

2013 EVENT SCHEDULE
WE NEED EVENT DIRECTORS

NEXT EVENT, MAR 30TH
INDOOR FLY-IN

February 2013



Flight Lines

ONLINE
EDITION

MONTHLY PERIODICAL OF:
the Spirits of St. Louis R/C Flying Club, Inc.

The Joy of Electric Flight



Photo by Walt Wilson

TIME TO RENEW YOUR MEMBERSHIP



Charter No. 396
an AMA Gold Level Leader Club
our 47th Year

NEXT MEETING
FEBRUARY 14TH, 2013
BRIDGETON TRAILS LIBRARY, 7 PM

A look into model hardware prices
Read & see the latest technical
presentations, Stuff and more...

Stuff

by: Gary Pyles

Being in the unique situation of holding positions as current club president and newsletter editor allows me to use this space to present both my leadership perspective on club operations and commentary on just about everything else club related. This month my column is short and provides no insight or commentary on club operations or politics.

In the short time I have occupied the newsletter editor's chair I have learned a lot and tried to do a lot of new things. Different formats, color pictures, online enhanced E-magazine style newsletters with video and tons of links. The print version of the newsletter is here to stay. This being said, I do not intend to have any "print" newsletter exceed 8 pages. However, I do want to keep expanding the online version of the newsletter to add new features, more stories, build logs, aircraft and components reviews and anything else you find interesting.

The bottom line is, I NEED YOUR STORIES! In this issue of Flight Lines are two great articles by Ralph Doyle and Vic Bunze. Write me, send some notes about a plane you just put together and the good and bad that happened along the way. Did you just buy a new tool? Share the info and pictures with the club. I keep all of the articles I get in a file so that I can use them when I have space. Club business takes precedent in the print newsletter. In the online version we can use as much space as you want.

Think about it, send me a note with your story.

Gary P



July 2012 Helicopter Fun Fly, photo by Walt Wilson

SAFETY CORNER

Cold-weather flyers be careful and stay warm. Reaction times are slower so plan ahead for all of those maneuvers. Limit your exposure time and hop back in your car for a quick warm-up.

Club Business

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Contact the Editor:

newsletter@spiritsofstl.com

Flight Lines is a monthly periodical produced by the Spirits of St. Louis R/C Flying Club, Inc. to provide club information and entertainment to our membership. The online version is free of charge and anyone interested my view current and back issues by visiting our website, www.spiritsofstl.com

Editor, Gary N. Pyles



MEETING MINUTES

Meeting Minutes: January 9, 2013

By Dale Buchanan, Secretary

Meeting was called to order at 7:00PM by President, Gary Pyles.

Attendance:

21 members were present.

Announcements:

None.

New Members in attendance:

None.

Secretary's Report, Dale Buchanan, Secretary:

The Paducah Aero Modelers club will have their 1st Heli fun fly May 11th and 12th. There will be a flyer posted on the club bulletin board at the field for anyone interested in going to this event.

In regards to an event cancellation, if there is no contest director for the event, 30 days before the event, it will be canceled.

Minutes were accepted as published in last month's Flight Lines.

Treasury Report, Bill Lindewirth, Treasurer:

A motion was made to accept the Treasury report as presented and the members accepted.

Field Report, Gary Graul, Field Chairman:

Gary was not present. Cracks in the runway and some painting will be addressed in the Spring.

Safety Report, Russ Watts, Safety Chairman:

Russ was not present.

Membership Report, Ralph Doyle, Membership Chairman:

Ralph reports out of 168 members last year, 82 members have renewed plus another 15 new members. When renewing or joining send a copy of your 2013 AMA card. NOT a copy of the temporary card.

Events Report, Vic Bunze, Event Chairman:

There are events that need contest/event director. If you want to run an event, contact Vic Bunze.

Jeff Becker is putting together an indoor fun fly at the New Hope Lutheran Church on Hwy 94 and Pralle. The address is 1975 S Old Highway 94. The event will be 4 hours of flying, possibly 5 hours, in the gym. The fee will be \$5.00. The date is March 30th, 11AM – 3PM. A motion was made to amend the present event schedule and add this event. The motion was accepted by the members. For more information on this event, contact Jeff Becker.

New Business:

Les Richman suggested lowering the dues. Gary Pyles and Bill Lindewirth explained why this could not be done at the present time. The club is just barely staying even with money coming in and going out. Our dues are in line with other clubs in the area.

Technical Presentations:

Four presentations were made. Walt Wilson, Rich Taylor, Mike Roederer, and Paul Geders presented a variety of aircraft and tools to the members. Check out page 8 for details and pictures.

Gene Jones brought in OS Surpass 120 S III with pump. It was rebuilt by Hobby Services last April. This motor sells for over \$400.00 new. He is selling it for \$199.95. The \$20.00 gift card was won by Paul Geders who did a great job of showing his plane called the Diamond.

Meeting was adjourned at 8:05.

The next meeting will be February 14, 2013 at the Bridgeton Trails Library at 7:00, meeting room 2.



MODEL HARDWARE, *Did you pay too much?*

by Ralph Doyle

Have you ever wondered if you should buy your screw hardware from any one of the several advertisers in Model Aviation, any of the modeling publications, or pay the expensive prices of on the shelf items at your local hobby shop or hardware store? I recently went to my local hardware store in need of a 4-inch machine screw. The only one I could find cost \$.93. Fortunately a saleslady took pity on me and pointed me to the cheap stock and I walked out with the 4 screws I needed for less then a dollar total. Still, the cost was .23 cents per screw.



Another point to keep in mind is that a lot of 'foreign' products you buy now days are metric. Outside of the hobby shops it is very hard to find the smaller diameter screws of any length in the 1.5mm to 3mm range.

The prices on the Home Depot column were the only prices I could verify on line. But, it may give you an idea of the price difference per screw. I didn't bother pricing hobby shop prices.

After looking at the chart, I took my own advice and ended up buying an assortment package of standard and metric cap head screws for a total of \$63. As you can see from

the chart where I listed the assortment price that it was the least expensive way to go on a per screw basis. Plus I also got two nice nine-compartment assortment cases. Visit Microfasteners.com for more information.

size	RTL Fasteners			Micro Fasteners			Home Depot	
	quantity	price	price/screw	quantity	price	price/screw		
2-56x1	12	\$2.95	\$0.25	50	\$8.10	\$0.16	-	
4-40x1	24	\$3.55	\$0.15	100	\$7.10	\$0.07	-	
6-32x1.5	12	\$3.50	\$0.29 *	50	\$9.20	\$0.18 *		\$0.42 *
8-32x2	12	\$3.85	\$0.32 *	10	\$3.70	\$0.37 *		\$0.48 *
10-32x2	12	\$2.30	\$0.19 *	20	\$2.80	\$0.14 *		\$0.60 *
2.5x25mm	12	\$4.25	\$0.35	10	\$2.90	\$0.29	-	
3x25mm	12	\$2.30	\$0.19	20	\$2.60	\$0.13	-	
5x25mm	12	\$2.35	\$0.20 *	20	\$2.60	\$0.13 *		\$0.37 *
shipping		\$6.00			\$7.00			\$0.00
			avg price per screw			avg price per screw		
TOTAL	108	\$31.05	\$0.29	280	\$46.00	\$0.16	\$1.87	\$0.47
			* avg price per screw of the 4 compared			* avg price per screw of the 4 compared		* avg price per screw of the 4 compared screws
assortment								
std sizes		not available		180	\$31.00	\$0.17	not available	
metric sizes		not available		180	\$25.00	\$0.14	not available	

the Joy of Electric Power

by Vic Bunze

I have come to love electric power. It hasn't always been that way. When I started out, it was quite a challenge to find a good power set up for a model. However, much has changed. In the olden days, electric model power systems were a lot heavier than the gas equivalent. The amazing improvements in batteries and motor efficiency now permit electric systems to OUTPERFORM gas and glow, in almost every aspect!

There are so many nice things about electric. It's hard to say which is the best aspect out of the long list of advantages, that is pretty subjective, but I will list why I think electric power is so sweet.

Care Free:

At the field, plug in a charged battery and fly! It always starts; no motor tuning, fuel and fussy fuel pumps, starter motors, glow heaters, fire extinguishers, leaky tanks and fuel lines, dead glow plugs, flooded cylinders, after run oils, running out the last drops of fuel, motor quitting in flight, motor going lean on you, and finally, no clean up ritual. All that is can go away if you go electric.

No Muffler:

I hate mufflers. They are ugly. You have to mangle the cowl. They make it difficult to get to the motor with the cowl on. They come loose, rattle, and fall off, and put goop on the plane where you don't want it. For this reason electric is very nice for scale models, no muffler to hide.

Covering & Fuel Proofing:

Once the film covering your plane has fuel on it, it's at risk for no longer sticking to the frame. If the fuel gets between the frame and the film the adhesive just doesn't work anymore. I hate when that happens. So with electric, you have many choices for the paint and covering, and it doesn't need fuel proofing.

Less Vibration:

Electric motors are smooth as silk. Great if you want to get into in-flight photography and video.

Quiet:

Electric has a very pleasing sound. It's totally prop noise. No noise complaints!



P47-Reliant, from Parkzone, foam, electric available as ARF, RTF, PNP,

No Rusted bearings:

Ever have a glow motor with shot bearings?

No Baked on Fuel: I think that discoloration of the engine is ugly.

High RPM is Easily Available:

It's not hard to select a power combination/prop that will go 20,000, even 30,000 RPM and more. If you want some real speed, it's available. No tuned pipe required.

Shutdown and Restart in the air At Will:

If you are like me, it's fun to climb out and hunt for thermals. You can do it with just about any plane; it doesn't need to be a glider. Trainers, Kadets, Telemasters, are particularly good for this. On a "lifty" day, flight times can be unlimited. You can trim a plane out for slow turns and set the transmitter down! Talk about low stress flying. Seek out the hawks; they know where the lift is.

Continued on page 6



Immediate Response:

There is virtually no sag when asking for power. The torque delivery of an electric system is astounding. Batteries have instant current delivery. Electric motors spool up much faster than their gas brethren. In some cases, so fast, YOU HAVE TO BE CAREFUL OF THE PROP NUT SLIPPING.

Small Frontal Profile:

In addition to no muffler sticking out, there is no cylinder head in the breeze. This makes for very clean airframes and more scale appearance.

Huge Power Range:

When you select a motor with care, you may have some leeway to soup it up, by simply using a battery pack with higher voltage. Clearly there are limits to this before possibly burning up the motor, but it's an option if it is within the specifications of the motor.

OK Already! Electric is Cool!

I do hear from a lot of the long time glow flyers, "I just don't get electric, it's complicated, and different". Well I can well understand that concern. It does seem so at first. So how do we peel back the layers of the electric onion?

Start with a manufacturer's plane and recommendations. That provides an excellent point of reference. E-flite does a really nice job of this, providing gorgeous ARFs along with standard and a higher performance set up recommendation. This includes, motor, speed controller, battery and prop. E-flite is not the only manufacturer, ParkZone and others provide nice set ups as well. Much can be learned by observing the choices these manufacturers make.

Some Rules of Thumb:

It's nice to have a power combination that delivers 100 to 200 watts (W) per pound of total flying weight. I have been known to go to 300+ Watts per pound for outrageous vertical or speed. 100 W per pound is for nice fly about sport, 200W enters the 3D domain, and



300W is for insane capability. Pick your power. Just for reference, one HP is equal to 746 Watts.

- Flight time in minutes at full power = (battery capacity in AMP hours/Amps required) x60
- Battery capacity in ampere-hours = milli-amp hours (mAh)/1000
- Amps required = power desired in Watts/ battery pack Voltage

- Power in Watts (W) = Volts (V) x Amps (A)

Example: Let's say we have a three pound plane and we want 200W per pound. This would call for 600W (3 pounds x 200W) capability. Check the motor and electronic speed control (ESC) specs to be sure that 600W is within their specifications. Suppose you also select a lithium polymer battery (LiPo) pack that is 11.1V and 2200 mAh or stated another way, it can deliver 2.2 amps for one hour at an average voltage of 11.1V. Amps flow like water from a reservoir. Once you let the water drain out, you get no more. Same goes with batteries.



So getting back to the 600Watts desired. Watts are equal to VOLTS x AMPS. So with 11.1 Voltage, we need amps to be (600Watts / 11.1V) = 54 Amps. This tells us that the motor and ESC AND BATTERY must be rated for at least 54amps.

Note: A 20C battery would not be able to deliver, but a 30C could. More about battery "C" ratings later.

So how much flight time can you get with this configuration? The 2200 mAh battery can deliver 2.2 amps for one hour, or it can deliver 4.4 amps for half an hour or it can deliver 54 amps for 2.4 minutes [(2.2 / 54) x 60 minutes] at full throttle. Longer with some throttle management. So, running at full throttle or 3D flying that is not much flight time. OK, what NOW?

Check back next month when we talk about batteries.

Happy Electrons!



Reminder: Your AMA & Spirits' membership expired December 31. There is **NO grace period**. If you have not renewed by Dec 31 you **MAY NOT FLY** until you renew. If you renew your Spirits membership before the end of the March meeting there is no "In Arrears" penalty. *You must be a current member or guest to fly at Spirits.*

The Spirits of St. Louis R/C Flying Club, Inc. MEMBER APPLICATION & AGREEMENT

FOR THE PERIOD **JANUARY 1 TO DECEMBER 31, 201**____
spiritsofstl.com

AMA and Spirits memberships run from January 1 to December 31st of each year. You must be an AMA member for the year you are applying for membership. (AMA Introductory memberships are not valid)

Check New or Renewing Below	Check the appropriate box or boxes		
<input type="checkbox"/> New Member	<input type="checkbox"/> Full Membership \$135	<input type="checkbox"/> Youth Member \$25 (under 19)	<input type="checkbox"/> Aug./Sept dues \$10/month (\$2.50 youth)
<input type="checkbox"/> Renewing Member	<input type="checkbox"/> Family Membership \$160	<input type="checkbox"/> Associate Member \$25 (non-flying)	<input type="checkbox"/> "In Arrears Fee" \$25 after the March meeting

Membership includes a subscription to "Flight Lines", our monthly newsletter. Check below to indicate how you would like to receive your copy: online @ spiritsofstl.com by US Postal service

Do you wish to be contacted by email, by the Spirits, about upcoming events & announcements: Yes No

Primary Member Information (please print clearly)		
First Name:	Last Name:	AMA No:
Address:		State:
City:		Zip:
Telephone:	Email:	Age (optional)
Signature:		Date:
Family Member #1 Information (please print clearly)		
First Name:	Last Name:	AMA No:
Relationship	Email:	Age (optional)
Signature:		Date:
Family Member #2 Information (please print clearly)		
First Name:	Last Name:	AMA No:
Relationship	Email:	Age (optional)
Signature:		Date:
Family Member #3 Information (please print clearly)		
First Name:	Last Name:	AMA No:
Relationship	Email:	Age (optional)
Signature:		Date:

By signing this application you agree that you have read and will comply with the current AMA Safety Code (available at: modelaircraft.org/files/105.pdf) & the Spirits' rules and regulations as stated in the latest version of the Spirits' Bylaws, Constitution, and Safety Rules available for review at spiritsofstl.com.

New members that join in August or September shall pay \$10 (\$2.50 for Youth Members) for August and or \$10 (\$2.50 for Youth Members) for September, plus the annual membership dues for the coming year. New members joining after October 1st pay only the annual membership dues for the coming year. (For example: If you join October 1, 2012 your membership will extend through December 31st, 2013.)

RENEWING MEMBERS: There is **NO** grace period when renewing! Not renewing your membership by Dec 31 results in your complete loss of flying and voting privileges with the Spirits in the coming year, until you have renewed. Additionally, if you have not renewed by the end of the March meeting you are subject to any "In Arrears Fee" listed on the membership application.

Send this completed and signed application, a copy of your (all family members) AMA card(s) with your check made out to Spirits of St. Louis R/C Flying Club, Inc. (no cash accepted) to the Membership Chair. You will receive your card in about 2 weeks. You may also apply in person during one of our meetings. Check our website for our next meeting time.

Mail applications to: Ralph Doyle, 2463 Wesington Dr, Maryland heights, MO 63043

You may contact Ralph by telephone at: 314-878-7914 or email: membership@spiritsofstl.com

TECHNICAL PRESENTATIONS

Our technical presentations keep getting more diverse and greater in number at each meeting. Don't miss out next month! Who knows what will show up then.

Walt Wilson brought in his Great Planes' ElectriFly Gee-Bee. The Rx-Ready, ARF sells for \$160.00 including the motor, ESC, and servos, all pre-installed. The airplane requires a 3S LiPo battery rated between 1300 and 2200 mAh, not included. The tail surfaces are all held in with magnets. What a great take on a classic plane.

Rich Taylor brought in his scratch built Hots. The top side panel never did fit well on this plane. Rich makes templates from the original plans and then modifies them with tape to get the design to fit just right on the plane as built. Sometimes this process takes several attempts to get the fit just right. The original kit is from Midwest Products.

Paul Geders brought in his scratch built Diamond. The original plane was originally designed by Boeing to be an antenna farm in a low-observable configuration. Made from 6mm Depron foam that he reinforced with carbon-fiber his 1/3 scale Diamond is impressive. The 64mm ducted fan on this plane reaches 60,000 rpm. The motor received energy from a 50 amp ESC and uses a 2200 mAh 4S LiPo to generate 2.3 pounds of thrust for a plane weighing in at 1.8 pounds.

Mike Roederer displayed a special tool, a bent screwdriver. The end was bent in a way to remove bell cranks, control horns and getting into tight places in the fuselage. It is amazing how many specialty tools are used in our hobby. Got a NEW tool or and old one that is different bring it in and share with the membership.



*Paul Geders showing his "Diamond" scratch built stealth antenna farm. Powered by a ducted fan.
photo by Walt Wilson*



*Custom Bent Screwdriver, presented by Mike Roederer, fabricated by Don Fitch
photo by Walt Wilson*



*Walt Wilson presenting his ElectriFly Gee-Bee, ARF. A great looking classic in foam.
photo by Paul Geders*



*Mike Roederer making a presentation about a custom tool.
photo by Walt Wilson*



*Rich Taylor explains how he used templates to form the body panels for his "Hots" airplane.
photo by Walt Wilson*

Congratulations

To
 Paul Geders
 for winning the \$20
 in Mark Twain Hobby
 gift cards for the best
 presentation.

Wing Patching; Easy as 1,2,3

by Peter Duzkiewicz, Tri-County RC Club, New Jersey
reprinted with permission from the AMA Insider

Top: Picture 1A, showing a large hole in a wing that can be repaired using this method.

Bottom: Picture 1B, showing a rip in wing covering that can be repaired.

We all have to get to the field and in doing so we always move our airplanes. During the life of a model it will get dinged up a bit, and eventually we all end up poking a hole in the wing, whether it's in the car or hitting a bush. In this article I will demonstrate three easy steps to patch those holes in the wings.

To perform a successful patch on a wing you will need the following:

- Covering iron
- Rubbing alcohol
- Trim solvent or acetone
- #11 blade hobby knife and scissors
- Marker (Sharpie)
- A ruler
- MonoKote to match the patch

- Windex

To understand what we're patching, here are two pictures of the damage that we will fix. Figures 1A and 1B show the type of damage that we're working with.

Clean the surrounding area where the patch will be applied with Windex. For good measure, you may also want to use some rubbing alcohol to wipe down the area, making sure there's no fuel residue on the wing, and to give it a final thorough cleaning.

After you have cleaned the area, use your hobby knife (with a #11 blade) to cut away the damaged area. I typically cut a larger area so the patch is easier to apply and conceal.

In Figure 2A I have cut out a square from leading edge to the main spar and from one rib to the other. In Figure 2B I drew a straight line where I would overlap a patch instead of cutting from rib to rib. The reason I did this is to minimize the work for diagonal strips that are shown (black and yellow), mostly because I was out of yellow MonoKote.

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The final step is to apply the patch. Before you





start cutting your patch, turn on your trim iron so it gets hot and it's ready for you to use. When cutting your patches cut them large enough so that it overlaps at least 3/8 of an inch. This will ensure that the patch does not shrink when you iron it on or hit it with a heat gun. I typically do not use a heat gun just for that reason. Remember patience here will pay off with a good repair.

When I apply the patch, as in Figure 3A or 3B, I spray a towel down with Windex and wipe it onto the wing around the border. The wet Windex helps to position and keep the patch in place as I begin to heat it with the iron. When I did the repair shown in Figures 1B, 2B, and 3B, I applied the white patch first. Hint, you always want to patch with the lightest color first so that the darker colors do not bleed through the lighter ones.

After placing the patch, I begin to iron it on into place as follows:

1. First tack each corner just before the edge of the patch. You should here the sizzle of the wet Windex. As it bubbles, move the iron forward towards the edge of the patch. Do this step for each corner.
2. Then using the iron, tack the patch at each center between the four corners. Work the

iron towards each corner, and then out towards the edge of the patch. Do this for each side of the patch.

3. Finally, after all the edges are sealed, gently run the iron over the patch itself. Start at the center and move out to either edge. Heat control is key here not to get wrinkles or excessive shrinkage of the patch. Do this until the patch is nice and taut.

4. An optional step—necessary for the patch in Figure 3B—is to apply any trim to match the original pattern. In the example shown I used black MonoKote trim (the peel away kind) and trim solvent to apply it. Alternatively you may use iron-on covering by applying trim solvent to the area where trim will be applied and then placing the trim on top of it. The wet trim solvent will allow you to work out any air bubbles, but you have to work quickly. Once the trim piece is in place I go over it with an iron set at a lower heat setting to ensure it's tacked on properly.

If you performed the steps correctly, the patched areas should look like the ones in Figure 3A and 3B.

Top Left: Picture 2A, a section of covering cut out from rib-to-rib in preparation for a patch.

Top Right: Picture 2B, a smaller area removed to minimize the repair.

Bottom Left: Picture 3A, finished repair of 1A & 2A.

Bottom Right: Picture 3A, finished repair of 2B & 3B.



Links

to stuff in this
issue & other things

About the Spirits

[Click here](#) to see all of the elected officers, Board of Director positions, and the chairmen that administer the club's affairs.

Events

[Click Here](#) to go to the Spirits Events Page and see the list of events that are scheduled.

[Click Here](#) to visit the Local Events Page where we list events in the surrounding area. If you know of an event, send it and a flyer to the [Webmaster](#).

Membership

[Click Here](#) to view or download a Spirits, Membership Application for 2013.

Reminder: If you are reading this and have not renewed your Spirits or AMA membership you are no longer legal to fly at the field. There is **NO grace period**. If you renew your Spirits membership before the end of the March meeting there is no "In Arrears" penalty. *You must be a current member or guest to fly at Spirits.*

**Support your
local hobby
shop!**

**If you don't, one day they won't be there
when you need that critical part to go
fly!**



Safety matters

Safety always matters in our hobby. Please be careful this winter while building and refitting your aircraft. If you are new to electric aircraft, consult a member

experienced with electric models to get some tips on preventing injuries from unwanted tor starts.

Safety is everyone's responsibility.

The following links discuss AMA and Spirits Safety:

[AMA Safety Code](#)

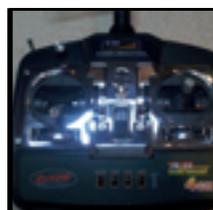
[Spirits Field Layout](#)

[Spirits Bylaws](#)

[Spirits Safety Rules](#)

[Click Here](#)

to go to the "Useful Links" page of our website. You will find dozens of links to manufacturers, Distributors, Hobby Shops, RC organizations, Local RC Clubs, Information for Newcomers, and info on Spirits' safety Program. Enjoy!



Lost & Found

Transmitter found at the Field. If it is yours contact Gary, gp@gtp ltd.com

Spirits

Advertising Section



If you have something you wish to advertise for sale please in the next Online newsletter please send it to the [editor](#) with photos, and your contact information.

Offered by:

Gene Jones, 314-291-5823, gjones4829@att.net

Item #1:

Horizon hobby Christian eagle
has 7 Hitec 652mg servos, Turnigy 52 overbore engine, Sullivan smoke system, spectrum 7ch RX engine & smoke & RX included but not installed
\$375.00

Item #2:

SIG Rascal 110" Saito FG21 (26 cc) spectrum RX
All batteries, ready to fly NO TRANSMITTER
\$600.00

Item #3:

HORIZON DECATHLON
Zenoa 26cc engine, spectrum RX, all batteries
Ready to fly NO TRANSMITTER
\$350.00

Item #4:

HURRICANE aerobatic shoulder wing
Turnigy 52 overbore engine
Sullivan smoke system installed
Spectrum RX installed, all batteries
NO TRANSMITTER
\$350.00



Offered by:

Gary Pyles, 314-680-2786, gp@gtpild.com

JR 11X, 11 channel DSMX/DSM2 transmitter
Purchased as a backup for my other JR 11X, programmed my models into it but never used at the flying field. Warranty card still in the package. No receiver. Like new because it is.
Priced to sell

Read more about the 11X at Horizon Hobby [click here](#).

\$400

Offered by:

Bill Lindewirth, 314-839-0282,
mrbillstl@charter.net

Great Planes F-86 SABRE "NIB" Comes complete with 2.4 GHz 4 Channel Rx. Three digital micro servos, (Ail. Rud. Elev.) 6 amp ESC, 2S 250mAh 7.4V 20C Battery, LiPo

Balancing Battery Charger, 12V Car adapter, 11,500kV brushless in-runner motor with 30mm HyperFlow ducted fan.

Includes FREE Tatic "ANY-LINK" 2.4 GHz radio adapter.

Tower's everyday price not including "ANY-LINK" is: \$139.95 +Shipping. See Tower 2013 Catalog pg. 7
Priced to sell **\$99.00!**

Hurry, Quantities are limited! Full factory warranty
See "[For Sale](#)" section on our website.

