



Water to Water Geothermal Heat Pump 3-Phase Models – Both 208 & 480

Installation Instructions

Model: THA-*-2 (208, 3-Phase)**
THT-*-2 (208, 3-Phase)**
THA-*-3 (480, 3-Phase)**
THT-*-3 (480, 3-Phase)**



Installer

This manual provides the changes in electrical installation and is an addition to the standard GI101 Installation & Operating Instructions.

- This additional document only replaces GI101 pages 5, 26 and 45.
- All general information, mechanical details and installation, general operating and troubleshooting, etc. is the same for all models.

DO NOT DESTROY THIS MANUAL. PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE BY A SERVICE TECHNICIAN.

Important information

Model Number: _____
Serial Number: _____
Installing Contractor: _____



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THA-*** – Electrical Data – Three-Phase, 208

Model	Voltage	Compressor		Load Pump	Desup. Pump	Source Pump	Total	Min.	Max. Fuse/ HACR
	(60 Hz)	RLA	LRA	FLA	FLA	FLA	FLA	Ampac-	
THA-036	200/230-3	13.5	88	1.8	.15	4.4	19.9	23.2	30
THA-048	200/230-3	17.6	123	1.8	.15	4.4	24.0	28.4	40
THA-060	200/230-3	20.5	155	1.8	.15	4.4	26.9	32.0	50
THA-072	200/230-3	23.2	164	1.8	.15	4.4	29.6	35.4	50

THT-*** – Electrical Data – Three-Phase, 208

Model	Voltage	Compressor		Load Pump	Desup. Pump	Source Pump	Total	Min.	Max. Fuse/ HACR
	(60 Hz)	RLA	LRA	FLA	FLA	FLA	FLA	Ampac.	
THT-096	200/230-3	17.6 x 2	123 x 2	1.8	.15	4.4	24.0 x 2	28.4 x 2	40 x 2
THT-120	200/230-3	20.5 x 2	155 x 2	1.8	.15	4.4	26.9 x 2	32.0 x 2	50 x 2
THT-144	200/230-3	23.2 x 2	164 x 2	1.8	.15	4.4	29.6 x 2	35.4 x 2	50 x 2

THA-*** – Electrical Data – Three-Phase, 480

Model	Voltage	Compressor		Load Pump	Desup. Pump	Source Pump	Total	Min.	Max. Fuse/ HACR
	(60 Hz)	RLA	LRA	FLA	FLA	FLA	FLA	Ampac.	
THA-036									
THA-048									
THA-060									
THA-072									

THT-*** – Electrical Data – Three-Phase, 480

Model	Voltage	Compressor		Load Pump	Desup. Pump	Source Pump	Total	Min.	Max. Fuse/ HACR
	(60 Hz)	RLA	LRA	FLA	FLA	FLA	FLA	Ampac.	
THT-096									
THT-120									
THT-144	460/480	15 x 2	75 x 2						20 x 2

Notes:

1. Dual compressor models contain dual power circuits for the compressors, amperages shown are for each circuit.
2. All 3-phase models have 120V service source for internal control transformer and outputs for pumps. Thus the only current/power from the 3-phase source is the compressor.

Electrical Hookup – 3-Phase Models – Both 208 and 480

⚠ WARNING

DISCONNECT ALL ELECTRICAL POWER BEFORE ELECTRICALLY CONNECTING OR SERVICING THE UNIT. FAILURE TO DISCONNECT THE ELECTRICAL POWER BEFORE WORKING ON THIS PRODUCT CAN CREATE A HAZARD LEADING TO PERSONAL INJURY OR DEATH.

Compressor Power Source – 3-Phase

The nameplate and/or Installation and Operating Manual specification page provides RLA, LRA, and total amps requirement. Select the proper wire size to comply with your type of wire routing and NEC field wiring requirements.

The field power supply connection is located at the compressor contactor in the lower right hand corner of the control box. Dual compressor models have separate contactors that feed each compressor individually. A dedicated circuit must be fed to each contactor, see electrical data chart for circuit breaker requirements.

⚠ WARNING

USE ONLY COPPER WIRE FOR CONNECTION TO THE CIRCUIT BREAKER TERMINALS AND INSIDE THIS PRODUCT'S CABINET.

Disconnect – field provided external safety disconnect is required, see nameplate max amps.

Grounding – route and install the proper size ground conductor between the ground lug above the compressor contactor and the building service entrance panel ground bus. This must be a conductor wire size according to NEC code for the total amp rating of the installed model. The conduit is not sufficient ground conductor.

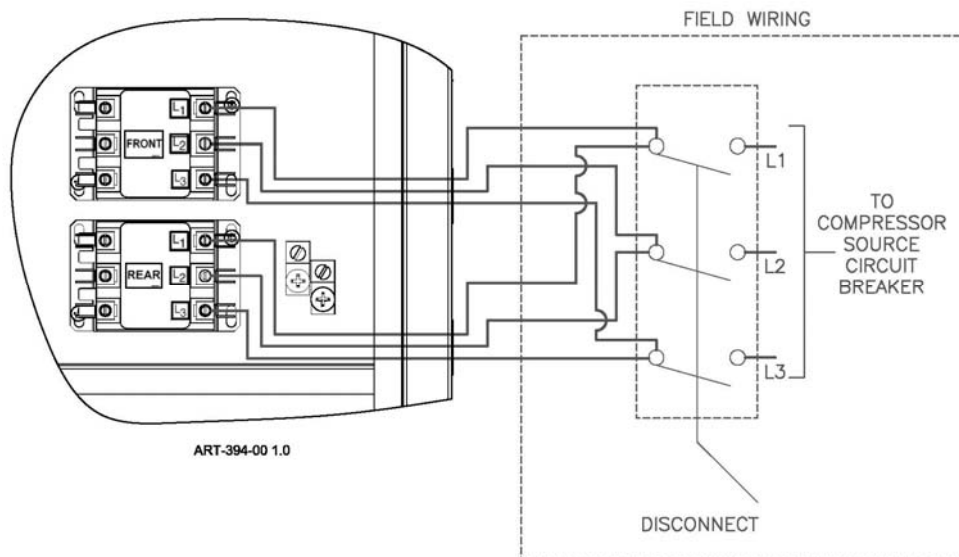
⚠ WARNING

TO AVOID THE RISK OF ELECTRIC SHOCK OR DEATH, WIRING TO THE UNIT MUST BE PROPERLY GROUNDED. FAILURE TO PROPERLY GROUND THE UNIT CAN RESULT IN A HAZARD LEADING TO PERSONAL INJURY OR DEATH.

Note: Some local codes and CEC electric code may require single disconnect and single feed for the main compressor power source. If this is the case, the installer must provide disconnect with multi-feeds per above.

⚠ WARNING

DISCONNECT ALL POWER SOURCES BEFORE OPENING OR SERVICING – COMPRESSOR POWER FEED, 120 CONTROL SERVICE, EXTERNAL PUMP RELAYS, ETC.

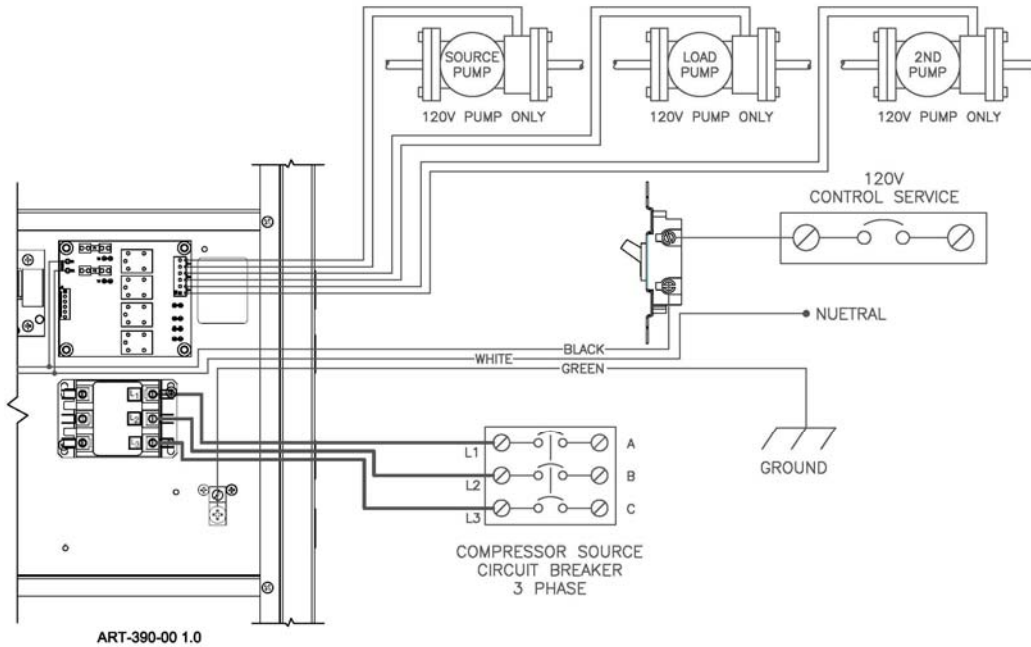


120 Control Service – these models require a 15-amp (minimum) standard general service 120 source. See below for hookup and appropriate servicing disconnect switch should be field installed external to the main geo cabinet.

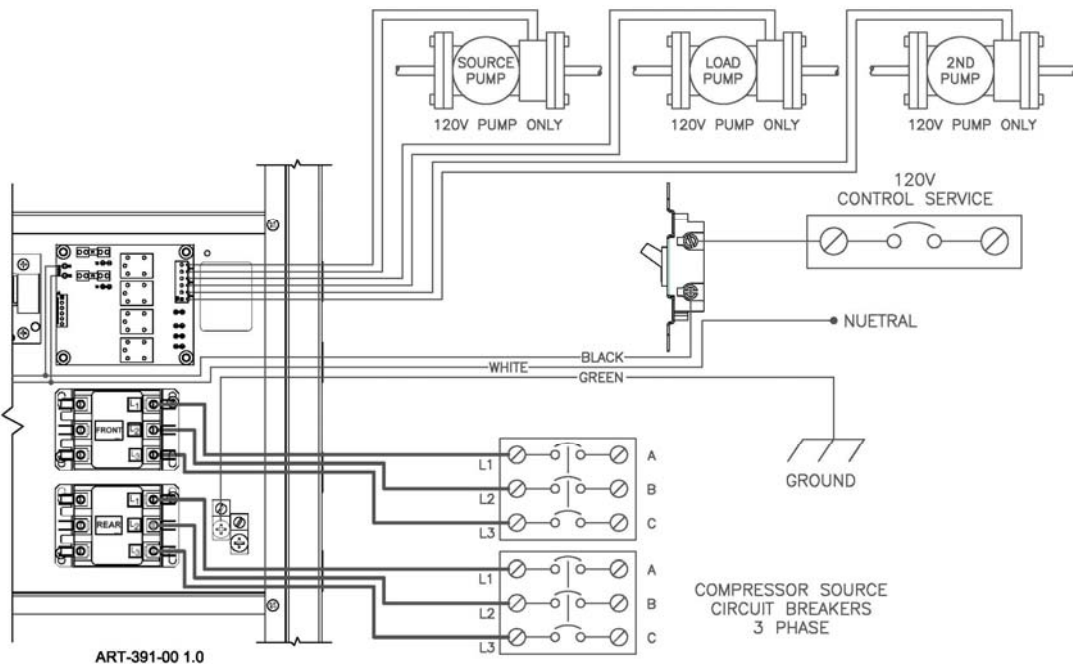
This 120 source is used for the control transformer and outputs 120VAC for both the source and load pumps. Each pump output is internally fused at 10 amps.

Comment – if either external pump requires a different voltage or power hookup, use 120V relay coil connected to the terminal block. The line voltage relay contacts can then apply the voltage required by the pumps being used at the specific installation site.

Single Compressor Models – 2.5 through 6-ton



Dual Compressor Models – 8 through 12-ton



Troubleshooting

Main THA/THT manual, page 45 – this is a rewrite for 120V control and external pump source.

Troubleshooting the pump relay board

The pump relay board has 4 LED's which display which relay is closed.

Yellow – is on when open loop water solenoid is energized.

Green – is on when the source and load pumps are energized.

Red – is on when the desuperheater pump relay has SWH terminal energized..

Blue – is on when the 2nd source loop pump is energized.

The relay board has a 15 amp fuse providing power for source loop, hydronic, and the desuperheater pumps. This is a standard inline, 1-1/4 x 1, 3AB.

Checking the high voltage input terminals

The high voltage enters the pump relay board on the upper left side, terminals W1 & W2.

This high voltage comes from the external 120V service.

WARNING

DISCONNECT ALL ELECTRICAL POWER BEFORE ELECTRICALLY CONNECTING OR SERVICING THE UNIT. FAILURE TO DISCONNECT THE ELECTRICAL POWER BEFORE WORKING ON THIS PRODUCT CAN CREATE A HAZARD LEADING TO PERSONAL INJURY OR DEATH.

Checking the high voltage output terminals

The high voltage leaves the pump relay board in 2 locations.

1. Terminal Block (TB1) is located in the upper right side of the pump relay board.

See the decal located to the right of the TB1 to determine wiring.

High voltage should be present at the respective terminals when the corresponding LED is on

Load pump terminals will be hot at the same time as source pump terminals.

Tip – if source voltage is present on the board W1, one of the LEDs is on, and high voltage is not present at the corresponding terminals, the switching relay is bad and the board will need to be replaced.

2. One of the desuperheater terminals (SWH) is located between the fuses and the other SHW terminal is below the fuses. These terminals carry **High Voltage**. To determine if the desuperheater pump has power measure across these two terminals. If a desuperheater pump needs to be disabled be sure the high voltage to the THERM GEO heat pump is disabled. Remove the SHW wire and place it on the parking tab (P) above the relays.

The pump relay board has one low voltage output for the 24 volt AC water solenoid. The 24VAC “common” wire is gray and is connected to terminal T7 on the right side of the pump relay board. The 24VAC “hot” wire is brown/yellow and is connected to terminal T4.

Tip – if the yellow LED #4 is on and the low voltage is not present at the water solenoid terminals, the switching relay is bad and the board will need to be replaced.