

Allmand™ Maxi Heat 500IQ

SERIAL NUMBER 14-000001 AND UP

MH500 IQ Specs

- Btu per burner- 515,000
- CFM per burner- 3200
- Fuel consumption per burner- 3.65 Gal/h
- Recommended fuel consumption- K-1 Kerosene or No.1 Diesel
- Operating power per burner- ~115 V, 1-PH, 60Hz 24 A (MAX 82 A)
- Weight per burner- 357 lbs
- Nozzles per burner- 2 GPH 60` Delavan Type A & 1 GPH 60` Delavan Type W
- Operating fuel pressure- 145 PSI/ 1000 kpa/ 10 bar

Overview

The IQ system is a design that allows for the simplicity and ease of operation. At start up the IQ system will calibrate for the ambient air temperature and elevation to determine the air to fuel ratio setting for the air band. There are no more calibrations needed after this point and the IQ system will recalculate the airband adjustment as ambient temperature changes.

Control Screen Flickering/ Turning off & On

- ❑ The screen is a 12 volt system and receives power from the transformer box next to the IQ controller. Check power at the two terminal wires (blk & white) going into the right side of the IQ control. Check all connections on the main PC board and fuses.
- ❑ Check the Voltage regulator in the control box below Image (A). Make sure all voltage is proper.
- ❑ Make sure the rocker switch on the heater outlet door is working (Picture below). The switch is a two pole switch that closes once the door is opened. Power is sent to the screen for illumination.

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- If the problem persists and power at the converter box showing 12 volts to the screen, then replace the screen.

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Engine Does Not Run

***Maxi Heat 500IQ will not start (The engine will crank over ,but not run) Isuzu Genset*

Note: **If the unit has a shocker valve, check the valve and make sure the shocker is open.** **

- Ensure the unit has enough fuel.
- Go through and check all the connections and most importantly check the emergency shutdown connection to make sure the connection is secure.(Isuzu Engine Timer Module-921432/ Cat C1.5 T4F- 650302)
- If all connections are secure then check to see if the engine is getting fuel.
- Pull the return line on the fuel pump and turn the engine over to see if the fuel pump is working correctly. Loosen the injector line at the injector to see if there is further fuel flow.
- The unit is getting fuel and the Fuel pump is working, find the fuel solenoid on the engine. Check the fuel shut off solenoid to ensure plunger retracts (example "A", solenoid plunger retracts from voltage on hold wire)
- If the pump works when an auxiliary power source is applied then trace through wiring for loss of voltage. Power is pulled from the engine starter and goes through the temp and oil pressure switches. Check schematic for further testing.

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Burner Cycles On & Off

***Maxi Heat 500IQ has one burner that will begin to run and then shuts down for High Temp Fault. (Message appears on the IQ screen). ***

- Each burner or both cycling on and off indicates that there is a possibility of backpressure. Back pressure occurs when the flow of heat is restricted and not moved which accumulates at the outlet or in the burner itself. Kinks in the ducting can cause this issue. Make sure the ducting is straight with limited bends and no elevated lifts or descending of the ducting.
- Check ducting for proper flow.
- Ensure the high limit sensor is working at the end of the outlet.
- Check the main blower fans connection and ensure it is turning on as needed. Faulty connections or loss of power can cause a stall in fan operation which in turn causes the heater to increase temperature.
- Make sure heat going into the area is ventilated so heat does not accumulate and raises temperature to increase output.

Blower Fan Stops Circulating or gets a Red “X” over fan:

*****MH 500 IQ has a burner that will start up and the fan will not turn on. Fan not running will cause the unit to shut down.*****

- ❑ When this fault occurs it is an indication the fan is losing power.
- ❑ Check all the circuits to the fan. Power comes from 120 plug in into the bottom of the IQ controller.
- ❑ Start with going to the IQ control box for the burner that is having the issue. Open the cover of the box and over to the side is a wrench icon, press it. After pressing the icon type the password 123 then press the Enter button. You can control the fan manually from this point.
 - ❑ Note: If you turn the fan on manually and the fan doesn't run, then the motor for the fan could be faulty and need to be replaced (#107194)
- ❑ If the fan runs while in manual mode then the fan is working and power going to fan is ok. The circuit into the IQ controller that controls the blower fan has a loose or faulty connection.
- ❑ Check the red terminal block at the bottom of the IQ controller (See examples below). 120 volts into the terminal block feeds the relay above it and into the fan circuit during the purge process.

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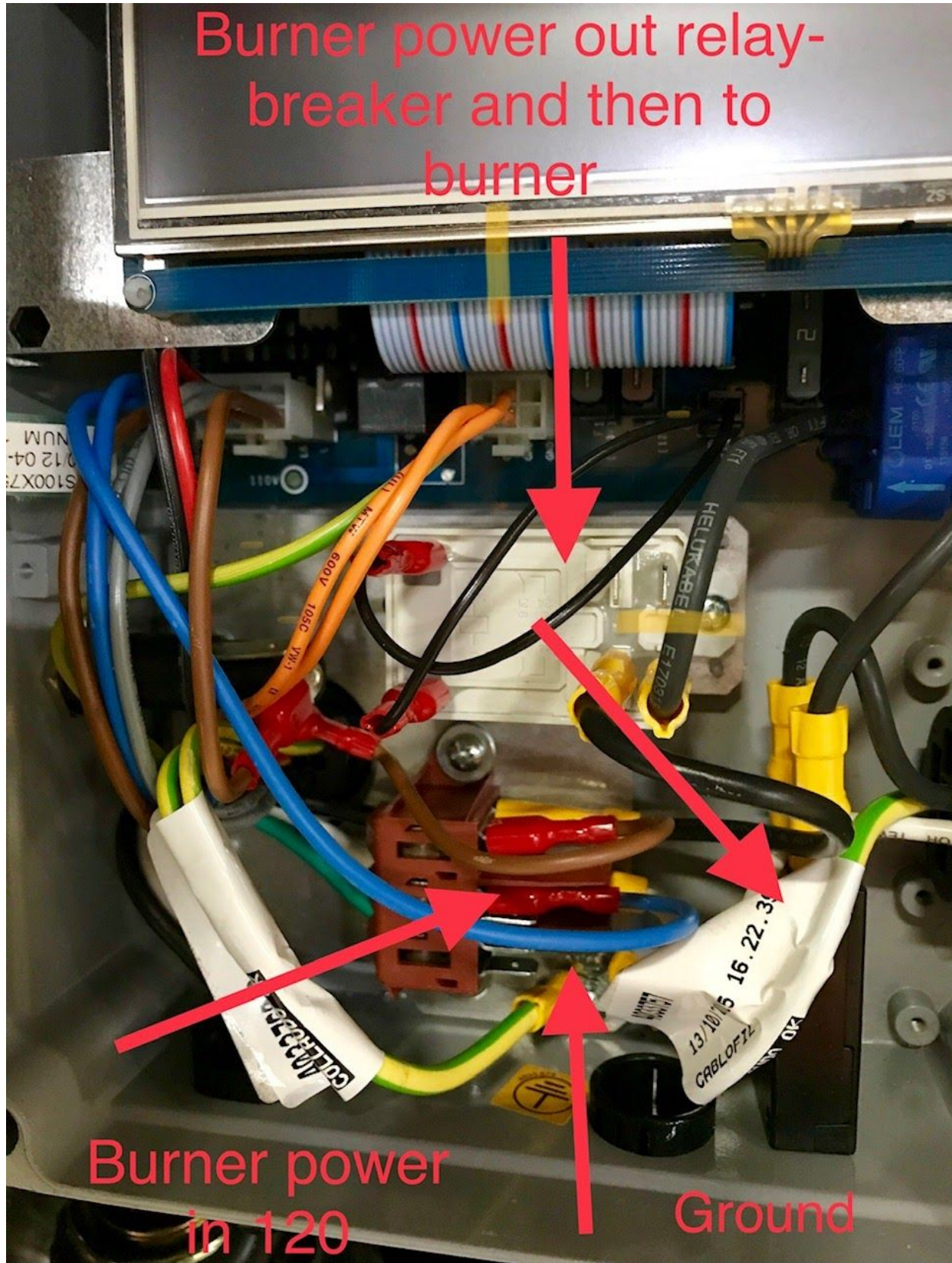
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107206 IQ control power
block



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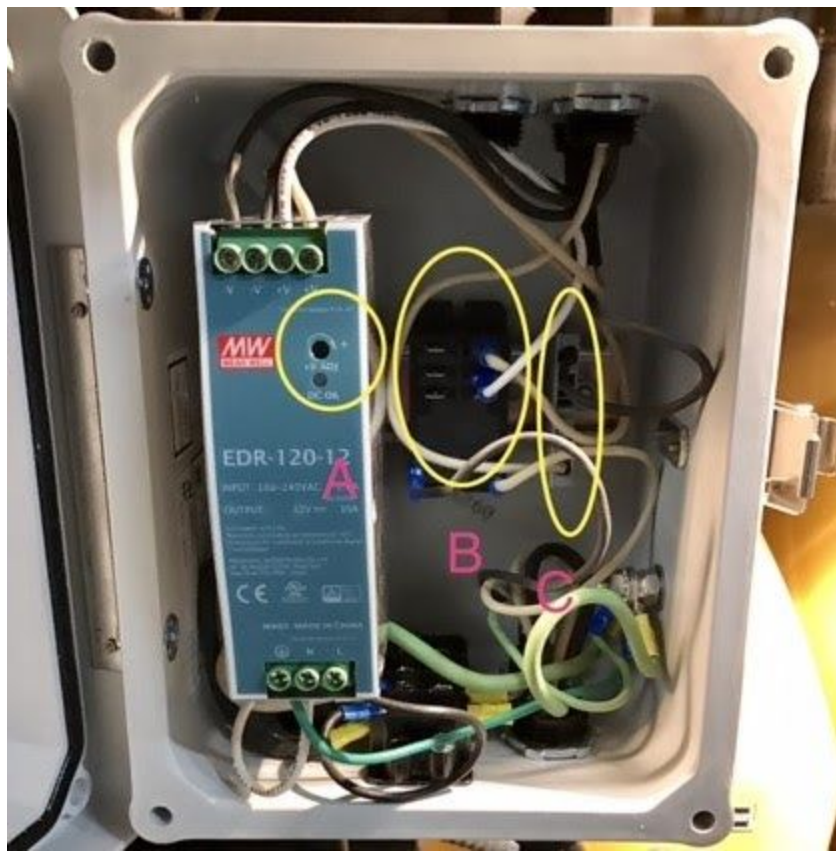
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No Power To IQ Control

****Maxi Heat 500IQ Controller does not turn on or has no power to the IQ box.****

- ❑ No power into the IQ controller will not activate the LCD screen for further operation. Make sure the door on the outlet (heat out of burner) side is open. The micro switch in the corner of the door activates power to each screen. * Switch is a two pole switch, if one side fails then the other could still open and provide power to the other screen. *
- ❑ Check the relay in the transformer box next to the controller (Example “A”). Make sure connections are secure and the relay is functioning properly.
- ❑ Check the heater element on top of the fuel water separator filter. If element shorts then it will draw too much amperage and not allow the screen to power up.
- ❑ If the IQ controller has 12 volts on the two wire (example “B” below) harnesses into the side of the controller. If the wire has 12 volts then the screen needs to be replaced.



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Example “A”

Example “B”

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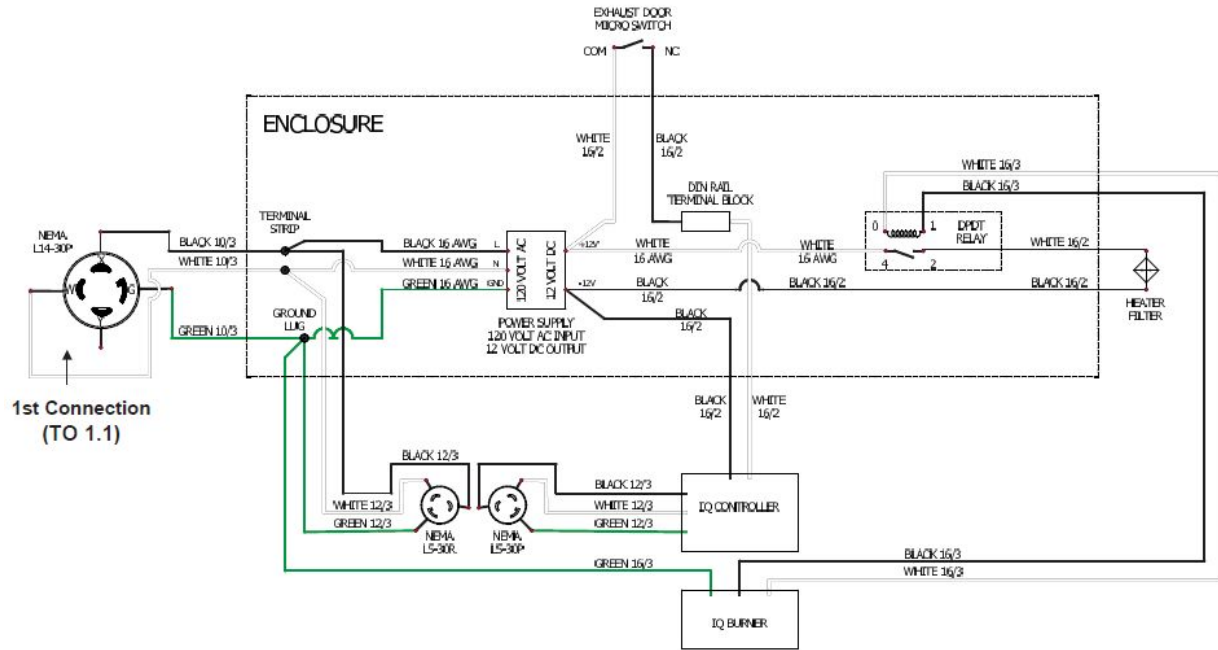
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Burner shuts off for “Burner Power Break” or will not turn on

Burner shuts off or always seeing “Burner Power Break “ fault on screen.

- ❑ During the purge cycle at the initial start up the burner ignitor box receives all its power from the IQ controller. System is 120 volts and is used to power the burner and fuel system.
- ❑ “Power Break” refers to the break in power to the burner. Test for loss of voltage at the Ignitor box in the burner assembly. (See example “B”)
- ❑ Terminal “N” & “L” are power in. If there is no voltage then check the IQ controller for power loss. Power into the controller red terminal block distributes voltage to the fan and burner.
- ❑ Check the red terminal block for power in and out (120 v). Make sure connections are secure.
- ❑ Check the 15 amp fuse on the left of the controller. (Example “C”). If it fails, replace it.
- ❑ Test for voltage into the power relay above the red terminal block. During purge power goes to relay and out into the thermal breaker. (Example “C”). If failed, replace it.

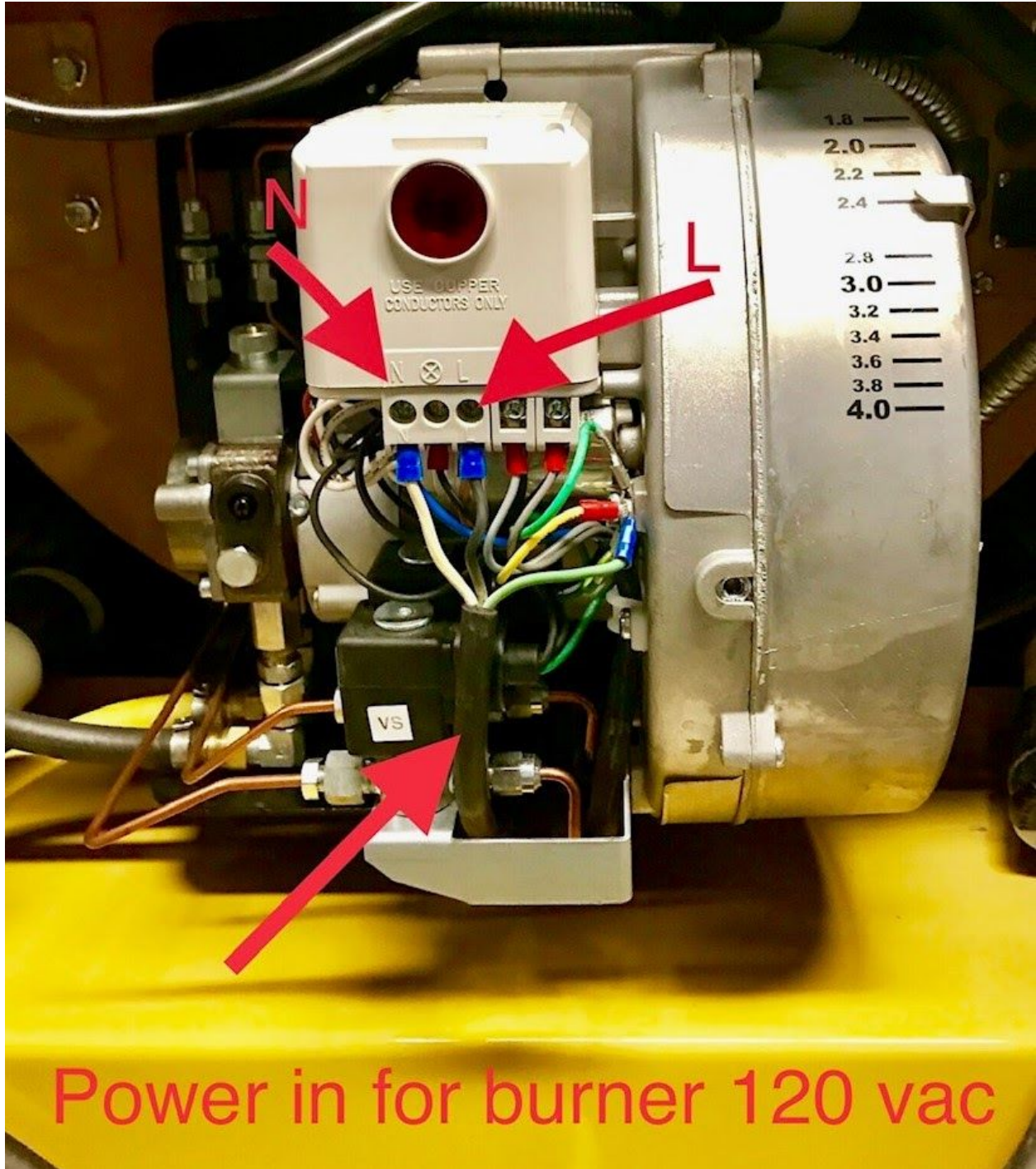
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Example "B"

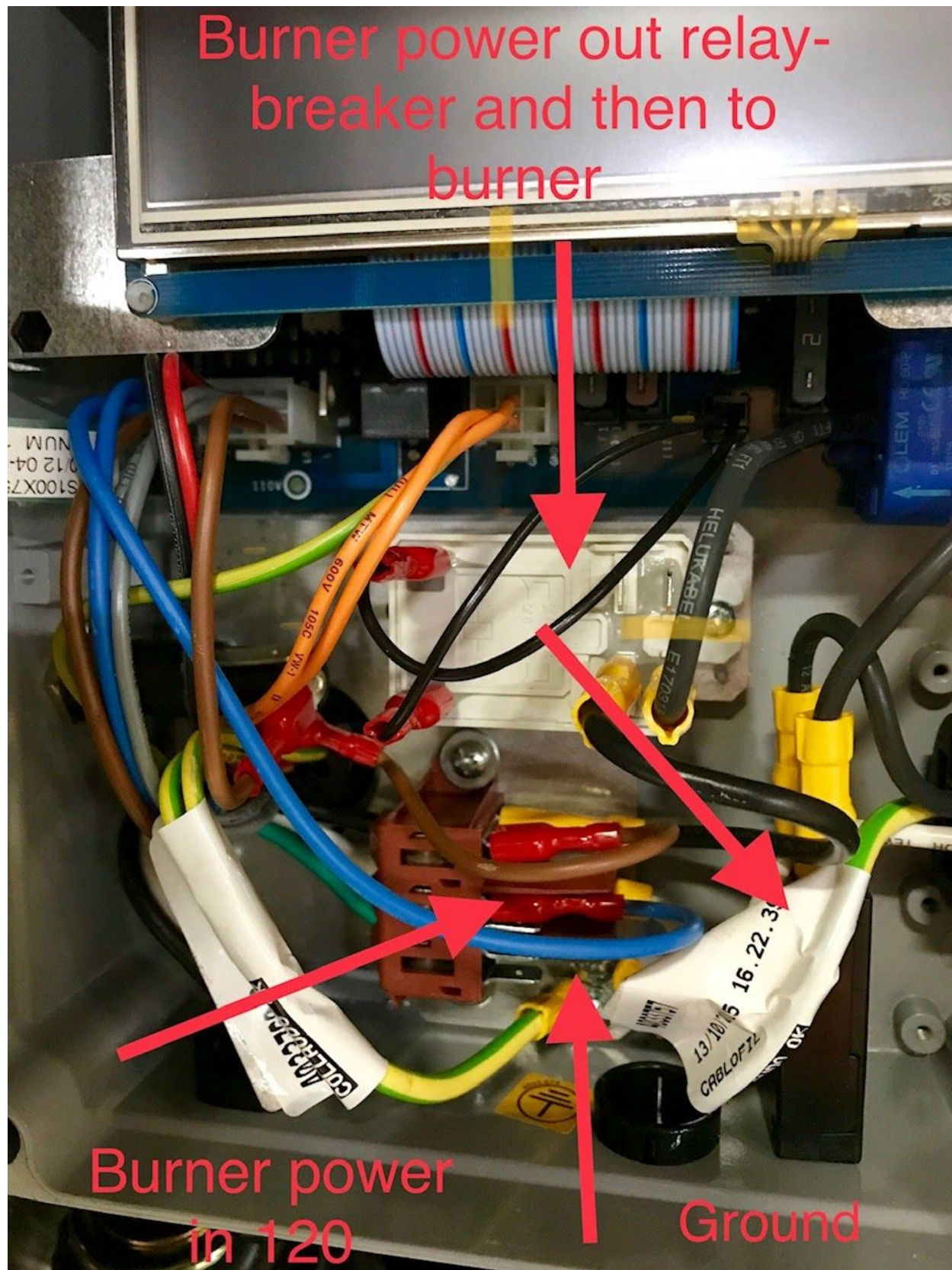
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Reset Safety Thermostat fault:

****Safety thermostat is a protection for the high limit. If the fan has failed or heater shut down incorrectly it creates trapped heat which trips the thermostat.****

- ❑ Look for the black cap on the heat exchanger below the main blower fan. (Example "A")
- ❑ Remove the cap and you will expose a red button. This button is connected to the safety thermostat and has to be reset. Push and hold for five seconds.
- ❑ If the thermostat continues to trip then give it 5 to 10 minutes for the heat to dissipate.
- ❑ If the problem persists then replace the safety thermostat.



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Burner starts to smoke and build black smoke out of exhaust stack:

*** Black smoke is an indication the unit is not getting enough air, bad fuel or carbon build up in the chamber. ***

- ❑ Make sure air setting is on a specified number that the IQ controller recommends at the time of start up. DO NOT adjust air setting during operation unless the IQ controller specifies. (Any change of ambient temperature and elevation requires smaller or higher amounts of air mixture.)
- ❑ Check for any debris or material covering or blocking the air damper. Clean and clear.
- ❑ Check fuel pressure and maintain 140-145 PSI at the pump.
- ❑ Ensure fuel nozzle NO 1 & NO 2 are both clean and working correctly. Check the schematic for a list of wiring for each nozzle. IQ logic controls both nozzles to maintain temperature.
- ❑ Make sure the heat exchanger and burn chamber are clear of any soot build up. If there is a large amount of build up then take the burner apart and wash with hot water high pressure hose. Let the barrel air dry before using.
- ❑ Make sure only NO 1 Diesel fuel is used. Any additives can cause more gel-like substances which will create fuel issues.



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Filters per engine option:

MH 500IQ MCS W/ ISUZU T4F 3CE1			
Burner			
FUEL FILTER (35 MICRON)	107222	****MH**\ 14-*****	
Engine			
AIR FILTER	650290	****MH**\ 14-*****	
OIL FILTER	22-000309	****MH**\ 14-*****	
FUEL FILTER	22-000310	****MH**\ 14-*****	
FILTER KIT (ALL FILTERS)	108461	****MH**\ 14-*****	

MH 500IQ MCS W/ CAT 1.5 NA T4F			
Engine			
FUEL FILTER (35 MICRON)	107222	****MH**\ 14-*****	
Engine			
AIR FILTER	102580	****MH**\ 14-*****	
OIL FILTER	650304	****MH**\ 14-*****	
FUEL FILTER	103155	****MH**\ 14-*****	
FILTER KIT (ALL FILTERS)	108464	****MH**\ 14-*****	

Oil Change Intervals:

Caterpillar C1.5- Every 500 hours

Isuzu 3CE1- Every 500 hours

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Isuzu T4F 3CE1 Parts:

- Dipstick Tube EXT Assy- (100604)
- Starter-102465
- AVR Board-103016
- Stop Solenoid--22-000316
- Stop Solenoid O Ring- 22-000329
- Alternator Diode- 22-000324
- Temp Switch- 22-000325
- Oil Pressure Switch- 22-000326
- Relay Assembly- 650423
- Fuel Pump- 22-000317
- Auto Shutdown Timer-921432
- Filter Kit (Air Fuel & Oil)- 108959
- Fuel Water Separator (35 Micron Fuel Filter)- 107222
- Timer Module-921432

Cat 1.5 T4F Parts:

- Ignition Keys- 920474
- Ignition/Cat- 920475
- Hour Meter- 340014
- Timer/Shutdown- 650302
- Cat 1.5 Muffler-104867
- Muffler Gasket- 650234
- 3 way Fuel Gauge- 103205
- Filter Kit (Air Fuel & Oil)- 108961
- Fuel Water Separator (35 Micron Fuel Filter)- 107222
- Timer Shutdown-650302

**Check engine operators manual for specific recommended lubricants.*

**Additional warranty information & claim forms can be obtained on Allmand.com.*

**Please contact Allmand Tech line for additional help and troubleshooting @ (308)
995-3431 / Parts (800) 562-1373.*

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