

Engine tightening torque values

Part	Q.ty	Thread	Pitch	Length	Min.	Torque	Max.	Notes
GEAR SHIFT ASSEMBLY								
Selector drum cam retaining screw	1	M8	1.25	20	23	25	27	LOCK 2 on thread only
GEARBOX - CLUTCH ASSEMBLY								
Clutch hub nut	1	M25	1.5	9	180	190	200	GREASE B on thread only
Idle primary gear inner ring retaining screw	1	M8	1.25	20	23	25	27	LOCK 2 on thread only
FCC - clutch spring screw	3	M6	1	45	9	10	11	
Gearbox primary bearing bushing retaining screw	3	M6	1	20	12	13	14	Pre-applied Loctite
TIMING SYSTEM ASSEMBLY								
Timing system chain tensioner	2	M22	1.5	-	28	30	32	
Timing system sliding shoe retaining pin	4	M8	1.25	12	18	20	22	
Chain sprocket and gear retaining screw	6	M6	1	18	18	19	20	LOCK 2 on thread only
Timing gear retaining screw	6	M6	1	14	18	19	20	LOCK 2 on thread only
IGNITION ASSEMBLY								
Flywheel retaining nut	1	M22	1.25	14	210	220	230	GREASE B
Starter clutch flange retaining screw	6	M6	1	16	11	13	15	Pre-applied Loctite
CONNECTING ROD ASSEMBLY								
Primary sprocket retaining nut	1	M22	1.25	14	180	190	200	GREASE B
Connecting rod screw	8	MJ9	1	34	GREASE G on thread and underhead			
	1) First pre-tightening to 10 Nm \pm 1							
	2) Second pre-tightening to 25 Nm \pm 1							
	3) Final tightening with a rotation of 120° \pm 1°							
	4) Torque check 65 \div 95 Nm							
	5) Expected stretch 0.300 mm \pm 0.020							
Crankshaft drilled grub screw	1	M8	1.25	8	11	13	15	LOCK 5
COVER ASSEMBLY - CLUTCH SIDE								
Blow-by delivery union	1	M24	1.5	9	18	20	22	Pre-applied Loctite
Engine timing hole threaded plug	1	M22	1.5	10	18	20	22	LOCK 2
Oil filler cap	1	M20	2.5	-	4.5	5	5.5	
Hole threaded plug for pick-up gap check	1	M12	1.25	8	14	15	16	Pre-applied Loctite
Oil pressure sensor	1	M10	1	12.5	14	15	16	
Pick-up retaining screw	1	M6	1	18	9	10	11	
Sound-deadening metal sheet retaining screw	7	M6	1	10	9	10	11	Pre-applied Loctite
Clutch protection cover retaining screw	6	M6	1	19				
	Tightening 3 \div 3.5 Nm + angle 90°							

	Torque check 5.5÷10 Nm							
Clutch cover retaining screw	14	M6	1	19				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
Clutch cover retaining screw	2	M6	1	27				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
Clutch cover retaining screw	2	M6	1	19	SEALING COMPOUND A on thread			
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
COVER ASSEMBLY - GENERATOR SIDE								
Stator retaining screw	3	M6	1	25	9	10	11	Pre-applied Loctite
Timing inspection cover retaining screw	2	M6	1	14	4.5	5	5.5	
Generator cover retaining screw	9	M6	1	19				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
Generator cover retaining screw	2	M6	1	19	SEALING COMPOUND A on thread			
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
Generator cover retaining screw	1	M6	1	27				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
COVER ASSEMBLY - OIL SUMP								
Oil drain plug with magnet	1	M14	1.5	-	12	14	16	SEALING COMPOUND A on thread
Oil filter cover retaining screw	3	M6	1	20	9	10	11	Pre-applied Loctite
Oil sump retaining screw	12	M6	1	19				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
Oil sump retaining screw	12	M6	1	27				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
CRANKCASE ASSEMBLY								
Water pump intake union	1	M32	1.5	-	23	25	27	Pre-applied Loctite
Oil return hose from airbox	1	M12	1.5	-	7	8	9	LOCK 5
Engine timing hole threaded plug	1	M12	1.25	8	14	15	16	Pre-applied Loctite
Inner central journal stud bolt	2	M10	1.25	-	23	25	27	LOCK 5

Inner side journal stud bolt	4	M10	1.25	-	23	25	27	LOCK 5
Head - engine block retaining stud bolt	12	M10	1.25	-	28	30	32	LOCK 5
Inner central journal nut	2	M10	1	-	ENGINE OIL on thread and underhead			
	Snug torque				13	15	17	
	Tightening				48	50	52	
Inner side journal nut	4	M10	1	-	ENGINE OIL on thread and underhead			
	Snug torque				13	15	17	
	Tightening				48	50	52	
Outer central journal screw	2	M10	1.25	85	ENGINE OIL on thread and underhead			
	Snug torque				13	15	17	
	Tightening				33	35	37	
Outer side journal screw	4	M8	1.25	35				
	Snug torque				13	15	17	
	Tightening				23	25	27	
Half-casing retaining screw	9	M8	1.25	30				
	Snug torque				13	15	17	
	Tightening				23	25	27	
Half-casing retaining screw	1	M8	1.25	40				
	Snug torque				13	15	17	
	Tightening				23	25	27	
Half-casing retaining screw	1	M8	1.25	60				
	Snug torque				13	15	17	
	Tightening				23	25	27	
Stud bolt - Secondary shaft output	1	M8	1.25	16	10	12	14	LOCK 5 on thread
Nut - secondary shaft output hole	1	M8	1	8				
	Snug torque				13	15	17	
	Tightening				23	25	27	
Tapered threaded plug	1	M8	1	8	9	10	11	Pre-applied Loctite
Special screw - gearbox selector pin	1	M8	1.25	16	18	20	22	LOCK 2 on thread
Knock sensor retaining screw	2	M8	1.25	25	23	25	27	Pre-applied Loctite
Nut retaining oil adjustment screw to clutch	1	M8	1	-	13	15	17	
Half-casing retaining screw	4	M6	1	30	12	13	14	
Hex socket set screw	1	M6	1	8	7	8	9	
Gear stopper lever retaining screw	1	M6	1	16	9	10	11	LOCK 2 on thread
Starter gear guide retaining screw	1	M6	1	18	12	13	14	Pre-applied Loctite
Selector drum bearing retaining screw	2	M6	1	10	9	10	11	LOCK 2 on thread
Thermostatic valve cover retaining screw	3	M6	1	18	12	13	14	Pre-applied Loctite

Piston oil squirters retaining screw	2	M5	0.8	10	7	8	9	LOCK 2 on thread
Gear sensor retaining screw	2	M4	0.7	14	2	2.5	3	LOCK 2 on thread
ELECTRIC STARTER ASSEMBLY								
Starter motor retaining screw	2	M6	1	25	12	13	14	Pre-applied Loctite
COOLING - WATER PUMP ASSEMBLY								
Water pump drive gear retaining screw	1	M6	1	16	18	19	20	Pre-applied Loctite
Water pump retaining screw	6	M6	1	19				
	Tightening 3÷3.5 Nm + angle 90°							
	Torque check 5.5÷10 Nm							
OIL PUMP ASSEMBLY								
By-pass pump plug	1	M16	1	12	27	30	33	LOCK 2 on thread
Oil pump drive gear retaining screw	1	M6	1	16	18	19	20	Pre-applied Loctite
Delivery pipe retaining screw	1	M6	1	16	9	10	11	
Delivery pump side retaining screw	3	M6	1	45	12	13	14	
Head scavenge pump side retaining screw	4	M6	1	35	12	13	14	
Delivery pump side retaining screw	1	M6	1	16	12	13	14	
Pump unit retaining screw	3	M6	1	35	12	13	14	Pre-applied Loctite
Strainer retaining screw	2	M6	1	18	9	10	11	Pre-applied Loctite
HEAD ASSEMBLY								
Water delivery union	2	M24	1.5	9	18	20	22	Pre-applied Loctite
Timing cover hole blanking cap	10	M15	1	7.5	16	17	18	LOCK 2 on thread
Rocker arm shaft blanking plug	12	M12	1.25	8	13	14	15	LOCK 2 on thread
Water jacket blanking tapered plug	8	M10	1	8	18	20	22	Pre-applied Loctite
Oil hole blanking plug	2	M10	1	8	13.5	15	16.5	
Nut for head/crankcase stud bolt	24	M10	1	-	GREASE C			
	Snug torque				-	20	-	
	Pre-tightening				38	40	42	
	Tightening				64	67	70	
NGK spark plug	4	M10	1	26.5	11	12	13	
Cap retaining screw	12	M6	1	30				
	Snug torque				7	8	9	
	Tightening				12	13	14	
Oil hole blanking plug	2	M6	1	10	7	8	9	
Rocker arm plate retaining screw	2	M6	1	10	5	6	7	Pre-applied Loctite
MAP sensor hose union	4	M6	1	8	5	6	7	
Canister pipe union	4	M6	1	8	5	6	7	

Exhaust flange stud bolt	12	M6	1	16	9	10	11	LOCK 5 on thread
Head cover retaining special screw	8	M6	1	12	9	10	11	
Exhaust flange cross member retaining nut	4	M6	1	-	9	10	11	
Head/crankcase retaining screw	4	M6	1	45	12	13	14	
Coil retaining screw	4	M6	1	20	9	10	11	
Secondary air cover retaining screw	4	M5	0.8	16	5	6	7	