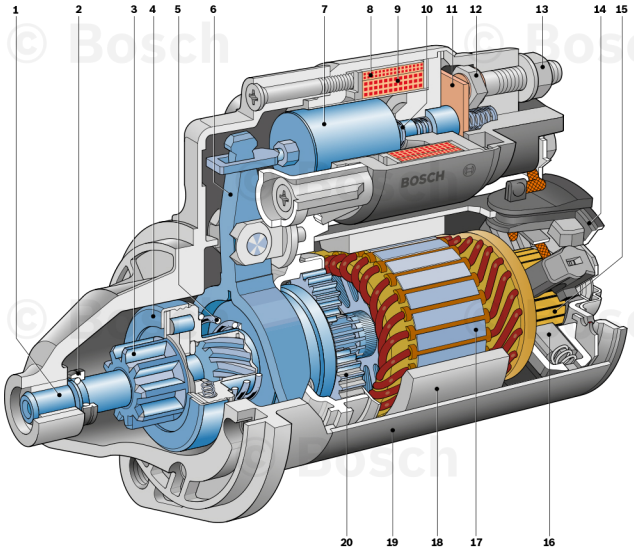
Bosch Classic

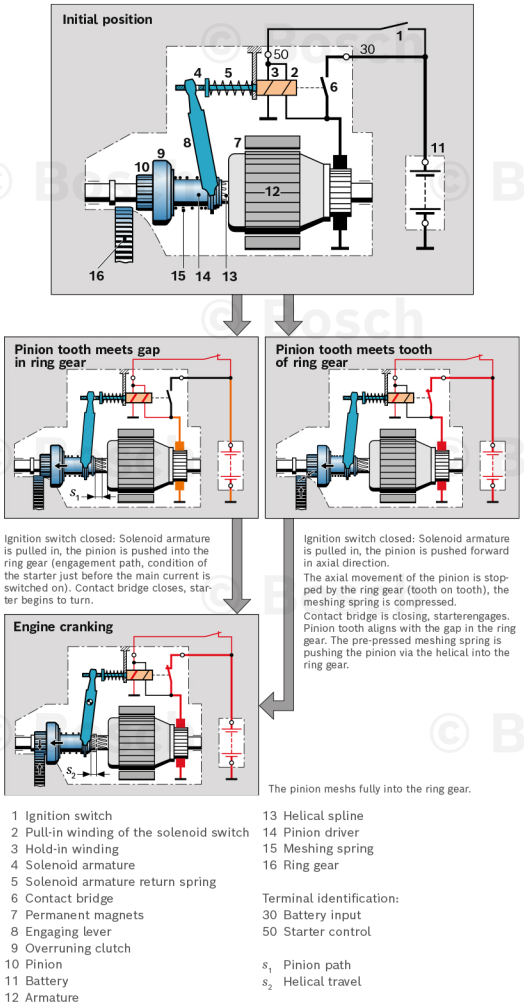
Pre-engaged Starter Motor

Pre-engaged starter motor



1 Drive shaft
2 Stop ring
3 Pinion
4 (Roller-type) Overrunning clutch
5 Meshing spring
6 Engaging lever
7 Solenoid switch
8 Hold-in winding
9 Pull-in winding
10 Solenoid armature return spring
11 Contact bridge
12 Contact
13 Electrical Connection
14 Commutator end shield
15 Commutator
16 Brush holder
17 Armature
18 Permanent magnets
19 Pole housing
20 Planetary gear train (reduction gear)

Working phases of the pre-engaged starter



Ignition switch closed: Solenoid armature is pulled in, the pinion is pushed into the ring gear (engagement path, condition of the starter just before the main current is switched on). Contact bridge closes, starter begins to turn.

Ignition switch closed: Solenoid armature is pulled in, the pinion is pushed forward in axial direction.
The axial movement of the pinion is stopped by the ring gear (tooth on tooth), the meshing spring is compressed.
Contact bridge is closing, starterengages. Pinion tooth aligns with the gap in the ring gear. The pre-pressed meshing spring is pushing the pinion via the helical into the ring gear.

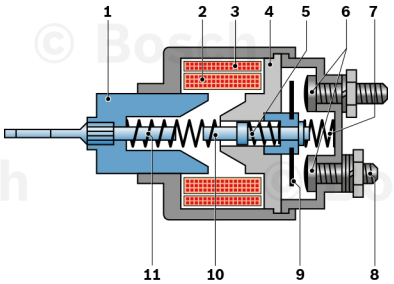
The pinion meshs fully into the ring gear.

1 Ignition switch
2 Pull-in winding of the solenoid switch
3 Hold-in winding
4 Solenoid armature
5 Solenoid armature return spring
6 Contact bridge
7 Permanent magnets
8 Engaging lever
9 Overruning clutch
10 Pinion
11 Battery
12 Armature
13 Helical spline
14 Pinion driver
15 Meshing spring
16 Ring gear

Terminal identification:
30 Battery input
50 Starter control

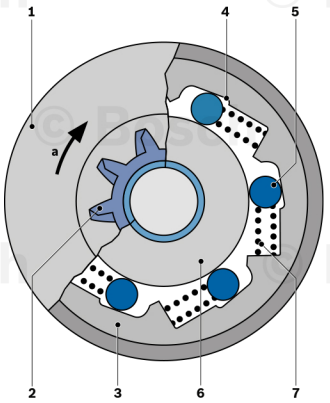
s_1 Pinion path
s_2 Helical travel

Solenoid switch



1 Solenoid armature
2 Pull-in winding
3 Hold-in winding
4 Magnetic core
5 Compression spring
6 Contacts
7 Contact return spring
8 Electrical Connection
9 Contact bridge
10 Switching pin
11 Solenoid armature return spring

Overrunning clutch



1 Sealing cap
2 Pinion
3 Clutch shell
4 Roller race
5 Cylindrical roller
6 Pinion roll collar
7 Spring
a Direction of rotation

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