

**Incident Summary #II-1274965-2021 (#24738) (FINAL)**

SUPPORTING INFORMATION	Incident Date	October 21, 2021	
	Location	Hornby Island	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Qty injuries	0
		Injury description	NA
		Injury rating	None
	Damage	Damage description	15Amp 120Volt receptacle destroyed.
		Damage rating	Minor
	Incident rating	Minor	
Incident overview	The occupant of a dwelling had just been outside and upon re-entering his house noticed a burnt smell and light smoke in the living room. The occupant found the source to be at a wall receptacle where a portable electric heater was plugged in. The occupant unplugged the heater and called the fire department. The same day an electrical contractor was on site making the installation safe.		
INVESTIGATION CONCLUSIONS	Site, system and components	When properly installed, the 15A 120V receptacle circuit is rated to carry a continuous load of 80% (12A). The receptacle branch circuit was normal #14 copper cable. The portable oil-filled electric heater has a factory cord end approved to plug into a 120V 15A receptacle. To prevent overheating the circuits breaker will trip if its 15A rating is exceeded or under short circuit conditions.	
	Failure scenario(s)	The portable electric heater plugged in at the time was turned on and set at the maximum 1500W setting. A poor conductor termination at the receptacle that had worsened over time caused overheating and melting of the conductor insulation, plastic box and charring of wood paneling.	
	Facts and evidence	<p>Occupant interview:</p> <ul style="list-style-type: none"> <li>The occupant said the heater was plugged into a living room receptacle and operating when he went outside. He returned a short time later to a burnt smell and light smoke.</li> <li>The occupant saw the receptacle smoking, unplugged the heater and called the fire department and an electrical contractor</li> </ul> <p>Electrical Contractor Interview:</p> <ul style="list-style-type: none"> <li>The electrical contractor turned the main breaker off; and observed the breaker supplying the receptacle circuit hadn't tripped and was in the on position; and the heater setting was at the maximum 1500W.</li> <li>The electrical contractor removed the receptacle and observed two of its terminals were doubled up with two conductors under each one.</li> </ul> <p>Safety Officer observation of photos:</p> <ul style="list-style-type: none"> <li>The white conductors that terminated on the right side of the receptacle is where the heaviest damage occurred and this matches to the heaviest charring in the receptacle box and wall.</li> <li>The receptacle wiring method showed two conductors under a single screw, in a counter-clockwise fashion.</li> <li>The heater cord end was in good shape.</li> </ul>	

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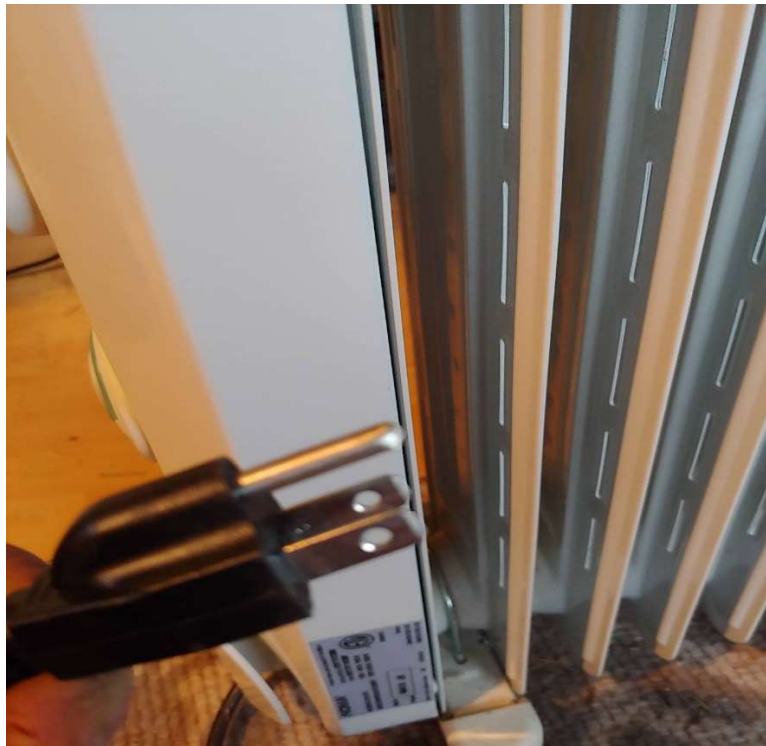
### Causes and contributing factors

The cause of this incident was likely due to a poor electrical connection at the receptacle. Although the electric heater was operating normally, it is a heavy load that stressed an already poor connection. Manufacturers instructions for receptacle wiring weren't followed by terminating two wires, counter-clockwise under single receptacle screw. This likely caused the connection to deteriorate and overheat.

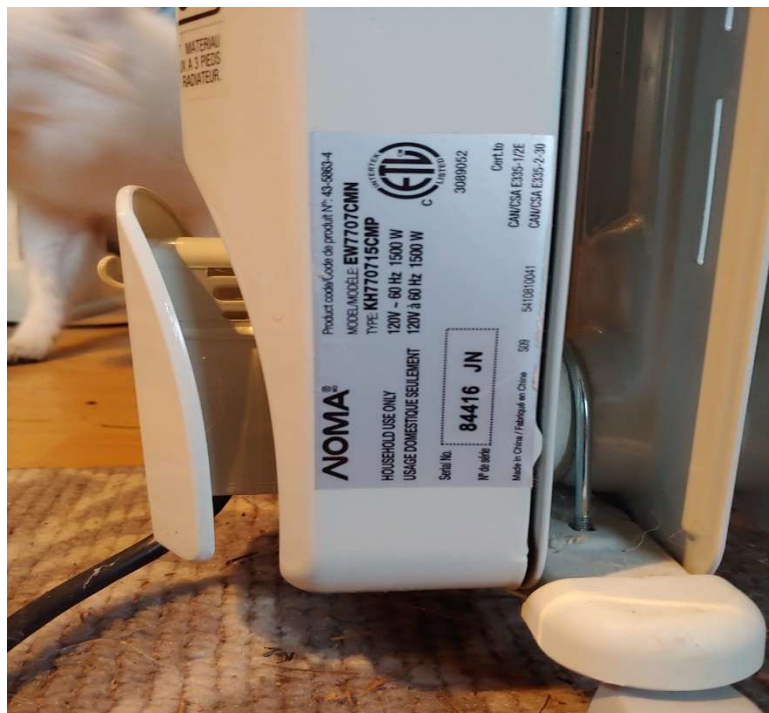
### Photos or diagrams:



Federal Pioneer Distribution Panel with Breaker in off position.



15 Amp 120 Volt rated Male cord end on electric heater.



Manufacturer label on Electric Heater

**ENGLISH**
**TO INSTALL:**

**WARNING:** TO BE INSTALLED AND/OR USED IN ACCORDANCE WITH APPROPRIATE ELECTRICAL CODES AND REGULATIONS.

**WARNING:** IF YOU ARE NOT SURE ABOUT ANY PART OF THESE INSTRUCTIONS, CONSULT A QUALIFIED ELECTRICIAN.

**FOR SEPARATE FEED CONVERSION ONLY:** Our outlet is provided with a break-off fin located between the two brass terminal screws. If you want to have the top outlet and the bottom outlet controlled by two *different* hot wires (two circuits), remove the break-off fin *before wiring*. With needlenose pliers, bend fin back and forth until it breaks off.

1. **WARNING:** TO AVOID FIRE, SHOCK, OR DEATH; **TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT THE POWER IS OFF BEFORE WIRING!**

2. Remove insulation per strip gauge on device [about 5/8" (1.6 cm)].

3. Connect wires per WIRING DIAGRAM as follows: **Manufacturers Spec**

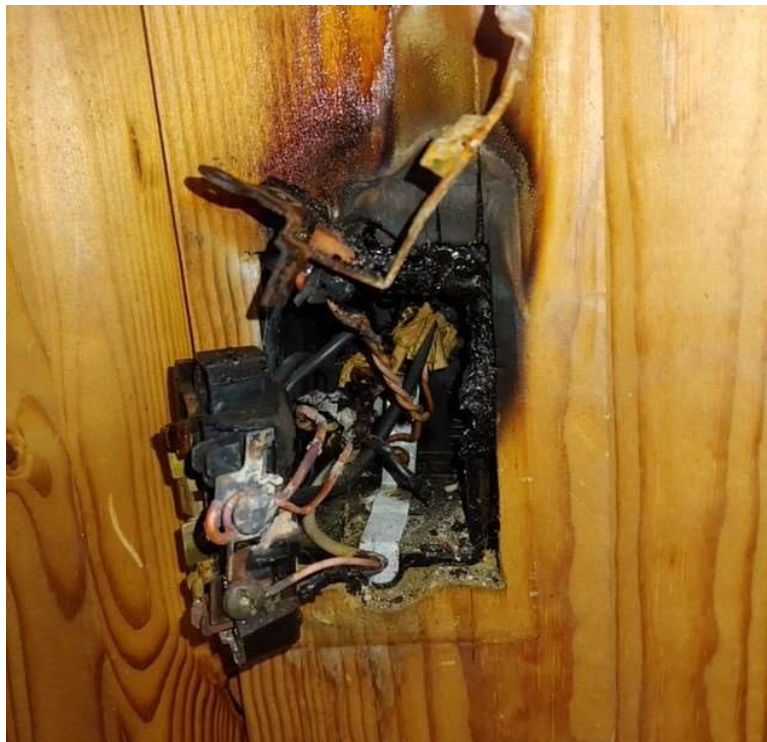
**To Side Wire:** Loop wires clockwise 3/4 turn around terminal screws. BLACK (hot) wire to BRASS screw, WHITE (neutral) wire to SILVER screw, GREEN or BARE (ground) wire to GREEN screw. Firmly tighten screws over wire loops. Terminal screws accept up to #12 AWG copper or copper clad wire.

**To Quickwire™:** Insert straight #14 AWG solid copper or copper clad wires into round Quickwire™ holes. Quickwire™ terminals accept #14 AWG solid copper or copper clad wires **ONLY!** For circuits with #12 AWG solid copper or copper clad wires, use terminal screws instead. If the receptacle must be replaced or rewired after Quickwiring, gently press the tip of a small screwdriver in the release slot and back the wire out gradually. If the receptacle or Quickwire™ terminal become damaged, do not reuse.

4. Mount device using long mounting screws. Attach wallplate (not included).

5. Restore power at circuit breaker or fuse. **Installation is complete.**

Installation Manual from Leviton's website.



Identified (white) conductor side of receptacle, has two conductors wrapped counter-clockwise under the top screw.





Ungrounded (black) conductor side of receptacle has two conductors terminated under the top screw.