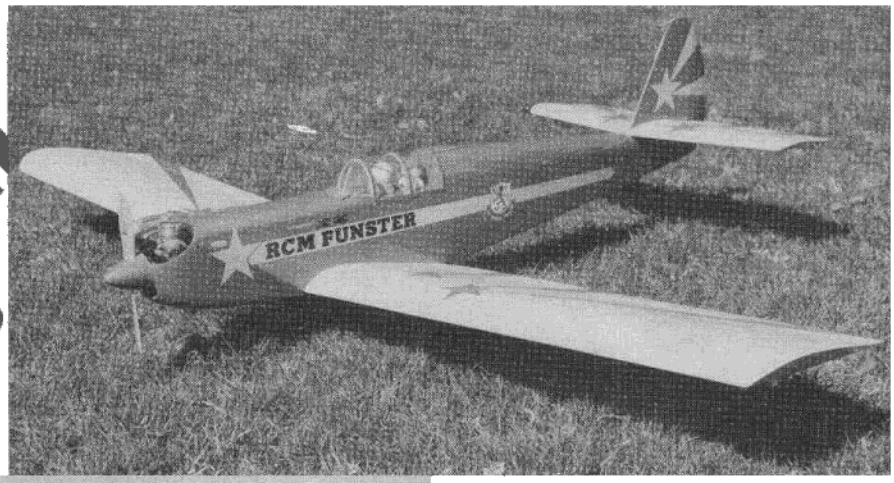
RCM FUNSTER 40

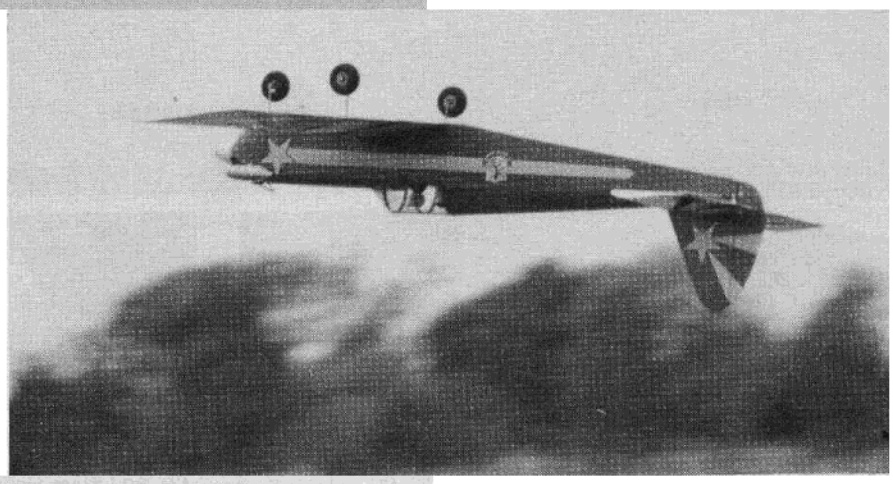


Fly by with full flaps deployed.

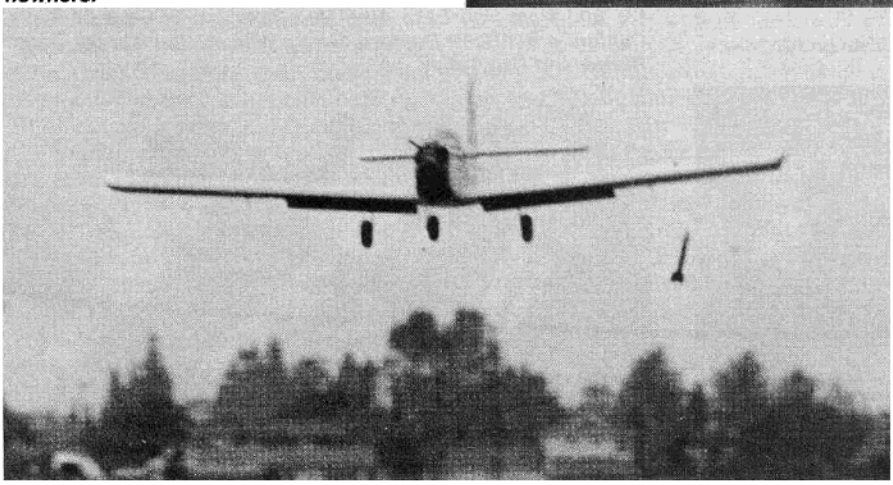
It is strange how some projects seem to get out of hand, but it is particularly heartwarming when everything works better than your wildest hopes.

Such is the case with the RCM Funster 40. The Funster is the most versatile performing aircraft with the broadest range of capabilities that we have ever seen in a sport aircraft. We can honestly say that our enthusiasm over this bird can be described as ecstatic.

The Funster concept was triggered by the success of the RCM Big Bird (RCM September 1980, plan #810) and the improved version, the RCM Big Bird Too (RCM October 1981, plan #849). The Big Birds were presented as the recommended first radio controlled airplane project, particularly for a person who either does not have, or does not want, an experienced RC'er to assist him. The huge response from modelers who were very happy with their success with the B.B.'s made us realize that there was a need for a suggested second aircraft for those newcomers to the hobby who had learned to fly and felt comfortable with the B.B.'s.



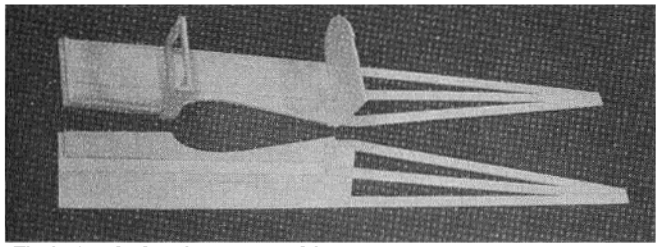
The bomb release works great. The ballistics of a tail heavy bomb ain't nowhere.



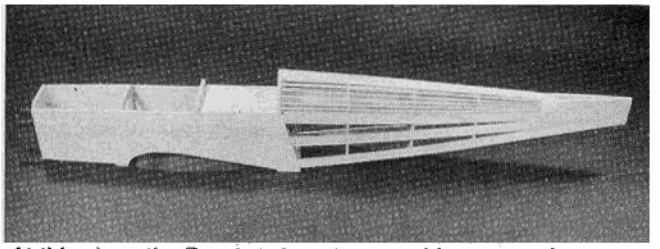
Now, as for the Funster concept, there is nothing new, exotic, or unusual involved. We have simply assembled a combination of features that have been proven over the years to achieve the desired flying characteristics. First, we wanted slow flight capability with good inherent stability and it must be a very tolerant and forgiving aircraft. We also wanted resonably snappy take-off capability and maneuverability when needed, large wheels on tricycle gear for good

By Dick Tichenor

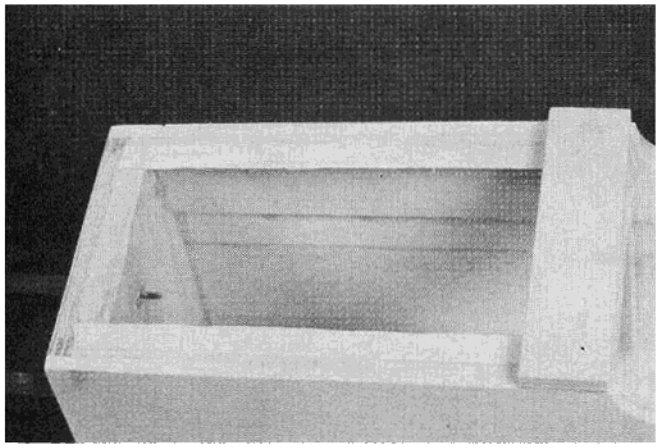
A .40 Powered Sport Design for Relaxed Enjoyment



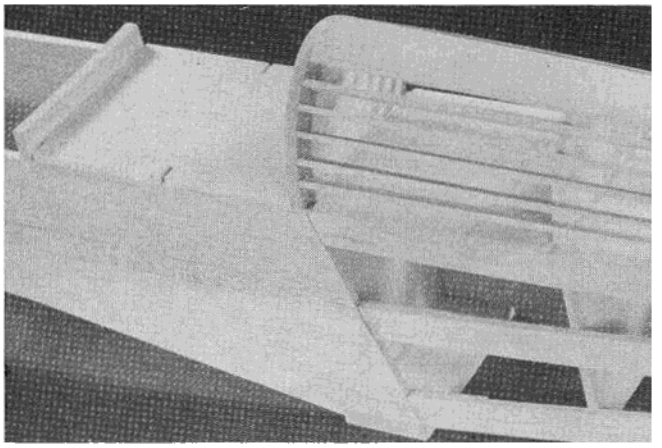
First step in fuselage assembly.



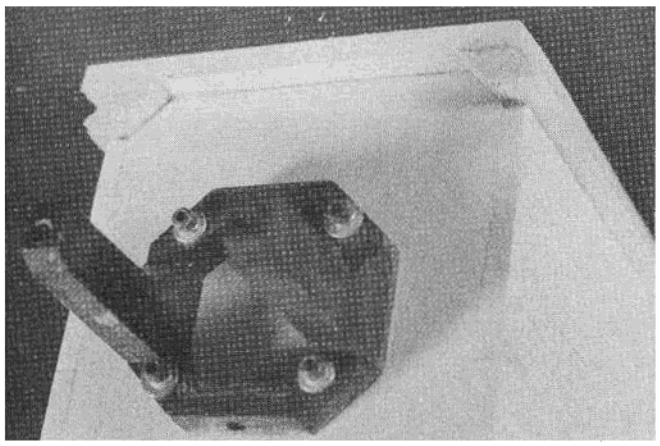
At this stage the Funster starts to resemble an aeroplane.



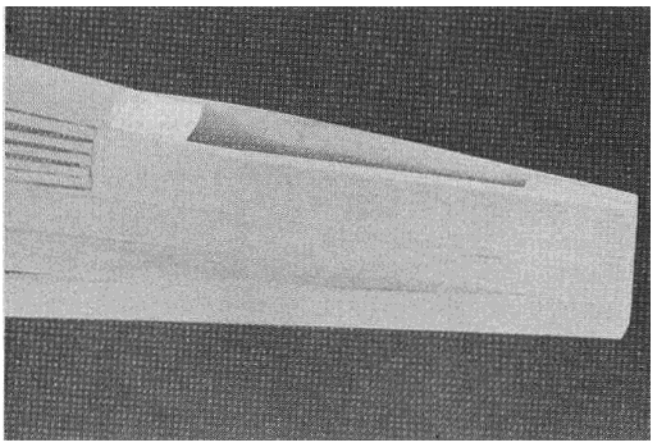
Front end bottom details.



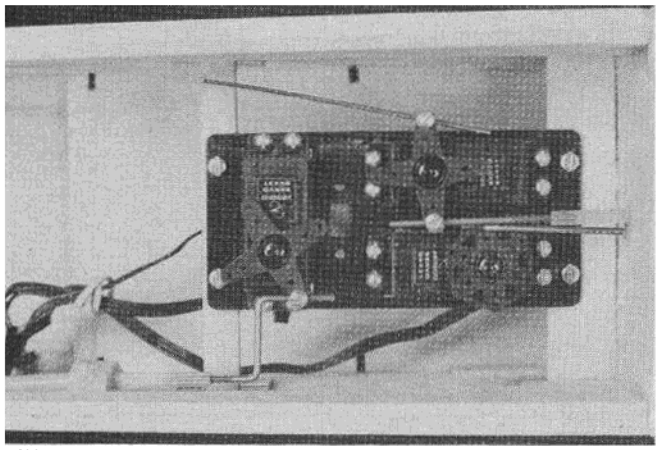
Structural details in cockpit area.



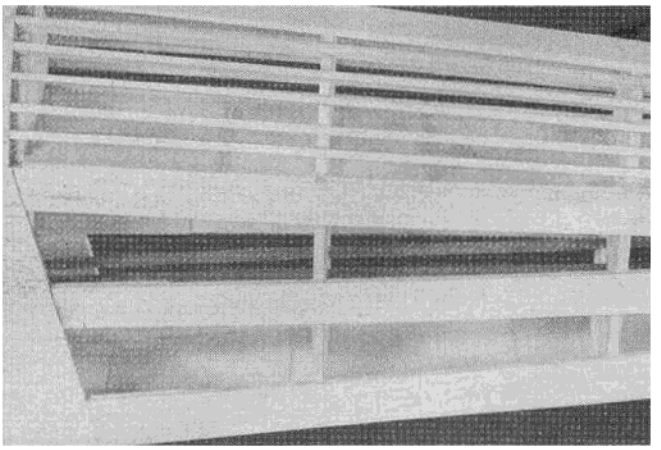
We used this top deck structure, plans are slightly different. Your choice.



Aft fuselage assembly.



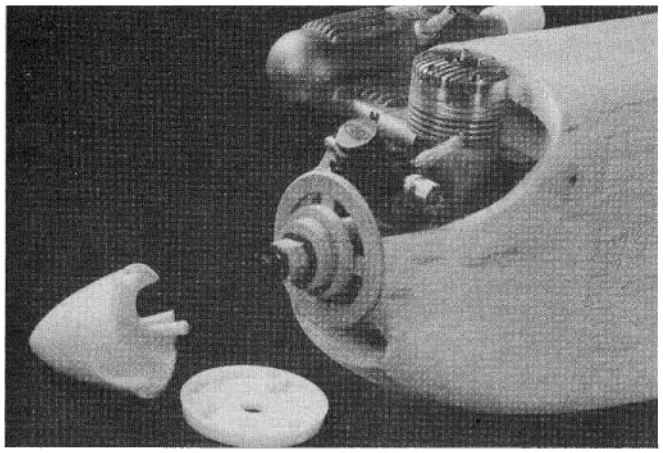
We prefer to make control installation in early assembly stage for easy access.



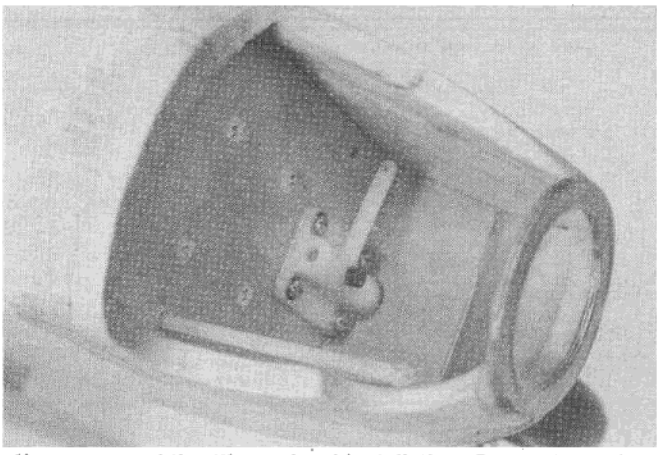
Sullivan Gold'N-Rod pushrods are visible in this photo.

ground handling and to facilitate take-offs and landings on grass fields. The above listed features weren't difficult to put together.

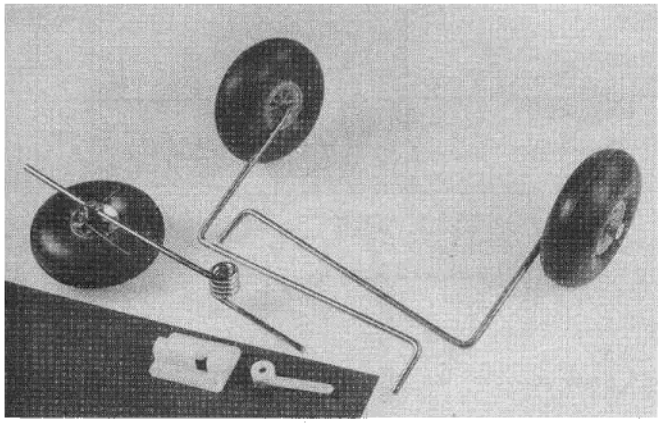
There is another aspect that we feel is most significant, although purely cosmetic --- it must be attractive. Square box type designs are very practical and are already available in many sizes and by the dozen. There are a lot of us who have a lot of pride in our hobby and we enjoy com-



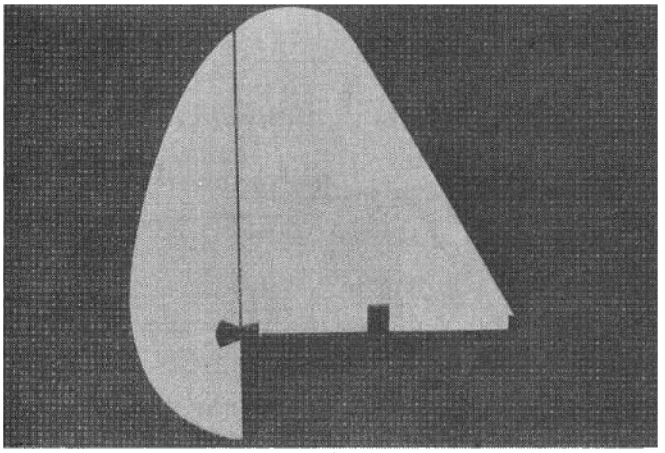
This arrangement was used for aligning nose ring and spinner. Note covers to keep dust out of engine. Hole in side is Allen wrench access to muffler screw.



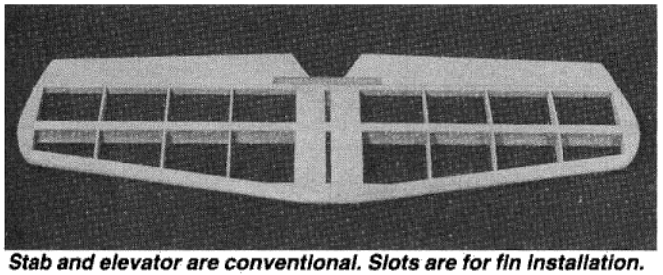
Nose gear and throttle pushrod installation. Compartment has been coated with K & B resin.



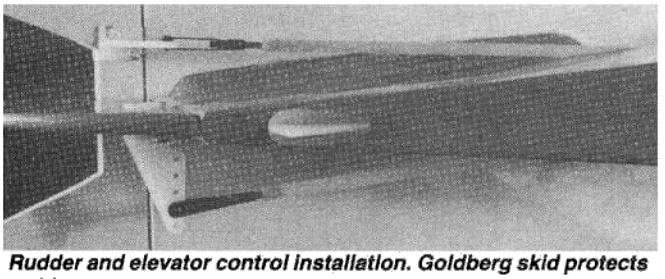
Landing gear components. Note Du-Bro brake on nose wheel.



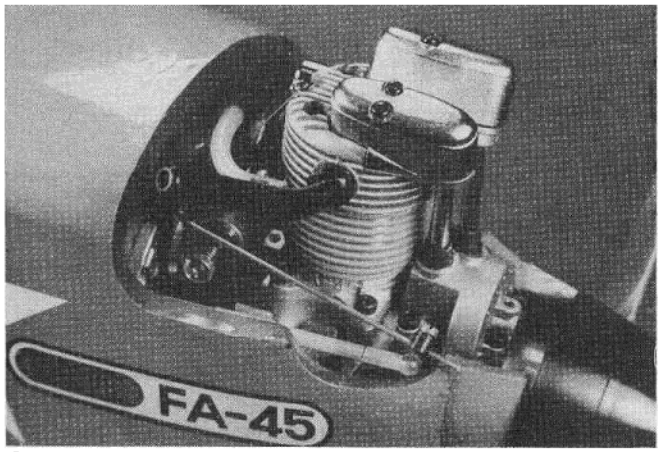
Fin and rudder are 1/4" sheet balsa. Note notch in bottom of fin to clear stab spar.



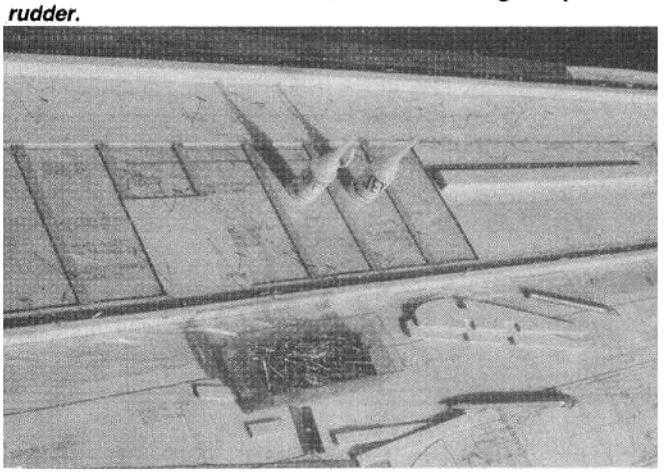
Stab and elevator are conventional. Slots are for fin installation.



Rudder and elevator control installation. Goldberg skid protects rudder.



Saito FA-45 installation required spacer behind spinner.



First step in wing assembly.

plimentary comments concerning our models from wives, friends, and flying buddies. We feel that this has been achieved with very little effort, especially after listening to the compliments at the flying field. Also, you must have noticed by now that we have avoided the word "trainer," a term we have come to abhor because of its gross misuse.

Bear with us, we ain't through extolling the virtues of the Funster.

From more than 200 club newsletters that we read each month, we have deduced that the largest competitive participation in R/C is in the club low key Fun Fly contests. We have felt that several of these events could be more efficiently and safely performed by an aircraft such as the Funster. We are referring to spot landings, bomb drop, limbo, numerous timed events, and just about any that we can think of. The optional equipment on the Funster such as flaps, nose wheel brake, and built-in bomb release have all been thoroughly flight tested and have proven their worth in practicing the various maneuvers.

All of this good performance is attributed to a large aircraft with light wing loading and reasonably low power loading. Other factors contributing are a high lift, low drag wing section, large control surfaces, long tail moment arm, and a lifting horizontal stabilizer. The K & B .40 engine has provided more than ample power for the Funster and it operates with excellent fuel economy. Knowing full well that some good folks will be determined to stuff a .61 engine in the nose even though it is in no way needed, the aircraft is stressed to handle up through a Fox .78. We have repeatedly taken-off, performed consecutive loops and 4 point rolls at 1/4 throttle with the K & B .40.

After a good many flight hours with the K & B .40, we couldn't resist temptation and installed a Saito FA-45. It is extremely difficult to restrain our enthusiasm for the Saito 4-stroke engines. Besides being a beautiful piece of machinery, the FA-45, like all the Saito 4-strokers, is a joy to operate. We were swinging a 12/6 Zinger prop with an impressive amount of power and, at 50 yards, the only noise was that produced by the prop. Not too shabby,

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from top speed to a safe idle with the trim in the full up position. With the control stick at idle, the trim lever is pulled to the bottom to kill the engine. The Du-Bro nose wheel brake is engaged by bringing the engine to idle and applying full down elevator simultaneously.

The C.G. location shown on the plans has been the most satisfactory position for us. It is slightly farther aft than usual because of the lifting stab. Try to keep the ground attitude the same as shown on the plans. With this set-up, it sticks to the ground on landing and only takes a slight touch of up elevator to rotate for take-off.

At this point we will close with one word: **Enjoy** □

a good bond when brushed over the outside of the cloth. Also, it sands very easily.

Another item concerns flaps. Incidentally, we strongly recommend that you install the flaps if you have a 5 channel radio. They aren't really necessary for the Funster, but you sure can have fun with them. If you go for flaps, keep this in mind: when connecting controls between a horizontal rotary arm, or wheel, at the servo and a Y or fork pushrod to the flap control rods you will get uneven deployment of the flaps as the servo output rotates. We eliminated this problem by installing an idler bar as shown on the drawings and in the photos.

The horizontal stabilizer has a simple structure with a flat bottom lifting airfoil. The front spar has a uniform depth to simplify the cutting and fitting of the shear webbing. The slots in the top center sheeting facilitates a strong and straight alignment of the fin. **Do not** cut the spar between these slots.

The vertical fin and rudder are made from soft 1/4" balsa and are sanded to a streamline cross section. Note that the bottom of the fin extends down into the stab.

The same as everyone else, we have our own approach to building. We prefer to cut out as many parts as practical prior to starting assembly. We usually preassemble the engine mount and engine, nose wheel mount and steering arm, and the fuel lines to the 1/4" plywood front bulkhead. Then those components are removed and the bulkhead is worked into the fuselage structure. We find it easier to do the drilling, blind nut installation, etc., in this manner.

The fuselage assembly sequence that we used is shown in the photos. The structure is about as simple as we could make it and still achieve the desired appearance. About the only unusual thing that is shown in the photos is our method of aligning the spinner and nose ring. With the rear of the spinner extending aft of rear prop drive face of the engine, we made up spacers to slip over the drive face to get the proper location of the nose ring. The nose ring had four spokes that were later removed. The 1/2" nose blocks were fitted between the ring and front of fuselage and carved to shape.

The mouth shaped hole below the spinner sort of resembles a P-51 which is a bit different for a sport aircraft but the reason for it is functional. The

From RCModeler Aug. 1982

opening provides access to the lower engine mount bolts and to the nose wheel mounting bolts.

The canopy was made of two pieces of clear butyrate sheet and was installed after the fuselage was covered. Some optional details of the Funster were shown in the June and July 1982 issues of RCM.

Our Funster 40 was covered with red & yellow MonoKote & the same was used for trim. An old but little known trick was used for applying the trim. With the trim pieces cut out and ready to apply, spray a light coat of Windex on the covering where the trim is to be positioned. Place the trim on the wet surface and slide it to the exact location. Now, with your left thumb pressed against the mid-point of the trim piece, use your right thumb working away from the mid-point to press out the Windex and any air bubbles. Wait about 10 minutes and apply a heat gun held about 10" to 12" from the covering while gently pressing on the trim with a soft cloth or folded Kleenex. There are no wrinkles and it sticks on like a good thing. Don't ask what happens to the Windex, all we know is that it works well.

The mentioning of the red and yellow color scheme reminds us of the coincidental development of the Funster and Great Planes Super Sportster. Last January, Ben Strasser brought the prototype of Super Sportster to our office. The similarity of lines, the same colors, similar trim (stars and sunburst), and each using a K & B .40 engine; all of this was uncanny, particularly in that each project was completed with absolutely no knowledge of the other.

The similarity of the two designs ends with the appearance. There are two distinctly different concepts involved and each fulfills its designed performance parameters superbly. To assist the modeler in selecting the design best suited for his pleasure, the following specifications may be compared. **Super Sportster:** span 55½", wing area 535 sq. in., weight 76 oz., wing loading 20½ oz./sq. ft., and fuselage length 39¼". **Funster:** span 72", wing area 840 sq. in., weight 92 oz., wing loading 15¾ oz./sq. ft., and fuselage length 55".

Finally, for the flying --- and that's what it's all about. We will be honest — everything was rigged to a bunch of best guesses and we lucked out. The only thing that changed from the first set-up was the rudder throw which was increased to 1" in each direction. Elevator travel is 1/2" each way. Ailerons are set for 1/2" up and 1/4" down and flap full travel is 30°. The throttle control is rigged to full range

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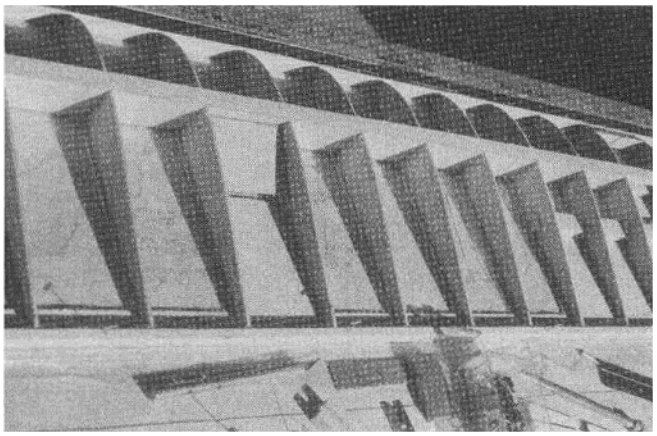
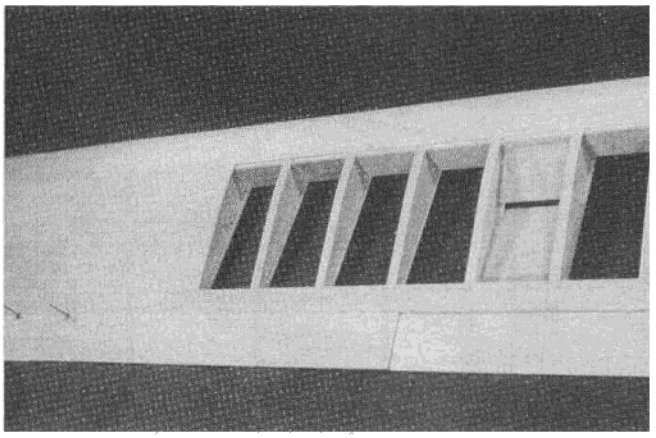


Wing is built from bottom upwards.



Wing structure nearly completed.

especially since the FA-45 does not have a muffler, only a short exhaust stack. The superb performance of the Saito FA-45 is exceeded only by our pride of ownership.

Our radio selection for the Funster 40 was an Airtronics XL Series 6 channel system. This radio particularly satisfies the needs for we non-technical modelers who build and fly for our own personal pleasure. The servo reverse switching feature is the most beneficial building aid to come down the road in many moons. The exponential dual rate capability makes our heavy fisted flying talent (lack of) look as though we know what we are doing. Also, the radio certainly must have a low electrical power consumption as evidenced by the amount of flying that we have experienced from each day at the field. Our flying has been with 6 servos, flaps were on the auxiliary channel, and the bomb drop used the retract channel.

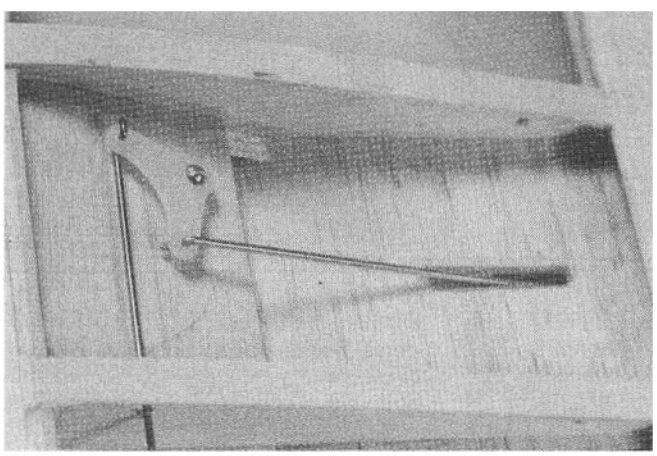
Among the many friends who have flown the Funster is our good friend, ace pilot, Mr. "Cool" Joe Zdankiewicz. Joe delights in doing his thing with airplanes such as a Funster take-off with 30° flaps that lifted the main wheels off the runway about an inch while the take-off run was made on only the nose wheel. Then there was the prolonged inverted flight with full

RCM FUNSTER 40
Designed By: Dick Tichenor
TYPE AIRCRAFT
Sport
WINGSPAN
72 Inches
WING CHORD
11¾ Inches
TOTAL WING AREA
840 Sq. In.
WING LOCATION
Low Wing
AIRFOIL
Flat Bottom
WING PLANFORM
Constant Chord
DIHEDRAL EACH TIP
2 Inches

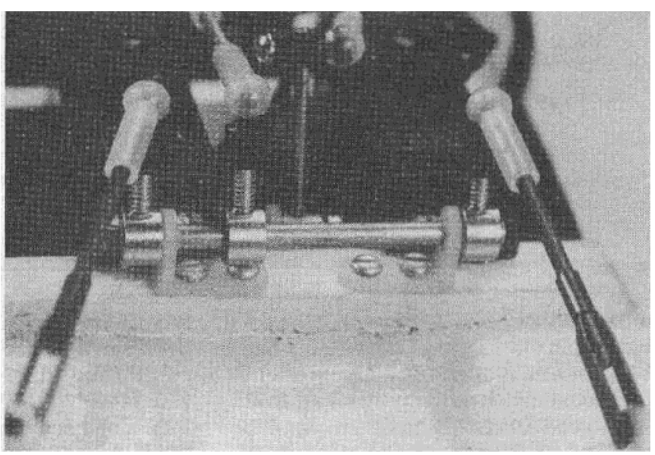
O.A. FUSELAGE LENGTH
55 Inches
RADIO COMPARTMENT SIDE
(L)11¾" x (W)3¼" x (H)4"
STABILIZER SPAN
25¼ Inches
STABILIZER CHORD (incl. elev.)
8⅜" (Avg.)
STABILIZER AREA
212 Sq. In.
STAB AIRFOIL SECTION
Flat Bottom
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
6½ Inches
VERTICAL FIN WIDTH (incl. rudder)
7½" (Avg.)

REC. ENGINE SIZE
.40
FUEL TANK SIZE
8 Oz.
LANDING GEAR
Tricycle
REC. NO. OF CHANNELS
6
CONTROL FUNCTIONS
Rud., Elev., Thrst., Ail.
(opt. Flaps & Bomb Release)

BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa & Ply
Wing ..... Balsa & Ply
Empennage ..... Balsa
Wt. Ready To Fly ..... 92 Oz.
Wing Loading ..... 15¾ Oz./Sq. Ft.



Aileron bellcrank is slightly offset to increase throw differential.



Idler bar was used to eliminate circular motion from servo wheel to flaps.