

# 1GR-FE STARTING

## SERVICE DATA

Starter	Current	Standard	100A or less at 11.5 V	
Starter armature assembly	Circle runout	Maximum	0.05 mm (0.0020 in.)	
	Commutator diameter	Standard	35.0 mm (1.378 in.)	
		Minimum	34.0 mm (1.339 in.)	
	Undercut depth	Standard	0.7 mm (0.028 in.)	
		Minimum	0.2 mm (0.008 in.)	
Commutator resistance	Standard	Below 1 Ω		
Starter yoke	Resistance	Standard	Lead wire-brush Below 1 Ω	
	Shunt coil resistance		Terminal A - B 1.5 to 1.9 Ω at 20°C (68°F)	
Brush	Length	Standard	15.0 mm (0.591 in.)	
		Minimum	9.0 mm (0.354 in.)	
Starter brush holder assembly	Brush spring lead	Standard	21.5 to 27.5 N (2.2 to 2.8 kgf, 4.8 to 6.2 lbf)	
		Minimum	12.7 N (1.3 kgf, 2.9 lbf)	
Starter relay assembly	Resistance	Standard	3 - 5 10 kΩ or higher	
			Below 1 Ω (apply battery voltage to terminal 1 and 2)	
Ignition switch assembly	Resistance	Standard	10 kΩ or higher (Lock)	
			1 (AM1) - 3 (ACC)	Below 1 Ω (ACC)
			1 (AM1) - 3 (ACC) - 4 (IG1)	Below 1 Ω (ON)
			7 (IG2) - 8 (AM2)	Below 1 Ω (ON)
			1 (AM1) - 2 (ST1) - 4 (IG1)	Below 1 Ω (START)
			6 (ST2) - 7 (IG2) - 8 (AM2)	Below 1 Ω (START)

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## TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Starter assembly x Transmission housing	37	377	27
Starter assembly x Terminal 30	5.9	60	52
Commutator end frame x Brush holder	3.8	39	34 in.*lbf
Starter drive housing assembly x Magnetic Starter Switch	9.3	95	82 in.*lbf
Commutator end frame x Starter drive housing assembly	9.3	95	82 in.*lbf
Lead wire x Terminal C of starter	5.9	60	52 in.*lbf
Engine wire x Cylinder block	13	133	10
No. 2 exhaust manifold stay x Transmission housing and Exhaust manifold	3.9	40	35 in.*lbf
Wire harness x Cylinder block	13	133	10

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