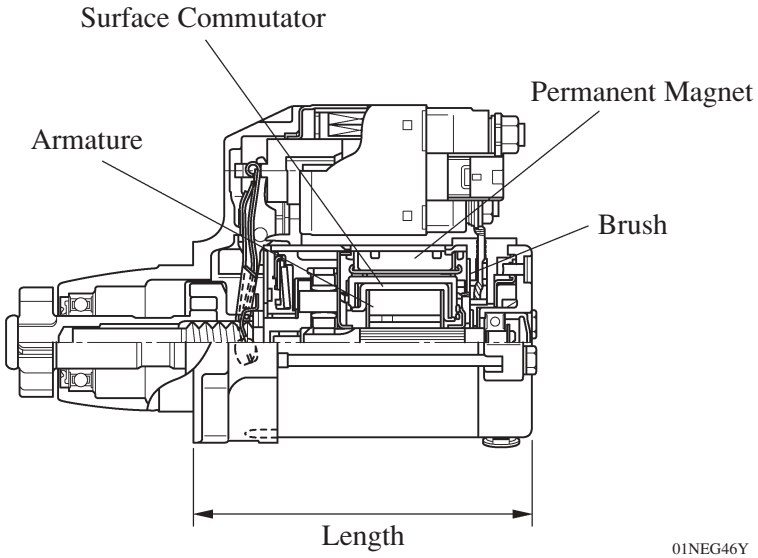
■STARTING SYSTEM

1. General

- A compact and lightweight PS (Planetary reduction-Segment conductor motor) type starter is used.
- Because the PS type starter contains an armature that uses square-shaped conductors, and its surface functions as a commutator, it has resulted in both improving its output torque and reducing its overall length.
- In place of the field coil used in the conventional type starter, the PS type starter uses two types of permanent magnets: main magnets and interpolar magnets. The main magnets and interpolar magnets have been efficiently arranged to increase the magnetic flux and to shorten the length of the yoke.



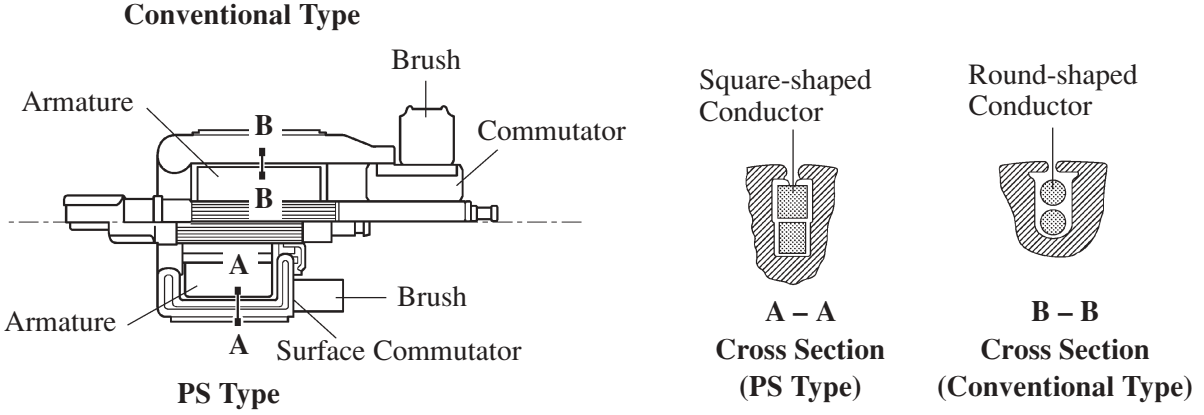
▶ Specifications ◀

Engine Type	1AZ-FE	2AZ-FE
Starter Type	PS Type	←
Rating Output	1.3 kW	1.6 kW
Rating Voltage	12 V	←
Length*1 mm (in.)	128 (5.04)	←
Weight g (lb)	2900 (6.39)	2950 (6.50)
Rotational Direction*2	Counterclockwise	←

*1: Length from the mounted area to the rear end of the starter
*2: Viewed from pinion side

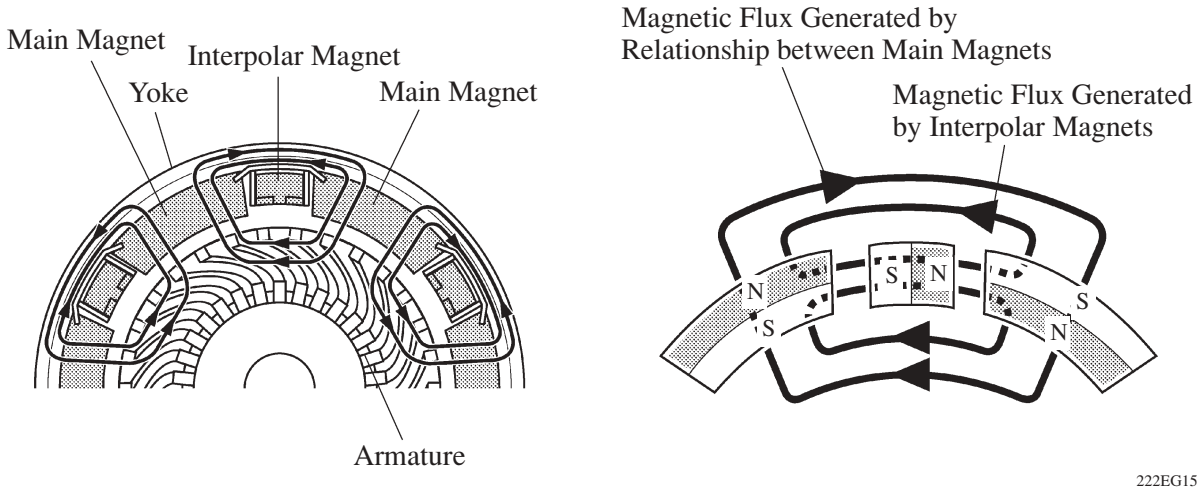
2. Construction

- Instead of constructing the armature coil with conventional type round-shaped conductor wires, the PS type starter uses square conductors. With this type of construction, the same conditions that are realized by winding numerous round-shaped conductor wires can be achieved without increasing the mass. As a result, the output torque has been increased, and the armature coil has been made more compact.
- Because the surface of the square-shaped conductors that are used in the armature coil functions as a commutator, the overall length of the PS type starter has been shortened.



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- Instead of the field coils used in the conventional type starter, the PS type starter uses two types of permanent magnets: the main magnets and the interpolar magnets. The main and interpolar magnets are arranged alternately inside the yoke, allowing the magnetic flux that is generated between the main and interpolar magnets to be added to the magnetic flux that is generated by the main magnets.
  In addition to increasing the amount of magnetic flux, this construction shortens the overall length of the yoke.



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