



Precision Parts

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# LIVE WIRE

## Welcome

*Greg Stuart*  
Engineering Manager

Welcome to the April 2004 issue of our "Live Wire" newsletter.

Greg Stuart's "Unit of the Month" **column of this month addresses a new series of units. Units with overrunning clutch pulleys. What is this all about?**

Hot Stuff **discusses various items of interest to our customers.**

For more information on these articles or other information, I can be E-mailed directly at:

[gstuart@pprok.com](mailto:gstuart@pprok.com)

**I look forward to hearing from you.**

**Thanks.**

## Contact Us



By Phone: 1-800-654-3846 ext. 243  
Mon - Fri 7:00-4:30 Central Time  
Precision Parts Technical Support can answer your questions on cataloging and technical issues.



By Fax: **1-405-685-7215**  
Mon - Fri 7:00-4:30 Central Time

Precision Parts Technical Support can provide you with technical information via fax line. Call or fax in your request and we can respond by fax. We can supply catalog information, copies of technical articles and service bulletins.



By Email: [techsupport@pprok.com](mailto:techsupport@pprok.com)

Combined, our technical staff has hundreds of years of experience diagnosing and correcting electrical system problems. We also have numerous resources available to help research and solve your toughest problems.



# Technical

Greg Stuart  
Engineering Manager

## Overrunning Clutch Pulley

### What is it and what do they do?

If you have recently purchased an alternator for a late model Audi, Mazda Mercedes Benz, Nissan, Porsche, Volkswagan ,Volvo and some domestic applications, you may have seen one of these pulleys.



Overrunning alternator pulley  
(courtesy of INA Bearing)

### What is it?

An overrunning alternator pulley differs from your standard alternator pulley. It still has the single or multiple grooves that matches your alternator belt. But internally is where the difference can be seen. The alternator pulley that you are familiar with is just a piece of steel or some other material. The overrunning alternator pulley has a one way clutch inside of the pulley. There are various designs depending upon the manufacturer. Some manufacturers use a roller clutch and some manufacturers use a one-way wrap spring clutch. Another important difference is how the pulley attaches to the alternator shaft. In the conventional pulley (no overrunning clutch) the pulley attaches to the shaft with a nut and lockwasher. In the overrunning clutch pulley, the inner race of the clutch acts as the nut and screws on to the shaft. Special tooling is required for the removal and installation of this type of pulley.

### What does it do?

The main reason the auto manufacturers use the overrunning clutch is to absorb vibrations and fluctuations in the accessory drive belt system. As you increase and decrease engine speed the alternator must keep up with these changes. In the standard pulley (no overrunning clutch) system, the alternator belt has a tendency to slip (belt chirp) on the deceleration phase of engine operation. This is due to the mass and inertia of the alternator rotor assembly.



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This slippage results in belt wear and irregular pulses introduced into the belt drive system. These irregular pulses cause wear on other accessories in the belt drive system. The overrunning clutch disengages the alternator from the belt drive system during the deceleration phase of engine operation. This has 2 advantages. The belt does not slip which reduces belt wear and the alternator does not have catch up with the acceleration phase on the next cycle resulting in a smoother pulse and more efficient engine loading. The benefits of this type of pulley system are more readily seen on vehicles that have rapid speed changes as well as high alternator loads. Systems using these types of pulleys have less belt noise (no chirping during speed changes) and smoother idle operation. This type of belt drive system has been popular in the heavy truck industry on diesel and odd cylinder engines in Europe.

## What does this mean to you?

PPR has currently sourced these pulleys from the original equipment supplier. All PPR units are sold with an overrunning clutch pulley if the unit was supplied with one from the factory. This is important because other brands of alternators may not have the original design pulley installed. Availability and cost of these pulleys limit some remanufacturers from using them, they will install a standard pulley in place of the overrunning clutch pulley. **So beware when comparing the PPR unit to other brands and make sure that your customer is aware of what he is getting. All units from PPR that require a clutched pulley will have a new clutched pulley.**

### Current Listing of PPR units with Overrunning Clutch Pulley

BOA107	BOA162	BOA218	DOA157	NDA109
BOA112	BOA186	BOA219	DOA158	
BOA113	BOA187	BOA252	GMA215	
BOA122	BOA197	BOA402	MAA101	
BOA159	BOA212	DAA124	MAA110	

**Note: Caution your customers about trying to remove this type of pulley. It takes special tooling to remove these pulleys without damaging the rotor shaft. It is recommended to not reuse the overrunning clutch pulley. Care must be taken when installing a unit with an overrunning clutch. Excessive force or a blow to the pulley can damage the clutch mechanism resulting in premature failure of the overrunning clutch pulley.**



# HOT STUFF

## Repeat starter failure

We recently received a call from a customer with repeat failures on a MAS301 application, specifically a 1987 Mazda B2000 pickup. When the starter was installed, it worked fine for several months. Then, the symptoms were typical of voltage drop or low ignition switch voltage, grunt, click, and/or no cranking. The symptoms also did not seem thermally related, the starter would intermittently malfunction with the engine being cold or hot.

It was finally discovered that a cam shaft seal leak contaminated the engine timing belt. The belt became slippery enough that it slipped one tooth, thus advancing the engine timing. With the timing off, the engine was more difficult to start, resulting in greatly shortened starter life.

This raises the point of engine tune condition being important to starter longevity. Our thanks go to Glen at Foreign Car Parts, Duncanville, Texas, for relating this experience to us.

## Website reminder

We would like to remind you that all issues of the PPR LiveWire are available on-line @ [www.pprok.com](http://www.pprok.com). These can be useful for diagnostic information for your customers. They are in .pdf format, and can be printed for your convenience.

## Catalog and price lists

PPR is releasing a new price list effective June 01, 2004. Copies will be shipped to PPR customers in early May, and Activant (formerly CCI-Traid) expects to have it on their June 2004 updates in their electronic cataloging system. This is the first 'across the board' price change for PPR since July, 1999.

Also, PPR will be going to press this May with the hard copy of the next PPR catalog. As soon as the catalogs are delivered to PPR, they will be distributed to our customers. Until then, any catalog updates for PPR part numbers are in real time on our web site, [www.pprok.com](http://www.pprok.com). This holds true for applications, buyers guide, and interchange information.

That's it for this issue, we will see you in the next LiveWire!

