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This file was not scanned to deprive Mazda of any money - it was scanned due to the rareness of the original manuals and the overwhelming need of the RX-7 owner to have this information so that they can accurately troubleshoot problems. Perhaps if Mazda's dealerships could support the Rotary Engine it wouldn't be so necessary for the owners to do so.

Many thanks to Lenny Terris for scanning this.

TECHNICAL DATA

C. ENGINE

Item \ Engine					13B (Turbo)
Type					Rotary engine
Displacement ml {cc, cu in}					654 {654, 40.0} × 2
Number of rotors and arrangement					2 rotors, longitudinal
Combustion chamber type					Bathtub
Compression ratio					9.0: 1
Port timing	Intake	Open	Primary		45° BTDC
			Secondary		32° BTDC
		Close	Primary		50° ABDC
			Secondary		50° ABDC
	Exhaust	Open			75° BBDC
		Close			48° ATDC
Compression pressure kPa {kgf/cm², psi}-rpm		Minimum			686 {7.0, 100}-250
		Maximum difference between chambers			147 {1.5, 21}-250
Side housing (Front, intermediate and rear housing)		Distortion limit mm {in}			0.04 {0.002}
		Side seal wear limit mm {in}			0.10 {0.004}
		Side seal wear limit, overlapping oil seal wear mm {in}			0.01 {0.0004}
		Side seal wear limit, outside oil seal wear mm {in}			0.10 {0.004}
		Oil seal wear limit mm {in}			0.02 {0.0008}
Rotor housing		Width mm {in}			80 {3.1}
		Maximum width difference mm {in}			0.06 {0.0024}
Rotor		Width (Apex) mm {in}			79.675 {3.1368}
		Clearance of side housing to rotor mm {in}		Standard	0.12–0.21 {0.0048–0.0082}
				Min.	0.10 {0.0039}
		Diameter of corner seal groove mm {in}			11.000–11.018 {0.4331–0.4338}
		Width of side seal groove mm {in}			0.714–0.739 {0.0281–0.0291}
		Width of apex seal groove mm {in}			1.995–2.012 {0.0785–0.0792}
Apex seal and spring		Width mm {in}			2.0 {0.079}
		Height (upper and lower) mm {in}		Standard	8.5 {0.33}
				Min.	6.5 {0.256}
		Clearance of apex seal and rotor groove mm {in}		Standard	0.051–0.101 {0.002–0.039}
				Max.	0.15 {0.0059}
		Spring free height mm {in}	Long	Standard	6.25 {0.246}
				Min.	3.5 {0.138}
			Short	Standard	3.3 {0.130}
Side seal and spring		Thickness mm {in}			0.661–0.686 {0.0260–0.0270}
		Clearance of side seal to rotor groove mm {in}		Standard	0.028–0.078 {0.0011–0.0030}
				Max.	0.10 {0.0039}
		Height mm {in}			3.0 {0.118}
		Protrusion min. mm {in}			0.50 {0.020}
		Clearance of side seal to corner seal mm {in}		Standard	0.05–0.15 {0.0020–0.0059}
				Max.	0.40 {0.016}
Corner seal and spring		Outer diameter mm {in}			10.990–11.014 {0.4327–0.4336}
		Height mm {in}			7.0 {0.276}
		Protrusion min. mm {in}			0.50 {0.020}
Rotor oil seal and spring		Height mm {in}			5.6–5.8 {0.220–0.228}
		Oil seal lip width max. mm {in}			0.50 {0.020}
		Protrusion min. mm {in}			0.50 {0.020}
Main bearing		Inner diameter mm {in}			43.025–43.050 {1.6939–1.6949}
Rotor bearing		Inner diameter mm {in}			74.025–74.050 {2.9144–2.9153}

Item \ Engine			13B (Turbo)
Eccentric shaft	Runout max. mm {in}		0.06 {0.0024}
	End play mm {in}	Standard	0.040–0.070 {0.0016–0.0027}
		Limit	0.09 {0.0035}
	Main journal diameter mm {in}		43 {0.37}
	Clearance of main journal mm {in}	Standard	0.08–0.11 {0.0032–0.0043} . . . outside 0.06–0.08 {0.0024–0.0031} . . . inside
		Limit	0.13 {0.0051} . . outside 0.11 {0.0043} . . . inside
	Rotor journal diameter mm {in}		74 {2.9}
	Clearance of rotor journal mm {in}	Standard	0.060–0.080 {0.0024–0.0031}
		Limit	0.10 {0.0039}
Drive belt deflection at 98 N {10 kgf, 22 lbf} mm {in}	Alternator and Air pump	Used	7.0–7.5 {0.28–0.29}
	P/S pump and A/C compressor	Used	4.5–5.0 {0.18–0.19}

D. LUBRICATING SYSTEM

Item \ Engine			13B (Turbo)
Lubrication system			Forced-fed
Oil pump	Type		Trochoid
	Lobe clearance of outer rotor to inner rotor mm {in}	Standard	0.03–0.12 {0.0012–0.0047}
		Max.	0.15 {0.0059}
	Clearance of outer rotor to pump body mm {in}	Standard	0.20–0.25 {0.0079–0.0098}
		Max.	0.30 {0.0118}
	End float mm {in}	Standard	0.03–0.125 {0.0012–0.0049}
		Max.	0.15 {0.0059}
Pressure control valve	Relief pressure kPa {kgf/cm^2, psi}		1,080 {11.0, 156}
Oil cooler	Type		Air-cooled, with bypass valve
	Relief temperature °C {°F}		60–65 {140–149} or below
	Relief pressure dif. kPa {kgf/cm^2, psi}		349 {3.56, 50} at 60°C {140°F}
	Bypass valve protrusion mm {in}		6 {0.24} min.
Regulator valve	Relief pressure kPa {kgf/cm^2, psi}		490 {5.0, 71}
Oil filter	Type		Full flow, paper element
	Relief pressure dif. kPa {kgf/cm^2, psi}		98 {1.0, 14}
Eccentric shaft bypass valve	Relief temperature °C {°F}		60 {140} or below
	Protrusion mm {in}		6 {0.24} or more
Engine oil	Total (Dry engine) L {US qt, Imp qt}		4.9 {5.2, 4.3} *5.4 {5.7, 4.8}
	Oil replacement L {US qt, Imp qt}		3.6 {3.8, 3.2}
	Oil replacement (with oil filter) L {US qt, Imp qt}		3.8 {4.0, 3.3}
	Oil filter L {US qt, Imp qt}	Factory installed	0.19 {0.20, 0.17}
		Service part	0.17 {0.18, 0.15}
	Grade		API Service SG, SH (EC II) ILSAC (Mineral oil only)
	Above −25°C {−10°F}		10W-30
	Below 0°C {32°F}		5W-30

* R1 model

E. COOLING SYSTEM

Item \ Engine			13B (Turbo)		
Cooling method			Water-cooled, forced circulation		
Water pump	Type		Centrifugal		
	Pulley ratio (Speed)		1: 1.22		
Thermostat	Type		Wax, bottom bypass		
	Opening temperature	°C {°F}	80.5–83.5 {177–182}		
	Full-open temperature	°C {°F}	95 {203}		
	Full-open lift min.	mm {in}	8–10 {0.31–0.39}		
Radiator	Type		Corrugated fin		
Coolant filler cap	Relief pressure	kPa {kgf/cm², psi}	115–145 {1.15–1.45, 16.4–20.6}		
Coolant fan	Type		Electrical		
	Capacity	W	160 × 2		
	Number of blades		No1: 5, No2: 4		
	Outer diameter	mm {in}	300 {11.8}		
Drive belt deflection at 98 N {10 kgf, 22 lbf} mm {in}	Alternator and air pump	Used	7.0–7.5 {0.28–0.29}		
Coolant	Capacity	L {US qt, Imp qt}	8.8 {9.3, 7.7}		
Antifreeze solution	Mixture / Protection		Mixture percentage %		Specific gravity at 20°C {68°F}
			Water	Antifreeze	
	Above −16°C {3°F}		65	35	1.054
	Above −26°C {−15°F}		55	45	1.066
	Above −40°C {−40°}		45	55	1.078

F. FUEL AND EMISSION CONTROL SYSTEMS

Item			Specification
Idle speed*		rpm	700–750
Ignition timing	Leading	ATDC	5°
	Trailing	ATDC	20°
Air cleaner housing			
Element type			Oil permeated
Throttle body			
Type			Horizontal draft (2 stage-3 barrel)
Throat diameter	Primary	mm {in}	45 {1.772}
	Secondary	mm {in}	50 {1.969} × 2
Dashpot touch angle			8
Water thermovalve operation (full open) temperature		°C {°F}	55–65 {131–149} or more
Charge air cooler			
Type			Air cooled
Core size {w × h × t}		mm {in}	294 × 114 × 65 {11.575 × 4.4882 × 2.5591}
Turbocharger			
System type			Sequential twin turbocharged
Cooling method			Water + engine oil
Boost control actuator			Turbo precontrol + wastegate control
Boost control method			Solenoid valve (duty-controled) × 2
Fuel filter			
Type	Low-pressure		Nylon element
	High-pressure		Paper element
Pressure regulator			
Type			Diaphragm
Regulated pressure		kPa {kgf/cm², psi}	250–260 {2.5–2.6, 35.6–37.0}

* TEN terminal of data link connector grounded

Item			Specification
Fuel pump			
Type			Impeller (In tank)
Output pressure		kPa {kgf/cm², psi}	490–740 {5.0–7.5, 71.1–106.7}
Injector			
Type			Side-feeding
Injection volume	Primary	ml {cc, fl oz}/min	550 {550, 165}
	Secondary	ml {cc, fl oz}/min	850 {850, 255}
Three-way catalyst			
Type	Warm-up three-way catalyst		Metal
	Three-way catalyst		Monolithic
Air pump			
Capacity		cm³ {cc}/rev	375 {375}
Output		L/min	MT 130–200, AT 160–200
Fuel			
Specification			Unleaded premium (RON95 or higher)

G. ENGINE ELECTRICAL SYSTEM

Item \ Transmission				MT	AT
Voltage			V	12, negative ground	
Battery	Type and capacity (5-hour rate)			65D23L (43Ah)	75D26L (52Ah)
Ignition system	Spark timing (TEN terminal grounded)			Leading : ATDC 5° (BTDC – 5°) Trailing : ATDC 20° (BTDC – 20°) at idle (AT: P range)	
	Spark advance			Electronic spark advance (ESA)	
	Spark plug	Type	Leading	NGK: BUR7EQP*1, BUR6EQP, BUR7EQ, BUR6EQ	
			Trailing	NGK: BUR9EQ*1, BUR8EQP, BUR9EQP, BUR8EQ	
		Plug gap	mm {in}	1.1–1.7 {0.044–0.066}	
Alternator	Output		V-A	12–100	
	Regulated voltage		V	14.1–14.7 (With temperature gradient characteristics)	
	Brush length	Standard	mm {in}	21.5 {0.846}	
		Minimum	mm {in}	8.0 {0.315}	
Stater	Type			Direct	Reduction
	Output		V-kW	12–1.2	12–2.0
	Output (no load)	Voltage	V	11	
		Current	A	Max 90	
		Speed	rpm	Min 3000	Min 2200
	Brush length	Standard	mm {in}	17.5 {0.689}	18 {0.71}
		Minimum	mm {in}	12 {0.47}	11 {0.43}

*1 Standard plug

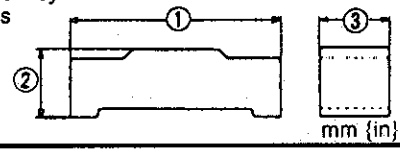
H. CLUTCH

Item \ Transmission		R15M-D
Clutch control		Hydraulic
Clutch pedal		
Type		Suspended
Pedal ratio		6.35
Full stroke	mm {in}	135 {5.32}
Height (with carpet)	mm {in}	165.5–177.0 {6.516–6.968}
Free play	mm {in}	0.6–3.2 {0.02–0.13}
Distance from carpet when clutch is fully disengaged	mm {in}	48 {1.9} min.

Item \ Transmission			R15M-D
Flywheel			
Runout limit		mm {in}	0.2 {0.008}
Clutch disc			
Type			Single dry-plate
Runout limit		mm {in}	0.6 {0.024}
Wear limit		mm {in}	0.3 {0.012} from rivet head
Outer diameter		mm {in}	236 {9.29}
Inner diameter		mm {in}	160 {6.30}
Facing thickness mm {in}	Flywheel side		3.5 {0.14}
	Pressure plate side		3.5 {0.14}
Clutch cover			
Type			Diaphragm spring
Set load		N {kgf, lbf}	7220 {736, 1619}
Clutch master cylinder	Inner diameter	mm {in}	15.87 {0.625}
Clutch release cylinder	Inner diameter	mm {in}	19.05 {0.750}
Clutch fluid			FMVSS116 DOT-3

J. MANUAL TRANSMISSION (R15M-D)

Item \ Engine			13B (Turbo)
Specifications			
Transmission type			R15M-D
Transmission control			Floor shift
Synchronization mechanism			Forward : Synchromesh Reverse : Synchromesh
Gear ratio	1st		3.483
	2nd		2.015
	3rd		1.391
	4th		1.000
	5th		0.719
	Reverse		3.288
Final gear ratio			4.100
Speedometer gear ratio (driven gear/drive gear)			0.304 (23/7)
Oil	Grade		API service GL-4 or GL-5
	Viscosity	All-season	SAE 75W-90
		Above 10°C {50°F}	SAE 80W-90
	Capacity	L {US qt, Imp qt}	2.5 {2.6, 2.2}
Runout			
Mainshaft		mm {in}	0.03 {0.0012}
Clearance			
Each gear inner diameter and mainshaft outer diameter		mm {in}	0.15 {0.006}
Each clutch hub sleeve gtoove and shift fork		Standard	0.2–0.3 {0.008–0.012}
mm {in}		Maximum	0.5 {0.020}
Reverse idler gear and shaft		Standard	0.02–0.05 {0.0008–0.0020}
mm {in}		Maximum	0.15 {0.006}
Synchronizer ring (all) and flank surface of gear		Standard	1.5 {0.059}
mm {in}		Minimum	0.8 {0.031}
Control rod lever and shift rod gate		mm {in}	0.8 {0.031}
Thrust plam			
Synchronizer key and synchronizer ring (4th)		Standard	0.66–2.0 {0.026–0.079}
mm {in}		Available thrust washer thick-nesses	2.5 {0.098}, 3.0 {0.118}, 3.5 {0.138}

Item \ Engine		13B (Turbo)
Thrust lock washer and C-washers (5th gear thrust play) mm {in}	Standard	0.1–0.2 {0.004–0.008}
	Available thrust lock washer thicknesses	6.2 {0.244}, 6.3 {0.248}, 6.4 {0.252}, 6.5 {0.256}, 6.6 {0.260}, 6.7 {0.264}
C-washers and mainshaft groove mm {in}	Standard	0–0.1 {0–0.004}
	Available C-washer thicknesses	2.9 {0.114}, 3.0 {0.118}, 3.1 {0.122}, 3.2 {0.126}
Clutch housing and main drive gear bearing mm {in}	Standard	0–0.1 {0–0.004}
	Available adjust shim thicknesses	0.3 {0.012}, 0.4 {0.016}, 0.5 {0.020}, 0.6 {0.024}, 0.7 {0.028}
Mainshaft front bearing mm {in}	Standard	0–0.05 {0–0.002}
	Available adjust shim thicknesses	0.1 {0.004}, 0.3 {0.012}
Countershaft front bearing mm {in}	Bearing height	0.9–1.0 {0.035–0.039}
	Available adjust shim thicknesses	0.1 {0.004}, 0.3 {0.012}
Reference		
Detent ball spring	Free length mm {in}	22.5 {0.886}
5th/reverse retaining spring	Free length mm {in}	73.00 {2.874}
Select lock spindle spring	Free length mm {in}	43.25 {1.703}
Synchronizer key dimensions  mm {in}	1st and 2nd	① 18.00 {0.709}, ② 5.45 {0.215}, ③ 6.00 {0.236}
	3rd, 4th, 5th and Reverse	① 17.00 {0.669}, ② 4.25 {0.167}, ③ 5.00 {0.197}

K. AUTOMATIC TRANSMISSION

Item \ Transmission			RB4A-EL
Gear ratio		1st gear	3.027
		2nd gear	1.619
		Third gear	1.000
		Fourth gear	0.694
		Reverse	2.272
Final gear ratio			3.909
Automatic transmission fluid (ATF)	Type		Dexron®II or M-III
	Capacity L {US qt, Imp qt}		8.6 {9.1, 7.6}
Torque converter	Stall torque ratio		2.200
Number of drive plates / driven plates	Reverse clutch		2/2
	High clutch		4/7
	Forward clutch		6/6
	Overrunning clutch		3/5
	Low and reverse brake		7/7
Band servo mm {in}	Servo piston outer dia. / inner dia.		80.0 {3.15} / 50.0 {1.97}
	4GR servo piston outer dia.		72.0 {2.83}
Mechanical system test			
Engine stall speed rpm		D, S, L, R range	3,000–3,300
Time lag sec.		N → D range	Approx. below 1.0
		N → R range	Approx. below 1.2
Line pressure kPa {kgf/cm², psi}	D range	Idle	500–520 {5.0–5.4, 72–76}
		Stall	1,200–1,270 {12.2–13.0, 174–184}
	S range	Idle	500–520 {5.0–5.4, 72–76}
		Stall	1,200–1,270 {12.2–13.0, 174–184}
	L range	Idle	500–520 {5.0–5.4, 72–76}
		Stall	1,200–1,270 {12.2–13.0, 174–184}
	R range	Idle	620–650 {6.3–6.7, 90–95}
		Stall	1,510–1,570 {15.3–16.1, 218–228}
Shift point km/h {MPH}			
POWER	D range	Wide open throttle	$D_1 \rightarrow D_2$ 50–56 {31–35}
			$D_2 \rightarrow D_3$ 103–111 {64–69}
			$D_3 \rightarrow D_4$ 178–188 {111–117}
		Half throttle	$D_1 \rightarrow D_2$ 35–41 {22–25}
			$D_2 \rightarrow D_3$ 81–93 {50–58}
			$D_3 \rightarrow D_4$ 126–144 {78–99}
			Lockup ON (D_3) 94–106 {58–66} (*81–93 {50–58})
			Lockup ON (D_4) 174–192 {108–119} (*126–144 {78–89})
		Closed throttle position	$D_4 \rightarrow D_3$ 39–45 {24–28}
			$D_3 \rightarrow D_2$ 13–19 {8–12}
			$D_2 \rightarrow D_1$ 5–11 {3–7}
		Kickdown (Wide open throttle)	$D_4 \rightarrow D_3$ 142–152 {88–94}
			$D_3 \rightarrow D_2$ 91–99 {57–62}
			$D_2 \rightarrow D_1$ 38–44 {24–27}

Caution
- **Lockup indicates complete lockup.**
- *** mark indicates lockup points when the engine coolant temperature is above 115°C {239°F}.**

Item \ Transmission				RB4A-EL
NORMAL	D range (A/C ON)	Wide open throttle	$D_1 \rightarrow D_2$	50–56 {31–35}
			$D_2 \rightarrow D_3$	103–111 {64–69}
			$D_3 \rightarrow D_4$	178–188 {111–117}
		Half throttle	$D_1 \rightarrow D_2$	32–38 {20–24}
			$D_2 \rightarrow D_3$	80–92 {50–57}
			$D_3 \rightarrow D_4$	126–144 {78–89}
			Lockup ON (D_3)	94–106 {58–66} (*80–92 {50–57})
			Lockup ON (D_4)	174–192 {108–119} (*126–144 {78–89})
		Closed throttle position	$D_4 \rightarrow D_3$	39–45 {24–28}
			$D_3 \rightarrow D_2$	13–19 {8–12}
			$D_2 \rightarrow D_1$	5–11 {3–7}
		Kickdown (Wide open throttle)	$D_4 \rightarrow D_3$	142–152 {88–94}
			$D_3 \rightarrow D_2$	91–99 {57–62}
			$D_2 \rightarrow D_1$	38–44 {24–27}
	D range (A/C OFF)	Wide open throttle	$D_1 \rightarrow D_2$	50–56 {31–35}
			$D_2 \rightarrow D_3$	103–111 {64–69}
			$D_3 \rightarrow D_4$	178–188 {111–117}
		Half throttle	$D_1 \rightarrow D_2$	32–38 {20–24}
			$D_2 \rightarrow D_3$	80–92 {50–57}
			$D_3 \rightarrow D_4$	126–144 {78–89}
			Lockup ON (D_3)	94–106 {58–66} (*80–92 {50–57})
			Lockup ON (D_4)	174–192 {108–119} (*126–144 {78–89})
		Closed throttle position	$D_4 \rightarrow D_3$	35–41 {22–25}
			$D_3 \rightarrow D_2$	13–19 {8–12}
			$D_2 \rightarrow D_1$	5–11 {3–7}
		Kickdown (Wide open throttle)	$D_4 \rightarrow D_3$	142–152 {88–94}
			$D_3 \rightarrow D_2$	91–99 {57–62}
			$D_2 \rightarrow D_1$	38–44 {24–27}
HOLD	D range	—	$D_4 \rightarrow D_3$	180–186 {112–116}
			$D_3 \rightarrow D_2$	7–13 {4–8}
			$D_2 \rightarrow D_3$	15–25 {9–16}
			Lockup ON (D_3)	94–106 {58–66} (*39–51 {24–32})
NORMAL	S range	Wide open throttle	$S_1 \rightarrow S_2$	50–56 {31–35}
			$S_2 \rightarrow S_3$	103–111 {64–69}
		Half throttle	$S_1 \rightarrow S_2$	35–41 {22–25}
			$S_2 \rightarrow S_3$	81–93 {50–58}
			Lockup ON (S_3)	94–106 {58–66} (*81–93 {50–58})
		Closed throttle position	$S_3 \rightarrow S_2$	13–19 {8–12}
			$S_2 \rightarrow S_1$	5–11 {3–7}
		Kickdown (Wide open throttle)	$S_3 \rightarrow S_2$	91–99 {57–62}
			$S_2 \rightarrow S_1$	38–44 {24–27}
HOLD		—	$S_3 \rightarrow S_2$	112–118 {70–73}

Caution
- **Lockup indicates complete lockup.**
- *** mark indicates lockup points when the engine coolant temperature is above 115°C {239°F}.**

Item \ Transmission				RB4A-EL
NORMAL	L range	Wide open throttle	$L_1 \rightarrow L_2$	50–56 {31–35}
		Half throttle	$L_1 \rightarrow L_2$	35–41 {22–25}
		Closed throttle position	$L_2 \rightarrow L_1$	5–11 {3–7}
		Kickdown (Wide open throttle)	$L_2 \rightarrow L_1$	38–44 {24–27}
HOLD		—	$L_2 \rightarrow L_1$	45–51 {28–32}
Control valve body				
(Upper control valve body)				
Torque converter relief valve spring mm {in}		Outer diameter		9.2 {0.362}
		Free length		38.3 {1.508}
Pressure regulator valve spring mm {in}		Outer diameter		14.0 {0.551}
		Free length		29.0 {1.142}
Pressure modifier valve spring* mm {in}		Outer diameter		(A) 6.8 {0.268}, (B) 6.9 {0.272}, (C) 6.9 {0.272}
		Free length		(A) 31.95 {1.258}, (B) 32.6 {1.283}, (C) 32.8 {1.291}
Accumulator control valve spring mm {in}		Outer diameter		10.5 {0.413}
		Free length		17.0 {0.669}
Shuttle shift valve D spring mm {in}		Outer diameter		6.0 {0.236}
		Free length		26.5 {1.043}
Shift valve B spring mm {in}		Outer diameter		7.0 {0.276}
		Free length		25.0 {0.984}
4-2 sequence valve spring mm {in}		Outer diameter		6.95 {0.274}
		Free length		29.1 {1.146}
Shift valve A spring mm {in}		Outer diameter		7.0 {0.276}
		Free length		25.0 {0.984}
4-2 relay valve spring mm {in}		Outer diameter		6.95 {0.274}
		Free length		29.1 {1.146}
Overrunning clutch control valve spring mm {in}		Outer diameter		7.0 {0.276}
		Free length		23.6 {0.929}
Overrunning clutch reducing valve spring mm {in}		Outer diameter		7.0 {0.276}
		Free length		32.5 {1.280}
Pilot valve spring mm {in}		Outer diameter		9.1 {0.358}
		Free length		25.7 {1.012}
Lockup control valve spring mm {in}		Outer diameter		4.7 {0.185}
		Free length		23.4 {0.921}
Lockup modifier valve spring mm {in}		Outer diameter		4.2 {0.165}
		Free length		21.5 {0.846}
(Lower control valve body)				
Modifier accumulator valve spring mm {in}		Outer diameter		9.8 {0.39}
		Free length		30.5 {1.20}
1st reducing valve spring mm {in}		Outer diameter		6.8 {0.27}
		Free length		25.4 {1.00}
Servo charger valve spring mm {in}		Outer diameter		6.5 {0.26}
		Free length		33.2 {1.31}

*: Either A, B, or C type spring is installed at shipment. Only A type spring is available for replacement.

Item \ Transmission			RB4A-EL
Accumulator			
N-D accumulator piston spring	mm {in}	Outer diameter	18.0 {0.71}
		Free length	43.0 {1.69}
1-2 accumulator piston spring	mm {in}	Outer diameter	29.3 {1.16}
		Free length	45.0 {1.77}
2-3 accumulator piston spring	mm {in}	Outer diameter	19.5 {0.768}
		Free length	66.0 {2.60}
3-4 / N-R accumulator piston spring	mm {in}	Outer diameter	18.0 {0.709}
		Free length	43.0 {1.69}
Oil pump			
Cam ring clearance	mm {in}	Standard	0.010–0.024 {0.0004–0.0009}
		Maximum	0.030 {0.0012}
Rotor, vanes, and control piston clearance	mm {in}	Standard	0.030–0.044 {0.0012–0.0017}
		Maximum	0.050 {0.0020}
Seal ring clearance	mm {in}	Standard	0.10–0.25 {0.004–0.010}
		Maximum	0.25 {0.010}
Cam ring spring	mm {in}	Outer diameter	13.7 {0.539}
		Free length	39.8 {1.567}
Reverse clutch			
Clutch clearance	mm {in}	With new drive / driven plates	0.50–0.80 {0.020–0.031}
		With reusing drive / driven plates	0.50–1.20 {0.020–0.047}
Retaining plate size	mm {in}		4.6 {0.181}, 4.8 {0.189}, 5.0 {0.197}, 5.2 {0.205}, 5.4 {0.213}, 5.6 {0.220}, 5.8 {0.228}
Return spring	mm {in}	Outer diameter	11.6 {0.457}
		Free length	19.69 {0.775}
High clutch			
Clutch clearance	mm {in}	With new drive / driven plates	1.8–2.2 {0.071–0.087}
		With reusing drive / driven plates	1.8–3.0 {0.071–0.118}
Retaining plate size	mm {in}		3.4 {0.134}, 3.6 {0.142}, 3.8 {0.150}, 4.0 {0.157}, 4.2 {0.165}
Return spring	mm {in}	Outer diameter	11.6 {0.457}
		Free length	22.3 {0.878}
Band servo			
Return spring A	mm {in}	Outer diameter	40.3 {1.59}
		Free length	53.8 {2.12}
Return spring B	mm {in}	Outer diameter	34.3 {1.35}
		Free length	45.6 {1.80}
Return spring C	mm {in}	Outer diameter	27.6 {1.09}
		Free length	29.7 {1.17}

Item \ Transmission			RB4A-EL
Forward clutch			
Clutch clearance mm {in}	With new drive / driven plates		0.45–0.85 {0.018–0.033}
	With reusing drive / driven plates		0.45–1.85 {0.018–0.073}
Retaining plate size mm {in}			8.0 {0.315}, 8.2 {0.323}, 8.4 {0.331}, 8.6 {0.339}, 8.8 {0.346}, 9.0 {0.354}, 9.2 {0.362}
Return spring mm {in}		Outer diameter	9.7 {0.38}
		Free length	35.8 {1.41}
Overrunning clutch			
Clutch clearance mm {in}	With new drive / driven plates		1.0–1.4 {0.039–0.055}
	With reusing drive / driven plates		1.0–2.0 {0.039–0.079}
Retaining plate size mm {in}			4.0 {0.157}, 4.2 {0.165}, 4.4 {0.173}, 4.6 {0.181}, 4.8 {0.189}, 5.0 {0.197}, 5.2 {0.205}
Low and reverse brake			
Brake clearance mm {in}	With new drive / driven plates		0.8–1.2 {0.031–0.047}
	With reusing drive / driven plates		0.8–2.6 {0.031–0.102}
Retaining plate size mm {in}			6.2 {0.244}, 6.4 {0.252}, 6.6 {0.260}, 6.8 {0.268}, 7.0 {0.276}, 7.2 {0.283}, 7.4 {0.291}, 7.6 {0.299}, 7.8 {0.307}, 8.0 {0.315}
Return spring mm {in}		Outer diameter	11.6 {0.457}
		Free length	22.3 {0.878}
Low one-way clutch inner race			
Seal ring clearance mm {in}		Standard	0.10–0.25 {0.004–0.010}
		Maximum	0.25 {0.010}
Total end play			
Standard end play mm {in}			0.25–0.55 {0.010–0.022}
Bearing race size mm {in}			0.8 {0.031}, 1.0 {0.039}, 1.2 {0.047}, 1.4 {0.055}, 1.6 {0.063}, 1.8 {0.071}, 2.0 {0.079}
Reverse clutch end play			
Standard end play mm {in}			0.55–0.90 {0.022–0.035}
Thrust washer size mm {in}			0.7 {0.028}, 0.9 {0.035}, 1.1 {0.043}, 1.3 {0.051}, 1.5 {0.059}, 1.7 {0.067}, 1.9 {0.075}
Torque converter distance (A)			
Torque converter distance (A) mm {in}			29.0 {1.14} min.

L. PROPELLER SHAFT

Item \ Transmission		R15M-D
Length	mm {in}	863 {33.98}
Outer diameter	mm {in}	75 {3.0}
Max. permissible runout	mm {in}	0.4 {0.02}

M. FRONT AND REAR AXLES

Item			Specifications
Drive shaft			
Type		Wheel side	BJ (bell joint)
		Differential side	TJ (Tripod joint)
Outer diameter of large boot end	mm {in}	Wheel side	105.3 {4.146}
		Differential side	100.5 {3.957}
Grease amount	g {oz}	Wheel side	100–120 {3.53–4.23}
		Differential side	170–190 {6.01–6.70}
Shaft length*	mm {in}		791.2–801.2 {31.15–31.54}
Front axle			
Bearing play axil direction	mm {in}		0.05 {0.002} max.
Rear axle			
Bearing play axil direction	mm {in}		0.05 {0.002} max.
Differential			
Backlash (Ring gear and drive pinion)	mm {in}		0.09–0.11 {0.0035–0.0043}
Drive pinion preload (without oil seal)	N·m {kgf·cm, in·lbf}		1.3–1.7 {13–18, 12–15}
Differential oil	Grade		API Service GL-4 or 5
	Viscosity		Above –18°C {0°F} : SAE 90 Below –18°C (0°F} : SAE 80
	Capacity	L {US qt, Imp qt}	1.30 {1.38, 1.14}

* Before measuring the drive shaft length, lift the boot to equalize the pressure within it.

N. STEERING SYSTEM

Item		Specifications
Steering wheel		
Outer diameter	mm {in}	380 {15.0}
Free play	mm {in}	0–30 {0–1.18}
Wheel effort	N {kgf, lbf}	30–38 {3.0–3.9, 6.6–8.5}
Lock-to-lock	turns	2.9
Steering shaft		
Shaft type		Collapsible
Joint type		2-cross joint
Power steering system		
Gear type		Rack and pinion
Gear ratio		∞ (infinite)
Rack stroke	mm {in}	160 {6.30}
Power steering fluid		ATF Dexron®II or M-III
Fluid capacity	L {US qt, Imp qt}	0.96 {1.01, 0.84}
Fluid pressure	kPa {kgf/cm^2, psi}	7620–8350 {77.7–85.2, 1110–1210}

P. BRAKING SYSTEM

Item				Specifications
Brake pedal				
Type				Suspended
Height (with carpet) mm {in}				164.5–176.0 {6.48–6.92}
Free play mm {in}				3–8 {0.12–0.31}
Reserve travel (When depressed at 590 N {60 kgf, 132 lbf}) (without carpet) mm {in}				100 {3.94} min.
Master cylinder				
Type				Tandem (with level sensor)
				Portless & recessed type
Push rod-to-piston clearance mm {in}	Power brake unit at 66.7 kPa {500 mmHg, 19.7 inHg}			0.1–0.4 {0.004–0.015}
Front brake				
Type				Ventilated disc
Disc pad thickness	Standard mm {in}		Outer	10.3 {0.41}
			Inner	9.3 {0.37}
	Limit mm {in}			1.0 {0.04}
Disc plate	Runout limit mm {in}			0.1 { 0.004}
	Thickness	Standard mm {in}		22.0 {0.87}
		Limit mm {in}		20.0 {0.79}
Rear brake				
Type				Ventilated disc
Disc pad thickness	Standard mm {in}			8.0 {0.31}
	Limit mm {in}			1.0 {0.04}
Disc plate	Runout limit mm {in}			0.1 {0.004}
	Thickness	Standard mm {in}		20.0 {0.79}
		Limit mm {in}		18.0 {0.71}
Power brake unit				
Type				Tandem diaphragm
Fluid pressure when pedal depressed at 200 N {20 kgf, 44 lbf} kPa {kgf/cm^2}	Power brake unit at 0 kPa {0 mmHg, 0 inHg}			590 {6} min.
	Power brake unit at 66.7 kPa {500 mmHg, 19.7 inHg}			7750 {79} min.
Rear wheel hydraulic control system				
Type				Proportioning bypass valve
Switching point kPa {kgf/cm^2, psi}				3900 {40.0, 570}
Parking brake				
Type				Mechanical, two-rear-wheel control
Operation system				Hand lever type
Parking lever stroke (When pulled at 200 N {20 kgf, 44 lbf}) notches				7–10
Brake fluid				
Type				FMVSS 116 DOT-3
Anti-lock brake system (ABS)				
Type				4-sensor, 3-channel system
Resistance between terminals of wheel speed sensor kΩ				0.8–1.2

Q, WHEELS AND TIRES

Item			Specifications
Standard tire			
Tires	Size		P225/50R16 91V P225/50 ZR 16
	Air pressure kPa {kgf/cm², psi}		220 {2.2, 32}
	Remaining tread	Ordinary tires mm {in}	1.6 {0.063} min.
		Snow tires %	50 min.
Wheels	Size		16 × 8JJ
	Material		Aluminum alloy
	Offset mm {in}		50.0 {1.97}
	Pitch circle diameter mm {in}		114.3 {4.50}
Temporary spare tire			
Tires	Size		T135/70D16
	Air pressure kPa {kgf/cm², psi}		415 {4.2, 60}
Wheels	Size		16 × 4T
	Material		Aluminum alloy
	Offset mm {in}		40.0 {1.57}
	Pitch circle diameter mm {in}		114.3 {4.50}
Wheel and tire			
Runout limit mm {in}		Horizontal	2.0 {0.08}
		Vertical	1.5 {0.06}
Maximum unbalance (at rim edge) g {oz}			8 {0.28}

R. SUSPENSION

Item \ Transmission			MT		AT
Item \ Suspension			Standard	Hard	Standard
Front suspension					
Suspension type			Double-wishbone		
Coil spring	Identification mark color		Red		Brown
	Wire diameter mm {in}		12.3 {0.48}		12.5 {0.49}
	Coil center diameter mm {in}		104.8 {4.126}		105.0 {4.134}
	Free length mm {in}		270.0 {10.63}		276.3 {10.88}
	Active coil number		4.14		4.39
Shock absorber	Type		Cylindrical, double-acting, low-pressure gas charged		
	Damping force characteristics		Standard	Hard	Standard
Stabilizer	Type		Torsion bar, hollow type		
	Diameter mm {in}		28.6 {1.13}		
Front wheel alignment (unladen*1)	Inspection standard				
	Total toe-in	mm {in}	2 ± 3 {0.08 ± 0.11}		
	Toe-in (per side)	Degree	0.1° ± 0.75°		
	Maximum steering angle	in	36° ± 2°		
		out	32° ± 2°		
	Camber angle	Degree	0.1° ± 0.75°		
	Difference between left and right	Degree	1.0° max.		
	Caster angle	Degree	6.08° ± 0.75°		
	Difference between left and right	Degree	1.0° max.		
	King pin angle	Degree	13°55'		
	Adjustment standard				
	Total toe-in	mm {in}	2 ± 1 {0.08 ± 0.04}		
	Toe-in (per side)	Degree	0.1° ± 0.05°		
	Maximum steering angle	in	36° ± 2°		
		out	32° ± 2°		

*1 Fuel tank full; radiator coolant and engine oil at specified levels; spare tire, jack, and tools in designated positions.

Item			Transmission / Suspension	MT Standard	MT Hard	AT Standard
Front wheel alignment (unladen*1)	Camber angle		Degree	0.1° ± 0.5°		
		Difference between left and right	Degree	1.0° max.		
	Caster angle		Degree	6.08° ± 0.5°		
		Difference between left and right	Degree	1.0° max.		
	King pin angle		Degree	13°55'		
Rear suspension						
Suspension type				Double-wishbone		
Coil spring	Identification mark color			Purple		
	Wire diameter		mm {in}	12.2 {0.48}		
	Coil center diameter		mm {in}	114.7 {4.516}		
	Free length		mm {in}	303.0 {11.93}		
	Active coil number			4.21		
Shock absorber	Type			Cylindrical, double-acting, low-pressure gas charged		
	Damping force characteristics			Standard	Hard	Standard
Stabilizer	Type			Torsion bar, hollow type		
	Diameter		mm {in}	13.8 {0.54}		
Rear wheel alignment (unladen*1)	Inspection standard					
	Total toe-in		mm {in}	2 ± 3 {0.08 ± 0.11}		
	Toe-in (per side)		Degree	0.1° ± 0.1°		
	Camber angle		Degree	−1.22° ± 0.75°		
		Difference between left and right	Degree	1.0° max		
	Thrust angle		Degree	0° ± 0.1°		
	Adjustment standard					
	Total toe-in		mm {in}	2 ± 1 {0.08 ± 0.04}		
	Toe-in (per side)		Degree	0.1° ± 0.05°		
	Camber angle		Degree	−1.22° ± 0.5°		
		Difference between left and right	Degree	1.0° max		
	Thrust angle		Degree	0° ± 0.1°		

*1 Fuel tank full; radiator coolant and engine oil at specified levels; spare tire, jack, and tools in designated positions.

T. BODY ELECTRICAL SYSTEM

Item		Specification (W) (BULB TRADE NO.)
Front exterior lights	Headlight (Halogen)	60/55 [HB_2]
	Parking light	5
	Front turn signal	27 (3497)
	Front fog light	35
	Daytime running light (For Canada)	27 (3496)
	Front side marker light	4.9 (168)
Rear exterior lights	Back-up light	27 (1156)
	License plate light	5
	Stop / Tail light	27/8 (1157)
	High-mount stoplight	18.4 (921)
	Rear turn signal light	27 (1156)
	Rear side marker light	3.8 (194)
Interior lights	Interior light	5
	Glove compartment light	3.4
	Cargo compartment light	8

Item		Specification (W) (BULB TRADE NO.)
Warning lights	Seat belt ABS Brake	1.4
	Alternator Oil-level Fuel-level Coolant level	3
	Air bag system	2
Indicator	Shift-up	2
	High beam Turn signal Security light Check Rear window defroster Cruise set HOLD	1.4
Illumination lights	Instrument cluster Head light cleaner switch Front fog light switch Heater unit Cigarette lighter Ash tray	3.4
	Retractor switch Automatic selector Rear window defroster switch Cruise control main switch Door key cylinder Ignition key	1.4

U. HEATER AND AIR CONDITIONER SYSTEMS

Item			Specifications	
			R-12	R-134a
Refrigerant amount		g{oz}	750–850 {26.5–30.0}	450–550 {15.9–19.4}
Compressor oil	Oil type		ND-OIL 7	ND-OIL 9
	Amount	ml {cc, fl oz}	100–140 {100–140, 3.0–4.2}	130–170 {130–170, 3.9–5.1}
Refrigerant normal pressure at 25°C {77°F} MPa {kgf/cm², psi}	Low pressure		0.15–0.20 {1.5–2.0, 21–28}	0.15–0.25 {1.5–2.5, 21–36}
	High pressure		1.42–1.47 {14.5–15.0, 206–213}	1.37–1.57 {14–16, 199–228}

STANDARD BOLT AND NUT TIGHTENING TORQUE

Diameter mm {in}	Pitch mm {in}	4T			6T			8T		
		N·m	kgf·m	ft·lbf	N·m	kgf·m	ft·lbf	N·m	kgf·m	ft·lbf
6 {0.236}	1 {0.039}	4.2–6.2	0.43–0.63	3.1–4.6	6.9–9.8	0.7–1.0	5.0–7.2	7.8–11.8	0.8–1.2	5.8–8.8
8 {0.315}	1.25 {0.049}	9.8–14.7	1.0–1.5	7.2–10.8	16–23	1.6–2.3	12–17	18–26	1.8–2.7	13–20
10 {0.394}	1.25 {0.049}	20–28	2.0–2.9	14–21	31–46	3.2–4.1	23–34	36–54	3.7–5.5	27–40
12 {0.472}	1.5 {0.059}	34–50	3.5–5.1	25–37	55–80	5.6–8.2	41–59	63–93	6.4–9.5	46–69
14 {0.551}	1.5 {0.059}	—	—	—	75–103	7.7–10.5	56–76	102–137	10–14	75–101
16 {0.630}	1.5 {0.059}	—	—	—	116–157	12–16	85–116	156–211	16–22	115–156
18 {0.709}	1.5 {0.059}	—	—	—	167–225	17–23	123–166	221–299	23–31	163–221
20 {0.787}	1.5 {0.059}	—	—	—	231–314	24–32	171–231	308–417	31–43	227–307
22 {0.866}	1.5 {0.059}	—	—	—	314–423	32–43	231–312	417–564	43–58	307–416
24 {0.945}	1.5 {0.059}	—	—	—	475–546	41–56	298–403	536–726	55–74	396–536