

**Engine tightening torque values**

Component	Q.ty	Threading	Length	min.	Torque (Nm)	max.	Notes
GEAR SELECTOR CONTROL							
Gearbox drum positioning screw	1	M16x1.5	-	27	30	33	
Gearbox pawl screw	1	M8x1.25	25	34	36	38	PRE-APPLIED THREADLOCKER
Gearbox pawl screw	1	M6x1	20	15	16	17	PRE-APPLIED THREADLOCKER
GEARBOX / CLUTCH							
Clutch drum nut	1	M25x1.5	-	180	190	200	GREASE B
Wet clutch spring screw	5-3	M6x1	40	9	10	11	
CYLINDERS / PISTONS							
Water union	1+1	M22x1.5	-	23	25	27	PRE-APPLIED THREADLOCKER
TIMING SYSTEM							
Timing layshaft belt roller ring nut	1	M15x1	-	95	100	105	GREASE A
Camshaft gear nut	1	M14x1	-	50	55	60	GREASE A
Nut securing FIXED tensioner	2	M8x1.25	-	22	25	28	GREASE A
Nut securing MOBILE tensioner	2	M8x1.25	-	22	25	28	GREASE A
PLASTIC cover retaining screw	13-16	M6x1	18	9	10	11	PRE-APPLIED THREADLOCKER
PLASTIC cover filter support self-tapping screw	2	3.5	12	1.5	1.75	2	
IGNITION							
Spark plug	2-4	M10x1	-	11	12	13	
Screw securing rotor to flywheel	8	M6x1	18-25-35	11	13	15	PRE-APPLIED THREADLOCKER
CON-ROD ASSEMBLY							
Flywheel retaining nut	1	M28x1.5	-	1) Snug torque at 50Nm			LOCK 5
				2) Tightening of 33° ± 5°			
				3) Torque check 330+550Nm			
Primary sprocket retaining ring nut	1	M24x1	-	171	190	209	GREASE B
Crankshaft drilled dowel	1	M8x1.25	8	11	13	15	LOCK 5
BURNISHED Long connecting rod bolt (Class 14.9)	4	M10x1	-	1) Apply grease Agip GR SM2			GREASE B
				Snug torque to 20 Nm			
				3) Snug torque to 35Nm			

				4) Tightening 120° +/-1°			
				5) Torque check 85÷125Nm			
Steel oil recess blanking plug - NITRIDED	1	M16x1		28	30	32	LOCK 5
Trim retaining pin	4	M20x1.5		45	50	55	LOCK 5 + CAULKING
COVERS							
Water intake union	1	M30x1.5	-	23	25	27	LOCK 5
Water delivery union	2	M22x1.5	-	23	25	27	LOCK 5
Wet clutch fluid filler cap	1	M20x2.5	-	4.5	5	5.5	
Water pump cover plug + washer	1	M10x1	-	13.5	15	16.5	
Clutch recess blanking plug + washer	1	M10x1	-	10	11	12	
Water pump bearing retaining screw + washer	2	M6x1	16	9	10	11	LOCK 2
Timing inspection cover screw	2	M6x1	14	4.5	5	5.5	
Alternator cover closing screw	13	M6x1	20-25-30-35-45	12.5	13.5	14.5	
Water pump cover blanking screw (through hole), + washer	2	M6x1	32	12.5	13.5	14.5	
Water pump cover blanking screw (blind hole)	4	M6x1	30	12.5	13.5	14.5	
Generator stator retaining screw	3	M6x1	30-40	9	10	11	LOCK 2
Clutch cover closing screw	10-9	M6x1	30-35-80-90	12.5	13.5	14.5	
Radial pick-up on generator cover retaining screw	1	M6x1	16	9	10	11	
Sound-deadening panel retaining screw	6-8	M6x1	10	10	12	14	LOCK 5
Rotary gear sensor retaining screw	2	M4x0.7	16	2	2.5	3	LOCK 2
CASING							
Oil cartridge	1	M16x1.5	-	10	11	12	ENGINE OIL
Nipple for oil cartridge	1	M16x1.5	-	38	42	46	LOCK 2
Oil intake service hole plug (low sump)	1	M16x1.5	-	21	24	27	LOCK 5
Oil drain plug with magnet	1	M12x1.5	-	13	15	17	THREE BOND TB 1215
Clutch casing oil delivery channel plug	1	M10x1.5	-	13	15	17	LOCK 5
Clutch casing inner oil channel grub screw	1	M10x1.5	-	13	15	17	LOCK 5
Roller bearing bush hole blanking special screw	1	M10x1	8	18	20	22	THREE BOND TB 1215
Cylinder/head stud bolt	8	M10x1.5	-	28	30	32	LOCK 2

Casing jointing screw in cylinder area	4	M8x1.25	90	1) Apply grease Shell Retinax HDX2 or Agip GR SM 2			GREASE B
				2) Preload torque:			
				17	19	21	
				3) Tightening torque:			
				22	25	28	
Casing jointing screw in cylinder area	3-7	M8x1.25	75	1) Apply grease Shell Retinax HDX2 or Agip GR SM 2			GREASE B
				2) Preload torque:			
				17	19	21	
				3) Tightening torque:			
				22	25	28	
Gear stopper lever retaining screw	1	M8x1.25	21.5	16	18	20	LOCK2
Special dowel for roller bearing bush	1	M8x1.25	14	15	16	17	DRILOC 2045
Inertia stopper screw	2	M8x1.25	15	20	22	24	DRILOC 2045
Nut retaining oil adjustment screw to clutch	1	M8x1	5	10	11	12	
Blow-by valve retaining screw	1	M6x1	16	9	10	11	
Secondary bearing, chain side, stop screw	2	M6x1	12	9	10	11	LOCK 2
Primary bearing, clutch side, stop screw	2	M6x1	12	9	10	11	LOCK 2
Casing jointing screw in idle gear shaft area	2	M6x1	75	9	10	11	
Casing outer jointing screw	8	M6x1	35	9	10	11	
Mesh filter blanking screws	4	M6x1	16	8	9	10	THREE BOND TB 1215
Oil squirter under piston retaining screw	2	M5x0.8	10	7	8	9	LOCK 2
Blow-by valve upper shell screw	3	M3x0.5	14	1	1.2	1.4	LOCK 5
Horizontal head to oil tube screw	2	M5x0.8	10	7	8	9	LOCK 2
ELECTRIC STARTER							
Starter motor outer retaining screw	1	M6x1	18-20	9	10	11	LOCK 2
Starter motor outer retaining screw	1	M6x1	25	9	10	11	LOCK 2
Starter motor rear retaining screw	1	M6x1	30	9	10	11	PRE-APPLIED THREADLOCKER
COOLING CIRCUIT							
Water circuit ties	3-4	-	-	2	2.5	3	
OIL PUMP							
Oil pump retaining screw + washer	2	M8x1.25	40	23	26	29	

Oil gear pump assembling screw	6-5	M6x1	25	9	10	11	
Oil pump retaining screw + washer	1	M6x1	-	9	10	11	
By-pass pump plug	1	M16x1	-	16	18	20	LOCK 5
HEAD							
VVT blanket plug	2+2	M22x1	-	18	20	22	
FIXED and MOBILE tensioner pin	2+2	M20x1	-	45	50	55	LOCK 2
OCV oil filter plug	2+2	M16x1	-	20	22.5	25	ENGINE OIL
Temperature sensor on water union	1	M12x1.5	-	20	23	26	LOCK 4
Rocker arm shaft blanking plug + washer	8+8	M12x1.25	-	14	15	16	PRE-APPLIED THREADLOCKER
VVT timing variator securing screw	4	M11x1	-	1) Snug torque at 20Nm			ENGINE OIL
				2) VVT angular backlash manual check			
				3) Tightening to 90±5Nm			
				4) VVT angular backlash manual check			
Nut for head/cylinder stud bolt	4+4	M10x1.5	-	1) Apply grease Agip GR FD33			GREASE C
				2) Snug torque at 20Nm			
				3) Preload torque			
				38	40	42	
				4) Tightening torque			
				57	60	63	
Camshaft cap retaining screw	8+8	M8x1.25	32	1) Apply SHELL ULTRA 4			ENGINE OIL
				2) Preload torque:			
				9	10	11	
				3) Tightening torque:			
				21	22.5	25	
Knock sensor	1+1	M8x1.25	35	22.5	25	27.5	
Exhaust manifold stud bolt	3+3	M6x1	-	9	10	11	LOCK 5
Vacuumeter retaining screw + washer	1+1	M6x1	8	4	5	6	
Horizontal head air breather union + washer	1	M6x1	-	2	2.5	3	LOCK 2
MAP sensor special screw	2	M6x1		4	5	6	
Vertical head air breather screw + washer	1	M6x1	8	7	8	9	LOCK 2
OCV retaining screw	2+2	M6x1	14	12.5	13.5	14.5	PRE-APPLIED THREADLOCKER

Secondary air cover retaining screw	2+2	M5x0.8	-	5	6	7	
Head cover retaining special stud bolt screw	2	M6x1	-	9	10	11	
Head cover retaining special stud bolt nut	2+2	M6x1	-	9	10	11	
Head cover retaining special screw	2+2	M6x1	-	9	10	11	
Pick-up sensors to head cover retaining screw	2+2	M6x1	16	7	8	9	PRE-APPLIED THREADLOCKER
Screw securing water unions to head	2+2	M5x0.8	16	5	6	7	PRE-APPLIED THREADLOCKER