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VOL 10 ★ ISSUE 06
JUNE 2013 | cessnaflyer.org

ENGINE ISSUE



**STATIONAIR UPGRADE &
OVERHAUL OPTIONS**

ENGINE OVERHAULS 101

SUN N FUN RECAP

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ENGINE OVERHAULS

Insider's guide to getting the best bang
for your engine overhaul buck



By Dale Smith

Life's funny that way. One day you're flying your 172 along without a care in the world. The next, your mechanic is breaking the news that your beloved is in dire need of an engine overhaul. Of course you knew this day was coming. What do you do now?

First and foremost, as Douglas Adams stated in the "Hitchhiker's Guide to the Galaxy," don't panic. Take a deep breath and assess the situation.

Chances are, unless you're lucky enough to have a mechanic who specializes in engine overhauls, you're going have to find a shop to do it for you.

Types of engine shops range from your local FBO's maintenance facility to the major independent engine overhaulers, up to the factory overhaul facilities. Unless you're AOG, you probably wouldn't go through the time, cost and trouble of pulling your engine and sending it away just for a top- or bottom-overhaul.

Having been around a considerable number of owners faced with this very situation, experience has taught me that in order to find the right engine shop, it's a good idea to ask a few questions.

"I can think of 10 questions I'd ask any shop that I was considering using," explained Allen Weiss, owner/president, Certified Engines Unlimited, Inc. "And I believe for the typical owner, price should be number seven or eight on that list."

"When I get a phone call from a new customer and the first thing he says is that he has a Model whatever and wants to know how much it costs for an overhaul, I know right away that I'm not going to get that job. I don't want

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that job," Weiss said. "If they don't take the time to ask me about my shop or my quality, then they don't know what they're looking for."

"There are different types of overhauls and I think the first thing an owner needs to identify is what he needs to have done," Bill Schmidt, president, Signature Engines Inc., said. "That information will help him clearly understand the scope of the work and what type of engine shop he's looking for."

"The second thing would be that the shop has an FAA repair station license. Not all of them do," Schmidt added. "It's important because if the FAA has certified the shop, it shows that they have set procedures for doing their overhauls. In other words, each station that the engine goes through during the overhaul has the proper paperwork going along with it."

Both Schmidt and Weiss stressed the importance of obtaining good documentation along every step of your engine's overhaul process. It's essential information for tracking any parts that may eventually be part of an AD

or Service Bulletin. Knowing what's in your engine could save you a lot of headaches down the road.

DOING YOUR PART

Once you've made your decision, you will have to supply your chosen shop with your engine's completed and up-to-date logbooks. You can send copies if you want.

"That's very important in helping us identify exactly what will need to be done to the engine," Schmidt

said. "If you have recently replaced a turbocharger or other accessory, you won't need to overhaul those components again."

Also, check your propeller logs and if it's getting up there, now is the

best time to address the prop's needs.

"We will check the logbook and the crankshaft before disassembly to see if it may be under an AD notice," Weiss said. "If that's the case, maybe you can buy a factory rebuilt for less than it costs for us to overhaul your engine."

"The more we know what we are dealing with, the better we can work with the customer to give them the

Chances are, unless you're lucky enough to have a mechanic who specializes in engine overhauls, you're going have to find a shop to do it for you.

With an independent shop, the engine is going to perform to factory standards—at least.



Photo: Signature Engines, Inc.

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right service," Schmidt said. "It's all up to the owner, though. We can't guess what's been going on with their engine."

Schmidt explained that they often receive engines that have had one cylinder recently replaced. "We always like to put a new set of cylinders on every engine just to ensure consistency and maximize the engine's performance," he said. "We take the 'new' cylinder off and give it a thorough inspection. Then we put a yellow tag on it and give it back to the customer to keep as a spare."

OEM vs. PMA

While we're on the subject of cylinders and replacement parts, it's a good time to address what is probably the most oft-debated point of an engine overhaul: namely, whether or not to use original OEM factory parts, or FAA approved aftermarket parts manufacturer approval (PMA) parts.

FAA-PMA parts are exact fit, form and function replacements for the original OEM parts they replace. Superior Air Parts has been producing FAA-PMA parts since 1967 and currently holds PMAs on over 2,000 parts and components.

"Some PMA producers only create parts through identity, which is basically reproducing the original part," explained Bill Blackwood, Superior Air Parts' director of operations. "We have our own engineering staff that reviews current designs along with metallurgical properties analysis to create an improved part using the best available materials. Once it is produced, we conduct extensive testing on each part to ensure it meets or exceeds FAA standards."

"Some customers want only factory parts in their engines," Schmidt said. "But today, fewer owners are making that request. What's important for all owners to remember is that the aftermarket PMA-produced parts and components are FAA approved and have the equivalent, and often times better quality, than the factory parts they replace."

"Rest assured that we would not put any inferior parts in any engine we overhaul or repair," he said.

"Our reputation is on the line with every engine we do and that's what I tell people when we start to talk which cylinders to use," Schmidt continued. "We offer customers their choice of overhauled cylinders, PMA replacements like Superior Millennium Cylinders, or new original manufacturer cylinders." And the choice often

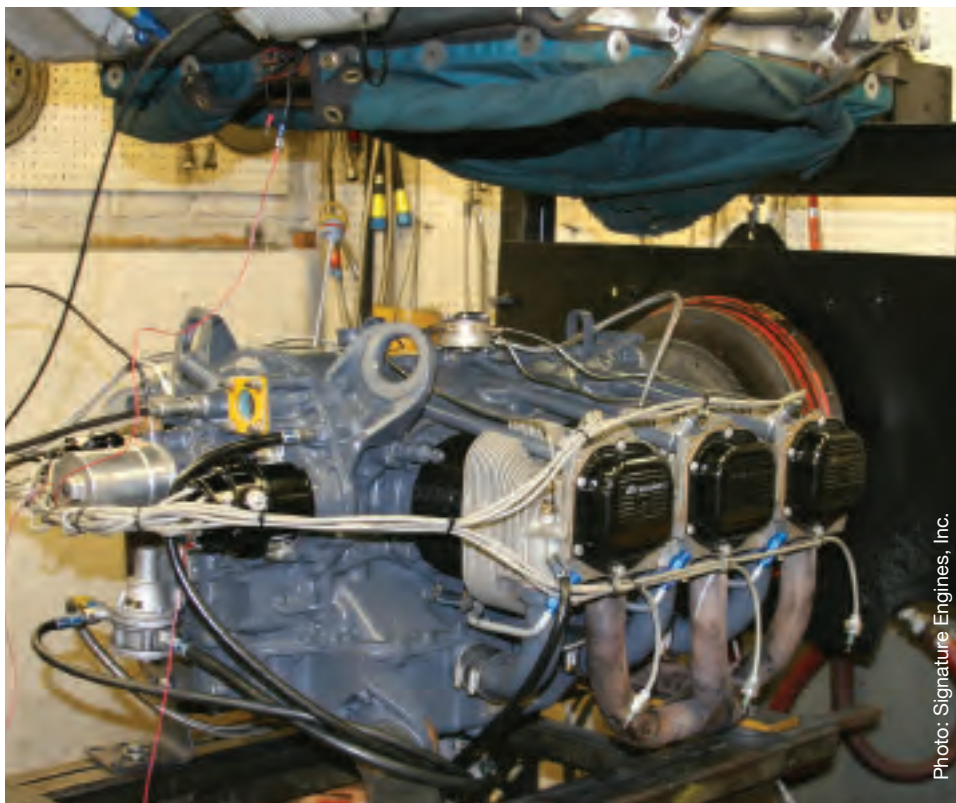


Photo: Signature Engines, Inc.

The more the engine shop knows what they are dealing with, the better they can work with the customer to give them the right service.

comes down to reputation and cost.

"On an IO-520-F engine, for example, we can sell a set of brand-new Millenniums for \$3,000 more than the price of using overhauled cylinders," he said. "[For that price] you get a brand new set of Millennium Cylinders—they're clearly a high quality cylinder.

"We've had an excellent history with Superior Air Parts cylinders and components. The Millennium Cylinders are especially high quality. When you show them to a customer—if you put a Superior cylinder next to an OEM factory cylinder, it's very easy to sell the Millenniums. The finish quality is obvious."

Of course when you're in business, especially a highly regulated business like aviation, you have to pay attention to every part you

use on an airplane. That goes doubly for aftermarket-produced parts.

"It's our business and reputation on the line every time," Weiss said. "When I choose a vendor, manufacturer or subcontractor I have three criteria: in order, quality, service and price—but

the only one that is negotiable is price. There are no negotiations when it comes to quality or service."

"If we offer an aftermarket part it's because we know and trust that it will give the quality and performance we require," he explained. "If you are trusting us to rebuild your engine, then trust us to make the right decisions about which parts we use."

FACTORY VS. INDEPENDENT OVERHAUL SHOPS

Another big question you'll have to answer is whether or not to just get a factory-rebuilt engine or go with an independent overhaul specialty shop like

Certified Engines or Signature Engines. It's a very personal decision.

One very good starting point is to talk to other owners

who have recently had major engine work done and see what their experiences have been. It can be an emotionally charged discussion. The choice often comes down to money and what price you're willing to pay.

The bottom line is if you do your

Knowing what's in your engine could save you a lot of headaches down the road.

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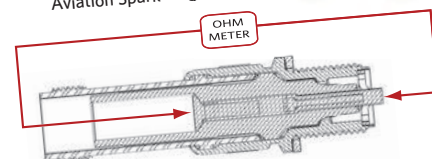
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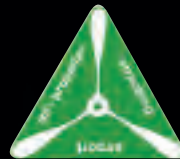
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homework and go with a reputable independent engine shop, the engine is going to perform to factory standards—at least. But, from my experiences, chances are where you'll really get a gigantic improvement is in the level of customer service the independent shop will deliver.

"I think it's a huge difference and a big plus when dealing with an independent overhaul shop," Schmidt said. "You can actually talk to the owner and the guys who are going to be working on your engine. You know who is responsible for what."

"Our customers have a nice hands-on relationship with us. If you have a problem, it's our responsibility to fix it," Weiss said.

Another benefit is that independent shops will offer you options to help control the cost of your overhaul wherever feasible. Prices for engine components can be higher any time the factory is the sole provider for specific parts or service, Schmidt said.

"If owner/operators don't support the individual overhauler, and the overhauler doesn't support the production of good FAA-PMA parts from companies like Superior Air Parts, then it will greatly increase the cost of flying for everyone," he said. "It will price most pilots right out of the sky."

Overhauling an aircraft engine may be inevitable, but being an informed customer can save you a lot of frustration, and probably some money, too.

Dale Smith has been an aviation journalist for 30 years. When he's not writing aviation articles, Smith does commission aircraft illustrations specializing in seaplanes and flying boats. Smith has been a licensed pilot since 1974 and has flown 35 different types of General Aviation, business and World War II vintage aircraft. Send questions or comments to editor@cessnaflyer.org.

RESOURCES

Certified Engines Unlimited, Inc.
certifiedengines.com

Signature Engines Inc.
signatureenginesinc.com

Superior Air Parts, Inc.
superiorairparts.com

Photo: Signature Engines, Inc.



15 PRE-OVERHAUL QUESTIONS

Provided by Allen Weiss, owner/president, Certified Engines Unlimited, Inc., and Bill Schmidt, president, Signature Engines, Inc.

Here, in no particular order, are 15 key questions you should ask any potential overhaul shop. Their answers will go a long way in helping you make an informed decision about whom to trust with major work on the most important part of your airplane.

- Are you an FAA licensed Repair Station?
- How long has your current management been in place?
- How long have your main assembly technicians and inspectors been with the company?
- Do you ever subcontract out any of the work? If so, are those contractors FAA licensed?
- Can you provide references of owners with the same type of engine?
- Have there ever been any failures or major problems with one of your overhauled engines?
- Do you provide an itemized list of all the new parts you install?
- What accessories are included? If they are overhauled, who does the overhaul for you?
- Do you do your engine test run on the aircraft, or a test stand? How long is the run?
- What type of paperwork do you provide with the completed engine?
- How detailed is your logbook entry?
- Do you use PMA parts?
- What is your published warranty?
- How long will the overhaul take?
- What is the estimated cost?

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