

# INSTALLATION INSTRUCTIONS

## SUMMER/WINTER SWITCH AND SUBBASE

for models – PD/BD, HD, HDS, PDP/BDP, PV/BV, PSH/BSH

### ⚠ WARNING

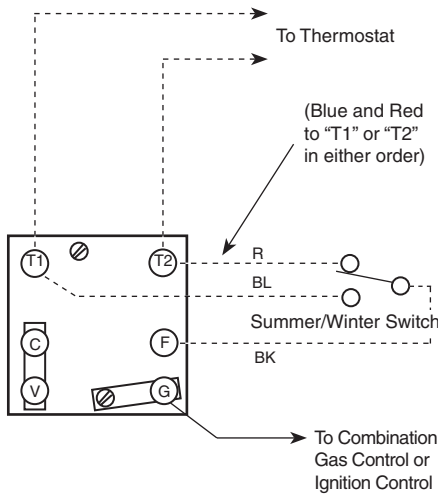
1. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
2. All units must be wired strictly in accordance with wiring diagram furnished with the unit. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. All wiring must be done with a wiring material having a temperature rating of at least 105°C.

### IMPORTANT

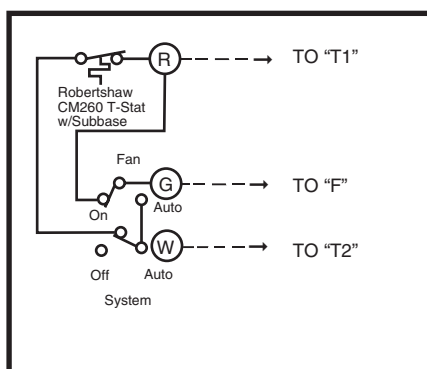
The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these units must be performed by a qualified installation and service agency. Modine manuals may contain excerpts from component supplier literature adapted for Modine products.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

Before proceeding with wiring the accessories described in this bulletin, make sure the unit has been installed, vented, piped and wired according to the Installation/Service Manual and Standard Wiring Diagram furnished with the unit heater. *(If the unit is used with a power exhauster, mount the power exhauster and power exhauster adapter as described in the installation instructions (6-530) packed with the power exhauster. The wiring instructions for the power exhauster are in both 6-530 and this bulletin.)*

### MODELS PD/BD – TYPICAL SUMMER/WINTER SWITCH WIRING



**Figure 1.1**  
**Typical Wiring – Summer/Winter Switch**  
**(Modine # 78727)**



**Figure 1.2**  
**Alternate wiring using Robertshaw**  
**CM260 Thermostat w/ SB-3A-1 Subbase**  
**(Modine #79187 and #78785 respectively)**

1. Remove the factory installed buss bar (jumper) from between terminals "T2" and "F" of terminal board.
2. Connect common of summer/winter switch to terminal "F" on terminal board.
3. Connect normally open switch of summer/winter switch to terminal "T1" on terminal board.
4. Connect normally closed switch of summer/winter switch to terminal "T2" on terminal board.
5. Connect thermostat between terminals "T1" and "T2" on terminal board.

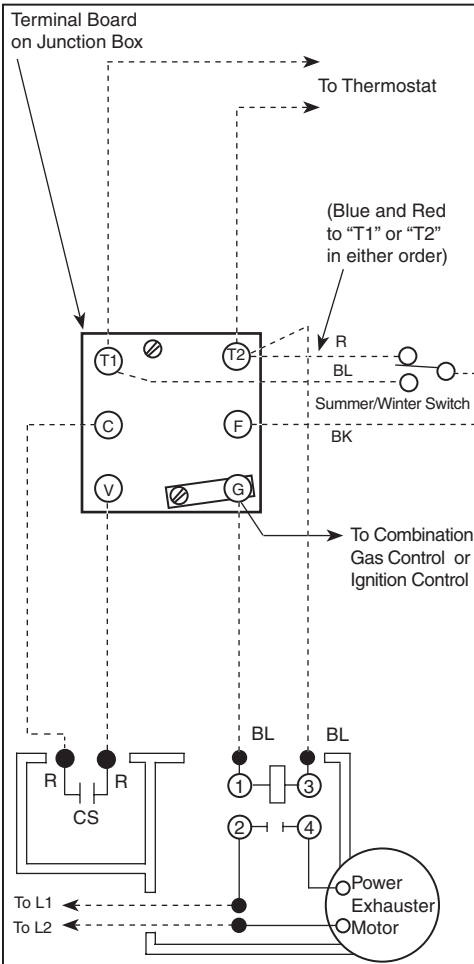
### Check-Out Procedure

With the power and gas supply turned off, set the thermostat to its lowest setting and place the summer/winter switch to the winter position. After making these adjustments proceed as follows.

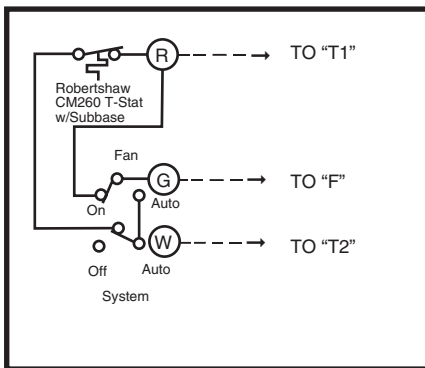
1. If the unit has a standing pilot, turn on the gas supply only, and light the pilot according to the instructions on the unit's serial plate, then proceed with Step 2.
2. If the unit is equipped with an intermittent pilot ignition system, turn on gas supply to unit and proceed with Step 2.
2. Turn on power supply to the unit. Nothing should happen.
3. Place the summer/winter switch in the summer position. After a delay of approximately 30 seconds the fan motor should start.
4. While the summer/winter switch is still in the summer position, and with the fan motor running, turn the thermostat up to call for heat. The main burner should now fire.
5. Turn the thermostat down again. The main burner should shut off and the fan motor should continue to run. During this step, allow the fan to run at least 1½ minutes to make sure it will continue to run. Modine units are equipped with a time delay relay and the motor will run approximately 30 to 90 seconds after the time delay relay has been de-energized.
6. After insuring that the fan motor will continue to run in the summer position, and with the thermostat set to its lowest setting, place the summer/winter switch in the winter position and wait for the time delay relay to turn the fan motor off.
7. After the fan motor has stopped, and with the summer/winter switch in the winter position, turn the thermostat up to call for heat. The main burner should fire and after a delay of approximately 30 seconds, the fan motor should run.

If the above sequence of operation does not occur, recheck all wiring until the necessary correction to the wiring is found and corrected. Set the thermostat to the desired set point and place summer/winter switch in desired position. Unit is now ready for use.

# MODELS PD/BD – COMBINATION SUMMER/WINTER SWITCH AND POWER EXHAUSTER



**Figure 2.1**  
**Typical Wiring – Combination Power Exhauster Switch with Summer/Winter Switch (Modine #78727)**



**Figure 2.2**  
**Alternate wiring, using Robertshaw CM260 thermostat w/ SB-3A-Subbase (Modine # 79187 and #78785 respectively)**

1. Remove the factory installed bus bars (jumpers) between terminals "T2" and "F", and between terminals "C" and "V".
2. Connect common of summer/winter switch to terminal "F" of terminal board.
3. Connect normally open switch of summer/winter switch to terminal "T1" of terminal board.
4. Connect normally closed switch of summer/winter switch to terminal "T2" of terminal board.
5. Connect one red lead from centrifugal switch (CS) of power exhauster to terminal "C" of terminal board and connect the other red lead from centrifugal switch (CS) to terminal "V" of terminal board.
6. Connect terminal (3) of power exhauster relay to terminal "T2" of terminal board.
7. Connect terminal (1) of power exhauster relay to terminal "G" of terminal board.
8. Connect terminal (2) of power exhauster relay to L1 of power supply in unit junction box.
9. Connect L2 lead from power exhauster motor to L2 lead of power supply in unit junction box.
10. Connect thermostat between terminals "T1" and "T2" of terminal board.

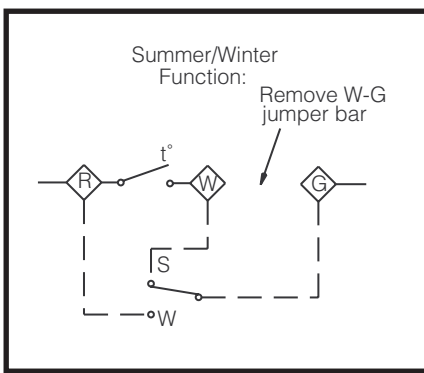
## Check-Out Procedure

With the power and gas supply turned off, set the thermostat to its lowest setting and place the summer/winter switch in the winter position. After making these adjustments, proceed as follows.

1. If the unit has a standing pilot, turn on the gas supply only, and light the pilot according to the instructions on the unit's serial plate, then proceed with Step 2. If the unit is equipped with an intermittent pilot ignition system, turn on gas supply to the unit and proceed with Step 2.
2. Turn on power supply to the unit. Nothing should happen.
3. Place the summer/winter switch in the summer position. After a delay of 30 to 90 seconds only the fan motor should start.
4. While the summer/winter switch is still in the summer position, and with the fan motor running, turn the thermostat up to call for heat. The power exhauster motor should come on, the centrifugal switch should close, and the main burner should fire.
5. Turn the thermostat down again. The main burner and power exhauster motor should shut off, but the fan motor should continue to run. During this step, allow the fan to run at least 90 seconds to make sure it will continue running. Modine units are equipped with a time delay relay and the motor will run 30 to 90 seconds after the time delay relay has been de-energized.
6. After insuring that the fan will continue to run in the summer position, and with the thermostat set at its lowest setting, place the summer/winter switch in the winter position and wait for the time delay relay to turn the fan motor off.
7. After the fan motor has stopped, and with the summer/winter switch in the winter position, turn the thermostat up to call for heat. The power exhauster should start, the centrifugal switch should close and the main burner should fire. After a delay of 30 to 90 seconds fan motor should run.
8. Turn the thermostat down again. The main burner and power exhauster motor should shut off. The fan motor should continue to run for 30 to 90 seconds and then shut off.
9. Check the power exhauster centrifugal switch for proper function. To do this, remove the centrifugal switch lead from terminal "V" of the terminal board. Turn up the thermostat to call for heat. The power exhauster motor should run, but the main burner should not light. After a 30 second delay, the fan motor should operate. The main burner should still not fire.
10. Turn down the thermostat and allow the power exhauster motor and fan motor to stop running. Reconnect the centrifugal switch lead to terminal "V" of the terminal board. Recycle the unit as described in Steps 7 and 8.

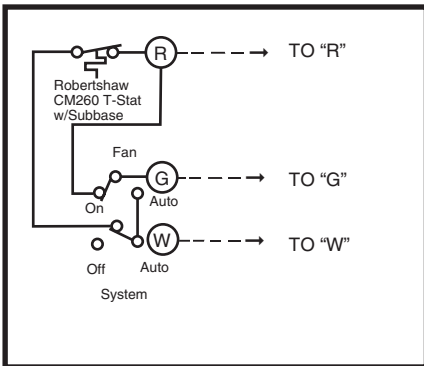
If the unit does not operate in the sequence describe above, recheck all of the wiring until the necessary correction to the wiring is found and corrected. Set the thermostat to the desired set point and switch the summer/winter switch to the desired position. The unit is now ready for use.

# MODELS HD, HDS - TYPICAL SUMMER/WINTER (OR SUBBASE) SWITCH WIRING



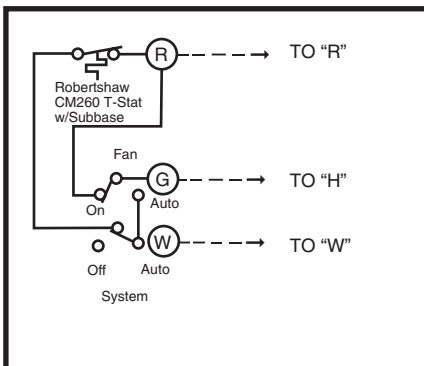
**Figure 3.1**

**Series 103 Typical Wiring - Summer/Winter Switch (Modine #7827)  
(24v Thermostat, 115v or 200/230v Summer/Winter Switch)**



**Figure 3.2**

**HD Series 103, HDS Series 101 Alternate wiring using Robertshaw CM260 Thermostat w/ SB-3A-1 Subbase (Modine #79187 and #78785 respectively)**



**Figure 3.3**

**HD Series 101 & 102 Wiring using Robertshaw CM260 Thermostat w/ SB-3A-1 Subbase (Modine #79187 and #78785 respectively)**

Installation procedures that follow are for units with the corresponding series identity number that may be found in the 5th through the 7th digits of the serial number. For example, a unit with the serial number "30011033603-0981" has the 5th through the 7th digits as 103 as shown underlined above. Match the series ID from the unit serial plate with the series ID listed in the heading of the following directions to determine which Procedure corresponds to your unit.

### Installation Procedure (HD Series 103, HDS Series 101)

1. Turn off gas and power supply to the unit.
2. Remove the factory installed jumper bar between "W" and "G" terminals on the circuit board.
3. Connect the common of the summer/winter switch to the "G" terminal of the circuit board.
4. Connect the normally open terminal of the summer/winter switch to the "R" terminal of the circuit board.
5. Connect the normally closed terminal of the summer/winter switch to the "W" terminal of the circuit board.
6. Connect the thermostat between the "R" and the "W" terminal on the circuit board.

### Installation Procedure (HD Series 101 & 102)

1. Turn off gas and power supply to the unit.
2. Remove the blue jumper wire between the "W" terminal on the circuit board and the "H" terminal of the time delay relay.
3. Connect the "G" terminal of the sub base to the "H" terminal of the Time Delay Relay.
4. Connect the "R" terminal of the sub base to the "R" terminal of the circuit board.
5. Connect the "W" terminal of the sub base to the "W" terminal of the circuit board.

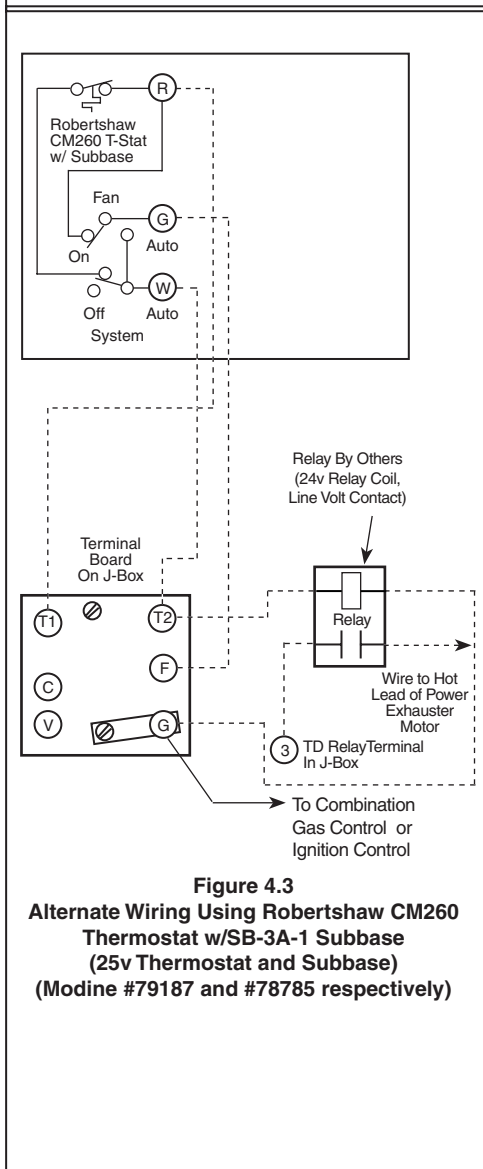
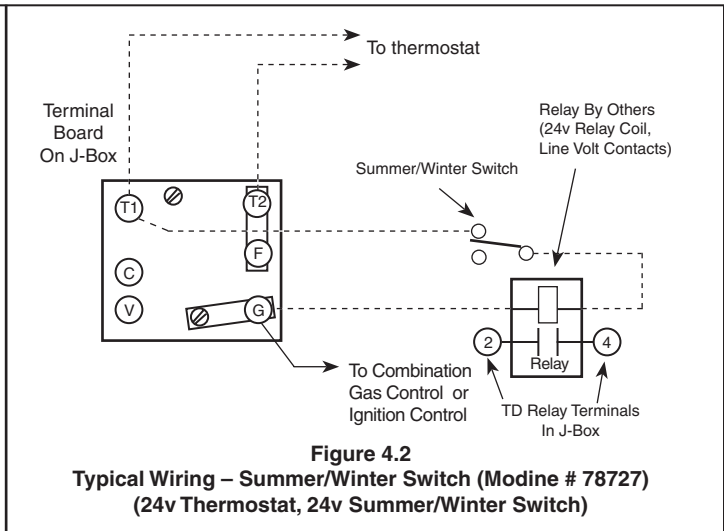
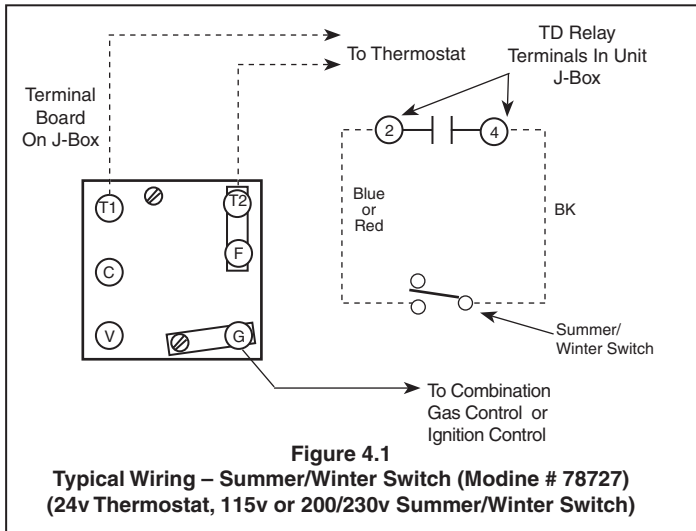
### Check-Out Procedure

With the gas and power supply turned off, set the thermostat to its lowest setting and place the summer/winter switch (or thermostat fan control) in the "winter" (or "auto") position. After making these adjustments proceed as follows.

1. Turn on the gas supply.
2. Turn on the power supply to the unit. Nothing should happen.
3. Place the summer/winter switch (or thermostat fan control) in the "summer" (or "on") position. After a delay of approximately 60 (30-110 for series 101 & 102) seconds the fan motor should start.
4. While the summer/winter switch (or thermostat fan control) is still in the "summer" (or "on") position, and with the fan motor running, turn the thermostat up to call for heat. The power exhauster should start and after approximately 30 seconds the burner should fire.
5. Turn the thermostat down again. The burner should shut off and the fan motor should continue to run. During this step, allow the fan to run at least 1 ½ minutes to make sure it will continue to run. Hot Dawg units are equipped with a time delay feature that allows the fan to run for 50 (45 for series 101 & 102) seconds to cool the heat exchanger after a call for heat.
6. After insuring that the fan motor will continue to run in the "summer" (or "on") position, set the thermostat to its lowest setting. Place the summer/winter switch (or thermostat fan control) in the "winter" (or "auto") position and wait for the time delay to turn the fan motor off.
7. After the fan motor has stopped, and with the summer/winter switch (or thermostat fan control) in the "winter" (or "auto") position, turn the thermostat up to call for heat. The power exhauster should start, the burner should light in approximately 30 seconds and after a delay of approximately 60 seconds, the fan should start.

If the above sequence of operation does not occur, recheck all wiring until the necessary corrections to the wiring is found and corrected. Set the thermostat to the desired set point and place the summer/winter switch (or thermostat fan control) in the desired position. Unit is now ready for use.

# MODELS PDP/BDP/PV/BV – TYPICAL SUMMER/WINTER SWITCH WIRING



1. Turn off gas and power supply to unit.
2. Determine which method of summer/winter control is desired, Figure 4.1, 4.2 or 4.3.
3. Wire unit according to the method selected. **Note: If the method selected is as described in Figure 4.3, the factory supplied buss bar between terminals "T2" and "F" must be removed** prior to wiring in thermostat and subbase.
4. Check wiring using the Check-Out Procedure.

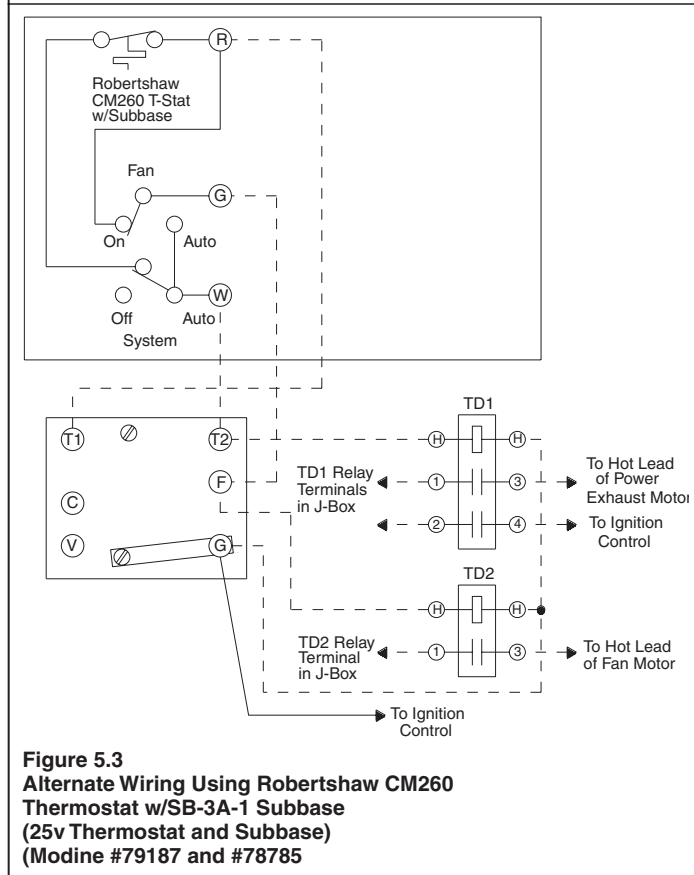
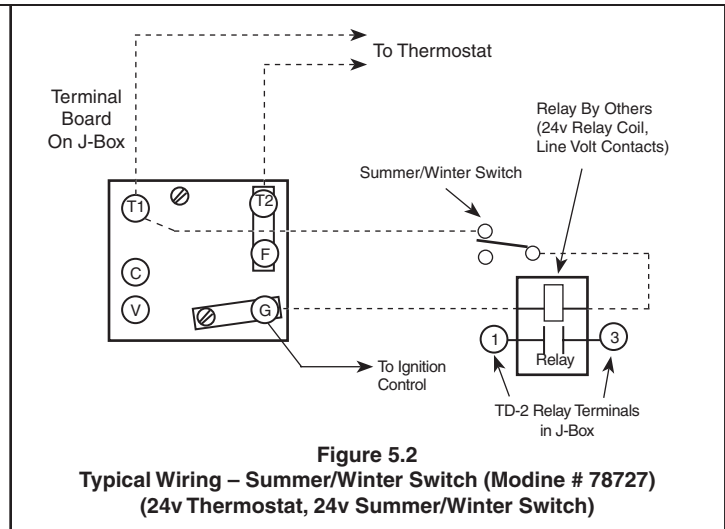
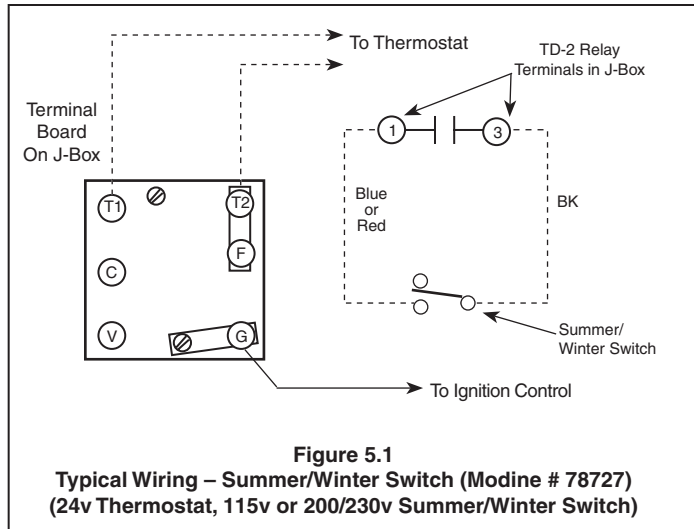
### Check-Out Procedure

With the power and gas supply turned off, set the thermostat to its lowest setting and place the summer/winter switch to the winter position. After making these adjustments proceed as follows:

1. Turn on gas and power supply to the unit. Nothing should happen.
2. Place the summer/winter switch in the summer position. The fan motor should start, except when wired as shown in Figure 4.3. In that case, after a delay of 30 to 90 seconds, the fan motor should start.
3. While the summer/winter switch is still in the summer position, and with the fan motor running, turn the thermostat up to call for heat. The power exhaustor motor should come on, the pressure switch should close, and the main burner should fire. Allow burner to fire for 1 to 2 minutes.
4. Turn the thermostat down again. The main burner should shut off and the fan motor should continue to run. During this step, allow the fan to run at least 90 seconds to make sure it will continue running. Modine units are equipped with a time delay relay and the motor will run 30 to 90 seconds after the time delay relay has been de-energized.
5. After insuring that the fan motor will continue to run in the summer position, and with the thermostat set to its lowest setting, place the summer/winter switch in the winter position and wait for the time delay relay to turn the fan motor off.
6. After the fan motor has stopped, and with the summer/winter switch in the winter position, turn the thermostat up to call for heat. The power exhaustor motor should come on, the pressure switch should close, the main burner should fire and after a delay of 30 to 90 seconds, the fan motor should run.

If the above sequence of operation does not occur, recheck all wiring until the necessary correction to the wiring is found and corrected. Set the thermostat to the desired set point and place summer/winter switch in desired position. Unit is now ready for use.

# MODELS PSH/BSH – TYPICAL SUMMER/WINTER SWITCH WIRING



### Check-Out Procedure

With the power and gas supply turned off, set the thermostat to its lowest setting and place the summer/winter switch to the winter position. After making these adjustments proceed as follows:

1. Turn on gas and power supply to the unit. Nothing should happen.
2. Place the summer/winter switch in the summer position. The fan motor should start, except when wired as shown in Figure 5.3. In that case, after a delay of approximately 30 seconds, the fan motor should start.
3. While the summer/winter switch is still in the summer position, and with the fan motor running, turn the thermostat up to call for heat. The power exhauster motor should come on, the pressure switch should close and the main burner should fire. Allow burner to fire for 1 to 2 minutes.
4. Turn the thermostat down again. The main burner should shut off and the fan motor should continue to run. During this step, allow the fan to run at least 90 seconds to make sure it will continue running. Modine units are equipped with a time delay relay and the motor will run approximately 30 to 90 seconds after the time delay relay has been de-energized.
5. After insuring that the fan motor will continue to run in the summer position, and with the thermostat set to its lowest setting, place the summer/winter switch in the winter position and wait for the time delay relay to turn the fan motor off.
6. After the fan motor has stopped, and with the summer/winter switch in the winter position, turn the thermostat up to call for heat. The power exhauster motor should come on, the pressure switch should close, the main burner should fire and after a delay of approximately 30 seconds, the fan motor should run.

1. Turn off gas and power supply to unit.
2. Determine which method of summer/winter control is desired, Figure 5.1, 5.2 or 5.3.
3. Wire unit according to the method selected. **Note: If the method selected is as described in Figure 5.3, the factory supplied buss bar between terminals "T2" and "F" must be removed** prior to wiring in thermostat and subbase.
  - a. Remove TD1 relay yellow wire from unit "F" terminal and connect to unit "T2" terminal.
  - b. Remove TD2 relay brown wire from (4) terminal on TD1 and wire to unit "F" terminal.
  - c. Wire thermostat "R" terminal to unit "T1" terminal.
  - d. Wire thermostat "G" terminal to unit "F" terminal.
  - e. Wire thermostat "W" terminal to unit "T2" terminal.
4. Check wiring using the Check-Out Procedure.

If the above sequence of operation does not occur, recheck all wiring until the necessary correction to the wiring is found and corrected. Set the thermostat to the desired set point and place summer/winter switch in desired position. Unit is now ready for use.

## INFORMATION INSTRUCTIONS — LOW VOLTAGE RELAY

### Electrical Data

Coil — 24V 50/60 Hz

Contact — Rated at 1 hp @ 125V, 2 hp @ 250V

Relay contains one pair of normally open (NO) contacts for load switching.

### Physical Data

Dimensions — 3" H x 2-5/8" W x 2-1/2" L (See Figure 5.1)

Enclosure — General Purpose with 1/2" conduit connector

### Application

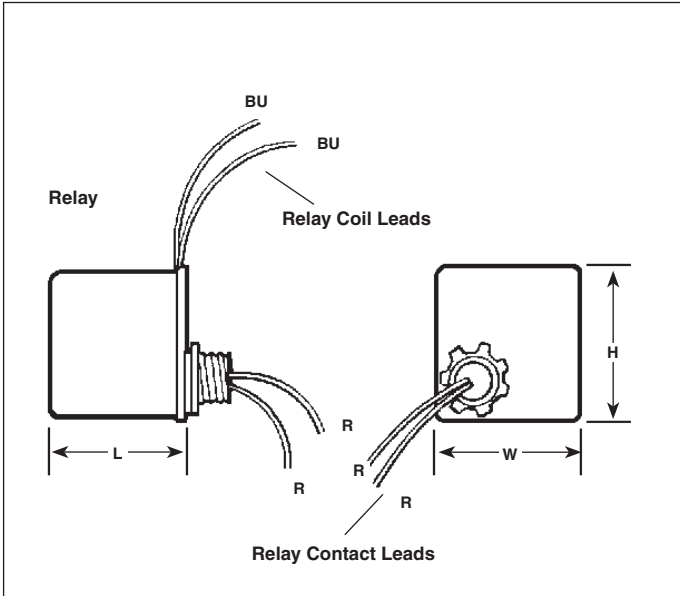
Low voltage relays can be used for controlling multiple units off of one thermostat, isolation of power exhauster motors when summer fan switches are used, or as unit interlocks between the unit and other mechanical equipment.

### Installation

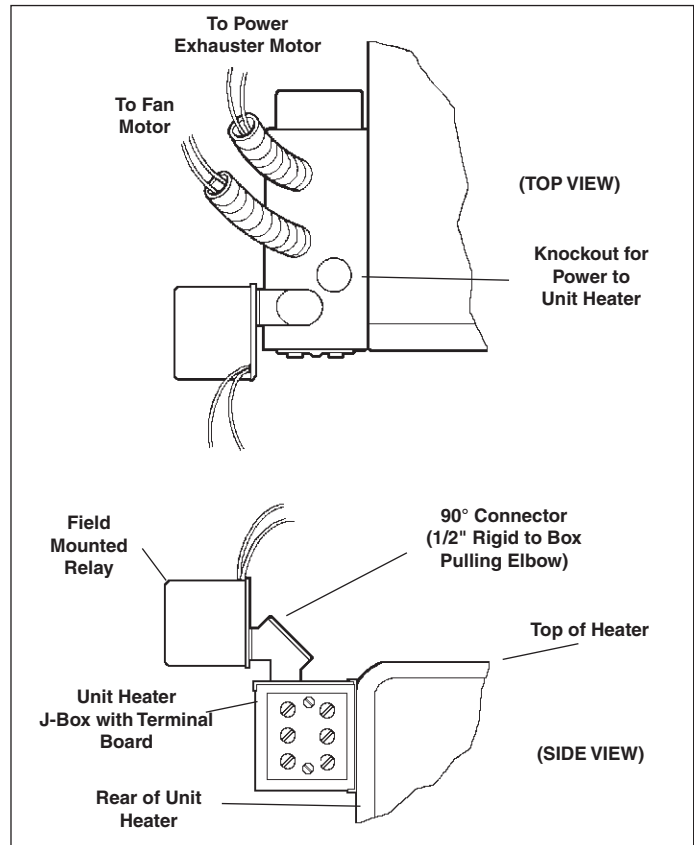
Modine low voltage relays are shipped separately for field mounting and wiring.

When this low voltage relay is to be used to isolate the power exhauster on PV/BV/PSH/BSH models during the summer, or when a summer/winter switch or thermostat sub-base is used, it may be desirable to mount the relay directly to the unit heater junction box. This can be accomplished with the use of a 1/2", Rigid to Box Pulling Elbow and mounting the relay as shown. (See Figure 6.2)

**Figure 6.1**  
**Low Voltage Relay**



**Figure 6.3**  
**Mounting of Low Voltage Relay**



**Figure 6.3**  
**Illustration of Summer/Winter Toggle Switch**

