TOSSUP 02

Results of SULA's $(SC)^2$ Contest — March 24th, 2002

1	Edgar Vera	SWSA	Master	2981.75	M1
2	Ben Clerx	HSS	Master	2969.50	M2
3	Larry Jolly	EDSF	Master	2968.75	M3
4	Craig Greening	SWSA	Master	2967.00	
5	Dave Schat	SULA	Expert	2963.25	E1
6	Fred Sage	TPG	Master	2962.00	
7	Bob Lenard	HSS	Sport	2956.00	S1
8	Joe Rodriguez	HSS	Expert	2953.00	E2
9	Jon Cotton	TPG	Expert	2939.25	E3
10	Mike Reagan	TOSS	Master	2928.25	
12	Bob Swet	TOSS	3F	2918.75	3F1
15	Tom Finch	SWSA	Sport	2888.00	S2
16	Steve Giron	EDSF	Sport	2874.50	S3
21	Lex Mierop	TOSS	Sport	2860.00	
30	Craig Borstelmann	TOSS	Sport	2737.50	
48	Gary Filice	TOSS	Expert	2291.50	

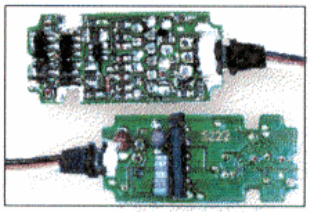
The total number of contestants was 55, of which 8 were Masters, 20 Experts, 20 Sportsmen and 7 Three Function. There was a single Junior, Emanuel Gomez, who finshed 20th overall or 7th. Expert.

April 2002 TOSS Monthly Contest																	
			ROUND 1			ROUND 2			ROUND 3			ROUND 4			TOTAL	Normalized	Yearly Flier
NAME	CLASS	Glider	Time	Landing	Points	Time	Landing	Points	Time	Landing	Points	Time	Landing	Points	POINTS	Points	Points
Craig Borstelmann	Open	Addiction	3:36	78	894.00	8:42	94	873.50	8:29	0	805.92	10:04	64	975.67	3549.08	1000.00	1000.00
John Ellias	Open	Stork	4:02	0	942.08	9:58	90	991.83	6:44	0	639.67	9:53	59	968.42	3542.00	998.00	998.00
Gary Filice	Open	Addiction	3:58	32	958.08	9:06	92	910.50	4:09	84	436.25	9:58	38	965.83	3270.67	921.55	921.55
Bob Swet	Open	Isoar	4:05	34	947.21	3:38	0	345.17	9:32	46	928.67	9:59	72	984.42	3205.46	903.18	903.18
Mike Reagan	Open	Ole Misty	3:59	98	995.04	6:21	97	651.75	5:22	87	553.33	9:59	80	988.42	3188.54	898.41	898.41
Lex Mierop	Open	Nyx	4:06	7	929.75	8:40	81	863.83	6:38	86	673.17	6:00	86	613.00	3079.75	867.76	867.76
Don Northern	Open	Gemini 'S'	4:03	88	982.13	3:37	83	385.08	8:02	77	801.67	8:02	92	809.17	2978.04	839.10	839.10
Bill Karp	Open	Fusion	4:01	80	986.04	3:58	53	403.33	3:38	0	345.17	5:31	0	524.08	2258.63	636.40	636.40
Aaron Amos	2 Meter	Spirit 2M	4:03	43	959.63	2:55	0	277.08	2:43	0	258.08	2:15	0	213.75	1708.54	1000.00	481.40
John Thayer	2 Meter	Spirit 2M	3:08	0	744.17	2:04	0	196.33	3:54	0	370.50	1:56	0	183.67	1494.67	874.82	421.14
Don McNamee	Sport	Salza	4:04	99	983.67	10:01	94	995.42	6:42	85	679.00	5:01	71	512.08	3170.17	1000.00	893.24
Don Northern	Sport	Gemini 'S'	4:01	81	986.54	7:14	51	712.67	9:59	85	990.92	4:09	6	397.25	3087.38	973.88	869.91
Bob Swet	Sport	Isoar	4:02	35	959.58	4:49	63	489.08	7:36	0	722.00	4:58	0	471.83	2642.50	833.55	744.56
Art McNamee	Sport	Salsa Supreme	3:59	69	980.54	4:03	0	384.75	4:25	0	419.58	0:0	0	0.00	1784.88	563.02	502.91
Myles	Sport	Pig	2:53	0	684.79	0:0		0.00	0:0		0.00	0:0		0.00	684.79	216.01	192.95

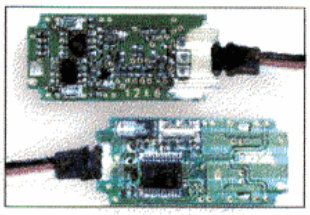
Futaba Digital FET Servos

The Significant Operational Advantages of a Digital Servo.

Over the last few years, servos have changed tremendously with size, rotational speeds and torque ever improving. The latest development, known as the 'digital servo', is yet another step forward. Digital servos have significant operational advantages over standard servos, even coreless versions. but with these advantages also come minor disadvantages, and this fact file will try, in simplified terms, to explain the positives and negatives of Digital servos. It will also dispel some myths.



The **'Standard Servo'** has custom logic chip and timing components with standard 30 strand lead.



The **'Digital Servo'** has a Quartz crystal controlled microprocessor, FET amplifier and heavy duty 50 strand lead.

To start with, a 'digital servo' is the same as a standard servo, except for a microprocessor, which analyses the incoming receiver signals and controls the motor. It is incorrect to believe that digital servos differ drastically in physical design to standard ones. Digital servos have the same motors, gears and cases as standard servos and they also, most importantly, have a Feedback Potentiometer (Pot) just like their standard counterparts.

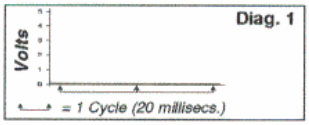
Where a digital servo differs, is in the way it processes the incoming receiver information, and in turn controls the initial power to the servomotor, reducing the deadband, increasing the resolution and generating tremendous holding power.

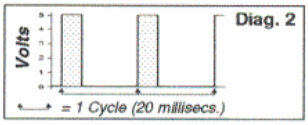
In a conventional servo at idle, no power is being sent to the servomotor. When a signal is then received for the servo to move, or pressure is applied to the output arm, the servo responds by sending power/voltage to the servomotor. This power, which is in fact the maximum voltage, is pulsed or switched On/Off at a fixed rate of 50 cycles per second, creating small 'blips' of power. By increasing the length of each pulse/blip of power, a speed controller effect is created, until full power/voltage is applied to the motor, accelerating the servo arm towards its new position.

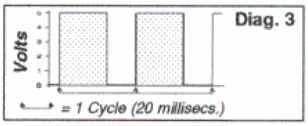
In turn, as the servo positioning pot tells the servo's electronics it is reaching its required position, the power blips are reduced in length to slow it down, until no power is supplied and the servomotor stops.

The 3 diagrams below each show two cycles of 'on/off' power pulses/blips. **Diag.1** - is idle. **Diag.2** - has a short time/pulse i.e. a low power command to the motor. **Diag.3** - is a longer pulse, power 'on' for longer, more power.

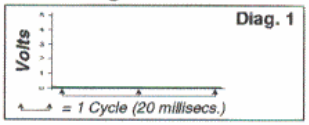
Standard Servo

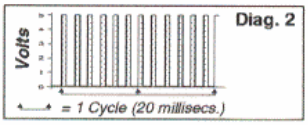


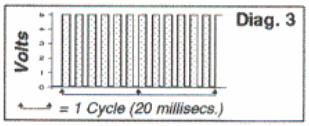




Digital Servo







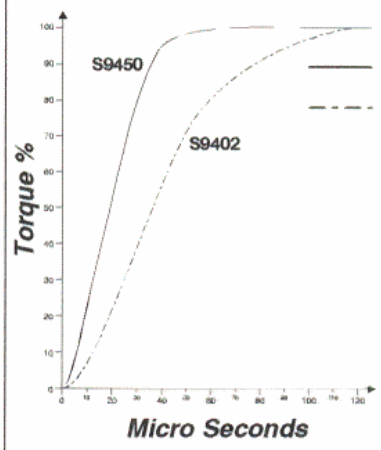
As you can imagine, a quick blip of power 'On', followed by a pause, does not give the motor much incentive to turn, whereas leaving the power 'On' for a longer period of time does. This means that a small control movement, which in turn sends small initial pulses to the motor, is very ineffective, and that is why there is what is termed a 'Deadband', i.e. sluggish or virtually no movement around the centre of a standard servo, in relation to a small Tx stick movement.

The Distinct Advantages of a Digital Servo.

- First, it is able, via it's microprocessor, to receive the incoming signal and apply preset parameters to that signal before sending its pulses of power to the servomotor. This means the length of the power pulse/blip, and therefore the amount of power sent out to activate the motor, can be adjusted by the microprocessors program to match its function requirements and therefore optimize the servo's performance.

- The second, is that a digital servo sends pulses to the motor at a significantly higher frequency. This means that, as opposed to the motor receiving 50 pulses/sec., it now receives 300. Although the length of the pulses is reduced in a direct ratio to the higher frequency because the power is being turned on/off to the motor more frequently, the motor has more incentive to turn. This also means that not only does the servomotor respond faster to the commands, but that increases or decreases in power for acceleration/deceleration are able to be transmitted to the servomotor far more frequently. This gives a digital servo an improved deadband, a faster response, quicker and smoother acceleration/deceleration, and better resolution and holding power.

Comparison between Digital and Standard Servos



This is a comparison graph showing the deadband between two Futaba servos with the same specifications. As you can see the S9450 has a far smaller deadband and applies more power far earlier than the S9402.

Practically, this means that if you tried to move the S9450 servo arm, its opposition response would be significantly quicker, more power/voltage would be applied earlier, resulting in greater holding power/torque and more accurate positioning.

Just One Disadvantage

The downside to these significant advantages - 'well, there's got to be one' - is power consumption. Naturally, with power being transmitted to the servomotor more frequently, together with increases in power being supplied to the motor earlier, the overall power consumption must go up.

However, with batteries in general gaining monthly in capacity for the same size and weight, increased current drain as a trade off for significantly better performance, is no longer a problem. The key point to remember with digital servos is to install the largest capacity battery that space/weight will allow. Always install a battery monitor to check the operational capacity and, wherever possible, top up the charge before every flight, just to be sure.

Digital servos are the future for model control, and anyone who has used them says the difference is so significant that they would never return to standard servos, if there is a digital one available to fit the application. To quote turbine display pilot Steve Elias, 'Digital servo response and precision is like flying on rails. After flying digital servos, analogue versions are like controlling custard'.

So If You Need:

- **Higher resolution - less deadband, more accurate positioning**
- **Faster control response - increased acceleration**
- **Constant torque throughout the servo travel**
- **Increased holding power when stationary**

Digital Servos Are The Only Solution!

A Pair of fast DS Slopers

Bluto!

Bluto is not only an incredibly clean, fast, stable and aerobatic "frontside" slope racer, it is also proving itself to be an amazingly versatile DS SCREAMER. Unballasted, it will fly beautifully in light to moderate-heavy lift, frontside or back. Add a little lead for medium to heavy air and Bluto becomes a big-sky carving, DS winding, ultra stable, high energy bullet with full inverted aerobatic capabilities!

Span: 48"
Wing Area: 378 Sq.In.
Unballasted Flying Weight: 20-22 Ounces
Ballasted Flying Weight: Up to 35 Ounces!
Typical Building Time: 24 to 48 Hours
Building Skills: Moderate or Better
Flying Skills: Moderate to Advanced

The JW

Boomerang Specifications:
Wing Span: 54 in., Wing Area: 432 sq. in., Wing Loading: 10.7 oz./ sq. ft., Weight: 32 Airfoil" Joe Wurts Designed
Construction: EPP Foam & Composite spar, Build Time: 4 - 5 Hours

ISS Contest Flier

TPG Contest Flier

No 24012

CONEJO VALLEY UNIFIED SCHOOL DISTRICT

1400 E. Janss Road • Thousand Oaks, CA 91362-2198 • (805) 497-9511 Date Received by the District Office 3-20-02

Civic Center Application for Rental of School Facilities

1. Application must be submitted two weeks before proposed facility use.
2. After completed, return to the District Office with the Application Fee and an **original Certificate of Insurance.**
3. Permits are void without required insurance coverage.
4. Once approved, the signed pink is the permit. It is mailed to the organization. This notifies the group of estimated fees.
5. **Fees are assessed** based upon facilities requested. Fees are due upon receipt of a CVUSD Invoice/Statement.

Thousand Oaks Soaring Society Requests the use of Redwood
Organization or Sponsor Name of School

FACILITY REQUESTED: 1) Field 2)
Example: Multipurpose room, gym, stadium, football or soccer field(s), baseball diamond(s), classroom(s), cafeteria, restroom, or theater. Kitchens and Theaters **require** district employees (appointed by the District Office) to operate the equipment.

ADDITIONAL ITEMS: ______
Example: Set-up/Tables, chairs, projector, microphone, piano, stage, or podium. Include quantity of each item needed.

INDICATE DATES AND HOURS DESIRED

Day of Week	Date(s) (Permit must be renewed each year)	Hours: From/To use AM/PM
Example: Mondays-Thursdays	January 12, 2001 to March 30, 2001	4:00 PM – 8:00 PM
Saturday	April 01 - 2002	Field to be used only
Sunday	~~[illegible]~~	when not needed by
	March 6, 2003	school or other organized
		activities.

Approximate attendance: 12 Purpose of meeting: Flying model sailplanes.

Responsibility

The undersigned states that, to the best of knowledge, the school property for use, of which application is hereby made, will not be used for the commission of any act intended to further any program or movement the purpose of which is to accomplish the overthrow of the government of the United States by force, violence, or any unlawful means, and that, to the best of knowledge, is not a Communist-action organization or Communist-front organization required by law to be registered with the Attorney General of the United States. Applicant hereby agrees to hold CVUSD, its Board of Education, the individual members thereof, and all District officers, agents and employees free and harmless from such loss, damage, liability, cost and expense that may arise during or be caused in any way by such use or occupancy of school property. Further, the organization or group you represent shall assume full responsibility for adequate care and protection of the school property involved under the request, and will reimburse the District in full for any damage or loss, which might occur. **Applicant guarantees payment of all fees and charges assessed by the school district. In the event of cancellation, the applicant agrees to notify the CVUSD Civic Center 48 hours in advance to avoid paying full charges. You will be charged for any costs incurred due to a cancellation.**

I have read the district's rules and regulations indicated and will comply with them:

Print Name and Title Martin Usher Signature [signature] Date 03-21-02

Mailing Address 3081 Rancho Circle Business Telephone # 805 376-6821
Thousand Oaks CA 91362 Home Telephone # 805 [illegible] 1176
City State Zip Code

THIS SECTION IS FOR DISTRICT USE ONLY: **FEES** Application Fee $ 10.00 Paid CR #5772
Rent 4.46 hr per field /Hour Utilities ______ /Hour Custodial Services ______ /Hour Gym Floor Care ______ /Hour
Custodial Supplies ______ per Attendee per day Other: ______ **Estimate of Total Fees Due $** ______
Insurance Company on file Policy # ______ Expiration Date 3/31/03

APPROVALS: District Additionally Insured: Yes ___ No ___
Principal's Signature [signature] Approved X Not Approved ___ Date 3/26/02
Reason for non-approval ______
District Office Approval [signature] Title Assist Supt 4/4/02

White: District Office Canary: School Pink: Organization's Permit (Will be mailed by District Office) Goldenrod: School
CVUSD 90-00002 /25 PK (Revised 3/15/01)

Note: Fields will be used by CVYF on Saturday in the Fall

ISS (SC)^2 Winch Contest:- Sunday, April 21st at Perris
Next Meeting:- Wednesday, April 24th at "TBD"
May's Club Contest:- Saturday, May 11th at Redwood
PSS (SC)^2 HLG Contest:- Saturday, May 11th at Poway
PSS (SC)^2 Winch Contest:- Sunday, May 19th at Poway

Thousand Oaks Soaring Society
Martin Usher
3081 Roundup Circle,
Thousand Oaks, CA91360