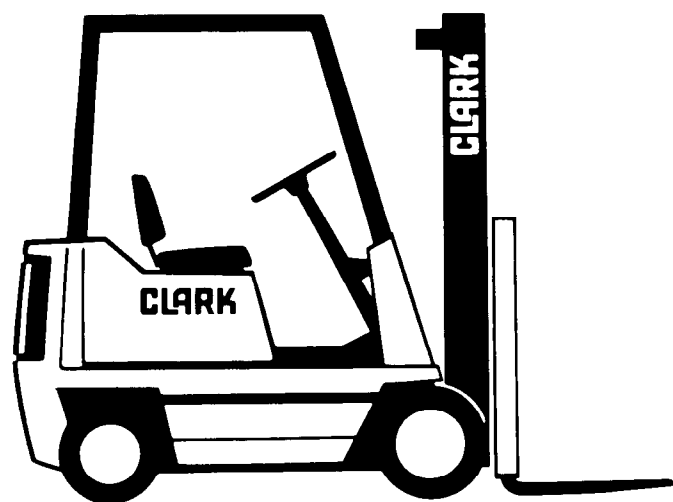


Service & Adjustment Manual



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

SERVICE MANUAL SM538

NP/NS 300 C&D

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FOREWORD

Clark Equipment Company welcomes you to the growing group of professional people who own, operate and maintain Clark lift trucks. This manual will familiarize you with service maintenance and overhaul information about your new truck. It has been especially prepared to help you maintain your Clark lift truck in an efficient and safe operating condition.

Regular, correct maintenance and care of your lift truck is not only important for full and efficient truck life; it is essential for your safety. A faulty lift truck is a potential source of danger to the operator, and to other personnel working near it. The importance of maintaining your lift truck in a safe operating condition by servicing it regularly and, when necessary, repairing it promptly cannot be emphasized too strongly.

To assist you in keeping your lift truck in good operating condition, this manual includes an outline of planned maintenance (PM) procedures that are considered essential to the life and safe performance of your truck. Brief procedures for inspections, operational checks, cleaning, lubrication, and adjustments are included for your reference.

Clark recommends that a planned maintenance and safety inspection program (PM) be performed by a trained and authorized mechanic on a regular basis. The PM program provides the opportunity to make thorough inspections and checks on the safe condition of your truck. Necessary adjustments and repairs can be done during the PM, which will increase the life of components and reduce unscheduled downtime. The need for major adjustments, repairs, or replacements is found and corrections made as required; not after failure has occurred.

HOW TO USE THIS MANUAL

This manual is intended to be used by persons who are trained and authorized to do lift truck maintenance. The recommended procedures for routine servicing and adjustments as well as for removal and overhaul of major components of the truck are outlined. It is written to show and describe the adjustment, removal, disassembly, inspection, repair, and assembly steps that are normally required to service these components.

The detailed procedures are arranged in sequence by numbered GROUP and Section. The GROUP numbers are the same as the component group in the Master Parts Book. Each GROUP has its own Table of Contents, so that you can find the various topics within more easily. If you cannot find a topic in the Table of Contents, check the Index at the back of the manual.

Component specifications, information notes and safety messages are included at the proper step of each procedure. To be better prepared to do the necessary service work, please take time to read the entire procedure, including any special instructions, before doing any work.

Specifications of selected truck components are included at the back of the manual for easy reference.

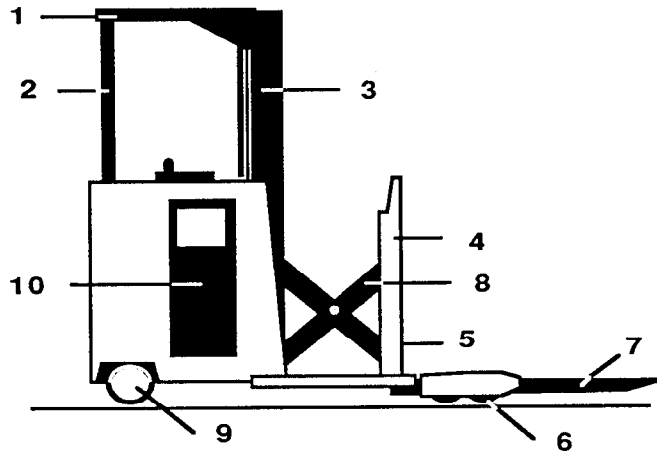
Also refer to the Operator's Manual, located on the truck, for additional information and instructions on the operation and maintenance of your truck.

If you have need for more information on the care and repair of your truck, please contact your authorized Clark dealer.

NOTICE - The descriptions and specifications included in this manual were in effect at the time of printing. Clark Equipment Company reserves the right to make improvements and changes in specifications or design, without notice and without incurring obligation. Please check with your authorized CLARK dealer for information on possible updates or revisions.

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PICTORIAL INDEX



**NP/NS 300 Narrow Aisle
Trucks**
(NP) = Pantograph
**(NS) = Straddle (no
pantograph)**

1. Overhead guard
2. Overhead guard rear post
3. Upright assembly
4. Load backrest extension
5. Fork carriage
6. Load wheels (NP model shown)
7. Load forks
8. Pantograph mechanism (NP only)
9. Swivel caster
10. Battery compartment

SAFETY AND OPERATIONAL CHECKS

PM Interval:

A = 8 - 10 hours, or daily

B = 50 - 250 hours, or every month

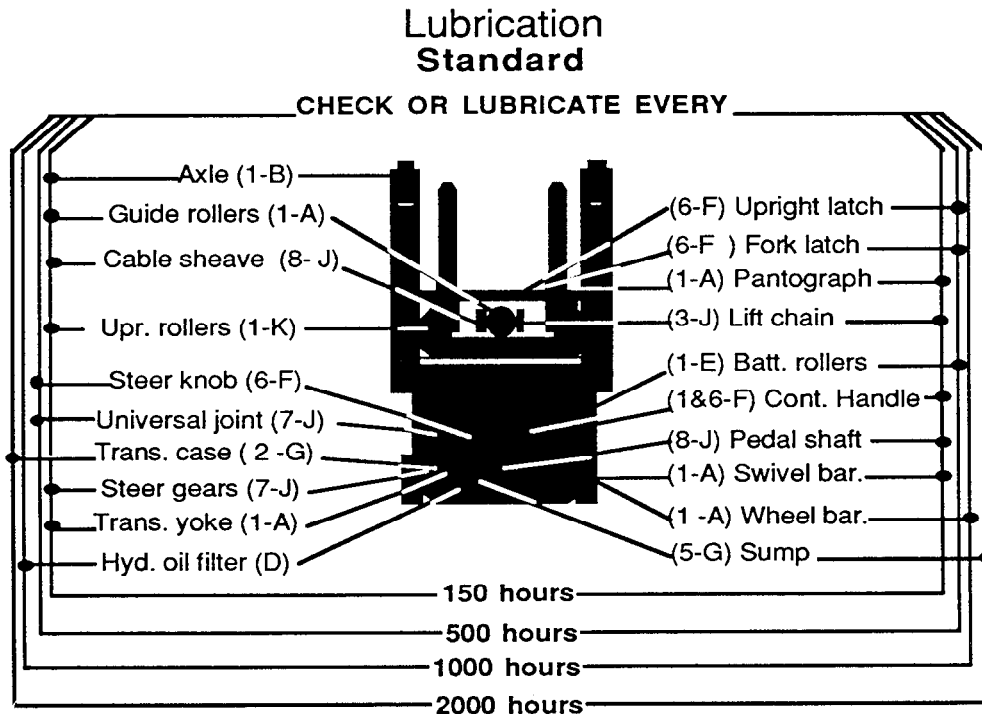
C = 450 - 500 hours, or every 3 months

D = 900 - 1000 hours, or every 6 months

E = 2000 hours, or every year

DAILY MAINTENANCE CHECKS	A	B	C	D	E
Check truck for obvious damage and leaks.	•				
Check / clean battery terminals	•				
Check electrolyte level.	•				
Check capacity, warning plates, decals	•				
Check condition of tires and wheels. Remove embedded objects.	•				
Check wheel lug nuts.	•				
Check hydraulic sump oil level.	•				
Check gauges and instruments.	•				
Check warning lights and hourmeter.	•				
Check overhead guard condition and bolts.	•				
Check horn operation and other warning devices.	•				
Check steering operation.	•				
Check service brake operation.	•				
Check parking brake operation.	•				
Check directional and speed controls operation.	•				
Check accelerator	•				
Check lift, tilt, and aux operation.	•				
Check upright, lift chains, and fasteners.	•				
Check load backrest extension and forks.	•				

RECOMMENDED PLANNED MAINTENANCE AND LUBRICATION SCHEDULE



Lubricants

- | | |
|---|------------------------------|
| (1) - MP1- multipurpose grease NLG1 # 1 | (6) - SAE 20 Engine oil |
| (2) - GL5 - transmission lubricant AP1GL5 | (7) - 886785 Spray lubricant |
| (3) - CL - chain lubricant Clark 886399 | (8) - Dry graphite |
| (5) - MS68 Hydraulic oil | |

Method

- | | |
|--|--------------------------------|
| (A) - Use standard lube gun | (F) - Apply light film |
| (B) - Use lube gun and adaptor for flush type fittings | (G) - Drain, flush and refill |
| (C) - Clean in solvent and re-oil | (H) - Repack bearing |
| (D) - Change filter | (J) - Clean and lubricate |
| (E) - Remove, clean and repack | (K) - Apply to channel of rail |

SAFETY SIGNS AND SAFETY MESSAGES

Improper or careless techniques cause accidents. Don't take chances with incorrect or damaged equipment. Read and understand the procedures for safe operation and maintenance outlined in this manual.

STAY ALERT! Follow safety rules, regulations and procedures. Accidents can be avoided by recognizing dangerous procedures or situations before they occur.

DRIVE AND WORK SAFELY and follow the safety signs and their messages displayed on the truck and in this manual.

SAFETY SIGNS and MESSAGES are placed in this manual and also on the lift truck to provide instructions and to identify specific areas where potential hazards exist and special precautions should be taken. Be sure you know and understand the meaning of these instructions, signs and messages. Damage to the truck or death or serious injury to you or other persons may result if these messages are not followed.

NOTICE This message is used when special information, instructions or identification is required relating to procedures, equipment, tools, pressures, capacities and other special data.

IMPORTANT This message is used when special precautions should be taken to ensure a correct action or to avoid damage to or malfunction of the truck or a component.

CAUTION This message is used as a reminder of safety hazards which can result in personal injury if proper precautions are not taken.

WARNING This message is used when a hazard exists which can result in injury or death if proper precautions are not taken.

DANGER This message is used when an extreme hazard exists which will result in death or serious injury if proper precautions are not taken.

USER SAFE MAINTENANCE PRACTICES

The following instructions have been prepared from current industry and government safety standards applicable to industrial truck operations and maintenance. These recommended procedures specify conditions, methods, and accepted practices that aid in the safe maintenance of industrial trucks. They are listed here for the reference and safety of all workers during maintenance operations. Carefully read and understand these instructions and the specific maintenance procedures before attempting to do any repair work. When in doubt of any maintenance procedure, please contact your local CLARK dealer.

1. Powered industrial trucks can become hazardous if maintenance is neglected. Therefore, suitable maintenance facilities, trained personnel, and procedures must be provided.

2. Maintenance and inspection of all powered industrial trucks shall be done in conformance with the manufacturer's recommendations.

3. A scheduled planned maintenance, lubrication, and inspection program shall be followed.

4. Only trained and authorized personnel shall be permitted to maintain, repair, adjust, and inspect industrial trucks, and in accordance with the manufacturer's specifications.

5. Properly ventilate work area, vent exhaust fumes, and keep shop clean and floor dry.

6. Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check for level, or leakage of fuel, electrolyte, or coolant. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.

7. Before Starting Work On Truck:

a) Raise drive wheel(s) off of floor or disconnect power source and use blocks or other positive truck-positioning devices.

b) Put blocks under the load engaging means, innermast(s), or chassis before working on them.

c) Disconnect battery before working on the electrical system.

8. Before working on engine fuel system of gasoline powered trucks with gravity-feed fuel systems, be sure fuel shutoff valve is closed.

9. Before working on engine fuel system of LP-gas powered trucks, close LP-gas cylinder valve and run engine until there is no more fuel in the system and engine stops running. If engine will not run, close LP-tank valve and vent fuel slowly in a safe area.

10. Operation of the truck to check performance must be conducted in an authorized, safe, clear area.

11. Before Starting To Drive Truck:

a) Be in operating position.

b) Disengage clutch on manual transmissions, or apply brake on trucks with powershift transmission and electric trucks.

c) Put directional control in neutral.

d) Start engine or turn on power.

e) Check functioning of lift and tilt systems, directional and speed controls, steering, brakes, warning devices, and any load handling attachments.

12. Before Leaving The Truck:

a) Stop truck.

b) Fully lower the load engaging means, upright, carriage, forks, or attachments.

c) Put directional control in neutral.

d) Apply the parking brake.

e) Stop the engine or turn off power.

f) Turn off the control or ignition circuit.

g) Put blocks at the wheels, if truck is on an incline.

13. Handle LP-gas cylinders with care. Damage such as dents, scrapes, or gouges may dangerously weaken the tank and make it unsafe for use.

14. Brakes, steering mechanisms, control mechanisms, warning devices, lights, governors, lift overload devices, guards and safety devices, lift and tilt mechanisms, articulating axle stops, and frame members must be carefully and regularly inspected and maintained in a safe operating condition.

USER SAFE MAINTENANCE PRACTICES

15. Special trucks or devices designed and approved for hazardous area operation must receive special attention to ensure that maintenance preserves the original, approved safe operating features.

16. Fuel systems must be checked for leaks and condition of parts. Extra special consideration must be given in the case of a leak in the fuel system. Action must be taken to prevent the use of the truck until the leak has been corrected.

17. All hydraulic systems must be regularly inspected and maintained in conformance with good practice. Tilt and lift cylinders, valves, and other similar parts must be checked to assure that "drift" or leakage has not developed to the extent that it would create a hazard.

18. When working on hydraulic system, be sure the engine is turned off or battery disconnected on electric trucks, upright is in its fully-lowered position, and hydraulic pressure relieved in hoses and tubing. **WARNING** -- Always put blocks under the carriage and upright rails when necessary to work with upright in an elevated position.

19. The truck manufacturer's capacity, operation and maintenance instruction plates, tags, or decals must be maintained in legible condition.

20. Batteries, motors, controllers, limit switches, protective devices, electrical conductors and connections must be inspected and maintained in conformance with good practice. Special attention must be paid to the condition of electrical insulation.

21. To avoid injury to personnel or damage to the equipment, consult the manufacturer's procedures in replacing contacts on any battery connection.

22. Industrial trucks must be kept in a clean condition to minimize fire hazards and help in the detection of loose or defective parts.

23. Modifications and additions that affect capacity and safe truck operation must not be done without the manufacturer's prior written approval. Capacity, operation and maintenance instruction plates, tags or decals must be changed accordingly.

24. Care must be taken to assure that all replacement parts, including tires, are interchangeable with the original parts and of a quality at least equal to that provided in the original equipment. Parts, including tires, are to be installed per the manufacturer's procedures. Always use genuine CLARK or CLARK-approved parts.

25. When removing tires, follow industry safety practices. Most important, deflate pneumatic tires completely prior to removal. Following assembly of tires on multi-piece rims, use a safety cage or restraining device while inflating.

26. Use special care when removing heavy components from the truck, such as counterweight, upright, etc. Be sure that lifting and handling equipment is of the correct capacity and in good condition.

NOTICE -- You should also be familiar with additional operating and maintenance safety instructions contained in the following publications:

ANSI/ASME B56.1 - 1983: Safety Standard for Low Lift and High Lift Trucks (Safety Code For Powered Industrial Trucks). Published by: Society of Mechanical Engineers, United Engineering Center, 345 E. 47th Street, New York, N.Y. 10017.

NFPA 505-1982: Fire Safety Standard for Powered Industrial Trucks: Type Designations, Areas of Use, Maintenance and Operation. Available from: National Fire Protection Assoc., Inc., Batterymarch Park, Quincy, MA 02269.

General Industry Standards, OSHA 2206: OSHA Safety and Health Standards (29 CFR 1910), Subpart N-Materials Handling and Storage, Section 1910.178 Powered Industrial Trucks. For sale by: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C 20402.