F5AE9484
F5AE9454
F5CE9484
F5CE9454
F5CE5454
Engines

Service Manual

87736548A

CASE CONSTRUCTION

MidWestTech | Case F5AE9484, F5AE9454, F5CE9484, F5CE9454, F5CE5454 Engine Service Manual | Publication 87736548A

Order the manual at mid-west-tech.com >

FOREWORD

UNITS OF MEASURE

In this manual, the units of measure of the IS (International System) are used.

The units of measure of the MKSA system are listed in parenthesis after the units of the International system.

Example: 24.5 Mpa (250 kgf/cm^2).

Here below, a conversion table of the units of the IS and some units of measure of other systems is listed. as a reference.

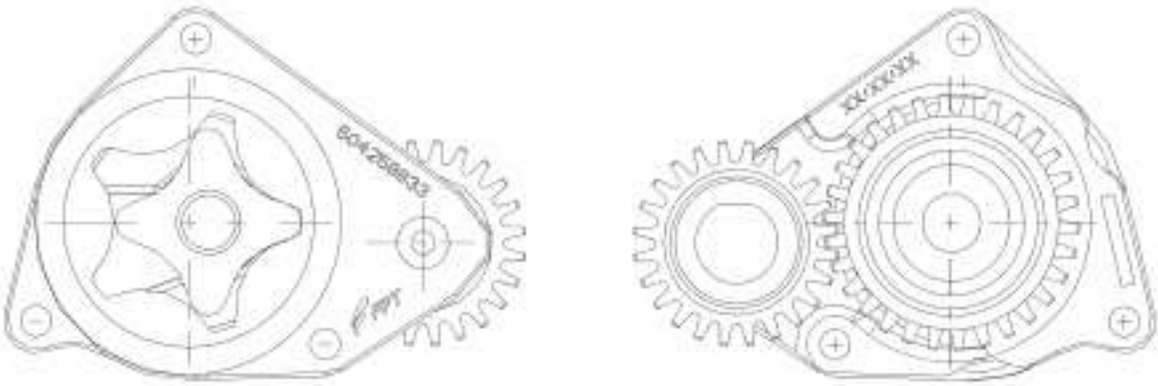
Quantity	To convert from (SI)	into (Others)	Multiply by
Length	mm	in	0.03937
	mm	ft	0.003281
Volume	L	US gal	0.2642
	L	US qt	1.057
	m^3	yd^3	1.308
Mass	kg	lb	2.205
Force	N	kgf	0.10197
	N	lbf	0.2248
Torque	N.m	kgf.m	0.10197
	N.m	lbf.ft	0.7375

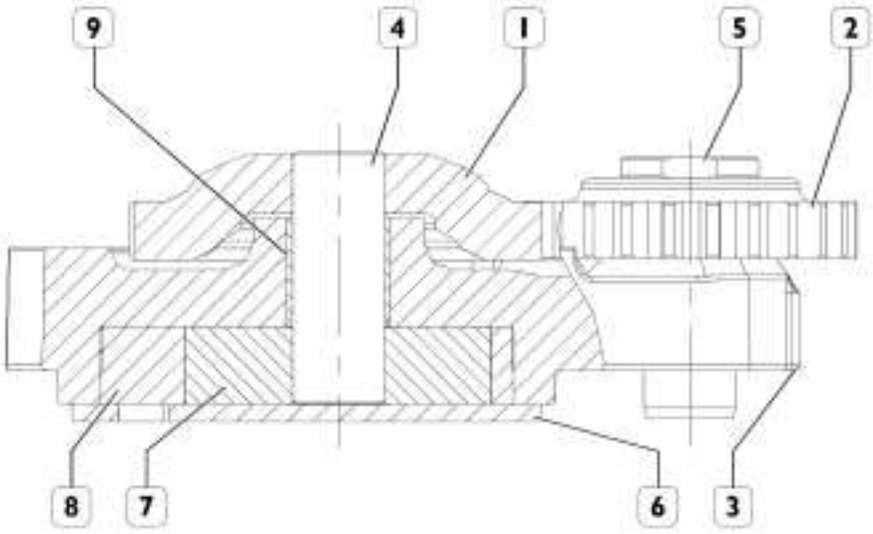
Quantity	To convert from (SI)	into (Others)	Multiply by
Pressure	MPa	kgf/cm^2	10.197
	MPa	psi	145.0
Power	kW	PS	1.360
	kW	HP	1.341
Temperature	°C	°F	°C x 1.8 + 32
Velocity	km/h	mph	0.6214
	min^{-1}	rpm	1.0
Flow	L/min	US gpm	0.2642
	mL/rev	cc/rev	1.0

MidWestTech | Case F5AE9484, F5AE9454, F5CE9484, F5CE9454, F5CE5454 Engine... Order the manual at mid-west-tech.com >

Oil pump

Figure 7





PUMP SPECIFICATIONS	
Rotating speed	750 rpm - 4200 rpm
Feed pressure	2 Bar - 4 Bar
Rated flow	12.2 l/min - 75.9 l/min
Oil type	SAE 20/30
Max oil temperature	80 °C

1. Main gear - 2. Secondary gear - 3. Pump unit - 4. Drive shaft - 5. Secondary shaft
6. Cover - 7. Internal rotor - 8. External rotor - 9. Bush

MidWestTech | Case F5AE9484, F5AE9454, F5CE9484, F5CE9454, F5CE5454 Engine... Order the manual at mid-west-tech.com >

MidWestTech | Case F5AE9484, F5AE9454, F5CE9484, F5CE9454, F5CE5454 Engine...

FAILURE	POSSIBLE ROOT CAUSE (*) = if applicable to the appliance	RECOMMENDED TESTS OR REMEDY	NOTES
Anomalous engine strokes.	Engine strokes cause excessive slack of one or more crankshaft bearings or big end bearings or excessive shoulder slack.	Grind the engine drive shaft pins and fit undersize bearings. Replace the thrust bearing half rings.	
	Unbalanced engine drive shaft.	Check the engine drive shaft alignment.	
	Loose flywheel fastening screws.	Replace the loose screws and tighten them to the prescribed torque setting.	
	Connecting rod misalignment.	Replace the connecting rod.	
	Noisy piston pins for excessive slack of piston hubs and connecting rod bush. Loose bushes in their housing on the connecting rod.	Replace the piston pin and/or the piston and the connecting rod bush.	
	Noisy timing.	Adjust the slack between camshaft and tappet and check there are no broken springs. Furthermore, check that the slack between valve stems and valve guides as well as tappets an relevant seat.	
Anomalous engine fumes. Black or dark grey fumes.	Excessive pump maximum delivery.	Disconnect the pump and adjust its delivery referring to the calibration table of the screw nuts.	Apply to CNH Technical Service.
	Defective or incorrectly adjusted K.S.B. device.	Adjust the ignition pump or replace it.	Apply to CNH Technical Service.
	The ignition pump is excessively delayed (or spark lead changing device is defective).	Correct setting, check the spark lead changing device.	

Order the manual at mid-west-tech.com >

540110 ENGINE DISASSEMBLY ON BENCH

NOTE Engine disassembly operations to remove the engine from the vehicle are described in the specific section. Engine disassembly operations, as well as engine overhaul, must be executed by qualified engineers only, duly provided with the specific tools required.

NOTE Depending on the appliance, some units may have different position on the engine.

NOTE Before fitting the engine on the rotary stand 380000978, disassemble the parts which may interfere with the bracket assembly. Depending on the appliance, it may be necessary to remove the starter and the oil filter.

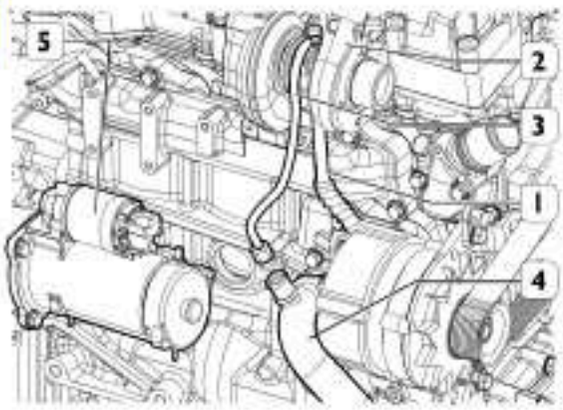
- ❑ Drain the engine oil from the oil pan collecting it in a suitable container.

Warning! Avoid skin contact with the engine oil: in case of contact wash your skin with running water.

The engine oil is highly polluting: waste disposal must be executed complying with the laws and regulations in force.

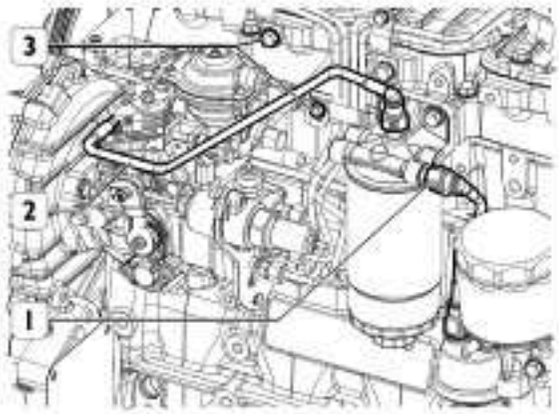
- ❑ Remove the electric wiring from the injection pump.

Figure 1



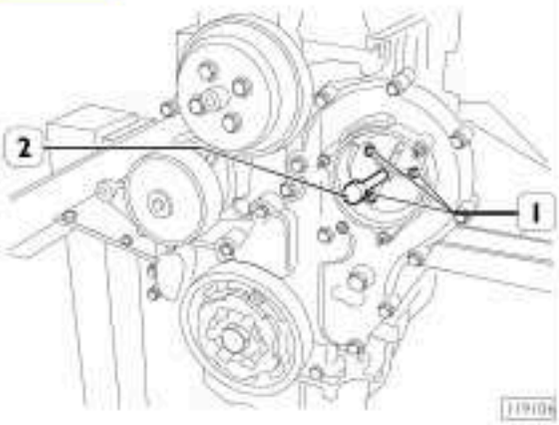
- ❑ Remove oil delivery pipe connected to the turbocharger (3) and t the oil return pipe (1).
- ❑ Remove the turbocharger unit (2).
- ❑ Duly hold the starter (5), unscrew the fastening screws and remove the starter.
- ❑ Remove the water hose (4).

Figure 2



- ❑ Remove the L.D.A. pipe. Remove the fast clutch fuel pipes from the priming pump to the filter (1) and from the filter to the ignition pump (2), then fit the specially provided caps to the pipes, the pumps and the filter. Unscrew the screws (3), fastening the fuel ignition pipes and remove them.

Figure 3



- ❑ Unscrew the pump fastening screws on the rear part of the gear cover. To disassemble the pump, fit tool 380100072 to the pump wheel and fix it with the three screws (1).
  Using the specially provided wrench, slowly tighten the screw (2) holding the rear part of the pump removing the pump completely.

NOTE Before removing the pump verify if, for the model used, a shaft block system exists. In that case, block the engine by means of the specific tool in the corresponding position, to the TDC of cylinder 1, (at compression end, as shown in the procedure at page 19). Now block with the specific system the pump shaft; this way the pump should be timed, so that when refitting (if no maintenance intervention is required on it) no adjustment is necessary.

MidWestTech | Case F5AE9484, F5AE9454, F5CE9484, F5CE9454, F5CE5454 Engine... Order the manual at mid-west-tech.com >

540110 ENGINE DISASSEMBLY ON BENCH

NOTE Engine disassembly operations to remove the engine from the vehicle are described in the specific section. Engine disassembly operations, as well as engine overhaul, must be executed by qualified engineers only, duly provided with the specific tools required.

NOTE Depending on the appliance, some units may have different position on the engine.

NOTE Here are the F5CE5454 engine overhaul operations which, except for the EGR external assembly apply as well to the engines F5CE9484 and F5CE9454.

NOTE Before fitting the engine on the rotary stand 380000978, disassemble the parts which may interfere with the bracket assembly. Depending on the appliance, it may be necessary to remove the starter and the oil filter.

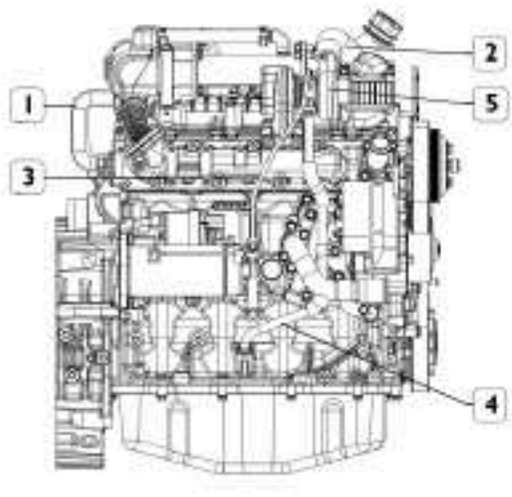
Drain the engine oil from the oil pan collecting it in a suitable container.

Warning! Avoid skin contact with the engine oil: in case of contact wash your skin with running water.

The engine oil is highly polluting: waste disposal must be executed complying with the laws and regulations in force.

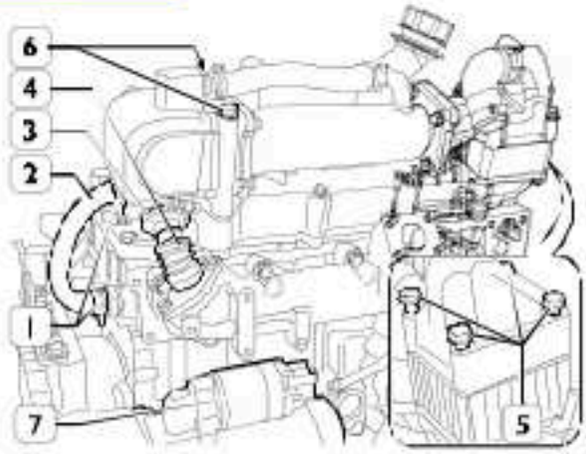
- ❑ Remove the wiring harness from all components indicated in part II, electrical equipment.

Figure 1



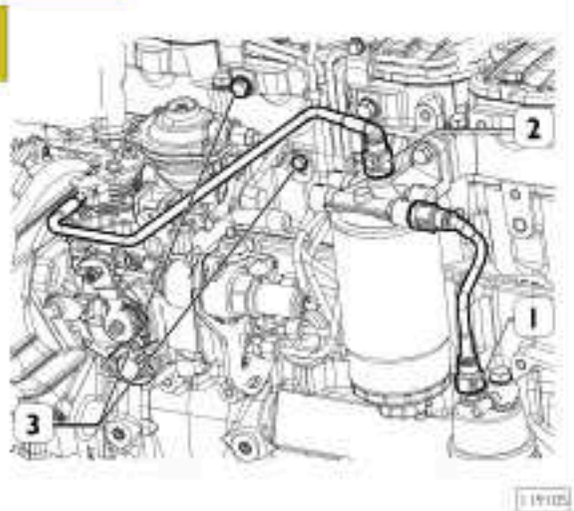
- ❑ Remove the water delivery pipe (1) from the exchanger.
- ❑ Loose the clip and disconnect the pipe (2); remove oil delivery pipe connected to the turbocharger (3) and t the oil return pipe (4).
- ❑ Remove the turbocharger unit (5)

Figure 2



- ❑ Using pincers, remove the clips (1) and the water delivery pipe connected to the valve support and the exchanger (2). Loosen the clip (3) and detach the pipe (4), from the EGR valve housing. Unscrew the EGR fastening screws on the front side (5), and those on the valve support side (6), then remove the EGR unit.
- ❑ Duly hold the starter (7), unscrew the fastening screws and remove the starter.

Figure 3



- ❑ Remove the L.D.A. pipe. Remove the fast clutch fuel pipes from the priming pump (1) to the filter and from the filter to the ignition pump (2), then fit the specially provided caps to the pipes, the pumps and the filter. Unscrew the screws (3), fastening the fuel ignition pipes and remove them.

MidWestTech | Case F5AE9484, F5AE9454, F5CE9484, F5CE9454, F5CE5454 Engine... Order the manual at mid-west-tech.com >