Alternator isolators are used to alleviate the harmful effects of torsional vibration on accessory belt drive systems. Torque pulses created by engine combustion create torsional vibration at the crankshaft pulley and are transmitted through the serpentine belt to all accessories within the ABDS. Of special concern is the alternator since it has a relatively high inertia and a small pulley. Having a small pulley amplifies the angular vibration and together with the high inertia requires high torques to propel the rotor. This high torque results in alternating high peak belt tensions, excessive tensioner arm motion, belt slip chirp noise, and severe belt span vibration.

**PRODUCT DESCRIPTION**

- The AID consists of a pulley, bearings, one-way clutch, shaft, torsional spring, and cover
- The spring is used to attenuate or isolate vibration
- The one-way clutch allows the AID to decouple or free-wheel
- The cover is fixed to the AID and does not require removal for service or installation

**PRINCIPLE**

- The pulley is connected to the shaft through the torsional spring and one-way clutch
- Spring stiffness is selected so that the first mode of vibration is below the idling frequency
- Vibration is attenuated at the rotor resulting in reduced peak tensions and elimination of belt chirp noise
- During start-up, shut down and transmission shifts, the one-way clutch decouples, eliminating belt slip noise
**BENEFITS**

- Reduced NVH related to belt slip
- Reduced peak belt tensions
- Reduced belt span vibration
- Reduced bearing loads on accessories
- Reduced tensioner arm motion
- Opportunity to lower overall installation tension

**SOLUTIONS OFFERED BY AID**

<table>
<thead>
<tr>
<th>If the belt drive has problems during</th>
<th>Will AID resolve the problem?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine start-up or shut down</td>
<td>Yes</td>
</tr>
<tr>
<td>Idling</td>
<td>Yes</td>
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<tr>
<td>Lugging</td>
<td>Yes</td>
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<tr>
<td>Engine run-up</td>
<td>Yes</td>
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<tr>
<td>High deceleration</td>
<td>Yes</td>
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