Service & Adjustment Manual



SM 538
NS/NP 246 (P.M.)

CLARK

Service Publications
Department
Battle Creek,
Michigan 49016

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SERVICE MANUAL
SM538

NP/NS 300 C&D

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PM - PLANNED MAINTENANCE PROGRAM

CONTENTS

	PG
General	1
Visual Inspection	1
Functional Tests	5
Test Drive The Truck	8
Air Cleaning	11
Critical Fastener Torque Check	11
Lubrication, Fluids and Filters	11

GENERAL

A planned maintenance program of regular, routine inspections and lubrication is important for long life and trouble-free operation of your lift truck. Make and keep records of your inspections. Use these records to help establish the correct PM intervals for your application and to indicate maintenance required to prevent major problems from occurring during operation.

PM Report Form

As an aid in performing and documenting your PM inspections, Clark has prepared an "ELECTRIC TRUCK PLANNED MAINTENANCE REPORT" form. Copies of this form may be obtained from your authorized CLARK dealer. We recommend that you use this form as a checklist and to make a record of your inspection and truck condition.

The periodic maintenance procedures outlined in this manual are intended to be used with PM report form. They are arranged in groupings of maintenance work that are done in a logical and efficient sequence.

A check mark or entry is made on PM Report Form when PM is performed. Please note special coding system for indicating importance of needed repairs and/or adjustments.

When you have finished PM inspections, be sure to give a copy of report to designated authority or person responsible for lift truck maintenance.

Do not make repairs or adjustments unless authorized to do so.

For safety, it is good practice to:

Remove all jewelry (watch, rings, bracelets, etc.) before working on the truck.

Disconnect battery from truck receptacle before working on electrical components.

Always wear safety glasses. Wear a safety (hard) hat in industrial plants and in special work areas where protection is necessary or required.

HOW TO PERFORM THE PM PERIODIC INSPECTIONS AND MAINTENANCE

VISUAL INSPECTION

First, perform a visual inspection of lift truck and its components. Walk around truck and take note of any obvious damage and maintenance problems. Check for loose fasteners and fittings.



Check to be sure all capacity, safety, and warning plates or decals are attached and legible.

NOTICE

NAMEPLATES & DECALS

Do not operate a lift truck with damaged or missing decals and nameplates. Replace them immediately. They contain important information

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Check resistance(s) from frame to SCR power and control terminals. A resistance of less than 20,000 ohms can cause misleading symptoms. If less than 20,000 ohms resistance is measured, conduct further tests to eliminate short circuit / ground fault conditions.

An index of most common symptoms for EV-1W SCH control troubles is:

1. Directional contactors will not close
2. Directional contactors close. No power. No audible SCR hum. Truck inoperative with accelerator in SCR range.
3. Directional contactors close. No power. Audible SCR hum. Truck inoperative with accelerator in SCR range.
4. Directional contactors close. Full SCR hum and power with accelerator in creep speed position.
5. Directional contactors close once or twice and then remain open. PMT trips.
6. One directional contactor close with normal operation but other contactor will not close.
7. 1A contactor will not close.
8. 1A contactor will not close when in SCR stall or going up a ramp.
9. Stiff plug and/or plugging distance will not adjust.
10. Miscellaneous.

Refer to Systems Diagnostic area for detailed information on sequence of operation and trouble-shooting of control.

Tools and test equipment required are:

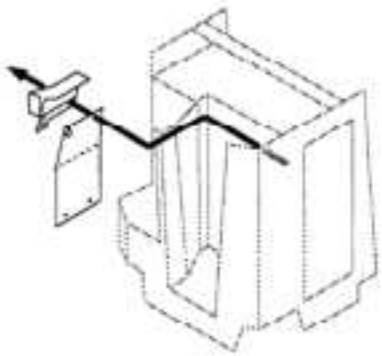
* 6 volt lamp
* 6 volt battery
* Two A14 diodes (1 amp 400 v)
* Clip leads
* Volt-ohm meter (VOM) * (20,000 ohms)
* General hand tools

NOTE: A digital VOM (such as Simpson Digital Multi-meter Model 461, or equivalent) is recommended for all electrical and control testing.

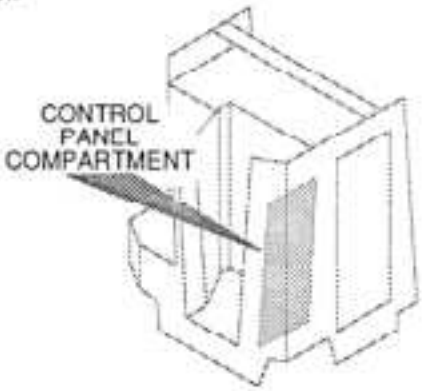
19-04 SCR CONTACTOR PANEL AND RELAY PANEL REMOVAL

WARNING
ELECTRICAL SHOCK
DISCONNECT THE BATTERY AND DISCHARGE THE CAPACITOR(S) BEFORE HANDLING THE CONTROL PANEL
BREAKING THIS RULE CAN CAUSE SERIOUS INJURY TO YOURSELF

1. Make sure truck has been parked in a safe position with upright fully lowered. Return all controls to neutral and turn key switch to off.
2. Disconnect battery (if not already removed from truck).



3. Loosen and remove two bottom fasteners and two top fasteners attaching control panel cover to frame on RH side of operators compartment. Remove panel cover. Removal of the two panel control cover top fasteners also loosens the relay panel cover and compartment rest pad. Lift off this cover and pad (cover has two top pins that lift out of holes in frame). This exposes the relay panel control.



This will expose control panel compartment which is mounted RH lower side of operators compartment. The SCR panel and contactor panel are considered an assembly and are removed as a unit.

4. Discharge capacitor by using an insulated screwdriver or similar device to short across terminals of capacitor.

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GROUP 22 WHEELS AND TIRES

CONTENTS NO.

DRIVE TIRE SPECIFICATIONS 22-01
DRIVE TIRE REPLACEMENT 22 02

22-01 DRIVE TIRE SPECIFICATIONS

NOTICE

The drive tire specified for the NP/NS 300C Series fork lift trucks was chosen after extensive testing as the best combination of tread and shape design and material compounding, including hardness, to provide the required wear and handling characteristics.

Std Cushion Drive Tire Size:	13.5 X 5.5
Caster wheel size (dual):	7 x 2.5
Front Wheel Size NS 300 30:	4 X 2.62 Poly.
Front Wheel Size all others:	5 x 2.62 Poly.

IMPORTANT

The user is advised that replacement of the original equipment tires with tires other than those recommended by CLARK may result in decreased operating performance and stability.

22-02 DRIVE TIRE REPLACEMENT

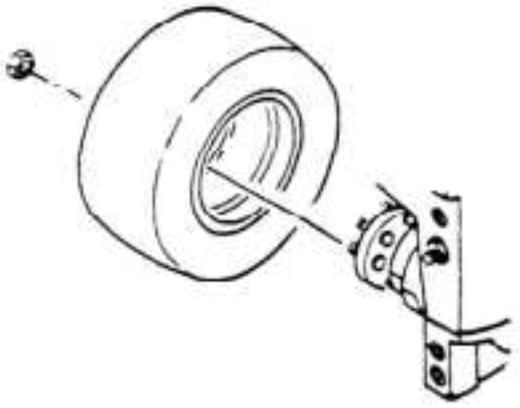
SAFETY NOTE

To perform this service procedure, it is recommended that you first:

Park truck on a level surface.
Return all controls to neutral
Turn key switch OFF.
Apply parking brake.

1. Use a portable jack of correct capacity placed under the frame of the truck to raise the drive wheel off the ground. (Refer to Group 38 Machine Jacking and Blocking for correct method).

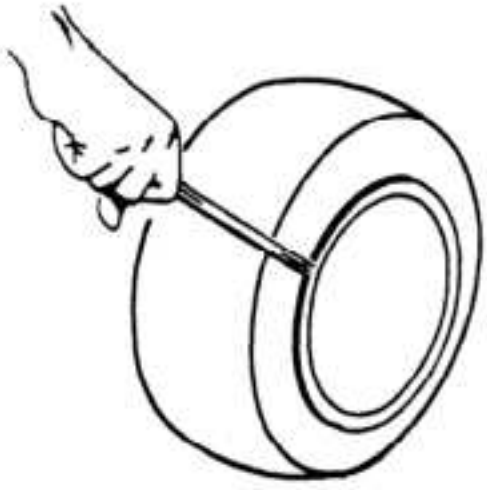
2. Remove the lug nuts from the wheel.



1. Remove the tire and wheel assembly from the drive axle hub.

2. Remove objects (nails, metal fragments, etc.) embedded in the tread of the tire. Be careful not to further damage the tire when removing these objects.

3. Check the tire for separation from the base band. If a thin steel rule or similar tool can be inserted more than [12 mm] .5 inch into the separation area from the side of the tire, the tire should be replaced.



4. Check the tire tread. If the tread is worn down to [6 mm] .25 in. or less in height, the tire should be replaced.

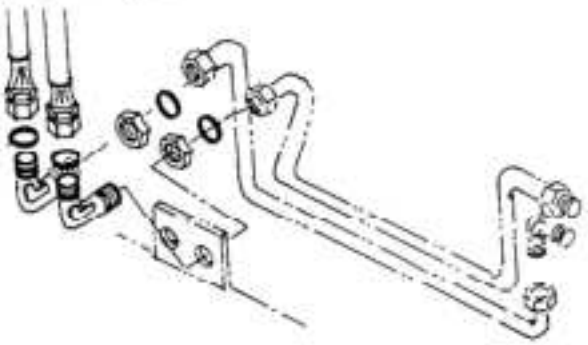
5. Check the tire for damage from chunking or heat damage. This is a judgment

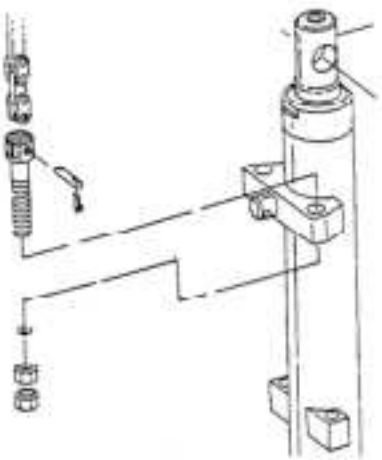
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2. Disconnect wire harness assemblies from upright by unlocking two (2) quick-disconnect plugs located below middle tie bar of outer rail assembly. One is for pantograph and other is for speed limit switch on top or upright.

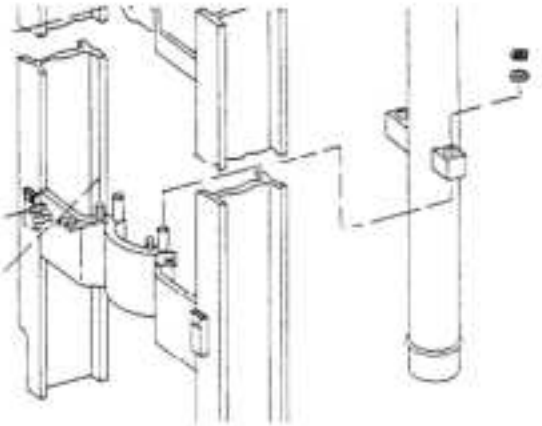


3. Remove hydraulic lines to lift cylinders. Two lines go to staging cylinders. Third line goes to sheave on intermediate rail. Cap ends of hose and cap cylinder ports.





4. Remove nuts from chain anchors and remove chain anchors from top plate of free-lift cylinder barrel. Remove lift chain retainer plate and spacer from piston rod. Remove lift chains from sheaves and secure in a safe position. Remove one cable from sheave on right hand side of cylinder and two cables from sheave on left hand side of cylinder.



5. Remove snap rings and washers from bottom tie bar pins on inner rail assembly.

Remove free-lift cylinder assembly by lifting anchor plates on cylinder barrel off of pins on lower inner rail tie bar. Slot in middle tie bar of inner rail assembly will allow pin on cylinder barrel to lift up. Store cylinder in a safe place.

6. Use a chain hoist to lift intermediate rail assembly a slight amount. Place a [100 mm] 4 inch hardwood block under upright rail and remove chain hoist.

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