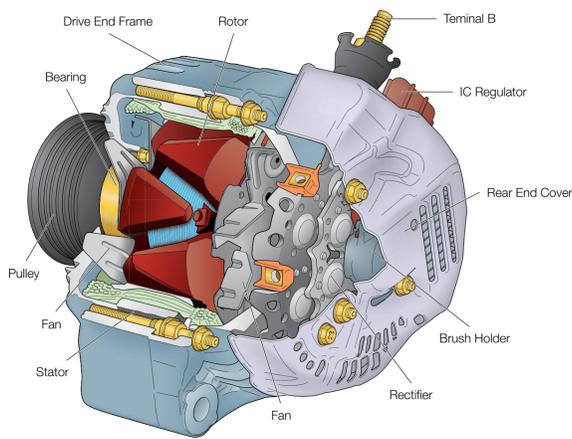


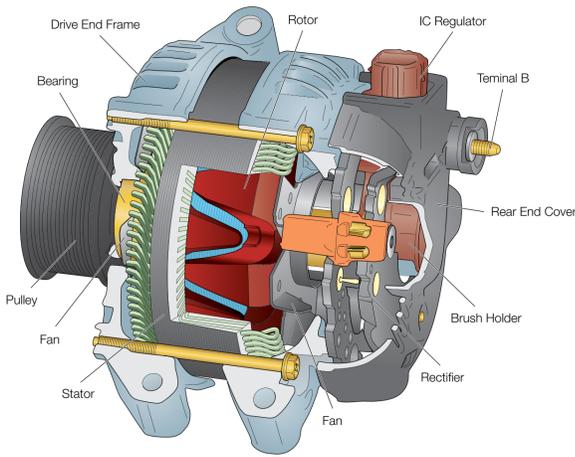
DENSO Starters & Alternators

Discovering DENSO Technology

Type III Alternator



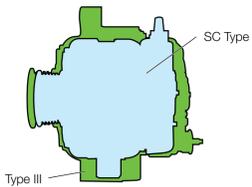
SC, SE Alternator



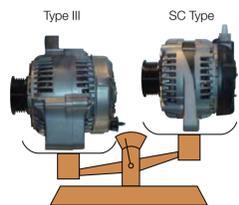
Diagnostic Chart

Symptom	Possible Cause	Corrective Action
Charging System/ Battery warning lamp is not ON with key switch ON and engine at stop condition	1. Blown fuse.	1. Check charging, ignition and engine fuses, replace as needed.
	2. Lamp burned out.	2. Replace lamp.
	3. Wiring connections loose.	3. Tighten loose connections.
	4. Defective relay.	4. Check relays, if used, for continuity and proper operation.
	5. Defective regulator.	5. Replace alternator.
NO charge	1. Defective battery or battery connections.	1. Check battery and battery terminal connections. Replace as needed.
	2. Blown fuse or fusible link.	2. Check fuse and fusible link. Replace as needed.
	3. Defective wiring.	3. Check voltage drop.
	4. Defective alternator.	4. Replace alternator.
	5. Excessive electrical load due to additional electrical accessories such as off-road lighting, etc.	5. Replace alternator with upgraded one.
Constantly overcharging	1. Defective battery.	1. Replace battery.
	2. Poor contact at voltage detection pin/terminal of alternator.	2. Make sure the contact area is clean and corrosion free.
	3. Defective regulator.	3. Replace alternator.
Intermittent charging	1. Insufficient belt tension.	1. Adjust tension or replace.
	2. Poor contact at battery connections.	2. Make sure the battery connections are clean and corrosion free.
	3. Poor alternator ground.	3. Make sure alternator is properly grounded.
	4. Open or shorted diodes.	4. Replace alternator.
	5. Open or shorted stator windings.	5. Replace alternator.
	6. Defective regulator.	6. Replace alternator.
Abnormal Noise	1. Loose/worn belt due to service life, binding, contamination.	1. Adjust tension or replace the belt.
	2. Defective/worn bearings due to too tight belt adjustment, water ingress, etc.	2. Replace alternator.
	3. Defective diode due to severe vibration, improper testing, jump start, reverse polarity, etc.	3. Replace alternator.
	4. Misalignment due to improper installation.	4. Inspect and make sure installation is properly done.

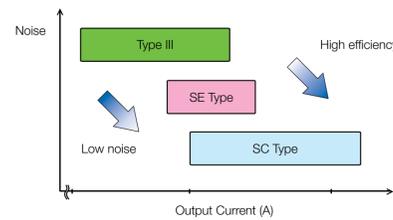
Volume



Weight (kg)



Feature of the product

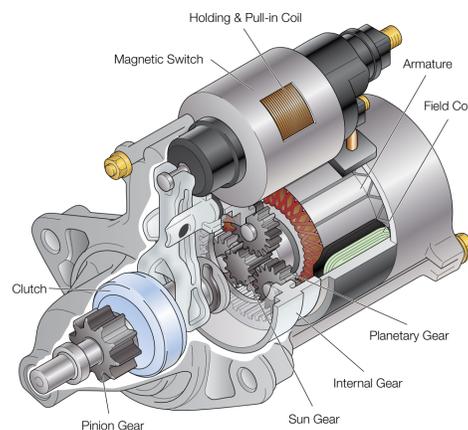
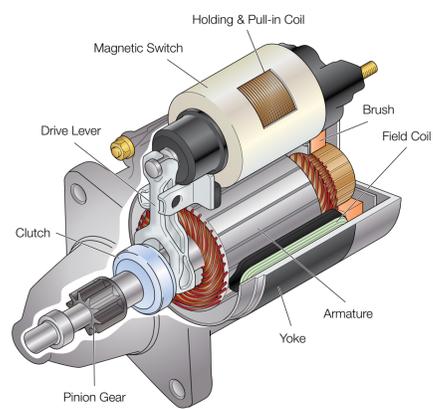
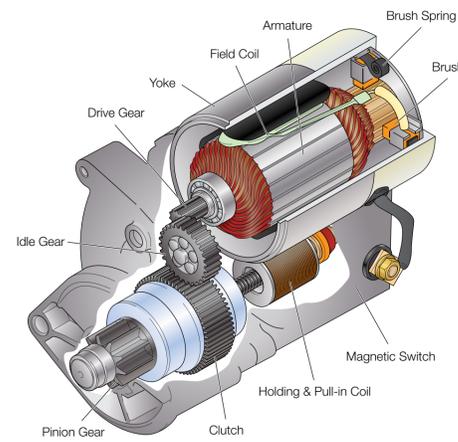


Type III: A compact and lightweight alternator with small internal fan blades integrated with the rotor.
 SC Alternator: Uses segment conductor consisting of angular copper wires with innovative winding method in its stator to achieve high power output, high efficiency and reduce magnetic noise.
 SE Alternator: Has a simple construction based on the SC alternator in a compact configuration.

R, RA Types Starter

GA Type Starter

P, PA Types Starter



Diagnostic Chart

Symptom	Possible Cause	Corrective Action
Engine does not crank	1. Dead or defective battery.	1. Check battery state of charge. Recharge if possible. Replace if necessary.
	2. Melted fuse/fusible link.	2. Replace as necessary.
	3. Loose connections.	3. Clean and tighten connections.
	4. Ignition switch or relay, neutral start switch, clutch start switch contacts in poor condition.	4. Replace components as necessary.
	5. Magnetic switch contacts worn away.	5. Replace starter.
	6. Malfunction of the magnetic switch (pull-in coil or plunger).	6. Replace starter.
	7. Malfunction of starter motor assembly (layer short, brush wear).	7. Replace starter.
	8. Mechanical problem in engine.	8. Check engine.
Engine cranks too slowly to start	1. Weak battery.	1. Check battery state of charge. Recharge if possible. Replace if necessary.
	2. Loose or corroded connections.	2. Clean and tighten connections.
	3. Poor magnetic switch contact.	3. Replace starter.
	4. Starter motor assembly malfunction (layer short, brush wear).	4. Replace starter.
The Starter rotates, but cannot crank the engine	1. Damaged or worn starter pinion gear or engine ring gear.	1. Check gears for damage or wear. Replace starter or ring gear.
	2. Defective over-running clutch.	2. Replace starter.
The Starter does not stop rotating	1. Damaged or worn starter pinion gear or engine ring gear.	1. Check gears for damage or wear. Replace starter or ring gear.
	2. Defective magnetic switch.	2. Replace starter.
	3. Defective ignition switch or control circuit.	3. Replace defective components as necessary.
	4. Binding ignition key.	4. Check key for damage.
Abnormal starter noise	1. Abnormal bushing wear.	1. Check and replace the starter if necessary.
	2. Wear on the starter pinion gear or engine ring gear tooth tips.	2. Check gear tooth tips for damage or wear. Replace starter or ring gear.
	3. Starter pinion gear sliding failure.	3. Replace starter.

Starter Type	Product Outline
R, RA Types (Reduction Method)	The R and RA type starters use a compact high-speed motor that is decelerate by 1/3 to 1/4 to drive the pinion gear.
GA Type (Pinion Shift Method)	In the GA type starter, the force of the magnetic switch (via the drive lever) pushes the pinion gear outwards to engage the engine ring gear.
P, PA Types (Planetary Method)	The P and PA type starters use the same type of compact high-speed motor as the reduction type, but use a planetary gear as the deceleration mechanism.

Feature of the product

