Perkins

# Perkins 1100 Series

Models RE, RF, RG, RH, RJ and RK

# WORKSHOP MANUAL

## 4 cylinder diesel engines for industrial, agriculture and construction applications

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# Contents

## 1 General information

**Introduction** ... 1

**Engine views** ... 2

**Engine identification** ... 3

**Safety precautions** ... 5

**Engine lift equipment** ... 7

**Viton seals** ... 8

**POWERPART recommended consumable products** ... 9

## 2 Specifications

**Basic engine data** ... 11

**Data and dimensions** ... 12

**Thread sealant** ... 29

**Standard torque values** ... 30

**Specific torque values** ... 31

**Compression test data** ... 34



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# 3 Cylinder head assembly

**General description** ... 35

**Atomiser cover**

Operation 3-1 To remove and to fit ... 36

**Rocker cover**

Operation 3-2 To remove ... 37
Operation 3-3 To fit ... 38

**Rocker assembly**

Operation 3-4 To remove and to fit ... 39
Operation 3-5 To dismantle and to assemble ... 40
Operation 3-6 To inspect and to correct ... 40

**Valve tip clearances**

Operation 3-7 To check and to adjust ... 41

**Valve springs**

Operation 3-8 To change the valve springs (with cylinder head fitted) ... 42

**Cylinder head assembly**

Operation 3-9 To remove ... 44
Operation 3-10 To fit ... 46

**Valves and valve springs**

Operation 3-11 To remove ... 49
Operation 3-12 To fit ... 50
Operation 3-13 To inspect and to correct ... 51

**Valve guides**

Operation 3-14 To inspect ... 52
Operation 3-15 To remove ... 53
Operation 3-16 To fit ... 54

**Cylinder head**

Operation 3-17 To inspect and to correct ... 56
Operation 3-18 To correct a valve seat with a valve seat cutter ... 57
Operation 3-19 To fit valve seat inserts ... 59



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# 4 Piston and connecting rod assemblies

**General description** ... 61

**Big end bearing**

Operation 4-1 To remove ... 63
Operation 4-2 To fit ... 64
Operation 4-3 To inspect ... 64

**Piston and connecting rod**

Operation 4-4 To remove ... 65
Operation 4-5 To fit ... 66
Operation 4-6 To check the piston height above the cylinder block ... 68

**Piston rings**

Operation 4-7 To remove ... 69
Operation 4-8 To fit ... 69

**Piston and connecting rod assembly**

Operation 4-9 To dismantle ... 70
Operation 4-10 To assemble ... 71
Operation 4-11 To check the length of a connecting rod ... 72

**Piston and piston rings**

Operation 4-12 To inspect ... 73

**Connecting rod**

Operation 4-13 To inspect ... 74

**Partially finished small end bush**

Operation 4-14 To remove and to fit ... 75

**Piston cooling jets**

Operation 4-15 To remove and to fit ... 76
Operation 4-16 To check the jet alignment ... 76

# 5 Crankshaft assembly

**General description** ... 77

**Crankshaft pulley**

Operation 5-1 To remove and to fit ... 78



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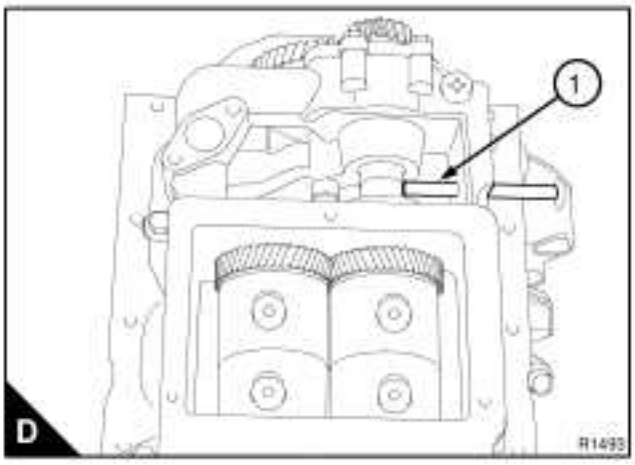
**4** Insert the timing pin (D1) into balancer, ensure that the timing pin is fully located in the drive shaft and that the balancer weights are pointing away from the cylinder block.

**5** Carefully fit the balancer unit onto the two M10 guide studs in the cylinder block, check that the balancer unit is fitted correctly on the thimble and the dowel. Ensure that the idler and crankshaft gears are in mesh. Fit two setscrews in the centre positions of the balancer frame, then tighten the setscrews to 54 Nm (40 lbf ft) 5,5 kgf m.

**6** Remove the two M10 guide studs and fit the four remaining setscrews in their correct position. Tighten the setscrews to 54 Nm (40 lbf ft) 5,5 kgf m.

**7** Rotate the crankshaft through two turns to ensure that it is free to rotate.

**8** Fit the lubricating oil sump, see Operation 10-5, and fill the sump to the correct level with lubricating oil of an approved grade, refer to Chapter 5 in the User's Handbook TPD 1477.






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## Fault diagnosis for the alternator — Operation 14-6

The alternator is designed in such a way that a flow of current (indicated by no light at the warning lamp or a reading shown on an ammeter) shows that the system is in correct operation. If the system is in correct operation, no open circuit, voltage or current output checks need to be done on the installation unless:

- The warning lamp does not show when the alternator is stationary and the switch is in the "ON" position, or it shows a light when the alternator is in operation
- No charge current is shown on the ammeter
- The battery is discharged
- The battery is hotter than normal which is an indication of loss of voltage control.

If one or more of the above symptoms occur, the procedure indicated below should be applied.

**Normal operation:**

**1** Ensure that the engine has stopped and that the ignition switch is in the "OFF" position.

**2** Check that the battery voltage is correct, either 12V to 12.8 V (12V system), or 24V to 25.6V (24V system). Check the condition of the battery if the voltage is not correct.

**3** Turn the ignition switch to the "ON" position and check that the ignition warning lamp is illuminated.

**4** Start the engine and operate it at a fast idle. Check that the ignition warning lamp is now extinguished.

**5** Switch on an electrical load, such as the vehicle lights, and increase the engine to its maximum speed.

**6** The battery voltage should now rise to either 13.5V (12V system), or 27V (24V system).

**7** Switch off the applied electrical load and the battery voltage should rise to either 14V (12V system) or 28V (24V system).

*Continued*



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### ECM and MIC connectors

**Note:** If several connector pins or sockets are damaged, it is more cost effective to renew the connector.

| Description | Repair |
|---|---|
| Damage to the connector body | Renew the connector body |
| Damage to a connector pin or socket | Remove the damaged connector pin or socket and fit a new connector pin or socket |

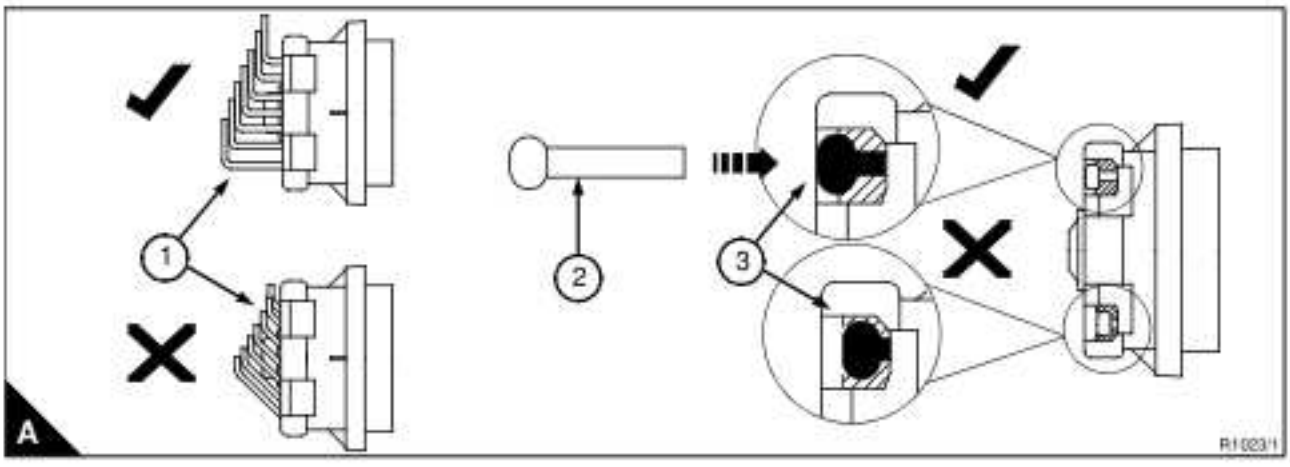
### Wiring harness

**Note:** If several wires are damaged, it is more cost effective to renew the wiring harness.

| Description | Repair |
|---|---|
| Cut wire | Use a crimp to join the wires together |
| Damage to wire insulation only | Remove the damaged section of wire, replace with a new section of wire and crimp to the original wires |
| Damage to wire by corrosion | Remove the damaged section of wire, replace with a new section of wire and crimp to the original wires |
| Damage to the harness outer cover | Repair with tape |

***Cautions*:**

- *Do not bend the wires directly from the rear of the connector (A1) as distortion of the rear seal will result, and this will allow water to enter the connector.*
- *Ensure that all ECM and MIC connector holes, that are not used by a wire to a socket or a pin, are closed by a blanking plug (A2) to ensure a waterproof seal. The blanking plugs must be inserted into the connector so that the head of the blanking plug is pushed against, but not into, the connector end seal (A3).*






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