Perkins

Perkins 100 Series

Models 102-05, 103-07, 103-10, 103-13, 103-15, 104-19, 104-22

WORKSHOP MANUAL

102-05	Two cylinder diesel engines
103-07 103-10 103-13 103-15	Three cylinder diesel engines
104-19 104-22	Four cylinder diesel engines

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Cylinder bore dimensions

Engine model/Block specification	Bore dimension mm (in)	
	Standard	Service limit
102-05, 103-07		
New Block	67,000 - 67,019 (2.63780 - 2.63854)	67,2 (2.646)
1st oversize bore 0,5 mm (0.2 in)	67,500 - 67,519 (2.65750 - 2.65822)	67,7 (2.666)
2nd oversize bore 0,5 mm (0.2 in)	68,000 - 68,019 (2.67720 - 2.67791)	68,2 (2.685)
103-10		
New Block	75,000 - 75,019 (2.95280 - 2.95350)	75,2 (2.961)
1st oversize bore 0,5 mm (0.2 in)	75,500 - 75,519 (2.97244 - 2.97318)	75,7 (2.981)
2nd oversize bore 0,5 mm (0.2 in)	76,000 - 76,019 (2.99212 - 2.99287)	76,2 (2.999)
103-13, 103-15, 104-19, 104-22		
New Block	84,000 - 84,019 (3.30710 - 3.30783)	84,2 (3.315)
1st oversize bore 0,5 mm (0.2 in)	84,500 - 84,519 (3.32677 - 3.32751)	84,7 (3.335)
2nd oversize bore 0,5 mm (0.2 in)	85,000 - 85,019 (3.34650 - 3.34719)	85,2 (3.354)

Caution: *When service limits are exceeded following a second oversize bore operation, the block* ***must*** *be renewed.*

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Wiring diagram 55 amp alternator - 103-15, 104-19, 104-22

Circuit	Cable number	Circuit current	Maximum circuit resistance	Maximum circuit volt drop	Remarks
Alternator charging	A A1 A11	55 amp	0.009 Ω	0.5 Volt	See Glow Plugs Circuit
Starter motor solenoid	A A2 A11	15.75 amp	0.04 Ω	0.63 Volt	See Glow Plugs Circuit
STD glow plugs (via glow signal)	A1 A5 A6 A7 A11	(Peak max) 39 amp (3 cyl) 52 amp (4 cyl)	0.0128 Ω (3 cyl)s 0.0096 Ω (4 cyl)s	0.5 Volt	

Wiring diagram maximum circuit resistance

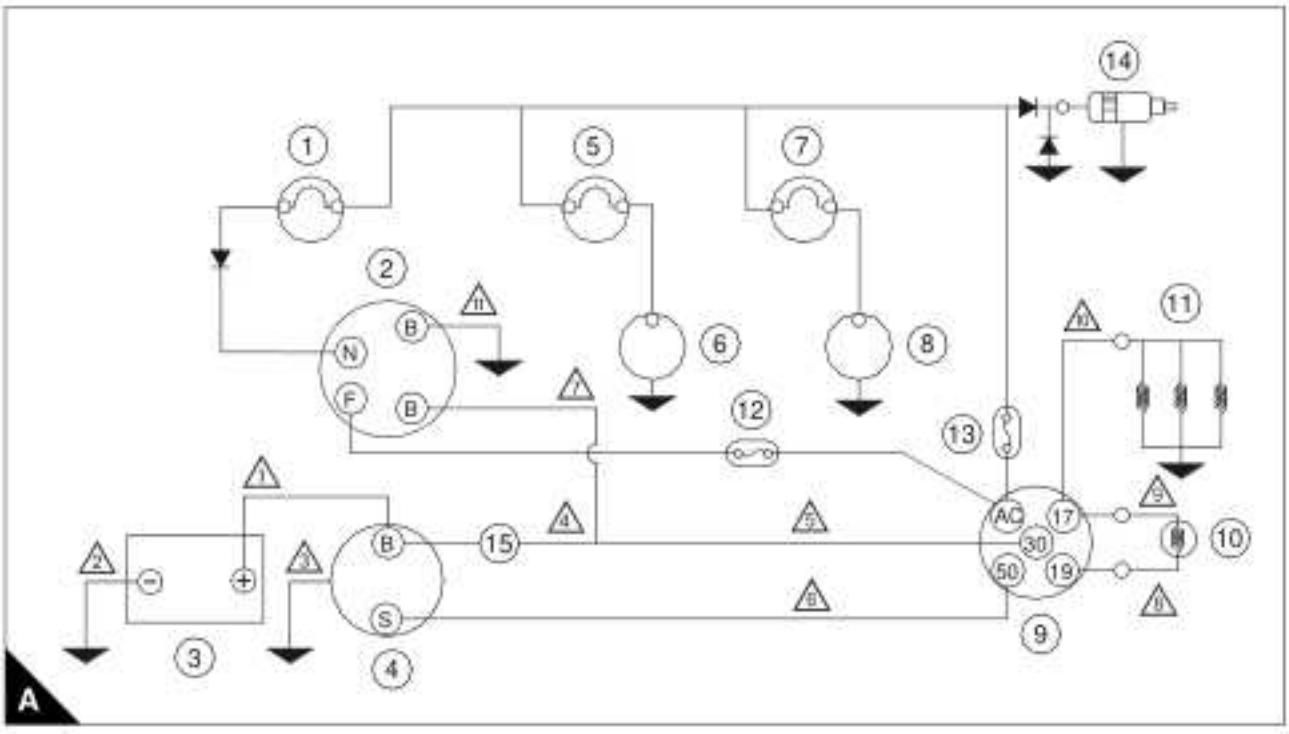
The resistance of battery cables 1, 2 and 3 must not exceed 0.0018 Ω.

Note: Maximum cable size for 375 lucar terminals on the alternator is 65/0,3 mm (4,5 mm^2) therefore twin cables are required at the connection to the alternator.

1 Alternator warning lamp
2 Alternator
3 Battery
4 Starter motor
5 Oil pressure warning lamp
6 Oil pressure switch (1)
7 Water temperature warning lamp
8 Thermostat switch
9 Key switch
10 Glow signal
11 Glow plugs
12 Fuse
13 Solenoid switch
14 A delayed fuse can be fitted if desired

(1) Max current draw for standard oil pressure switch is 0.42 amps (5 Watt lamp max).

→|← = Diode. Capacity: Current 3 amp. Reverse Voltage: 600V. **(This is mandatory)**.



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Auto shutdown wiring diagram 40 amp alternator - 103-15, 104-19, 104-22

Auto shutdown operation symptoms

If the conditions below last for more than 10 seconds during the start operation, the engine will shut down.

If the conditions below last for more than 2 seconds while the engine is operated, the engine will shut down.

Warning! *There is no protection against low water levels.*

Conditions

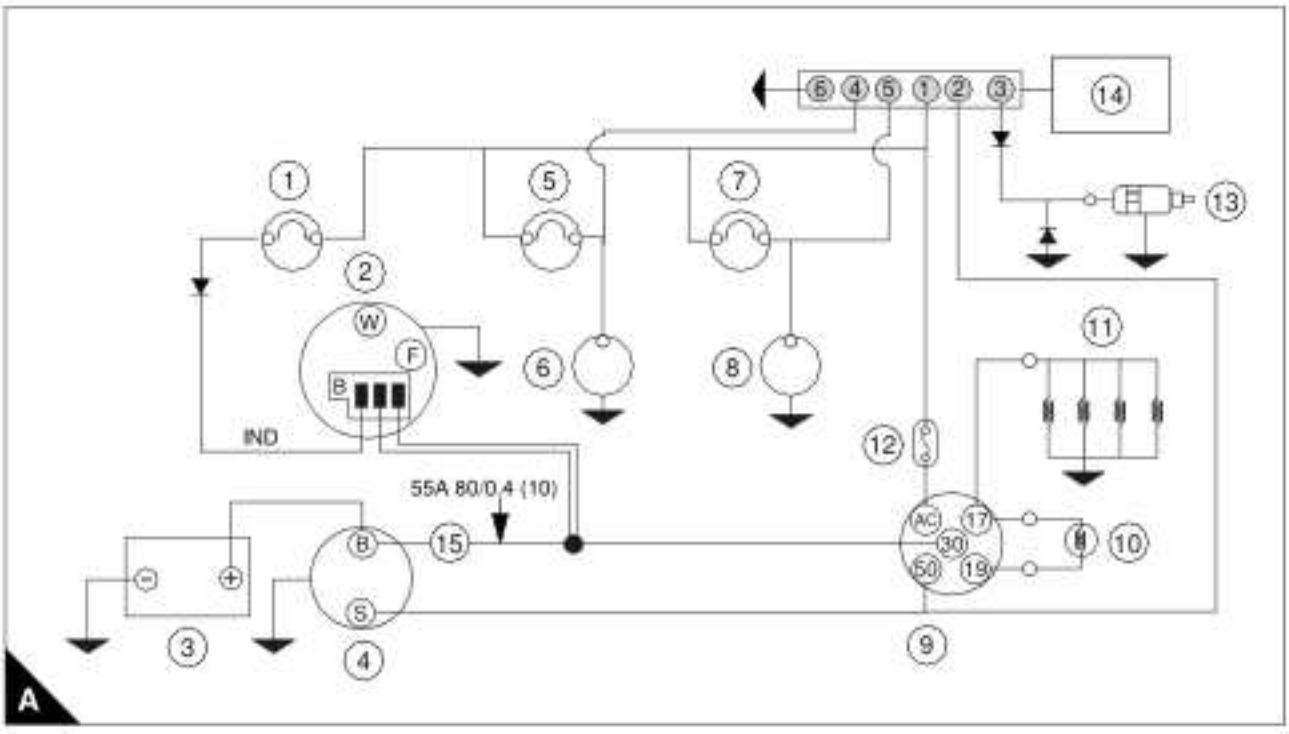
Water temperature switch: If the water temperature exceeds 105 °C ± 4 °C.

Oil Pressure Switch: If the oil pressure falls below 0,3 kgf/cm² (4.27 lbf/in²).

1 Alternator warning lamp
2 Alternator
3 Battery
4 Starter motor
5 Oil pressure warning lamp
6 Oil pressure switch (1)
7 Water temperature warning lamp
8 Thermostat switch
9 Key switch
10 Glow signal
11 Glow plugs
12 Fuse
13 Solenoid switch
14 Auto shutdown device
15 A delayed fuse can be fitted if desired

(1) Max current draw for standard oil pressure switch is 0.42 amps (5 Watt lamp max).

— ▶| — = Diode. Capacity: Current 3 amp. Reverse Voltage: 600V. **(This is mandatory)**.



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