

PRODEMAND

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2015 Subaru BRZ 2.0L Eng Premium

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ENGINE - SPECS**COMMON SPECS & PROCEDURES**

BRZ COMMON SPECS & PROCEDURES

System	Specification/Procedure
Air Conditioning	
Automatic System	HVAC SYSTEM (HEATER, VENTILATOR AND A/C)
Manual System	HVAC SYSTEM (HEATER, VENTILATOR AND A/C)
Axle Nut/Hub Nut	
Rear	140.1 ft.lbs (190 N.m)
Battery	CHARGING SYSTEM
Brakes	
Bleeding Sequence	AIR BLEEDING
Disc Brakes	
Front	FRONT BRAKE
Rear	REAR BRAKE
Torque	
Front	FRONT BRAKE
Rear	REAR BRAKE
Charging	
Generator	CHARGING SYSTEM
Drive Belts	V-BELT (FA20)
Engine Cooling	
Radiator Cap Pressure	93 to 123 kPa (.95 to 1.25 kgf/cm ² , 14 to 18 psi)
Thermostat R & I	THERMOSTAT (FA20/FOR ENGINE COOLANT)
Water Pump R & I	WATER PUMP (FA20)
Engine Mechanical	
Compression	1150 to 1750 kPa (11.7 to 17.8 kgf/cm ² , 167 to 254 psi)
Oil Pressure (176°F (80°C))	50 kPa (0.5 kgf/cm ² , 7.3 psi) or more @ idle; 500 kPa (5.1 kgf/cm ² , 73 psi) or more @ 6000 RPM
Overhaul	ENGINE (FA20)

Fluid Specifications	See FLUIDS under MAINTENANCE tab. From within Manager or Service Writer, click the "30/60/90 Interval" or "Maint." button.	
Flywheel/Flex Plate Torque		
M/T	85 N.m (62.7 ft. lbs)	
A/T	95 N.m (70.1 ft. lbs)	
Fuel System		
Pressure Specification	350-500 kPa (4-5 kgf/cm ² , 51-72 psi)	
Fuel Pressure Test Procedure	FUNCTION INSPECTION	
Fuel Filter	PARTS LOCATION	
Ignition		
Firing Order & Cylinder Identification	H6 ENGINE	
Spark Plug (DENSO: ZXE27HBR8)		
Gap	0.7 to 0.8 mm (0.028 to 0.031 in.)	
Torque	17 N.m (13 ft. lbs.)	
Starting		
Starter	STARTING SYSTEM	
Torque	STARTING SYSTEM	
Wheel Alignment		
Adjustment Specifications		
Front	FRONT WHEEL ALIGNMENT	
Rear	REAR WHEEL ALIGNMENT	
Torque		
Front	ADJUSTMENT	
Rear	ADJUSTMENT	
Wheel & Tire		
Wheel Lug Nut Torque	120 N.m (89 ft. lbs.)	

FA20 Engine Mechanical

SERVICE DATA

SERVICE DATA SPECIFICATIONS

Ignition timing	-5 to 10° BTDC at idle (Transmission in neutral)		
Idle speed	Automatic transmission (in neutral)		600 to 800 r/min
	Manual transmission		550 to 750 r/min
Compression	Compression pressure	1150 to 1750 kPa (11.7 to 17.8 kgf/cm ² , 167 to 254 psi)	
	Difference between each cylinder	200 kPa (2.0 kgf/cm ² , 29 psi) or less	
Cam clearance	Standard (Cold)	Intake	0.10 to 0.15 mm (0.0039 to 0.0059 in.)
		Exhaust	0.20 to 0.24 mm (0.0079 to 0.0094 in.)
Camshaft	Circle runout	Maximum	0.020 mm (0.00079 in.)
	Cam lobe height	Intake	40.39 to 40.49 mm (1.5902 to 1.5941 in.)
		Exhaust	40.19 to 40.29 mm (1.5823 to 1.5862 in.)
		For fuel pump	40.55 to 40.65 mm (1.5965 to 1.6004 in.)
	Cam base circle	Intake	34.0 mm (1.3386 in.)
		Exhaust	34.0 mm (1.3386 in.)
	Journal diameter	25.946 to 25.963 mm (1.02149 to 1.02216 in.)	
	Thrust clearance	0.068 to 0.116 mm (0.00027 to 0.00457 in.)	
Oil clearance	0.037 to 0.072 mm (0.00146 to 0.00283 in.)		
Cylinder head sub-assembly	Warpage	Maximum	0.035 mm (0.00138 in.)
	Cylinder head height	Standard	98.5 mm (3.878 in.)
		Minimum	98.4 mm (3.874 in.)
Intake valve	Overall length	104.95 mm (4.1319 in.)	
	Margin thickness	0.8 to 1.2 mm (0.0315 to 0.0472 in.)	
	Valve stem diameter	5.455 to 5.470 mm (0.2148 to 0.2154 in.)	
	Valve seat width	0.8 to 1.6 mm (0.032 to 0.063 in.)	
	Overall length	97.57 mm (3.8413 in.)	

Exhaust valve	Margin thickness		1.0 to 1.4 mm (0.039 to 0.055 in.)	
	Valve stem diameter		5.445 to 5.460 mm (0.21437 to 0.21496 in.)	
	Valve seat width		1.1 to 1.7 mm (0.043 to 0.067 in.)	
Intake valve guide bush	Inside diameter		5.500 to 5.512 mm (0.21654 to 0.21701 in.)	
	Oil clearance		0.030 to 0.057 mm (0.00118 to 0.00224 in.)	
	Protrusion height		11.4 to 11.8 mm (0.449 to 0.466 in.)	
Exhaust valve guide bush	Inside diameter		5.500 to 5.512 mm (0.21654 to 0.21701 in.)	
	Oil clearance		0.040 to 0.067 mm (0.00157 to 0.00264 in.)	
	Protrusion height		11.4 to 11.8 mm (0.449 to 0.466 in.)	
Valve adjusting shim	Valve stem end diameter	Intake	5.455 to 5.470 mm (0.21476 to 0.21535 in.)	
		Exhaust	5.445 to 5.460 mm (0.21437 to 0.21496 in.)	
	Valve adjusting shim inside diameter		5.500 to 5.560 mm (0.21654 to 0.21890 in.)	
	Oil clearance	Intake	0.030 to 0.105 mm (0.00118 to 0.00413 in.)	
		Exhaust	0.040 to 0.115 mm (0.00157 to 0.00453 in.)	
Valve spring	Free length		41.06 mm (1.617 in.)	
	Deviation	Maximum	Less than 1.8 mm (0.0710 in.)	
	Angle	Maximum	2.5°	
Cylinder block	Warpage	Maximum	0.025 mm (0.00098 in.)	
	Cylinder block height	Standard	205.0 mm (8.071 in.)	
		Minimum	204.9 mm (8.067 in.)	
	Cylinder bore diameter	Mark A	86.005 to 86.015 mm (3.38602 to 3.38641 in.)	
		Mark B	85.995 to 86.005 mm (3.38562 to 3.38602 in.)	
Maximum (When				

		boring)	86.505 mm (3.40570 in.)
Cylinder bore	Cylindricity		0.030 mm (0.00118 in.)
	Out-of-roundness		0.030 mm (0.00118 in.)
Piston	Piston diameter	Distance from piston head	39.4 mm (1.551 in.)
		A grade	85.985 to 85.995 mm (3.38523 to 3.38562 in.)
		B grade	85.975 to 85.985 mm (3.38484 to 3.38523 in.)
		0.25 mm (0.0098 in.) over size	86.225 to 86.245 mm (3.39468 to 3.39547 in.)
		0.50 mm (0.0197 in.) over size	86.475 to 86.495 mm (3.40452 to 3.40531 in.)
	Oil clearance		0.010 to 0.030 mm (0.00039 to 0.00118 in.)
Piston pin	Piston pin oil clearance		0.004 to 0.008 mm (0.00016 to 0.00031 in.)
	Connecting rod bushing oil clearance		0.006 to 0.026 mm (0.00024 to 0.00102 in.)
Piston ring	Piston ring end gap	No. 1	0.20 to 0.25 mm (0.00784 to 0.00984 in.)
		No. 2	0.60 to 0.70 mm (0.02362 to 0.02756 in.)
		Oil ring	0.10 to 0.35 mm (0.00394 to 0.01378 in.)
	Groove clearance	No. 1	0.030 to 0.080 mm (0.00118 to 0.00315 in.)
		No. 2	0.030 to 0.070 mm (0.00118 to 0.00276 in.)
	Bend	Maximum	0.10 mm (0.0039 in.) per 100 mm (3.937 in.) in length
	Twist	Maximum	0.10 mm (0.0039 in.) per 100 mm (3.937 in.) in length
	Thrust clearance		0.070 to 0.330 mm (0.00276 to 0.01299 in.)
	Oil clearance		0.025 to 0.055 mm (0.00098 to 0.00217 in.)
		Standard	1.492 to 1.508 mm (0.05874 to 0.05937 in.)

Connecting rod	Bearing size (Thickness at center)	0.03 mm (0.0012 in.) Undersize	1.511 to 1.515 mm (0.05949 to 0.05965 in.)
		0.05 mm (0.0020 in.) Undersize	1.521 to 1.525 mm (0.05988 to 0.06004 in.)
		0.25 mm (0.0098 in.) Undersize	1.621 to 1.625 mm (0.06382 to 0.06398 in.)
	Crank pin diameter	Standard	49.976 to 50.000 mm (1.96756 to 1.96850 in.)
		0.03 mm (0.0012 in.) Undersize	49.946 to 49.970 mm (1.96637 to 1.96732 in.)
		0.05 mm (0.0020 in.) Undersize	49.926 to 49.950 mm (1.96559 to 1.96653 in.)
0.25 mm (0.0098 in.) Undersize		49.726 to 49.750 mm (1.95771 to 1.95866 in.)	
Circle runout	Maximum	0.035 mm (0.00138 in.)	
	Maximum	0.006 mm (0.00024 in.)	
	Maximum	0.005 mm (0.00020 in.)	
	Maximum	0.006 mm (0.00024 in.)	
	Maximum	0.005 mm (0.00020 in.)	
	Minimum	47.726 mm (1.87897 in.)	
	Minimum	67.735 mm (2.66673 in.)	
	Connecting rod bearing thickness (at center)	Standard	1.492 to 1.508 mm (0.05874 to 0.05937 in.)
		0.03 mm (0.0012 in.) Undersize	1.511 to 1.515 mm (0.05949 to 0.05965 in.)
		0.05 mm (0.0020 in.) Undersize	1.521 to 1.525 mm (0.05988 to 0.06004 in.)
		0.25 mm (0.0098 in.) Undersize	1.621 to 1.625 mm (0.06382 to 0.06398 in.)
	No. 1 to No. 4 crank bearing thickness (at center)	Standard	2.495 to 2.513 mm (0.09823 to 0.09894 in.)
		0.03 mm (0.0012 in.) Undersize	2.519 to 2.522 mm (0.09917 to 0.09929 in.)
		0.05 mm (0.0020 in.) Undersize	2.529 to 2.532 mm (0.09957 to 0.09968 in.)
0.25 mm (0.0098 in.) Undersize		2.629 to 2.632 mm (0.10350 to 0.10362 in.)	

Crankshaft	No. 5 crank bearing thickness (at center)	Standard	2.493 to 2.511 mm (0.09815 to 0.09886 in.)
		0.03 mm (0.0012 in.) Undersize	2.517 to 2.520 mm (0.09909 to 0.09921 in.)
		0.05 mm (0.0020 in.) Undersize	2.527 to 2.530 mm (0.09949 to 0.09961 in.)
		0.25 mm (0.0098 in.) Undersize	2.627 to 2.630 mm (0.10342 to 0.10354 in.)
	Crank pin outer diameter	Standard	49.976 to 50.000 mm (1.96756 to 1.96850 in.)
		0.03 mm (0.0012 in.) Undersize	49.946 to 49.970 mm (1.96637 to 1.96734 in.)
		0.05 mm (0.0020 in.) Undersize	49.926 to 49.950 mm (1.96559 to 1.96653 in.)
		0.25 mm (0.0098 in.) Undersize	49.726 to 49.750 mm (1.95771 to 1.95866 in.)
	Crankshaft journal diameter	Standard	67.985 to 68.009 mm (2.67657 to 2.67751 in.)
		0.03 mm (0.0012 in.) Undersize	67.955 to 67.979 mm (2.67539 to 2.67633 in.)
		0.05 mm (0.0020 in.) Undersize	67.935 to 67.959 mm (2.67460 to 2.67555 in.)
		0.25 mm (0.0098 in.) Undersize	67.735 to 67.759 mm (2.66673 to 2.66767 in.)
	Thrust clearance		0.130 to 0.308 mm (0.00512 to 0.01213 in.)
	Oil clearance		0.013 to 0.031 mm (0.00051 to 0.00122 in.)