



Allis Chalmers

Service Manual

HD-9

Diesel Crawler

Service Manual

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AC-S-HD9

SUBJECT INDEX

SUBJECT	PAGE	SECTION
Description and Specifications	1	1
Engine Fuel System	15	2
Engine Air Intake System	43	3
Engine Cooling System	68	4
Engine Lubricating System	81	5
Engine Controls and Governor	94	6
Electrical System	104	7
Instruments	112	8
Engine	115	9
Engine Clutch and Clutch Brake	174	10
Transmission and Bevel Gear	187	11
Steering Clutches and Controls	208	12
Steering Brakes	219	13
Final Drives	224	14
Truck Frames	241	15
Draw Bar	259	16
Tracks	261	17
Main Frame and Equalizer Spring	266	18
Fender and Seat Group	270	19
Special Equipment	272	20
General Maintenance Instructions	282	21
Fits and Tolerances	287	22
Trouble Shooting	295	23
Special Tools	313	24

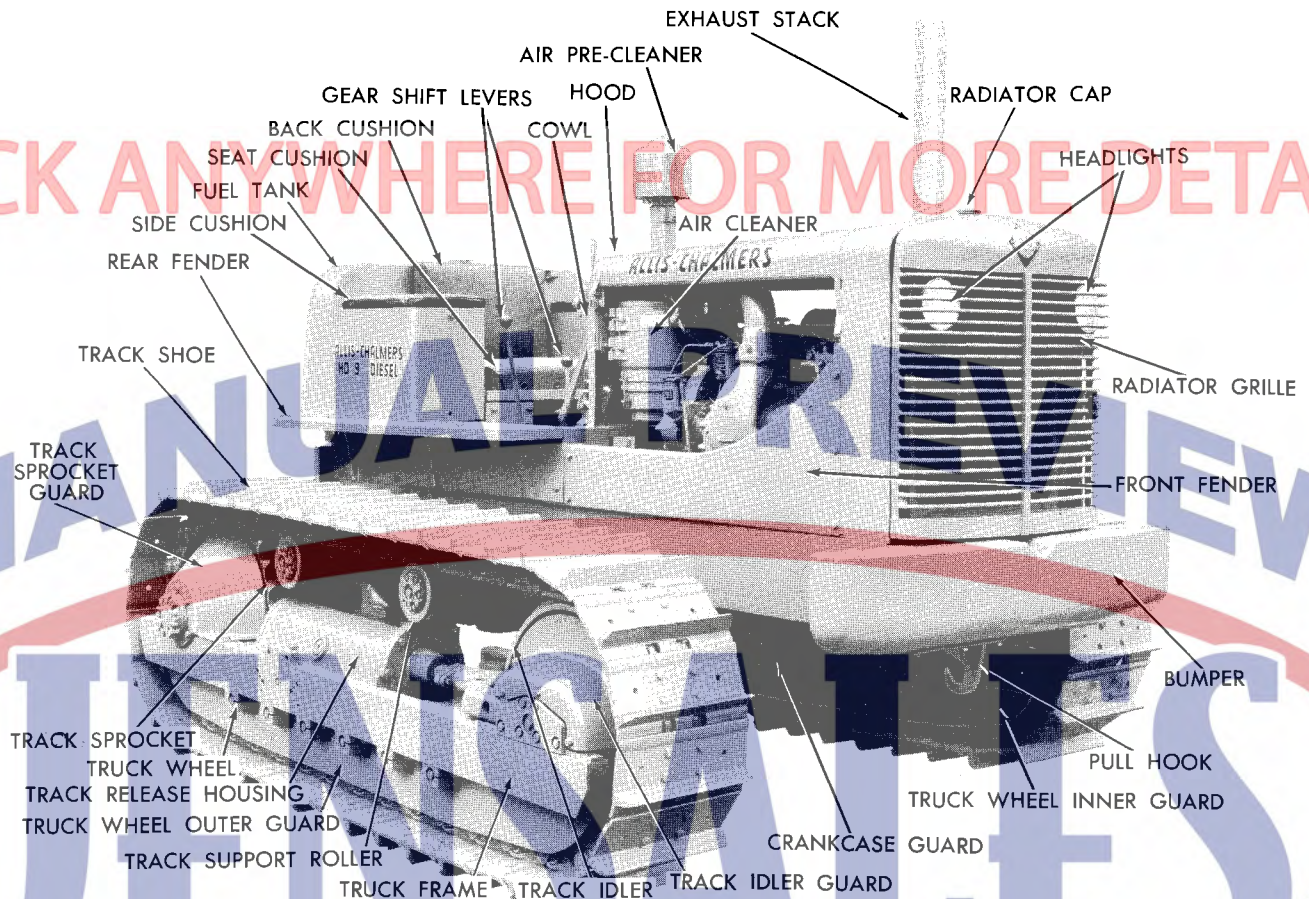


Fig. 1 — Model HD-9B Tractor

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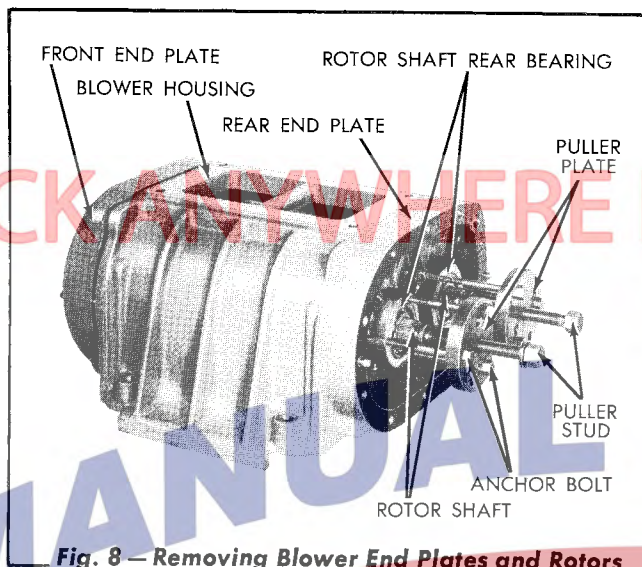


Fig. 8 — Removing Blower End Plates and Rotors

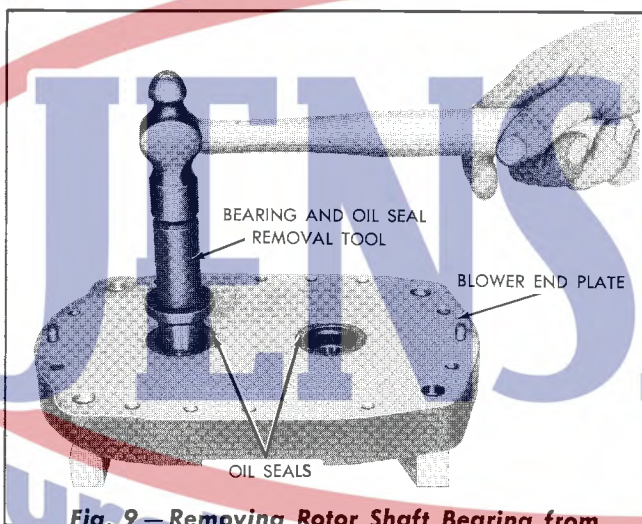


Fig. 9 — Removing Rotor Shaft Bearing from End Plate

end plate assembly as a unit from the blower housing. Assemble the puller plates on the front end plate and press the rotor shafts out of the rotor shaft front bearings in the same manner as the shafts were pressed out of the rotor shaft rear bearings.

8. Remove the rotor shaft bearings from the blower end plates by using a bearing remover tool as shown in Fig. 9. Insert the bearing remover tool through the oil seal from the inner face of the blower end plate, so that the pilot of the tool enters the bore in the inner race of the bearing and the shoulder of the tool rests against the bearing inner race. Support the end plate on blocks about two (2) inches high and drive the bearing out of the end plate. Follow the

same procedure and remove all four (4) bearings.

9. Remove the rotor shaft oil seals from the blower end plates. The oil seals may be removed from the end plates at the same time that the bearings were removed by continuing to drive down on the remover tool shown in Fig. 9; the collar of the remover tool will contact the oil seal and drive it out of the end plate.

E. Inspection of Blower Parts

After the blower has been disassembled, wash all parts in clean solvent and dry with compressed air.

1. Wash the rotor shaft bearings by rotating them in a pan of clean solvent or fuel until they are free from grease and oil. Blow the dirt and fuel from the bearings with dry compressed air, while rotating the bearings by hand. **CAUTION: Do not spin the bearings with air pressure.** Repeat the cleaning operation until all foreign substance has been removed. After cleaning, thoroughly lubricate the bearings with clean engine oil and rotate them by hand to inspect for roughness. The double-row bearings used at the rear of the rotors are pre-loaded and have no end play; in fact a new double-row bearing will seem to have considerable resistance to motion when revolved by hand. Due to blower rotor expansion and contraction in relation to temperature during engine operation, the roller bearings used at the front of the rotors are designed for end movement within the bearing proper. The inner races and the rollers of the bearings are free to move endwise in relation to the outer races, as the outer races are greater in width than the bearing rollers. If the balls, rollers, or races of the rotor shaft bearings are discolored instead of having brightly polished surfaces, the bearings have probably been overheated at some time and are unfit for further service. Discard any bearings that have tight or rough spots, or that are worn or discolored from heat.

2. The inspection for the condition of the rotor shaft oil seals in the end plates, with the en-

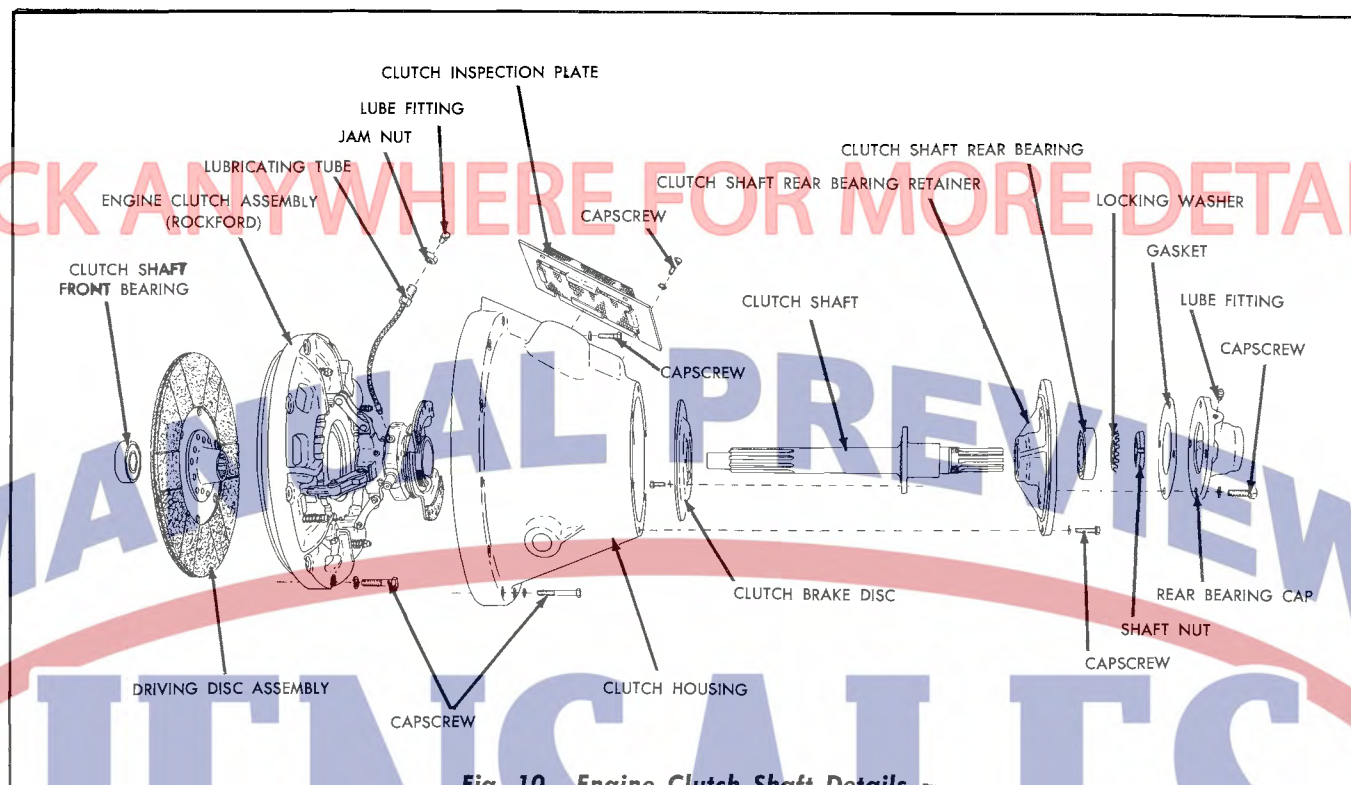


Fig. 10 — Engine Clutch Shaft Details

9. Inspect the four (4) pressure plate retracting springs for breakage and replace if necessary.
10. Inspect the face of the flywheel and make certain the surface is flat and smooth. If the face is scored and "heat checked" the flywheel may be machined smooth; replace the flywheel if more than 1/16" stock must be removed.
11. Inspect the clutch shaft front bearing (pilot bearing) for wear and lubrication. If the bearing shows signs of improper lubrication, install a new oiling wick assembly, refer to "REPLACEMENT OF ENGINE CLUTCH SHAFT FRONT BEARING OILING WICK," in Topic 5, Section IX).
12. Inspect the clutch shaft rear bearing for wear and roughness. Replace the bearing if it is worn excessively or if it does not turn smoothly when rotated by hand.
13. Inspect the clutch shaft. If the shaft is excessively worn at the location of the clutch shifting sleeve, or if the splines of the shaft show excessive wear, the shaft must be replaced.
14. Inspect the lubricating tube for the clutch shifting bearing and replace the tube if necessary.
15. Inspect the clutch brake plate assembly. If the brake plate facings are worn to the extent that the rivet heads may score the clutch brake disc, the facings must be replaced. Inspect the clutch brake disc for wear and scoring. Slight scoring or uneven wear can be removed by machining, however, if the disc is worn or scored excessively, replacement of the disc is necessary.

K. Assembly of Engine Clutch

1. "ROCKFORD" Clutch

Refer to Figs. 1 and 11 and assemble the engine clutch by direct reversal of the disassembly procedure. **IMPORTANT:** When installing the pins used to connect the actuating lever to the adjusting ring plate, make certain the pins fit tightly in the plate. If the holes in the adjusting ring plate are worn, the plate and pins should be replaced with new parts. After the pins are installed in the adjusting ring plate, stake the plate at the pin locations so that the pins cannot

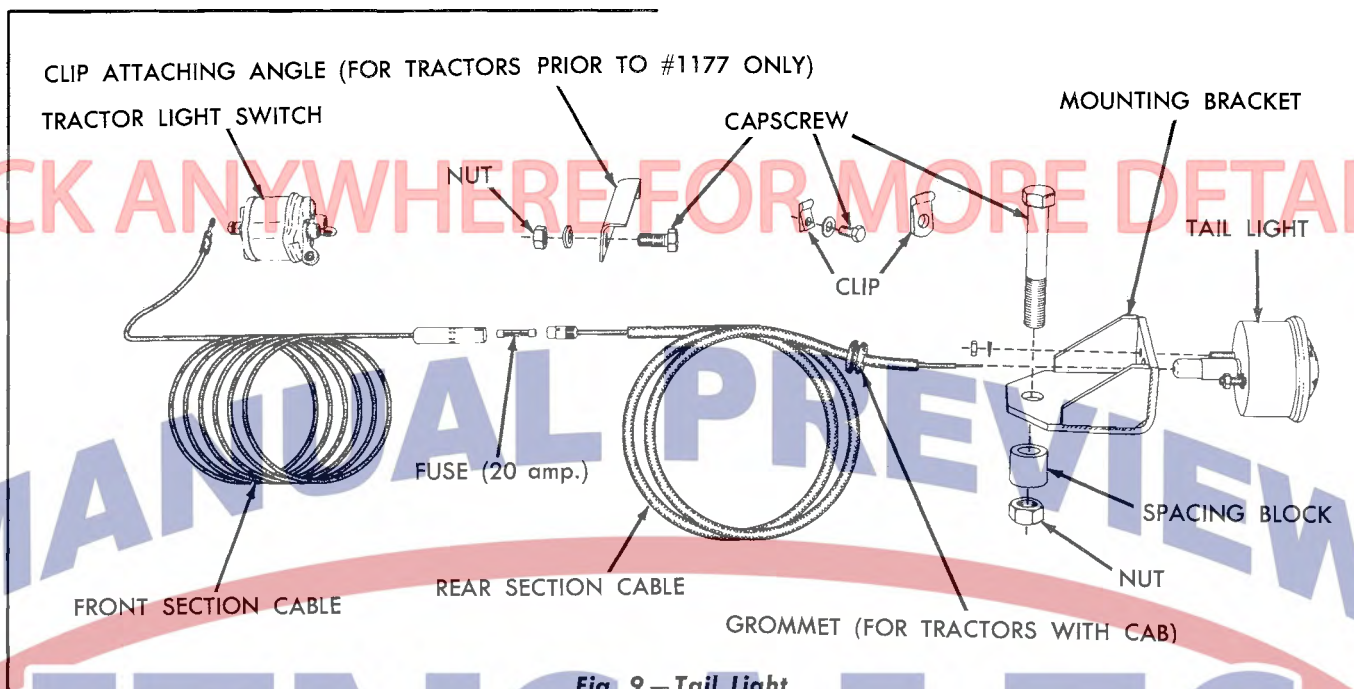


Fig. 9 — Tail Light

8. POWER PULLEY AND POWER TAKE-OFF

A. Power Pulley

The power pulley is mounted to the rear of the steering clutch and final drive housing and is driven by the transmission top shaft. The pulley is 13 $\frac{3}{8}$ inches in diameter and rotates clockwise (viewed from left side of tractor) at 929 R.P.M. at 1600 R.P.M. engine speed.

B. Straight Rear Power Take-Off

The straight rear power take-off is mounted to the rear of the steering clutch and final drive housing

and is driven by the transmission top shaft. The output shaft rotates counterclockwise (viewed from rear of tractor) at the same speed as the engine.

C. Reversible Reduction Power Take-Off

The reversible reduction power take-off is mounted to the rear of the steering clutch and final drive housing and is driven by the transmission top shaft. The output shaft rotates clockwise at 430 R.P.M. and counterclockwise at 335 R.P.M. at 1600 R.P.M. engine speed.

9. MISCELLANEOUS

In addition to the above special equipment, several other items, as described below, are available.

A. Radiator Curtain

The radiator curtain is used with other special equipment for cold weather operation. Its purpose is to help control the engine operating temperature. The curtain cannot be used when the tractor is equipped with a pusher type fan.

B. Engine Pre-Heater

The pre-heater is a portable "DIESEL" fuel torch equipped with an electric blower. It is used to pre-heat the engine internally under conditions of extreme cold.

C. Engine Air Pre-Cleaner Extension

The pre-cleaner extension is for use when the tractor is operated under extremely dusty or sandy conditions.

Description

Size of New Parts

B. Pistons

1. Piston length	6.00"	
2. Piston pin length	3.610" to 3.620"	
3. Inside diameter of piston pin bushing	1.5025" to 1.503"	
4. Outside diameter of piston pin	1.4996" to 1.500"	
5. Clearance — pin and piston bushing	.0025" to .0034"	.010"

C. Piston Rings — Compression

1. Number of rings and width	4 — 1/8"	
2. Gap between ends — fitted	.025" to .040"	
3. Clearance in groove		
Upper ring	.010" to .0125"	.022"
2nd ring from top	.008" to .0105"	.015"
3rd and 4th rings from top	.006" to .0085"	.013"

D. Piston Rings — Oil Control

1. Number of rings and width	2 — 3/16" three piece ring	
2. Gap between ends — fitted	.010" to .020"	.040"
3. Clearance in grooves	.0015" to .0055"	.008"

E. Crankshaft

1. Diameter of crank pin journals	2.750" + .000", — .001"	
2. Width between cheeks	2.125" + .002", — .002"	
3. Diameter of main bearing journals	3.500" + .000", — .001"	
4. Width between cheeks	1.500" + .005", — .005"	
5. Crankshaft journals may be ground	.010", .020", and .030"	
6. Undersize bearings available for service	.002", .010", .020", and .030"	
7. Crankshaft end play	.004" minimum	.018"
8. Oversize rear main thrust washers available for service	.005"	

F. Main Bearings

1. Number of main bearings in engine	5	
2. Diameter — inside of shell	3.502" + .001", — .000"	
3. Diameter of crankshaft main bearing journals	3.500" + .000", — .001"	
4. Clearance — shell and journal	.002" to .004"	.006"
5. Width of shell	1-3/16"	
6. Undersize bearings available for service	.002", .010", .020", and .030"	