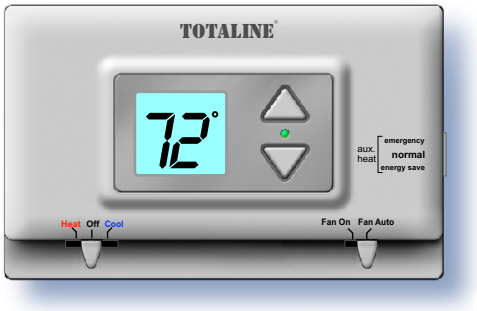
OWNER'S MANUAL MODEL P474-0140

Non-Programmable Digital Thermostat

HEAT PUMP THERMOSTAT

2 HEAT, 1 COOL



- Millivolt Compatible
- Battery or System Powered
- Digital Display
- DC Voltage Compatible
- Stages: 2-Heat, 1-Cool
- Easy Operation

TOTALINE®

Star

Replacement Components Division - Carrier Corporation

Contents

Page #

Safety Warnings

P/N P474-0140

CAUTION

Follow *Installation Instructions* carefully.

DISCONNECT POWER TO THE HEATER - AIR CONDITIONER BEFORE REMOVING THE OLD THERMOSTAT AND INSTALLING THE NEW THERMOSTAT.

WARNING

CAUTION

The two AA alkaline batteries must be replaced at least once every 12 months to ensure proper operation. The Low Battery icon (fig. 1) will appear on the display when it is time to replace the batteries. If the thermostat is connected to 24v power, the batteries should still be installed, but are not required.

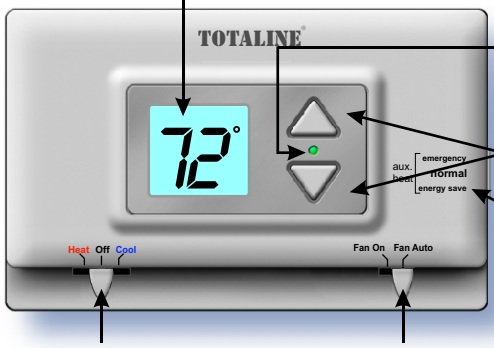
FIG. 1

When Lb is displayed the batteries must be replaced immediately. The manufacturer cannot be liable for improper operation of the thermostat if the batteries are not immediately replaced.

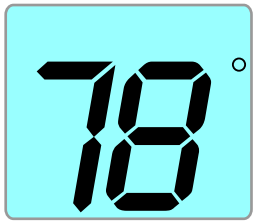
Annual battery replacement is especially critical in locations subject to freezing temperatures. The thermostat will be unable to turn on the heating system if the batteries are exhausted.

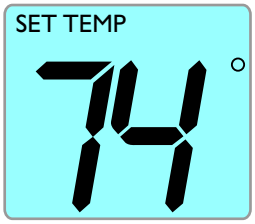
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Front Panel


DISPLAY
TOTALINE
72°
aux. heat
emergency
normal
energy save
Heat Off Cool
Fan On Fan Auto
AUX HEAT INDICATOR
UP & DOWN BUTTONS
AUX HEAT SWITCH
Emergency
Normal
Lockout
MODE SWITCH
Heat, Off or Cool
FAN SWITCH
On or Auto

Display

❶ 

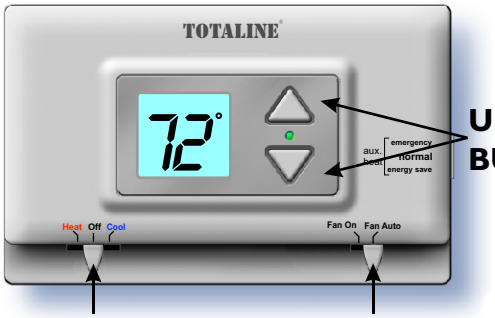
❷ 

❶ Current room temperature.

❷ If the UP or DOWN button is pressed the thermostat will show the Set Temp indicator. When Set Temp is displayed you may use the UP or DOWN button to adjust the desired room temperature.

NOTE: *After five seconds with no button presses the thermostat will revert back to show the current room temperature.*

Normal Operation



UP & DOWN BUTTONS

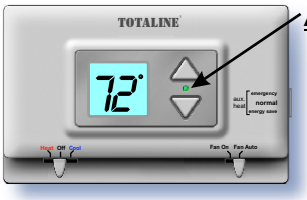
MODE SWITCH Heat, Off or Cool

FAN SWITCH On or Auto

Operation

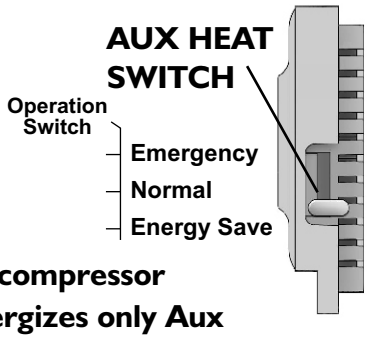
1. Select Heat or Cool with the Mode Switch.
2. Normally leave the fan switched to Fan Auto. In Fan Auto, the fan will turn on only with a heat or cool demand. When Fan On is selected, the fan will run continuously.
3. Adjust the desired set temperature with the UP and DOWN buttons.

Aux Heat



<u>Aux Heat Indicator</u> - This LED will illuminate when the thermostat has energized Aux Heat.* (W2 terminal)

The LED will only turn on when the thermostat is powered from the HVAC System. The cost of operating Electric Strip Heat (Aux Heat) is normally significantly more expensive than the cost of operating Heat Pump.



<u>Emergency</u> - Disables all compressor functions and energizes only Aux Heat to satisfy the heat demand.**

<u>Normal</u> - Aux Heat is allowed to run, if necessary, along with the heat pump to satisfy the heat demand.

<u>Energy Save</u> - Aux Heat will never turn on regardless of the heat demand.

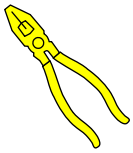
** When the Aux Heat Switch is in the Emergency position the compressor will also be locked out during cooling operation.

Preparation

Proper installation of the thermostat will be accomplished by following these step by step instructions. If you are unsure about any of these steps, call a qualified technician for assistance.

These tools will be required:

Flat Blade Screwdriver



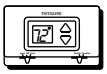
Wire cutter & Stripper

Make sure your Heat Pump is working properly before beginning installation of the thermostat.

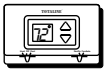
Carefully unpack the thermostat. Save the screws and instructions.

Turn off the power to the Heat Pump at the main fuse panel.

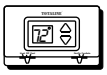
Remove & Replace Old Thermostat



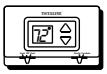
Remove the cover of the old thermostat. If it does not come off easily check for screws.



Loosen the screws holding the thermostat base or subbase to the wall, and lift away.



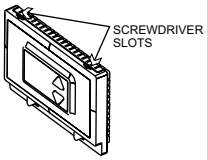
Disconnect the wires from the old thermostat. Tape the ends of the wires as you disconnect them, and mark them with the letter of the terminal for easy reconnection to the new thermostat.



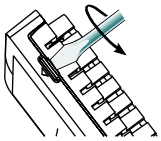
Keep the old thermostat for reference purposes, until your new thermostat is functioning properly.

Battery Replacement

1. The top of the thermostat housing has two screwdriver slots to assist in separating the thermostat front from the sub-base.

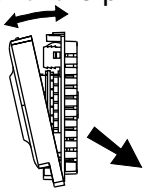


2. To pull the housing apart, insert a small blade screwdriver into the slot and rotate 90˚. This will release the top housing snaps.



3. Repeat this procedure in the other screw driver slot.

4. Separate the thermostat front from the sub-base by pulling the top forward until the pins release, and then lift the bottom out.



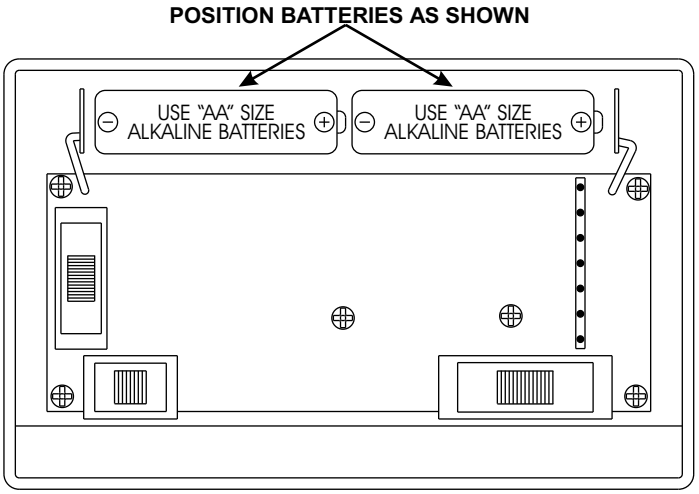
Next Page

The batteries must be replaced immediately when the thermostat displays the low battery icon (fig.1).

FIG. 1

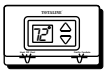
Battery Replacement

5 Remove the old batteries and replace with new AA alkaline batteries at least once every year or when the low battery icon Lb appears (pages 3 and 10).



If the thermostat is connected to 24v power, the batteries should still be installed.

Wire Connections



If the terminal designations on your old thermostat do not match those on the new thermostat, ***refer to the chart below or the wiring diagrams that follow.***

Wire from the old thermostat terminal marked	Function	Install on the new thermostat connector marked
C	Common	C (optional)
W1, W or H	Auxiliary Heat	W2
Y1 or Y	Cooling	Y
O	Rev. Valve (Energize to Cool)	O
B	Rev. Valve (Energize to Heat)	B
G or F	Fan	G
Rc, R, M, Vr, A	Power	R

Thermal Insulating Sheet

A label is provided on the backplate that prevents drafts originating inside the wall from entering the thermostat.

These drafts, left unchecked, may cause incorrect room temperature readings.

Please do not remove this label from the thermostat. Insert the wires through the slots provided in the label as shown in Fig. 1

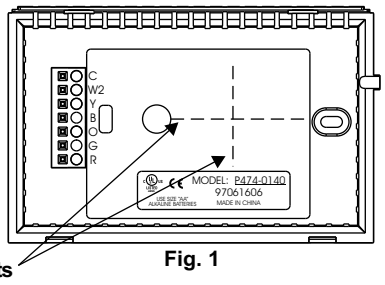
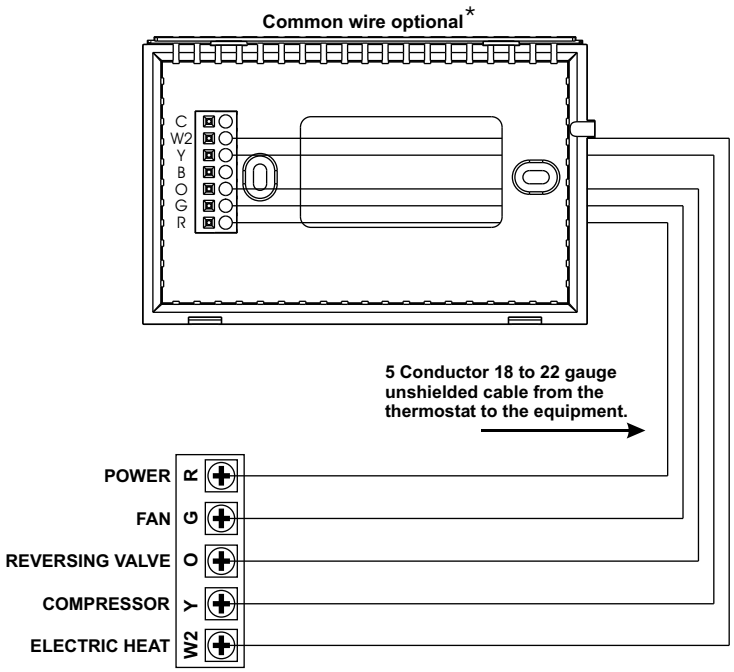


Fig. 1

Sample Wiring Diagrams

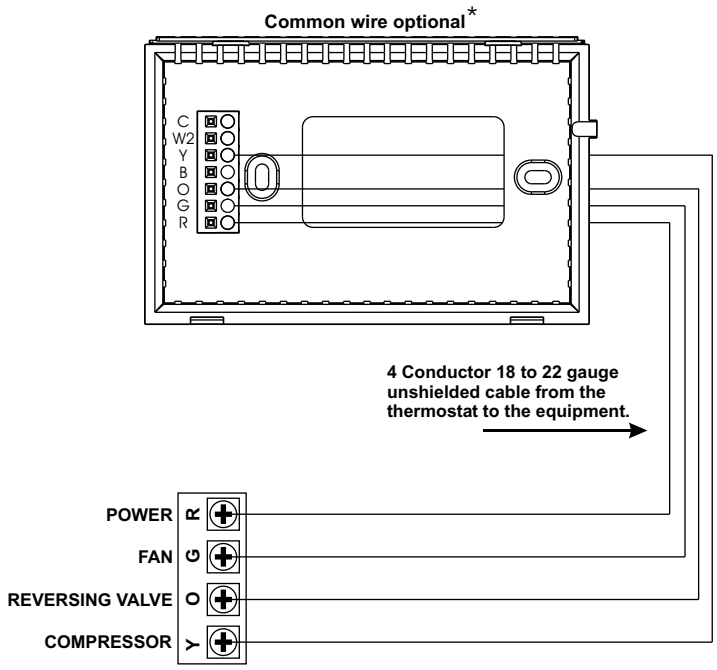
5 Wire, 1 Stage Cooling, 2 Stage Heat, Heat Pump with O reversing valve.
Residential Heat Pumps, split systems & package units, with auxiliary heat.



* **Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 10) each year or when the Low Battery indicator is displayed (page 3).**

Sample Wiring Diagrams

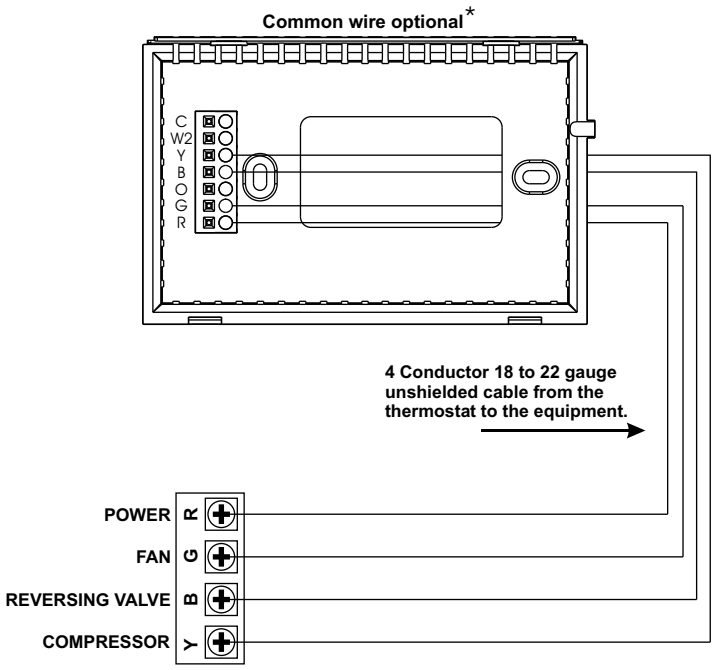
4 Wire, 1 Stage Cooling, 1 Stage Heat, Heat Pump with O reversing valve.
Residential Heat Pumps, split systems & package units, with no auxiliary heat.



* **Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 10) each year or when the Low Battery indicator is displayed (page 3).**

Sample Wiring Diagrams

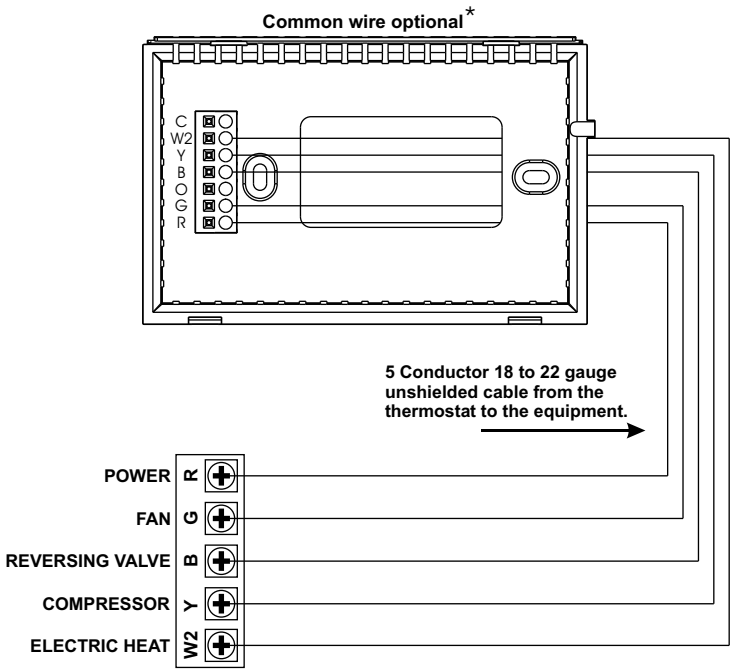
4 Wire, 1 Stage Cooling, 1 Stage Heat, Heat Pump with B reversing valve.
Residential Heat Pumps, split systems & package units, with no auxiliary heat.



* **Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 10) each year or when the Low Battery indicator is displayed (page 3).**

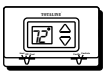
Sample Wiring Diagrams

5 Wire, 1 Stage Cooling, 2 Stage Heat, Heat Pump with B reversing valve.
Residential Heat Pumps, split systems & package units, with auxiliary heat.

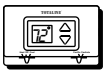


* **Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 10) each year or when the Low Battery indicator is displayed (page 3).**

Test Operation



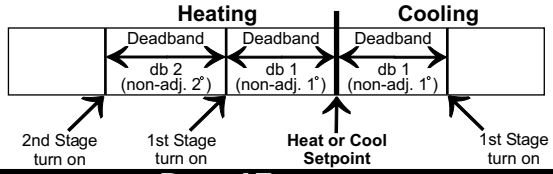
Turn on the power to the Heat Pump.



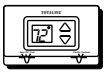
On the thermostat, slide the Mode Switch to **HEAT**. Press the UP or DOWN button until the set temperature is 10 degrees above room temperature. The HVAC unit should energize in the heating mode. ***Note: You may need to wait up to five minutes for heating to energize due to the compressor lockout feature. There is a two minute minimum run-time for first stage heating.***

On the thermostat, slide the Aux Heat Switch to the **NORMAL** position. If the thermostat is system powered the Aux Heat indicator will illuminate indicating that the thermostat has energized Aux Heat (page 7).

TWO STAGE OPERATION - The 2nd stage of heat (auxiliary heat) is turned on when the room temperature is equal to or less than: *the setpoint minus the 1st stage deadband (one degree, non-adjustable), minus the 2nd stage deadband (two degrees, non-adjustable).*



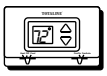
Test Operation



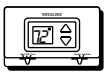
On the thermostat, slide the Mode Switch to **COOL**. Press the UP or DOWN button until the set temperature is 10 degrees below room temperature. The HVAC unit should energize in the cooling mode (Page 6).
Note: You may need to wait up to five minutes for cooling to energize due to the compressor lockout feature.

On the thermostat, slide the Mode Switch to **OFF**, then slide the Fan Switch to **Fan On.** The fan should turn on and run continuously (Page 6).

TroubleShooting

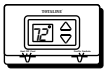


SYMPTOM: The slide switches on the thermostat are very difficult to move.
CAUSE: The backplate of the thermostat is screwed too tightly into a wall that is not perfectly flat.
REMEDY: Loosen the screws holding the thermostat into the wall.



SYMPTOM: The Air Conditioning does not attempt to turn on.
CAUSE: The cooling setpoint is set too high, the Mode Switch is not set for Cool, the batteries are too weak, or the Aux. Heat Switch is set for Emergency.
REMEDY: Consult the Normal Operation section in this manual to:

- **L**ower the cooling setpoint (Page 6)
- **C**orrect the Mode Switch position (Page 6)
- **R**eplace the batteries (Page 10)
- **A**djust the Aux Switch to Normal (page 7)



SYMPTOM: The fan does not turn on even though the compressor has energized.
CAUSE: The Fan Switch is not completely in the On or Auto position.
REMEDY: Slide the Fan Switch firmly into the On or Auto position.

TroubleShooting

SYMPTOM: Aux Heat does not turn on.
CAUSE: The Aux Heat Switch is set for Lockout.
REMEDY: Consult the Aux Heat section of this manual to slide the Aux Heat Switch to Normal (Page 7).

SYMPTOM: The Heating does not attempt to turn on.
CAUSE: The heating setpoint is set too high, the Mode Switch is not set for Heat, the batteries are too weak, or the Aux Heat Switch is set for Emergency.
REMEDY: Consult the Normal Operation section in this manual to:

- **R**aise the heating setpoint (Page 6)
- **C**orrect the Mode Switch position (Page 6)
- **R**eplace the batteries (Page 11)
- **A**djust the Aux Switch to Normal (Page 7)

c UL us LISTED 4Z95

CE

Battery Stat P/N P474-0140
FC Tested to Comply with FCC Standards
FOR HOME OR OFFICE USE

P/N 88-419
Rev. 2

Warranty

Five-Year Warranty - This Product is warranted to be free from defects in material and workmanship. If it appears within five year from the date of original installation, whether or not actual use begins on that date, that the product does not meet this warranty, a new or remanufactured part, at the manufacturer's sole option to replace any defective part, will be provided without charge for the part itself provided the defective part is returned to the distributor through a qualified servicing dealer.

THIS WARRANTY DOES NOT INCLUDE LABOR OR OTHER COSTS incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts. Such costs may be covered by a separate warranty provided by the installer.

THIS WARRANTY APPLIES ONLY TO PRODUCTS IN THEIR ORIGINAL INSTALLATION LOCATION AND BECOMES VOID UPON REINSTALLATION.

LIMITATIONS OF WARRANTIES – ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER. ALL WORK UNDER THE TERMS OF THIS WARRANTY SHALL BE PERFORMED DURING NORMAL WORKING HOURS. ALL REPLACEMENT PARTS, WHETHER NEW OR REMANUFACTURED, ASSUME AS THEIR WARRANTY PERIOD ONLY THE REMAINING TIME PERIOD OF THIS WARRANTY.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR:

1. Normal maintenance as outlined in the installation and servicing instructions or owner's manual, including filter cleaning and/or replacement and lubrication.
2. Damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
3. Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
4. Damage as a result of floods, winds, fires, lightning, accidents, corrosive environments or other conditions beyond the control of the Manufacturer.
5. Parts not supplied or designated by the Manufacturer, or damages resulting from their use.
6. Manufacturer products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
7. Electricity or fuel costs or increases in electricity or fuel costs for any reason whatsoever including additional or unusual use of supplemental electric heat.
8. ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.