



INTRODUCTION

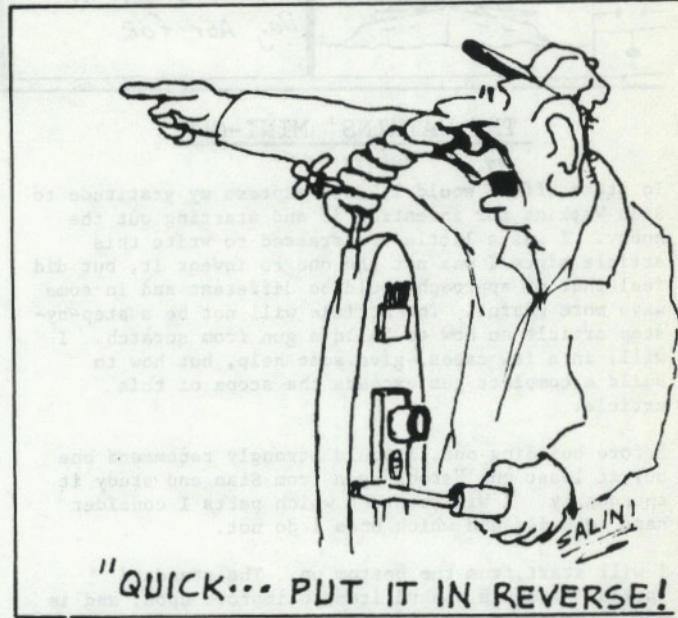
Well the NATS are over and everybody had a really good time. I would love to tell you about it all but I believe that joy is left for Steve Milholland's special issue. This Busters is aimed at helping the rookies. They always have thousands of Questions about the gun and where to buy stuff for their ships. This Busters has made a stab at answering those two lengthy questions.

You all should know the new rules of R/C combat. First, Battleships and battle cruisers may have only two side mounted guns. These guns are limited to a 50 BB magazine and must be mounted rigidly horizontal. (no delevate). These side mounted guns count as 1/2 a "unit" and these ships get a 5 offensive/defensive unit count. Also, 1 of the 4 quadrants (sides)

must not be protected (gunned).

The second new construction rule concerns pumps. Their "exits" may not have an inside diameter greater than 1/8", and this exit must be easily measureable at lake side.

The last new construction rule concerns scale. A ship built after January 1, 1984 must be 1/124 to 1/150 th in scale.



How to

Make An Adjustable Valve Knob Adapter By Stan Watkins

The needle valve used with the MK IX GCH generally works pretty well but as it is used over many on/off cycles the "turn-off" point changes. If the servo arm is soldered to the valve knob or if the valve knob is filed square to accommodate a plastic servo arm the valve/tank assembly will have to be rotated or the servo linkage will have to be adjusted to make up for this change in the "turn-off" point.

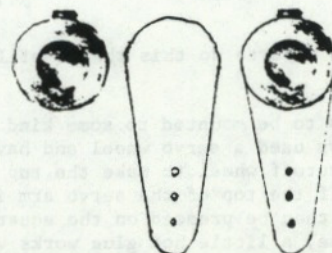
A 1/2" Dubro-collor can be modified to allow the adjustment of the "turn-off" point by loosening a set screw rotating the collar slightly and tightening the set screw.

A 1/2" Dubro-collor will slip over the "stock" valve knob nicely without any soldering or filing. That's nice. But how do you connect the thing to your servo linkage? That's easy. Well, I think most people can do it. procure a sheet of sheet brass about .020 to .040 inch thick.

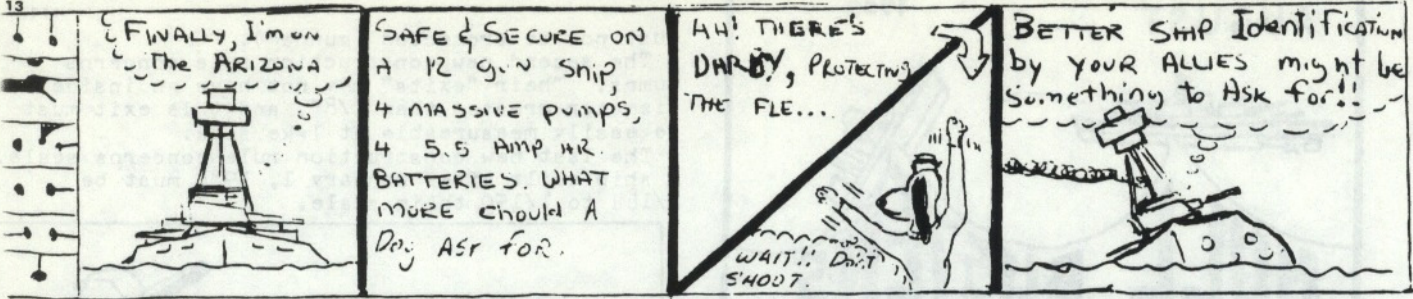
- 1.) Trace the outline of the outer diameter of the 1/2" Dubro-collor on the brass sheet.
- 2.) Extend the outer edges of the circle in a triangular shape.
- 3.) Drill 1/16" holes in the triangle to give servo link attach points.
- 4.) Now the hard part, solder. Don't panic, you too can solder this brass arm to the Dubro-collor. Be careful not to get solder in the set screw hole. I believe that anyone can make this solder joint easily if they will get some "Kester" Acid core solder (Green box). The brand name is very important. Many brands like "Wards", "K-Mart", etc., may make you decide that soldering is difficult, right Fluegel? The acid core flux in Kester Acid Core solder is very good and that's the secret to soldering. Also Kester is readily available so you won't have to order it, which can turn you off. Most hardware stores have it. There are other good solders but if you

- 5.) don't want to have to experiment or order just get "Kester" acid core.
- 6.) Now, if you did #4 right your almost finished. You will need a small torch (brand name not critical "Bernzomatic" etc.) Be sure prior to using your "Kester" that the flux is visible in the core of the solder. If not cut off some of the solder 1/2" long or so until the flux is visible. When heating the flux will melt just slightly before the solder melts. you should allow the flux to run around the joint area. The solder will follow the flux and adhere well to areas that the flux has contacted. Don't use too much solder.
- 7.) place the brass arm in contact with the Dubro-collor and using the torch on low flame heat both parts several seconds then move the solder to the area to be soldered. Contrary to popular belief you can apply heat to the solder as well as the parts to be soldered as this will melt the flux and allow it to flow onto the parts. Good Luck. You may pour some water onto the parts to quicken the cooling process.
- 8.) If all went well you now will have a completed adjustable valve knob adapter. If the solder job was less than desirable you may heat the parts and separate them to try again.

Let's sink krauts! Let's Battle!
P.S. I'll make you one for \$2.00 plus postage.
(\$1.00)



(Editor's Note: Dubro's Dura-Collors Cat. No. 244, 2 for \$1.00)



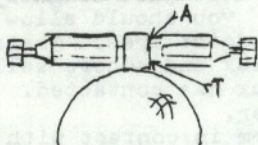
THE WATKINS' MINI-GUN

By M. Schneider.

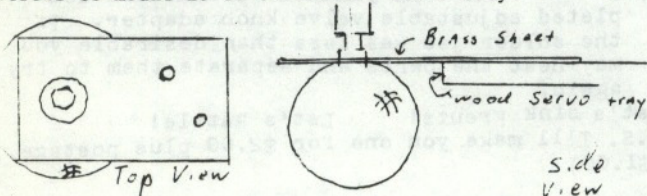
To start off, I would like to express my gratitude to Stan Watkins for inventing it and starting out the hobby. I was a little embarrassed to write this article since I was not the one to invent it, but did feel that my approach would be different and in some ways more useful. The article will not be a step-by-step article on how to build a gun from scratch. I will, in a few cases, give some help, but how to build a complete gun exceeds the scope of this article.

Before building one, I would strongly recommend one buy at least one "stock" gun from Stan and study it thoroughly. I will mention which parts I consider hard to build and which ones I do not.

I will start from the bottom up. The standard Watkins' tank is a hard item to improve upon, and is about the right size for one gun. Using a large tank with several valves on it is something everyone I know of who has tried it has quit doing it. If one valve stays open, you have lost all of your Freon. Another problem is that once it gets cold, the relative surface area is so small it takes much too long for it to warm up. Don't use 1/8" plastic tubing to hook a large tank to a gang of valves. It breaks under continuous pressure, although this is not the problem with normal use (intermittent pressure). By using a "T" available from Watkins one can use two valves on a standard tank.

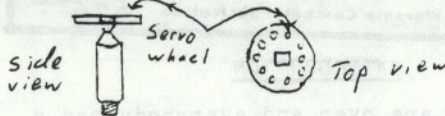


Where the valve attaches to the "T" (Point A) it must be soldered or it will unscrew when the guns are fired. The valve must be taken apart, and the needle-valve removed before soldering or heat will ruin the "O" rings in the top of the valve. I think it is better to use one tank on one valve though, and unless room is a big problem, I would not use it. I personally mount tanks by soldering a piece of brass sheet to the top so I can drill holes in it and use screws to mount it to the wooden servo tray.

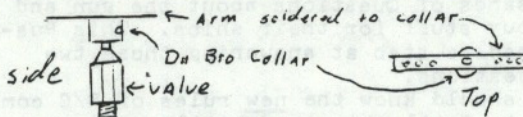


There are many other ways to do this that I will not go into.

The valve stem needs to be mounted to some kind of lever. I have always used a servo wheel and have used a Dremel tool cutoff wheel to make the top of the valve square. If the top of the servo arm is drilled out, it can then be pressed on the square stem. If it is loose, a little hot glue works very well. Holes can be drilled all around the servo wheel so that the pushrod can be mounted anywhere on it.

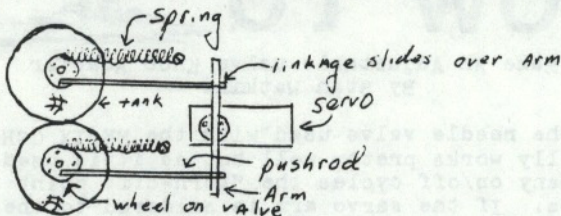


If I were to do it again, however, I wouldn't do it that way. I think that using a DuBro Duro Collar, which has a set screw in it, is superior.



By using the set screw it can be set anywhere. Once you have an arm on the tank, it is a simple matter to connect the servo to the valve. Ideally, arms and linkages should be selected so that the valve will open 90°.

One servo can be used to drive two valves; I would strongly and emphatically recommend you use a heavy duty servo to do this (about 56 ounce inches).



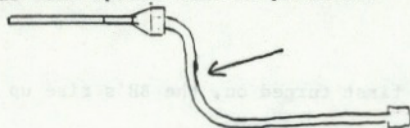
The pushrod shown in the picture slides when the other side valve is being opened.

There are three types of magazines. The "stock" magazine I consider the poorest; it tends to kink. The other disadvantage is that it is hard to mount if you want guns to elevate. Copper magazines are easy to make. One quarter inch copper tubing can be bent in almost any shape. Expensive tubing benders are nice, but I have used copper magazines for many years and have always used the cheap, \$1.00, spring tubing bender. After you bend them, always make sure a BB will go through them. It is easy to elevate a copper magazine. One can just solder something to it and attach a servo.

Steel magazines (1/4" brake line tubing) has some advantages over copper; it is thicker and does not kink as easily. Because it is thicker, there is less room around the BB's. This improves feed. It is harder to work with than copper and requires special tubing bender. It also cannot be flared with ordinary tools. That is why I said use brake line tubing because it comes with a flare on each end. I would not bother to use them, however, except for single-shot guns which I will discuss later.

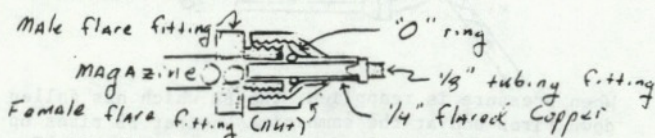
Magazine length is something which has been discussed in depth. All of what I have to say here applies to copper magazines. It is generally conceded that the shorter the magazine, the more single-shots you get. I am referring here to the ratio of the number of shots proportionately to the total number of BB's in magazine. However, you could still increase the total number of shots by increasing the length of the magazines. Now that I have thoroughly confused you, let me give you three types of magazines as an example. A 20 BB magazine might have 10 individual

shots. A 100 BB magazine would probably have about 15 individual shots, and a 200 BB magazine might have 20 individual shots. The first magazine is much more efficient, but the third magazine would still give you more shots. All the Freon pressure build up in the long magazine tends to make the BB's spurt. In my experience, about 12" is probably optimal. Under bench conditions, it can deliver 18 to 20 individual shots. If possible, I use straight magazines with as much upward feed as possible.

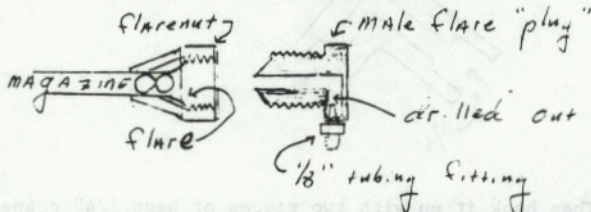


A large amount of downward flow shown by the arrow increases the number of single shots. A word of warning here. It can take lots of Freon flow to make BB's go up such a vertical incline. This means it takes a powerful servo with long arms to open the valves wide. It is one of the main reasons I recommend 56 ounce inch servos for one servo two gun combinations.

The standard quick-connect works well.

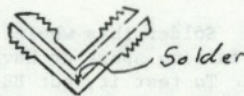


This is difficult to draw and even more difficult to describe. It is one of the reasons I said to buy one of Stan's guns. They can be made fairly easily. Incidentally, only the distal end need be soldered. One can also reverse things and use a female flare and flare nut to make a quick connect.



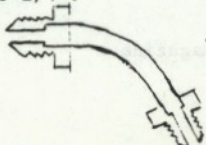
These are inherently shorter and less room consuming; they seem excellent, but my experience with them is nil.

The next thing I would like to talk about is "elbows". The first one I want to mention is the stock elbow. To make it feed freely, usually a small amount of solder has to be dropped into the right angle bend and the elbow heated to solder the angle.



This eliminates the sharp angles which tend to stop the BB's. I think this arrangement is obsolete. One of the arguments for it is that it limits flow of BB's and theoretically gives more shots. This isn't so. If it restricts BB's enough to limit spurts, it jams. I have compared the standard "STAN" elbow to other free-feeding elbows and if the "STAN" elbow is a free-feeding one, the number of shots is identical.

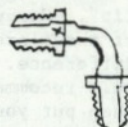
I attempt to try not to be prejudiced when I do things, but I will make an exception this time. I consider the next kind of elbow the best. The kind of elbow I use has a bent piece of copper tubing with a male end soldered on. The male ends can be cut off, unions drilled to 1/4" or male blank plugs drilled to 1/4".



This elbow never jams; it is easy to make and does not wear out (I have some three years old). Contrary to popular belief, it will fit in almost any turret.

I will not spend a lot of time discussing the 90° "L" of Dan Dees. I will refer you to his article.

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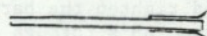
I have a minimal amount of experience with it. One of the problems with it is that the bend is so sharp that it wears out. It can be reinforced several ways. Steve Millholland bends a piece of piano wire, grinds it out and silver solders it to the convex end. Alternatively, it could probably be wrapped with brass or copper wire and soldered. I haven't done this; it just seems like a good idea. The other problem is that when BB's reach area "X" they do not feed readily to the tip in some kinds of guns. If I used this elbow, I would take a small piece of 1/4" copper tubing and insert it there to narrow it.

Now let us talk about barrels. I want to introduce this discussion by saying I do not know of anyone who builds barrels as well as Stan Watkins. I think Stan has a "copper thumb." Stan's standard elbow uses flared out copper tubing drilled out 7/32 seconds.



The flare nut isn't shown

They are press fitted. I learned this from Fluegel, but they can be made by using 1/4" K & S brass tubing instead of outside copper.



There has to be a small lip (not a big one). This holds the "O" ring in place and allows one to "tweak" the gun.

I have done a minimal amount of experimentation with barrel length. Allegedly, short barrels do not hurt accuracy is what I had originally heard. I disagree with this statement. I think that the pattern is considerably wider when barrels are cut off. I am not sure that this is a significant disadvantage at the ranges we shoot at. Barrels on side-mounted guns are very susceptible to ram damage and I would recommend that they be cut down to a length short enough so that they cannot be damaged by ramming. The length can be extended with soda straws if one wishes to keep scale appearance and they just bend instead of damaging barrels when rammed.

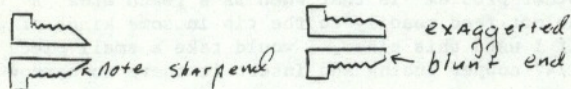
What I have said previously describes how to set up a gun. Now let's talk about how to use one. First, start off with the standard Watkins gun. It is hard enough to learn how to use in the original style; start playing with modifications only after you know how to use the original. Start off by shooting in your garage. Shoot about 10,000 BB's through it, manually opening the valve. Then hook it up to radio control and fire another 10,000 BB's, and you will have a novice's knowledge of the gun. I am getting a little ahead of myself though, so let's regress a little. Even filling tanks is important. After they are filled, I recommend opening the valves 90° and leaving it open until no more liquid runs out of the tank. I would do this well before the first battle because then the tank will warm up to room temperature. This allows higher operating pressure. During most battle situations, it is unnecessary to fill tanks more than at the start of the day. Venting the tank as I described prevents getting liquid in the lines and consequently prevents spurts.

Adjusting the "O" rings and the barrel is technically the most difficult thing to learn to start off

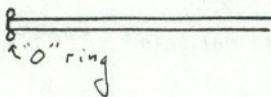
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with to have good BB feed. Even before trying to "tweak" a barrel, put some BB's in the magazine and make sure it feeds adequately. Once this criteria is satisfied, you can start tweaking the barrel. This might sound kind of stupid, but a good barrel is hard to identify. The main thing that makes a good barrel is to have the right amount of "lip". However, I am firmly convinced that the shape of the flare and the type of the "O" ring makes some difference. If you are making your own barrels, I would recommend you first have a gun that works and then put your barrels on it. This makes the only two factors, the barrel itself and tweaking.

The importance of the male end that the barrel fits on is important and this has never been addressed. If the male end is blunt, opposed to sharp, the "O" rings cont act too readily and with almost no pressure the gun will not shoot.



Once upon a time, about two years ago, I found this out at the Nationals and I was able to bypass the problem somewhat by using old and worn-out "O" rings, but this is unpredictable and not advised. To tweak the barrel first, put the "O" ring on the very end of the guide tubing.



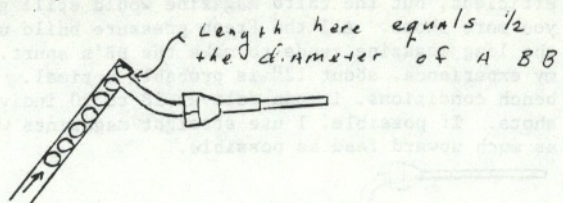
Insert it so that it barely touches the flare. Tighten the barrel until it barely touches. Then pull the guide tubing out and tighten the barrel about 1/8 turn more. Fire some BB's through it and if they just roll out of the barrel, you tightened it too much before removing the guide tubing or your "O" ring is worn out. If it won't shoot, but doesn't leak Freon, you didn't tighten it enough before removing the guide, or else you have a problem like a blunt male end I described earlier. If it won't shoot and leaks Freon, BB's are not feeding or else you have a bad barrel. The latest situation I described is equivalent to having cancer and radical surgery is indicated. Something other than an "O" ring needs to be replaced.

Once you have the gun shooting, I would recommend further tweaking by shooting against a cardboard box. It should be able to go through one side in hot weather; cold weather tweaking is considerably more difficult and one has to settle for less force and power. Fire 10,000 more BB's and find out.

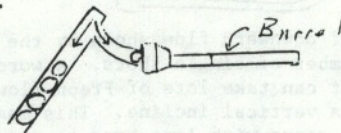
There is a difference of opinion regarding how to fire a gun. I personally recommend opening the valve as wide as it will open for a short period of time. In hot weather, this provides an almost instantaneous shot. The main problem with it is that in the excitement of battle, one tends to leave the valve open and waste ammunition. This can only be overcome by a marked degree of self-discipline which I personally do not have. The other alternative is to open the valve only slightly and have several shots fired which are powerful, but don't fire on demand. I will not comment on effectiveness of this because I have never done it. I personally feel it is inferior to "on demand" firing.

Now I would like to comment on a new version of elbow to feed the gun which almost makes it single shot. I feel like a fool writing this because it has never been combat tested despite the fact I have equipped my battleship with it. I have chosen to discuss it because even if it proves not to work for me, I think it deserves more research and development because it has a potential of being a cheap one-shot gun. I admit I stole the idea from Stan Watkins.

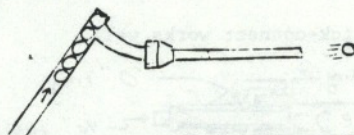
We Axis' are good at that. One only needs to remember that the V-2 was basically built from Goddard's work. Details of my theft I will not elaborate upon. What the basic principle involves is this.



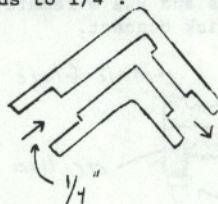
When the Freon is first turned on, the BB's rise up and jam.



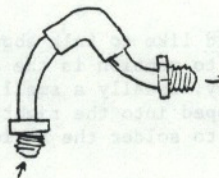
Then when the pressure is released, the BB falls into the tubing closest to the barrel.



When pressure is reapplied, the BB which has fallen down fires and at the same time another BB rises up and subsequently falls down to take its place. To make one of these elbows, take a standard elbow and cut off both ends to make it shorter. Then drill it out to make the depression shown, and then drill out both ends to 1/4".

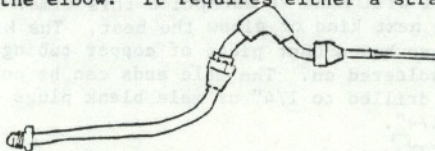


Then hook it up with two pieces of bent 1/4" copper tubing to two male end elbows as shown below.

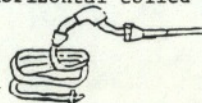


Now comes the funny part. Solder this whole stinking mess together without it falling apart or having solder run on the inside. To test it, put BB's in the magazine and intermittently put Freon pressure on it. If one BB does not come out at a time - you have screwed it up! BEST WISHES.

Now that you think you have the hard part done, look again. The magazine necessary with this is fundamentally different from any previously described. Any magazine which allows the BB's to approach the barrel works using regular elbows. With this elbow, BB's must also fall down freely to take tension off of the end BB so it can fall down to the firing end of the elbow. It requires either a straight magazine,



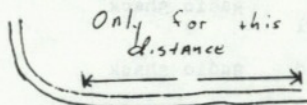
or a horizontal coiled magazine.



It took a long time to realize that building a magazine that BB's flow down by gravity is harder to build than one you can force BB's up with Freon. This all becomes very complicated. When they flow down that easily, it is harder to propel them upward. Standard 1/4" copper tubing leaves much too much room around the BB's and steel 1/4" brakeline tubing is mandatory. If one could find thick copper tubing, it would be equally effective, but I do not think this exists. Some of the parts in the elbow can be copper and I have described these earlier.

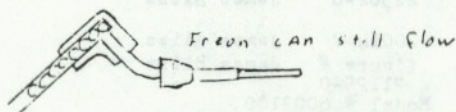
This is not an easy gun to make or use, and using it can be very frustrating. It tends not to work when originally put together. To conquer this, beat on the elbows a few times if it jams to allow the BB's to fall back down; after this occurs a few times, something happens. The rough edges get beaten off and it works.

Last, but certainly not least, the amount of BB's you put in is important. Put BB's only in the flat part of the magazine, otherwise it jams.



Please don't confuse what I said about magazines for this gun with what I said previously with the standard elbow; it just isn't the same situation.

The basic difference is that the standard magazine doesn't have to work in reverse by gravity alone. The other difference is that the gun wastes Freon when left on after the BB is fired.



The tanks become cold quickly. This decreases Freon pressure and is one reason why 1/4" brakeline tubing is essential. It also works better with short magazines. Thirty to 40 BB's is about the right length.

EDITORS COMMENT. Schneider told me to add my 2 cents, so here they are. To begin with, Martin wrote this article before the 83 NATS. In the first 2 sorties of a 3 sortie fleet battle, his single shot guns were used for the first time in battle. Their reliability was fantastic. Their rate of fire was approximately 4 BB's or shots per 5 seconds. Schneider had the gun he always wanted. BUT, he made a mistake wanting a single shot gun. The Axis lost that fleet battle, the first such loss in two years for the Axis. It is clear that a high rate of fire is what a combatant wants. Martin had the foresight to have a second deck with the standard rapid fire guns ready in case his single shot guns did not work. Once they were re-installed the momentum returned to the Axis and stayed there.

Battle, unlike any other environment has a way of defining what a real problem is and what a bad idea is. Still, the single shot gun is not dead. A multi-gun ship would seem to be improved if one single shot gun was on board. Their use as a weapon against ships that are dead in the water seems valid. The single shot gun will not revolutionize R/C combat but they may occupy a niche.

A further thought concerns Stan's barrels. Do not use a wrench on them, or intentionally fire the gun while a safety pin is in the barrel. These two practices will eventually affect the "lip" on the barrel and render them useless.

One last caution concerns Martin's practice of soldering on his freon tanks. If you solder on them use as little heat as is possible. I have avoided soldering on these tanks and am reluctant to promote the idea.



This photo courtesy of Larry Manofski is the first photo I know of that actually captures a BB in flight. The ships are (left) my Bismarck and (right) Terry Darby's Astoria. The place was Decatur Alabama. My ricochet shot is fired with my back to the ships. A small hand mirror is used in order to see the ships at the same time I am combing my hair.

GETTING HIGH AT THE NATS

What do you think of that title for another article for SCALE SHIP MODELER. I had so much fun at the National R/C Warship Combat Championships in Springfield, Missouri that I'm in the mood to tell the whole world about it. I feel like I have been injected with new enthusiasm. Wow!!! What a natural high! I regret that I had scheduled only two days for driving and two days for the ships. Next year, if we have another centrally located site, I will have to plan for a whole week.

For those of you who didn't come I will have to say that you missed a lot of thrills. Have you ever tried to go to Disney World or Disney Land and see it all in one or two days? It's hard isn't it! Well, I can definitely say that it takes a whole week to take in all the action in this sport. Participating or otherwise, you just can't do the sport any justice in two days. It's like playing two or four holes of golf and calling it a day.

I just got my pictures back (35mm slides) and learned you miss a lot of good photos by trying to be a combatant and a photographer too. I was disappointed that the photo session on Monday didn't provide all the ships in the water at one time for one great fleet portrait. We need a Combat Photographer! I nominate Joseph Salini! By the way, if anyone has a good color picture of my IJN Mikawa sinking, I would appreciate borrowing your negative so I could reproduce an 8 X 10 color print. The IJN Mikawa is a New Orleans class cruiser sporting a Japanese flag. It was stolen from the Allied Fleet by Davidson Guneichi Mikawa. The Allies were heard saying, "If we can't get her back, we'll sink the #13*#&#(3*4&3!!!

During combat and later looking at my slides, I decided it would be a big help if everyone had flags that were a little larger than scale for identification purposes. I proposed we make that a rule. Question?**** Now what do I have to do to suggest (officially) that rule? Get a partition signed or what?

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WHERE TO BUY.....EVERYTHING!....?

In the last two Hull Busters I referred to a list of merchants that I was compiling and with a lot of help from my friends, Da Da, here it is! Actually, it's not as wonderful as I had hoped it would be, but next year I will do it again, polish it up, and make it more complete (I am sure it will be wonderful). This is a wonderful starting point for you rookies, so don't throw this issue away.

GENERAL CATALOG INFORMATION

James Bliss \$2.00 catalog Address: James Bliss & Co. Inc./Route 128/Dedham, MA 02026/phone (617) 329-2430
Have shipping charges. (under \$15.00 add \$2.25)

International Marine Exchange \$2.00 catalog Address: International Marine Exchange/Rt 1 Box 207/Hendersonville, N.C. 28739/phone (704) 685-8645

The Model Boat Yard \$2.00 catalog Address: The Model Boat Yard/12474 W. Washington Blvd/Los Angeles, CA. 90066/phone (213) 398-5377

Technical Electronics Corp. catalog unknown Address: Technical Electronics Corp./P.O. Box 2361/Woburn, MA. 01888/phone (617) 935-7328 credit cards accepted.

Jerry Co. Inc. free catalog surplus stuff Address: Jerry Co, Inc./5700 Northwest Highway/Chicago, Illinois 60646/phone (312) 763-0313

Item	Description	price	catalog #	Vendor
Motor	4.8 volt dumas operate @ 6 volts. Fair performance.	\$ 8.00	2120	Tennessee Model Hobby (615) 482-2900 or any good hobby shop.
Motor	"Associated Electronics 05 car". 4.8 volts operate @ 6 volts tremendous performance, tremendous battery consumption.	12.00	?	same as above
Motor	3 to 15 volt Radio Shack. discontinued line. Fair performance on 12 volts.	.79 each	273-221	Radio Shack
Motors	6 volt Radio Shack. Terrible radio interference after a little use.	1.49 pkg of 3	273-208	Radio Shack
Motors	All current motors are unacceptable. From Edmund S			Edmund scientific
Universals	Dumas, Very Durable, a bit large.	?	?	Tennessee Model Hobby or any good hobby shop.
Universals	Length 1 3/64 OD 1/4 ID 1/8	3.00	528-D204	"Stock Drive Products" (516) 328-0200 or 328-3300
Universals	Length 1 23/64 OD 1/4 ID 1/8	3.96	528-DD204	Hull Busters Page 66
Universals	Homemade Page 78 Hull Busters Auto Vacuum Hose unacceptable use "rubbery" R/C plane fuel line, the shortest possible length.			
Brass Gun Barrels	44mm long, looks good for 5.9" guns German ships	2.00 for 4.	22362-8	James Bliss
Derrick Hook & Ball Life Boat	Lead hook for cranes Dinghy, smallest row boat 1"	.75 .65	20014-7 figure # 21125-0	James Bliss James Bliss
Life Boat	Cutter, Large row boat, 1 5/8"	1.00	figure # 21127-6 Model # 6003100	James Bliss
Scribed Decking	As of 7-19-83 all scribed decking has had warping problems after a week long battle.			James Bliss'
Battery Charger	Charger for precision charging of Gates Excell batteries.	44.95	None	International Marine Exchange
Battery Charger	1.2 v 450mA for slow charge on batteries with 4 to 7 amps.	6.95	110270	Hobby Shack 1-800-854-8171
Battery Charger	6 v 700 mA for slow charge of 6v 6 to 10 Amp batteries.	6.95	110262	same as above
Battery (by Yuasa)	3.82" x .98" x 1.99" 1.2 Amp 6 volt Not recommended	11.95	none	Model Boat yard
Battery	14 VDC pack, 5 AH "Gates Excell"	21.00	831 stock # 2302	Technical Electronics Corp.
Battery pack	12 volt 1.2 AH 2"x2"x5" plastic case.	5.95	?	Fair Radio/P.O. Box 1105/ 1016 E. Eureka St./Lima, OHIO 45802/phone 419-223- 2196; 419-227-6573
Battery	6 volt, 6 AH Lead Acid Hobby Battery #68. Heavy Cruiser size. Marginal durability, good size.	8.99	110197	Hobby Shack 1-800-854-8471
Battery	6 volt, 4 AH, 4"x 1 7/8"x 2 3/4" weigh 1 3/4 lbs. Gel cell not yet battle tested.	10.00	?	Pollc-Aristo/Craft NY, NY Accepts credit cards 212-233-5085
Battery	6 volt 4 AH ... Do NOT buy. Be leary of any lead acid battery with the #64 on it.	7.99	110189	Hobby Shack
Battery (Yuasa)	6 volt 5.5 AH Unsealed Lead Acid 4 7/8" x 3 1/2" L x 2 3/4" wide Excellent large Battleship power	14.50	6N5.5-1D-1	Better Motorcycle shops
Battery (Yuasa)	6 volt 4.2 AH 4 3/4" x 2 3/4" L x 2 3/4" wide	?	6N4-2A	same as above
Battery (Yuasa)	6 volt 4 3/4" h x 2 3/4" L x 1 3/4" wide	?	6N2-2A-3	same as above
Props	Cast metal, good performance, will need some cleaning up. A future Hull Busters will elaborate. 3 blades	.35 .35 .20 .20 .15 .15	Left #575 1 1/2" Right #576 1 1/2" Left #209 1 1/8" Right #208 1 1/8" Left #227 1 " Right #226 1 "	Model Shipways/Box 85 Bogota, N.J. 07603 phone 201-342-7920
Props	3 bladed metal props. page 98 in Hull Busters. Right or left hand. 4th blade available for 75¢. Good performance. price as of 7/82	3.50 3.50 3.75 3.95	1" 1 1/2" 1 1/2" 1 3/4"	Information available from "Exact Miniatures"/P.O. Box 402/Oxford, Maryland 21654 Send self addressed envelope
Props	Dumas 2 blades plastic. Looks bad, Good performance	.80	.049	Tennessee Model Hobby or any good hobby shop.

props	Dumas 2 blades plastic. Looks bad, good performance.	.95	.09	As above
Deck Latch	plastic, require small modification.	.55		Bob spychalski/1514 Charmaine Toledo, Ohio 43614
Deck Latch Aircraft plywood	plastic Carl Goldberg. price per pkg. Excellent for decks and ribs	.79	278	Better Hobby shops. Tennessee Model Hobby or any good hobby shop. Local hobby shop Local hobby shop
glue	Super jet and Devcon 5 min. epoxy			
glue	Ambroid Good for hull patching, do not use for planking the hull.			M.W.P. Co
plan sets	Specially for R/C combat. info in most Hull Busters.			Info in scale ship modeler
plan sets	wiswesser. often inaccurate, use only as a last resort.			good hobby shop. WHOOPS!
Speed Control	Homemade. Hull Busters, page 34	9.50		good hobby shop.
Speed Control	Tamiya kit sp 1054-1200			
Speed Control	page 66 & 75 in Hull Busters	63.99	715516	Hobby shack 1-800-854-8471
Speed Control	10 amp Putaba. not tested yet in battle.			
Lights	3 position toggle switch		222	Radio shack
Radios	Use three in series			Radio shack
Information	Putaba and Cirrus servos have water durability problems, though their use is common. All other brands have no water problems. Get a radio with the proper frequency and plug in crystals.			
Information	Talk a cassette tape to the person nearest you from the list of people under "R/C combat types", in this Hull Busters. select from those with an * beside their name. Tapes are excellent information sources.			
Information	A rookies information pack.	2.50		Model warship products Co./ 304 East Willow Creek/ Amarillo, Texas 79100
Balsa	Do not use "Balsa U.S.A.". Sig, pacra, and midwest are good.			Local hobby shop.

WHOOPS

The newsletter Shot Patter isn't 75¢ but \$1.00/ copy. Sorry Hal. (Hull busters pg 65).

OUT AND OUT LIE

U.S.S. Texas was a contender for "Best of Scale".

MODEL WARSHIP PRODUCTS CO.

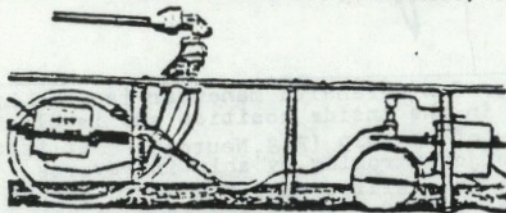
The Gun (MK IX GCH) R/C Operated Miniature BB Gun

39.95 plus \$2.00 parcel post (\$3.00 First Class)

fires 90 BB's per magazine before reloading

For use only with R/C Combat Warships.

Any other use of this gun will be considered as abuse by MWP Co.



MK IX GCH in R.C Warship hull framework

PLEASE ALLOW 2 TO 4 MONTHS FOR DELIVERY

PLEASE ALLOW 2 TO 4 MONTHS FOR DELIVERY

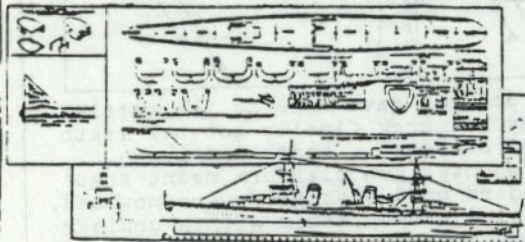
USS SAN FRANCISCO - A TECHNICAL HISTORY by Chuck Hansen

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PLANS AVAILABLE	SKILL LEVEL
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HMS Exeter	Beginner
IJN Aoba	Advanced
USS Pensacola class	Intermediate
DKM Prinz Eugen	Intermediate
USS Albatross	Intermediate
SOON TO BE RELEASED	DATE
IJN Nachi class	Dec. 82
Italian Zara class	83
French Anvers	85
HMS Kent class	87

New! USS Pensacola class Heavy Cruiser
This new ship is projected by R/C Combat Veterans to be an excellent R/C Combatant.

For "Rules of R/C Warship Combat" and Information Pack send \$2.00 to

MODEL WARSHIP PRODUCTS CO.

304 E. Willow Creek - Amarillo, Texas 79108
ARMY MERCHANT TO THE R/C WARSHIP COMBAT WORLD

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OBSERVATIONS OF THE FOUNDING FATHER

The really big news from the 1983 Nationals was the rule change session. Battlecruisers and battleships have been reduced to 5 units. This probably means 3 guns and 2 pumps, right. Well, no. A side firing gun counts as 1/2 unit, but must be aimed horizontally (no down angle) and may only have 50 BBs. I guess a person could rig 6 side firing 50's with 2 pumps and be legal but the intent as discussed at the meeting was that these ships would only be allowed 1 side gun off each side.

Also a battleship must have one quadrant with no gun on it. Example /Bow, port, and starboard guns but no stern gun, or stern, port, and starboard but no bow gun.

Pumps were plugged. Jeff Poindexter had a 6 gallon per minute pump and mine were 5 gallons per minute each. But the new pump must have no larger than a 1/8" inside diameter outlet. The outlet must be exposed at the exit for measurement.

Looks like the 1984 Championships will also be in Springfield, Missouri. Steven Milholland really did his facilities planning and coordination work well and this helped for the convenience of all combatants. Thanks again Steven.

Some lessons learned from this championships were: 1.) Don't tweak your guns (test fire) with the safety pins in. This damages the safety pin holes and tends to pull the brass barrel sleeve out of adjustment.

2.) Water in your ship can cause it to list if the water is shifted in a turn.

3.) stay away from the Tirpitz and the Bismarck.

4.) Dan Dees has not yet learned how to build sloppy ships.

Well, if you haven't sent Steven Milholland your \$1.00 for the NAT's issue of Hull Busters you'd better do it now. I bet it will be great!

Let's Battle! Stan

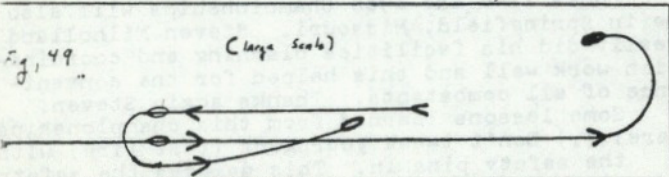
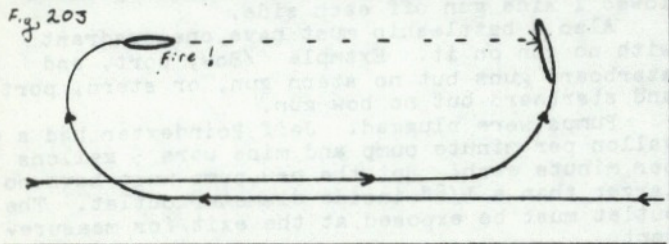
NEW PLANS AVAILABLE FROM MWP CO. Baltimore Lutzwow plus \$1.00 parcel post (\$2.00 First Class)

MY SHIPS AND THEIR STRATEGIES

by Fluegel

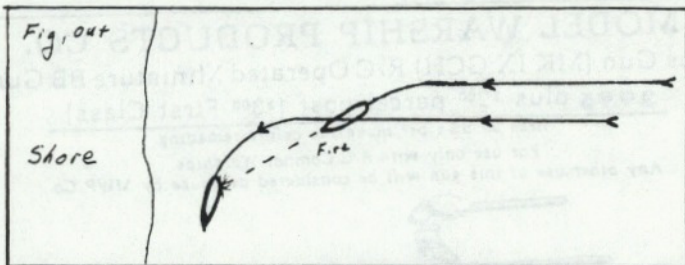
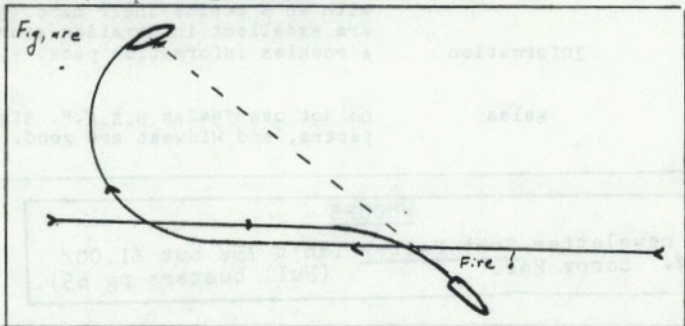
It's story time! I hope this one is non-fiction. This is a story about the strategies I have used and how they changed as I went from one ship to another. Before we get to the nitty-gritty let's get rid of some misconceptions. R/C ship battles are not like real ship battles, they are like airplane dog-fights. Most shots are fired at a range under 10 feet, and like planes we aim our ships to fire, not our guns. The definition of a "good shot" is when your opponents hull is perpendicular to your guns and within 12 feet. This means when your broadside is facing your opponent you're in trouble (unlike real ship battles). One last deviation from real wars is the guns are never elevated and are often de-elevated. Hopefully as time progresses we will evolve into a hobby that more accurately reflects real ship battles.

Now, we begin our story about five years ago with my battle cruiser Scharnhorst. Think of that ship as an oversized Heavy cruiser with no acceleration, poor reverse, poor turning, and at last its strong point, average speed. Battleships of today would be much, much better. Strategy is using your strong points to their maximum and minimizing your weak points. As there were only two other R/C combat ships in the world at that time (Stan's Wichita and Jeff's Houston) I knew what everybody's strong points and weak points were. Today it is not that simple. Strengths and weaknesses are relative to your opponents ships. If your ship turns terribly but is relatively fast, my ships strengths and weaknesses would be reversed and my tactics would reflect the changed circumstances. Anyway, Stan and Jeff were in a "turn and shoot and turn" match. What they were trying to do is turn quicker than each other to catch their opponent while he was still turning and fire into his broadside hull (Fig #203). As my ship's turn was measured with a calendar I had to avoid the "turn and shoot" tactics. I would use my speed to run away and turn. Then I would approach my opponent bow to bow meeting him on equal terms, then run away and turn again (Fig #49). Stan always beat me, but Jeff would occasionally break down and be dead in the water. At these times I could really out turn, accelerate, reverse etc., etc., his ship and as long as my guns would work I could really ring up some points.

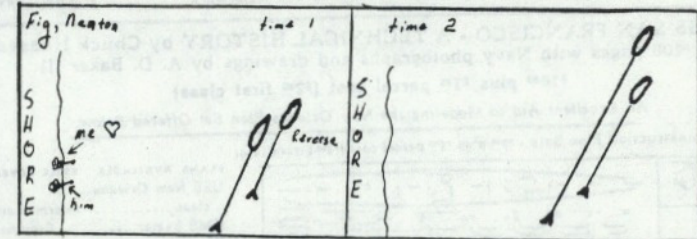


It didn't take me long to install a stern and port mounted gun. The stern mounted gun gave me a great deal of pleasure. When my opponent would pass by me and make his 180° turn I only needed a 45° turn to get a good shot on him (Figure) Ever since those days, losers have found some relief in the stern mounted gun. I didn't realize in those days that I had onboard my ship the greatest weapon in R/C combat, the side mounted gun on a stable platform. Actually my "platform" was not that stable as my ship was 1 inch narrower in beam than it should have been. Another reason I didn't appreciate that gun was due to the

fact that early guns were very unreliable when compared with today's guns. It took all my pit time to keep two guns going. I often neglected my side mounted gun...I haven't always been as brilliant as I am today. I did however realize in 1979 that my new snip (Bismarck) was even a greater turkey than my Scharnhorst (technology and rule changes have changed that part of R/C combat to be more like real ship wars). So I joined the turn and shoot world with my third ship, the Prinz Eugen. Though her speed was adequate she still couldn't compete in a turning match, still she was infinitely better than the Scharnhorst, particularly her reverse capabilities. A standard tactic that I employed with my new ship was to chase my opponent towards the shore were a delightful broadside target would be gained (Fig, out). This tactic meant that you had to continually jockey for "outside location" in order to force your opponent towards the shore. However, if his ship could out reverse my ship then the hunter becomes the hunted. As I chased my opponent shore-ward he often would go into reverse and guess whose penned between his ship and the shore, the Scharnhorst, oh shoot (Prinz Eugen didn't start with S).



Another fun defensive maneuver is when his ship is in the inside position and is blocking his view of my ship (Fig, Neuton). At that moment I enjoy throwing my ship in reverse. By the time he realizes what I'm up to I have a second or two of reverse momentum on him.



The 1980 rule changes gave hope to the battleship Boys and my Bismarck finally got her teeth (I love that kind of talk... teeth are guns). The stable side mounted gun platform meant that most of the standard good strategies were now bad. I have never battled a battleship with a cruiser but I can tell you it's fun to battle a cruiser with a battleship. I believe 3 experienced cruisers could beat a battleship 50% of the time, however; cruises often block their comrades escape routes and inadvertently pin their comrades into a bad situation. For the first time in R/C combat history, team work is a factor. Just as that was true in real wars, it is just as true that the best thing to defeat a battleship with, is with a better battleship. Fortunately for me, the Tirpitz is on my side!

The story of strategy in R/C warship combat will

unquestionably change, It is my hope that future strategies will continue to make our play wars, more and more like the real ones. I further hope you make that your goal when you suggest or vote on a rule. I do.

President's Column *Schmidt*

We have now finished another year of R/C combat. I thought the "yearly championships" (ex nationals) were a great success and I felt everybody had a good time and I think we should all express thanks to Steve for a job well done. It was nice to have calm water to battle in for a change.

A few growing pains have surfaced as our hobby enlarges. With more people in the hobby frequency conflicts are going to get worse. This is far from a simple issue. I think that alerting manufactures that there is a demand for 4 and 6 channel radios on the new frequencies is a good idea but I personally doubt that our end of the hobby world is large enough to pull much weight. Some of this may improve with time. From speaking to some model airplane enthusiasts there is some indication that radio manufactures haven't exactly decided what they are going to do about the frequency changes. This is evolving and I feel we may see increased availability of radios on the new frequencies. It may also become feasible to get old radios changed to the new frequencies. In the meanwhile the executive committee will study the situation more. The originally proposed allocation of frequencies might need to be changed. One piece of information we vitally need is a complete list of who is on what frequency now. Some form of seniority will probably be necessary to give some precedence to people who already own radios. Consequently I am asking everybody to mail in their frequencies to Hull Busters. If you don't mail them we will assume you don't own a radio.

The rule changes we voted on to limit the power of battleships are a grand experiment. I personally don't feel we have limited them very much. Limiting magazines on side guns will probably make for shorter battles. Limiting the number of quadrants one can shoot from probably gives the cruiser the greatest edge. It will take a large amount of skill to keep from getting yourself blown to pieces while taking advantage of that quadrant. The change in pumping capacity will produce some changes in what it takes to sink a ship. It will probably still take blowing large holes in a battleship to sink one. Discrete holes probably won't do it. The whole situation with pumps is a little confusing though. I think the effectiveness of a pumping system cannot be measured solely on the basis of capacity. I arrived at this conclusion when I became amazed at the number of battleships that were sank with high output, operating pump systems. I didn't expect to see that. I didn't expect to see any barring technical problems. I personally doubt that this is the last rule change we will see regarding battleship vs cruiser firepower. I think the cruiser should still have a fighting chance and with last years rules the did't.

Despite what I have said above I would like to give some encouragement to people who would still like to fight cruisers. From speaking to people at nationals it seemed like a lot of even die hard cruiser captains were deserting them for battleships. It might be difficult to be grand nationals champion with a cruiser but from the standpoint of pure enjoyment they take a lot less effort to build and maintain and I think are more interesting to fight with. I would hate to see the battleship, cruiser conflict ended by nobody building cruisers anymore.

Editor's Comment. Don't send me your frequencies. Send them to the Club Secretary, Kay Poindexter/hh09 Brown/Amarillo, Texas 79108

A ROOKIE GOES TO NATS

120

By Tom Fass

The trip from Chicago to Springfield, MO was hot and full of worry. Would the boat box on the top of the car blow off and six months of work be ruined? Would the HMS RODNEY be competitive? Would the terrible Axis sink us during each sortie?

These questions (and others) filled my mind as my son, John, and I traveled to the 1983 R/C Warship Combat NATS. Mechanically we felt the ROD was sound; she had been in the water for several months and seemed reliable. We had fired several hundred rounds through her guns in the basement, but we had never fired them on the water. Oh, well...there just wasn't time to get all the small details worked out.

On Sunday afternoon we trekked to the pond to test the ROD and see the battle site. After launching, John opened the throttle and let her steam. Just then someone (Steve M.?) said, "Is that half throttle?" We knew the future looked black. The ROD was built with the KISS (Keep It Simple Stupid) principle in mind. We chose her because she was inexpensive (cheap): one rudder, two screws, and three fore-mounted turrets. To conserve funds (and batteries) I mounted one motor driving through a Dumas gear train; perhaps we'd sound like the TIRPITZ and scare them to death. We had purchased two guns (for our PT boats, remember?), and so we mounted them broadside port and starboard per Steve M's suggestion. However, Stan's comment during a phone call that the RODNEY seemed like a big, slow cruiser appeared very apt. So, back to the "little red schoolhouse" to install a second motor in ROD. Out with the gears, in with the Dumas. Terry D. and Joe S. helped make new props. (I didn't believe HULL BUSTERS about homemade screws.

Off to the battles on Monday. Thank God, Steve put all the Rookies (a term we were proud of) into a separate fleet battle. The first Expert Fleet Battle was mind-boggling. The power and destructiveness was awesome as the ships blasted each other

I won't describe the battle since it will be reported elsewhere, but let me note my amazed observations. The battleship broadsides were simply overwhelming. I thought battles were fought at longer range and lasted longer. No way could we let ROD loose among those bloodthirsty animals (Axis and Allies alike).

The Rookie battles were much less destructive and seemed to be fought in slow motion but they were fun and exciting for all participants. As our confidence climbed, the collisions dropped, and the BB hits increased. ROD proved to be too slow to hold her own one-on-one with the cruisers (especially the AUSTIN and the ASTORIA), and too undergunned to ever be let out alone with the TIRPITZ, BISMARCK, ARIZONA or ALABAMA. But in fleet battles she could score if handled with patience. We even caught the AUSTIN once at the end of sortie 2 when the AUSTIN'S batteries were low. (James was just as surprised as we were.) I should mention that my son, John, did all the conning; I functioned as the chief engineer throughout the week.

As the week wore on, we gave some damage and got some. We gained a lot of knowledge by talking with the other captains; the exchange of ideas alone was worth the trip.

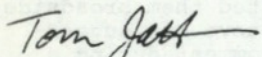
Everyone was helpful and willing to lend a hand to rookies. The weather was hot, the hotel pool was cool, and the company was wonderful. We learned so much about construction when the ships were opened up for repair.

There are some sights from the '83 NATS that will remain with me always: the powerful BISMARCK steaming where she wanted, when she wanted; the evil effective gun fire from the TIRPITZ; the seamanship and gunnery displayed by Terry D. in the ASTORIA; the beauty and detail on Don Dee's COLORADO; the raking the AUSTIN gave the ROD (her first bad damage); the sudden, sickening sinking of Dan H's EXETER; the speed and grace of the ALABAMA with her machine-gun salvos. Where do I stop? We'll be back in '84!!

Thanks to everyone who made our trip a success: Stan for the guns; Steve M. for his penny-pump design and all his work as contest director; Terry D. for his encouragement and willingness to help Rookies; Dan and Mary H. for their help and hospitality; Fluegel's HULLBUSTER for all the data and news to keep us involved up here in Chi town.

John and I had the time of our lives. We've found an educational, exciting hobby that is full of wonderful, creative people who share a common passion...ships that fight!!

Thank you all for a great week.


Tom Jaffe

Jeff's R/c Fighting Ships-82

Orders for Jeff's 82 (1st. ed.) will not be taken after Sept. 15th. 1983. Payment must be sent with order. (1st. ed.) is only available Hard-bound. Jeff's 82 (2nd ed.) will be available anytime in both Hard & Soft copies. Jeff's 83 will be available later in the year.

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C/O Jeff Poindexter
4409 Brown
Amarillo, Texas 79108

"Memo from the Secretary"

Scores for the 1983-1984 battling season as well as rule suggestions must be sent to me. Money and memberships should be sent to Terry Darby.

Since points are counted on a per sortie basis, all 'Battle Damage Report' forms must be filled out and sent to me. Sorry, but if there is no 'Battle Damage Report' filed there will be no points added to the scores.

"Battle Damage Report" forms are available from Terry for a small fee. (remember to specify 'Class' of ship.) Thank you, *Kate*

Kay Poindexter 4409 Brown Amarillo, Texas 79108	Terry Darby Chillhowee Ranger St. Tallahassee, Tn. 37878
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Electronic Valves

James C. Foster

At this recent NATS many of you expressed an interest in the Clippard electro-pneumatic valves I was using to work my guns. So here is the info you all wanted.

First, where to get them? I purchased mine through Aid-Dreco, Inc. which has four offices.

Houston:(main office) 2230 W. Governors Circle P.O. Box 10928 Houston, Texas 77018 (713)681-4601	Dallas: 1471 Prudential Dr. P.O. Box 35652 Dallas, Texas 75235 (214)638-7070 (Metro)263-7470
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San Antonio: 312W. Nakoma San Antonio, Texas 78216 (512)342-3163	New Orleans: 5041 Taravella Rd. P.O. Drawer 1220 Marrero, La. 70072 (504)341-0491
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If you check the Yellow Pages of your city you may be able to locate a distributor of the Clippard line of products, which would either carry the valves or could order them for you.

As far as cost is concerned, they are rather expensive, setting one back \$16.50 a shot. This may rather discourage their widespread use, in addition to the fact they may not work any more reliably than the needle valves presently in use.

The number of the valve is the Clippard Minimatic EV-2. It is obtainable in voltages of 1.4, 3,6,12, and 24 volts D.C.

Using the valves is fairly simple, but there are a few tricks that will make their use simpler. One of the major tricks is that you put the freon supply into the 'out' port of the valve, and connect the gun to the 'in' side of the valve. If the freon is connected in the way the labels suggest, the valve will leak freon into the magazine, causing the gun to fire itself, not to mention your freon tank running 'dry'. Another factor to keep in mind is that the lines to the valves from your tank will always be at the full freon pressure. You must either use brass tubing for your plumbing or some kind of very high pressure hose to prevent a burst supply line. The first hose I used wasn't high pressure enough and I had to recover a fair section of my hull.

The second trick has to do with adjusting the flow rate and reliability of the valve. The valve is basically in two sections, the coil being held to the valve body with a threaded collar. By turning this collar you can vary the distance the spider armature (the heart of the valve) has to move, which will allow you to adjust the flow of gas through the valve. I have found that you must unscrew the collar a slight amount for the valve to work at all against the pressure of the freon. A note of warning, however, do not unscrew the collar too much or the spider armature will not fully close and the leakage problem of premature gun firing will occur. This shows up for the most part with a full magazine where a fair amount of residual pressure is left in the gun after firing. It is the pressure differential which helps seal the valve.

The third trick is one you should save as a last resort. It is to lightly sand the neoprene button on the spider armature to reduce the thickness of the button. You must do this very carefully keeping the surface level and square to the armature surface. Do not remove more than a third of the thickness of the neoprene. As I say though, do this only as a last resort and preferably only if you have a spare armature or two. You should be able to get the spares at the same time you get the valves.

I hope this answers a lot of the questions you have about the valves, and if any further questions come to you, please do not hesitate to contact me. I am also working on improving the performance of the valves and guns in my I.T.S. Austin, as their action at the NATS was fair but not good.

by Kay Poindexter

Editor's Comments: Kay Poindexter, our new secretary sent me the rule changes shown below. Kay desired that everybody see the new rules but these are not the new rules, they are her notes from the meeting. She along with the rest of the executive board is re-writing the rules to make them more accurate and easier to understand. Some say you can't do both things, they work against each other, well, we will try. When we finish the complete rule set will be published in Hull Busters.

The 1984 officers are, Martin Schneider (President) Fluegel (Vice President and inspiration to all that know him), Terry Darby (Treasurer), Kay Poindexter (Secretary) and the 1984 Championships Contest Director, Terry

THE RULE CHANGES

by Kay Poindexter

All superstructure on a ship during "Best of scale" judging shall be left on board for the duration of the event.

To win "Best of Scale" at Championships a ship must have scored at least 100 points and have competed in all categories. Penalty points will not be counted against the score for the "Best of scale" but will for battle scores.

Convoy battle shall be legal using rules published in HullBusters. Rules will be set up at next rule committee championship meeting.

If a ship has sunk (not beached sunk) and if the guns will still work, the ship may continue to shoot at any enemy ships if the combatant had not declared empty magazine rule. Ship is still declared sunk.

A battle is to consist of 2 or more sorties.

All ships must have a reverse. (in order to avoid rams.)

For any and all ram damage (scratch to hole) a 50 point penalty will be assessed the rammer. If rammer sinks, 500 points will be assessed.

Rotating turrets are illegle.

A Battle Cruiser and Battleship may each have 5 units. A unit is a gun or pump. Side guns shall be limited to a 50 round magazine and count $\frac{1}{2}$ unit each. These must be horizontal. One quadrant must be left uncovered. Ratio of guns and/or pumps is captians choice but must not exceed 5 units.

Any ship completed after Jan 1, '84, shall be 1/144 to 1/150 scale.

Subs shall be legal. They shall have one gun with a 20 shot magazine. They must comply with surface ship rules which includes 1/32 in. balsa, safety pins, and proper scale. Their torpedo tubes may not be used as housing for the guns. The gun must be mounted in the deck gun location, (except Surcouf, whose 8in. guns were in the superstructure) and no pumps for any reason.

Ship to Sub challenge shall be legal if the ship accepts the challenge.

A gun shall not fire a projectile larger than a BB. Maximum gun pressure shall not exceed the ambient pressure of Freon 22.

After a combatants "5 minute rule" has expired, he must declare this fact and leave the battle.

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Rule F1 which states "A ship must not be launched in an attempt to ram or damage another ship" shall be deleted.

Rule III B 5a shall be deleted from the rules as it is repetitious with rule XI D1.

Ram penalties cannot be canceled for any reason.

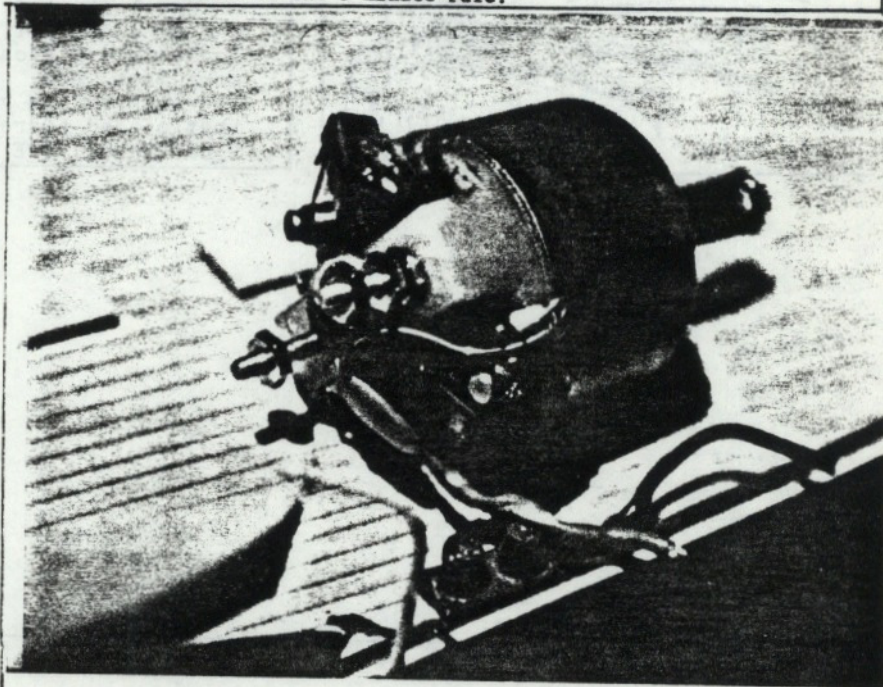
All pump outlets on any ship shall have an exit diameter of 1/8 in.

All points at championships count twice.

If a ship sinks, and there is a BB hole anywhere in the hull, a sink shall be awarded with 500 points plus any BB damage scored going to the victor(s).

If a ship is "out of controll" and beaches the combatant can elect to call it a "sink", or leave it there for 5 Minute rule. This applies only to beached ships and only for the purpose of minimizing non-sinkable damage. A majority, in that sortie, of combatants must agree the ship was truly out of control.

"Out of controll" on water rule. If rudder hangs up, motors quit (for any reason other than batteries losing normal charge), ship hangs on object, or props get fouled the ship may shoot back if it is capable of doing so for the duration of the 5 minute rule.



ON BOARD THE I.R.N. ZARA- After having my main fuse blow in combat, resulting in engine failure, the chief engineer decided to jury-rig a wire around the fuse to get power to the engine. The next time full power was applied, the engine had a meltdown resulting in a fire belowdecks.

L. Manofsky

Recommended for the shipbuilder's

Library

****Recommended for the shipbuilder's Library:
BATTLESHIPS AND BATTLE CRUISERS 1905-1970.
Translated from german by Alfred Kurti, 1978
Doubleday and Company, Garden City, New York.

This book has 922 side elevations, deck plans cross sections and detail sketches of almost all large warships (allied and axis) built and planned between 1905 and 1970. Extremely technical in scope. Covers individual ship histories as well. Order from your local

CALENDAR

1.) There is a 90% probability that a sanctioned regionals will be held in the Merville Tennessee area in early October. Contact Terry Darby for more details at 615-856-3133.

2.) I guess there is an 82.04% probability that the 1984 NATS will be held in July at Springfield Missouri. Terry Darby will be the Contest Director.

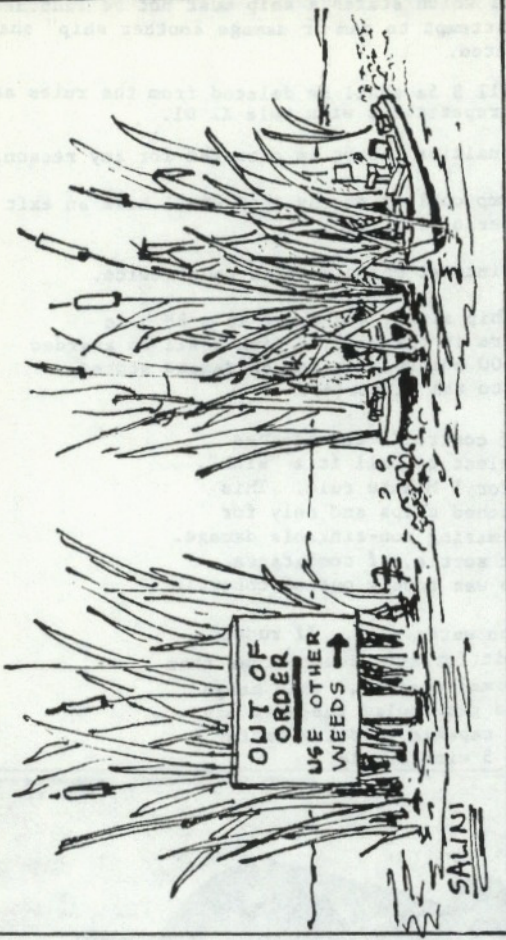
3.) I have no official word but there is a good evidence that a Northwest Regionals will be held in Portland Oregon in late September or October. Dan Dees would be the ontest director and his address is 1108h SW 81st/Tigard, Or 97223

CONCLUSION

Boy, this Issue was hard to put together! I really would have loved telling you about the 83 Championships, like who was the 83 NATS winner but I don't want to scoop Steve Milhollands Special issue. If you want his special issue of Hull Busters send him (or Hull Busters) one dollar and do it soon! If you want to subscribe to Hull Busters send two dollars for the remainder of the 83 issues, or \$5.00 for the 1982 Annual Edition.

I have added a new section to Hull Busters called "Calendar". If you and Wilton are going to battle on Oct 31st let the rest of us know "Me and Wilton are going to battle Oct 31st at Lake Sinkya". See how easy it is.

One last word, I was laid off last week and I need a job. If any of you know about a geologist's job floating around, let me know! One more last word. Thanks to Schneider for all the work on his gun article, that was a subject that needed addressing for a long time.
Your Friend, THE 1983 Championship winner.



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