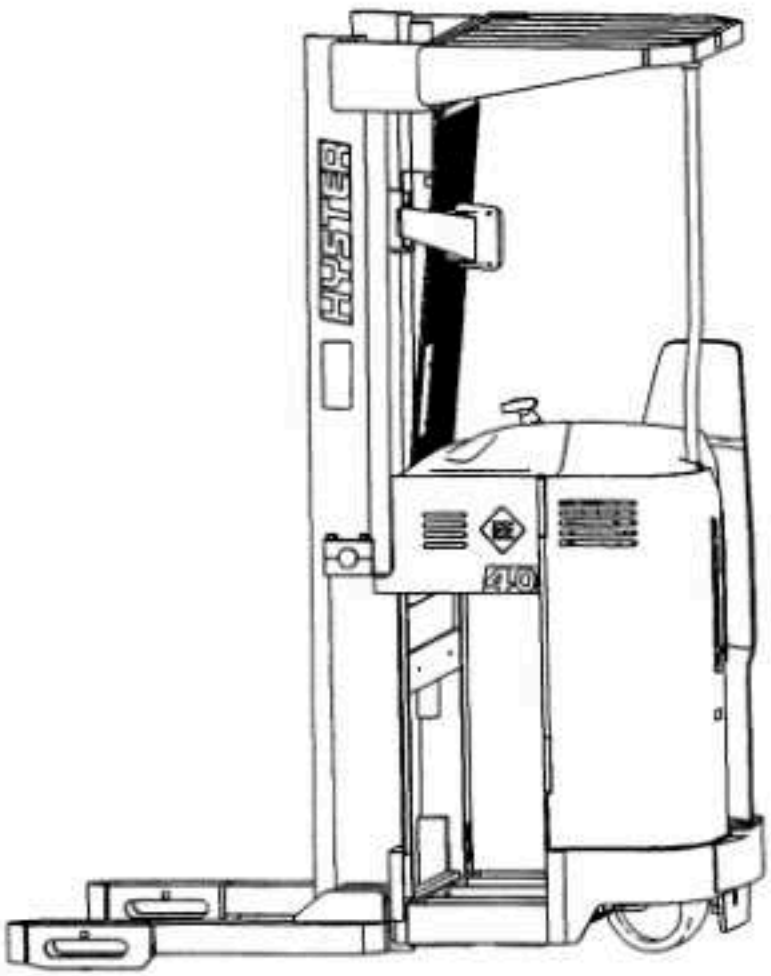
SERVICE MANUAL

(E138) N30-45XMR, N25-30XMDR, N50XMA



FORM 897707 Rev. 01/04

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STEERING SYSTEM	1600 SRM 0605	05/99
BRAKE SYSTEM (E138, B470, B471, F138)	1800 SRM 0606	05/98
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Hydraulic System Leaks Check

1. Slowly raise and lower the mast several times without a load. On lift trucks with carriage functions, operate the carriage functions several times. Put a capacity (see the Nameplate) load on the forks, and raise and lower the load several times. Lower the load. Check for leaks and repair as necessary.

2. Raise the carriage and the capacity load 1 m (3 ft). If the carriage lowers slowly with the control valve in a neutral position, there are leaks inside the hydraulic system. The maximum speed that the carriage is allowed to lower is 50 mm (2 in.) in 10 minutes when the hydraulic oil is 30°C (86°F). If the oil temperature is 70°C (158°F), the maximum speed that the carriage can lower is 150 mm (6 in.) per 10 minutes.

3. Check the lift cylinders for internal leaks. Remove the load from the forks. Install a gate valve in each of the supply lines between the main control valve and the mast. Put a capacity load on the forks again. Raise the carriage 1 m (3 ft). Close both gate valves. If the carriage or inner mast lowers slowly, the seals in the lift cylinders have leaks.

4. If the carriage does not move, open both gate valves and check the movement again. If the carriage lowers when the gate valves are open, check for leaks in the hydraulic lines and fittings. If no leaks are found, the main control valve may have a defect. Remove the load from the forks.

5. On Reach trucks, slowly tilt the forks forward. If the forks continue to slowly tilt forward when the control valve is in a neutral position, there are leaks inside the hydraulic system. The maximum speed that the forks are allowed to tilt forward is 13 mm (0.50 in.) per 10 minutes (measured at the tilt cylinder). This maximum speed is measured when the hydraulic oil is 30°C (86°F). If the oil temperature is 70°C (158°F), the maximum speed is 39 mm (1.5 in.) per 10 minutes.

6. If the leak rate for the tilt function is greater than specifications, remove the load from the forks. Install a gate valve between the port at the rod end of the tilt cylinder and the hydraulic line. Put the load on the forks again. Close the valve. Tilt the forks approximately halfway back. If the forks tilt slowly forward, the piston seals are leaking.

7. If the forks do not move, open the gate valve and check for movement again. If the forks move forward when the gate valve is open, check for leaks in the hydraulic lines or fittings. If no leaks are found, the main control valve or solenoid valves can be damaged. Remove the load from the forks.

Lift Chains Check

GENERAL

NOTE: These procedures are for both the two-stage and three-stage mast assemblies.

CLEAN AND INSPECT

Read and follow the Safety Procedures When Working Near Mast as well as all WARNINGS and CAUTIONS.

WARNING

Cleaning solvents can be flammable and toxic and can cause skin irritation. Wear protection for eyes and skin. When using cleaning solvents, always follow the recommendations of the manufacturer.

CAUTION

Do NOT use steam to clean the lift chains, sheaves, or load rollers. The sheaves and bearings are sealed and permanently lubricated. Do not use compressed air on the bearings. The air can force the lubricant out of the bearings.

1. Clean the lift chains using solvent. Inspect the lift chains for wear or damage. See Figure 23. A lift chain becomes longer when it is worn. If a lift chain is 3 percent longer than a new lift chain, the lift chain must be replaced. Use a chain scale to measure the chains. If a chain scale is not available, check the lift chains with the measurements given in Figure 23.

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Troubleshooting

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
Tilt cylinder movement is slow or not smooth.	Air is in the hydraulic system.	Remove air from hydraulic system.
	The hydraulic pump is worn or damaged.	Repair or replace hydraulic pump.
	Restriction in the hydraulic lines.	Repair hydraulic lines.
	Seals in tilt cylinder are damaged.	Replace seals and inspect cylinder bore for damage.
	Tilt cylinders have internal damage.	Repair or replace cylinder.
	Load is greater than capacity.	Reduce load.
	Pressure relief valve(s) is not adjusted correctly or is damaged.	Repair or adjust relief valve(s).
	Large leaks between spool and bore.	Replace valve section.
	Spool is not fully extended or retracted.	Adjust linkage to spool.
	Tilt control spool is damaged.	Repair control valve.
The tilt cylinders permit the mast to move when the Tilt control lever is in the Neutral position.	There are leaks in the hydraulic lines.	Tighten fittings or repair leaks.
	Seals in tilt cylinder are damaged.	Replace seals and inspect cylinder bore for damage.
	Tilt cylinders have internal damage.	Repair or replace cylinder.
	Tilt control spool is damaged.	Repair control valve.

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