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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

ENGINE	TD- 2
LUBRICATING SYSTEM	TD- 3
COOLING SYSTEM	TD- 4
FUEL AND EMISSION CONTROL SYSTEMS	TD- 4
ENGINE ELECTRICAL SYSTEM	TD- 5
CLUTCH	TD- 5
MANUAL TRANSMISSION	TD- 6
AUTOMATIC TRANSMISSION	TD- 8
PROPELLER SHAFT	TD-13
FRONT AND REAR AXLES	TD-13
STEERING SYSTEM	TD-13
BRAKING SYSTEM	TD-14
WHEELS AND TIRES	TD-15
SUSPENSION	TD-15
BODY ELECTRICAL SYSTEM	TD-16
HEATER AND AIR CONDITIONER SYSTEMS	TD-17
STANDARD BOLT AND NUT TIGHTENING TORQUE	TD-17

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/cm ² , 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}
			mm {in}	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}
			mm {in}	Min.	6.5 {0.256}
		Clearance of apex seal and rotor groove	mm {in}	Standard	0.051-0.101 {0.002-0.039}
			mm {in}	Max.	0.15 {0.0059}
		Spring free height	mm {in}	Long	Standard
mm {in}	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}
			mm {in}	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

TD

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/cm ² , 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		Mixture percentage %		Specific gravity at 20°C {68°F}
	Protection		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 thermostatic valve 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-controlled) × 2
Fuel filter		
Type	Low-pressure	Nylon element
	High-pressure	Paper element
Pressure regulator		
Type		Diaphragm
Regulated pressure		kPa {kgf/cm ² , 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/cm ² , 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	cm ³ {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
	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.	

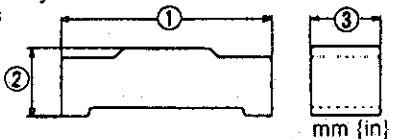
Item		Transmission	R15M-D
Flywheel			
Runout limit		mm {in}	0.2 {0.008}
Clutch disc			
Type		Single dry-plate	
Runout limit		mm {in}	0.6 {0.024}
Wear limit		mm {in}	0.3 {0.012} from rivet head
Outer diameter		mm {in}	236 {9.29}
Inner diameter		mm {in}	160 {6.30}
Facing thickness	mm {in}	Flywheel side	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 groove and shift fork	mm {in}	Standard	0.2-0.3 {0.008-0.012}
		Maximum	0.5 {0.020}
Reverse idler gear and shaft	mm {in}	Standard	0.02-0.05 {0.0008-0.0020}
		Maximum	0.15 {0.006}
Synchronizer ring (all) and flank surface of gear	mm {in}	Standard	1.5 {0.059}
		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)	mm {in}	Standard	0.66-2.0 {0.026-0.079}
		Available thrust washer thicknesses	2.5 {0.098}, 3.0 {0.118}, 3.5 {0.138}

TECHNICAL DATA

TD

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		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}

TD

K. AUTOMATIC TRANSMISSION

Transmission		RB4A-EL		
Item				
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/cm ² , 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 → D ₂	50-56 {31-35}
			D ₂ → D ₃	103-111 {64-69}
			D ₃ → D ₄	178-188 {111-117}
		Half throttle	D ₁ → D ₂	35-41 {22-25}
			D ₂ → D ₃	81-93 {50-58}
			D ₃ → 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 → D ₃	39-45 {24-28}
			D ₃ → D ₂	13-19 {8-12}
			D ₂ → D ₁	5-11 {3-7}
		Kickdown (Wide open throttle)	D ₄ → D ₃	142-152 {88-94}
			D ₃ → D ₂	91-99 {57-62}
			D ₂ → 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 → D ₂	50-56 {31-35}
			D ₂ → D ₃	103-111 {64-69}
			D ₃ → D ₄	178-188 {111-117}
		Half throttle	D ₁ → D ₂	32-38 {20-24}
			D ₂ → D ₃	80-92 {50-57}
			D ₃ → 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 → D ₃	39-45 {24-28}
			D ₃ → D ₂	13-19 {8-12}
			D ₂ → D ₁	5-11 {3-7}
		Kickdown (Wide open throttle)	D ₄ → D ₃	142-152 {88-94}
	D ₃ → D ₂		91-99 {57-62}	
	D ₂ → D ₁		38-44 {24-27}	
	D range (A/C OFF)	Wide open throttle	D ₁ → D ₂	50-56 {31-35}
			D ₂ → D ₃	103-111 {64-69}
			D ₃ → D ₄	178-188 {111-117}
		Half throttle	D ₁ → D ₂	32-38 {20-24}
			D ₂ → D ₃	80-92 {50-57}
			D ₃ → 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 → D ₃	35-41 {22-25}
			D ₃ → D ₂	13-19 {8-12}
D ₂ → D ₁			5-11 {3-7}	
Kickdown (Wide open throttle)		D ₄ → D ₃	142-152 {88-94}	
	D ₃ → D ₂	91-99 {57-62}		
	D ₂ → D ₁	38-44 {24-27}		
HOLD	D range	—	D ₄ → D ₃	180-186 {112-116}
			D ₃ → D ₂	7-13 {4-8}
			D ₂ → 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 → S ₂	50-56 {31-35}
			S ₂ → S ₃	103-111 {64-69}
		Half throttle	S ₁ → S ₂	35-41 {22-25}
			S ₂ → S ₃	81-93 {50-58}
			Lockup ON (S ₃)	94-106 {58-66} (*81-93 {50-58})
		Closed throttle position	S ₃ → S ₂	13-19 {8-12}
			S ₂ → S ₁	5-11 {3-7}
		Kickdown (Wide open throttle)	S ₃ → S ₂	91-99 {57-62}
			S ₂ → S ₁	38-44 {24-27}
		HOLD	—	S ₃ → S ₂

Caution

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

TD

Item		Transmission		RB4A-EL
NORMAL	L range	Wide open throttle	L ₁ → L ₂	50-56 {31-35}
		Half throttle	L ₁ → L ₂	35-41 {22-25}
		Closed throttle position	L ₂ → L ₁	5-11 {3-7}
		Kickdown (Wide open throttle)	L ₂ → L ₁	38-44 {24-27}
HOLD	—	L ₂ → 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.

TECHNICAL DATA

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Transmission		RB4A-EL	
Item			
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}

Transmission		RB4A-EL	
Item			
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}
	Limit	mm {in}	Inner 9.3 {0.37}
Disc plate	Runout limit	mm {in}	1.0 {0.04}
	Thickness	Standard mm {in}	0.1 {0.004}
		Limit mm {in}	22.0 {0.87}
			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/cm ² , 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/cm ² , 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 Suspension	MT		AT
		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°	
		in	36° ± 2°	
	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°	
in		36° ± 2°		
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		MT		AT
	Suspension		Standard	Hard	Standard
Front wheel alignment (unladen*1)	Camber angle		Degree		
	Difference between left and right		Degree		
	Caster angle		Degree		
	Difference between left and right		Degree		
	King pin angle		Degree		
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}
Refrigerant normal pressure at 25°C (77°F) MPa {kgf/cm ² , 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