

# RcM



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# radio control MODELER

THE WORLD'S LEADING PUBLICATION FOR THE RADIO CONTROL ENTHUSIAST





*John Brodbeck Sr. is the Owner and President of K & B. John is showing a soon-to-be released new Marine 11cc engine that has already been timed at 96 mph.*



*K & B is located in Downey, California. All of the engine manufacturing, and fuel and paints are shipped from this location.*

## A Visit To K & B Manufacturing

**T**his month we're going to take a visit to K & B and talk to the people responsible for making all those record breaking engines for planes, boats as well as cars. The K & B plant is located at 12152 So. Woodruff Ave., Downey, California 90241, in two large red brick buildings. They're of course, also world famous for their K & B fuel as well as model epoxy paint finishes, and many other items.

I talked first with John Brodbeck Sr., and right now I'd like to thank John, not only for giving me so much of his time, but also for the genuine enthusiasm in which he related to me all the answers to the questions I asked. And also to the time it took to

pour over back issues of Model Airplane News, dating back to January 1940 (he has almost every issue printed) as well as R/C Modeler and Model Builder.

How did K & B get started, and what does K & B stand for? Well, back during World War II, John was manager of California Machining Co., in Los Angeles, who were prime contractors with aircraft companies such as North American, Lockheed, Douglas, and Convair.

John was also a model airplane enthusiast, and had built his first free flight airplane in 1936, powered with a Brown Jr. During the war he kept thinking he could build a better model airplane engine than was being produced, so while at California Machining Co. he designed, and prototyped a .29 ignition engine with

the thought in mind that after the war California Machining could go into the engine business.

However, upon the surrender of Germany, many contracts were cancelled by the aircraft companies, and the owner of the company decided to sell off his equipment and go out of business.

So John, who was now out of a job, talked Lud Kading, who was a super machinist, and who also worked at California Machining, into going into business, and together they started their own machine shop in Lynwood, California, and called it K & B Manufacturing Co. (K for Kading, B for Brodbeck).

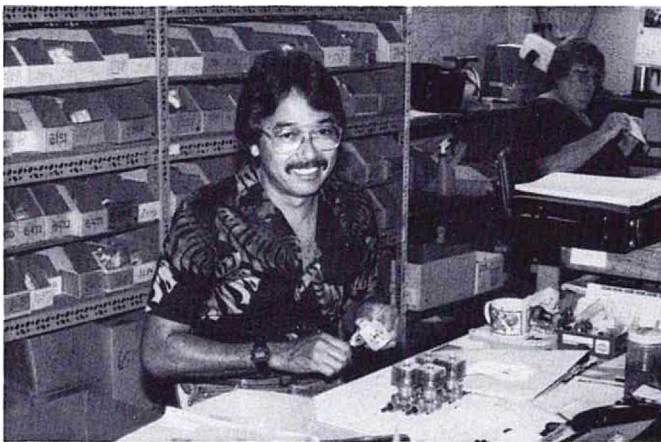
The shop was located in Lud's two car garage (John had only a one car garage) and consisted of a couple of lathes, drill presses, and a tool



*Plant Manager Pat O'Brien, is showing us the incredible machined finish that their two new Mori Seiki CNC lathes will be doing on all their new engines. The finish looks so smooth it almost looks like it's chromed.*



*When it comes to motors, you start with Bill Wisniewski. Bill is holding the first-ever Schnuerle ported model airplane engine, which he built and flew. Bill does all the engine design work for K & B.*



**Bobby Tom manages the Customer Service Department. Anyone with a K & B motor problem, or anyone who just needs motor parts will get excellent service from Bobby.**



**If you know anything about boats, you know Jack Garcia. Even though Jack has won many boating titles, he still has the time to help other boating enthusiasts.**

grinder. They picked up some of the old customers from California Machining, and one item for what was called the Manhattan Project, which they later found out was a part of the "A" bomb, and thus they survived until the end of World War II.

The moment raw materials were released from the war-time priorities, they went to work on producing their first engine, the Torpedo .29, and shipped the first production in June, 1946. The engine was an instant success and the first .29 engine to break the 100 mph barrier in Class B U-Control planes, which was accomplished by the late Tony Nacarrato Sr.

A few months later another company came out with a "Torpedo Special" engine in an attempt to gain sales on K & B's Torpedo engine name. John sued them and won the case in court, but before K & B could collect damages the other company went out of business.

It seems there's always a lot of people who are good at copying, but not much good at coming up with original ideas of their own. It was true in 1946, and it's still true today. The success of the K & B Torpedo .29 was followed by the K & B Torpedo .32 and K & B Torpedo .24 in 1947. By this

time the shop had moved to larger quarters in Bell Gardens, California.

In 1948 K & B developed the Infant .020 engine which was the world's smallest production made glow plug engine, at the time. Because neither John or Lud knew if the Infant would catch on, and sell, they gambled on a first production quantity of 10,000 engines. Only 3000 engines were assembled when they made the announcement to their distributors, and in the first week they had orders for 280,000 engines. It took them a year to catch up on orders. The Infant originally sold for \$7.95 and when production quantities increased, the price was dropped to \$4.95. Don't look in old magazine, you won't believe the prices.

Shortly after the start of the Korean War, K & B merged with the screw machine company that was producing the hundreds of thousands of parts required for their Infant .020, Torp Jr. .035 and Torp .049 engines. The company was owned by three partners, one of who was good at manipulating paperwork to benefit his personal financial gain, and when Lud and John found out, Lud sold his interest in the company, and John merged with Allyn Sales Co., to buy back the engine business. Allyn Sales

Co. made beautiful custom static display models for aircraft companies, such as Douglas, Boeing, plus the Fury and Sea Fury line of model engines.

About 1950, Gil Henry of Veco Products decided to go into the model engine business and asked John to make the engines for him. John said okay if Veco would design their own case, so they could use Torpedo insides. This they did and the Veco .29 and .31 was born. RCM's own Clarence Lee later went to work for Veco and designed the famous Veco .19, .45 and .61 engines. (In 1967 K & B purchased the Veco line of engines, as Veco was going out of the model airplane kit, and engine business.)

In 1959 K & B received a contract from Aurora Plastics Co., to produce 250,000 .049 and .061 engines for a line of plastic ready to fly models that Aurora was going to produce.

In 1961 Aurora decided they wanted to buy K & B. They did, and though John thought of retirement Aurora signed him to a 5 year contract as President of K & B. In 1972 the famous Nabisco Company bought Aurora, and K & B.

About 1977 Nabisco sold off Aurora but kept the profitable K & B division, only to sell it to Leisure Dynamics, Inc., in July 1979. (L.D.I. also owned Cox Hobbies.)

On April 22, 1983, John bought K & B back from Leisure Dynamics and is now the owner, and President of K & B. If you kept up with all of that, you're a better man than I am!

Upon entering John's office anyone will be overwhelmed by the vast array of plaques and trophies that literally cover the walls. Over the years, John has been a recipient of every significant award that the Hobby Industry Association, Academy of Model Aviation, North American Model Boating Association, and International Model Power Boating Association has to offer. Among these

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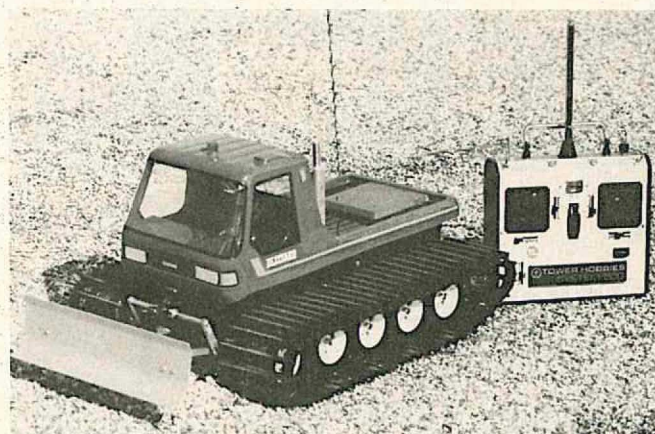
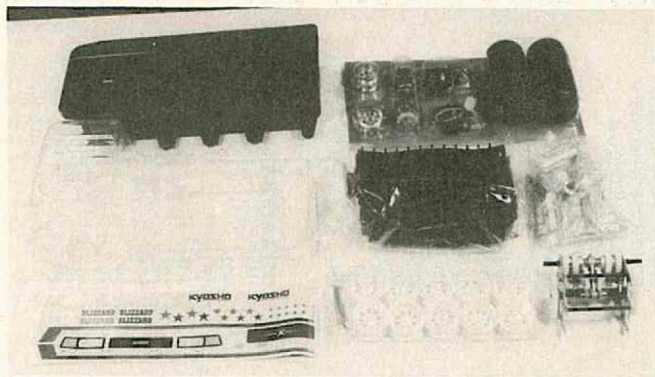
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# RCM PRODUCT REVIEW

## Tower Hobbies BLIZZARD



**T**ower Hobbies, P.O. Box 778, Champaign, Illinois 61820, has gotten together with Kyosho of Japan to bring us an interesting and rather novel R/C vehicle, the Blizzard. Blizzard is a 1/12th scale model and, in a nice way, sort of reminds us of a streamlined tank or an enclosed snowmobile.

It's a good looking rascal, for sure, but let's take a closer look and see if its beauty is only skin deep ... or do we really have something here?

Before getting started on the insides, let's take a look at the carton. This is a big box, measuring 6½" high, 15" wide, and 18" long, and is covered on the top and all four sides with great color photos of Blizzard in action, along with full specs written in Japanese. For those who are a little rusty when it comes to that interesting language, there is comparable English printing as well. At any rate, we are informed that this thing operates with dual elective motors, and runs on snow, sandy soil, grassland, and muddy roads (not to mention living room rugs, hardwood floors, or just about any other surface you can find).

Opening up the box we found that the Kyosho people had done an outstanding job of packaging. Components were grouped and sealed in clear plastic according to function. Road wheels were in one bag, the drive sprockets, tires and

### SPECIFICATIONS

Name .....	THE BLIZZARD
R/C Type .....	Catpillar Tractor 1/12th Scale
Manufactured By .....	Kyosho of Japan for Tower Hobbies
	P.O. Box 778
	Champaign, Illinois 61820
Mfg. Suggested Retail Price .....	\$149.95 — Tower price \$99.98
Available From .....	Direct from Tower
Length .....	14" (18½" with blade)
Width .....	12 Inches
Height .....	8 Inches
Power .....	Mabuchi RS-380X 2 pcs.
Power Source .....	6N 1200 7.2 volt battery
Gear Ratio .....	12:1 or 32:1 (see text)
Recommended No. of Channels .....	2 or 3 (see text)
Rec. Control Functions .....	Steering, Throttle, Blade
<b>Basic Materials Used In Construction:</b>	
Body .....	Clear Polycarbonate
Chassis .....	Injection Molded
Wheels & Tires .....	Injection Molded/Rubber
Tracks .....	Molded Plastic
Instruction Manual .....	Yes (16 Pages)

### RCM PROTOTYPE

Motor Used .....	As supplied in kit
Radio Used .....	Tower Hobbies System 500, Gold Series 6 channel
Charger Used .....	Tower Hobbies 5/6 cell 1200 mah Fast Charger

### SUMMARY

#### WE LIKED THE:

Good instruction manual, fine quality materials, ease of assembly, and great off-road fun.

#### WE DIDN'T LIKE THE:

Found no problems.

electric motors in another, the unassembled tracks in yet another, and the final bag contained all the necessary miscellaneous hardware. A beautiful pre-assembled gear box, the chassis and body, and a set of decals completed the inventory and we were eager to get to work ... if you can call this sort of thing "work."

#### Assembly:

The cover of the instruction manual gave us a photo of Blizzard in action, and promised great things inside. As it turned out, we weren't disappointed. In 16 pages there are fifty line drawings that show every (and we mean every) individual part and piece of Blizzard, and clearly illustrate exactly where they are meant to go. The assembly sequence was covered nicely by the written portion of the booklet, and we must say that this manual ranks along with the best we've come across to date.

Installation of suspension springs to the chassis started us off, and right here the combination of good drawings and written instructions paid off. The suspension springs all look alike, but we found (via the manual) that there were three different sizes of these things to be used with the 10 road wheels. From suspension springs and road wheels we moved on to the tracks. As the tracks come out of the package we found that they were in sub-assemblies, and it was a simple matter to screw the proper joints together and end up with two complete sets of tracks.

Installation of the tires onto the road wheels came next, followed by the trailing arms. This completed the basic suspension portion of the job, and our attention was next directed to such exotic things as the gear box, rear axle

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"Do Some Savin Shop Hobby Haven"

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## BLIZZARD

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... shafts, and drive sprockets. As we mentioned earlier, the gear box was already assembled and needs only the emplacement of the two Mabuchi R-S 380 motors. At this stage you are given a choice of gear ratios through a simple but effective method. If you wish to run the high gear (32:1), you tighten set screws on a particular pair of rear axle gears. If you'd rather go for the lower range (12:1), then two other set screws are tightened on another pair of rear axle gears. Naturally, when one set of gears are being used, the other pair are left to free wheel. As great as this thing is, it just won't run in two different gear ratios at the same time.

Blizzard's tracks were installed, and the spring loaded trailing arm kept the desired tension against the forward road wheel, thus ensuring that the flexible tracks would turn freely and resist being peeled or thrown during off-road operations.

At this point we installed the Blizzard three piece option parts set (Tower Hobbies order no. TE 702, at \$16.98), which consisted of a power shovel, a patrol light, and a muffler. This set is accompanied by a single instruction sheet that has been divided into six steps, each well-illustrated by a black and white photo. The power shovel is raised and lowered by a servo which, naturally, now makes Blizzard a three servo machine. So be informed ... if you have a two channel system, the power shovel would not be a functional item. If, however, you use a three (or more) channel outfit, we recommend you consider this option. It not only adds realism to the rig, but, as we found out, added to our fun during operations. The patrol light has its built-in flasher, uses its own switch and 9 volt battery, and looks great installed on the roof of the cab. The muffler is, of course, non-functional, but does look good in place.

Incidentally, we should point out that we painted the clear polycarbonate body a bright red, using Pactra Formula "U" paint on the inside surface, prior to the installation of the patrol light and muffler. The furnished decals were applied, and Blizzard looked ready to go. Well, almost.

### Radio And Electronics:

We decided to use the Tower Hobbies System 500, Gold Series, 6 channel radio with Blizzard, even

Ed Brannan



Dick Wangler



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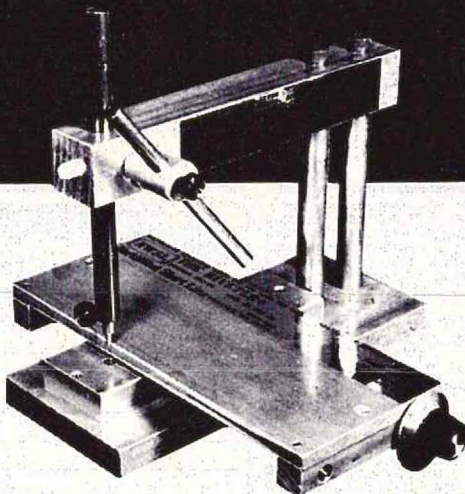
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though we'd need just three of the channels to do the job (remember, you only need two channels if you don't use the option set). For those of you who haven't yet had the opportunity to get up close to one of these radios, we'll give you a brief description. Appearance-wise this is just a beautiful piece of electronic gear. The case is gold anodized, brushed aluminum, and this is set off by the flat black side plates. The unit we used was the Mode II conventional stick arrangement with the throttle function on the left stick positionable by a fine grid ratcheting for precise setting. The adjustable sticks are the open gimbal type, with dust covers. In addition to the aforementioned four channel Mode II set up, our 6 channel rig had a toggle switch that could be used for retracts, bomb dropping, or any other "on-off" non-proportional application. The sixth channel is a proportional lever and can, of course, be assigned any appropriate task you choose. In addition to all this, there is a trainer switch that will allow the rig to be used in a trainer system. Also present are dual rate switches to reduce servo throw in relation to stick movement, and servo reversing switches that reverse the usual direction of servo travel. In addition to all these goodies, Tower includes a 12 month warranty with this radio. At \$159.95, this system merits serious consideration by anyone in the market for new gear.

Back to Blizzard and the radio installation. The provisions made for component locations were found to be very good, indeed. The receiver went onto a special mount, and the receiver battery was held in place by a metal clip. The three servos were bolted onto a metal servo mount, and the controller rheostat positioned just aft of that location. The 6N-1200 mah 7.2 volt battery (Tower no. TG696 \$22.98) was located lengthwise on the floor of the chassis. Wiring the switches, the patrol light, and bolting on the power shovel completed the job, and Blizzard looked ready for anything. At this stage, the battery was charged with Tower's fast charger (Tower no. TG695 \$19.98) and ready we were.

#### Performance:

Controlling Blizzard was certainly different . . . but offered no real problems, and after a very few minutes we found we could shave by objects (like table legs, chair legs, and even a human leg or two) very precisely. Our initial run was indoors, and after having gone around or over everything we could find, we decided we were ready for the great outdoors. We proceeded to tour the back forty, and this is where Blizzard proved to be a real fun machine. Soft dirt was

graded and piled using the power blade, and all sorts of small objects were climbed. Terrain varied from lawn, hard earth, soft dirt, and sandy soil to layers of fallen leaves, small twigs . . . and Blizzard proved to be right at home with all of it . . . and all the while looking like a full scale vehicle in action.

#### Conclusion:

If you were like us as a youngster, you probably, at one time or another, had a couple or so small non-powered model cars that you pushed by hand through the dirt and over "bridges." If you'd like to re-live some of that fun,

and do it in a way that's easier on the hands and knees, you ought to give Blizzard some serious consideration. Here's a chance to play in the dirt — and not get dirty! And when you get tired of building roads and dams, you can always bring it back inside the house and chase the dog or cat around with it. We don't live in snow country, but for those who do, Blizzard should really prove to be a great year round fun machine.

As a parting word, Tower Hobbies has informed us that they stock a complete line of spare parts for the Blizzard. □

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## PIT STOP

from page 16/14

awards are elections to the Model Aviation Hall of Fame, and to the Model Boating Hall of Fame. John E. Brodbeck is indeed admired and respected by his peers.

John's son, Johnny Brodbeck, is the Vice President and oversees virtually every operation at K & B and makes John's job much easier. (Johnny is often referred to as Jr., but he really isn't a Jr. His middle initial is W, while John's is E.) Johnny was away on vacation when I visited K & B, so I didn't get an in-depth interview with him, but he certainly is the spark plug of the company. He makes everything go.

The Plant Manager is Pat O'Brien. Pat is totally dedicated to improving every engine K & B makes. John left this job up to Pat, and Pat went full steam ahead. He personally contacted many plane, boat, and car people to ask them how their engines could be improved. Rich Lee and myself spent hours with Pat showing him things that we thought should be improved on the 3.5 engine to be able to keep up with their competition in the R/C car engine market. Pat listened, asked questions, took notes, and each batch of K & B 3.5 engines has improved greatly. As a new way is found to improve the quality of a particular part on an engine, that same method can be used to improve that part on the whole line of engines. So, not only are the 3.5 engines being improved, but all the engines are constantly being improved.

One of the things that John and Pat are proud of, is the two new Mori Seiki CNC lathes. The parts coming out of these computer numerically controlled machines are absolutely beautiful. Some of the machining is done with diamond tooling, that gives

the aluminum parts a finish that looks like polished chrome! Tolerances that they could only dream of are now easily held and easily duplicated. Some operation that had to be done out of plant on special machines, can now be done in plant with a much higher level of quality and consistency. There's something else they can do now, that they couldn't do before. Before, when doing the nose-piece, the large bearing bore and crankshaft hole would be machined, then the part would have to be turned over and put in another machine and the small bearing bore machined. Tolerances add up and both bearings may not always be perfectly aligned. On these new lathes, both bearing bores and the crankshaft hole are all done in the same operation, so all three are perfectly aligned, making for a much more freely turning crankshaft. This is only one example of new things coming. It will also allow making the crankcase nose all in one piece now, making for greater rigidity. Now that John again has full control of K & B, things are definitely getting better.

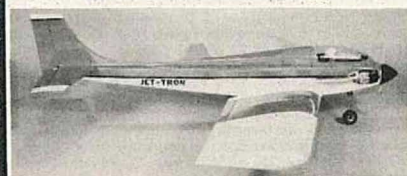
Next I got to talk to Bill Wisniewski. Bill has taken over where John left off, and for the last 25 years has been doing the engine design work for K & B. Bill started flying control line planes when he was 7 years old and he was National Champion in 1960, 1964, and 1966!

In 1963 Bill developed the first Schnuerle 15 engine. These prototype engines were nicknamed the Wart, because of the funny looking bumps on the sides of the crankcases, which were actually the Schnuerle ports. Well, the Warts were fast, to say the least, as the U.S. Team used them to take 1st, 2nd, and 3rd places in 1964, and in 1966 they were the first to use tuned pipes.

In 1972 K & B came out with the first K & B-15 Schnuerle ported engine which was an immediate success. The 6.5cc or 40 cu. in. size was next and it immediately dominated pylon racing. The 3.5 or 21 followed and it immediately took over the R/C boat and car markets and records. An outboard .21 size was so popular a new boat class was made just for it. Then a 7.5cc or .45 inboard and outboard followed. Soon to be released is a brand new 11cc, or .67 inboard that National Champion Steve O'Donnell has already been electronically timed at 96 mph with. And there's more coming that are still in the prototype stages, that will be setting new records. When you think of engines you certainly have to think of K & B and Bill Wisniewski first. At least other engine manufacturers around the world do.

If you know anything about boats,

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you have to know and like Jack Garcia. Jack has been a modeler since day one. He designed and raced slot cars for Dynamic Models, and together with Hi Johnson, developed the first 1/8 scale fully independent suspension gas car. He still had time to race boats with Dick Norsikian, and later they produced their own Nor/Kar 1/8 scale gas car. Jack then went to work for Associated and helped them to develop their first 1/8 gas car. Associated moved from Paramount to Santa Ana, and Jack opted not to make the move and then joined K & B heading up the Marine Specialties department. If you need help at a boating event, I'm sure Jack will help you. He's that kind of person.

One of the things K & B is famous for, is their Customer Service Department, headed by Bobby Tom and ably staffed with three knowledgeable ladies. Bobby has been with K & B for 26 years and certainly knows engines. But equally important, he knows how to help you, the customer, with a motor problem. K & B's motors are warranted for any defects in manufacturing, which are few and far between. What keeps this department busy is rebuilding or replacing used motors with a Maximum Repair Service that can't be beat. Also, most distributors do not carry spare engine parts, so dealers can order engine parts directly from K & B. Engines, fuel and paint, are obtained through distributors only.

If you have an engine problem with a K & B engine call the Customer Service Department, Bobby or one of the girls will help you. They can tell you over the phone, if your engine is covered by warranty. Or, if you want your engine repaired, they can tell you how much it will cost, or if you qualify for their Maximum Repair Service. You'll find that they're more than fair and will treat you as you like to be treated. They really care.

For that matter, everyone at K & B cares about their customers.