower Motor HP	Unit Total FLA	Min. Circuit Ampacity	Fuse Size Time Delay	Min. Wire Size
VES54-5	575-3-60	9.0	50.0	2.9	1/2	11.9	14.9	20	12
VES72-5	575-3-60	10.0 X 2	54.1X2	2.9	1	22.9	16.1	25	10

NOTES:

Units are standard in Galvanized Metal. Available in Powder Coated. Extra charges apply.
Specifications and performance data subject to change without notice.

Your Local Distributor		
	Project:	
	Contractor:	
	Engineer:	
	Submitted By:	
	Date:	

RANGER Heating & Air Conditioning Products Inc.

SUBMITTAL

RCU54/72-1
Remote Condenser

PERFORMANCE DATA

NOMINAL CAPACITY	DATA TC	TSC	THR	KW	EER	Condesor Coil ΔP (PSI)
54	54,000	44,442	74,597	6.20	16.1	7.2
72	72,000	59,256	92,113	8.02	15.8	9.6

TC -Total Capacity
TSC -Total Sensible Capacity
THR -Total Heat of Rejection
KW -Total Power Input
EER -Energy Efficiency Ratio

(A) Cooling capacity rating test conditions: Evaporator Air - 80°F db/67°F wb, Condenser Air - 95°F

(B) Units are shipped in standard sensible format. For high sensible application, motor speed must be changed to the high speed tap.

Model	CONDENSER FANS VARIABLE SPEED ECM MOTORS
RCU54-5	Dual condenser vary depending on temperature of the condenser coil
RCU72-5	Dual condenser vary depending on temperature of the condenser coil

ELECTRICAL DATA

Model	Electrical Characteristics	Compressor RLA	Compressor LRA	Blower Motor RLA	Blower Motor LRA	Unit Total FLA	Min. Circuit Ampacity	Fuse Size Time Delay	Min. Wire Size
RCU-54-1	208-1-60			1.4	8.4	1.4	3.5	15	14
RCU-72-1	208-1-60			1.4	8.4	1.4	3.5	15	14

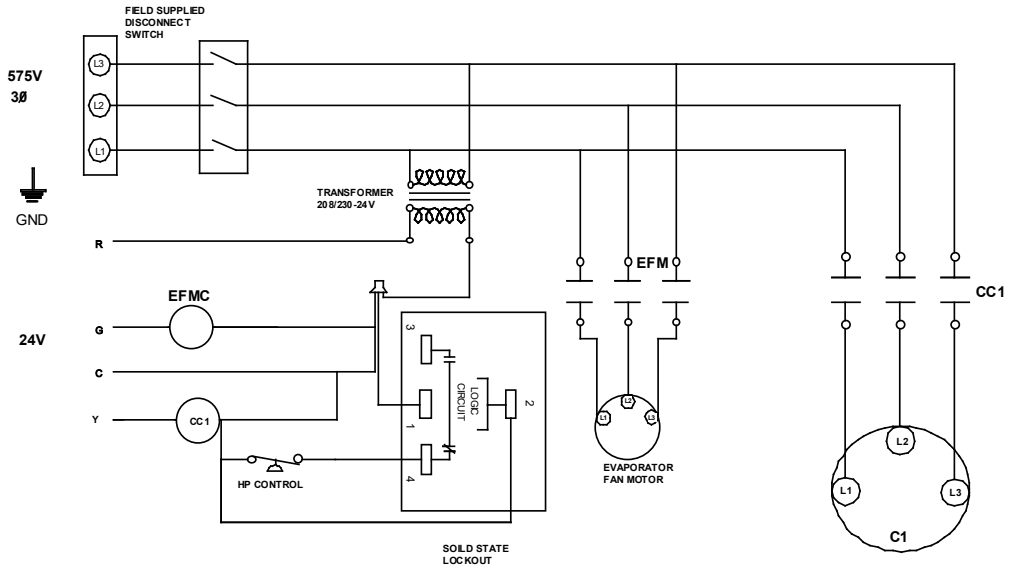
NOTES:

Units are standard in Galvanized Metal. Available in Powder Coated. Extra charges apply.
Specifications and performance data subject to change without notice.

Your Local Distributor		
	Project:	
	Contractor:	
	Engineer:	
	Submitted By:	
	Date:	

Wiring Diagram

VES 575-3-60



CC1 Contactor Coil 1
C1 Contactor 1
EFMC Evaporator Contactor Coil
EFM Evaporator Fan Motor Contactor

DANGER:ELECTRICAL SHOCK HAZARD
SERVICE BY AUTHORIZED PERSONS ONLY

The installation of air source air conditioning units and all components, parts and accessories that make up the installation shall be in accordance with the regulations of ALL authorities having jurisdiction and MUST conform to all applicable codes. It is the responsibility of the Installing Contractor to determine and comply with ALL applicable codes and regulations.

Introduction

The Ranger Air to Air (A2A) Air Conditioner is an innovative new product designed for Canadian winters. .

How It Works

The Air to Air A/C uses technology to provide forced air. The compressor is sized to efficiently provide cooling for design temperatures as low as -25°C.

With the system having a remote condenser the compressor is inside. All controls and key control components are serviced from the heated mechanical room instead of at the outside unit as with most other vendor's equipment.

Outdoor Fan Motor Operation

The outdoor unit control energizes the two outdoor fans anytime compressor is operating. The outdoor fan remains energized if a pressure switch opens or compressor scroll over temperature should occur. The outdoor fans are EC motors that operate at varying speeds depending on the ambient air temperature and the demand. The maximum speed of the outdoor fans is adjustable from the HP control. Maximum fan speed should be typically set between 70% and 100% for optimum operating efficiency. Lower maximum fan speeds may be selected for noise control but system efficiency and capacity is compromised when the fan speed is limited too greatly.

Indoor Continuous Fan

When the thermostat fan switch is set to continuous fan, the fan will run continuous regardless if there is a call for cooling or not.

Installation

Indoor Unit Location

The indoor A2A series units are not designed for outdoor installation. The remote condenser must be installed outdoors. Provide sufficient room to make electrical and other connections.
Locate the unit in an indoor area that allows easy removal of access panels, and has enough space for service personnel to perform maintenance or repair. Provide sufficient room to make Duct, condensate drain, refrigerant and electrical connections. Avoid blocking important access panels with electrical wiring, drain and refrigerant piping. Do not locate in areas where ambient conditions are not maintained within 40-100°F and below 75% relative humidity.

The unit may be installed on a rubber isolation pad for sound attenuation purposes. Although the compressor is already installed on an isolation mounting rubber feet inside of the unit, this additional pad will help to prevent any additional vibration noise.

Ductwork

General

Ductwork installed in unheated spaces, such as attics, must be installed between the insulation and the heated space. Provide at least R-12 of insulation above ducts. If cooling is required, the branch and trunk lines must be insulated and sealed with a vapour barrier prior to applying house insulation.

If a fresh air duct is required, make connection to return air plenum at least 6 feet upstream from filter. Insulate all fresh air ducts.

Supply Ductwork

Supply trunks may be square or round. SEAL all joints and seams with metal tape or a sealing compound. For single zoned systems, volume dampers for each of the main supply trunks must be accessible for balancing. (Near the supply plenum is preferred)

Locate outlets at least 6 inches from outside walls or window coverings.

Return Ductwork

Return air plenum should be the same cross sectional area as the air handler return air opening. A conventional return air drop and elbow is acceptable. It is recommended that the return duct/drop be acoustically lined for 6 feet nearest the air handler.

System Supplemental Heat

Hydronic Backup

The hydronic option comes with a built in circulator and plumbing lines to connect to the hot water system. Refer to the typical plumbing schematic for plumbing guidance. Be sure to install the isolation and purge valves required to purge the air from the hydronic loop. Do not block any access panel with plumbing. If you must run the water lines across an access door, ensure a minimum of 6 inches of clearance to allow for easy removal of all door panels.

Electric Resistance Backup

This option is required to be installed in the field.

Sources of hydronic supplemental heat can be:
Wood or pellet boiler
Electric or fossil fuel fired boiler
Fossil fuel fired domestic water heater

Outdoor Unit Location

Locate unit away from windows, patios, decks, etc. where unit operation sound may disturb home occupants or neighbours.

All outdoor modules need to be installed with sufficient space for airflow clearance, wiring, refrigerant piping, and service. A minimum of 6 feet of clearance is required in front of the unit for proper airflow. Also, the outdoor module should be installed at least 6 feet away from any appliance exhaust pipe. Do not install unit near any walkways.
Be sure to take the line-sets into consideration when locating the outdoor module.

Stand Alone Outdoor Unit Option

The Remote Condenser needs to be installed on a solid, level surface. If conditions or local codes require the unit be attached to pad, tie down bolts should be used and fastened through the bottom flanges of the unit legs.
On rooftop applications, mount on level platform or frame. Isolate unit and tubing set from structure. Arrange supporting members to adequately support unit and minimize vibration transmission to building. Consult local codes governing rooftop applications.
Install the stand-alone unit with a slight slope back or to the side to avoid draining of melted snow into the fan openings. A slope of 1/8" per foot is adequate to keep lid of unit free of free standing water.

CAUTION

Failure to follow this caution may result in equipment damage or improper operation.

- Use a brazing shield
- Wrap service valves with wet cloth or heat sink material before brazing

Refrigerant Connections

The outdoor module must be connected to the indoor unit using field-supplied refrigerant grade tubing of correct size and condition.

1. Run refrigerant tubes as directly as possible by avoiding unnecessary turns and bends.
2. For line sets over 50 feet, go up one nominal size to compensate for the added pressure drop.
3. Leave some slack between structure and unit to absorb vibration.
4. When passing refrigerant tubes through the wall, seal opening with RTV or other pliable silicon-based caulk.
5. Avoid direct tubing contact with water pipes, duct work, floor joists, wall studs, floors and walls to prevent the likelihood of vibration.
6. Do not suspend refrigerant tubing from joists and studs with a rigid wire or strap which comes in direct contact with tubing.
7. Ensure that tubing insulation is pliable and completely surrounds vapor tube.
8. When necessary, use hanger straps that conform to shape of tubing insulation.
9. Isolate hanger straps from insulation by using metal sleeves bent to conform to shape of insulation.
10. Insulation is required on all piping inside of the building envelope with at least an R-2.
11. For A2W-540-D insulate an additional R-2 on both vapour and liquid lines. This is most easily achieved by running both lines close together then double rapping with pipe insulation around both pipes. Make sure to seal all joints in both layers of insulation to ensure that there are no condensation issues.
12. Do NOT use insulation that is not rated for refrigerant use! Refrigerant lines get hot enough to melt regular plastic plumbing pipe insulation.
13. Do not crush the insulation with strapping. It will reduce the R-value at that point.

WARNING

Personal Injury And Unit Operation Hazard-
Failure to follow this warning may result in personal injury or death.
Relieve high pressure nitrogen charge from the outdoor module before cutting the lines to connect to indoor unit.

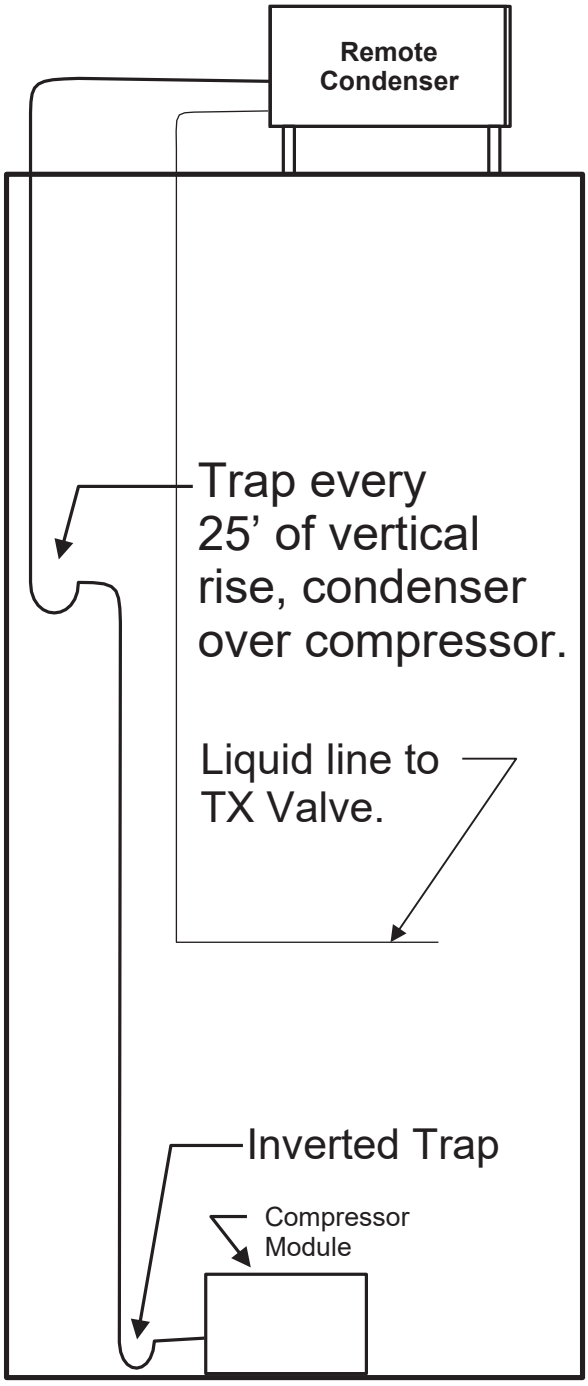
It is important to install a drip loop on both lines outside just before they enter the building. This will prevent condensate from running along the tubing into the building.

Outdoor & Indoor units comes charged with dry nitrogen.

Once you have relieved the nitrogen charge from the outdoor unit, dry fit both the liquid and vapour refrigerant lines between the indoor and outdoor unit and prepare for brazing. Make sure open lines and outdoor coil are capped to prevent contamination of the system until you are ready to braze.

Connect the vapour and liquid tubes to the correct service valve inside of the indoor unit. Again, be sure to use refrigerant grade tubing. Service valves are closed from factory and ready for brazing. Wrap service valves with a wet rag and braze the sweat connections using industry accepted methods and materials. Next, make the sweat connections at the outdoor unit. It is important to run nitrogen through the open portion of the system while brazing. Wrap all filter driers and service valves with wet cloth when brazing.

Discharge and Liquid Line Sizing



Line Sizing

Compressor To Condenser

	Equivalent Length		
Capacity	25'	50'	75'
18,000	1/2"	1/2"	1/2"
24,000	1/2"	5/8"	5/8"
30,000	1/2"	5/8"	5/8"
36,000	5/8"	5/8"	5/8"
42,000	5/8"	5/8"	3/4"
48,000	5/8"	3/4"	3/4"
60,000	3/4"	3/4"	7/8"
92,000	3/4"	7/8"	7/8"

Source: DuPont Piping Handbook

Condenser To TXV

	Equivalent Length		
Capacity	25'	50'	75'
18,000	3/8"	3/8"	3/8"
24,000	3/8"	3/8"	3/8"
30,000	3/8"	3/8"	1/2"
36,000	3/8"	3/8"	1/2"
42,000	3/8"	1/2"	1/2"
48,000	1/2"	1/2"	1/2"
60,000	1/2"	1/2"	1/2"
92,000	1/2"	1/2"	5/8"

Notes:

Source: DuPont Piping Handbook

1. Use a tubing bender with 6 diameter radius to form traps if possible.
2. Insulate the discharge line.with closed cell type insulation.
3. Glue insulation joints with an approved glue.
4. Insulate liquid line if used in low ambient outdoor temperture applicitions

Once all of the connections are made, the outdoor module and line sets are ready for a leak test.

Once the leak test has passed, refrigerant tubes and outdoor coil. The indoor and outdoor service valves must be opened and release the dry

CAUTION
Unit Operation Hazard- **Failure to follow this caution may result in equipment damage or improper operation.**
Do not leave system open to atmosphere any longer than necessary for installation. POE oil in compressor is extremely susceptible to moisture absorption. Always keep ends of tubing sealed during installation.

nitrogen charge. Then using the recommended deep vacuum method down to 400 microns. Now the full system is opened to be vacuumed.

Be sure to use a wrench to back the service valves when opening.

Never open system to atmosphere while it is under a vacuum.

Charging refrigerant

WARNING
ELECTRICAL SHOCK HAZARD
To avoid possible injury or death due to electrical shock.
The unit cabinet must have an uninterrupted or unbroken ground to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes.

When running both power and control wiring, be sure not to block any access panels.

Electrical – LINE Voltage

General Line Voltage Wiring
Be sure the available power is the same voltage and phase as that shown on the unit serial plate. Line and low voltage wiring must be done in accordance with local codes or the National Electrical Code whichever is applicable.

Indoor Unit Power Connection
Line voltage connection is made by connecting the incoming line voltage wires to the "Line" side of the contactor or the power block

CAUTION
Failure to follow this caution may result in personal injury, equipment or environmental damage or improper operation.
Do not overcharge system with refrigerant
Do not operate unit in a vacuum or at negative pressure
Do no disable low pressure switch
Dome temperatures may be hot
Wear safety glasses, protective clothing, and gloves when handling refrigerant.
Federal regulations require that you do not vent refrigerant to the atmosphere. Recover during system repair or final unit disposal.

Systems are factory charged for 25 feet of line set. Adjusting the amount of refrigerant for desired sub cooling is covered in the procedures contained in the **Commissioning Report Form**. All model Air Conditioning units require the system to be commissioned after installation and before putting into service.

ONLY add or remove refrigerant if it is determined from the commissioning that the system is under or overcharged.
If refrigerant is needed, system should be charged with liquid refrigerant. Use a commercial type metering device in the manifold hose when charging into suction line with compressor operating.

When system must be opened for service, recover refrigerant, evacuate then break vacuum with dry nitrogen and replace filter driers. Evacuate to 400 microns prior to recharging. Do not vent refrigerant into the atmosphere.

Electrical

depending on the specific unit model. Refer to the wiring diagram located on the electrical panel door of the unit. Wiring diagrams are also included at the beginning of this manual.

WARNING
To avoid possible injury or death due to electrical shock, disconnect power during installation.

Outdoor Unit Power Connection
Provide a disconnect at the outdoor unit as required by Code.
Power for outdoor unit is supplied separate from the indoor unit power as the indoor unit is 575/60/3 the outdoor unit is 208/60/1. Power must be supplied from separate circuits form the panels one being 575/60/3 to the indoor unit and the outdoor unit 208/60/1.

Field Wiring
All field installed wiring, including electrical ground, must comply with the National Electrical Code as well as all applicable local codes.

Refer to the unit label for fuse sizes and the provided wiring diagram schematic of the field connections that must be made by the installing (or electrical) contractor.

Consult the unit wiring diagram provided with the equipment or located on the inside of the electrical access panel to ensure proper electrical hookup.

All final electrical connections must be made with a length of flexible conduit to minimize vibration and sound transmission to the building.

Electrical – LOW Voltage

Thermostat Connections

The thermostat or set point control should be wired directly to the terminal board in the unit. Refer to wiring diagrams provided with the unit. The indoor section expects a standard heat / cool or cooling only thermostat. Do not use a heat pump thermostat without contacting the factory for instructions on how to wire and apply.

Start Up Procedures

Initial Check

Do NOT start the system until you have checked the following:

1. All Hydronic loops are filled and purged (if applicable).
2. All refrigerant connections between the indoor unit and outdoor module have been brazed and leak test was passed and evacuated.
3. Both the liquid and vapour service valves have been open on the indoor and outdoor sections prior to evacuation.
4. 410A refrigerant has been added to the system to break the vacuum.
5. The field power and control wiring has been done in accordance to the wiring diagrams provided

Commissioning report

Upon system start up, follow and completely fill in the Ranger **Commissioning Report** form. Follow instructions on the form for testing the unit and optimizing the refrigerant charge.

Service and Maintenance

Indoor unit

At the start of each cooling season, check the drain connection to the refrigerant coil to ensure it is free of debris. If a plugged coil is suspected, call a service technician for testing and cleaning.

Outdoor Fan

Check outdoor fan twice a year to ensure proper operation. Clear any obstruction or debris.

It is important to periodically check the outdoor coil to ensure there is no debris blockage. Losing a portion of the outdoor coil can have a significant impact on the system performance.

Compressor

It is recommended to conduct annual amperage checks to ensure current draw is no more than 10% greater than that indicated by serial plate data.

Cabinet

Generally, all cabinets are set up from the floor a few inches on an isolation pad for sound control. This will ensure long life and a cabinet free of corrosion. The cabinet can be cleaned using a mild detergent.

Refrigerant System

To maintain sealed circuit integrity, do not install service gauges unless unit operation appears abnormal. Verify that air flow rates are at proper levels before servicing the refrigerant circuit.

Maintenance for forced air system

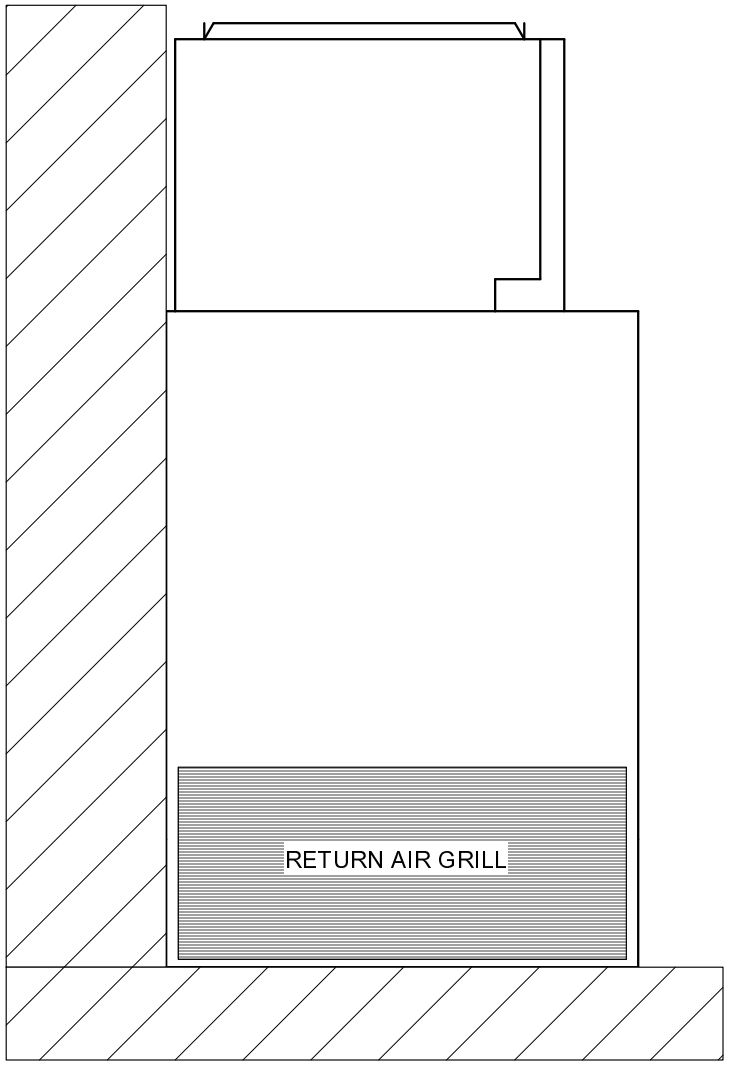
Check filters at least every three months. Replace at least every six months for single use filters. Wash every three months for washable filters and replace at least once every three years.

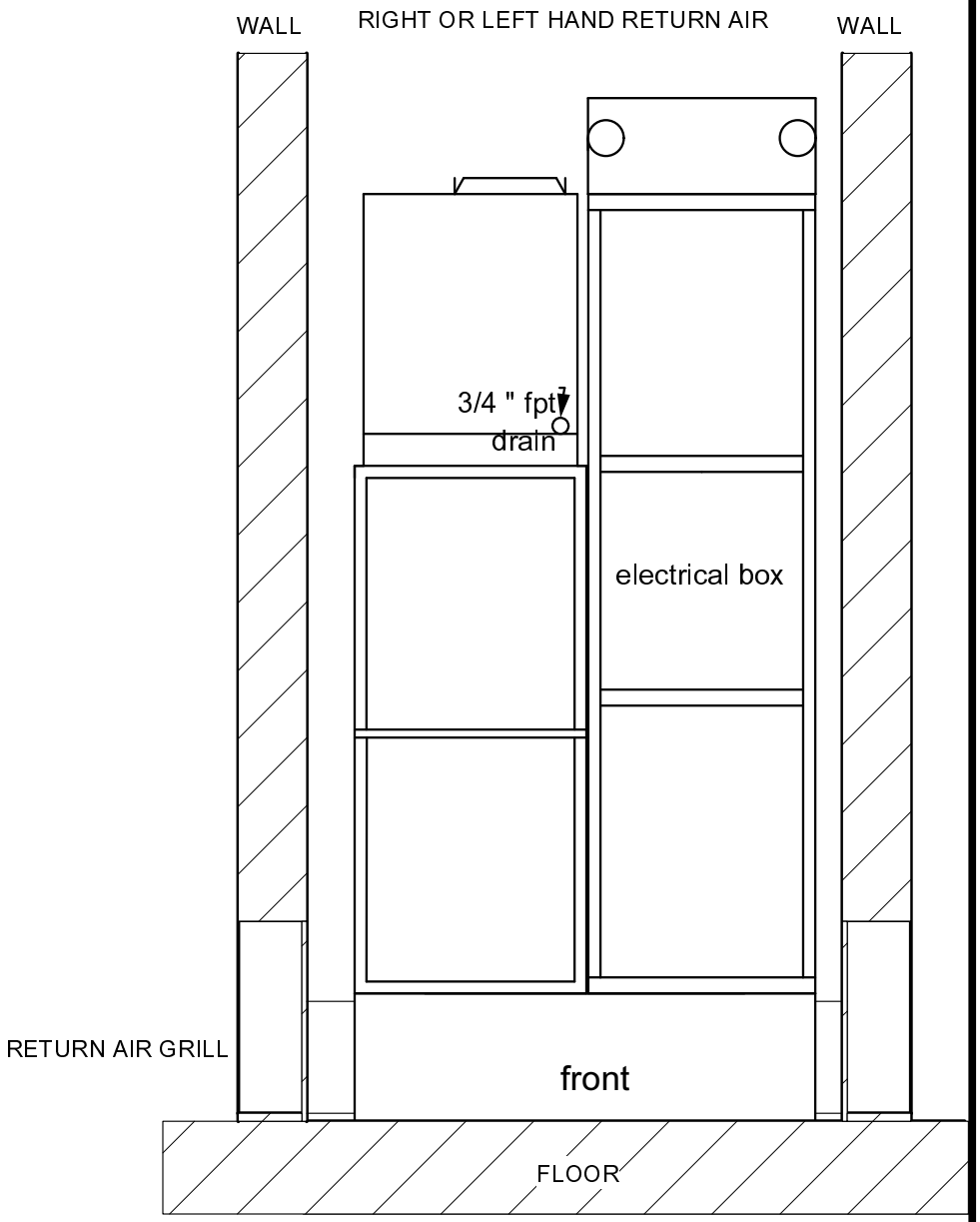
If the installation is located in an area with a known high dirt or debris content, it is best to establish with the owner a periodic maintenance schedule so the coil can be checked regularly. If periodic coil cleaning be necessary, use standard coil cleaning procedures which are compatible with both the heat exchanger material and copper lines.

Unit & System Checklist

Item	Description	Done
1	Ensure Voltage is within an acceptable range for the unit and wiring and fuses/breakers are properly sized. Check low voltage wiring is complete	☐
2	Ensure transformer has properly selected control voltage tap. 208-230V units are factory wired for 230V operation unless specified otherwise.	☐
3	Test thermostat to ensure each call is functioning as expected. If multi-zone system, test each thermostat separately and with all zones calling.	☐
4	Check filters are in place for forced air systems	

MAT'L		TOLERANCES UNLESS NOTED OTHERWISE X.X ±.060" ANGLE X.X ± 0.5° X.XX ±.030" X.XXX ±.015"
PT #	REQ'D	





Typical return air duct installation
Modular duct work to be modified to individual requriements

ITEM	PART	QTY.	MAT'L	DESCRIPTION

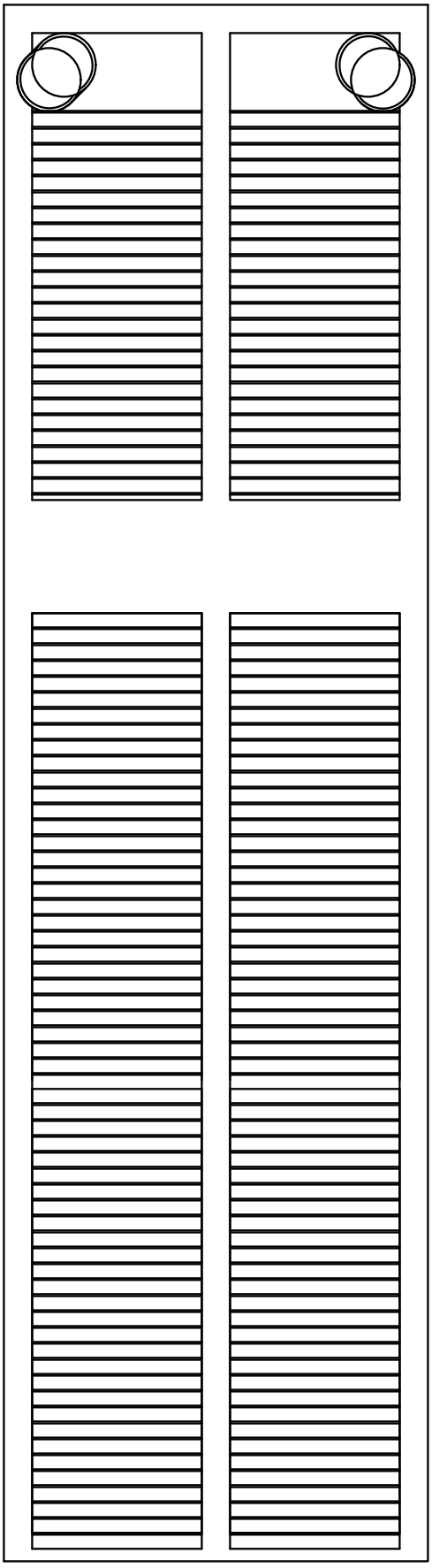
RANGER Heating & Air Conditioning Products Inc.

Typical Bottom Return air

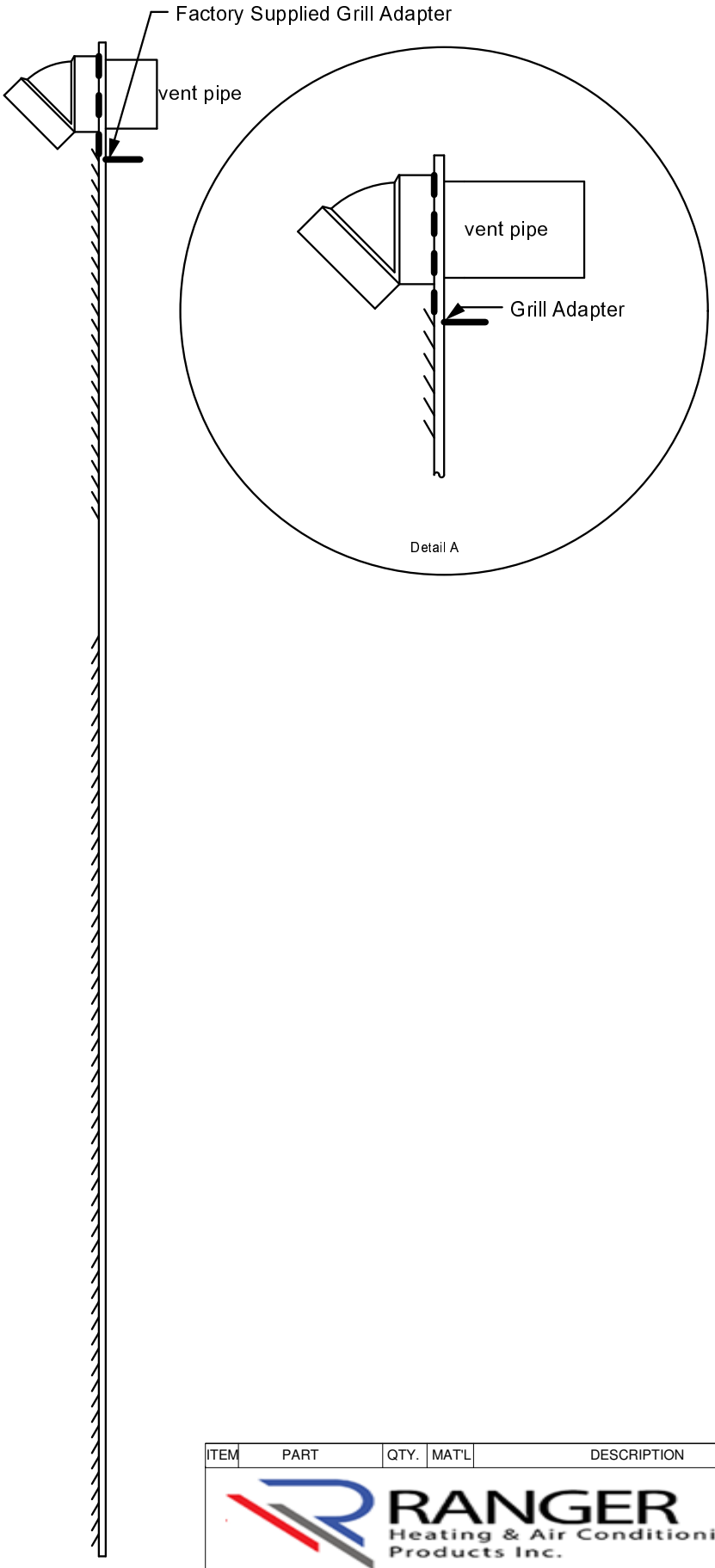
Units Inches

REV.	DESCRIPTION	DATE	BY	APPR.

DR. BY		DATE	SCALE	DWG. NO.	REV
		DATE			



Typical Grill May not be exact



ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning Products Inc.

R - SKYPAK GRILL C/W VENTING ADAPTOR

DR. BY		DATE	SCALE	DWG. NO.	REV

Job Name / Location		For:	☐ File ☐ Resubmit ☐ Approval ☐ Other:
Date:			
P.O. No.:			
Architect:		Contact:	
Engineer:		Contact:	
General Contractor:		Mechanical Contractor:	

R-SKYPAK-1018-E-12
PACKAGED AIR CONDITIONING SYSTEM

AIR COOLED INDOOR PACKAGE SYSTEM WITH ELECTRIC HEAT

Features:

- **Designed as a drop-in replacement for Sky Pac systems.**
- **Air to air indoor package air conditioner.**
- **Utilizes outdoor air for condenser.**
- **10 kW electric heat package**
- **Individual blower motors**

Operating Range:

Cooling (°F)	50 - 102

Equipment Data

Shipping weight (Primary) (lbs)	
Net weight (Primary) (lbs)	
Net weight (Secondary) (lbs)	
Unit Height (in)	56
Unit Width (in)	28.8
Unit Depth (in)	28.875
Fan Motor Type	PSC
Refrigerant Metering Device	TXV

Heating System

Type	Electric
Stages	1
Capacity (kW)	10
Pressure Proving Switch	Yes
Thermal Cut-out Reset Type	Auto
Thermostat (Field Supplied Wires/V)	4/24vac

Performance

Cooling Capacity (BTU/hr):	18,000
EER:	13
SEER	13.2

Electrical Data

Voltage	208/230
Phase	1
Hertz	60
MOP (Amps)	60
RLA (Amps)	7.7
LRA (Amps)	39
Indoor Fan (Amps)	2.2
Outdoor Fan (Amps)	2.9

Condensate Piping

Condensate Drain MIPT	3/4"

Refrigerant

Refrigerant	R-410A

Outdoor Ambient Operating Range:

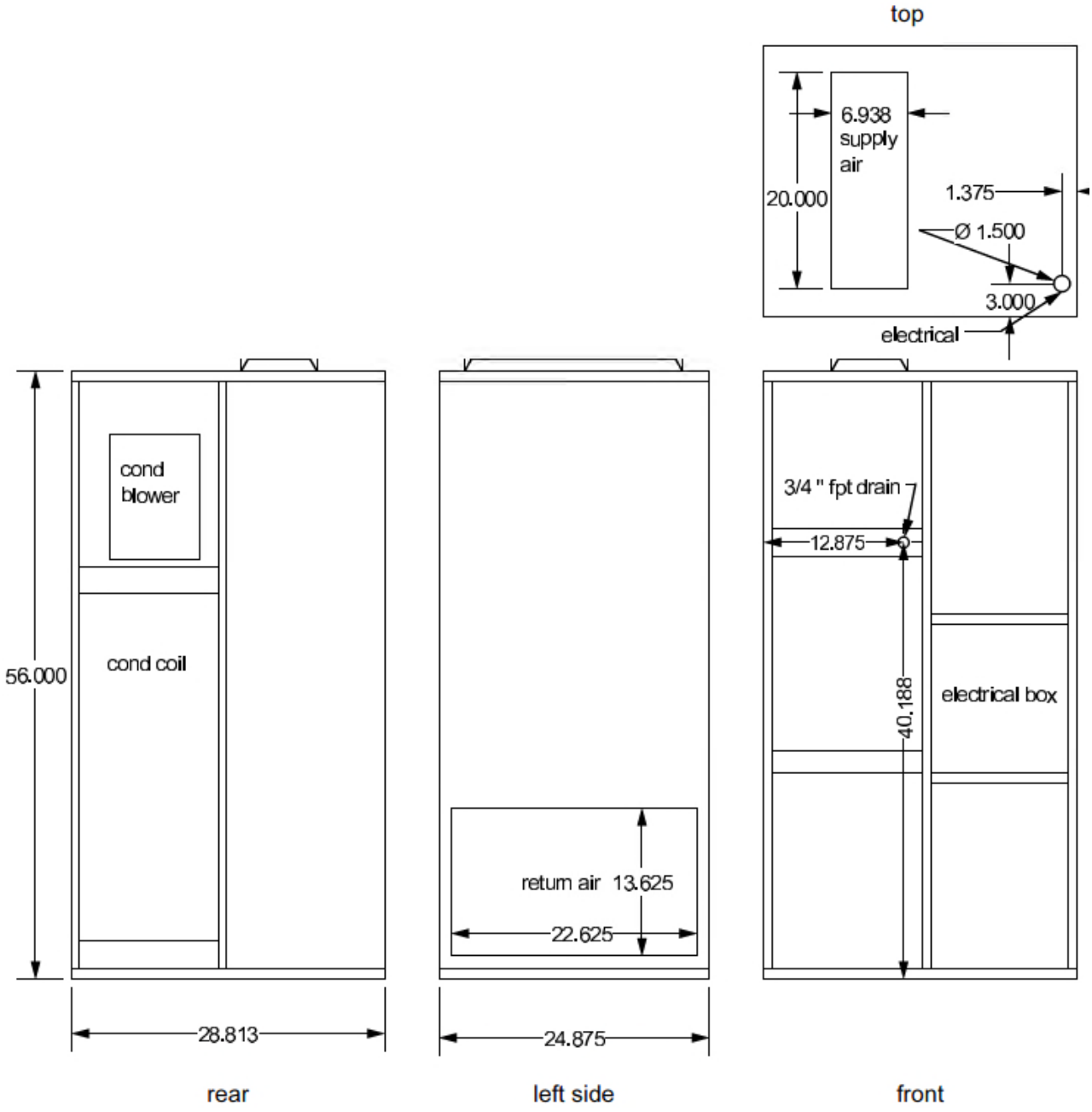
Cooling (°F)	50 - 102

Warranty

90 days cosmetic parts; one year all parts

RANGER
Heating & Air Conditioning
Products Inc.

R-SKYPAK-1018-E-12 1.5 Ton Indoor Packaged Air Conditioner with 10 kW Electric Heat



Warranty:

- **Limited compressor warranty 5 years**
- **Other covered components 1 year**
- **Cosmetic parts 30 days**

RANGER
Heating & Air Conditioning
Products Inc.

Job Name / Location		For:	☐ File ☐ Resubmit ☐ Approval ☐ Other:
Date:			
P.O. No.:			
Architect:		Contact:	
Engineer:		Contact:	
General Contractor:		Mechanical Contractor:	

RANGER RSKYPAK4518 PACKAGED AIR CONDITIONING SYSTEM

AIR COOLED INDOOR PACKAGE SYSTEM WITH GAS HEAT

Features:

- **Designed as a drop-in replacement for Sky Pac systems.**
- **Air to air indoor package air conditioner.**
- **Utilizes outdoor air for condenser.**
- **45,000 BTU high eff gas furnace**
- **Individual blower motors**

Operating Range:

Cooling (°F)	50 - 102

Equipment Data

Shipping weight (Primary) (lbs)	
Net weight (Primary) (lbs)	
Net weight (Secondary) (lbs)	
Unit Height (in)	56
Unit Width (in)	28.8
Unit Depth (in)	28.875
Fan Motor Type	PSC
Refrigerant Metering Device	TXV

Heating System

Type	Gas
Stages	2
Capacity BTU	45,000
Pressure Proving Switch	Yes
Blower Motor	ECM
Thermostat (Field Supplied Wires/V)	4/24vac

Cooling Capacity (BTU/hr):	18,000
EER:	13
SEER	13.2

Electrical Data

Voltage	208/230
Phase	1
Hertz	60
MOP (Amps)	15
RLA (Amps)	12.4
LRA (Amps)	58.3
Furnace Electrical Data	15
Outdoor Fan (Amps)	2.9

Condensate Piping

Condensate Drain MIPT	3/4"

Refrigerant

Refrigerant	R-410A

Outdoor Ambient Operating Range:

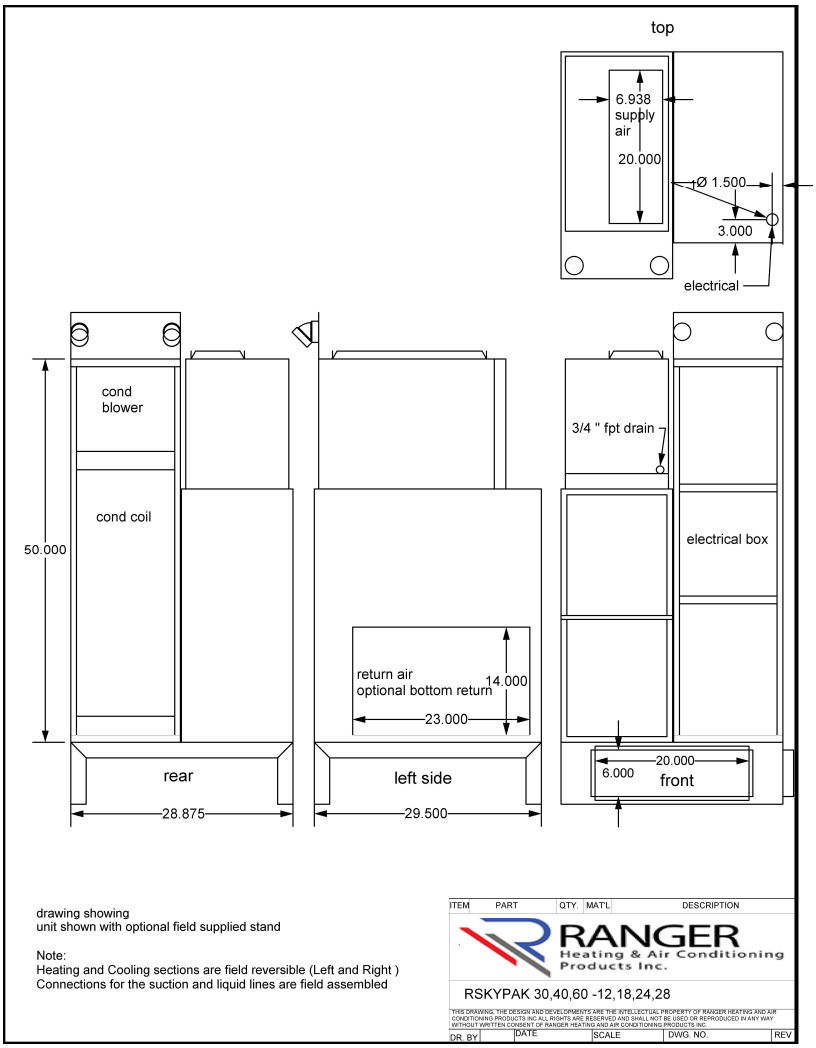
Cooling (°F)	50 - 102

Warranty

90 days cosmetic parts; one year all parts

RANGER
Heating & Air Conditioning
Products Inc.

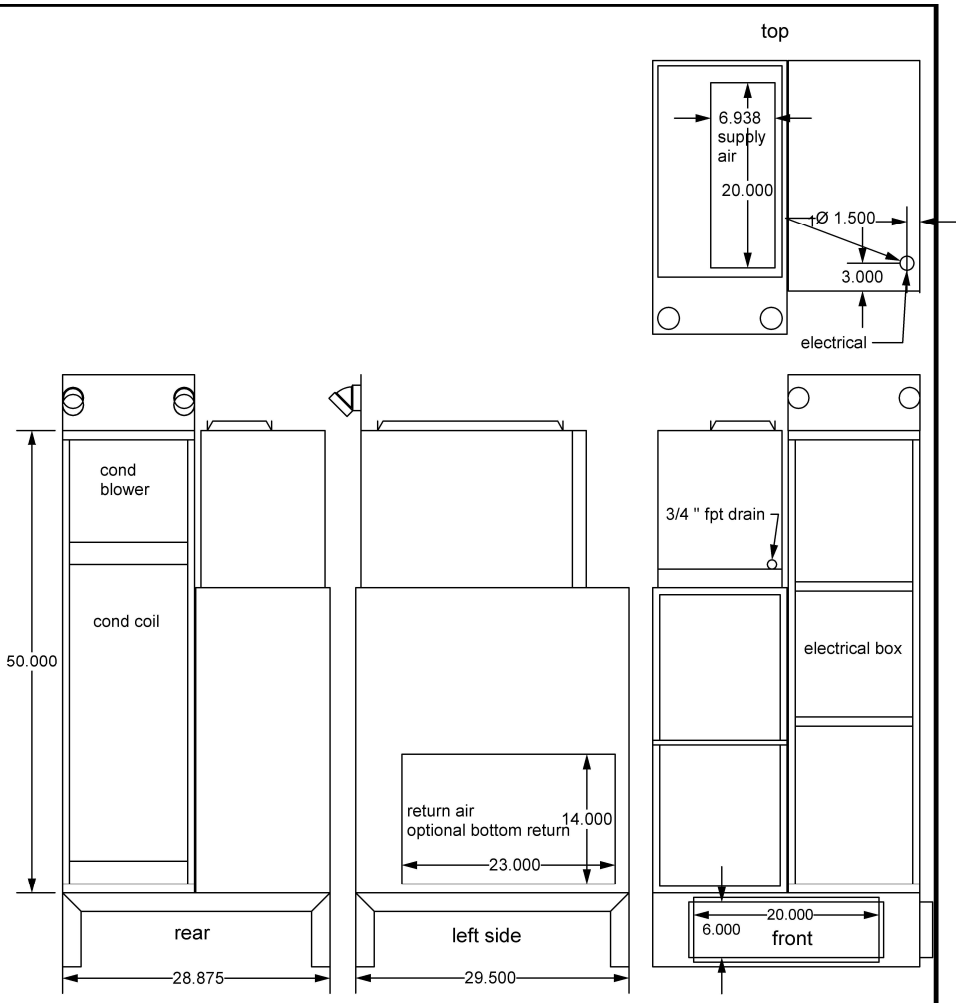
RANGER RSKYPAK4518 1.5Ton Indoor Packaged Air Conditioner with 45,000 BTU Gas Heat



Warranty:

- **Limited compressor warranty 5 years**
- **Full manufactures warranty on the furnace**
- **Other covered components 1 year**
- **Cosmetic parts 30 days**

RANGER
Heating & Air Conditioning
Products Inc.



drawing showing
unit shown with optional field supplied stand

Note:
Heating and Cooling sections are field reversible (Left and Right)
Connections for the suction and liquid lines are field assembled

ITEM	PART	QTY.	MAT'L	DESCRIPTION

RANGER
Heating & Air Conditioning Products Inc.

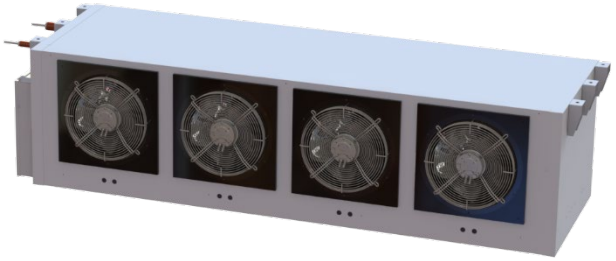
RSKYPAK 30,40,60 -12,18,24,28

DR. BY	DATE	SCALE	DWG. NO.	REV

RANGER
Heating & Air Conditioning
Products Inc.

R-LOGIX
CATALOGUE

2022



Issue Date: 10/17/2022

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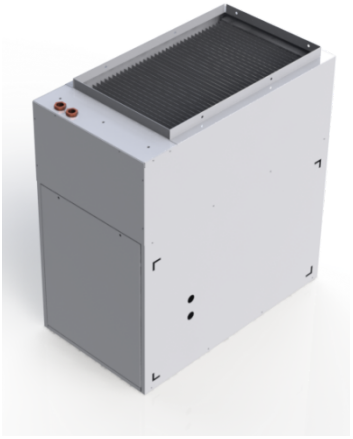
R-EC series air handlers



Variable speed high efficiency air handler for forced air heating when connected to a heat pump, boiler or domestic water heater.

- High efficiency EC motor.
- Cycle timer to meet Provincial and National building codes.
- Five independent speeds for heating, cooling and continuous fan operation.
- Includes hot water coil, pump and check valve.
- Optional cased cooling coil (sold separately).
- Fits standard filter frame (sold separately).
- Multi-position: up flow, downflow and horizontal.
- Suitable for small D™ or other high velocity duct systems.

Performance

Catalogue No.	Heating Capacity (Btu/hr.)			Airflow (cfm)	Cooling Capacity (Tons)	List Price
	@110°F	@140°F	@180°F			
R-EC33	18,600	33,000	52,700	800	1.0-2.0	Please Contact
R-EC40	22,700	39,800	63,500	800	1.0-2.0	Please Contact
R-EC46	25,400	46,600	76,500	1400	1.5-3.5	Please Contact
R-EC66	35,200	66,100	110,900	1400	1.5-3.5	Please Contact
R-EC70	36,800	69,400	116,900	1700	2.5-5.0	Please Contact

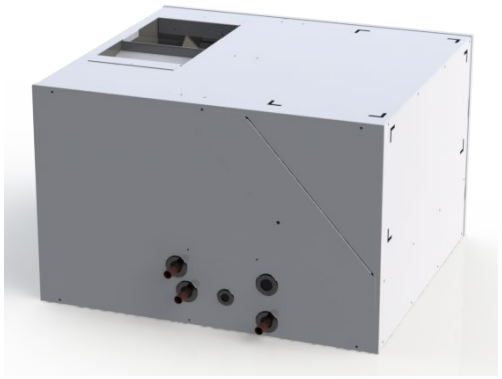
Physical Properties

Catalogue No.	Cabinet dimensions			Supply air size	Return air filter size	Water inlet/outlet	Weight (pounds)	Electrical		
	width	depth	height					volts	Min Amps	Max Fuse
R-EC33	14”	25”	26”	12”x20”	16”x25”	1/2”	60	115	7.7	15
R-EC40	14”	25”	26”	12”x20”	16”x25”	1/2”	65	115	7.7	15
R-EC46	23”	25”	32”	20”x20”	20”x25”	3/4”	80	115	7.7	15
R-EC66	23”	25”	32”	20”x20”	20”x25”	3/4”	85	115	7.7	15
R-EC70	23”	25”	32”	20”x20”	20”x25”	3/4”	88	208/230	5.8	15

Notes

1. To order unit as a fan box without coil or pump, add suffix R-ECxx”-FB”. Deduct $600 from LIST price.
2. To order unit with external pump, add suffix R-ECxx”-EP”. Add $0 to LIST price (no cost special order).

R-ECW series air handlers



Low profile air handler for restricted head room applications.

- High efficiency EC motor.
- Can be connected to a heat pump, boiler or domestic water heater.
- Cycle timer to meet Provincial and National building codes.
- Five independent speeds for heating, cooling and continuous fan operation.
- Hot water coil comes with field mounted pump and check valve.
- Cooling coil up to 1.5 Ton capacity is included. Cooling coil comes standard with 1.5 Ton fixed orifice. Unit can be ordered with TX valve kit or other orifice sizes to match the selected condenser for most common refrigerants
- Internal filter slot holds standard 16” x 20” filter size.
- Suitable for small D™ or other high velocity duct systems.
- All connections at front of unit. All parts accessible through front without removal of unit from ductwork. Zero clearance required on all sides, back and bottom.
- Coil assembly slides out for service and can be reversed to switch air handler return from right to left hand orientation. Return air can be side or top inlet. Corner marks are provided for cut-in of either location.

Performance

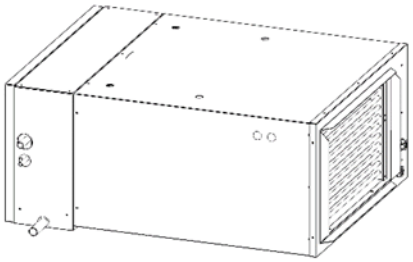
Catalogue No.	Heating Capacity (Btu/hr.)			Airflow (cfm)	Cooling Capacity (Tons)	List Price
	@110°F	@140°F	@180°F			
R-ECW33	18,600	33,000	52,700	800	¾ -1.5	Please Contact
R-ECW40	22,700	39,800	63,500	800	1.5-2.0	Please Contact

Physical Properties

Catalogue No.	Cabinet dimensions			Supply air size	Return air filter size	Water inlet/outlet	Weight (pounds)	Electrical		
	width	depth	height					volts	Min Amps	Max Fuse
R-ECW33/40	14”	25”	26”	12”x20”	16”x25”	1/2”	60	115	7.7	15

R-ECL series air handlers

Bottom access air handler for restricted head room applications or shallow wall applications.



R-ECL ceiling mounted with R-CR1420 cooling coil

- High efficiency EC motor.
- Can be connected to a heat pump, boiler or domestic water heater.
- Cycle timer to meet Provincial and National building codes.
- Five independent speeds for heating, cooling and continuous fan operation.
- Hot water coil comes with internal pump and check valve.
- Optional 2 or 3 way valve may be factory installed in place of pump and check valve.
- Suitable for small D™ or other high velocity duct systems.
- All parts accessible through front without removal of unit from ductwork. Zero clearance required on all sides, back and bottom.
- Coil assembly slides out for service and can be reversed to switch air handler return from right to left hand orientation. Return air can be side or top inlet. Corner marks are provided for cut-in of either location.

Performance

Catalogue No.	Heating Capacity (Btu/hr.)			Airflow (cfm)	Cooling Capacity (Tons)	List Price
	@110°F	@140°F	@180°F			
R-ECL33	18,600	33,000	52,700	800	¾ -1.5	Please Contact
R-ECL40	22,700	39,800	63,500	800	1.5-2.0	Please Contact

Physical Properties

Catalogue No.	Cabinet dimensions			Supply air size	Return air filter size	Water inlet/outlet	Weight (pounds)	Electrical		
	width	length	height					volts	Min Amps	Max Fuse
R-ECL33/40	25”	26”	14”	12”x25”	12”x25”	1/2”	60	115	7.7	15

R-EZ series zoned air handlers

Variable speed high efficiency air handler for forced air heating when connected to a heat pump, boiler or domestic water heater.

- High efficiency EC motor.
- Cycle timer to meet Provincial and National building codes.
- Variable air flow; each zone is selectable from 20% to 100%.
- Includes integral hot water coil, pump and check valve.
- Uses return mounted cased cooling coil (sold separately).
- Uses standard filter frame (sold separately).
- Multi-position: upflow, downflow and horizontal.
- Suitable for small D™ or other high velocity duct systems.

Performance

Catalogue No.	Heating Capacity (Btu/hr.)			Airflow (cfm)	Cooling Capacity (Tons)	List Price
	@110°F	@140°F	@180°F			
R-EZ33	18,600	33,000	52,700	800	1.0-2.0	Please Contact
R-EZ40	22,700	39,800	63,500	800	1.0-2.0	Please Contact
R-EZ46	25,200	46,600	76,500	1400	1.5-3.5	Please Contact
R-EZ66	35,200	66,100	110,900	1400	1.5-3.5	Please Contact
R-EZ70	36,800	69,400	116,900	1700	2.5-5.0	Please Contact

Physical Properties

Catalogue No.	Cabinet dimensions			Supply air size	Return air filter size	Water inlet/outlet	Weight (pounds)	Electrical		
	width	depth	height					volts	Min Amps	Max Fuse
R-EZ33	14”	25”	36”	2@10”Ø	16”x25”	1/2”	70	115	7.7	15
R-EZ40	14”	25”	36”	2@10”Ø	16”x25”	1/2”	75	115	7.7	15
R-EZ46	23”	25”	42”	4@10”Ø	20”x25”	3/4”	90	115	7.7	15
R-EZ66	23”	25”	42”	4@10”Ø	20”x25”	3/4”	95	115	7.7	15
R-EZ70	23”	25”	42”	4@10”Ø	20”x25”	3/4”	98	208/230	5.8	15

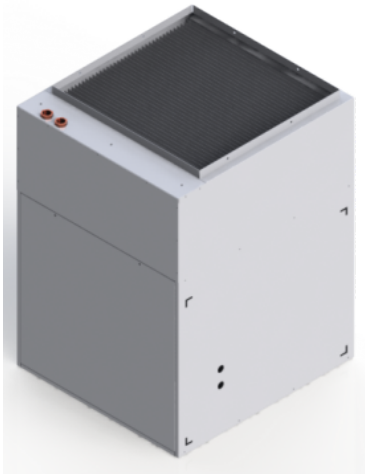
Notes

1. To order unit as a fan box without coil or pump, add suffix R-ECxx”-FB”. Deduct $600 from LIST price.
2. To order unit with external pump, add suffix R-ECxx”-EP”. Add $0 to LIST price (no cost special order).

R-EM series Make-Up-Air units

Variable speed, high efficiency air handler for forced air heating of an outdoor fresh air stream when connected to a heat pump or boiler.

- High efficiency EC motor.
- Airflow selection can be fixed speed or multi stage.
- Air flow is adjustable from 20% to 100% in any mode.
- Includes integral hot water coil, pump and check valve.
- Uses standard filter frame (sold separately).
- Multi-position: upflow, downflow or horizontal.
- Add-on cooling capable (cooling coil not included).
- Discharge air temperature can be internally controlled with built in temperature sensor or can be externally controlled using a remote thermostat or 0-10V input signal.



Performance

Catalogue No.	Boiler Input Required (Btu/hr.) for outdoor air inlet conditions				Airflow (cfm)	List Price
	@10°F	@0°F	@-10°F	@-30°F		
R-EM33	52,000	60,000	68,800	Not Recomended	800	Please Contact
R-EM40				86,400		Please Contact
R-EM46	89,500	104,900	Not Recomended	Not Recomended	1400	Please Contact
R-EM66			120,300	152,000		Please Contact
R-EM70	108,600	127,300	Not Recomended	Not Recomended	1700	Please Contact
R-EM98			145,600	183,600		Please Contact

Performance based on 50% propylene glycol at 160F water inlet temperature and 68F air supply temperature at air inlet conditions shown.

Physical Properties

Catalogue No.	Cabinet dimensions			Supply air	Return air filter size	Water inlet/ outlet	Wt (lbs)	Electrical		
	w	d	h					Volts	Min Amps	Max Fuse
R-EM33	14”	25”	26”	12”x20”	16”x25”	1/2”	60	115	7.7	15
R-EM40	14”	25”	26”	12”x20”	16”x25”	1/2”	65	115	7.7	15
R-EM46	23”	25”	32”	20”x20”	20”x25”	3/4”	80	115	7.7	15
R-EM66	23”	25”	32”	20”x20”	20”x25”	3/4”	85	115	7.7	15
R-EM70	23”	25”	32”	20”x20”	20”x25”	3/4”	88	208 /230	5.8	15
R-EM98	36”	25”	32”	20”x20”	20”x25”	3/4”	100	208 /230	6.8	15

Notes - R-EM98 series air handler includes an external heating coil and pump to be field mounted. Width shown for R-EM98 air handler includes cased heating coil.

Cased water coils

- Aluminum fin on copper tube.
- Suitable for heating applications using water-based heat pumps, domestic hot water (combo heating) or hydronic/ boiler.
- 150 psi maximum pressure, 180°F maximum operating temperature.
- G90 galvanized cabinet. Stainless steel drain pan included for chilled water use.
- Cased coils are for horizontal air flow only.
- R-CW3020 coil suitable for horizontal flow, or top return /side outlet.

Catalogue No.	Airflow (cfm)	Heating Capacity (MBH)			Cooling Capacity (MBH)			List Price
		110°F	140°F	180°F	50°F	45°F	40°F	
R-CW1320-02	800	18.6	33.0	52.7	14.2	17.1	20.2	Please Contact
R-CW1320-03	800	22.7	39.8	63.5	18.5	22.7	26.9	Please Contact
R-CW2220-02	1400	25.2	46.6	76.5	25.0	30.1	35.6	Please Contact
R-CW2220-03	1400	35.2	66.1	110.9	31.5	38.4	45.5	Please Contact
	2000	38.5	72.8	122.9	*	*	*	
R-CW3020-04	2000	55.1	99.8	160.6	43.3	52.0	61.0	Please Contact

Notes:
Heating air inlet 70F. Cooling air inlet 80F/67F.
*If no values shown in cooling table, carryover in cooling mode is likely and therefore not recommended.

Catalogue No.	Cabinet dimensions				Line connections[1]		
	Width	High	Depth	Filter	Supply	Return	drain
R-CW1320	5	18	25	16x25	1/2”	1/2”	7/8”
R-CW2220	5	24	25	20x25	3/4”	3/4”	7/8”
R-CW3020	14	30	25	20x25	1”	1”	7/8”

1) Plumbing pipe sizes are nominal. Drain connection is actual OD pipe diameter for hose connection.

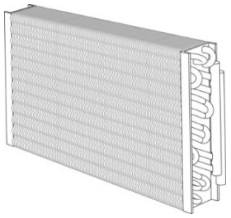
Cased refrigerant coils

- Aluminum fin on copper tube.
- Suitable for heating applications using air or ground source heat pumps.
- Tested to 800 psi. Suitable for R410a, R407c R22, R134a and other refrigerants.
- TX valve for R410a comes standard. Fixed orifice or TX valves for other refrigerants available. Please specify at time of order.
- G90 galvanized cabinet. Stainless Steel drain pan included.
- Cased coils are for horizontal air flow only.
- R-UC2420 & R-UC3020 are sloped coils suitable for horizontal flow, or top return / side outlet.

Catalogue No.	Capacity (Tons)		Airflow (cfm)	Cabinet dimensions				Line connections[1]			List Price
	Min	Max		Width	High	Depth	Filter	liquid	vapour	drain	
R-CR1422-03-1TX	¾	1.0	800	5”	14	25	14x25	3/8”	5/8”	7/8”	Please Contact
R-CR1422-03-2TX	1.0	2.0	800	5”	14	25	14x25	3/8”	5/8”	7/8”	Please Contact
R-CR1422-04-2TX	1.5	2.5	1200	8”	14	25	14x25	3/8”	5/8”	7/8”	Please Contact
R-CR1620-02-1TX	¾	1.0	800	5”	18	25	16x25	3/8”	5/8”	7/8”	Please Contact
R-CR1620-02-2TX	1.0	1.5	800	5”	18	25	16x25	3/8”	5/8”	7/8”	Please Contact
R-CR1620-03-2TX	1.5	2.5	1400	5”	18	25	16x25	3/8”	5/8”	7/8”	Please Contact
R-CR1620-03-FCR-2TX	1.0	2.0	1400	4.5”	16	23.5	NA	3/8”	5/8”	7/8”	Please Contact
R-CR2420-03-3TX	2.5	3.5	1600	10”	30	25	20x25	3/8”	3/4”	7/8”	Please Contact
R-CR3020-04-5TX	3.0	6.0	2000	10”	30	25	20x25	3/8”	3/4”	7/8”	Please Contact
R-CR1620-02-FR	¾	1.5	800	5”	18	25	16x25	3/8”	5/8”	7/8”	Please Contact
R-CR1620-03-FR	1.5	2.5	1400	5”	18	25	16x25	3/8”	5/8”	7/8”	Please Contact
R-CR1620-03-FCR-FR	1.0	2.0	1400	4.5”	16	23.5	NA	3/8”	5/8”	7/8”	Please Contact

[1] All line connections are copper. Sizes are OD (outside diameter.)
[2] For FR (Flow Rater fixed orifice) coils please provide orifice size or cooling capacity and refrigerant type
[3] TX valves also available for R22, 407C or other refrigerants. Please contact factory.
4 FCR series is a First Company TAQ slide in coil replacement available with Fixed orifice or TX.

Uncased Water Coils

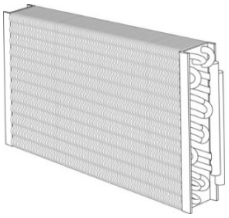


Aluminum fin on copper tube.
Suitable for water based heat pumps, domestic hot water (combo heating) or hydronic/boiler applications.
150 psi, 180°F maximum.
Drain pans available for chilled water applications.

Catalogue No.	Airflow (cfm)	Heating Capacity (MBH)			Cooling Capacity (MBH)			List Price
		110°F	140°F	180°F	50°F	45°F	40°F	
R-UW1320-02	800	18.6	33.0	52.7	14.2	17.1	20.2	Please Contact
R-UW1320-03	800	22.7	39.8	63.5	18.5	22.7	26.9	Please Contact
R-UW2220-02	1400	25.2	46.6	76.5	25.0	30.1	35.6	Please Contact
R-UW2220-03	1400	35.2	66.1	110.9	31.5	38.4	45.5	Please Contact
	2000	38.5	72.8	122.9	*	*	*	
R-UW3021-04	2000	55.1	99.8	160.6	43.3	52.0	61.0	Please Contact

Notes: Heating air inlet 70F. Cooling air inlet 80F/67F.
*If no values shown in cooling table, carryover in cooling mode is likely and therefore not recommended.

Uncased Refrigerant Coils



- Aluminum fin on copper tube.
- 600psi 400°F maximum. (suitable for R410a)
- Drain pans available for cooling applications.

Catalogue No.	Capacity (Tons)		Nominal Airflow (cfm)	Coil Face Dimensions			Line connections[1]		List Price
	Min	Max		Width	High	Rows	liquid	vapour	
R-UR1422-03	¾	1.5	800	20”	16	3	3/8”	5/8”	Please Contact
R-UR1422-04	1.5	2.5	1400	20”	16	4	3/8”	5/8”	Please Contact
R-UR1620-02	¾	1.5	800	20”	16	2	3/8”	5/8”	Please Contact
R-UR1620-03	1.5	3.0	1400	20”	16	3	3/8”	5/8”	Please Contact
R-UR2420-03	2.5	4.0	1400	20”	24	3	3/8”	3/4”	Please Contact
R-UR3020-04	3.0	6.0	2000	20”	30	4	3/8”	3/4”	Please Contact

Notes:
Heating air inlet 70F. Cooling air inlet 80F/67F.
Can be ordered with fixed orifice or TX valve for 410a. TX or orifices for other refrigerants available by special order.

Air handler Filters

Catalogue No.	Description	Dimensions (ins)			List Price
		Height	Width	Thk	
R-FRK1625-1	Filter rack (includes disposable filter)	16	25	1	Please Contact
R-FRK2025-1		20	25	1	Please Contact
R-FPD1625-1	Disposable MERV 8 Pleated filter with cardboard frame	16	25	1	Please Contact
R-FPD2025-1		20	25	1	Please Contact

R-TWFHP series - wall sleeve Heat Pump units

- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- EC axial fan motor with field settable speed control.
- TWF wall sleeve kits are designed to fit wall opening for replacement of older 24”x32” wall units where no sleeve was originally installed.
- “H” series heat pumps drain condensate to outside. Units are for use with Ecologix HYBRID heat pump system.
- “C” series heat pumps drain condensate to inside. Condensate pump c/w overflow alarm is included.
- Consult application bulletins for installation tips and options.

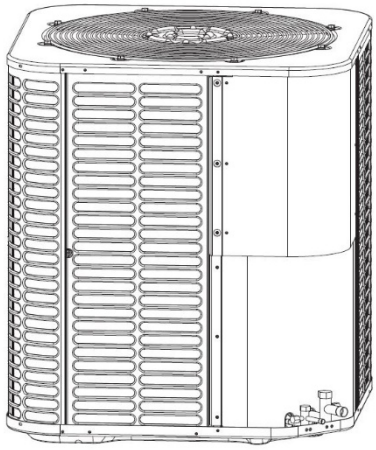
R-TWFHP unit

Model	Capacity (Tons)		Cabinet dimensions (inches)			Refrigerant Line size		Electrical		List Price
	Cooling (Tons)	Heating (MBtu/hr)	Width	Height	Depth	Liquid	Vapor	Min Amps	Max Breaker	
R-TWFHP12	1.0	12	24	32	19	3/8”	5/8”	8	15	Please Contact
R-TWFHP18	1.5	18	24	32	19	3/8”	5/8”	12	20	Please Contact
R-TWFHP24	2.0	24	24	32	19	3/8”	3/4”	15	20	Please Contact

R-TWF-sleeve	-		24.25	32.25	16	-	-	-	-	Please Contact
R-TWF-grille	-		24.25	32.25	3/4	-	-	-	-	Please Contact

Outdoor cube condensers AC + Heat Pump

- Vertical discharge cube style condensing unit
- 208 / 230V single phase
- Galvanized post-painted metal cabinet for long rust-free life
- R-VDAC are fixed speed air conditioning 14 SEER
- R-VDHP are fixed speed Heat Pumps 14 SEER
- R-VDIAC are inverter driven air conditioning 18 SEER
- R-VDIHP are inverter driven Heat Pumps 18 SEER
- Other sized models available for project quantities.

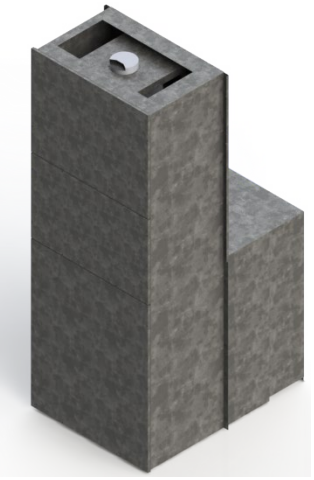


Model No.	Capacity (Btu/hr)	Cabinet dimensions (inches)			Refrigerant Line size		Electrical		LIST PRICE
		Width	Height	Depth	Liquid	Vapor	Min Amps	Max Breaker Amps	
R-VDAC18	18,000	22	25	22	3/8”	3/4”	8	15	Please Contact
R-VDAC24	24,000	22	25	22	3/8”	3/4”	11	20	Please Contact
R-VDAC36	36,000	22	25	22	3/8”	3/4”	17	25	Please Contact
R-VDHP24	24,000	22	25	22	3/8”	3/4”	11	20	Please Contact
R-VDHP36	36,000	22	25	22	3/8”	3/4”	17	25	Please Contact
R-VDIHP24	24,000	22	25	22	3/8”	3/4”	11	20	Please Contact
R-VDIHP36	36,000	22	25	22	3/8”	3/4”	17	25	Please Contact
R-VDIHP60	56,000	29	33	29	3/8”	7/8”	32	40	Please Contact

R-ECE-E series – DX Heat Pump with Electric back up Heat Thru Wall Air Handling / Heat Pump System

- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- AC has Axial EC variable speed fan motor with field adjustable speed settings.
- Indoor fan is 5 speed EC motor with independent rotary dial speed controls for Heating, Cooling and Continuous Fan speeds.
- Comes complete with wall sleeve
- Aluminum louver (sold Separately)

Air Handler



Wall Sleeve

Heat Pump

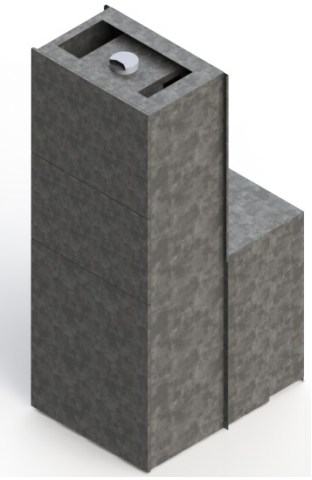
Model	Capacity		Inside Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)			LIST PRICE
	Cooling (tons)	Heating (KW)	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)	
R-ECE09-E05	3/4	5	25	68	17	24.5	32	10-18	Please Contact
R-ECE12-E05	1.0	5	25	68	17	24.5	32	10-18	Please Contact
R-ECE18-E07	1.5	7	25	68	17	24.5	32	10-18	Please Contact
R-ECE18-E10	1.5	10	25	68	17	24.5	32	10-18	Please Contact
R-ECE24-E07	2.0	7	25	68	17	24.5	32	10-18	Please Contact
R-ECE24-E10	2.0	10	25	68	17	24.5	32	10-18	Please Contact

R-EVE-E series – DX Heat Pump with Electric Heat & ERV

Thru Wall Air Handling / Heat Pump With integral ERV

- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- AC has Axial EC variable speed fan motor with field adjustable speed settings.
- Indoor fan is 5 speed EC motor with independent rotary dial speed controls for Heating, Cooling and Continuous Fan speeds.
- High efficiency counterflow ERV core with independent EC fans for flow control
- Connects to bathroom exhaust or can be simply connected internal to unit. Stale Air is ducted to wall box external to unit.
- Outside air is introduced internal to unit through grille. Fresh air is introduced to air stream internal to unit.
- Comes complete with wall sleeve
- Aluminum louver (sold separately)

Air Handler



Wall Sleeve

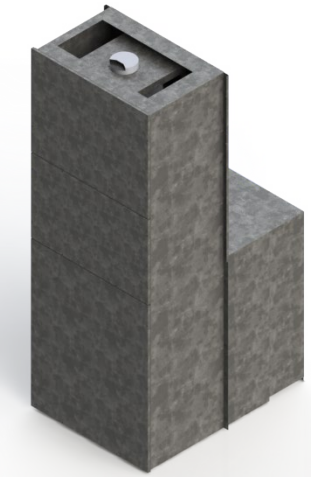
HP + ERV

Model	Capacity		Inside Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)			LIST PRICE
	Cooling (tons)	Heating (KW)	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)	
R-EVE09-E05	3/4	5	25	68	21	24.5	32	10-18	Please Contact
R-EVE12-E05	1.0	5	25	68	21	24.5	32	10-18	Please Contact
R-EVE18-E07	1.5	7	25	68	21	24.5	32	10-18	Please Contact
R-EVE18-E10	1.5	10	25	68	21	24.5	32	10-18	Please Contact
R-EVE24-E07	2.0	7	25	68	21	24.5	32	10-18	Please Contact
R-EVE24-E10	2.0	10	25	68	21	24.5	32	10-18	Please Contact

R-ECE-H series – DX Air Conditioning with Hydronic Heat Thru Wall Air Handling / Air Conditioning

- Insulated for sound attenuation
- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- AC has Axial EC variable speed fan motor with field adjustable speed settings.
- Indoor fan is 5 speed EC motor with independent rotary dial speed controls for Heating, Cooling and Continuous Fan speeds.

Air Handler



Wall Sleeve

AC

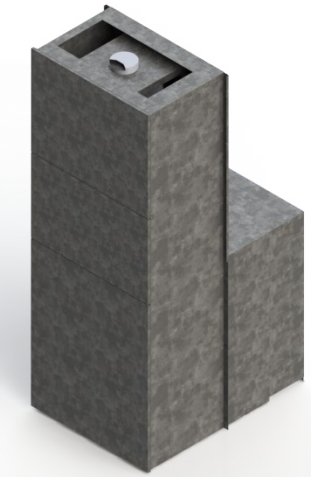
Model	Capacity		Inside Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)			LIST PRICE
	Cooling (tons)	Heating (MBH@140F)	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)	
R-ECE09-H33	3/4	33	25	68	17	24.5	32	10-18	Please Contact
R-ECE12-H33	1.0	7.0	25	68	17	24.5	32	10-18	Please Contact
R-ECE18-H33	1.5	5.0	25	68	17	24.5	32	10-18	Please Contact
R-ECE18-H40	1.5	7.0	25	68	17	24.5	32	10-18	Please Contact
R-ECE24-H33	2.0	5.0	25	68	17	24.5	32	10-18	Please Contact
R-ECE24-H40	2.0	7.0	25	68	17	24.5	32	10-18	Please Contact

EVE-H series – DX AC with Hydronic Heat & ERV

Thru Wall Air Handling / Air Conditioning With integral ERV

- Insulated for sound attenuation
- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- AC has Axial EC variable speed fan motor with field adjustable speed settings.
- Indoor fan is 5 speed EC motor with independent rotary dial speed controls for Heating, Cooling and Continuous Fan speeds.
- High efficiency counterflow ERV core with independent EC fans for flow control
- Connects to bathroom exhaust or can be simply connected internal to unit. Stale Air is ducted to wall box external to unit.
- Outside air is introduced internal to unit through grille. Fresh air is introduced to air stream internal to unit.

Air Handler



Wall Sleeve

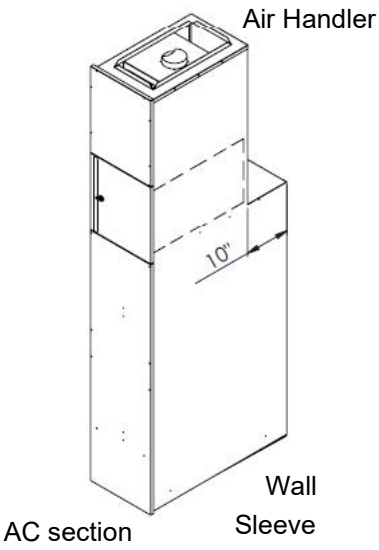
AC + ERV

Model	Capacity		Inside Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)			LIST PRICE
	Cooling (tons)	Heating (MBH@140F)	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)	
R-EVE09-H33	3/4	33	25	68	21	24.5	32	10-18	Please Contact
R-EVE12-H33	1.0	7.0	25	68	21	24.5	32	10-18	Please Contact
R-EVE18-H33	1.5	5.0	25	68	21	24.5	32	10-18	Please Contact
R-EVE18-H40	1.5	7.0	25	68	21	24.5	32	10-18	Please Contact
R-EVE24-H33	2.0	5.0	25	68	21	24.5	32	10-18	Please Contact
R-EVE24-H40	2.0	7.0	25	68	21	24.5	32	10-18	Please Contact

R-ECN-H series – DX Air Conditioning with Hydronic Heat Thru Wall Air Handling / Air Conditioning

- Narrow profile for slim outdoor grille profile
- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- AC has Axial EC variable speed fan motor with field adjustable speed settings.
- Indoor fan is 5 speed EC motor with independent rotary dial speed controls for Heating, Cooling and Continuous Fan speeds.

R-EVN Unit



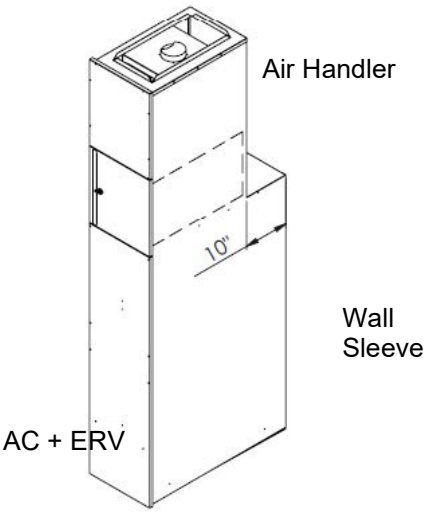
Model	Capacity		Inside Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)			LIST PRICE
	Cooling (tons)	Heating (MBH@140F)	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)	
R-ECN09-H33	3/4	33	15.5	88	25	14.5	58.75	10-18	Please Contact
R-ECN12-H33	1.0	7.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-ECN18-H33	1.5	5.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-ECN18-H40	1.5	7.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-ECN24-H33	2.0	5.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-ECN24-H40	2.0	7.0	15.5	88	25	14.5	58.75	10-18	Please Contact

R-EVN-H series – DX AC with Hydronic Heat & ERV

Thru Wall Air Handling / Air Conditioning With integral ERV

- Narrow profile for slim outdoor grille.
- Installed and serviced from the indoors
- 208 / 230V single phase
- G90 Galvanized for long rust-free life
- AC has Axial EC variable speed fan motor with field adjustable speed settings.
- Indoor fan is 5 speed EC motor with independent rotary dial speed controls for Heating, Cooling and Continuous Fan speeds.
- High efficiency counterflow ERV core with independent EC fans for flow control
- Connects to bathroom exhaust or can be simply connected internal to unit. Stale Air is ducted to wall box external to unit.
- Outside air and exhaust air are introduced internal to unit through grille. No ERV connections required external to unit.

R-EVN Unit

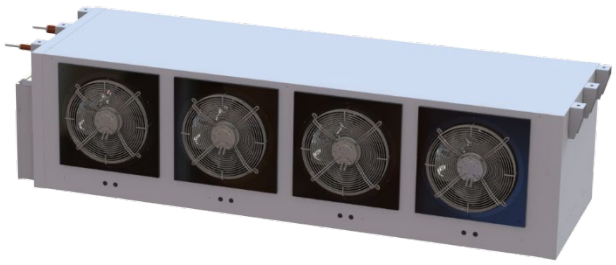


Model	Capacity		Inside Cabinet Dimensions (ins)			Wall Sleeve Dimensions (ins)			LIST PRICE
	Cooling (tons)	Heating (MBH@140F)	Width	Height	Depth	Width	Height	Wall Depth (Min-Max)	
R-EVN09-H33	3/4	33	15.5	88	25	14.5	58.75	10-18	Please Contact
R-EVN12-H33	1.0	7.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-EVN18-H33	1.5	5.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-EVN18-H40	1.5	7.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-EVN24-H33	2.0	5.0	15.5	88	25	14.5	58.75	10-18	Please Contact
R-EVN24-H40	2.0	7.0	15.5	88	25	14.5	58.75	10-18	Please Contact

R-ECC series Commercial Air Handlers

Variable speed high efficiency axial fan air handling system with cooling coil and reheat coil for cooling / heating and humidity removal.

- High efficiency EC motorized impellers.
- Variable air flow; fans can be controlled from 20% to 100% with an external 0-10V signal or manually set and operated by a conventional; thermostat. Controls allow one unit to act as lead unit to link as many as 100 units together to operate from one external signal or thermostat



- Ceiling mounting brackets are included. Brackets fit Unistrut channel. Flat smooth top for tight seal to ceiling.
- Double wall post painted G90 galvanized steel lined cabinet to ensure all surfaces are wipe down safe and rust free.
- Hinged access door through bottom for easy cleaning from below without tools or panel removal.
- Stainless steel drain pans.
-

Performance

Catalogue Number	Heating Capacity (Btu/hr.)			Airflow (cfm)	Cooling (Btu/hr)		LIST Price
	@110°F	@140°F	@180°F		Total	Sensible	
R-ECC235	38,000	64,100	99,200	3000	112,200	77,700	Please Contact
R-ECC435	76,000	128,200	198,200	6000	224,400	174,200	Please Contact

Cooling at 80/67wb/db inlet with 45F inlet water dT=20F Heating calculated at 68F inlet air, pump flow=5 gpm
Consult factory for detailed performance specifications at different operating conditions.

Physical Properties

Catalogue Number	Dimensions			Fans	Access Doors	Water Connection			Ship Weight (lbs)	Min Amps	Max Fuse
	Width	Depth	Height			Hot	Cold	Conn. point			
R-ECC235	55”	32”	25”	2	2	1”	1.25”	Side	450	4.5	15
R-ECC435	100”	32”	25”	4	2	1”	1.5”	Side	600	6.0	15

RANGER
Heating & Air Conditioning
Products Inc.

R-MS CATALOGUE

2022

Issue Date: 10/17/2022

INVERTER TECHNOLOGY
VARIABLE CAPACITY
HEATING & AIR CONDITIONING

Effective January 1st, 2022

RANGER SIDE DISCHARGE INVERTER HEAT PUMP
COMPATIBLE INDOOR AIR HANDLING UNIT

RANGER Heating & Air Conditioning Products Inc. **MULTI POSITION AIR HANDLING UNIT**

MODEL #	DESCRIPTION	SIZE (TON)	CONTRACTOR COST
MVB-**24**HWFN1-M / MVC-**24**HWFN1-M	Indoor Air Handling Unit	2	**Please Contact**
MVB-**36**HWFN1-MX / MVC-**36**HWFN1-M	Indoor Air Handling Unit	3	**Please Contact**
MVB-**48**HWFN1-MX / MVC-**48**HWFN1-M	Indoor Air Handling Unit	4	**Please Contact**
MVC-**60**HWFN1-M	Indoor Air Handling Unit	5	**Please Contact**

* NO INTERFACE REQUIRED – BUILT-IN AHU
* 16.2 SHEILDED CABLE MUST BE USED FOR 3 & 4 TON MATCHED SYSTEMS
* ELECTRIC HEATERS COMPATIBLE TO RANGER AIR HANDLING UNITS

** Specifications & Prices subject to change without notice

The New RANGER Inverter Heat Pump Compatible Indoor Air Handling Unit

Indoor Model *			MVC-24HWFN1-M	MVC-36HWFN1-M	MVC-48HWFN1-M	MVC-60HWFN1-M
			2 TON	3 TON	4 TON	5 TON
Indoor fan motor	Input	W	/	150.0	126.0	126.0
	RLA	A	1	1.48	2.4	2.4
Indoor air flow (Hi/Mi/Lo)		CFM	758.82/694.12/629.41	1082.35/970.59/864.71	1282.35/1094.12/905.88	1582.35/1358.82/1135.29
Indoor noise level (Hi/Mi/Lo)		dB(A)	43/40.5/35	46.8/44/41.3	53/50/46	52.5/49/44
Indoor unit	Dimension(W*D*H)	inch	21.02 x 17.52 x 45.00	21.02 x 21.02 x 49.02	21.02 x 21.02 x 49.02	21.02 x 24.49 x 52.99
	Dimension(W)	inch	21.02	21.02	21.02	21.02
	Dimension(D)	inch	17.52	21.02	21.02	24.49
	Dimension(H)	inch	45	49.02	49.02	52.99
	Net/Gross weight	lbs.	141.09/156.09	127.87/153.66	130.51/156.31	220.46/231.48

*** Rated Heating capacity at 47°F outdoor temperature**
§ Thermostat used must be 2 Stage Heat-Cool when using Electric Heater option.
*** Air flow measured at 0.20 in. w.c. ESP**

WARRANTY: All warranty effective from date of installation.
Labour Warranty is the responsibility of the Installing Contractor.

Side Discharge Inverter Heat Pump Condenser by
Ranger Heating & Air Conditioning Products Inc. Warranty can be registered at www.ranger.com - **5 years all Parts** - **5 years on Compressor**

§ All Testing and Values are per Manufacturer's testing and the use of Manufacturer's Coils.

***To register warranty on equipment, go to www.rangerhvac.com**

Distributed by:

RANGER
Heating & Air Conditioning Products Inc.

Bradford, Ontario
Canada

www.rangerhvac.com

The New Inverter Heat Pump that can operate with any Furnace or Fan Coil*

some conditions apply

Outdoor Model *			MOB30-12HFN1-MS0W	MOX330U-18HFN1-MR0	MOX430U-24HFN1-MR0	MOD30U-30HFN1-MR0
			1 TON	1.5 TON	2 TON	2.5 TON
Power supply		Ph-V-Hz	208/230/1/60	208/230/1/60	208/230/1/60	208/230/1/60
Cooling	Capacity	Btu/h	12,000	18,000	24,000	30,000
	Rated current	A	4.5	7.5	9.7	12.2
	EER	Btu/w	11	11.1	11.3	10.9
	SEER	Btu/w	19	19	19.4	19.5
Heating	Capacity	Btu/h	12,000	18,000	26,000	31,000
	Rated current	A	4.3	6.7	9.8	12.4
	COP	W/W	3.43	3.49	3.54	3.19
	HSPF5	Btu/w	8	8.8	9.2	8.6
Electrical Wiring	MIN. CIRCUIT AMPACITY	A	15	16	19	24
	MAX.FUSE	A	15	25	30	35
Compressor	Type		INVERTER	ROTARY	ROTARY	ROTARY
	Rated current(RLA)	A	6	9	14	16
Outdoor fan motor	Input	W	58	/	/	150
	RLA	A	0.39	1	1	1.35
Outdoor air flow		CFM	1176	1450	1764.71	3000
Outdoor noise level		dB(A)	55	54	56.5	61.5
Outdoor unit	Dimension(W*D*H)	inch	31.50 x 13.11 x 21.81	31.69 x 12.99 x 21.81	35.04 x 13.46 x 26.50	37.24 x 16.14 x 31.89
	Dimension(W)	inch	31.5	31.69	35.04	37.24
	Dimension(D)	inch	13.11	12.99	13.46	16.14
	Dimension(H)	inch	21.81	21.81	26.5	31.89
	Net/Gross weight	lbs.	67.0/72.75	105.82/129.41	100.97/108.03	141.76/151.46
Refrigerant (R410-A)	Precharged for 25 feet	oz	30	74	107	107
	Additional charge (5 ft)	oz	0.8	3.5	3.5	3.5
Refrigerant piping	Line Set (Liquid/Gas)	inch	(1/4"/1/2")	(3/8"/5/8")	(3/8"/5/8")	(3/8"/5/8")
	Max. refrigerant pipe length	ft	82	98.42	164.04	213.25
	Max. difference in level	ft	33	65.62	82.02	98.42
Operation temperature	Outdoor (cooling/heating)	°F	5~122/5~86	5~122/5~75.2	5~122/5~75.2	5~122/5~75.2

***Defrost Pan Heater included**

◆ Outdoor Unit includes Interface module

WARRANTY: All warranty effective from date of installation.
Labour Warranty is the responsibility of the Installing Contractor.

Side Discharge Inverter Heat Pump Condenser by
Ranger Heating & Air conditioning Products Inc. — **5 years all Parts**
Warranty can be registered at www.rangerhvac.com — **- 5 years on Compressor**

Coil by ASPEN — **- 10 years ****
** Registration is required within 60 days of the installation date to upgrade to the 10 year warranty – www.aspenmfg.com

Ranger Wifi Thermostat

§ All Testing and Values are per Manufacturer's testing and the use of Manufacturer's Coils.

Distributed by:

RANGER
Heating & Air Conditioning Products Inc.

Bradford, Ontario Canada

www.rangerhvac.com

***To register warranty on equipment, go to www.rangerhvac.com**

The New Inverter Heat Pump that can operate with any Furnace or Fan Coil*

some conditions apply

Outdoor Model *			MOD30U-36HFN1-MR0	MOE30U-48HFN1-MR0	MOE30U-60HFN1-MR0
			3 TON	4 TON	5 TON
Power supply		Ph-V-Hz	208/230/1/60	208/230/1/60	208/230/1/60
Cooling	Capacity	Btu/h	**36,000**	**47,000**	**57,000**
	Rated current	A	15.82	21.9	23.8
	EER	Btu/w	10.4	9.3	10.3
	SEER	Btu/w	18	17.3	18
Heating	Capacity	Btu/h	**36,000**	**55,000**	**60,000**
	Rated current	A	16.12	23.3	20.9
	COP	W/W	3.02	3	3.55
	HSPF5	Btu/w	7.1	8.2	7.6
Electrical Wiring	MIN. CIRCUIT AMPACITY	A	24	37	34
	MAX.FUSE	A	40	50	60
Compressor	Type		ROTARY	ROTARY	ROTARY
	Rated current(RLA)	A	17.6	24	24.6
Outdoor fan motor	Input	W	150	126	126
	RLA	A	1.48	2.4	2.4
Outdoor air flow		CFM	2235.29	4500	4411.76
Outdoor noise level		dB(A)	61	59	61
Outdoor unit	Dimension(W*D*H)	inch	37.24 x 16.14 x 31.89	37.48 x 16.34 x 52.48	37.48 x 16.34 x 52.48
	Dimension(W)	inch	37.24	37.48	37.48
	Dimension(D)	inch	16.14	16.34	16.34
	Dimension(H)	inch	31.89	52.48	52.48
	Net/Gross weight	lbs.	151.68/161.16	217.59/248.68	176.37/187.39
Refrigerant (R410-A)	Precharged for 25 feet	oz	130	165	172
	Additional charge (5 ft)	oz	3.6	3.6	3.6
Refrigerant piping	Line Set (Liquid/Gas)	inch	(3/8"/5/8")	(3/8"/5/8")	(3/8"/3/4")
	Max. refrigerant pipe length	ft	213.25	213.25	213.25
	Max. difference in level	ft	98.42	98.42	98.42
Operation temperature	Outdoor (cooling/heating)	°F	5~122/5~75.2	5~122/5~75.2	5~122/5~75.2

***Defrost Pan Heater included**

◆ Outdoor Unit includes Interface module

WARRANTY: All warranty effective from date of installation.
Labour Warranty is the responsibility of the Installing Contractor.

Side Discharge Inverter Heat Pump Condenser by
Ranger Heating & Air Conditioning Products Inc.
Warranty can be registered at www.ranger.com - **5 years on Compressor**

Coil by ASPEN - **10 years ****
** Registration is required within 60 days of the installation date to upgrade to the 10 year warranty – www.aspenmfg.com

RANGER Wifi Thermostat

§ All Testing and Values are per Manufacturer's testing and the use of Manufacturer's Coils.

Distributed by:

RANGER
Heating & Air Conditioning Products Inc.

Bradford, Ontario Canada

www.rangerhvac.com

***To register warranty on equipment, go to www.rangerhvac.com**

RANGER
Heating & Air Conditioning
Products Inc.

OPTIONAL ACCESSORIES

FOR RANGER INDOOR AIR HANDLING UNIT

Effective January 1st, 2022

Compatible Heater Model #		AHU Model #			Contractor Cost $
		MVB-24HWFN1-M (2 TON)	MVB-36HWFN1-MX (3 TON)	MVB-48HWFN1-MX (4 TON)	
EAH-10A(UL)	10KW	x	x	x	Please Contact
EAH-15A(UL)	15KW		x	x	Please Contact
EAH-20A(UL)	20KW			x	Please Contact

Compatible Heater Model #		AHU Model #				Contractor Cost $
		MVC-24HWFN1-M (2 TON)	MVC-36HWFN1-M (3 TON)	MVC-48HWFN1-M (4 TON)	MVC-60HWFN1-M (5 TON)	
EAH-05B(UL)	5KW					Please Contact
EAH-10B(UL)	10KW	x	x	x		Please Contact
EAH-15B(UL)	15KW		x	x		Please Contact
EAH-20B(UL)	20KW			x	x	Please Contact
EAH-25B(UL)	25KW				x	Please Contact

** Specifications & Prices subject to change without notice

RANGER
Heating & Air Conditioning
Products Inc.

M1TSWZ28EC

THROUGH THE WALL HEAT PUMP

Effective January 1st, 2022

Contractor Cost Please Contact

- Suitable for residential and commercial applications
- Heating, air conditioning, and fresh air intake
- Eliminates the need for an outdoor unit
- Modern and attractive aesthetic
- Virtual plug and play
- Low maintenance
- Low noise

RANGER
Heating & Air Conditioning
Products Inc.

FEATURES

LOW NOISE

The innovative design of the crossflow fan produces low noise levels during operation. The air and carbon filter purifies the air, which creates a comfortable environment.

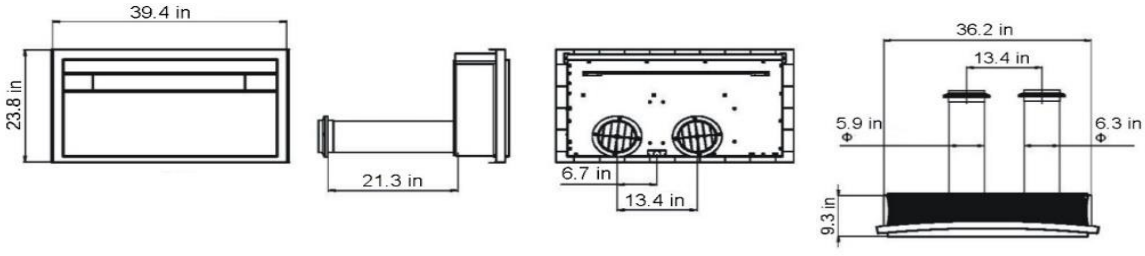
FRESH AIR VENTILATION

The unit uses an innovative new system that makes it easy to ventilate your room with fresh air. This air is purified by the air filtration system, which removes harmful particles and pollutants.

DISCREET & ELEGANT INSTALLATION

The sleek design fits perfectly into various residential and commercial applications such as a home, office building, or hotel, etc.

DIMENSIONS



Note: The external pipes have two different diameters, use 6.3 in for inlet side and 5.9 in for outlet side

MANUFACTURER TECHNICAL DATA

AIRFLOW		H	ft^3/min	265
		M		235
		L		205
COOLING CAPACITY	*		Btu/h	9,900
HEATING CAPACITY	**		Btu/h	10,000
ELECTRIC HEATER CAPACITY			Btu/h	6,800
EER			Btu/W	11.18
COP			Btu/Btu	3.53
NOISE LEVEL @ 3.28 FT	INDOOR	H	dB/A	48.2
		M		46.0
		L		43.7
	OUTDOOR ***	H	dB/A	58.1 (54.6***)
		M		-
		L		46.6 (43.1***)
ELECTRICAL INSULATION PROTECTION CLASS				I
WATER PROOF CLASS				IPX4
DEHUMIDIFICATION			gal/h	0.217
POWER SUPPLY			V/Ph/Hz	208-230/1/60
POWER INPUT	COOLING		W	885
	HEATING		W	830
RUNNING CURRENT	COOLING		A	4.5
	HEATING		A	4.1
START CURRENT	COOLING		A	12.3
	HEATING		A	11.6
ELECTRIC HEATER RUNNING CURRENT			A	9.1
COMPRESSOR				ROTARY
REFRIGERANT CONTROL				CAPILLARY
REFRIGERANT CHARGE			lb	1.43
REFRIGERANT TYPE				R410A
DIMENSIONS	WIDTH		in	43.11
	HEIGHT			22.83
	DEPTH			9.65
GROSS WEIGHT			lb	114.64

All testing and values are per Manufacturer's testing

All capacities are based on:
*Cooling: Indoor 80.6°F DB, 66.2°F WB, outdoor 95°F DB, 75.2°F WB.
**Heating: Indoor 68°F DB, outdoor 44.6°F DB, 42.8°F WB
***Values in parentheses refer to outdoor sound pressure levels with optional sound attenuation device installed

WARRANTY

All warranty is effective from the date of installation. Labour warranty is the responsibility of the installing contractor.

M1TSW28EC by Ranger Heating & Air Conditioning Products Inc.
- 3 years compressor warranty
- 1 year for parts warranty

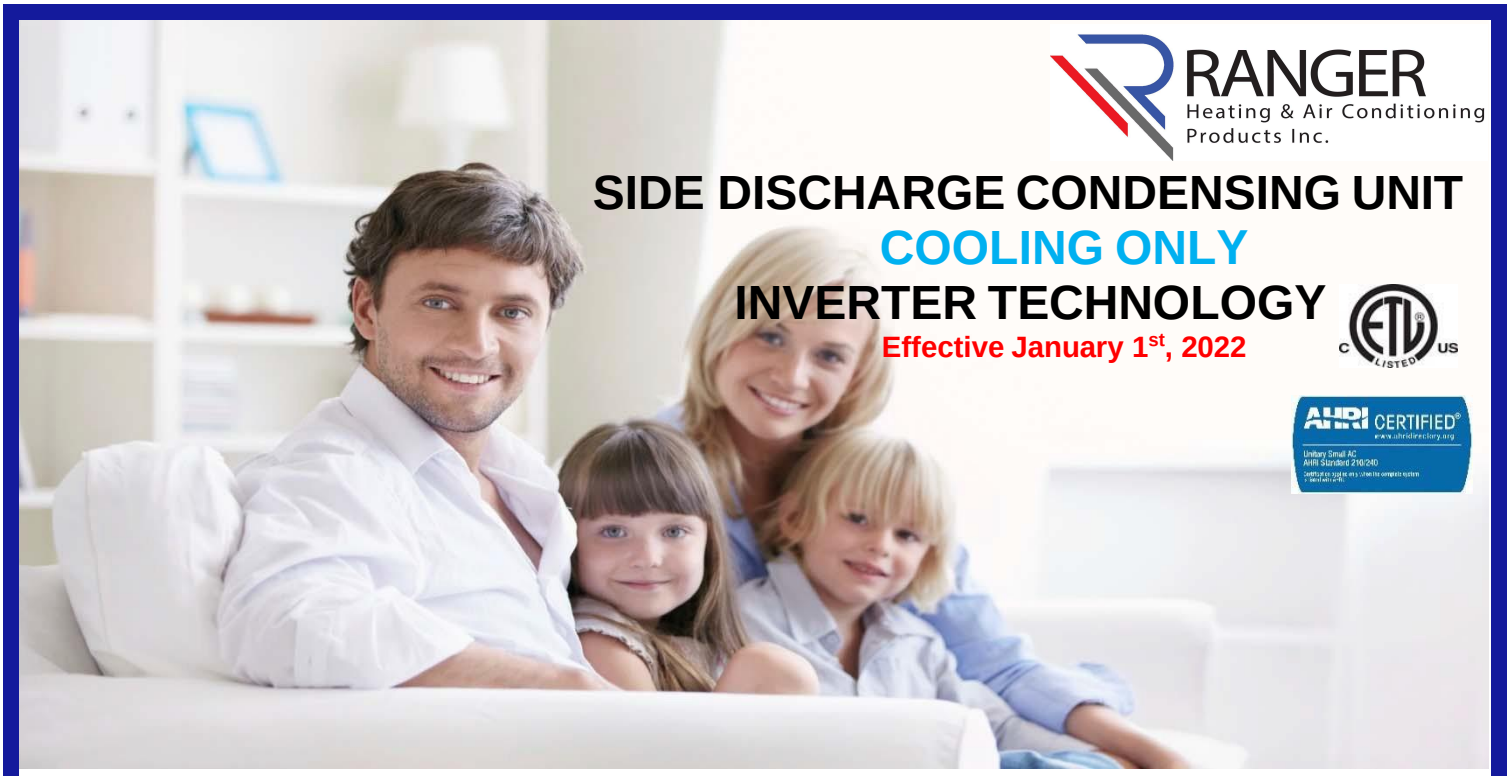
To register warranty on equipment, go to www.rangerhvac.com

Distributed by:

RANGER
Heating & Air Conditioning Products Inc.

Bradford, Ontario
Canada

www.rangerhvac.com



RANGER
Heating & Air Conditioning
Products Inc.

SIDE DISCHARGE CONDENSING UNIT

COOLING ONLY

INVERTER TECHNOLOGY

Effective January 1st, 2022

RANGER CONDENSING UNIT

COOLING ONLY

FEATURES:

- Ultra-quiet operation down to 51.5 dB(A)
- Inverter technology reduces operating costs up to 40%
- Slim design from 12,000 btuh to 24,000 btuh
- Up to 20 SEER
- R410A refrigerant

RANGER Heating & Air Conditioning Products Inc. **Condensing unit**

CONDENSER MODEL #	SIZE (TON)	BTU	V/Ph/Hz	SEER**	EER	Outdoor Noise Level dB(A)	LINE SET SIZES (not included)	CONTRACTOR COST $
MOBA30-**11**CFN1-MQOW	1	11500	208-230/1/60	19	11.1	51.5	¼" x ½"	**Please Contact**
MOBA30-**17**CFN1-MROW	1.5	17000	208-230/1/60	20	10.8	53.5	¼" x ½"	**Please Contact**
MOCA30-**22**CFN1-MROW	2	22000	208-230/1/60	19	10.9	57	⅜" x ⅝"	**Please Contact**

****SEER & Capacity depends on Indoor Unit**

Specifications & Prices subject to change without prior notice

Outdoor Model◆			MOBA30-**11**CFN1-MQ0W	MOBA30-**17**CFN1-MR0W	MOCA30-**22**CFN1-MR0W
Power supply		Ph-V-Hz	208-230V, 1Ph, 60Hz	208-230V, 1Ph, 60Hz	208-230V, 1Ph, 60Hz
Cooling	**Capacity**	Btu/h	**11500**	**17000**	**22000**
	Input	W	1037	1583	1960
	Rated current	A	4.5	6.7	9.0
	EER§	Btu/w	11.1	10.8	10.9
	SEER§	Btu/w	19	20	19
Minimum Circuit Ampacity		A	11	15	18
Max. Fuse		A	15	20	25
Compressor	**Type**		**INVERTER**	**INVERTER**	**INVERTER**
	Rated current (RLA)	A	6.8	9	12.0
Outdoor fan motor	**RLA**	A	0.39	0.39	0.6
Outdoor noise level		dB(A)	51.5	53.5	57
Outdoor unit	**Dimension(W*D*H)**	Inch	30.31 x 11.81 x 21.85	30.31 x 11.81 x 21.85	33.27 x 14.29 x 27.64
	Net/Gross weight	lbs.	54.67/59.52	65.92/72.31	88.62/95.90
Refrigerant type (Precharge)		oz	R410A (18.7)	R410A (31.7)	R410A (40.9)
Refrigerant precharge		ft	20	20	30
Additional charge for each ft		oz	0.21	0.21	0.32
Refrigerant piping	Liquid side/Gas side	Inch	1/4" / 1/2"	1/4" / 1/2"	3/8" / 5/8"
	Max. Refrigerant pipe length	ft	82	98	98
	Max. Difference in level	ft	33	66	66
Operation Temperature	Outdoor (cooling)	°C	-3 ~ 35	-3 ~ 35	-3 ~ 35
	Outdoor (cooling)	°F	25 ~ 95	25 ~ 95	25 ~ 95

§ All testing and values are per Manufacturer's testing and use of Manufacturer's coils

◆ Outdoor Unit includes Interface module

WARRANTY: All warranty effective from date of installation.
Labour Warranty is the responsibility of the Installing Contractor.

Side Discharge Condenser by **Ranger Heating & Air Conditioning Products Inc.**
Warranty can be registered at www.rangerhvac.com **5 years all Parts**
- 5 years on Compressor

Coil by ASPEN **- 10 years ****
** Registration is required within 60 days of the installation date
to upgrade to the 10 year warranty – www.aspenmfg.com

Ranger Wifi Thermostat -

Distributed by:

RANGER
Heating & Air Conditioning
Products Inc.

Bradford, Ontario
Canada

www.rangerhvac.com

***To register warranty on equipment, go to www.rangerhvac.com**

INVERTER TECHNOLOGY
VARIABLE CAPACITY
HEATING & AIR CONDITIONING

Effective January 1st, 2022

RANGER SIDE DISCHARGE
INVERTER HEAT PUMP

FEATURES:

- Slim attractive design available in 1 Ton, 1.5 Ton, 2 Ton, 2.5 Ton, 3 Ton, 4 Ton, 5 Ton (12,000 Btuh to 60,000 Btuh)
- Ultra quiet operation down to 54 dB(A)
- Up to 19.5 SEER
- R410A Refrigerant

1- 3 TON

4 - 5 TON

Side Discharge Condensing unit

Will work with any Furnace or Fan Coil *

some conditions apply

CONDENSER MODEL #	SIZE (TON)	V/Ph/Hz	SEER**	EER	COP	OUTDOOR NOISE LEVEL dB(A)	LINE SETS SIZES (not included)	CONDENSER ONLY CONTRACTOR COST $
MOB30-**12**HFN1-MSOW	1	208/230/1/60	19.0	11	3.43	55	¼" x ½"	**Please Contact**
MOX330U-**18**HFN1-MR0	1.5	208/230/1/60	19	11.1	3.49	54	⅜" x ⅝"	**Please Contact**
MOX430U-**24**HFN1-MR0	2	208/230/1/60	19.4	11.3	3.54	56.5	⅜" x ⅝"	**Please Contact**
MOD30U-**30**HFN1-MR0	2.5	208/230/1/60	19.5	10.9	3.19	61.5	⅜" x ⅝"	**Please Contact**
MOD30U-**36**HFN1-MR0	3	208/230/1/60	18	10.4	3.02	61	⅜" x ⅝"	**Please Contact**
MOE30U-**48**HFN1-MR0	4	208/230/1/60	17.3	9.3	3	59	⅜" x ⅝"	**Please Contact**
MOE30U-**60**HFN1-MR0	5	208/230/1/60	18	10.3	3.55	61	⅜" x ¾"	**Please Contact**

*** Ranger Air logic Interface included**

****SEER & Capacity depends on Indoor Unit**

Specifications & Prices subject to change without notice

RANGER
Heating & Air Conditioning
Products Inc.

NEW

RANGER Heating & Air Conditioning Products Inc.

SIDE DISCHARGE HEAT PUMP "U" SERIES

Ranger Heating & Air Conditioning Products Inc. is introducing its new "U" series Heat Pumps.
These heat pumps have been completely re-engineered to provide excellent energy savings in both heating and cooling. Low temperature heating performance is higher and will provide both energy savings and superior comfort.

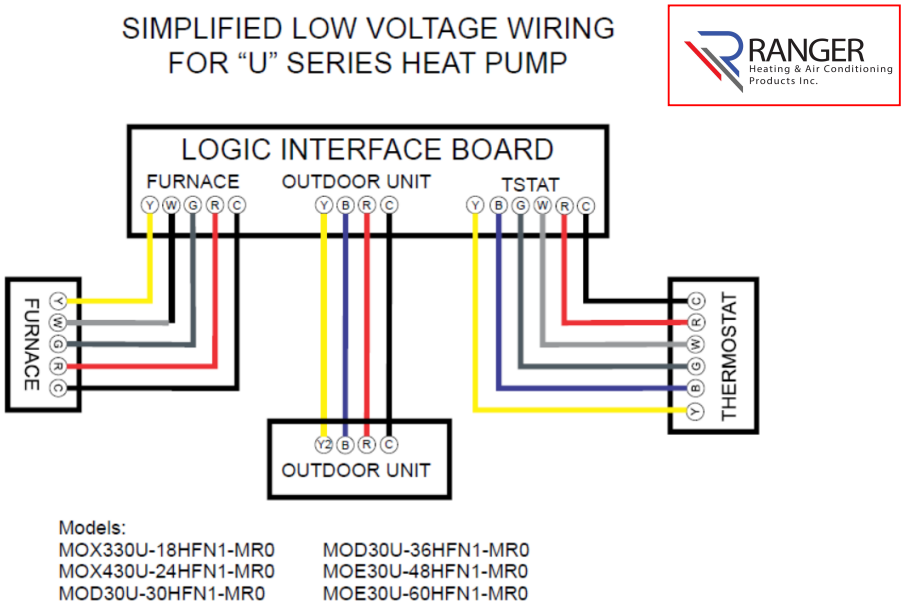
Three major features have been incorporated into the new model:

1. The "U" series will now use a heat pump thermostat to incorporate the hardy suite of management algorithms incorporated into today's heat pump thermostats. The system will use a "B" terminal to control heat/cool operation of the reversing valve.

2. The power wiring from the outdoor unit to the interface panel has been eliminated as well as the return air thermistor. The system sensor suite will include pressure transducers to fully evaluate the actual refrigeration load condition and will respond better to load changes.

3. The primary logic control has been moved to the outdoor unit. This completely re-engineered "brain" will provide intelligent control to the system and reduce installation time and cost to our contractors.

Below is the simplified low voltage wiring diagram for the new series.



Models:
MOX330U-18HFN1-MR0
MOX430U-24HFN1-MR0
MOD30U-30HFN1-MR0
MOD30U-36HFN1-MR0
MOE30U-48HFN1-MR0
MOE30U-60HFN1-MR0

If you have a 4 or 5 existing wire thermostat then see page 2 for Fast Stat HVAC Wiring Extender

RANGER
Heating & Air Conditioning Products Inc.

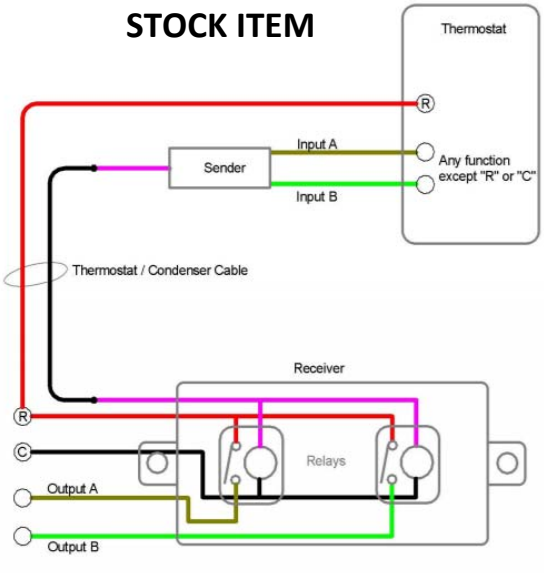
Fast Stat HVAC Wiring Extender

(To be used if you have a 4-wire thermostat to get extra wire)

Model 1000: Adds one wire to a cable. **Contractor Cost: Please Contact**

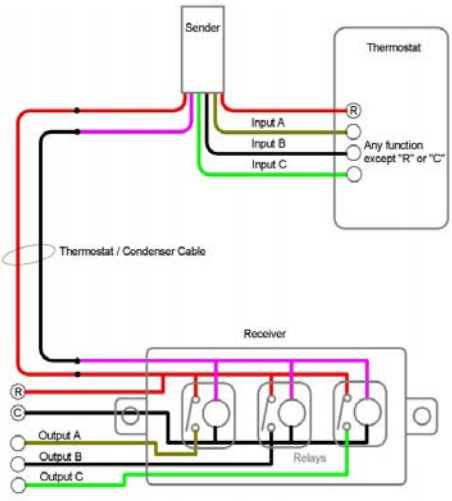
General purpose use such as 2-stage air conditioner conversions & cable repairs. Can be used for adding a common wire for Wi-Fi and powered thermostats when the cable has 3 or more wires.

STOCK ITEM



Model 3000: Provides 4-wire control over a 2-wire cable. **Special Order**

Often used to add A/C to a heating system (R, G, Y & W over a 2-wire thermostat cable). Can be used with cables having more than 2-wires and the additional wires can be used for other functions.



RANGER
Heating & Air Conditioning Products Inc.

SIDE DISCHARGE ACCESSORIES

Effective September 1st, 2022

83335

CHBRCB-20G

DJ-1200/DJ-1500

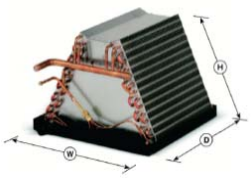
CHBRFS-045R

AN-H305

ACCESSORIES

ACCESSORIES	MODEL #	DESCRIPTION	CONTRACTOR COST $
LINE SETS	RANGER ¼ x ½ COPPER KIT	PRE-INSULATED	Please Contact
	RANGER ⅜ x ⅝ COPPER KIT	PRE-INSULATED	Please Contact
	RANGER ⅜ x ¾ COPPER KIT	PRE-INSULATED	Please Contact
NON-FUSED DISCONNECT BOX	83335	60 AMP	Please Contact
Thermostat Multi Stage	STN855W	RANGER WIFI THERMOSTAT	Please Contact
	BLU3901	3 HEAT / 2 COOL	Please Contact
WALL BRACKET	CHBRCB-20G	200 KG	Please Contact
SNOW STAND	CHBRFS-045R	200 KG	Please Contact
	DJ-1200	700KG	Please Contact
	DJ-1500	700KG	Please Contact
ECO-FOOT (MINI-FRAME)	AN-H305	350 KG	Please Contact

ASPEN COILS



ASPEN A-Coil

A-COIL MODEL #	DIMENSION W x D x H	COIL ONLY CONTRACTOR COST $
CA24A2G-130L	13 x 19⅜ x 13.5	Please Contact
CA30A2G-130L	13 x 19⅜ x 15.5	Please Contact
CA36A2G-160L	16 x 19⅜ x 17.5	Please Contact
CA42A2G-160L	16 x 19⅜ x 19.5	Please Contact
CA48A2G-195L	19.5 x 19⅜ x 21.5	Please Contact
CA60A2G-195L	19.5 x 19⅜ x 25.5	Please Contact

ASPEN COIL WARRANTY:

Note : All CA coils come with a 10 Year Warranty.
Registration is required within 60 days of the installation date to upgrade to the 10 Year Warranty.

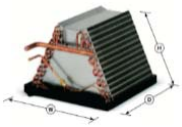
**** Specifications & Prices subject to change without notice**

RANGER
Heating & Air Conditioning
Products Inc.

OPTIONAL ACCESSORIES

FOR RANGER SIDE DISCHARGE INVERTER HEAT PUMP

Effective September 1st, 2022



ACCESSORIES	MODEL #	DIMENSION (DESCRIPTION) W x D x H	CONTRACTOR COST $
ASPEN A-COIL	CA24A2G-130L	13 x 19⅜ x 13½	Please Contact
	CA30A2G-130L	13 x 19⅜ x 15½	Please Contact
	CA36A2G-160L	16 x 19⅜ x 17½	Please Contact
	CA42A2G-160L	16 x 19⅜ x 19½	Please Contact
	CA48A2G-195L	19½ x 19⅜ x 21½	Please Contact
	CA60A2G-195L	19½ x 19⅜ x 25½	Please Contact
LINE SETS	MITS ¼ x ½ COPPER KIT	PRE-INSULATED	Please Contact
	MITS ⅜ x ⅝ COPPER KIT	PRE-INSULATED	Please Contact
	MITS ⅜ x ¾ COPPER KIT	PRE-INSULATED	Please Contact
NON-FUSED DISCONNECT BOX	83335	60 AMP	Please Contact
Thermostat Multi Stage	BLU3901	3 HEAT / 2 COOL	Please Contact
	STN855W	MITSAIR™ WIFI THERMOSTAT	Please Contact
WALL BRACKET	CHBRCB-20G	200 KG	Please Contact
SNOW STAND	CHBRFS-045R	200 KG	Please Contact
	DJ-1200	700KG	Please Contact
	DJ-1500	700KG	Please Contact
ECO-FOOT (MINI-FRAME)	AN-H305	350 KG	Please Contact

ASPEN COIL WARRANTY:

Note : All CA coils come with a 10 Year Warranty.
Registration is required within 60 days of the installation date to upgrade to the 10 Year Warranty.

**** Specifications & Prices subject to change without notice**

RANGER
Heating & Air Conditioning
Products Inc.

LIMITED WARRANTY

WATER COOLED EQUIPMENT

Ranger Heating & Air Conditioning Products Inc. warrants for one year its products to be free from defects in material and workman ship when installed and operated pursuant to manufacturers instructions.

In addition, the compressor is warranted for additional four years.

If, upon examination by **Ranger Heating & Air Conditioning Products Inc.** a part is deemed defective under this warranty, we will repair or replace that part F.O.B. our factory free of charge, exclusive of labor.

This warranty is in exclusion of any statutory warranty expressed or implied

For Customer Reference:

Unit Model:	Serial Number:
Install Date:	Installer Name:
Notes:	

Ranger Heating & Air Conditioning Products Inc.
LIMITED WARRANTY HVAC EQUIPMENT

1. Ranger heating and air conditioning products Inc (ranger) warrants to the original end user of this HVAC equipment (the "Equipment") for the periods described below that the Equipment will be free of manufacturing defects. If the Equipment fails to operate under normal use due to a manufacturing defect within a period of one (I) year after the date of original installation of the Equipment, or in the case of a manufacturing defect in the compressor, within a period of five (5) years after such date, ranger will at its option replace the defective part or compressor or part thereof without charge for the replacement or refurbished component. This warranty does not cover any labor, nor shipping or handling costs incurred. Any replacement or refurbished Equipment, compressor or part will be warranted against manufacturing defects for the remainder of the original warranty period. Parts used in connection with normal maintenance and parts subject to normal wear and tear, such as filters and belts, are not covered by this warranty.

2. To obtain warranty service, you must notify your dealer or contractor of any manufacturing defect in the Equipment within the applicable warranty period. This warranty does not cover any labor, nor shipping or handling costs incurred. You may be responsible for shipping or handling costs incurred in delivering defective Equipment or components or parts thereof for service or replacement unless your dealer or contractor has agreed to bear such costs.

3. Ranger sells this Equipment only to distributors who resell the Equipment to dealers or contractors. The dealers and contractors have sole and exclusive responsibility for the selection, application, suitability, and installation of the Equipment with respect to all end users and their requirements. Dealers and contractors may also sell or furnish other products and equipment not supplied by or on behalf of Ranger for use in conjunction with the Equipment. Accordingly, Ranger makes no warranty or condition whatsoever and assumes no liability or obligation whatsoever with respect to: (a) any representation, warranty, promise or statement made by any dealer or contractor with respect to any Equipment or part thereof or the use or application thereof; b) any acts or omissions of any dealer or contractor in selecting, recommending, installing, servicing, repairing, dismantling, moving or removing any Equipment or part thereof; or (c) any products, equipment, components, accessories or materials furnished or sold to you by a dealer or contractor other than the Equipment. Your dealer or contractor may provide a separate warranty for the products and services it supplies to you in addition to the Equipment and you are advised to confirm the terms and conditions of such warranty with your dealer or installer.

4. Any replaced Equipment, compressor or part will become the property of Ranger when exchanged for its replacement. Ranger reserves the right of inspection or refurbishing of its equipment at its discretion.

5. Proof of the original date of installation of the Equipment must be presented to establish the effective date of this warranty. Otherwise, the effective date will be deemed to be the date which is 30 days after the date of manufacture of the Equipment. The return of the Owner Registration Card is not a condition of the warranty. However, please complete, detach, and return the Card so that we can contact you should any question arise, which may affect your Equipment.

6. This warranty applies only: (a) while the Equipment remains at the site of original installation (except for Equipment designed for portable use); (b) to Equipment installed in Canada; and (c) if the Equipment is installed, maintained and operated in accordance with the manufacturer's written instructions accompanying the Equipment and in compliance with all applicable laws, regulations, codes and bylaws. This warranty does not cover damage caused by: (a) accident, abuse, negligence or misuse; (b) operation of the Equipment in a corrosive atmosphere containing chlorine, fluorine or any other damaging chemicals; (c) improper matching or combination of other products, equipment, parts accessories or components with the Equipment; (d) modification or alteration of the Equipment; (e) repair or service by unqualified or unauthorized persons; (f) failure to install or operate the Equipment or to provide proper maintenance or service according to the manufacturer's instructions; or (g) improper application or use of the Equipment; lightning, fluctuations in electrical power ;or (f) Acts of God, acts of war both declared and undeclared, acts of terrorism or use of the equipment in any unlawful application.

7. THE FOREGOING CONSTITUTES YOUR SOLE AND EXCLUSIVE REMEDY AND THE SOLE AND EXCLUSIVE LIABILITY AND OBLIGATION OF RANGER IN CONNECTION WITH THE EQUIPMENT. THIS WARRANTY IS IN SUBSTITUTION FOR AND EXCLUDES ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR ANY INTENDED OR PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES WILL RANGER BE LIABLE TO THE PURCHASER OF THE EQUIPMENT OR ANY OTHER PERSON FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGE OR LOSS, WHETHER ARISING OUT OF BREACH OF CONTRACT, BREACH OF WARRANTY OR TORT, AND WHETHER OR NOT RANGER KNEW OR OUGHT TO HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGE OR LOSS.

8. This warranty gives you specific legal rights, and you may have other rights which may vary from Province to Province. If portions of this warranty may be struck down in your jurisdiction, this does not render the remaining portions of this warranty to be void.

9. This warranty applies only to Equipment sold in Canada by RANGER and installed and used in Canada. This warranty is not transferable.

RANGER HEATING AND AIR CONDITIONING PRODUCTS INC.
401 DISSETTE STREET Units 4, 5 & 6
BRADFORD, ONTARIO L3Z 3G9

RANGER
Heating & Air Conditioning
Products Inc.

Warranty Registration Form

After unit has been installed, please email a completed copy of this form to:

warranty@rangerhvac.com

Installer Company Information –

Name:	Site:
Address:	Serial Number:
Unit Model:	Original P.O. #:
Unit Serial:	Part Serial #:
Comments:	Installation Date:

Owner/Location Information –

Name:	Phone Number:
Address:	
Comments:	

Signature of equipment owner: _____ Date: _____

Warranty may be void if not registered with Ranger Heating & Air Conditioning Products Inc.

RANGER
Heating & Air Conditioning
Products Inc.

Date:	R.G.A Number:	Authorized By:

R.G.A. / WARRANTY REQUEST

R.G.A Number must be obtained from Ranger Heating & Air Conditioning Products Inc. prior to email. Complete from and email to stephanie@rangerhvac.com. Warranty parts **must** be received by Ranger within **30 days** from replacement part ship date, if "defective" part is not received by Ranger **warranty claim will be voided**. ***Customer is to assume all in & outbound shipping costs relating to warranty claims***.

Customer:		Unit Model #:	
Original P.O #:		Unit Serial #:	
Ranger Invoice Number:		Date of Failure:	
Date Purchased:		Part Model #:	
Date Installed:		Part Serial #:	
Site:		Technicians Name:	

REASON FOR RETURN

☐ Defective ☐ Damaged ☐ Other (Specify Below)

_____

_____

_____

_____

NATURE OF DEFECT

☐ Will Not Start	☐ Overheats	☐ Leaks	☐ Stays Open
☐ Starts & Stops	☐ Grounded	☐ Non-Adjustable	☐ Stays Closed
☐ Will Not Pump	☐ Blows Fuses	☐ Noisy	☐ Burnout

Provide Details of Defect: _____

_____

_____

Technicians Comments: _____

_____

_____

Claim Submitted By: _____ Phone Number: _____ Date: _____

Subject to change without notice.

Ranger Heating Air Conditioning Products Inc.
START-UP PERFORMANCE CHECKLIST

JOB NAME:	**COMPANY NAME:**
DATE:	**COMPANY ADDRESS:**
JOB ADDRESS: _____ _____	**TECHNICIAN NAME:**
	TECH. CERTIFICATE #:
UNIT MODEL : _____	
NAME PLATE VOLTAGE: _____	**UNIT SERIAL:** _____
TEMP. AT TIME OF INSPECTION: _____	**NAME PLATE AMPERAGE:** _____

ELECTRICAL

SUPPLY VOLTAGE UNIT OFF: 1 & 2 _____ 1 & 3 _____ 2 & 3 _____

DISCONNECT: SIZE: _____

DISCONNECT FUSES AT: _____ AMPS

CONNECTIONS CHECKED FOR TIGHTNESS: ☐

CIRCUIT CHECKED FOR SHORTS & GROUND FAULT ☐

ACTUAL CONTROL VOLTAGE: _____

REFRIGERATION CIRCUIT

DISCHARGE PRESSURE: _____ PSIG _____ PSIG

SUCTION PRESSURE: _____ PSIG _____ PSIG

REFRIGERANT CHARGE OK: YES ☐ NO ☐

AIR ON COIL: _____ ºF AIR OFF COIL: _____ ºF

SUPERHEAT: #1: _____ #2: _____

SUBCOOLING: #1: _____ #2: _____

LEAK TEST: SYSTEM #1 ☐ SYSTEM #2 ☐

AMPS: COMPRESSOR 1 _____

2 _____

REF. TYPE : _____

CONTROLS

THERMOSTAT SETTING CHECKED: YES ☐ NO ☐

THERMOSTAT WIRING CHECKED: YES ☐ NO ☐

SWITCHES OPERATE SYSTEM: ☐ COOLING ☐ HEATING

ANTICIPATOR SETTING: W1 ☐

ELECTRIC HEAT

OF KW: STAGE #1 _____KW #2 _____KW

#3 _____KW #4 _____KW

ACTUAL VOLTAGE: L1 _____ L2 _____

ACTUAL AMPS: L1 _____ L2 _____

TEMP RISE: _____ ºF

GAS HEAT

SAFETY CONTROLS CHECKED ☐

INDUCED DRAFT BLOWER FREE ☐

FUEL TYPE: _____

GAS PIPE LENGTH: _____ GAS PIPE SIZE: _____

LINE PRESSURE: _____ IN WC

MANIFOLD PRESSURE: _____ IN WC

TEMP. RISE: AIR ON: _____ AIR OFF: _____ TD: _____

VENTING SIZE: _____ VENTING LENGTH: _____

FURNACE MAKE: _____

FURNACE MODEL _____

RETURN AIR

SIZE:

EVAP/COND FAN

COND. MOTOR SPEED: 1 _____ 2 _____

COND. MOTOR AMPS: 1 _____ 2 _____

FILTERS IN PLACE: ☐ CORRECT FAN ROTATION: ☐

EVAP. MOTOR SPEED: 1 _____ 2 _____

EVAP. MOTOR AMPS: 1 _____ 2 _____

BLOWER RPM: _____ CFM:_____ ESP:_____ IN WC:_____

TRAPPED CONDENSATE DRAIN ☐ SECURED ALL PANELS ☐ CHECKED VIBRATION ☐ CLEANED DEBRIS ☐

BEFORE LEAVING JOB		SERVICE TECH SIGNATURE
1. WARRANTY CERTIFICATE FILLED OUT & GIVEN TO OWNER?	YES ☐ NO ☐	
2. HAS SYSTEM BEEN AIR BALANCED?	YES ☐ NO ☐	EQUIP OWNER SIGNATURE
3. OPERATING & MAINTENANCE INSTRUCTIONS GIVEN TO OWNER?	YES ☐ NO ☐	
4. OPERATOR INSTRUCTED ON SYSTEM OPERATION?	YES ☐ NO ☐	DATE
EQUIPMENT OWNER NAME:		

PLEASE SUBMIT COMPLETED WITH WARRANTY DOCUMENTS WITHIN (7) BUSINESS DAYS AFTER INSTALLATION
HAS BEEN COMPLETED TO WARRANTY@RANGERHVAC.COM FAILURE TO DO SO COULD VOID WARRANTY