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MANUAL PREVIEW

Caterpillar

Service Manual

4" Bore 4 Cylinder Engine

For D311 Engine Set

D2 Crawler S/n 4U & 5U

#122 Motor Grader

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MANUAL PREVIEW

Caterpillar

REG. U.S. PAT. OFF.

Diesel Engines

(4" BORE 4-CYLINDER)

D311 INDUSTRIAL

D311 ELECTRIC SET

D311 MARINE

D2 TRACTOR

NO. 212 MOTOR GRADER

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Fuel Pump Plunger

Length	2.6575-2.6577-in.
Maximum wear	.005 -in.

Fuel Injection Pump Timing	12° BTC
----------------------------------	---------

Flywheel Housing

Bore run-out	.010 -in.
Face run-out	.010 -in.
Nut torque	150 lb. ft.

Flywheel Run-out

Outside diameter (Maximum)	.006 -in.
Face (Maximum)	.006 -in.

Cylinder Head

Tighten nuts (see text for sequence):	
First time (1/2" nuts)	45 lb. ft.
9/16" nuts	70 lb. ft.
Second time (1/2" nuts)	60 lb. ft.
9/16" nuts	95 lb. ft.
Expected tightness after run-in	
(1/2" nuts)	55 lb. ft.
(9/16" nuts)	90 lb. ft.

Accessory Shaft

End clearance	.003 - .010 -in.
Maximum	.025 -in.

Compression Release Clearance (non-adjustable)

Between rocker arm button and compression release shaft	.120 - .125 -in.
--	------------------

Timing Gear Housing

Capscrew torque	35 lb. ft.
-----------------------	------------

Hour Meter

Bearing clearance (Maximum)	.012 -in.
-----------------------------------	-----------

Pre-combustion Chamber

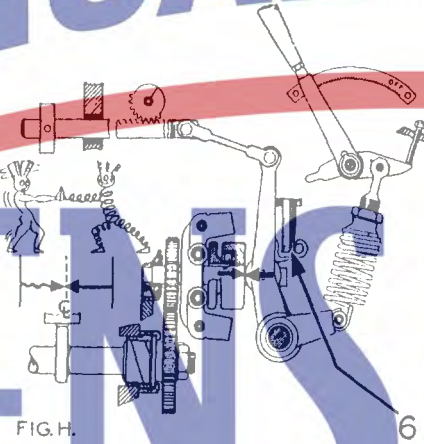
Torque	150 lb. ft.
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The following illustration shows the numbering of the cylinders and of fuel injection pumps.



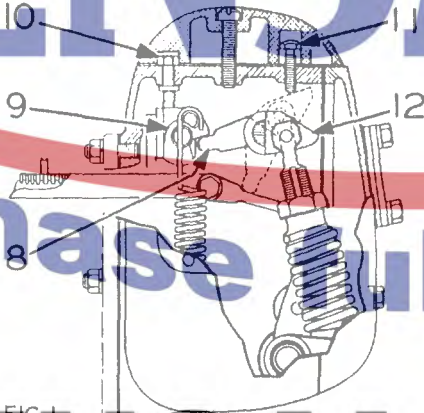
ENGINE UNDER FULL LOAD

Fig. G. A further increase in load results in additional movement of the rack to provide additional fuel. The stop pin (7) is in contact with the torque spring (6) or stop. As long as the load remains constant the fuel remains constant.



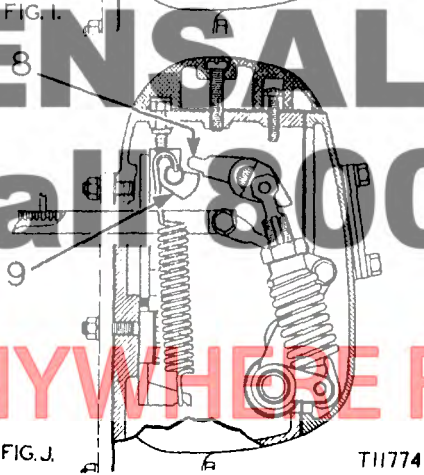
ENGINE OVERLOADED

Fig. H. If additional load is imposed the engine speed will start to drop, reducing the force of the weights, and allowing the governor spring force to compress the torque spring to give a further increase in the amount of fuel being injected.



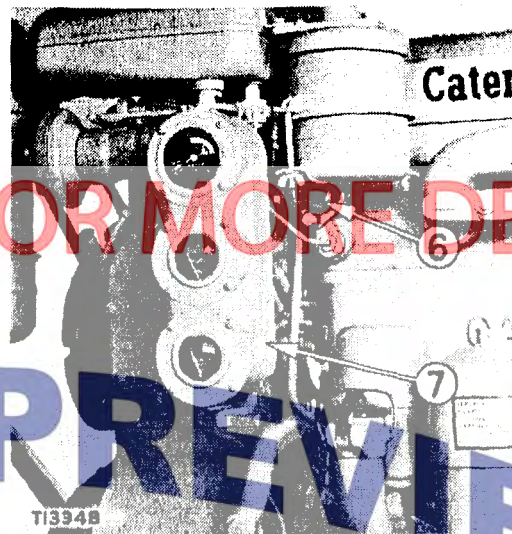
HIGH AND LOW IDLE ADJUSTMENTS

Fig. I. When the low idle stop lever (8) is in contact with the spring-loaded stop (9) as illustrated, the engine operates at low idle. The screw assembly (10) controls the low idle setting. When the lever (12) contacts the high idle screw (11) which is also adjustable, the engine operates at the high idle speed.



GOVERNOR SHUT-OFF POSITION

Fig. J. When the governor control is in the shut-off position, it causes the stop lever (8) to pivot the spring-loaded stop (9) and it will hold the fuel rack in the "fuel off" position.



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DISCONNECTIONS FOR STARTING ENGINE REMOVAL

- 1-Fumes disposal tube. 2-Air inlet pipe. 3-Compression release rod.
4-Capscrew. 5-Nut. 6-Elbow. 7-Gauge panel.

Starting Engine Installation

Before installing the starting engine, clean the gasket surfaces on the top of the Diesel engine flywheel housing and on the bottom of the starting engine block. Cement a new gasket in place on the flywheel housing and allow it to set. Coat the top of the gasket with heavy grease.

Attach cables to the starting engine in a manner to balance the engine, to permit it to be lowered into place so as not to damage the gasket. Guide the starting engine down over the dowels in the flywheel housing and also engage the teeth of the clutch idler gear with the starter pinion



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LIFTING STARTING ENGINE
FROM THE FLYWHEEL HOUSING

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