

TORQUE SPECIFICATION

1ZZ-FE

Part Tightened		N·m	kgf·cm	ft·lbf
Cylinder head cover No. 2 x Cylinder head cover sub-assy		7.0	71	62 in.·lbf
Camshaft bearing cap No. 3 x Cylinder head sub-assy		13	133	10
Camshaft bearing cap No. 1 x Cylinder head sub-assy		23	235	17
Camshaft timing gear or sprocket x Camshaft No. 2		54	551	40
Chain tensioner assy No. 1 x Timing chain or belt cover sub-assy		9.0	92	80 in.·lbf
V-ribbed belt tensioner assy x Cylinder block sub-assy		69	704	51
V-ribbed belt tensioner assy x Cylinder head sub-assy		29	296	21
Engine mounting insulator RH x Body		52	530	38
Engine mounting insulator RH x Transverse engine engine mounting bracket		52	530	38
Cylinder head cover sub-assy x Cylinder head sub-assy	A	11	112	8
	B	9.0	92	80 in.·lbf
Cylinder head cover sub-assy x Timing chain or belt cover sub-assy		11	112	8
Engine wire x Cylinder head cover sub-assy		9.0	92	80 in.·lbf
Ignition coil assy x Cylinder head cover sub-assy		9.0	92	80 in.·lbf
Engine hanger x Cylinder head cover sub-assy		38	387	28
Radio setting condenser x Cylinder head sub-assy		10	102	7
E.F.I. Engine coolant temperature sensor x Cylinder head sub-assy		20	204	15
Exhaust manifold x Cylinder head sub-assy		37	377	27
Exhaust manifold heat insulator No. 1 x Exhaust manifold		18	184	13
Manifold stay x Exhaust manifold		49	500	36
Oxygen sensor x Exhaust manifold		44	450	33
Manifold stay x Cylinder block sub-assy		49	500	36
Transverse engine engine mounting bracket x Timing chain or belt cover sub-assy		47	479	35
Knock control sensor x Cylinder block sub-assy		20	204	15
Crank position sensor x Timing chain or belt cover		9.0	92	80 in.·lbf
Crank position sensor No. 1 x Cylinder head sub-assy		9.0	92	80 in.·lbf
Water inlet x Cylinder block sub-assy		11	112	8
Water by-pass pipe No. 1 x Cylinder block sub-assy		9.0	92	80 in.·lbf
Water by-pass pipe No. 1 x Cylinder head sub-assy		9.0	92	80 in.·lbf
Oil level gage guide x Water by-pass pipe No. 1		13	133	10
Intake manifold x Cylinder head sub-assy		30	306	22
Flywheel sub-assy x Crankshaft	1st	49	500	36
	2nd	Turn 90°	Turn 90°	Turn 90°
Drive plate & ring gear sub-assy x Crankshaft		88	897	65
Transverse engine engine mounting bracket front x Transverse engine engine mounting insulator front		52	530	38
Transverse engine engine mounting bracket rear x Transverse engine engine mounting insulator rear		87	887	64
Transverse engine engine mounting bracket LH x Transverse engine engine mounting insulator LH		80	816	59
Transverse engine engine mounting bracket RH x Transverse engine engine mounting insulator RH		52	530	38
Front suspension crossmember sub-assy x Body	Front	113	1,152	83
	Rear	157	1,601	116
Engine mounting member sub-assy center x Body		39	398	29
Floor panel brace front x Body		30	306	22
Return tube sub-assy x Body	Bolt A	5.0	51	44 in.·lbf
	Bolt B	7.8	80	69 in.·lbf
Cruise control actuator x Cruise control bracket		6.0	61	53 in.·lbf

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Part Tightened		N·m	kgf·cm	ft·lbf
Air cleaner case x Body		7.0	71	62 in.·lbf
Air cleaner case x Transverse engine engine mounting bracket LH		7.0	71	62 in.·lbf
Battery carrier x Body		13	133	10
Battery clamp sub-assy x Body		5.0	51	44 in.·lbf
Battery clamp sub-assy x Battery clamp bolt		30 – 4.0	31 – 41	27 – 35 in.·lbf
Radiator support upper x Body		19	194	14
Front wheel RH & LH x Front axle hub sub-assy RH & LH		103	1,050	76
Oil strainer sub-assy x Cylinder block sub-assy		9.0	92	80 in.·lbf
Oil pan sub-assy x Cylinder block sub-assy		9.0	92	80 in.·lbf
Oil pan drain plug x Oil pan sub-assy		37	377	27
Camshaft timing gear assy x Camshaft		54	551	40
Oil control valve filter x Cylinder head sub-assy		30	306	22
Oil pump assy x Cylinder block sub-assy		9.0	92	80 in.·lbf
Timing chain cover sub-assy x Stud bolt		5.0	51	44 in.·lbf
Water pump assy x Timing chain cover sub-assy	A	9.0	92	80 in.·lbf
	B	11	112	8
Spark plug x Cylinder head sub-assy		25	255	18
Ventilation valve sub-assy x Cylinder head cover sub-assy		30	306	22
Chain tensioner slipper x Cylinder block sub-assy		19	194	14
Timing chain or belt cover sub-assy x Cylinder head sub-assy		13	133	10
Timing chain or belt cover sub-assy x Cylinder block sub-assy	M6	13	133	10
	M8	19	194	14
Crankshaft pulley x Crankshaft		138	1,407	102
Cylinder head sub-assy x Cylinder block sub-assy	1st	49	500	36
	2nd	Turn 90°	Turn 90°	Turn 90°
Camshaft timing oil control valve assy x Cylinder head sub-assy		9.0	92	80 in.·lbf
Chain vibration damper No. 1 x Cylinder head sub-assy		9.0	92	80 in.·lbf
Chain vibration damper No. 1 x Cylinder block sub-assy		9.0	92	80 in.·lbf
Cylinder head sub-assy x Stud bolt	A, D and E	9.5	97	84 in.·lbf
	B and C	5.0	51	44 in.·lbf
W/ Head taper screw plug No. 2 x Cylinder head sub-assy		44	449	33
Cylinder block sub-assy x Stud bolt	A, C, D and E	5.0	51	44 in.·lbf
	B	11	112	8
Crankshaft bearing cap x Cylinder block sub-assy	1st	44	449	33
	2nd	Turn 90°	Turn 90°	Turn 90°
	Others	19	194	14
Connecting rod cap x Connecting rod		20	204	15
Cylinder block water drain cock sub-assy x Cylinder block sub-assy		25	255	18

2ZZ-GE

Part Tightened		N·m	kgf·cm	ft·lbf
Suction hose bracket x Body		9.8	100	87 in.·lbf
Wire harness clamp x Cylinder head cover		10	102	7
Ignition coil x Cylinder head cover		9.0	92	80 in.·lbf
Cylinder head cover No. 2 x cylinder head cover		7.0	71	62 in.·lbf
Engine hanger x Cylinder head		38	387	28
Camshaft timing gear or sprocket x Camshaft		54	551	40
Camshaft timing gear assy x Camshaft		54	551	40
Chain vibration damper No. 1 x Cylinder block		21	214	15
Chain tensioner slipper x Cylinder block		21	214	15
Timing chain or belt cover sub-assy x Cylinder head x Cylinder block	M8	21	214	15
	M6	11	112	8
	Stud (E8)	9.5	97	84 in.·lbf

Part Tightened		N·m	kgf·cm	ft·lbf
Transverse engine engine mounting bracket x Timing chain or belt cover sub-assy		49	500	36
Crank position sensor x Timing chain or belt cover sub-assy		9.0	92	80 in.·lbf
Crankshaft pulley x Crankshaft		118	1,203	87
Chain tensioner assy No. 1 x Timing chain or belt cover sub-assy		9.0	92	80 in.·lbf
Cylinder head cover sub-assy x Cylinder head		10	102	7
No. 1 ventilation pipe x Cylinder head cover sub-assy		10	102	7
No. 1 ventilation pipe x Intake manifold		24	245	18
Camshaft bearing cap x Cylinder head		19	194	14
Valve rocker shaft x Cylinder head		9.0	92	80 in.·lbf
Camshaft timing oil control valve assy x Cylinder head		9.0	92	80 in.·lbf
Cam timing control valve housing x Cylinder head		9.0	92	80 in.·lbf
Engine oil pressure switch x Cylinder head		13	133	9
Oil control valve filter x Cylinder head		29	296	21
Cylinder head x Cylinder block	1st	35	357	26
	2nd	Turn 180°	Turn 180°	Turn 180°
Intake manifold x Cylinder head	Bolt A	34	347	25
	Bolt B	46	469	34
Surge tank stay No. 1 x Intake manifold		24	245	18
Exhaust manifold x Cylinder head		50	510	37
Exhaust manifold heat insulator No. 1 x Exhaust manifold		21	214	15
V-ribbed belt tensioner assy x Cylinder head	Bolt	100	1,020	74
	Nut	29	296	21
Oil level gage guide x Intake manifold		24	245	18
Exhaust manifold stay		50	510	37
Front engine mounting bracket x Engine mounting member		52	530	38
Rear engine mounting bracket x Suspension member		87	887	64
Engine mounting insulator sub-assy LH x Body		80	816	60
Engine mounting insulator sub-assy RH x Body		52	531	38
Suspension member x Body	Bolt A	157	1,601	116
	Bolt B	113	1,152	83
Engine mounting member x Body		39	398	29
Return tube sub-assy x Body	Bolt A	5.0	51	44 in.·lbf
	Bolt B	7.8	80	69 in.·lbf
Generator bracket No. 1 x Generator x Intake manifold		29	296	21
Battery carrier x Body		13	132	10
Cruise control actuator x Cruise control bracket		6.0	61	53 in.·lbf
Air cleaner case		7.0	71	62 in.·lbf
Crankshaft bearing cap sub-assembly x Cylinder block	12 pointed head 1st	22	224	16
	2nd	44	449	32
	3rd	Turn 45°	Turn 45°	Turn 45°
	4th	Turn 45°	Turn 45°	Turn 45°
	Hexagon head	18	184	13
Screw plug x Crankshaft bearing cap sub-assembly		43	438	32
Connecting rod cap x Connecting rod sub-assy	1st	30	306	22
	2nd	Turn 90°	Turn 90°	Turn 90°
Oil strainer x Crankshaft cap		9.0	92	80 in.·lbf
Oil pan baffle plate x Crankshaft cap		9.0	92	80 in.·lbf
Oil pan x Crankshaft bearing cap sub-assembly		9.0	92	80 in.·lbf
Oil pan drain plug x Oil pan		37	378	28
Oil pump x Cylinder block		9.0	92	80 in.·lbf
Water pump x Timing chain or belt cover sub-assy x Cylinder block		9.0	92	80 in.·lbf
Water pump pulley x Water pump		15	153	11

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Part Tightened		N·m	kgf·cm	ft·lbf
Spark plug x Cylinder head		18	184	13
Ventilation valve sub-assy x Cylinder head cover sub-assy		27	275	20
Stud bolt x Cylinder head	A, B, D and E	9.5	97	84 in.·lbf
	C	5.0	51	44 in.·lbf
	F	19	194	14
W/ head taper screw plug No. 1 x Cylinder head		78	796	58
Sub-assy oil nozzle No. 1 x Cylinder block		9.0	92	80 in.·lbf
Oil filter union x Crankshaft cap		30	306	22
Cylinder block water drain cock sub-assy x Cylinder block		25	255	18
E. F. I. engine coolant temperature sensor x Cylinder head		20	208	15
Cam position sensor x Cylinder head		9.0	92	80 in.·lbf
Knock control sensor x Cylinder block		20	204	15
Ventilation case		8.5	87	75 in.·lbf
Water bypass pipe No. 1 x Cylinder block x Cylinder head	M6	8.5	87	75 in.·lbf
	M8	21	214	15
	Nut	10	102	7
Fly wheel sub-assy x Crankshaft	1st	49	500	36
	2nd	Turn 90°	Turn 90°	Turn 90°
Drive plate & ring gear sub-assy x Crankshaft		88	897	65
Front wheel		103	1,050	76