

A-1

SERVICE SPECIFICATIONS

ENGINE MECHANICAL	Page A-2
FUEL SYSTEM	A-6
COOLING SYSTEM	A-10
LUBRICATION SYSTEM	A-10
STARTING SYSTEM	A-11
CHARGING SYSTEM	A-12

A

A-2

SERVICE SPECIFICATIONS — Engine Mechanical

ENGINE MECHANICAL

Specifications

Drive belt deflection or tension		with 10 kg (22.0 lb, 98 N)		w/SST (Reference)
FR Vehicles				
Fan – Alternator	New belt	9.0 – 11.0 mm	0.354 – 0.433 in.	40 – 60 kg
	Used belt	12.0 – 14.0 mm	0.472 – 0.551 in.	20 – 40 kg
PS Pump – Crankshaft	New belt	7.5 – 9.5 mm	0.295 – 0.374 in.	45 – 55 kg
	Used belt	9.5 – 12.5 mm	0.374 – 0.492 in.	20 – 35 kg
A/C Compressor – Crankshaft	New belt	6.5 – 7.5 mm	0.256 – 0.295 in.	45 – 55 kg
	Used belt	7.5 – 10.0 mm	0.295 – 0.394 in.	20 – 35 kg
FF Vehicles				
Alternator – Crankshaft	New belt	9.0 – 11.0 mm	0.354 – 0.433 in.	40 – 60 kg
	Used belt	12.0 – 14.0 mm	0.472 – 0.551 in.	20 – 40 kg
PS Pump – Crankshaft	New belt	11.0 – 14.0 mm	0.433 – 0.551 in.	55 – 65 kg
	Used belt	15.0 – 18.0 mm	0.591 – 0.709 in.	25 – 40 kg
A/C Compressor – Crankshaft	New belt	5.0 – 6.0 mm	0.197 – 0.236 in.	70 – 80 kg
	Used belt	6.0 – 7.0 mm	0.236 – 0.276 in.	30 – 45 kg
CE80 w/o PS CE80 w/ PS and Others	New belt	11.0 – 14.0 mm	0.433 – 0.551 in.	55 – 65 kg
	Used belt	15.0 – 18.0 mm	0.591 – 0.709 in.	25 – 40 kg
Engine oil capacity				
FR Vehicles	Dry fill	5.3 liters	5.6 US qts	4.7 imp. qts
	Drain and refill			
	w/ Oil filter change	4.5 liters	4.8 US qts	4.0 imp. qts
	w/o Oil filter change	3.8 liters	4.0 US qts	3.3 imp. qts
FF Vehicles	Dry fill	4.8 liters	5.1 US qts	4.2 imp. qts
	Drain and refill			
	w/ Oil filter change	4.3 liters	4.5 US qts	3.8 imp. qts
	w/o Oil filter change	3.8 liters	4.0 US qts	3.3 imp. qts
2C-T	Dry fill	5.0 liters	5.3 US qts	4.4 imp. qts
	Drain and refill			
	w/ Oil filter change	4.3 liters	4.5 US qts	3.8 imp. qts
	w/o Oil filter change	3.8 liters	4.0 US qts	3.3 imp. qts
Injection timing [At 0.77 – 0.83 mm (0.0303 – 0.0327 in.) Plunger lift]		0°TDC		
Injection order		1–3–4–2		
Valve clearance (Cold)	Intake	0.20 – 0.30 mm	0.008 – 0.012 in.	
	Exhaust	0.25 – 0.35 mm	0.010 – 0.014 in.	
Idle speed		750 – 850 rpm		
Maximum speed	CV	5,100 – 5,200 rpm		
	Others	5,300 – 5,400 rpm		
Compression pressure	at 250 rpm	30.0 kg/cm ²	427 psi	2,942 kPa
	STD	25.0 kg/cm ²	356 psi	2,452 kPa
Differential of pressure between each cylinder		Less than 5.0 kg/cm ² (71 psi, 490 kPa)		

SERVICE SPECIFICATIONS

Specifications (Cont'd)

Cylinder head	Head surface warpage	Li
	Manifold surface warpage	IN & EX Li
Valve seat	Refacing angle	
	Contacting angle	IN
Valve guide bushing	Contacting width	E
	Inner diameter	
Valve	Outer diameter	STD
	Replacing temperature	O/S type 0
Valve	Valve overall length	STD
	Limit	IN
Valve	Valve face angle	IN
	Stem diameter	IN
Valve	Stem oil clearance	STD
	Limit	IN
Valve spring	Free length	
	Installed length	S
Valve spring	Installed load	
	Squareness	L
Camshaft	Thrust clearance	S
	Journal oil clearance	L
Camshaft	Journal diameter	S
	Circle runout	L
Camshaft	Cam lobe height	
	Intake	STD
Camshaft	Exhaust	Limit
	Limit	2
Valve lifter	Outer diameter	S
	Valve lifter oil clearance	S
Valve lifter		L

A-4

SERVICE SPECIFICATIONS — Engine Mechanical

Specifications (Cont'd)

Intake and exhaust manifold	Manifold surface warpage	Limit	IN & EX	0.4 mm	0.016 in.
No. 2 air intake manifold	Manifold surface warpage	Limit		0.4 mm	0.016 in.
Combustion chamber	Protrusion Shim size			0.01 – 0.07 mm 0.05 mm (0.0020 in.), 0.10 mm (0.0039 in.)	0.0004 – 0.0028 in.
Idle pulley tension spring	Free length Installed tension		at 63 mm (2.48 in.)	51.93 mm 4.3 kg	2.0445 in. 9.5 lb
Cylinder block	Warpage	Limit		0.20 mm	0.0079 in.
	Cylinder bore	STD	1C series	83.00 – 83.03 mm	3.2677 – 3.2689 in.
	Cylinder bore wear		2C series	86.00 – 86.03 mm	3.3858 – 3.3870 in.
	On standard sized piston	Limit		83.23 mm	3.2788 in.
	On oversized piston (O/S 0.50)	Limit		83.73 mm	3.2965 in.
	On standard sized piston	Limit		86.23 mm	3.3949 in.
Piston and piston ring	Piston diameter	1C series	STD	82.95 – 82.98 mm	3.2657 – 3.2669 in.
			O/S type 0.50	83.45 – 83.48 mm	3.2854 – 3.2866 in.
		2C series	STD	85.95 – 85.98 mm	3.3839 – 3.3850 in.
			O/S type 0.50	86.45 – 86.48 mm	3.4035 – 3.4047 in.
	Piston oil clearance	STD		0.04 – 0.06 mm	0.0016 – 0.0024 in.
		Limit		0.15 mm	0.0059 in.
	Piston ring end gap	STD end gap	No. 1	0.27 – 0.54 mm	0.0106 – 0.0213 in.
			No. 2	0.25 – 0.52 mm	0.0098 – 0.0205 in.
	Limit end gap	Oil	No. 1	0.20 – 0.82 mm	0.0079 – 0.0323 in.
			No. 2	1.34 mm	0.0528 in.
	Ring to ring groove clearance (New piston ring)	Oil		1.32 mm	0.0520 in.
				1.62 mm	0.0638 in.
Connecting rod and bearing	Thrust clearance	Limit		0.08 – 0.30 mm	0.0031 – 0.0118 in.
		Limit		0.4 mm	0.016 in.
	Bearing oil clearance	STD		0.036 – 0.064 mm	0.0014 – 0.0025 in.
		Limit		0.1 mm	0.004 in.
	Pin to bushing oil clearance	STD		0.007 – 0.015 mm	0.0003 – 0.0006 in.
		Limit		0.05 mm	0.0020 in.
	Piston pin diameter			27.000 – 27.012 mm	1.0630 – 1.0635 in.
	Bushing inside diameter			27.011 – 27.023 mm	1.0634 – 1.0639 in.
	Rod bend per 100 mm (3.94 in.)	Limit		0.05 mm	0.0020 in.
	Rod twist per 100 mm (3.94 in.)	Limit		0.15 mm	0.0059 in.

SERVICE SPECIFICATIONS

Specifications (Cont'd)

Crankshaft	Thrust clearance	STD
	Thrust washer thickness	Limit
		STD
		O/S type
		O/S type
	Main journal oil clearance	STD
		Limit
	Main journal diameter	STD
	Crank pin oil clearance	STD
		Limit
Flywheel	Crank pin diameter	STD
	Circle runout	Limit
	Main journal taper and out-of-round	Limit
	Crank pin journal taper and out-of-round	Limit
	Runout	Limit

Torque Specifications

Part tightened	
Cylinder head x Cylinder block	1st St
	2nd St
	3rd St
Camshaft bearing cap x Cylinder head	
Manifold x Cylinder head	Intake
	Exhaust
No. 2 air intake manifold x Intake manifold	
Camshaft pulley x Camshaft	
Injection pump drive pulley x Injection pump	
Oil pump drive pulley x Oil pump	
No. 1 idler pulley x Cylinder head	
No. 2 idler pulley x Oil pump x Cylinder block	
Water pump x Cylinder block	
Oil pump x Cylinder block	
Fan bracket or RH engine mounting bracket	14 mm bolt head
	17 mm bolt head
Crankshaft pulley x Crankshaft	
Crankshaft bearing cap x Cylinder block	
Connecting rod cap x Connecting rod	
Flywheel x Crankshaft	
Drive plate x Crankshaft	
Nozzle holder x Cylinder head	
Oil pan or No. 2 oil pan x Cylinder block	
Injection pipe	CV
	Others

A-6

SERVICE SPECIFICATIONS — Fuel System.

FUEL SYSTEM

Injection nozzle	Nozzle type	DNQPD4	
	Nozzle opening pressure		
	Inspection	New nozzle	145 – 155 kg/cm ² (2,062 – 2,205 psi, 14,220 – 15,200 kPa)
		Reused nozzle	135 – 155 kg/cm ² (1,920 – 2,205 psi, 13,239 – 15,200 kPa)
	Adjustment		145 – 155 kg/cm ² (2,062 – 2,205 psi, 14,220 – 15,200 kPa)
	Adjusting shim thickness		0.90 – 1.95 mm 0.0354 – 0.0768 in.
	(For adjusting nozzle opening pressure)		[43 sizes in 0.025 mm (0.0010 in.) increment]
Fuel feed pump	Quantity		4 cc 0.2 cu in.
	Inner pressure	400 rpm	2.2 – 2.8 kg/cm ² (31 – 40 psi, 216 – 275 kPa)
		2,200 rpm	6.7 – 7.3 kg/cm ² (95 – 104 psi, 657 – 716 kPa)
Automatic timer	Timer piston stroke	CE70, CM (STD)	800 rpm 0.20 – 1.20 mm 0.0079 – 0.0472 in.
			1,800 rpm 3.67 – 4.67 mm 0.1445 – 0.1839 in.
			2,350 rpm 5.58 – 6.58 mm 0.2197 – 0.2591 in.
	CE80		800 rpm 0.20 – 1.20 mm 0.0079 – 0.0472 in.
			1,800 rpm 3.67 – 4.67 mm 0.1445 – 0.1839 in.
			2,350 rpm 5.58 – 6.58 mm 0.2197 – 0.2591 in.
	CV		700 rpm 0.24 – 1.24 mm 0.0094 – 0.0488 in.
			1,800 rpm 4.32 – 5.32 mm 0.1701 – 0.2094 in.
			2,250 rpm 5.99 – 6.99 mm 0.2358 – 0.2752 in.
	CT		800 rpm 0.20 – 1.20 mm 0.0079 – 0.0472 in.
			1,800 rpm 3.67 – 4.67 mm 0.1445 – 0.1839 in.
			2,350 rpm 5.58 – 6.58 mm 0.2197 – 0.2591 in.
	CM (OPT)		800 rpm 0.61 – 1.61 mm 0.0240 – 0.0633 in.
			1,800 rpm 4.08 – 5.08 mm 0.1606 – 0.2000 in.
			2,350 rpm 5.99 – 6.99 mm 0.2358 – 0.2752 in.
	CR		800 rpm 0.20 – 1.20 mm 0.0079 – 0.0472 in.
			1,800 rpm 3.67 – 4.67 mm 0.1445 – 0.1839 in.
			2,350 rpm 5.58 – 6.58 mm 0.2197 – 0.2591 in.
	Adjusting shim thickness		[Hysteresis limit less than 0.3 mm (0.012 in.)] 0.2, 0.5, 1.0 mm 0.008, 0.020, 0.039 in.

SERVICE SPECIFICATIONS

FUEL SYSTEM (Cont'd)

Injection pump	Direction of rotation	
	Cam lift	
	Injection order	
	Adjusting lever moving angle	
		CE70
		CE80, CT150
		CM, CR
		CV
	Plunger spring	
	Free length	STD
	Squareness	Limi
	Plunger spring shim	Limi
	Plunger adjusting shim	
	Delivery valve spring	
	Free length	STD
	Squareness	Limi
	Governor	
	Governor sleeve plug	2C-
		Oth
	Weight holder thrust clearance	
	Adjusting washer	
	Top of governor shaft to end of inject pump housing	
Injection pipe	Overall length	
	Outside diameter	
	Inside diameter	

Injection Pump Adjustment and Test

Preparations of pump tester	Test nozzle type	
	Test nozzle opening pressure	
	Injection pipe	Outer diameter
		Inner diameter
		Length
		Minimum bending radius
	Fuel temperature	
	Fuel feeding pressure	
	Fuel cut solenoid voltage	
Over flow volume	Pump rpm	
	2,200	

A-8

SERVICE SPECIFICATIONS — Fuel System

Injection Pump Adjustment and Test (Cont'd)

Full load injection volume	Item	Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume				
-1 Apply 0.48 kg/cm ² (6.8 psi, 47 kPa) pressure	CE70	Plus 9 – 19*	1,500	200	7.9 – 8.3 cc	0.48 – 0.51 cu. in.			
	CE80	Plus 13 – 23*			7.7 – 8.1 cc.	0.47 – 0.49 cu. in.			
	CM (STD)	Plus 3 – 10*			10.1 – 10.5 cc.	0.62 – 0.64 cu. in.			
	CV	Plus 14 – 22*			8.1 – 8.5 cc	0.49 – 0.52 cu. in.			
	CT (w/o HAC)	Plus 13 – 23*			7.9 – 8.4 cc	0.48 – 0.51 cu. in.			
	CT (w/ HAC) ⁻²	Plus 13 – 23*			8.1 – 8.5 cc	0.49 – 0.52 cu. in.			
-2 Apply 730 ± 1.5 mm Hg (28.74 ± 0.06 in. Hg, 97.3 ± 0.2 kPa) absolute pressure	CR	Plus 3 – 10*	1,500	200	7.1 – 7.5 cc	0.43 – 0.46 cu. in.			
	CM (OPT ⁻³)	Plus 3 – 10*							
-3 High altitude									
Maximum speed set	Item	Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume	Remarks			
-1 Apply 0.48 kg/cm ² (6.8 psi, 47 kPa) pressure -2 Apply 730 ± 1.5 mm Hg (28.74 ± 0.06 in. Hg, 97.3 ± 0.2 kPa) absolute pressure -3 For CM (OPT: High altitude)	CE70, CE80	Plus 9 – 19* (CE70) Plus 13 – 23* (CE80)	2,700	200	2.0 – 3.2 cc	0.12 – 0.20 cu. in.	Adjust		
			2,600		4.1 – 5.8 cc	0.25 – 0.35 cu. in.	–		
			2,850		2.8 – 3.8 cc	0.16 – 0.23 cu. in.	Adjust		
	CV	Plus 14 – 22*	2,600	200	5.0 – 8.3 cc	0.31 – 0.51 cu. in.	–		
			2,500		Less than 1.5 cc (0.09 cu. in.)	Adjust			
			2,800		2.0 – 3.2 cc	0.12 – 0.20 cu. in.	Adjust		
	CT	Plus 13 – 23*	2,600	200	4.3 – 6.1 cc	0.26 – 0.37 cu. in.	–		
			2,850		Less than 1.5 cc (0.09 cu. in.)	–			
			2,700		2.2 – 3.0 cc	0.13 – 0.18 cu. in.	Adjust		
	CM, CR	Plus 3 – 10*	2,600	200	4.3 – 6.1 cc	0.26 – 0.37 cu. in.	–		
			2,800		<4.0 – 5.8 cc	0.24 – 0.35 cu. in.	–		
					Less than 1.5 cc (0.09 cu. in.)				
	Injection volume for confirmation	Item	Adjusting lever angle	Pump rpm	No. of measuring strokes	Injection volume	Variation limit	Remarks	
	-1 Apply 0.48 kg/cm ² (6.8 psi, 47 kPa) pressure	CE70	Plus 9 – 19*	1,500	200	7.9 – 8.3 cc	0.48 – 0.51 cu. in.	0.4 cc 0.02 cu. in.	Basic full-load injection volume
				100		8.6 – 13.4 cc	0.52 – 0.82 cu. in.	0.8 cc 0.05 cu. in.	Volume during starting
500				6.4 – 7.4 cc		0.39 – 0.45 cu. in.	–	–	
2,350				6.9 – 7.9 cc		0.42 – 0.48 cu. in.	0.5 cc cu. in.	–	
2,500				5.7 – 7.0 cc		0.35 – 0.43 cu. in.	–	–	
CE80 CM (STD)		Plus 13 – 23* (CE80) 3 – 13* (CM)	1,500	200	7.7 – 8.1 cc	0.47 – 0.49 cu. in.	0.4 cc 0.02 cu. in.	Basic full-load injection volume	
			100		8.6 – 13.4 cc	0.52 – 0.82 cu. in.	0.8 cc 0.05 cu. in.	Volume during starting	
			500		6.2 – 7.2 cc	0.38 – 0.44 cu. in.	–	–	
			2,350		6.7 – 7.7 cc	0.41 – 0.47 cu. in.	0.5 cc cu. in.	–	
			2,500		5.8 – 6.9 cc	0.35 – 0.42 cu. in.	–	–	
CV		Plus 14 – 22*	1,500	200	10.1 – 10.5 cc	0.62 – 0.64 cu. in.	0.4 cc 0.02 cu. in.	Basic full-load injection volume	
			100		9.6 – 14.4 cc	0.59 – 0.88 cu. in.	0.8 cc 0.05 cu. in.	Volume during starting	
			2,250		4.5 – 10.5 cc	0.27 – 0.64 cu. in.	0.5 cc cu. in.	–	
			2,350		8.8 – 10.1 cc	0.54 – 0.62 cu. in.	0.4 cc 0.03 cu. in.	–	
			1,500		8.1 – 8.5 cc	0.49 – 0.52 cu. in.	0.4 cc 0.02 cu. in.	Basic full-load injection volume	
CT (w/o HAC)	Plus 13 – 23*	1,500	200	8.6 – 13.4 cc	0.52 – 0.82 cu. in.	0.8 cc 0.05 cu. in.	Volume during starting		
		100		6.6 – 7.6 cc	0.40 – 0.46 cu. in.	–	–		
		500		7.1 – 8.1 cc	0.43 – 0.49 cu. in.	0.5 cc	–		
		2,350		6.0 – 7.4 cc	0.37 – 0.45 cu. in.	0.3 cu. in.	–		
		2,500							
-1 Apply 0.48 kg/cm ² (6.8 psi, 47 kPa) pressure									

SERVICE SPECIFICATION

Injection Pump Adjustment and Test (Cont'd)

Injection volume for confirmation (Cont'd)	Item	Adjusting lever angle	Pump rpm	No. of measuring strokes	
⁻¹ Apply 730 ± 1.5 mm Hg (28.74 ± 0.06 in. Hg, 97.3 ± 0.2 kPa) absolute pressure ⁻² Apply 530 ± 1.5 mm Hg (20.87 ± 0.06 in. Hg, 70.8 ± 0.2 kPa) absolute pressure	CT ⁻¹ w/ HAC	Plus 13 – 23°	1,500	200	
			100		
			500		
			2,350		
			2,500		
				+1,300	
	CR	Plus 3 – 13°	1,500	200	
			100		
			500		
			2,350		
2,500					
CM (OPT: High altitude)	Plus 3 – 13°	100	200		
		500			
		2,350			
		2,500			
		2,500			
Full-load minimum injection volume (CV Only)				Pump rpm	No. of measuring strokes
				500	1
Boost compensator characteristic (CV Only)				Pump rpm	No. of measuring strokes
				1,500	200
Boost compensator characteristic tendency (CV Only)	Pump rpm	Pressure kg/cm ² (psi, kPa)	1,500	No. of measuring strokes	
					0.48 (8.8, 47)
					0.27 (8.3, 26)
					0.14 (2.0, 14)
					0
Load sensing timer	Pump rpm	Measuring strokes	1,800	Full injection volume (1.7 – 1.9)	
					200
					200
					200
					200
			Pump rpm	0.93 – 1.0	
Idle speed set	Item	Adjusting lever angle	Pump rpm	No. of measuring strokes	
⁻¹ w/ HAC Apply 730 ± 1.5 mm Hg (28.74 ± 0.06 in. Hg, 97.3 ± 0.2 kPa) absolute pressure	CT ⁻¹ w/ HAC Apply CE70, 80 CV	Minus 24 – 34°	400	200	
			375		
			475		
			400		
			375		
CM CR	Minus 30 – 40°		400	200	
			375		
			475		
			400		
			375		

A-10 SERVICE SPECIFICATIONS — Cooling System, Lubrication System

COOLING SYSTEM

Coolant capacity (w/heater)	CE70	6.3 liters	6.7 US qts	5.5 imp. qts
	CE80	7.3 liters	7.7 US qts	6.4 imp. qts
	CV, CT	7.5 liters	7.9 US qts	6.6 imp. qts
	CM	7.0 liters	7.4 US qts	6.2 imp. qts
	CR	7.1 liters	7.5 US qts	6.2 imp. qts
Radiator	Relief valve opening pressure	STD	0.75 – 1.05 kg/cm ² (10.7 – 14.9 psi, 74 – 103 kPa)	
		Limit	0.6 kg/cm ² 8.5 psi 59 kPa	
Thermostat	Valve opening temperature		80 – 84°C	176 – 183°F
	Starts to open at		95°C	203°F
	Fully opens at		More than 8 mm (0.31 in.)	
	Valve opening travel			

LUBRICATION SYSTEM

Oil pressure	Oil pressure at idle at 3,000 rpm		More than 0.3 kg/cm ² (4.3 psi, 29 kPa) 2.5 – 6.0 kg/cm ² (36 – 85 psi, 245 – 588 kPa)	
Oil pump	Body clearance	STD	0.10 – 0.17 mm	0.0039 – 0.0067 in.
		Limit	0.20 mm	0.0079 in.
	Tip clearance	STD	0.05 – 0.15 mm	0.0020 – 0.0059 in.
		Limit	0.20 mm	0.0079 in.
	Side clearance	STD	0.03 – 0.09 mm	0.0012 – 0.0035 in.
		Limit	0.15 mm	0.0059 in.

SERVICE SPECIFICATION

STARTING SYSTEM

Pre-heating system	Type	
	Light lighting time	at 20°C (68°F)
Starter	Rated voltage and output	Power
	No-load characteristic	Ampere
		rpm
	Brush	Length
		STD
		Limit
	Commutator	Outer diameter
		STD
		Limit
		Undercut depth
		STD
		Limit
	Circle runout	Limit
	Spring installed load	STD
		Limit

A-12

SERVICE SPECIFICATIONS — Charging System

CHARGING SYSTEM

Battery specific gravity when fully charged at 20°C (68°F)		1.27 – 1.29	NT80–S6(S), NX110–5, NX110–5L, NX110–5L–MF, NX120–7, NX120–7L, NX120–7L–MF	
Drive belt deflection with 10 kg (22.0 lb, 98N)	FR Vehicles (CM, CR)	New belt	4.5 – 6.0 mm	0.177 – 0.236 in.
		Used belt	6.5 – 8.5 mm	0.256 – 0.335 in.
(Others)	New belt	6 – 7.5 mm	0.236 – 0.295 in.	
	Used belt	7.5 – 10.5 mm	0.295 – 0.413 in.	
FF Vehicles	New belt	9 – 11 mm	0.35 – 0.43 in.	
	Used belt	12 – 14 mm	0.47 – 0.55 in.	
Drive belt tension (Reference) w/SST				
FR Vehicles (CM, CR)	New belt	70 – 80 kg		
	Used belt	30 – 45 kg		
(Others)	New belt	45 – 55 kg		
	Used belt	20 – 35 kg		
FF Vehicles	New belt	45 – 55 kg		
	Used belt	20 – 35 kg		
Alternator	Rated output		12V 40A, 12V 45A, 12V 50A, 12V 55A, 12V 60A	
	Rotor coil resistance	w/ IC regulator	Approx. 2.9 Ω	
		w/o IC regulator	Approx. 4.0 Ω	
	Brush exposed length	STD	20 mm	0.79 in.
		Limit	5.5 mm	0.217 in.
Alternator regulator	Regulator voltage	w/ IC regulator	13.8 – 14.4V	
		w/o IC regulator	13.8 – 14.8V	
		CE OPT: Cold area of the Europe	13.8 – 14.4V	
	Voltage relay actuating voltage		4.0 – 5.8V	

STAN
TORC

STANDARD

B-2

STANDARD BOLT TORQUE SPECIFICATIONS

STANDARD BOLT TORQUE SPECIFICATIONS

HOW TO DETERMINE BOLT STRENGTHS

	Mark	Class		Mark	Class
Hexagon head bolt	 Bolt head No. 4~	4T	Stud bolt	 No mark	4T
		5~			
	6~	6T			
	7~	7T			
	 No mark	4T			
Hexagon flange bolt w/washer hexagon bolt	 No mark	4T		 Grooved	6T
Hexagon head bolt	 Two protruding lines	5T			
Hexagon flange bolt w/washer hexagon bolt	 Two protruding lines	6T	Welded bolt	 4T	4T
Hexagon head bolt	 Three protruding lines	7T			

STANDARD BOLT TORQUE

SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Hexagon head	
			kg-cm	ft-lb
4T	6	1	55	48
	8	1.25	130	9
	10	1.25	260	19
	12	1.25	480	35
	14	1.5	760	55
	16	1.5	1,150	83
5T	6	1	65	56
	8	1.25	160	12
	10	1.25	330	24
	12	1.25	600	43
	14	1.5	930	67
	16	1.5	1,400	101
6T	6	1	80	69
	8	1.25	195	14
	10	1.25	400	29
	12	1.25	730	53
	14	1.5	—	—
7T	6	1	110	8
	8	1.25	260	19
	10	1.25	530	38
	12	1.25	970	70
	14	1.5	1,500	108
	16	1.5	2,300	166

SS1

SST (SPECIAL SERVICE TOOLS)

Section		Classification	
Part Name			
Part No.			
Illustration			
	09222-64010	Connecting Rod Bushing Remover & Replacer	E
	(09222-02020)	(Remover & Replacer)	
	(09222-02030)	(Guide)	
	(09222-02040)	(Base)	
	09223-56010	Crankshaft Rear Oil Seal Replacer	E
	09228-44010	Oil Filter Wrench	A
	09228-64010	Fuel Filter Wrench	A
	09230-00010	Radiator Service Tool Set	E
	09241-76022	Injection Pump Stand Set	C
	09245-54010	Injection Pump Stand Arm	C
	09248-64010	Valve Clearance Adjusting Tool	A
	09260-54012	Injection Pump Tool Set	C
	09268-64010	Injection Nozzle Wrench Set	A
	09275-54010	Plunger Stroke Measuring Tool	A

Section							
Classification							
Part Name		EM	FU	CO	LU	ST	CH
Part No.							
Illustration							
	09278-54012	(Drive Shaft Holding Tool)	A	●	●	●	
	09286-46011	(Injection Pump Spline Shaft Puller)	C				● ●
	09330-00021	(Companion Flange Holding Tool)	A	●	●	●	●
	09612-24013	(Steering Gear Housing Overhaul Tool Set)	B	●			
	09820-00021	(Alternator Rear Bearing Puller)	B				●
	09820-00038	(Alternator Rear Bearing Replacer)	B				●
	09952-00023	(Cylinder Compression Check Gauge Set)	A	●			
	09952-00160	(Compression Gauge No. 5 Attachment)	A	●			
	09952-00240	(Turbocharger Pressure Gauge)	C	●	●		