

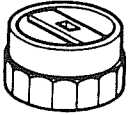
# SST & SERVICE SPECIFICATIONS

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## SST (SPECIAL SERVICE TOOLS)

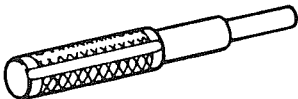
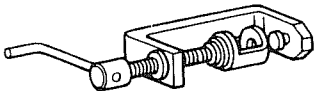
### ENGINE TUNE-UP

#### Engine Oil

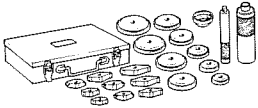
Illustration	Tool No.	Tool Name
	09228-44010	Oil Filter Wrench

### ENGINE SERVICE

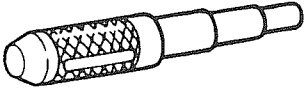
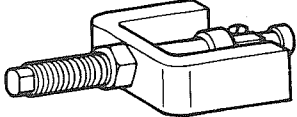
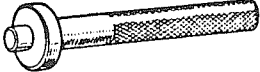
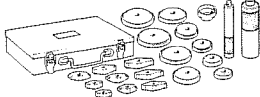
#### Cylinder Head

Illustration	Tool No.	Tool Name
	09201-60011	Valve Stem Guide Remover & Replacer
	09202-43013	Valve Spring Compressor

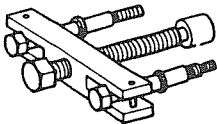
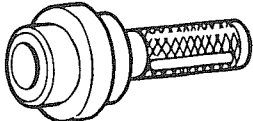
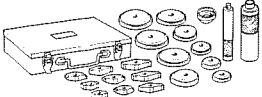
#### Timing Chain

Illustration	Tool No.	Tool Name
	09213-31021	Crankshaft Pulley Puller
	09213-36020	Timing Gear Remover
	09608-35013	Axle Hub & Drive Pinion Bearing Tool Set


**Cylinder Block**

Illustration	Tool No.	Tool Name
	09222-30010	Connecting Rod Bushing Remover & Replacer
	09303-35011	Input Shaft Front Bearing Puller
	09304-30012	Input Shaft Front Bearing Replacer
	09608-35013	Axle Hub & Drive Pinion Bearing Tool Set

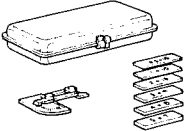
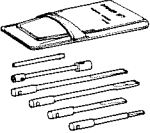
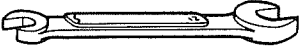
**LUBRICATION SYSTEM****Oil Pump**

Illustration	Tool No.	Tool Name
	09213-31021	Crankshaft Pulley Puller
	09223-50010	Crankshaft Front Oil Seal Replacer
	09608-35013	Axle Hub & Drive Pinion Bearing Tool Set

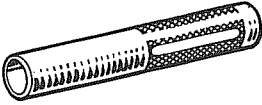
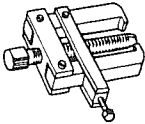
**COOLING SYSTEM****Water Pump**

Illustration	Tool No.	Tool Name
	<b>09236-00100</b>	<b>Water Pump Overhaul Tool Set</b>

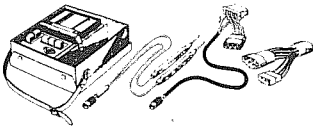
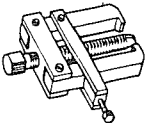
**FUEL SYSTEM****Carburetor**

Illustration	Tool No.	Tool Name
	<b>09240-00014</b>	<b>Carburetor Adjusting Gauge Set</b>
	<b>09860-11011</b>	<b>Carburetor Driver Set</b>
	<b>09922-00010</b>	<b>Wrench 5 x 12</b>

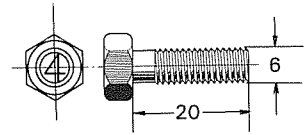
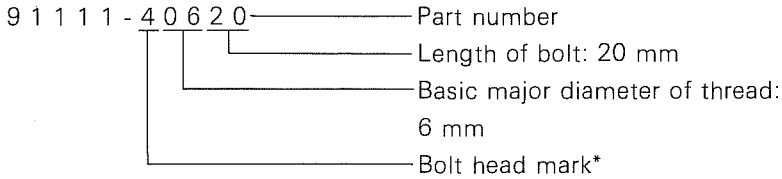
**STARTING SYSTEM****Reduction Starter**

Illustration	Tool No.	Tool Name
	09285-76010	Injection Camshaft Bearing Cone Replacer
	09286-46011	Injection Pump Spline Shaft Puller

**CHARGING SYSTEM****Alternator**

Illustration	Tool No.	Tool Name
	09081-00011	Alternator Checker
	09286-46011	Injection Pump Spline Shaft Puller

# STANDARD BOLT TIGHTENING TORQUE



\* Explanation of bolt head marks are as indicated in the following table.

## SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Basic diameter mm	Pitch mm	Torque limit	kg-m (ft-lb)
4T	6	1	0.4 – 0.7	( 3 – 5)
	8	1.25	1.0 – 1.6	( 8 – 11)
	10	1.25	1.9 – 3.1	( 14 – 22)
	10	1.5	1.8 – 3.0	( 14 – 21)
	12	1.25 (ISO)	3.5 – 5.5	( 26 – 39)
	12	1.5	3.5 – 5.5	( 26 – 39)
	12	1.75	3.0 – 5.0	( 22 – 36)
	13	1.5	4.5 – 7.0	( 33 – 50)
	14	1.5	5.0 – 8.0	( 37 – 57)
	14	2	4.7 – 7.7	( 34 – 55)
	16	1.5	7.5 – 11.0	( 55 – 79)
	16	2	7.1 – 10.6	( 52 – 76)
	5T	6	1	0.6 – 0.9
8		1.25	1.5 – 2.2	( 11 – 15)
10		1.25	3.0 – 4.5	( 22 – 32)
10		1.5	2.7 – 4.2	( 20 – 30)
12		1.25 (ISO)	5.0 – 8.0	( 37 – 57)
12		1.5	5.0 – 7.0	( 37 – 50)
12		1.75	4.8 – 6.8	( 35 – 49)
13		1.5	6.5 – 9.0	( 48 – 65)
14		1.5	7.5 – 11.0	( 55 – 79)
14		2	7.0 – 10.5	( 51 – 75)
16		1.5	12.0 – 17.0	( 87 – 122)
16		2	11.5 – 16.5	( 84 – 119)
6T		6	1	0.6 – 0.9
	8	1.25	1.5 – 2.2	( 11 – 15)
	10	1.25	3.0 – 4.5	( 22 – 32)
	10	1.5	2.7 – 4.2	( 20 – 30)
	12	1.25 (ISO)	5.0 – 8.0	( 37 – 57)
	12	1.5	5.0 – 7.0	( 37 – 50)
	12	1.75	4.8 – 6.8	( 35 – 49)

**SPECIFIED TORQUE FOR STANDARD BOLTS (Cont'd)**

Class	Basic diameter mm	Pitch mm	Torque limit	kg-m (ft-lb)
7T	6	1	0.8 — 1.2	( 6 — 8)
	8	1.25	2.0 — 3.0	( 15 — 21)
	10	1.25	4.0 — 5.5	( 29 — 39)
	10	1.5	3.7 — 5.2	( 27 — 37)
	12	1.25 (ISO)	7.5 — 10.5	( 55 — 75)
	12	1.5	7.0 — 9.0	( 51 — 65)
	12	1.75	6.0 — 8.5	( 44 — 61)
	13	1.5	8.0 — 12.0	( 58 — 86)
	14	1.5	10.0 — 15.0	( 73 — 108)
	14	2	9.5 — 14.0	( 69 — 101)
	16	1.5	15.0 — 23.0	(109 — 166)
	16	2	14.0 — 22.0	(102 — 159)

**— Note —**

**These torque specifications are applicable only for steel (female) threads. They do not apply to other types of material or if the tightening surface is subjected to heat or vibration.**

## TIGHTENING TORQUE FOR MAIN PARTS

Tightening part	kg-m	ft-lb
Rocker arm support x Cylinder head x Cylinder block	7.2 — 8.8	53 — 63
Cylinder head x Chain cover	1.8 — 2.6	14 — 18
Cylinder block x Chain cover	1.8 — 2.6	14 — 18
Intake manifold x Cylinder head	Bolt 1.8 — 2.6	13 — 19
	Nut 1.5 — 2.2	11 — 15
Exhaust manifold x Cylinder head	4.0 — 5.0	29 — 36
Crankshaft bearing cap x Cylinder block	9.5 — 11.5	69 — 83
Connecting rod cap x Connecting rod	5.4 — 6.6	40 — 47
Crankshaft pulley x Crankshaft	14.0 — 18.0	102 — 130
Flywheel x Crankshaft	10.0 — 12.0	73 — 86
Camshaft timing sprocket x Camshaft	7.0 — 9.0	51 — 65
Camshaft bearing cap x Cylinder head	1.7 — 2.3	13 — 16
Chain tensioner x Cylinder block	1.5 — 2.1	11 — 15
Chain damper x Cylinder block	1.0 — 1.6	8 — 11
Spark plug x Cylinder head	1.5 — 2.1	11 — 15
Oil pan x Cylinder block	0.3 — 0.9	27 — 78 in.-lb
Oil pan x Drain plug	3.5 — 4.5	26 — 32
Alternator pulley	5.0 — 6.5	37 — 47



# SERVICE SPECIFICATIONS

## ENGINE TUNE-UP

Drive belt tension			
(General countries)			
Deflection at 10 kg (22 lb) force			
Fan — Alternator	New belt	5 — 7 mm	0.20 — 0.28 in.
	Used belt	7 — 10 mm	0.28 — 0.39 in.
Crank — Air pump	New belt	8 — 10 mm	0.31 — 0.39 in.
	Used belt	10 — 14 mm	0.39 — 0.55 in.
(USA & Canada)			
Borroughs belt tension gauge			
No. BT-33-73F	New belt	100 — 150 lbs	
	Used belt	60 — 100 lbs	
Battery electrolyte specific gravity			
When fully charged at 20°C (68°F)			
1.25 — 1.27			
Engine oil capacity			
21R & 21R-C	Dry fill	4.8 liters	5.1 US qt 4.2 Imp.qt
	Drain & refill		
	w/ Oil filter change	4.3 liters	4.5 US qt 3.8 Imp.qt
	w/o Oil filter change	3.6 liters	3.8 US qt 3.2 Imp.qt
22R	Dry fill	4.8 liters	5.1 US qt 4.2 Imp.qt
	Drain & refill		
	w/ Oil filter change	4.6 liters	4.9 US qt 4.0 Imp.qt
	w/o Oil filter change	3.8 liters	4.0 US qt 3.3 Imp.qt
Radiator cap valve opening pressure			
	STD	0.75 — 1.05 kg/cm <sup>2</sup>	10.7 — 14.9 psi
	Limit	0.6 kg/cm <sup>2</sup>	8.5 psi
Coolant capacity w/ Heater			
	21R-C (RA)	7.5 liters	7.9 US qt 6.6 Imp.qt
	21R & 21R-C (RX, RT)	8.0 liters	8.5 US qt 7.0 Imp.qt
	22 RB (RHD)	10.5 liters	11.1 US qt 9.2 Imp.qt
	RB (LHD)	10.7 liters	11.3 US qt 9.4 Imp.qt
	ex. RB	8.4 liters	8.9 US qt 7.4 Imp.qt
Spark plugs			
Type	21R & 21R-C (Sweden)	ND	W20EXR-U
		NGK	BPR6EY
	21R-C (Australia)	ND	W16EXR-U
		NGK	BPR5EY
	22R RB	ND	W16EX-U
		NGK	BP5EY
	Others	ND	W16EXR-U
		NGK	BPR5EA-L, BPR5EY
Gap		0.8 mm	0.031 in.
High tension cord resistance		Less than 25 k $\Omega$ per cord	

## ENGINE TUNE-UP (Cont'd)

Distributor			
Breaker points type	Rubbing block gap	0.45 mm	0.0177 in.
	Damping spring gap	0.1 – 0.4 mm	0.004 – 0.016 in.
	Dwell angle	52°	
Breaker points less type			
	Air gap	0.2 – 0.4 mm	0.008 – 0.016 in.
Ignition timing			
21R & 21R-C	21R-C (Australia)	5° BTDC/Max. 600 rpm (M/T) or 650 rpm (A/T)	
	21R, 21R-C (Sweden)	8° BTDC/Max. 750 rpm	
22R		8° BTDC/Max. 950 rpm	
Firing order		1 – 3 – 4 – 2	
Valve clearance	Hot	Intake	0.20 mm
		Exhaust	0.30 mm
Idle speed			
(Ex. Canada RN 4x4, RB, RX, RA60-61, RT133)			
	M/T	700 rpm	
	A/T Fed. RN w/ 4-speed A/T	700 rpm	
	Canada RA, RT-A/T	850 rpm	
	Others A/T	750 rpm	
Idle speed and idle mixture			
(Canada RN 4x4, RB, RX, RA60-61 & RT133)			
	Canada RN 4x4	700 rpm	
	RB	800 rpm	
	RX, RX61	750 rpm	
	RA60, RA133 (Australia)	600 rpm (M/T) 650 rpm (A/T)	
Idle mixture speed	Canada RN 4x4	740 rpm	
	RB	850 rpm	
	RX	800 rpm	
Fast idle speed	21R & 21R-C	2,400 rpm	
	22R RB	2,400 rpm	
	Others	2,600 rpm	
Throttle positioner setting speed			
	Calif. RN 4x4 and RN C&C	1,050 rpm	
	RX ex. ECE M/T, RA60-61 & RT133	1,200 rpm	
	Australia RB	1,400 rpm	
Dash pot			
	Time required to return to idle position	Approx. 3 seconds	
Compression pressure at 250 rpm			
	STD 21R	More than 11.0 kg/cm <sup>2</sup> (157 psi)	
	21R-C	More than 11.5 kg/cm <sup>2</sup> (164 psi)	
	22R	More than 12.0 kg/cm <sup>2</sup> (171 psi)	
	Limit 21R & 21R-C	9.0 kg/cm <sup>2</sup>	128 psi
	22R	10.0 kg/cm <sup>2</sup>	142 psi
Difference between each cylinder		1.0 kg/cm <sup>2</sup>	14 psi

**ENGINE****Cylinder Head**

Surface warpage	Limit	0.15 mm	0.0059 in.
Manifold mounting surface warpage	Limit	0.20 mm	0.0079 in.
Valve seat			
Contacting surface angle		45°	
Contacting width		1.2 – 1.6 mm	0.047 – 0.063 in.
Refacing angle	Intake	30°, 45°, 60°	
	Exhaust	30°, 45°, 65°	

**Valve & Guide Bushing**

Valve				
Head edge thickness	Limit	IN & EX	0.6 mm	0.024 in.
Face angle		IN & EX	44.5°	
Overall length	STD	21R & 21R-C		
		Intake	115.5 mm	4.547 in.
		Exhaust	113.4 mm	4.465 in.
		22R		
		Intake	113.5 mm	4.468 in.
		Exhaust	112.4 mm	4.425 in.
Stem end refacing	Limit	IN & EX	0.5 mm	0.020 in.
Stem diameter	STD	Intake	7.970 – 7.985 mm	0.3188 – 0.3145 in.
		Exhaust	7.965 – 7.980 mm	0.3136 – 0.3142 in.
Stem oil clearance	STD	Intake	0.02 – 0.06 mm	0.0008 – 0.0024 in.
		Exhaust	0.03 – 0.07 mm	0.0012 – 0.0026 in.
	Limit	Intake	0.08 mm	0.0031 in.
		Exhaust	0.10 mm	0.0039 in.
Guide bushing				
Inner diameter		Intake	8.00 – 8.03 mm	0.3150 – 0.3161 in.
		Exhaust	8.01 – 8.03 mm	0.3154 – 0.3161 in.
Outer diameter	STD		13.040 – 13.051 mm	0.5134 – 0.5138 in.
		O/S type 0.05	13.090 – 13.101 mm	0.5154 – 0.5158 in.
Replacing temperature (Cylinder head side)			Normal temperature	

**Valve Rocker Arm & Shaft**

Oil clearance	STD	0.01 – 0.05 mm	0.0004 – 0.0020 in.
	Limit	0.08 mm	0.0031 in.

**Valve Spring**

Free length		45.8 mm	1.803 in.
Installed length		40.5 mm	1.594 in.
Installed load	STD	27.2 kg	60 lb
	Limit	24.5 kg	54 lb
Squareness		1.6 mm	0.063 in.

**Camshaft**

Circle runout	Limit	0.2 mm	0.008 in.
Thrust clearance	STD	0.08 – 0.18 mm	0.0031 – 0.0071 in.
	Limit	0.25 mm	0.0098 in.
Oil clearance	STD	0.01 – 0.05 mm	0.0004 – 0.0020 in.
	Limit	0.1 mm	0.004 in.
Journal diameter	STD	32.98 – 33.00 mm	1.2984 – 1.2992 in.
Cam height	STD	Intake	42.63 – 42.72 mm
		Exhaust	42.69 – 42.78 mm
	Limit	Intake	42.43 mm
		Exhaust	42.49 mm
			1.6783 – 1.6819 in.
			1.6807 – 1.6842 in.
			1.6705 in.
			1.6728 in.

**Timing Chain Tensioner & Damper**

Tensioner head thickness	Limit	11.0 mm	0.433 in.
Damper No. 1 thickness	Limit	5.0 mm	0.197 in.
Damper No. 2 thickness	Limit	4.5 mm	0.177 in.

**Timing Chain & Sprocket**

Chain elongation	at 17 links	Limit	147.0 mm	5.787 in.
Crankshaft sprocket wear		Limit	59.4 mm	2.339 in.
Camshaft timing sprocket wear		Limit	113.8 mm	4.480 in.

**Manifold**

Installing surface warpage	Limit	Intake	0.20 mm	0.0079 in.
		Exhaust	0.70 mm	0.0276 in.

**Cylinder Block**

Warpage	Limit	0.05 mm	0.0020 in.
Cylinder bore	STD		
	21R & 21R-C	84.00 – 84.03 mm	3.3071 – 3.3083 in.
	22R	92.00 – 92.03 mm	3.6220 – 3.6232 in.
Wear	Limit	0.2 mm	0.008 in.
Taper and out-of-round	Limit	0.01 mm	0.0004 in.
Difference between each cylinder		Less than 0.03 mm (0.0012 in.)	

**Piston & Piston Ring**

Piston diameter	STD	21R & 21R-C	83.96 – 83.99 mm	3.3055 – 3.3067 in.
		22R	91.938 – 91.968 mm	3.6196 – 3.6208 in.
	O/S 0.50	21R & 21R-C	84.46 – 84.49 mm	3.3252 – 3.3264 in.
		22R	92.438 – 92.468 mm	3.6393 – 3.6405 in.
	O/S 1.00	21R & 21R-C	84.96 – 84.99 mm	3.3449 – 3.3461 in.
		22R	92.938 – 92.968 mm	3.6590 – 3.6602 in.
Cylinder to piston clearance		21R & 21R-C	0.03 – 0.05 mm	0.0012 – 0.0020 in.
		22R	0.052 – 0.072 mm	0.0020 – 0.0028 in.
Piston ring end gap	No.1	21R & 21R-C	0.25 – 0.47 mm	0.0098 – 0.0185 in.
		22R	0.24 – 0.39 mm	0.0094 – 0.0154 in.
	No.2	21R & 21R-C	0.15 – 0.42 mm	0.0059 – 0.0165 in.
		22R	0.18 – 0.42 mm	0.0071 – 0.0165 in.
	Oil	21R & 21R-C	0.20 – 0.82 mm	0.0079 – 0.0323 in.
		22R	0.20 – 0.82 mm	0.0079 – 0.0323 in.
Ring to ring groove clearance	Limit	No. 1, No. 2	0.2 mm	0.008 in.
Piston pin installing temperature			80°C	176°F

**Connecting Rod & Bearing**

Thrust clearance	STD	0.16 – 0.26 mm	0.0063 – 0.0102 in.	
	Limit	0.30 mm	0.0118 in.	
Bearing oil clearance	STD	0.025 – 0.055 mm	0.0010 – 0.0022 in.	
	Limit	0.1 mm	0.004 in.	
Bearing type		STD, U/S (0.25)		
Oil clearance	STD	0.005 – 0.011 mm	0.0002 – 0.0004 in.	
	Limit	0.015 mm	0.0006 in.	
Bend	Limit	per 100 mm (3.94 in.)	0.05 mm	0.0020 in.
Twist	Limit	per 100 mm (3.94 in.)	0.15 mm	0.0059 in.

**Crankshaft**

Circle runout	Limit	0.1 mm	0.004 in.
Thrust clearance	STD	0.02 – 0.22 mm	0.0008 – 0.0087 in.
	Limit	0.3 mm	0.012 in.
Main journal			
Diameter	STD	59.98 – 60.00 mm	2.3614 – 2.3622 in.
U/S finished diameter	U/S 0.25	59.70 – 59.71 mm	2.3504 – 2.3508 in.
Taper and out-of-round	Limit	0.01 mm	0.0004 in.
Main journal oil clearance	STD	0.025 – 0.055 mm	0.0010 – 0.0022 in.
	Limit	0.08 mm	0.0031 in.
Bearing type		STD, U/S (0.25)	
Crank pin journal			
Diameter	STD	52.99 – 53.00 mm	2.0862 – 2.0866 in.
U/S finished diameter	U/S 0.25	52.70 – 52.71 mm	2.0748 – 2.0752 in.
Taper and out-of-round	Limit	0.01 mm	0.0004 in.
Oil clearance	STD	0.025 – 0.055 mm	0.0010 – 0.0022 in.
	Limit	0.08 mm	0.0031 in.
Bearing type		STD, U/S (0.25)	
Thrust washer thickness	STD	2.00 mm	0.0787 in.
	O/S 0.125	2.06 mm	0.0811 in.
	O/S 0.250	2.13 mm	0.0839 in.

**Flywheel**

Runout	Limit	0.2 mm	0.008 in.
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**LUBRICATION SYSTEM****Oil Pump**

Body clearance	STD	0.09 – 0.15 mm	0.0035 – 0.0059 in.
	Limit	0.2 mm	0.008 in.
Tip clearance			
Driven gear to crescent	STD	0.15 – 0.21 mm	0.0059 – 0.0083 in.
	Limit	0.3 mm	0.012 in.
Drive gear to crescent	STD	0.22 – 0.25 mm	0.0087 – 0.0098 in.
	Limit	0.3 mm	0.012 in.
Side clearance	STD	0.03 – 0.09 mm	0.0012 – 0.0035 in.
	Limit	0.15 mm	0.0059 in.
Relief valve operating pressure		4.5 kg/cm <sup>2</sup>	64 psi

**COOLING SYSTEM****Water Pump**

Bearing installing temperature	85°C	185°F
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**Radiator**

Radiator cap relief valve opening pressure			
STD	0.75 – 1.05 kg/cm <sup>2</sup>	10.7 – 14.9 psi	
Limit	0.6 kg/cm <sup>2</sup>	8.5 psi	

**Thermostat**

	Low temp. type		High temp. type	
Valve opening temperature				
Starts to open at	80 – 84°C	176 – 183°F	86 – 90°C	187 – 194°F
Fully opens at	95°C	203°F	100°C	212°F
Valve opening travel	8 mm	0.31 in.	←	

**FUEL SYSTEM****Carburetor**

Part number	21100-35010, 35020, 35030, 35040, 35050, 35060, 35070, 35080, 35090, 35100, 35110, 35120, 35130, 35140, 37050, 37060, 37070, 37080, 37090		
Acceleration pump stroke	4.1 mm		0.161 in.
Float level			
Raised position (float top to air horn)	10.5 mm		0.413 in.
Lowered position (float bottom to air horn)	48 mm		1.89 in.
Throttle valve closed angle	Primary	9° from horizontal plane	
	Secondary	20° from horizontal plane	
Throttle valve full open angle	Primary	90° from horizontal plane	
	Secondary	90° from horizontal plane	
Fast idle angle	ECE RX	21° from horizontal plane	
	Sweden RX	22° from horizontal plane	
	Others	24° from horizontal plane	
Unloader angle	21R & 21R-C	54° from horizontal plane	
	22R	54° from horizontal plane (21100-35120)	
	Canada RN 4x4	49° from horizontal plane	
	Others	49° from horizontal plane	
Throttle positioner angle	21R & 21R-C	17° from horizontal plane	
	22R	16° from horizontal plane	
Choke breaker opening angle		38° from horizontal plane	
Dash pot			
Time required to return to idle position		Approx. 3 seconds	

**Carburetor (Cont'd)**

Outer vent control valve resistance at 20°C (68°F)	63 – 73 Ω
Chock coil resistance at 20°C (68°F)	16 – 20 Ω
Idle mixture adjusting screw presetting Canada RN 4x4, RB and RX	Screw out 3 turns
Others	Screw out 2-1/2 turns
Idle mixture speed (Ex. Canada RN 4x4, RB, RX, RA60-61 & RT133)	
M/T	740 rpm
A/T Fed. RN w/ 4-speed A/T	740 rpm
Canada RA, RT	890 rpm
Others	790 rpm
Idle speed (Ex. Canada RN 4x4, RB, RX, RA60-61 & RT133)	
M/T	700 rpm
A/T Fed. RN w/ 4-speed A/T	700 rpm
Canada RA, RT	850 rpm
Others	750 rpm

**STARTING SYSTEM**

**Starter (Conventional Type)**

Rated voltage and output power		12V, 0.8 kw	12V, 1.0 kw
No-load characteristic at 11V	Current	Less than 50A	←
	Revolution	More than 5,000 rpm	←
Armature shaft			
Bushing to shaft clearance	STD	0.035 – 0.077 mm 0.0014 – 0.0030 in.	←
	Limit	0.2 mm 0.008 in.	←
Thrust clearance	STD	0.05 – 1.00 mm 0.0020 – 0.0394 in.	←
	Limit	1.0 mm 0.039 in.	←
Commutator			
Outer diameter	STD	28.0 mm 1.102 in.	32.7 mm 1.287 in.
	Limit	27 mm 1.06 in.	31 mm 1.22 in.
Runout	STD	Less than 0.1 mm (0.004 in.)	←
	Limit	0.3 mm 0.012 in.	←
Mica depth	STD	0.4 – 0.8 mm	←
	Limit	0.016 – 0.031 in. 0.2 mm 0.008 in.	←



**Starter (Conventional Type) (Cont'd)**

Brush					
Length	STD	16 mm	0.63 in.	19 mm	0.75 in.
	Limit	10 mm	0.39 in.		←
Spring tension		1.02 – 1.38 kg			←
		2.2 – 3.0 lb			
Pinion end to stop collar clearance		0.1 – 4.0 mm			←
		0.004 – 0.157 in.			
Moving stud length (Reference only)		34 mm	1.34 in.		←

**Starter (Reduction Type)**

Rated voltage and output power		12V, 1.0 kw		12V, 1.4 kw	
No-load characteristic at 11.5V	Current	Less than 90A			←
	Revolution	More than 3,000 rpm		More than 3,500 rpm	
Commutator					
Outer diameter	STD	30 mm	1.18 in.		←
	Limit	29 mm	1.14 in.		←
Runout	Limit	0.2 mm	0.008 in.		←
Mica depth	STD	0.45 – 0.75 mm			←
	Limit	0.0177 – 0.0295 in.			
	Limit	0.2 mm	0.008 in.		←
Brush					
Length	STD	13.5 mm	0.531 in.	14.5 mm	0.571 in.
	Limit	10 mm	0.39 in.		←
Spring tension	STD	1,445 – 1,955 g		1,785 – 2,415 g	
		3.2 – 4.3 lb		3.9 – 5.3 lb	
	Limit	1,200 g	2.6 lb		←

**IGNITION SYSTEM**

**Distributor**

Rubbing block gap	21R & 21R-C	0.45 mm	0.0177 in.
Dwell angle	21R & 21R-C	52°	
Damping spring gap	21R & 21R-C	0.1 – 0.4 mm	0.004 – 0.016 in.
Air gap	22R	0.2 – 0.4 mm	0.008 – 0.016 in.
Signal generator resistance	22R	130 – 190 Ω	

## Distributor (Cont'd)

Distributor advance angle (Part No.)	Governor		Vacuum		
	Dis. rpm	Advance angle	mmHg	in. Hg	Advance angle
21R (ECE) & 21R-C RX (19100-37030) 21R-C (Sweden) RA (19100-37090)	650	0.2° - 2.5°	120	4.72	0.2° - 3.0°
	850	2.8° - 5.2°	200	7.87	6.0° - 8.6°
	1,250	6.1° - 8.1°	330	12.99	9.0° - 11.0°
	2,200	10.9° - 12.9°			
	3,000	12.9° - 14.9°			
21R (Ex. ECE) RX (19100-37040) 21R (Ex. ECE) RA (19100-37100)	800	0.0° - 2.0°	130	5.12	0.6° - 3.2°
	1,100	1.8° - 3.8°	310	12.20	8.6° - 10.8°
	1,700	3.8° - 5.8°	480	18.90	11.0° - 13.0°
	2,300	5.8° - 7.8°			
	3,000	7.4° - 9.4°			
21R (AUSTRALIA) RA (19100-37080)	800	0.1° - 1.6°	Main		
	1,050	2.4° - 3.9°	120	4.72	0.2° - 2.4°
	1,500	5.3° - 6.8°	270	10.63	8.1° - 10.0°
	1,900	7.3° - 8.8°	400	15.75	10.1° - 12.0°
	2,700	8.0° - 10.0°	Sub		
			240	9.45	0.3° - 2.5°
			280	11.02	1.7° - 3.9°
			380	14.96	2.5° - 4.5°
21R (ECE) RA (19100-37110)	650	0.3° - 2.3°	120	4.72	0.4° - 2.8°
	850	3.0° - 5.0°	200	7.87	6.3° - 8.4°
	1,250	6.5° - 8.0°	330	12.99	9.0° - 11.0°
	2,200	11.2° - 12.7°			
	3,000	12.7° - 14.7°			
22R RT, RA & RN (19100-35040) 22R Canada RN 4x4 (19100-35070)	700	0.1° - 1.6°	Main		
	900	1.4° - 2.9°	80	3.15	0.4° - 2.7°
	1,600	5.0° - 6.5°	160	6.30	5.8° - 7.9°
	2,100	7.1° - 8.6°	280	11.02	8.0° - 10.0°
	3,000	8.0° - 10.0°	Sub		
			240	9.45	0.3° - 2.5°
			280	11.02	1.7° - 3.9°
			380	14.96	2.5° - 4.5°
22R RB (19100-35080)	750	0.1° - 1.6°	100	3.94	0.2° - 2.3°
	1,000	1.4° - 2.9°	260	10.24	6.6° - 8.5°
	1,400	3.0° - 4.5°	410	16.14	8.5° - 10.5°
	2,100	6.0° - 7.5°			
	3,000	7.0° - 9.0°			
22R RB (OPT) (19100-35090)	900	0.1° - 1.6°	100	3.94	0.5° - 2.7°
	1,600	2.8° - 4.3°	250	9.84	7.4° - 9.2°
	2,200	5.8° - 7.3°	400	15.75	9.5° - 11.5°
	3,000	6.5° - 8.5°			

### Ignition Coil

Primary coil resistance	
21R & 21R-C	1.2 — 1.5 Ω
22R RB, USA RT & USA RA	0.8 — 1.1 Ω
RN, Canada RT & Canada RA	0.4 — 0.5 Ω
Secondary coil resistance	
21R & 21R-C	8.5 — 11.5 kΩ
22R RB, USA RT & USA RN	10.7 — 14.5 kΩ
RN, Canada RT & Canada RA	8.5 — 11.5 kΩ
External resistor resistance	
21R & 21R-C	1.3 — 1.5 Ω
22R	—

### High Tension Cord

Resistance	Limit	Less than 25 kΩ per cord
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### Spark Plugs

Type	21R & 21R-C	ND	W20EXR-U	
		NGK	BPR6EY	
	22R	RB13	ND	W16EX-U
			NGK	BP5EY
		Others	ND	W16EXR-U
		NGK	BPR5EA-L, BPR5EY	
Gap			0.8 mm                      0.031 in.	

## CHARGING SYSTEM

### Alternator

Alternator type		w/o IC Regulator	w/ IC Regulator
Rated output		40A, 45A, 50A, 55A	40A, 55A, 60A
Brush exposed length	STD	12.5 mm    0.492 in.	←
	Limit	5.5 mm    0.217 in.	←
Rotor coil resistance		3.9 — 4.1 Ω	2.8 — 3.0 Ω

### Alternator Regulator

Regulating voltage	Tirrill type	13.8 — 14.8 V (40A, 45A, 50A, 55A)
	IC regulator	14.0 — 14.7 V (40A, 55A, 60A)
Voltage relay actuating voltage	Tirrill type	4 — 5.8 V (40A)





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**TOYOTA MOTOR CORPORATION**  
Haruhi Center

PRINTED IN JAPAN ①  
01-801130-00  
07-810010-00