



**Massey Harris
Massey Ferguson
Service Manual
Perkins Diesel Engines
4.108, 4.107 & 4.99**

Service Manual

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MH-S-ENG4.108

SERVICE MANUAL

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Perkins Diesel
Engine
4.108 Series

MANUAL PREVIEW



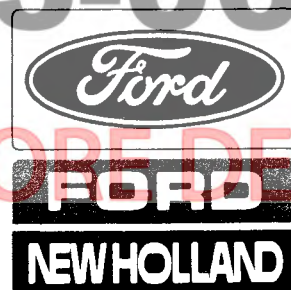
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Recommended Torque Tensions

The following torque figures will apply with the components lightly oiled before assembly:—

	4.107 and 4.99			4.108		
	lbf ft	kgf m	Nm	lbf ft	kgf m	Nm
Cylinder Head Nuts	42	5,81	57	60	8,3	81
Connecting Rod Setscrews	42	5,81	57	42	5,81	57
*Main Bearing Setscrews	85	11,5	115	85	11,5	115
Flywheel Setscrews	60	8,3	81	60	8,3	81
Idle Gear Hub Setscrews	36	4,98	49	36	4,98	49
Crankshaft Pulley Setscrew — 1.56 in (39,6 mm) long	150	20,7	203	150	20,7	203
with 1.875 in (47,6 mm) dia. washer						
Crankshaft Pulley Setscrew — 1.68 in (42,7 mm) long				190	26,3	250
with 1.75 in (44,6 mm) dia. washer (Cadmium Plated)						
Crankshaft Pulley Setscrew (Phosphated)				230	31,5	310
Atomiser Securing Nuts	12	1,7	16	12	1,7	16
High Pressure Fuel Pipe Nuts	15	2,1	20	15	2,1	20
Dynamo Pulley Retaining Nut	20	2,8	27	20	2,8	27
Alternator Pulley Retaining Nut	30	4,1	41	30	4,1	41
Thermostart Unit	10	1,38	13	10	1,38	13
Thermostart Insulating Adaptor	10	1,38	13	10	1,38	13

*The tab and shim washers may be discarded where used on earlier engines, but the setscrews must be tightened to the torque loading indicated.

Service Wear Limits

The following "wear limits" indicate the condition when it is recommended that the respective items should be serviced or replaced.

Cylinder Head Bow	Longitudinal	0.006 in (0,15 mm)
Cylinder Head Bow	Transverse	0.003 in (0,08 mm) concave
		0.005 in (0,13 mm) convex
Maximum Bore Wear (when new liners are necessary)		0.006 in (0,15 mm)
Crankshaft Main and Big End Journal Wear		0.001 in (0,03 mm)
Crankshaft Main and Big End Journal Ovality		0.0005 in (0,01 mm)
Maximum Crankshaft End Float		0.020 in (0,51 mm)
Valve Stem to Guide Clearance — inlet		0.005 in (0,13 mm)
Valve Stem to Guide Clearance — exhaust		0.006 in (0,15 mm)
Valve Head Thickness at outer edge		0.025 in (0,64 mm)
Rocker Clearance on Shaft		0.005 in (0,13 mm)
Camshaft Journals — Ovality and Wear		0.002 in (0,05 mm)
Camshaft End Float		0.020 in (0,51 mm)
Idle Gear End Float		0.010 in (0,25 mm)
*Valve Head Depth below Head Face—inlet and exhaust		0.048 in (1,22 mm)

*Where vehicle engines have to conform with the smoke density regulation B.S.AU 141a: 1971, then the valve depths must not exceed production limits as given on page B.8.

Manufacturing Data and Dimensions

The data regarding clearances and tolerances are given for personnel engaged upon major overhauls.

Further information can be obtained on request from the Technical Services Department, Perkins Engines Ltd., Peterborough.

CYLINDER BLOCK

Total Height of Cylinder Block		
between Top & Bottom Faces	4.108, 4.107, 4.99	9.936/9.939 in (252,374/252,451 mm)
Parent Bore Dia. for Cylinder Liner	4.108	3.249/3.250 in (82,525/82,550 mm)
Parent Bore Dia. for Cylinder Liner	4.107, 4.99	Wet Liners
Main Bearing Parent Bore	4.108, 4.107, 4.99	2.3950/2.3955 in (60,833/60,846 mm)
Camshaft Bore Dia. No. 1	4.108, 4.107, 4.99	1.794/1.7955 in (45,568/45,606 mm)
Camshaft Bore Dia. No. 2	4.108, 4.107, 4.99	1.784/1.787 in (45,314/45,390 mm)
Camshaft Bore Dia. No. 3	4.108, 4.107, 4.99	1.776/1.778 in (45,110/45,161 mm)
Tappet Bore Dia.	4.108, 4.107, 4.99	0.562/0.56325 in (14,275/14,307 mm)
Fuel Pump Drive Hub Bearing		
Bore Dia.	4.108, 4.107, 4.99	1.8125/1.8141 in (46,037/46,078 mm)



E4

4. Uncouple the water outlet connection on the front of the cylinder head.
5. Remove the air cleaner and place somewhere level read for servicing.
6. Disconnect the fuel pipe and electrical connection to the starting aid located in the induction manifold. (Refer to Fig. E.1).



E6

7. Remove the cylinder head cover together with the breather pipe.
8. Unscrew the oil feed pipe to the rocker shaft at the cylinder head end. (Refer to Fig. E.2 for its location).
9. Remove the eight rocker shaft bracket securing nuts **evenly** and remove the rocker shaft complete with the oil feed pipe. (Refer to Fig. E.3).



E5



L4

1. Relief Valve Housing
2. Rotor Housing
3. Hole for Locating Screw
4. Pump Drive Gear
4. Tap back the tab washer locking the location screw and support the lubricating oil pump assembly (if the engine is the normal way up), whilst the location screw is removed.
5. Remove the lubricating oil pump assembly from the cylinder block as shown in Fig. L.2.

L5

2. Install the drive shaft complete with inner rotor, then the outer (driven) rotor ensuring that the face which carries the chamfered edge enters the pump body first (Refer Fig. L.5), now carry out the three following dimensional checks.
 - (a) Check the clearance between the inner and outer rotors. (Refer Fig. L.6).
 - (b) Check the clearance between the outer rotor and the pump body (Refer Fig. L.7).
 - (c) Check the clearance between the rotors and the end cover assembly using a straight edge and feeler gauges (Refer Fig. L.8).

To Dismantle the Oil Pump

1. Remove the delivery and suction pipes. The pump will now be as shown in Fig. L.4.
2. Withdraw the drive gear by means of a suitable puller.
3. With the pump suitably held in a vice, (using protective clamps) remove the four securing set-screws and remove the end cover assembly. N.B. This end cover assembly also incorporates the pressure relief valve housing.
4. Withdraw the drive shaft complete with inner rotor. N.B. It is advisable not to remove this inner rotor from the shaft as this item is not available as a separate part (See later note).
5. Withdraw the outer rotor.

Inspection

1. Inspect for signs of wear, cracks, pitting, etc.

L6

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