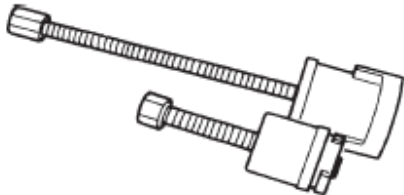
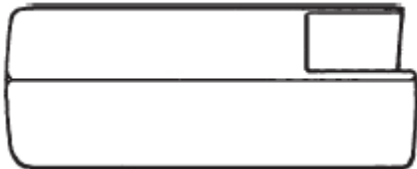

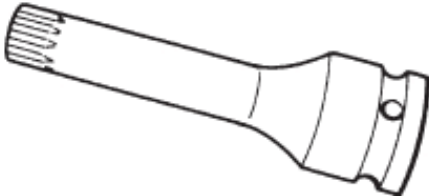
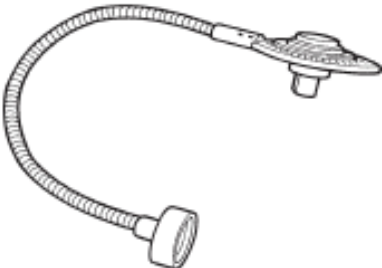


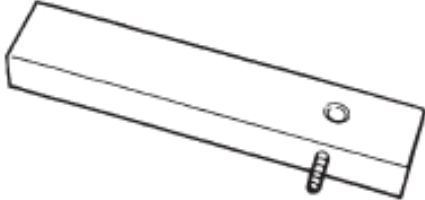
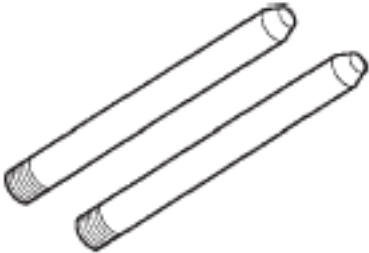





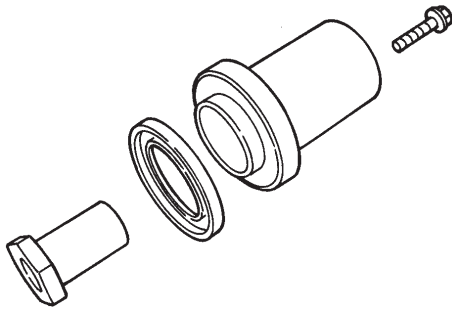

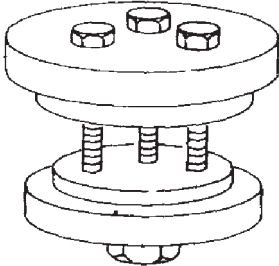
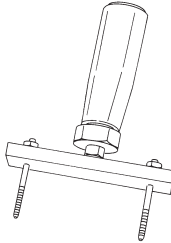

## FASTENER TIGHTENING SPECIFICATIONS

COMPONENT	Nm	SYSTEM
CENTER MAIN BEARING CARRIERS - BOLTS	44,1	ENGINE BLOCK
OIL DELIVERY TO MAIN BEARING CARRIERS - SPECIAL SCREW ON BLOCK	53,9	ENGINE BLOCK
CAMSHAFT FLANGE - SCREW	27,5	ENGINE BLOCK
OIL PISTON COOLING JET - SCREW	12,7	ENGINE BLOCK
IDLER GEAR (BEETWEN CAMSHAFT AND CRANKSHAFT GEARS) - BOLT	32,4	TIMING SIDE
IDLER GEAR (BEETWEN CAMSHAFT AND INJECTION PUMP GEARS) - SCREW	35	TIMING SIDE
OIL PUMP - SCREW	27,5	TIMING SIDE
COOLANT PUMP - SCREW	32,4	TIMING SIDE
CRANKSHAFT FRONT HUB - NUT	SEE PROCEDURE	TIMING SIDE
CRANKSHAFT FRONT PULLEY - SCREW	45,1	TIMING SIDE
RAIL - SCREW	SEE PROCEDURE	INJECTION SIDE
RAIL BRACKET - SCREW	SEE PROCEDURE	INJECTION SIDE
INJECTOR - CLAMP SCREW	SEE PROCEDURE	INJECTION SIDE
HIGH PRESSURE INJECTION PUMP - FLANGE NUT	27,5	INJECTION SIDE
HIGH PRESSURE INJECTION PUMP GEAR - NUT	86,3	INJECTION SIDE
ENGINE OIL HEAT EXCHANGER (MODINE) - BOLT	60	INJECTION SIDE
OIL FILTER HOUSING - BOLT	39,2	INJECTION SIDE
COOLANT MANIFOLD - SCREW	11,8	INJECTION SIDE
OIL DELIVERY PIPE TO ROCKER ARM - HOLLOW BOLT ON CYL. HEAD	14	INJECTION SIDE
OIL DELIVERY PIPE TO ROCKER ARM - HOLLOW BOLT ON CRANCASE	23,5	INJECTION SIDE
EXHAUST MANIFOLD - NUT	32,4	EXHAUST SIDE
INTAKE MANIFOLD - NUT	27,5	EXHAUST SIDE
TURBOCHARGER - NUT	32,4	EXHAUST SIDE
OIL DELIVERY PIPE TO TURBOCHARGER- HOLLOW BOLT ON TURBO FLANGE	24,5	EXHAUST SIDE
OIL DELIVERY PIPE TO TURBOCHARGER - NUT ON BLOCK	32,4	EXHAUST SIDE
EGR HEAT EXCHANGER (INSTALLED ON HOUSING) - SCREW	10,8	EXHAUST SIDE
EGR HEAT EXCHANGER (INSTALLED ON BLOCK) - SCREW	32,4	EXHAUST SIDE
EGR HOUSING HEAT EXCHANGER (INSTALLED ON EXHAUST MANIFOLD) - NUT	32,4	EXHAUST SIDE
ASSEMBLY EGR & INTAKE THROTTLE VALVE - SCREW	10,8	EXHAUST SIDE
EGR VALVE (R754IE4-TE4-ISE4)	13,7	EXHAUST SIDE
ELBOW ASSEMBLY EGR & INTAKE THROTTLE VALVE - SCREW	10,8	EXHAUST SIDE
VACUUM PUMP OIL DELIVERY PIPE - HOLLOW BOLT (ON BLOCK)	27,5	ENGINE ELECTRICAL
ALTERNATOR - NUT	45,1	ENGINE ELECTRICAL
ALTERNATOR IDLE PULLEY	80 ± 5	ENGINE ELECTRICAL
STARTER MOTOR - BOLT	83,4	ENGINE ELECTRICAL
VACUUM PUMP OIL DELIVERY PIPE - HOLLOW BOLT (ON VACCUM PUMP)	27,5	ENGINE ELECTRICAL
REAR MAIN BEARING CARRIER - NUT	24,5	FLYWHEEL SIDE
FLYWHEEL HOUSING - SCREW	68,6	FLYWHEEL SIDE
FLYWHEEL	SEE PROCEDURE	FLYWHEEL SIDE
OIL FILTER	12,7	MAINTENANCE
CONNECTING ROD - SCREW	SEE PROCEDURE	BASIC ENGINE
CYLINDER HEAD	SEE PROCEDURE	BASIC ENGINE
ROCKER ARM - NUT	29	BASIC ENGINE
GLOW PLUG OR PLUG	14,2	BASIC ENGINE
ALTERNATOR BRACKET - SCREW	68,6	REMOVAL & INSTALLATION
FRONT ENGINE LIFTING BRACKET (INSTALLED ON ALTERNATOR BRACKET)	27,5	REMOVAL & INSTALLATION
REAR ENGINE LIFTING BRACKET (INSTALLED ON EXHAUST MANIFOLD)	32,4	EXHAUST SIDE

## SPECIAL TOOLS

VM code	Description	Picture
68400012A	Cylinder liner extractor	
68400015A	Crankshaft and camshaft bearing remover/installer	
68410006A	Crankshaft assembly tool	
68410012F	Assembly/disassembly Hydraulic tappets tool	
68420016F	XZN wrench for cylinder head bolt (12 mm)	
68420015F	XZN wrench for cylinder head bolt (14 mm)	
68420019F	Angular torque wrench	
68460003A	Cylinder head assembly dowels	

68480003A	Flywheel ring gear clamp (to be installed in place of starter motor)	
68490007A	Cylinder liner protusion gauge	
68460005F	Pins for flywheel assembly	
68400038F	Crankshaft gear extractor for engines with cylindrical crankshaft end	
68500010F	<p><b>R750 EURO 4 / 5</b>  <b>R750 IE3, TE3</b>  <b>R750 IE4, TE4, ISE4</b></p> <p>Diagnostic tool</p> <hr/> <p> <b>The software updating is available on VM Motori web site, Customer Reserved Area "EXTRANET"</b></p>	

68410013G	Front Oil Seal Installer	
68400040F 68400046F 68400044F 68400045F 68400045G	Injector Remover (Complete) Body Stud Fork R750 EURO 4 / IE3 Fork R750 EURO 5	
68410010F	Rear Oil Seal Installer	
68480013F	Counter balancing crankshaft pins (only for engines where the counter weight balance is installed)	
6844009F 68440010F	Cylinder head seal hydraulic test Cylinder head seal test with hydraulic O-rings	

68420022F	Alternator idle pulley remover	
68490038F	 <b>ONLY FOR R750 EURO 4</b>  Owen for DPF Filter cleaning 3kW - 220V	
68490035F  68490036F  68490037F	Test Engine harness  (without potentiometer accelerator and ECU)  (with potentiometer accelerator and without ECU)  (with potentiometer accelerator and with ECU)	
68490034F	engine compression adapter tester tool	
68500017F 68500016F	<b>Break out box</b>  (without jumpers) (complete of jumpers)	

	<p>Oscilloscope (recommended type "PicoScope")</p> <p>Tool useful to visualize crankshaft and camshaft waveform</p>	
<p>68490007F</p>	<p>Belt fitting tool (R750IE4-TE4-ISE4)</p> <p>A: belt fitting B: tensioner locking spring</p>	
<p>68500019F</p>	<p>R750 engine family - Diagnostic tool <b>(this supersedes the VM diagnostic tool 68500010F not anymore supplied)</b></p>	