NEW HOLLAND

F4HE9484C*J102
F4HE9484C*J103
Tier 3

ENGINE SERVICE MANUAL

87643867 NA

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NEF-F4HE ENGINE

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1. TECHNICAL SPECIFICATIONS

MODEL

Models	F4HE9484C*J102 - C*J103
Cycle	diesel, four stroke
Injection	direct (Common Rail)
Number of cylinders	4
Number of valves per cylinder	2
Piston bore	140 mm (5.5 in)
Piston stroke	132 mm (5.2 in)
Cylinder displacement	4485 cm^3 (273.7 in^3)
Compression Ratio	17.5:1
Maximum power	82 kW (60741 ft·lb/s)
Revolution number (maximum power)	2200 rpm
Maximum torque (CEE)	516 Nm (380.6 lbf·ft)
Revolution number (maximum torque)	1400 rpm

LUBRICATION

Pressure feed lubrication	with gear pump, pressure control valve, oil filter
Oil pressure (with engine hot):	
at idle speed	0.7 bar (10 psi)
at top speed	4 bar (58 psi)

COOLING

Type	with cooling liquid
H_2O	pump belt control
Thermostat (opening starts at)	81 ± 2 °C (177.8 ± 35.6 °F)

VALVE GEAR TIMING

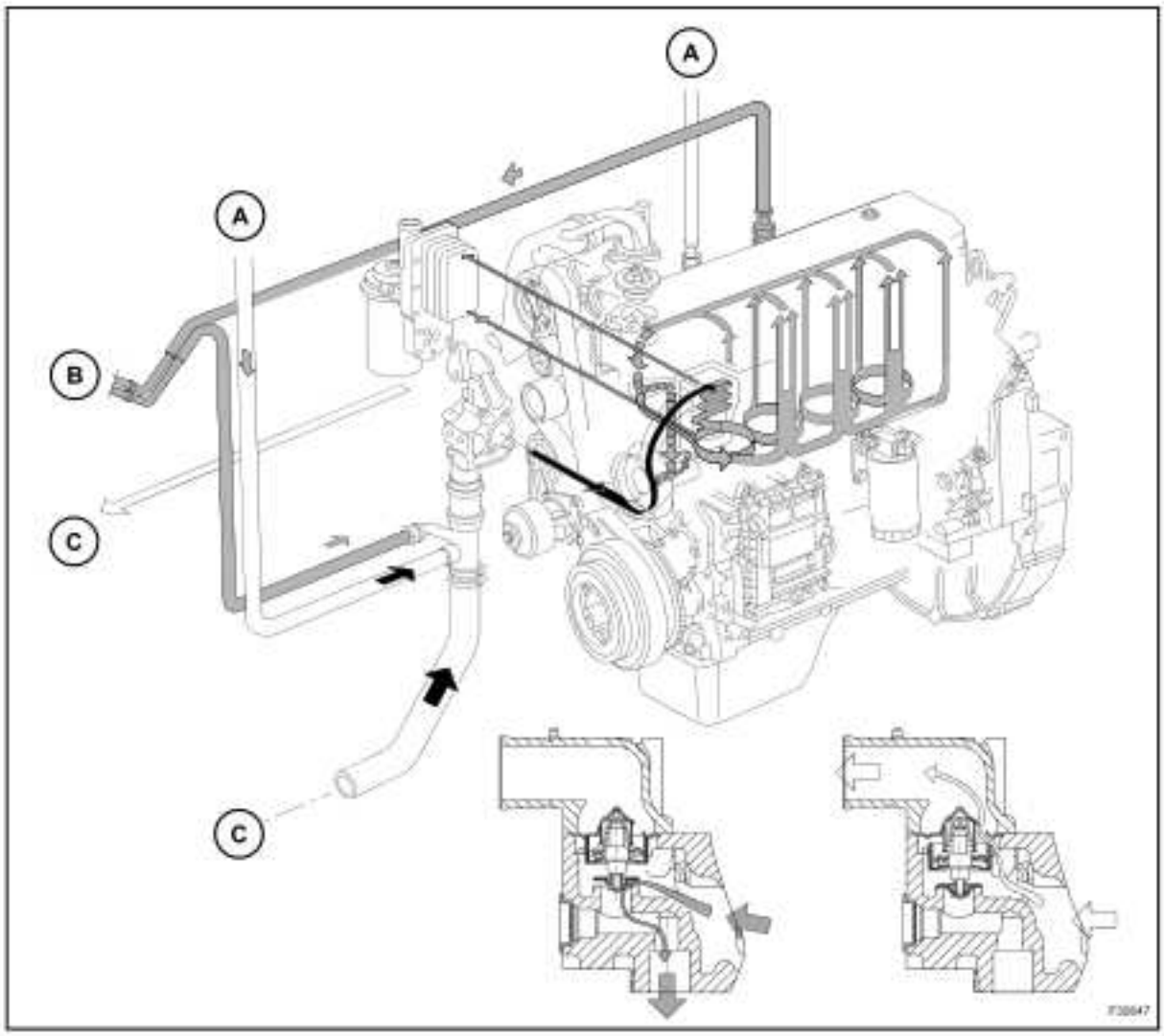
Intake	
Start: before T.D.C.	18.5°
End: after B.D.C.	29.5°
Exhaust	
Start: before T.D.C.	67°
End: after B.D.C.	35°
Valve and rocker operating clearance (with cold engine)	
Intake	0.20 ÷ 0.30 mm (0.0078 ÷ 0.011 in)
Exhaust	0.45 ÷ 0.55 mm (0.0177 ÷ 0.0216 in)

SUPPLY

Type	BOSCH high pressure, Common Rail
Overfeed	with intercooler
Turbocharger	HOLSET HX35
Injectors	CRIU 2
Injection sequence	1-3-4-2
Injection pressure	250 - 1600 bar (3625 - 23197 psi)

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4.2 COOLING



Thermostat water outlet
Water circulation in the engine
Pump water inlet

A. Expansion tank
B. Heater
C. Radiator

The engine cooling system is by forced circulation with closed circuit and includes the following components:

- expansion tank: it can change location, shape and dimension according to the engine outfit;
- radiator, has the task to dissipate the heat drawn from the engine by the coolant. Also this component is a feature of the outfit both as location and as size;
- viscostatic fan with the aim to increase the dissipating power of radiator: it is also part of the engine specific outfit;
- an heat exchanger to cool down the lubrication oil: it is also part of the engine specific outfit;
- a centrifugal water pump house in the front side of the engine crankcase;
- a thermostat regulating the cooling liquid circulation;
- the circuit can possibly reach also the compressor if the outfit includes this.

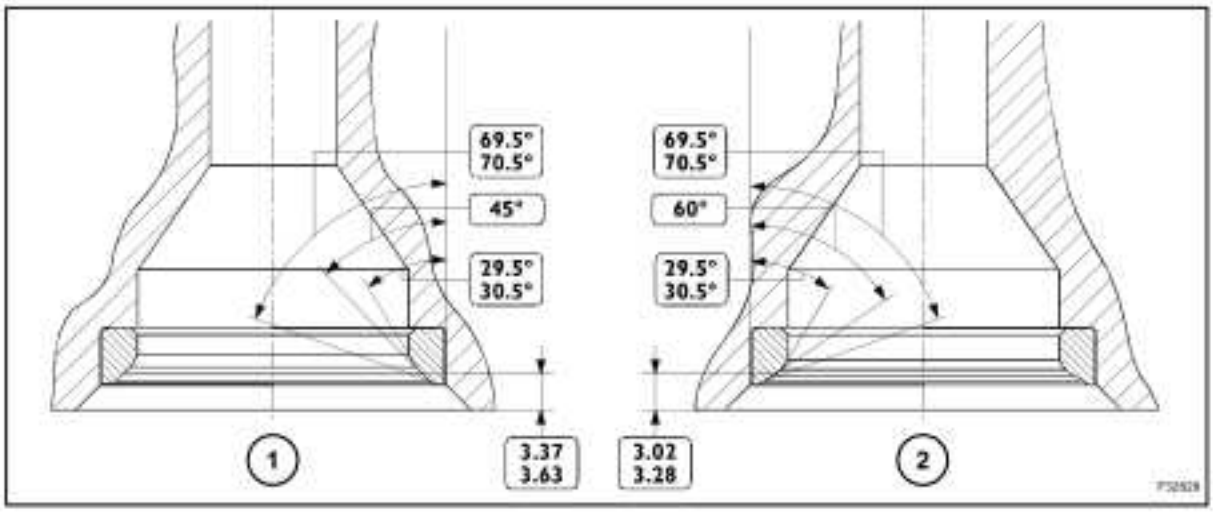
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5. TROUBLESHOOTING

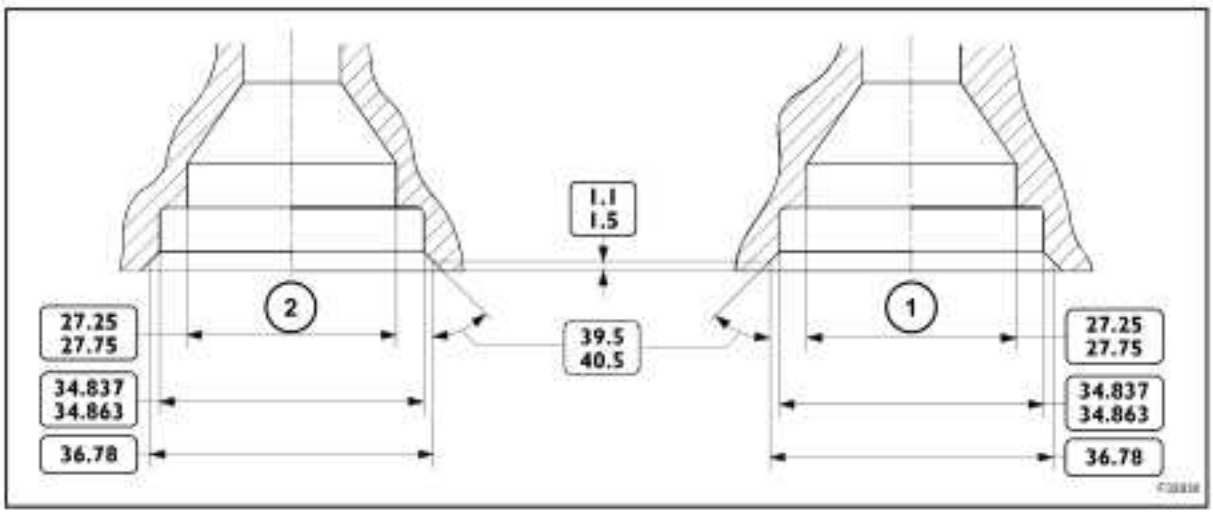
PROBLEM	CAUSE	REMEDY
Engine does not start.	Partially run down batteries.	Check, recharge the batteries and replace them if necessary.
	Connections to batteries terminals corroded or loose.	Clean, examine, tighten the nuts and, if necessary, replace the terminals and the nuts extremely corroded.
	Incorrect timing of injection pump on engine.	Correctly time the injection pump on the engine.
	Collection of impurity or water in the fuel lines.	Disconnect the lines, injection pump and clean them accurately and, if necessary, clean and dry the fuel tank.
	Fuel tank without fuel.	Fill.
	No supply from injection pump.	Check and, if necessary, change the supply pump.
	Air in the fuel circuit.	Check the lines, connectors, fuel pump, filters and injection pump for the presence of air; then bleed the circuit.
	Starter motor damaged.	Repair or change the starter motor.
The engine stops.	Idle rpm too low.	Adjust the idle speed.
	Irregular flow of injection pump.	Check the flow rates on a test bench.
	Collection of impurity or water in the fuel lines.	Disconnect the lines, injection pump and clean them accurately and, if necessary, clean and dry the fuel tank.
	Fuel filters clogged.	Change the filter cartridges.
	Abnormal clearance between valves and rockers.	Adjust the clearance between valves and rockers.
	Burnt or cracked valves.	Change the valves.
	Air in the fuel circuit.	Check the lines, connectors, fuel pump, filters and injection pump for the presence of air; then bleed the circuit.
	Injection pump controls damaged.	Replace damaged items.

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Valve seat dimensions (mm (in))



Valve seat housing dimensions (mm (in))



1. Intake
2. Exhaust

If the valve seats cannot be restored by refacing only, they can be replaced with spares. Using the special tool and taking care not to notch the cylinder head, remove the highest possible amount of valve seat material, until it is possible to remove them from the cylinder head with a punch. Heat the cylinder head to 80 ÷ 100 °C (176 ÷ 212 °F) and use a suitable drift to fit the new valve seats on it, after cooling them.
Then reface the valve seats according to the values given.

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