

Mountaineer R/C Flying Club

AMA Chapter #659

July 2002



Bob Yates' 1/4 Scale Fokker DR-1

Club News

On a personal level things have been thankfully uneventful in the last month. Doesn't look like there has been a whole lot of activity at the field either. Guess the heat and vacations have kept everyone away.

I wasn't present at the last meeting but the big news was the changing in club officers. As I understand it, Bob Yates will be President for the remainder of the year. Denny will fill in for Vice and Dave remains as Treasurer. See Dave's notes of the meeting on the next page for details.

We had one new member and two previous members join this month. Our new member, Adam (Ahmad) Alrefaei flew with a club in Cleveland, OH. He has been out of flying for about a year but is eager to get back at it. Cameron Allen rejoined and Daniel Kitchen who has been away a couple of years rejoined.

Note about the field. Let us all make a little extra effort to make sure the pin box and gate are locked if you are the last one out. On several occasions recently, I've found them both unlocked. There are also some items that have been left at the field. A chair and a pocket knife. I suspect they belong to John Clark, but if you are missing something let me know.

Barry



**Next Meeting - Sunday, July 21st,
2:00PM at the field.**

In the Digital Mood?

So what are digital servos? Until recently I hadn't explored the subject. I just figure it was a way for the manufacturers to charge more money for something no one needed. For the most part that is a true statement, but for certain special applications and especially for giant scale planes, they have a big advantage.



Out of the box a digital servo behaves just like a standard analog servo. If you are needing a high torque servos for your project, you are most likely going to look at Hitec's line of servos. They are much cheaper than Futaba or JR and just as good in my opinion. I believe all their high torque products are digital as well. I think Hitec is finding a niche in the market with their servo product line. I will also say that their technical department is very helpful. Can't say the same about the support of Futaba equipment.



So what can a digital servo do that an analog servo can't? With a programmer like the one pictured from Hitec, you can change it's rotation, center point,

(...continued on page 2)

Meeting Notes from June 23rd...

The following are notes recorded by Dave Gaines in my absence.

Treasury at \$1279.47.

Nominations for Bob Yates to finish the year as president, and Denny Bostic as vice president were made, seconded and voted in by those present at the meeting. It was also noted that we need to get new brochures made

Mountaineers RC is to support the Bob Evans flyin by manning the radio impound. We need folks on both Saturday and Sunday. To date Gaines and John Clark will man the impound on Saturday morning, and Denny has volunteered for Saturday afternoon. We still need one more person for Saturday, and folks for Sunday.

In attendance

Dave Gaines, Bob Yates, John Clark, Denny, Rex Spurlock, Darren Gullion, Jerry Workman, Tony Eagle (former member) Michael Gullion, Tom Mallory, Charlie Jarvis, and two new folks whose names I can't read.

(Digital Mood continued...)

end points, dead band and speed to name a few. I know what you are going say. "I can do most of that stuff with my digital radio". That is true, however if you think about the possible applications, a digital radio will fall short.

A classic example is an airplane that requires two elevator servos mounted in the fuse in the tail of an airplane. This presents a challenge if you are wanting to drive the servos on a single channel with a Y harness or using two receivers. Servos either rotate clockwise or counter clockwise depending on the brand. So when you mount your servos, you will have one control horn pointing up and the other pointing down. This will cause uneven deflection of elevator surfaces the farther you get from center. You can flip one servo 180 degrees and use a longer pushrod, but you end up with the same old problem. Using digital servos, one can be programmed to rotate clockwise and the other to rotate counter clockwise solving the problem. Sure with a computer radio you could use two channels, but if you are dealing with a giant scale plane that has four aileron servos, two elevator servos, two rudder servos, one for throttle, you

start running out of channels pretty quick and programming all the mixing in the radio would be a nightmare.

Changing the dead band of a servos is something a computer radio can't do. The dead band of a servo is the place where the servo is centered. I like to think of it as the place where the servo is at rest. Dead bands are usually very narrow. A practical use of widening dead bands would be a situation where you were using two servos on a single surface like an aileron. It would be nearly impossible to mechanically adjust the linkages to the point where the servos wouldn't be fighting themselves when centered, burning up your battery power. In this case widening the dead band would solve the problem.

My favorite function is the ability to slow the servos. I can think of all kinds of uses for this. Slowing a flap servo to a crawl would give a more scale like appearance not to mention a slowly deploying flap would allow the flyer to easily compensate for the natural pitching up of the model in flight. You could do the same with mechanical retracts. Since you can adjust the endpoints of digital servos they can easily be used for retracts without the assistance of computer radios.

As far as I can tell, the digital servos programmers, like the Hitec are proprietary. It can only program Hitec digital servos. The Hitec can perform certain basic functions with any servo, analog or digital regardless of brand. It can test them, center them and when the programmer is connect to the receiver, it can measure the pulse and voltage going to the servo. Could be handy if you are trying to diagnose a problem.

I did find after bench testing two new Hitec 5645MG servos that they were not identical. One was slightly slower and their center and endpoints were different. A few minutes fiddling with the programmer and I had them perfectly matched.

✖



MountainCAD

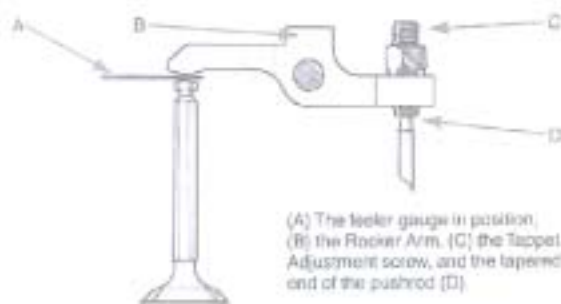
Specializing in Computer Aided
Design Systems and Networking

339 Sixth Avenue, So. Charleston, WV 25303
304-744-7911

4 Stroke Valve Adjustments

There seems to be some mystery attached to adjusting the valves on our 4 stroke engines. I suppose there is some hidden fear in us that we might screw up a perfectly good engine. One sign that the valves need adjusting is a gradually loss of power. The engine still runs OK, but just doesn't perform like it used to. After you waste time repeatedly adjusting the needle valve and replacing the glow plug, you come to the conclusion it must be the valves.

So how do you adjust them? It really is a simple procedure that just takes a couple of minutes. You will need a set of feeler gauges you can get from an automotive store. The range of gauges we are looking for at least for OS, Saito and probably most others is 0.04mm to 0.10mm so be sure the gauges you buy are in that range. Saito supplies a gauge with their engines. However, after checking about a half dozen of them, I discovered that none of them were the same thickness and a few were way out of spec.



(A) The feeler gauge in position, (B) the Rocker Arm, (C) the Tappet Adjustment screw, and the tapered end of the pushrod (D)

So with our gauges in hand, remove the valve cover(s) and the glow plug. There are two Top Dead Centers on a four stroke engine. Firing and non-firing. We are looking for the firing TDC as both valve will be closed in this position. Insert an allen wrench in the glow plug opening and rotate the crank shaft until the piston is at the top of the cylinder head.

Note: *I use a thin golf tee for this step since it is less likely to damage the piston head or cylinder wall, but at the field allen wrenches are readily available so just be careful.*

With the piston in this position, rock the crank shaft back and forth watching the rocker arms. If they are moving,

you are at non-firing TDC. By rotating the crank another full turn, you should be at firing TDC and it can be verified again by rocking the crank back and forth. You should observe no moment on rocker arms.

Now look closely at the rocker arms. On one end there should be a screw with a lock nut known as a tappet and you will see a rod connecting to it. The other end will be positioned over a spring and a stem. These are the valve spring and valve stems. For this exercise we will assume you have an OS or a Saito. If you have a different engine, you will need to refer to the manual for the proper valve gap.

Still maintaining the piston at TDC, check the gap with a 0.10mm feeler gauge. The gap you are checking is between the top of the valve stem and the bottom of the rocker arm. If the 0.10mm gauge can be inserted into the gap, the valve needs adjusted. If it doesn't, try the 0.04mm gauge. If a valve is properly adjusted, the 0.04mm gauge should fit into the gap with a very slight resistance. It should be barely snug but not tight. If the 0.04mm gauge doesn't fit then the valve needs adjusted.

Assuming the valves need adjusted, loosen the lock nuts on the tappets. If you need to close the gap, turn the tappet clockwise, and to open the gap turn counter clockwise. The tappets either are hex head or take a straight blade small screwdriver. Once you have the tappets adjusted to accept the 0.04mm gauge, tighten the lock nuts. If possible, hold the tappet with the wrench or screwdriver as you tighten the nut. This requires your third hand. If you don't, it will be out of adjustment after tightening the nut. Another approach is to adjust the tappets to where the 0.04mm gauge is sort of loose, then tighten the nuts. This method takes a little trial and error. After the nuts are tight, recheck your gaps. The gap range can be between 0.04mm and 0.10mm, but you are better off on the low end.

That is it! Install the glow plug and valve cover(s) and fire it up. You will probably need to make some minor adjustments to the needle valve.

Note: *This article is based on my experiences with OS and Saito engines and should be a fairly good outline for most of their engines. But when in doubt, refer to your owners manual.*

Club Contacts

President Bob Yates 722-3634
email - Yatescot42@cs.com
Vice Pres. Denny Bostic 768-5075
email - dib259@aol.com
Sec/Treas. Dave Gaines 727-1549
email - WVRCFlyer@hotmail.com
Newsletter Barry Thaxton 766-9180
email - barry@moutaineer-rc.com

Around the Field

We've certainly see our share poor flight conditions in the last few weeks. Seems like it is either miserably hot or too darn windy. The evenings at the field haven't shown a lot of relief as far as the winds are concerned.

Rumor has it that Denny recently had a crash course in lumberjacking after nesting his Blue Max in a tree. This maneuver earned him spot in the Bag a Plane race which is still all tied up.

Dave's Ultra Stick suffered what appeared to be a battery failure in flight. The Ultra Stick suffered relatively minor damage and is ready to fly again.

Rex Spurlock is having fun with his new 40 size Ultra Stick powered by a Saito 72.

I expected to see a lot of activity during the 4th of July holiday at the field, but attendance was sparse with the exception of Saturday. When I pulled into the field I thought we were having a convention. Turns out that new member Pat Howley had brought his entire clan out to watch him fly.

I spent the holiday trying to get my new Pitts Special to fly. The first flight was a nightmare. After adjustments, the second flight wasn't any better. Finally after replacing the servos which made it worse, I managed to tear up the landing gear on Sunday. I've concluded this plane is better suited for a static display.

Dave put up the new fencing on the shelter we've been talking about for a while. The new fencing is guarding the shelter area on the runway side.

Barry



THE FOUNTAIN HOBBY CENTER

200 W. Washinaton Street
Charleston, WV 25302



344-1441



Schedule of Events

August 10&11th - Bob Evans 14th Annual Fly-In
and Scale Contest
Rio Grande, OH
August 17&18th - Wally's Squadron's 11th
Annual RC Fly-in
Summersville, WV
September 28th - Club Picnic

We need volunteers to man the radio impound at the Bob Evans Fly-In. We need someone for Saturday afternoon the 10th and two people for the morning and two for the afternoon Sunday the 11th. If you can, please help support our club.



*Barry's new Pitts Special
doomed to be a static display*