

TM 9-1802A

WAR DEPARTMENT

TECHNICAL MANUAL



ORDNANCE MAINTENANCE

**POWER PLANT FOR 2½-TON AMPHIBIAN
TRUCK, 6x6, (GMC DUKW-353) AND
2½-TON TRUCK, 6x6 (GMC)**

JULY 15, 1943

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RESTRICTED

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POWER PLANT for 2½-TON AMPHIBIAN TRUCK, 6 x 6, (GMC DUKW-353) AND 2½-TON TRUCK, 6 x 6 (GMC)

Prepared under the direction of the
Chief of Ordnance
(with the cooperation of the Yellow Truck and Coach
Manufacturing Company)

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CHAPTER 1

INTRODUCTION

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1. SCOPE.

a. This manual is published for the information and guidance of Ordnance maintenance personnel. It contains detailed instructions on inspection, disassembly, assembly, maintenance and repair of the GMC Model 270 Gasoline Engine and all of its accessories for the Truck, Amphibian, 2½ Ton—6 x 6 GMC DUKW-353 and Truck, 2½ ton, 6 x 6, GMC—CCKW-352 and 353. These instructions are supplementary to those in the field and technical manuals prepared for the using arm. This manual does not contain information which is intended for the using arm, since such information is available to Ordnance maintenance personnel in 100 series TM's or FM's.

(1) **NOTE: Publication Plates on CCKW 352 and 353 Trucks refer to Maintenance Manual TM 9-1801. However, TM 9-1801 contains maintenance and repair information on the Power Train only, and reference must be made to this Manual (TM 9-1802A) for maintenance and repair of the Power Plant.**

b. This manual contains a description of and procedure for the removal, disassembly, inspection, and repair of the engine assembly and includes such accessories as clutch, engine lubrication system units, ignition system units, generator and regulator, starter and controls, carbureter, governor, fuel filter, air cleaner, fuel pump, water pump, thermostat, and fans and belts.

c. **Vehicle Generally.** Information concerning operation, service, maintenance, inspection and lubrication of the entire vehicle will be found in TM 9-802 for amphibian and TM 9-801 (April 12, 1943) for 6 x 6.

d. Power Train.

(1) **Truck, Amphibian, 2½ Ton, 6x6, GMC DUKW-353.** Description and procedure for the removal, disassembly, inspection, and repair of transmission, main transfer case, power take-off, driving axle propeller shafts and universal joints, front and rear axles, brake system, and wheels and hubs will be found in TM 9-1802B. Lighting system units and miscellaneous electrical units will also be found in TM 9-1802B.

(2) **Truck, 2½ Ton, 6x6, GMC CCKW-352 and 353.** Description of and procedure for the removal, disassembly, inspection and repair of transmission, transfer case, power take-off, propeller shafts and universal joints, front and rear axles, brake system, steering gear, frame, cab lighting system parts, winch and hoist will be found in TM 9-1801.

e. Hull and Associated Parts, Truck, Amphibian, 2½ Ton,

POWER PLANT, GMC 270 ENGINE, DUKW AND 6 x 6 TRUCK

6x6, GMC DUKW-353. Description of and procedure for the removal of, disassembly, inspection and repair of hull and frame, steering system, water propeller and drive, power tire pump, bilge pumping system and winch will be found in TM 9-1802C.

2. ARRANGEMENT OF MANUAL.

a. Chapters 1 through 9 include maintenance operation on basic engine and its accessories. Chapter 10 contains information regarding the special tools required and lists all standard nomenclature lists, technical manuals, and other specifications for the materiel described herein.

3. MAINTENANCE ALLOCATION.

a. **Scope.** The scope of maintenance and repair by the crew and other units of the using arm is determined by the availability of suitable tools, availability of necessary parts, capabilities of the mechanics, time available, and the tactical situation. All of these are variable and no exact system of procedure can be prescribed. Many second echelon operations are often done by Ordnance personnel.

b. **Allocation of Maintenance.** Indicated below are the maintenance duties for which tools and parts have been provided for the using arm personnel. Other replacements and repairs are the responsibility of Ordnance maintenance personnel but may be performed by using arm personnel when circumstances permit, within the discretion of the commander concerned. Echelons and words as used in this list of maintenance allocations are defined as follows:

Second Echelon: Line organization regiments, battalions, companies, detachments, and separate companies.

Third Echelon: Ordnance light maintenance companies, ordnance medium companies, ordnance divisional maintenance battalions, and post ordnance shops.

Fourth Echelon: Ordnance heavy maintenance companies, and service command shops.

Fifth Echelon: Ordnance base regiments, ordnance bases, arsenals, and manufacturers' plants.

SERVICE:

(Including preventive maintenance.) Refer to AR 850-15, paragraph 23a. (1) and (2).

Consists of servicing, cleaning, lubricating, tightening bolts and nuts, and making external adjustments of sub-assemblies or assemblies and controls.

REPLACE:

Refer to AR 850-15, paragraph 23a. (4).

Consists of removing the part, sub-assembly or assembly from the vehicles and replacing it with a new or reconditioned or rebuilt part, subassembly or assembly, whichever the case may be.

REPAIR:

Refer to AR 850-15, paragraph 23a (3) and (5) in part.

Consists of making repairs to, or replacement of the part, subassembly or assembly that can be accomplished without com-

INTRODUCTION

REPAIR (Contd.)

pletely disassembling the subassembly or assemblies, and does not require heavy welding, or riveting, machining, fitting and/or alining or balancing.

REBUILD:

Refer to AR 850-15, paragraph 23a. (5) in part, and (6).

Consists of completely reconditioning and replacing in serviceable condition any unserviceable part, subassembly or assembly of the vehicle, including welding, riveting, machining, fitting, alining, balancing, assembling, and testing.

(1) Maintenance Allocation for 2½-Ton, 6x6, GMC DUKW-353.

ABSORBERS, SHOCK

	ECHELONS			
	2nd	3rd	4th	5th
Absorber assemblies, shock (w/linkage) replace.....	X			
Absorber assemblies, shock (w/linkage) repair.....		X		
Absorber assemblies, shock (w/linkage) rebuild.....			E	X

AXLE, FRONT

Arm, steering knuckle—replace.....	E	X		
*Axle assembly—replace.....	*	X		
Axle assembly—repair.....		X		
Axle assembly—rebuild.....	E	X		
Bearings, wheel—service and/or replace.....	X			
Drums, brake—replace.....	X			
Gears, bevel and pinion—adjust.....		X		
Hub assemblies—replace.....	X			
Hub assemblies—repair.....		X		
Hub assemblies—rebuild.....			X	
Hub and drum assemblies—replace.....	X			
Retainers, wheel grease—replace.....	X			
Rod assembly, tie—replace.....	X			
Rod assembly, tie—repair.....		X		
Seals, trunnion housing oil—replace.....	E	X		
Shafts, axle—replace.....	E	X		
Wheel alinement, toe-in—adjust.....	X			
Wheel alinement, camber and caster—check.....		X		
Wheel alinement, camber and caster—aline.....			E	X

AXLES AND SUSPENSION, REAR (TANDEM)

*Axle assemblies—replace.....	*	X		
Axle assemblies—repair.....		X		
Axle assemblies—rebuild.....			E	X
Bearings, spring seat—service and/or replace.....	X			
Bearings, wheel—service and/or replace.....	X			
Drums, brake—replace.....	X			
Gears, bevel and pinion—adjust.....		X		
Hub assemblies—replace.....	X			
Hub assemblies—repair.....		X		
Hub assemblies—rebuild.....			X	
Hub and drum assemblies—replace.....	X			
Retainers, wheel grease—replace.....	X			
Rod assemblies, torque—replace.....	X			
Rod assemblies, torque—repair.....		X		
Rod assemblies, torque—rebuild.....			E	X
Seat assemblies, spring—replace.....	X			
Seat assemblies, spring—repair.....		X		

*Note: See page 16 for explanation of *, E and X symbols.

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POWER PLANT, GMC 270 ENGINE, DUKW AND 6 x 6 TRUCK**AXLES AND SUSPENSION, REAR (TANDEM) (Contd.)**

	ECHELONS			
	2nd	3rd	4th	5th
Seat assemblies, spring—rebuild			E	X
Shafts, axle—replace	X			
Shaft, trunnion—replace		X		
Shaft, trunnion—rebuild		X	E	X
Spring assemblies, rear suspension—replace	X			
Spring assemblies, rear suspension—repair		X		
Spring assemblies, rear suspension—rebuild			E	X

BRAKE, PARKING

Band assembly—service and/or replace	X			
Band assembly—repair (reline)		X		
Controls and linkage—service and/or replace	X			
Controls and linkage—repair		X		

BRAKE SERVICE

Controls and linkage—service and/or replace	X			
Controls and linkage—repair		X		
Cylinder assembly, master—replace	X			
Cylinder assembly, master—repair		X		
Cylinder assembly, master—rebuild			X	
Cylinder assembly, power (hydrovac)—replace	X			
Cylinder assembly, power (hydrovac)—repair		X		
Cylinder assembly, power (hydrovac)—rebuild			X	
Cylinder assemblies, wheel—replace	X			
Cylinder assemblies, wheel—repair		X		
Cylinder assemblies, wheel—rebuild			X	
Hose, flexible, lines and connections—replace and/or repair	X			
Shoe assemblies—service and/or replace	X			
Shoe assemblies—repair (reline)		X		

CASE, TRANSFER (MAIN)

*Case assembly, transfer—replace	*	X		
Case assembly, transfer—repair		X		
Case assembly, transfer—rebuild			E	X
Controls and linkage—service and/or replace	X			
Controls and linkage—repair		X		
Drum, parking brake—replace	X			

CASE, TRANSFER (WATER PROPELLER)

*Case assembly, transfer—replace	*	X		
Case assembly, transfer—repair		X		
Case assembly, transfer—rebuild			E	X
Controls and linkage—service and/or replace	X			
Controls and linkage—repair		X		

CLUTCH

Clutch—replace	E	X		
Clutch—repair		X		
Clutch—rebuild			E	X
Controls and linkage—service and/or replace	X			
Controls and linkage—repair		X		

COOLING GROUP

Connections—replace	X			
Radiator assembly—replace	X			
Radiator assembly—repair		X		

*Note: See page 16 for explanation of *, E and X symbols.

INTRODUCTION

ECHELONS
2nd 3rd 4th 5th

COOLING GROUP (Contd.)

Radiator assembly—rebuild.....			E	X
System, cooling—service.....	X			
Tank, over-flow—replace.....	X			
Tank, over-flow—repair.....		X		

ELECTRICAL GROUP

Battery—service, recharge and/or replace.....	X			
Battery—repair.....		X		
Battery—rebuild.....			E	X
Cables, battery—replace and/or repair.....	X			
Coil, ignition—replace.....	X			
Horn assembly—service and/or replace.....	X			
Horn assembly—repair.....		X		
Lamp assemblies—service and/or replace.....	X			
Lamp assemblies—repair.....		X		
Regulator, current and voltage—replace.....	X			
Regulator, current and voltage—service and/or repair..		X		
Regulator, current and voltage—rebuild.....			X	
Switch assemblies—replace ..	X			
Switch assemblies—repair.....		X		
Wiring, replace.....	X			

ENGINE
(GMC ENGINE 270)

Bearings, connecting rod (inserts)—replace.....		E	E	X
Bearings, crankshaft (inserts)—replace.....		E	E	X
Belt—service and/or replace.....	X			
Block, cylinder—rebuild (recondition).....			E	X
Carbureter assembly—service and/or replace.....	X			
Carbureter assembly—repair.....		X		
Carbureter assembly—rebuild.....			X	
Cleaner, air—service and/or replace.....	X			
Cleaner, air—repair.....		X		
Coil, ignition—replace.....	X			
Condenser, distributor—replace.....	X			
Controls and linkage—service and/or replace.....	X			
Controls and linkage—repair.....		X		
Crankshaft—rebuild (recondition).....			E	X
Distributor assembly—service and/or replace.....	X			
Distributor assembly—repair.....		X		
Distributor assembly—rebuild.....			X	
*Engine assembly—replace.....	*	X		
Engine assembly—repair.....		X		
Engine assembly—rebuild.....			E	X
Fan assembly—replace.....	X			
Filter assembly, oil—service or replace cartridge.....	X			
Filter assembly, oil—replace.....	X			
Filter assembly, oil—repair.....		X		
Flywheel assembly—replace and/or repair ..		X		
Flywheel assembly—rebuild (recondition).....			E	X
Gaskets, cylinder head and manifold—replace.....		X		
Gears, timing—replace.....		X		
Generator assembly—replace.....	X			
Generator assembly—repair.....		X		
Generator assembly—rebuild.....			X	
Governor assembly—adjust and/or replace.....		X		
Governor assembly—rebuild.....			E	X

*Note: See page 16 for explanation of *, E and X symbols.

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POWER PLANT, GMC 270 ENGINE, DUKW AND 6 x 6 TRUCK**ENGINE (Contd.)
(GMC ENGINE 270)**

	ECHELONS			
	2nd	3rd	4th	5th
Head, cylinder—replace and/or repair.....		X		
Housing, flywheel—replace.....		X		
Housing, flywheel—rebuild.....			E	X
Lines and connections, oil (external)—replace and/or repair.....	X			
Lines and connections, oil (internal)—replace and/or repair.....		X		
Manifolds—replace.....	X			
Manifolds—rebuild.....			X	
Motor assembly, starting—replace.....	X			
Motor assembly, starting—repair.....		X		
Motor assembly, starting—rebuild.....			X	
Pan assembly, oil—service and replace gaskets.....		X		
Pan assembly, oil—replace and/or repair.....		X		
Pistons and rings—replace.....		E	E	X
Plugs, spark—service and/or replace.....	X			
Plugs, spark (two piece)—repair.....		X		
Points, breaker, distributor—service and/or replace.....	X			
Pump assembly, fuel—replace.....	X			
Pump assembly, fuel—repair.....		X		
Pump assembly, fuel—rebuild.....			X	
Pump assembly, oil—replace and/or repair.....		X		
Pump assembly, oil—rebuild.....			X	
Pump assembly, water—replace.....	X			
Pump assembly, water—repair.....		X		
Pump assembly, water—rebuild.....			X	
Rods, connecting—replace.....		E	E	X
Thermostat—replace.....	X			
Tube, water by-pass—replace.....	X			
Valves—service.....	X			
Ventilator, crankcase—service and/or replace.....	X			
Wiring, ignition—replace.....	X			
EXHAUST GROUP				
Muffler and exhaust pipes—replace.....	X			
EXTINGUISHER, FIRE				
Extinguisher, fire (carbon tetrachloride CCl ₄) service.. (refill) and/or replace.....	X			
Extinguisher, fire (carbon tetrachloride CCl ₄) repair....		X		
Extinguisher, fire (carbon tetrachloride CCl ₄) rebuild...			E	X
FRAME				
Frame assembly—repair.....		X		
Frame assembly—rebuild.....			E	X
Shackles and bolts—replace.....	X			
Spring assemblies, front suspension—replace.....	X			
Spring assemblies, front suspension—repair.....		X		
Spring assemblies, front suspension—rebuild.....			E	X
FUEL GROUP				
Filter assembly, fuel—service and/or replace.....	X			
Lines and connections—replace and/or repair.....	X			
Tank—service and/or replace.....	X			
Tank—repair.....		X		

*Note: See page 16 for explanation of *, E and X symbols.