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TM-10-1457
2ND EDITION

MAINTENANCE MANUAL

6 x 4 DIESEL TRUCK TRACTOR

FEDERAL MOTOR TRUCK CO.

BUILT FOR

UNITED STATES ARMY

MODEL 604

SUPERSEDES TM-10-1457 DATED APRIL 1942

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DETROIT, MICHIGAN, U. S. A.

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NOMENCLATURE–TRACTOR TRUCK– 6 X 4
MAKE–FEDERAL MODEL 604
SERIAL NUMBER
TRACTOR–UNLOADED–WEIGHT 20000 LBS.
TRAILER–UNLOADED–WEIGHT 12000 LBS.
TRAILER–PAY LOAD–NOMINAL 45000 LBS.
GROSS WEIGHT–TRACTOR-TRAILER & PAY LOAD 77000 LBS.
DATE OF DELIVERY
RECOMMENDED BY MANUFACTURER
S.A.E GRADE OF OIL ABOVE 32° F 20
S.A.E GRADE OF OIL BELOW 32° F 10
PUBLICATIONS APPLYING TO THIS VEHICLE
PARTS LIST TM-10-1456
MAINTENANCE MANUAL TM-10-1457
FEDERAL MOTOR TRUCK CO. DETROIT, MICH. U.S.A.

ABOVE PLATES ARE LOCATED ON LEFT HAND SEAT RISER IN FULL VIEW WHEN LEFT HAND CAB DOOR IS OPEN.

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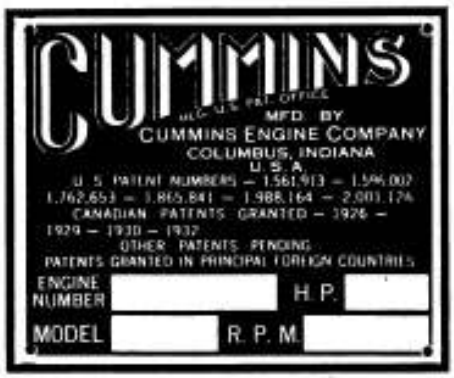
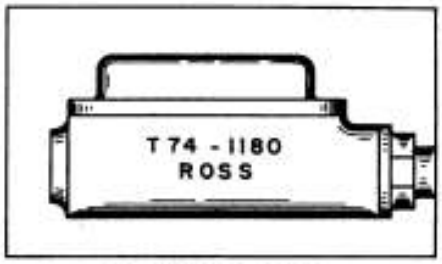
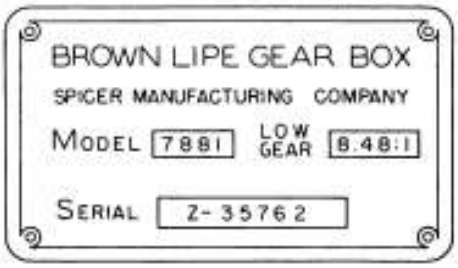


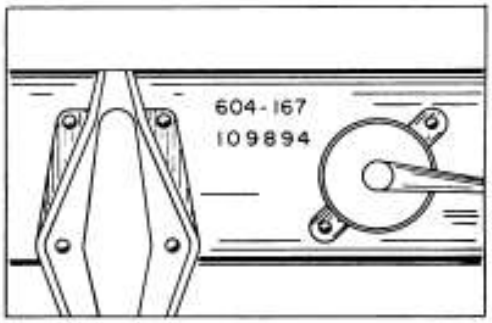
ENGINE - R.H. FRONT
OIL FILTER BRACKET BOSS



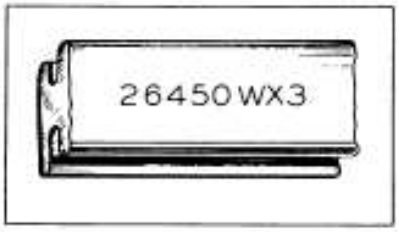
STEERING GEAR
TOP OF HOUSING



TRANSMISSION - L.H. FRONT

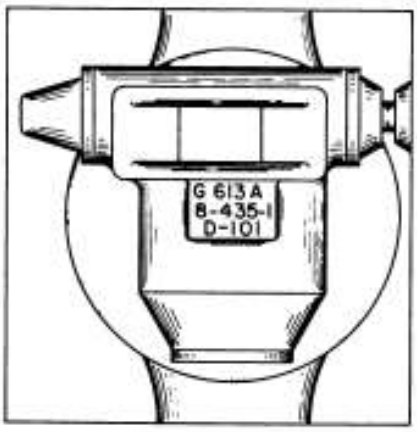


CHASSIS - SERIAL NO.
L.H. FRONT FRAME SIDE RAIL

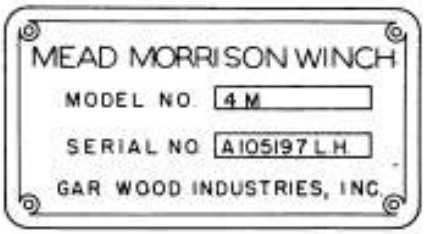


FRONT AXLE - TOP CENTER

CAB NUMBER
UPPER R.H. WINDSHIELD



REAR AXLE
TOP OF CARRIER



WINCH - R.H. DRUM HOUSING

SERIAL NUMBER LOCATIONS

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GOVERNMENT LIST OF MAJOR GROUPS AND SUB-GROUPS FOR THE SETTING UP OF PARTS DEPOTS.

01 ENGINE GROUP
0100 Engine Assembly
0101 Cylinder Block and Head
0102 Crankshaft, Bearings and Caps
0103 Pistons, Rings and Piston Pins
0104 Connecting Rods and Bearings
0105 Valves, Springs, Guides, Tappets, Lifts, Rocker Arm and Shaft
0106 Camshaft, Timing, Bearings, Etc.
0107 Oil Pump, Oil Pan, Gauge and Oil Filter
0108 Manifold
0109 Flywheel, Ring Gear, Etc.
0110 Engine Mountings

02 CLUTCH GROUP
0201 Clutch Disc
0202 Cover, Pressure Plate and Springs
0203 Release Lever, Bearing, Forks, Etc.
0204 Pedal
0205 Pilot Bearing
0207 Clutch Housing, Etc.

03 FUEL SYSTEM GROUP
0301 Carburetor, Air Cleaner
0302 Fuel Pump and Fuel Filter
0303 Accelerator, Throttle and Choke
0304 Fuel Tank, Lines and Gauge
0305 Governor

04 EXHAUST GROUP
0401 Muffler
0402 Pipe and Tail Pipe

05 COOLING GROUP
0501 Radiator Shell, Core, Filler Cap and Grille
0502 Thermostat and Thermometer
0503 Water Pump, Fan
0504 Radiator Mountings
0505 Engine Water Fittings and Hose

06 ELECTRICAL GROUP
0601 Generator and Regulator
0602 Starting Motor
0603 Distributor and Condenser
0604 Ignition Coil, Wiring, Spark Plugs, Ignition Switch
0605 Instruments
0606 Light Switches and Wiring Harness
0607 Headlamps, Sealed Beams
0608 Stop and Tail Lamp
0609 Horn
0610 Battery, Starting Cables and Connections

07 TRANSMISSION GROUP
0700 Transmission Assembly
0701 Case
0702 Gears
0703 Main Drive Pinion and Bearings
0704 Main Shaft, Countershaft and Gears, Reverse Idler Gears and Brgs.
0706 Shift Forks, Levers
0708 Power Take Off

08 TRANSFER CASE GROUP
0800 Transfer Case Assembly
0801 Case
0802 Drive Gear, Shaft, Bearings
0803 Driven Gear, Shaft, Bearings
0804 Idler Gear, Shaft, Bearings
0806 Shift Shaft & Fork
0807 Speedometer Gears
0808 Mounting

09 PROPELLER SHAFT AND UNIVERSAL JOINT GROUP
0901 Propeller Shaft Assy., Tubes and Flanges
0902 Universal Joints

10 FRONT AXLE GROUP
1000 Front Axle Assembly
1001 Housing
1002 Differential and Carrier Assy., Brgs.
1003 Drive Gear, Pinion and Bearings
1006 Steering Knuckle, Flange and Arm
1007 Axle Shaft and Universal Joint

11 REAR AXLE GROUP
1100 Rear Axle Assembly
1101 Housing Assembly
1102 Axle Drive Shafts
1103 Differential and Carrier Assy., Brgs.
1104 Differential, Drive Gear and Pinion
1105 Drive Gear and Bearings
1106 Torque Rods
1107 Trunnion Brackets

12 BRAKES GROUP
1201 Hand Brake
1202 Shoes and Facing
1203 Brake Shoe Support, Guide, Springs, Adjusting Pins
1204 Pedal
1205 Master Cylinder
1207 Wheel Cylinders
1208 Brake Dust Shield
1209 Brake Lines, Pipes, Hoses
1210 Power Brake Cylinder
1211 Power Brake Lines and Fittings
1212 Brake Pull Rods, Cables and Cross Shafts
1213 Air Compressor, Valves, etc.

13 WHEELS, HUBS AND DRUMS GROUP
1301 Wheel Assembly, Bearings, Retainers, Etc.
1302 Hubs and Drums

14 STEERING GROUP
1401 Drag Link
1402 Tie Rod
1403 Gear Assembly
1404 Wheel Assembly
1405 Brackets

15 FRAME AND BRACKETS GROUP
1500 Frame and Brackets
1501 Towing Attachment
1502 Pintle Hook
1503 Spring Brackets
1504 Fender and Running Board Hangers
1505 Spare Wheel Carrier

16 SPRINGS AND SHOCK ABSORBERS GROUP
1601 Front and Rear Springs
1602 Shackles
1603 Shock Absorbers

17 HOODS, FENDERS, RUNNING BOARDS, APRONS (MISC. SHEET METAL) GROUP
1701 Fenders
1702 Splash Shield
1703 Running Boards
1704 Hoods

18 BODY GROUP
1800 Cab
1801 Windshield Wiper and Parts
1802 Floor Mats
1803 Battery Mounts and Cab Mounting
1805 Handles, Locks, etc., Door and Window Fittings
1809 Windshield, Rear Window and Door Window

19 WINCH GROUP
1900 Winch and Winch Drive Shafts

21 BUMPERS AND GUARDS GROUP
2101 Bumpers
2102 Bumper Bracket
2103 Radiator Guard

22 MISCELLANEOUS BODY, CHASSIS AND ACCESSORIES GROUP
2201 Rear View Mirrors
2203 Speedometers and Parts

23 GENERAL USE, STANDARDIZED PARTS GROUP
2300 Miscellaneous Tools, Tire Chains
2304 Misc. Nuts, Bolts, Screws and Washers
2305 Miscellaneous Cotter Keys, Woodruff Keys

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SPECIFICATIONS AND GENERAL DATA

ENGINE

Type	Diesel
Horsepower S.A.E.	57
R.P.M.	1800
Piston Displacement	672 Cu. In.
Bore	4-7/8"
Stroke	6"
No. of Cylinders	6
Governed Speed	

CAPACITIES	U.S.	IMPERIAL	METRIC
Fuel Tanks (each of 2)	40 Gals.	32	151.3 Litres
Engine Crankcase - Refill	20 Qts.	16	18.9 Litres
Cooling System	41 Qts.	32-4/5	3.88 Litres
Transmission - With P.T.O.	13 Qts.	10-1/2	12.3 Litres
Rear Axle Differential - Each	10 Qts.	8 Qts	9.46 Litres
Air Cleaner Oil Bath - Each	3 Pts.	2 1/2 Pts	1.42 Litres
Winch must not be E.P. Lub.	5-1/2 Pts.	4 1/2 Pts	2.6 Litres
Steering Gear	3-1/2 Pts.	2 3/4 Pts	1.67 Litres

DIMENSIONS

Turning Radius	65' Right 63' Left
O.A. Height	99"
O.A. Width	95-1/4"
O.A. Length	265" to end of Pintle

WEIGHT

Net, less Trailer	19,900 lbs

ROAD CLEARANCE ..... 10 1/2" under rear axle housing

LAMP BULBS
(See 6-16 ELECTRICAL)

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FOREWORD

This book contains complete and exhaustive information on the operation and care of the Federal Model 604, 6 x 4 Diesel Truck Tractor.

All service operations have been clearly illustrated to aid in training skilled personnel. However, there is no substitute for experience; and every opportunity should be taken to study the equipment in operation, and learn the quickest and most convenient method of handling various operations under actual service conditions in the field.

This book follows the Functional Group Code established by the Quartermaster General for use in all Maintenance Manuals and Parts Lists. All grouping follows the marginal indices showing on the flysheet.

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CARE AND OPERATION

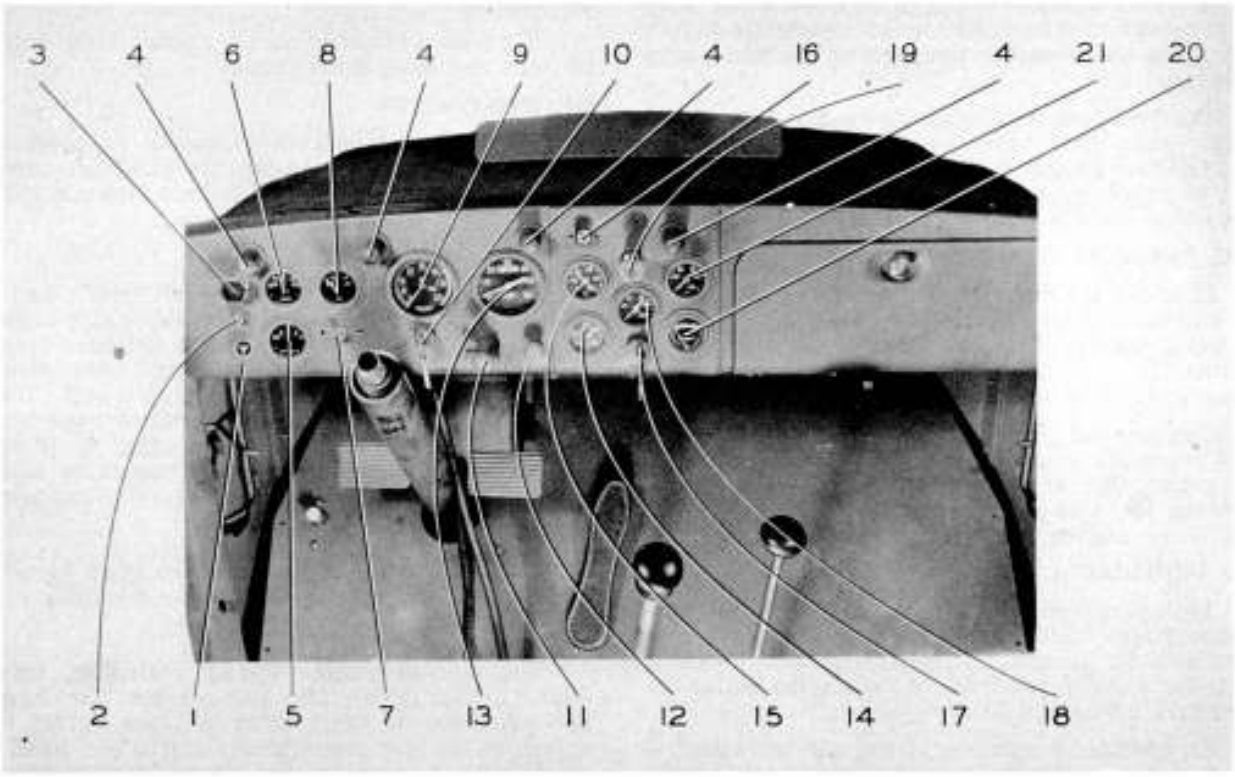

Figure 0-1
INSTRUMENT PANEL

1. Hand Throttle
2. Engine Stop Button
3. Emergency Stop Control
4. Panel Light
5. "B" Ammeter
6. Ammeter
7. Fuel Tank Selector Switch
8. Fuel Tank Gauge
9. Tachometer
10. Tachometer Lock
11. Main Light Switch
12. Panel Light Switch
13. Speedometer
14. Temperature Gauge
15. Lubricating Oil Pressure Gauge
16. Trouble Lamp Receptacle
17. Circuit Lock
18. Fuel Oil Pressure Gauge
19. Flame Thrower Pump
20. Viscometer
21. Air Pressure Gauge

The vehicles covered by the instructions in this book have been carefully inspected and adjusted before shipment, and should require a minimum of attention before being put into service.

Every piece of mechanical equipment, however, requires proper use, care and maintenance. This book has been prepared to serve as a guide and reference for correct operation, lubrication, adjustment and major repairs.

During the first 1000 miles of operation, the moving parts of engine, transmission and axles are working in, and extreme caution should be observed during this period to prevent overloading or overspeeding. In many instances, failures that are evident only after thousands of miles of operation are traceable to abuse in the first 1000 miles of service.

The good driver will find it helpful to acquaint himself thoroughly with the various instruments and controls before attempting to operate this or any other truck. The following notes contain a brief description of each instrument and control that is used in operating this truck.

INSTRUMENTS

FUEL GAUGE AND SWITCH

This gauge indicates the amount of fuel oil in one or the other of the two fuel tanks whenever the engine is running. It does not function when the circuit lock is turned "off". The toggle switch just below the dial selects the tank unit with which the gauge is connected. Push switch to the right for the right hand tank, to the left for the left hand tank.

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CAUTION: Use only one fuel tank at a time, and never continue to use fuel from a tank when the level falls below 1/8 full, otherwise air may be drawn into the fuel lines, causing erratic engine operation and possible damage to the fuel pump governor.

The fuel tank shut-off valves are just ahead of the tanks in the battery compartment. Be sure that the fuel gauge is always switched to the tank that is supplying the fuel at the time the one valve is opened and the other one closed.

FUEL PRESSURE GAUGE

In order for the engine to operate, fuel under pressure must be supplied to the injector in the cylinder heads. This pressure is built up and is ordinarily maintained in the lines by the fuel pump assembly on the engine.

The amount of this pressure is shown by the fuel pressure gauge. If no pressure is shown on the gauge, due to the vehicle having been out of service for sometime, it will be necessary to prime the engine, as explained in Engine Section.

AIR PRESSURE GAUGE

This gauge indicates the pressure of the compressed air for the brakes. If this gauge shows less than 60 pounds, the engine should be idled until the air compressor on the engine builds the pressure up to this point.

An additional warning of low air pressure is the buzzer on the dash, which always operates when the engine is running and the air pressure is below 60 pounds. If buzzer starts up while the truck is being operated, stop the truck as soon as possible and determine cause of loss of air pressure.

AMMETERS

These dials indicate the flow of electrical current from the generator to the batteries, or the rate of discharge from the batteries. The upper dial records the flow of current to and from the right hand batteries; the lower dial records the flow to the left hand batteries.

When the engine is operated at speeds above idling, both ammeters should indicate on the "+" or charge side. When the engine is idling or stopped with lights or other electrical equipment in use, the upper ammeter should indicate "-" or discharge.

TEMPERATURE GAUGE

This instrument reveals the temperature of the cooling fluid in the engine blocks. The temperature shown will vary with operating conditions, but it should not be allowed to reach the boiling point of the coolant (212°F. for water, lower temperatures for some anti-freeze solutions). The engine should never be operated continuously at temperatures above 200°F.

OIL PRESSURE GAUGE

This gauge indicates the pressure at which the oil pump is forcing lubrication oil to the engine bearings. Pressure at idling speed should be about 30 pounds, at higher driving speeds, up to 50 pounds.

If gauge indicates no pressure, stop engine at once and determine cause.

OIL VISCOMETER

This gauge indicates viscosity or condition of the lubricating oil. Accurate readings can be made only after engine is warmed up and oil is hot.

OIL LEVEL GAUGE

This gauge is of the "bayonet type", and is located on the right hand side of the engine crankcase. Always wipe off dip stick and then reinsert and withdraw to get correct reading. Level should be maintained between the "high" and "low" marks. Crankcase capacity is twenty quarts not including oil filter which has a capacity of four quarts. This additional amount should be added when filter is drained and new elements installed.

SPEEDOMETER

The speedometer indicates the road speed in miles per hour and the total vehicle miles.

TACHOMETER

This is the engine speed indicator, which shows actual revolutions per minute. Two hands are provided, a white hand to show actual revolutions at any given time, and a red hand to show highest actual engine revolutions reached. The red hand can be turned back to zero reading only by inserting key in tachometer lock.

LIGHTING CONTROLS

MAIN LIGHTING SWITCH

Pulling switch button out to first position, turns on blackout front and rear marker lights and blackout stop lights.

To turn on service headlights, tail lamps and stop lamps, it is necessary first to press locknut button on side of switch and then to pull switch button to second position.

Stop lights only for daytime driving in traffic can be secured by depressing locknut button and pulling switch button out to third position.

DIMMER SWITCH

This is a foot switch located at the left of the clutch pedal which permits the driver to select the upper or lower head lamp beams as required by traffic conditions.

PANEL LIGHT SWITCH

This provides an auxiliary control for the instrument panel lights. It operates only when the main light switch is in the second position.

ENGINE STARTING AND STOPPING

PRE-STARTING INSPECTION

Before attempting to start the engine, make sure that cooling system is filled with the correct fluid, that the crankcase contains the correct