

TM 10-3930-235-35

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DS, GS, AND DEPOT MAINTENANCE MANUAL

TRUCK, LIFT, FORK, GASOLINE 4,000 LB CAPACITY

TOWMOTOR MODELS	ARMY MODEL FSN
462SG4024-100 (SOLID TIRE)	MHE-191 3930-781-3856
462SG4024-144 (SOLID TIRE)	MHE-191 3930-781-3855
502PG4024-144 (PNEUMATIC TIRE)	MHE-190 3930-073-9222

This copy is a reprint which includes current
pages from Changes 1 and 2.

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HEADQUARTERS
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DS, GS, and Depot Maintenance Manual

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462SG4024-100 (Solid Tire)	MHE-191	3930-781-3856
462SG4024-144 (Solid Tire)	MHE-191	3930-781-3855
502PG4024-144 (Pneumatic Tire)	MHE-190	3930-073-9222



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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for use of personnel responsible for direct support, general support, and depot maintenance of the Truck, Lift, Fork, Solid Rubber Tired Wheels, 4,000-Lb Capacity, Towmotor Models 462SG4024-100, FSN 3930-781-3856 and 462SG4024-144, FSN 3930-781-3855 respectively, Army Model MHE-191, procured under Contract Number DSA-4-014877-MP310, and Towmotor Model 502PG4024-144, FSN 3930-073-9222, Army Model MHE-190, 4,000-Lb Capacity, Pneumatic Tired Wheels, procured under Contract Number DSA-4-014863-MP310.

b. The direct reporting, by the individual user, of errors, omissions, and recommendations for improving this manual, is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to Commanding General, U. S. Army Mobility Equipment Center, ATTN: SMOME-MMP, Post Office Drawer 58, St. Louis, Mo. 63166. One information copy will be provided to the individual's immediate supervisor (e.g., officer, noncommissioned officer, supervisor, etc.).

c. Report all equipment improvement recommendations as prescribed by TM 38-750.

2. Appendix

Appendix I is a list of current references applicable to direct support, general support, and depot maintenance.

Note. The maintenance allocation chart, which designates the maintenance operations to be performed, is published in TM 10-3930-235-20. Repair parts and special tool lists is published in TM 10-3930-235-35P.

3. Record and Report Forms

For record and report forms applicable to direct and general and depot maintenance, refer to TM 38-750.

Note. Applicable forms, excluding standard form 46 which is carried by the operator, will be kept in a canvas bag mounted on the equipment.

4. Orientation.

Throughout this manual, the use of the terms, right, left, front, and rear with respect to engine and truck are determined with the operator sitting in the seat of the truck.

Section II. DESCRIPTION AND DATA

5. Description

A general description of the truck is to be found in TM 10-3930-235-10. Any required additional description of a component of the truck will be found in that section of the manual which applies to the component.

6. Data

a. Engine.

Make Continental
Model FS1 62-6089
Number cylinders 4
Bore $3\frac{7}{16}$ inches inches
Stroke $4\frac{3}{8}$ inches

Displacement 162 cu in.
 SAE horsepower rating 18.8
 Brake horsepower at 2200 rpm 46
 Compression ratio 6.3:1
 Governed speed 2400 rpm
 Compression pressures at 1500 rpm or
 starting motor speed 110–120 psi
 Maximum variations between cylinder, 10 lbs
 Camshaft and bushings:
 Fronts:
 Bushings inside diameter 1.8745–1.8755
 Journal diameter 1.8715–1.8725
 Allowable additional wear on
 journal diameter 0.001
 Clearance 0.002–0.004
 Center:
 Bushings inside diameter 1.7495–1.7502
 Journal diameter 1.7457–1.7465
 Allowable additional wear on
 journal diameter 0.001
 Clearance 0.003–0.0045
 Rear:
 Bushings inside diameter 1.2495–1.2505
 Journal diameter 1.2465–1.2475
 Allowable additional wear on
 journal diameter 0.001
 Clearance 0.002–0.004
 End thrust 0.003–0.007
 Crankshaft and bearings:
 Main journal diameter 2.2442–2.2451
 Additional allowable wear on main
 journal diameter 0.0006
 Main bearing thickness 0.0950–0.0953
 Main bearing clearance 0.0002–0.0024
 Connecting rod journal diameter, 2.0600–2.0607
 Additional allowable wear on con-
 necting rod journal diameter, . . . 0.0006
 Connecting rod bearing thickness, . 0.0625–0.0628
 Additional allowable wear clear-
 ance 0.0005
 Connecting rod bearing clearance, . 0.0002–0.0020
 Additional allowable wear clear-
 ance 0.0032
 Journal out-of-round 0.0005 max.
 Journal taper 0.0005 max.
 Crankshaft end thrust 0.004–0.006
 Connecting rod:
 Thrust or bend 0.002 max.
 Cylinder walls:
 Taper 0.0000–0.0005
 Out-of-round 0.0005 max.
 Pistons:
 Cylinder bore 3.4375–3.4395
 Skirt clearance 0.003
 Ring land clearance 3.4045–3.4095
 Taper of skirt 0.0005–0.0015

Piston pins:
 Piston—pin hole diameter 0.8593–0.8596
 Pin bushing inside diameter 0.8593–0.8596
 Pin diameter 0.8591–0.8593
 Additional allowable wear on pin
 diameter 0.001
 Pin fit in piston at 70° F. (21°C.) . . —0.0003—+0.0003
 Pin fit in bushing 0.0000–0.0005
 Piston rings:
 Width:
 Top and second 0.093–0.094
 Third and fourth 0.1545–0.1555
 Thickness:
 Top 0.162–0.172
 Second, third and fourth 0.143–0.153
 Side clearance:
 Top 0.002–0.004
 Second 0.001–0.003
 Third and fourth 0.0005–0.0025
 End gap 0.010–0.020
 Valves:
 Intake:
 Stem diameter 0.3405–0.3415
 Additional allowable wear on
 stem 0.002
 Guide inside diameter 0.3432–0.3440
 Guide to stem clearance 0.0017–0.0035
 Additional allowable guide to
 stem clearance 0.0046
 Valve face 0.120
 Valve seat angle 45°
 Valve seat width 0.066
 Lifter to valve clearance 0.014 (hot)
 Exhaust:
 Stem diameter 0.3405–0.3415
 Additional allowable wear on
 stem 0.002
 Guide inside diameter 0.3452–0.3460
 Guide to stem clearance 0.0037–0.0055
 Additional allowable guide to
 stem clearance 0.0075
 Valve face 0.122
 Valve seat angle 45°
 Valve seat width 0.086
 Lifter to valve clearance 0.014 (hot)
 Valve springs
 Free length 1-45/64 inches
 Load required at closed length, 47 to 53 lbs
 Additional allowable tolerance, 42 lbs
 Oil pump:
 Gear backlash 0.001–0.003
 Gear teeth to body clearance 0.002–0.004
 Gear face to cover clearance
 (with gasket installed) 0.0015–0.006
 Idle shaft diameter 0.5015–0.502
 Drive shaft bushing (in pump
 body) 0.500–0.501
 Additional allowable wear on
 bushing 0.0005
 Drive shaft bushing (in block) . . . 0.9843–0.994

Additional allowable wear on
 bushing 0.0005
 Driveshaft diameter 0.4985–0.4990

b. Fuel System.

Jet sizes:

Discharge jet No. 60
 Fuel valve No. 35
 Idle jet No. 10
 Main jet No. 23–1
 Venturi No. 19
 Well vent jet No. 22

Float adjustment (measured from top
 of float to machined surface of
 body) $1\frac{1}{2}$

c. Electrical System.

Generator:

Rated voltage 12
 Rotation Clockwise
 Ground polarity Negative
 Brush spring tension 18 to 36 ounces
 Field current draw 1.6 to 1.7 amps at
 10 volts
 Motoring draw 2.9 to 3.0 amps at
 10 volts
 Output 25 amps at 15 volts
 at 2200 rpm

Brush length:

New $\frac{3}{4}$
 Permissible worn length $\frac{7}{8}$

Starting motor:

Rated voltage 12 volts
 Rotation (drive end) Clockwise
 Brush spring tension 42 to 53 ounces
 Armature end play 0.005 in
 No load test 55 amps, 10 volts,
 5200 rpm
 Stall torque test max 235 amps, 4
 volts

Brush length:

New $\frac{1}{2}$
 Permissible worn length $\frac{5}{8}$

d. Transmission.

Oil pressures (Para. 30b)
 Converter output shaft and bushing:
 Bushing inside diameter 1.063–1.066
 Shaft diameter 1.0615–1.0620
 Forward clutch shaft and bushing:
 Bushing inside diameter 1.2515–1.2545
 Shaft diameter 1.2490–1.2495
 Clutch facing thickness 0.046–0.062
 Clutch adjustment neutral setting
 (fig. 37) 0.375–0.390

e. Universal Joint.

Alignment (adjust at engine
 mountings) max. $\frac{1}{8}$ in.

f. Drive Axle.

Differential:

Bevel pinion bearing adjustment. 0.000–0.002 (tight)
 Differential bearing adjustment. . . . 0.000–0.005 (tight)
 Bevel gear to pinion backlash. . . . 0.006–0.010

g. Power Steering System.

Oil pressures (Para. 44f)
 Hydraulic pump cam end clearance. . . max. 0.002

h. Hydraulic Lift.

Oil pressures (Para. 52)
 Mast column:
 Outer to inner column clearance. . . 0.015–0.025
 Mast carriage:
 Thrust plate to narrowest sliding
 width of inner column 0.020
 Lifting speed 85 feet per minute