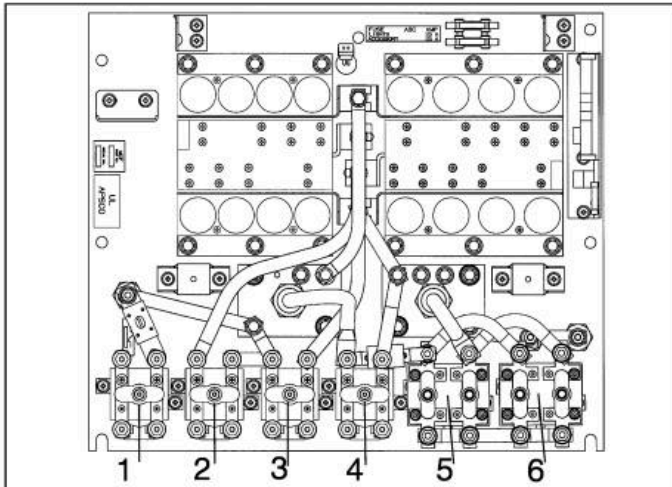


Tests “O” Through “T”

The remaining tests check contactor operation. You will toggle the DRS switch from DIAG to RUN to activate the contactor being tested, then toggle the switch back to DIAG to deactivate it. You must visually observe the contactors for proper operation during these tests. The seat switch must be closed for the contactor tests.



Contactor Locations. Panel with regen is shown. Plug-only panels will not have regen contactor (4).
(1) Line contactor (2) Pump bypass contactor
(3) Drive bypass contactor (4) Regen contactor
(5) Forward contactor (6) Reverse contactor

Test O: Line Contactor Circuit

Move the DRS switch to RUN.

Display = 12 and the line contactor (1) does not close. Circuit is defective.

See Troubleshooting Problem 50.

Display = 12 and line contactor (1) closes. Line contactor circuit OK.

Move the DRS switch to DIAG.

Display = 13 and the line contactor (1) opens.

Test P: Pump Bypass Contactor Circuit

Move the DRS switch to RUN.

Display = 13 and the pump bypass contactor (2) does not close. Circuit is defective.

See Troubleshooting Problem 50.

Display = 13 and pump bypass contactor (2) closes. Pump bypass contactor circuit OK.

Move the DRS switch to DIAG.

Display = 14 and the pump bypass contactor (2) opens.

Test Q: Drive Bypass Contactor Circuit

Move the DRS switch to RUN.

Display = 14 and the drive bypass contactor (3) does not close. Circuit is defective.

See Troubleshooting Problem 50.

Display = 14 and drive bypass contactor (3) closes. Drive bypass contactor circuit OK.

Move the DRS switch to DIAG.

Display = 15 and the drive bypass contactor (3) opens.

Test R: Regen Contactor Circuit

Move the DRS switch to RUN.

Display = 15 and the regen contactor (4) does not close. Circuit is defective.

See Troubleshooting Problem 50.

Display = 15 and regen contactor (4) closes. Regen contactor circuit OK.

Move the DRS switch to DIAG.

Display = 16 and the regen contactor (4) opens.

Test S: Forward Contactor Circuit

Move the DRS switch to RUN.

Display = 16 and the forward contactor (5) does not close. Circuit is defective.

See Troubleshooting Problem 50.

Display = 16 and forward contactor (5) closes. Forward contactor circuit OK.

Move the DRS switch to DIAG.

Display = 17 and the forward contactor (5) opens.

Test T: Reverse Contactor Circuit

Move the DRS switch to RUN.

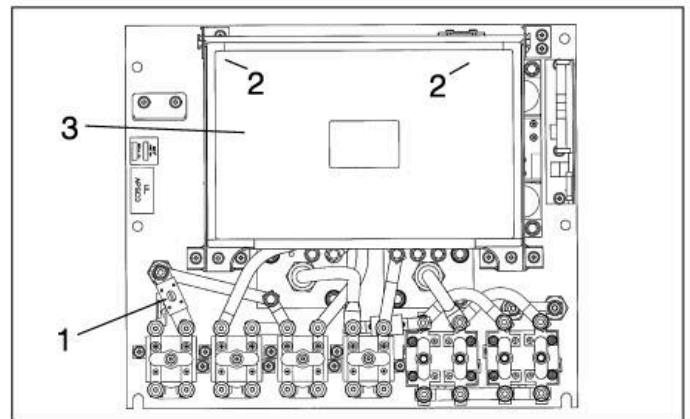
Display = 17 and the reverse contactor (6) does not close. Circuit is defective.

See Troubleshooting Problem 50.

Display = 17 and reverse contactor (6) closes. Reverse contactor circuit OK.

Move the DRS switch to DIAG.

Display = DONE and the reverse contactor opens.



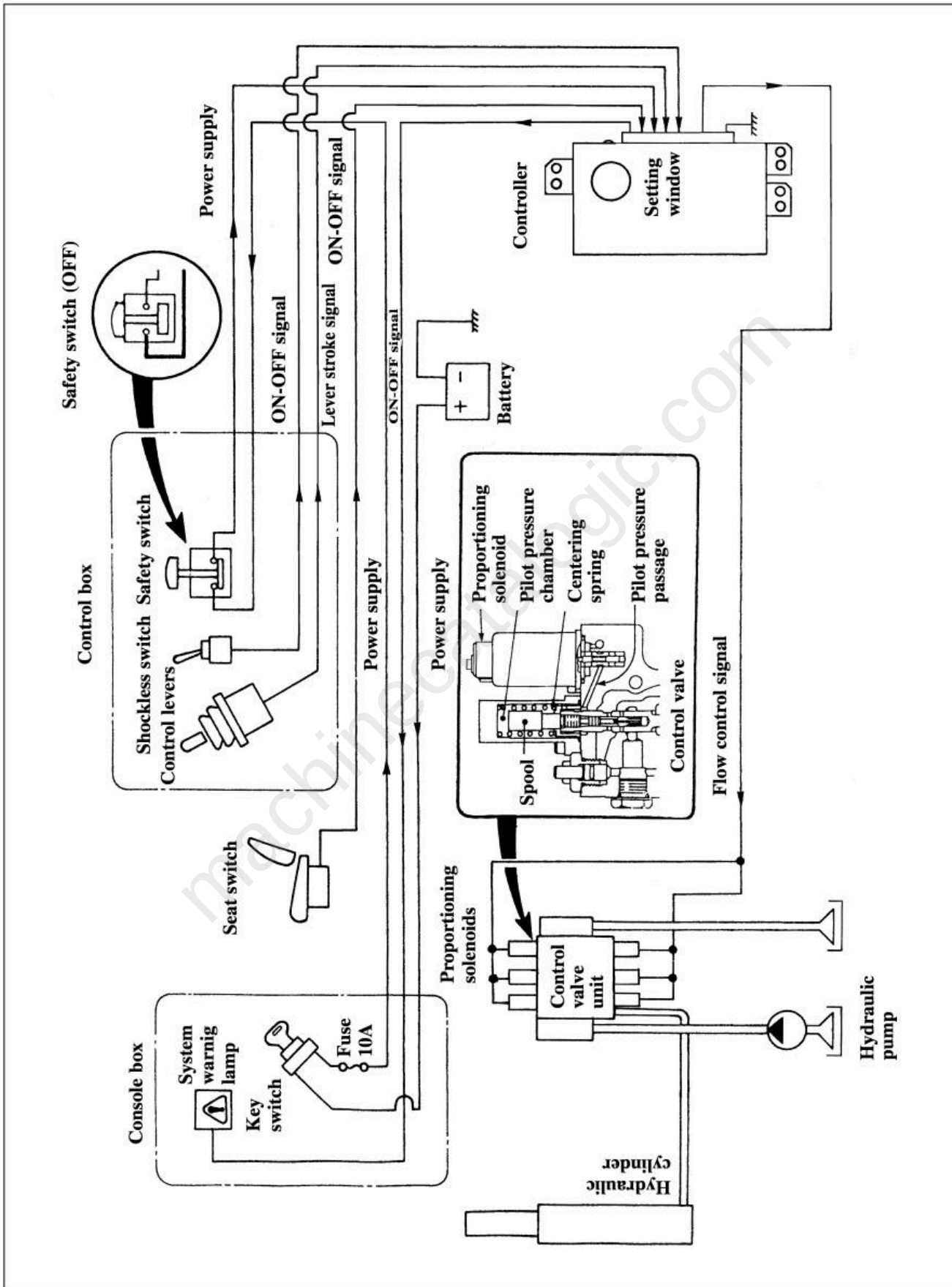
Location of components: 1.Line Fuse 2.Screws 3.Logics Cover

This completes the self-diagnostics tests. The contactor tests may be repeated by moving the DRS switch to RUN and back to DIAG.

If you are finished with self diagnostics, do the following:

1. Turn off the truck.
2. Disconnect the battery and install the line fuse (1).
3. Move the DRS switch to the RUN position.
4. Install the logics cover (3) and tighten screws (2).

FINGER CONTROL SYSTEM



PROBLEM 7

Over temperature indicator ON. Truck accelerator slower than normal. Bypass contactor will not close.
Pump motor operation normal. E1 stored in fault code area.

POSSIBLE CAUSES

Traction motor overheated: traction motor thermal switch defect; open wiring; logics defect; display unit defect.

CHECKS

Allow truck to cool 15 minutes.

Over temperature Indicator Still ON

Check stored fault codes. Verify E1 is present.

E1

Measure the voltage at P3-1 (wire #76) on the logics board (silver area).
Scrape coating off board if needed. Do NOT disconnect from logics.

No E1

Replace display unit.

High

Disconnect the battery. With the traction motor at close to room temperature, disconnect the thermal switch connector P8. Check continuity of thermal switch. Should have continuity below 69°C (156°F).

Low

Replace display unit.

Continuity

Disconnect P3 from the logics unit. Check continuity from P3-1 to battery negative (wire #1).

No Continuity

Replace thermal switch.

Continuity

Find short to battery negative in the harness. Repair or replace wire.

No Continuity

Verify problem still exists.

Display OK

Traction motor was overheated: resume normal operation. If condition repeats, check the following:

- Current limit calibration
- BDI calibration
- Operating cycle for excessive ramp climbing, towing, or pushing
- Brake drag, park brake adjustment
- Service brake interrupt switch operation.

PROBLEM 32

Display = "60": (!) action light flashing: no lift truck operation. Line contactor closes then opens.

POSSIBLE CAUSES

Serial communications fault between display and logics.

CHECKS

Check the following wires for continuity. Also visually inspect their connections for burnt or discolored terminals, loose connections, smashed or compressed connectors, corrosion or foreign materials.

P3-4 to P6-4 (wire #12).

P3-5 to P6-3 (wire #16).

P6-2 to key switch (wire #4).

P6-1 to battery negative (wire #1).

P3-19 to key switch (wire #4).

P3-21, to battery negative (wire #1).

Checks OK

Check for short to battery negative (wire #1) in the following wires:

Wire #12.

Wire #16.

Wire #4.

Checks Not OK

Repair or replace
open wires.

Checks OK

Connect a spare display unit to harness plug P6 and turn the key switch on.

Checks Not OK

Fix shorts.

Spare Display Functions Properly

Replace display.

Display = "60"

Replace logics.

Full Version Available

Caterpillar EP20 72-80V MCIII Forklift Electrical Schematic (99759-60100)

Caterpillar EP20 72-80V MCIII forklift electrical schematic, wiring routes and diagnostics. Instant PDF download.

VIEW THE FULL MANUAL

<https://machinecatalogic.com/caterpillar-ep20-72-80v-mciii-forklift-electrical-schematic-99759-60100/>