

## 1-2 The Engagement Mechanism

This type utilizes the electromagnetic force. The pinion is engaged with the ring gear by means of the torsion spring and shift lever. The plunger is shifted by the attracting force and depresses the pinion. When the pinion does not strike the ring gear, smooth engagement occurs, then the contacts close to start the motor.

Also, when the pinion strikes the ring gear teeth, it compresses the torsion spring and loses the contacts. When the current flows through the motor and the armature starts rotating, the pinion is depressed strongly on the ring gear and rotated by means of torsion spring pressure and the helical spline's force. Then, the pinion teeth are arranged in engagement with the ring gear teeth. When the key start switch is turned OFF, the magnetic switch is demagnetized, and the pinion is returned by the torsion spring force. Simultaneously, the contacts open to stop motor operation. In Fig. 2, engagement between the pinion and ring gear is illustrated.

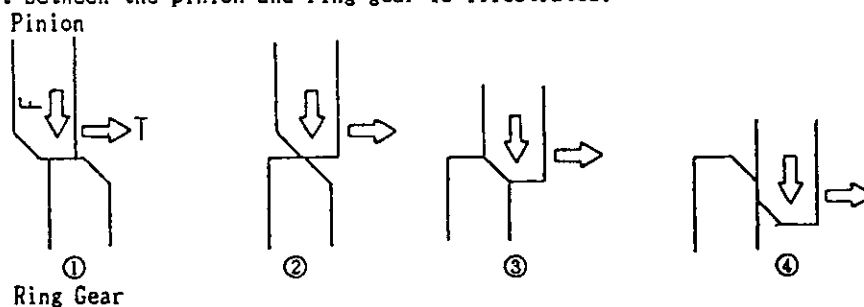
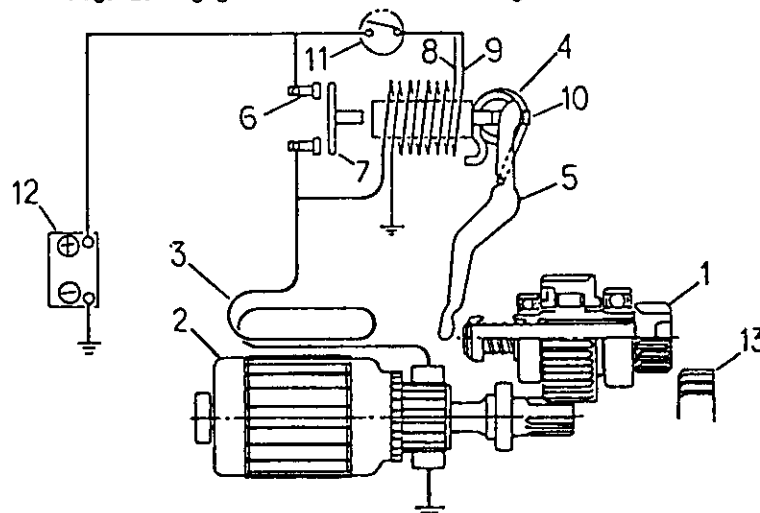


Fig. 2. Engagement of Pinion and Ring Gear



- |                       |                                  |
|-----------------------|----------------------------------|
| 1. Pinion             | 8. Shunt coil (Holding Coil)     |
| 2. Armature           | 9. Series Coil (Attracting Coil) |
| 3. Field Coil         | 10. Plunger                      |
| 4. Torsion Spring     | 11. Key Start Switch             |
| 5. Shift lever        | 12. Battery                      |
| 6. Stationary contact | 13. Ring Gear                    |
| 7. Movable Contactor  |                                  |

Fig. 3. Schematic Layout of Reduction Starter's Electrical Circuit

## 2. Removal

- 1) Disconnect the battery's negative or  $\ominus$  side cable at the battery.
- 2) Disconnect the battery's positive or  $\oplus$  cable and the main harness' feed wire from the magnetic switch of the reduction starter.
- 3) Disconnect the battery's negative or  $\ominus$  cable at the reduction starter.
- 4) Remove the reduction starter retaining bolts and lockwashers. Then withdraw the motor assembly.