

SAE The Engineering Society
For Advancing Mobility
Land Sea Air and Space®

○ A Product of the
Cooperative Engineering Program

SAE J56 JUN83

**Electrical Generating
System (Alternator
Type) Performance
Curve and Test
Procedure**

SAE Recommended Practice
Revised June 1983

SAENORM.COM : Click to view the full PDF of SAE J56 JUN83

**S. A. E.
LIBRARY**

○
○
○
an American National Standard

SAENORM.COM : Click to view the full PDF of j56_198306

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Copyright 1989 Society of Automotive Engineers, Inc.

ELECTRICAL GENERATING SYSTEM (ALTERNATOR TYPE) PERFORMANCE CURVE AND TEST PROCEDURE

1. PURPOSE:

The purpose of this SAE Recommended Practice is to provide a standard test procedure for the development of alternator output performance, and a standard form for plotting performance curves.

2. INSTRUMENTATION:

2.1 Voltmeter and ammeter should have an accuracy of $\pm 0.5\%$ of full scale.

2.2 Speed sensing device should have an accuracy of $\pm 1\%$.

3. TEST PROCEDURE:

3.1 Alternator test stand with suitable instrumentation is shown in Fig. 1.

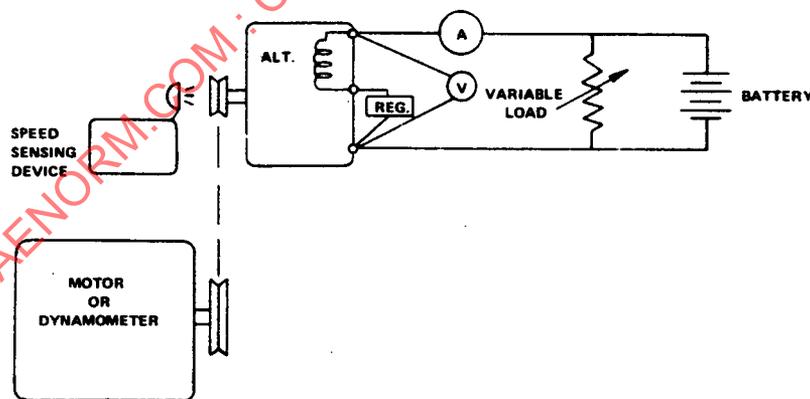


FIGURE 1 - Typical Test Setup for Output Performance

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

- 3.2 The test conditions require that the alternator output voltage be maintained at the applicable test voltage listed below, $\pm 1\%$, with the field current to be supplied by the alternator.

\emptyset Voltage Levels

Basic System Battery Voltage	6.0	12.0	24.0	30.0	32.0
Test Voltage	7.0	14.0	28.0	35.0	37.5

- 3.3 Output performance curve data is obtained by driving the alternator at room ambient, $24 \pm 3^\circ\text{C}$ ($75.0 \pm 5^\circ\text{F}$) at various discrete speeds, and adjusting the load to maintain constant output test voltage. Temperature stabilization must be attained at each discrete speed.
- 3.4 When the alternator is normally used with a built-in or external-solid-state type regulator having inherent voltage drop, the performance test should be run with the regulator adjusted or re-connected for full field current condition, or an equivalent voltage drop should be connected in the field circuit if the test is performed without a regulator.
- 3.5 Deviations from the above procedure should be noted on the performance curve.

4. CURVE:

The output performance curve is made by plotting output current (amps) as the ordinate versus alternator speed (rpm) as the abscissa. (See Fig. 2.)

ALTERNATOR OUTPUT CURVE

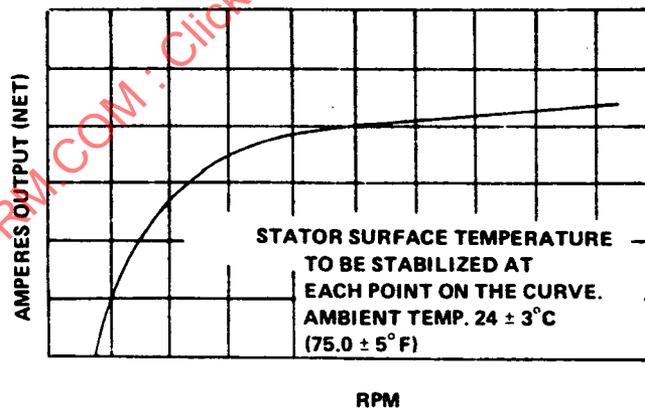


FIGURE 2 - Standard Form for Performance Curve

The phi (\emptyset) symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.