

# Teardown

tearing down an engine

- to tear down , teardown - to disassemble , disassembly
- “ We got this Toyota engine we’re gonna **do a teardown on** . “
- First we are **pulling off** ( taking off ) manifolds
- If it’s hard to take off we should spray some **penetrating lube** on it
- Lube such as WD-40 makes it a lot easier for bolts to **come off**
- We’re gonna **knock off** the pulley real quick
- We start with the **outside accessories** and we **work our way in** .
- This hole place is too deep so our socket / bit didn’t **fit in** [ fir-in ]
- Some **wires cross over** we pull ‘em out and **set** ’em **aside** .
- I’m gonna **tip** the engine **over** and let the water come out .
- This nice engine stand allows you to **flip** the engine **over** by yourself and **come back** again .
- The problem is it’s a **bit wiggly**

- The pulley is actually **hard** to **get off** , I tried an electric impact - didn't work .
- An **air impact** doesn't work either ...
- Literally by sort of **lifting myself off** the ground I was able to get enough force to break the pulley bolt loose.
- When I got that pulley bolt **all the way out** the pulley didn't want to come off itself .
- There was temptation to use a **pry bar** to **get** that pulley **off** but a pry bar would just start **cracking** the thing .
- I had to use a puller to pull the pulley off safely .
- A puller is just a beam with a centre bolt that **pushes** and a couple of other bolts that hold on the pulley .
- I have a piece of paper around and I'm actually writing down all the gaskets and stuff .
- So we later **order for** it .
- I **put** the pulley bolt **back in** .
- You don't wanna **pull apart** any of these 10 mm heads ( bolts )

- You need to **go through** a specific **sequence** .
- A **hard line** ( pipe ) that feeds the engine with oil .
- Normally the cam will sort of **pop off** from the spring pressure
- The engine head **bolts** are **set** deep and the torque is pretty high so I have to use a **breaking bar** and a spline drive .
- We start by loosening them a **quarter turn** .
- When it's done for the time's sake put the spline drive on an impact and **zip** those suckers **out**
- The gasket looks like it was **sealing up** well .
- Also remove the **knock sensor** ( detonation sensor ).
- Oil level sensor - has a little **plastic float** that floats in the oil and If oil level is too low the float goes down and hits a little sensor that sends a signal to the ECU .
- The **bolts** are pretty **tight** on the **girdle** .
- This whole girdle **ties** the bottom of the block **together** and **adds** more **rigidity** to the block .
- Before I take the pistons out I wanna use a piece of Scotch-Brite to take these

## **carbon deposits** off

- Because those carbon deposits will stop the piston or make it much harder for the piston to **exit** the **bore** . They can also mess up the rings which you may want to reuse when reassembling the engine .
- Another Pro-Tip is uscrew the round bolts a half way and knock them with a **Dead-Blow** (mallet) .
- What it'll do is **get** the cap **off** of the rod .
- Make sure you get your hand underneath and go ahead and **push** the piston **off** the bottom .
- **Check the wear** on the side skirts of the pistons .
- This wear is pretty normal for a 20 years old engine that's **seen** 90 0r 100 000 miles on it .
- Before taking the crank off I spin it and see **how well it spins** .
- It will give a little bit of indication if the **block** is **twisted** or anything .
- We break the crank cap bolts loose with **a quarter of a turn** . And we're taking the rest **all the way out** .
- Pro-Tip , I put the bolts back sort of half way and **wiggle** the main cap to get 'em off . Sometimes main caps are **wedged** so they're hard to get off

- There is a lot reinforcement and ***ribbing*** on the bottom part of the block .