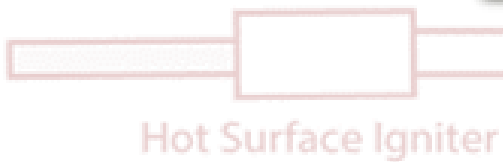
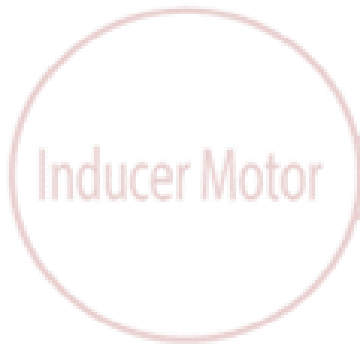


ELECTRICAL

TROUBLESHOOTING FUNDAMENTALS

15 Troubleshooting Scenarios



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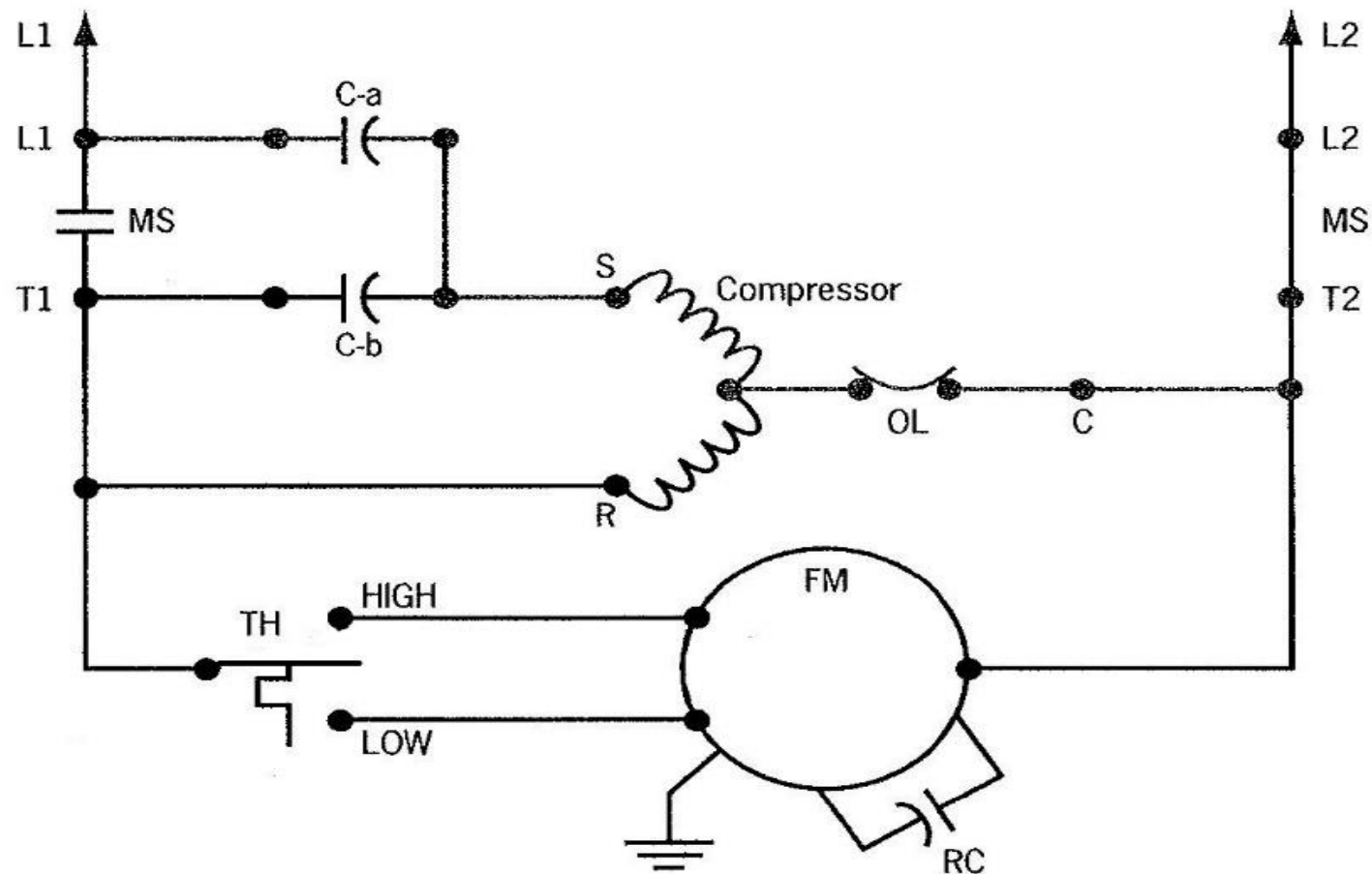
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Electrical Troubleshooting Problem #1

A heat pump that's not keeping a building comfortable



A heat pump that's not keeping a building comfortable

- In this troubleshooting situation, summer is in full swing and the outdoor temperature has been in the low 90's for more than a week.
- The equipment you are called to service is a ten-year-old split system heat pump.
- The customer's description of the problem is that the building was being kept comfortable at the beginning of the cooling season, but they have noticed that lately while there is air flow from the registers, the building is too warm for comfort, especially in the afternoon.



A heat pump that's not keeping a building comfortable

- When you arrive at 2:00 PM, you confirm that the indoor air handler is operating.
- You also note that since preventive maintenance has been performed regularly on this system, the filter is clean and the air flow throughout the building is sufficient.
- The thermostat has been turned down to 70-degrees, but the temperature in the building is near 83-degrees.



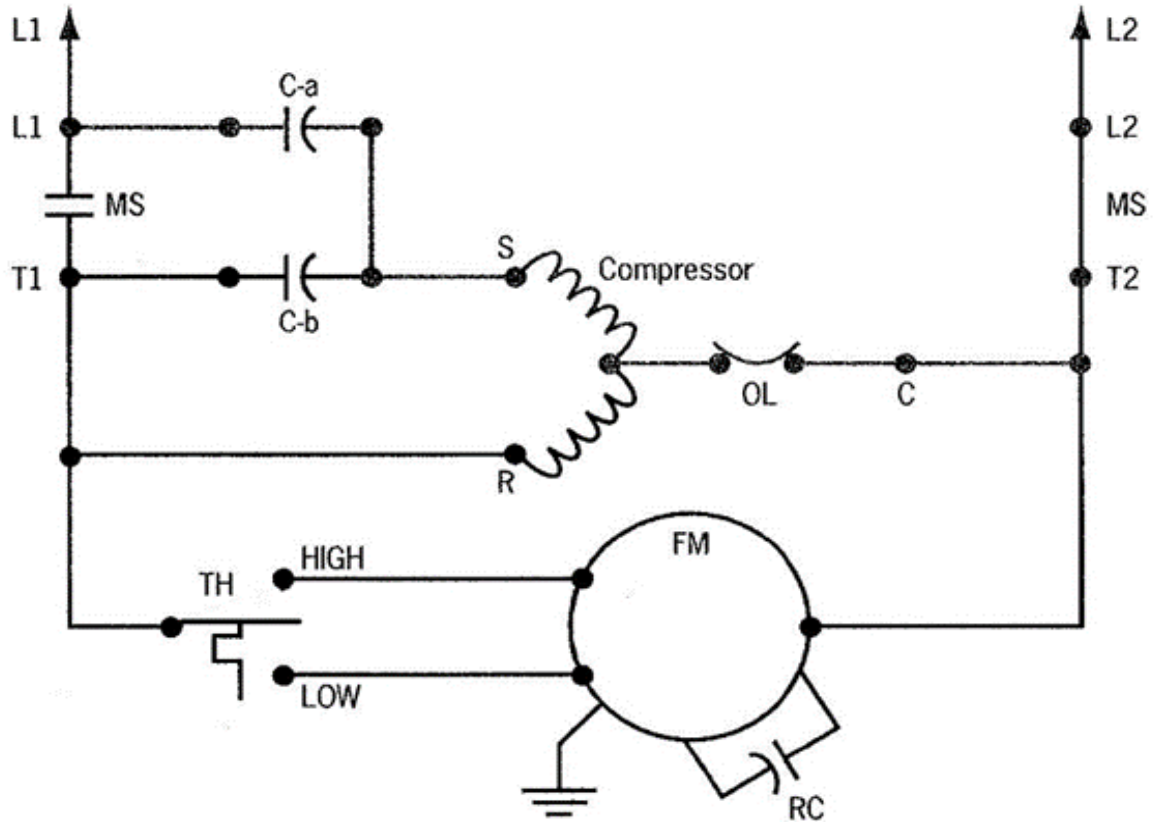
A heat pump that's not keeping a building comfortable

- Moving to the outdoor section, you find that the outdoor fan motor blade is moving air, and the compressor, which is hot and off on its internal overload, cycles on after a short time.
- After a brief run time, the compressor again kicks off on overload.
- In order to be sure that there is sufficient air flow you decide to check the outdoor fan motor circuit. Your voltage check from T1 connection to HIGH on TH shows 240 VAC, and a test from T1 to LOW shows 0-volts.



Your troubleshooting question:

What is the next step you need to take in servicing this equipment?



The above diagram shows the circuitry for the compressor and outdoor fan motor of this system.



Electrical Troubleshooting Problem #1 Answer

Next steps:

- Replace the outdoor fan motor thermostat (TH).
- In a high ambient temperature situation, the switch should be operating the outdoor fan motor on high speed.
- Our voltage tests showed the high-speed circuit to the fan was open and the low-speed circuit was complete.

