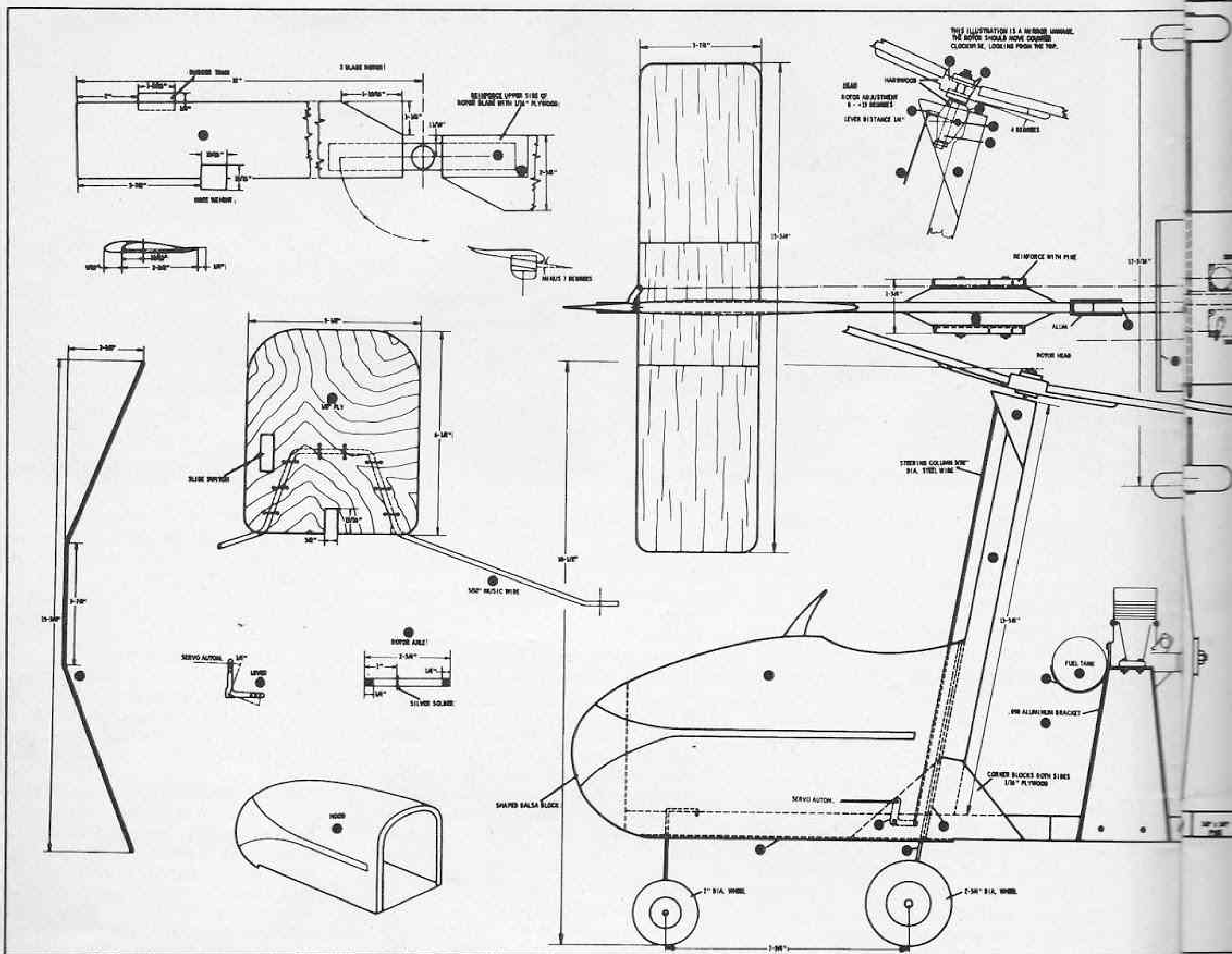


EDITOR'S NOTE: RCM readers are cautioned that this is not a tested and proven design, but rather, a 'state of the art' experiment on the part of the Author. As such, it will provide interested RC'ers with the results of the Author's engineering data on the subject as a springboard for further experimentation. R/C Modeler Magazine would be most interested in hearing from any readers who do attempt to carry this project to its conclusion.

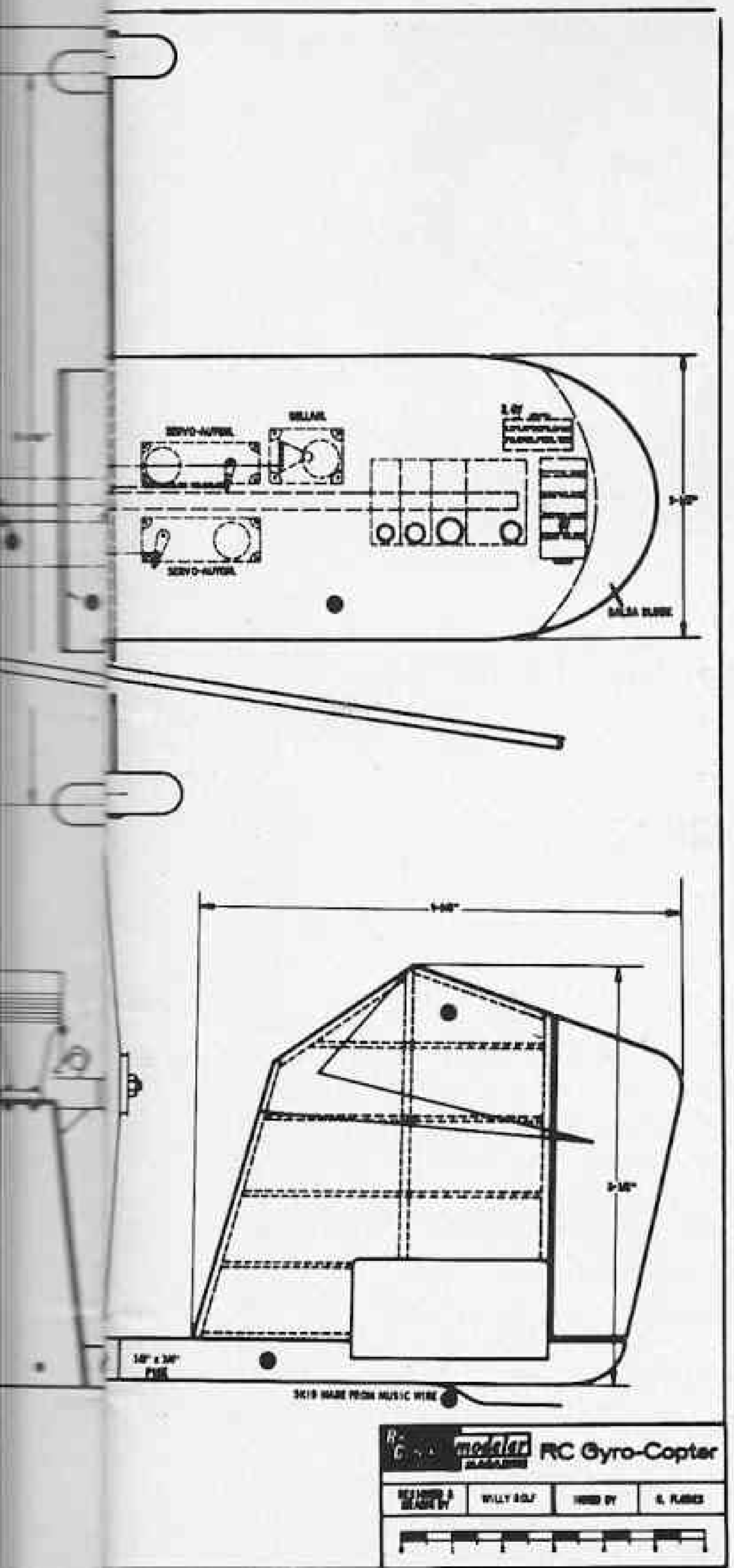
TO begin with, there is no Radio Controlled Gyrocopter today, or at least, there is no knowledge of one as of today. The plans illustrate an R/C model of the Benson Gyrocopter. It was designed and built in order to give a better picture of the size and installation of R/C equipment. The plan, therefore, is only an outline. It was drawn with the model builder in mind who would like to experiment with a great possibility of quick success. Close to scale of the full sized craft, only the horizontal stabilizer, wheelbase, mast, and vertical stabilbizer cross section have been changed. Building the model on a smaller scale is not recommended since the relationship between weight and stress will be negatively influenced.

Some of the more elaborate Benson types have an enclosed cockpit. This has been illustrated on the plans since this hood is necessary in order to facilitate housing the R/C system. The receiver, batteries, and servos can be bolted to the floor. The on-off switch can be mounted on the bulkhead. This will permit good accessibility to the whole system.

The C.G. is in the rotor axle, and it is recommended that the R/C gear be mounted last in order that it may be positioned to achieve this C.G. point.

The model is flown like its big brother — by changing the rotor angle, rudder movement, and throttle adjustment. A self-neutralizing Bellamatic II is shown for the rudder, while a trimmable servo-automatic was required for each of the remaining functions. A 3 channel proportional system would be ideal.

It is suggested that you complete the rotor section first in the construction of this model. The rotor has to turn counter-clockwise (looking from the top) in order to counteract the revolution of the engine. For the rotor, a simple ball bearing is adequate, although a pressure ball bearing would be preferred. The blades, themselves, can be made of either one piece of hard balsa, or of two laminated layers. In the latter case, a thin steel wire will have to be glued between the layers for stiffening. (0.5 mm.) The exact profile of the blades is very important for the crucial stability of the rotor. This can be best achieved with a concave scraper, or shaped by cutting, filing, and grinding. The latter process, however, will be more difficult. The leading edge of the rotor blades must have a ballast, while the trailing edges have a trim tab. These factors serve as rotor stabilizers in a full-size, manned gyrocopter. Unfortunately, it is impossible to determine, to date, the rules governing the bassast and trim. It is suggested that you construct the leading edge in such a way that weights can be added or subtracted, in order to determine the exact amount



R/C GYROCOPTER

BY WILLY ROLF

From 'FLUG and MODELL-TECHNIK'

Experimental R/C version of the famous Benson Gyrocopter. For .30 sized mills and proportional or reed equipment. This article is for the advanced modeler who wishes to experiment with a 'state of the art' project.

of ballast needed during actual flight.

The blades are bolted, or glued, to the rotor plate. Bolts require a plywood reinforcement, while gluing saves weight.

Insofar as the aerodynamics are concerned, the area stress of the model at a weight of 1200g is approximately 69 per $10cm^2$ of the rotor circle area. If the completed rotor is subjected to a wind speed of 5m/sec at a positive angle of 5, one will notice a surprising stability and lift. In calm weather, it will be possible to take exact measurements with the help of a convertible car. The rotor angle should be held at a positive angle of not more than 15. By driving at a given, constant speed, weights should be placed on the rotor, and you will be able to determine the stability of the rotor at that speed. You will discover that at speeds of 20 m.p.h., without weights, it will be hard to hold on the rotor!

Good luck and success in the construction of the first, true R/C Gyrocopter.

MATERIALS LIST

No.	Description	Material	Size	Quantity
1	Keel	Pine	28 3/8" x 3/4" x 3/8"	1
2	Mast	Pine	14 9/16" x 3/4" x 3/8"	1
3	Reinforcement	Pine	4 9/16" x 3/4" x 3/8"	2
4	Bulkhead	Plywood	6 9/16" x 5 1/2" x 1/8"	1
5	Floor	Balsa	9 1/16" x 5 1/2" x 5/32"	1
6	Hood	Balsa	Block	1
7	Rotor Mount	Plywood	5 5/16" x 3 9/16" x 3/32"	1
8	Landing Gear	Music Wire	5/32" dia.	1
9	Wheels		2 3/4"	2
11	Front Wheel		2"	1
12	Vertical Stabilizer	Balsa		1
13	Horizontal Stabilizer	Balsa	16 9/16" x 4" x 3/32"	1
15	Engine Support	Aluminum	6" x 3 1/8" x 3/4"	2
16	Glow Engine	O.S. Max. .30R/C		1
17	Prop		7/8" x 3/8"	1
18	Tank Support	Aluminum		1
19	Tank	Plastic	200 ccm.	1
20	Skid	Steel	1 3/4" x 3/8"	1
21	Rotor Plate	Beech	6" x 7/8" x 9/16"	1
22	Ball Bearing		for 1/4" shaft	2
23	Rotor Axle	Steel	2 3/4" x 1/4" dia.	1
24	Nut	Steel		2
25	Splint	Steel		1
27	Swivel Plate	Beech	1 3/8" x 15/16" x 3/8"	1
			3/8" x 5/32" dia.	1
29		Aluminum	1 3/8" x 1 3/8" x 3/32"	1
30	Steering Column	Music Wire	3/32" dia.	1
31	Rotor Blade	Balsa	30 5/16" x 2 7/16" x 5/16"	2
32	Plywood Enforcement		3/64"	2
33	Rotor Weight	Balsa	3/64"	2
34	Rotor Trim Tabs	Tin	1/128" x 1 9/16" x 9/16"	2
35	Miscellaneous Hardware Items			