



GUIDE SPECIFICATIONS

EC Series 1/2-6 Ton R-410A

GENERAL

Units shall be performance certified to ISO standard 13256-1 for Water Loop Heat Pump, Ground Water Heat Pump and Ground Loop Heat Pump applications. Units intended for use on ground loop applications shall have an optional extended range package installed. Units shall be Underwriter Laboratories (UL and cUL) listed for safety on all models. Each unit shall be run tested at the factory. Each unit shall be pallet mounted and stretch wrapped. The units shall be manufactured in an ISO9001:2000 certified facility.

The units shall be designed to operate with entering fluid temperatures between 50°F (10°C) and 100°F (38°C) in cooling and between 50°F (10°C) and 80°F (27°C) in heating. With the optional factory installed extended range package units shall operate with entering fluid temperatures between 50°F (10°C) and 110°F (43.3°C) in cooling and between 25°F (-3.9°C) and 80°F (27°C) in heating.

CASING & CABINET

The cabinet shall be fabricated from heavy-gauge steel finished with Galvalume® plus, an aluminum-zinc alloy with a clear acrylic coating for additional corrosion protection. The interior shall be insulated with ½" (12.7mm) thick, multi density, coated, glass fiber. All units shall allow sufficient service access to replace the compressor without unit removal. One blower and two compressor compartment access panels shall be removable with supply and return ductwork in place. A duct collar shall be provided on the supply air opening. Units shall have a 1 inch thick throwaway type glass fiber filter as standard. The filter rack shall incorporate a 1 inch duct flange. The units shall have an insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise, and to permit service testing without air bypass. Units shall have a stainless steel condensate drain pan.

Units shall have a floating base pan consisting of a ½" (12 mm) thick high density rubber pad between the compressor/condenser base plate and the unit base pan.

REFRIGERATION CIRCUITS

Units shall utilize refrigerant R-410A. All units shall contain a sealed refrigerant circuit including a hermetic compressor, capillary tube metering device with strainer or balance port expansion valve, refrigerant drier, finned tube air-to-refrigerant heat exchanger, refrigerant reversing valve and service ports. Compressor shall be high efficiency, designed for heat pump duty, internally spring isolated (if reciprocating type) for maximum sound attenuation and mounted on rubber vibration isolators. Compressor motors shall be equipped with overload protection. Refrigerant reversing valves shall be pilot operated sliding piston type with replaceable encapsulated magnetic coils energized only during the cooling cycle. The finned tube coil shall be constructed of lanced aluminum fins not exceeding fourteen fins per inch bonded to rifled copper tubes in a staggered pattern not less than three rows deep and have a 600 psig (4140 Kpa) working pressure. Coils shall have a baked polyester enamel coating for protection against most airbourn chemicals. The coil shall have aluminum end sheets. The coaxial water-to-refrigerant heat exchanger shall be constructed of a convoluted copper (optional cupronickel) inner tube and steel outer tube with a designed refrigerant working pressure of 600 psig

(4140 Kpa) and designed water side working pressure of no less than 400 PSIG (2750 Kpa).

EXTENDED RANGE PACKAGE

An optional extended range package shall include a bi-flow balanced port expansion valve metering device in place of capillary tubes and insulated water to refrigerant heat exchanger.

FAN MOTOR & ASSEMBLY

The fan shall be direct drive centrifugal forward curved type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low velocity operation. The fan housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the fan motor. The fan motor shall be three speed PSC type for direct drive units and single speed for belt drive units. The motor shall be permanently lubricated and have thermal overload protection.

ELECTRICAL

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include fan relay, compressor contactor, 24V transformer, reversing valve coil and solid state lockout controller (UPM) The UPM controller shall include the following features: Anti-short cycle time delay, random start, brown out/surge/power interruption protection, 120 second low pressure switch bypass timer, shutdown on high or low refrigerant pressure safety switch inputs, shutdown for the optional freezestat or high level condensate sensors, 24 VAC alarm output for remote fault indication, unit reset at thermostat or disconnect, ability to defeat time delays for servicing and automatic intelligent reset. The UPM shall automatically reset after a safety shut down and restart the unit, if the cause of the shut down no longer exists, after the anti-short cycle and random start timers expire. Should a fault re-occur within 60 minutes after reset, then a permanent lockout will occur. A light emitting diode (LED) shall annunciate the following alarms: high refrigerant pressure, low refrigerant pressure, low water temperature and a high level of condensate in the drain pan (when equipped with the optional low water temperature and high level condensate sensors). The LED will display each fault condition as soon as the fault occurs. If a permanent lockout occurs, then the fault LED will display the type of fault until the unit is reset.

Safety devices include a low pressure cutout set at 40 PSIG (280 kPa) for loss of charge protection (freezestat and/or high discharge gas temperature sensor is not acceptable) and a high pressure cutout control set at 600 PSIG (4125 Kpa).

An optional energy management relay that allows unit control by an external source shall be factory installed. A terminal block with screw terminals shall be provided for control wiring.

PIPING

Supply, return water and condensate drain connections shall be brass female pipe thread fittings and mounted flush to cabinet exterior with optional stainless steel, Braided hose kit with swivel connectors.



GUIDE SPECIFICATIONS

EC Series 6-30 Large Commercial R-410A

GENERAL

Units shall be performance certified to ISO standard 13256-1 for Water Loop Heat Pump, Ground Water Heat Pump and Ground Loop Heat Pump applications for units up to 10 tons. Units intended for use on ground loop applications shall have an optional extended range package installed which consists of an insulated water to refrigerant heat exchanger. Units shall be Underwriter Laboratories (UL and cUL) listed for safety on all models. Each unit shall be run tested at the factory. Each unit shall be pallet mounted and stretch wrapped. The units shall be manufactured in an ISO9001:2000 certified facility.

The units shall be designed to operate with entering fluid temperatures between 50°F (10°C) and 100°F (38°C) in cooling and between 50°F (10°C) and 80°F (27°C) in heating. With the optional factory installed extended range package units shall operate with entering fluid temperatures between 50°F (10°C) and 110°F (43.3°C) in cooling and between 25°F (-3.9°C) and 80°F (27°C) in heating.

CASING & CABINET

The cabinet shall be fabricated from heavy-gauge galvanized steel. The interior shall be insulated with ½" (12.7mm) thick, multi density, coated, glass fiber. All units shall allow sufficient service access to replace the compressors without unit removal. Two blower and two compressor compartment access panels shall be removable with supply and return ductwork in place. A duct collar shall be provided on the supply air opening of all vertical units. Units shall have a 1 inch thick throwaway type glass fiber filter as standard. The filter rack shall incorporate a 1 inch duct flange. Vertical units shall have an insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise, and to permit operational service testing without air bypass. Units shall have stainless steel condensate drain pan(s).

REFRIGERATION CIRCUITS

Units shall utilize refrigerant R-410A. All units shall contain sealed refrigerant circuits including hermetic compressors, thermal expansion valve metering devices, refrigerant drier, finned tube air-to-refrigerant heat exchangers, refrigerant reversing valves and service ports. Compressors shall be high efficiency, designed for heat pump duty, internally spring isolated (except for scroll type compressors) for maximum sound attenuation and mounted on rubber vibration isolators. Compressor motors shall be equipped with overload protection. Refrigerant reversing valves shall be pilot operated sliding piston type with replaceable encapsulated magnetic coils energized only during the cooling cycle. The finned tube coil shall be constructed of lanced aluminum fins not exceeding fourteen fins per inch bonded to rifled copper tubes in a staggered pattern not less than three rows deep and have a 600 PSIG (4140 Kpa) working pressure. Coils shall have an optional baked polyester enamel coating for protection against most airbourn chemicals. Coils shall have aluminum end sheets. The coaxial water-to-refrigerant heat exchangers shall be constructed

of a convoluted copper (optional cupro-nickel) inner tube and steel outer tube with a designed refrigerant working pressure of 600 PSIG (4140 Kpa) and a designed water side working pressure of no less than 400 PSIG (2750 Kpa).

FAN MOTOR & ASSEMBLY(S)

The fan(s) shall be belt driven DWDI forward curved type with dynamically balanced wheel(s). The housing(s) and wheel(s) shall be designed for quiet low velocity operation. The fan housing(s) shall be removable from the unit without disconnecting the supply air ductwork for servicing of the fan motor(s). The fan motor(s) shall be 1725 or 3450 RPM 56 frame sealed ball bearing type. The motor(s) shall be permanently lubricated and have thermal overload protection.

ELECTRICAL

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include fan relay(s), compressor contactors, 24V transformer, reversing valve coils and a solid state lock-out control circuit (UPM). The UPM controller shall include the following features: Anti-short cycle time delay, random start, interstage delay, brown out/surge/power interruption protection, 120 second low pressure switch bypass timer, shutdown on high or low refrigerant pressure safety switch inputs, shutdown for the optional freezestat or high level condensate sensors, 24 VAC alarm output for remote fault indication, unit reset at thermostat or disconnect, ability to defeat time delays for servicing, time delay between stages and automatic intelligent reset. The UPM shall automatically reset after a safety shut down and restart the unit, if the cause of the shut down no longer exists, after the anti-short cycle and random start timers expire. Should a fault re-occur within 60 minutes after reset, then a permanent lockout will occur. A light emitting diode (LED) shall annunciate the following alarms for each refrigerant circuit: high refrigerant pressure, low refrigerant pressure, low water temperature and a high level of condensate in the drain pan (when equipped with the optional low water temperature and high level condensate sensors). The LED will display each fault condition as soon as the fault occurs. If a permanent lockout occurs, then the fault LED will display the type of fault until the unit is reset. Safety devices include a low pressure cutout set at 40 PSIG (280 Kpa) for loss of charge protection (a freezestat used for loss of charge protection is not acceptable) and a high pressure cutout control set at 600 PSIG (4140 Kpa). An optional energy management relay to allow unit control by an external source shall be factory installed.

PIPING

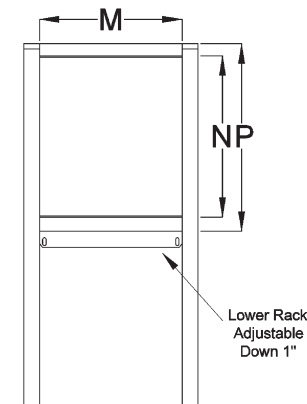
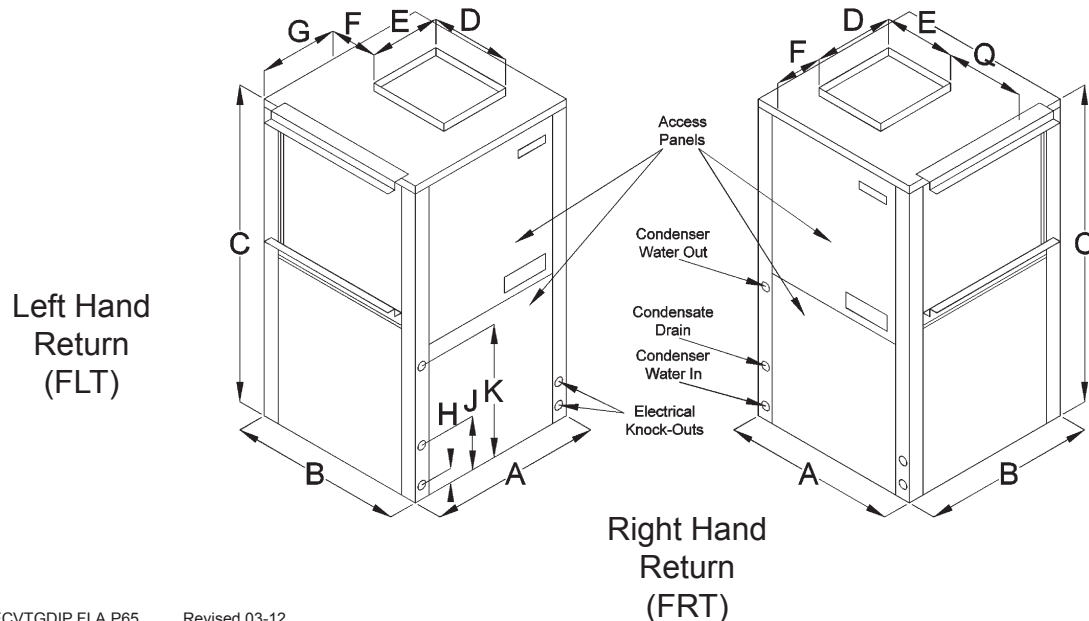
Supply, return water and condensate drain connections shall be copper or brass female pipe thread fittings and mounted flush to cabinet exterior.



GeoMaster, LLC
 3512 Cavalier Dr. Fort Wayne, IN 46808
 Phone: 877-443-6411 Fax: 260-482-1489
<http://www.geoexcel.com>

EC Series Vertical Dimensions

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Q	Condenser Water Connections	Recommended Replacement Nominal Filter Size
	Width	Depth	Height								R/A Duct Flg Width	R/A Duct Flg Height	Filter Rack Height			
EC007, 009	19.00	19.00	24.25	11.75	7.75	3.50	8.25	2.38	4.88	7.38	15.00	8.00	10.00	8.25	3/4" F.P.T.	10 X 16 X 1
EC012	19.00	19.00	24.25	11.75	7.75	4.00	9.75	2.38	4.88	7.38	15.00	8.00	10.00	5.00	3/4" F.P.T.	10 X 16 X 1
EC015	21.50	21.50	32.25	11.75	9.75	5.88	7.88	2.38	7.38	13.25	17.50	14.00	16.00	7.88	3/4" F.P.T.	16 X 20 X 1
EC018	21.50	21.50	32.25	16.25	13.75	1.75	5.62	2.38	7.38	13.25	17.50	14.00	16.00	5.62	3/4" F.P.T.	16 X 20 X 1
EC024	21.50	21.50	36.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	16.00	18.00	5.62	3/4" F.P.T.	18 X 20 X 1
EC030	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	18.00	20.00	5.62	3/4" F.P.T.	20 X 20 X 1
EC036	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24 X 24 X 1
EC041	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	8.38	14.75	17.50	18.00	20.00	5.62	3/4" F.P.T.	20 X 20 X 1
EC042	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24 X 24 X 1
EC048	24.00	32.50	45.25	17.75	17.75	7.38	5.12	2.63	8.38	14.75	28.00	22.00	24.00	5.12	1" F.P.T.	24 X 30 X 1
EC051	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24 X 30 X 1
EC060	24.00	32.50	45.25	17.75	17.75	7.38	5.12	3.00	8.50	15.00	28.00	22.00	24.00	5.12	1" F.P.T.	24 X 30 X 1
EC061	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24 X 30 X 1
EC070	26.00	33.25	58.25	17.75	17.75	8.50	6.50	3.38	8.38	17.38	28.00	30.00	32.00	6.50	1" F.P.T.	16X30X1 (2)



NOTES: All dimensions within +/- 0.125".

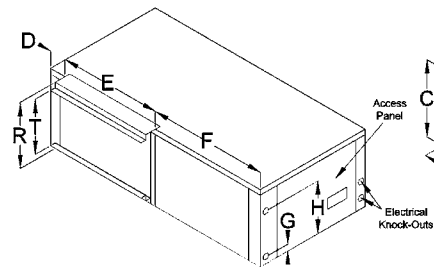
All condensate drain connections are 3/4" FPT.

EC051 and 061 only available in vertical configuration.

Specifications subject to change without notice.

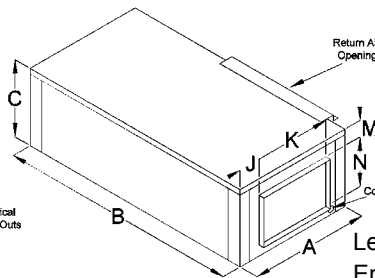
EC Series Horizontal Dimensions

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Q	R	T	Condenser Water Connections	Recommended Replacement Nom. Filter Size
	Width	Depth	Height		R/A Duct Flg Width										Filter Rack Height	R/A Duct Flg Height		
EC007, 009	19.00	31.00	13.25	2.00	15.00	14.00	2.38	7.38	2.25	11.75	2.00	7.75	2.25	1.88	10.00	8.00	3/4" F.P.T.	10 X 16 X 1
EC012	19.00	31.00	13.25	2.00	15.00	14.00	2.38	7.38	2.50	11.75	2.00	7.75	2.25	3.00	10.00	8.00	3/4" F.P.T.	10 X 16 X 1
EC015	21.50	43.00	17.00	2.00	17.50	23.50	2.38	13.25	4.00	11.75	2.00	9.75	2.25	2.50	16.00	14.00	3/4" F.P.T.	16 X 20 X 1
EC018	21.50	43.00	17.00	2.00	17.50	23.50	2.38	13.25	3.50	11.75	2.00	13.75	3.50	1.75	16.00	14.00	3/4" F.P.T.	16 X 20 X 1
EC024	21.50	43.00	19.00	2.00	17.50	23.50	2.38	12.50	3.25	11.75	3.25	13.75	3.25	1.75	18.00	16.00	3/4" F.P.T.	18 X 20 X 1
EC030	22.00	45.00	19.00	2.00	19.50	23.50	2.38	12.50	2.50	13.75	1.50	15.75	2.50	1.50	18.00	16.00	3/4" F.P.T.	18 X 20 X 1
EC036	22.00	54.50	19.00	2.00	29.00	23.50	2.38	14.75	2.50	13.75	1.50	15.75	2.50	1.50	18.00	16.00	3/4" F.P.T.	18 X 30 X 1
EC041	21.50	43.00	22.00	2.00	17.50	23.50	2.38	14.75	2.50	13.75	3.00	15.75	2.50	3.50	20.00	18.00	3/4" F.P.T.	20 X 20 X 1
EC042	22.00	54.50	19.00	2.00	29.00	23.50	2.38	14.75	2.50	13.75	1.50	15.75	2.50	1.50	18.00	16.00	3/4" F.P.T.	18 X 30 X 1
EC048	36.00	43.00	21.00	2.25	33.75	7.00	2.63	14.75	10.13	15.75	3.50	15.75	3.00	3.50	20.00	18.00	1" F.P.T.	18 X 20 X 1 (2)
EC060	36.00	43.00	21.00	2.25	33.75	7.00	4.00	15.75	10.13	15.75	1.50	17.75	3.25	1.50	20.00	18.00	1" F.P.T.	18 X 20 X 1 (2)
EC070	26.00	78.00	21.50	2.50	44.00	31.50	3.12	17.00	2.75	17.75	2.75	17.75	2.75	1.25	20.50	18.50	1" F.P.T.	18 X 20 X 1 (2)

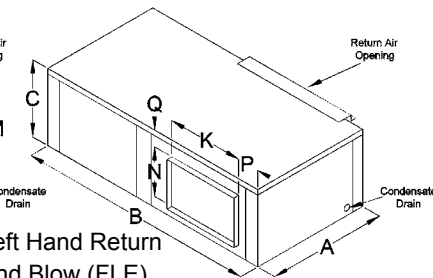


Left Hand Return

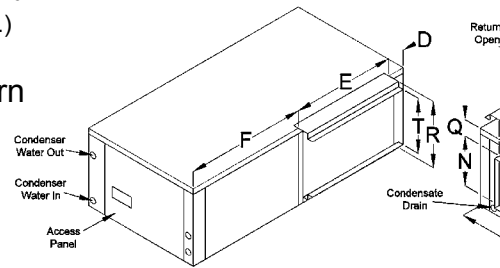
(Note: Models EC048 & 060 Left Hand Return units have condenser water connections on the front right and electrical knockouts on the front left.)



Left Hand Return End Blow (FLE)

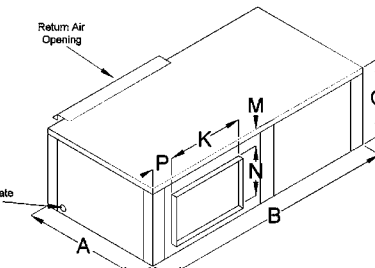
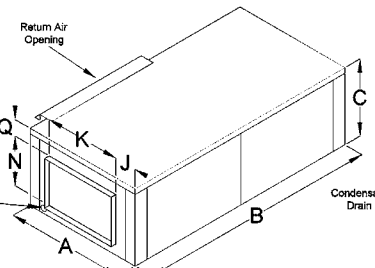


Left Hand Return Straight Through (FLS)



Right Hand Return

Right Hand Return End Blow (FRE)

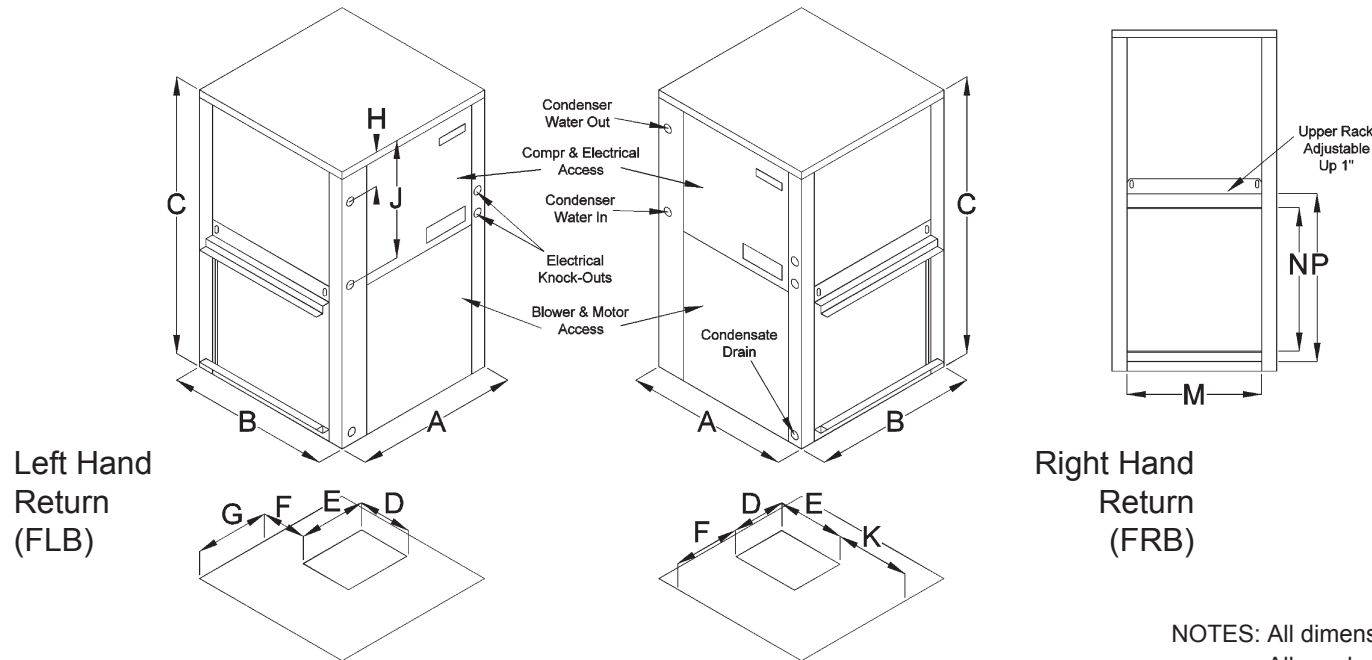


Right Hand Return Straight Through (FRS)

NOTES: All dimensions within +/- 0.125". All condensate drain connections are 3/4" FPT. Specifications subject to change without notice. EC015-070 can be field converted between end blow and straight through supply air configurations

EC Series Counterflow Dimensions

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Condenser Water Connections	Recommended Replacement Nominal Filter Size
	Width	Depth	Height	Blower Opening	Blower Opening						R/A Duct Flg Width	R/A Duct Flg Height	Filter Rack Height		
EC007, 009	19.00	19.00	24.25	6.25	4.25	6.00	10.25	5.00	10.00	10.25	15.00	8.00	10.00	3/4" F.P.T.	10 X 16 X 1
EC012	19.00	19.00	24.25	5.25	4.00	7.00	12.38	4.50	9.50	7.75	15.00	8.00	10.00	3/4" F.P.T.	10 X 16 X 1
EC015	21.50	21.50	32.25	6.25	4.25	6.50	12.00	5.88	16.75	12.00	17.50	14.00	16.00	3/4" F.P.T.	16 X 20 X 1
EC018	21.50	21.50	32.25	9.63	9.25	8.13	8.00	5.88	16.75	8.00	17.50	14.00	16.00	3/4" F.P.T.	16 X 20 X 1
EC024	21.50	21.50	36.25	9.63	9.25	8.13	8.00	5.88	16.00	8.00	17.50	16.00	18.00	3/4" F.P.T.	18 X 20 X 1
EC030	21.50	21.50	39.25	9.63	9.25	8.13	8.00	4.75	15.00	8.00	17.50	18.00	20.00	3/4" F.P.T.	20 X 20 X 1
EC036	21.50	26.00	43.25	10.25	9.25	7.75	9.50	3.75	15.50	8.75	22.00	22.00	24.00	3/4" F.P.T.	24 X 24 X 1
EC041	21.50	21.50	39.25	10.25	9.25	7.25	7.75	4.38	16.75	7.75	17.50	18.00	20.00	3/4" F.P.T.	20 X 20 X 1
EC042	21.50	26.00	43.25	10.25	9.25	7.75	9.50	3.50	15.50	9.50	22.00	22.00	24.00	3/4" F.P.T.	24 X 24 X 1
EC048	24.00	32.50	45.25	11.75	10.75	9.25	9.00	5.00	16.50	9.00	28.00	22.00	24.00	1" F.P.T.	24 X 30 X 1
EC060	24.00	32.50	45.25	12.50	12.00	9.50	9.50	4.25	17.75	8.00	28.00	22.00	24.00	1" F.P.T.	24 X 30 X 1
EC070	26.00	33.25	58.25	12.00	12.50	10.63	9.00	3.00	18.50	9.00	28.00	30.00	32.00	1" F.P.T.	16 X 30 X 1 (2)



NOTES: All dimensions within +/- 0.125".

All condensate drain connections are 3/4" FPT.
 Specifications subject to change without notice.

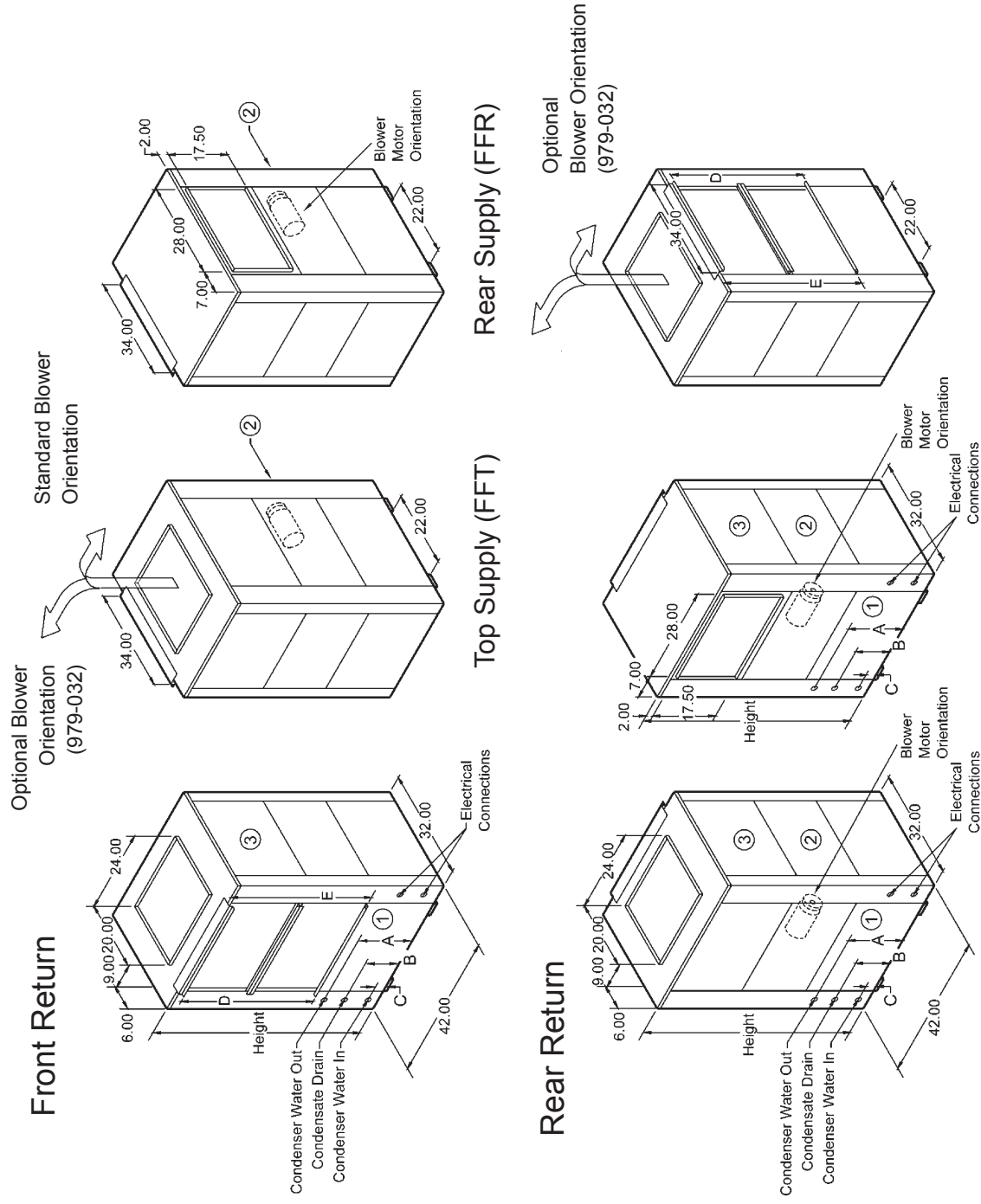


GeoMaster, LLC
3512 Cavalier Dr. Fort Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
<http://www.geoexcel.com>

EC072-120 Vertical Dimensions

Single Blower Large Commercial Units

Dimensions		
All Dimensions +/- 0.125"		
Dimension	Model	
	-072	-096 -120
Height	62.00	62.00 62.00
Width	42.00	42.00 42.00
Depth	32.00	32.00 32.00
Condenser Connections		
A	14.75	14.75 15.00
B	8.50	8.50 9.00
C	2.75	2.75 3.00
Dia. (FPT)	1.00"	1.00" 1.50"
Return Air Opening		
D(Duct Flange)	38.00	38.00 38.00
E(Filter Rack)	40.00	40.00 40.00
Replacement Filter Size		
-072 through -120	20 x 34-1/2 x 1 (2 per unit)	
Service Access		
Panel #	Access To:	
1	Controls, Compressors, Refrigeration Components	
2	Blower & Motor	
3	Blower	



Notes: Condensate connections are 0.75" FPT on -072 through -120
Due to continuing research and development, specifications are subject to change without notice.

ECSVDGIP.P65

Rev. 8-11

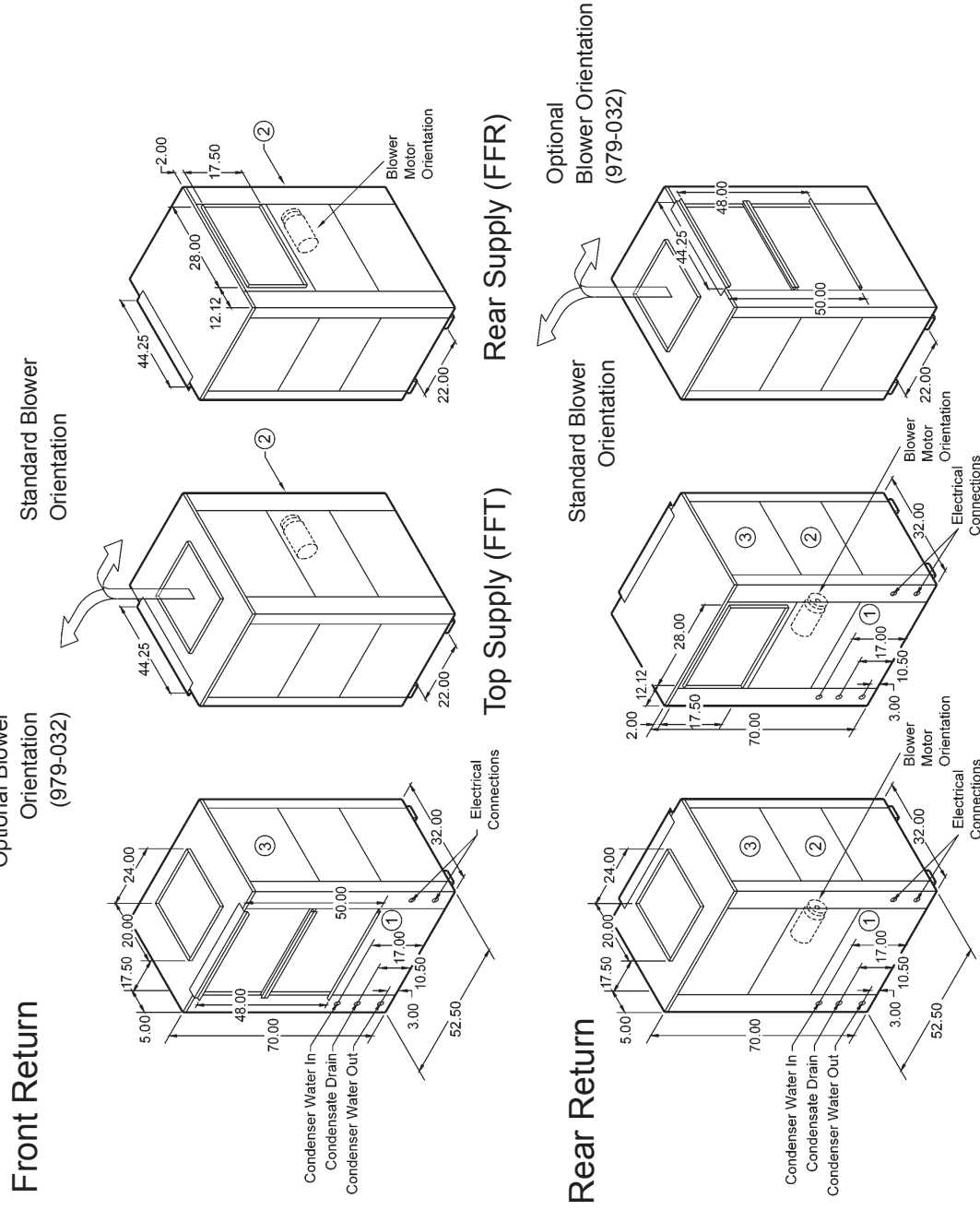


GeoMaster, LLC
3512 Cavalier Dr. Fort Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
<http://www.geoexcel.com>

EC151-181 Vertical Dimensions

Single Blower Large Commercial Units

Dimensions	
All Dimensions +/- 0.125"	
Dimension	Model
Height	-151 -181
Width	70.00 70.00
Depth	52.50 52.50
	32.00 32.00
Condenser Connections	
Dia. (FPT)	1.50" 1.50"
Return Air Opening	
(Duct Flange)	48.00 48.00
(Filter Rack)	50.00 50.00
Replacement Filter Size	
-151 through -181	24 x 24 x 1 (4 per unit)
Panel #	Service Access Access To:
1	Controls, Compressors, Refrigeration Components
2	Blower & Motor
3	Blower



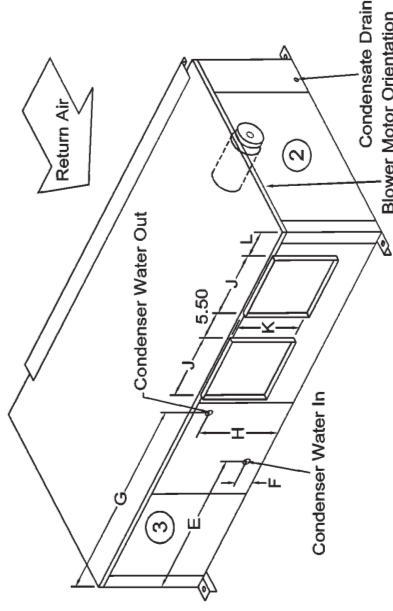
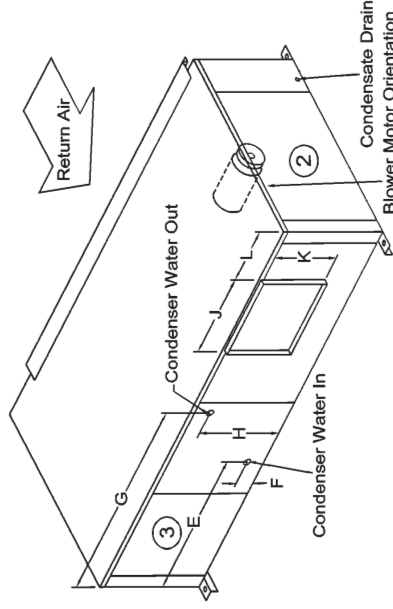
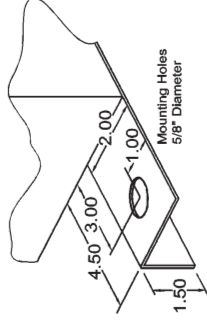
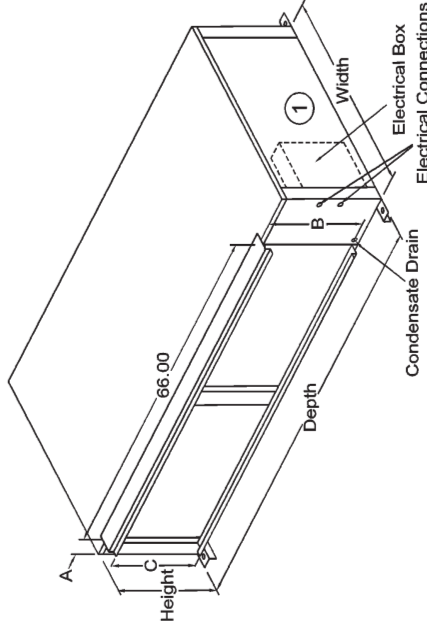
Notes: Condensate connections are 0.75" FPT on -151 through -181
Due to continuing research and development, specifications are subject to change without notice.



GeoMaster, LLC
3512 Cavalier Dr. Fort Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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EC072-150 Horizontal Dimensions

Dimensions			
All Dimensions +/- 0.125"			
Dimension	-072	-096	Model -120 -150
Height	21.50	21.50	21.50 26.75
Width	38.00	38.00	38.00 42.00
Depth	78.00	78.00	78.00 82.00
Return Air Dimensions			
A	2.00	2.00	2.00 2.00
B	20.50	20.50	20.50 24.00
C	18.50	18.50	18.50 22.00
Condenser Connections			
E	28.00	26.25	27.50 24.00
F	2.75	3.50	3.38 2.75
G	28.00	28.00	28.00 24.00
H	14.50	19.25	16.75 17.75
Diameter	1"FPT	1"FPT	1.25"FPT 1.50"FPT
Supply Air Dimensions (Blower Outlet)			
J	15.50	15.50	12.50 18.50
K	13.50	13.50	13.50 16.00
L	10.50	10.50	5.25 14.00
Replacement Filter Size			
072-120	20 x 34-1/2 x 1 (2 per unit)		
150	24 x 34 x 1 (2 per unit)		
Service Access			
Panel#	Access To:		
1	Controls, Compressors		
2	Blower & Motor		
3	Compressors, Refrigeration Components		



072, 096 & 150 (-SLS Only)

120 (-SLS Only)

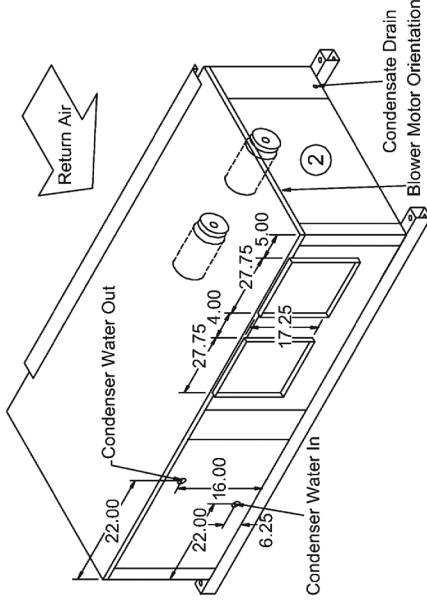
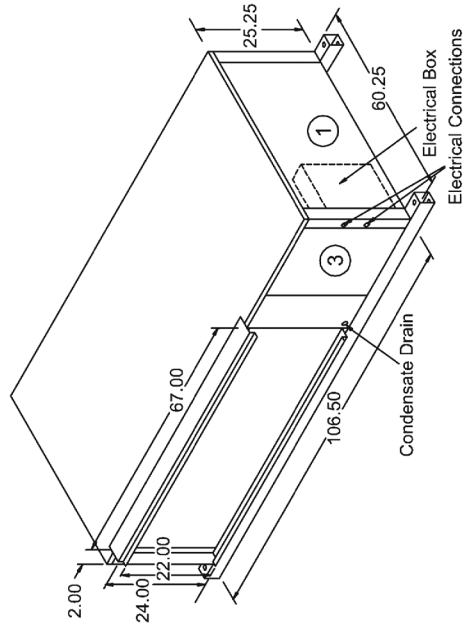
Notes: All condensate connections are 0.75" FPT.

Due to continuing research and development, specifications are subject to change without notice. ECLHDGIP.P65

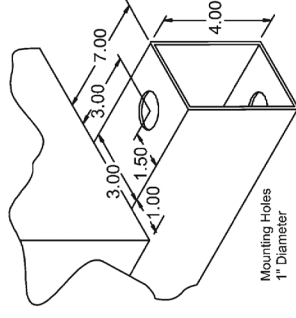


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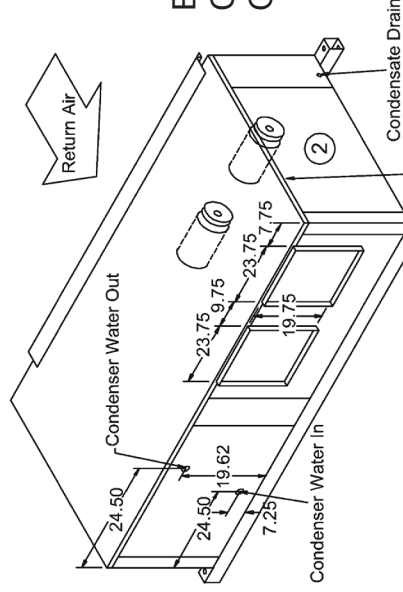
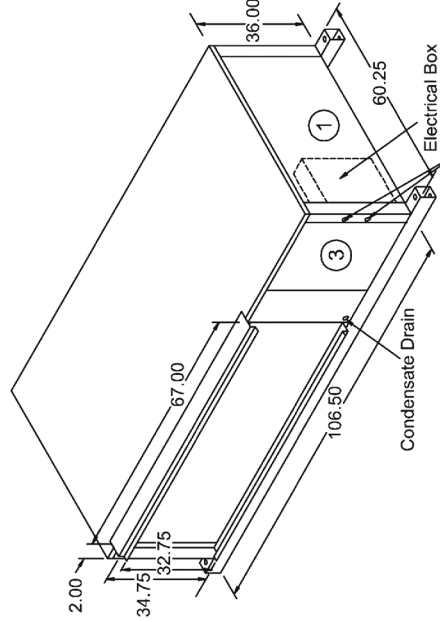
EC180-242 Horizontal Dimensions



EC180 SLS
CONFIGURATION
ONLY



MOUNTING BRACKET
SECTION VIEW



EC242 SLS
CONFIGURATION
ONLY

Dimensions	
Condenser Connections	
Replacement Filter Size	
Service Access	
Panel#	Access To:

Notes:

All dimensions +/- 0.125".
All condensate connections are 1.25" FPT.
Due to continuing research and development, specifications are subject to change without notice. EC180242HZIP.P05



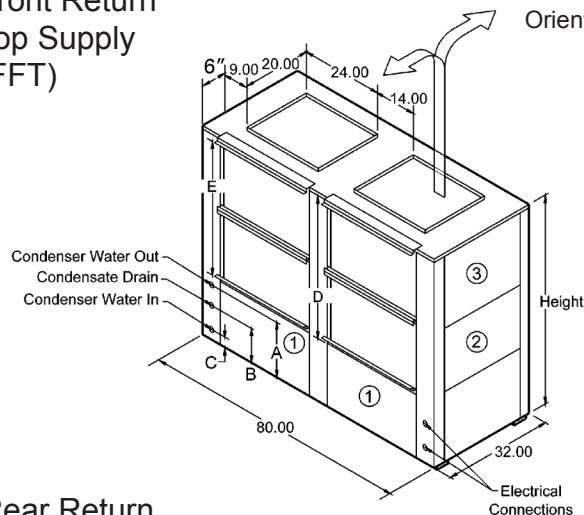
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EC210-360 Vertical Dimensions

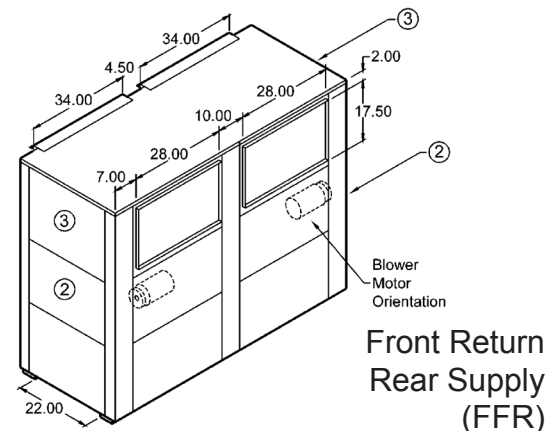
Dual Blower Large Commercial Units

Dimensions						
All Dimensions +/- 0.125"						
Model	Height	A	B	C	D	E
210	62.00	18.00	8.75	2.75	40.00	38.00
240	66.50	18.00	8.75	2.75	40.00	38.00
300	66.50	18.00	8.75	2.75	40.00	38.00
360	86.50	17.00	9.00	3.50	60.00	58.00
Model	Condenser Connection Diameter			Condensate Drain Diameter		
210	2.00"FPT			1.25"FPT		
240	2.00"FPT			1.25"FPT		
300	2.00"FPT			1.25"FPT		
360	2.00"FPT			1.25"FPT		
Supply Air Duct Collar Location (F)						
Standard Blower Orientation				6.00		
Optional Blower Orientation				11.0		
Recommended Replacement Filter Size (Nominal)						
20 x 34-1/2 x 1 (4 per unit, 210-360)						
30 x 34-1/2 x 1 (4 per unit, 360)						
Panel #	Service Access Access To:					
1	Controls, Compressors, Refrigeration Components					
2	Blower & Motor					
3	Blower					

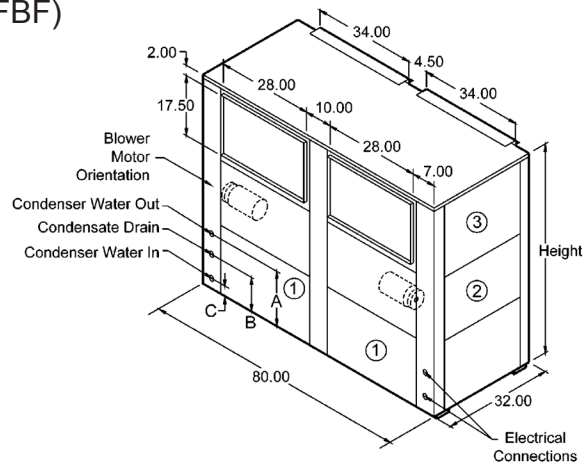
Optional Blower Orientation (979-033)
 Front Return Top Supply (FFT)



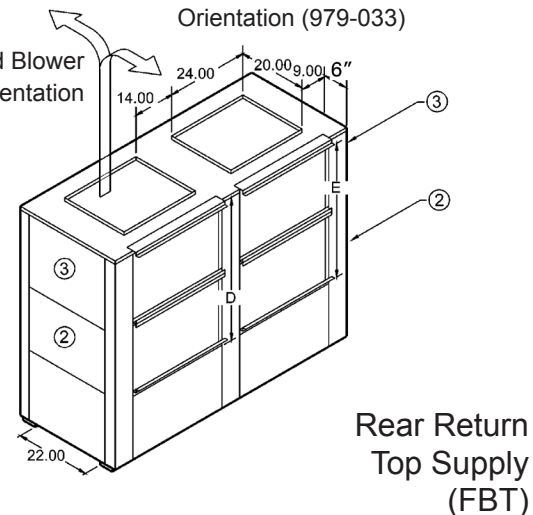
Standard Blower Orientation



Rear Return Front Supply (FBF)



Optional Blower Orientation (979-033)
 Standard Blower Orientation



PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC007

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
115-1-60	-0	6.6	29.8	2.20	1/10	-	-	10.5	15
208/230-1-60	-1	3.1	15.9	0.96	1/10	-	-	4.8	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
0.90	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
4x6 DD		Rotary	
Net Weight		Ship Weight	
118 lbs		127 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	410	380	350	315	280	210	-	-	-	-	-	-
Medium	390	360	330	300	260	-	-	-	-	-	-	-
Low	370	340	295	250	-	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
1.0	1.7	0.7
1.5	3.5	1.5
2.0	5.9	2.5
2.5	8.8	3.8
3.0	12.2	5.3

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 300 CFM and 2.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
6,200	12.5	8,000	5.1	7,200	20.0	6,000	4.0	6,500	15.0	4,500	3.2

CAPACITY DATA All performance at 300 CFM and 2.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	6.30	4.13	0.66	0.35	7.51	17.8
60°		5.99	3.96	0.66	0.40	7.36	14.9
70°		5.68	3.80	0.67	0.45	7.21	12.6
85°		5.21	3.58	0.69	0.52	6.99	10.0
100°		4.74	3.37	0.71	0.60	6.77	8.0
50°	75°db 63°wb	6.76	4.96	0.73	0.36	7.97	19.0
60°		6.42	4.75	0.74	0.40	7.80	15.9
70°		6.09	4.56	0.75	0.45	7.63	13.5
85°		5.59	4.30	0.77	0.53	7.38	10.6
100°		5.09	4.05	0.80	0.60	7.13	8.5
50°	80°db 67°wb	7.42	5.48	0.74	0.36	8.65	20.7
60°		7.06	5.26	0.74	0.41	8.45	17.3
70°		6.69	5.05	0.75	0.46	8.25	14.7
85°		6.14	4.75	0.77	0.53	7.95	11.6
100°		5.60	4.48	0.80	0.60	7.65	9.3
50°	85°db 71°wb	8.09	6.01	0.74	0.36	9.32	22.5
60°		7.69	5.76	0.75	0.41	9.09	18.8
70°		7.30	5.53	0.76	0.46	8.86	15.9
85°		6.70	5.22	0.78	0.53	8.52	12.6
100°		6.10	4.92	0.81	0.61	8.18	10.0

HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	6.66	0.48	5.03	4.1		
60°		7.65	0.49	5.98	4.6		
70°		8.64	0.50	6.92	5.0		
80°		9.63	0.52	7.87	5.5		
50°	70°	6.30	0.48	4.64	3.8		
60°		7.23	0.50	5.53	4.3		
70°		8.17	0.51	6.42	4.7		
80°		9.10	0.52	7.31	5.1		
50°	80°	5.88	0.49	4.19	3.5		
60°		6.75	0.51	5.01	3.9		
70°		7.62	0.52	5.84	4.3		
80°		8.49	0.54	6.66	4.6		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	60°	4.10	0.44	2.58	2.7
30°		4.59	0.45	3.05	3.0
40°		5.56	0.46	3.97	3.5
25°	70°	3.88	0.45	2.34	2.5
30°		4.34	0.46	2.78	2.8
40°		5.26	0.47	3.65	3.3
25°	80°	3.63	0.46	2.06	2.3
30°		4.06	0.47	2.46	2.5
40°		4.91	0.48	3.27	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC009

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
115-1-60	-0	8.3	40.0	2.2	1/10	-	-	12.6	20
208/230-1-60	-1	3.7	22.0	0.96	1/10	-	-	5.5	15
265-1-60	-2	3.3	16.0	0.85	1/10	-	-	4.9	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
0.90	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
4x6 DD		Rotary	
Net Weight		Ship Weight	
120 lbs		129 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	410	380	350	315	280	210	-	-	-	-	-	-
Medium	390	360	330	300	260	-	-	-	-	-	-	-
Low	370	340	295	250	-	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
1.0	1.4	0.6
1.5	2.9	1.3
2.0	4.9	2.1
2.5	7.3	3.2
3.0	10.2	4.4

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 350 CFM and 2.5 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
7,800	13.7	11,400	4.7	9,000	20.0	8,600	3.8	8,100	14.8	6,400	3.2

CAPACITY DATA All performance at 350 CFM and 2.5 GPM

COOLING

EFT Range (Standard) 50°F to 100°F EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	7.88	5.22	0.66	0.43	9.35	18.3
60°		7.52	5.02	0.67	0.48	9.14	15.8
70°		7.15	4.84	0.68	0.52	8.94	13.7
85°		6.60	4.58	0.69	0.59	8.62	11.1
100°		6.05	4.35	0.72	0.66	8.31	9.1
50°	75°db 63°wb	8.45	6.25	0.74	0.43	9.92	19.5
60°		8.05	6.01	0.75	0.48	9.69	16.8
70°		7.66	5.79	0.76	0.53	9.46	14.6
85°		7.07	5.48	0.78	0.60	9.11	11.9
100°		6.48	5.20	0.80	0.67	8.76	9.7
50°	80°db 67°wb	9.27	6.90	0.74	0.44	10.76	21.3
60°		8.84	6.64	0.75	0.48	10.49	18.3
70°		8.41	6.39	0.76	0.53	10.22	15.9
85°		7.77	6.06	0.78	0.60	9.82	12.9
100°		7.12	5.75	0.81	0.67	9.41	10.6
50°	85°db 71°wb	10.10	7.56	0.75	0.44	11.60	23.0
60°		9.63	7.27	0.75	0.49	11.29	19.8
70°		9.16	7.00	0.76	0.53	10.99	17.1
85°		8.46	6.64	0.78	0.61	10.53	14.0
100°		7.76	6.30	0.81	0.68	10.07	11.5

HEATING

EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	9.32	0.66	7.06	4.1
60°		10.71	0.70	8.34	4.5
70°		12.10	0.73	9.61	4.9
80°		13.49	0.76	10.89	5.2
50°	70°	8.81	0.67	6.51	3.8
60°		10.13	0.71	7.71	4.2
70°		11.44	0.74	8.91	4.5
80°		12.76	0.78	10.10	4.8
50°	80°	8.22	0.69	5.87	3.5
60°		9.44	0.72	6.97	3.8
70°		10.67	0.76	8.07	4.1
80°		11.89	0.79	9.18	4.4

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	5.72	0.58	3.75	2.9
30°		6.41	0.59	4.38	3.2
40°		7.77	0.63	5.63	3.6
25°	70°	5.42	0.59	3.41	2.7
30°		6.06	0.60	4.00	2.9
40°		7.35	0.64	5.17	3.4
25°	80°	5.05	0.60	3.00	2.5
30°		5.65	0.62	3.54	2.7
40°		6.85	0.65	4.62	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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PACKAGED UNITS

SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC012

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
115-1-60	-0	8.3	40.0	2.2	1/10	-	-	12.6	20
208/230-1-60	-1	5.1	28.0	0.96	1/10	-	-	7.3	15
265-1-60	-2	4.3	22.0	0.85	1/10	-	-	6.2	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
0.97	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
4x7 DD		Rotary	
Net Weight		Ship Weight	
129 lbs		140 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	425	410	390	370	350	325	300	-	-	-	-	-
Medium	410	395	375	355	330	305	-	-	-	-	-	-
Low	385	370	350	330	305	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
1.5	3.2	1.4
2.0	5.3	2.3
2.5	7.9	3.4
3.0	11.0	4.8
3.5	14.5	6.3

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 400 CFM and 3.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
11,000	13.0	14,500	4.5	12,400	19.0	11,500	3.6	11,500	14.5	8,700	3.1

CAPACITY DATA All performance at 400 CFM and 3.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	10.93	7.14	0.65	0.60	12.97	18.3
60°		10.48	6.91	0.66	0.67	12.77	15.7
70°		10.04	6.70	0.67	0.74	12.56	13.6
85°		9.38	6.42	0.68	0.84	12.26	11.1
100°		8.71	6.17	0.71	0.95	11.96	9.2
50°	75°db 63°wb	11.71	8.53	0.73	0.60	13.76	19.5
60°		11.23	8.25	0.73	0.67	13.53	16.7
70°		10.76	8.00	0.74	0.74	13.29	14.5
85°		10.05	7.67	0.76	0.85	12.95	11.8
100°		9.34	7.38	0.79	0.96	12.60	9.8
50°	80°db 67°wb	12.85	9.42	0.73	0.61	14.91	21.2
60°		12.33	9.11	0.74	0.68	14.64	18.2
70°		11.81	8.84	0.75	0.75	14.36	15.8
85°		11.03	8.47	0.77	0.86	13.95	12.9
100°		10.25	8.15	0.79	0.96	13.54	10.6
50°	85°db 71°wb	13.98	10.31	0.74	0.61	16.07	22.9
60°		13.42	9.98	0.74	0.68	15.75	19.7
70°		12.86	9.68	0.75	0.75	15.43	17.0
85°		12.01	9.28	0.77	0.86	14.95	13.9
100°		11.16	8.92	0.80	0.97	14.47	11.5

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	12.22	0.90	9.16	4.0
60°		13.91	0.94	10.71	4.4
70°		15.59	0.97	12.27	4.7
80°		17.28	1.01	13.82	5.0
50°	70°	11.56	0.92	8.43	3.7
60°		13.15	0.95	9.89	4.0
70°		14.74	0.99	11.35	4.4
80°		16.33	1.03	12.81	4.6
50°	80°	10.77	0.94	7.58	3.4
60°		12.25	0.98	8.93	3.7
70°		13.74	1.01	10.27	4.0
80°		15.22	1.05	11.62	4.2

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	7.86	0.81	5.11	2.9
30°		8.68	0.82	5.87	3.1
40°		10.33	0.86	7.39	3.5
25°	70°	7.43	0.82	4.63	2.7
30°		8.21	0.84	5.35	2.9
40°		9.77	0.88	6.78	3.3
25°	80°	6.93	0.84	4.07	2.4
30°		7.66	0.86	4.73	2.6
40°		9.11	0.90	6.05	3.0

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EC015

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	6.8	31.2	0.96	1/10	-	-	9.4	15
265-1-60	-2	5.8	27.0	0.85	1/10	-	-	8.1	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
1.42	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
4x7 DD		Rotary	
Net Weight		Ship Weight	
158 lbs		170 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	520	500	480	460	430	400	340	-	-	-	-	-
Medium	380	370	360	340	330	-	-	-	-	-	-	-
Low	320	300	280	-	-	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
2.0	3.9	1.7
2.5	5.9	2.5
3.0	8.2	3.5
4.0	13.7	5.9
4.5	16.9	7.3

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 500 CFM and 4.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
14,000	13.0	18,000	4.6	15,800	19.0	13,500	3.8	14,500	15.0	10,100	3.3

CAPACITY DATA All performance at 500 CFM and 4.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	13.91	9.08	0.65	0.76	16.50	18.3
60°		13.35	8.79	0.66	0.85	16.24	15.8
70°		12.79	8.52	0.67	0.93	15.98	13.7
85°		11.95	8.17	0.68	1.07	15.59	11.2
100°		11.11	7.86	0.71	1.20	15.20	9.3
50°	75°db 63°wb	14.90	10.85	0.73	0.76	17.51	19.5
60°		14.30	10.50	0.73	0.85	17.21	16.8
70°		13.71	10.19	0.74	0.94	16.91	14.6
85°		12.81	9.77	0.76	1.07	16.47	11.9
100°		11.91	9.41	0.79	1.20	16.02	9.9
50°	80°db 67°wb	16.36	11.98	0.73	0.77	18.99	21.2
60°		15.70	11.60	0.74	0.86	18.63	18.3
70°		15.04	11.25	0.75	0.95	18.28	15.9
85°		14.06	10.79	0.77	1.08	17.75	13.0
100°		13.07	10.39	0.79	1.21	17.22	10.8
50°	85°db 71°wb	17.81	13.12	0.74	0.78	20.46	22.9
60°		17.10	12.70	0.74	0.87	20.05	19.8
70°		16.38	12.32	0.75	0.95	19.64	17.2
85°		15.31	11.82	0.77	1.09	19.03	14.1
100°		14.24	11.38	0.80	1.22	18.41	11.6

HEATING

EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	14.76	1.07	11.12	4.1
60°		17.00	1.14	13.11	4.4
70°		19.24	1.21	15.10	4.7
80°		21.47	1.28	17.09	4.9
50°	70°	13.96	1.09	10.25	3.8
60°		16.07	1.16	12.11	4.1
70°		18.18	1.23	13.97	4.3
80°		20.30	1.31	15.83	4.5
50°	80°	13.02	1.11	9.22	3.4
60°		14.98	1.19	10.93	3.7
70°		16.95	1.26	12.64	3.9
80°		18.91	1.34	14.35	4.1

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required

25°	60°	9.00	0.89	5.97	3.0
30°		10.09	0.92	6.94	3.2
40°		12.28	0.99	8.89	3.6
25°	70°	8.51	0.90	5.43	2.8
30°		9.55	0.94	6.34	3.0
40°		11.62	1.01	8.16	3.4
25°	80°	7.94	0.92	4.79	2.5
30°		8.90	0.96	5.63	2.7
40°		10.83	1.04	7.30	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	6.5	43.0	1.8	1/4	-	-	9.9	15
265-1-60	-2	5.8	46.0	1.6	1/4	-	-	8.9	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
1.88	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
9x7 DD		Reciprocating	
Net Weight		Ship Weight	
180 lbs		195 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	770	700	680	650	610	570	530	515	-	-	-	-
Medium	670	650	615	570	530	515	-	-	-	-	-	-
Low	560	520	510	-	-	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
2.5	5.9	2.5
3.0	8.2	3.5
4.0	13.7	5.9
4.5	17.0	7.3
5.0	20.5	8.9

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 650 CFM and 5.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
18,500	13.0	24,000	4.4	21,400	19.0	18,000	3.8	19,800	14.1	13,400	3.3

CAPACITY DATA All performance at 650 CFM and 5.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	18.96	12.35	0.65	1.06	22.58	17.9
60°		18.08	11.87	0.66	1.18	22.10	15.4
70°		17.21	11.44	0.66	1.29	21.61	13.3
85°		15.90	10.85	0.68	1.46	20.89	10.9
100°		14.59	10.30	0.71	1.63	20.17	8.9
50°	75°db 63°wb	20.32	14.77	0.73	1.07	23.96	19.0
60°		19.38	14.21	0.73	1.18	23.42	16.4
70°		18.45	13.70	0.74	1.30	22.88	14.2
85°		17.05	12.99	0.76	1.47	22.06	11.6
100°		15.64	12.34	0.79	1.64	21.25	9.5
50°	80°db 67°wb	22.30	16.32	0.73	1.08	25.97	20.7
60°		21.28	15.70	0.74	1.19	25.35	17.9
70°		20.26	15.13	0.75	1.31	24.72	15.5
85°		18.72	14.35	0.77	1.48	23.78	12.6
100°		17.18	13.63	0.79	1.66	22.83	10.4
50°	85°db 71°wb	24.29	17.88	0.74	1.08	27.99	22.4
60°		23.18	17.20	0.74	1.20	27.28	19.3
70°		22.06	16.58	0.75	1.32	26.56	16.7
85°		20.39	15.73	0.77	1.49	25.49	13.7
100°		18.72	14.94	0.80	1.67	24.42	11.2

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC018jp6 mod1 Revised 03-12

HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	19.75	1.44	14.84	4.0
60°		22.75	1.55	17.46	4.3
70°		25.75	1.66	20.08	4.5
80°		28.75	1.77	22.70	4.8
50°	70°	18.67	1.46	13.68	3.7
60°		21.51	1.58	16.13	4.0
70°		24.34	1.69	18.58	4.2
80°		27.18	1.80	21.02	4.4
50°	80°	17.42	1.49	12.32	3.4
60°		20.06	1.61	14.56	3.6
70°		22.70	1.73	16.80	3.9
80°		25.33	1.84	19.05	4.0

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	12.01	1.16	8.05	3.0
30°		13.48	1.21	9.33	3.3
40°		16.42	1.33	11.89	3.6
25°	70°	11.36	1.18	7.34	2.8
30°		12.75	1.24	8.53	3.0
40°		15.53	1.35	10.92	3.4
25°	80°	10.60	1.20	6.49	2.6
30°		11.90	1.26	7.59	2.8
40°		14.49	1.38	9.78	3.1

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AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	7.4	43.0	1.8	1/4	-	-	11.1	15
265-1-60	-2	6.7	46.0	1.6	1/4	-	-	10.0	15
208/230-3-60	-3	5.9	63.0	1.8	1/4			9.2	15
460-3-60	-4	2.9	30.0	0.9	1/4			4.5	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.12	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
205 lbs	228 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	900	850	800	760	710	690	680	670	-	-	-	-
Medium	750	720	690	670	-	-	-	-	-	-	-	-
Low	670	-	-	-	-	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
3.0	3.5	1.5
4.0	5.9	2.6
5.0	8.9	3.8
6.0	12.3	5.3
7.0	16.3	7.0

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 850 CFM and 6.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
25,000	13.8	30,000	4.5	28,200	20.6	23,800	3.8	26,500	15.2	17,900	3.3

CAPACITY DATA All performance at 850 CFM and 6.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	25.03	16.38	0.65	1.24	29.25	20.2
60°		24.08	15.89	0.66	1.40	28.87	17.1
70°		23.12	15.45	0.67	1.57	28.49	14.7
85°		21.70	14.88	0.69	1.82	27.92	11.9
100°		20.27	14.38	0.71	2.08	27.35	9.8
50°	75°db 63°wb	26.81	19.56	0.73	1.24	31.05	21.6
60°		25.79	18.97	0.74	1.41	30.61	18.3
70°		24.77	18.45	0.74	1.58	30.17	15.7
85°		23.24	17.77	0.76	1.83	29.50	12.7
100°		21.71	17.18	0.79	2.09	28.84	10.4
50°	80°db 67°wb	29.41	21.58	0.73	1.25	33.69	23.5
60°		28.29	20.93	0.74	1.42	33.15	19.9
70°		27.18	20.36	0.75	1.59	32.61	17.1
85°		25.50	19.60	0.77	1.85	31.81	13.8
100°		23.82	18.95	0.80	2.10	31.00	11.3
50°	85°db 71°wb	32.01	23.62	0.74	1.26	36.32	25.3
60°		30.80	22.91	0.74	1.43	35.69	21.5
70°		29.58	22.28	0.75	1.61	35.06	18.4
85°		27.76	21.46	0.77	1.86	34.12	14.9
100°		25.93	20.75	0.80	2.12	33.17	12.2

HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	25.08	1.83	18.85	4.0		
60°		28.44	1.93	21.86	4.3		
70°		31.79	2.02	24.88	4.6		
80°		35.15	2.12	27.90	4.8		
50°	70°	23.70	1.86	17.36	3.7		
60°		26.88	1.96	20.18	4.0		
70°		30.05	2.06	23.01	4.3		
80°		33.22	2.16	25.84	4.5		
50°	80°	22.09	1.90	15.60	3.4		
60°		25.05	2.01	18.20	3.7		
70°		28.00	2.11	20.80	3.9		
80°		30.96	2.21	23.40	4.1		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	30°	40°	25°	30°	40°
16.36	18.00	21.29	15.46	17.02	20.13
1.58	1.63	1.73	1.61	1.66	1.76
10.97	12.45	15.40	9.98	11.37	14.13
3.0	3.2	3.6	2.8	3.0	3.4
14.42	15.87	18.76	1.64	1.69	1.80
8.82	10.09	12.63	8.82	10.09	12.63
2.6	2.7	3.1	2.6	2.7	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	9.9	54.0	1.8	1/4	-	-	14.2	20
265-1-60	-2	8.5	46.0	1.6	1/4	-	-	12.2	20
208/230-3-60	-3	6.9	63.0	1.8	1/4	-	-	10.4	15
460-3-60	-4	3.6	30.0	0.9	1/4	-	-	5.4	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.29	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
230 lbs	245 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1250	1170	1120	1070	940	830	740	650	-	-	-	-
Medium	1050	980	920	830	760	700	-	-	-	-	-	-
Low	975	910	870	740	640	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
3.5	3.9	1.7
5.0	7.4	3.2
6.0	10.3	4.5
7.0	13.6	5.9
9.0	21.4	9.3

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 950 CFM and 7.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
29,000	13.0	35,000	4.3	33,000	18.6	28,400	3.8	31,000	14.4	21,000	3.3

CAPACITY DATA All performance at 950 CFM and 7.0 GPM

COOLING

EFT Range (Standard)
50°F to 100°F

EFT Range (Ext. Range Option)
45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	29.02	18.86	0.65	1.74	34.95	16.7
60°		27.83	18.24	0.66	1.91	34.35	14.6
70°		26.65	17.68	0.66	2.08	33.76	12.8
85°		24.87	16.94	0.68	2.34	32.86	10.6
100°		23.09	16.28	0.70	2.60	31.97	8.9
50°	75°db 63°wb	31.11	22.59	0.73	1.75	37.07	17.8
60°		29.84	21.85	0.73	1.92	36.39	15.5
70°		28.57	21.19	0.74	2.09	35.72	13.6
85°		26.67	20.30	0.76	2.35	34.70	11.3
100°		24.77	19.51	0.79	2.61	33.69	9.5
50°	80°db 67°wb	34.16	24.96	0.73	1.76	40.17	19.4
60°		32.77	24.15	0.74	1.93	39.37	16.9
70°		31.38	23.41	0.75	2.11	38.58	14.9
85°		29.29	22.44	0.77	2.37	37.39	12.3
100°		27.21	21.57	0.79	2.64	36.20	10.3
50°	85°db 71°wb	37.21	27.36	0.74	1.77	43.27	21.0
60°		35.70	26.47	0.74	1.95	42.36	18.3
70°		34.19	25.66	0.75	2.13	41.45	16.1
85°		31.92	24.60	0.77	2.39	40.08	13.4
100°		29.65	23.65	0.80	2.66	38.72	11.2

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC030jp6 mod1 Revised 03-12

HEATING

EFT Range (Standard)
50°F to 80°F

EFT Range (Ext. Range Option)
25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	30.19	2.28	22.42	3.9
60°		34.13	2.42	25.87	4.1
70°		38.08	2.56	29.33	4.4
80°		42.02	2.71	32.78	4.5
50°	70°	28.56	2.32	20.65	3.6
60°		32.28	2.46	23.88	3.8
70°		36.01	2.61	27.10	4.0
80°		39.73	2.75	30.33	4.2
50°	80°	26.64	2.37	18.56	3.3
60°		30.11	2.52	21.52	3.5
70°		33.58	2.67	24.48	3.7
80°		37.05	2.81	27.44	3.9

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	19.93	1.92	13.38	3.0
30°		21.87	1.99	15.07	3.2
40°		25.73	2.13	18.45	3.5
25°	70°	18.87	1.95	12.20	2.8
30°		20.69	2.03	13.78	3.0
40°		24.35	2.17	16.93	3.3
25°	80°	17.61	2.00	10.80	2.6
30°		19.31	2.07	12.25	2.7
40°		22.72	2.22	15.14	3.0

GeoMaster, LLC

3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC036

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.0	74.0	3.9	1/2	-	-	20.2	30
265-1-60	-2	11.3	67.0	2.3	1/2	-	-	16.4	25
208/230-3-60	-3	7.8	68.0	1.8	1/4	-	-	11.6	15
460-3-60	-4	3.9	34.0	2.0	1/2	-	-	6.9	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
3.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
268 lbs	288 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1500	1440	1370	1290	1210	1120	1000	900	-	-	-	-
Medium	1410	1350	1290	1220	1150	1060	900	-	-	-	-	-
Low	1290	1250	1200	1150	1080	1000	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
4.0	2.1	0.9
5.0	3.2	1.4
7.5	6.5	2.8
9.0	9.1	3.9
11.0	13.0	5.6

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,200 CFM and 9.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
36,000	13.8	46,000	4.5	40,200	19.5	36,200	4.0	37,800	15.5	27,400	3.3

CAPACITY DATA All performance at 1,200 CFM and 9.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	34.99	22.71	0.65	2.08	42.10	16.8
60°		33.74	22.07	0.65	2.28	41.53	14.8
70°		32.48	21.52	0.66	2.48	40.96	13.1
85°		30.59	20.80	0.68	2.79	40.10	11.0
100°		28.70	20.21	0.70	3.09	39.24	9.3
50°	75°db 63°wb	37.52	27.22	0.73	2.09	44.67	17.9
60°		36.17	26.46	0.73	2.30	44.01	15.8
70°		34.83	25.80	0.74	2.50	43.35	13.9
85°		32.81	24.95	0.76	2.80	42.37	11.7
100°		30.79	24.24	0.79	3.10	41.38	9.9
50°	80°db 67°wb	41.22	30.09	0.73	2.11	48.42	19.5
60°		39.74	29.26	0.74	2.31	47.63	17.2
70°		38.26	28.52	0.75	2.52	46.85	15.2
85°		36.05	27.59	0.77	2.82	45.68	12.8
100°		33.84	26.81	0.79	3.13	44.51	10.8
50°	85°db 71°wb	44.91	32.99	0.73	2.12	52.16	21.1
60°		43.31	32.08	0.74	2.33	51.26	18.6
70°		41.70	31.28	0.75	2.54	50.36	16.4
85°		39.29	30.25	0.77	2.84	49.00	13.8
100°		36.89	29.40	0.80	3.15	47.64	11.7

HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	39.07	2.87	29.29	4.0		
60°		44.48	3.03	34.13	4.3		
70°		49.88	3.20	38.97	4.6		
80°		55.28	3.36	43.81	4.8		
50°	70°	36.96	2.92	27.01	3.7		
60°		42.07	3.08	31.54	4.0		
70°		47.17	3.25	36.07	4.3		
80°		52.27	3.42	40.60	4.5		
50°	80°	34.49	2.98	24.32	3.4		
60°		39.24	3.15	28.49	3.7		
70°		43.99	3.32	32.65	3.9		
80°		48.74	3.49	36.82	4.1		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	60°	25.07	2.45	16.70	3.0
30°		27.72	2.54	19.06	3.2
40°		33.01	2.70	23.80	3.6
25°	70°	23.73	2.50	15.22	2.8
30°		26.23	2.58	17.43	3.0
40°		31.24	2.75	21.86	3.3
25°	80°	22.16	2.55	13.47	2.5
30°		24.49	2.63	15.50	2.7
40°		29.15	2.81	19.58	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC036ip6 mod1 Revised: 03-12

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EC041

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.6	88.0	3.9	1/2	-	-	20.9	30
265-1-60	-2	12.0	67.0	2.3	1/2	-	-	17.3	25
208/230-3-60	-3	8.8	68.0	1.8	1/4	-	-	12.8	20
460-3-60	-4	4.4	34.0	2.0	1/2	-	-	7.5	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.29	4	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
250 lbs	265 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1260	1180	1100	1030	960	870	810	720	-	-	-	-
Medium	1210	1150	1070	1010	940	850	750	-	-	-	-	-
Low	1000	960	920	860	800	740	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5.0	3.2	1.4
7.0	5.8	2.5
9.0	9.1	3.9
11.0	13.0	5.6
13.0	17.6	7.6

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,150 CFM and 9.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
38,000	12.5	49,000	4.2	40,400	16.1	39,000	3.7	39,200	14.1	28,500	3.1

CAPACITY DATA All performance at 1,150 CFM and 9.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	35.06	22.64	0.65	2.34	43.04	15.0
60°		34.32	22.35	0.65	2.52	42.93	13.6
70°		33.58	22.15	0.66	2.70	42.82	12.4
85°		32.48	21.98	0.68	2.98	42.65	10.9
100°		31.38	21.98	0.70	3.25	42.48	9.6
50°	75°db 63°wb	37.55	27.04	0.72	2.35	45.58	16.0
60°		36.76	26.70	0.73	2.54	45.42	14.5
70°		35.98	26.45	0.74	2.72	45.26	13.2
85°		34.79	26.26	0.75	3.00	45.02	11.6
100°		33.61	26.26	0.78	3.27	44.78	10.3
50°	80°db 67°wb	41.20	29.84	0.72	2.37	49.30	17.4
60°		40.34	29.46	0.73	2.56	49.07	15.8
70°		39.48	29.19	0.74	2.74	48.84	14.4
85°		38.18	28.98	0.76	3.02	48.49	12.6
100°		36.88	28.98	0.79	3.30	48.14	11.2
50°	85°db 71°wb	44.85	32.67	0.73	2.39	53.01	18.8
60°		43.92	32.25	0.73	2.58	52.71	17.0
70°		42.98	31.96	0.74	2.76	52.41	15.5
85°		41.57	31.73	0.76	3.04	51.96	13.7
100°		40.16	31.72	0.79	3.32	51.50	12.1

HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	40.98	3.06	30.53	3.9		
60°		46.93	3.27	35.76	4.2		
70°		52.88	3.48	40.99	4.4		
80°		58.84	3.70	46.22	4.7		
50°	70°	38.74	3.12	28.10	3.6		
60°		44.36	3.33	32.98	3.9		
70°		49.98	3.55	37.87	4.1		
80°		55.61	3.76	42.76	4.3		
50°	80°	36.10	3.19	25.22	3.3		
60°		41.34	3.41	29.71	3.6		
70°		46.58	3.63	34.19	3.8		
80°		51.81	3.85	38.67	3.9		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	60°	25.59	2.53	16.95	3.0
30°		28.50	2.64	19.50	3.2
40°		34.34	2.85	24.62	3.5
25°	70°	24.19	2.58	15.40	2.8
30°		26.95	2.69	17.78	2.9
40°		32.46	2.90	22.56	3.3
25°	80°	22.56	2.63	13.56	2.5
30°		25.12	2.75	15.75	2.7
40°		30.26	2.97	20.13	3.0

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.6	88.0	3.9	1/2	-	-	20.9	30
265-1-60	-2	12.0	67.0	2.3	1/2	-	-	17.3	25
208/230-3-60	-3	8.8	68.0	1.8	1/4	-	-	12.8	20
460-3-60	-4	4.4	34.0	2.0	1/2	-	-	7.5	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
3.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9x7 DD	Reciprocating		
Net Weight	Ship Weight		
256 lbs	276 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1560	1500	1420	1340	1260	1170	1070	950	-	-	-	-
Medium	1470	1410	1340	1270	1200	1110	1010	-	-	-	-	-
Low	1340	1300	1250	1200	1130	1050	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5.0	3.2	1.4
7.0	5.8	2.5
10.0	11.0	4.8
11.0	13.0	5.6
13.0	17.6	7.6

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,500 CFM and 10.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
42,000	13.0	53,000	4.2	44,500	18.5	42,000	3.8	43,800	14.2	32,200	3.3

CAPACITY DATA All performance at 1,500 CFM and 10.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	38.76	25.36	0.65	2.17	46.17	17.9
60°		38.09	25.13	0.66	2.48	46.56	15.4
70°		37.42	25.00	0.67	2.79	46.96	13.4
85°		36.42	24.97	0.69	3.26	47.55	11.2
100°		35.41	25.13	0.71	3.73	48.14	9.5
50°	75°db 63°wb	41.52	30.28	0.73	2.18	48.97	19.0
60°		40.81	30.01	0.74	2.50	49.32	16.4
70°		40.09	29.85	0.74	2.81	49.67	14.3
85°		39.01	29.82	0.76	3.28	50.20	11.9
100°		37.94	30.01	0.79	3.75	50.73	10.1
50°	80°db 67°wb	45.56	33.41	0.73	2.20	53.06	20.7
60°		44.77	33.11	0.74	2.51	53.36	17.8
70°		43.99	32.94	0.75	2.83	53.65	15.5
85°		42.81	32.91	0.77	3.31	54.09	13.0
100°		41.63	33.12	0.80	3.78	54.53	11.0
50°	85°db 71°wb	49.59	36.58	0.74	2.22	57.16	22.4
60°		48.74	36.25	0.74	2.53	57.39	19.2
70°		47.88	36.06	0.75	2.85	57.62	16.8
85°		46.60	36.02	0.77	3.33	57.97	14.0
100°		45.32	36.25	0.80	3.81	58.32	11.9

HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	44.95	3.33	33.60	4.0
60°		50.80	3.55	38.67	4.2
70°		56.66	3.78	43.74	4.4
80°		62.51	4.01	48.81	4.6
50°	70°	42.49	3.39	30.93	3.7
60°		48.02	3.62	35.66	3.9
70°		53.55	3.85	40.39	4.1
80°		59.08	4.09	45.12	4.2
50°	80°	39.60	3.46	27.78	3.4
60°		44.75	3.70	32.11	3.5
70°		49.90	3.94	36.44	3.7
80°		55.05	4.18	40.78	3.9

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	29.72	2.75	20.33	3.2
30°		32.59	2.87	22.81	3.3
40°		38.33	3.10	27.77	3.6
25°	70°	28.10	2.80	18.54	2.9
30°		30.81	2.92	20.85	3.1
40°		36.23	3.15	25.47	3.4
25°	80°	26.20	2.86	16.42	2.7
30°		28.72	2.98	18.54	2.8
40°		33.77	3.22	22.77	3.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage, or conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC048

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	21.2	113.0	5.0	3/4	-	-	31.5	50
208/230-3-60	-3	16.1	120.0	5.2	3/4	-	-	25.3	40
460-3-60	-4	8.4	60.0	2.5	3/4	-	-	13.0	20
575-3-60	-5	6.4	42.0	2.6	3/4	-	-	10.6	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
10x8 DD	Scroll		
Net Weight	Ship Weight		
304 lbs	328 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1880	1830	1780	1710	1630	1550	1460	1350	1300	-	-	-
Medium	1620	1600	1580	1530	1490	1420	1350	-	-	-	-	-
Low	1390	1360	1330	1310	1290	1250	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
6.0	2.9	1.3
9.0	6.1	2.6
12.0	10.2	4.4
14.0	13.5	5.9
16.0	17.2	7.4

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,600 CFM and 12.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
48,000	14.0	58,000	4.8	58,000	20.6	46,600	4.2	52,000	15.4	36,800	3.5

CAPACITY DATA All performance at 1,600 CFM and 12.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	51.49	33.42	0.65	2.89	61.34	17.8
60°		48.35	31.63	0.65	3.12	58.99	15.5
70°		45.22	29.94	0.66	3.35	56.64	13.5
85°		40.51	27.52	0.68	3.69	53.12	11.0
100°		35.81	25.16	0.70	4.04	49.60	8.9
50°	75°db 63°wb	55.20	40.05	0.73	2.90	65.11	19.0
60°		51.85	37.93	0.73	3.13	62.54	16.5
70°		48.49	35.91	0.74	3.37	59.98	14.4
85°		43.46	33.02	0.76	3.71	56.13	11.7
100°		38.42	30.21	0.79	4.06	52.28	9.5
50°	80°db 67°wb	60.64	44.28	0.73	2.92	70.61	20.7
60°		56.96	41.93	0.74	3.16	67.73	18.0
70°		53.28	39.70	0.75	3.39	64.85	15.7
85°		47.76	36.53	0.76	3.74	60.53	12.8
100°		42.24	33.43	0.79	4.09	56.21	10.3
50°	85°db 71°wb	66.08	48.54	0.73	2.94	76.12	22.4
60°		62.07	45.97	0.74	3.18	72.93	19.5
70°		58.07	43.54	0.75	3.42	69.73	17.0
85°		52.07	40.06	0.77	3.77	64.93	13.8
100°		46.07	36.68	0.80	4.12	60.14	11.2

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC048jp6 mod1 Revised 03-12

HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	50.51	3.52	38.49	4.2
60°		56.66	3.66	44.15	4.5
70°		62.80	3.81	49.82	4.8
80°		68.95	3.95	55.48	5.1
50°	70°	47.79	3.58	35.57	3.9
60°		53.60	3.73	40.88	4.2
70°		59.40	3.87	46.19	4.5
80°		65.21	4.02	51.50	4.8
50°	80°	44.60	3.66	32.12	3.6
60°		50.00	3.80	37.02	3.9
70°		55.41	3.95	41.92	4.1
80°		60.82	4.10	46.82	4.3

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	34.45	3.17	23.65	3.2
30°		37.47	3.24	26.42	3.4
40°		43.49	3.38	31.96	3.8
25°	70°	32.62	3.22	21.63	3.0
30°		35.47	3.29	24.23	3.2
40°		41.16	3.44	29.43	3.5
25°	80°	30.46	3.28	19.25	2.7
30°		33.12	3.36	21.65	2.9
40°		38.42	3.51	26.45	3.2

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EC051

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	21.2	113.0	5.0	3/4			31.5	50
208/230-3-60	-3	16.1	120.0	5.2	3/4	-	-	25.3	40
460-3-60	-4	8.4	60.0	2.5	3/4	-	-	13.0	20

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.10	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
10x8 DD		Scroll	
Net Weight		Ship Weight	
310 lbs		334 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	1650	1630	1610	1530	1500	1440	1400	1340	1250	-	-	-
Medium	1615	1590	1540	1475	1450	1410	1380	1275	-	-	-	-
Low	1585	1560	1510	1440	1425	1335	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
6.0	2.9	1.3
9.0	6.1	2.6
12.0	10.2	4.4
14.0	13.5	5.9
16.0	17.2	7.4

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,500 CFM and 12.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
47,500	13.8	53,500	4.7	58,000	20.6	46,600	4.2	51,000	15.5	37,800	3.6

CAPACITY DATA All performance at 1,500 CFM and 12.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	47.48	31.27	0.66	2.76	56.91	17.2
60°		45.54	30.24	0.66	3.00	55.78	15.2
70°		43.59	29.31	0.67	3.24	54.65	13.5
85°		40.68	28.07	0.69	3.59	52.95	11.3
100°		37.77	26.97	0.71	3.95	51.25	9.6
50°	75°db 63°wb	50.89	37.44	0.74	2.78	60.38	18.3
60°		48.81	36.21	0.74	3.02	59.11	16.2
70°		46.74	35.10	0.75	3.26	57.85	14.4
85°		43.62	33.63	0.77	3.61	55.95	12.1
100°		40.50	32.32	0.80	3.97	54.05	10.2
50°	80°db 67°wb	55.89	41.36	0.74	2.80	65.44	20.0
60°		53.61	40.01	0.75	3.04	63.99	17.6
70°		51.33	38.79	0.76	3.28	62.53	15.6
85°		47.91	37.17	0.78	3.64	60.34	13.2
100°		44.50	35.73	0.80	4.00	58.15	11.1
50°	85°db 71°wb	60.88	45.33	0.74	2.82	70.51	21.6
60°		58.40	43.85	0.75	3.06	68.86	19.1
70°		55.93	42.51	0.76	3.31	67.21	16.9
85°		52.21	40.74	0.78	3.67	64.73	14.2
100°		48.49	39.16	0.81	4.03	62.25	12.0

HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	49.89	3.45	38.10	4.2		
60°		54.44	3.54	42.36	4.5		
70°		59.00	3.63	46.62	4.8		
80°		63.56	3.71	50.88	5.0		
50°	70°	47.19	3.51	35.20	3.9		
60°		51.49	3.60	39.20	4.2		
70°		55.80	3.69	43.20	4.4		
80°		60.10	3.78	47.20	4.7		
50°	80°	44.01	3.59	31.77	3.6		
60°		48.02	3.68	35.47	3.8		
70°		52.03	3.77	39.17	4.0		
80°		56.04	3.86	42.87	4.3		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	60°	37.74	3.23	26.70	3.4
30°		39.97	3.28	28.78	3.6
40°		44.44	3.36	32.96	3.9
25°	70°	35.71	3.29	24.48	3.2
30°		37.82	3.34	26.43	3.3
40°		42.04	3.42	30.35	3.6
25°	80°	33.32	3.36	21.85	2.9
30°		35.29	3.41	23.66	3.0
40°		39.22	3.50	27.28	3.3

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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GeoMaster, LLC
3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
www.geoexcel.com

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GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC060

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	29.0	145.0	5.0	3/4			41.3	70
208/230-3-60	-3	18.0	123.0	5.2	3/4	-	-	27.7	45
460-3-60	-4	9.7	70.0	2.5	3/4	-	-	14.6	20
575-3-60	-5	7.7	53.0	2.6	3/4	-	-	12.2	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.50	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
11x9 DD	Scroll		
Net Weight	Ship Weight		
339 lbs	360 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	2160	2090	2030	1960	1870	1800	1730	1680	1640	1600	1550	1500
Medium	1910	1840	1790	1710	1620	1560	1490	1430	-	-	-	-
Low	1600	1580	1550	1510	1460	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
8	5.5	2.4
10	7.8	3.4
13	12.2	5.3
15	15.2	6.6
20	24.5	10.6

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2,000 CFM and 15.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
62,000	13.2	79,000	4.4	67,000	18.3	61,500	3.9	63,600	14.7	50,000	3.3

CAPACITY DATA All performance at 2,000 CFM and 15.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	58.20	37.95	0.65	3.44	69.95	16.90
60°		56.69	37.28	0.66	3.82	69.73	14.84
70°		55.18	36.74	0.67	4.20	69.51	13.15
85°		52.92	36.17	0.68	4.76	69.17	11.11
100°		50.66	35.84	0.71	5.33	68.84	9.51
50°	75°db 63°wb	62.36	45.39	0.73	3.46	74.18	18.01
60°		60.75	44.59	0.73	3.84	73.86	15.81
70°		59.13	43.95	0.74	4.22	73.54	14.01
85°		56.71	43.27	0.76	4.79	73.06	11.84
100°		54.29	42.87	0.79	5.36	72.58	10.13
50°	80°db 67°wb	68.45	50.12	0.73	3.49	80.36	19.62
60°		66.68	49.23	0.74	3.87	79.90	17.23
70°		64.91	48.53	0.75	4.25	79.43	15.26
85°		62.26	47.78	0.77	4.83	78.73	12.90
100°		59.60	47.35	0.79	5.40	78.04	11.04
50°	85°db 71°wb	74.55	54.89	0.74	3.52	86.55	21.20
60°		72.62	53.93	0.74	3.90	85.94	18.62
70°		70.70	53.16	0.75	4.29	85.33	16.49
85°		67.81	52.34	0.77	4.86	84.41	13.94
100°		64.92	51.86	0.80	5.44	83.50	11.93

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC060jp6 mod1 Revised 03-12

HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	68.82	5.07	51.50	3.97
60°		76.95	5.30	58.86	4.26
70°		85.08	5.52	66.23	4.51
80°		93.21	5.75	73.59	4.75
50°	70°	65.07	5.17	47.43	3.69
60°		72.75	5.40	54.33	3.95
70°		80.43	5.62	61.24	4.19
80°		88.11	5.85	68.14	4.41
50°	80°	60.66	5.28	42.64	3.37
60°		67.82	5.51	49.00	3.60
70°		74.97	5.75	55.35	3.82
80°		82.12	5.98	61.70	4.02

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	47.54	4.51	32.14	3.09
30°		51.52	4.62	35.74	3.26
40°		59.50	4.85	42.95	3.59
25°	70°	44.96	4.59	29.28	2.87
30°		48.73	4.71	32.66	3.03
40°		56.26	4.94	39.41	3.34
25°	80°	41.94	4.69	25.92	2.62
30°		45.44	4.81	29.02	2.77
40°		52.46	5.05	35.24	3.05

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EC061

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	29.0	145.0	5.0	3/4			41.3	70
208/230-3-60	-3	18.0	123.0	5.2	3/4	-	-	27.7	45
460-3-60	-4	9.7	70.0	2.5	3/4	-	-	14.6	20

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.10	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
11x9 DD		Scroll	
Net Weight		Ship Weight	
328 lbs		348 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	2050	2000	1930	1840	1800	1760	1700	1650	1570	1500	1420	1340
Medium	1560	1550	1540	1530	1520	1490	1460	1430	-	-	-	-
Low	1550	1540	1525	1520	1500	1470	1430	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
9	4.3	1.9
11	6.1	2.7
13	8.3	3.6
15	10.7	4.6
20	18.0	7.8

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1,800 CFM and 15.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
59,000	13.9	68,000	4.6	63,000	19.7	55,400	4.1	61,000	15.8	44,600	3.5

CAPACITY DATA All performance at 1,800 CFM and 15.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	53.94	35.42	0.66	3.12	64.58	17.3
60°		52.72	34.91	0.66	3.49	64.63	15.1
70°		51.50	34.54	0.67	3.87	64.69	13.3
85°		49.67	34.20	0.69	4.43	64.77	11.2
100°		47.84	34.12	0.71	4.99	64.85	9.6
50°	75°db 63°wb	57.84	42.47	0.73	3.13	68.53	18.5
60°		56.53	41.86	0.74	3.51	68.51	16.1
70°		55.23	41.42	0.75	3.89	68.49	14.2
85°		53.27	41.02	0.77	4.45	68.45	12.0
100°		51.31	40.91	0.80	5.01	68.42	10.2
50°	80°db 67°wb	63.54	46.95	0.74	3.16	74.32	20.1
60°		62.11	46.28	0.75	3.54	74.18	17.6
70°		60.68	45.79	0.75	3.91	74.04	15.5
85°		58.53	45.35	0.77	4.48	73.83	13.1
100°		56.39	45.24	0.80	5.05	73.63	11.2
50°	85°db 71°wb	69.25	51.48	0.74	3.18	80.10	21.8
60°		67.69	50.75	0.75	3.56	79.85	19.0
70°		66.13	50.21	0.76	3.94	79.59	16.8
85°		63.80	49.73	0.78	4.52	79.21	14.1
100°		61.46	49.61	0.81	5.09	78.84	12.1

Units are complete packages containing compressor, reversing valve, capillary tube metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes expansion valve metering device, insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC061ip6 mod1 Revised 03-12

HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	59.99	4.25	45.49	4.1
60°		66.78	4.43	51.66	4.4
70°		73.58	4.61	57.83	4.7
80°		80.37	4.80	64.00	4.9
50°	70°	56.75	4.32	42.01	3.8
60°		63.17	4.51	47.79	4.1
70°		69.59	4.69	53.57	4.3
80°		76.01	4.88	59.35	4.6
50°	80°	52.95	4.41	37.90	3.5
60°		58.93	4.60	43.22	3.8
70°		64.91	4.79	48.55	4.0
80°		70.89	4.99	53.87	4.2

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	42.16	3.79	29.23	3.3
30°		45.49	3.88	32.24	3.4
40°		52.15	4.06	38.28	3.8
25°	70°	39.90	3.85	26.75	3.0
30°		43.05	3.95	29.58	3.2
40°		49.35	4.13	35.24	3.5
25°	80°	37.26	3.93	23.84	2.8
30°		40.19	4.03	26.44	2.9
40°		46.05	4.22	31.65	3.2

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GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC070

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	30.1	158.0	5.0	3/4	-	-	42.6	70
208/230-3-60	-3	20.5	155.0	5.2	3/4	-	-	30.8	50
460-3-60	-4	9.6	75.0	2.5	3/4	-	-	14.5	20

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
6.00	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
11x9 DD		Scroll	
Net Weight		Ship Weight	
385 lbs		410 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	2240	2220	2200	2150	2100	2050	2000	1940	1870	1800	1700	1590
Medium	1900	1890	1880	1870	1860	1825	1790	1730	1670	1590	1500	-
Low	1570	1560	1550	1540	1530	1505	1475	1440	1400	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
8	5.1	2.2
10	7.2	3.1
12	9.5	4.1
16	14.8	6.4
20	20.1	9.0

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2,200 CFM and 16.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
68,000	13.5	80,000	4.5	76,000	19.8	68,000	4.0	70,000	15.2	53,000	3.3

CAPACITY DATA All performance at 2,200 CFM and 16.0 GPM

COOLING EFT Range (Standard) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	66.64	44.01	0.66	3.53	78.67	18.9
60°		64.14	42.71	0.67	3.95	77.64	16.2
70°		61.64	41.57	0.67	4.38	76.60	14.1
85°		57.90	40.07	0.69	5.02	75.05	11.5
100°		54.16	38.79	0.72	5.67	73.50	9.6
50°	75°db 63°wb	71.40	52.62	0.74	3.55	83.50	20.1
60°		68.73	51.08	0.74	3.98	82.30	17.3
70°		66.06	49.71	0.75	4.41	81.10	15.0
85°		62.05	47.93	0.77	5.05	79.30	12.3
100°		58.05	46.41	0.80	5.70	77.50	10.2
50°	80°db 67°wb	78.37	58.10	0.74	3.57	90.57	21.9
60°		75.44	56.40	0.75	4.01	89.12	18.8
70°		72.52	54.89	0.76	4.44	87.67	16.3
85°		68.12	52.93	0.78	5.09	85.51	13.4
100°		63.73	51.25	0.80	5.74	83.34	11.1
50°	85°db 71°wb	85.34	63.63	0.75	3.60	97.63	23.7
60°		82.16	61.77	0.75	4.04	95.94	20.3
70°		78.97	60.12	0.76	4.48	94.25	17.6
85°		74.20	57.98	0.78	5.13	91.71	14.5
100°		69.42	56.14	0.81	5.79	89.18	12.0

Units are complete packages containing compressor, reversing valve, expansion valve metering device, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a lock-out circuit.

Extended range option includes insulated water coil and solid state lock-out controls.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC070ip6 mod1 Revised 03-12

HEATING EFT Range (Standard) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	71.44	5.01	54.33	4.2
60°		78.97	5.18	61.31	4.5
70°		86.50	5.34	68.29	4.7
80°		94.04	5.50	75.26	5.0
50°	70°	67.55	5.10	50.13	3.9
60°		74.67	5.27	56.68	4.2
70°		81.78	5.43	63.23	4.4
80°		88.90	5.60	69.78	4.7
50°	80°	62.98	5.22	45.18	3.5
60°		69.61	5.38	51.23	3.8
70°		76.24	5.55	57.28	4.0
80°		82.86	5.72	63.33	4.2

LOW TEMP HEATING

Antifreeze Required

25°	60°	51.58	4.61	35.85	3.3
30°		55.27	4.69	39.27	3.5
40°		62.65	4.85	46.10	3.8
25°	70°	48.78	4.69	32.78	3.0
30°		52.27	4.77	35.98	3.2
40°		59.25	4.94	42.40	3.5
25°	80°	45.50	4.79	29.15	2.8
30°		48.75	4.88	32.11	2.9
40°		55.25	5.05	38.03	3.2

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SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC072

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.0	74.0	7.0	1	-	1	36.3	45
208/230-3-60	-3	7.8	68.0	3.6	1	-	1	21.2	25
460-3-60	-4	3.9	34.0	1.8	1	-	1	10.6	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
7.00	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
12x12 BD		Reciprocating	
Net Weight		Ship Weight	
615 lbs		660 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	-	-	2420	2160	1900	1700
1/2 Open	-	-	2980	2800	2610	2400	2100	1800	-	-	-	-
Open	2780	2590	2350	2050	1780	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
10	6.0	2.6
12	8.3	3.6
14	11.0	4.8
16	14.0	6.1
18	17.3	7.5

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2,300 CFM and 16.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
72,000	13.0	92,000	4.5	80,400	18.6	72,400	3.8	75,600	14.2	54,800	3.2

CAPACITY DATA All performance at 2,300 CFM and 16.0 GPM

COOLING		EFT Range (Standard) 50°F to 100°F		EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	70.46	46.54	0.66	4.05	84.29	17.4
60°		67.85	45.19	0.67	4.50	83.22	15.1
70°		65.23	43.99	0.67	4.95	82.14	13.2
85°		61.30	42.43	0.69	5.63	80.52	10.9
100°		57.38	41.10	0.72	6.31	78.90	9.1
50°	75°db 63°wb	75.50	55.65	0.74	4.07	89.41	18.5
60°		72.70	54.03	0.74	4.53	88.16	16.1
70°		69.90	52.60	0.75	4.98	86.90	14.0
85°		65.70	50.75	0.77	5.66	85.02	11.6
100°		61.49	49.16	0.80	6.34	83.14	9.7
50°	80°db 67°wb	82.87	61.44	0.74	4.11	96.89	20.2
60°		79.80	59.66	0.75	4.56	95.38	17.5
70°		76.73	58.08	0.76	5.02	93.87	15.3
85°		72.12	56.04	0.78	5.71	91.60	12.6
100°		67.51	54.29	0.80	6.39	89.33	10.6
50°	85°db 71°wb	90.24	67.29	0.75	4.14	104.37	21.8
60°		86.90	65.34	0.75	4.60	102.60	18.9
70°		83.56	63.62	0.76	5.06	100.83	16.5
85°		78.55	61.38	0.78	5.75	98.18	13.7
100°		73.54	59.47	0.81	6.44	95.53	11.4

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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		EFT Range (Standard) 50°F to 80°F		EFT Range (Ext. Range Option) 25°F to 80°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	77.46	5.59	58.38	4.1		
60°		88.26	5.88	68.18	4.4		
70°		99.06	6.18	77.98	4.7		
80°		109.87	6.47	87.78	5.0		
50°	70°	73.24	5.69	53.81	3.8		
60°		83.45	5.99	63.00	4.1		
70°		93.65	6.29	72.18	4.4		
80°		103.86	6.59	81.37	4.6		
50°	80°	68.28	5.82	48.43	3.4		
60°		77.79	6.12	56.89	3.7		
70°		87.29	6.43	65.35	4.0		
80°		96.80	6.73	73.81	4.2		

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	49.46	4.86	32.88	3.0
30°		54.76	5.00	37.68	3.2
40°		65.35	5.30	47.27	3.6
25°	70°	46.79	4.95	29.91	2.8
30°		51.79	5.10	34.40	3.0
40°		61.80	5.39	43.39	3.4
25°	80°	43.65	5.05	26.40	2.5
30°		48.31	5.21	30.54	2.7
40°		57.63	5.51	38.81	3.1

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EC096

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressors (X 2)		Blower		Loop Pump		Min. Circuit Amps*	Max. Fuse/Breaker
		RLA	LRA	FLA*	HP*	FLA	HP		
208/230-1-60	-1	21.2	113.0	12.3/12.3	1-1/2 /2	-	-	60/60	80/80
208/230-3-60	-3	16.1	120.0	5.0/6.4	1-1/2 /2	-	-	41.2/42.6	50/50
460-3-60	-4	8.4	60.0	2.5/3.2	1-1/2 /2	-	-	21.4/22.1	25/30
575-3-60	-5	6.4	42.0	2.0/2.5	1-1/2 /2	-	-	16.4/16.4	20/20

*Vertical units use one 1-1/2 HP motor (first value) while horizontal units use one 2 HP motor (second value)

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
9.00	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
12x12 BD		Scroll	
Net Weight		Ship Weight	
765 lbs		815 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	-	2800	2650	2450	2300	2200
1/2 Open	-	-	3480	3340	3230	3075	2880	2690	2555	2355	-	-
Open	3110	2965	2835	2615	2460	2275	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
12	5.7	2.4
14	7.5	3.2
18	11.7	5.1
21	15.5	6.7
24	19.7	8.5

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2,800 CFM and 21.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
96,000	14.0	116,000	4.8	116,000	20.6	93,200	4.2	104,000	15.4	73,600	3.5

CAPACITY DATA All performance at 2,800CFM and 21.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	104.23	68.94	0.66	5.36	122.51	19.5
60°		97.96	65.32	0.67	5.82	117.82	16.8
70°		91.69	61.89	0.68	6.28	113.12	14.6
85°		82.28	56.99	0.69	6.97	106.08	11.8
100°	75°db 63°wb	72.88	52.22	0.72	7.66	99.03	9.5
50°		111.66	82.38	0.74	5.39	130.05	20.7
60°		104.95	78.06	0.74	5.85	124.92	17.9
70°		98.24	73.98	0.75	6.31	119.79	15.6
85°	80°db 67°wb	88.17	68.14	0.77	7.01	112.10	12.6
100°		78.10	62.46	0.80	7.71	104.41	10.1
50°		122.54	90.92	0.74	5.43	141.06	22.6
60°		115.18	86.17	0.75	5.90	135.30	19.5
70°	85°db 71°wb	107.82	81.67	0.76	6.36	129.54	16.9
85°		96.78	75.23	0.78	7.07	120.90	13.7
100°		85.75	68.97	0.80	7.77	112.26	11.0
50°		133.41	99.55	0.75	5.47	152.08	24.4
60°	85°db 71°wb	125.41	94.35	0.75	5.94	145.69	21.1
70°		117.40	89.43	0.76	6.41	139.29	18.3
85°		105.40	82.39	0.78	7.12	129.70	14.8
100°		93.39	75.54	0.81	7.83	120.11	11.9

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	99.81	6.63	77.20	4.4		
60°		112.12	6.91	88.53	4.8		
70°		124.42	7.19	99.87	5.1		
80°		136.73	7.48	111.20	5.4		
50°	70°	94.37	6.75	71.35	4.1		
60°		106.00	7.04	81.98	4.4		
70°		117.62	7.33	92.62	4.7		
80°		129.25	7.62	103.25	5.0		
50°	80°	87.98	6.89	64.45	3.7		
60°		98.81	7.19	74.26	4.0		
70°		109.63	7.49	84.08	4.3		
80°		120.46	7.78	93.89	4.5		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	60°	67.70	5.91	47.52	3.4
30°		73.73	6.06	53.06	3.6
40°		85.79	6.34	64.15	4.0
25°	70°	64.03	6.02	43.48	3.1
30°		69.73	6.17	48.69	3.3
40°		81.13	6.46	59.09	3.7
25°	80°	59.72	6.15	38.73	2.8
30°		65.03	6.30	43.53	3.0
40°		75.64	6.60	53.13	3.4

GeoMaster, LLC
3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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2 STAGE PACKAGED UNITS

SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC120

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower		Loop Pump		Min. Circuit Amps*	Max. Fuse/Breaker
		RLA	LRA	FLA*	HP*	FLA	HP		
208/230-1-30	-1	29.0	145.0	12.3	2	-	-	77.6	100
208/230-3-60	-3	18.0	123.0	6.4/9.0	2/3	-	-	46.9/49.5	60/60
460-3-60	-4	9.7	70.0	3.2/4.5	2/3	-	-	25.1/26.3	35/35
575-3-60	-5	7.7	53.0	2.0/3.6	2/3	-	-	19.3/20.9	25/25

*Vertical units use one 2 HP motor (first value) while horizontal units use one 3 HP motor & 2 12x9 blowers (second value)

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
9.00	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size*	Compr Type		
15x15 BD	Scroll		
Net Weight	Ship Weight		
725 lbs	770 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	-	-	4400	4150	3830	3600
1/2 Open	-	-	-	4660	4490	4240	3950	3600	3000	-	-	-
Open	4680	4490	4270	4000	3700	3370	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
16	4.8	2.1
20	7.2	3.1
24	10.0	4.3
28	13.2	5.7
32	16.8	7.3

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 4,000 CFM and 28.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
124,000	13.2	158,000	4.4	134,000	18.3	123,000	3.9	127,200	14.7	100,000	3.2

CAPACITY DATA All performance at 4,000CFM and 28.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F		EFT Range (Ext. Range Option) 45°F to 110°F					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	115.83	76.39	0.66	6.91	139.40	16.8
60°		112.65	74.91	0.66	7.65	138.74	14.7
70°		109.46	73.71	0.67	8.39	138.08	13.1
85°		104.68	72.36	0.69	9.49	137.08	11.0
100°		99.90	71.49	0.72	10.60	136.09	9.4
50°	75°db 63°wb	124.14	91.40	0.74	6.94	147.84	17.9
60°		120.73	89.64	0.74	7.69	146.97	15.7
70°		117.32	88.21	0.75	8.43	146.10	13.9
85°		112.20	86.60	0.77	9.55	144.79	11.8
100°		107.08	85.56	0.80	10.66	143.48	10.0
50°	80°db 67°wb	136.30	100.95	0.74	7.00	160.18	19.5
60°		132.56	99.01	0.75	7.75	159.00	17.1
70°		128.82	97.43	0.76	8.50	157.82	15.2
85°		123.21	95.67	0.78	9.62	156.05	12.8
100°		117.60	94.52	0.80	10.75	154.28	10.9
50°	85°db 71°wb	148.45	110.60	0.75	7.05	172.51	21.1
60°		144.38	108.48	0.75	7.81	171.02	18.5
70°		140.31	106.75	0.76	8.56	169.54	16.4
85°		134.21	104.82	0.78	9.70	167.31	13.8
100°		128.11	103.56	0.81	10.83	165.08	11.8

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC120jp6 mod1 Rev: 05-12

HEATING

EFT Range (Standard) 50°F to 80°F		EFT Range (Ext. Range Option) 25°F to 80°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	134.90	9.83	101.33	4.0
60°		151.74	10.26	116.73	4.3
70°		168.58	10.68	132.13	4.6
80°		185.42	11.10	147.53	4.9
50°	70°	127.56	10.01	93.39	3.7
60°		143.47	10.44	107.84	4.0
70°		159.39	10.87	122.28	4.3
80°		175.30	11.30	136.72	4.5
50°	80°	118.95	10.23	84.03	3.4
60°		133.77	10.67	97.35	3.7
70°		148.58	11.11	110.66	3.9
80°		163.40	11.55	123.97	4.1

LOW TEMP HEATING

		Extended Range Option Required Antifreeze Required			
25°	60°	90.98	8.78	61.02	3.0
30°		99.23	8.99	68.55	3.2
40°		115.74	9.41	83.62	3.6
25°	70°	86.07	8.93	55.57	2.8
30°		93.86	9.15	62.64	3.0
40°		109.46	9.58	76.76	3.3
25°	80°	80.30	9.13	49.14	2.6
30°		87.56	9.35	55.66	2.7
40°		102.09	9.79	68.68	3.1

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2 STAGE HORIZONTAL PACKAGED UNITS

SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC150

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	20.5	155.0	9.0	3	-	-	55.1	70
460-3-60	-4	9.6	75.0	4.5	3	-	-	26.1	35
575-3-60	-5	7.6	54.0	3.6	3	-	-	20.7	25

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
10.83	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15x15 BD		Scroll	
Net Weight		Ship Weight	
822 lbs		912 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	7120	6920	6530	6080	5660	5120
1/2 Open	-	-	-	6860	6530	6120	5780	5380	4880	4090	-	-
Open	6770	6300	5880	5430	4970	4340	3750	-	-	-	-	-

RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 5,000 CFM and 35.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
157,000	16.0	181,000	5.6	185,000	24.0	140,000	5.0	166,000	17.9	107,000	4.2



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
20	3.4	1.5
25	5.1	2.2
30	7.0	3.0
35	9.3	4.0
50	17.6	7.6

CAPACITY DATA

All performance at 5,000 CFM and 35.0 GPM

COOLING

EFT Range (Standard)
50°F to 100°F

EFT Range (Ext. Range Option)
45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	160.90	105.09	0.65	8.47	189.81	19.0
60°		151.98	100.04	0.66	9.24	183.50	16.5
70°		143.05	95.30	0.67	10.00	177.19	14.3
85°		129.67	88.62	0.68	11.15	167.73	11.6
100°		116.28	82.23	0.71	12.30	158.27	9.5
50°	75°db 63°wb	172.66	126.34	0.73	8.51	201.70	20.3
60°		163.11	120.31	0.74	9.28	194.78	17.6
70°		153.55	114.67	0.75	10.05	187.86	15.3
85°		139.22	106.71	0.77	11.21	177.48	12.4
100°		124.89	99.10	0.79	12.37	167.10	10.1
50°	80°db 67°wb	189.86	139.85	0.74	8.57	219.09	22.2
60°		179.38	133.21	0.74	9.34	211.27	19.2
70°		168.91	126.99	0.75	10.12	203.46	16.7
85°		153.20	118.22	0.77	11.29	191.73	13.6
100°		137.49	109.83	0.80	12.46	180.01	11.0
50°	85°db 71°wb	207.06	153.50	0.74	8.62	236.48	24.0
60°		195.66	146.24	0.75	9.41	227.77	20.8
70°		184.27	139.43	0.76	10.19	219.05	18.1
85°		167.18	129.84	0.78	11.37	205.98	14.7
100°		150.09	120.67	0.80	12.55	192.91	12.0

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard)
50°F to 80°F

EFT Range (Ext. Range Option)
25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	155.13	9.77	121.79	4.7
60°		176.61	10.36	141.27	5.0
70°		198.10	10.95	160.74	5.3
80°		219.58	11.53	180.21	5.6
50°	70°	146.89	9.92	113.03	4.3
60°		167.19	10.52	131.28	4.7
70°		187.48	11.12	149.52	4.9
80°		207.78	11.72	167.77	5.2
50°	80°	137.22	10.11	102.70	4.0
60°		156.12	10.73	119.51	4.3
70°		175.02	11.34	136.31	4.5
80°		193.92	11.95	153.12	4.8

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	99.43	8.30	71.12	3.5
30°		109.96	8.59	80.65	3.8
40°		131.03	9.18	99.70	4.2
25°	70°	94.27	8.42	65.52	3.3
30°		104.22	8.72	74.45	3.5
40°		124.11	9.32	92.30	3.9
25°	80°	88.20	8.58	58.92	3.0
30°		97.46	8.88	67.14	3.2
40°		115.99	9.50	83.58	3.6

GeoMaster, LLC
3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
www.geoexcel.com

2 STAGE VERTICAL PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC151

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	20.5	155.0	9.0	3	-	-	55.1	70
460-3-60	-4	9.6	75.0	4.5	3	-	-	26.1	35
575-3-60	-5	7.6	54.0	3.7	3	-	-	20.8	25

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
14.33	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15x15 BD		Scroll	
Net Weight		Ship Weight	
882 lbs		972 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
High	-	-	-	-	-	-	7120	6920	6530	6080	5660	5120
Medium	-	-	-	6860	6530	6120	5780	5380	4880	4090	-	-
Low	6770	6300	5880	5430	4970	4340	3750	-	-	-	-	-

RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 5,000 CFM and 35.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
147,000	16.0	181,000	5.6	175,000	24.0	140,000	5.0	155,000	17.9	107,000	4.2



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
20	3.4	1.5
25	5.1	2.2
30	7.0	3.0
35	9.3	4.0
50	17.6	7.6

CAPACITY DATA All performance at 5,000 CFM and 35.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	152.16	99.28	0.65	8.12	179.88	18.7
60°		143.16	94.12	0.66	8.81	173.23	16.3
70°		134.17	89.25	0.67	9.50	166.57	14.1
85°		120.67	82.34	0.68	10.53	156.59	11.5
100°		107.17	75.65	0.71	11.56	146.62	9.3
50°	75°db 63°wb	163.30	119.41	0.73	8.16	191.15	20.0
60°		153.67	113.27	0.74	8.85	183.88	17.4
70°		144.04	107.47	0.75	9.54	176.60	15.1
85°		129.59	99.23	0.77	10.58	165.70	12.2
100°		115.14	91.27	0.79	11.62	154.79	9.9
50°	80°db 67°wb	179.60	132.21	0.74	8.21	207.63	21.9
60°		169.04	125.44	0.74	8.91	199.45	19.0
70°		158.48	119.06	0.75	9.61	191.27	16.5
85°		142.64	109.98	0.77	10.65	179.00	13.4
100°		126.80	101.20	0.80	11.70	166.73	10.8
50°	85°db 71°wb	195.90	145.15	0.74	8.27	224.11	23.7
60°		184.41	137.75	0.75	8.97	215.02	20.6
70°		172.92	130.76	0.76	9.67	205.93	17.9
85°		155.69	120.83	0.78	10.73	192.30	14.5
100°		138.46	111.23	0.80	11.78	178.67	11.8

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	155.13	9.77	121.79	4.7
60°		176.61	10.36	141.27	5.0
70°		198.10	10.95	160.74	5.3
80°		219.58	11.53	180.21	5.6
50°	70°	146.89	9.92	113.03	4.3
60°		167.19	10.52	131.28	4.7
70°		187.48	11.12	149.52	4.9
80°		207.78	11.72	167.77	5.2
50°	80°	137.22	10.11	102.70	4.0
60°		156.12	10.73	119.51	4.3
70°		175.02	11.34	136.31	4.5
80°		193.92	11.95	153.12	4.8

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	99.43	8.30	71.12	3.5
30°		109.96	8.59	80.65	3.8
40°		131.03	9.18	99.70	4.2
25°	70°	94.27	8.42	65.52	3.3
30°		104.22	8.72	74.45	3.5
40°		124.11	9.32	92.30	3.9
25°	80°	88.20	8.58	58.92	3.0
30°		97.46	8.88	67.14	3.2
40°		115.99	9.50	83.58	3.6

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2 STAGE HORIZONTAL PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC180

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower (x2)		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	22.4	149.0	6.4	2	-	-	63.2	80
460-3-60	-4	10.6	75.0	3.2	2	-	-	30.3	40
575-3-60	-5	7.7	54.0	2.0	2	-	-	21.3	25

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
10.83	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
12x12 BD		Scroll	
Net Weight		Ship Weight	
HZ 1,010 lbs		1,100 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	7200	6940	6560	6150	5710	5140
1/2 Open	-	-	7200	6930	6580	6200	5800	5450	4920	-	-	-
Open	6780	6350	5970	5540	5050	4510	-	-	-	-	-	-

RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 6,000 CFM and 42.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
182,000	14.2	204,000	5.0	195,000	20.0	156,000	4.2	185,000	15.4	118,000	3.5

CAPACITY DATA All performance at 6,000 CFM and 42.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F				EFT Range (Ext. Range Option) 45°F to 110°F			
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	165.85	108.66	0.66	9.80	199.29	16.9
60°		161.63	106.78	0.66	10.91	198.88	14.8
70°		157.40	105.30	0.67	12.03	198.47	13.1
85°		151.06	103.78	0.69	13.71	197.86	11.0
100°		144.72	102.97	0.71	15.39	197.24	9.4
50°	75°db 63°wb	177.90	130.43	0.73	9.85	211.50	18.1
60°		173.38	128.19	0.74	10.97	210.82	15.8
70°		168.85	126.43	0.75	12.10	210.14	14.0
85°		162.07	124.62	0.77	13.78	209.11	11.8
100°		155.28	123.66	0.80	15.47	208.09	10.0
50°	80°db 67°wb	195.52	144.28	0.74	9.91	229.36	19.7
60°		190.57	141.81	0.74	11.05	228.28	17.2
70°		185.61	139.87	0.75	12.18	227.19	15.2
85°		178.17	137.87	0.77	13.89	225.56	12.8
100°		170.73	136.82	0.80	15.59	223.93	11.0
50°	85°db 71°wb	213.15	158.27	0.74	9.98	247.23	21.3
60°		207.75	155.57	0.75	11.13	245.74	18.7
70°		202.36	153.45	0.76	12.27	244.25	16.5
85°		194.27	151.26	0.78	13.99	242.01	13.9
100°		186.18	150.11	0.81	15.70	239.78	11.9

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC180ip6 mod1 Rev: 05-12



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
22	4.0	1.7
27	5.8	2.5
32	7.9	3.4
42	12.9	5.6
52	18.9	8.2

HEATING

EFT Range (Standard) 50°F to 80°F						EFT Range (Ext. Range Option) 25°F to 80°F	
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP		
50°	60°	171.73	11.87	131.22	4.2		
60°		196.70	12.49	154.06	4.6		
70°		221.66	13.11	176.91	5.0		
80°		246.63	13.73	199.75	5.3		
50°	70°	162.53	12.07	121.34	3.9		
60°		186.12	12.70	142.76	4.3		
70°		209.70	13.34	164.19	4.6		
80°		233.29	13.97	185.61	4.9		
50°	80°	151.73	12.32	109.69	3.6		
60°		173.69	12.96	129.45	3.9		
70°		195.66	13.61	149.20	4.2		
80°		217.62	14.26	168.96	4.5		

LOW TEMP HEATING

Extended Range Option Required Antifreeze Required					
25°	30°	40°	25°	30°	40°
107.18	119.42	143.89	101.54	113.10	136.22
10.32	10.63	11.25	10.49	10.80	11.44
71.96	83.14	105.49	65.75	76.23	97.19
3.0	3.3	3.7	2.8	3.1	3.5
94.92	105.68	127.22	10.70	11.02	11.67
58.41	68.07	87.40	2.6	2.8	3.2

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2 STAGE VERTICAL PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC181

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	22.4	149.0	12.2	5	-	-	62.6	80
460-3-60	-4	10.6	75.0	6.1	5	-	-	30.0	40
575-3-60	-5	7.7	54.0	5.4	5	-	-	22.7	30

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
14.33	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15x15 BD		Scroll	
Net Weight		Ship Weight	
885 lbs		975 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	7200	6940	6560	6150	5710	5140
1/2 Open	-	-	7200	6930	6580	6200	5800	5450	4920	-	-	-
Open	6780	6350	5970	5540	5050	4510	-	-	-	-	-	-

RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 6,000 CFM and 42.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
170,000	14.2	204,000	5.0	185,000	20.0	156,000	4.2	175,000	15.4	118,000	3.5

CAPACITY DATA All performance at 6,000 CFM and 42.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	158.00	103.43	0.65	9.43	190.19	16.8
60°		153.22	101.14	0.66	10.43	188.83	14.7
70°		148.45	99.22	0.67	11.43	187.47	13.0
85°		141.29	96.97	0.69	12.93	185.43	10.9
100°		134.13	95.33	0.71	14.43	183.40	9.9
50°	75°db 63°wb	169.49	124.20	0.73	9.48	201.84	17.9
60°		164.38	121.47	0.74	10.49	200.17	15.7
70°		159.27	119.19	0.75	11.49	198.50	13.9
85°		151.61	116.50	0.77	13.00	195.99	11.7
100°		143.95	114.56	0.80	14.51	193.47	9.9
50°	80°db 67°wb	186.31	137.41	0.74	9.55	218.89	19.5
60°		180.71	134.40	0.74	10.56	216.75	17.1
70°		175.11	131.89	0.75	11.58	214.61	15.1
85°		166.71	128.93	0.77	13.10	211.41	12.7
100°		158.31	126.79	0.80	14.62	208.20	10.8
50°	85°db 71°wb	203.12	150.76	0.74	9.61	235.93	21.1
60°		197.03	147.47	0.75	10.64	233.33	18.5
70°		190.94	144.72	0.76	11.66	230.73	16.4
85°		181.80	141.48	0.78	13.19	226.83	13.8
100°		172.66	139.14	0.81	14.73	222.93	11.7

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC181ip6 mod1 Rev: 05-11



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
22	4.0	1.7
27	5.8	2.5
32	7.9	3.4
42	12.9	5.6
52	18.9	8.2

HEATING EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	171.73	11.87	131.22	4.2
60°		196.70	12.49	154.06	4.6
70°		221.66	13.11	176.91	5.0
80°		246.63	13.73	199.75	5.3
50°	70°	162.53	12.07	121.34	3.9
60°		186.12	12.70	142.76	4.3
70°		209.70	13.34	164.19	4.6
80°		233.29	13.97	185.61	4.9
50°	80°	151.73	12.32	109.69	3.6
60°		173.69	12.96	129.45	3.9
70°		195.66	13.61	149.20	4.2
80°		217.62	14.26	168.96	4.5

LOW TEMP HEATING Extended Range Option Required Antifreeze Required

25°	60°	107.18	10.32	71.96	3.0
30°		119.42	10.63	83.14	3.3
40°		143.89	11.25	105.49	3.7
25°	70°	101.54	10.49	65.75	2.8
30°		113.10	10.80	76.23	3.1
40°		136.22	11.44	97.19	3.5
25°	80°	94.92	10.70	58.41	2.6
30°		105.68	11.02	68.07	2.8
40°		127.22	11.67	87.40	3.2

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2 STAGE VERTICAL PACKAGED UNITS

SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC210

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower (x2)		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	29.5	195.0	5.0	1-1/2	-	-	76.4	100
460-3-60	-4	14.7	95.0	2.5	1-1/2	-	-	38.1	50
575-3-60	-5	12.2	80.0	2.0	1-1/2	-	-	31.5	40

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
18.10	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15x15 BD		Scroll	
Net Weight		Ship Weight	
1,090 lbs		1,180 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	-	-	-	-	7800	7500
1/2 Open	-	-	-	-	-	8600	8200	7600	6900	5240	-	-
Open	8840	8400	8000	7560	7000	6400	-	-	-	-	-	-

RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 7,000 CFM and 50.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
220,000	14.6	270,000	5.1	292,000	22.5	204,000	4.5	250,000	17.2	152,000	3.9



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
30	5.9	2.6
40	9.9	4.3
50	14.8	6.4
60	20.5	8.9
70	27.0	11.7

CAPACITY DATA All performance at 7,000 CFM and 50.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	263.76	172.75	0.65	14.11	311.90	18.7
60°		241.26	159.18	0.66	14.86	291.98	16.2
70°		218.76	145.98	0.67	15.61	272.05	14.0
85°		185.02	126.49	0.68	16.75	242.17	11.0
100°		151.27	106.81	0.71	17.88	212.29	8.5
50°	75°db 63°wb	282.93	207.40	0.73	14.18	331.31	20.0
60°		258.85	191.22	0.74	14.93	309.82	17.3
70°		234.76	175.50	0.75	15.69	288.32	15.0
85°		198.64	152.29	0.77	16.83	256.09	11.8
100°		162.52	128.84	0.79	17.97	223.85	9.0
50°	80°db 67°wb	310.97	229.43	0.74	14.27	359.68	21.8
60°		284.57	211.60	0.74	15.04	335.90	18.9
70°		258.17	194.28	0.75	15.80	312.11	16.3
85°		218.57	168.70	0.77	16.95	276.43	12.9
100°		178.97	142.85	0.80	18.10	240.74	9.9
50°	85°db 71°wb	339.01	251.69	0.74	14.37	388.06	23.6
60°		310.29	232.19	0.75	15.14	361.98	20.5
70°		281.58	213.25	0.76	15.91	335.89	17.7
85°		238.50	185.27	0.78	17.07	296.76	14.0
100°		195.43	157.01	0.80	18.23	257.64	10.7

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC210jp6 mod1 Rev: 05-12

HEATING EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	226.52	15.14	174.86	4.4
60°		260.78	16.32	205.09	4.7
70°		295.04	17.50	235.32	4.9
80°		329.29	18.68	265.55	5.2
50°	70°	214.47	15.38	161.98	4.1
60°		246.84	16.58	190.23	4.4
70°		279.20	17.79	218.49	4.6
80°		311.57	18.99	246.75	4.8
50°	80°	200.32	15.68	146.80	3.7
60°		230.46	16.91	172.74	4.0
70°		260.60	18.14	198.68	4.2
80°		290.74	19.37	224.62	4.4

LOW TEMP HEATING Extended Range Option Required Antifreeze Required

25°	60°	138.11	12.19	96.52	3.3
30°		154.91	12.78	111.30	3.6
40°		188.49	13.96	140.86	4.0
25°	70°	130.94	12.37	88.71	3.1
30°		146.81	12.98	102.52	3.3
40°		178.54	14.18	130.15	3.7
25°	80°	122.51	12.60	79.49	2.8
30°		137.29	13.22	923.0	3.0
40°		166.84	14.45	117.52	3.4

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EC240

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower (x2)		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	30.1	225.0	6.4	2	-	-	80.5	110
460-3-60	-4	16.7	114.0	3.2	2	-	-	44.0	60
575-3-60	-5	12.2	80.0	2.0	2	-	-	31.5	40

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
18.10	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15x15 BD		Scroll	
Net Weight		Ship Weight	
1,310 lbs		1,400 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	-	-	9000	8800	8330	7660
1/2 Open	-	-	-	-	9320	8980	8480	7900	7200	6000	-	-
Open	9360	8980	8540	8000	7400	6740	-	-	-	-	-	-



RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 8,000 CFM and 60.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
248,000	14.4	315,000	5.0	310,000	21.1	250,000	4.5	275,000	16.0	180,000	3.9

FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop (FOH) (PSIG)
30	3.7
40	6.2
50	9.3
60	12.9
75	19.2

CAPACITY DATA All performance at 8,000 CFM and 60.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	276.26	181.03	0.66	15.75	330.03	17.5
60°		256.97	169.68	0.66	16.72	314.02	15.4
70°		237.68	158.79	0.67	17.68	298.01	13.4
85°		208.74	142.99	0.69	19.12	273.99	10.9
100°		179.80	127.35	0.71	20.56	249.97	8.7
50°	75°db 63°wb	296.32	217.28	0.73	15.83	350.36	18.7
60°		275.67	203.75	0.74	16.80	333.01	16.4
70°		255.02	190.79	0.75	17.77	315.66	14.4
85°		224.04	171.97	0.77	19.22	289.63	11.7
100°		193.06	153.34	0.79	20.67	263.61	9.3
50°	80°db 67°wb	325.67	240.34	0.74	15.94	380.09	20.4
60°		303.03	225.43	0.74	16.92	360.78	17.9
70°		280.39	211.14	0.75	17.89	341.46	15.7
85°		246.43	190.40	0.77	19.36	312.50	12.7
100°		212.47	169.87	0.80	20.82	283.53	10.2
50°	85°db 71°wb	355.01	263.63	0.74	16.06	409.81	22.1
60°		330.39	247.33	0.75	17.04	388.54	19.4
70°		305.76	231.70	0.76	18.02	367.27	17.0
85°		268.82	209.02	0.78	19.50	335.36	13.8
100°		231.88	186.56	0.80	20.97	303.45	11.1

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	268.16	17.79	207.45	4.4
60°		307.37	19.21	241.79	4.7
70°		346.57	20.64	276.14	4.9
80°		385.77	22.06	310.48	5.1
50°	70°	253.82	18.08	192.10	4.1
60°		290.86	19.53	224.19	4.4
70°		327.89	20.98	256.27	4.6
80°		364.93	22.44	288.36	4.8
50°	80°	236.97	18.45	174.02	3.8
60°		271.47	19.93	203.45	4.0
70°		305.96	21.41	232.87	4.2
80°		340.45	22.90	262.30	4.4

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	166.82	14.23	118.25	3.4
30°		186.04	14.94	135.04	3.6
40°		224.47	16.37	168.62	4.0
25°	70°	158.07	14.46	108.73	3.2
30°		176.22	15.18	124.41	3.4
40°		212.53	16.63	155.77	3.7
25°	80°	147.79	14.73	97.50	2.9
30°		164.69	15.48	111.87	3.1
40°		198.51	16.96	140.62	3.4

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3512 Cavalier Dr. Ft. Wayne, IN 46808
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2 STAGE HORIZONTAL PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC242

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower (x2)		Loop Pump		Min. Circuit Amps	Max. Fuse/ Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	30.1	225.0	6.4	2	-	-	80.5	110
460-3-60	-4	16.7	114.0	3.2	2	-	-	44.0	60
575-3-60	-5	12.2	80.0	2.0	2	-	-	31.5	40

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/ Inch
15.30	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15x15 BD		Scroll	
Net Weight		Ship Weight	
1,310 lbs		1,400 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Motor Sheave	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	-	-	-	-	-	-	8120	7500
1/2 Open	-	-	-	-	-	-	8280	7700	7000	5800	-	-
Open	-	-	8340	7800	7200	6540	-	-	-	-	-	-

RATED IN ACCORDANCE WITH ISO 13256-1 Rated at 8,000 CFM and 60.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
248,000	14.4	315,000	5.0	310,000	21.1	250,000	4.5	275,000	16.0	180,000	3.9



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
30	3.7	1.6
40	6.2	2.7
50	9.3	4.0
60	12.9	5.6
75	19.2	8.3

CAPACITY DATA All performance at 8,000 CFM and 60.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	276.80	179.28	0.65	15.60	330.03	17.7
60°		257.51	168.06	0.65	16.56	314.02	15.6
70°		238.21	157.31	0.66	17.52	298.01	13.6
85°		209.27	141.70	0.68	18.96	273.99	11.0
100°		180.33	126.25	0.70	20.40	249.97	8.8
50°	75°db 63°wb	296.86	215.10	0.72	15.68	350.36	18.9
60°		276.21	201.73	0.73	16.64	333.01	16.6
70°		255.55	188.92	0.74	17.61	315.66	14.5
85°		224.58	170.33	0.76	19.06	289.63	11.8
100°		193.60	151.92	0.78	20.51	263.61	9.4
50°	80°db 67°wb	326.20	237.88	0.73	15.79	380.09	20.7
60°		303.56	223.15	0.74	16.76	360.78	18.1
70°		280.92	209.03	0.74	17.74	341.46	15.8
85°		246.96	188.54	0.76	19.20	312.50	12.9
100°		213.00	168.25	0.79	20.66	283.53	10.3
50°	85°db 71°wb	355.55	260.89	0.73	15.90	409.81	22.4
60°		330.92	244.78	0.74	16.88	388.54	19.6
70°		306.29	229.34	0.75	17.87	367.27	17.1
85°		269.35	206.93	0.77	19.34	335.36	13.9
100°		232.41	184.75	0.79	20.82	303.45	11.2

Units are complete packages featuring 2 stage operation and containing compressors, reversing valve, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

EC242HZip6 mod1 Rev: 05-12

HEATING EFT Range (Standard) 50°F to 80°F EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	267.63	17.63	207.45	4.4
60°		306.83	19.06	241.79	4.7
70°		346.03	20.48	276.14	5.0
80°		385.24	21.90	310.48	5.2
50°	70°	253.29	17.93	192.10	4.1
60°		290.32	19.38	224.19	4.4
70°		327.36	20.83	256.27	4.6
80°		364.40	22.28	288.36	4.8
50°	80°	236.44	18.29	174.02	3.8
60°		270.93	19.77	203.45	4.0
70°		305.42	21.26	232.87	4.2
80°		339.92	22.74	262.30	4.4

LOW TEMP HEATING

25°	60°	166.30	14.07	118.26	3.5
30°		185.51	14.79	135.05	3.7
40°		223.95	16.21	168.63	4.0
25°	70°	157.54	14.30	108.74	3.2
30°		175.70	15.02	124.42	3.4
40°		212.01	16.48	155.78	3.8
25°	80°	147.26	14.58	97.51	3.0
30°		164.17	15.32	111.88	3.1
40°		197.99	16.80	140.63	3.5

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3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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2 STAGE VERTICAL PACKAGED UNITS

GEOEXCEL[®] SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC300

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower (x2)		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	48.1	245.0	9.0	3	-	-	126.2	150
460-3-60	-4	18.6	125.0	4.5	3	-	-	50.9	60
575-3-60	-5	14.7	100.0	3.6	3	-	-	40.3	50

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
18.1	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15 x 15 BD		Scroll	
Net Weight		Ship Weight	
1,350 lbs		1,450 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Closed	-	-	-	-	10000	9650	9300	8950	8600	8200	-	-
1/2 Open	-	10500	10100	9700	8900	8500	8100	-	-	-	-	-
Open	9900	9100	8700	8300	-	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
40	6.2	2.7
50	9.2	4.0
60	12.8	5.5
75	19.1	8.3
85	24.0	10.4

PERFORMANCE DATA

Rated in accordance with ISO 13256-1 at 10,000 CFM and 75.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
295,000	13.0	376,000	4.2	365,000	18.8	300,000	3.8	318,000	14.0	222,000	3.2

CAPACITY DATA

All performance at 10,000 CFM and 75.0 GPM

COOLING

EFT Range (Standard) 50°F to 100°F
EFT Range (Ext. Range Option) 45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	329.18	217.55	0.66	18.61	392.70	17.7
60°		306.89	204.46	0.67	19.86	374.65	15.5
70°		284.59	191.92	0.67	21.10	356.60	13.5
85°		251.16	173.75	0.69	22.96	329.53	10.9
100°		217.72	155.80	0.72	24.83	302.46	8.8
50°	75°db 63°wb	352.69	260.04	0.74	18.72	416.57	18.8
60°		328.83	244.44	0.74	19.97	396.97	16.5
70°		304.97	229.51	0.75	21.22	377.38	14.4
85°		269.18	207.87	0.77	23.09	347.99	11.7
100°		233.39	186.48	0.80	24.97	318.60	9.3
50°	80°db 67°wb	387.09	287.07	0.74	18.86	451.46	20.5
60°		360.93	269.88	0.75	20.12	429.60	17.9
70°		334.77	253.42	0.76	21.38	407.75	15.7
85°		295.53	229.57	0.78	23.27	374.97	12.7
100°		256.30	206.00	0.80	25.16	342.18	10.2
50°	85°db 71°wb	421.48	314.37	0.75	19.01	486.35	22.2
60°		393.03	295.57	0.75	20.28	462.23	19.4
70°		364.57	277.57	0.76	21.55	438.12	16.9
85°		321.89	251.49	0.78	23.45	401.94	13.7
100°		279.21	225.71	0.81	25.36	365.77	11.0

Units are complete packages containing two compressors with independent refrigeration circuits, reversing valves, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard) 50°F to 80°F
EFT Range (Ext. Range Option) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	317.56	22.84	239.60	4.1
60°		362.27	24.24	279.54	4.4
70°		406.98	25.64	319.48	4.7
80°		451.69	27.03	359.42	4.9
50°	70°	300.28	23.25	220.91	3.8
60°		342.52	24.68	258.29	4.1
70°		384.76	26.10	295.66	4.3
80°		427.00	27.53	333.04	4.5
50°	80°	279.97	23.76	198.86	3.5
60°		319.31	25.22	233.23	3.7
70°		358.65	26.68	267.59	3.9
80°		397.99	28.14	301.95	4.1

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	201.75	19.35	135.72	3.1
30°		223.66	20.05	155.25	3.3
40°		267.50	21.44	194.31	3.7
25°	70°	190.85	19.69	123.64	2.8
30°		211.56	20.40	141.92	3.0
40°		252.97	21.83	178.47	3.4
25°	80°	178.06	20.12	109.39	2.6
30°		197.34	20.85	126.19	2.8
40°		235.91	22.31	159.78	3.1

GeoMaster, LLC
3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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2 STAGE VERTICAL PACKAGED UNITS

SPECIFICATION DATA SHEET

GEOEXCEL HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

EC360

AQUARIUS SERIES

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor (x2)		Blower (x2)		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-3-60	-3	55.8	340.0	12.2	5	-	-	150.0	200
460-3-60	-4	26.9	173.0	6.1	5	-	-	72.7	90
575-3-60	-5	23.7	132.0	5.4	5	-	-	64.1	80

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
27.0	3	3/8	14
Water Coil			
Type		Work Press	
Coaxial		450 psig	
Blower Size		Compr Type	
15 x 15 BD		Scroll	
Net Weight		Ship Weight	
1,650 lbs		1,750 lbs	

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.20	0.30	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20
Closed	-	-	-	-	-	-	-	-	-	-	12900	10800
1/2 Open	-	-	-	-	-	13050	11850	10350	7500	-	-	-
Open	12200	11575	10950	9600	7800	-	-	-	-	-	-	-



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
50	8.5	3.7
70	15.6	6.8
80	19.8	8.6
90	24.5	10.6
100	29.6	12.8

PERFORMANCE DATA

Rated in accordance with ISO 13256-1 at 12,000 CFM and 90.0 GPM

Water Loop				Ground Water				Ground Loop (Ext. Range Required)			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
386,000	14.8	435,000	4.4	472,000	22.0	342,000	4.0	412,000	16.4	252,000	3.3

CAPACITY DATA

All performance at 12,000 CFM and 90.0 GPM

COOLING

EFT Range (Standard)
50°F to 100°F

EFT Range (Ext. Range Option)
45°F to 110°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	410.51	266.82	0.65	23.92	492.15	17.2
60°		382.97	250.73	0.65	25.62	470.40	14.9
70°		355.43	235.39	0.66	27.31	448.65	13.0
85°		314.12	213.26	0.68	29.86	416.03	10.5
100°		272.81	191.49	0.70	32.40	383.40	8.4
50°	75°db 63°wb	440.77	321.51	0.73	24.03	522.79	18.3
60°		411.30	302.36	0.74	25.74	499.14	16.0
70°		381.82	284.08	0.74	27.44	475.48	13.9
85°		337.60	257.71	0.76	30.00	440.00	11.3
100°		293.38	231.78	0.79	32.56	404.52	9.0
50°	80°db 67°wb	485.05	356.31	0.73	24.18	567.59	20.1
60°		452.74	335.19	0.74	25.91	541.15	17.5
70°		420.42	315.05	0.75	27.63	514.71	15.2
85°		371.94	285.99	0.77	30.21	475.04	12.3
100°		323.47	257.41	0.80	32.79	435.38	9.9
50°	85°db 71°wb	529.33	391.45	0.74	24.34	612.39	21.7
60°		494.17	368.36	0.75	26.07	583.16	19.0
70°		459.02	346.33	0.75	27.81	553.93	16.5
85°		406.29	314.55	0.77	30.41	510.09	13.4
100°		353.56	283.30	0.80	33.01	466.24	10.7

Units are complete packages containing two compressors with independent refrigeration circuits, reversing valves, expansion valve metering devices, and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and a solid state lock-out circuit.

Extended range option includes insulated water coils.

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.

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HEATING

EFT Range (Standard)
50°F to 80°F

EFT Range (Ext. Range Option)
25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	377.81	29.21	278.10	3.8
60°		430.94	31.14	324.67	4.1
70°		484.08	33.06	371.24	4.3
80°		537.22	34.99	417.81	4.5
50°	70°	358.00	29.67	256.74	3.5
60°		408.20	31.63	300.25	3.8
70°		458.40	33.59	343.76	4.0
80°		508.60	35.55	387.27	4.2
50°	80°	334.73	30.23	231.56	3.2
60°		381.48	32.23	271.47	3.5
70°		428.24	34.24	311.37	3.7
80°		474.99	36.25	351.28	3.8

LOW TEMP HEATING

Extended Range Option Required
Antifreeze Required

25°	60°	240.16	24.40	156.87	2.9
30°		266.21	25.37	179.63	3.1
40°		318.30	27.29	225.16	3.4
25°	70°	227.94	24.77	143.41	2.7
30°		252.54	25.75	164.67	2.9
40°		301.76	27.71	207.20	3.2
25°	80°	213.57	25.21	127.53	2.5
30°		236.49	26.21	147.02	2.6
40°		282.33	28.22	186.01	2.9

GeoMaster, LLC

3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
www.geoexcel.com

Notes

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3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
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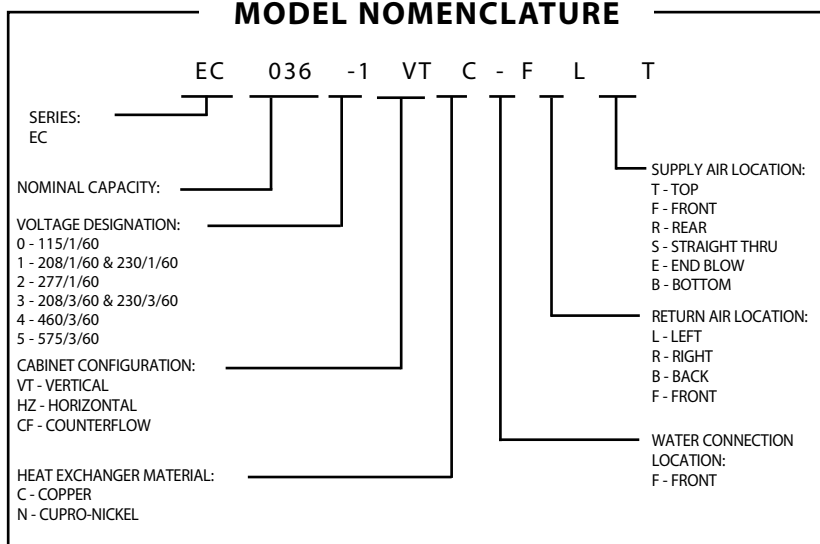


INSTALLATION and maintenance manual

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MODEL NOMENCLATURE



INTRODUCTION:

The EC Series uses scroll and reciprocating compressors and refrigerant R-410A to achieve high efficiency levels, quiet operation and reliable performance.

The new refrigerant provides performance similar to that of R-22 with one major advantage. Refrigerant R-410A is an HFC so it does not contain any ozone depleting HCFCs or CFCs.

INITIAL INSPECTION:

Be certain to inspect all cartons or crates on each unit as received at the job site before signing the freight bill. Verify that all items have been received and that there are no visible damages; note any shortages or damages on all copies of the freight bill. In the event of damage or shortage, remember that the purchaser is responsible for filing the necessary claims with the carrier. Concealed damages not discovered until after removing the units from the packaging must be reported to the carrier within 24 hours of receipt.

GENERAL DESCRIPTION:

The EC Water-to-Air Heat Pumps provide the best combination of performance and efficiency available. Safety devices are built into each unit to provide the maximum system protection possible when properly installed and maintained.

The EC Water-to-Air Heat Pumps are Underwriters Laboratories (UL), (CE) and (CUL) listed for safety. The EC Water-to-Air Heat Pumps are designed to operate with entering liquid temperature between 50° F and 100° F. With the extended range option, the heat pump can operate with entering liquid temperatures between 25° F and 110° F.

NOTE: 50° F Min. EWT for well water applications with sufficient water flow to prevent freezing. Antifreeze solution is required for all closed loop applications.

Cooling Tower/ Boiler and Earth Coupled (GeoThermal) applications should have sufficient antifreeze solution to protect against extreme conditions and equipment failure. Frozen water coils are not covered under warranty.

WARNING: This product should not be used for temporarily heating/cooling during construction. Doing so may effect the units warranty.

MOVING AND STORAGE:

If the equipment is not needed for immediate installation upon its arrival at the job site, it should be left in its shipping carton and stored in a clean, dry area. Units must only be stored or moved in the normal upright position as indicated by the "UP" arrows on each carton at all times. If unit stacking is required, stack units as follows: Vertical units less than 6 tons, no more than two high. Horizontal units less than 6 tons, no more than three high. "Do not stack units larger than 6 tons."

SAFETY CONSIDERATIONS:

CAUTION: R-410A systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on R-410A equipment.

Installation and servicing of this equipment can be hazardous due to system pressure and electrical components. Only trained and qualified personnel should install, repair, or service the equipment. Untrained personnel can perform basic functions of maintenance such as cleaning coils and replacing filters.

WARNING: Before performing service or maintenance operations on the system, turn off main power to the unit. Electrical shock could cause personal injury or death.

When working on equipment, always observe precautions described in the literature, tags, and labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing, and place a fire extinguisher close to the work area.

LOCATION:

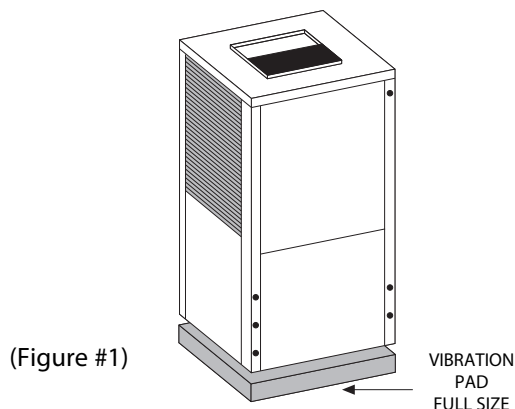
Locate the unit in an indoor area that allows easy removal of the filter and access panels, and has enough room for service personnel to perform maintenance or repair. Provide sufficient room to make water, electrical, and duct connection(s). If the unit is located in a confined space such as a closet, provisions must be made for return air to freely enter the space. On horizontal units, allow adequate room below the unit for a condensate drain trap and do not locate the unit above supply piping. These units are not approved for outdoor installation; therefore, they must be installed inside the structure being conditioned. Do not locate in areas that are subject to freezing.

INSTALLATION:

WARNING: Remove all shipping blocks under blower housing. Loosen compressor mounting bolts.

MOUNTING VERTICAL UNITS:

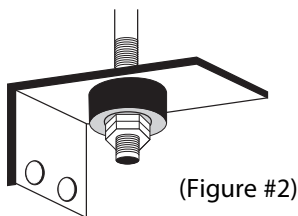
Vertical units up to five tons are available in left, right, front, or rear air return configurations. Vertical units should be mounted level on a vibration absorbing pad slightly larger than the base to minimize vibration transmission to the building structure. It is not necessary to anchor the unit to the floor. (See Figure #1). Vertical units larger than five tons



should be vibration isolated according to the design engineers specifications.

MOUNTING HORIZONTAL UNITS:

While horizontal units may be installed on any level surface strong enough to hold their weight, they are typically suspended above a ceiling by threaded rods. The rods are usually attached to the unit corners by hanger bracket kits (P/N 930-008). (See Figure #2). The rods must be securely anchored to the ceiling. Refer to the hanging bracket assembly and installation instructions (Included with the unit) for details. Units larger than six tons include an integral angle iron frame with mounting holes present. (See unit horizontal detail drawing). Horizontal units installed above the ceiling must conform to all local codes. An auxiliary drain pan if required by code, should be at least four inches larger than the bottom of the heat pump. Plumbing connected to the heat pump must not come in direct contact with joists, trusses, walls, etc..



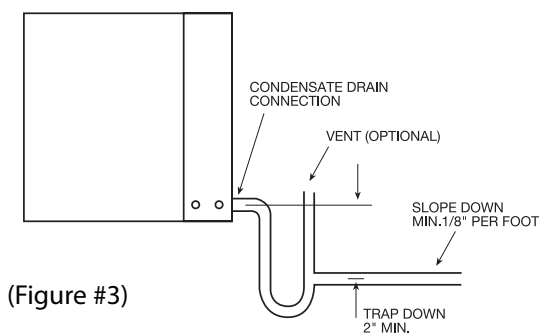
(Figure #2)

Some applications require an attic floor installation of the horizontal unit. In this case the unit should be set in a full size secondary drain pan on top of a vibration absorbing mesh. The secondary drain pan prevents possible condensate overflow or water leakage damage to the ceiling. The secondary drain pan is usually placed on a plywood base isolated from the ceiling joists by additional layers of vibration absorbing mesh. In both cases, a 3/4" drain connected to this secondary pan should be run to an eave at a location that will be noticeable. If the unit is located in a crawl space, the bottom of the unit must be at least 4" above grade to prevent flooding of the electrical parts due to heavy rains.

CONDENSATE DRAIN:

WARNING: If equipped with float style condensate overflow switch, final adjustment must be made in the field.

A drain line must be connected to the heat pump and pitched away from the unit a minimum of 1/8" per foot to allow the condensate to flow away from the unit.

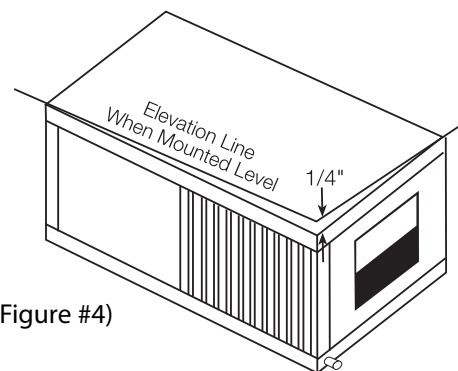


(Figure #3)

This connection must be in conformance with local plumbing codes. A trap must be installed in the condensate line to insure free condensate flow. (Units are not internally trapped). A vertical air vent is sometimes required to avoid

air pockets. (See Figure #3). The length of the trap depends on the amount of positive or negative pressure on the drain pan.

A second trap must not be included. The horizontal unit should be pitched approximately 1/4" towards the drain in both directions, to facilitate condensate removal. (See Figure #4)



(Figure #4)

DUCT SYSTEM:

All EC models are provided with a return air duct flange, while a supply air outlet collar is provided on all models except the 6 thru 12 ton horizontal models to facilitate duct connections. Refer to the individual data specification sheet for physical dimensions of the collar and flange.

A flexible connector is recommended for supply and return air connections on metal duct systems. All metal ducting should be insulated with a minimum of one inch duct insulation to avoid heat loss or gain and prevent condensate forming during the cooling operation. Application of the unit to uninsulated duct work is not recommended as the unit's performance will be adversely affected. Do not connect discharge ducts directly to the blower outlet. The factory provided air filter must be removed when using a filter back return air grill. The factory filter should be left in place on a free return system.

If the unit will be installed in a new installation with new duct work, the installation should be designed using current ASHRAE procedures for duct sizing. If the unit will be connected to an existing duct system, a check should be made to assure that the duct system has the capacity to handle the air required for the unit application. If the duct system is too small, larger duct work must be installed. Be certain to check for existing leaks and repair.

The duct system and all diffusers should be sized to handle the designed air flow quietly. To maximize sound attenuation of the unit blower, the supply and return air plenums should be insulated. There should be no direct straight air path thru the return air grille into the heat pump. The return air inlet to the heat pump must have at least one 90 degree turn away from the space return air grille. If air noise or excessive air flow are a problem, the blower speed can be changed to a lower speed to reduce air flow.

ELECTRICAL:

All field wiring must comply with local and national fire, safety and electrical codes. Power to the unit must be within the operating voltage range indicated on the unit's nameplate. On three phase units, phases must be balanced within 2%.

Properly sized fuses or HACR circuit breakers must be installed for branch circuit protection. See equipment rating plate for maximum size. The unit is supplied with an opening for attaching conduit. Be certain to connect the ground lead to the ground lug in the control box. Connect the power leads as indicated on the unit wiring diagram.

THERMOSTAT CONNECTIONS:

Thermostat wiring is connected to the 5-position (6-position on dual compressor models) low voltage terminal block located in the upper portion of the electrical box. The thermostat connections and their functions are as follows:

C	Transformer 24 VAC Common
O	Reversing Valve (energized in cooling)
Y	Compressor contactor
Y1	1ST stage compressor contractor (dual-compressor unit)
Y2	2ND stage compressor contractor (dual-compressor unit)
R	Transformer 24 VAC Hot
G	Fan

SAFETY DEVICES AND THE UPM CONTROLLER

Each unit is factory provided with a Unit Protection Module (UPM) that controls the compressor operation and monitors the safety controls that protect the unit.

Safety controls include the following:

- High pressure switch located in the refrigerant discharge line and wired across the HPC terminals on the UPM
- Low pressure switch located in the unit refrigerant suction line and wired across terminals LPC1 and LPC2 on the UPM.
- Optional freeze protection sensor, mounted close to condensing water coil, monitors refrigerant temperature between condensing water coil and thermal expansion valve. If temperature drops below or remains at freeze limit trip for 30 seconds, the controller will shut down the compressor and enter into a soft lockout condition. The default freeze limit trip is 30°F, however this can be changed to 15°F by cutting the R42 resistor located on top of DIP switch SW1.
- The optional condensate overflow protection sensor (standard on horizontal units) is located in the drain pan of the unit and connected to the 'COND' terminal on the UPM board.
- Units with two compressors will be equipped with UPM II.
- UPM II provides the same protection for each compressor.
- The UPMII has the following Inputs and Outputs:

Digital Outputs: Three digital outputs relay contacts rated at 10A resistive @ 125 VAC; Two dedicated for

the compressor contactor 24VAC when "ON" and one dedicated for alarm purposes dry

contact Normally Open (NO)

Inputs: Four (9) inputs. Dedicated inputs for:

- 2 High Pressure Switches (HPC)
- 2 Low Pressure Switches (LPC)
- 2 Freeze Sensors (FREEZE) 10 K @ 77F Thermistor
- 1 Condensate Overflow Sensor (CON) 230 K +/- 15%
- 2 Compressor Call (Y) Signals

Please see figure 4 for UPM II Board layout.

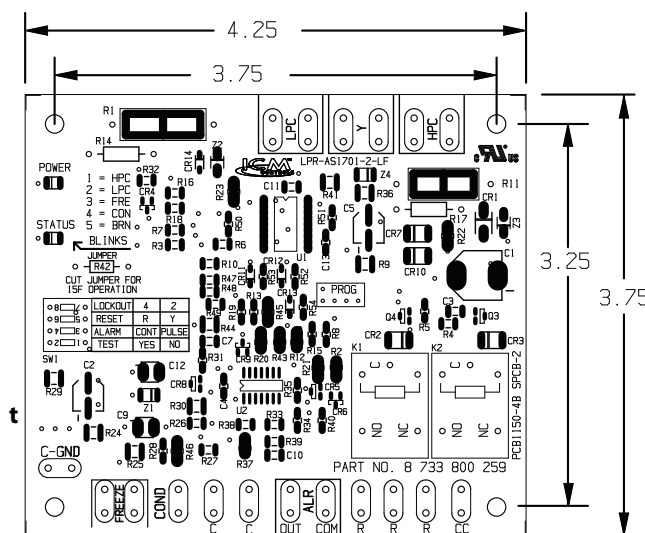


Figure 4

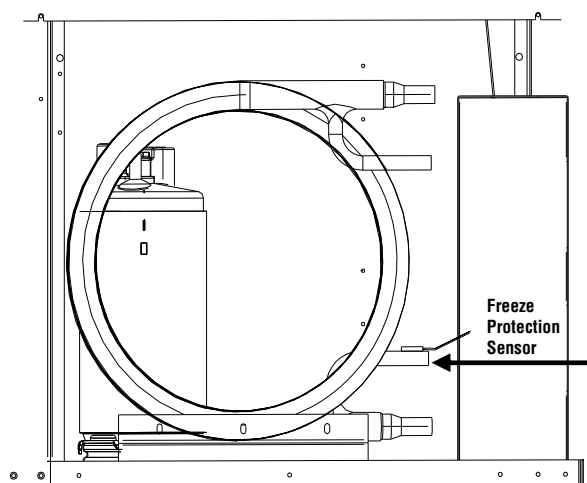


Figure 5 Freeze Protection Sensor

NOTE: If freeze protection sensor is not installed, a jumper between freeze contacts must be installed on the UPM board otherwise unit will not start.

The UPM includes the following features:

- **ANTI-SHORT CYCLE TIME**—5 minute delay on break timer to prevent compressor short cycling.
- **RANDOM START**—Each controller has a unique random start delay ranging from 270 to 300 seconds to reduce the chances of multiple units simultaneously starting after initial power up or after a power interruption, creating a large electrical spike.
- **LOW PRESSURE BYPASS TIMER**—If the compressor is running and the low pressure switch opens, then the control will keep the compressor on for 120 seconds. After 2 minutes if the low pressure switch remains open, the control will shut down the compressor and enter a soft lockout. The compressor will not be energized until the low pressure switch closes and the anti-short cycle time delay expires. If the low pressure switch opens 2–4 times in 1 hour, the unit will enter a hard lock out and need to be reset.
- **BROWNOUT/SURGE/POWER INTERRUPTION PROTECTION**—The brownout protection in the UPM board will shut down the compressor if the incoming power falls below 18 VAC. The compressor will remain off till the voltage goes above 18 VAC and the anti short cycle timer (300 seconds) times out. The unit will not go into a hard lockout.
- **MALFUNCTION OUTPUT**—Alarm output is Normally Open (NO) dry contact. If 24 VAC output is needed R must be wired to the ALR-COM terminal; 24VAC will be available on the ALR-OUT terminal when the unit is in alarm condition. If pulse is selected the alarm output will be pulsed. The fault output will depend on the dip switch setting for “ALARM”. If it set to “CONST”, a constant signal will be produced to indicate a fault has occurred and the unit requires inspection to determine the type of fault. If it is set to “PULSE”, a pulse signal is produced and a fault code is detected by a remote device indicating the fault. See L.E.D. Fault Indication below for blink code explanations. The remote device must have a malfunction detection capability when the UPM board is set to “PULSE”.
- **TEST DIP SWITCH**—A test dip switch is provided to reduce all time delay settings to 10 seconds during troubleshooting or verification of unit operation. Note that operation of the unit while in test mode can lead to accelerated wear and premature failure of the unit. The “TEST” switch must be set back to “NO” for normal operation.
- **FREEZE SENSOR**—The freeze sensor input is active all the time, if a freeze option is not selected the freeze terminals will need a jumper. There are 2 configurable freeze points, 30°F & 15°F. The unit will enter a soft lock out until the temperature climbs above the set point and the anti-short cycle time delay has expired. The freeze sensor will shut the compressor output down after 90 seconds of water flow loss and report a freeze condition. It is recommended to have a flow switch to prevent the unit from running if water flow is lost.

NOTE: If unit is employing a fresh water system (no anti-freeze protection), it is extremely important to have the “Freeze” jumper R42 resistor set to 30°F in order to shut down the unit at the appropriate leaving water temperature and protect your heat pump from freezing if a freeze sensor is included.

UNIT PROTECTION MODULE (UPM)

The Unit Protection Module (UPM) as shown in figure 6, is a printed circuit board (PCB) that interfaces with the thermostat or the digital direct controller. The main purpose of this device is to protect the compressors by monitoring the different states of switches and sensors of each refrigerant circuit, this device provides time delays and protects the unit against freezing of the water and refrigerant heat exchangers as well as condensate overflow when the appropriate sensors are installed.

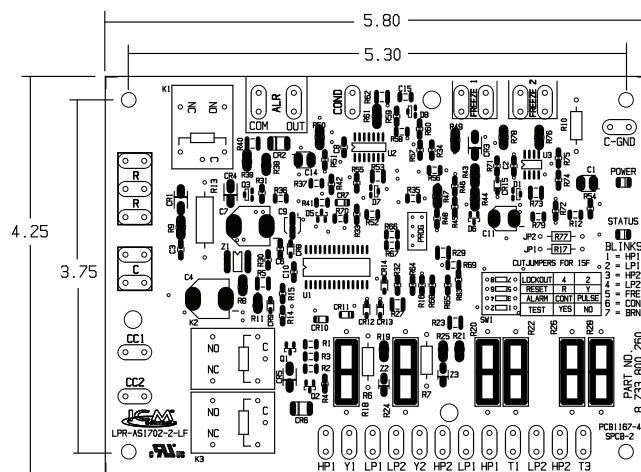
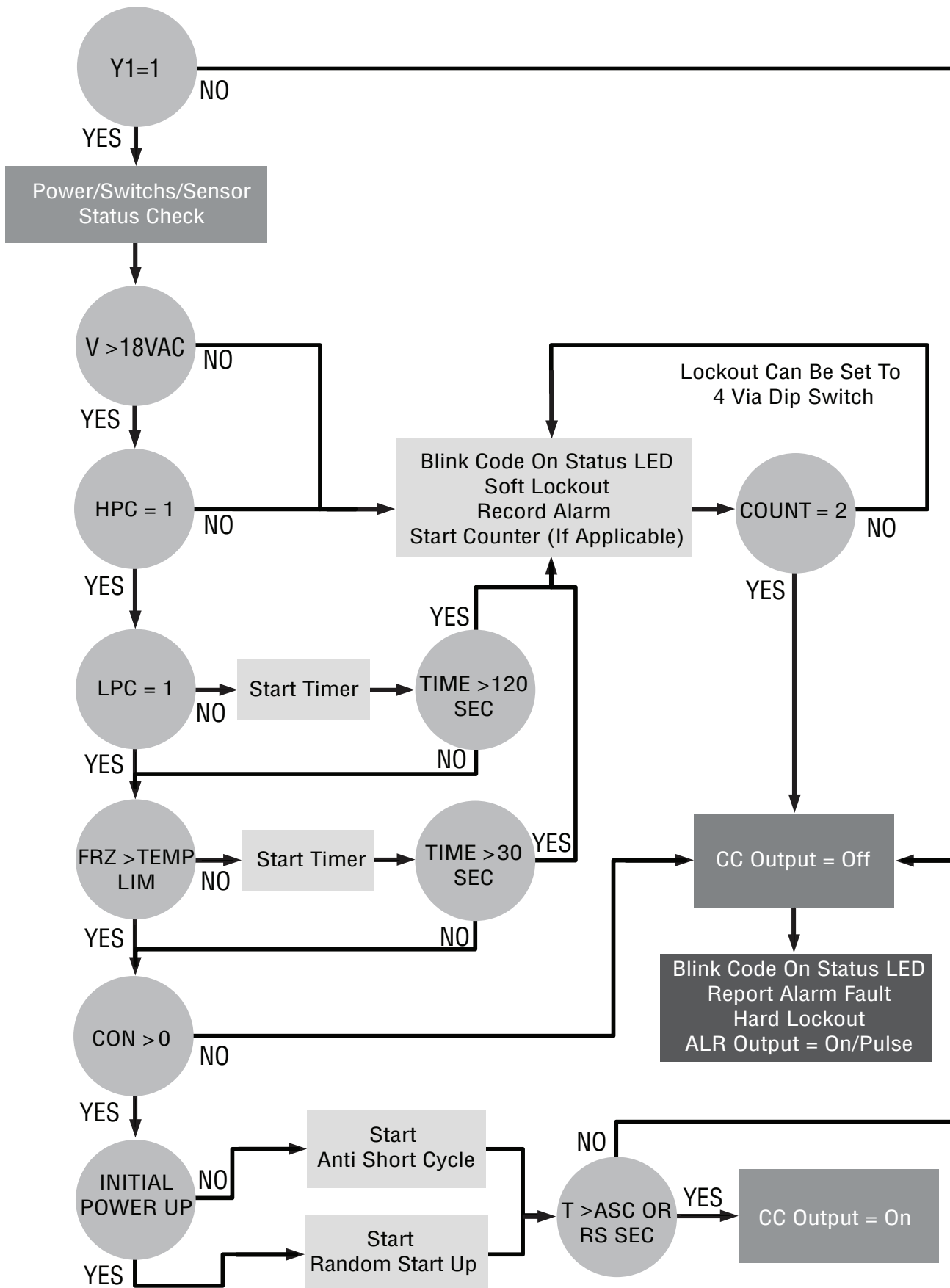


Figure 6 - UPM Two Stage

Alarm output is Normally Open (NO) dry contact. If 24 VAC output is needed R must be wired to the ALR-COM terminal; 24VAC will be available on the ALR-OUT terminal when the unit is in alarm condition. If pulse is selected the alarm output will be pulsed.

- **L.E.D. FAULT INDICATION**—Two L.E.D. indicators are provided:
 - Green: Power L.E.D. indicates 18—30 VAC present at the board.
 - Red: Fault indicator with blink codes as follows:
 - One blink—High pressure lockout
 - Two blinks—Low pressure lockout
 - Three blinks—Freeze sensor lockout
 - Four blinks—Condensate overflow
 - Five blinks—Brownout
- **INTELLIGENT RESET**—If a fault condition is initiated, the 5 minute delay on break time period is initiated and the unit will restart after these delays expire. During this period the fault LED will indicate the cause of the fault. If the fault condition still exists or occurs 2 or 4 times (depending on 2 or 4 setting for Lockout dip switch) before 60 minutes, the unit will go into a hard lockout and requires a manual lockout reset. A single condensate overflow fault will cause the unit to go into a hard lockout immediately, and will require a manual lockout reset.
- **LOCKOUT RESET**—A hard lockout can be reset by turning the unit thermostat off and then back on when the “RESET” dip switch is set to “Y” or by shutting off unit power at the circuit breaker when the “RESET” dip switch is set to “R”.

UPM Sequence of Operation (SOO) Flow Chart



NOTE: The blower motor will remain active during a lockout condition.

- **UPM BOARD DEFAULT SETTINGS**—Your UPM board will come from the factory with the following default settings:
- **Freeze**—"Terminals not jumped" on all the time
- **Temp**—30°F
- **Lockout**—2
- **Reset**—"Y"
- **Alarm**—"PULSE"
- **Test**—"NO"
- **Dry Contact**—"Normally Open (NO)"

CONSIDERATIONS

1. Always check incoming line voltage power supply and secondary control voltage for adequacy. Transformer primaries are dual tapped for 208 and 230 volts. Connect the appropriate tap to ensure a minimum of 18 volts secondary control voltage. 24 volts is ideal for best operation.
2. Long length thermostat and control wiring leads may create voltage drop. Increase wire gauge or up-size transformers may be required to insure minimum secondary voltage supply.
3. FHP recommends the following guidelines for wiring between a thermostat and the unit: 18 GA up to 60 foot, 16 GA up to 100 ft and 14 GA up to 140 ft.
4. Do not apply additional controlled devices to the control circuit power supply without consulting the factory. Doing so may void equipment warranties.
5. Check with all code authorities on requirements involving condensate disposal/over flow protection criteria.

SEQUENCE OF OPERATION

Cooling Mode

See Typical Wiring Diagram page 24. Energizing the "O" terminal energizes the unit reversing valve in the cooling mode. The fan motor starts when the "G" terminal is energized.

When the thermostat calls for cooling (Y), the loop pump or solenoid valve if present is energized and compressor will start.

Once the thermostat is satisfied, the compressor shuts down accordingly and the fan ramps down to either fan only mode or off over a span of 30 seconds (ECM Motors).

Note that a fault condition initiating a lockout will de-energize the compressor.

Heating Mode

Heating operates in the same manner as cooling, but with the reversing valve de-energized. The compressor will run until the desired setpoint temperature on the thermostat is achieved.

Once the thermostat is satisfied, the compressor shuts down and the fan ramps down in either fan only mode or

turns off over a span of 30 seconds. Auxiliary electric heating coils are not available on the AP product line.

UNIT OPTIONS

HOT GAS REHEAT (HGR)

Hot gas reheat allows the user to not only control space temperature, but also humidity levels within the conditioned space. An excess of moisture in the space can allow mold growth leading to damage in the structure or interior surfaces as well as reducing the air quality and creating an unhealthy environment.

The typical control of a unit is by a thermostat that senses the temperature in the space. By utilizing a humidistat in addition to the thermostat we are able to monitor the humidity levels in the space as well. The HGR option allows cooling and dehumidification to satisfy both the thermostat and humidistat.

PIPING:

Supply and return piping must be as large as the unit connections on the heat pump (larger on long runs). Never use flexible hoses of a smaller inside diameter than that of the water connections on the unit. EC Units are supplied with either a copper or optional cupro-nickel condenser. Copper is adequate for ground water that is not high in mineral content. Should your well driller express concern regarding the quality of the well water available or should any known hazards exist in your area, we recommend proper testing to assure the well water quality is suitable for use with water source equipment. In conditions anticipating moderate scale formation or in brackish water a cupro-nickel heat exchanger is recommended.

Both the supply and discharge water lines will sweat if subjected to low water temperature. These lines should be insulated to prevent damage from condensation.

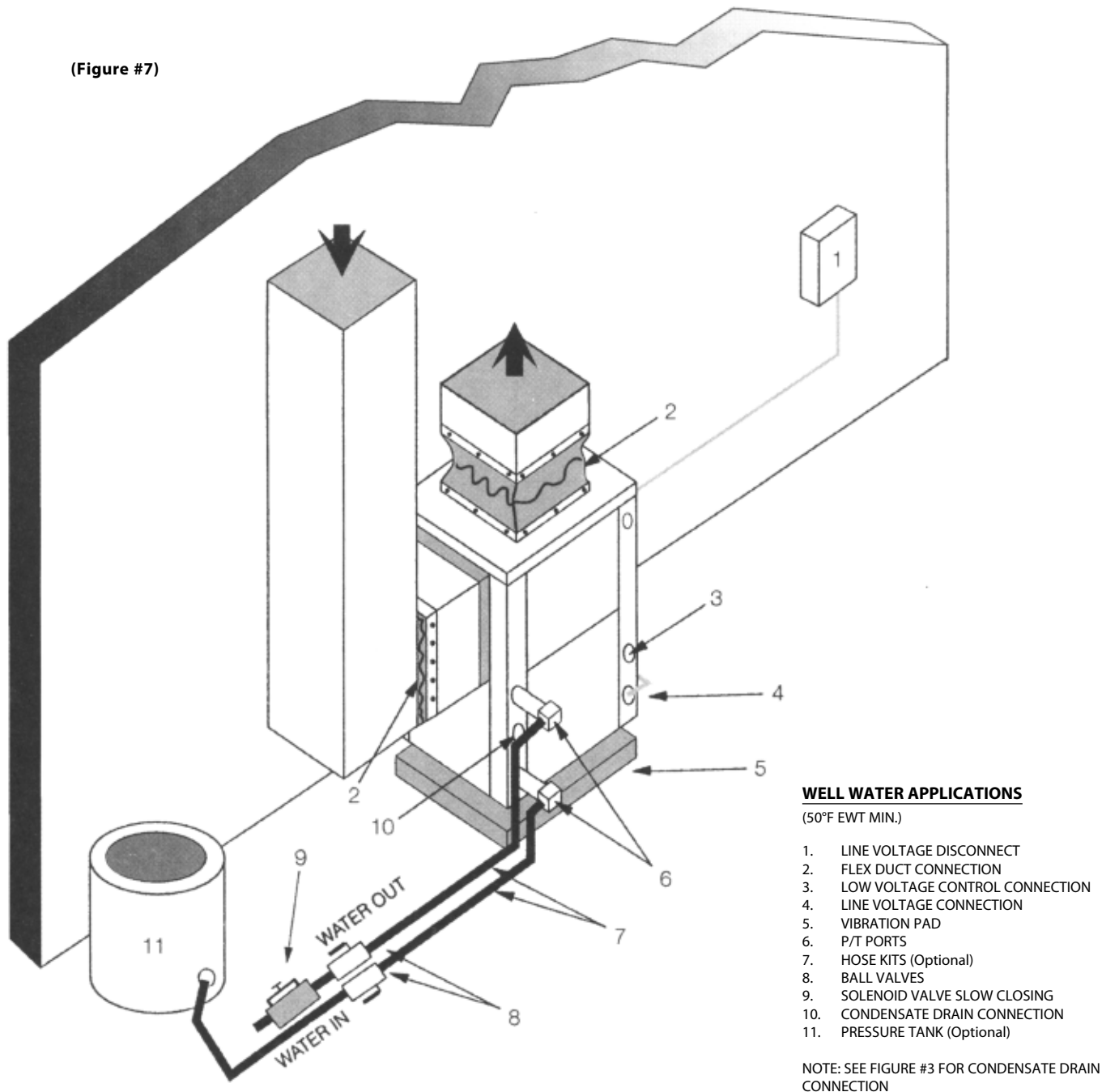
All manual flow valves used in the system must be ball valves. Globe and gate valves must not be used due to high pressure drop and poor throttling characteristics. Never exceed the recommended water flow rates. Serious damage or erosion of the water to refrigerant heat exchanger could occur.

Always check carefully for water leaks and repair appropriately. Units are equipped with female pipe thread fittings. Consult the specification sheets for sizes. Teflon tape sealer should be used when connecting water piping connections to the units to insure against leaks and possible heat exchanger fouling. Do not overtighten the connections. Flexible hoses should be used between the unit and the rigid system to avoid possible vibration. Ball valves should be installed in the supply and return lines for unit isolation and unit water flow balancing.

Pressure/temperature ports are recommended in both the supply and return lines for system flow balancing. The water flow can be accurately set by measuring the water-to-refrigerant heat exchangers water side pressure drop. See the unit specification sheets for the water flow and pressure drop information.

CAUTION: Water piping exposed to extreme, low ambient temperatures is subject to freezing.

(Figure #7)

**WELL WATER SYSTEMS: (50° F EWT Min.)**

(Figure #7)

When a water well is used exclusively for supplying water to the heat pump, the pump should operate only when the heat pump operates. A 24 volt, double pole single throw (DP/ST) contactor can be used to operate the well pump with the heat pump.

When two or more units are supplied from one well, the pump can be wired to operate independently from either

unit. Two 24-volt double pole single throw relays wired in parallel are required. An upsized VA transformer may be required in either case.

The discharge water from the heat pump is not contaminated in any manner and can be disposed of in various ways depending on local codes (i.e. discharge well, dry well, storm sewer, drain field, stream, pond, etc.)

COOLING TOWER / BOILER APPLICATION:

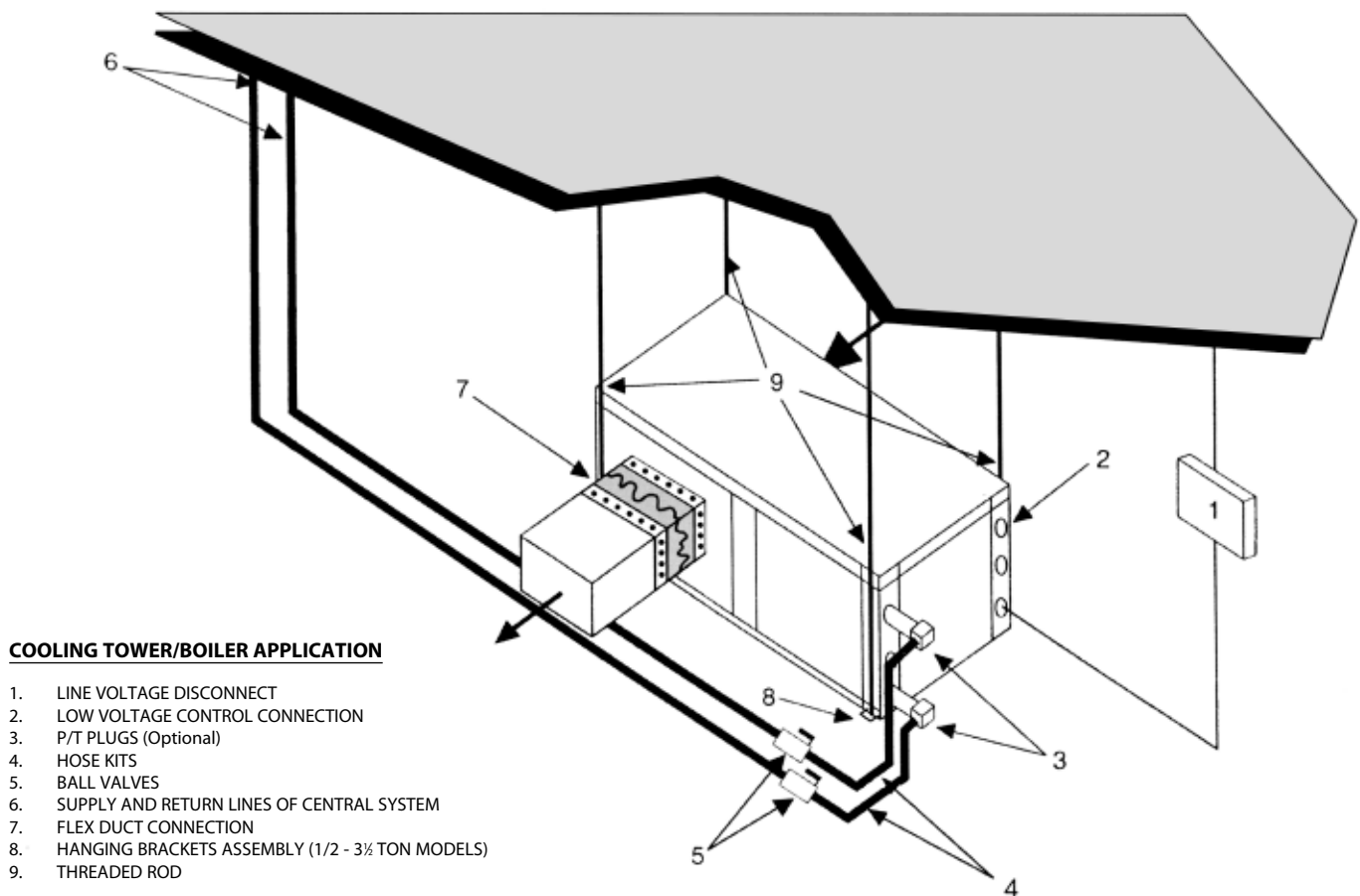
(Figure #8)

To assure adequate cooling and heating performance, the cooling tower and boiler water loop temperature should be maintained between 50°F to 75°F in the heating mode and 60°F to 110°F in the cooling mode. In the cooling mode, heat is rejected from the unit into the water loop. A cooling tower provides evaporative cooling to the loop fluid; thus, maintaining a constant supply temperature to the unit. When utilizing an open cooling tower, chemical water treatment is mandatory to ensure the water is free of corrosive materials.

A secondary heat exchanger (plate frame between the unit and the open cooling tower) may also be used. It is imperative that all air is eliminated from the closed loop side of the heat exchanger to prevent condenser fouling.

In the heating mode, heat is absorbed from the water loop to the unit. A boiler can be utilized to maintain the loop within the proper temperature range.

No unit should be connected to the supply or return piping until the water system has been completely cleaned and flushed to remove dirt, piping chips or other foreign material. Supply and return hoses should be connected together during this process to ensure the entire system is properly flushed. After the cleaning and flushing has taken place the unit may be connected to the water loop and should have all valves wide open.

Figure #8

NOTE: SEE FIGURE #3 FOR CONDENSATE DRAIN CONNECTION

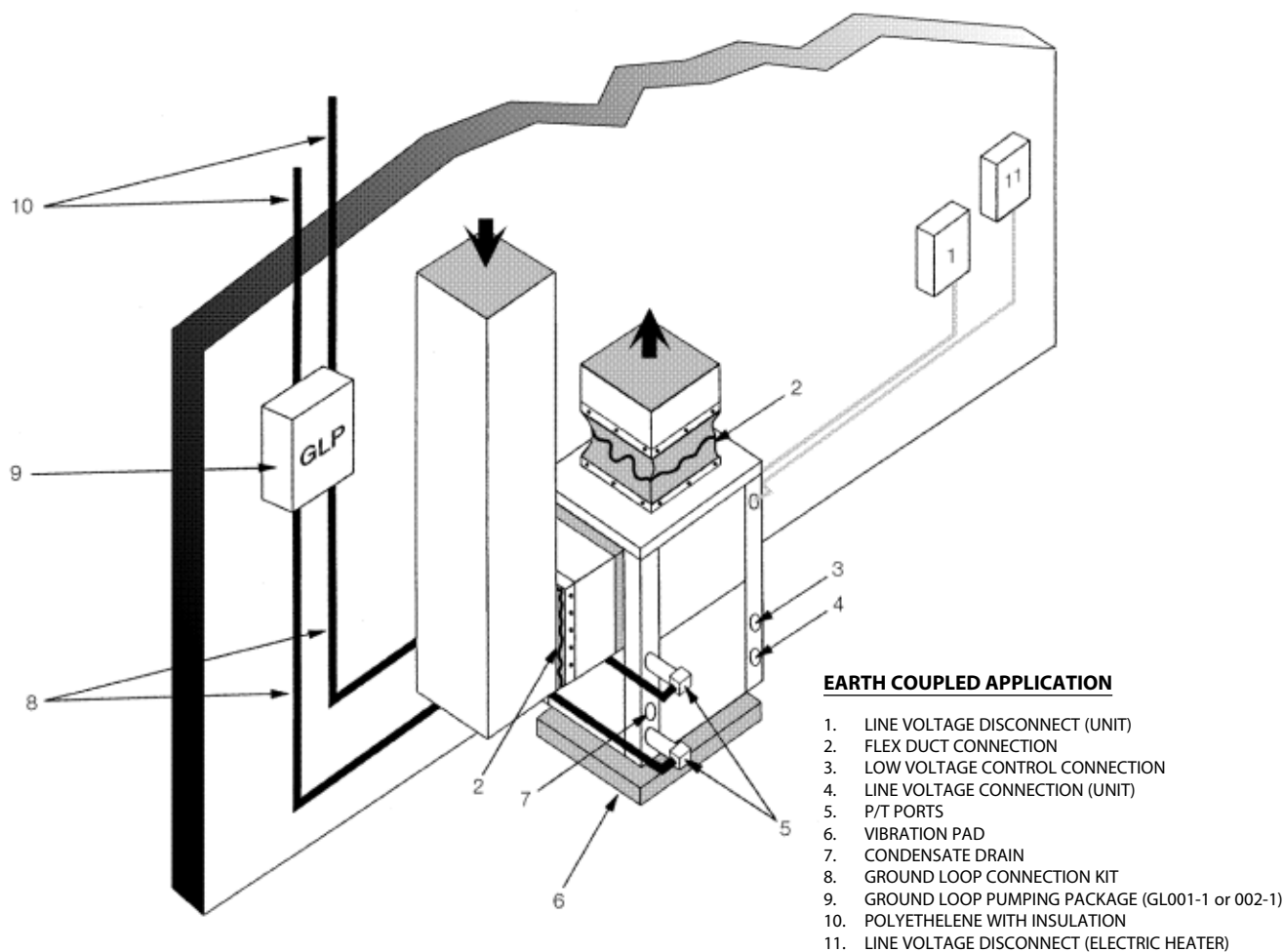
EARTH COUPLED SYSTEMS: (Figure #9)

Operation of an EC Series unit on a closed loop application requires the extended range option.

NOTE: Closed loop and pond applications require specialized design knowledge. No attempt at these installations should be made unless the dealer has received specialized training.

Utilizing Ground Loop Pumping Package (GLP), makes the installation easy. Anti-freeze solutions must be utilized when low evaporating conditions are expected to occur. Refer to the installation manuals for more specific instructions.

Figure #9



NOTE: SEE FIGURE #3 FOR CONDENSATE DRAIN CONNECTION

IN-WARRANTY MATERIAL RETURN:

When contacting your representative for service or replacement parts, refer to the model and serial number of the unit as stamped on the data plate attached to the unit.

All warranty material returned to the factory for credit must be accompanied by a material return material tag. Enter the information as called for on the tag in order to expedite handling and insure prompt issuance of credits.

Freight charges for all items returned to the factory shall be prepaid. The return of the part does not constitute an order for a replacement. Therefore, a purchase order must be entered through your nearest representative. The order shall include the part number, model number, and serial number of the unit involved. If the part is within the warranty period, and after our inspection of the returned part proves that the failure is due to faulty material or workmanship a credit or replacement part will be issued.

All warranty parts shall be returned freight prepaid to:

FHP Manufacturing Company
601 N.W. 65TH Court • Fort Lauderdale, FL 33309

SYSTEM CHECKOUT:

- After completing the installation, and before energizing the unit, the following system checks should be made:
- Verify that the supply voltage to the heat pump is in accordance with the nameplate ratings.
- Make sure that all electrical connections are tight and secure.
- Check the electrical fusing and wiring for the correct size.
- Verify that the low voltage wiring between the thermostat and the unit is correct.
- Verify that the water piping is complete and correct.
- Check that the water flow is correct, and adjust if necessary.
- Check the blower for free rotation, and that it is secured to the shaft.
- Verify that vibration isolation has been provided.
- Unit is serviceable. Be certain that all access panels are secured in place.

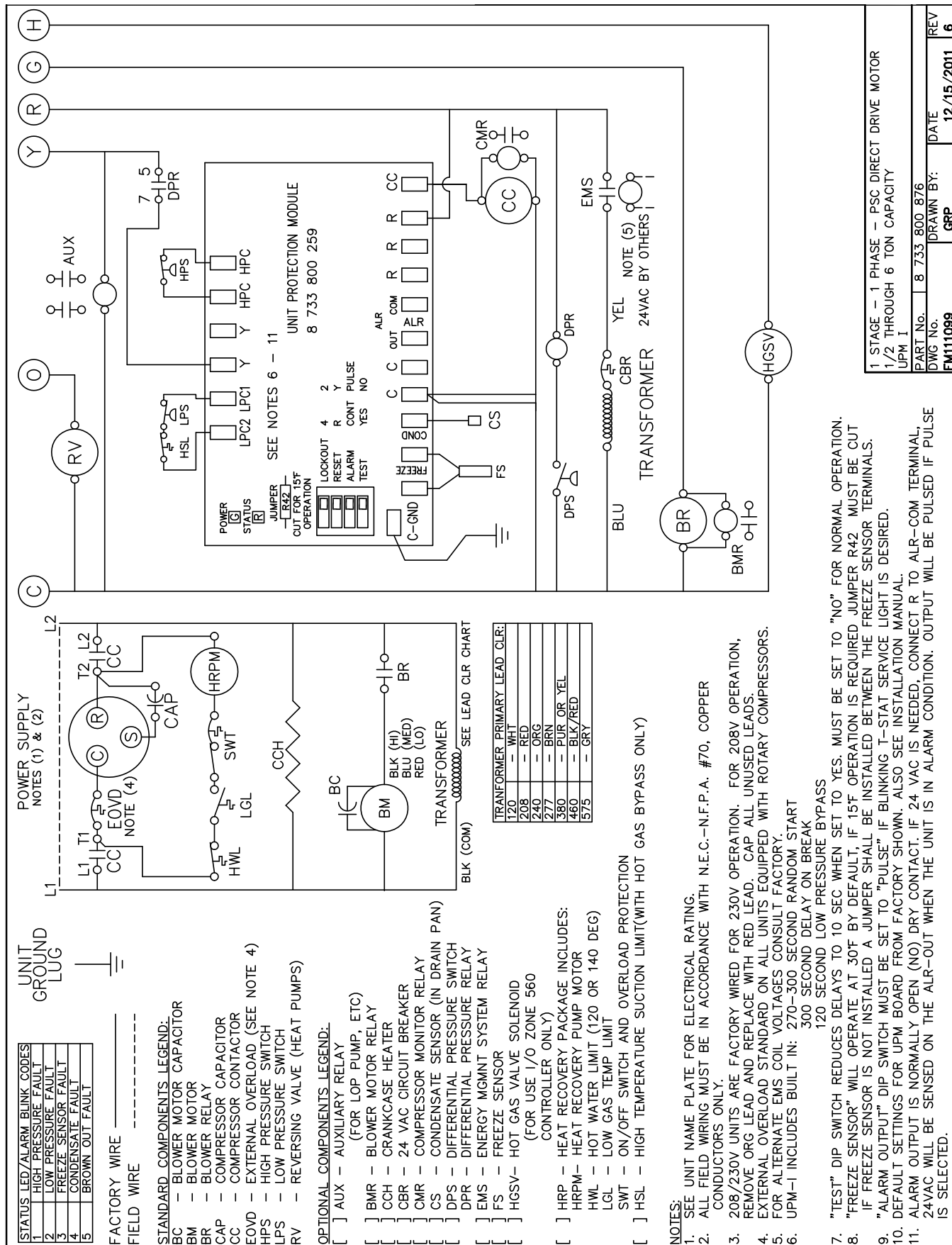
UNIT START-UP:

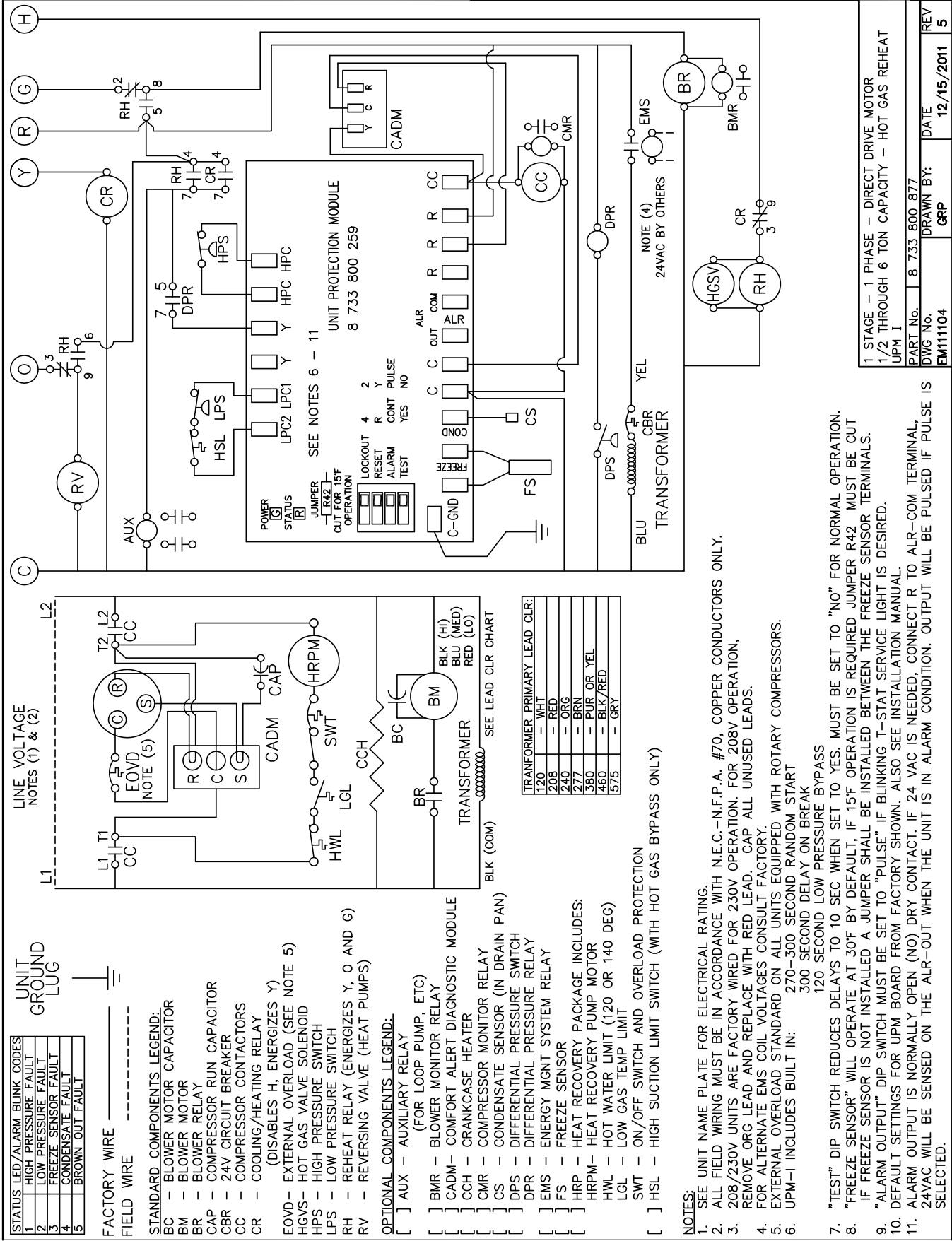
1. Set the thermostat to the highest setting.
2. Set the thermostat system switch to "COOL", and the fan switch to the "AUTO" position. The reversing valve solenoid should energize. The compressor and fan should not run.
3. Reduce the thermostat setting approximately 5 degrees below the room temperature.

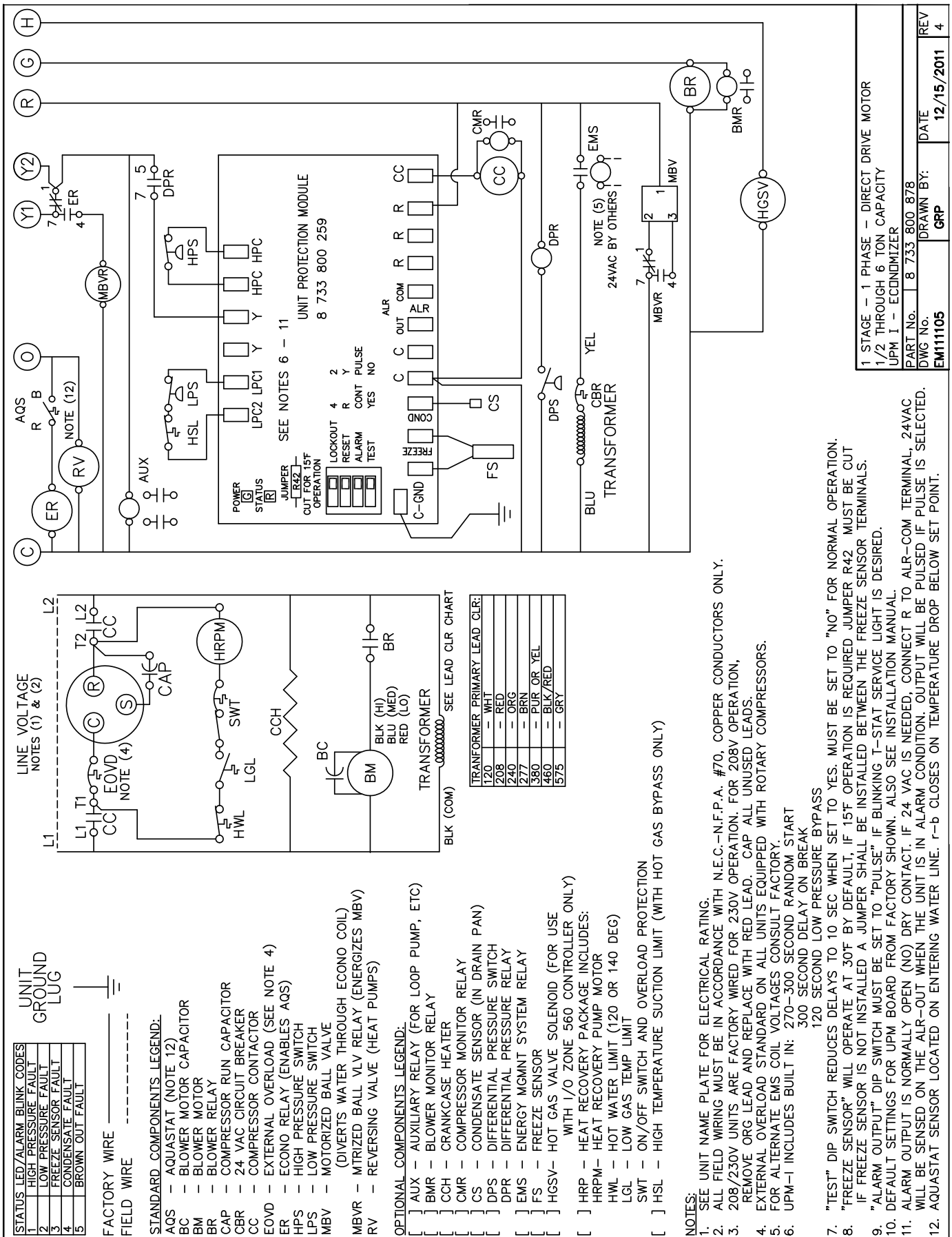
4. Verify the heat pump is operating in the cooling mode.
5. Turn the thermostat system switch to the "OFF" position. The unit should stop running and the reversing valve should deenergize.
6. Leave the unit off for approximately (5) minutes to allow for system equalization.
7. Turn the thermostat to the lowest setting.
8. Set the thermostat switch to "HEAT".
9. Increase the thermostat setting approximately 5 degrees above the room temperature.
10. Verify the heat pump is operating in the heating mode.
11. Set the thermostat to maintain the desired space temperature.
12. Check for vibrations, leaks, etc...
13. Instruct the owner on the unit and thermostat operation.

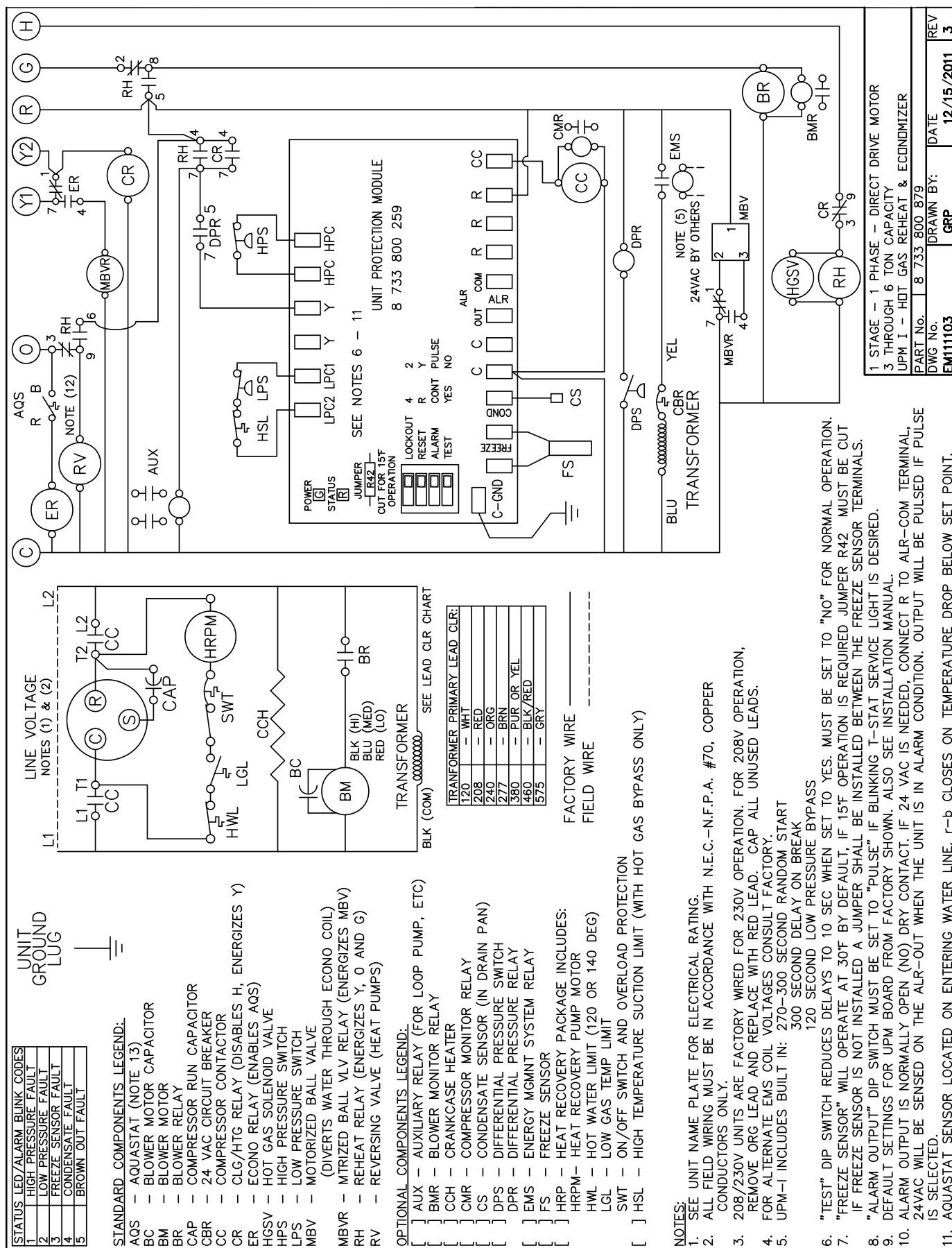
MAINTENANCE:

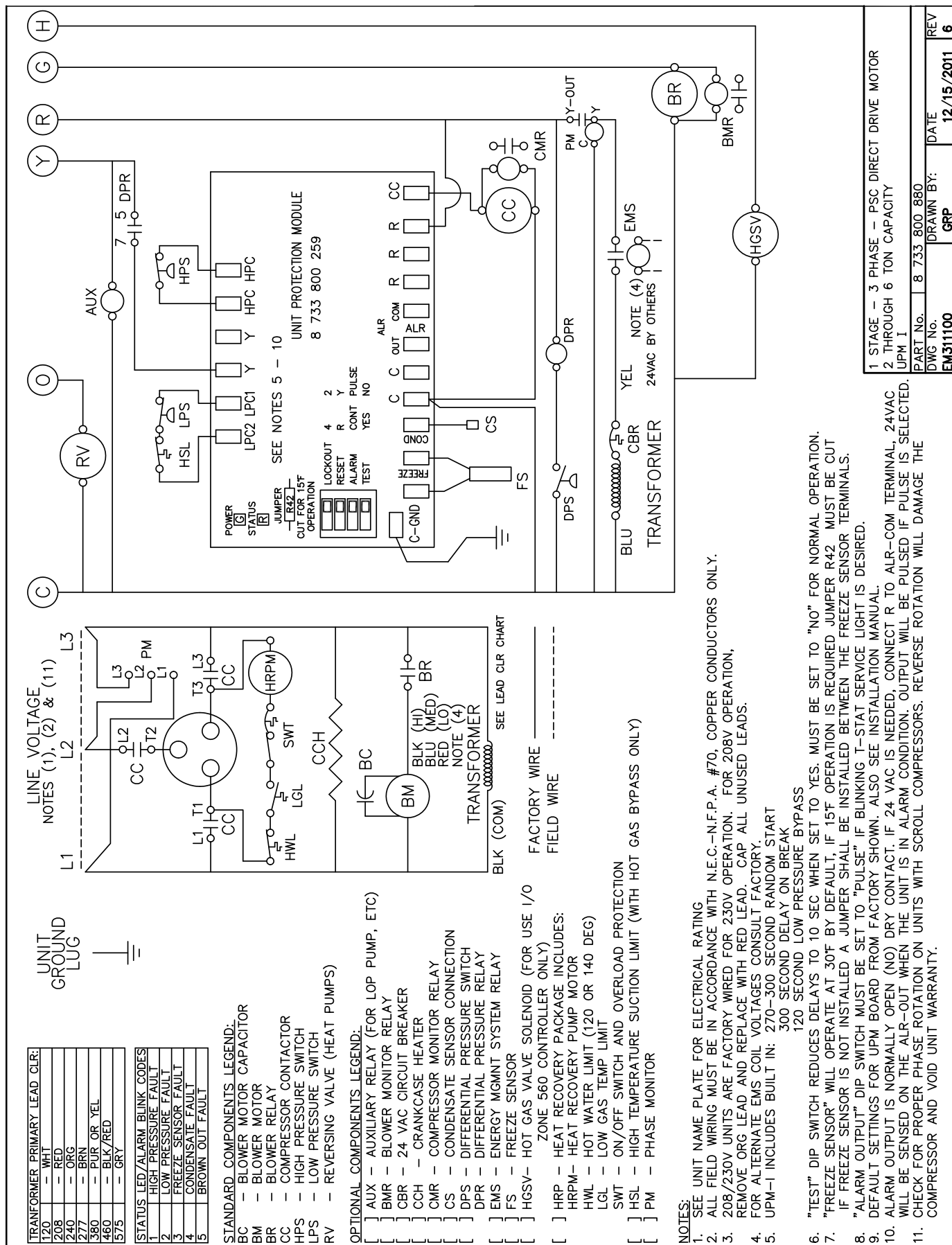
1. Filter changes or cleanings are required at regular intervals. The time period between filter changes will depend upon type of environment the equipment is used in. In a single family home, that is not under construction, changing or cleaning the filter every 60 days is sufficient. In other applications, such as motels, where daily vacuuming produces a large amount of lint, filter changes may need to be as frequent as biweekly.
2. An annual "checkup" is recommended by a licensed refrigeration mechanic. Recording the performance measurements of volts, amps, and water temperature differences (both heating and cooling) is recommended. This data should be compared to the information on the unit's data plate and the data taken at the original startup of the equipment.
3. Lubrication of the blower motor is not required, however, may be performed on some motors to extend motor life. Use SAE-20 non-detergent electric motor oil.
4. The condensate drain should be checked annually by cleaning and flushing to insure proper drainage.
5. Periodic lockouts almost always are caused by air or water flow problems. The lockout (shutdown) of the unit is a normal protective measure in the design of the equipment. If continual lockouts occur call a mechanic immediately and have them check for: water flow problems, water temperature problems, air flow problems or air temperature problems. Use of the pressure and temperature charts for the unit may be required to properly determine the cause.

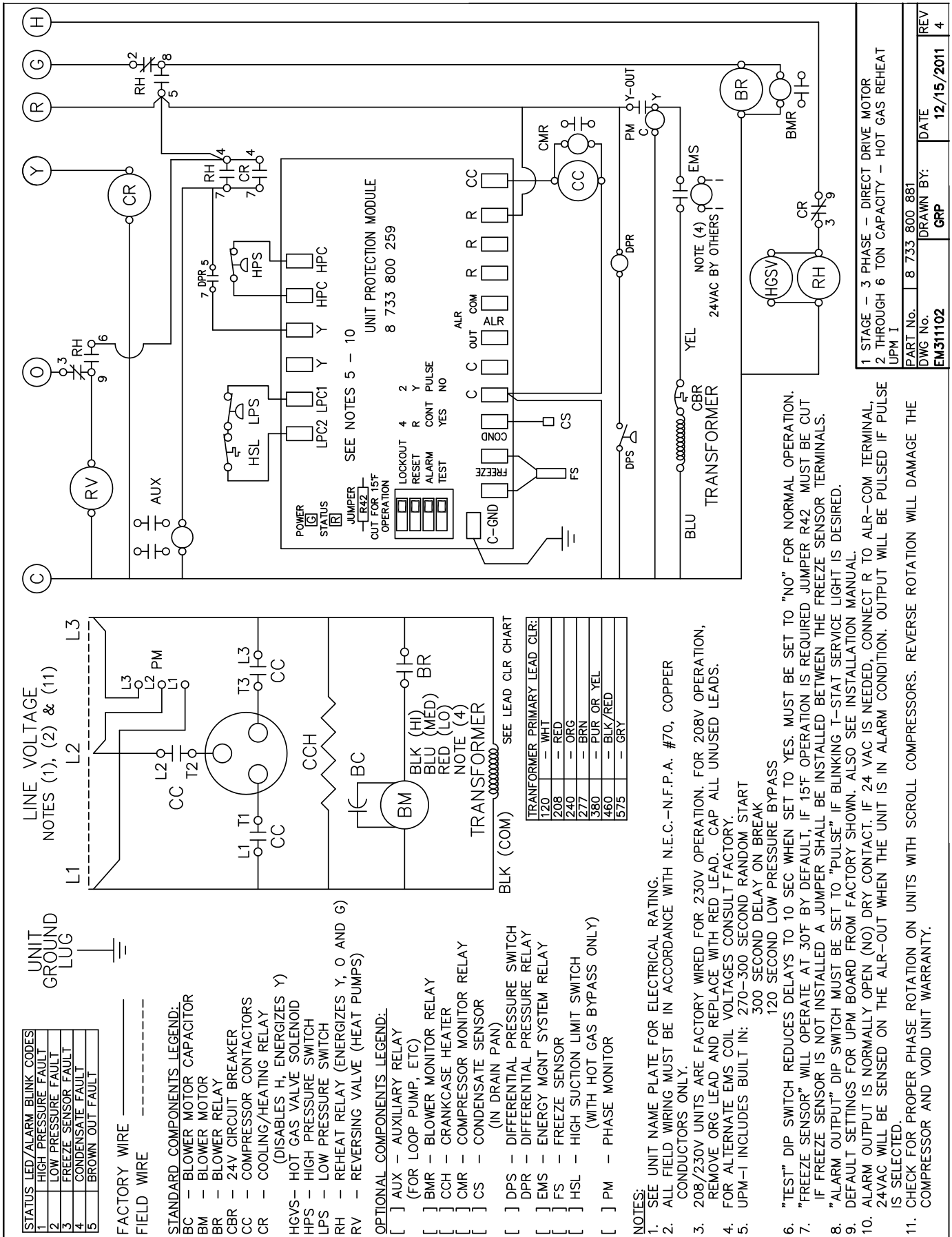












	STATUS LED/ALARM BLINK CODES
1	HIGH PRESSURE FAULT
2	LOW PRESSURE FAULT
3	FREEZE SENSOR FAULT
4	CONDENSATE FAULT
5	BROWN OUT FAULT

FACTORY WIRE ———

FIELD WIRE - - - - -

STANDARD COMPONENTS LEGEND:

AQS	— AQUASTAT (NOTE 13)
BC	— BLOWER MOTOR CAPACITOR
BM	— BLOWER MOTOR
BR	— BLOWER RELAY
CCBR	— 24 VAC CIRCUIT BREAKER
CC	— COMPRESSOR CONTACTOR
EER	— ECONO RELAY (ENABLES AQS)
HPS	— HIGH PRESSURE SWITCH
LP	— LOW PRESSURE SWITCH
MBV	— MOTORIZED BALL VALVE

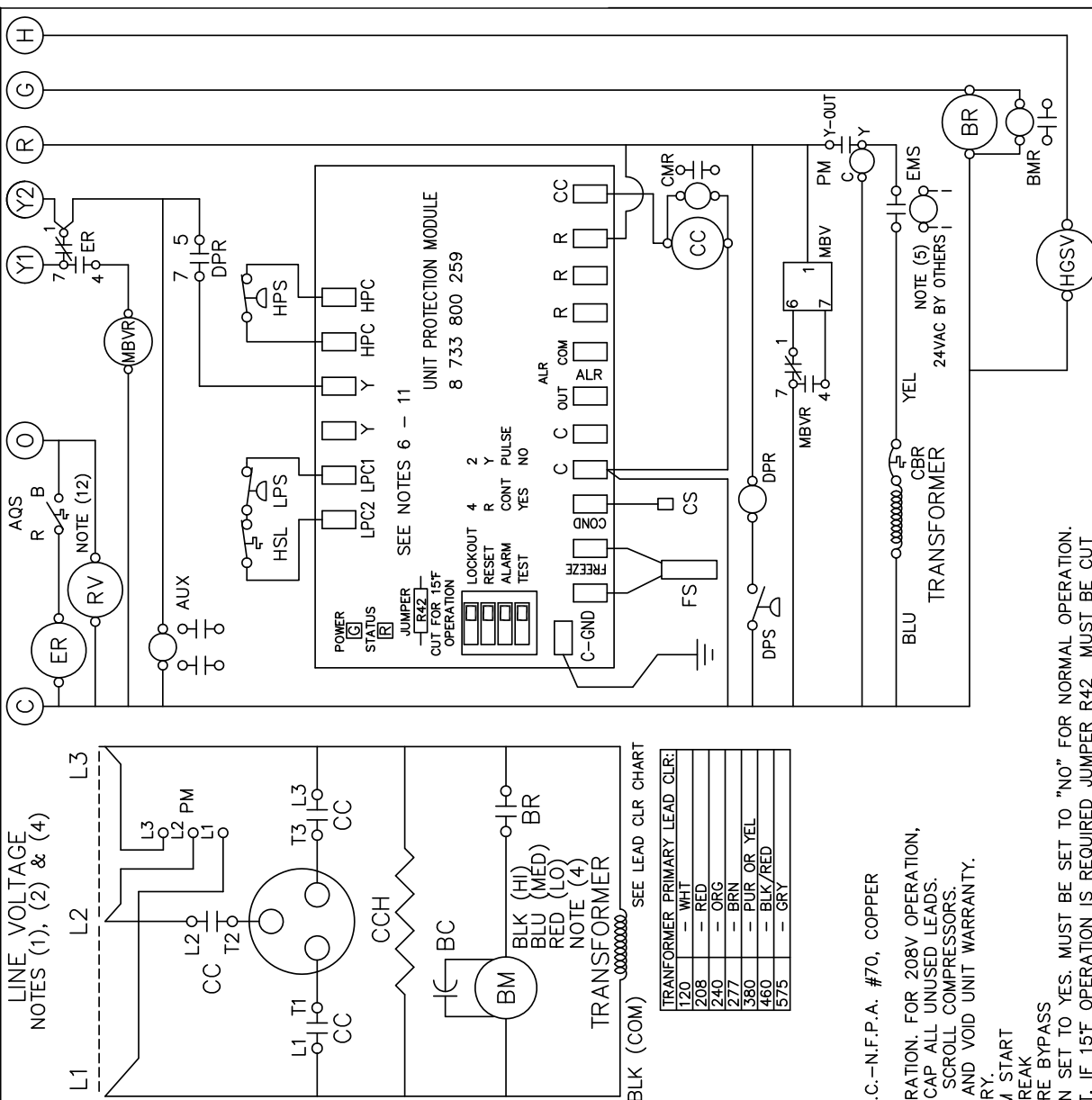
MBVR – MTRIZED BALL VLV RELAY (ENERGIZES MBV)
 RV – REVERSING VALVE (HEAT PUMPS)

OPTIONAL COMPONENTS LEGEND:

[]	AUX	-	AUXILIARY RELAY (FOR LOOP PUMP, ETC)
[]	BMR	-	BLOWER MONITOR RELAY
[]	CCH	-	CRANKCASE HEATER
[]	CMR	-	COMPRESSOR MONITOR RELAY
[]	CS	-	CONDENSATE SENSOR (IN DRAIN PAN)
[]	DPS	-	DIFFERENTIAL PRESSURE SWITCH
[]	DPR	-	DIFFERENTIAL PRESSURE RELAY
[]	EMS	-	ENERGY MGMT SYSTEM RELAY
[]	FS	-	FREEZE SENSOR
[]	HGSV	-	HOT GAS VALVE SOLENOID (FOR USE WITH I/O ZONE 560 CONTROLLER ONLY)
[]	HSL	-	HIGH TEMPERATURE SUCTION LIMIT (WITH HOT GAS BYPASS ONLY)
[]	PM	-	PHASE MONITOR

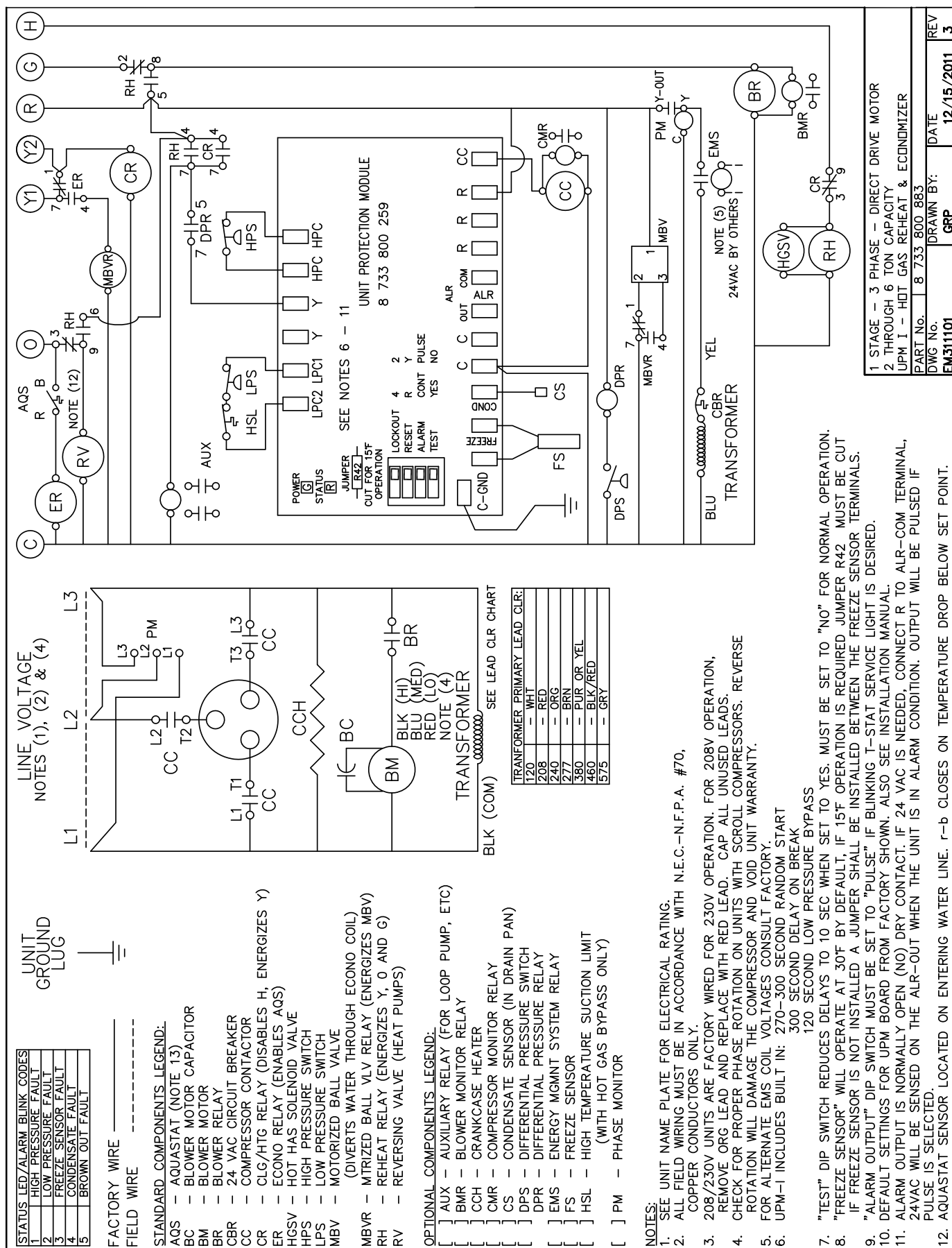
NOTES:

1. SEE UNIT NAME PLATE FOR ELECTRICAL RATING.
2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.-N.F.P.A. #70, COPPER CONDUCTORS ONLY.
3. 208/230V UNITS ARE FACTORY WIRED FOR 230V OPERATION. FOR 208V OPERATION, REMOVE ORG LEAD AND REPLACE WITH RED LEAD. CAP ALL UNUSED LEADS.
4. CHECK FOR PROPER PHASE ROTATION ON UNITS WITH SCROLL COMPRESSORS. REVERSE ROTATION WILL DAMAGE THE COMPRESSOR AND VOID UNIT WARRANTY.
5. FOR ALTERNATE EMS COIL VOLTAGES CONSULT FACTORY.
6. UPM-1 INCLUDES BUILT IN: 270-300 SECOND RANDOM START
300 SECOND DELAY ON BREAK
120 SECOND LOW PRESSURE BYPASS
7. "TEST" DIP SWITCH REDUCES DELAYS TO 10 SEC WHEN SET TO YES. MUST BE SET TO "NO".
8. "FREEZE SENSOR" WILL OPERATE AT 30°F BY DEFAULT, IF 15°F OPERATION IS REQUIRED, DIP SWITCH MUST BE SET TO YES.
9. IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING T-STAT SERVICE IS REQUIRED.
10. DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL FOR UPM BOARD SETTINGS.
11. ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONTACT 24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. PULSE IS SELECTED.
12. AQUASTAT SENSOR LOCATED ON ENTERING WATER LINE. r-b CLOSURE ON TEMPERATURE RISE.



TRANSFORMER	PRIMARY LEAD CLR:
120	- WHT
208	- RED
240	- ORG
277	- BRN
380	- PUR OR YEL
460	- BLK/RED
575	- GRN

1 STAGE - 3 PHASE - DIRECT DRIVE MOTOR	
2 THROUGH 6 TON CAPACITY	
UPM 1 - ECONOMIZER	
PART No.	8 733 800 882
DWG No.	103
DRAWN BY:	GRP
DATE	12/15/2011
REV	5



STATUS	LED/ALARM	BLINK CODES
1	HIGH PRESSURE	FAULT
2	LOW PRESSURE	FAULT
3	FREEZE SENSOR	FAULT
4	CONDENSATE	FAULT
5	BROWN OUT	FAULT

UNIT
GROUND
FLOOR

FACTORY WIRE _____

FIELD WIRE - - - - -

STANDARD COMPONENTS LEGEND:

- BC — BLOWER MOTOR CAPACITOR
- BM — BLOWER MOTOR
- BR — BLOWER RELAY
- CAP — COMPRESSOR CAPACITOR
- CC — COMPRESSOR CONTACTOR
- HPS — HIGH PRESSURE SWITCH
- LP — LOW PRESSURE SWITCH
- RV — REVERSING VALVE (HEAT PUMPS)

OPTIONAL COMPONENTS LEGEND:

[]	AUX	-	AUXILIARY RELAY (FOR LOOP PUMP, ETC)
[]	BMR	-	BLOWER MOTOR RELAY
[]	CBR	-	24 VAC CIRCUIT BREAKER
[]	CCH	-	CRANKCASE HEATER
[]	CMR	-	COMPRESSOR MONITOR RELAY
[]	CS	-	CONDENSATE SENSOR (IN DRAIN PAN)
[]	DPS	-	DIFFERENTIAL PRESSURE SWITCH
[]	DPR	-	DIFFERENTIAL PRESSURE RELAY
[]	EMS	-	ENERGY MGMT SYSTEM RELAY
[]	FS	-	FREEZE SENSOR
[]	HGSV	-	HOT GAS VALVE SOLENOID (FOR I/O ZONE 560 CONTROLLER C)
[]	HRP	-	HEAT RECOVERY PACKAGE INCL
[]	HRPM	-	HEAT RECOVERY PUMP MOTOR
[]	HWL	-	HOT WATER LIMIT (120 OR 140
[]	LGL	-	LOW GAS TEMP LIMIT
[]	SWT	-	ON/OFF SWITCH AND OVERLOAD
[]	HSL	-	HIGH TEMPERATURE SUCTION LINE (WITH HOT GAS BYPASS ONLY)

NOTES:

1. SEE UNIT NAME PLATE FOR ELECTRICAL RATING.

2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.—N.F.P.A. #70, COPPER CONDUCTORS ONLY.

3. 208/230V UNITS ARE FACTORY WIRE FOR 230V OPERATION. FOR 208V OPERATION, REMOVE ORG LEAD AND REPLACE WITH RED LEAD. CAP ALL UNUSED LEADS.

4. FOR ALTERNATE EMS COIL VOLTAGES CONSULT FACTORY:

5. UPM-I INCLUDES BUILT IN: 270-300 SECOND RANDOM START

300 SECOND DELAY ON BREAK

120 SECOND LOW PRESSURE BYPASS

6. "TEST" DIP SWITCH REDUCES DELAYS TO 10 SEC WHEN SET TO YES. MUST BE SET TO "NO" FOR NORMAL OPERATION.

7. "FREEZE SENSOR" WILL OPERATE AT 30°F BY DEFAULT, IF 15°F OPERATION IS REQUIRED JUMPER R42 MUST BE CUT

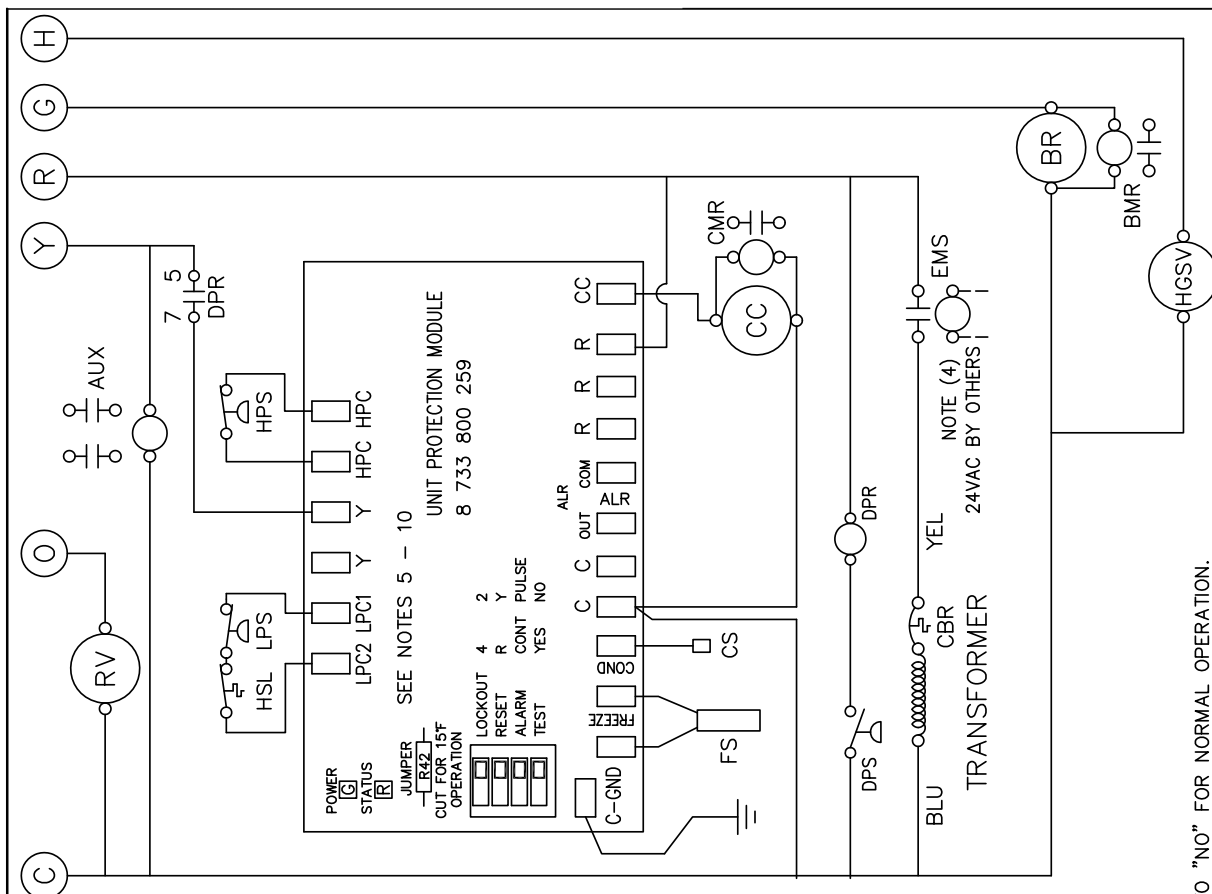
IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE FREEZE SENSOR TERMINALS.

8. "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING T-STAT SERVICE LIGHT IS DESIRED.

9. DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL.

10. ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONNECT R TO ALR-COM TERMINAL,

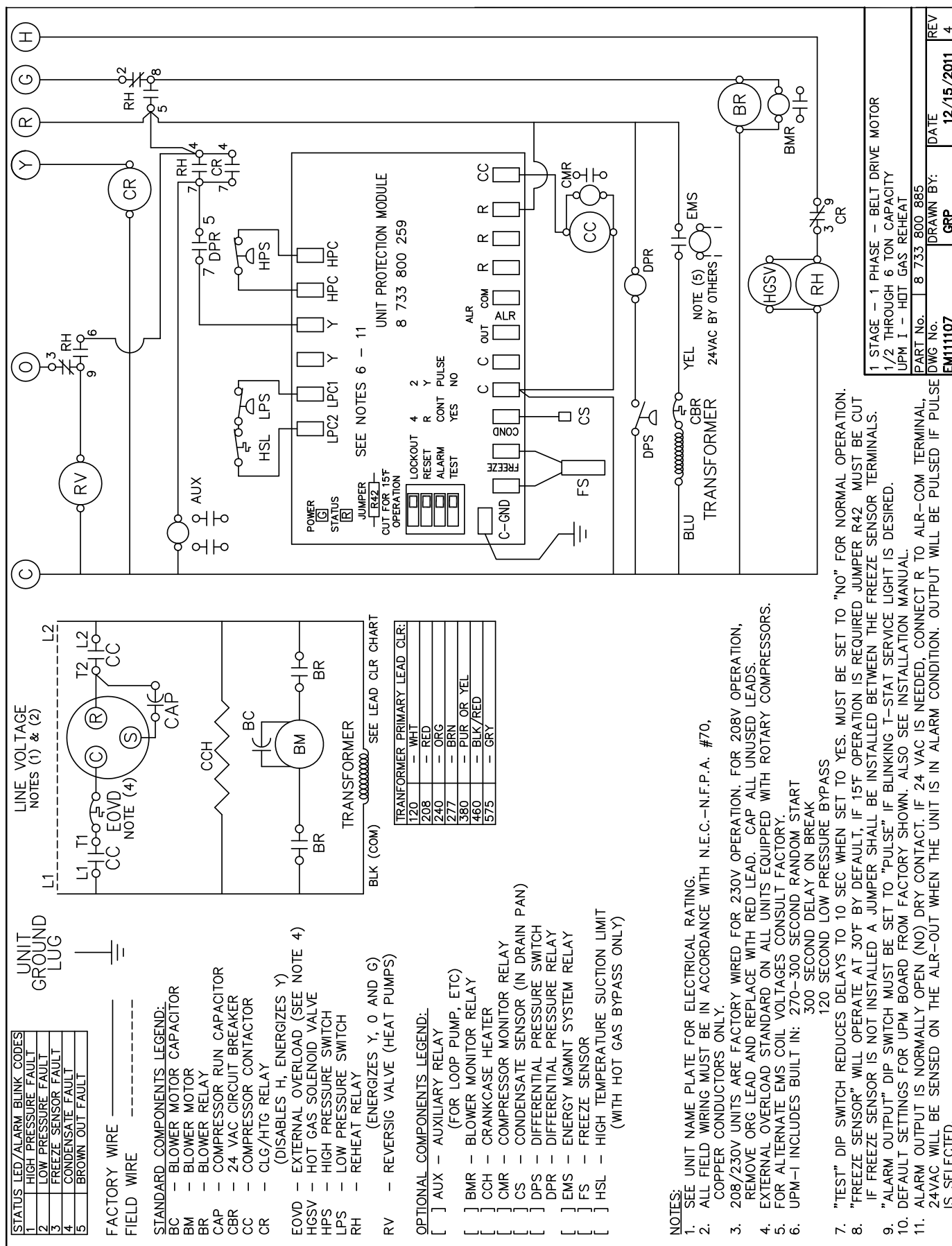
24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. OUTPUT WILL BE PULSED IF PULSE

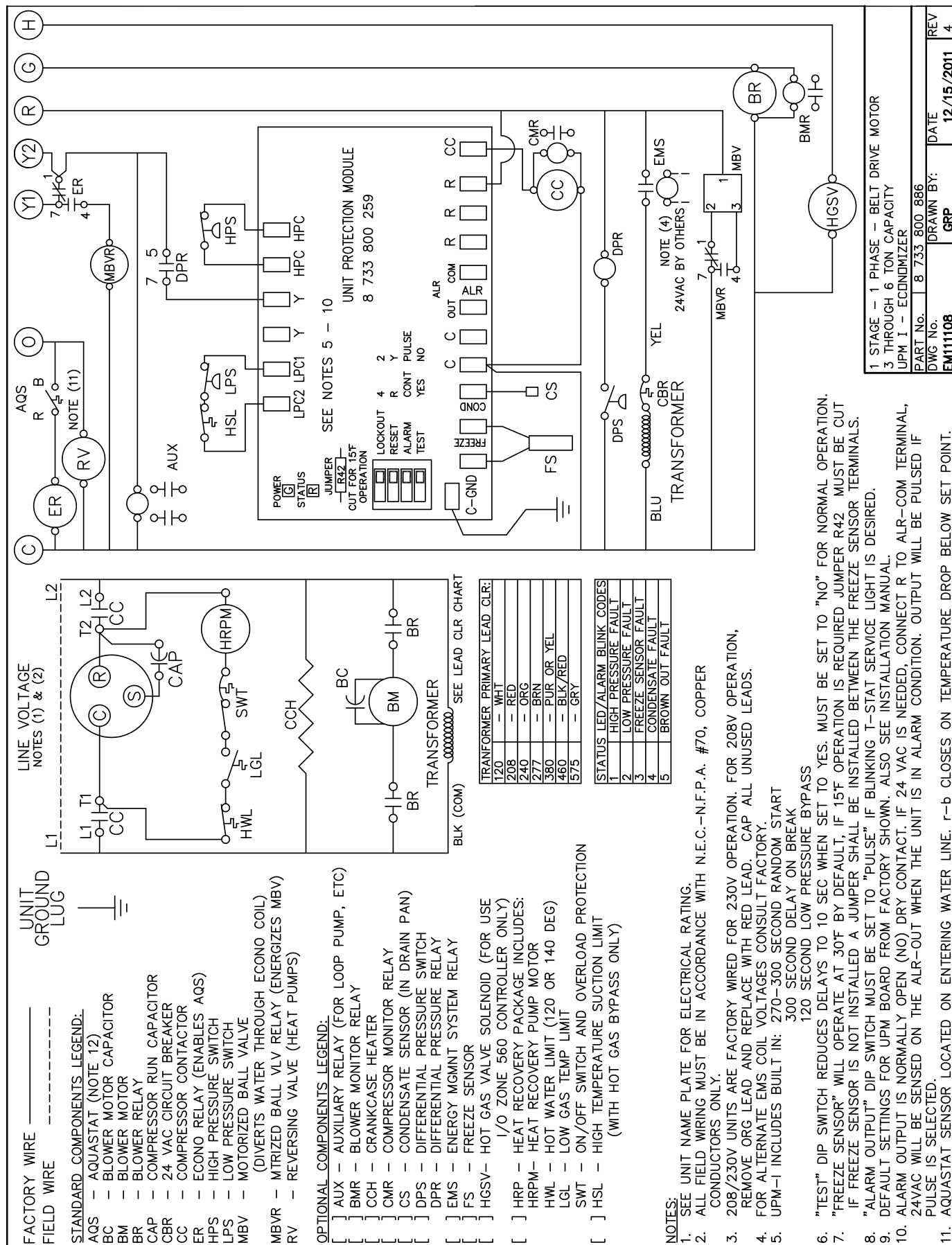


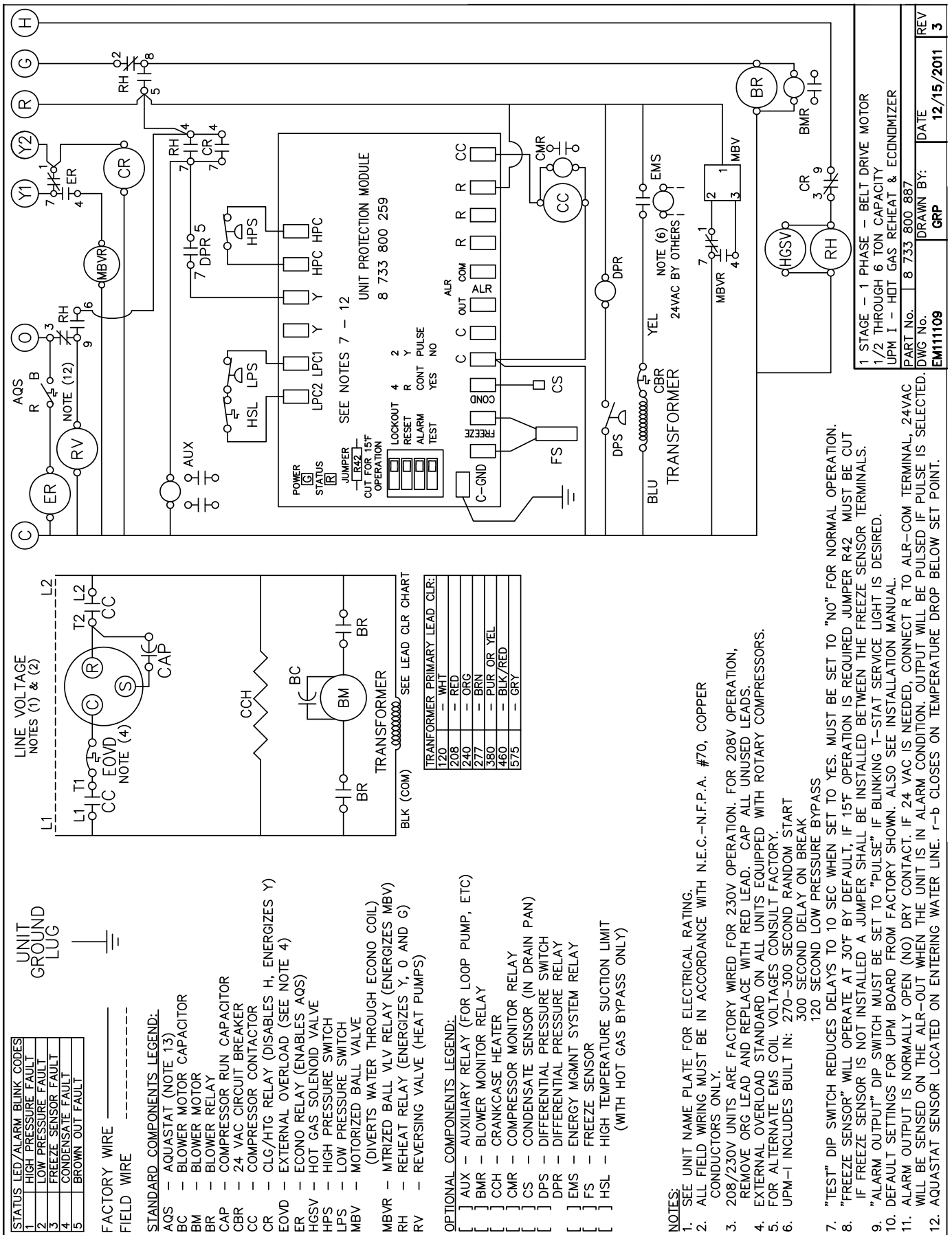
1 STAGE - 1 PHASE - BELT DRIVE MOTOR
3 THROUGH 6 TON CAPACITY
UPM I

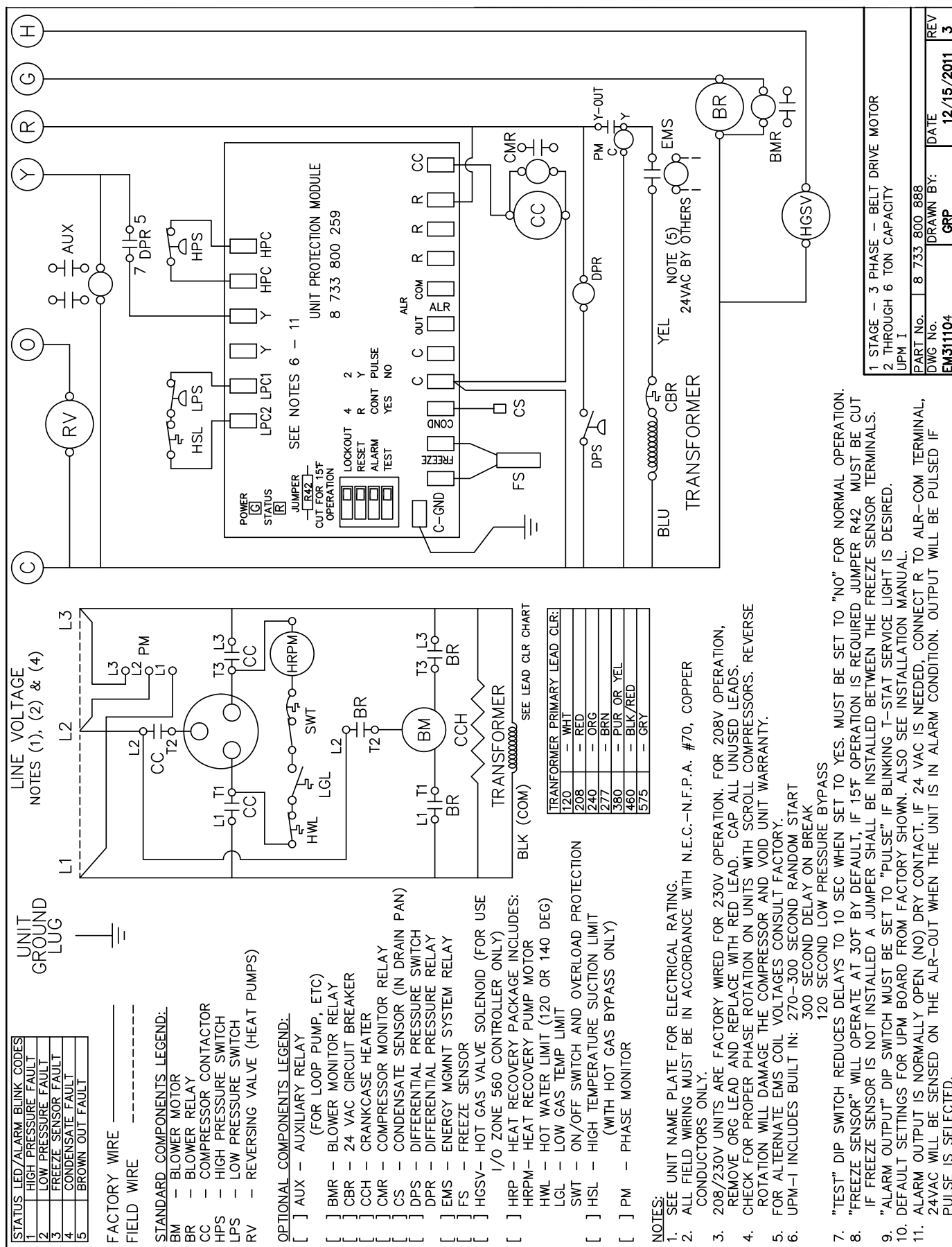
PART No.	8 733 800 884
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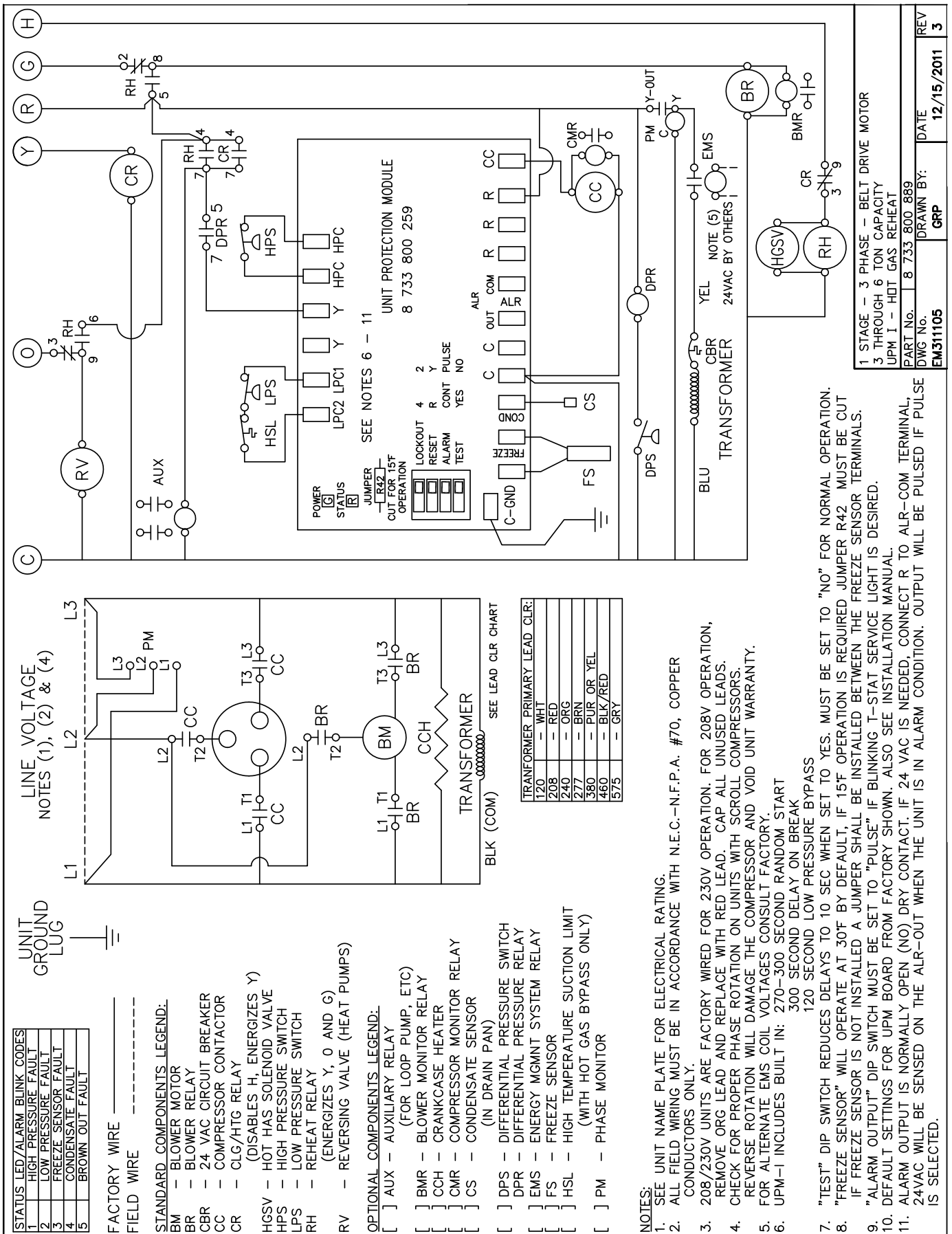
DATE	12/15/2011
DRAWN BY:	GRP
DWG No.	EM111106

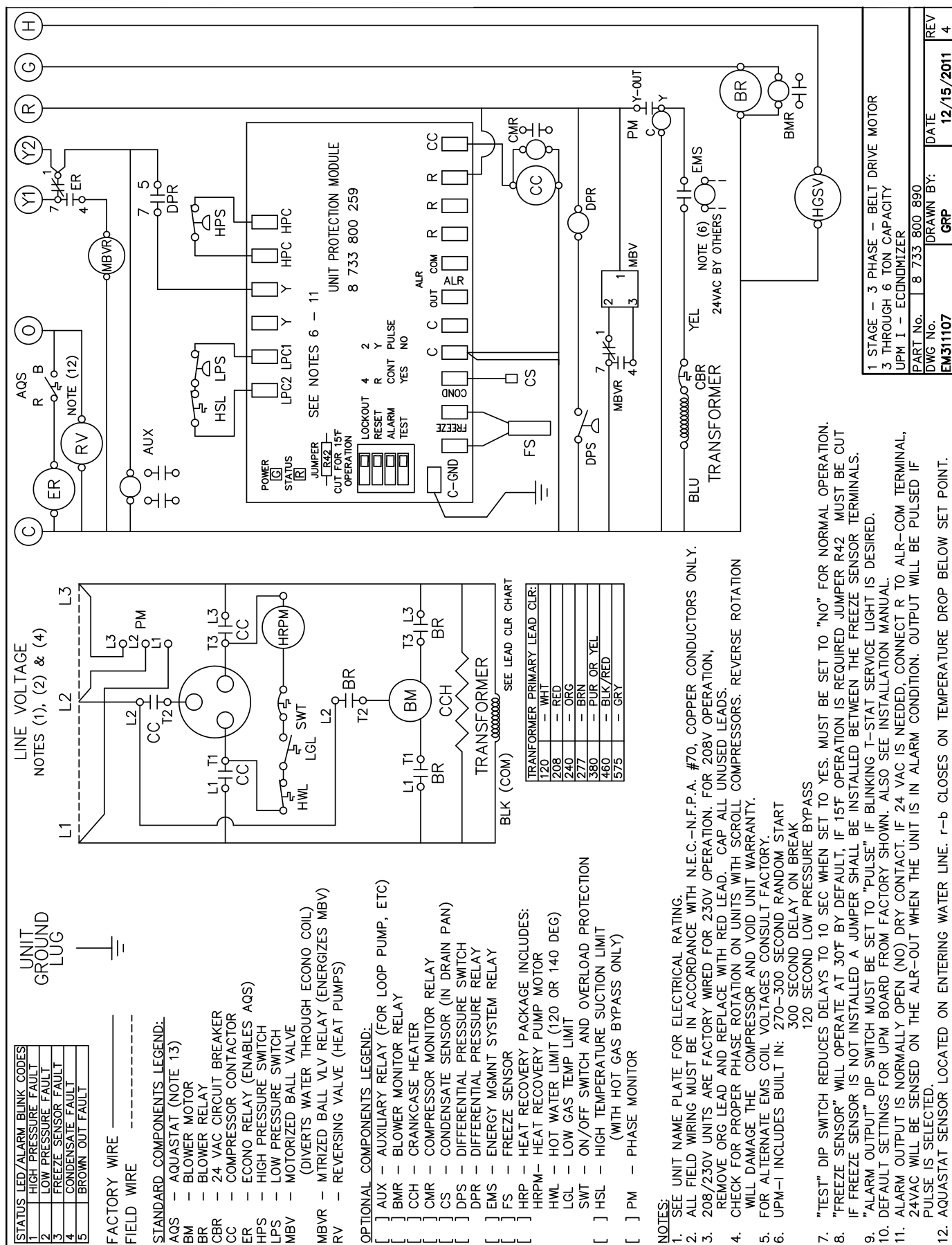








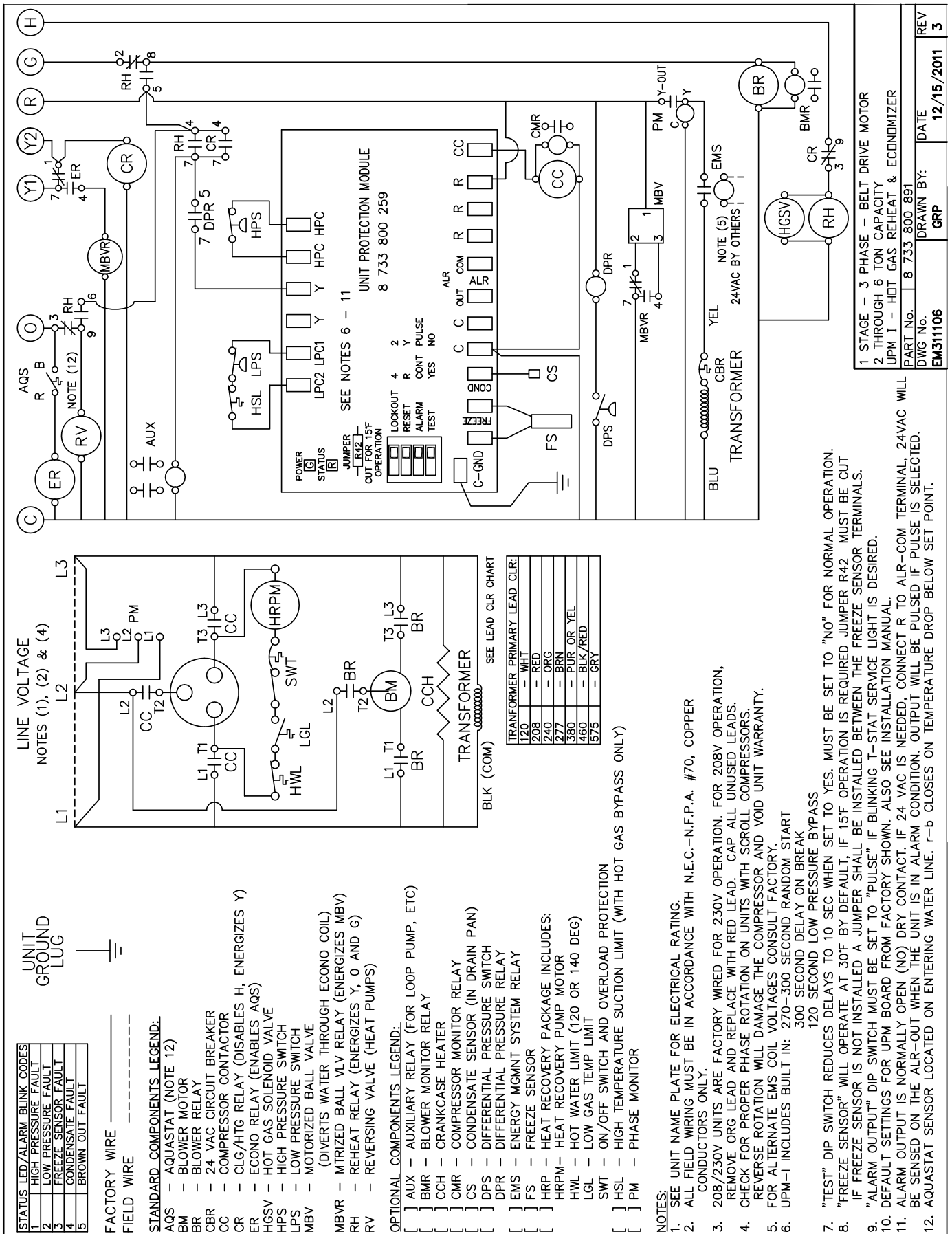


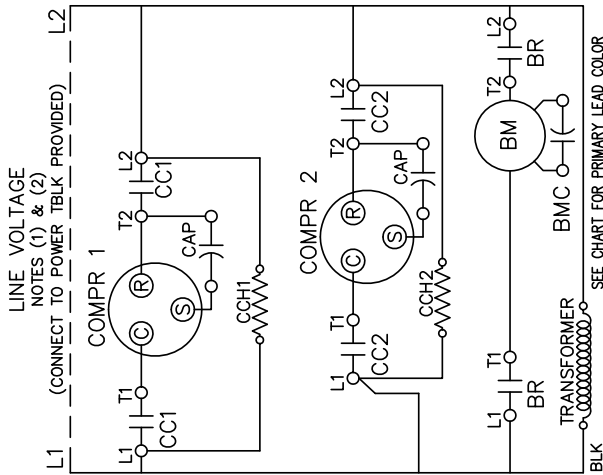
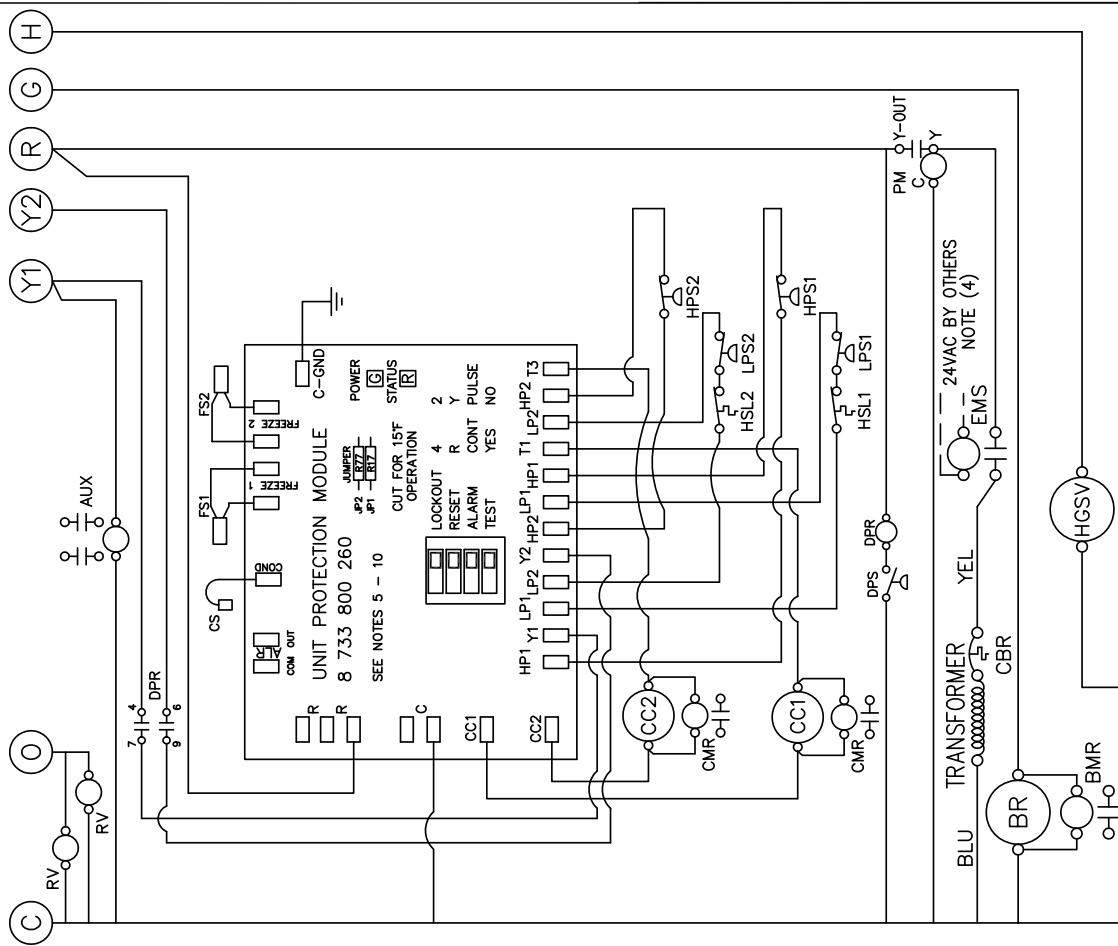


- NOTES:**
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 - CHECK FOR PROPER PHASE ROTATION ON UNITS WITH SCROLL COMPRESSORS. REVERSE ROTATION WILL DAMAGE THE COMPRESSOR AND VOID UNIT WARRANTY.
 - FOR ALTERNATE EMS COIL VOLTAGES CONSULT FACTORY.
 - UPM-1 INCLUDES BUILT IN: 270-300 SECOND RANDOM START
300 SECOND DELAY ON BREAK
120 SECOND LOW PRESSURE BYPASS
 - "TEST" DIP SWITCH REDUCES DELAYS TO 10 SEC WHEN SET TO YES. MUST BE SET TO "NO" FOR NORMAL OPERATION.
 - "FREEZE SENSOR" WILL OPERATE AT 30°F BY DEFAULT, IF 15°F OPERATION IS REQUIRED JUMPER R42 MUST BE CUT IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE FREEZE SENSOR TERMINALS.
 - "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING T-STAT SERVICE LIGHT IS DESIRED.
 - DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL.
 - ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONNECT R TO ALR-COM TERMINAL. 24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. OUTPUT WILL BE PULSED IF PULSE IS SELECTED.
 - AQUASTAT SENSOR LOCATED ON ENTERING WATER LINE. r-b CLOSING ON TEMPERATURE DROP BELOW SET POINT.

1 STAGE - 3 PHASE - BELT DRIVE MOTOR
 3 THROUGH 6 TON CAPACITY
 UPM I - ECONOMIZER

PART No.	DWG No.	DRAWN BY:	DATE	REV
8 733 800 890	EM311107	GRP	12/15/2011	4





STATUS LED/ALARM BLINK CODES
1 HIGH PRESSURE FAULT - CKT 1
2 LOW PRESSURE FAULT - CKT 1
3 HIGH PRESSURE FAULT - CKT 2
4 LOW PRESSURE FAULT - CKT 2
5 FREEZE SENSOR FAULT
6 CONDENSATE FAULT
7 BROWN OUT FAULT

TRANSFORMER PRIMARY LEAD CLR:
120 - WHT
208 - RED
240 - ORG
277 - BRN
380 - PUR OR YEL
460 - BLK/RED
575 - GRN

FACTORY WIRE
FIELD WIRE

UNIT
GROUND
LUG

STANDARD COMPONENTS LEGEND:

- #1 - FIRST STAGE
- #2 - SECOND STAGE
- BM - BLOWER MOTOR
- BMC - BLOWER MOTOR CAPACITOR
- BR - BLOWER RELAY
- CAP - COMPRESSOR CAPACITOR
- CBR - 24 VAC CIRCUIT BREAKER
- CC - COMPRESSOR CONTACTOR
- HPS - HIGH PRESSURE SWITCH
- LPS - LOW PRESSURE SWITCH
- RV - REVERSING VALVE (HEAT PUMPS ONLY)

OPTIONAL COMPONENTS LEGEND:

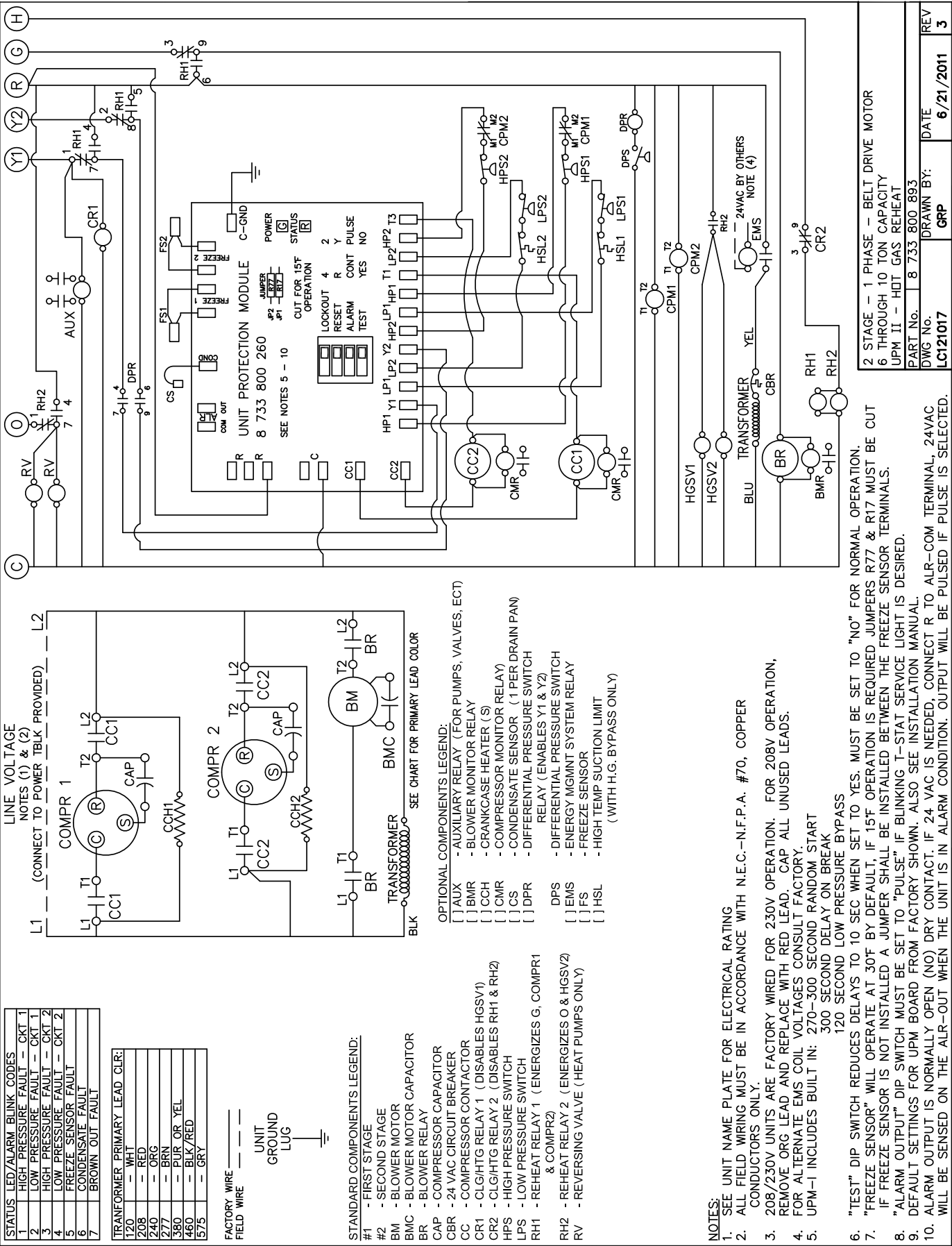
- [] AUX - AUXILIARY RELAY (FOR PUMPS, VALVES, ECT)
- [] BMR - BLOWER MOTOR RELAY
- [] CCH - CRANKCASE HEATER (S)
- [] CMR - COMPRESSOR MONITOR RELAY
- [] CS - CONDENSATE SENSOR (1 PER DRAIN PAN)
- [] DPR - DIFFERENTIAL PRESSURE SWITCH RELAY (ENABLES Y1 & Y2)
- [] DPS - DIFFERENTIAL PRESSURE SWITCH
- [] EMS - ENERGY MGMT SYSTEM RELAY
- [] FS - FREEZE SENSOR
- [] HGSV - HOT GAS SOLENOID VALVE (USED WITH FHP CONTROLLER ONLY)
- [] HSL - HIGH TEMP SUCTION LIMIT (WITH H.G. BYPASS ONLY)

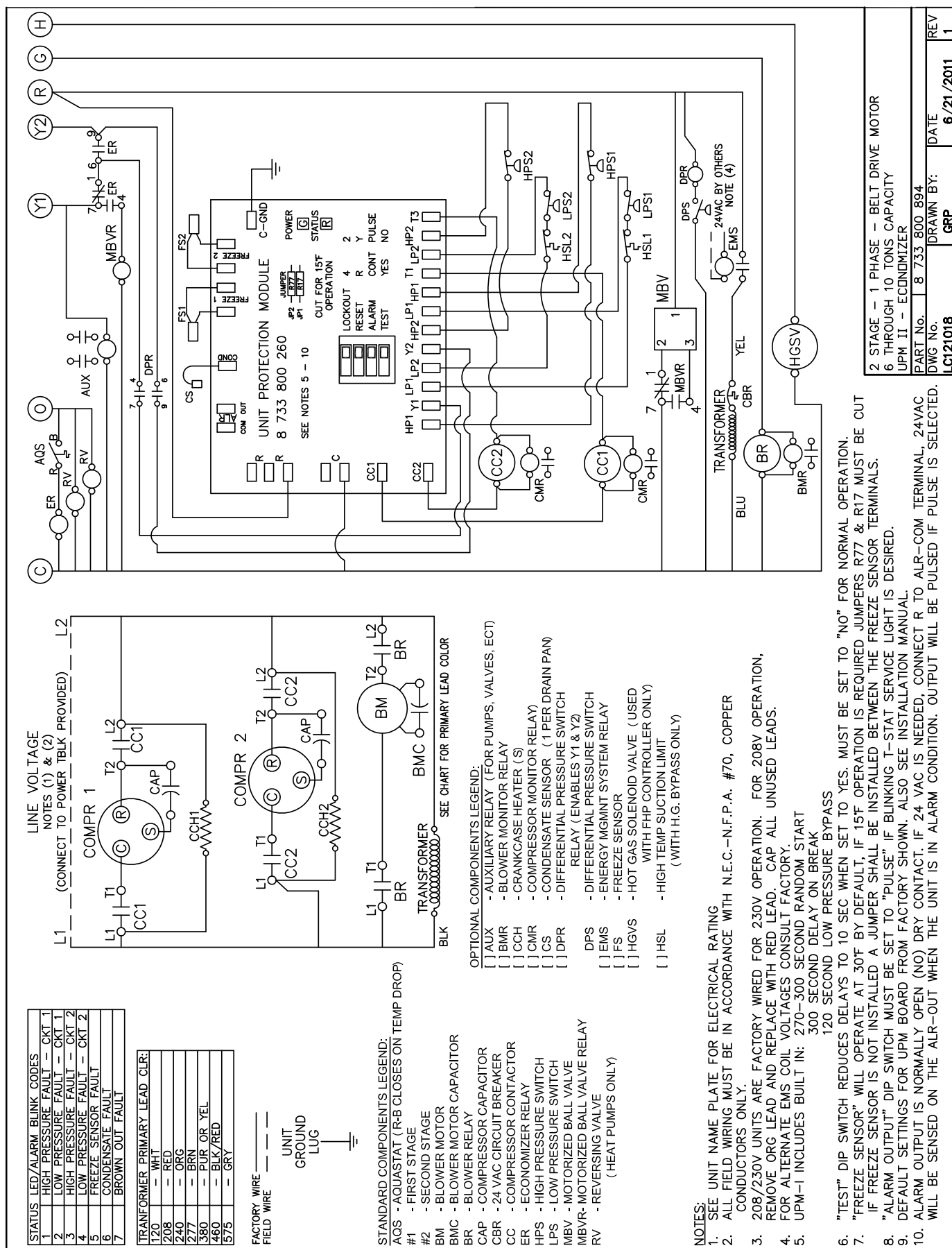
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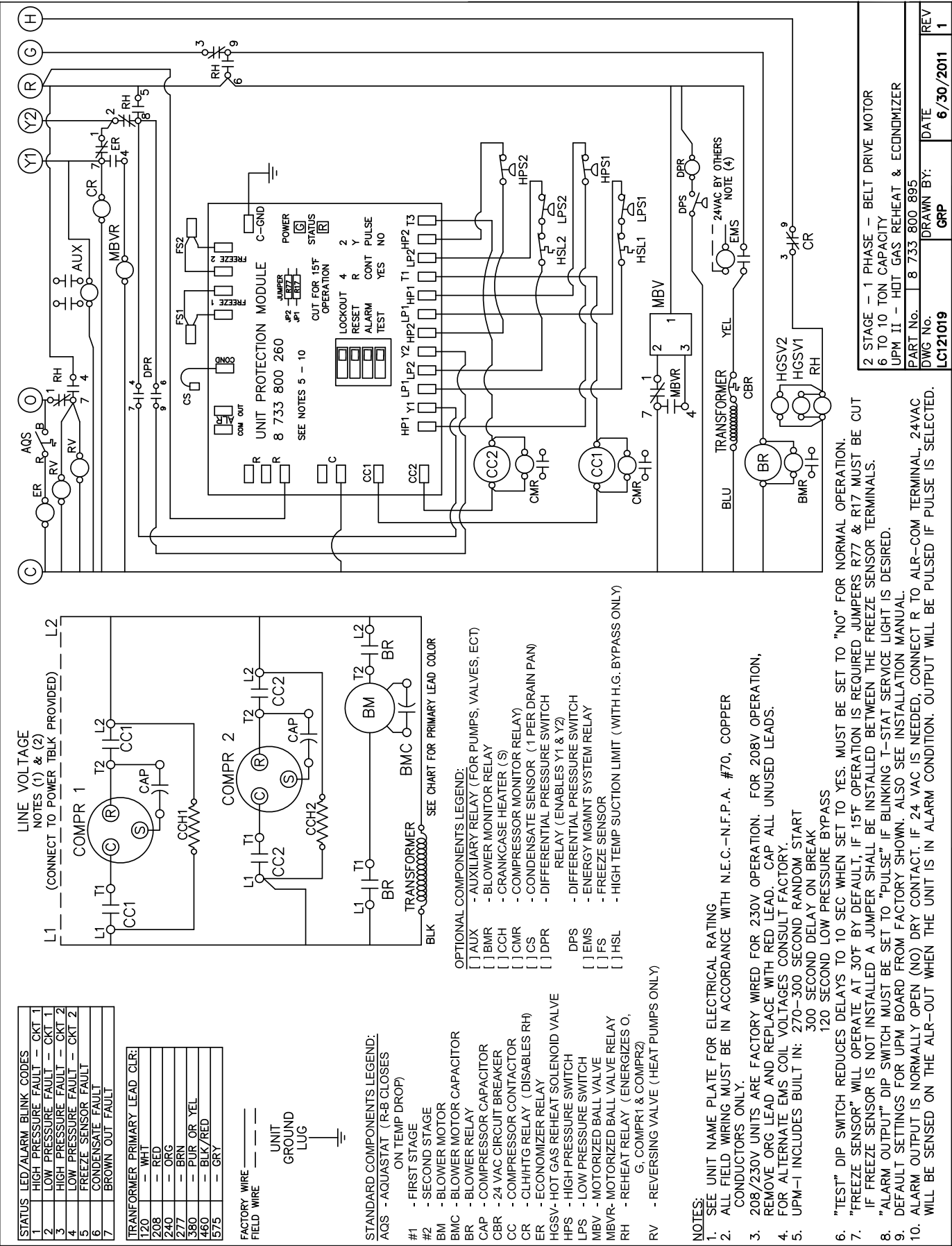
- SEE UNIT NAME PLATE FOR ELECTRICAL RATING
- ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.-N.F.P.A. #70, COPPER CONDUCTORS ONLY.
- 208/230V UNITS ARE FACTORY WIRED FOR 230V OPERATION. FOR 208V OPERATION, REMOVE ORG LEAD AND REPLACE WITH RED LEAD. CAP ALL UNUSED LEADS.
- FOR ALTERNATE EMS COIL VOLTAGES CONSULT FACTORY.
- UPM-1 INCLUDES BUILT IN: 270-300 SECOND RANDOM START 300 SECOND DELAY ON BREAK 120 SECOND LOW PRESSURE BYPASS
- "TEST" DIP SWITCH REDUCES DELAYS TO 10 SEC WHEN SET TO YES. MUST BE SET TO "NO" FOR NORMAL OPERATION.
- "FREEZE SENSOR" WILL OPERATE AT 30°F BY DEFAULT. IF 15°F OPERATION IS REQUIRED JUMPERS R77 & R17 MUST BE CUT
- IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE FREEZE SENSOR TERMINALS.
- "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING T-STAT SERVICE LIGHT IS DESIRED.
- DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL.
- ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONNECT R TO ALR-COM TERMINAL, 24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. OUTPUT WILL BE PULSED IF PULSE IS SELECTED.

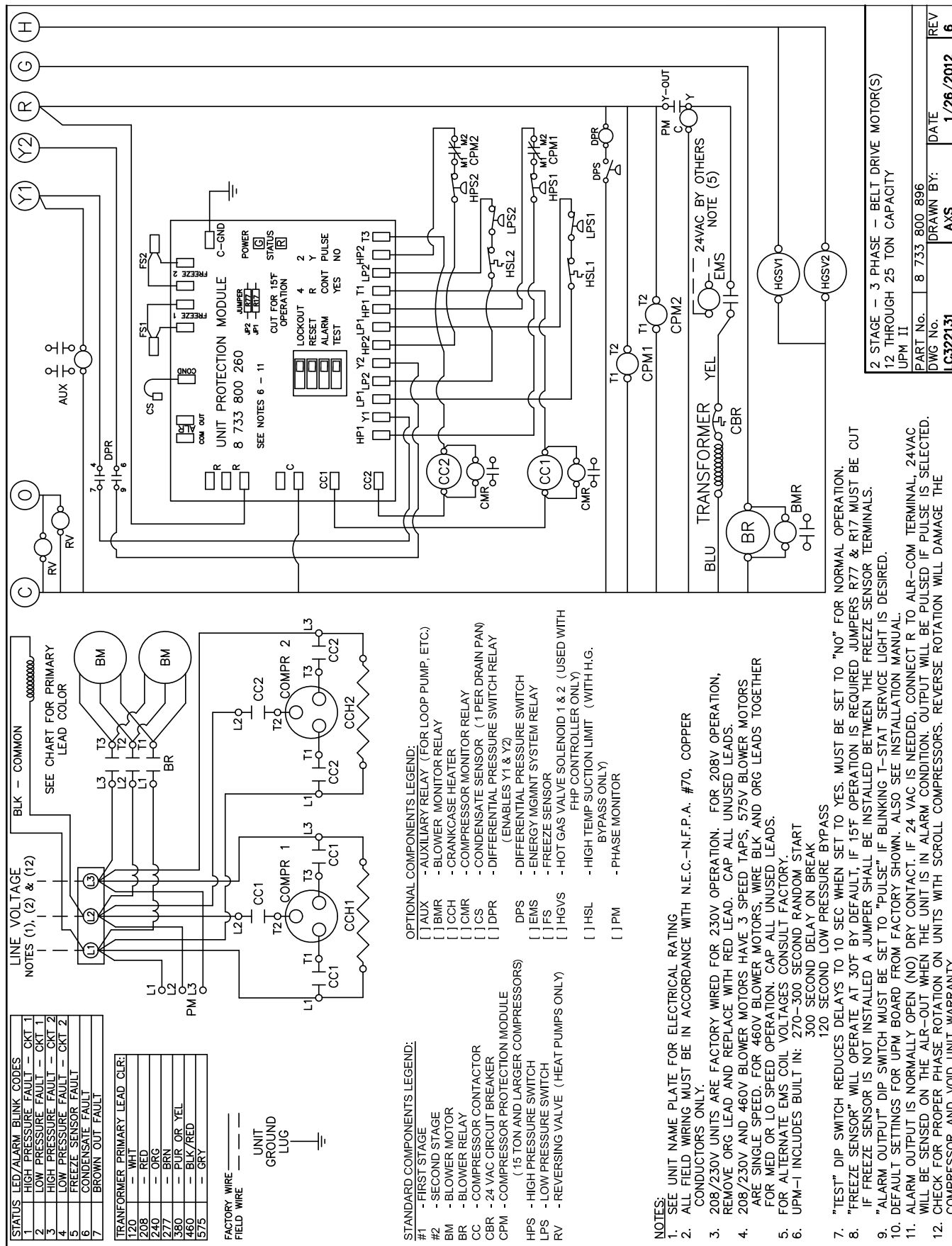
2 STAGE - 1 PHASE - BELT DRIVE MOTOR
6 THROUGH 10 TON CAPACITY
UPM II

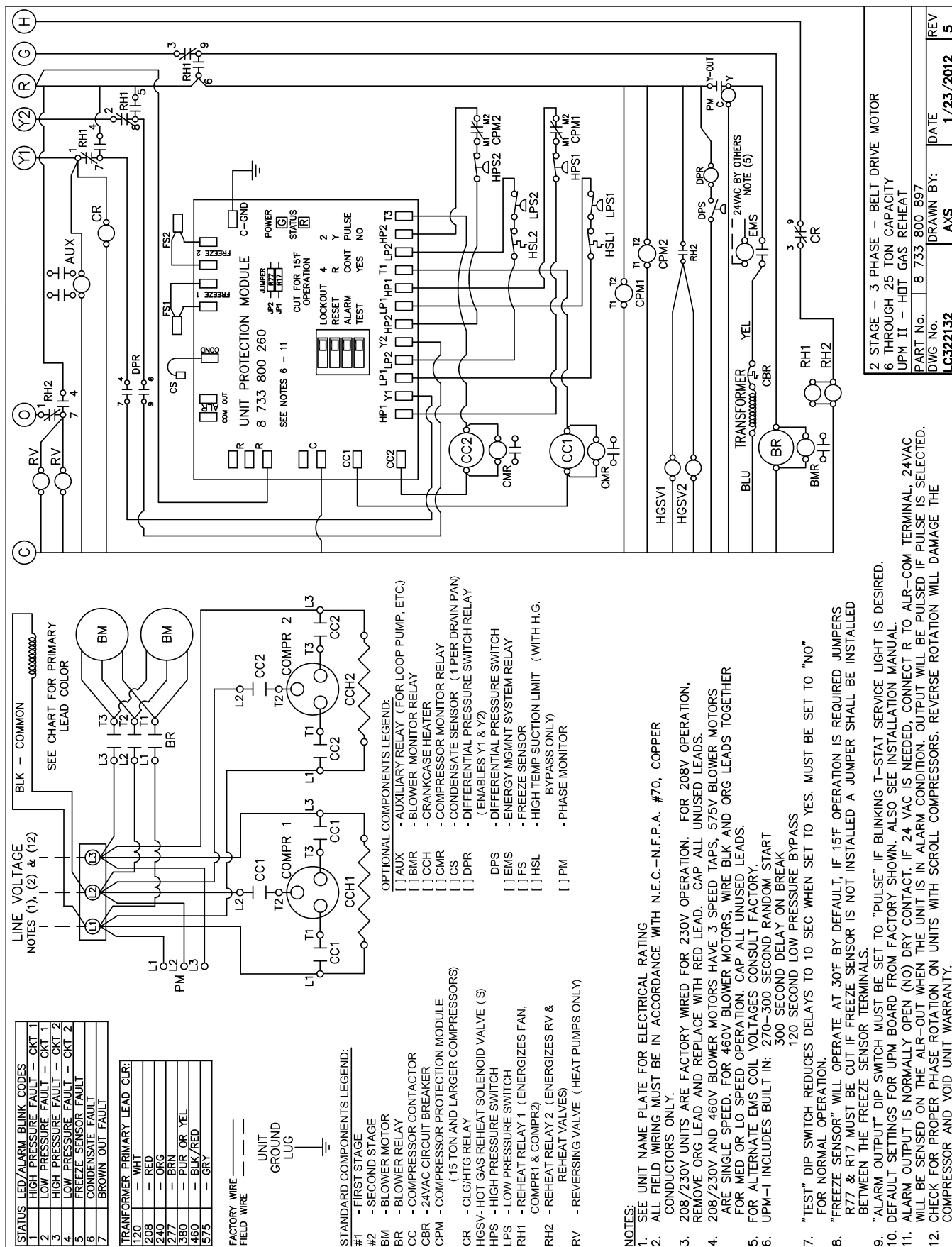
DWG No.	8 733 800 892	DATE	6/28/2011	REV	3
GROUP	LC121016	DRAWN BY:	GRP		











NOTES:

1. SEE UNIT NAME PLATE FOR ELECTRICAL RATING

2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.-N.F.P.A. #70, COPPER CONDUCTORS ONLY.

3. 208/230V UNITS ARE FACTORY WIRING FOR 230V OPERATION. FOR 208V OPERATION, REMOVE ORG LEAD AND REPLACE WITH RED LEAD. CAP ALL UNUSED LEADS.

4. 208/230V AND 460V BLOWER MOTORS HAVE 3 SPEED TAPS, 575V BLOWER MOTORS ARE SINGLE SPEED. FOR 460V BLOWER MOTORS, WIRE BLK AND ORG LEADS TOGETHER FOR MED OR LO SPEED OPERATION. CAP ALL UNUSED LEADS.

5. FOR ALTERNATE EMS COIL VOLTAGES CONSULT FACTORY.

6. UPM-1 INCLUDES BUILT IN: 270-300 SECOND RANDOM START

300 SECOND DELAY ON BREAK

120 SECOND LOW PRESSURE BYPASS

7. "TEST" DIP SWITCH REDUCES DELAYS TO 10 SEC WHEN SET TO YES. MUST BE SET TO "NO" FOR NORMAL OPERATION.

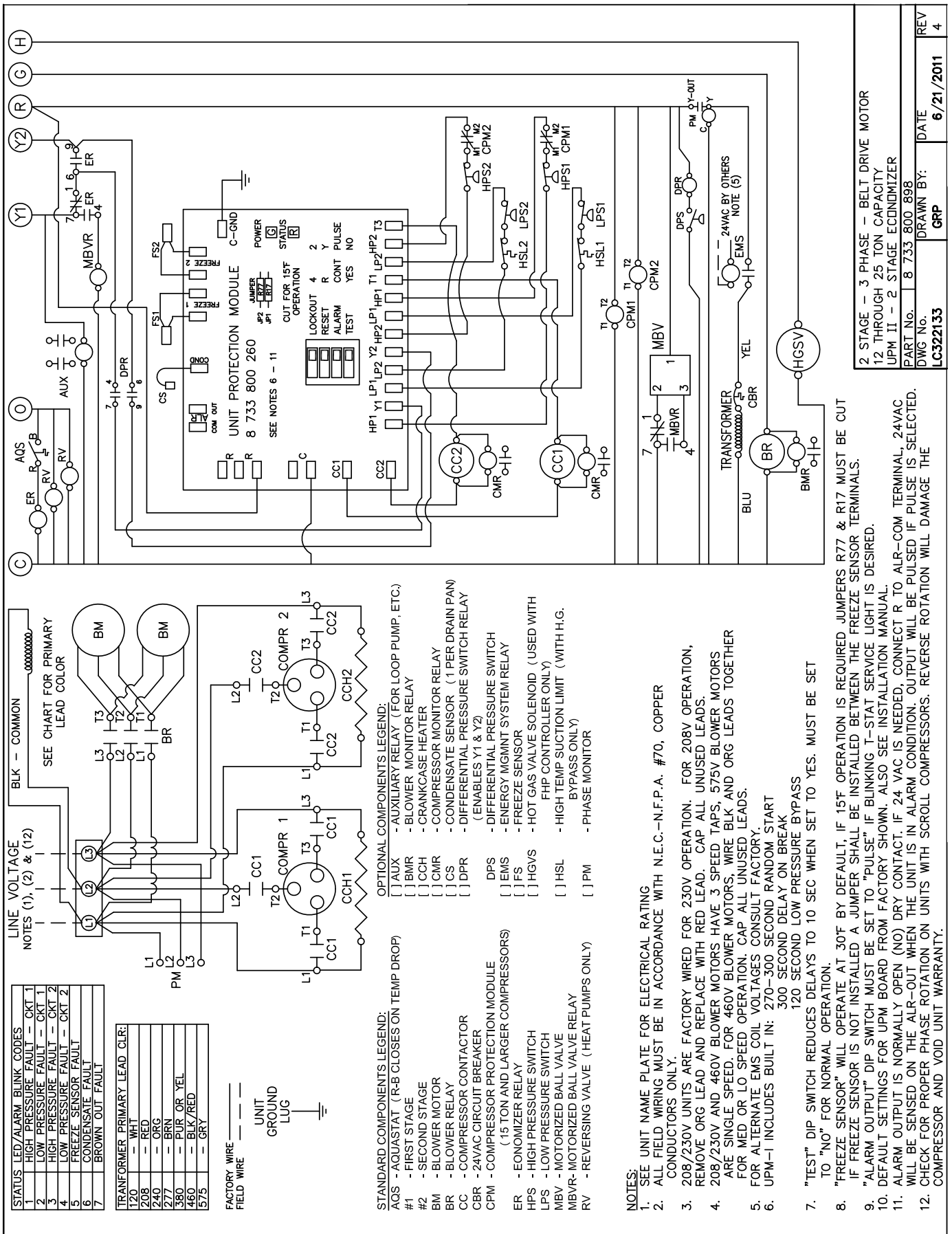
8. "FREEZE SENSOR" WILL OPERATE AT 30°F BY DEFAULT. IF 15°F OPERATION IS REQUIRED JUMPERS R77 & R17 MUST BE CUT IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE FREEZE SENSOR TERMINALS.

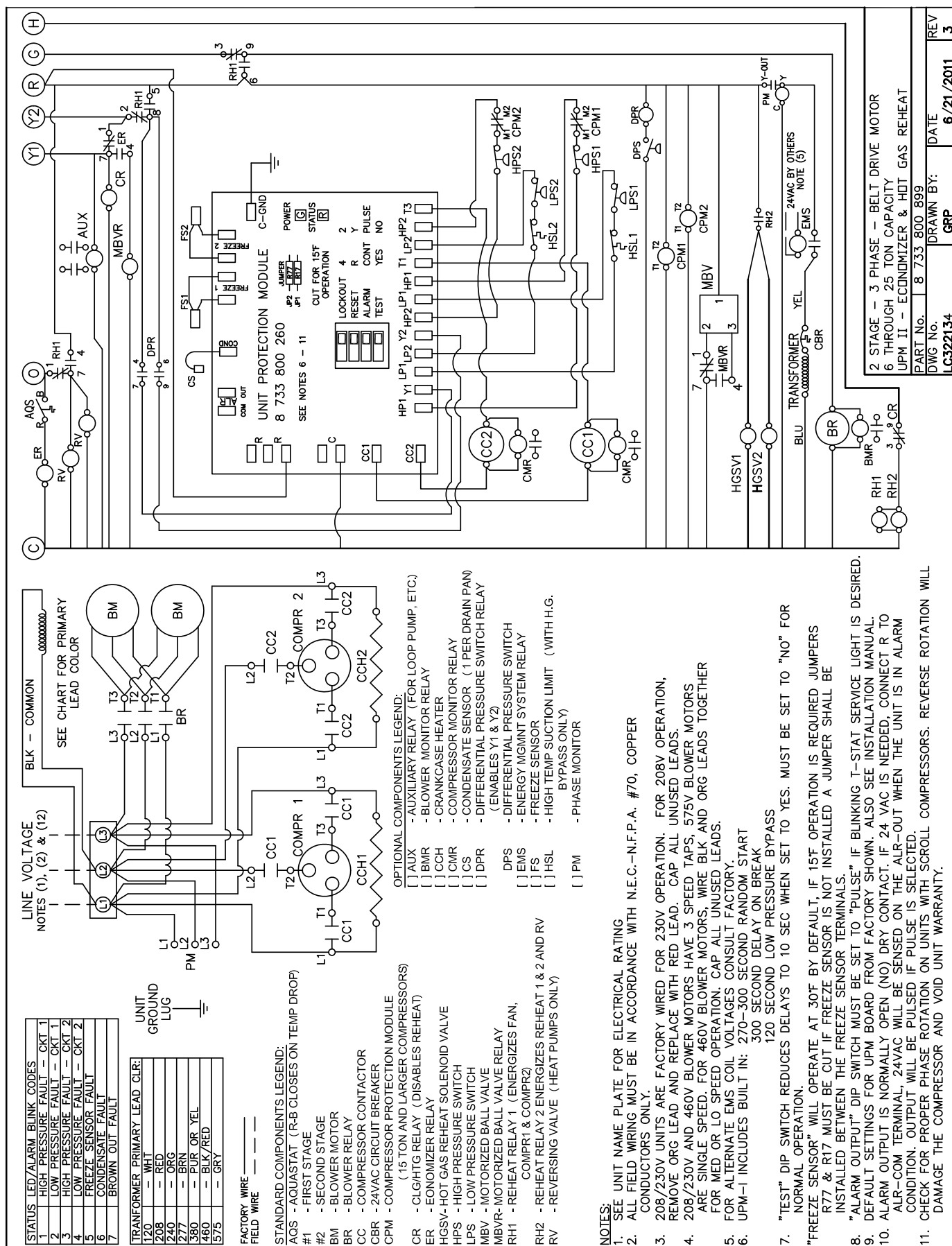
9. "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING T-STAT SERVICE LIGHT IS DESIRED.

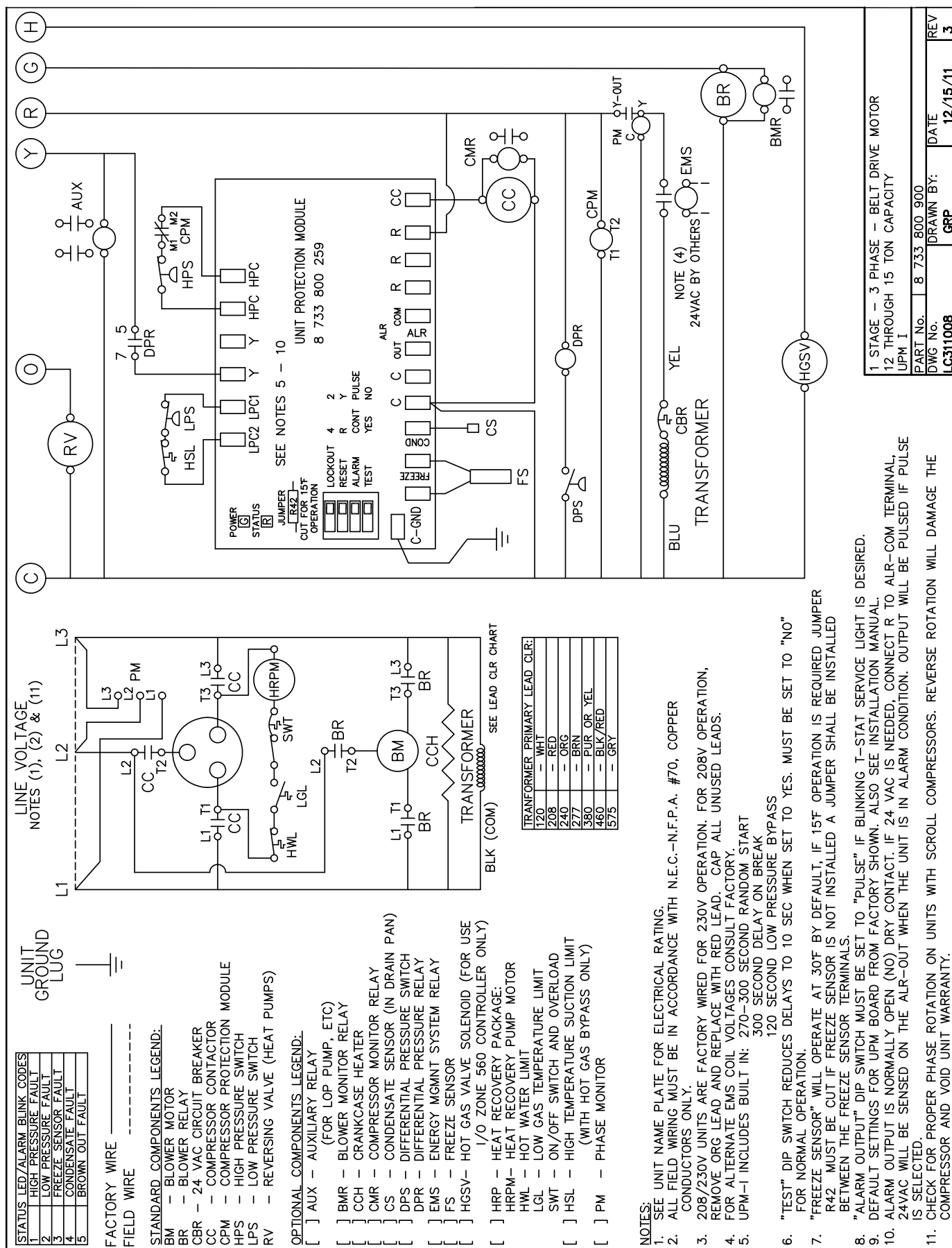
10. DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL.

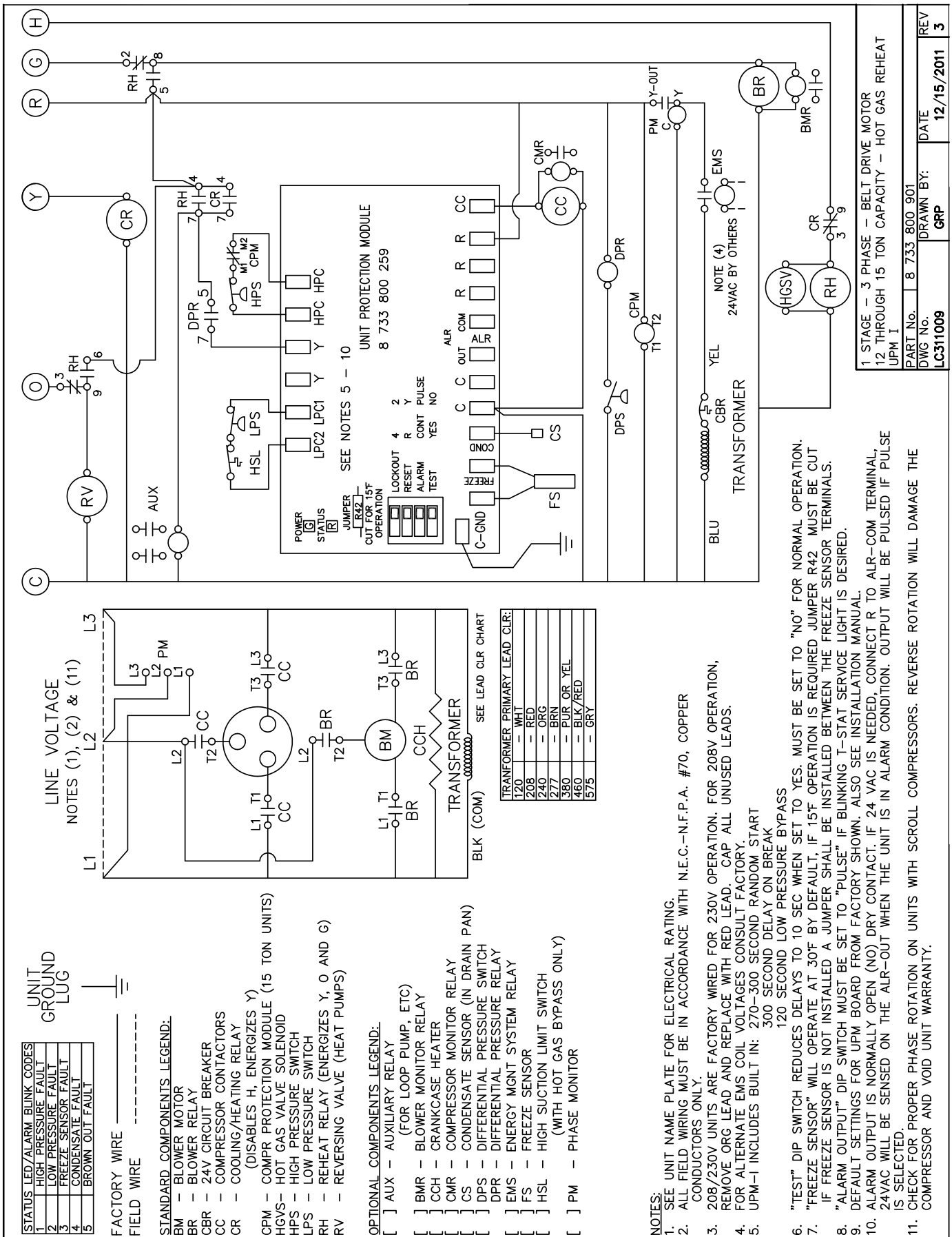
11. ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONNECT R TO ALR-COM TERMINAL, 24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. OUTPUT WILL BE PULSED IF PULSE IS SELECTED.

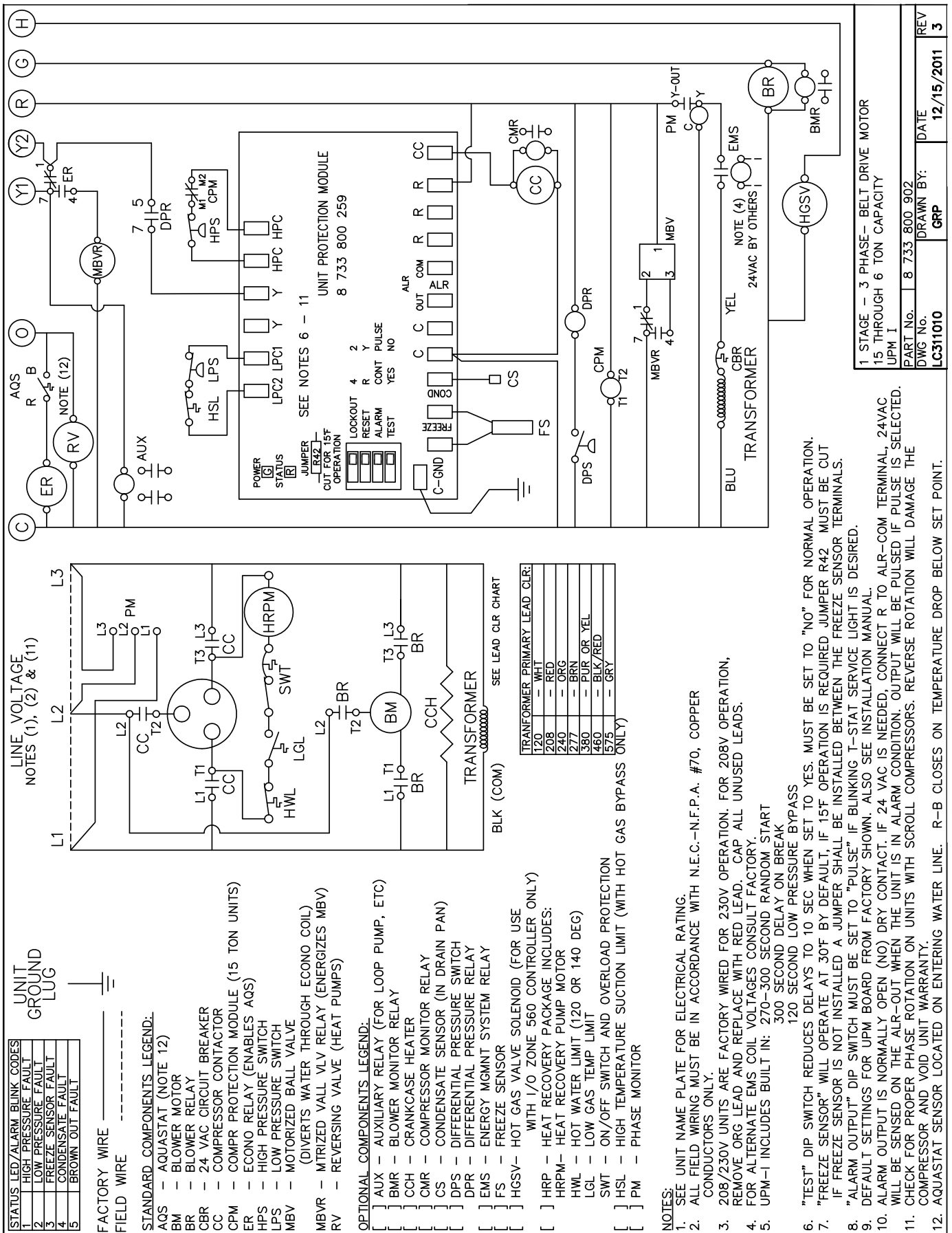
12. CHECK FOR PROPER PHASE ROTATION ON UNITS WITH SCROLL COMPRESSORS. REVERSE ROTATION WILL DAMAGE THE COMPRESSOR AND VOID UNIT WARRANTY.

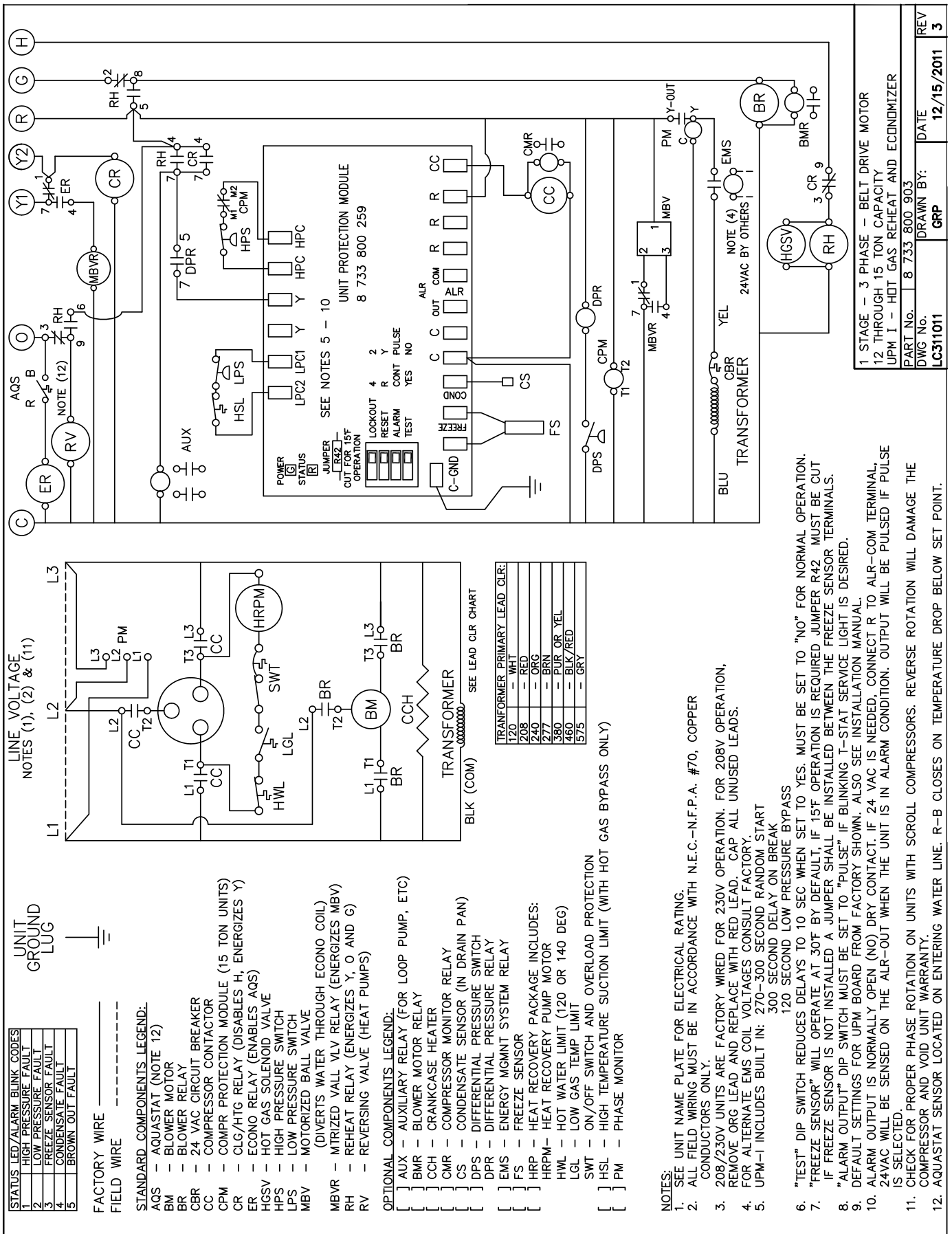












STATUS LED/ALARM BLINK CODES
1 HIGH PRESSURE FAULT
2 LOW PRESSURE FAULT
3 FREEZE SENSOR FAULT
4 CONDENSATE FAULT
5 BROWN OUT FAULT

FACTORY WIRE _____
FIELD WIRE -----

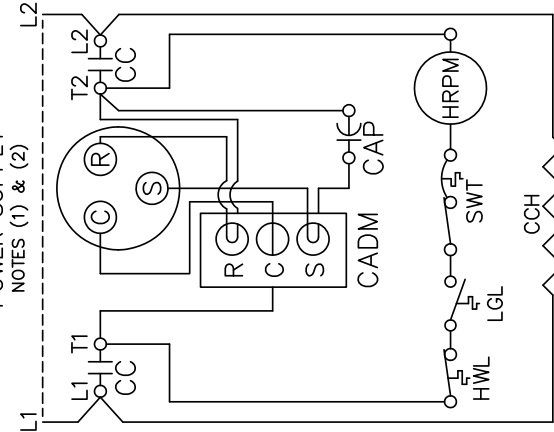
STANDARD COMPONENTS LEGEND:

BM - BLOWER MOTOR
CAP - COMPRESSOR CAPACITOR
CC - COMPRESSOR CONTACTOR
HPS - HIGH PRESSURE SWITCH
LPS - LOW PRESSURE SWITCH
RV - REVERSING VALVE (HEAT PUMPS)

OPTIONAL COMPONENTS LEGEND:

[] AUX - AUXILIARY RELAY
(FOR LOP PUMP, ETC)
[] CADM - COMFORT ALERT DIAGNOSTIC MODULE
[] CCH - CRANKCASE HEATER
[] CMR - COMPRESSOR MONITOR RELAY
[] CS - CONDENSATE SENSOR
(IN AIR HANDLER DRAIN PAN)
[] DPS - DIFFERENTIAL PRESSURE SWITCH
DPR - DIFFERENTIAL PRESSURE RELAY
[] FS - FREEZE SENSOR
[] HGSV - HOT GAS VALVE SOLENOID (FOR USE I/O ZONE 560 CONTROLLER ONLY)
[] HRP - HEAT RECOVERY PACKAGE INCLUDES: HRP - HEAT RECOVERY PUMP MOTOR
HWL - HOT WATER LIMIT (120 OR 140 DEG)
LGL - LOW GAS TEMP LIMIT
SWT - ON/OFF SWITCH AND OVERLOAD PROTECTION
[] HSL - HIGH TEMPERATURE SUCTION LIMIT
(WITH HOT GAS BYPASS ONLY)

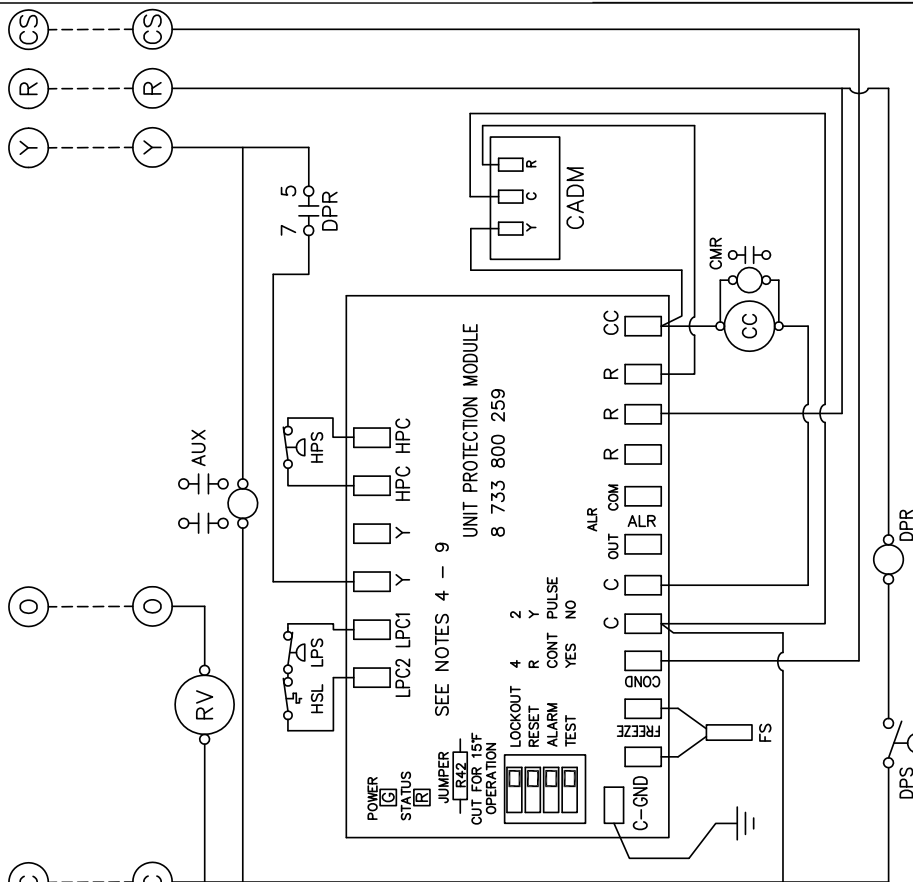
POWER SUPPLY



TRANSFORMER PRIMARY LEAD CLR:
120 - WHI
208 - RED
240 - ORG
277 - BRN
380 - PUR OR YEL
460 - BLK/RED
575 - GRY

UNIT
GROUND
LUG

CONNECT TO FHP - BOSCH AIR HANDLING UNIT

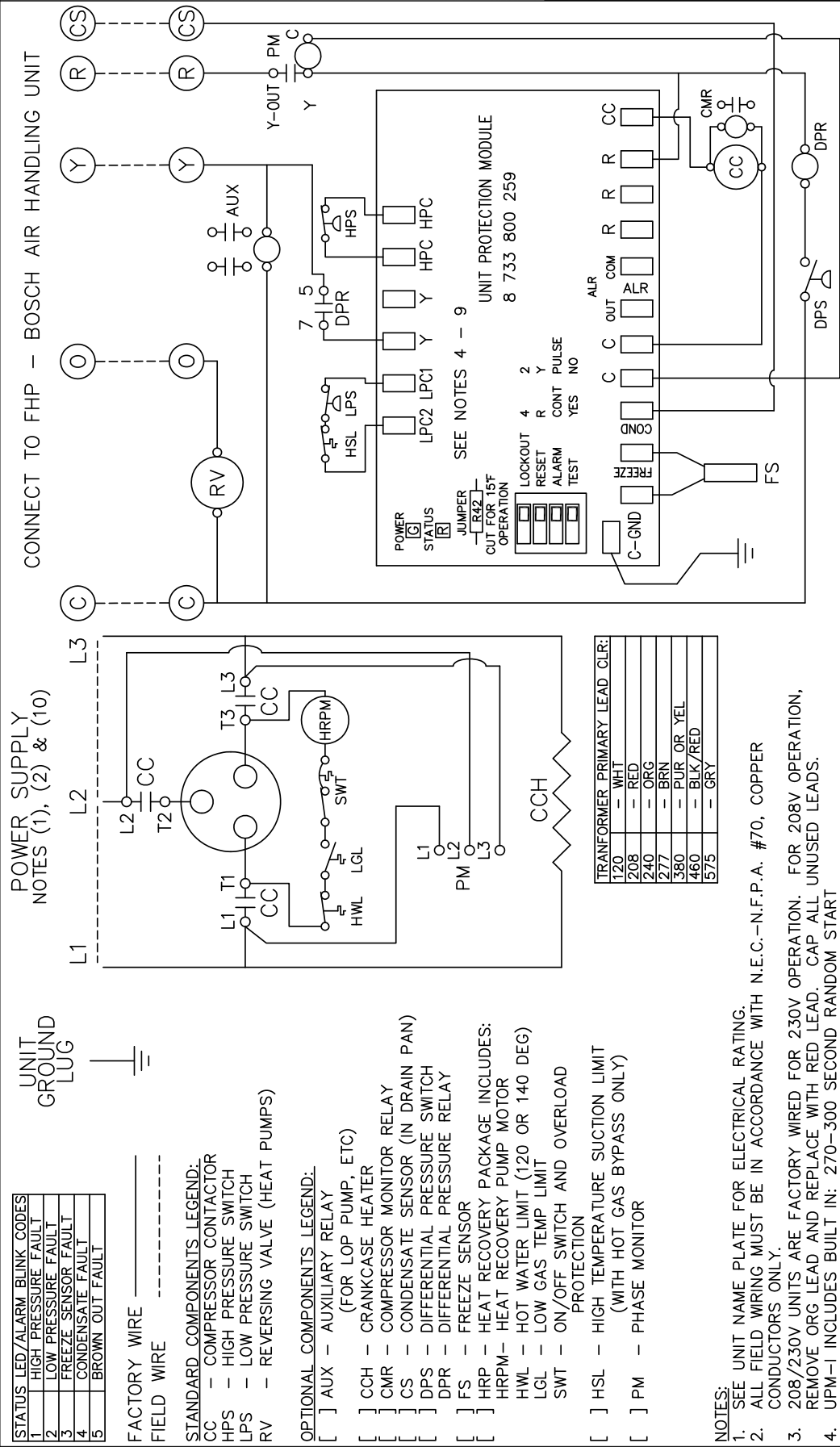


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300 SECOND DELAY ON BREAK
120 SECOND LOW PRESSURE BYPASS
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- "FREEZE SENSOR" WILL OPERATE AT 30F BY DEFAULT, IF 15F OPERATION IS REQUIRED JUMPER R42 MUST BE CUT IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE FREEZE SENSOR TERMINALS.
- "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING T-STAT SERVICE LIGHT IS DESIRED.
- DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL.
- ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONNECT R TO ALR-COM TERMINAL, 24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. OUTPUT WILL BE PULSED IF PULSE IS SELECTED.

1 STAGE - 1 PHASE - CONDENSING SECTION
1/2 THROUGH 6 TON CAPACITY
UPM I - ALL VBLTAGES

PART No.	DWG No.	8 733 800 949	DATE	REV
EM110010	GRP	12/15/2011	6	



1 STAGE – 3 PHASE – CONDENSING SECTION
2 THROUGH 6 TON CAPACITY
UPM I – ALL VBL TAGS

PART No.	8 733 800 953	DRAWN BY:	GRP	DATE	12/15/2011	REV	3
DWG No.	EM310005						

- NOTES:
1. SEE UNIT NAME PLATE FOR ELECTRICAL RATING
 2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.—N.F.P.A. #70
 3. WIRE OUTDOOR T-STAT IN PLACE OF WIRE NUT IF HTR STAGING IS REQUIRED (7.5–20kW)

HEATER PACKAGES CONTAIN THE FOLLOWING:

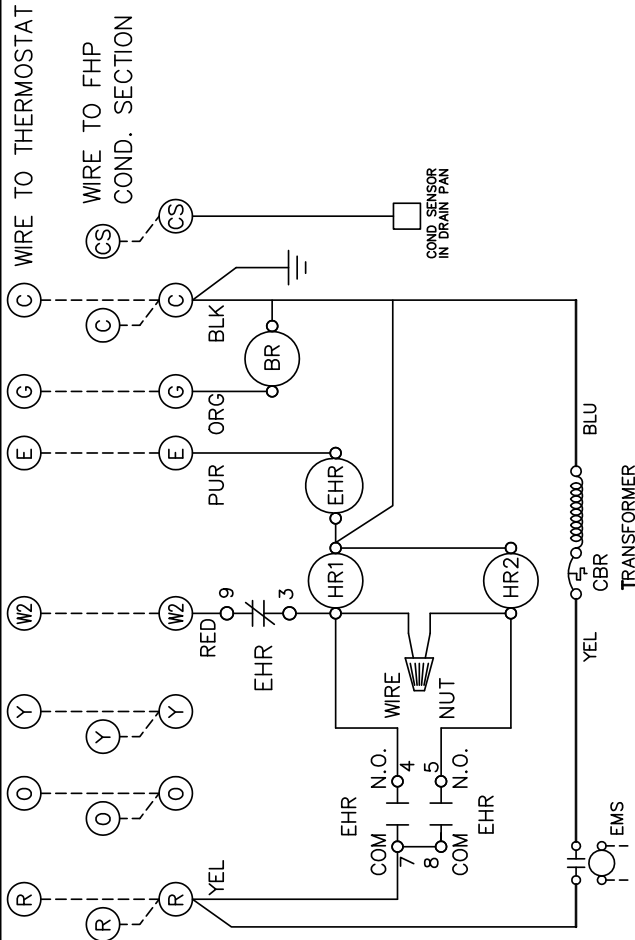
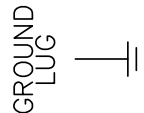
- 3.5–5kW — HEATER CIRCUIT 1, HR1, EHR
 7.5–10kW — HEATER CIRCUIT 1, 2, HR1, HR2, EHR, WIRE NUT
 15kW — HEATER CIRCUIT 1, 2, 3, HR1, HR2, EHR, WIRE NUT
 20kW — HEATER CIRCUIT 1, 2, 3, 4, HR1, HR2, EHR, WIRE NUT
 3.5–10kW HEATERS ARE NON FUSED, 15 & 20kW ARE FUSED

LEGEND:

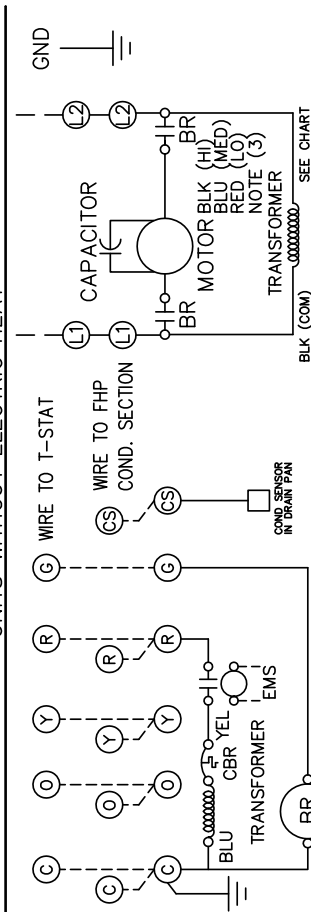
- BR — BLOWER RELAY
 EHR — EMERGENCY HEAT RELAY
 HLS — HIGH TEMP LIMIT SWITCH
 HT1–4 — HEATER ELEMENT 1–4
 HR1,2 — HEATER RELAY 1, 2

OPTIONAL COMPONENTS LEGEND:

- [] CBR — 24V CIRCUIT BREAKER
 [] CS — CONDENSATE SENSOR (IN UNIT DRAIN PAN)
 [] EMS — ENERGY MANAGEMENT SYSTEM RELAY



UNITS WITHOUT ELECTRIC HEAT



NOTES:

1. SEE UNIT NAME PLATE FOR ELECTRICAL RATING
2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.—N.F.P.A. #70
3. 115V THROUGH 460V BLOWER MOTORS HAVE 3 SPEED TAPS, 575V MOTORS ARE SINGLE SPEED. FOR 460V BLOWER MOTORS, WIRE BLK AND ORG LEADS TOGETHER FOR MED OR LO SPEED OPERATION. CAP ALL UNUSED LEADS.

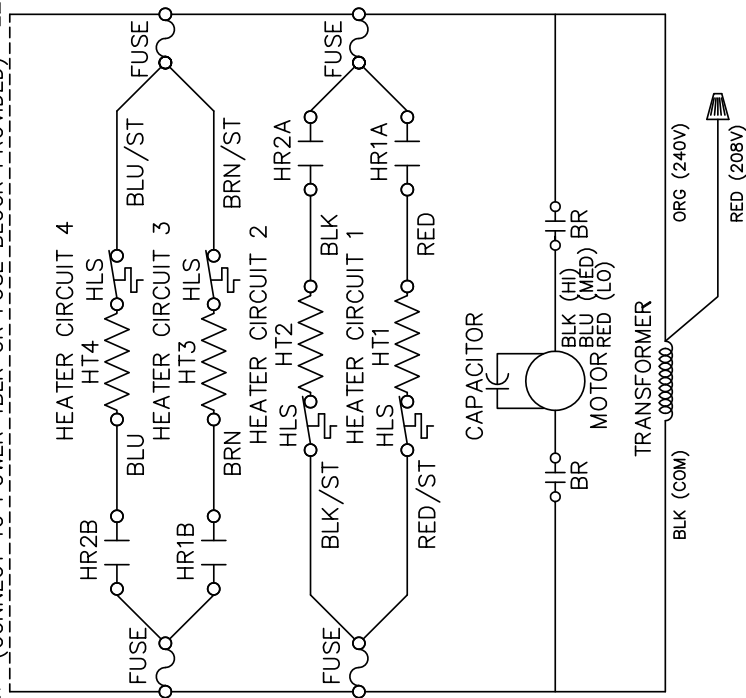
TRANSFORMER PRIMARY LEAD CLR:

120	— WHT
208	— RED
240	— ORG
277	— BRN
360	— PUR OR YEL
460	— BLK/RED
575	— GRN

1 PHASE — SINGLE BLWR AIR HANDLER
 WIRING DIAGRAM

PART No.	8 733 800 958	DATE	12/15/2011	REV	5
DWG No.	EM101006	DRAWN BY:	GRP		

LINE VOLTAGE (208/230–1–60)
 L1 (CONNECT TO POWER TBLK OR FUSE BLOCK PROVIDED) L2



Operating Temperatures & Pressures, EC007-012

			OPERATING DATA							
			COOLING				HEATING			
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC007	30°	1.4					65-80	282-344	6-7	14-17
		1.9					73-89	294-359	3-4	15-18
	40°	1.4	106-129	146-178	17-21	18-22	80-98	299-365	7-9	16-20
		1.9	102-124	133-162	10-13	19-23	89-108	311-380	4-5	17-21
	50°	1.4	115-141	180-220	17-20	17-21	95-116	315-385	9-11	19-23
		1.9	111-135	163-200	10-12	18-23	105-128	329-402	5-7	20-24
	60°	1.4	124-152	213-261	16-19	17-21	109-133	332-406	11-13	21-26
		1.9	120-146	194-237	10-12	18-22	121-148	346-423	6-8	22-27
	70°	1.4	134-163	247-302	15-19	17-20	124-151	349-427	12-15	23-28
		1.9	128-157	225-275	9-11	18-21	138-168	364-444	7-9	25-30
	80°	1.4	143-175	281-343	14-18	16-20	138-169	366-447	14-17	26-31
		1.9	137-168	255-312	9-11	17-21	154-188	381-466	8-10	27-33
	90°	1.4	152-186	315-385	14-17	16-19	153-187	383-468	16-19	28-34
		1.9	146-179	286-350	8-10	17-20	170-208	399-487	9-12	29-36
	100°	1.4	161-197	349-426	13-16	15-19				
		1.9	155-190	317-387	8-10	16-20				
EC009	30°	1.8					91-111	251-307	5-6	21-25
		2.4					95-116	256-313	3-4	22-26
	40°	1.8	112-137	144-176	14-17	22-27	107-130	267-327	6-7	24-29
		2.4	106-130	137-167	10-12	23-28	112-137	273-333	4-5	25-30
	50°	1.8	116-142	177-217	13-16	21-26	123-150	284-347	7-9	27-33
		2.4	111-135	169-206	9-12	22-27	129-158	289-353	5-6	28-34
	60°	1.8	121-148	211-258	13-16	21-26	139-170	300-366	8-10	30-37
		2.4	115-140	200-245	9-11	22-27	146-179	306-374	6-7	32-39
	70°	1.8	126-154	245-299	13-15	20-25	156-190	316-386	9-12	33-41
		2.4	119-146	232-284	9-11	21-26	163-200	322-394	7-8	35-43
	80°	1.8	130-159	278-340	12-15	20-24	172-210	332-406	11-13	36-44
		2.4	124-151	264-323	9-11	21-26	180-220	339-414	8-9	38-47
	90°	1.8	135-165	312-381	12-15	19-24	188-230	349-426	12-15	39-48
		2.4	128-157	296-362	9-10	20-25	197-241	355-434	8-10	41-51
	100°	1.8	140-171	345-422	12-14	19-23				
		2.4	133-162	328-401	8-10	20-24				
EC012	30°	2.6					73-89	266-325	5-6	15-18
		3.0					77-94	272-333	3-4	16-19
	40°	2.6	117-143	189-231	14-17	18-22	86-105	279-341	6-7	17-21
		3.0	112-137	178-217	8-9	19-24	90-110	286-350	4-5	18-22
	50°	2.6	126-154	221-270	14-17	18-21	162-198	293-358	7-8	20-24
		3.0	121-148	207-253	8-9	19-23	170-208	300-366	5-6	21-25
	60°	2.6	131-160	252-308	13-16	17-21	110-134	306-374	8-10	22-27
		3.0	125-153	237-290	8-9	18-22	115-141	314-383	6-7	23-29
	70°	2.6	135-165	284-347	13-16	17-20	122-150	320-391	9-11	24-30
		3.0	130-158	266-326	7-9	18-22	129-157	327-400	6-8	26-32
	80°	2.6	140-171	320-391	13-16	16-20	134-164	333-407	11-13	27-33
		3.0	134-164	300-367	7-9	17-21	141-172	341-417	7-9	28-35
	90°	2.6	144-176	360-440	13-16	16-19	147-179	347-424	12-14	29-36
		3.0	138-169	338-414	7-9	17-21	154-188	355-434	8-10	31-38
	100°	2.6	149-182	405-495	13-15	15-19				
		3.0	143-174	381-465	7-9	16-20				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

As a result of continuing research and development, specifications are subject to change without notice.

Operating Temperatures & Pressures, EC015-024

			OPERATING DATA							
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	COOLING				HEATING			
			SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC015	30°	2.8					74-90	244-299	3-4	13-15
		3.8					78-95	251-306	2-3	13-16
	40°	2.8	122-149	183-224	14-18	19-23	87-106	257-314	4-5	15-18
		3.8	117-143	172-210	8-10	20-24	91-111	263-322	3-3	16-19
	50°	2.8	131-160	214-261	14-18	18-22	164-201	269-329	5-6	17-20
		3.8	126-154	201-245	8-10	19-24	173-211	276-337	3-4	18-22
	60°	2.8	136-166	244-298	14-17	18-22	111-136	282-344	6-7	19-23
		3.8	131-160	230-281	8-10	19-23	117-143	289-353	4-5	20-24
	70°	2.8	141-172	275-336	14-17	17-21	124-152	294-360	7-8	21-25
		3.8	135-165	258-316	8-10	18-22	131-160	302-369	5-6	22-27
	80°	2.8	145-178	310-378	14-17	17-20	136-166	307-375	8-9	23-28
		3.8	140-171	291-356	8-10	18-22	143-175	314-384	5-6	24-30
	90°	2.8	150-183	349-426	14-17	16-20	149-182	319-390	8-10	25-30
		3.8	144-176	328-401	8-9	17-21	156-191	327-400	6-7	26-32
EC018	30°	3.0					65-80	282-344	6-7	14-17
		5.0					73-89	294-359	3-4	15-18
	40°	3.0	121-148	184-225	17-21	18-22	80-98	299-365	7-9	16-20
		5.0	117-143	167-204	10-13	19-23	89-108	311-380	4-5	17-21
	50°	3.0	123-151	222-271	17-20	17-21	95-116	315-385	9-11	19-23
		5.0	119-145	202-247	10-12	18-23	105-128	329-402	5-7	20-24
	60°	3.0	125-153	260-318	16-19	17-21	109-133	332-406	11-13	21-26
		5.0	120-147	237-289	10-12	18-22	121-148	346-423	6-8	22-27
	70°	3.0	127-155	298-365	15-19	17-20	124-151	349-427	12-15	23-28
		5.0	122-149	271-331	9-11	18-21	138-168	364-444	7-9	25-30
	80°	3.0	129-158	336-411	14-18	16-20	138-169	366-447	14-17	26-31
		5.0	124-152	306-374	9-11	17-21	154-188	381-466	8-10	27-33
	90°	3.0	131-160	374-458	14-17	16-19	153-187	383-468	16-16	28-34
		5.0	126-154	340-416	8-10	17-20	170-208	399-487	9-12	29-36
EC024	30°	5.0					72-87	296-361	5-6	21-25
		7.0					75-92	301-368	3-4	22-26
	40°	5.0	114-139	155-190	14-17	22-27	88-107	314-384	6-7	24-29
		7.0	108-132	147-180	10-12	23-28	92-112	321-392	4-5	25-30
	50°	5.0	116-142	192-234	13-16	21-26	104-127	333-407	7-9	27-33
		7.0	111-135	182-222	9-12	22-27	109-133	340-415	5-6	28-34
	60°	5.0	119-146	228-279	13-16	21-26	120-146	352-430	8-10	30-37
		7.0	113-138	217-265	9-11	22-27	125-153	359-439	6-7	32-39
	70°	5.0	122-149	264-323	13-15	20-25	136-166	371-453	9-12	33-41
		7.0	116-142	251-307	9-11	21-26	142-174	378-462	7-8	35-43
	80°	5.0	125-152	301-368	12-15	20-24	152-185	389-476	11-13	36-44
		7.0	118-145	286-349	9-11	21-26	159-194	397-485	8-9	38-47
	90°	5.0	127-156	337-412	12-15	19-24	168-205	408-499	12-15	39-48
		7.0	121-148	320-392	9-10	20-25	176-215	416-509	8-10	41-51
	100°	5.0	130-159	374-457	12-14	19-23				
		7.0	124-151	355-434	8-10	20-24				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

As a result of continuing research and development, specifications are subject to change without notice.

Operating Temperatures & Pressures, EC030-042

			OPERATING DATA							
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	COOLING				HEATING			
			SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC030	30°	3.5					73-89	266-325	5-6	15-18
		7.5					77-94	272-333	3-4	16-19
	40°	3.5	117-143	189-231	14-17	18-22	86-105	279-341	6-7	17-21
		7.5	112-137	178-217	8-9	19-24	90-110	286-350	4-5	18-22
	50°	3.5	126-154	221-270	14-17	18-21	162-198	293-358	7-8	20-24
		7.5	121-148	207-253	8-9	19-23	170-208	300-366	5-6	21-25
	60°	3.5	131-160	252-308	13-16	17-21	110-134	306-374	8-10	22-27
		7.5	125-153	237-290	8-9	18-22	115-141	314-383	6-7	23-29
	70°	3.5	135-165	284-347	13-16	17-20	122-150	320-391	9-11	24-30
		7.5	130-158	266-326	7-9	18-22	129-157	327-400	6-8	26-32
	80°	3.5	140-171	320-391	13-16	16-20	134-164	333-407	11-13	27-33
		7.5	134-164	300-367	7-9	17-21	141-172	341-417	7-9	28-35
	90°	3.5	144-176	360-440	13-16	16-19	147-179	347-424	12-14	29-36
		7.5	138-169	338-414	7-9	17-21	154-188	355-434	8-10	31-38
	100°	3.5	149-182	405-495	13-15	15-19				
		7.5	143-174	381-465	7-9	16-20				
EC036	30°	4.5					74-90	244-299	3-4	13-15
		9.0					78-95	251-306	2-3	13-16
	40°	4.5	122-149	183-224	14-18	19-23	87-106	257-314	4-5	15-18
		9.0	117-143	172-210	8-10	20-24	91-111	263-322	3-3	16-19
	50°	4.5	131-160	214-261	14-18	18-22	164-201	269-329	5-6	17-20
		9.0	126-154	201-245	8-10	19-24	173-211	276-337	3-4	18-22
	60°	4.5	136-166	244-298	14-17	18-22	111-136	282-344	6-7	19-23
		9.0	131-160	230-281	8-10	19-23	117-143	289-353	4-5	20-24
	70°	4.5	141-172	275-336	14-17	17-21	124-152	294-360	7-8	21-25
		9.0	135-165	258-316	8-10	18-22	131-160	302-369	5-6	22-27
	80°	4.5	145-178	310-378	14-17	17-20	136-166	307-375	8-9	23-28
		9.0	140-171	291-356	8-10	18-22	143-175	314-384	5-6	24-30
	90°	4.5	150-183	349-426	14-17	16-20	149-182	319-390	8-10	25-30
		9.0	144-176	328-401	8-9	17-21	156-191	327-400	6-7	26-32
	100°	4.5	155-189	392-480	13-16	16-19				
		9.0	149-182	369-451	8-9	17-21				
EC041 EC042	30°	6.0					64-78	248-303	5-6	15-18
		10.0					67-82	254-311	3-4	16-19
	40°	6.0	109-134	183-224	18-22	19-23	75-91	261-319	6-8	17-21
		10.0	105-128	172-210	10-12	20-25	79-96	267-327	4-5	18-23
	50°	6.0	118-144	214-261	18-22	19-23	142-173	273-334	8-10	20-24
		10.0	113-138	201-245	10-12	20-24	149-182	280-342	5-7	21-26
	60°	6.0	122-149	244-298	17-21	18-22	96-117	286-349	9-11	22-27
		10.0	117-143	230-281	10-12	19-24	101-123	293-358	6-8	24-29
	70°	6.0	126-154	275-336	17-21	18-22	107-131	299-365	11-13	25-30
		10.0	121-148	258-316	10-12	19-23	113-138	306-374	7-9	26-32
	80°	6.0	130-159	310-378	17-21	17-21	117-143	311-380	12-15	27-33
		10.0	125-153	291-356	10-12	18-22	123-151	319-390	8-10	29-35
	90°	6.0	134-164	349-426	17-20	17-20	128-157	324-396	13-16	29-36
		10.0	129-158	328-401	9-12	18-22	135-165	332-406	9-11	31-38
	100°	6.0	139-170	392-480	16-20	16-20				
		10.0	133-163	369-451	9-11	17-21				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

As a result of continuing research and development, specifications are subject to change without notice.

Operating Temperatures & Pressures, EC048-070

			OPERATING DATA							
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	COOLING				HEATING			
			SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC048 EC051	30°	6.0					71-87	277-339	6-7	15-19
		10.0					75-92	284-347	4-5	16-20
	40°	6.0	118-144	194-237	21-25	19-23	84-102	291-356	7-9	18-22
		10.0	113-138	182-223	12-14	20-24	88-108	299-365	5-6	19-23
	50°	6.0	127-155	226-276	21-25	18-22	159-194	305-373	9-11	20-25
		10.0	122-149	213-260	12-14	19-24	167-204	313-383	6-7	21-26
	60°	6.0	131-160	259-316	21-25	18-22	108-132	320-391	10-13	23-28
		10.0	126-154	243-297	12-14	19-23	113-138	328-400	7-9	24-29
	70°	6.0	136-166	291-355	20-25	17-21	120-147	334-408	12-15	25-31
		10.0	130-159	273-334	12-14	18-22	126-154	342-418	8-10	27-32
	80°	6.0	140-171	328-401	20-24	17-20	131-161	348-425	14-17	27-34
		10.0	135-165	308-377	11-14	18-22	138-169	356-436	9-11	29-36
	90°	6.0	145-177	369-451	20-24	16-20	144-176	362-442	15-18	30-37
		10.0	139-170	347-424	11-14	17-21	151-185	371-453	10-12	32-39
	100°	6.0	149-183	415-508	19-24	16-19				
		10.0	143-175	391-477	11-14	17-21				
EC060 EC061	30°	8.0					68-84	256-313	5-7	19-23
		12.0					73-89	261-319	4-5	20-25
	40°	8.0	113-138	173-212	18-22	19-23	81-99	277-339	7-8	22-26
		12.0	110-134	162-198	12-14	20-24	86-105	283-346	5-6	23-28
	50°	8.0	116-142	207-253	17-21	19-23	93-114	299-365	8-9	24-29
		12.0	112-137	193-236	12-14	19-24	99-121	305-373	6-7	25-31
	60°	8.0	118-145	240-293	17-21	18-23	106-129	321-392	9-11	26-32
		12.0	115-140	224-274	11-14	19-23	113-138	327-400	7-8	28-34
	70°	8.0	121-148	273-334	17-21	18-22	118-145	342-418	10-12	29-35
		12.0	117-143	255-312	11-14	19-23	126-154	349-427	8-9	30-37
	80°	8.0	123-151	307-375	16-20	18-22	131-160	364-444	11-14	31-38
		12.0	120-146	287-350	11-13	19-23	139-170	371-454	8-10	33-40
	90°	8.0	126-154	340-416	16-20	18-22	143-175	385-471	12-15	33-41
		12.0	122-149	318-388	11-13	18-22	152-186	393-480	9-11	35-43
	100°	8.0	128-157	373-456	16-19	17-21				
		12.0	125-152	349-426	11-13	18-22				
EC070	30°	12.0					68-84	256-313	5-7	19-23
		16.0					73-89	261-319	4-5	20-25
	40°	12.0	117-143	182-222	15-19	21-26	81-99	277-339	7-8	22-26
		16.0	114-139	170-208	11-14	22-27	86-105	283-346	5-6	23-28
	50°	12.0	120-147	215-263	15-18	20-25	93-114	299-365	8-9	24-29
		16.0	117-143	201-246	11-14	21-26	99-121	305-373	6-7	25-31
	60°	12.0	123-150	248-304	14-17	20-24	106-129	321-392	9-11	26-32
		16.0	119-146	232-284	11-13	21-25	113-138	327-400	7-8	28-34
	70°	12.0	126-154	282-344	14-17	19-24	118-145	342-418	10-12	29-35
		16.0	122-149	263-322	10-13	20-25	126-154	349-427	8-9	30-37
	80°	12.0	129-157	315-385	13-16	19-23	131-160	364-444	11-14	31-38
		16.0	125-153	294-360	10-12	19-24	139-170	371-454	8-10	33-40
	90°	12.0	132-161	348-426	13-16	18-22	143-175	385-471	12-15	33-41
		16.0	128-156	326-398	10-12	19-23	152-186	393-480	9-11	35-43
	100°	12.0	134-164	382-466	12-15	17-21				
		16.0	131-160	357-436	9-11	18-22				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

As a result of continuing research and development, specifications are subject to change without notice.

Operating Temperatures & Pressures, EC072-120

			OPERATING DATA							
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	COOLING				HEATING			
			SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC072	30°	10.0					65-80	282-344	6-7	14-17
		16.0					73-89	294-359	3-4	15-18
	40°	10.0	121-148	184-225	17-21	18-22	80-98	299-365	7-9	16-20
		16.0	117-143	167-204	10-13	19-23	89-108	311-380	4-5	17-21
	50°	10.0	123-151	222-271	17-20	17-21	95-116	315-385	9-11	19-23
		16.0	119-145	202-247	10-12	18-23	105-128	329-402	5-7	20-24
	60°	10.0	125-153	260-318	16-19	17-21	109-133	332-406	11-13	21-26
		16.0	120-147	237-289	10-12	18-22	121-148	346-423	6-8	22-27
	70°	10.0	127-155	298-365	15-19	17-20	124-151	349-427	12-15	23-28
		16.0	122-149	271-331	9-11	18-21	138-168	364-444	7-9	25-30
	80°	10.0	129-158	336-411	14-18	16-20	138-169	366-447	14-17	26-31
		16.0	124-152	306-374	9-11	17-21	154-188	381-466	8-10	27-33
	90°	10.0	131-160	374-458	14-17	16-19	153-187	383-468	16-19	28-34
		16.0	126-154	340-416	8-10	17-20	170-208	399-487	9-12	29-36
	100°	10.0	133-162	413-504	13-16	15-19				
		16.0	128-156	375-458	8-10	16-20				
EC096	30°	13.0					72-87	296-361	5-6	21-25
		22.0					75-92	301-368	3-4	22-26
	40°	13.0	114-139	155-190	14-17	22-27	88-107	314-384	6-7	24-29
		22.0	108-132	147-180	10-12	23-28	92-112	321-392	4-5	25-30
	50°	13.0	116-142	192-234	13-16	21-26	104-127	333-407	7-9	27-33
		22.0	111-135	182-222	9-12	22-27	109-133	340-415	5-6	28-34
	60°	13.0	119-146	228-279	13-16	21-26	120-146	352-430	8-10	30-37
		22.0	113-138	217-265	9-11	22-27	125-153	359-439	6-7	32-39
	70°	13.0	122-149	264-323	13-15	20-25	136-166	371-453	9-12	33-41
		22.0	116-142	251-307	9-11	21-26	142-174	378-462	7-8	35-43
	80°	13.0	125-152	301-368	12-15	20-24	152-185	389-476	11-13	36-44
		22.0	118-145	286-349	9-11	21-26	159-194	397-485	8-9	38-47
	90°	13.0	127-156	337-412	12-15	19-24	168-205	408-499	12-15	39-48
		22.0	121-148	320-392	9-10	20-25	176-215	416-509	8-10	41-51
	100°	13.0	130-159	374-457	12-14	19-23				
		22.0	124-151	355-434	8-10	20-24				
EC120	30°	16.0					73-89	266-325	5-6	15-18
		32.0					77-94	272-333	3-4	16-19
	40°	16.0	117-143	189-231	14-17	18-22	86-105	279-341	6-7	17-21
		32.0	112-137	178-217	8-9	19-24	90-110	286-350	4-5	18-22
	50°	16.0	126-154	221-270	14-17	18-21	162-198	293-358	7-8	20-24
		32.0	121-148	207-253	8-9	19-23	170-208	300-366	5-6	21-25
	60°	16.0	131-160	252-308	13-16	17-21	110-134	306-374	8-10	22-27
		32.0	125-153	237-290	8-9	18-22	115-141	314-383	6-7	23-29
	70°	16.0	135-165	284-347	13-16	17-20	122-150	320-391	9-11	24-30
		32.0	130-158	266-326	7-9	18-22	129-157	327-400	6-8	26-32
	80°	16.0	140-171	320-391	13-16	16-20	134-164	333-407	11-13	27-33
		32.0	134-164	300-367	7-9	17-21	141-172	341-417	7-9	28-35
	90°	16.0	144-176	360-440	13-16	16-19	147-179	347-424	12-14	29-36
		32.0	138-169	338-414	7-9	17-21	154-188	355-434	8-10	31-38
	100°	16.0	149-182	405-495	13-15	15-19				
		32.0	143-174	381-465	7-9	16-20				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

As a result of continuing research and development, specifications are subject to change without notice.

Operating Temperatures & Pressures, EC150-210

			OPERATING DATA							
			COOLING				HEATING			
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC150	30°	22.0					74-90	244-299	3-4	13-15
		38.0					78-95	251-306	2-3	13-16
	40°	22.0	122-149	183-224	14-18	19-23	87-106	257-314	4-5	15-18
		38.0	117-143	172-210	8-10	20-24	91-111	263-322	3-3	16-19
	50°	22.0	131-160	214-261	14-18	18-22	164-201	269-329	5-6	17-20
		38.0	126-154	201-245	8-10	19-24	173-211	276-337	3-4	18-22
	60°	22.0	136-166	244-298	14-17	18-22	111-136	282-344	6-7	19-23
		38.0	131-160	230-281	8-10	19-23	117-143	289-353	4-5	20-24
	70°	22.0	141-172	275-336	14-17	17-21	124-152	294-360	7-8	21-25
		38.0	135-165	258-316	8-10	18-22	131-160	302-369	5-6	22-27
	80°	22.0	145-178	310-378	14-17	17-20	136-166	307-375	8-9	23-28
		38.0	140-171	291-356	8-10	18-22	143-175	314-384	5-6	24-30
	90°	22.0	150-183	349-426	14-17	16-19	149-182	319-390	8-10	25-30
		38.0	144-176	328-401	8-9	17-21	156-191	327-400	6-7	26-32
	100°	22.0	155-189	392-480	13-16	16-19				
		38.0	149-182	369-451	8-9	17-21				
EC180	30°	25.0					64-78	248-303	5-6	15-18
		45.0					67-82	254-311	3-4	16-19
	40°	25.0	109-134	183-224	18-22	19-23	75-91	261-319	6-8	17-21
		45.0	105-128	172-210	10-12	20-25	79-96	267-327	4-5	18-23
	50°	25.0	118-144	214-261	18-22	19-23	142-173	273-334	8-10	20-24
		45.0	113-138	201-245	10-12	20-24	149-182	280-342	5-7	21-26
	60°	25.0	122-149	244-298	17-21	18-22	96-117	286-349	9-11	22-27
		45.0	117-143	230-281	10-12	19-24	101-123	293-358	6-8	24-29
	70°	25.0	126-154	275-336	17-21	18-22	107-131	299-365	11-13	25-30
		45.0	121-148	258-316	10-12	19-23	113-138	306-374	7-9	26-32
	80°	25.0	130-159	310-378	17-21	17-21	117-143	311-380	12-15	27-33
		45.0	125-153	291-356	10-12	18-22	123-151	319-390	8-10	29-35
	90°	25.0	134-164	349-426	17-20	17-20	128-157	324-396	13-16	29-36
		45.0	129-158	328-401	9-12	18-22	135-165	332-406	9-11	31-38
	100°	25.0	139-170	392-480	16-20	16-20				
		45.0	133-163	369-451	9-11	17-21				
EC210	30°	28.0					71-87	277-339	6-7	15-19
		52.0					75-92	284-347	4-5	16-20
	40°	28.0	118-144	194-237	21-25	19-23	84-102	291-356	7-9	18-22
		52.0	113-138	182-223	12-14	20-24	88-108	299-365	5-6	19-23
	50°	28.0	127-155	226-276	21-25	18-22	159-194	305-373	9-11	20-25
		52.0	122-149	213-260	12-14	19-24	167-204	313-383	6-7	21-26
	60°	28.0	131-160	259-316	21-25	18-22	108-132	320-391	10-13	23-28
		52.0	126-154	243-297	12-14	19-23	113-138	328-400	7-9	24-29
	70°	28.0	136-166	291-355	20-25	17-21	120-147	334-408	12-15	25-31
		52.0	130-159	273-334	12-14	18-22	126-154	342-418	8-10	27-32
	80°	28.0	140-171	328-401	20-24	17-20	131-161	348-425	14-17	27-34
		52.0	135-165	308-377	11-14	18-22	138-169	356-436	9-11	29-36
	90°	28.0	145-177	369-451	20-24	16-20	144-176	362-442	15-18	30-37
		52.0	139-170	347-424	11-14	17-21	151-185	371-453	10-12	32-39
	100°	28.0	149-183	415-508	19-24	16-19				
		52.0	143-175	391-477	11-14	17-21				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

As a result of continuing research and development, specifications are subject to change without notice.

Operating Temperatures & Pressures, EC240-360

			OPERATING DATA							
MODEL	ENTERING WATER TEMP, °F	WATER FLOW GPM	COOLING				HEATING			
			SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP RISE, °F	AIR TEMP DROP, °F	SUCTION PRESSURE PSIG	DISCHARGE PRESSURE PSIG	WATER TEMP DROP, °F	AIR TEMP RISE, °F
EC240	30°	32.0					68-84	256-313	5-7	19-23
		64.0					73-89	261-319	4-5	20-25
	40°	32.0	113-138	172-210	18-22	19-23	81-99	277-339	7-8	22-26
		64.0	110-134	161-196	12-14	20-24	86-105	283-346	5-6	23-28
	50°	32.0	116-142	206-252	17-21	19-23	93-114	299-365	8-9	24-29
		64.0	112-137	193-236	12-14	19-24	99-121	305-373	6-7	25-31
	60°	32.0	118-145	241-294	17-21	18-23	106-129	321-392	9-11	26-32
		64.0	115-140	225-275	11-14	19-23	113-138	327-400	7-8	28-34
	70°	32.0	121-148	275-336	17-21	18-22	118-145	342-418	10-12	29-35
		64.0	117-143	257-314	11-14	19-23	126-154	349-427	8-9	30-37
	80°	32.0	123-151	309-378	16-20	18-22	131-160	364-444	11-14	31-38
		64.0	120-146	289-353	11-13	19-23	139-170	371-454	8-10	33-40
	90°	32.0	126-154	344-420	16-20	18-22	143-175	385-471	12-15	33-41
		64.0	122-149	321-392	11-13	18-22	152-186	393-480	9-11	35-43
	100°	32.0	128-157	378-462	16-19	17-21				
		64.0	125-152	353-432	11-13	18-22				
EC300	30°	45.0					68-84	256-313	5-7	19-23
		75.0					73-89	261-319	4-5	20-25
	40°	45.0	117-143	210-256	15-19	21-26	81-99	277-339	7-8	22-26
		75.0	114-139	196-239	11-14	22-27	86-105	283-346	5-6	23-28
	50°	45.0	120-147	243-297	15-18	20-25	93-114	299-365	8-9	24-29
		75.0	117-143	227-277	11-14	21-26	99-121	305-373	6-7	25-31
	60°	45.0	123-150	276-337	14-17	20-24	106-129	321-392	9-11	26-32
		75.0	119-146	258-315	11-13	21-25	113-138	327-400	7-8	28-34
	70°	45.0	126-154	309-378	14-17	19-24	118-145	342-418	10-12	29-35
		75.0	122-149	289-353	10-13	20-25	126-154	349-427	8-9	30-37
	80°	45.0	129-157	343-419	13-16	19-23	131-160	364-444	11-14	31-38
		75.0	125-153	320-391	10-12	19-24	139-170	371-454	8-10	33-40
	90°	45.0	132-161	376-459	13-16	18-22	143-175	385-471	12-15	33-41
		75.0	128-156	351-429	10-12	19-23	152-186	393-480	9-11	35-43
	100°	45.0	134-164	409-500	12-15	17-21				
		75.0	131-160	382-467	9-11	18-22				
EC360	30°	50.0					65-80	282-344	6-7	14-17
		90.0					73-89	294-359	3-4	15-18
	40°	50.0	121-148	184-225	17-21	18-22	80-98	299-365	7-9	16-20
		90.0	117-143	167-204	10-13	19-23	89-108	311-380	4-5	17-21
	50°	50.0	123-151	222-271	17-20	17-21	95-116	315-385	9-11	19-23
		90.0	119-145	202-247	10-12	18-23	105-128	329-402	5-7	20-24
	60°	50.0	125-153	260-318	16-19	17-21	109-133	332-406	11-13	21-26
		90.0	120-147	237-289	10-12	18-22	121-148	346-423	6-8	22-27
	70°	50.0	127-155	298-365	15-19	17-20	124-151	349-427	12-15	23-28
		90.0	122-149	271-331	9-11	18-21	138-168	364-444	7-9	25-30
	80°	50.0	129-158	336-411	14-18	16-20	138-169	366-447	14-17	26-31
		90.0	124-152	306-374	9-11	17-21	154-188	381-466	8-10	27-33
	90°	50.0	131-160	374-458	14-17	16-19	153-187	383-468	16-19	28-34
		90.0	126-154	340-416	8-10	17-20	170-208	399-487	9-12	29-36
	100°	50.0	133-162	413-504	13-16	15-19				
		90.0	128-156	375-458	8-10	16-20				

This chart shows approximate temperatures and pressures for a unit in good repair. The values shown are meant as a guide only and should not be used to estimate system charge. This chart assumes rated air flow and 80° d.b./67° w.b. entering air temperature in cooling, 70° d.b. entering air temperature in heating. Heating data at entering fluid temperatures below 50° assumes the use of antifreeze. Operation in shaded area requires the extended range option.

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UNIT CHECK-OUT SHEET

Customer Data

Customer Name _____ Date _____
 Address _____
 Phone _____ Unit Number _____

Unit Nameplate Data

Unit Make _____
 Model Number _____ Serial Number _____
 Refrigerant Charge (oz) _____
 Compressor: RLA _____ LRA _____
 Blower Motor: FLA (or NPA) _____ HP _____
 Maximum Fuse Size (Amps) _____
 Minimum Circuit Ampacity (Amps) _____

Operating Conditions

	Cooling Mode	Heating Mode
Entering / Leaving Air Temp	_____ / _____	_____ / _____
Entering Air Measured at:	_____	_____
Leaving Air Measured at:	_____	_____
Entering / Leaving Fluid Temp	_____ / _____	_____ / _____
Compressor Volts / Amps	_____ / _____	_____ / _____
Blower Motor Volts / Amps	_____ / _____	_____ / _____
Fluid Flow (gpm)*	_____	_____
Fluid Side Pressure Drop*	_____	_____
Suction / Discharge Pressure (psig)*	_____ / _____	_____ / _____
Suction / Discharge Temp*	_____ / _____	_____ / _____
Suction Superheat*	_____	_____
Entering TXV / Cap Tube Temp*	_____	_____
Liquid Subcooling*	_____	_____

* Required for Troubleshooting ONLY

Auxiliary Heat

Unit Make _____
 Model Number _____ Serial Number _____
 Max Fuse Size (Amps) _____
 Volts / Amps _____ / _____
 Entering Air Temperature _____
 Leaving Air Temperature _____

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	CHECKS AND CORRECTIONS
ENTIRE UNIT DOES NOT RUN	Power supply off	Apply power, close disconnect
	Blown fuse	Replace fuse or reset circuit breaker. Check for correct fuses.
	Voltage supply low	If voltage is below minimum voltage specified on unit data plate, contact local power company.
	Thermostat	Set the fan to "ON", the fan should run. Set thermostat to "COOL" and lowest temperature setting, the unit should run in the cooling mode (reversing valve energized). Set unit to "HEAT" and the highest temperature setting, the unit should run in the heating mode. If neither the blower or compressor run in all three cases, the thermostat could be miswired or faulty. To ensure miswired or faulty thermostat verify 24 volts is available on the condensing section low voltage terminal strip between "R" and "C", "Y" and "C", and "O" and "C". If the blower does not operate, verify 24 volts between terminals "G" and "C" in the air handler. Replace the thermostat if defective.
BLOWER OPERATES BUT COMPRESSOR DOES NOT	Thermostat	Check setting, calibration, and wiring.
	Wiring	Check for loose or broken wires at compressor, capacitor, or contactor.
	Safety controls	Check UPM board red default L.E.D. for Blink Code
	Compressor overload open	If the compressor is cool and the overload will not reset, replace compressor.
	Compressor motor grounded	Internal winding grounded to the compressor shell. Replace compressor. If compressor burnout, install suction filter dryer.
	Compressor windings open	After compressor has cooled, check continuity of the compressor windings. If the windings are open, replace the compressor.
UNIT OFF ON HIGH PRESSURE CONTROL	Discharge pressure too high	In "COOLING" mode: Lack of or inadequate water flow. Entering water temperature too warm. Scaled or plugged condenser. In "HEATING" mode: Lack of or inadequate air flow. Blower inoperative, clogged filter or restrictions in ductwork.
	Refrigerant charge	The unit is overcharged with refrigerant. Reclaim refrigerant, evacuate and recharge with factory recommended charge.
	High pressure	Check for defective or improperly calibrated high pressure switch.
UNIT OFF ON LOW PRESSURE CONTROL	Suction pressure too low	In "COOLING" mode: Lack of or inadequate air flow. Entering air temperature too cold. Blower inoperative, clogged filter, or restrictions in ductwork. In "HEATING" mode: Lack of or inadequate water flow. Entering water temperature too cold. Scaled or plugged condenser.
	Refrigerant charge	The unit is low on refrigerant. Check for refrigerant leak, repair, evacuate and recharge with factory recommended charge.
	Low pressure switch	Check for defective or improperly calibrated low pressure switch.
UNIT SHORT CYCLES	Unit oversized	Recalculate heating and or cooling loads.
	Thermostat	Thermostat installed near a supply air grill, relocate thermostat. Readjust heat anticipator.
	Wiring and controls	Loose connections in the wiring or a defective compressor contactor.
INSUFFICIENT COOLING OR HEATING	Unit undersized	Recalculate heating and or cooling loads. If excessive, possibly adding insulation and shading will rectify the problem.
	Loss of conditioned air by leaks	Check for leaks in duct work or introduction of ambient air through doors or windows.
	Airflow	Lack of adequate air flow or improper distribution of air. Replace dirty filter.
	Refrigerant charge	Low on refrigerant charge causing inefficient operation.
	Compressor	Check for defective compressor. If discharge is too low and suction pressure is too high, compressor is not pumping properly. Replace compressor.
	Reversing valve	Defective reversing valve creating bypass of refrigerant from discharge to suction side of compressor. Replace reversing valve.
	Operating pressures	Compare unit operating pressures to the pressure / temperature chart for the unit.
	TXV/Capillary Tube	Check for possible restriction or defect. Replace if necessary.
	Moisture, noncondensables	The refrigerant system may be contaminated with moisture or noncondensables. Reclaim refrigerant, evacuate and recharge with factory recommended charge. Note: a liquid line dryer may be required.

GeoMaster, LLC
3512 Cavalier Dr. Ft. Wayne, IN 46808
Phone: 877-443-6411 Fax: 260-482-1489
www.geoexcel.com

