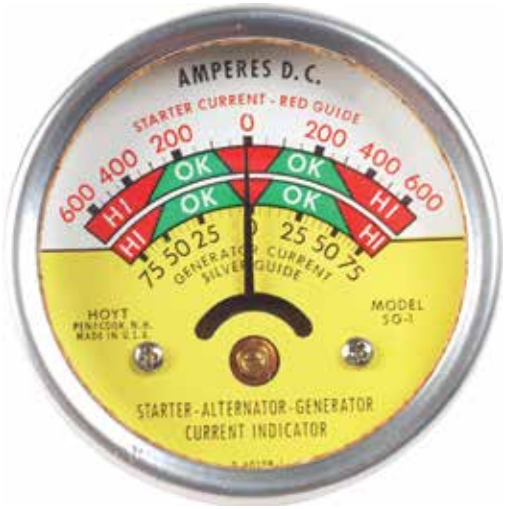
Model: SG-1

Automotive Test Meters

2” SG-1 Alternator-Starter-Battery Checker



Features

An Ideal checker for testing the battery, starter and alternator systems on any 12 volt vehicle.
Small enough in size, it can be carried easily in a pocket.
Easy-to-read color dial, heavy duty leads and cigarette plug.

Special Dials are available with the following options:
Additional Colors, Scales, Special Legends, Logo and Mirrors.

Specifications

Accuracy:	±5% FS.
Range:	±600 Amps.
Wire Clamp:	0.5" Channel (0000 AWG and up).
Movement:	Moving Magnet.
Case:	Steel Portable Case.
Operating Temperature:	32°F to 104°F (0°C to 40°C).
Storage Temperature:	-4°F to 131°F (-20°C to 55°C).
Origin:	Made in USA.

Before testing with the meter:

Visually inspect the Alternator:
1. Is the Alternator belt worn or cracked? if yes, replace belt.
2. Loose belt tension will reduce the charging rate, tighten if necessary.
3. Are Alternator connections clean and tight? Output leads should not be frayed at terminal ends and insulation should be in good shape. If found defective? Replace leads.

Visually inspect Battery:
1. Check to be sure that battery cable connections are clean and tight.
2. The point where the battery cables connect to the battery terminals should be clean and cable insulation intact. Rotted insulation is a sign of a deteriorated electrical connection.
3. Be sure to inspect both battery cable connections at the other ends. Some vehicles have two battery grounds, one is to the engine for grounding the starter, and the other is to the fender wall in ground accessories.

Alternator Test
1. Turn off all accessories and lights.
2. Start engine and adjust idle to 2000-250-0 RPM.
   Let engine run for at least 2 minutes or until charging voltage stabilizes before performing next step.
3. The CG-1 voltmeter can be connected by plugging into the cigarette receptacle.
4. The reading of the voltmeter is the Dynamic charging voltage of the charging system.

The voltmeter should read as follows:

Maitenance-Free batteries
When charging system voltage is measured, the following approximate guidelines apply:

Above 15.5	Overcharging (unless very cold)
14.5-15.1	Normal charging at 80 deg. F.
13.8-14.4	Normal for hot weather, may indicate low charging rate in cold weather.
12.6 - 13.0	Charging rate too low, unless very hot.
Below 12.6	Not charging at all.

LOW Maintenance Batteries

Above 15.1	Overcharging.
13.8 - 14.6	Normal charging at 80 deg. F.
13.0 - 13.8	Normal for hot weather, may indicate low charging rate in cold weather.
12.6 - 13.0	Charging rate too low, unless very hot.
Below 12.6	Not charging at all.

Hoyt Electrical Instrument Works, Inc.
23 Meter Street
Penacook, NH 03303
Phone: (800) 258-3652
Fax: (603) 753-9592
Email: sales@hoytmeter.com
www.hoytmeter.com

Note: If charging voltage decreases when engine RPM is studdenly increased, and the voltage increases again when the RPM is reduced to idle,check for a loose belt. The loose belt slips at higher RPM and reduces the Alternator output.

Factors affecting charging voltage

1. Ambient Temperature: The charging voltage reads higher at lower temperatures because batteries are harder to charge when cold. The charging voltage reads lower at higher temperatures because batteries charge easier when hot.

2. Amount of Electrical load: as the demand for current from the alternator increases, the alternator charging voltage decreases. If the charging voltage is checked with a heavy electrical load, it will measure lower thannormal.

3. Age of Battery: Older batteries have less charge acceptance.

4. State of original Charge: The higher the battery state of charge before cranking, the faster the charging voltage will rise to its upper limit.

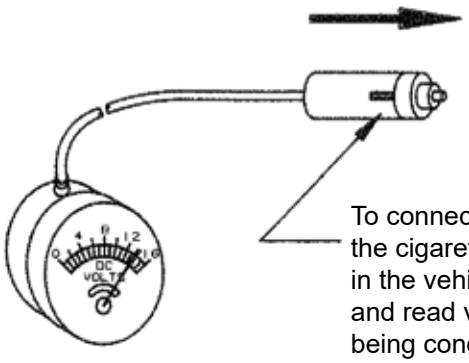
5. Manufacturers use various levels to operate Electrical Systems.
Normal charging voltages will range from 13.8 to 15.1 Volts at 80 Deg.F.

The Starter Test
Visually inspect the Starter
1. Are there any corroded connections at the battery, solenoid, starter motor or defective cables that would cause voltage drop?
2. Is the battery fully charged? Charge if not.

Plug in The Hoyt CG-1 meter in the cigarette lighter.
Disconnect the light tension load from the coil and engage the starter.
All accessories should be off.
While the engine is cranking, the meter pointer should be read in the green zone from 9 volts to 12 volts.

If meter reads below 9 volts, possible cases are:
a: Undercharged battery.
b: High starter current draw indicating a bad starter or solenc
Check current draw with Hoyt SG-1 Inductive meter tester

If meter reads above 12 volts, possible cases are:
a: Bad cables.
b: Corroded or loose terminals.



To connect, plug into the cigarette lighter receptacle in the vehicle being tested and read voltage for test being conducted.

Important Notice:
Hoyt Electrical Instrument Works and its represantatives cannot and do not assume any responsibility or liability for any expenses, costs, injuris, losses or damages to person or property which might be incurred derectly or indirectly, due to the use of the test meters.