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## Show calendar:

November 8—AOPA Fly-In  
St. Simons, GA

April 15-18—AERO  
Friedrichshafen, Germany

April 21-26—Sun-N-Fun  
Lakeland, FL

August 20-23—Tannkosh Fly-in  
Tannheim Germany

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## Modern Barnstormers—Sowing Seeds at Air Shows

For many of our customers, their first WACO experience was at an air show, aviation event or ride in an airplane. Every year WACO employees attend and exhibit at dozens of aviation events—sowing seeds that will one day grow into customers. Over the last year we made it to all but one of the new AOPA Fly-ins, Air Venture, Sun-N-Fun and numerous pancake breakfasts and EAA events. Look for us next year at even more events, including AERO in Germany, Sun-N-Fun, Tannkosh (also in Germany), Triple Tree and Oshkosh.



## The New Great Lakes—An Aerobatic Machine!

I heard a great quote at this year's Sun-N-Fun from a Pitts owner "I don't start sweating until I turn final". Those of you who have flown a Pitts can likely relate to that statement. Fortunately the New Great Lakes has some of the greatest landing and ground characteristics of any tail wheel airplane. I think we will start calling it the "no sweat" landing gear! Not only is the airplane easy on the ground but it's also a great aerobatic airplane, reassuringly docile yet exceptionally capable. As a demo pilot I often find myself in the front cockpit with any manner of pilot in the rear seat. I have never found myself in a position where I was not completely at ease that a recovery from even the most unusual attitudes would be easy. Reports back from customers have been excellent, with customers doing all the normal maneuvers (loops, rolls, inverted flight, ect..) and even consecutive outside loops (yikes!)

Did you know that the Great Lakes, with Tex Rankin at the controls, holds the current world record for consecutive outside loops: 131! (wonder if he had a headache after that?)  
Approved maneuvers and speeds:

Maneuver	Propeller RPM	Entry Speed (MPH @ IAS)	Demonstrated Acceleration (G's)
Loop	2700	125	3
Snap Roll	2450	80	3
Barrel Roll	2450	120	3
Primary Roll	2450	120	2.5
Slow Roll	2450	120	3
Hammer Head Turn	2700	125	3
Immelman Turn	2700	130	3
Split S	ENTER @ 2450 THEN RE-DUCE	80	3.5
Spin	USE SLOW DECELERATION		3
Inverted Loop	2700	120	-3
Inverted Immelman	2700	130	-3
Inverted Spin	USE SLOW DECELERATION		-3
Inverted Barrel Roll	2450	120	-3
Inverted Snap Roll	2450	90	-2



## Flying Wire Inspections SN-041 (NEW)

The name "Flying Wire" is often used as a general term used to describe streamline wire rod or round rod that is used in the structural rigging of the aircraft. For clarity, "Flying Wires" (or Lift Wires) carry the load while in flight (the lifting loads). They are connected to the lower fuselage and extend upwards and outwards towards the lower outboard "N" struts of the upper wing, whereas "Landing Wires" carry the load when on the ground, supporting the inertial loads during landing and loads during negative G maneuvers. Landing wires extend from the upper cabane (center section) strut to the top of the lower wing at the outboard "N" struts. The Flying and Landing wires are separated at their mid point by a "Flying Wire Separator Stick" sometimes called a "Javelin". The upper center section is braced by "Center Section" wires often referred to as "Racking Wires". On the tail, the lower wires are considered "Flying Wires" and the upper wires are considered "Landing Wires".

Wires should be examined frequently as part of the pre-flight inspection. Careful attention should be paid to any sign of nicks or other defects. If a nick or defect is found, do not fly until a qualified mechanic has inspected and repaired the condition. There are no acceptable defects allowed on flying wires. Any nick, dent, kink, pit, discoloration or any type of defect renders the wire/rod non-airworthy.

Although rare, failures can occur. The prime cause of failure of wires is vibration due to improper tensioning. Please ensure that your wires are tensioned in accordance with the manufacturer's instructions. Another cause of failure is stress concentration from nicks, pits or similar defects leading to the propagation of cracks. Salt corrosion can occur even with stainless steel wires when the aircraft is exposed to salt spray in coastal areas. This corrosion appears as small grayish spots and can develop into pitting which in turn can lead to a concentration of stresses and ultimately cracking and failure. However, application of a light oil or wax will help protect your wires from salt spray exposure.

Areas of special inspection:

Tail Wires: stones or FOD kicked up by the main gear can cause nicks in the wires leading to cracks and failures.

Separator Stick (Javelin) area: wires may come in contact with each other (not properly separated) causing a nick or dent that will lead to a failure.

If a wire failure occurs in flight, make an immediate safe landing, taking care to minimize stress on the airframe. Do not attempt to continue a flight to a convenient destination.

Reference, WACO Support Documents (<http://www.wacoaircraft.com/ymf-support/>):

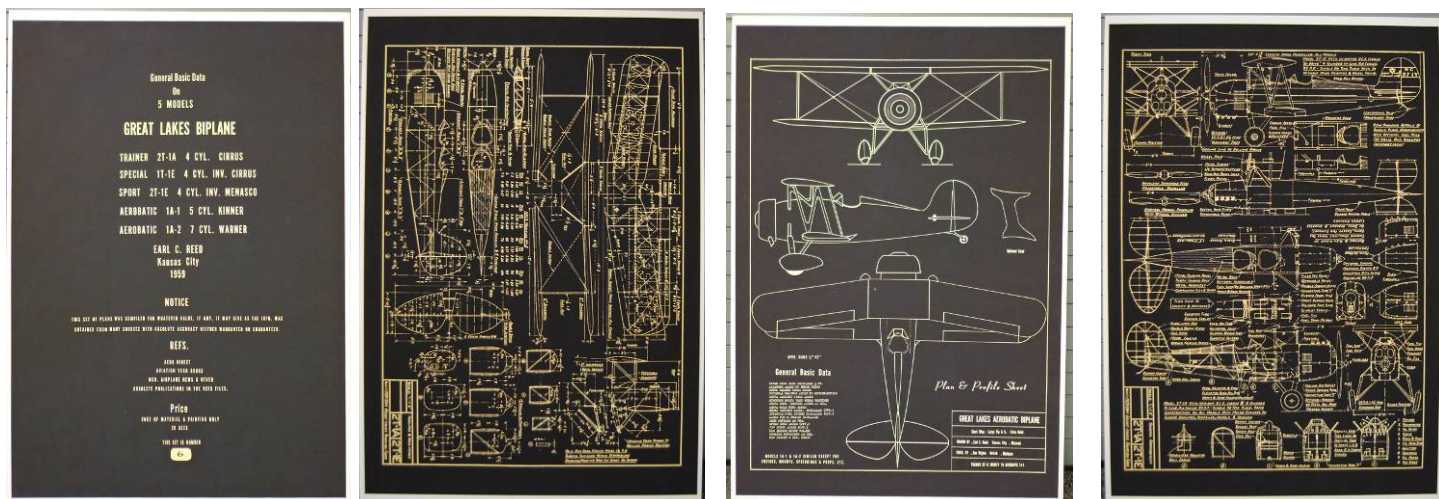
GI02271992 – Corrosion of Flying Wires (revised)

GI06031996 – Streamline Wire

GI11051990 – Corrosion of Flying Wires      Note: You can find more safety notices here: <http://www.wacoaircraft.com/support/>

## Great Lakes History Posters

Reproduction posters of rare and unique original Great Lakes posters and drawings. Excellent artwork for your office or hanger. 4 poster set (not matted or framed) priced at \$100 per set, plus shipping. Posters measure 16.5" X 24". Available at WacoGear.com or by calling 269-565-1000



## Upset Recovery—The NEW Great Lakes is the Perfect Training Platform!

New rules currently being introduced will mandate that most flight schools provide much more robust and comprehensive upset recovery/unusual attitude training. The training regiments are outside the safe capability of traditional training aircraft like Cessnas and Pipers. This new focus on improving basic airmanship skills is a direct result of recent airline accidents (Colgan Air, Air France 447 and others) where a breakdown or lack of basic airmanship contributed to a poor outcome.

The new Great Lakes is a fantastic upset recovery and unusual attitude trainer and is great for use as an entry level to intermediate level aerobatic trainer. The airplane now offers more cockpit space, updated avionics and greatly improved systems that make it a perfect airplane for personal use and flight schools.

Some of the great attributes include:

- Docile ground handling including super soft "no bounce" oleo strut landing gear
- Low acquisition and operating costs
- Easy maintainability with simple systems and accessories
- Overnight part availability direct from the factory in Michigan
- Lycoming AEIO 360 engine with inverted fuel and oil system
- Both traditional and glass panel avionics packages
- Options include electronic attitude indicators for simulated instrument training applications



Already several flight schools have selected the new Great Lakes to add to their fleet for the reasons above and as a marquee airplane to help attract more students to their school.

Below is data from a presentation that I made at a very large flight school. Notice a trend? (Hint, tail wheel aerobatic pilots are better pilots)

The Pilot had this type of primary training and recent experience ——>	Tail Wheel	Glider	Aerobatic	Outcome of accident (Good or Bad)
Flight/Event:				
Air France 447	NO	YES (the co-pilot who was not flying)	NO	BAD
UAL 232—Sioux City, Iowa DC-10	YES	YES	YES	GOOD
Colgan Air 3407	NO	NO	NO	BAD
US Air 1549—Miracle on the Hudson A320	YES	YES	YES	GOOD
Asiana 214 (San Francisco Sea Wall Accident)	NO	NO	NO	BAD
Air Canada 143 (aka Glimi Glider, B767)	YES	YES	YES	GOOD





## Recent Completions

NEW WACO YMF-50's



Great Lakes by WACO







## The New 2015 2T-1A-2 by WACO

### Improvements made to new production aircraft



- More Space, the pilot seat was moved back four inches and reclined
- Aluminum side skins are more rugged and damage resistant than the older fabric sides and are easily removed for improved servicing
- NEW PPG Aerospace paint offering more color options and lighter weight
- Standard TRIG TY91 Radio and TT22 Mode-S Transponder
- Relocated COM 1 antenna providing for better communication range
- JPI-930 color engine monitor and performance computer
- New lighter weight tail wheel and main wheel assemblies
- Hooker Aerobatic seatbelts
- Air filler doors on wheel pants improve safety by allowing for easier access
- Stainless Steel exhaust
- Upgraded 406 MHz ELT
- Improved adjustable rudder/brake pedals for tall pilots improves rudder feel & function. New toe brakes in pilot cockpit replace heel brakes
- All frames are fabricated using German tubing that has been precision cut on a CNC tube cutting machine
- New Heater design and firewall blanket. Improve both summer and winter flying comfort
- LED strobe lights on upper wing and LED beacon.
- Concord sealed aerobatic battery
- Improved fuel tank design and electronic gauge
- Taller windshields improve cabin comfort
- New cowlings are both lower, improving forward visibility, and more aerodynamic, improving performance
- Standard inverted fuel and oil system
- Redesigned "Zero Maintenance" Oleo strut landing gear
- Improved cabin ergonomics that features larger map storage (sized for an iPad), cup holder, and new arm rest
- Well Equipped Price: \$ 255,250



The engineers and artisans here at WACO continue to refine and improve the YMF-5D. For 2015 customers can expect the following:

- NEW PPG Polyurethane paint offering more color options and lighter weight
- Standard in IFR spec YMF-5Ds the new Garmin GTN-750 and GTN-365 Touchscreen GPS and enhanced base avionics
- Relocated COM 1 antenna providing for better communication range
- Larger pilot side foot step accommodates larger shoes
- New lighter weight tail wheel and main wheel assemblies
- New one-piece wing root fairing provides for a cleaner look and lighter weight
- Optional camera mount on upper vertical stabilizer
- Air filler doors on wheel pants improve safety by allowing for easier access
- New Carbon Fiber engine baffles
- New "Safety Throttle" in front cockpit
- All 300 HP Engines now feature New Production aluminum cases and long 1400 hour TBO
- Improved adjustable rudder/brake pedals for tall pilots and a new closed loop rudder cable system that improves rudder feel & function
- Pilot seat adjustment now uses a gas piston, replacing maintenance prone bungee system
- Upgraded 406 MHz ELT
- All frames are fabricated using German tubing that has been precision cut on a CNC tube cutting machine
- Under skin seals have been improved to enhance pilot and passenger comfort in cold weather and help minimize heat intrusion during warmer times
- Increased front cockpit space
- Improved LED strobe lights and Landing lights
- Concord sealed batteries now standard
- Improved fuel tank design
- Improved engine hoses and connections
- New "Zero Maintenance" trim system









## Cold Weather Flying

Can I fly in my open cockpit airplane in the winter, and if so, how cold can I go?

Yes you can — assuming you fly a New Waco YMF-5D or New Great Lakes 2T-1A-2. Doing this in most other open cockpit airplanes is brutal; however, both the New Waco and New Great Lakes feature great wind protection and heat! Here at the factory we frequently fly in weather down to the 30's (F) and will even fly down into the 20's on occasion (particularly if we are going somewhere warmer). The new Great Lakes was recently flown with an OAT of only 5 degrees! (and yes, that was getting a little cold).

Some recommendations:

- 1) Have the winter weather kit installed by the factory (standard on new YMFs and Great Lakes).
- 2) Let the oil heat up to 80 deg minimum before run-up.
- 3) Wear a helmet, and proper gear like hunters gloves and a good jacket.
- 4) Install the front cockpit snap cover or zip in cover and turn the heat off to the front cockpit
- 5) Watch out for migrating geese.



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## Employee focus: Greg Jones

Greg has been working at WACO for over 7 years now, and has worked in many different areas. He currently works mostly in Final Assembly, but he's also worked on frames, in the woodshop, and in whatever area we need him. In fact, he's worked in nearly every department except fabric and paint. Greg likes the work here because we build such a unique product that no one else makes, and every day brings something different to do. He likes the fact that he gets to work on the airplane from nose to tail.

Greg, who is a licensed pilot, is married and has two children, a boy and a girl. He's been going to Oshkosh every single year for 22 years now, and has never missed a year. He truly enjoys the airplanes, and sharing the event with his family. Greg also likes fishing, deer hunting, camping and playing cards with friends.

