

TM 5-2410-214-35

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE
MANUAL

TRACTOR, FULL TRACKED, LOW SPEED, DIESEL ENGINE DRIVEN, MEDIUM DRAWBAR PULL; OSCILLATING TRACK; 78-INCH GAGE

[CATERPILLAR MODEL D-7]

FSN 2410-782-1130

This reprint includes all changes in effect at the time of
publication; change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

7 FEBRUARY 1969

TECHNICAL MANUAL

No. 5-2410-214-35

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 7 February 1969

DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL

**TRACTOR, FULL TRACKED, LOW SPEED: DIESEL ENGINE DRIVEN; MEDIUM DRAWBAR PULL;
OSCILLATING TRACK; 78-INCH GAGE (CATERPILLAR MODEL D-7) FSN 2410-782-1130**

	Paragraph	Page
CHAPTER 1. INTRODUCTION		
Section I. General	1-1, 1-2	3
II. Description and data.	1-3, 1-4	3
CHAPTER 2. GENERAL MAINTENANCE INSTRUCTIONS		
Section I. Repair parts, special tool., and equipment	2-1 - 2-3	15
II. Troubleshooting.	2-4	16
III. Removal and installation of major components	2-5, 2-6	17
CHAPTER 3. REPAIR INSTRUCTIONS		
Section I. Engine	3-1 - 3-15	20-44
II. Engine accessory drive and governor	3-16 - 3-20	49-58
III. Fuel system	3-21 - 3-25	62-69
IV. Electrical system	3-26, 3-27	78, 80
V. Engine cooling system	3-28 - 3-32	85-91
VI. Engine lubrication system.	3-33 - 3-37	97-99
VII. Torque divider and transmission	3-38 - 3-48	101-138
VIII. Steering clutches, brakes, and bevel gear	3-49 - 3-54	146-160
IX. Final drive	3-55 - 3-65	162-180
X. Track roller frame and tracks	3-66 - 3-76	180-195
XI. Chassis and main frame.	3-77, 3-78	195, 196
XII. Hydraulic system	3-79 - 3-87	198-222
XIII. Winch.	3-88 - 3-92	224-228
XIV. Ripper	3-93 - 3-94	231
APPENDIX REFERENCES		
INDEX		

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual contains instructions for the use of direct and general support, and depot maintenance personnel maintaining the Caterpillar Model D-7 Tractor as allocated by the Maintenance Allocation Chart. It provides information on the maintenance of the equipment which is beyond the scope of the tools, equipment, personnel, or supplies normally available to organizational level maintenance personnel.

1-2. Forms and Records

- a. DA forms and procedures used for equip-

ment maintenance will be only those prescribed by TM 38-750, Army Equipment Record Procedures.

- b. The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to the Commanding General, U.S. Army Mobility Equipment Command ATTN: AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

Section II. DESCRIPTION AND DATA

1-3. Description

A general description of the Model D-7 tractor and information pertaining to the identification plates are contained in TM 5-2410-214-12. A more detailed description of specific components and assemblies is contained in the applicable sections of this manual. Detailed descriptions of the components of the Model D-7 tractor are provided in the applicable maintenance paragraphs of this manual.

1-4. Tabulated Data

- a. *General.* This paragraph contains all maintenance data pertinent to direct and general support and depot maintenance personnel.

- b. *Nut and Bolt Torque Data.*

Cylinder head:

5/8-inch nuts (first time)	60 lb-ft
7/8-inch nuts (first time)	150 lb-ft
5/8-inch nuts (second time)	120 lb-ft
7/8-inch nuts (second time)	300 lb-ft

Accessory drive retainer nut

torque	150 lb-ft
--------------	-----------

Camshaft gear retainer bolt torque ..

140—165 lb-ft

Connecting rod bolt nuts torque

190 lb-ft

Main Bearing stud nut torque:

5/8-inch stud nuts	95 lb-ft
7/8-inch stud nuts	350 lb-ft

Crankshaft pulley retaining

screw torque	300—325 lb-ft
--------------------	---------------

Flywheel retaining bolt torque 210—250 lb-ft

Flywheel housing bolt and nut
torque 210—250 lb-ft

Fuel injection line nut torque 25—35 lb-ft

Fuel injection nozzle retaining
nut torque 105 lb-ft

Fuel injection precombustion
chamber torque 200 lb-ft

Fuel transfer pump drive gear
retaining nut torque 10 lb-ft

Balancer gear retaining nut
torque 150—170 lb-ft

Balancer bracket assembly bolt
torque 130—170 lb-ft

Balancer front support bracket
bolt torque:
3/8-inch 42—50 lb-ft
1/2-inch 115—125 lb-ft

Timing gear housing bolt torque ... 80 lb-ft

Turbocharger:

Torque on impeller housing
band clamp 110—130 lb-ft

Torque on turbine housing
bolts 160—190 lb-ft

Torque on thrust plate assembly
retaining bolts 30—40 lb-in.

Torque on impeller nut (para
3-25) Initial (hot) 120 lb-ft

Final (room temperature or
150° max) push additional
turn of 120°

Turbocharger-to-manifold
bolt torque using anti-seize
compound . . . 36—44 lb-ft

Water pump impeller retaining
nut torque . . . 70 lb-ft

Torque divider
Scavenge pump:
Drive gear-to-shaft re-
taining nut torque . . . 36—44 lb-ft

Transmission hydraulic controls:
Control valve-to-transmission
retaining bolt, torque . . 32—38 lb-ft
Safety valve-to-directional
valve, torque (installed
using liquid lock) . . . 35—45 lb-ft
Pressure control valve
cover-to-body retaining
bolts, torque . . . 32—38 lb-ft

Transmission:
Clutch housing retaining
bolts 80—90 lb-ft
Transmission case to transfer
gear case retaining nut . . . 70—80 lb-ft
Bearing cage to No. 1
carrier retaining bolt 37—43 lb-ft
Bearing cage to No. 2
carrier retaining bolts . . 37—43 lb-ft

Bevel gear:
Bevel gear-to-shaft retaining
bolt nut, torque 118—142 lb-ft

Ripper:
Mounting bracket stud nut . . 1500 lb-ft
Hydraulic cylinder piston rod
nut 1600±120 lb-ft

Steering clutch:
Steering clutch hub-to-
steering clutch inner drum
bolt, torque 180—220 lb-ft

Steering clutch outer drum-to-
pinion flange bolt, torque . . . 180—220 lb-ft
Clutch plate bolt 600—700 lb-ft

Final drive:
Track roller frame outer
bearing retaining nut
torque 500—600 lb-ft
Final drive case-to-steering
clutch and bevel gear
case bolt, torque 200—220 lb-ft
Final drive flange-drum
screw 180—220 lb-ft

Track rollers and track carrier
rollers
Lubrication plug, torque . . . 110—140 lb-ft

Front idlers and recoil springs:
Taper lockpins bolt torque:
Initial to seat parts 65 lb-ft
Hammer lock pins into
place, then tighten to
torque value of 65—85 lb-ft
Lubrication plug torque 110—140 lb-ft
Fill valve torque 20—30 lb-ft
Ball check valve torque 20—30 lb-ft
Relief valve torque 20—30 lb-ft

Track:
Track shoe bolt torque 180—260 lb-ft plus
additional ¼
turn

Minimum torque after
¼ turn 420 lb-ft

c. Repair and Replacement Standards. Tables 1-1, 1-2, and 1-3 list manufacturer's dimensions, tolerances, clearances, and the maximum allowable wear and clearance.

d. Electrical System Schematic Diagram. Figure 1-1 shows the schematic wiring diagram for this tractor.

Table 1-1. Engine Repair and Replacement Standards

Component	Manufacturer's dimensions and tolerances in inches		Desired clearance		Maximum allowable wear and clearance
	Minimum	Maximum	Minimum	Maximum	
ACCESSORY DRIVE SHAFT:					
Backlash between accessory drive gear and camshaft gear			0.002	0.008	
Accessory drive shaft journal diameters (front and rear)	1.4335	1.4345			
Accessory drive shaft bearing clearance			0.0015	0.0035	0.007
Accessory drive shaft end clearance			0.006	0.008	0.015
CAMSHAFT:					
Bearing journal diameter	2.619	2.620			
Bearing clearance			0.003	0.006	0.010
End clearance			0.010	0.020	0.035
Gear backlash (camshaft to crankshaft)			0.003	0.017	
COMPRESSION RELEASE					
Distance between rocker arm and lifter rod			0.025	0.030	
CONNECTING ROD					
Connecting rod bearing clearance (measured vertically)			0.0042	0.0071	0.012
Center to center distance	14.999	15.001			
Piston pin bearing should be machined to ID of	2.3910	2.3915			