

# Plane RAP

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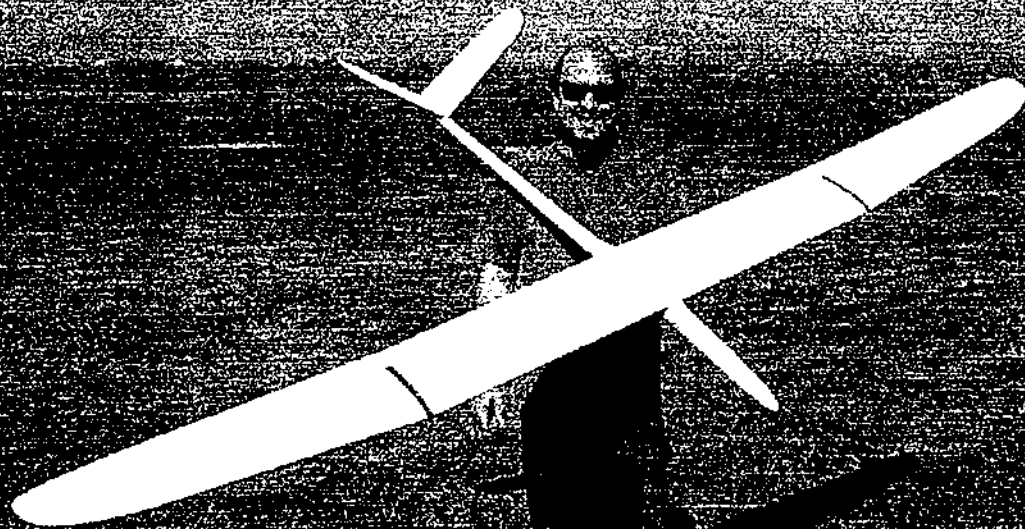
- ▣ What's A SC2?
- ▣ The Views
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- ▣ Wing Tidbits

Harbor Soaring Society

AMA Charter #128

The Western Soaring Capital

## "The Hera"



Tom Copp

# Club Information

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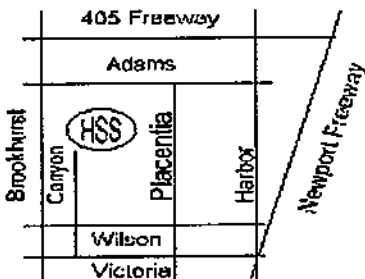
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**General Director**

Roger MacGregor  
949-642-6830

## Flying Site



**Cover** - Tom Copp grabs his new molded ship named "The Hera". The Hera is designed around the 7035 wing platform and moves out when necessary. It's reasonable price makes this a good choice for Open Class competition.



## The Kenyon Chronicles

A Message from the Pres. -



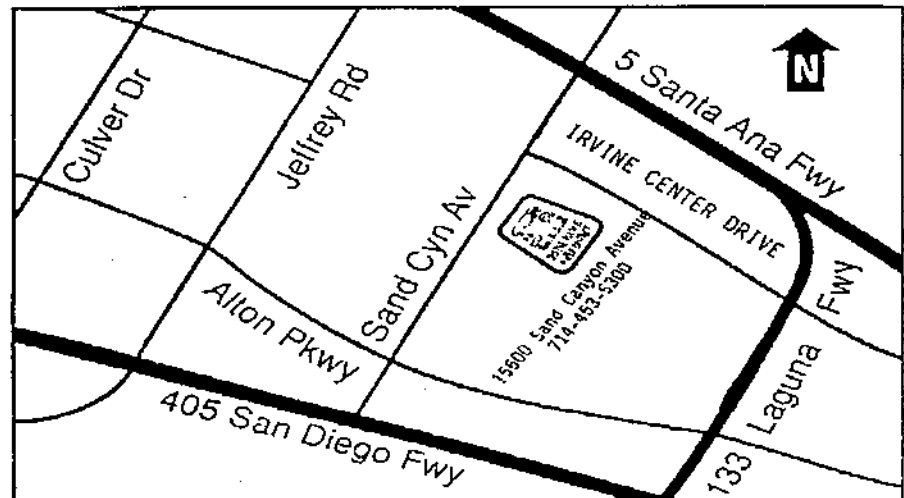
*Les Kenyon*

## Contest Season Is About Here!

### Constitutional By - Law Changes:

For the past few months, the Board of Directors, have been reviewing our By- Laws with the intent of updating them to reflect the way our club does business. With this in mind we have made some clarifications where needed and dropped some items that weren't. The revised Constitution and by - laws will be available at the field for the month of April - please take a look. These changes are highlighted in bold print. We are all in this club together so take a few moments and review. I need your participation to make this club the best it can be. We need 50% of all paid members to vote on these changes - so we

### Notice: Meeting Tuesday 4-6-99 at the Irvine Water District Office



Note: The Irvine Ranch Water District neither supports or endorses the cause or activities of Organizations which use the District's meeting rooms that are made available as a public service.

# The Kenyon Chronicles Continued

*(Continued from page 2)*

**will have ballots and a ballot box at the field for those members who don't make the April meeting.**

**Now, continuing with more important business -** It is my sad duty to report to you that HSS-1, also known as the Presidents plane - has bit the dust. After many months of flying my 126 full house PolyBlaster, the decision was made to fly HSS-1. After 4 great test flights, I gave the Presidential order to launch again to presidential test pilot, Chris Kenyon. First Officer Kenyon stepped hard on the winch pedal and sent HSS-1 upward. Immediately after launching to a height of about 20ft, the violent death spiral began. Unfortunately First Officer Kenyon had no control as the Presidential plane plunged nose first into the ground splattering only feet from it's builder and designer, Rick Briggs. As President, I assume all the blame for forcing First Officer Kenyon to pilot HSS-1 instead of skating around on his board. What was I thinking??

**Latest New Flash! -**

Chief HSS builder Rick Briggs and First Officer Kenyon have reviewed the Presidential tapes from the Secret Service and have agreed that HSS-1 acted as if it had been shot down. As of this writing, I have ordered the HSS crash investigation team, headed by Vice-President Karl Hawley to personally look into this serious matter. I can only report that several Torrey Pine Gull team members were present during this incident. Once forensic testing has been completed and if evidence points to Team Torrey Pines for their involvement of the crash of HSS-1, I will personally order air strikes. I will asked each and every one of you to battle the evil empire from Torrey Pines at every contest this year. Now get out there and make me proud. Team HSS must prevail! In the mean while, Vice-President Karl assures me that plans are underway to salvage HSS-1, otherwise we will be holding an early plane auction.

Men, may the force be with us during this tough period. Till next month - Good flying

*Les*

## Mar. 1999 Minutes

President Les Kenyon opened the meeting at 7:30pm 3/2/99

Vice-Presidents report - Blah, Blah, Blah, Blah, Blah, Blah

Treasurer's report - Still Solvent

CD's report - Still having contests this year

President Les Kenyon closes the meeting at around 8 pm.

Vice-President Karl Hawley introduces Joe Ballasch from Leisure Electronics.

## Tom Copp Launches The Hera



## DO YOU HAVE ANY SPARE QUARTERS FOR



## MY RIDING MACHINE?

## March Contest



Dick Pantzer Gets Ready To Launch

### Contest - Sun. Mar 7, 1999

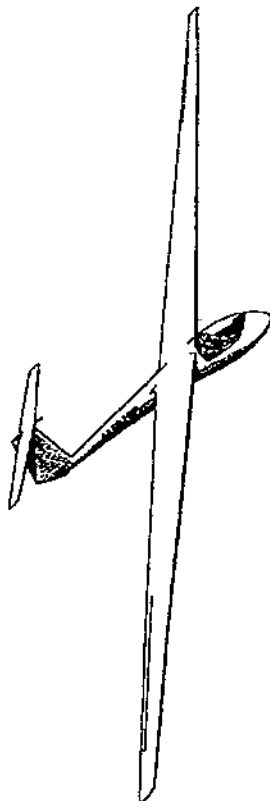
The talk of the day was wind. Sustained winds of 25 to 35 MPH made flying a "pain in the face". The dirt field at HSS provided plenty of sand and pebbles to duck from. Finally after 3 rounds CD - Nick Buzolich called the contest. All agreed that enough was enough and the fourth round would just be dropped. The final results are shown below:

### OPEN

Larry Jolly 1000 1st Masters  
 Steve Hendry 998  
 Joe Rodriguez 998  
 Tom Vincent 998 1st Expert  
 Tom Copp 997 2nd Expert  
 Mark Taylor 995 3rd Expert  
 Karl Hawley 991 1st Advanced  
 Roger Saville 927  
 Roger MacGregor 774  
 Ross Thomas 663  
 Mike Marjoseph 543

### CLASSIC

Mike Marjoseph 1000 1st  
 Ross Thomas 816 2nd  
 Larry Jolly 712 3rd  
 Roger MacGregor 457  
 Dick Pantzer 442  
 Gordon Paulsen 326  
 Will Conrad 322



## Classified Ads

**For Sale** - 118 inch Mako with Sage 7037 wings. Great shape with 6 metal geared servos, carbon and steel wing rods. \$525 talk to Tom Vincent or email him at: tvtom@access1.net

## Cyber Central

Do you want some more information about the Hera featured on the front cover of this issue? Then check out their website at:

<http://www2.jonction.net/~icare/hera.htm>

The site provides specifications, prices, and other plane offerings. You can also talk to Tom Copp.

Another interesting site is from Critter Bits. Lots of links to other RC interests:

<http://www.multiplexrc.com/airlinks.htm>

SC2 Contest Results can be found at:

[http://home.earthlink.net/~john\\_brown/index.htm](http://home.earthlink.net/~john_brown/index.htm)

### GET YOUR FEET OFF THE GROUND AT THE OSCA BBQ/OPEN HOUSE SATURDAY APRIL 17TH.

Interested in trying full-size gliders? Orange County Soaring Association, located at Hemet-Ryan Airport, is having an Open house on April 17th beginning at 10AM. For those interested in learning to fly, glider rides will be offered on a first come first server basis for the cost of a tow or \$35. Food and drink will also be provided at a nominal cost (rumor has it that Tri-tip sandwiches might be cook'in) Bring along a lawn chair and hang out at the field on a Spring day with the OSCA gang. For more information email Lars at : LarSwan@AOL.com



## Nick's Views

Nick Buzolich

I don't have much to talk about this month but I'm wondering if everyone is feeling like I am about how busy May is for an HSS contest? I want to talk about this at April's monthly meeting. Since we haven't had any rain dates this year, I believe we could afford to throw out this contest. Doing so would probably benefit the majority of the membership by allowing them to participate in other events. What do you think? Come to this month's meeting and let's figure this out.

Take a look at this:

May 1 and 2nd - Rose Bowl Contest  
 May 2nd - scheduled date for HSS contest  
 May 9th - Mothers Day  
 May 15 and 16th - Bent Wing Contest @ Visalia  
 May 23rd - SC2  
 May 30th - Memorial weekend.

The best of lift, *Nick*



## Winch Corner

Dick Pantzar

This month I wanted to talk about winch safety. We had an incident at the March contest that could have turned out real ugly. If not for the acrobatics of this individual, a serious wound would have occurred because of the retriever line. I can't state this enough that **"it is the winch operators responsibility to see if the coast is clear prior to launching and to be sure that the retriever line doesn't wrap around anything when retrieving"**. The winch line will cut anything it touches especially human flesh. Please, when you sit down to operate the winch, look once, look twice, and look three times to be sure that nothing is in the way. We don't want anyone getting hurt out there.

Until next month, I hope my winches get you off.



## KARL THE VICE-PRESIDENT

Karl V. Hawley

I went to San Diego Friday Feb 12 and 13th for an Electric Flyers event. Their field is near Mission Bay which is close to Sea World. What fun but the highlight of this trip was walking around the electric flight symposium at the Aerospace museum in Balboa Park. We were given a special tour on Friday and Saturday evening that gained us access to the basement where they were restoring a Ford Tri-motor. Do you know what I noticed? That Tri-motor didn't have restroom holding tanks. Just a big hole in the floor that I'm sure was big enough to allow you to see the roof tops below. I wonder how many folks on the ground ran for cover when they saw these planes fly over? Anyway, if you want to see flying history, get to the Aerospace Museum in Balboa park. Oh yea, before I forget, another advantage to go to San Diego is the food! I actually stopped my "seefood" diet to eat nothing else but Mexican, YUMMMY!

I wanted to personally thank Joe Ballasch from Leisure Electronics for his talk about flying electrics at the March meeting. We certainly learned a few things.

Upcoming events include a discussion from Dave Sanders about his latest foamie creations for the slope at the April meeting. Also, don't forget about the Pasadena two contest at the Rose Bowl on May 1st and 2nd. This is the second contest of the Triad. The first one took place back in February in Arizona and everything concludes in Visalia in October. There is an ISSA fun fly in Apple Valley on April 24th and lets not forget about the two day bent wing contest on May 15th and 16th sponsored by Central Valley R/C soaring club. For additional details about this contest, either talk to me or call Jerry Fox at (559) 733-8091.

And that's it!

*Karl*

MANUFACTURER	P/N	DESCRIPTION	TORQUE (oz./in)	WEIGHT (oz.)	SIZE W x L x H (in.)	SPEED sec/60	BALL BEARINGS	MOTOR	METAL GEARS	RETAIL	Torque/wt
AIRTRONICS	94501	MicroLite	29	0.57	0.50x1.07x1.07	0.23	None	Coreless	No	89.95	50.0
AIRTRONICS	94555	MicroLite w/Aluminum gears	30	0.58	0.50x1.07x1.07	0.21	None	Coreless	Al	109.95	51.0
AIRTRONICS	94407	Micro	29	0.96	0.60x1.23x1.23	0.23	Dual	Coreless	Mixed	79.95	30.0
AIRTRONICS	94831	Mini	38	1.10	0.71x1.46x1.16	0.21	Single	3-Pole Ferrite	No	54.95	34.5
AIRTRONICS	94145	Micro w/Al output/BB	33	1.11	0.60x1.42x1.29	0.07	Single	Coreless (6V)	Al output	99.95	29.7
AIRTRONICS	94141	Micro	45	1.17	0.60x1.42x1.29	0.20	Single	Coreless	Yes	89.95	38.5
AIRTRONICS	94102	Precision Heavy Duty Standard	50	1.59	0.79x1.54x1.42	0.22	None	3-Pole Ferrite	No	34.95	31.4
AIRTRONICS	94921	Low Profile Ball Bearing	75	1.60	0.88x1.75x0.92	0.16	Dual	Coreless	No	119.95	46.9
AIRTRONICS	94924	Low Profile Ball Bearing Retract	85	1.60	0.88x1.75x0.92	0.48	Dual	3-Pole Ferrite	No	99.95	53.1
AIRTRONICS	94734	CONTEST Retract	74	1.73	0.79x1.54x1.38	0.40	Dual	5-Pole Ferrite	Mixed	89.95	42.8
AIRTRONICS	94739	CONTEST Proportional Retract	74	1.77	0.79x1.54x1.38	0.42	Dual	5-Pole Ferrite	Mixed	99.95	41.8
AIRTRONICS	94742	CONTEST GP High Speed	50	1.79	0.79x1.54x1.38	0.11	Dual	3-Pole Ferrite	No	69.95	27.9
AIRTRONICS	94731	CONTEST Aircraft & Heli	80	1.80	0.79x1.54x1.38	0.17	Dual	Coreless	No		44.4
AIRTRONICS	94267	ERG-2R High Speed w/AL gear	110	1.80	0.79x1.54x1.38	0.06	Dual	Coreless (6V)	Yes		61.1
AIRTRONICS	94258	ERG-2B High Torque w/AL gear	145	1.80	0.79x1.54x1.38	0.09	Dual	Coreless (6V)	Yes		80.6
AIRTRONICS	94743	CONTEST AP Standard	60	1.83	0.79x1.54x1.38	0.20	Dual	3-Pole Ferrite	No	69.95	32.8
AIRTRONICS	94737	CONTEST High Speed	57	1.95	0.79x1.54x1.38	0.15	Dual	Coreless	Mixed	89.95	29.2
AIRTRONICS	94738	CONTEST High Torque	71	1.95	0.79x1.54x1.38	0.21	Dual	Coreless	Yes	89.95	36.4
AIRTRONICS	94322	Precision Heavy Duty Standard	50	2.07	0.79x1.54x1.48	0.20	Single	Coreless	No	49.95	24.2
AIRTRONICS	94452	PRO Contest Airplane High Speed	80	2.10	0.79x1.54x1.48	0.11	Dual	Coreless	No		38.1
AIRTRONICS	94451	PRO Contest Heli High Speed	90	2.10	0.79x1.54x1.48	0.15	Single	Coreless	No		42.9
AIRTRONICS	94453	PRO Contest Air High Torque	100	2.10	0.79x1.54x1.48	0.17	Dual	Coreless	No		47.6
AIRTRONICS	94181	Pro Large Scale	135	2.50	0.79x1.54x1.65	0.25	Dual	3-Pole Ferrite	Yes	114.95	54.0
AIRTRONICS	94581	Sail Winch - Arm Type	170	4.94	1.58x3.65x1.78	1.78	None	3-Pole Ferrite	No	69.95	34.4
CANNON	UM-1	Ultra-Micro	14	0.33	0.44x0.84x1.16	0.20	None	Ferrite	No	59.95	42.4
CANNON	CE-9	Micro-Elite	24	0.37	0.45x0.97x1.08	0.24	None	Ferrite	No	54.95	65.8
CANNON	CE-9RT	Micro-Elite Retract (150 Degree)	24	0.37	0.45x0.97x1.08	0.24	None	Ferrite	No	58.95	65.8
CANNON	CE-15	CE-15A Star	30	0.90	0.75x1.50x1.16	0.18	None	Ferrite	No	39.95	33.3
CANNON	CE-15RT	CE-15A Retract (170 Degree)	30	0.90	0.75x1.50x1.16	0.18	None	Ferrite	No	42.95	33.3
CIRRUS	CS-10	Molecular Micro	7	0.19	0.37x0.90x0.81	0.09	Single	Ferrite	No	44.95	36.8
CIRRUS	CS-20BB	Sub-Micro	11	0.32	0.43x0.88x0.77	0.11	Single	Ferrite	No	39.95	34.4
CIRRUS	CS-21BB	Sub-Micro, High Performance	19	0.32	0.43x0.88x0.77	0.09	Single	Ferrite	No	47.95	59.4
CIRRUS	CS-25BB	Sub-Micro, Professional	22	0.49	0.50x1.06x0.88	0.12	Single	Ferrite	No	42.95	44.9
CIRRUS	CS-26BB	Sub-Micro	25	0.49	0.50x1.06x0.88	0.15	Single	Ferrite	No	44.95	51.0
CIRRUS	CS-30BB	Mini "3002" Type	44.4	0.85	0.63x1.22x1.21	0.23	Single	Ferrite	No	34.95	52.0
CIRRUS	CS-90BB	Fast Low Profile	31.75	1.13	0.88x1.75x1.13	0.09	Dual	Ferrite	No	29.95	2
CIRRUS	CS-100	Low Profile Retract	102.7	1.20	0.89x1.78x0.97	0.50	Dual	Ferrite	Yes	41.95	85.0
CIRRUS	CS-90	Standard Low Profile	38.8	1.48	0.88x1.75x1.13	0.14	None	Ferrite	No	21.95	26.2
CIRRUS	CS-50	Standard Sport	42.3	1.48	0.74x1.52x1.26	0.16	None	Ferrite	No	16.95	28.6
CIRRUS	CS-70	Standard	43.68	1.55	0.79x1.59x1.50	0.15	None	Ferrite	No	18.95	28.2
CIRRUS	CS-70BB	Professional	43.68	1.55	0.79x1.59x1.50	0.15	Dual	Ferrite	No	24.95	28.2
CIRRUS	CS-60 2BB	Car/Heli	48.25	1.58	0.79x1.60x1.49	0.17	Dual	Ferrite	No	26.75	29.3
CIRRUS	CS-75BBCL	BB Coreless Hi Speed	86	1.59	0.77x1.57x1.37	0.10	Dual	Coreless	No	79.95	41.5
CIRRUS	CS75BBMG	BB Coreless Hi Speed w/MG	66	1.59	0.77x1.57x1.37	0.10	Dual	Coreless	Yes	86.95	41.5
CIRRUS	CS-65BBCL	BB Bearing Coreless Hi Torque	102	1.59	0.77x1.57x1.37	0.16	Dual	Coreless	No	79.95	64.2
CIRRUS	CS-60 MG BB	Car/Heli, Metal Gear	52	1.94	0.79x1.60x1.49	0.21	Dual	Ferrite	Yes	36.95	26.8
CIRRUS	CS-80 MG BB	1/8 Scale Car/Heli	114.58	2.01	0.79x1.60x1.69	0.31	Dual	Ferrite	Yes	39.95	57.0
CIRRUS	CS-400	Giant Pro, BB	139	4.00	1.04x2.15x2.03	0.25	Dual	Ferrite	No	36.95	34.8
CIRRUS	CS-600	FET Jumbo, BB	250	4.78	1.27x2.45x2.22	0.28	Dual	Ferrite	No	74.95	52.3
CRITTER	CBP-788	Micro	15	0.52	0.52x1.02x0.94	0.20	None		No	19.95	28.8
CRITTER	CBP-588	Midi	31	0.81	0.54x1.10x1.10	0.20	None		No	19.95	50.8
CRITTER	CBM-788	Micro w/metal gears	21	0.67	0.52x1.02x0.94	0.20	None		Yes	24.95	31.3
CRITTER	CBP-688	Mini	27	0.67	0.54x1.14x1.10	0.20	None		No	19.95	40.3
CRITTER	CBM-688	Midi w/metal gears	31	0.74	0.54x1.10x1.10	0.20	None		Yes	24.95	41.9
CRITTER	CBM-688	Mini w/metal gears	39	0.79	0.54x1.14x1.10	0.20	None		Yes	29.95	49.4
CRITTER	CBP-488	Max	25	1.06	0.62x1.22x1.20	0.14	None		No	17.95	23.6
CRITTER	CBP-388	Lite	33	1.12	0.70x1.46x1.18	0.17	None		No	19.95	29.5
CRITTER	CBM-488	Max w/metal gears	27	1.16	0.62x1.22x1.20	0.14	None		Yes	24.95	23.3
CRITTER	CBM-388	Lite w/metal gears	33	1.38	0.70x1.45x1.18	0.17	None		Yes	24.95	24.3
CRITTER	CBP-288	Super	35	1.48	0.78x1.61x1.41	0.20	None		No	9.95	23.6
CRITTER	CBP-188	Std	48	1.67	0.78x1.61x1.61	0.23	None		No	9.95	25.7
CRITTER	CBP-1188	Pro	69	1.90	0.78x1.61x1.61	0.18	None		No	17.95	35.3
CRITTER	CBM-288	Super w/metal gears	39	1.97	0.78x1.61x1.41	0.20	None		Yes	20.95	19.8
CRITTER	CBM-1188	Pro w/metal gears	69	2.29	0.78x1.61x1.61	0.20	None		Yes	24.95	30.1
CRITTER	CBM-188	Std w/metal gears	48	2.30	0.78x1.61x1.61	0.23	None		Yes	15.95	20.8
CRITTER	CBM-1188 BFM	Pro w/metal gears	138	2.38	0.78x1.61x1.61	0.20	None		Yes	39.95	58.0
CRITTER	CBP-088	Giant	111	2.53	1.14x2.32x2.04	0.22	None		No	19.95	31.4
EXPERT	SL200		12	0.32		0.13				20.95	37.5
EXPERT	SL220		22	0.48		0.14				22.95	4
EXPERT	SL300		42	0.63		0.23				19.95	6
EXPERT	SL320		53	0.85		0.19				21.95	62.4
EXPERT	SL600		42	1.10		0.20				13.95	38.2
EXPERT	SL630		103	1.20		0.50				23.95	85.8
EXPERT	SL620		53	1.20		0.17				16.95	44.2

Data shown is based on information provided to author at time of entry and may not represent the manufacturer's current specifications or prices. Entry prices based on various converters are not shown.

MANUFACTURER	P/N	DESCRIPTION	TORQUE (oz./in)	WEIGHT (oz.)	SIZE W x L x H (in.)	SPEED sec/60	BALL BEARINGS	MOTOR	METAL GEARS	RETAIL	torque/wt
EXPERT	SL500		40.3	1.47		0.25				11.95	27.4
EXPERT	SL800		173	5.12		0.29				39.95	33.8
EXPERT	SLB20		214	5.60		0.19				49.95	38.2
FMA DIRECT	S70	Super Sub Micro	11	0.25	0.37x0.90x0.72	0.11	No	3-Pole Ferrite	No	29.95	44.0
FMA DIRECT	S80	Sub Micro BB	11.1	0.32	0.43x0.85x0.78	0.11	Single	3-Pole Ferrite	No	19.75	34.7
FMA DIRECT	S90	Sub Micro BB	19	0.32	0.43x0.85x0.78	0.09	Single	3-Pole Ferrite	No	24.95	59.4
FMA DIRECT	S95	Micro BB	22	0.46	0.50x1.06x0.88	0.12	Single	3-Pole Ferrite	No	19.75	47.8
FMA DIRECT	S100	Micro BB	25	0.49	0.50x1.06x0.97	0.15	Single	3-Pole Ferrite	No	21.95	51.0
FMA DIRECT	S200	Mini Double BB	44.5	0.85	0.63x1.22x1.21	0.23	Single	3-Pole Ferrite	No	21.95	52.4
FMA DIRECT	S600	Low Profile Retract BB	100	1.13	0.89x1.78x0.97	0.50	Single	3-Pole Ferrite	No	24.75	88.5
FMA DIRECT	S700	Low Profile, High Speed BB	30.5	1.20	0.89x1.78x1.13	0.09	Single	3-Pole Ferrite	No	17.95	25.4
FMA DIRECT	S701	Low Profile Std	34.7	1.48	0.89x1.76x1.13	0.16	No	3-Pole Ferrite	No	12.95	23.4
FMA DIRECT	S300	Standard Bronze Bushing	41.7	1.55	0.80x1.60x1.50	0.14	Bronze	3-Pole Ferrite	No	10.95	26.9
FMA DIRECT	S301	Standard BB	41.7	1.55	0.80x1.60x1.50	0.14	Dual	3-Pole Ferrite	No	14.95	26.9
FMA DIRECT	S350	Standard	50	1.69	0.80x1.60x1.50	0.21	None	3-Pole Ferrite	No	17.95	29.6
FMA DIRECT	S355	Dbl BB Hi-Output	114	1.69	0.80x1.70x1.50	0.31	Dual	3-Pole Ferrite	No	19.95	67.5
FMA DIRECT	S360	Hi-Output, High Speed, Dbl BB	81	1.69	0.80x1.70x1.50	0.19	Dual	3-Pole Ferrite	No	19.95	47.9
FMA DIRECT	S3501	Coreless 2BB	83	1.73	0.80x1.60x1.50	0.10	Dual	Coreless	No	44.95	48.0
FMA DIRECT	S3551	Coreless 2BB	98	1.73	0.80x1.60x1.50	0.16	Dual	Coreless	No	44.95	56.6
FMA DIRECT	S3601	Coreless 2BB	108	1.73	0.80x1.60x1.50	0.13	Dual	Coreless	No	44.95	62.4
FMA DIRECT	S3501 M	Coreless 2BB w/Metal Gears	83	1.83	0.80x1.60x1.50	0.10	Dual	Coreless	Yes	47.95	45.4
FMA DIRECT	S3551 M	Coreless 2BB w/Metal Gears	98	1.83	0.80x1.60x1.50	0.18	Dual	Coreless	Yes	47.95	53.6
FMA DIRECT	S3601 M	Coreless 2BB w/Metal Gears	108	1.83	0.80x1.60x1.50	0.13	Dual	Coreless	Yes	47.95	59.0
FMA DIRECT	S350 M	Double BB w/ Metal Gear	50	1.94	0.80x1.60x1.50	0.21	Dual	3-Pole Ferrite	Yes	19.95	25.8
FMA DIRECT	S355 M	Dbl BB Hi-Output w/Metal Gear	114	2.00	0.80x1.70x1.50	0.31	Dual	3-Pole Ferrite	Yes	21.95	57.0
FMA DIRECT	S360 M	Hi-Output, Hi-Speed, Dbl BB w/MG	81	2.00	0.80x1.70x1.50	0.19	Dual	3-Pole Ferrite	Yes	21.95	40.5
FMA DIRECT	S400	Giant Dbl BB	(180.5)	4.00	1.04x2.14x2.02	0.20	Dual	3-Pole Ferrite	No	24.95	45.1
FMA DIRECT	S500	Giant - BB - FET	(298)	5.40	1.27x2.48x2.22	0.22	Dual	3-Pole Ferrite	No	44.95	55.2
FMA DIRECT	S550	360 Degree Sail Winch	(298)	5.40	1.27x2.48x2.22	0.25	Dual	3-Pole Ferrite	No	54.95	55.2
FMA DIRECT	S555	180 Degree Sail Arm	(298)	5.40	1.27x2.48x2.22	0.25	Dual	3-Pole Ferrite	No	54.95	55.2
FUTABA	S3103	Micro Mini	16.7	0.34	0.43x0.85x0.78	0.11	None	Ferrite	No	49.95	49.1
FUTABA	S3101	Micro	34.7	0.60	0.51x1.10x1.17	0.22	Okite	Ferrite	No	69.95	57.8
FUTABA	S3102	Micro w/ metal gears	51.4	0.74	0.51x1.10x1.17	0.25	Okite	Ferrite	Yes	109.95	69.5
FUTABA	S9502	Coreless High Speed w/BB	37.5	1.09	0.59x1.41x1.47	0.09	Dual	Coreless	Yes	124.95	34.4
FUTABA	S3002	High Torque Mini w/MG	45.8	1.23	0.53x1.22x1.19	0.16	Dual	5-Pole Ferrite	Yes	109.95	37.2
FUTABA	S3003	Standard	44.4	1.30	0.78x1.59x1.42	0.22	Okite	Ferrite	No	29.95	34.2
FUTABA	S1366	Compact Retract	75.4	1.48	0.89x1.76x1.00	0.50	Dual	5-Pole Ferrite	Yes	84.95	51.6
FUTABA	S148	Standard	41.7	1.50	0.78x1.59x1.42	0.22	Okite	3-Pole Ferrite	No	39.95	27.8
FUTABA	S3001	Standard	41.7	1.59	0.78x1.59x1.42	0.22	Okite/BB	3-Pole Ferrite	No	44.95	26.2
FUTABA	S9101	High Speed Std.	43.1	1.59	0.77x1.52x1.36	0.16	Dual	Ferrite	No	108.95	27.1
FUTABA	S9102	Coreless Wing Mount	50	1.62	0.87x1.78x1.02	0.13	Dual	Coreless	No	134.99	30.9
FUTABA	S3401	High Speed w/ball bearings	44.4	1.66	0.79x1.54x1.47	0.15	Dual	Ferrite	No	89.95	26.7
FUTABA	S9001	Coreless w/ ball bearing	54.2	1.69	0.78x1.59x1.42	0.22	Okite/BB	Coreless	No	79.95	32.1
FUTABA	S9202	Helix - Coreless w/ball bearing	69.4	1.76	0.79x1.59x1.40	0.22	Dual	Coreless	No	109.95	39.4
FUTABA	S9304	Coreless High Torque w/BB	69.4	1.76	0.79x1.59x1.40	0.22	Dual	Coreless	Yes	103.95	39.4
FUTABA	S9203	Helix - Coreless w/ ball bearings	76.4	1.87	0.79x1.59x1.48	0.11	Dual	Coreless	Yes	159.95	40.9
FUTABA	S9205	Helicopter w/BB	76.4	1.87	0.79x1.59x1.48	0.11	Dual	Coreless	Yes	40.9	40.9
FUTABA	S9204	High Torque	131.9	1.88	0.79x1.59x1.48	0.19	Dual	Ferrite	Yes	159.95	70.2
FUTABA	S9404	Coreless High Torque w/BB	79.2	1.94	0.79x1.54x1.47	0.11	Dual	Coreless	Yes	124.95	40.8
FUTABA	S9402	Coreless High Torque w/BB	111.1	1.94	0.79x1.59x1.48	0.09	Dual	Coreless	Yes	159.95	57.3
FUTABA	S9303	High Torque	100	2.28	0.79x1.59x1.56	0.19	Dual	Ferrite	Yes	124.95	43.9
FUTABA	S125	Sail - Arm Type	129.2	2.30	0.91x1.78x1.66	0.62	Single	Ferrite	No	74.95	56.2
FUTABA	S5801	Sail Winch	136.1	2.93	0.98x1.61x1.73	0.50	Dual	Ferrite	Yes	224.95	46.5
FUTABA	S3302	Quarter Scale w/metal gears	111	3.60	1.13x2.33x1.96	0.19	Dual	5-Pole Ferrite	Yes	109.95	30.8
FUTABA	S3501	Sail - Arm Type	194	3.77	1.13x2.33x1.96	0.22	Dual	5-Pole Ferrite	Yes	109.95	51.5
Hitec RCD	HS-60	Feather	7.91	0.22	0.44x0.82x0.87	0.09	None	3-Pole Ferrite	No	59.95	36.0
Hitec RCD	HS-60	Super Micro	15.4	0.49	0.51x1.02x0.94	0.21	None	3-Pole Ferrite	No	59.95	31.4
Hitec RCD	HS-B1	Mighty Micro	32	0.70	0.48x1.2x1.2	0.12	None	3-Pole Ferrite	No	35.99	45.7
Hitec RCD	HS-85 BB	Mighty Micro	38	0.70	0.45x1.1x1.15	0.18	Single	3-Pole Ferrite	No	49.95	54.3
Hitec RCD	HS-B1 MG	Mighty Micro w/metal gears	32	0.84	0.48x1.2x1.2	0.12	None	3-Pole Ferrite	Yes	46.99	38.1
Hitec RCD	HS-85 MG	Mighty Micro w/ metal gears	42	0.85	0.45x1.1x1.15	0.16	Single	3-Pole Ferrite	Yes	58.95	49.4
Hitec RCD	HS-101	Mini	23.8	0.93	0.5x1.3x1.2	0.20	None	3-Pole Ferrite	No	33.95	25.6
Hitec RCD	HS-205 BB	Super Mini	43.3	0.98	0.7x1.3x1.2	0.20	Single	3-Pole Ferrite	No	41.95	44.2
Hitec RCD	HS-225 BB	Mighty Mini	55	0.98	0.7x1.3x1.2	0.14	Single	3-Pole Ferrite	No	49.95	56.1
Hitec RCD	HS-225 MG	Mighty Mini w/metal gears	55	1.10	0.7x1.3x1.2	0.14	Single	3-Pole Ferrite	Aluminum	58.95	50.0
Hitec RCD	HS-205 MG	Super mini w/metal gears	43.3	1.13	0.7x1.3x1.2	0.20	Single	3-Pole Ferrite	Yes	59.95	38.3
Hitec RCD	HS-235 AG	Mini w/aluminum gear	35	1.20	0.7x1.3x1.2	0.11	Dual	3-Pole Ferrite	Aluminum	79.95	29.2
Hitec RCD	HS-75 BB	Retract	92.4	1.23	0.9x1.7x1.0	0.50	Single	3-Pole Ferrite	One	59.95	75.1
Hitec RCD	HS-77 BB	Low Profile, BB	61	1.30	0.9x1.7x1.0	0.18	Single	3-Pole Ferrite	No	59.95	46.9
Hitec RCD	HS-300	Standard Sport I	42	1.57	0.8x1.6x1.4	0.19	Nylon (1)	3-Pole Ferrite	No	17.95	26.8
Hitec RCD	HS-525 BB	High Speed	46.2	1.57	0.8x1.6x1.4	0.16	Single	5-Pole Ferrite	No	59.95	29.4
Hitec RCD	HS-300 BB	Standard Sport I	42	1.60	0.8x1.6x1.4	0.19	Single	3-Pole Ferrite	No	20.95	26.3
Hitec RCD	HS-303	Standard Sport II	42	1.60	0.8x1.6x1.4	0.19	None	3-Pole Ferrite	No	17.95	26.3
Hitec RCD	HS-545 BB	High Torque	61.6	1.60	0.8x1.6x1.4	0.21	Single	5-Pole Ferrite	No	59.95	38.5
Hitec RCD	HS-422	Daluxe	43.4	1.65	0.8x1.6x1.4	0.20	Okite (1)	3-Pole Ferrite	No	19.95	28.3

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MANUFACTURER	P/N	DESCRIPTION	TORQUE loz./in.	WEIGHT (oz.)	SIZE W x L x H (in.)	SPEED sec/60	BALL BEARINGS	MOTOR	METAL GEARS	RETAIL	torque/wt
Hitec RCD	HS-425 BB	Standard Pro Ball Bearing	43.4	1.65	0.8x1.6x1.4	0.20	Dual	3-Pole Ferrite	No	29.95	26.3
Hitec RCD	HS-605 BB	Ultra Torque w/helical gear	77	1.73	0.8x1.6x1.5	0.16	Dual	3-Pole Ferrite	No	59.95	44
Hitec RCD	HS-925 MG	High Speed w/metal gears	47	1.80	0.8x1.5x1.4	0.16	Single	5-Pole Ferrite	Yes	69.95	26.1
Hitec RCD	HS-925 MG	High Speed Coreless	84	2.00	0.8x1.5x1.4	0.10	Dual	Coreless	Yes	149.95	42.0
Hitec RCD	HS-945 MG	High Torque Coreless	123	2.00	0.8x1.5x1.4	0.15	Dual	Coreless	Yes	149.95	61.5
Hitec RCD	HS-605 MG	Ultra Torque w/metal gears	77	2.12	0.8x1.6x1.5	0.16	Dual	3-Pole Ferrite	Yes	70.95	35.3
Hitec RCD	HS-615 MG	Super Torque w/metal gears	107	2.12	0.8x1.6x1.5	0.22	Dual	3-Pole Ferrite	Yes	75.95	50.5
Hitec RCD	HS-700 BB	Giant Scale	133	3.60	1.1x2.3x2.0	0.22	Single	3-Pole Ferrite	No	44.95	36.9
Hitec RCD	HS-715 BB	Sail Arm Servo 90 degree	161	3.60	1.1x2.3x2.0	0.27	Single	3-Pole Ferrite	No	53.95	44.7
Hitec RCD	HS-725 BB	Sail Winch - 3.5 Turns	161	3.60	1.1x2.3x2.0	0.27	Single	3-Pole Ferrite	No	73.95	41.3
Hitec RCD	HS-705 MG	Giant Scale w/metal gears	161	4.05	1.1x2.3x2.0	0.27	Single	3-Pole Ferrite	No	69.95	39.8
Hitec RCD	HS-805 BB	Mega Torque	275	5.36	1.2x2.6x2.3	0.19	Dual	3-Pole Ferrite	No	69.95	51.3
Hitec RCD	HS-815 BB	Mega Sail Arm	275	5.36	1.2x2.6x2.3	0.19	Dual	3-Pole Ferrite	No	73.95	51.3
HOBBICO	CS-15	Sub-Micro	15.1	0.49	0.5x1.0x0.9	0.20	None	3-Pole Ferrite	No		30.8
HOBBICO	CS-12	Hi-Speed Micro	35	0.62	0.5x1.2x1.1	0.11	None	3-Pole Ferrite	No		56.5
HOBBICO	CS-35	Hi-Power Mini BB	54.6	0.95	0.7x1.3x1.2	0.14	Single	3-Pole Ferrite	No		57.5
HOBBICO	CS-59	Low Profile Aileron BB	61.1	1.23	0.9x1.7x1.0	0.18	Single	3-Pole Ferrite	Mixed		49.7
HOBBICO	CS-63	Low Profile Retract BB	90.8	1.24	0.9x1.7x1.0	0.50	Single	3-Pole Ferrite	Mixed	59.95	73.2
HOBBICO	CS-61	Standard Sport	42	1.56	0.8x1.8x1.4	0.19	None	3-Pole Ferrite	No		25.9
HOBBICO	CS-55	Deluxe Standard	42.6	1.62	0.8x1.6x1.4	0.20	Bushing	3-Pole Ferrite	No	19.99	26.3
HOBBICO	CS-57	Dual BB Standard	42.6	1.62	0.8x1.8x1.4	0.20	Dual	3-Pole Ferrite	No	29.95	26.3
HOBBICO	CS-65	Hi-Torque Standard BB	77	1.73	0.8x1.6x1.5	0.16	Single	3-Pole Ferrite	No		44.5
HOBBICO	CS-71	Super Torque MG BB	110	2.12	0.8x1.6x1.5	0.23	Single	3-Pole Ferrite	AI output		51.9
HOBBICO	CS-72	1/4 Scale Ball Bearing	130.6	3.60	1.1x2.3x2.0	0.22	Dual	3-Pole Ferrite	No	49.99	36.3
JR	341	Micro	31.9	0.63	0.50x1.12x1.17	0.24	None	5-Pole Ferrite	No	32.95	50.6
JR	321	High Speed Mini	29.2	0.77	0.58x1.30x1.02	0.23	Single	5-Pole Ferrite	No	52.95	37.9
JR	3021	Mini (coreless)	37.5	0.84	0.58x1.30x1.02	0.22	Dual	Coreless	No	59.95	44.6
JR	351	Micro w/ metal gears	31.9	0.88	0.50x1.12x1.17	0.24	None	5-Pole Ferrite	Yes	52.95	36.3
JR	3321	Wing (coreless)	59.8	0.95	0.58x1.30x1.30	0.32	Dual	Coreless	No	69.99	62.9
JR	3025	Ultra-Speed Mini	29.2	0.95	0.58x1.30x1.02	0.15	Dual	Coreless	No	62.95	30.7
JR	911	Mid-Size Low Profile, BB	43.1	1.13	0.71x1.37x1.03	0.27	Dual	5-Pole Ferrite	No	46.95	38.1
JR	703	Low Profile Retract	93.2	1.16	0.88x1.73x0.93	1.36	Dual	Cored	No	59.95	80.3
JR	7005	Low Profile (coreless)	62.6	1.31	0.88x1.73x0.93	0.19	Dual	Coreless	No	89.95	47.8
JR	9011	Mid-size BB (coreless)	60.6	1.31	0.75x1.04x1.42	0.23	Dual	Coreless	No	62.95	45.3
JR	2250	Standard Race	48	1.47	0.73x1.52x1.32	0.19	Bushing	3-Pole Ferrite	No	24.95	33.7
JR	507	Standard	40.3	1.47	0.73x1.52x1.32	0.25	None	3-Pole Ferrite	No	17.95	27
JR	7100	Low Profile Super Servo	60.8	1.48	0.88x1.73x1.02	0.19	Dual	Coreless	No	114.95	41.1
JR	4131	Ultra Precision	90.4	1.50	0.73x1.52x1.32	0.23	Dual	Coreless	No	74.95	60.3
JR	2550	Premium Race	62	1.50	0.73x1.52x1.32	0.17	Single	3-Pole Ferrite	No	44.95	41.3
JR	9021	Mid-Size (coreless)	57.5	1.50	0.71x1.37x1.32	0.22	Dual	Coreless	No	57.99	38.3
JR	531	Premium Sport	51	1.50	0.73x1.52x1.32	0.23	Single	5-Pole Ferrite	No	39.95	34.0
JR	517	Standard w/BB	40.3	1.58	0.73x1.52x1.32	0.25	Single	3-Pole Ferrite	No	26.95	25.5
JR	23550	Mini Race	38	1.61	0.58x1.30x1.02	0.11	Dual	Coreless	No	69.95	23.6
JR	4721	Ultra Torque	119.6	1.72	0.73x1.52x1.32	0.22	Dual	Coreless	No	79.95	69.5
JR	24750	Ultra Race	95	1.72	0.73x1.52x1.32	0.12	Dual	Coreless	No	109.95	55.8
JR	4735	Ultra Speed	90	1.72	0.73x1.52x1.32	0.15	Dual	Coreless	No	79.95	52.3
JR	513	Standard Retract, BB	66.77	1.72	0.73x1.52x1.32	1.25	Single	5-Pole Ferrite	No	32.95	38.8
JR	D58231	Digital Ultra Precision	88	1.76	0.75x1.52x1.48	0.22		Coreless	No		
JR	4000	Super Servo for Gyro	73.6	1.78	0.73x1.52x1.32	0.17	Dual	Coreless	No	114.95	41.8
JR	22750	Super Race	61	2.00	0.73x1.52x1.32	0.09	Dual	Coreless	Yes	179.95	30.5
JR	058411	Digital Ultra Torque	156	2.03	0.75x1.52x1.48	0.18		Coreless	Yes	NA	
JR	D58417	Digital Ultra Speed	62	2.03	0.75x1.52x1.48	0.10		Coreless	Yes	NA	
JR	605	Monster FET	139.1	4.75	1.26x2.50x2.30	0.28	Dual	Cored	No	99.95	29.3
JR	2721	Ultra Torque Alloy Gear	116		0.73x1.52x1.32	0.22	Dual	Coreless	No	99.95	
JR	8101	Ultra Precision	90.4				Dual		Yes	109.95	
JR	2700G	Super High Speed for Gyro	48			0.11			Yes	139.95	
JR	331	Micro - 4 cell only	42.2		0.50x1.12x1.17	0.23	None		No	31.95	
KO PROPO	KOPM1115	Quick Steering for Electrics (7.2V)	(100.4)	1.80	0.79x1.61x1.50	(0.05)	Dual	Coreless	No		
KO PROPO	KOPM1101	Throttle for Gas (6 Volt)	(91)	2.10	0.79x1.61x1.50	(0.08)	Dual	Coreless	Yes		
KO PROPO	KOPM1100	Steering for Electrics (7.2 Volt)	(97)	2.10	0.79x1.61x1.50	(0.06)	Dual	Coreless	Yes		
KO PROPO	XOPM1104	Steering for Gas (6 Volt)	(104.5)	2.10	0.79x1.61x1.50	(0.13)	Dual	Coreless	Yes		
MAXX Products	MX-50	Micro	14	0.32	0.43x0.88x0.78	0.09	Teflon		No	22.95	43.8
MAXX Products	MX-50HP	Micro High Power	23	0.32	0.43x0.88x0.78	0.08	Single		No	27.95	71.9
MAXX Products	MX-100	Mini	47	0.78	0.63x1.22x1.18	0.18	Teflon		No	18.95	60.3
MAXX Products	MX-100HP	Mini Pro	53	0.81	0.63x1.22x1.18	0.19	Dual		No	24.95	65.4
MAXX Products	MX-600	Low Profile	43	1.17	0.89x1.77x1.13	0.13	Oilite		No	12.95	38.8
MAXX Products	MX-600HP	Low Profile Pro, High Power	49	1.20	0.89x1.77x1.13	0.08	Dual		No	23.95	40.8
MAXX Products	MX-400	Std Pro	44	1.66	0.79x1.60x1.50	0.15	Oilite		No	11.95	26.5
MULTIPLEX	6 5149	Micro 3 BB	23	0.85	0.59x1.30x1.26	0.15				63.30	27.1
MULTIPLEX	6 5163	Super FL (mc/V2)	34	0.85	1.81x1.67x0.43	0.18	Dual	5-Pole Ferrite		104.50	40.0
MULTIPLEX	6 5175	Micro Speed (mc/V2)	34	0.85	0.59x1.30x1.26	0.08	Dual	5-Pole Ferrite		104.50	40.0

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MANUFACTURER	P/N	DESCRIPTION	TORQUE (oz.in)	WEIGHT (oz.)	SIZE W x L x H (in.)	SPEED sec/60	BALL BEARINGS	MOTOR	METAL GEARS	RETAIL	Torque @ 4.8V
MULTIPLEX	6 5157	Super FL BB	34	0.85	1.61x1.67x0.43	0.18				63.30	40.0
MULTIPLEX	6 5178	Micro (mc/V2)	48	0.85	0.59x1.30x1.26	0.18	Dual	5-Pole Ferrite		104.50	56.5
MULTIPLEX	6 5173	Royal (mc/V2)	71	1.50	0.83x1.57x1.61	0.13	Dual	5-Pole Ferrite	No	85.50	44.4
MULTIPLEX	6 5161	Royal	42	1.62	0.83x1.57x1.61	0.14				57.00	25.9
MULTIPLEX	6 5170	Europa BB	48	1.69	0.9x1.6x1.8	0.18				43.80	28.4
MULTIPLEX	6 5138	Profi Speed (mc/V2)	57	1.70	0.75x1.42x1.54	0.10	Dual	5-Pole Ferrite	Yes	104.50	33.5
MULTIPLEX	6 5174	Profi (mc/V2)	68	1.70	0.75x1.42x1.54	0.15	Dual	5-Pole Ferrite	Yes	104.50	40.0
MULTIPLEX	6 5176	Power (mc/V2)	106	2.90	0.91x1.85x1.85	0.22	Dual	5-Pole Ferrite		142.60	36.6
MULTIPLEX	6 5177	Jumbo (mc/V2)	241	5.70	1.18x2.36x2.36	0.23	Dual	5-Pole Ferrite		167.80	42.3
TOWER	TS-15	Super Micro	15.4	0.49	0.5x1.0x0.9	0.20	Oilite			24.99	31.4
TOWER	TS-10	Micro	30	0.61	0.51x1.10x1.10	0.22			No	27.99	49.2
TOWER	TS-31	Mini w/Bushing	20	0.93	0.6x1.3x1.2	0.22	Bushing	3-Pole Ferrite	No	22.99	21.5
TOWER	TS-35	Power Mini	55	0.95	0.67x1.26x1.22	0.14	Single		No	22.99	57.9
TOWER	TS-83	Retract	92	1.23	0.9x1.7x1.0	0.50	Oilite	3-Pole Ferrite	No	37.99	74.8
TOWER	TS-59	Lo Profile Aileron	61.6	1.24	0.91x1.73x0.98	0.18	Single		Output	27.99	49.7
TOWER	TS-53	Standard	42	1.50	0.77x1.59x1.41	0.22			No	8.99	28.0
TOWER	TS-67	Ball Bearing	43	1.61	0.8x1.6x1.4	0.20	Dual	3-Pole Ferrite	No	19.99	26.7
TOWER	TS-88	Standard, BB	42	1.61	0.77x1.59x1.41	0.20	Single		No	14.99	26.1
TOWER	TS-65	Hi-Torque	77	1.73	0.8x1.6x1.5	0.16	Dual		No	29.99	44.5
TOWER	TS-71	Super Torque MG	110	2.17	0.79x1.61x1.67	0.23	Dual		Yes	34.99	50.7
TOWER	TS-75	1/4 Scale	110	3.60	1.14x2.32x1.97	0.19	Single		Output	34.99	30.6
VOLTZ	410	Kolibri	11	0.26	0.45x1.14x0.98	0.22	None		No	48.99	42.1
VOLTZ	400	Zio	20	0.39	0.46x1.13x1.04	0.16	Teflon		No	43.99	51.3
VOLTZ	420	Twins (2 Servos in 1 case)	11	0.50	0.90x1.14x0.98	0.22	None		No	93.99	22.0
VOLTZ	500	Micro-Star 3	28	0.67	0.51x1.12x1.12	0.26	Single		Yes	56.99	41.8
VOLTZ	505	Micro-Maxx	47	0.67	0.51x1.12x1.12	0.18	Single		Yes	68.99	70.1
VOLTZ	700	Wing-Star	25	0.67	0.39x1.04x1.50	0.22	Single		Yes	68.99	37.3
VOLTZ	705	Wing-Maxx	42	0.67	0.39x1.04x1.50	0.15	Single		Yes	81.99	62.7
VOLTZ	325	Mini-Standard 2	33	0.80	0.65x1.34x1.30	0.22	Teflon		No	34.99	41.3
VOLTZ	130	FS-Retract	100	1.02	0.86x1.76x0.98	0.50	Sinter (2)		Mixed		98.0
VOLTZ	300	Mini-Star 3	42	1.06	0.65x1.34x1.30	0.22	Single		Yes		39.6
VOLTZ	200	VS-202	48	1.70	0.80x1.61x1.77	0.26	Single		No		28.2
VOLTZ	600	Alu-Star	91	2.60	0.80x1.61x1.77	0.20	Dual		Yes		36.4
ZEBRA RC	788	Micro	16	0.52	0.52x1.00x1.00	0.20	Oilite		No	39.95	28.8
ZEBRA RC	788MG	Micro w/Metal Gears	21	0.67	0.52x1.00x1.00	0.20	Oilite		Yes	49.95	31.3
ZEBRA RC	688R	Mini	27	0.67	0.52x1.13x1.14	0.20	Oilite		No	29.95	40.3
ZEBRA RC	688MG	Mini w/Metal Gears	39	0.79	0.52x1.13x1.14	0.20	Oilite		Yes	38.95	49.4
ZEBRA RC	388	Lite	33	1.10	0.71x1.48x1.26	0.17	Oilite		No	24.95	30.0
ZEBRA RC	388MG	Lite w/Metal Gears	33	1.40	0.71x1.48x1.26	0.17	Oilite		Yes	34.95	23.6
ZEBRA RC	288	Pro	39	1.60	0.79x1.63x1.64	0.20	Oilite		No	14.95	26.0
ZEBRA RC	188	Pro Plus	46	1.80	0.79x1.57x1.37	0.23	Oilite		No	26.95	26.7
ZEBRA RC	288MG	Pro w/Metal Gears	39	1.90	0.79x1.63x1.64	0.28	Oilite		Yes	24.95	20.5
ZEBRA RC	188MG	Pro Plus w/Metal Gears	48	2.30	0.78x1.57x1.37	0.23	Oilite		No	26.95	20.9
ZEBRA RC	1188BFMS	Pro Reflex w/Metal Gears	138	2.40	0.79x1.61x1.57	0.20	Oilite		Yes	39.95	57.5
SORTED BY:	1) Manufacturer	NOTES:	* = Available as replacement parts through dealer								
	2) Weight		= Specification at 6.0 Volts (otherwise @ 4.8 V)								
	3) Size		{ } = Specification at 7.2 Volts (otherwise @ 4.8 V)								
	4) Torque		- Discontinued Servo								

# WING TIDBITS

This month's Wing TibBits is just a culmination of silly things that you might find useful. So here goes:

## Splatter Proof Spray Paint [thanks to Ricky Briggs] -

Most of us eventually need to spray paint something whether it's for around the house or for decorating your newly finished plane. If you like me, you have noticed that splattering paint is directly proportional to the importance of the job. No matter how hard I try to cover it up I must admit that "I'm a Splatterer". So if you're still in the closet about this condition here's an easy tip to stop those annoying paint splatters.

Splattering usually occurs due to two things; a dirty nozzle and insufficient pressure in the can. So try this:

1. Locate a glass big enough to hold the spray can.
2. Fill the glass with 1 inch of water.
3. Place glass w/water into microwave and heat on high for 1 minute (please don't put spray can in microwave.)
4. Remove from microwave and place spray can in hot water (not boiling).
5. Wait for a minute or two until can warms up.
6. Shake and test spray. You will see a marked improvement in the spray pattern and consistency due to the hot water which raised the pressure in the can. This method works pretty good.

## Clean Up Hints Using "Bounce" Fabric Sheets

- by Larry Enger

I'm sure most of you are aware of the product "Bounce", that square of silkspan like material that is thrown in the clothes dryer used as a fabric softener. When the clothes are dry, you throw the Bounce sheet away. Don't let this happen in your home, save them as a great hot monocoque iron cleaner. I had heard or read of this months ago but never paid much attention until covering EPP foam airplanes. To properly cover an EPP foam airplane it is necessary to spray it with 3M-77 contact cement, put on the fiber tape strips and wraps, then spray again, and over compound curves, spray again. (Credit Dan Fink with this) You now have a gooey mess that will take at least a week to dry enough to handle but who waits that long. As you apply the mylar covering your iron will drag and stick on contact with the 3M-77 while everything else is sticking to your hands. Wiping the iron on the Bounce cleans it instantly and allows progress, making life a whole lot easier which makes for a much nicer looking airplane. If you do not have ready access to a supply of Bounce then contact those of us who have wives who have a wastebasket in the laundry room just for used Bounce and lint, lose the lint unless you need it for low spots in the foam. (Just kidding). It's also good to use to clean the iron when changing covering colors. Give it a try, you'll like it.

## AVIATION 101

Thanks to Larry Enger

Takeoffs are optional. Landings are mandatory.

If you push the stick forward, the houses get bigger, if you pull the stick back they get smaller. (Unless you keep pulling the stick back --- then they get bigger again)

Flying is not dangerous; crashing is dangerous.

It's better to be down here wishing you were up there, than up there wishing you were down here.

The propeller is just a big fan in the front of the plane to keep the pilot cool. Want proof? Make it stop; then watch the pilot break out into a sweat.

Speed is life, altitude is life insurance. No one has ever collided with the sky.

It's best to keep the pointed end going forward as much as possible.

The only time you have too much fuel is when you're on fire.

Every one already knows the definition of a 'good' landing is one from which you can walk away. But very few know the definition of a 'great landing.' It's one after which you can use the airplane another time.

The probability of survival is equal to the angle of arrival.

Always remember you fly an airplane with your head, not your hands. Never let an airplane take you somewhere your brain didn't get to five minutes earlier.

You know you've landed with the wheels up when it takes full power to taxi.

Those who hoot with the owls by night should not fly with the eagles by day.

A helicopter is a collection of rotating parts going round and round and reciprocating parts going up and down - all of them trying to become random in motion. Helicopters can't really fly - they're just so ugly that the earth immediately repels them.

Young man, was that a landing or were we shot down?

# Southern California Soaring Contest

It's well known that each soaring club hosts their own monthly contests but when the urge calls you to fly against the regions best, then it's time to fly SC2. SC2 means Southern California Soaring Contest. For those not familiar with this soaring circuit, SC2 contests allow the individual to fly against different competitors from other clubs with the same skill level. Instead of flying against the same folks all the time at the home club, SC2 provides you the opportunity to test your skills against different fliers.

There are seven clubs that will participate in SC2 this year. Each club hosts this event and invites the other clubs to come on over to fly. The fliers that participate are interested in honing their thermal duration skills to the next level of competition. Regardless of your ability, SC2 has a beginner class all the way up to Masters. So come on out next time and enjoy what SC2 has to offer. You will be amazed at what you can learn at these contests.

This years schedule is the following:

SULA	March 28
ISS	April 25
TPG	May 23
TOSS	June 27
HSS	August 29
SWSA	September 26
PSS	October 31

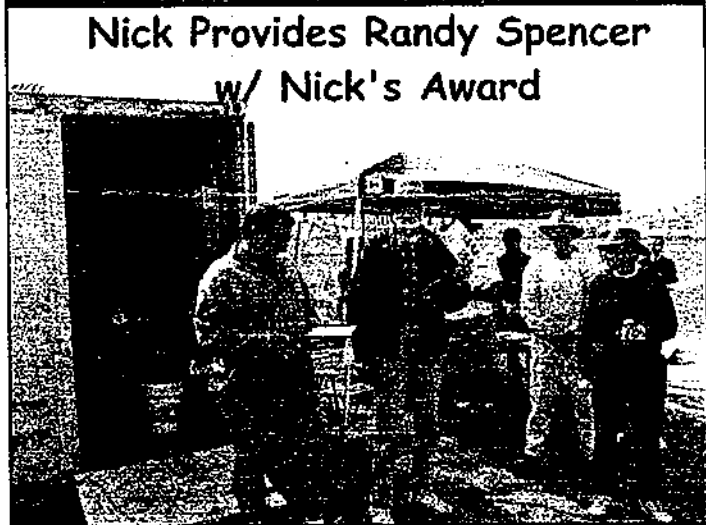
Your scores for SC2 will be tallied for the best 5 out of 7 contests. These are separate contests that do not affect your contest standings at HSS. After you fly at SC2 you can see your results at the following web page:

[http://home.earthlink.net/~john\\_brown/index.htm](http://home.earthlink.net/~john_brown/index.htm)

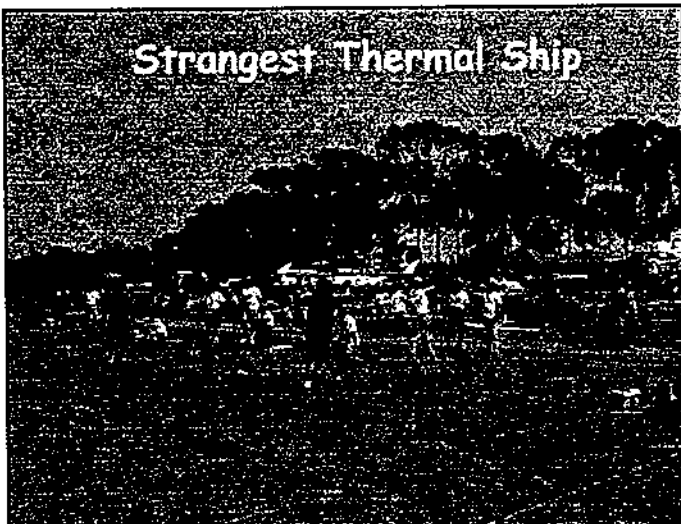
The 1999 SC2 contest year started on Sunday March 28 at SULA (Cal State Domingez Hills) to a crowd of better than 60 pilots. There were four rounds equaling to a total of 24 minutes of flight time. The lift was outstanding with landing points making the difference to the winners. The crew at SULA should be complemented for a job well done. Next month, we're off to Riverside.....



SC2 Crowd Listens To CD Message



Nick Provides Randy Spencer w/ Nick's Award



Strangest Thermal Ship





**EIGHTEENTH ANNUAL  
ROSEBOWL SOARING FESTIVAL AND TRADE SHOW  
MAY 1st AND 2nd - 1999  
2ND EVENT OF THE WESTERN STATES SOARING TRIAD  
SPONSORED BY THE PASADENA SOARING SOCIETY  
THIS IS AN AMA AA SANCTIONED EVENT. ALL AMA RULES APPLY.**

**LOCATION:** PASADENA'S BROOKSIDE PARK -- ROSEBOWL SOARING FIELD

**CLASSES:** UNLIMITED AND TWO-METER

**TIME:** PILOTS MEETING 8:30am EACH DAY -- FIRST FLIGHT 9:00am EACH DAY

**SATURDAY - MAY 1st**

ROUND 1 - 3 MINUTE PRECISION DURATION  
ROUND 2 - 1ST FLIGHT OF ADD-EM-UP  
ROUND 3 - 2ND FLIGHT OF ADD-EM-UP  
ROUND 4 - 3RD FLIGHT OF ADD-EM-UP

**SUNDAY - MAY 2nd**

ROUND 5 - 5 MINUTE PRECISION DURATION  
ROUND 6 - 4TH FLIGHT OF ADD-EM-UP  
ROUND 7 - 8 MINUTE PRECISION DURATION

The add-em-up round will consist of four flights to make 26 minutes with no flight over 8 minutes. On Sunday, pilots will have the option to fly Round 6 before Round 5.

**TROPHIES:** UNLIMITED - 1ST THRU 10TH PLACE. TWO-METER - 1ST THRU 5TH PLACE.  
1ST PLACE UNLIMITED TEAM - TOP FOUR DUES PAYING MEMBERS OF ONE AMA CLUB  
FIRST PLACE SENIOR - AGE 62 AND OVER

**RAFFLE:** FOLLOWING THE LAST ROUND ON SUNDAY.

**TRADE SHOW:** MANUFACTURERS WILL DISPLAY WHATS NEW IN THE HOBBY BOTH DAYS.

**RV PARKING:** FREE OVERNIGHT PARKING ON FRIDAY AND SATURDAY. NO HOOK UPS AVAILABLE.

**INFORMATION:**

<b>CONTEST DIRECTOR</b> RICHARD BURNS (626) 857-0024	<b>TRADE SHOW</b> KARLTON SPINDLE (818) 785-2401	<b>SCORING</b> AL ZIMMERMAN (818) 500-9019
--	--	--

**ENTRY FEE:** \$32.00 FOR FIRST CLASS ENTRY. \$15.00 EXTRA TO FLY BOTH CLASSES.  
ENTRY FEES ARE NONREFUNDABLE.

Submit your Entry early for best frequency availability. No entries will be accepted at the field. Entry Forms will only be accepted on a first come, first served basis. Limited Participation. List of local accommodations will be supplied with acceptance notification.

**MAIL ENTRY TO:** PASADENA SOARING SOCIETY  
AL ZIMMERMAN  
1328 BRANTA DRIVE  
GLENDALE, CA 91208

**ENTRY FORM: PLEASE MAKE CHECKS PAYABLE TO "PASADENA SOARING SOCIETY"**

**NAME:** \_\_\_\_\_ **AGE 62+** \_\_\_\_\_

**STREET:** \_\_\_\_\_ **RV PARK** \_\_\_\_\_

**CITY, STATE, ZIP:** \_\_\_\_\_

**PHONE NUMBER:** ( \_\_\_\_\_ ) \_\_\_\_\_

**AMA NUMBER:** \_\_\_\_\_ **TEAM DESIGNATION:** \_\_\_\_\_

**FREQUENCY CHOICES:** UNLIMITED - 1ST \_\_\_\_\_ 2ND \_\_\_\_\_ 3RD \_\_\_\_\_

TWO-METER - 1ST \_\_\_\_\_ 2ND \_\_\_\_\_ 3RD \_\_\_\_\_

**ENTRY FEE** \$ \_\_\_\_\_

**2-METER FEE** \$ \_\_\_\_\_

**TOTAL** \$ \_\_\_\_\_

**No T-Shirts this Year**

**DIRECTIONS**

From L.A. take 91 N. to 60 E. and turn go E. to  
Woods E. to Valencia 100 E.

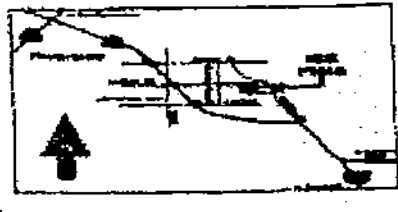
Field on R.

From San Diego take 94 N. to 278 E.

and continue turn R. On approx. 2nd

Valencia 100 E.

Field on R.



# Inland Soaring Society

## SC2 April 25 1999

12 V winches  
Big Wheel Retrievers  
600 FT. Turnaround  
Landing mowed weeds

Vince Botkin

CD/Pres.

(909) 928-0956

Entry \$8.00

Junior \$4.00

Restrooms

B.B.Q. Lunch

Drinks Avail.

Landing triangle is 10 ft. long  
divided into 4 equal zones.

5 ft. wide at base, with 10 pt. zone

5ft. before & after triangle and sides

approach

10

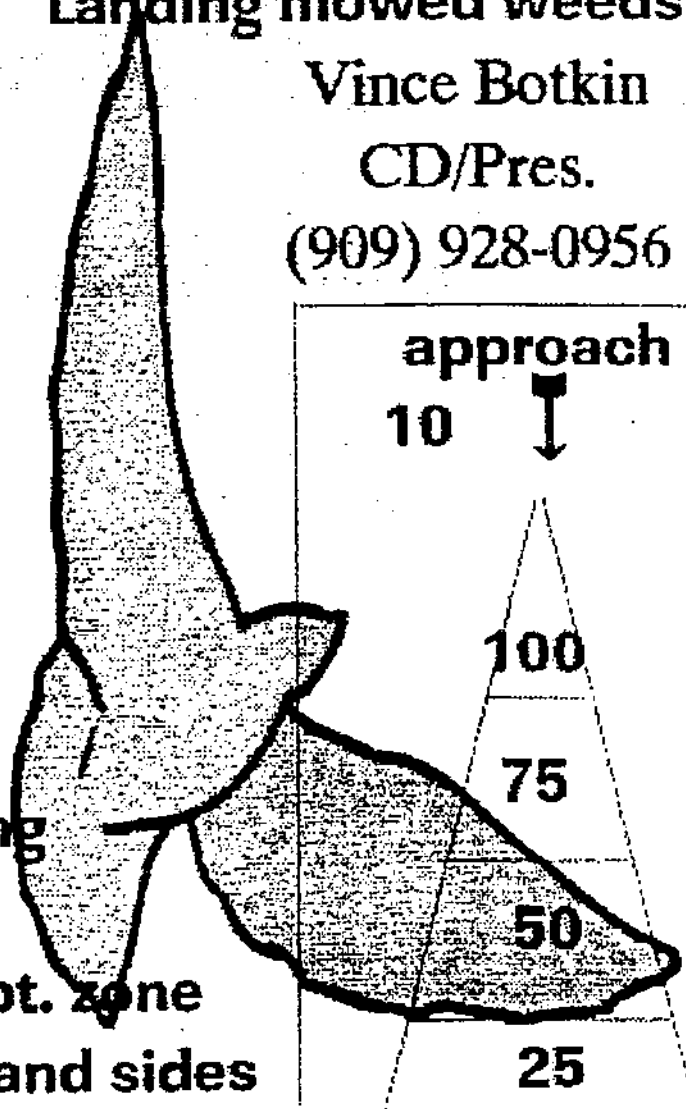
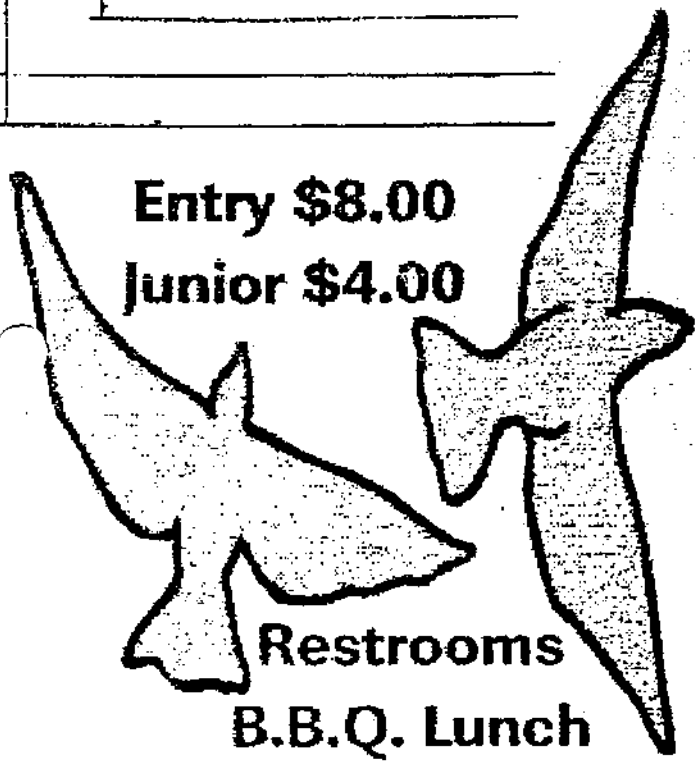


100

75

50

25



Look on Back.

**MANUFACTURERS' LINE  
REPRESENTED BY JOE BALLASCH  
LEISURE ELECTRONICS OF DOWNEY**

**AIRPLANES & ARFS**

- \* AVEOX
- \* CERMARK

**BATTERIES**

- \* SANYO - STANDARD  
AND CUSTOM PACKS

**CHARGERS**

- \* ASTRO FLIGHT
- \* AVEOX
- \* CERMARK
- \* FMA DIRECT
- \* HITEC

**CONTROLLERS**

- \* LEISURE ELECTRONICS
- \* ASTRO FLIGHT
- \* CASTLE CREATIONS
- \* CERMARK

**GEAR BOXES**

- \* ASTRO FLIGHT
- \* AVEOX
- \* CERMARK
- \* MASTER AIRSCREW

**MINI RECEIVER ANTENNAS**

- \* DEANS

**MOTOR REPAIRS**

- \* LEISURE ELECTRONICS

**ALL HOBBY LOBBY  
PRODUCTS**

**MOTORS**

- \* ASTROFLIGHT
- \* AVEOX
- \* CERMARK
- \* MASTER AIRSCREW

**PLUGS**

- \* CERMARK
- \* DEANS
- \* FMA DIRECT
- \* SERMOS

**PROPELLERS**

- \* AVEOX
- \* CERMARK
- \* MASTER AIRSCREW
- \* ROBBE

**RADIOS & SERVOS**

- \* AIRTRONICS
- \* FMA DIRECT
- \* HITEC - RCD

**SUPER FLEX WIRE**

- \* #16, #14, #12

**SWITCHES**

- \* AIRTRONICS

**LEISURE ELECTRONICS**

of Downey

Speed Controllers  
Electric Flight Components

Phone (310) 869-0425 (Home)

Fax (310) 861-0193 (Office)

Phone (310) 923-0772 (Ans. Machine)

Joe Ballasch

Owner

10039 Lesterford Ave. Downey, CA 90240-9519

Leisure Electronics of Downey 10039 Lesterford Avenue Downey CA 90240-3519  
TEL (562) 869-0425 (home) FAX (562) 861-0193 (562) 923-0772 (Answering Machine)

MEMBERSHIP APPLICATION 1999,

*Harbor Soaring Society  
AMA Chartered Club # 128  
P.O. Box 1673  
Costa Mesa, CA 92628  
AMA's Oldest Chartered Soaring Club*

I understand that by applying for membership in the Harbor Soaring Society, I must be a current member of the AMA.

Please Print

NAME \_\_\_\_\_ Home Ph # \_\_\_\_\_

ADDRESS \_\_\_\_\_ Work Ph # \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ Zip \_\_\_\_\_ E-Mail \_\_\_\_\_

AMA # \_\_\_\_\_ (PROOF OF STATUS REQUIRED)

DATE OF BIRTH \_\_\_\_\_ Frequency channels used \_\_\_\_\_

NEW APPLICANTS. (W/Name Tag)--(17 years and older) = \$25.00  
SENIOR MEMBER (Renewal W/O NameTag)(17 years and older) = \$20.00 NEW/RENEWAL (circle one)  
JUNIOR MEMBER \_\_\_\_\_(16 years and under), = \$10.00  
FAMILY MEMBER \_\_\_\_\_(At same address) = \$ 5.00  
Extra HSS Name tag \_\_\_\_\_ = \$5.00

Applicants making application for senior membership between July 1st and October 31st pay a reduced rate of \$10.00. New applicants making application between November 1st and December 31st will pay the annual rate indicated above and such dues will make the new member paid in full for the following year. A signature is required by all Harbor Soaring Society members, agreeing to comply with the current AMA Safety Code and the current HSS General Field Rules and Field Safety Rules

*The undersigned attests that: I will operate my model using only radio control frequencies currently allowed by the FCC. Further, any transmitter that I use at any designated HSS flying field must have a certified R/CMA-AMA gold sticker affixed indicating that it was manufactured or modified for operations at 20 Khz frequency separation. I understand that my failure to comply with the above restrictions will result in nullification of liability coverage for damages caused or claimed*

SIGNATURE: \_\_\_\_\_ DATE \_\_\_\_\_

Total Dues Owed and attached: \$ \_\_\_\_\_

SIGNATURE OF CLUB OFFICER RECEIVING APPLICATION \_\_\_\_\_

# Calendar Of Events

HSS Club Meeting 7:00 Irvine Wtr Dst. Presenter - Dave Sanders (Combat Foamies)	Tues. Apr 6
<b>HSS T.D. Contest</b>	<b>Sun Apr 11</b>
SC2 T.D. Contest - ISS	Sun Apr 25
Pasadena Two Day	Sat May 2
HSS T.D. Contest??	Sat May 2
HSS Club Meeting 7:00 Irvine Wtr Dst.	Tues May 4
Mothers Day	Sun May 9
Visalia Classic Contest	Sat May 15-16
SC2 T.D. Contest - TPG	Sun May 23
HSS Club Meeting 7:00 Irvine Wtr Dst.	Tues. Jun 1
HSS T.D. Contest	Sun Jun 6
SC2 T.D. Contest - TOSS	Sun Jun 27
HSS Club Meeting 7:00 Irvine Wtr Dst.	Tues. Jul 6
HSS T.D. Contest	Sun Jul 11
SC2 T.D. Contest -	None

Please keep an eye of the Calendar of Events. They may change from one month to another.

# HSS SPY REPORT



The Spies from MAD magazine decide to shoot the cigar right out of the mouth of HSS President Les Kenyon. Either the cigar or "the grin" is doomed.



**Harbor Soaring Society**  
**P.O. Box 1673**  
**Costa Mesa, CA 92626**



[www.rcsoaring.com/hss/hss.htm](http://www.rcsoaring.com/hss/hss.htm)

WILL CONRAD  
 9359 SHRIKE AVE  
 FOUNTAIN VALLEY, CA 92708



**Notice: Meeting Tuesday 4-6-99  
 at the Irvine Water District Office.**

**The April HSS monthly contest  
 date is Sunday 4-11. Rain date: 4-18.  
 3 rounds of 24 minute add-em up  
 plus 10 minute 4th flight.**