Diesel

"CI" ~ I’LC: ~
INC. WITHOUT
THE AUTHORIZATION OF
CE::SS;ORS. ALLIS CHALMERS
AND IT'S SUCCESSORS
THE QUALITY OR ACCURACY OF THIS
CONTAINED
AND USED HEREIN
ARE THOSE OF OTHERS,
PTIVE SENSE TO REFER
TO THE PRODUCTS OF OTHERS.

Allis Chalmers
Service Manual

180 Gas & Diesel
185 Diesel
### Make: Allis Chalmers Model: 180

<table>
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<th>Years Made: 1968-1973</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-PTO: 64.01</td>
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<tr>
<td>HP-Engine: AC</td>
</tr>
<tr>
<td>Engine-Make: AC</td>
</tr>
<tr>
<td>Engine-Drawbar: 55.2</td>
</tr>
<tr>
<td>Engine-Fuel: DIESEL</td>
</tr>
<tr>
<td>Engine-Cyl(s)-CID: 6/301</td>
</tr>
<tr>
<td>Transmission-STD: CM</td>
</tr>
<tr>
<td>Fwd/Rev Standard: 8/2</td>
</tr>
<tr>
<td>Tires-Std Front: 7.50-16</td>
</tr>
<tr>
<td>Tires-Std Rear: 18.4-28</td>
</tr>
<tr>
<td>CAT II-3pt Hitch: True</td>
</tr>
<tr>
<td>CAT III-3pt Hitch: False</td>
</tr>
<tr>
<td>Hydraulics-Type: OPEN</td>
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<td>Hyd-Cap:</td>
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<tr>
<td>冷却容量: 18</td>
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<tr>
<td>Cab-Std A/C, Rops:</td>
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### FRONT OF TORQUE HOUSING FLANGE ON EITHER SIDE

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<thead>
<tr>
<th>Year</th>
<th>Beginning Serial Number</th>
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<tr>
<td>MAIN BODY OF TRACTOR</td>
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<tr>
<td>FRONT AND REAR WHEELS</td>
<td>ACCREAM</td>
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### Make: Allis Chalmers Model: 185

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<td>HP-PTO: 74.87</td>
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<td>HP-Engine: AC</td>
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<td>Tires-Std Rear: 16.9-28</td>
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<td>Cab-Std A/C, Rops:</td>
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### FRONT OF TORQUE HOUSING FLANGE ON EITHER SIDE

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DIESEL ENGINE

TRACTOR

HYDRAULICS

OPTIONAL EQUIPMENT & ACCESSORIES

IMPORTANT: This Service Manual Section has been supplemented to be applicable to both 180 and 185 Tractors with differences as noted.
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</tbody>
</table>

*Also found in Fuel Injection Data Section of this Manual
CONNECTING RODS (Cont'd)

4. Inside diameter of connecting rod bushing - finished bore after installation. ........................................... 1.2527" - 1.2532"

5. Outside diameter of connecting rod bushings ................................................................................................. Split type

6. Bearing bore (without bearing, cap in place and capscrews tightened to specified torque) ............................ 2.5620" - 2.5625"

7. Connecting rod bearing-to-crankshaft journal clearance (with capscrews tightened to specified torque) ........... .0009" - .0034"

8. Connecting rod width at lower end .................................................................................................................. 1.4935" - 1.495"

9. Side clearance-to-crankshaft journal ................................................................................................................ 1.0035" - 1.008"

10. Piston pin diameter ......................................................................................................................................... 1.2515" - 1.2517" - 1.2517" - 1.2517"

11. Piston pin bushing length in connecting rod ................................................................................................. 1.391" - 1.411" - 0.001" - 0.0017"

12. Piston pin to connecting rod bushing clearance ........................................................................................... 1.3750" - 1.3755" - 45 - 50 lbs. ft.

13. Torque for tightening connecting rod capscrews .......................................................................................... 1.3750" - 1.3755"

14. Bore in connecting rod for piston pin bushing ............................................................................................... 1.3750" - 1.3755"

EXHAUST VALVES

1. Valve lift (at valve w/.015" lash) .................................................................................................................... .1354"

2. Valve lift (at cam) .............................................................................................................................................. 2.246"

3. Seat Angle ......................................................................................................................................................... 3/12"

4. Valve seat contact width .................................................................................................................................. .018"

5. Valve lash (cold) ................................................................................................................................................. .018"

6. Valve lash (Normal operating temperature) ..................................................................................................... .015"

7. Head diameter .................................................................................................................................................. 1.439" - 1.449"

8. Overall length .................................................................................................................................................. 5.997"

9. Stem diameter .................................................................................................................................................. .3705" - .3710"

10. Valve must be recessed (in head) ..................................................................................................................... Minimum .0485"

EXHAUST AND INTAKE VALVE SPRING

1. Valve spring free length ..................................................................................................................................... 2.968" approx.

2. Valve spring length (valve closed) .................................................................................................................... 2.223"

3. Valve spring length (valve open) ....................................................................................................................... 1.836"

4. Spring load at 2.223" length ............................................................................................................................ 41 - 45 lbs.

5. Spring load at 1.836" length ............................................................................................................................. 73 - 81 lbs.

6. Install new spring when old spring is 5% below the low limit or 5% above the high limit.

INTAKE VALVES

1. Valve lift (at valve (w/.015" lash)) .................................................................................................................... .4005"

2. Valve lift (at cam) .............................................................................................................................................. .277"

3. Seat angle ......................................................................................................................................................... 30°

4. Valve seat contact width .................................................................................................................................. 3/32"

5. Valve lash (cold) .............................................................................................................................................. .018"

6. Valve lash (normal operating temperature) ...................................................................................................... .015"

7. Head diameter .................................................................................................................................................. 1.615" - 1.625"

8. Overall length .................................................................................................................................................. 5.996"

9. Stem diameter .................................................................................................................................................. .3715" - .3720"

10. Valve must be recessed (in head) ..................................................................................................................... Minimum .0345"

EXHAUST VALVE SEAT INSERT (Service Only Prior to Eng. S/N 2D-03143)

1. Seat angle ......................................................................................................................................................... 45°

2. Seat contact width ............................................................................................................................................ .002" - .002"

3. Seat run out ..................................................................................................................................................... .001" - .003"

4. Insert press fit ................................................................................................................................................... .002"

5. Insert O.D. not installed .................................................................................................................................. .4465" - .4485"

6. Bore in cylinder head for insert ........................................................................................................................ 1.4825" - 1.4835" - 1.4805" - 1.4815"

7. Depth of counterbore in cylinder head for insert (from bottom deck of head) ............................................... .4465" - .4485"

8. Oversize insert .................................................................................................................................................. .005" over standard

9. Insert in Production Engine: 2800 Prior to S/N 2D-03143 - NO; Eff. w/S N 2D-03143 YES

10. Insert available for service: 2800 YES;
**Cylinder Head**

1. Valve sequence (front to rear)
   - No. 1 cylinder
   - No. 2 cylinder
   - No. 3 cylinder
   - No. 4 cylinder
   - No. 5 cylinder
   - No. 6 cylinder

**Lubricating Oil Pressure Pump**

1. Radial clearance - gears to pump body
2. End clearance - pump gears
3. I.D. in pump body for oil pump drive shaft
4. O.D. of drive shaft
5. O.D. of idler shaft
6. I.D. in gear driver for drive shaft
7. Clearance - O.D. of drive shaft to bore in oil pump body
8. I.D. in lower pump body for idler gear shaft
9. I.D. in idler gear
10. Clearance - idler shaft to gear
11. I.D. in drive gear for drive shaft

**Water Pump**

1. Clearance - impeller to plate
2. Bearing:
   - Bearing O.D.
   - Bore in water pump body (for bearing)
   - Fit-bearing O.D. to body
3. Impeller:
   - Bore in impeller for shaft
   - Shaft diameter
   - Fit - shaft diameter to impeller bore
4. Hub - for water pump pulley:
   - Bore in hub for shaft
   - Shaft diameter
   - Fit - shaft diameter to hub bore

**Idler Gear Assembly**

1. Idler gear bearing:
   - Bearing bore (I.D. for idler shaft)
   - Shaft diameter
   - Fit - shaft to bearing
   - Bearing O.D.
   - Bore in idler gears
   - Fit-bearing O.D. to idler gear
   - Bore in cylinder block for idler gear shaft
   - Idler shaft O.D.
   - Fit-idler shaft to bore in cylinder block

**Hydraulic Pump Drive Assembly**

1. Hydraulic pump drive bearing:
   - Bearing bore (I.D. for hydraulic pump drive shaft)
   - Shaft diameter
   - Fit-shaft to bearing
   - Bearing O.D.
   - Bore in hydraulic pump drive housing
   - Fit-bearing O.D. to hydraulic pump drive housing
WATER PUMP INSTALLED
1. Volute
2. Water Pump
3. Front of Cylinder Block

The seal assembly is springloaded and is pressed into the pump body forming a leakproof seal at this point.

A carbon sealing surface is bonded to the seal assembly and contacts a ceramic seal insert bonded to the pump impeller. Proper positioning of impeller on shaft creates a 9 to 13 pound load on the seal assembly forming a tight seal.

A pulley hub, pressed on front end of water pump shaft, provides a mounting for the water pump pulley and fan blade assembly.

WATER PUMP REMOVAL

Drain the cooling system at radiator and cylinder block. Loosen clamps and remove inlet and outlet radiator hoses. Remove radiator assembly and radiator supports from tractor. Remove the alternator assembly from tractor. Remove capscrews, fan and pulley from water pump hub.

Remove by-pass tube from water pump body and thermostat housing. Remove capscrews and water inlet pipe from water pump body. Remove capscrews and water pump body assembly from the outlet sections, called the water outlet volute. The pump body is sealed to volute with an O-ring seal.

WATER PUMP VOLUTE INSTALLED
1. Volute
2. Cylinder Block
3. Timing Gear Cover

BACK SIDE OF VOLUTE
1. O-Ring
2. Cylinder Block
3. Volute

Remove capscrews and volute from cylinder block. The volute is sealed to cylinder block with an O-ring seal.
MAIN BEARING CAPS LOCATION

1. Rear Main Bearing Cap
2. Thrust Main Bearing Cap
3. Front Main Bearing Cap
4. Intermediate Main Bearing Caps
5. Bearing Cap Position Numbers

The crankshaft should turn freely after all lock bolts are properly torqued. Never file or shim a bearing cap to make the bearing shell fit; install new bearing shells if fit on the crankshaft is unsatisfactory.

g. Check end play of the crankshaft using a dial indicator as illustrated. Tap crankshaft with a soft headed hammer in one direction to take up slack or end play. After dial indicator is set in place, force crankshaft with a pry bar in opposite direction to obtain end play reading. The specified end play is 0.004" to 0.009" and must not exceed 0.015". The end play is controlled by thrust flanges on the number 4 main bearing shell. If end play is not within the specified range, replace the bearing shell.

h. Install connecting rod bearing caps and shells and check side clearance between connecting rods and crankshaft journals.

i. Install the oil pump and complete the rest of the installation by a direct reversal of the removal procedure. See headings "Crankshaft Removal" and "Crankshaft Inspection".

j. Fill the cooling system and fill the engine crankcase to the proper level with the specified oil.

CRANKSHAFT GEAR REMOVAL AND INSTALLATION

The crankshaft gear may be removed from the crankshaft by the use of tools similar to those shown in illustration. The gear may be removed either with the crankshaft installed in the engine or after the crankshaft has been removed.
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## BRAKE OPERATION
- Brake Pedal Adjustment
- Installation
- Removal

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- Disassembly
- Installation
- Removal

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- Adjust Differential Bearings
- Assembly
- Disassembly
- Install Ring Gear to Differential Housing
- Reinstall in Transmission Housing
- Specifications

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- Installation
- Removal
- Safety Start Switch Adjustment

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- Installation
- Removal

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## FINAL DRIVE & REAR AXLE
- Installation
- Removal

## FRONT AXLE SUPPORT
- Installation
- Removal

## FRONT END WEIGHT

## FRONT SUPPORT WITH INTERCHANGEABLE FRONT AXLE WITH INTERNAL STEERING RACKS
- Adjust Bearings on Steering Racks
- Install Front Support Assembly
- Install Power Steering Racks
- Install Steering Spindle Shaft
- Remove Front Support Assembly
- Remove Power Steering Racks
- Remove Steering Spindle Shaft

## FRONT WHEEL FOR DUAL & ROLL SHIFT
- Axle Front Wheels and Bearings
- Seal Kit

## GENERATOR - DELCOGTRON.
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- Checking Voltage Setting
- Closing Voltage
- Field Relay Unit
- Point Opening
- Voltage Regulator
- Voltage Setting

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- Removal
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180 AND 185 TRACTORS

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HYDRAULIC LIFT SYSTEM

TORSION BAR PRELOAD

Remove all draft loads from draft arms by unhitching from implement. Loosen locknut and turn preload adjusting screw in approximately two turns tight and back off screw until finger tight, but no preload. Hold screw in this position and tighten locknut.

"TRACTION BOOSTER" LINKAGE

The torsion bar adjustment must be completed before making TRACTION BOOSTER linkage adjustments. Remove implement if one is hitched to tractor. The lower draft arms must be free of all loads when making adjustments.

Place the tractor lift arm lever in the TRACTION BOOSTER position. Move Position Control lever all the way forward. Move the TRACTION BOOSTER lever all the way rearward.

Set engine speed at approximately 1000 RPM and turn both nuts on the TRACTION BOOSTER support rod an equal amount until the lift arms are as near horizontal as possible.

If it is desired to decrease, or increase the sensing valve travel in relation to torsion bar linkage movement, it can be accomplished by changing link to lever ratios.

Heavy draft loads with fully mounted implements provide the most deflection in the torsion bar and the greatest linkage movement. Therefore, it may be desirable to reduce the sensing valve travel by moving the spring-loaded linkage to the rear hole in the lever and/or placing TRACTION BOOSTER link rod in the lower hole in lever.

Lighter draft loads with semi-mounted implements provide a somewhat less deflection of the torsion bar which results in less linkage movement. Therefore, it may be desirable to increase the sensing valve travel by moving the TRACTION BOOSTER link rod to the upper hole in lever and/or moving the spring loaded linkage to the forward hole in the lever.

FEED-BACK LINKAGE

The TRACTION BOOSTER system is equipped with "feed-back" linkage. The "feed-back" linkage prevents the draft arms from raising too much or lowering too much when changes in draft arm loads occur.