

Transpo Engineering Takes The Worry Out of Regulator Replacement

Responsible new product engineering entails more than just analyzing OEM components and duplicating electronic circuitry and mechanical features. While form, fit and function are very important, in-field performance aspects of the intended application must also be considered..

Case in point is the new Transpo [IM853](#) (introduced Feb04). This is the replacement Regulator for Mitsubishi 75-Amp alternator A5TA4591, Lester 13649, on 1999-2000 Honda Civic with 1.6 liter engines..

While researching the vehicle application, Transpo Tech noticed a service bulletin (TSB 98-029) that calls for replacement of the alternator due to voltage regulator failures. The TSB is vague and also makes reference to tightening the B+ terminal at the output post and the under-hood relay/fuse B+ terminal connection..

The vehicle has many accessory options available so, based upon the information at hand, it was decided that the best way to improve over the obviously weak OE regulator was to design the Transpo [IM853](#) to be more tolerant of excessive electrical loads at low

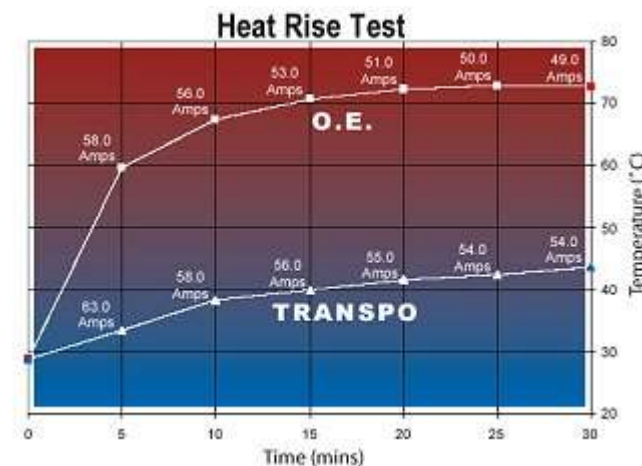
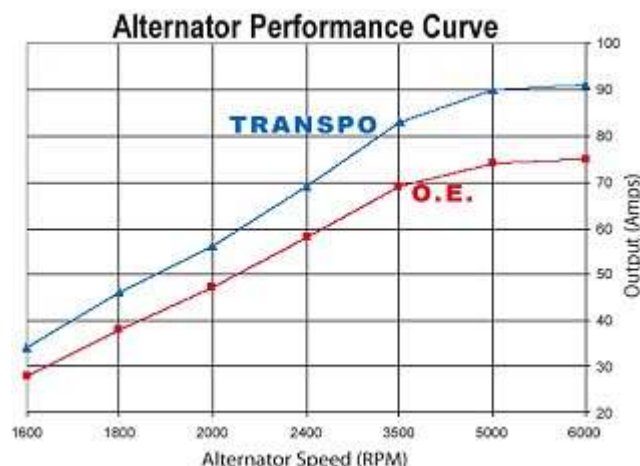
engine speeds, and to improve on its ability to withstand transient load dumps generated externally of the alternator. This was accomplished in part by adopting a 'Heavy Duty' circuit that incorporates a 50-Amp, 75-Volt FET Power Device.



IM853

The tests charts indicate superior loading values and temperature rise numbers; all of which point to a very robust Transpo [IM853](#) Regulator design..

Special Rebuilder Note: Lester 13649 is applied to the basic alternator that, as a fully assembled unit, fits the intended Honda application. The Lester 13649 consolidation does not take into consideration the nuances of the electronics internal to the alternator. The IM853 is stator activated and would be considered for the later Mitsubishi version. The trio-activated, early version regulator is serviced by Transpo [IM850](#)...



Thermocouples placed on heat sinks next to power device. Transpo's [IM853](#) uses a 50 ampere 75 volts FET. Test completed using Lester 13649 alternator at full load and 2500 rpm motor speed.

TRANSPO TECH TIP

After two years of development, Transpo is please to announce the release of the [F601](#) regulator with new micro-technology. [F601](#) services Ford 6G alternators with original regulator XW4U-10C359-AB..

This Ford 6G regulator is unique and unlike other regulators produced by Ford. Some of the aspects include the following .



- LI terminal, also known as feedback (FR).
- RC terminal, also known as signal (SIG)
- S .

terminal, also known as B+ or sense (S, As). • No Lamp-Circuit function, Lamp is 100% controlled by the vehicle PCM. • Regulator Set Point range is 12.5 Volts to 16.0 Volts and is determined by the PCM signal.

The PCM control signal that is sent to the regulator (via the vehicle PCM signal line) is a variable pulse-width modulated signal provided at a fixed 125 Hertz frequency. As an example, a 55% PWM signal from the PCM yields a regulation voltage of 14.25V (+/- 0.1)..

Considering the intricacies of the design, and that full regulator function is dependent upon the vehicle computer interface, existing bench testing methods will no longer tell the full story.

Without a custom test adapter with signal interface, only default voltage tests may be performed. A default voltage test will indicate that the regulator is basically functional but it will not answer the question of whether the regulator circuit will change the set point according to PCM commands, or whether feed-back from the regulator circuit is working or accurate .

To load test an alternator using regulator default voltages, connect power-source B+ to the alternator output terminal as usual, then ground the regulator 'RC' pin (center-pin). Test voltage will read approximately 13.9 Volts. Connecting power-source B+ to the 'S' pin in addition to grounding the 'RC' should yield a reading of approximately 13.7 Volts. Alternator test output may be something less than the alternator's rated output, due to these lower voltages..

It should be noted that the Transpo [F601](#) design offers an added 'efficiency' feature referred to as 'Burst Mode'. This function serves to maintain the voltage set point last directed by the PCM, rather than requiring continuous PCM adjustment to maintain the set point..

Thank You For Your Business!