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AgPubs D8 Tractor

AgPubs Service Repair Manual for Caterpillar D8 Tractor

Technical Shop Book for Overhaul and Maintenance

Introduction to Your Service Manual

This document serves as a comprehensive service and repair manual for the Caterpillar D8 Tractor. It is designed to provide detailed technical information necessary for performing repairs, overhauls, and in-depth troubleshooting. This manual is an essential resource for maintaining the operational integrity and longevity of your equipment.

Understanding Manual Types

For effective equipment management, it is important to distinguish between different types of manuals:

- **Service Manual:** Focuses on repair procedures, overhaul instructions, and detailed troubleshooting guides. This manual is for in-depth mechanical work.
- **Operators Manual:** Provides information on basic operation, routine maintenance schedules, fluid types and quantities, and minor adjustments.
- **Parts Catalog:** Contains exploded views of assemblies, part names, and original equipment manufacturer (OEM) part numbers, useful for identifying and ordering replacement components.

This specific manual is a **Service Manual**, tailored for comprehensive repair and overhaul tasks.

Using Your Service Manual for Setup and Preparation

Before commencing any repair or overhaul, familiarize yourself with the manual's structure. Identify the relevant sections pertaining to the specific component or system you are working on. Ensure you have all necessary tools and safety equipment as recommended by general workshop practices. The manual provides the foundational knowledge for proper preparation.

Operating Procedures with Your Manual

When performing complex operations such as engine overhauls or transmission repairs, follow the manual's step-by-step instructions precisely. Pay close attention to torque specifications, clearances, and assembly sequences.

Diagrams and illustrations within the manual are crucial for understanding component placement and function.

Maintenance Guidance from Your Manual

While primarily a service manual, this resource contains detailed information that supports preventative and corrective maintenance. Understanding the construction and function of components, as detailed in the manual, is key to effective maintenance planning and execution. Refer to specific sections for component-level maintenance procedures.

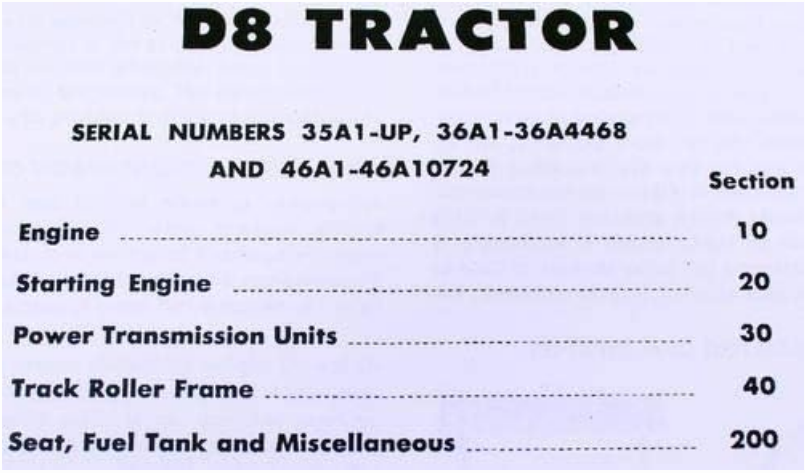
Troubleshooting with Your Manual

The service manual includes sections dedicated to diagnosing common and complex issues. Utilize the provided charts, diagrams, and descriptive text to systematically identify the root cause of malfunctions. Following the troubleshooting flowcharts and diagnostic steps will help in efficient problem resolution.

Manual Content Overview

The following images provide examples of the detailed content found within this AgPubs Service Repair Manual for the Caterpillar D8 Tractor, illustrating its comprehensive nature and utility for various repair and maintenance tasks.

Manual Section Index



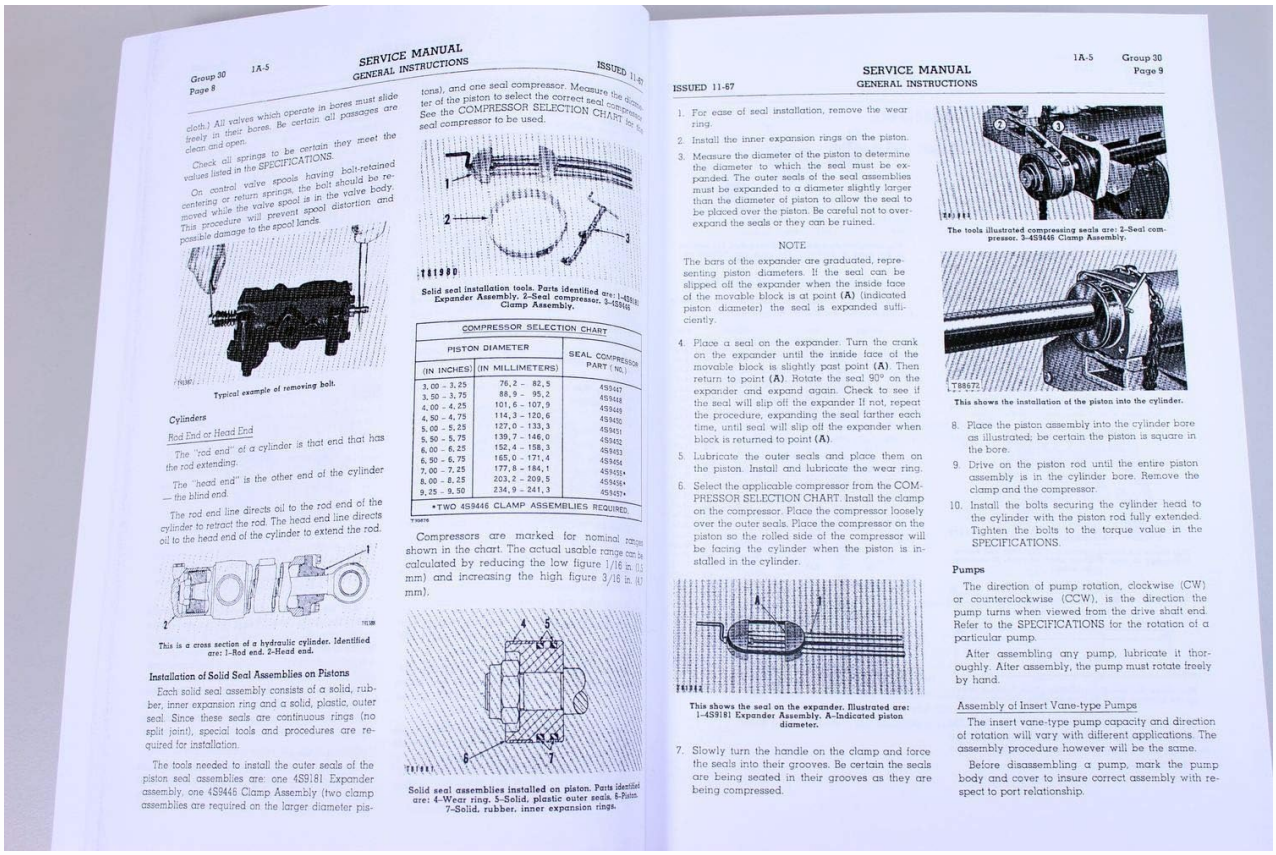
D8 TRACTOR

SERIAL NUMBERS 35A1-UP, 36A1-36A4468 AND 46A1-46A10724

	Section
Engine	10
Starting Engine	20
Power Transmission Units	30
Track Roller Frame	40
Seat, Fuel Tank and Miscellaneous	200

This image displays a page from the manual, detailing the applicable D8 Tractor serial numbers (35A1-UP, 36A1-36A4468, and 46A1-46A10724) and an index of major sections such as Engine, Starting Engine, Power Transmission Units, Track Roller Frame, and Fuel Tank. This provides an overview of the manual's scope.

Engine Component Details



SERVICE MANUAL
GENERAL INSTRUCTIONS

Group 30 Page 8 — 1A-5 — ISSUED 11-67

cloth.) All valves which operate in bores must slide freely in their bores. Be certain all passages are clean and open.

Check all springs to be certain they meet the values listed in the SPECIFICATIONS.

On control valve spools having bolt-retained centering or return springs, the bolt should be removed while the valve spool is in the valve body. This procedure will prevent spool distortion and possible damage to the spool lands.

Typical example of removing bolt.

Cylinders

Rod End or Head End

The "rod end" of a cylinder is that end that has the rod extending.

The "head end" is the other end of the cylinder — the blind end.

The rod end line directs oil to the rod end of the cylinder to retract the rod. The head end line directs oil to the head end of the cylinder to extend the rod.

This is a cross section of a hydraulic cylinder. Identified are: 1-Rod end. 2-Head end.

Installation of Solid Seal Assemblies on Pistons

Each solid seal assembly consists of a solid, rubber, inner expansion ring and a solid, plastic, outer seal. Since these seals are continuous rings (no split joint), special tools and procedures are required for installation.

The tools needed to install the outer seals of the piston seal assemblies are: one 4S9181 Expander assembly, one 4S9446 Clamp Assembly (two clamp assemblies are required on the larger diameter pistons), and one seal compressor. Measure the diameter of the piston to select the correct seal compressor. See the COMPRESSOR SELECTION CHART for the seal compressor to be used.

Solid seal installation tools. Parts identified are: 1-4S9181 Expander Assembly. 2-Seal compressor. 3-4S9446 Clamp Assembly.

COMPRESSOR SELECTION CHART

PISTON DIAMETER (IN INCHES)	PISTON DIAMETER (IN MILLIMETERS)	SEAL COMPRESSOR PART (NO.)
3,00 – 3,25	76,2 – 82,5	4S9447
3,50 – 3,75	88,9 – 95,2	4S9448
4,00 – 4,25	101,6 – 107,9	4S9449
4,50 – 4,75	114,3 – 120,6	4S9450
5,00 – 5,25	127,0 – 133,3	4S9451
5,50 – 5,75	139,7 – 146,0	4S9452
6,00 – 6,25	152,4 – 158,3	4S9453
6,50 – 6,75	165,0 – 171,4	4S9454
7,00 – 7,25	177,8 – 184,1	4S9455*
8,00 – 8,25	203,2 – 209,5	4S9456*
9,25 – 9,50	234,9 – 241,3	4S9457*

*TWO 4S9446 CLAMP ASSEMBLIES REQUIRED.

Compressors are marked for nominal ranges shown in the chart. The actual usable range can be calculated by reducing the low figure 1/16 in. (1,5 mm) and increasing the high figure 3/16 in. (4,7 mm).

Solid seal assemblies installed on piston. Parts identified are: 4-Wear ring. 5-Solid, plastic outer seals. 6-Piston. 7-Solid, rubber, inner expansion rings.

SERVICE MANUAL
GENERAL INSTRUCTIONS

ISSUED 11-67 — 1A-5 — Group 30 Page 9

1. For ease of seal installation, remove the wear ring.
2. Install the inner expansion rings on the piston.
3. Measure the diameter of the piston to determine the diameter to which the seal must be expanded. The outer seals of the seal assemblies must be expanded to a diameter slightly larger than the diameter of piston to allow the seal to be placed over the piston. Be careful not to overexpand the seals or they can be ruined.

NOTE

The bars of the expander are graduated, representing piston diameters. If the seal can be slipped off the expander when the inside face of the movable block is at point **(A)** (indicated piston diameter) the seal is expanded sufficiently.

4. Place a seal on the expander. Turn the crank on the expander until the inside face of the movable block is slightly past point **(A)**. Then return to point **(A)**. Rotate the seal 90° on the expander and expand again. Check to see if the seal will slip off the expander. If not, repeat the procedure, expanding the seal farther each time, until seal will slip off the expander when block is returned to point **(A)**.
5. Lubricate the outer seals and place them on the piston. Install and lubricate the wear ring.
6. Select the applicable compressor from the COMPRESSOR SELECTION CHART. Install the clamp on the compressor. Place the compressor loosely over the outer seals. Place the compressor on the piston so the rolled side of the compressor will be facing the cylinder when the piston is installed in the cylinder.

This shows the seal on the expander. Illustrated are: 1-4S9181 Expander Assembly. A-Indicated piston diameter.

7. Slowly turn the handle on the clamp and force the seals into their grooves. Be certain the seals are being seated in their grooves as they are being compressed.

The tools illustrated compressing seals are: 2-Seal compressor. 3-4S9446 Clamp Assembly.

This shows the installation of the piston into the cylinder.

8. Place the piston assembly into the cylinder bore as illustrated; be certain the piston is square in the bore.
9. Drive on the piston rod until the entire piston assembly is in the cylinder bore. Remove the clamp and the compressor.
10. Install the bolts securing the cylinder head to the cylinder with the piston rod fully extended. Tighten the bolts to the torque value in the SPECIFICATIONS.

Pumps

The direction of pump rotation, clockwise (CW) or counterclockwise (CCW), is the direction the pump turns when viewed from the drive shaft end. Refer to the SPECIFICATIONS for the rotation of a particular pump.

After assembling any pump, lubricate it thoroughly. After assembly, the pump must rotate freely by hand.

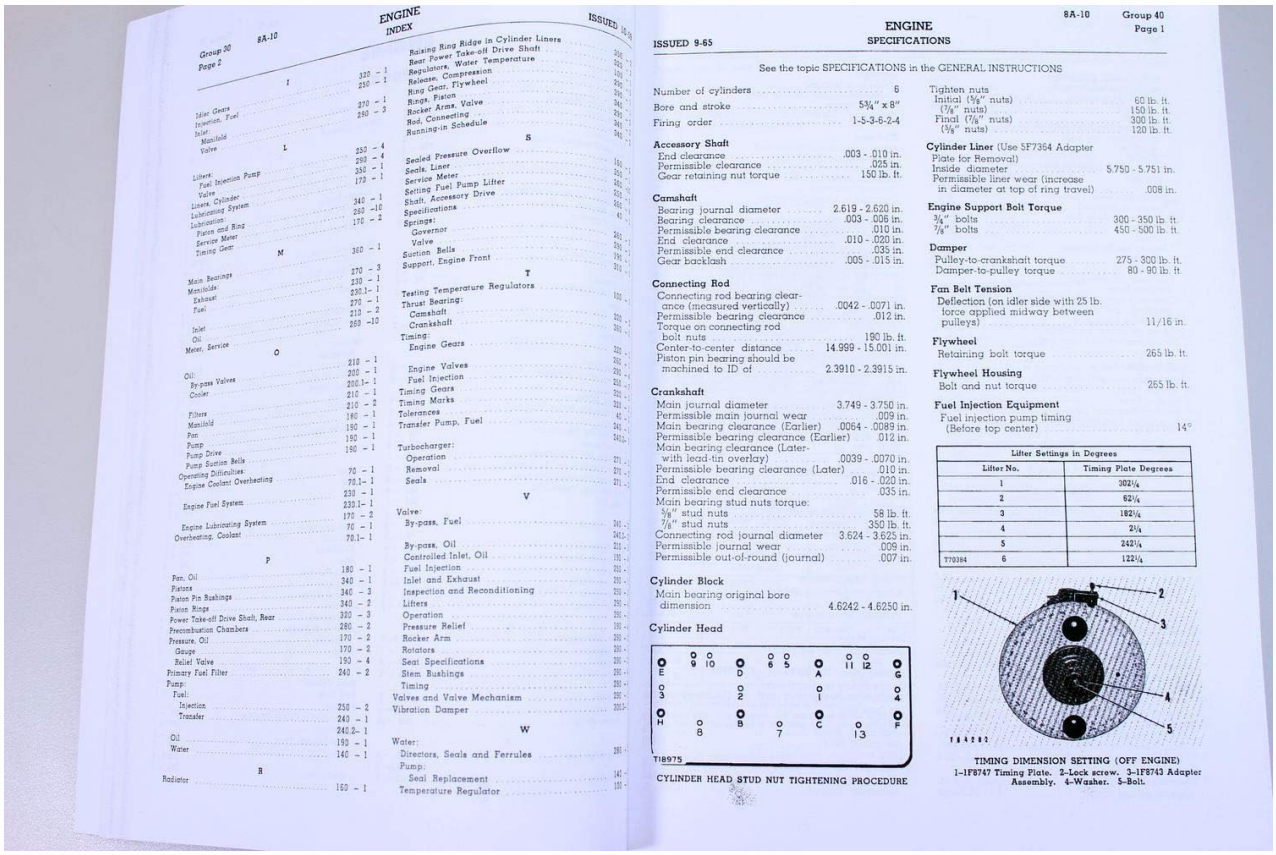
Assembly of Insert Vane-type Pumps

The insert vane-type pump capacity and direction of rotation will vary with different applications. The assembly procedure however will be the same.

Before disassembling a pump, mark the pump body and cover to insure correct assembly with respect to port relationship.

This page illustrates detailed service general instructions, including diagrams for piston assembly and a compression selection chart with specifications in inches and millimeters. It highlights the precision required for engine component work.

Engine Specifications and Index



ENGINE
INDEX

Group 30 Page 2 — 8A-10 — ISSUED 11-67

I
Idler Gears ..... 320 – 1
Injection, Fuel ..... 250 – 1
Inlet, Manifold ..... 270 – 1
Valve ..... 280 – 3

L
Lifters: Fuel Injection Pump ..... 250 – 4
Valve ..... 290 – 4
Liners, Cylinder ..... 350 – 1
Lubricating System ..... 175 – 1
Lubrication: Piston and Ring ..... 340 – 1
Service Meter ..... 280 –10
Timing Gear ..... 170 – 2

M
Main Bearings ..... 360 – 1
Manifolds: Exhaust ..... 270 – 3
Fuel ..... 230 – 1
Inlet ..... 270 – 1
Oil ..... 213 – 2
Meter, Service ..... 269 –10

O
Oil: By-pass Valves ..... 210 – 1
Cooler ..... 200 – 1
Filters 200.1– 1
Manifold ..... 210 – 1
Pan ..... 210 – 2
Pump ..... 190 – 1
Pump Drive ..... 190 – 1
Pump Suction Bells ..... 190 – 1
Operating Difficulties: Engine Coolant Overheating ..... 160 – 1
Engine Fuel System ..... 70 – 1
Engine Lubricating System 70.1– 1
Overheating, Coolant ..... 230 – 1
230.1– 1
170 – 2
70 – 1
70.1– 1

P
Pan, Oil ..... 180 – 1
Pistons ..... 340 – 1
Piston Pin Bushings ..... 340 – 3
Piston Rings ..... 340 – 2
Power Take-off Drive Shaft, Rear ..... 320 – 3
Precombustion Chambers ..... 280 – 2
Pressure, Oil ..... 170 – 2
Gauge ..... 170 – 2
Relief Valve ..... 190 – 4
Primary Fuel Filter ..... 240 – 2
Pump: Fuel: Injection ..... 250 – 2
Transfer ..... 240 – 1
240.2– 1
Oil ..... 190 – 1
Water ..... 140 – 1

R
Radiator ..... 160 – 1
Raising Ring Ridge in Cylinder Liners ..... 350 – 1
Rear Power Take-off Drive Shaft ..... 320 – 3
Regulators, Water Temperature ..... 130 – 1
Release, Compression ..... 120 – 1
Ring Gear, Flywheel ..... 300 – 1
Rings, Piston ..... 340 – 2
Rocker Arms, Valve ..... 290 – 2
Rod, Connecting ..... 340 – 1
Running-in Schedule ..... 340 – 3

S
Sealed Pressure Overflow ..... 160 – 1
Seals, Liner ..... 350 – 1
Service Meter ..... 280 – 1
Setting Fuel Pump Lifter ..... 250 – 3
Shaft, Accessory Drive ..... 280 – 1
Specifications ..... 40 – 1
Springs: Governor ..... 240 – 1
Valve ..... 290 – 1
Suction Bells ..... 190 – 1
Support, Engine Front ..... 310 – 1

T
Testing Temperature Regulators ..... 130 – 1
Thrust Bearing: Camshaft ..... 220 – 1
Crankshaft ..... 360 – 1
Timing: Engine Gears ..... 220 – 1
Engine Valves ..... 290 – 1
Fuel Injection ..... 250 – 1
Timing Gears ..... 220 – 1
Timing Marks ..... 220 – 1
Tolerances ..... 40 – 1
Transfer Pump, Fuel ..... 240 – 1
240.2– 1
Turbocharger: Operation ..... 270 – 1
Removal ..... 270 – 2
Seals ..... 270 – 1

V
Valve: By-pass, Fuel ..... 240 – 1
240.2– 1
By-pass, Oil ..... 210 – 1
Controlled Inlet, Oil ..... 190 – 1
Fuel Injection ..... 250 – 1
Inlet and Exhaust ..... 290 – 1
Inspection and Reconditioning ..... 290 – 1
Lifters ..... 290 – 1
Operation ..... 290 – 1
Pressure Relief ..... 190 – 1
Rocker Arm ..... 290 – 1
Rotators ..... 290 – 1
Seat Specifications ..... 290 – 1
Stem Bushings ..... 290 – 1
Timing ..... 290 – 1
Valves and Valve Mechanism ..... 290 – 1
Vibration Damper ..... 220 – 1

W
Water: Directors, Seals and Ferrules ..... 280 – 1
Pump: Seal Replacement ..... 140 – 1
Temperature Regulator ..... 130 – 1

ENGINE
SPECIFICATIONS

ISSUED 9-65 — 8A-10 — Group 40 Page 1

See the topic SPECIFICATIONS in the GENERAL INSTRUCTIONS

Number of cylinders 6
Bore and stroke ..... 5¾" x 8"
Firing order 1-5-3-6-2-4

Accessory Shaft
End clearance ..... .003 - .010 in.
Permissible clearance ..... .025 in.
Gear retaining nut torque ..... 150 lb. ft.

Camshaft
Bearing journal diameter ..... 2.619 - 2.620 in.
Bearing clearance ..... .003 - .006 in.
Permissible bearing clearance ..... .010 in.
End clearance ..... .010 - .020 in.
Permissible end clearance ..... .035 in.
Gear backlash ..... .005 - .015 in.

Connecting Rod
Connecting rod bearing clearance (measured vertically) ..... .0042 - .0071 in.
Permissible bearing clearance ..... .012 in.
Torque on connecting rod bolt nuts ..... 190 lb. ft.
Center-to-center distance ..... 14.999 - 15.001 in.
Piston pin bearing should be machined to ID of ..... 2.3910 - 2.3915 in.

Crankshaft
Main journal diameter ..... 3.749 - 3.750 in.
Permissible main journal wear ..... .009 in.
Main bearing clearance (Earlier) ..... .0064 - .0089 in.
Permissible bearing clearance (Earlier) ..... .012 in.
Main bearing clearance (Later-with lead-tin overlay) ..... .0039 - .0070 in.
Permissible bearing clearance (Later) ..... .010 in.
End clearance ..... .016 - .020 in.
Permissible end clearance ..... .035 in.
Main bearing stud nuts torque: ⅝" stud nuts ..... 58 lb. ft.
⅞" stud nuts ..... 350 lb. ft.
Connecting rod journal diameter ..... 3.624 - 3.625 in.
Permissible journal wear ..... .009 in.
Permissible out-of-round (journal) ..... .007 in.

Cylinder Block
Main bearing original bore dimension ..... 4.6242 - 4.6250 in.

Cylinder Head

CYLINDER HEAD STUD NUT TIGHTENING PROCEDURE

Tighten nuts
Initial (⅝" nuts) ..... 60 lb. ft.
(⅞" nuts) ..... 150 lb. ft.
Final (⅞" nuts) ..... 300 lb. ft.
(⅝" nuts) ..... 120 lb. ft.

Cylinder Liner (Use 5F7364 Adapter Plate for Removal)
Inside diameter ..... 5.750 - 5.751 in.
Permissible liner wear (increase in diameter at top of ring travel) ..... .008 in.

Engine Support Bolt Torque
¾" bolts ..... 300 - 350 lb. ft.
⅞" bolts ..... 450 - 500 lb. ft.

Damper
Pulley-to-crankshaft torque ..... 275 - 300 lb. ft.
Damper-to-pulley torque ..... 80 - 90 lb. ft.

Fan Belt Tension
Deflection (on idler side with 25 lb. force applied midway between pulleys) ..... 11/16 in.

Flywheel
Retaining bolt torque ..... 265 lb. ft.

Flywheel Housing
Bolt and nut torque ..... 265 lb. ft.

Fuel Injection Equipment
Fuel injection pump timing (Before top center) ..... 14°

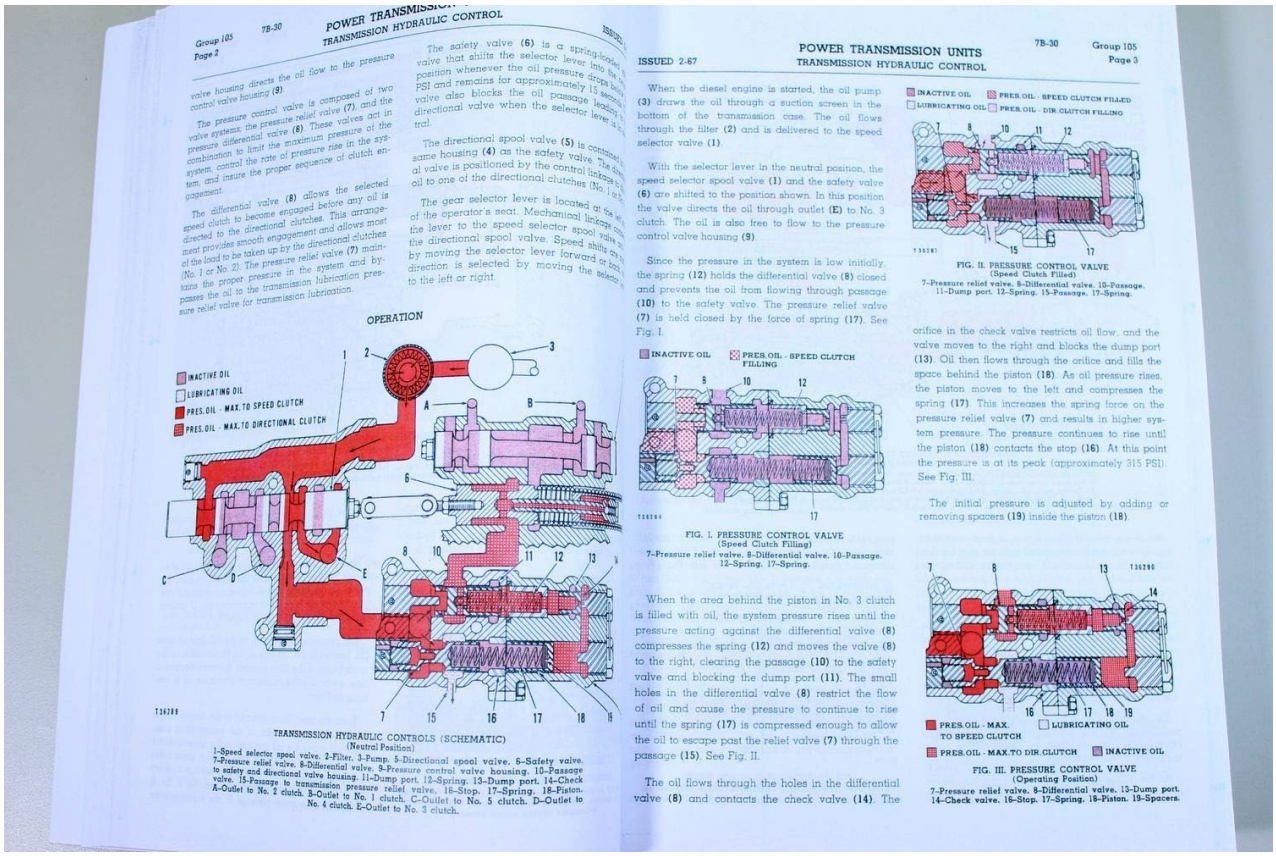
Lifter Settings in Degrees	
Lifter No.	Timing Plate Degrees
1	302¼
2	62¼
3	182¼
4	2¼
5	242¼
6	122¼

TIMING DIMENSION SETTING (OFF ENGINE)
1-1F8747 Timing Plate. 2-Lock screw. 3-1F8743 Adapter Assembly. 4-Washer. 5-Bolt.

An example page featuring an engine index on the left and comprehensive engine specifications on the right. This includes critical data such as bore, stroke, number of cylinders, connecting rod bearing clearances, and flywheel housing specifications,

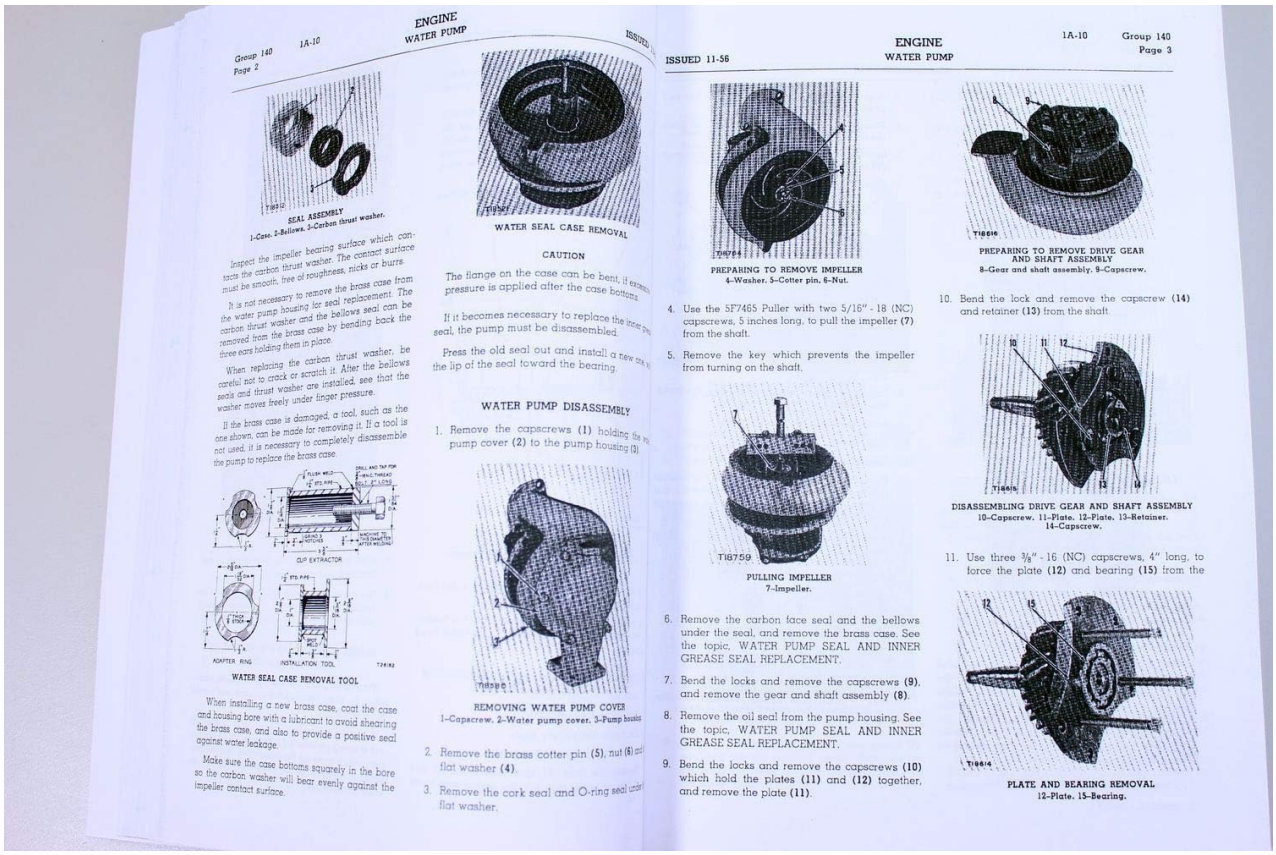
essential for engine overhaul.

Power Transmission Hydraulic Control



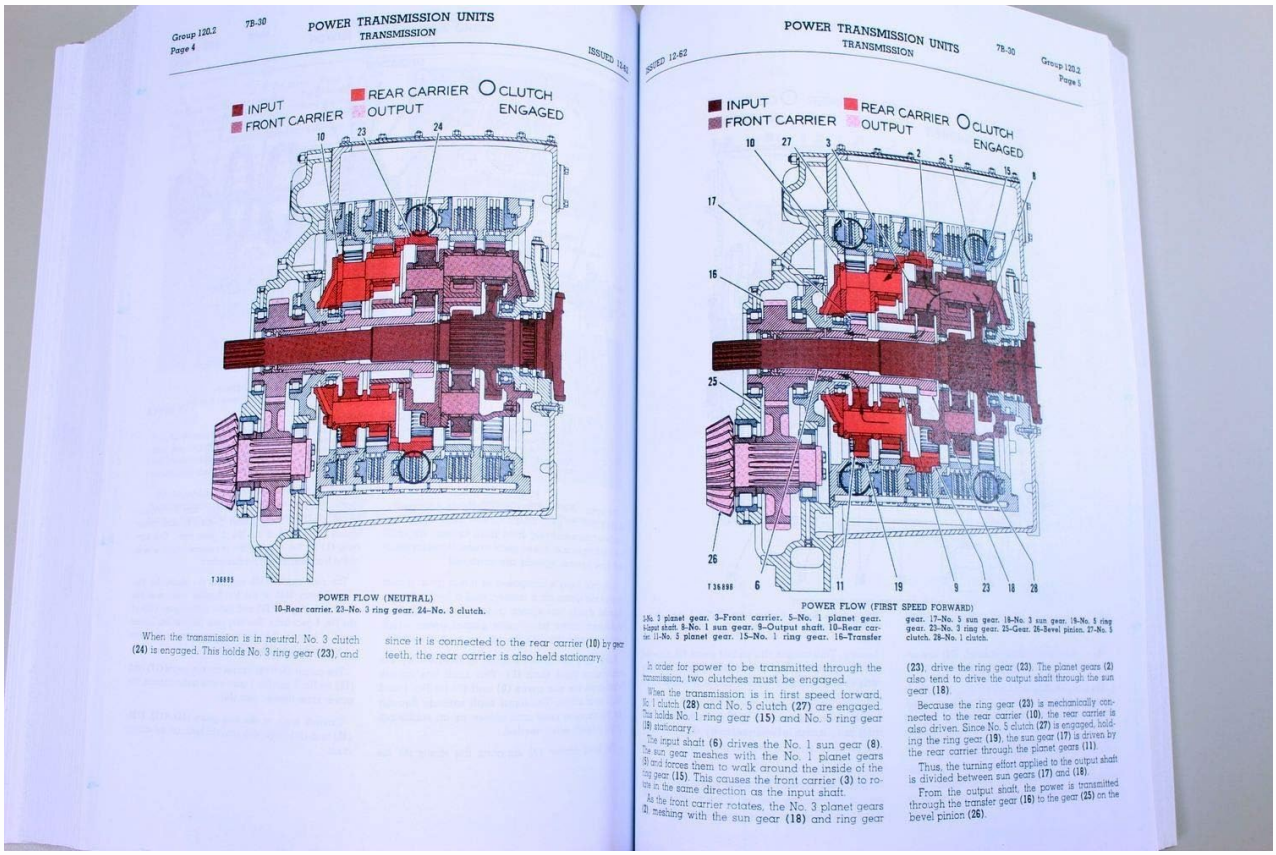
This image shows a section on Power Transmission Units, specifically focusing on Transmission Hydraulic Control. It includes detailed diagrams of the hydraulic system and descriptions of its operation, crucial for diagnosing and repairing transmission issues.

Engine Water Pump Service



A page dedicated to the Engine Water Pump, featuring exploded views, instructions for water pump disassembly, seal replacement, and preparing for impeller removal. This section is vital for cooling system maintenance and repair.

Power Transmission Unit Diagrams



This image presents detailed diagrams of the power transmission units, illustrating the power flow in both neutral and first speed forward configurations. Such diagrams are indispensable for understanding the internal workings and troubleshooting

transmission problems.

Specifications

This service manual is a quality reproduction, designed to be durable and long-lasting, often surpassing the durability of original vintage prints. It provides factory OEM authored content, ensuring accuracy and reliability for your Caterpillar D8 Tractor.

- **Manufacturer:** AgPubs
- **ASIN:** B07K6YNB1H
- **Applicable Model:** Caterpillar D8 Tractor
- **Manual Type:** Service / Repair / Overhaul / Troubleshooting

Quality and Durability

This manual is a high-quality reproduction, crafted to withstand the rigors of a workshop environment. It is generally more durable than the original vintage prints, ensuring that the valuable technical information remains accessible for years of service. Investing in a factory-authored manual helps avoid frustration and wasted time often associated with inferior aftermarket alternatives.

Support

For specific inquiries regarding the content or application of this service manual, refer to the introductory sections within the manual itself for guidance on its intended use. For general product support or purchasing inquiries, please contact the manual's publisher, AgPubs, or your authorized dealer.

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