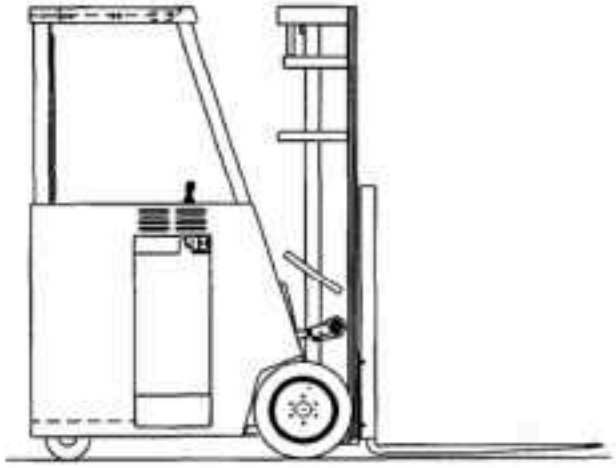
Service Manual
SM596



ESM-II 12 thru 25

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Section 2.

Planned Maintenance Procedures

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STATUS CODE	DESCRIPTION	MEMORY RECALL	Yes
-76	Capacitor overvoltage during regen.	CIRCUIT	Traction

SYMPTOM

Forward or reverse contactor opens and closes, then opens and can only close by opening and closing the key switch

POSSIBLE CAUSE

Intermittent connection in battery power circuit.

- Check battery power circuit, both positive and negative for loose connections.
- Check power fuse, battery connectors, line contactors, and etc. for possible opening during regen cycle.

Excessive source inductance.

- Check for unfiltered tag lines.
- Check for long battery cables.

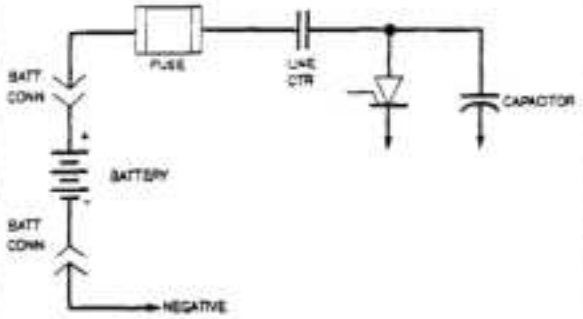


Figure 1.

STATUS INDICATION CRITERIA

This status code is displayed when capacitor voltage is greater than 225 volts during the regen cycle.

STATUS CODE	DESCRIPTION	MEMORY RECALL	No
-90	User defined status code - see OEM instruction manual.	CIRCUIT	TMM1

SYMPTOM

Status code flashes on and off. Vehicle speed may or may not be reduced.

POSSIBLE CAUSE

User defined status code is displayed by switch closure to negative.

- See OEM instruction manual for corrective action required.

Other Causes:

- Terminal 1 shorted to negative.
- Defective input switch (shorted).
- Defective TMM1 card.

NOTE: When SCR pump control is used with internal TMM1 function, input terminal is PA3 on pump logic card.

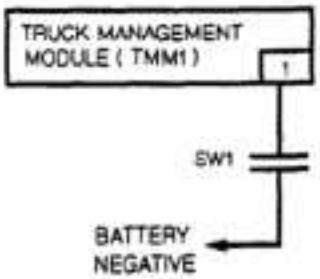


Figure 1.

STATUS INDICATION CRITERIA

This status code is displayed when the voltage at terminal 1 of TMM1 is at zero volts.

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Hydraulic Pressure Checks

Check Tilt and Auxiliary Circuits Relief Valves Setting

NOTE

The relief valves RV1, RV2, are located on the solenoid control valve. Refer to illustration on next page.

IMPORTANT

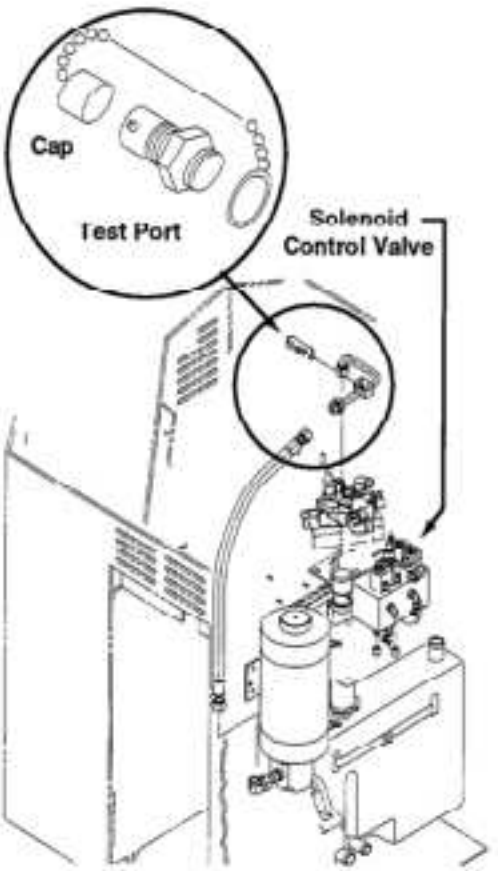
Check system pressure with the hydraulic fluid at operating temperature: 43–54°C (110 to 130°F).

1. Remove cap from test port, refer to illustration in opposite column .

NOTE

The hydraulic relief valve setting may be checked with a Mico Quadrigage or with a conventional pressure gauge having a scale of 0–27,580 kPa (0–4000 psi).

2. Connect adaptor to pressure gauge. See illustration on previous page.
3. Attach adaptor to test port.
4. Turn key switch ON.



5. Move the multi-function control to tilt fully forward. Hold control in the fully actuated position. When the system operates over relief, immediately read the pressure gauge and then release control. **Do not operate system over relief any longer than it takes to read the pressure gauge.** Gauge should register as specified on next page. Turn key switch OFF.



Always Wear Safety Glasses



Remove All Jewelry Before Working on Truck.

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Group 16 - Motors

Drive Motor

36V, 6.64 in. diameter, series wound.

Weight:		24.5 kg (54 lb)
Open Rating (60 Min.):		34.8V, 1600 rpm, 4.0 hp, 117 amps
Brushes:	Dimension	L 35 mm (1.38 in.), W 32 mm (1.26 in), T 12.65 mm (0.498 in)
		No. per holder: 1
		No. per motor: 4
	Grade	CM880
	Worn Length	14.5 mm (0.57 in) on longest side.
	Brush Spring Tension (force per brush)	
	NEW:	935–1077 g (33–38 oz)
	WORN:	453 g (16 oz)

Hydraulic Pump Motor

36V, 7.15 in. diameter series wound.

	Weight:	42.2 kg (93 lb)
Open Rating (15% Time):		33.4V, 1050 rpm, 10.0 hp, 340 amps
Brushes:	Dimension	L 35 mm (1.38 in.), W 25.3 mm (0.997 in), T 13.9 mm (0.548 in)
		No. per holder: 2
		No. per motor: 8
	Grade	CM880
	Worn Length	14.5 mm (0.57 in) on longest side.
	Brush Spring Tension (force per brush)	
	NEW:	935–1077 g (33–38 oz)
	WORN:	453 g (16 oz)

Steer Pump Motor

36V 6.5 in. diameter, permanent magnet.

Weight:		19.3 kg (43 lb)
Enclosed Rating (Continuous):		36.0V, 1220 rpm, 0.9 hp, 27 amps
Brushes:	Dimension	L 28.7 mm (1.13 in.), W 20.6 mm (0.812 in), T 9.35 mm (0.368 in).
		No. per holder: 1
		No. per motor: 4
	Grade	CM880
	Worn Length	10.65 mm (0.420 in) on longest side.
	Brush Spring Tension (force per brush)	
	NEW:	782-870 g (27.6–30.7 oz)
	WORN:	326-357 g (11.5-12.6 oz)

Group 19 - Electrical Controls

GROUND TEST: Minimum Resistance

Resistance values may range from 20,000 to 30,000 ohms, without problems.

When below 20,000 ohms, further testing must be conducted to repair problem.

CURRENT DRAW VALUES: Warm Truck, 36-volt fully charged battery.

Drive Motor - 1A Freewheeling (less power steering motor idle current)

@ Battery: 26 amps each motor

Steer Pump Motor - Idle current @ Battery: 5–8 amps

SCR CURRENT LIMIT: Cold Truck

Drive Motor - 525–575 amps Motor Current (Both Motors)

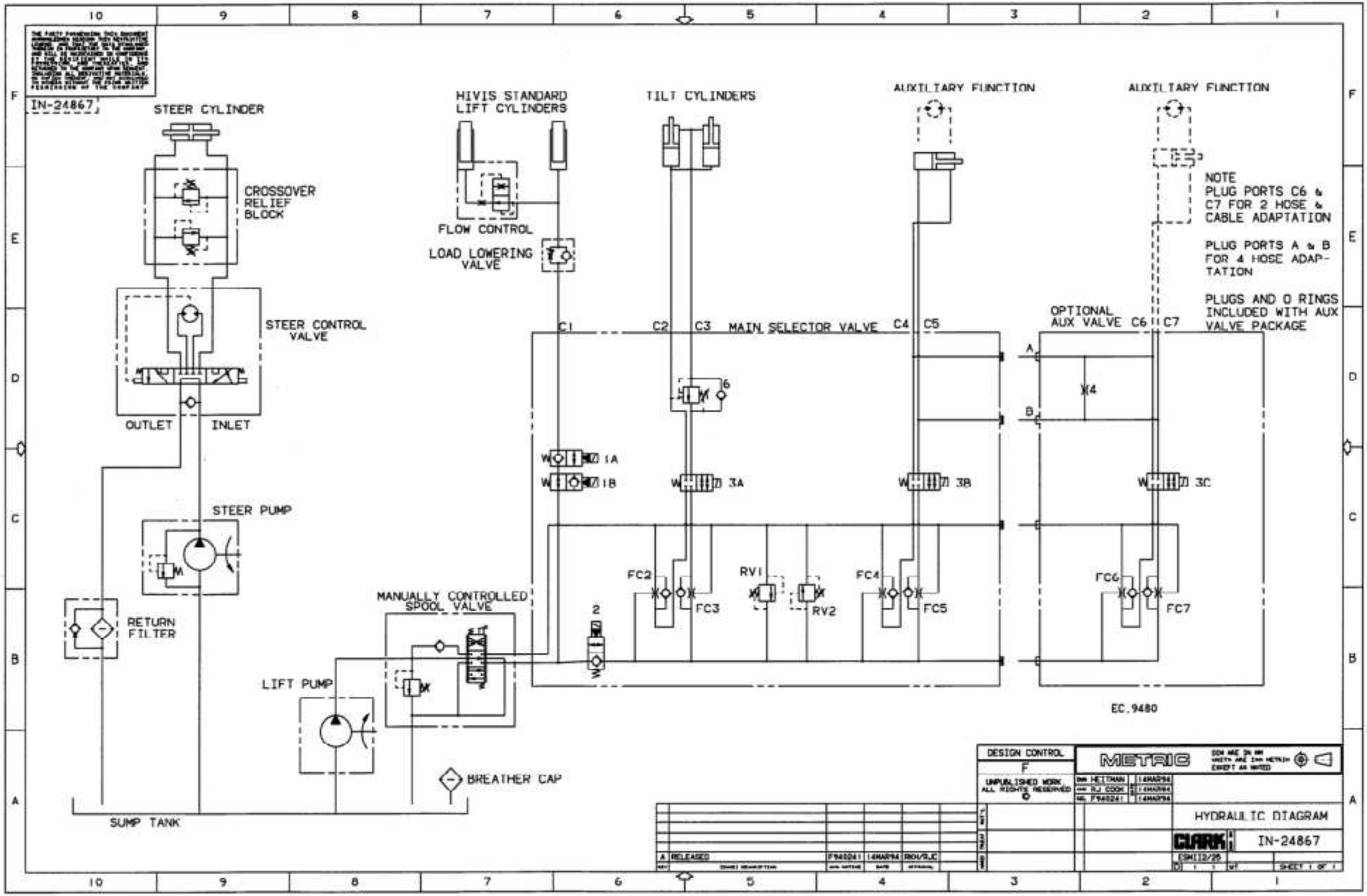
(250–350 amps Battery Current)

CREEP SPEED: 1.6–3.6 volts @ motor

1A PICKUP TIME DELAY: 1.5 seconds

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