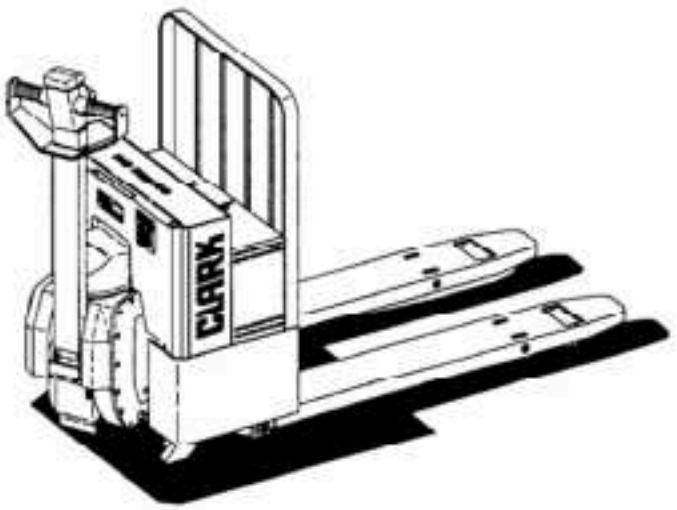
Service Manual

SM 611



WP 40

CLARK Technical Publications Lexington, KY 40507-1640

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2.5 Troubleshooting

Troubleshooting can be broken down into individual circuits. By knowing the exact symptoms of the truck operation many hours of troubleshooting time can be saved. If the proper contactor operates for the chosen direction and speed then the problem can be found in the power circuit of that function. If a particular contactor does not operate when a function is chosen then the problem can generally be found in the control circuit of that function.

Only the travel functions are controlled by the transistor controllers. Lift, lower, and horn functions operate separately.

To use this troubleshooting guide locate the failure symptom in the index on the following pages then go to the expanded outline and follow the testing procedures described.

Voltage tests are made with the negative lead of the volt meter connected to battery negative. If the negative lead is connected to a negative terminal on the electrical panel you must first verify the negative connection to the battery by touching the positive meter lead to the positive battery post. The battery voltage must be at least 25.2 volts for a 24 volt system. If the battery voltage is below 22 volts (no load) then the controller may not operate properly. The battery voltage must be at least 12.6 volts for a 12 volt system. If the battery voltage is below 11 volts (no load) then the controller may not operate properly. You will then have to charge the battery before starting the troubleshooting procedures.

When testing voltage, the "POSITIVE SIDE" of any component refers to the terminal on that component that is closest electrically to the battery positive terminal. The "NEGATIVE SIDE" of any component refers to the terminal on that component that is farthest electrically from the battery positive terminal. It is possible, and in many cases desirable, to measure battery voltage on the negative side of a component.

"Forward" direction refers to travel in the direction of the control handle with the forks trailing. "Reverse" direction refers to travel with the forks leading. The control handle operating position is between 20 degrees below fully raised and 10 degrees above fully lowered. When the control handle is fully raised or fully lowered the brakes are applied and the brake interlock switch cuts off all power to the travel control circuits. The line contactor will also open. On a 12 volt truck the line contactor will open immediately. On a 24 volt truck the line contactor will open after a 15 second delay.

After the final test is completed the truck should be repaired and operating properly. If it is not, then you must verify your test results and possibly re-evaluate the failure symptoms. If you still have not repaired the truck then you should call your local Clark dealer for assistance. When you call, the following information is required: Truck model and serial number, service meter hours, actual battery voltage at open circuit and at hydraulic operation under full load, the precise operating symptoms, and the exact results of the testing you have done. Authorized Clark dealers may call the factory directly if necessary.

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shorted diode will show continuity in both directions. You will have to test the diodes individually as shown above to determine which diode is faulty.

2. Disconnect the diode flexible leads to isolate the diodes from the circuit.

3. Use the ohmmeter to test the continuity of each diode in both directions. A shorted diode will show continuity in both directions and an open diode will show no continuity in either direction. A good diode will show continuity in only one direction.

4. Reconnect diode leads in charger.

B. Capacitor

1. Discharge capacitor.

2. Disconnect capacitor leads.

3. Set ohmmeter R x 10,000 scale and connect ohmmeter leads to terminals on capacitor. When needle (or display) quits moving, reverse leads.

On a good capacitor the needle will deflect to the right (low resistance) and then deflect back to the left (high resistance) each time the meter leads are reversed.

On a shorted capacitor the needle will deflect to the right (low resistance) and remain there.

On an open capacitor the needle will not deflect (stationary display).

4. Reconnect capacitor leads in the charger.

5. Set AC volt meter on a scale to read at least 500 volts AC. Connect meter leads to the capacitor terminals.

A shorted capacitor will indicate 0 volts AC.

An open capacitor will indicate about 300 volts + or -20 volts AC. THis is the same as the capacitor transformer winding voltage without a capacitor connected in circuit.

6. Turn on charger power.

⚠WARNING Before checking components disconnect AC power supply, unplug batteries and discharge capacitor with insulated screwdriver. All tests should be made with the charger disconnected unless otherwise stated. Use extreme caution when a test calls for the power to be "on" at the charger.

C. Timer

1. The timer can be tested by rotating the timer knob clockwise to the one (1) hour mark. With the AC power connected the charger should turn off in one (1) hour.

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HYDRAULIC SCHEMATIC SYMBOLS



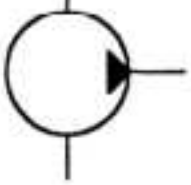
COMPONENT ENCLOSURE



HYDRAULIC LINES JOINING



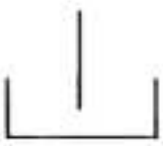
MOTOR (ELECTRIC)



HYDRAULIC PUMP



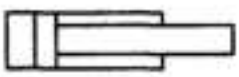
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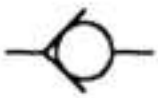
RESERVOIR (VENTED)



CYLINDER (SINGLE ACTING)



CYLINDER (DOUBLE ACTING)



CHECK VALVE



HYDRAULIC LINES CROSSING

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