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Road vehicles — Alternators with regulators — Test methods and general requirements

*Véhicules routiers — Alternateurs avec régulateur — Méthodes d'essai et conditions
générales*

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8854 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Road vehicles — Alternators with regulators — Test methods and general requirements

1 Scope and field of application

This International Standard specifies test methods and general requirements for the determination of the electrical characteristic data of alternators for road vehicles.

It applies to alternators, cooled according to the manufacturer's instructions, mounted on internal combustion engines.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 test voltage, U_t : Specified value, in volts, at which the current measurements shall be carried out.

2.2 cut-in frequency, n_A : Alternator rotational frequency, which is the number of revolutions divided by time, in minutes to the power minus one, at which it begins to supply current when frequency is increased for the first time. This depends on pre-exciting power (input), frequency changing velocity, battery voltage and residual flux density of the rotor.

2.3 zero-amp. frequency, n_0 : Alternator rotational frequency, in minutes to the power minus one, at which it reaches the specified test voltage U_t without any current output (the point where the current frequency characteristic $I = f(n)$ intersects the abscissa).

2.4 minimum application frequency, n_L : Alternator rotational frequency, in minutes to the power minus one, which corresponds approximately to the idling frequency of the engine. This rotational frequency is set at $1\,500\text{ min}^{-1}$ for the purpose of this specification.

2.5 rated frequency, n_R : Alternator rotational frequency, in minutes to the power minus one, at which it supplies its rated current I_R .

The rated frequency is specified as $n_R = 6\,000\text{ min}^{-1}$.

2.6 minimum application current, I_L : Current, in amperes, which is delivered by the alternator at test voltage U_t and at frequency $n_L = 1\,500\text{ min}^{-1}$.

2.7 rated current, I_R : Minimum current, in amperes, which the alternator shall supply at a frequency $n_R = 6\,000\text{ min}^{-1}$ and at test voltage U_t .

2.8 maximum current, I_{\max} : Current, in amperes, which the alternator supplies at maximum continuous frequency (as defined by the alternator manufacturer) and at test voltage U_t .

3 Test conditions

The tests shall be carried out at a room temperature of $23 \pm 5\text{ }^\circ\text{C}$ wherever possible. A temperature deviating from this range shall be recorded.

The reference point for recording cooling air temperature shall be at 5 cm from the air intake of the alternator.

The direction of alternator rotation shall be as indicated by the manufacturer.

In the measuring circuit, a battery and an adjustable resistor R shunted to the battery are used (see figures 1 and 2).

The tests shall be conducted using a fully charged lead-acid battery of the correct nominal voltage having a nominal capacity of not less than 50 % of the rated current I_R , expressed in ampere-hours.

The overall capability of the test equipment shall allow parameter measurements within the tolerances shown in the table.

Table

Parameter	Accuracy %
Voltage	$\pm 0,3$
Current	$\pm 0,5$
Torque	± 2
Rotational frequency	± 1

All measurements of current shall be carried out by adjusting the load resistor R to maintain a constant test voltage U_t .

The measurements shall be carried out with integral or separate regulator.

To prevent the regulator working, measurements shall be made at the following test voltages:

$13,5 \pm 0,1\text{ V}$ for 12 V systems;

$27 \pm 0,2\text{ V}$ for 24 V systems.