

# WHAT DOES IT COST TO OWN A 303?

by Bob Thomason, TTCF Editor



The Cessna T303 Crusader is one of the rarest of Twin Cessnas. Only 297 were manufactured from 1982 to 1984, when production was discontinued due to the great general aviation downturn. It was originally designed to replace the 310 and, sure enough, Cessna stopped 310R production when it introduced the T303.

Today, there are fewer than 60 T303s on the US FAA registry. This number is suspect on the low side, due to the current reregistration process. Our guess is that there are at least 75 and maybe more flying in the U.S. Most of the rest are overseas, particularly Europe, where the Crusader's low turning RPMs and noise signature are in compliance with local regulations. And, at one time at least, the low weight of the Crusader meant it was taxed at a lower rate than other cabin class Twin Cessnas. Today, the cost and scarcity of avgas in Europe and other parts of the world are bringing some of these airplanes back home to the U.S.

The Crusader is very different from the other 300 and 400 series Cessnas. It was a clean sheet design that Cessna used to achieve a couple of key goals. One was to tame the engine-out characteristics of conventional twin. It achieved this objective by installing counter rotating engines to eliminate the critical engine, as well as incorporating aerodynamic refinements that produced a very low Vmc speed, slightly lower than the stall speed in some weight and CG situations.

Other design objectives were good fuel economy, excellent flying characteristics, and a good useful load. It achieved the latter by trimming all the weight it could out of the design. This shows up everywhere on the airplane, from the lighter weight wing skins to the specially designed Continental TSIO-520 engines, which have cylinders with shorter cooling fins, among other modifications.

All of these objectives were achieved, with only a few drawbacks. The lightweight construction of the airplane created some maintenance headaches for flight schools that used them as trainers. While more than adequate for a personal use airplane, the Crusader required a lot

of maintenance when worked hard by students and instructors.

With a cost comparable to a top-of-the-line T310R which is faster with its larger engines, why does someone buy a T303 today? Here are some of the reasons:

- It is cabin class, with an airstair door (unpressurized, though).
- It has better hand flying characteristics.
- It has much better short field characteristics (with a higher lift wing and fowler flaps).
- It has simpler systems (e.g. just left and right wet wing fuel tanks and a free-fall emergency gear extension procedure).
- Some of the systems are more advanced (e.g. a true dual bus electrical system and trailing link landing gear).
- It has a lower fuel burn due to the derated TSIO-520s (limited to 2,400 RPM and 250 HP).
- It has higher engine TBOs (2,000 hours), that are usually achieved.

(For an excellent overview of the Crusader from one owner's perspective, see the August 2010 issue of this



The Editor's 1984 T303 Crusader. It's an efficient and economical cabin-class twin.

magazine. It's available on our online Member Forum under the Past Magazine section.)

Efficiency and cost effectiveness are clearly motivations to consider owning a T303. So, exactly how much does it cost to own one and how does that compare to other Twin Cessnas? We recently surveyed our members who own T303s and present the results below. We had an excellent response to the following questions:

1. What year and model Twin Cessna do you own or operate?
2. How many years have you owned your Twin Cessna?
3. How many hours per year do you

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Cessna T303 Operating Costs					
<b>Survey Data:</b>		<b>Cost to Fly 100 Hrs per Year</b>	Not including taxes, training, or financing costs	<b>Total Cost per Hour w/o OH Reserves</b>	<b>\$356</b>
		<b>Variable Costs:</b>		Typical Engine & Prop O/H Costs	\$51,145
<b>Hrs/Year</b>	<b>101</b>	<b>Fuel:</b>	\$12,792	TBO	2000
<b>Fuel Burn (GPH)</b>	<b>27</b>	<b>Non-Annual Maintenance:</b>	\$6,600	O/H Cost per Hour for Both Engines	\$51
<b>Annual Inspection Cost</b>	<b>\$5,786</b>	<b>Total Variable Costs:</b>	<b>\$19,392</b>		
<b>% Who Do Own Maintenance / % Performed</b>	<b>42% / 31%</b>	<b>Fixed Costs: (Including Annual Inspection)</b>		<b>Total Cost to Fly 100 Hrs/Yr Including</b>	<b>\$40,709</b>
<b>Annual Insurance Premium</b>	<b>\$4,752</b>	<b>Insurance</b>	\$4,752	<b>Total Cost per Hour including O/H Reserves</b>	<b>\$407</b>
<b>Monthly Hangar or Tiedown Fee</b>	<b>\$472</b>	<b>Hangar/Tie Down:</b>	\$5,664		
		<b>Total Fixed Costs</b>	<b>\$16,202</b>		
<b>% Who Run LOP</b>	<b>28%</b>				
		<b>Total Cost to Fly 100 Hrs. w/o OH Reserves</b>	<b>\$35,594</b>		

*typically fly your Twin Cessna? (Not including flight time for other airplanes.)*

4. *Do you typically run your engines lean-of-peak (LOP) or rich-of-peak (ROP) in cruise flight?*
5. *What is the typical fuel burn of your Twin Cessna in GPH during cruise flight?*
6. *Do you perform any of your own maintenance? If yes, what percentage?*
7. *What is the cost of an Annual Inspection on your airplane in an average year? (Not including upgrades.)*
8. *Not counting the Annual Inspection or upgrades, how much do you spend on additional maintenance in a typical year (engine, airframe, and avionics)?*
9. *How much is your annual insurance premium?*
10. *How much is your monthly hangar rent or tie-down fee?*
11. *Did you spend a significant amount on aircraft upgrades in the past year?*
12. *Is there anything else you want to tell us about the ownership costs of your Twin Cessna?*

In this survey, we looked at two main variables that impact operating costs: 1) How owners operate their airplanes and 2) How they maintain them. Running lean-of-peak (LOP) vs. rich-of-peak (ROP) can lower fuel burn per hour by as much as 20 percent. Additionally, most of our survey respondents perform at least some of their own maintenance.

Although we note in the chart below what percentage of respondents run LOP and what percent do some of their own maintenance, the fuel burns and maintenance costs reported are an average of all responses. Of course fuel costs will be less for those who run LOP, and maintenance costs will be less for those who do some of their own maintenance. Keep this in mind as you apply the results to your own situation.

Here are the key findings that you can apply to these average numbers in the summary table:

### Notes on Fuel Burn

- 28% of 303 owners report running

their engines LOP, the second highest percentage of any Twin Cessna model surveyed (35% of turbo 310 owners run LOP). This makes sense, as one of the reasons people buy a 303 is for operating economy. It was the only Twin Cessna certified to run at peak EGT.

- Owners running LOP report an average cruise fuel burn of 23 GPH while those running ROP burn 28 GPH.

### Notes on Maintenance

- 42% of respondents report doing at least some of their own maintenance.
- The average amount of total maintenance they perform themselves is 31%.

Since the maintenance costs in the Summary Table are an average these two groups, the costs for those owners who don't do any of their own maintenance are likely to be higher than shown, and vice versa for those who do a lot of their own maintenance.

And remember, even if you do all your own maintenance, you should take your airplane to a Twin Cessna specialist at least periodically.

Finally, there are significant operating costs we chose not include in the survey. Among them are taxes, training, and financing costs. Taxes vary considerably according to location and the other costs are easily obtainable through a little research by a prospective owner. We do provide our own estimates of prop and overhaul reserves in the accompanying chart. They are based on actual quotes, including removal and installation, from a respected specialty engine overhauler. If you prefer RAM or factory remains at overhaul time, your costs will be higher.

### Results

While T303 owners represent only a small percentage of our members, we had a good response from them.

### Notes:

In the "Cost to Fly 100 Hours per Year" section:



*The large cargo door is a highly desirable option that enhances the utility of the T303.*

- An average cost per gallon of 100LL of \$4.92 (vs. \$5.12 in 2015.)
- An average monthly cost for hanger/tiedown of \$472 is used, per the survey.
- Engine and prop overhaul costs are based on actual 2020 quotes for a pair of TSIO-520-AE3Bs. They include removal and installation cost.
- Costs omitted include: taxes, financing costs, extraordinary maintenance events

Cutting to the chase, according to our survey, to fly 100 hours per year, a T303 will cost you about \$356/hour without reserves and \$407 with engine and prop overhaul reserves. This compares with \$365/hour and \$409/hour, respectively, in 2015. Higher maintenance, overhaul, and fixed costs were almost exactly offset by lower fuel prices.

Comparing this to the cost to own other Twin Cessna models shows the T303 has the lowest operating costs of any turbocharged Twin Cessna. (But not by much. The per hours cost figures for turbo 310s were \$361 and \$437.) T303 costs fall in between a normally aspirated 310R and a T310R.

Here are a few other observations about our T303 results:

- T303 owners fly about 101 hours per year, similar to other Twin Cessna models which are flown non-commercially.
- T303 owners spend a little less on

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maintenance than late model turbo 310 owners (both Annual and non-Annual related maintenance). This is a result of simpler systems and fewer ADs. Most notably, the T303 is exempt from the exhaust system AD. The 2,000 hour engine TBO on the T303 also means a lower overhaul reserve, although because the engine is fairly rare, the cost differential is not as low as it might otherwise be.

- Hanger costs are a little bit higher than those of 310s, as are insurance costs (\$4,752 per year vs. \$3,743 for the T310R.) This is most likely due to typically higher hull values.

The numbers presented in this survey summary are averages. As all long time aircraft owners know, from a financial standpoint, there are good years, bad years, and sometimes very bad years. The first few years of aircraft ownership

are often “catch up” maintenance years and costs are likely to be much higher than our survey numbers. Prepare to pay considerably more.

Additionally, the survey results do not reflect upgrades. In order to preserve the value of your aircraft, every so often it has to have paint and interior work. Also, these days it’s getting difficult to sell an airplane without at least some glass in the panel. And avionics are advancing at such a rapid rate that panel upgrades are required with more and more frequency.

And don’t forget about inflation. Engine overhaul prices are rising faster than the general rate of inflation. They may be 20 to 25% more in ten years. If you are accumulating funds in an overhaul account as many owners do, you’ll need to take this into consideration.

**A T303 will cost you about \$356/hour without reserves and \$407/hour with overhaul reserves. \*\***

With these caveats, our survey data should be useful to anyone who wants to know the long term cost of owning a T303 Crusader.



**\*\* If you use these numbers for cost estimates and do not plan to perform any of your own maintenance, adjust them upward accordingly.**



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