TM 10-1423

MAINTENANCE *Manual*

GASOLINE • DIESEL • GMC • TRUCKS

2½-5 TON • 6 x 4

Built for

UNITED STATES ARMY

MODEL CCW-353

CONTRACT NUMBER W-398-QM-11595

PUBLISHED JULY 20, 1942

General Motors Truck

TM 10-1423

WAR DEPARTMENT

Washington, July 8, 1942

TM 10-1423, Maintenance Manual, Truck, 2½-5 Ton, 6 x 4 GMC (Model CCW-353) published by the Yellow Truck & Coach Manufacturing Company is furnished for the information and guidance of all concerned.

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By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff

Official:
J. A. ULIO,
Major General,
The Adjutant General

Maintenance Manual

GMC 2½—5-TON 6 x 4

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TM 10-1423 FORM X-4225

GENERAL MOTORS TRUCK & COACH

DIVISION OF

YELLOW TRUCK & COACH MANUFACTURING COMPANY

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GMC 2½—5-TON 6x4 TRUCK

MODEL CCW-353

General Motors Truck & Coach *Division of* Yellow Truck & Coach Manufacturing Company

Introduction

This Maintenance Manual applies on GMC trucks indicated by model number shown on cover. It was compiled by GMC for use by the United States Army—in accordance with latest Army specifications—and has been officially approved for such use by the War Department, whose authentication notice appears on inside front cover.

A copy of this book is placed in each truck on which it applies before the vehicle leaves the factory. To definitely identify the book with the truck, the Army has assigned a Technical Manual (abbreviated TM) number to the publication. This TM number appears in upper right and lower left corners of cover, and in addition, this same TM number appears on the truck in the form of a publication plate as illustrated on page 4. Thus, to be sure of what Manual or Parts List to use, look at publication plate in driver's cab for TM number and use only the book having corresponding TM number on its cover.

How To Use This Manual

Adhering strictly to Army specifications, this book is arranged according to the Army's "Functional Group Code" which is represented by the quick reference index along the right hand margin of the first page. Groups appear in the book in the same order shown in index.

The first page of each group referred to in the quick reference index is indicated with a black thumb dot including the group number. Thus, each group may be located quickly by bending book slightly to expose these thumb dots which line up with corresponding group numbers in index on first page.

To make contents of this book even more quickly located, each group has its own quick reference index. This appears at the beginning of each group and consists of a list of all principal paragraphs contained in the group — each paragraph is numbered and appears numerically throughout the group. Wherever possible, material is shown in each group in the following order:

DESCRIPTION AND OPERATION
TROUBLE SHOOTING AND GENERAL SOLUTIONS
INSPECTION AND ADJUSTMENT
REMOVAL AND INSTALLATION
REPAIR
SPECIFICATIONS
TOOL EQUIPMENT

TO SUMMARIZE: Select group from index on first page — bend book back slightly to expose tab on first page of group — note paragraph number of subject wanted — refer to paragraph for detailed information.

GENERAL DATA

Type	270	**Stroke**	4"
Horsepower—S.A.E.	34.35	**Cylinders**	6
Displacement—Cu. In.	269.5	**Engine Governed Speed (R.P.M.)**	2750
Bore	$3\frac{55}{64}$"		

CAPACITIES

Fuel Tank (gallons)	40	**Oil Bath Air Cleaner** (quarts)	1
Engine Crankcase—Refill, Less Filter (quarts)	11	**Transfer Case** (pints or pounds)	4
Cooling System (quarts)	19	**Front Axle Differential** (pints or pounds)	$13\frac{1}{2}$
Transmission (pints or pounds) (without P.T.O.)	13	**Rear Axle Differential** (pints or pounds)	17
Transmission (pints or pounds) (with P.T.O.)	14		

DIMENSIONS

NOTE: Height, Width and Length dimensions shown apply only when these trucks are equipped with cargo body, bows and tarpaulin.

Turning Radius	63' 2" R.H.; 62' 3" L.H.	**Length** (Overall) with cargo body	256"
Height (Overall)	108"	**Road Clearance**	$17\frac{1}{4}$"
Width (Overall)	88"		

TORQUE WRENCH SPECIFICATIONS

Recommended specifications for proper torque to apply at points throughout the vehicle are as given below. Figures shown are foot pounds of torque with threads clean and dry. If threads are cleaned and oiled, the figures shown may be reduced about 10%.

Description	Ft. Lb. Torque	Description	Ft. Lb. Torque
Axle Flange Nuts	35-40	Main Bearing Caps	70-80
Differential Carrier	60-70	Exhaust Manifold	15-20
Generator	22-26	Intake Manifold	15-20
Starter	40-50	Boggie Mountings	140-155
Connecting Rod Bearing Bolts	40-50	Spring Mounting—Front ("U"-Bolts, $\frac{3}{4}$")	170-185
Cylinder Head	60-70	Spring Mounting—Rear ("U"-Bolts, $\frac{7}{8}$")	200-220
Engine Mountings (Front)	35-42	Steering Mounting to Frame	160-170
Engine Mounting (Rear)	70-80	Transfer Case Caps	20-25
Flywheel to Crankshaft	35-40	Universal Joints	20-25

PUBLICATION PLATE

PUBLICATIONS APPLYING TO THIS VEHICLE
PARTS LIST
MAINTENANCE MANUAL

"Publication Plate"—gives **TM** number of Maintenance Manual and Parts List to use for each vehicle and is located in Driver's cab. Additional information on **TM** number application is given on Page 3 of this book.

Group D — Driver's Instructions

GENERAL — Paragraph

Instructions To Drivers 1
Trouble Shooting and General Solutions 2
Inspection 3

CONTROLS AND INSTRUMENTS

Engine 4
Clutch 5
Fuel 6
Cooling 7
Electrical 8
Transmission 9
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Cab 12

TRUCK OPERATING INSTRUCTIONS

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How To Start Truck 14
How To Stop Truck 15
Shifting Transmission Into Lower Speed 16
Shifting Into Reverse Speed 17
General Operating Instructions 18

TABULATED DATA

Tool Equipment 19

GENERAL

1. INSTRUCTIONS TO DRIVERS

Our instructions to Drivers constitute one of the most important purposes of this manual—as it is our contention that good driving embraces more than the basic actions of starting, operating and stopping a motor vehicle. By adhering to good driving practices and through complete knowledge of the vehicle, a good Driver will obtain the utmost in reliable performance and stamina inherent in all GMC vehicles.

The natural function of a GMC truck is smooth and rhythmic without sharp clicks, knocks, or unusual sounds. The good Driver soon becomes accustomed to the operation or "feel" of his vehicle and, regardless of his knowledge of its mechanical construction, is quick to detect any changes in its normal operation. On the other hand the Driver is not expected to rely entirely upon sound or instinct for trouble diagnosis—and, accordingly, instruments are provided which indicate the condition of such vital items as engine temperature, engine oil pressure, electrical charging rate, quantity of fuel, etc., all of which are useful aids to good driving.

In addition to the information contained in this section, we particularly refer all Drivers to "Trouble Shooting and General Solutions" in each group of this book. Careful study of these items will enable the Driver to recognize even gradual changes in the mechanical condition of various units, and will thus encourage the application of corrective service **before** failure and **before** costly repairs become necessary.

Whether or not the Driver is thoroughly acquainted with properly handling a truck, or is only a beginner, the information given in this section of the book should be studied carefully to assure complete familiarity with the details of operation which apply to these particular vehicles.

2. TROUBLE SHOOTING AND GENERAL SOLUTIONS

Engine operating troubles may be classified into three groups, or conditions, as follows:

1—Failure to start. 2—Misfiring. 3—Uneven Running.

Diagnosing these conditions is simplified by use of chart as shown on page two. Apply starter in usual manner, follow the chart and these suggestions:

DRIVER'S INSTRUCTIONS

1. If starter cranks engine normally but **engine does not start:**

(a) Test for spark as shown. If no spark is obtained, causes of engine failing to start are listed in Group No. 1.

(b) If spark is weak, causes of engine failing to start are as shown in Group No. 2.

(c) If no spark is evident, engine fails to start for one or more reasons as listed in Group No. 3.

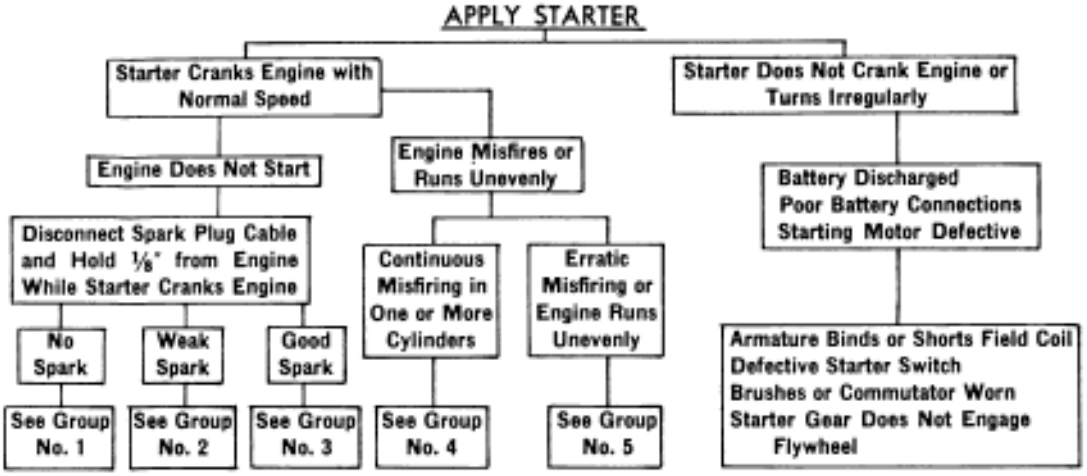
2. If starter cranks engine normally but engine **misfires or runs unevenly:**

(a) Causes of continuous misfiring are as shown in Group No. 4.

(b) Causes of erratic misfiring or engine running unevenly are shown in Group No. 5.

3. If upon applying starter, it does not crank engine, or turns irregularly, note causes shown in chart.

ENGINE FAILS TO START—MISFIRES—OR RUNS UNEVENLY



GROUP NO. 1—ENGINE WILL NOT START—SPARK TEST INDICATES "NO SPARK"

Note: The ammeter on instrument panel will be a valuable aid in localizing defect in circuit which results in "NO SPARK."

A. Ammeter Shows No Discharge—zero reading:

If ammeter shows no discharge, it is an indication that primary circuit is interrupted and current is not allowed to complete circuit to battery. The following conditions apply:

(1) Breaker points are excessively burned or pitted.....Clean or replace
(2) Breaker points in distributor not closing.....Readjust or replace
(3) Loose connections from starter to ignition switch.....Clean and tighten
(4) Primary wire from ignition switch to coil or from coil to distributor may be broken or connections loosened.....Repair or tighten
(5) Ignition coil primary windings may be open.....Replace ignition coil
(6) Ignition switch is defective.....Replace

B. Normal Ammeter Reading—needle oscillates between two and five amperes discharge while starter is cranking engine:

When ammeter reading is normal (slight oscillation) it indicates that primary circuit is complete—therefore checking should be confined to secondary circuits as follows:

(1) High tension wire from coil to distributor may be broken or grounded.....Repair or replace
(2) Defective ignition coil or condenser.....Install new part
(3) Defective distributor rotor or distributor cap.....Install new part
(4) High tension wires may be wet.....Dry thoroughly

C. Ammeter Indicates Abnormal Discharge—more than two to four amperes:

This condition is an indication that a "short" exists (between the ammeter and the ignition coil; or, in event of a shorted primary winding in ignition coil, "short" may exist in distributor as follows:

(1) Distributor points may not be opening.....Readjust points
(2) Condenser may be "shorted".....Install new condenser
(3) Primary winding in ignition coil may be "shorted".....Install new coil
(4) Breaker point arm in distributor may be grounded.....Clean or replace
(5) Wire from ammeter to ignition switch or from ignition switch to ignition coil may be "shorted" or grounded.....Repair or replace

DRIVER'S INSTRUCTIONS

GROUP NO. 2—ENGINE WILL NOT START—SPARK TEST INDICATES "WEAK SPARK"

1. Distributor points may be burned or badly pitted. . . . . Clean or replace
2. Defective distributor condenser. . . . . Install new condenser
3. Defective ignition coil. . . . . Install new coil
4. Loose electrical connections throughout circuit will cause "voltage drop". . . . . Locate and tighten
5. High tension (secondary) wires may be defective or wet. . . . . Clean or replace
6. Defective distributor cap. . . . . Install new cap
7. Defective distributor rotor or broken rotor brush. . . . . Install new rotor

GROUP NO. 3—ENGINE WILL NOT START—SPARK TEST INDICATES "GOOD SPARK"

When test indicates a good spark is occurring at each spark plug, the ignition system may be eliminated and the fuel system should be checked as follows:

A. If inspection reveals gasoline to be present in carburetor—the following apply:

(1) Carburetor may contain dirt and water. . . . . Remove and clean
(2) Carburetor may be flooded through excessive use of choke or incorrect float level adjustment . . . . . Adjust float level
(3) Choke control may not be operating. . . . . Check linkage

B. If no gasoline is reaching carburetor, the following should be checked:

(1) Fuel tank empty. . . . . Add fuel
(2) Fuel lines may be clogged. . . . . Remove and clean
(3) Fuel pump may be inoperative. . . . . Disconnect outlet line and test
(4) Vent in fuel tank cap may be plugged. . . . . Remove and clean
(5) Tank fuel line may contain an air leak. . . . . Install new line

GROUP NO. 4—ENGINE MISFIRES—CONTINUOUS MISFIRING IN ONE OR MORE CYLINDERS

A. Faulty spark plugs are a frequent cause of engine misfiring—check the following:

(1) Is recommended type plug being used? . . . . See Engine Tune-Up
(2) Clean and readjust spark plugs. . . . . Use feeler gauge
(3) Inspect porcelain at lower end. (A) If porcelain is very white, plug is too hot—use colder plug. (B) If color is light brown, plug is correct—replace with same type. (C) If black or oily, plug is too cold—use hotter plug.

B. If the possibility of faulty plugs has been eliminated proceed to check the following:

(1) High tension wires may be leaking. . . . . Replace
(2) Distributor cap may be defective. . . . . Replace
(3) Cylinder may have insufficient or uneven compression. . . . . Test and repair—See engine tune-up

GROUP NO. 5—ENGINE RUNS UNEVENLY—ERRATIC MISFIRING

A. Engine may run unevenly at idling speed for one or more of the following reasons:

(1) Faulty spark plugs or gaps adjusted too wide. . . . . Replace or adjust
(2) Ignition coil and condensers may be defective. . . . . Install new parts
(3) Distributor breaker points may be faulty, sticking, or improperly adjusted. . . . . Adjust or replace
(4) For reasons given in group No. 2 above.
(5) For reasons given in group No. 3 above.
(6) Valve mechanism in poor condition—valve sticking open, weakened valve springs, incorrect tappet clearance . . . . . Service valves
(7) Defective cylinder head gasket. . . . . Replace gasket
(8) Uneven cylinder compression. . . . . See engine tune-up

B. Uneven engine operation at high speed may be due to one of the following (also see items under "A" above):

(1) Weakened valve spring. . . . . Replace
(2) Weakened distributor breaker arm tension springs. . . . . Replace points
(3) Breaker points adjusted too wide. . . . . Readjust
(4) Incorrect type spark plugs. . . . . Replace

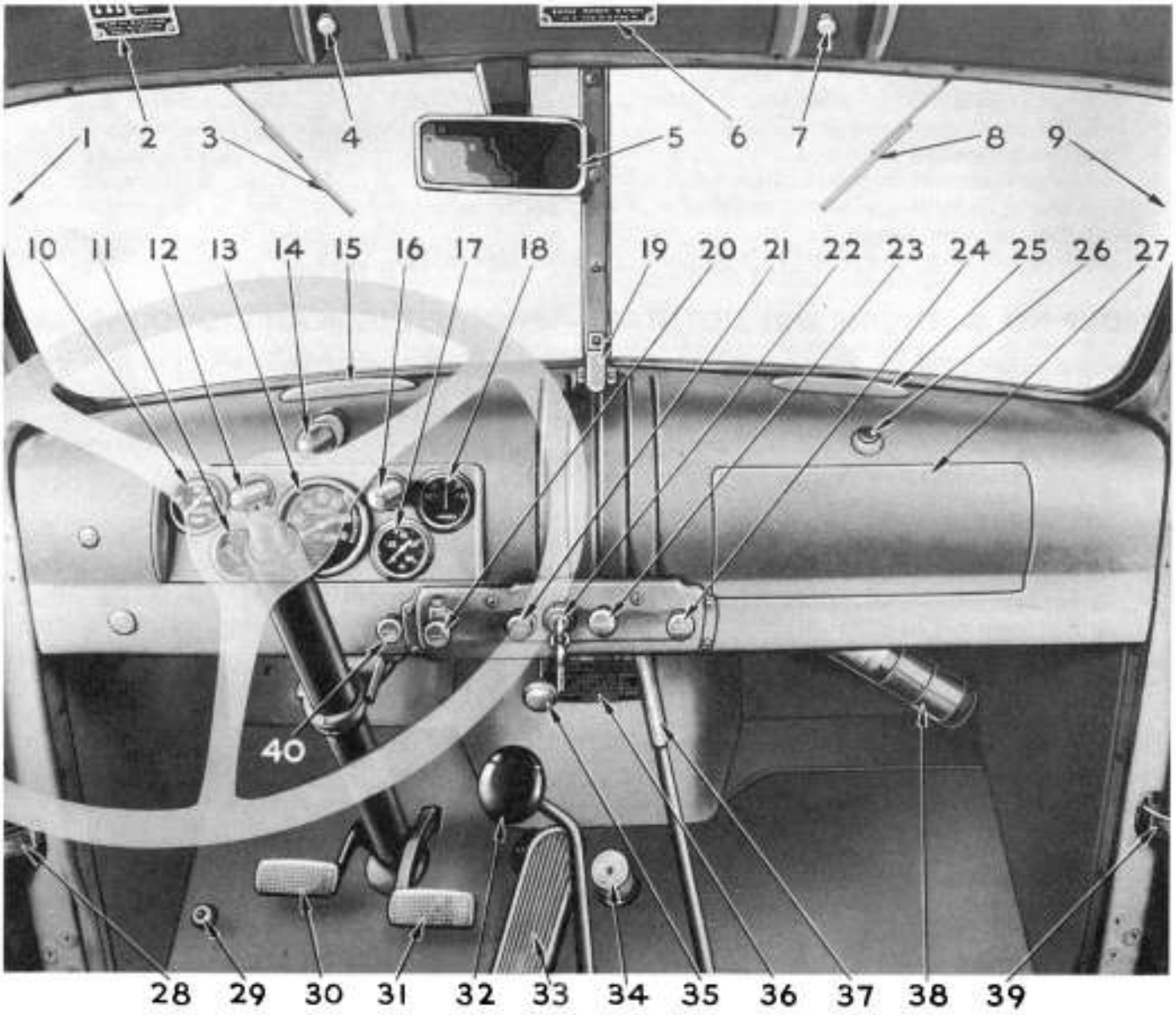


Fig. 1 Interior of Driver's Cab—Showing Controls and Instruments

1. L.H. Windshield Quadrant Adjusting Screw
2. Shifting Arrangement Plate
3. L.H. Windshield Wiper
4. L.H. Windshield Wiper Switch
5. Rear View Mirror
6. Road Speed Caution Plate
7. R.H. Windshield Wiper Switch
8. R.H. Windshield Wiper
9. R.H. Windshield Quadrant Screw
10. Temperature Gauge
11. Fuel Gauge
12. Temperature & Fuel Gauge Light
13. Speedometer
14. Speedometer Light
15. Defroster Opening—L.H.
16. Ammeter and Oil Gauge Light
17. Oil Gauge
18. Ammeter
19. Windshield Lock
20. Light Switch
21. Throttle Button
22. Ignition Switch
23. Choke Button
24. Instrument Panel Light Switch
25. Defroster Opening—R.H.
26. Package Compartment Door Lock
27. Package Compartment Door
28. Door Check—L.H.
29. Dimmer Switch
30. Clutch Pedal
31. Brake Pedal
32. Transmission Shift Lever
33. Accelerator Pedal
34. Starter Button
35. Ventilator Control
36. Serial Number Plate
37. Hand Brake Lever
38. Fire Extinguisher
39. Door Check—R.H.
40. Blackout Driving Lamp Switch