

EMERGENCY START / STOP PROCEDURE

Bypass circuit board (all functions except fuse) as follows:

- ! Jumper terminal 9 to 5 (fused power) - This will energize the fuel pump, fuel solenoid and ignition coil
- ! Press the "Start Switch" [S3] or temporarily jumper terminal 1 to 7 - This will engage the starter. Remove jumper as soon as the engine starts. *Note: Do not press switch or jumper terminal 1 to 7 while engine is running.*
- ! Remove jumper from terminal 9 to 5 for engine stop

TRYS TO RUN WITH START SWITCH ON

Battery charge verified, battery cables clean and functional, control board fuse (5A) OK, and oil level verified

Attach jumper board terminal 9 to 5 - should hear fuel pump running

Press start switch and Onan runs

Remove jumper and Onan continues to run

Suspect low battery voltage between terminal 11 to 1 (with starter on)
! Must be greater than 10.5 VDC (typically 11.5 VDC)

Suspect [K1] starter relay or wiring faulty
! Must have greater than 10.5 VDC terminal 10 to 1 (starter on)
! Temporary jumper terminal 11 to 10 and try starting (remove jumper)

Remove jumper and Onan will not continue to run

Suspect low AC voltage (terminal 8 to 11) must be 26 to 30 VAC running

! Disable / disconnect Onan voltage regulator wiring
! Remove single wire and tape up without touching ground or other wires

! Remove double wire with adapter (keep connected) and tape up without touching ground or other wires

Suspect remote control panel or wiring faulty
! Remove wires from upper terminals 1, 2 and 3 and try running again.

Suspect faulty low oil pressure (LOP) switch or wiring failure
! Remove wire from board terminal 12 and try running again

Suspect control board faulty
! Test and / or repair board as required

Press start switch and Onan will not run

Suspect fuel or ignition problem
! Repair as required

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WILL NOT TRY TO RUN (STARTER OK)

Battery charge verified, battery cables clean and functional, control board fuse (5A) OK and oil level verified

Attach jumper board terminal 9 to 5 - should hear fuel pump running

Press start switch and Onan runs

! See "Trys to run with start switch on" chart: "Onan continues to run"

Press start switch and Onan will not run (jumper attached)

Suspect fuel problem (probe pump wire for voltage)
! Remove carburetor fuel hose at fuel pump
! Fuel must flow out of pump with jumper attached
! If not, fuel pump faulty, hose faulty or no fuel in tank

Suspect ignition problem
! Remove ignition point cover and hit starter so points are closed
! Open and close points. You should have a spark
! If not, **Suspect** wiring, coil or points faulty

Suspect faulty low oil pressure (LOP) switch or wiring failure
! Remove wire from board terminal 12 and try running again
! If it now runs, **Suspect** LOP switch or wiring faulty

Suspect remote control panel or wiring faulty
! Remove wires from upper terminals 1, 2 and 3 and try running again
! If now functional, **Suspect** Remote Control Panel or wiring faulty

! Probe wires from upper terminals 1, 2 and 3 to verify Control Panel operation and wires are not crossed or shorted to ground.

NO STARTER ACTION

Battery charge verified, battery cables clean and functional, control board fuse (5A) OK and oil level verified

Press Control Board start switch and no starter action

Jumper [K1] starter relay "S" terminal (small) to chassis ground

Starter action
! Control board or wiring faulty

No starter action
! Apply +12 VDC to [K1] starter relay "S1" terminal (large, left side)

Starter action
! [K1] relay faulty

No starter action
! Apply +12 VDC to starter solenoid "S" terminal (slip-on terminal)

Starter action
! Wiring between [K1] and starter solenoid faulty

No starter action
! Starter faulty

Note: If starter ever stays engaged after Onan starts:

Pull slip-on terminal wire from starter solenoid to stop starter
! If starter stops - **Suspect** [K1] Relay
! If starter will not stop - Suspect starter solenoid sticky (clean & lube)
! Remove starter battery cable to stop starter.

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WILL NOT RESPOND TO STOP SWITCH

Battery charge verified, battery cables clean and functional, control board fuse (5A) OK and oil level verified

Press control board's stop switch to find it non functional and will not stop Onan

Remove wires from board's upper terminals 1, 2 and 3

Attach jumper between upper terminals 1 and 2

Non functional
! **Suspect** faulty control board

Functional
! **Suspect** faulty Control Board

To force stop function

Remove wire from board terminal 11, 9 or 1

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GENERAL CONTROL TROUBLE SHOOTING GUIDE

Clean battery cables (both + and - cables / both ends)

! Apply corrosion prevention material to cable ends and mating surfaces.

Remove upper board terminal wires (Leave disconnected for test)

! Verify operation of remote control panel and that wires are not shorted to ground.

Remove wire from board terminal 12 (Leave disconnected for test)

! Verify oil pressure switch and wire operation (not shorted to ground).

Remove wires (Typically 2 or 3) from voltage regulator. Note wire location

! Tape up single terminated wire and 2X terminated wires separately

! Permanently stow (voltage regulator is not required).

Disconnect 12 pin connector [J2]

! Clean and re-shape female sockets for round shape.

Verify fuse [F1] is 5 amp and is functional

! Terminal 5 to 1 or each fuse holder clip to 1 is +12VDC

Verify fuel present at carburetor:

! Disconnect at fuel pump and jumper board terminal 9 to 5

Verify ignition functional - spark present

! Jumper board terminal 9 to 5 and make and break points

LOW OIL PRESSURE (LOP) CIRCUIT TEST PROCEDURE

Verify board low oil pressure (LOP) circuit operation as follows:

Engine running under normal conditions
Jumper terminal 1 to 12 and measure time required for engine to stop

Typical delay time should be 3 to 5 seconds

Remove jumper and re-start engine

Board test complete

Circuit board is OK with 3 to 5 seconds time delay

Circuit board Malfunction if no time delay or if engine does not stop

LOP switch and wiring test

Remove wire from board terminal 12
Measure resistance to ground of wire 12
Without engine operating, should be near zero ohms
With engine operating, should be high resistance (open)

Note: Attach wire to terminal 12 and start engine

Note: A malfunction LOP circuit could cause permanent engine damage due to operation with loss of oil pressure.

RUNNING CIRCUIT (Figure 2)

The output (AC voltage) of the alternator [G1] increases as the engine speed increases. This AC voltage is converted to DC voltage by Diode [CR1], Resistor [R1], and Capacitor [C1] and is applied to the "Hold Relay" coil [K2].

The "Hold Relay" [K2] is energized when the applied voltage reaches 10 to 11 volts DC (typical). One contact of [K2] opens to disable the start circuit ([K2a] - See Fig. 1) and the second contact [K2b] closes to apply power to the following:

- "Run Relay" coil [K3]
- Remote control panel
- The low oil pressure (LOP) circuit.

STARTING CIRCUIT [Figure 1]

Pressing the "START" switch (S3 or the Remote Switch) will power the starter relay [K1] by applying a ground through the "HOLD RELAY" contact K2a (normally closed contact)

When the "Start" relay [K1] is energized it activates:

- Starter solenoid and starter motor [B1]
- Electric choke solenoid [E1]
- "Run Relay" [K3] thru CR5 and R2

The "Run Relay" contact [K3] (normally open) applies power to the following:

- Fuel pump [E2]
- Fuel solenoid [K4]
- Ignition coil [T1]

Resulting action: Engine starts and runs