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**LEFTHAND SIDE, ABOVE PLATFORM FLOOR, NEXT TO STEERING WHEEL**

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Record: 9-75304
Printed in USA

Compiled and Reproduced From Original by Jensales Inc.
**C-2 188 ENGINE SPECIFICATIONS**

**Type**  
CASE Full Diesel, A Cylinder 4 Stroke Cycle  
**No. of Cylinder Heads**  
1  
**Firing Order**  
1-3-4-2  
**Bore**  
3-3/16 Inches  
**Stroke**  
4-1/8 Inches  
**Piston Displacement**  
188 Cubic Inches  
**Compression Ratio**  
17.5 to 1  
**Oil Filter, Crankcase**  
Replaceable Full Flow Element Type.  
**Method of Starting Diesel Engine**  
Electric Starting Motor.

**Maximum Compression Pressures**  
ENGINE WARMED UP TO OPERATING TEMPERATURE  
CRANKING AT APPROXIMATELY 720 RPM  
Altitude  
Sea Level 1000 ft.  2000 ft.  3000 ft.  4000 ft.  5000 ft.  
Compression  
400 PSI  385 PSI  373 PSI  359 PSI  346 PSI  332 PSI  
**Allowable Variance Between Cylinders**  
20 Pounds

**CYLINDER SLEEVES**  
**Type**  
Replaceable Wet Type; Two Rubber "O" Ring Seals Carried on Each Sleeve.  
**Inside Diameter of Sleeve Bore**  
**Piston Clearance in Sleeve (At Skirt)**  
.002 to .005 Inch  
**Cylinder Sleeve Protrusion Above Block**  
.002 to .005 Inch

**PISTON AND PISTON PINS**  
**Piston Material**  
Aluminum  
**Piston Weight (Less Pin)**  
2.224 to 2.333 Pounds  
**Diameter of Piston at Top of Skirt** (Below Oil Ring Perpendicular to Pin)  
3.805 to 3.806 Inches  
**Diameter of Piston at Bottom of Skirt** (Perpendicular to Pin)  
3.807 to 3.808 Inches  
**Piston Pins**  
Full Floating Type; Held in Position With Snap Rings in Piston. Replace Bushing in Connecting Rod.  
**Piston Pin Length**  
3.147 to 3.167 Inches  
**Piston Pin Diameter**  
1.2497 to 1.2498 Inches  
**Piston Pin Fit in Piston**  
.0001 to .0004 Inch  
**Piston Pin Fit in Connecting Rod Bushing**  
.0002 to .0005 Inch

**PISTON RINGS**  
**Rings Per Piston**  
3 (2 Compression and 1 Oil)  
**Compression Rings**  
Width of Ring-Top (Keystone)  
.1225 to .124 Inch  
2nd  
.0930 to .0935 Inch  
Ring End Gap When Compressed  
3.8125 Inch Cylinder  
.015 to .023 Inch  
Side Clearance in Groove of 2nd Ring  
.0035 to .005 Inch  
**Oil Ring**  
To Install Replacement Ring, Follow Instructions Packed With Rings.  
Width of Ring  
.1285 to .1288 Inch  
Side Clearance in Groove  
.0000 to .0007 Inch

**CONNECTING RODS**  
**Connecting Rod Bushing**  
Replaceable Bronze Bushing. Replace Bushing Must be Reamed. Use 1.2500 to 1.2502 Reamer.  
**Piston Pin Hole Diameter in Rod (Without Bushing)**  
1.312 to 1.313 Inches  
**Inside Diameter of Pin in Rod**  
1.2500 to 1.2502 Inches; Install New Bushing If Inside Diameter Exceeds 1.2507 Inches.  
**Connecting Rod Bearing**  
Replaceable Precision, Steel Backed Aluminum Liners  
**Connecting Rod Cap Screws**  
Self Locking Type; No Lock Wires Required; May Be Used More Than Once.  
**Connecting Rod Length (Center to Center Between Pin Hole and Bearing Journal Hole)**  
7.0025 to 7.0030 Inches  
**Bearing Liner Width**  
1.125 Inches  
**Diameter of Crankshaft Journal Hole** (In Rod Without Liner)  
2.1670 to 2.1675 Inches  
**Inside Diameter of Bearing Liner (Standard Liner in Place in Rod and Capscrews Tight)***  
2.0625 to 2.0640 Inches  
**Diameter of Crankshaft Rod Journal**  
2.0605 to 2.0615 Inches  
**Clearance Between Rod Bearing and Crankshaft Journal**  
.001 to .0035 Inch; Install New Bearing Liners When Clearance Exceeds .006 Inch.  
**Undersize Bearing Liners Available for Service**  
.002, .010, .020, .030 Inch  
**Allowable Connecting Rod Bearing End Play**  
.005 to .011 Inch

**CRANKSHAFT AND MAIN BEARINGS**  
**Crankshaft**  
Balanced; Drilled to Provide Pressure Lubrication to Main and Connecting Rod Bearings.  
**Type Main Bearings**  
Replaceable, Precision, Steel Backed Aluminum Liners.  
**Bearing Capscrews**  
Self Locking Type; No Lock Wires Required. May Be Used More Than Once.  
**Bearing Taking End Thrust**  
Self Locking Type; No Lock Wires Required. May Be Used More Than Once.  
**Crankschaft End Play (Measured at Center Main Bearing)**  
.001 to .008 Inch; Install New Bearing Liner If End Play Exceeds .012 Inch.  
**Main Bearing Journal Diameter**  
2.873 to 2.874 Inches  
**Crankshaft Main and Connecting Rod Journal Bearings out of Round**  
Maximum .005 Inch  
**Inside Diameter of Main Bearing Liners (In Place and Capscrews Tight)**  
3.8748 to 3.8768 Inches  
**Clearance Between Main Bearing Liner and Journal**  
.0008 to .0008 Inch; Install New Bearing Liner When Clearance Exceeds .006 Inch.

**Width of 1st Main Bearing Liner (Front)**  
1.275 to 1.286 Inches  
**Width of 2nd and 4th Main Bearing Liners**  
1.990 to 1.990 Inches  
**Width of 3rd (Center) Main Bearing Liner**  
1.371 to 1.373 Inches  
**Width of 5th (Rear) Main Bearing Liner**  
1.5575 to 1.5675 Inches  
**Width Between Crankshaft Main Bearing Cheeks**  
5th  
1.745 to 1.755 Inches  
2nd, 4th  
1.185 to 1.189 Inches  
3rd (Center)  
1.374 to 1.377 Inches  
**Width Between Crankshaft Rod Bearing Journal Cheeks**  
1.3105 to 1.3145 Inches  
**Undersize Main Bearing Liners Available for Service**  
.002, .010, .020, .030 Inch
Section 2013

CYLINDER HEAD AND VALVES
148, 159, 188 AND 201 SPARK IGNITION ENGINES

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CASE CORPORATION
Rec. 9-80512

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Section 2023

ENGINE BLOCK ASSEMBLIES

201G, 188G, 159G, 148G SPARK IGNITION ENGINES

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ROOSA MASTER
MODEL DB FUEL INJECTION PUMPS
188 SERIES DIESEL ENGINES

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Section 4019

BREAK-AWAY COUPLINGS AND PORTABLE HYDRAULIC CYLINDERS

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PUMP RELIEF VALVE ADJUSTMENT
(Refer to Figure DD-2)

1. Install the Hydra-Sleuth Tester as illustrated with the quadrant lever in the forward position.
2. Move the volume range selector to 10 GPM capacity.
3. Fully open the load valve by turning it to the left.
4. Start the engine and operate at 1500 RPM. Move the quadrant lever to the full raise position.
5. Observe the temperature gauge on the Hydra-sleuth. When the temperature reaches 120°F., gradually close the load valve by turning to the right.
6. Observe the pressure gauge reading. The pressure gauge should read between 1450 - 1550 PSI when the relief valve opens. When the relief valve pressure is observed, open the load valve by turning it to the left.

**IMPORTANT** Do not continue to leave the load valve closed as the temperature will rise and damage to the relief valve could occur.

7. If the pressure gauge registers below 1450 PSI, remove the adapter housing and turn the adjusting plug in to increase pressure (1/4 turn equals 100 PSI).
8. If the pressure gauge registers above 1550 PSI, remove the adapter housing and turn the adjusting plug out to decrease pressure (1/4 turn equals 100 PSI).
9. When the adjustment is completed, stake the adjusting plug in two places.

Figure DD-2

NOTE: The CASE CORPORATION reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.
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SPECIFICATIONS

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  Valve Spool in High Speed Lift 10 GPM
Type of Oil ...................................................... Case TCH Oil.
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SPECIFICATIONS

Power Pump Oil Flow --------------------------------------------- 6.5 GPM at 1200 PSI (oil Temperature of 150°F) at Full Governed No Load Engine RPM.
Power Pump Relief Valve Pressure ------------------------------- 1500 to 1700 PSI at Engine Speed of 1500 RPM.
Type of Oil ------------------------------------------------------ Case TCH
Front Wheel Toe In Adjustment ----------------------------------- 1/4" Cap
Capacity of Pump Reservoir -------------------------------------- 1 Quart
Capacity of System ----------------------------------------------- 2.5 Quarts
POWER STEERING

Removing Torque Motor from Tractor
(Refer to Figures 00-1 and 00-2)

NOTE The Steering Valve can easily be removed while the torque motor is in place in the tractor. Clean the area around the valve thoroughly before removing.

1. Drain radiator, lock brakes and block up tractor front end.
2. Remove hood, grille screens, radiator side members, grille cap and cultivator support frame.
3. Disconnect the two hose lines.
4. Drive the roll pin out of the universal joint.
5. Loosen the lower radiator bracket, if necessary.

SINGLE OR DUAL FRONT WHEELS

6. Remove the single front wheel assembly or the dual front wheel spindle assembly.
7. The six bolts that hold the torque motor in place can then be removed and the torque motor lifted out.

ADJUSTABLE FRONT AXLE

8. Disconnect the front axle pedestal from the radiator bracket.
9. Loosen the capscrews that hold the radius rod bracket to the radiator bracket.
10. Disconnect the steering arm from the torque motor.
11. Raise the tractor enough so there is clearance to remove all six of the torque motor mounting bolts.
12. Lift the torque motor out of the tractor.

Removing Gear Housing from Torque Motor
(Refer to Figures 00-3 and 00-4)

IMPORTANT

When loosening the tube fittings, hold the inlet and outlet connectors with a wrench so the connectors cannot turn with the tube fittings and cause damage.

1. Using an Allen Head wrench, remove plug and drain fluid. If the air bleed tube is used, loosen the tube and remove it.
2. Remove housing top cover and “O” ring.
3. Remove thrust ball retaining plug, thrust ball and saddle.
4. Remove the tubes from the valve to the housing.
5. Remove the two bolts from the gear housing and lift the housing off the torque motor valve body.
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FRONT AXLES
Disassembly-Assembly-Adjustments

DUAL FRONT WHEELS

Assembly and Adjustment Notes:
Lubricate the top bearing with SAE 90 and the lower bearing with No. 1 gun grease (lithium base) before assembly, tighten the adj. nut until a drag is felt while rotating the spindle shaft, then back off nut to first slot and lock with tang washer.

ADJUSTABLE FRONT AXLES

VT3961 bushing used on early models had inside Dia. 1.379 (when installed) and oil hole. Also could be reamed if necessary.

Lubricate with No. 1 gun grease (lithium base). Tighten nut and add shims if necessary to remove spindle shaft end play.

A36637 bushing used on later models had inside Dia. 1.371 (when installed) and could be reamed if necessary.

RADIUS ROD REAR BUSHINGS

Inside Dia. .861 (when installed) can be reamed if necessary. Lubricate with No.1 gun grease (lithium base).

RADIUS ROD FRONT BUSHINGS

Inside Dia. 1.7265 (when installed) can be reamed if necessary. Lubricate with No. 1 gun grease (lithium base).

Figure 4"O"-3. RADIUS ROD REAR BUSHINGS

Figure 4"O"-4. Adjustable Front Axle Radius Rod Pivot Pin Assemblies

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## INTRODUCTION

Section F contains the specifications and wiring diagrams necessary to diagnose and make minor adjustments on the electrical components on the Case Wheel Tractors.

All major adjustments and overhaul of electrical components should be performed by an Authorized Electrical Service Station (Delco-United Motors Service or Auto-Lite Service Stations) where specialized equipment and trained personnel are available.

**DO NOT ATTEMPT EVEN MINOR ELECTRICAL ADJUSTMENTS WITHOUT THE AID OF PROPER TEST EQUIPMENT**

**NOTE** Gas engines before Serial No. 8233766 and Diesel engines before Serial No. 8232882 used a positive grounded system. These Serial Numbers and after use a negative grounded system.

---

## BATTERY SERVICE AND INSPECTION

**IMPORTANT** Working with storage batteries all exposed metal surfaces are "live". Never lay a metal object on top of a battery as a short circuit may result. Sparks or open flame must be kept away from batteries due to the presence of explosive gas in and around the batteries while they are being charged or in use.

The sulfuric acid or electrolyte present in a battery is very harmful to your eyes, skin and clothing. If contact is made with it, wash it with a weak solution or baking soda and water. This will neutralize the acid.

**Visual Inspection**

Check the battery terminals and cables for dirty or corroded conditions which will cause high resistance, resulting in undercharged batteries and very poor cranking speed.

The battery tray, hold down terminals and cable ends must be cleaned when contaminated with baking soda and water. This will help prevent self discharge of batteries. After cleaning and drying a thin coating of vasoline, light cup grease or paint will help prevent contamination.

A cracked or leaking battery case will let the electrolyte leak out and cause damage to the equipment, a battery in this condition should be replaced. When just the top sealing compound is leaking the battery can be resealed.

Vent holes in the filler caps should always be kept open to let the battery gases escape. Never remove battery caps except to add water.

The electrolyte level should be checked each week. Never let the level drop to a point where the plates are exposed. Pure or distilled water should only be added when the electrolyte level is low. **DO NOT OVERFILL**, refer to Figure F-1.

Normal water consumption would be approximately 1 oz. every 60 hours of operation. If it is greater, either the case is leaking or regulator is overcharging and must be adjusted.
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# Section 8014

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