

# 1GR-FE STARTING

## SERVICE DATA

Starter	No-load characteristics		Current	100 A 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.)		
	Starter yoke	Shunt coil resistance	at 20°C (68°F)	1.5 to 1.9 Ω	
	Brush	Brush length	Standard	15.0 mm (0.591 in.)	
			Minimum	9.0 mm (0.354 in.)	
	Starter brush holder assembly	Brush spring load	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 (3 - 5)		Apply battery voltage to terminal 1 and 2	10 kΩ or higher	
				Below 1 Ω	
Ignition or starter switch	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	
	START			1 (AM1) - 2 (ST1) - 4 (IG1)	Below 1 Ω
				6 (ST2) - 7 (IG2) - 8 (AM2)	Below 1 Ω

## TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Starter assembly x Transmission housing	37	377	27
Starter assembly x Terminal 30	9.8	100	7
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
Manifold stay x Transmission housing and Exhaust manifold	40	408	30
Steering sliding yoke x Steering intermediate shaft No. 2	36	370	27

**SS**