DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL

DS, GS AND DEPOT MAINTENANCE MANUAL

TRUCK; FORK LIFT

GASOLINE ENGINE DRIVEN

SOLID RUBBER TIRES, 4,000 LB CAPACITY

(HYSTER MODEL S40CP)

(ARMY MODEL MHE 203)

FSN 3930-935-7866 (100 IN)

FSN 3930-935-7865 (180 IN)

HEADQUARTERS, DEPARTMENT OF THE ARMY
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INTRODUCTION AND GENERAL DESCRIPTION

INTRODUCTION

This manual contains operation and service instructions for the Model S-40C-P Fork Lift Trucks manufactured by Hyster Company, Portland, Oregon. Unit serial numbers covered by the material in this manual are as Follows:

C2D-5928N through C2D-6125N.
C2D-6542N through C2D-6556N.

The Federal Stock Number for the model with a three-stage upright assembly is 3930-935-7865; the Federal Stock Number for the model with a free-lift upright assembly is 3930-935-7866. The model identification number, the unit serial number, and the Federal Stock number appear on the specification plate under the instrument panel of the fork lift truck.

PURPOSE

The fork lift truck is used for loading, lifting, transporting and stacking cargo and bulk articles packaged, on pallets, or in bins.

GENERAL CHARACTERISTICS AND PERFORMANCE

The fork lift trucks operate efficiently on floors, docks, and other paved surfaces. The three-stage models provide lifting heights up to 180 inches, the free-lift models provide lifting heights to 100 inches. Both models have a working capacity of 4000 pounds. The load center of gravity is 24 inches from the front face of the lifting arms.

ENGINE AND POWER TRAIN

Power is provided by a four-cylinder, four cycle, internal combustion gasoline engine. A hydraulic torque converter provides fluid coupling of power from the engine to the transmission. The transmission is a hydraulically operated unit which provides one range of speed in forward and one in reverse.

DRIVE AXLE AND BRAKES

Motive power from the drive shaft is transferred to the drive wheels through a heavy duty spiral bevel differential and wheel mounted reduction gearing. The brakes are hydraulically actuated.

DESCRIPTION OF COMPONENTS

ENGINE. The engine is a four-cylinder inline, side valve (L-head), four-cycle internal combustion gasoline engine, producing 45 SAE horsepower at 2600 rpm. The construction is of the main frame (integral cylinder and crankcase) unit power plant type. The crankshaft has three precision replaceable type main bearings. Each of the four connecting rods is fitted with a precision replaceable type rod bearing. The connecting rods are of heat-treated steel and the pistons are of the cylindrical rib type using two compression rings and two oil control rings. Intake and exhaust valves are one-piece forgings. The cylinder block and cylinder head are waterjacketed for cooling. The major part of the combustion space is over the valves and the L-head type cylinder head is completely water-jacketed.

FUEL PUMP AND FILTER. The mechanical fuel pump, located on the engine, is a diaphragm type unit actuated by a rocker arm displaced by an eccentric lobe on the engine camshaft. A fuel filter is located in the fuel pump inlet line.

HYDRAULIC BRAKE SYSTEM. The automotive type brakes are mounted on the front axle only. The brake system consists of

brake pedal and linkage, master cylinder, hydraulic fluid lines, wheel cylinders, and brake shoe assemblies attached to brake backing plates, The brake backing plates are mounted on the front axle, Brake drums are attached to the front wheel hubs,

HANDBRAKE. The handbrake, or parking brake, consists of a hand operated lever in the driver's compartment and a cable that connects the handbrake lever to the eccentric arm and brake shoes,

STEERING SYSTEM. The steering system consists of a single stud, recirculating ball worm gear and lever,

HYDRAULIC TANK, The hydraulic tank, with & capacity of eight gallons, provides an hydraulic fluid reservoir for the hydraulic system, It includes an hydraulic fluid filter,

HYDRAULIC FLUID FILTER. The hydraulic fluid filter, located in the hydraulic tank, contains a replaceable filter element which filters all foreign material from the hydraulic fluid used in the hydraulic system, The filter is located in the return aide of the hydraulic system,

HYDRAULIC CONTROL VALVE. The hydraulic control valve is mounted on the cowl of the fork lift truck, It consists of a body, operating spools, a check valve for each spool, an adjustable relief valve, and the necessary seals and plugs,

TILT CYLINDERS. The double acting tilt cylinders, located between the upright assemblies and the driver's compartment, are equipped with self-adjusting packings, These cylinders tilt the upright assemblies forward and backward.

HOIST CYLINDER. The cylinder is located between the uprighted and is attached to the inner upright at the top and outer uptight at the bottom, This cylinder is equipped with self-adjusting packing and a flow control valve,

UPRIGHT ASSEMBLY. The upright assembly consists of outer upright, intermediate upright, and an inner upright, or on the free-lift model, an outer and inner upright only, Assembled on each are canted rollers which provide the necessary rolling and sliding surfaces needed to obtain upright rigidity, Rolling surfaces for two load chains are provided by eight flanged rollers, Four of the rollers are part of the Inner upright assembly and four are attached to the hoist cylinder, One end of each load chain is anchored on the hoist cylinder and the other is attached to the load carriage, The upright assembly id supported at the front of the fork lift truck by two pivots on the drive axle.

CARRIAGE ASSEMBLY. The carriage assembly is supported by the upright assembly and supports the lifting arms.

HORN. Electrical current to the horn is obtained through the horn relay that is energized by the horn button on the steering wheel, The horn is an electrical vibrator type,

STARTING SWITCH. Actuation of the starting switch energizes the starter motor solenoid which, in sequence, moves the starting motor pinion gear into engagement with the engine flywheel, and makes electrical contact to energize the starting motor.

CARBURETOR. The carburetor is a single throat, down-draft unit, A fast idle mechan

ism aids in cold weather starting by preventing over-choking. An idle bowl vent aids in hot starting. The carburetor also contains a mechanically operated accelerator pump and a power jet system.

GOVERNOR. A fly-ball type governor is mounted on the engine, and under preset over-speed conditions, a spring-balanced throttle arm closes the carburetor throttle valve, restricting fuel-air mixture to the engine, until the engine speed stabilizes at governed speed setting.

AIR CLEANER. The air cleaner is an oilbath type, mounted next to the carburetor.

ENGINE OIL FILTER. The engine oil filter, located on the engine, removes foreign material from the engine lubricating oil. The filter is a replaceable type.

STARTING MOTOR AND SOLENOID. The starting motor is a high-torque, low-speed, direct current motor with a solenoid switch. The starting motor is located on the flywheel housing of the engine.

DISTRIBUTOR AND IGNITION COIL. The distributor and ignition coil are located on top of the engine. The distributor is an automatic, 12-volt grounded type, gear driven by the engine camshaft. The ignition coil is a hermetically-sealed unit that transforms low voltage to high voltage for the engine ignition system.

ALTERNATOR. The alternator produces an out-put of 12 volts dc to the electrical system.
The generator is bracket-mounted on the engine and is belt-driven by the engine.

BATTERY. The battery is a lead-acid, 12-volt, six cell, 53 amp-hour capacity unit mounted in the engine compartment.

COOLING SYSTEM. The cooling system for the engine consists of a radiator, radiator fan, fan driving belt, water pump, water hoses, and thermostat.

CRANKCASE VENTILATION SYSTEM. The engine ventilation system minimizes emission of noxious vapors into the atmosphere by drawing fumes from the crankcase into the intake manifold.

TRANSMISSION. The power shift transmission is mounted on the engine. It consists of an hydraulic torque converter, two hydraulically actuated clutches, and constant mesh gearing. Directional selection is made manually, with actual clutch engagement within the transmission done hydraulically.

INCHING CONTROL. An "inching" system in the transmission provides accurate control of the forward or backward movement of the fork lift truck when engaging the lifting arms with a load. The inching control foot pedal is located on the left side of the driver's compartment floor boards.

AXLES. The front axle of the fork lift truck transmits motive power from the engine and transmission to the driving wheels. Brake assemblies and cushion-tire wheels are mounted at both ends of the front axle. The rear axle provides wheel articulation for steering. Single wheels without brakes are mounted at each end of the rear axle.

DIFFERENTIAL. The differential gearing, and a heavy-duty spiral bevel pinion-and gear, are contained within a one-piece housing. They transmit motive power to the front axles. The straddle-mounted pinion has three bearings to carry thrust and radial load. Further torque multiplication is provided by reduction gears within the drive wheel assemblies.

HOUR METER. The hour meter is a device that records the total amount of time that the engine has operated. The meter is connected with an oil switch on the engine, ensuring that the meter will operate only when the engine is running.

COUNTERVWEIGHT. A cast iron counterweight is located at the rear of the fork lift truck to counter-balance heavy loads on the loading arms at the front.

WHEELS AND TIRES. The wheels are demountable. Tires are cushion type.