

AEROWORKS TECHNOLOGIES

ARX-5 Model T

REFERENCE MANUAL



Created by Jason L. Terry

151109



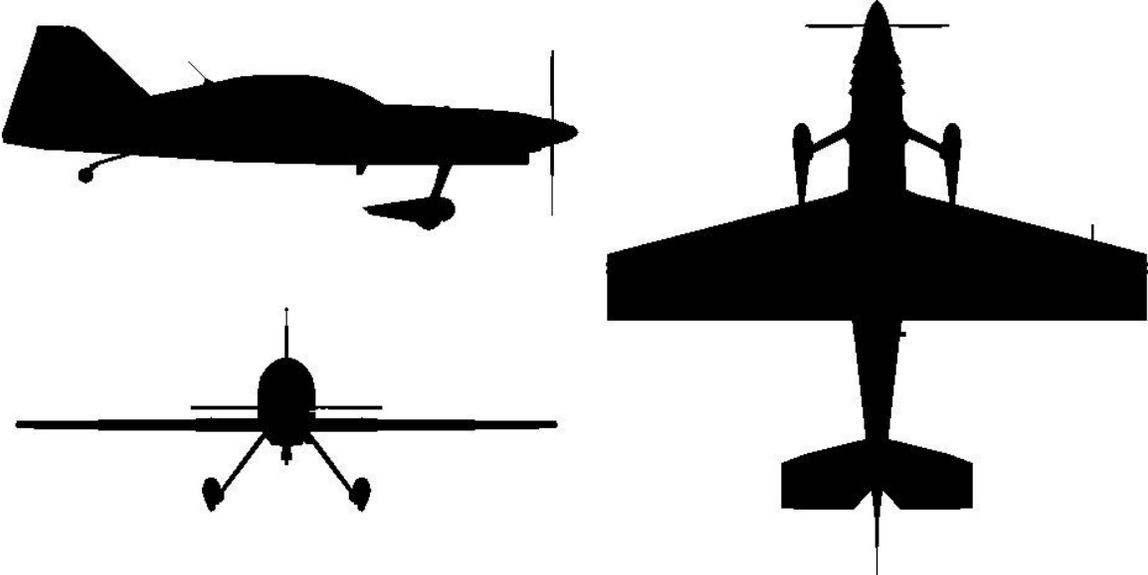
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- Come to understand we hate this legal stuff! But it has to be done - we have always worked for free, and our work is given to you as it was created by us. Basically, please don't rip us off! It makes us "all crazy-like"...which isn't much different from any other day, but that's no excuse.

DESCRIPTION

Dimensions:

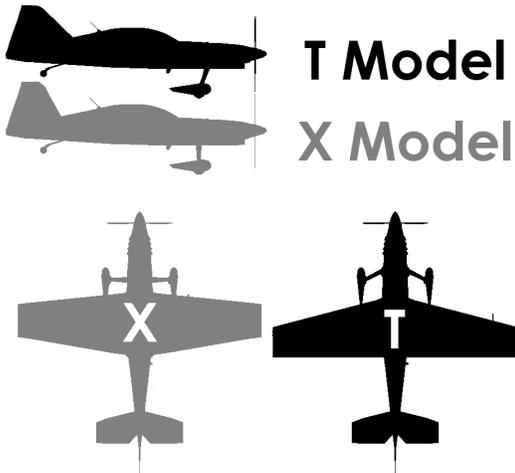


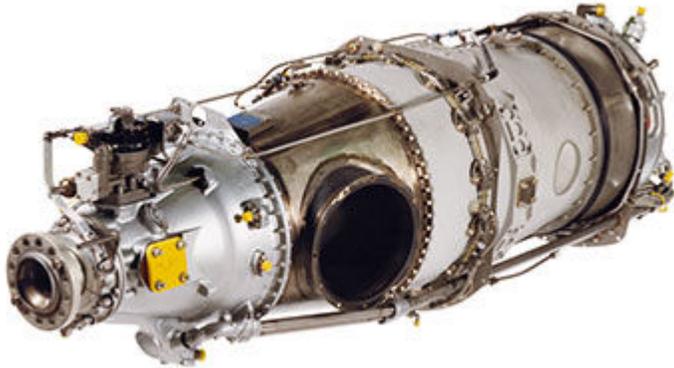
Role:

Experimental Prototype.

Airframe:

Welded steel tube fuselage covered in fiberglass. The mid-set wing has a carbon fiber composite spar and fiberglass skins. A symmetrical airfoil, mounted with a zero angle of incidence, provides equal performance in both upright and inverted flight. The landing gear is fixed taildragger style with spring-steel main legs and fiberglass wheel pants.





Engine:

Pratt & Whitney PT6A-25C.

- Dry Weight With Accessories: 330 lbs.
- Fuel Grade: Jet A
- Power Output: 750shp



Propeller:

Constant-speed, swept 3-blade "Scimitar" manufactured by HARTZELL. Diameter 91.6 in.

Fuel:

Grade	Jet A	
Total Capacity	52 Gallons	(348 lbs.)
Fuselage-	12 gallons	(80.4 lbs.)
Wing (ea.)	20 Gallons	(134 lbs.)

Weights:

Empty: 1500 lbs.
Gross: 2250 lbs.



PERFORMANCE

Airspeed Limitations

V_S	Stall Speed	51 KIAS
V_A	Maneuvering Speed	130 KIAS
V_{NO}	Maximum Structural Cruise	260 KIAS
V_{NE}	Never Exceed Speed	300 KIAS
V_{REF}	Landing Approach Speed	70 KIAS
Cruise power (N1% 75)		190 KIAS
Range at cruise		400 NM

FLYING THE TURBO COYOTE

If you're reading this without ever having flown our ARX-5X, you will be thrown into the deep end by starting out with the 5T. There isn't anything that compares to it. Imagine the default Extra 300 with an engine from the Kingair. That's what this plane amounts to!

In stable un-accelerated flight at speeds less than 220kts, you will probably not notice a difference between this and the X Model. That's how similar they are. But that is where the similarities end.

It's prime benefit over the ARX-5X (and every other aerobatic plane) is it's sheer power and level flight speed. In terms of power, the Turbo Coyote is a step above the Model X as the X Model is a step above everything else in the aerobatic world. It is Fast. Very Fast. Like a 3000m (10,000ft) time-to-climb in under a minute.

Plus the faster you go, the more dynamic pressure builds up and the less the control surfaces want to move, therefore the rotation rates and overall maneuverability goes down the faster you fly. Therefore it is recommended to fly aerobatic sequences at half throttle or idle, depending on the maneuver. The Coyote by design has a fast roll rate, but that rate is at it's highest around 110-130kt range. At 260kts, the Coyote T is basically a cruiser - that's 300 miles per hour.

The Chelton Flight Systems Engine Airdata Unit (EAU) has been changed to fit a turboprop engine, reflecting the N1% and Torque percent, as well as a readout of the condition lever.

Condition %

A major thing to note, that applies strictly to the Turbo Coyote, is to always be aware of the position of the condition percent. Condition is controlled with the condition lever, and is similar to mixture controls on a piston aircraft and is controlled with the same keyboard commands:

- Ctrl+Shift+F1** = Fuel Cutoff (0%)
- Ctrl+Shift+F2** = Decrease
- Ctrl+Shift+F3** = Increase
- Ctrl+Shift+F4** = Full (100%)

Normally the condition should be at 100%. However **before landing you will need to lower the Condition Percent to less than 40%**, by using the **Ctrl+Shift+F2** key combination. This is also placarded above the Chelton EAU on the plane's panel.



HISTORY OF THE TURBO COYOTE

Although it is the fifth concept, the ARX-5 "Coyote" is one of the oldest designs I've had going...in some form or another. In 1996 I created a plane simply called the Coyote, and it was based very loosely off of the Staudacher S-300 – using the excellent Lycoming 540 engine. This was the "old" Coyote, with a square body similar to the Staudacher.

In 1999 I was working at an airport in Oklahoma, and someone had recently been to an airshow in Oklahoma City and was talking about a plane that could go straight up hover and then go back up again. This was my introduction to the legendary Wayne Handley, who was dominating the airshow scene with a custom-built turboprop powered Akrotech Giles G-202 modification that he called the G-750 "Turbo Raven" – nothing could touch that airplane. It became one of my favorite aircraft of all time, and I still have a picture of it on my wall in 2015. Framed, no less.

In 2002, I got to go to Sun'n'Fun in Lakeland Florida for the EAA's annual gathering. This was like a pilgrimage to Mecca. But among all this the thing I remember most was first seeing a Velox Revolution II prototype. Admittedly not that much different than everything else at the time, but I just liked the lines of it and the overall look and feel of it. Naturally the old Coyote sort of morphed into a more sleek and rounded Velox clone and was originally intended to be powered by a Lycoming 540, as is everything else in the aerobatic world.

Then sometime around 2001 after releasing four concept aircraft under the ARX moniker, I decided to revitalize the Coyote and throw it into the ARX fold. The "ARX-5A" was to be the Lycoming one, but as I often do, I let curiosity get the better of me, and made an ARX-5T as well, with a Pratt & Whitney PT6 -- just like the Turbo Raven. I can't say the Turbo Coyote wasn't "fun" because it was, but it just wasn't what I was looking for at the time. The Lycoming model was too close to an Extra 300 and everything else in the world. And the Turbo Coyote was too unbridled and insane. So for a while I left the entire Concept 5 project on back burner while I did other things. I was looking for something in the middle. I felt the ARX-5A was too unoriginal, and the ARX-5T was too much off the deep end.

In 2003 Joseph Thompson, a friend who was into air racing turned me onto a new engine for a totally unrelated concept plane I was thinking about doing. The engine was a 495c.i. 600hp. piston engine called Trace-Orenda 600. They had achieved STC's in Canada and had been used on aircraft that were originally designed with turboprops and thirsty radial engines - Otter's and Beavers and such. The Orenda was an ideal replacement for a PT-6 turboprop because of it's better fuel economy, but the idea hit me very rapidly that it would also provide better performance on an aerobatic plane as well. Same power as a turbine...but no turbine – hence, no spool time. Therefore you could have all that power at your command, almost on a whim! I quickly modified the Coyote to have an Orenda engine, and called it the ARX-5X. Just crazy enough to be different, but not so psychotic as to be a handful...

Version 1 was released in 2003 for Fs2002.

Version 2 was released in 2009 for FSX.

With the ARX-5X released, the Turbo Coyote was abandoned. For over a decade...

When I first released the Coyote X, it was my opinion the other models would never be as good as the X Model, so why bother. I still feel that way pretty much.

The Model A is not much different from any other unlimited aerobatic plane. And the Turbo monster is just that. A monster. The problem with a turboprop aerobatic plane is that turbine engines have to "spool" up. The power isn't immediate. And there are times when you will get yourself into situations in aerobatics where all the extra power is useless if you don't have it IMMEDIATELY on command. Pulling out of a vertical down line low to the ground is a bad time to have to wait for a turbine to spool up, and not for the faint of heart! This exact same scenario is actually what led to the demise of the Turbo Raven itself, but not before Wayne managed to set new time-to-climb records! Fortunately Wayne survived the accident – but I acquired a sort of love/hate relationship with turbine aerobatic planes. I hate them every bit as much as I love them!

But the ARX-5T, after working out all it's kinks, is perhaps not as bad as I thought originally. It IS a handful, and it DOES not like to slow down, and you DO need to plan ahead with throttle use, and then you have to manage the condition lever if you ever want to land...but that sort of makes it it's own thing in a way. The Turbo Coyote has a personality all it's own. And after several years of people enjoying the Model X, I have decided to let this one out.

But make no mistake - The X Model is still our favorite!



ARX-5 "mules" over Death Valley, 2015



CREDITS AND THANKS

AEROWORKS credits:

Austin Gardner ~ Beta testing the 5T in FSX.

Joshua Nyhus ~ Refusing to proofread this document.

Jason L Terry ~ Aircraft model & panel, paint, and flight dynamics.

This aircraft was created with FSDS 3.5.1 with FSDSxTweak, Paint Shop Pro, as well as Imagetool and FX Tool from the FSX SDK.

We would like to thank the following:

FS Developer.com & *Freeflight Design* – both are excellent forums, and have always been more than useful, more than helpful for figuring out problems we create while constructing all these little endeavors of ours. Special thanks to Felix Rodriguez and Fr. Bill, both are a Guru's Guru.

Louis Sinclair & Abacus – I'm a Gmax'er. But when it comes to Flightsim, I tend to stick with FSDS. Thanks for giving flightsimmers the FSDS program back in FS2000, and for keeping it updated through all the version up to FSX.

Dave Nunez – The makers of FSDS can't be thanked without thanking the guy who allows it to use all the neat new FSX tricks. Thanks for FSDSxTweak!

Pete from Simviation – Thanks for hosting our website since time immemorial!

Thank YOU – for downloading!



If you enjoy this aircraft, please check out the X-Model of the ARX-5, as well as our recently released Malibu Version 2016 for FSX – we like to make dual releases of aircraft and a scenery when we can, and since Malibu MotorSports is where the Coyote was “made” in FSX and where we flight tested it, it makes a good companion scenery.

Malibu, as well as all our older sceneries can be found on our website at www.aeroworks-technologies.com

If you have any questions, suggestions or comments, the author's email is webmaster@aeroworks-technologies.com

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