

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Spark plug x Cylinder head	20	200	15
Bearing cap x Cylinder head for 10 mm (0.39 in.) head	9.0	92	80 in.·lbf
Bearing cap x Cylinder head for 12 mm (0.47 in.) head	24	245	18
Chain tensioner No. 2 x Cylinder head	19	194	14
Camshaft timing sprocket x Camshaft	100	1,020	74
Camshaft timing gear assembly x Camshaft	100	1,020	74
Chain tensioner x Cylinder block	10	102	7
Timing chain cover plate x Timing chain cover	9.0	92	80
V-bank cover	7.5	76	66 in.·lbf
Air cleaner	8.0	82	71 in.·lbf
Fan pulley x Water pump	21	214	15
Vane pump x Engine	43	438	32
Oil level gauge guide x Cylinder block	9.0	92	80
Generator x Generator bracket	43	438	32
Generator wire x Generator	9.8	100	7
Wire harness clamp bracket x Generator	8.0	82	71 in.·lbf
Suction hose sub-assy x Cylinder block	8.0	82	71 in.·lbf
Cooler compressor x V-ribbed belt tensioner	25	255	18
Idler pulley No. 1 x Cylinder block	54	551	40
Idler pulley No. 2 x Cylinder block	39	398	29
Water inlet x Cylinder head	9.0	92	80 in.·lbf
V-ribbed belt tensioner x Cylinder block	36	367	27
Oil pan x Cylinder block (See page EM-89)	Bolt A, B, Nut	21	214
	Bolt C	10	102
Oil pan x transmission	37	377	27
Oil strainer x Oil pan	9.0	92	80 in.·lbf
Oil pan No. 2 x Oil pan (See page EM-89)	Bolt	9.0	92
	Nut	10	102
Drain plug x Oil pan No. 2	40	408	30
Stud bolt x Oil pan	4.0	41	35 in.·lbf
Crankshaft pulley set bolt	250	2,549	184
Timing chain cover x Cylinder head and cylinder block	23	235	17
Chain vibration damper No. 1 x Cylinder block	19	194	14
Idle gear shaft No. 2 x Cylinder block	60	612	44
Intake air surge tank x Intake manifold	28	286	21
Surge tank stay x Intake air surge tank and cylinder head	21	214	15
Ignition coil x Cylinder head cover	10	102	7
Oil baffle plate x Surge tank stay No. 1	9.0	92	80 in.·lbf
Cylinder head cover x Cylinder head (See page EM-89)	Bolt A, Nut	9.0	92
	Bolt B	10	102
Throttle body bracket	21	214	15
Exhaust manifold x Cylinder head	21	214	15
Front exhaust pipe x Exhaust manifold	62	630	46
Manifold stay x Front exhaust pipe and transmission	40	408	30

SERVICE SPECIFICATIONS – ENGINE MECHANICAL (1GR-FE)

RH front exhaust pipe x Center exhaust pipe		43	440	32
Water by-pass joint x Cylinder head		9.0	92	80 in.-lbf
LH front exhaust pipe x Center exhaust pipe		48	490	35
Intake manifold x Cylinder head		26	265	19
Oil filter cap housing x Cylinder head cover		9.0	92	80 in.-lbf
Camshaft timing oil control valve x Cylinder head		9.0	92	80 in.-lbf
Fuel pipe bracket		9.0	92	80 in.-lbf
Ventilation valve x Cylinder head cover		27	275	20
VVT sensor x Cylinder head		9.0	92	80 in.-lbf
Oil control valve filter x Cylinder head		62	632	46
Cylinder head x Cylinder block (See page EM-89)	1st 2nd	36 turn 180°	367 turn 180°	27 turn 180°
LH Cylinder head x Cylinder block		30	306	22
Camshaft bearing cap No. 1 x Cylinder head		24	245	18
Camshaft bearing cap No. 2 x Cylinder head		9.0	92	80 in.-lbf
Stud bolt x Cylinder head (See page EM-82)	A and C B	4.0 19.5	41 199	35 in.-lbf 14
Union x Cylinder head		15	153	11
Straight screw plug x Cylinder head		80	816	59
Drive plate x Crankshaft		49	500	36
Engine mounting bracket x Frame bracket		38	388	28
Water outlet pipe No. 1 x Cylinder block		10	102	7
Knock sensor x Cylinder block		20	204	15
Water drain lock x Cylinder block		25	255	18
Connecting rod cap x Connecting rod	1st 2nd	25 Turn 90°	250 Turn 90°	18 Turn 90°
Oil nozzle x Cylinder block		9.0	92	80 in.-lbf
Crankshaft bearing cap x Crankshaft	1st 2nd	61 Turn 90°	622 Turn 90°	45 Turn 90°
Rear oil seal retainer x Cylinder block	Bolt Nut	10 9.0	102 92	7.0 80 in.-lbf
Stud bolt x Cylinder block (See page EM-128)	A B C	11 4.5 4.0	112 46 41	8.1 40 in.-lbf 35 in.-lbf
Clamp x Exhaust tail pipe		32	326	24
Heated oxygen sensor (Bank 1, 2) x Front exhaust pipe		44	450	33
Exhaust center pipe x LH front exhaust pipe		48	490	35
Exhaust center pipe x RH front exhaust pipe		43	440	32