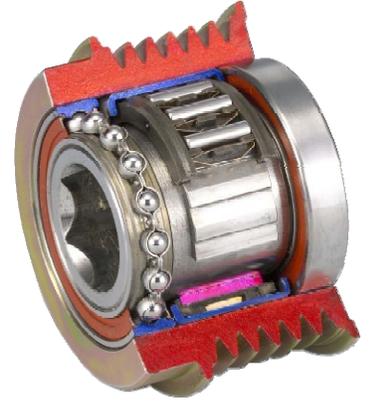


Clutch Pulleys

WHAT IS IT AND WHAT DOES IT DO?

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



An overrunning alternator pulley differs from your standard alternator pulley. It still has the single or multiple grooves that match 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 lock washer. 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.

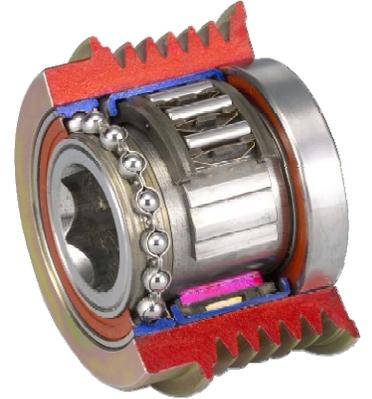
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Clutch Pulleys

Page #2

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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?

TAE has currently sourced these pulleys from the original equipment supplier. All TAE 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.