

# MANTA

CHAMPIONSHIP  
ROCKET BOOST GLIDER

## GLIDER ASSEMBLY INSTRUCTIONS:

Place center portions of wing on wax paper with grain running as shown and glue together. Hold in place with pins or weights.

With the grain parallel to the leading edge, bevel the inner edge of the outer wing to fit the center wing when they are raised to the 1 1/4" dihedral. Prop up the tips to 1 1/4" and glue in place.

Glue the rear flap in place so that the rear is 1/16" above the bottom of the wing and the front is even with the center wing. Allow to dry.

Cut the 1/8" balsa body to the shape as shown on the full size side view using the actual side view of the glider body as a pattern.

Sand the bottom and front of the body round as shown on the cross section. Do not round the top of the body or it will ruin the fit of the wing and pylon.

Invert wing and prop up the center so that the wing tips are above the table. Mark the center of the wing and glue body on mark.

Glue the rudders flush with the rear and along the joint of main wing and the outer wing.

Check rudders and body to be sure they are vertical.

When dry, sand the wing to an airfoil shape and the rudders to a symmetrical airfoil. Resand the body with fine sandpaper, keeping the top flat. Coat all surfaces with clear dope or sanding sealer and fine sand when dry. For best performance and light weight just fill and sand sufficiently for a smooth surface. Paint with colored dope if desired.

The center of gravity for the glider, minus pop pod is 3 1/2" from the front of the wing where it connects to the body. Balance the glider with clay until the C. G. is correct. Hand glide and trim as necessary. Generally, exact trim cannot be determined until the bird has been actually flown under power. Build Pop Pod. (See Pop Pod Assembly Instructions.)

## PARACHUTE INSTRUCTIONS:

Parachute is precut to a circular shape. Fold in half then fold in thirds to obtain the location of the shroud lines. Crease parachute at folds or mark with marking pencil. When reopened there should be 6 equally spaced places for shroud lines.

Cut 6 shroud lines, equal in length to the diameter of the parachute.

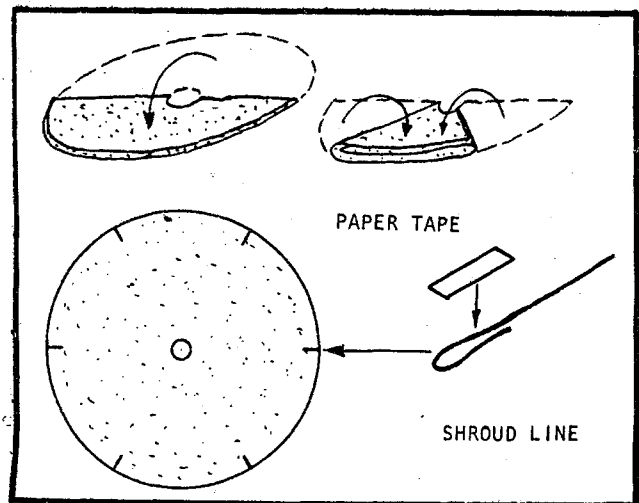
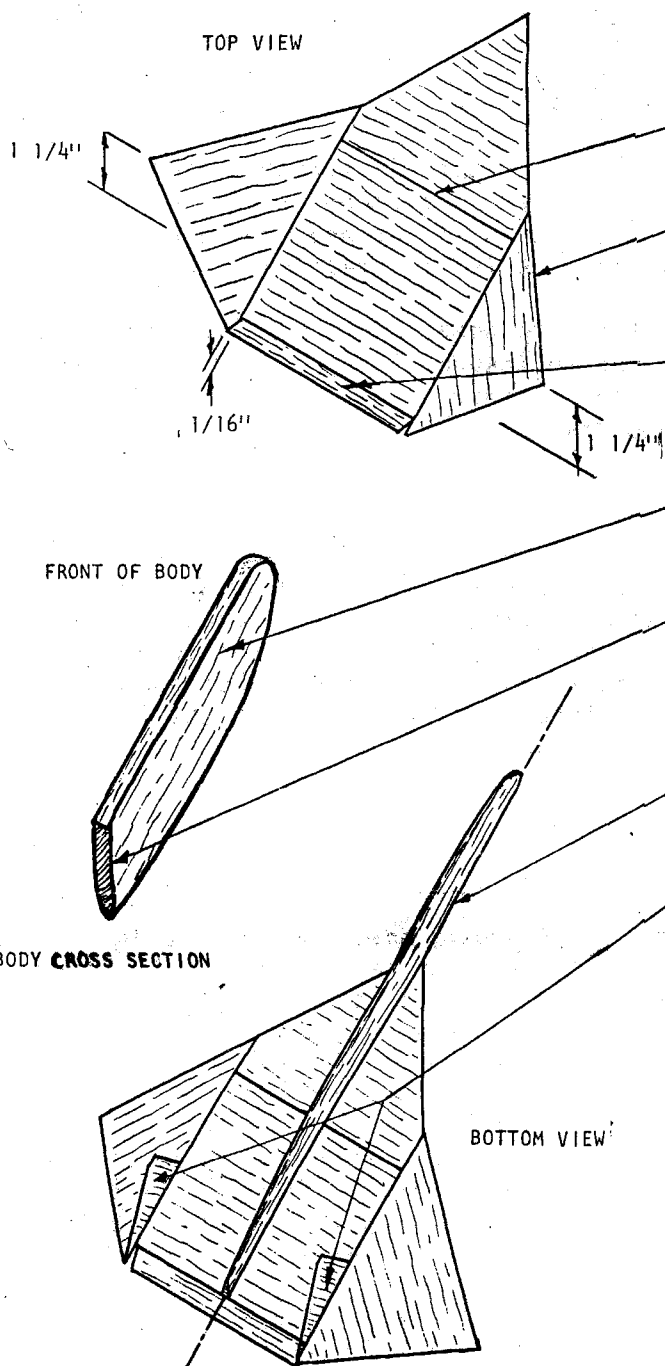
Cut 6 pieces of wide tape 5/8" long. Peel off paper backing and attach by pressing tape over a loop of shroud line.

Gather free ends of shroud line together, insert through snap swivel and tie into a knot. Attach snap swivel to hook in nose cone.

## FLYING INSTRUCTIONS:

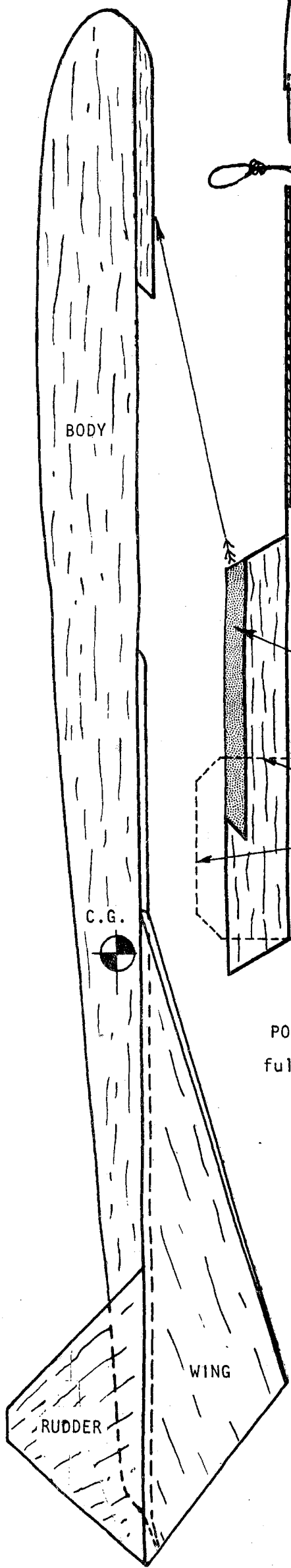
Although the bird will generally lift off the pad and rise vertically with no adjustment, sometimes a little adjustment is necessary for a perfect vertical flight. Load the power pod with a 1/2A6-2 engine, with igniter, wrapped with tape for a tight fit, for the first test flight. Place flameproof wadding into front of pod and push until it hits front of engine. Hook parachute swivel to nose cone wire. Fold and insert parachute then replace nose cone. Nose cone should fit snugly into the body tube to insure proper separation of the "pop" pod. A piece of masking tape should be wrapped around the launch rod so that the "pop" pod weight is resting on the tape. This keeps the pod from separating from the glider before ignition. Attach igniter clips and fire. Observe the flight under power. If the bird veers over on its back during the initial flight, shave the nose of the glider to tilt the nose of the pod down. This should be done only a 1/32" at a time until the trim is correct. At the same time the glider should be adjusted for a perfect glide in a large circle using clay as necessary.

The Manta can be flown with 1/2A-2, A5-2, A8-3 and B4-2 engines without difficulty. When flying with C6-5 engines the wing tip joints, leading edge and the body wing joints should be reinforced with silk or silk-span covered with glue. They can also be reinforced with adhesive aluminized mylar, CMR Cat. No. AM1.



SIDE VIEW OF GLIDER

full size



BODY

C.G.

WING

RUDDER

POP POD  
full size

ENGINE

"POP" POD ASSEMBLY INSTRUCTIONS:

Start assembly of nose cone by inserting shock cord through hole in bottom of nose cone adapter. Tie knot large enough to keep cord in place.

Put a thin coat of plastic (styrene) cement around inside of nose cone. Rub cement with the end of your finger to smooth it out and remove excess. Use cement sparingly as it will melt nose cone.

Insert adapter into nose cone then slip nose cone into body tube to insure alignment. With a twisting motion, carefully remove nose cone from body tube and allow to dry.

Tie loop in shock cord to attach parachute.

Punch two holes with a pencil 1/2" apart in the gauze shock cord anchor and thread cord into anchor as shown. Smear glue with a brush or "Q" Tip in body tube about the size of the anchor 3/4" from end. Insert shock cord and anchor into body tube and push into glue with a pencil until securely set in place.

Using a "Q" Tip or brush, smear white glue around inside of body 2 1/2" from rear. Insert engine block in rear of body tube and push it forward with an engine casing until 1/4" of engine casing protrudes. Remove engine casing immediately as soon as engine is positioned.

Cut out shaded portion of 1/8" balsa pylon as shown on drawing. Glue this piece to front of glider body making sure that it is positioned correctly as shown on side view of glider.

Glue the 1/16" balsa alignment plates on both sides of the notch in the 1/8" balsa pylon slightly higher than the top of the pylon as shown. Make sure that no glue gets in the notch or on the bottom of the pylon. Remove any excess glue from the bottom of the pylon assembly immediately. Any glue remaining will keep the pod from fitting on the body. Allow to dry.

Carve and sand pylon assembly to a symmetrical air-foil shape. Sand top to fit body tube, then glue to rear and parallel to center line of the pod body.

Glue launch lug along one side of body tube parallel to center line.

FINISHING AND CHECKING:

Coat all balsa surfaces with sanding sealer. Sand then recoat as necessary to obtain a smooth finish. Paint pod a bright color for visibility. Do not paint nose cone.

Fit the "pop" pod on the glider body so that the cut-out fits into the space where it was removed from the pylon. By moving the pod forward the "pop" pod and the glider body should interlock. If the pod fits properly on the glider body you should be able to "pop" the pod off of the glider by hitting the nose cone lightly with the palm of your hand. If the pod fits too tight, sand the inside of the alignment plates until the pod comes off easily but does not fall off when you hold the glider. (See Parachute Instructions next.)

Main body/wing of Manta is made from 4"x12" sheet of 1/16" thick balsa

Body fuselage is 1/8" balsa and is shown to size on main plans. Pylon is 1/8" balsa with 1/16" side plates. Body is bt-20

A 3/4 scale manta works great with bt-5

A 1.5x scale manta works great with bt-50

Redrawn diagram based on original from Fred Shecter.

