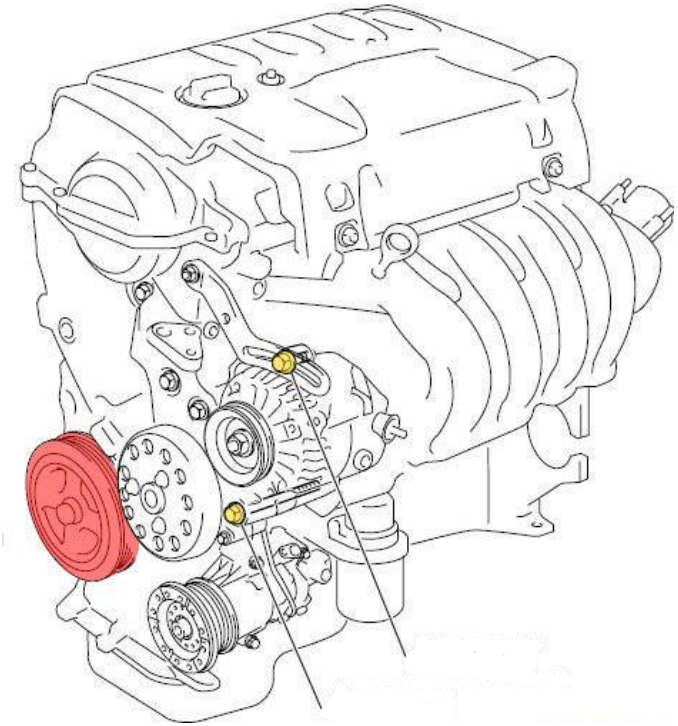
Micro Image Lightweight Crank Pulley DIY Install

By jpmck03

Quick Overview

What Is a Lightweight Crank Pulley?

A light weight crank pulley is simply a lightened version of the crank pulley that comes from the factory on a vehicle. On the 1NZ-FE engine, it's highlighted in red in the illustration to the right. This pulley is attached to the other three pulleys (to the right on the aforementioned illustration) via a belt.



Why Do I Want One?

Simply put, it frees up power that the engine was using to keep the heavier OEM pulley spinning. It all comes down to reducing parasitic loss on the engine.

One of the better analogies as to how and why it works is as follows:

> "Anything that reduces rotational inertia frees up power. That includes the crank pulley, the flywheel, and your wheels/tires.
>
> "Take a CD in with your fingers around the edge, and spin it back and forth. Now imagine it's made of steel and much heavier. Harder to spin. Same concept."

Introduction

Disclaimer

These instructions are merely a guide. I'm not a mechanic, so please use this as I guide at your own risk.

Suggested Tools

I used the following tools during my install. You may find that other tools my work better for your situation, so feel free to use what is best for you.

- ½-in. drive teardrop ratchet
- ⅜-in. drive teardrop ratchet
- sockets in ½-in. drive:
  - 19mm socket
- sockets in ⅜-in. drive:
  - 12mm socket
  - 14mm socket
- Torque wrench
- floor jack
- jack stand
- chock or block of wood
- WD-40 (optional)
- work gloves (optional, but really suggested)

Installation

Time Required

30 – 45 minutes.

Installation

Lifting and Panel Removal

First thing's first: park your car on a nice even area, and make sure to engage the parking brake. You are going to need to jack up the car on the front passenger side, so chock the rear driver's side wheel and jack up the car. Make sure to use jack stands for your safety!



After the car has been lifted, remove your front passenger's side wheel and put it aside. Inside the wheel well, you will see a panel that has to be removed (shown in **orange** in the photo to the right). There are six bolts that have to be removed to take off this panel. Once you remove this panel, you will be able to see the OEM crank pulley (shown in **red** in the photo below).



Alternator Loosening and Belt Removal

In order to remove the crank pulley, the accessory belt must be loosened and moved out of the way. To do this, the alternator must be loosened and moved to release tension on the belt. Recall the illustration on page 1. There are two bolts which must be loosened in order to move the alternator which are both highlighted in **yellow**. Before loosening these two bolts, it is handy to mark the location of the top bolt on the bracket. If you are using a smaller wrench, it may be helpful to use a small piece of pipe to extend the ratchet. Loosen both bolts and then gently press the alternator back towards the engine. The end result of this step is shown in the photo to the right. This will release tension on the belt, and allow it to be moved out of the way.



Pulley Removal and Replacement

There are a number of different ways to remove the pulley. For this guide, the simple hand tools method will be used. To remove the pulley, have someone hold the pulley in place while you loosen the bolt on the pulley. This can be achieved with several methods: a.) wedge a screwdriver between the pulley and the engine block (don't use this method on the lightweight pulley!), b) have someone hold the pulley in place by wrapping a shop rag through the pulley, or c) tie a rope between the pulley and the frame to hold it in place.

Using a breaker bar (or impact gun, if you have one) and 19mm socket, break the bolt holding the pulley in place loose. Once it has broken free, finger loosen the bolt, while holding the pulley in place. Slowly remove the pulley being mindful of the pin that is used to align the pulley!



Don't lose that pin!

Reassembly

Now that you have removed the OEM pulley, you can begin the reassembly process. Reapply your new pulley, ensuring that the pin is lined up and

everything is snug. Finger tighten the bolt until tight, then using a torque wrench, tighten the bolt to 95 $ft{\cdot}lb_f$. Then, run the pulley back around the crank pulley.



Move the alternator back to its original position, tightening the top bolt first, to hold in place, followed by the bottom bolt. While the access panel is still open, give the alternator a few spins to ensure that the belt is properly seated on the pulley. At this time you could start up the car to make sure everything is running smoothly before finishing up.

Replace the wheel well panel, noting that the 2 bolts with thinner threads go into the top portion of the panel nearest the pulley. Put your wheel back on and lower the car.

Functions Check

To ensure that everything was done correctly, check the following:

- Before starting the car, look to see if the belts are properly aligned and seated on each pulley.
- With the car running, check to see if the belts are still aligned and properly seated on each pulley, and listen for any noises.
- If there are any squeals or noises coming from the belts, check to see if the belts are properly tightened.