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September, 2006

INSTALLATION Step Down Transformer Kit models HSB/HC, V/VN, PT/PTN, WTC/WSC, WVC/WVN, WPC/WPN manufactured after September 1, 2005



WARNING

- 1) Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
- 2) All appliances must be wired strictly in accordance with wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
- Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.
- 4) Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.

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Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.

IMPORTANT

The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these units must be performed by a qualified installation and service agency. These manuals may contain excerpts from component supplier literature adapted for Modine products. Any accompanying component supplier literature is for general information.



Special Precautions

- Installation of wiring must conform with local building codes, or in the absence of local codes, the National Electric Code ANSI/NFPA 70 - Latest Edition. Unit must be electrically grounded in conformance to this code. In Canada, wiring must comply with CSA C22.1, Part 1, Electrical Code.
- 2) Disconnect supply voltage.
- 3) Verify electrical system supply voltage to ensure it matches the accessory transformer primary voltage rating.
- 4) Verify that the unit heater supply voltage listed on the serial plate is 115 Volts, 60 Hertz, 1 Phase.
- 5) Verify that the accessory transformer is correctly sized for the unit type, size, and supply voltage. The accessory item codes and kVA sizes are shown in Table 1.1.

Table 1.1Transformer Accessory Item Codes and Ratings

		Supply Voltage					
		200V/60Hz/		230/460V/		575V/60Hz/	
		1 or 3 phase		60Hz/3 phase		3 phase	
		Item		Item		Item	
Model	Size	Code	kVA	Code	kVA	Code	kVA
HSB/HC, WTC/WSC	18-63	48094	0.50	48099	0.25	48108	0.25
	86-121			48100	0.50	48109	0.50
	165-193	48095	1.00	48101	0.75	48110	0.75
	258-340			48102	1.00	48111	1.00
V/VN,	42-59	48096	0.50	48103	0.25	48112	0.25
	78-139			48104	0.50	48113	0.50
WVC/WVN	161-212	48097	1.00	48105	0.75	48114	0.75
	247-333			48106	1.00	48115	1.00
PT/PTN, WPC/WPN	279-333	48098	1.00	48107	1.00	48116	1.00

THIS MANUAL IS THE PROPERTY OF THE OWNER. PLEASE BE SURE TO LEAVE IT WITH THE OWNER WHEN YOU LEAVE THE JOB.

Transformer to Mounting Bracket Installation

 Review Table 2.1 to identify if the transformer accessory requires a factory supplied bracket to mount the transformer to the unit heater (on some models, the transformer mounts directly to the heater without the use of an extra bracket). If a bracket is not required, skip to the section titled, "Mounting the Transformer Accessory to the Unit Heater".

Table 2.1

Transformer Acces	sory Mountin	y Method
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		Supply Voltage						
		200V/60Hz/		230/460V/		575V/60Hz/		
		1 or 3 phase		60Hz/3 phase		3 phase		
		Item	Mount	Item	Mount	Item	Mount	
Model	Size	Code	wount	Code		Code		
HSB/HC, WTC/ WSC	18-63	48094	Bracket	48099	Direct	48108	Direct	
	86-121			48100	Bracket	48109	Bracket	
	165-193	48095	Bracket	48101	Bracket	48110	Bracket	
	258-340			48102		48111		
VAA	42-59	40000	Dracket	48103	Direct	48112	Direct	
WVC/ WVN	78-139	48096	Bracket	48104	Bracket	48113	Bracket	
	161-212	40007	Direct	48105	Direct	48114	Direct	
	247-333	40097	Direct	48106		48115		
PT/PTN, WPC/WPN	279-333	48098	Bracket	48107	Bracket	48116	Bracket	

2) Mount the Transformer to the mounting bracket using the ¼"-20 cap screws and ¼" nuts provided. Cap screws must be inserted from the back of the mounting bracket and into the transformer mounting holes as shown in Figure 1.1.

Figure 1.1 Transformer to Mounting Bracket Installation



Mounting the Transformer Accessory to the Unit Heater

For HSB/HC, WTC/WSC Models Bracket Mount:

- Mount the transformer/mounting bracket assembly on the left side of the unit heater (as viewed from the front, air blowing toward you) by slipping the bracket over the unitmounting rod. Tighten the unit mounting rod jam nut onto the transformer mounting bracket (see Figure 2.1).
- 2) Insert the foam pad between the bottom of the mounting bracket and the unit heater side panel as shown in Figure 2.1. Use two #10-24x½" self-drilling screws to fasten the transformer mounting bracket to the unit heater side panel, using the side panel screw locating dimples.

Figure 2.1 HSB/HC, WTC/WSC Model Bracket Mounted Transformer



For HSB/HC, WTC/WSC Models Direct Mount:

- Insert the foam pad between the integral top transformer mounting bracket and the unit heater side panel as shown in Figure 2.2. Use two #10-24x½" self-drilling screws to fasten the transformer to the unit heater side panel, using the side panel screw locating dimples.
- 2) Insert the foam pad between the back of the transformer jbox and the unit heater side panel as shown in Figure 2.2. From within the transformer j-box, use one #10-24x½? selfdrilling screw to fasten the transformer to the unit heater side panel, using the side panel screw locating dimples.

Figure 2.2 HSB/HC, WTC/WSC Model Direct Mounted Transformer



For V/VN, PT/PTN, WVC/WVN, WPC/WPN Models Bracket Mount:

- The transformer/mounting bracket assembly is mounted on the top of the casing for V/VN,WVC/WVN models and the back of the casing for PT/PTN, WPC/WPN models. The top for V/VN,WVC/WVN and back for PT/PTN, WPC/WPN is identified as the casing side opposite the side of leaving airflow with the fan guard.
- 2) Insert one foam pad between the bottom of the mounting bracket and the unit heater casing panel as shown in Figure 3.1. Insert the remaining foam pad between the mounting foot of the bracket and the unit heater casing panel, as indicated in Figure 3.1 (but not shown). On PT/PTN, WPC/WPN units, use two 5/16" nuts with lock washers to fasten the transformer mounting bracket to the existing threaded studs on the unit heater. See Figure 3.2.
- On V/VN,WVC/WVN units, use three #10-24x¹/₂" selfdrilling screws to fasten the transformer bracket to the unit heater casing panel. See Figure 3.1. On PT/PTN, WPC/WPN units, use two #10-24x¹/₂" self-drilling screws to fasten the transformer bracket to the unit heater casing. See Figure 3.2.

Figure 3.1 V/VN, WVC/WVN Model Bracket Mounted Transformer



Figure 3.2

PT/PTN, WPC/WPN Bracket Mounted Transformer



For V/VN, WVC/WVN Models Direct Mount:

- Insert the foam pad between the integral top transformer mounting bracket and the top of the casing for V/VN, WVC/ WVN models. The top for V/VN, WVC/WVN is identified as the casing side opposite the side of leaving airflow with the fan guard.
- Use two #10-24x¹/₂" self-drilling screws to fasten the transformer to the unit heater casing panel, using the casing panel screw locating guide holes.
- 3) Insert the foam pad between the back of the transformer j-box and the unit heater casing panel as shown in Figure 3.3. From within the transformer j-box, use one #10-24x¹/₂" self-drilling screw to fasten the transformer to the unit heater casing panel, using the casing panel screw locating guide hole.

Figure 3.3

V/VN, WVC/WVN Model Direct Mounted Transformer



Wiring the Transformer Accessory to the Unit Heater

- 1) Install the wiring harness (conduit, connectors and wires) between the transformer junction box and the unit heater junction box.
- Connect the wiring harness wiring ends in the unit heater junction box as shown in the unit heater wire diagram for 115V single-phase power.
- Within the transformer junction box, interconnect the transformer secondary leads and wiring harness wiring ends as follows:
 - Transformer wires X1 and X3 are connected to the white harness wire.
 - Transformer wires X2 and X4 are connected to the black harness wire.
- 4) Connect the incoming electrical power feed line to the transformer junction box with an appropriate box connector.
- 5) Within the transformer junction box, connect the incoming electrical power feed circuit ground wire to the transformer grounding lug. See Figure 3.4 for location of the ground lug.

Figure 3.4 Transformer Accessory Ground Lug Location



6) Within the transformer junction box, interconnect the transformer primary wires (labeled H1, H2, etc.) and connect the incoming electrical power feed wires as indicated in Table 3.1 for the voltage and transformer manufacturer supplied. The connection charts are also provided on the transformer casing.

Table 3.1 Transformer Accessory Primary Wiring Connections

Primary Voltage	208		240	480	600	
Supplier	Hevi-Duty	Jefferson	All	All	Hevi-Duty	Jefferson
Size	1.0KVA	All	All	All	All	All
Interconnect	H2 to H3	None	H1 to H3	H2 to H3	None Required	
Primary		Required	H2 to H4			
Connect Primary	H1 & H4	H1 & H2	H1 & H4	H1 & H4	H1 & H2	H1 & H2
Lines To						

7) Turn the power supply on to unit. Verify the voltage from the transformer to unit. Also verify that the unit operates as detailed in the unit Installation and Service Manual, 1-550 or AIR1-550 latest edition.

Commercial HVAC&R Division • Modine Manufacturing Company • 1500 DeKoven Avenue • Racine, Wisconsin 53403-2552 "HS/HSB/HC", "V/VN" & "PT/PTN" Model Series - Phone: 1.800.828.4328 (HEAT) • Fax: 1.800.204.6011 "WTC/WSC", "WVC/WVN" & "WPC/WPN" Model Series - Phone: 1.866.823.1631 (Toll Free) • Fax: 1.800.204.6011 © 2006 Modine Manufacturing Company 1-556 2 8/06 - Litho in USA