
Perkins 4.41 Series

Model LM

WORKSHOP MANUAL

**4 cylinder, naturally aspirated, diesel engine for
agricultural and industrial use**

Publication TPD 1322E, Issue 3.

© Proprietary information of Perkins Engines Company Limited, all rights reserved.

The information is correct at the time of print.

Published in February 1997 by Technical Publications.

Perkins Engines Company Limited, Peterborough, PE1 5NA, England.

This publication is written in
Perkins Approved Clear English



Chapters

- 1 General information**
- 2 Specifications**
- 3 Cylinder head assembly**
- 4 Piston and connecting rod assemblies**
- 5 Crankshaft assembly**
- 6 Timing case and drive assembly**
- 7 Cylinder block assembly**
- 8 Engine timing**
- 9 Aspiration system**
- 10 Lubrication system**
- 11 Fuel system**
- 12 Cooling system**
- 13 Flywheel and housing**
- 14 Electrical equipment**
- 15 Auxiliary equipment**
- 16 Special tools**

The following pages contain a detailed table of contents

Contents

1 General information

Introduction	1
Engine views	2
Engine identification	3
Safety precautions	4
Engine lift equipment	6
Viton seals	7
POWERPART recommended consumable products	8

2 Specifications

Basic engine data	11
Data and dimensions	12
Recommended torque settings	28
Compression test data	30

3 Cylinder head assembly

General description	31
Rocker cover	
Operation 3-1 To remove and to fit	32
Rocker assembly	
Operation 3-2 To remove and to fit	33
Operation 3-3 To dismantle and to assemble	34
Operation 3-4 To inspect and to correct	34
Valve tip clearances	
Operation 3-5 To check and to adjust	35
Valve springs	
Operation 3-6 To change the valve springs (with cylinder head fitted)	36
Cylinder head assembly	
Operation 3-7 To remove	38
Operation 3-8 To fit	40
Valves and valve springs	
Operation 3-9 To remove	44
Operation 3-10 To fit	45
Operation 3-11 To inspect and to correct	46
Valve guides	
Operation 3-12 To inspect	47
Operation 3-13 To remove	48
Operation 3-14 To fit	49
Cylinder head	
Operation 3-15 To inspect and to correct	50
Operation 3-16 To correct a valve seat with a valve seat cutter	51
Operation 3-17 To fit valve seat inserts	52

4 Piston and connecting rod assemblies

General description	53
Big end bearing	
Operation 4-1 To remove	54
Operation 4-2 To fit	55
Operation 4-3 To inspect	55
Piston and connecting rod	

Operation 4-4 To remove	56	
Operation 4-5 To fit	57	
Operation 4-6 To check the piston height above the cylinder block	59	
Piston rings		
Operation 4-7 To remove and to fit	60	
Piston and connecting rod assembly		
Operation 4-8 To dismantle	61	
Operation 4-9 To assemble	62	
Piston and piston rings		
Operation 4-10 To inspect	63	
Connecting rod		
Operation 4-11 To inspect	64	
Small end bush		
Operation 4-12 To remove and to fit	64	
 5 Crankshaft assembly		
General description		65
Crankshaft pulley		
Operation 5-1 To remove and to fit	66	
Rear oil seal assembly		
Operation 5-2 To remove and to fit	67	
Operation 5-3 To renew the rear oil seal	68	
Thrust washers		
Operation 5-4 To check the crankshaft end-float	69	
Operation 5-5 To remove	70	
Operation 5-6 To fit	71	
Main bearings		
Operation 5-7 To remove (with the crankshaft in position)	72	
Operation 5-8 To fit (with the crankshaft in position)	73	
Operation 5-9 To inspect	73	
Crankshaft		
Operation 5-10 To remove	74	
Operation 5-11 To fit	75	
Operation 5-12 To inspect	77	

Balancer unit

Operation 5-13 To remove	78
Operation 5-14 To fit	79
Operation 5-15 To dismantle	80
Operation 5-16 To assemble	82
Operation 5-17 To inspect	85
Operation 5-18 To remove and to fit the needle roller bearings for the drive shaft	86
Operation 5-19 To remove and to fit the bushes for the balance weights	87

6 Timing case and drive assembly**General description** 89**Timing case cover**

Operation 6-1 To remove	90
Operation 6-2 To fit	91

Front oil seal

Operation 6-3 To remove	92
Operation 6-4 To fit	93

Idler gear and hub

Operation 6-5 To remove	94
Operation 6-6 To fit	95

Fuel pump gear

Operation 6-7 To remove	96
Operation 6-8 To fit	97

Camshaft gear

Operation 6-9 To remove	98
Operation 6-10 To fit	99

Crankshaft gear

Operation 6-11 To remove	100
Operation 6-12 To fit	100

Timing case

Operation 6-13 To remove	101
Operation 6-14 To fit	102

Camshaft and tappets

Operation 6-15 To remove	104
Operation 6-16 To fit	105

7 Cylinder block assembly

General description	107
----------------------------	-----

Cylinder block

Operation 7-1 To dismantle	107
Operation 7-2 To assemble	108
Operation 7-3 To inspect	109

Cylinder liner

Operation 7-4 To inspect	110
Operation 7-5 To recover a glazed liner	111
Operation 7-6 To remove	112
Operation 7-7 To fit a service liner	114

8 Engine timing

Lucas DPA fuel injection pumps

Operation 8-1 General description	117
Operation 8-2 To set number 1 piston to TDC on the compression stroke	118
Operation 8-3 Another method to set number 1 piston to TDC on the compression stroke.	119
Operation 8-4 To check the valve timing	120
Operation 8-5 To check the timing of the fuel injection pump	121
Operation 8-6 To check the timing mark of the fuel injection pump	122
Operation 8-7 To check the engine timing mark	123

Stanadyne fuel injection pumps

Operation 8-8 General description	124
Operation 8-9 To set number 1 piston to TDC on the compression stroke	124
Operation 8-10 To check the valve timing	124
Operation 8-11 To check the timing of the fuel injection pump	125
Operation 8-12 To check the timing mark of the fuel injection pump	126
Operation 8-13 To check the engine timing mark	128

9 Aspiration system

Open engine breather	129
-----------------------------	-----

10 Lubrication system

General description	131
Lubrication system flow diagram	132
Lubrication system flow diagram for the relief valve and balancer	133
Filter canister	
Operation 10-1 To renew	134
Filter head	
Operation 10-2 To remove and to fit	135
Sump	
Operation 10-3 To remove and to fit	136
Oil strainer and suction pipe	
Operation 10-4 To remove and to fit	137
Operation 10-5 To inspect and to correct	138
Lubricating oil pump	
Operation 10-6 To remove	139
Operation 10-7 To fit	140
Operation 10-8 To renew the shaft for the idler gear	141
Operation 10-9 To inspect	142
Relief valve	
Operation 10-10 To remove and to fit	143
Operation 10-11 To dismantle and to assemble	144
Operation 10-12 To inspect	144

11 Fuel system

General description	145
Fuel filter element	
Operation 11-1 Fuel filter element types	147
Operation 11-2 To renew the filter element of the separate element type	148
Operation 11-3 To renew the filter element of the canister type	149
Atomisers	
Operation 11-4 Atomiser fault	150
Operation 11-5 To remove and to fit	151
Fuel lift pump	
Operation 11-6 To remove and to fit	152

Operation 11-7 To dismantle	153
Operation 11-8 To assemble	154
Operation 11-9 To test	155

Lucas DPA fuel injection pump

Operation 11-10 To remove	156
Operation 11-11 To fit	157
Operation 11-12 To adjust	158
Operation 11-13 To eliminate air from the fuel system	159

Stanadyne fuel injection pump

Operation 11-14 To remove	161
Operation 11-15 To fit	162
Operation 11-16 To adjust	163
Operation 11-17 To eliminate air from the fuel system	164

12 Cooling system

General description	167
----------------------------------	------------

Thermostats

Operation 12-1 To remove and to fit	168
Operation 12-2 To test	168

Coolant pump

Operation 12-3 To remove	169
Operation 12-4 To fit	170
Operation 12-5 To dismantle	171
Operation 12-6 To assemble	172

Fan

Operation 12-7 To remove and to fit	174
---	-----

Lubricating oil cooler

Operation 12-8 To remove and to fit (canister type)	175
---	-----

13 Flywheel and flywheel housing

General description	177
----------------------------------	------------

Flywheel

Operation 13-1 To remove and to fit	178
---	-----

Ring gear

Operation 13-2 To remove and to fit	179
---	-----

Flywheel housing

Operation 13-3 To remove and to fit	180
---	-----

14 Electrical equipment

Alternators	181
Operation 14-1 To check and to adjust drive belt tension	182
Operation 14-2 To remove and to fit the drive belt	183
Operation 14-3 To remove and to fit the alternator	184
Operation 14-4 To maintain the alternator	184
Alternator fault diagnosis	185
Starter motors	187
Operation 14-5 To remove and to fit	187
Operation 14-6 To test on the engine	188
Starting aid	189
Operation 14-7 To remove and to fit a fuelled starting aid	189
Operation 14-8 To check the fuelled starting aid	190

15 Auxiliary equipment

Power take-off adaptors (adaptor for a hydraulic pump)	
Operation 15-1 To remove and to fit	191
Operation 15-2 To dismantle	192
Operation 15-3 To assemble	193
Exhauster	
Operation 15-4 To remove and to fit	194

16 Special tools

List of special tools	195
------------------------------------	-----

**Please Click Here To Download The Complete Manual
Download Other Manuals
If Having Any Questions Feel Free To Contact us**

admin@servicemanualbit.com