Apply Pressure Here

I recently found myself without a welder to remove a check ball staked into the end of an oil passage of a crankshaft. So I applied a different technique to remove it to clean the crank.

I clamped some pieces of steel together to form some "caps." I had to place some spacers between them to leave me enough material at the tops of the radius. I drilled them on end and then bolted them together like you might 2-rod caps, still with spacers in the middle. Then I bored the centers on my mill – one was machined to the diameter of the rod journal and the other the main

journal. The one for the main was drilled and tapped for a zerk fitting, which you can see in the photo.

Before clamping the caps to the crank I ground away the staking around the ball. Then I clamped the small diameter caps to the rod journal around the oil hole. From the main journal side I dripped some oil in the hole to displace some air. Then I clamped the main journal diameter caps around the oil hole in the main lining the zerk up with the hole. Using pressure from a grease gun the ball came out of the end of the journal throw with ease.

I believe these caps will work again as well if the crank has smaller journals.

Steve Morton
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Warwick, RI

Hollow Dowel Removal Tips

To keep hollow dowels from collapsing, insert a short bolt or stud, either an American or a metric, before clamping the pullers collet on to it, or just use a pipe wrench or locking pliers to twist it loose.

We sometimes just thread the inside of the dowel with a bottom tap, using either an American or metric tap, thread in a stud, and then use a normal collet puller on that.

For the tougher ones, we tack weld a washer that just fits over the dowels end and use pry bars on each side to lift it out. Insert a snug fitting bolt inside it and tack weld that on for a better grip with locking pliers.

For the easy ones we collapse them by hitting them vertically on the side with a chisel.

Another way is to clamp around them with a tubing flaring tool. Then twist or pry them out.

You can also slit one side of a dowel with a small cutoff wheel, then collapse it with a chisel.

Timm Jurincie
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Avondale, AZ

Get The Parts!

Customers seem to like to send you cylinder heads without sending the rockers, lifters, cams, cam caps, etc. Always have them bring all these parts so you can check them out along with the head, especially when it is a shim-adjust head with solid lifter shim cups so you can make sure the adjustments are correct. Customers try to keep these shim cups in order, but when transporting them when not in the head they can easily get mixed up. Getting the head with all the parts will save time and aggravation for both you and the customer, keeping everyone happy.

Ronnie Myers
MAR Automotive, Inc.
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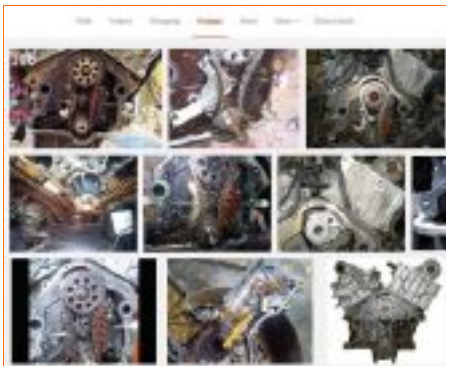
Search 'Engines' Using Search Engines

You've heard the old saying that a picture is worth a thousand words. Often when sourcing parts for today's complex engines it helps to see an image of the component or the casting the part is bolting on to.

There are many industry sources that offer details about parts and their proper installation, but these programs may be expensive to buy and maintain, and often don't include many photographs. Here is an inexpensive way to find images for just about any engine part or engine: Using an Internet browser, enter a specific search string into any search engine, e.g. "4.0L Ford Timing chain replacement." Then, click the link label "Images."

If you don't see a helpful photo, try altering your search criteria. Click on the image you want to view.



To get a closer look at the image, if using Google, click the link labeled "view image." Once the image appears in a new browser window/tab, use the browser's zoom feature to enlarge any part of the image.

Richard Martin
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THE MOST PROFITABLE TOOL IN YOUR SHOP

Ask yourself, what is the most profitable tool in your shop? The answers vary! A lot of machine shop owners will quickly say their flywheel grinder or their guide and seat machine. But the most profitable tool isn't a machine you plug into the grid. It's the tool provided you every month by your accountant – your financial statement.

This is a three-part shop solution dedicated to helping owners understand how to maximize their profit by using this important tool. Today's tip will focus on "gross profit." The next tip will talk about expenses, and finally, how these work together to earn net profit.

Gross profit is basically the amount of money you make per unit sold. For example, if you sell a piston set for $200 and it cost you $160, you've made a gross profit of $40. Your margin is 20 percent. When referring to gross profit you're only taking into account the cost of the product, not the fixed costs

associated with operating the business.

Income is displayed in the first part of your P&L statement and includes the money your company has earned during the period from regular sales of parts and service. It includes cash payments and accounts receivable.

Variable costs or Cost of Good Sold (COGS) include only those expenses directly related to the sale of the parts or service you counted as income. As a remanufacturer, your COGS includes the variable labor costs incurred for every job along with the cost you paid your supplier for the parts.

The gross profit represents the amount of money you earned during the period to cover your fixed expenses.

Understanding the different sections of your financial statement will help you get a better picture of your business's financial health.

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To submit a Shop Solution simply mail your entry to Engine Builder Magazine, Shop Solutions, 3550 Embassy Parkway, Akron, OH 44333; or email to shopsolutions@enginebuildermag.com. Shop Solutions may also be emailed to shopsolutions@enginepro.com. You must include your name, shop name, shop address and shop telephone number. Submitted Shop Solutions not published will be kept on file and reevaluated for publication with each month's new entries. If you include your email address you will be emailed notification of publication if your Shop Solution is chosen.

Shop Solutions – The Power of Knowledge

Engine Builder and Engine Pro present Shop Solutions in each issue of Engine Builder Magazine and at enginebuildermag.com.

The feature is intended to provide machine shop owners and engine technicians the opportunity to share their knowledge to benefit the entire industry and their own shops.

Those who submit Shop Solutions that are published are awarded a prepaid $100 Visa gift card.

Engine Pro is a nationwide network of distributors that warehouse a full line of internal engine components for domestic and import passenger car, light truck, heavy duty, industrial, marine, agricultural and performance applications.

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