INSTALLATION

AND

SERVICE MANUAL

"STHP SERIES" PORTABLE HOT WATER AND STEAM AIR HEATERS

CAUTION BEFORE INSTALLING OR OPERATING THIS HEATING UNIT, PLEASE READ THIS INSTALLATION AND SERVICE MANUAL. ONLY QUALIFIED PERSON SHOULD MAKE INITIAL ADJUSTMENTS AND START-UP THIS UNIT.

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INSTALLATION INSTRUCTIONS

1.1 FOREWORD

The following recommendations are intended to supplement requirements of federal, state or local codes having jurisdiction. All local authorities having jurisdiction should be consulted before installation is made. The performance of the heating equipment described herein is conditioned upon installation be a qualified contractor in accordance with the provisions of this installation manual. The unit should be installed in accordance with the standards of the National Board of Fire Underwriters for which the application is being used and all wiring connections must conform to the latest National, State, and Local codes.

1.2 GENERAL DESCRIPTION

The Rupp TAH & STHP are hot water or steam heating units build with a 5/8 OD seamless copper tube coil, belt driven blowers, adjustable motor base and drives, internally insulated galvanized casing, thermo plastic enamel finish and is prewired and tested for blower and control operation.
Note: STHP units utilize steam distributing coils. Contact Temp-Air for proper coil selection depending on application.

1.3 UNPACKING AND INSPECTION

Inspect the unit for visible damage. Some units are wrapped with plastic (for shipping only). Remove plastic from the exterior of the unit or damage to the paint may occur. The unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at the time of delivery and immediately reported to the delivery carrier. Request a written inspection report from the Claims Inspector to substantiate any necessary claim. File the claim with the delivery carrier, not with Rupp Industries, Inc.

1.3 POSITIONING THE COOLING UNIT

Locate the unit level making certain that minimum clearance is maintained to allow service and inspection of the unit, as required by local codes. When possible, avoid facing the unit intake into the prevailing wind direction.

1.4 HOT WATER & STEAM PIPING

1. Be certain that adequate piping flexibility is provided. Stresses resulting from expansion of closely coupled piping and coil arrangement can cause serious damage.

1.4 HOT WATER & STEAM PIPING Continued

2. Use only pipe, hose, and fittings that are in good condition suitable for the pressures and water capacities involved.
3. Do not reduce pipe size at the coil return connection.

1.5 DUCT WORK

Duct work must be sized and installed in accordance with applicable codes and standards.

1.6 CONDENSATE TRAPS

Steam units should have condensate traps installed on the condensate return line of the steam coil. Each steam coil must be trapped separately and installed below the condensate return outlet. Traps should be Thermostatic and float control and must be sized for each application. Consult with your mechanical contractor for proper sizing.

1.7 ELECTRICAL WIRING

Caution! Make Sure This Unit is Properly Wired for the Power Supply Voltage.

These units can be wired for the following power supply voltages: 208, 230 and 460 volt 3 phase, 60 Hz. In addition, the TAH-20 and STHP-1000 and STHP-1500 can be wire for 208-230 volt single phase. The voltage selected may require changes in the motor and control voltage transformer wiring, and changes in the starter overload and the fusing. Before connecting the unit to any power source consult the wiring guide near the end of this service manual for additional information on the required changes.

Electrical wiring must be accomplished in accordance with applicable codes and standards. The appropriate wiring schematic and electrical rating must also be used.

2.1 PRELIMINARY CHECKS

After the unit has been positioned and all service connections made, complete the following checks before starting the unit. Keep in mind the fact that the heating unit may have been subjected to sever jolts during transportation and handling. These checks are essential to make sure that the unit is in proper operating condition.

2.1 PRELIMINARY CHECKS Continued

1. Check motor wiring, transformer wiring, starter overload and fusing to insure that all are correct for the supply voltage.
2. Check coil connections for correct direction of water flow. Check all water fittings for tightness.
3. Check to see that the remote thermostat is plugged into receptacle on the unit control panel.
4. Check all electrical terminals for tightness and contact.
5. Examine belt, motor and blower drives for proper adjustment. The motor and blower should turn easily by hand. Properly adjusted belts can be easily depressed about one inch. Make sure blower bearings and blower wheel are locked to shaft.

6. Inspect air stream for any obstructions.

2.2 SUGGESTED START-UP CHECK LIST

1. - Connect and leak test all water or steam piping and hoses.

2. - Check that all wiring is completed in accordance with the wiring diagram.

3. - Check that terminal screws tightened at all field wiring connections.

4. - Turn unit disconnect to "ON" position

5. - Set 3 position switch on remote station to "ON" position.

6. - Check control operation of components supplied by others.

2.3 SEQUENCE OF OPERATION:TAH 20 & TAH-40 & STHP-

1. Electrical power is brought in through the Main Disconnect Switch.
2. Power for the 24 volt control circuit is furnished by the Control Voltage Transformer.
3. Blower Switch in the OFF position:

   The unit is off and will not respond to a call for heating from the thermostat.

   Blower Switch in the ON position.

   The unit's blower runs continuously.

4. Power is supplied to the Low Temp safety control. If air temperature is above 40°F the blower is allowed to start when the thermostat calls for heat. When the thermostat is satisfied the blower will shut off.

2.4 SEQUENCE OF OPERATION:TAH 100 & TAH-150

1. Electrical power is brought in through the Main Disconnect Switch (ST-Ol).
2. Power for the 24 volt control circuit is furnished by the Control Voltage Transformer.
3. ON - OFF - AUTO Switch in the OFF position:

   The unit is off and will not respond to a call for cooling from the thermostat.

   ON - OFF - AUTO Switch in the ON position.

   The unit's blower runs continuously.

   ON - OFF - AUTO Switch in the AUTO position.

   The units blower operates in response to the room thermostat (TS-24). If the thermostat is calling for heat the blower will run. When the thermostat is satisfied the blower will shutoff

3.1 PERIODIC INSPECTIONS

Service and maintenance should be performed every time the cooling unit is moved to a new installation or after every 2,000 hours of operation. The following items should be checked at each inspection:

A) Check motor, transformer, and fusing for proper voltage settings.

B) Check wear and tension of belt; replace if necessary. (Tension of new belt should be re-adjusted after first two weeks of operation to compensate for stretching.)

C) Check cleanliness of coil.

D) Check and clean blower wheel. Inspection can be made by removing blower access panel. Clean as necessary.

E) Check the motor. Clean air inlets of motor, if needed.

F) Check and clean end fittings of thermostat.

G) Grease bearings.

SERVICE NOTES

Unit Specifications

	TAH-20	TAH-40	TAH-100	TAH-100VFD	TAH-150
Unit General					
CFM @ in WC. ESP	3,500 @ .625"	5,000 @ .75"	20,000 @ 3.5"	20,000 @ 3.5"	30,000 @ .5"
Dimensions L W H	63 x 34 x 76	106 x 46 x 50	120 x 100 x 83	120 x 100 x 83	166 x 100 x 102
Weight (lbs)	1,300	2,000	5,165	5,165	7,900
Filters	(2) - 24 x 24 x 2	-	-	-	-
Discharge connections	1- 20"	20W x 27H	(3) - 20"	(3) - 20"	(4)- 20"
Discharge locations	Top,End, Sides	End	Top,End, Sides	Top,End, Sides	Top, End
Casters	Yes	No	No	No	No
Skids	No	Yes	Yes	Yes	Yes
Pitched condensate drain pan	Yes	No	No	No	No
Condensate connections	1" NPT	3/4" NPT	(2) 1" NPT	(2) 1" NPT	(2) 1" NPT
Automatic air purge	No	No	Yes	Yes	Yes
Manual Air purge	Yes	No	No	No	No
Electrical					
Volts/Phase/Hz/MCA	208-230/1/60/15	208-230/1/60/35	-	-	-
Volts/Phase/Hz/MCA	208/3/60/9	208/3/60/9	208/3/60/78	-	208/3/60/100
Volts/Phase/Hz/MCA	230/3/60/9	230/3/60/20	230/3/60/70	-	230/3/60/90
Volts/Phase/Hz/MCA	460/3/60/5	460/3/60/10	460/3/60/35	460/3/60/35	460/3/60/45
Motor HP	2	5	20	20	2(15)
Safety Disconnect	Yes	Yes	Yes	Yes	Yes
Blower					
Blower type	Forward Curve	Forward Curve	BAF Plenum	BAF Plenum	BAF Plenum
Inlet vanes	No	No	Yes	No	Yes
Blower Size	12 - 12	22 -15	33	33	(2) 30
Blower RPM	1180	560	1240	1240	1310
Coil					
Coil size W x H	21" x 48"	32" x 36"	54" x 90"	54" x 90"	(2) 39" x 108"
Number of Rows	6	6	8	8	8
Fins per in.	10	10	8	8	8
Fin Type	Corrugated "B"	Corrugated "C"	Corrugated	Corrugated	Corrugated
Fin thickness	0.0075	0.0075	0.006	0.006	0.01
Tube size	0.625	0.625	0.625	0.625	0.625
Tube thickness	0.049	0.049	0.049	0.049	0.035
Coil circuiting	1/2 serpentine	3/4 serpentine	double serpentine	double serpentine	double serpentine
Coil connection size	2" NPT	2.5" NPT	4" 150# Flange	4" 150# Flange	4" 150# Flange
Heresies coating	No	No	Yes	Yes	Yes
Coil Mfg.	Heatcraft	Heatcraft	RAE	RAE	RAE

Unit Specifications Continued

	STHP-1000	STHP-1500	STHP-2000
Unit General			
CFM @ in WC. ESP	5,000 @ .75"	6,000 @ .75"	11,000 @ .75"
Dimensions L W H	106 x 46 x 50	106 x 46 x 50	106 x 46 x 50
Weight (lbs)	2,000	2,000	2,000
Filters	-	-	-
Discharge connections	20W x 27H	20W x 27H	20W x 27H
Discharge locations	End	End	End
Casters	No	No	No
Skids	Yes	Yes	Yes
Pitched condensate drain pan	-	-	-
Condensate connections	-	-	-
Automatic air purge	No	No	No
Manual Air purge	No	No	No
Electrical			
Volts/Phase/Hz/MCA	208-230/1/60/35	208-230/1/60/35	-
Volts/Phase/Hz/MCA	208/3/60/20	208/3/60/20	-
Volts/Phase/Hz/MCA	230/3/60/20	230/3/60/20	230/3/60/25
Volts/Phase/Hz/MCA	460/3/60/10	460/3/60/10	460/3/60/15
Motor HP	5	5	7.5
Safety Disconnect	Yes	Yes	Yes
Blower			
Blower type	Forward Curve	Forward Curve	Forward Curve
Inlet vanes	No	No	No
Blower Size	22 -15	22 -15	22 -15
Blower RPM	560	600	700
Coil			
Coil size W x H	32" x 36"	32" x 36"	32" x 36"
Number of Coils	1	1	2
Number of Rows	2	2	2
Fins per in.	10	10	10
Fin Type	Corrugated "C"	Corrugated "C"	Corrugated "C"
Fin thickness	0.0075	0.0075	0.0075
Tube size	0.625	0.625	0.625
Tube thickness	0.049	0.049	0.049
Coil circuiting	Distributing	Distributing	Distributing
Coil connection size	2.5" NPT	2.5" NPT	2.5" NPT
Herisite coating	No	No	No
Coil Mfg.	Heatcraft	Heatcraft	Heatcraft

STHP-1000/1500/200 Parts list

Part Description	STHP-1000	STHP-1500	STHP-2000	
Belts	80400.218	80400.218	AX-85	
Blower bearings	80300.009	80300.009	80300.009	
Blower RPM	550	600	700	
Blower Sheave	86900.051	86900.051	86900.507	
Blower sheave bushing	86900.239	86900.239	86900.239	
Blower Shaft	86800.016	86800.016	86800.016	
Blower wheel	88700.033	88700.033	88700.033	
Coil horizontal top slide angles	04701.045	04701.045	04701.045	
Coil horizontal bottom slide angles	04701.043	04701.043	04701.043	
Coil vertical slide angle	04701.044	04701.044	04701.044	
Coil, blank off angle	04701.042	04701.042	04701.042	
Coil, inlet connection hat section				
Coil, steam 1	81400.025	81400.025	81400.025	
Coil, steam 2	N/A	81400.025	81400.025	
Disconnect handle	82700.032	82700.032	82700.032	
Disconnect switch	82700.002	82700.002	82700.002	
Disconnect shaft	82700.034	82700.034	82700.034	
Disconnect fuse cover	83500.019	83500.019	83500.019	
Door blower left	54701.012	54701.012	54701.012	
Door Blower Right	54701.013	54701.013	54701.013	
Door control panel	54701.011	54701.011	54701.011	
Door steam	04701.040	04701.040	04701.040	
Fuse Adaptors	83500.003	83500.003	83500.003	
Fuses main 230 volt single phase	83500.072	83500.072	N/A	
Fuses main 230 volt three phase	83500.124	83500.124	83500.072	
Fuses main 460 volt three phase	83500.077	83500.077	83500.123	
Fuses transformer primary	83500.074	83500.074	83500.074	
Fuses transformer secondary	83500.055	83500.055	83500.055	
Indicator light	80700.012	80700.012	80700.012	
Indicator light bulb	80700.064	80700.064	80700.064	
Intake screen	04701.047	04701.047	04701.047	
Motor 5hp 230/460 three phase	85600.026	85600.026	N/A	
Motor 5hp 230 volt single phase	85600.5.12	85600.5.12	N/A	
Motor 7.5 HP 230/460 three phase	N/A	N/A	85600.7.5.19	
Motor overload 230 single phase	87300.072	87300.072	N/A	
Motor overload 230 three phase	87300.070	87300.070	87300.072	
Motor overload 460 three phase	87300.069	87300.069	87300.070	
Motor panel	04701.046	04701.046	04701.046	
Motor Sheave	86900.220	86900.220	86900.423	
Motor starter 1 phase units	87300.037	87300.037	N/A	

Motor starter 3 phase units	87300.036	87300.036	87300.036	
Relay 24 volt	86300.001	86300.001	86300.001	
Switch on/off	87500.009	87500.009	87500.009	
Switch on/off base	87500.015	87500.015	87500.015	
Thermostat	87800.031	87800.031	87800.031	
Thermostat assembly (complete)	50619.100	50619.100	50619.100	
Thermostat jack (cord end)	82900.031	82900.031	82900.031	
Thermostat jack (unit mounted)	82900.032	82900.032	82900.032	
Transformer 115 volt	88000.004	88000.004	88000.004	
Transformer 24 volt	88000.008	88000.008	88000.008	
Lo temp limit control	82000.009	82000.009	82000.009	