

STARFIGHTER SCORPION

READ THESE INSTRUCTIONS CAREFULLY
BEFORE YOU START BUILDING

Additional materials and tools
required for construction:

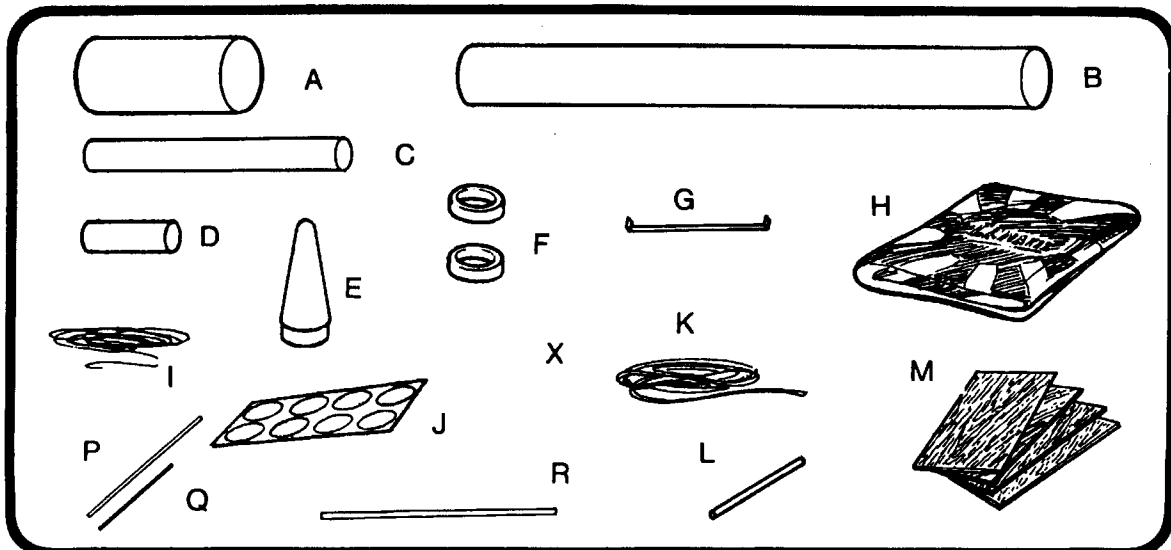
- modelling knife
- white glue
- contact cement
- fine sandpaper
- butyrate dope
- cornstarch or talc
- white spray paint
- scissors
- ruler
- modelling clay
- pencil

Additional items required to fly the
Starfighter Scorpion:

- Heat Wadding
- Trans-A-Pad Launcher
- Countdown Controller
- Canaroc Engines
- Masking Tape

PARTS LIST

- | | |
|------------------------------------|--------------------------------------|
| A) 1 - PT-400 Body Tube (7.6 cm) | K) 1 - Shock Cord |
| B) 1 - PT-200 Body Tube (35.2 cm) | L) 1 - Launch Lug |
| C) 2 - PT-100 Body Tubes (17.8 cm) | M) 4 - Balsa Sheets |
| D) 1 - ET-100 Engine Tube | N) 1 - Large Body Panel (not shown) |
| E) 1 - PN-200D Nose Cone | O) 1 - Small Body Panel (not shown) |
| F) 2 - Centering Rings | P) 4 - Plastic Tubes (6 mm) |
| G) 1 - Engine Retainer | Q) 4 - Plastic Tubes (3 mm) |
| H) 1 - Parachute (30 cm) | R) 1 - Plastic Tube (6 mm x 16.5 cm) |
| I) 1 - Shroudline | S) 2 - Decal Sheets (not shown) |
| J) 8 - Tape Disks | |



CONSTRUCTING THE ENGINE MOUNT

A Mount the engine retainer by cutting a small slit in the engine tube 7mm from one end (Fig. 1). Push the end of the retainer into the slit.

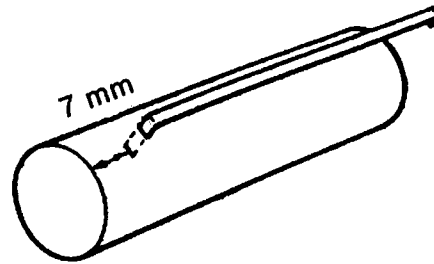


FIG. 1

B Test fit a centering ring to slide onto the tube, and over the engine retainer. If it will not slide on easily, then peel a layer of paper from the inside of the ring (Fig. 2).

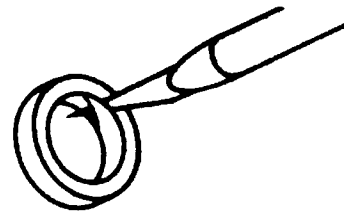


FIG. 2

C Spread glue around the outside of the engine tube 4 cm from the front. Slide a centering ring onto the tube from the front, over the retainer wire and position it 4 cm from the front (Fig. 3).

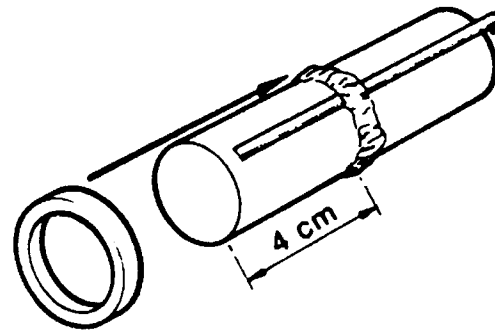


FIG. 3

D Spread glue around the outside of the engine tube at the front. Slide the other centering ring onto the tube so that it is positioned even with the front of the tube (Fig. 4). Set the engine mount aside to dry.

E Put a double wrap of masking tape around the engine tube between the two centering rings. This will help keep the retainer from being pushed forward.

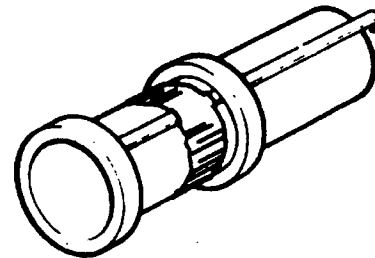


FIG. 4

INSTALLING THE ENGINE MOUNT

A Test fit the completed engine mount into the body tube. If the mount does not easily slide into the tube, then remove the outer layer of paper from the centering rings. Both rings should now slide easily into the tube.

B Place glue on the end of your finger, place the finger into one end of the body tube and smear the glue around in a ring on the inside of the tube. Do this again until you have made a thick ring of glue in a complete circle inside the tube, about 6.5 cm up (Fig. 5).

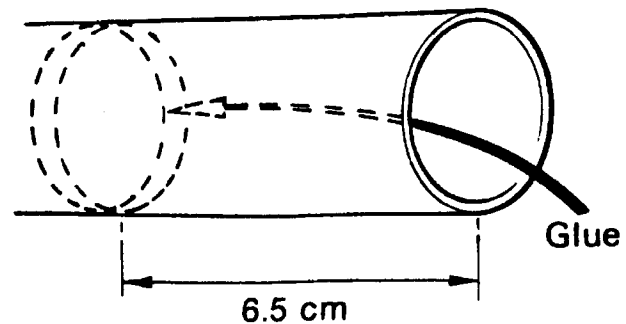


FIG. 5

- C Slide the engine mount into the body tube until the engine tube is even with the end of the body tube. Leave the retainer wire sticking out (about 7 mm) (Fig. 6).

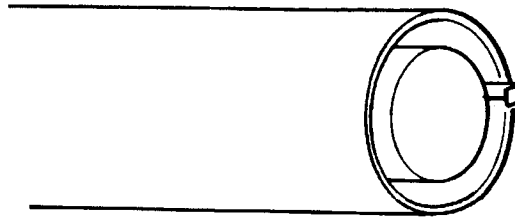
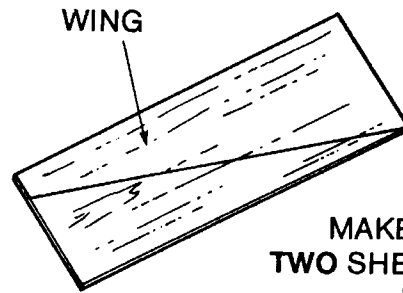


FIG. 6

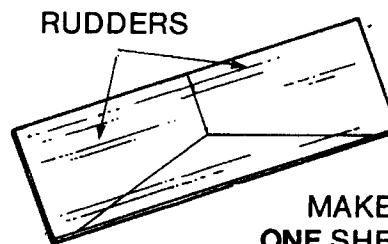
CONSTRUCTING THE WING/TAIL ASSEMBLY

- A Cut out the wing and pylon patterns from the pattern sheet. Trace out the patterns on the balsa sheet. Trace out the patterns on the balsa sheets, as shown in Fig. 7. Make sure that the balsa grain direction is as shown on the patterns.



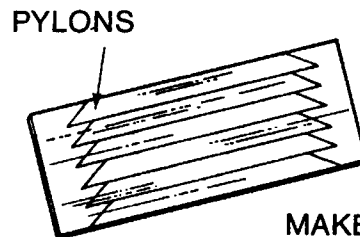
MAKE TWO. USE TWO SHEETS OF Balsa.
FIG. 7a

- B Carefully cut each piece from the balsa sheets, using a modelling knife or single edge razor blade. **DO NOT ATTEMPT TO CUT THE Balsa IN A SINGLE STROKE.** When cutting balsa, run the blade lightly along the line to be cut barely applying pressure on the first stroke. On each stroke afterward, apply more force on the blade. After three or four strokes, the balsa will have a smooth clean cut. Attempting to apply too much force and making the cut in one stroke will tear the balsa, giving the fin an unsightly appearance.



MAKE TWO. USE ONE SHEET OF Balsa.
FIG. 7b

- C Stack all 6 of the Pylon Pieces together, and "jog" them into place to see if they are all the same size and shape. There will probably be slight differences in each of the pieces. These differences should be eliminated by first laying a sheet of fine sandpaper on a table, and then grasping the "stack" of Pylon Pieces very tightly (so that they won't move with respect to each other) and carefully sanding each "face" of the stack (Fig. 8).



MAKE SIX. USE ONE SHEET OF Balsa
FIG. 7c

Care must be taken, not to over-sand the Pylon Pieces, and perhaps change their shape.

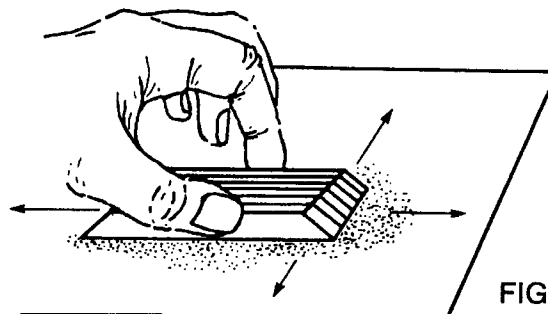


FIG. 8

- D Cut out the Placement Pattern from the pattern sheet. Wrap the Pattern around the rear end (the engine mount end) of the main body tube and tape the ends together. Place a mark on the tube adjacent to each arrow on the pattern. (Fig. 9)

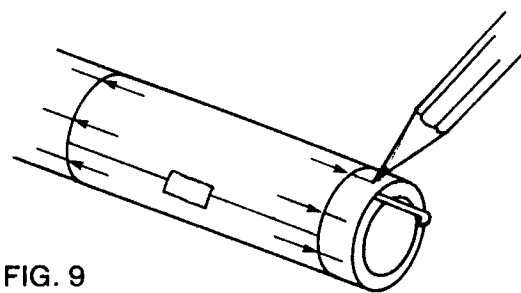


FIG. 9

- E Spread a thin line of glue along the root edge (the longest edge) of a pylon, then stick the pylon to the tube, along one of the sets of alignment marks. The Pylon Pieces have one end which is "sharper" than the other - the "sharper" end should point forward. The other end should sit "flush" with the bottom of the tube.

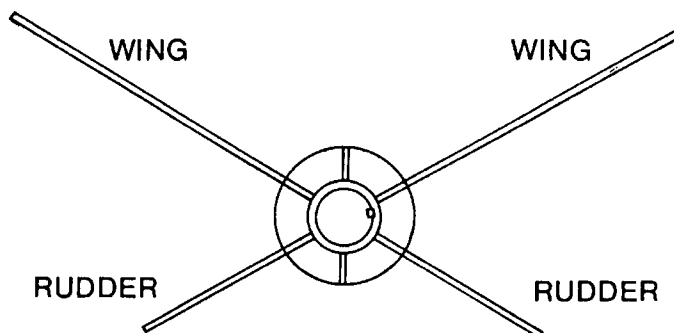
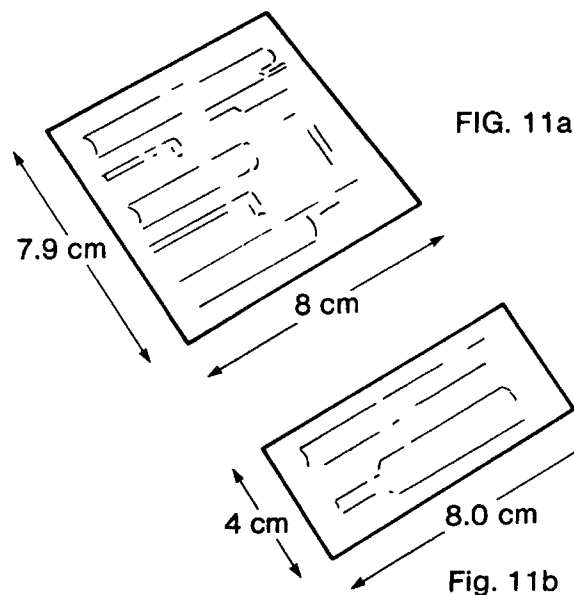


Fig. 10

Glue the other 5 pylons in place in a similar manner, then allow the assembly to dry.

- F Spread glue on the outer-most edge of each Pylon, and then slide the PT-400 tube over the Pylons, and center it in place. Wipe away any excess glue, and allow to dry.



- G Glue the Wings and Rudders to the PT-400 tube, so that they point "directly out" from the Pylons, as shown in Fig. 10. Make sure that leading edge of each Wing and Rudder is pointing forward.

- H Trim the Body Panels to size (as shown in Fig. 11), using a ruler to mark the panels, and scissors to cut them.

- I Spread contact cement in a rectangular pattern, between the two wings (as shown in Fig. 12). Spread contact cement around the perimeter of the bottomside of the Small Body Panel, and allow to set for 10 minutes. Then press firmly into place, between the two wings.

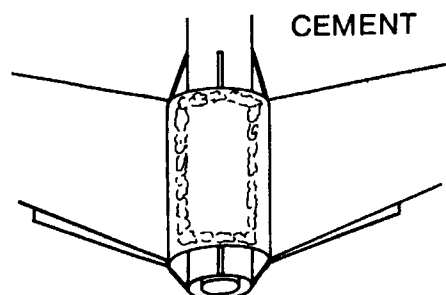


FIG. 12

J Spread contact cement in two bands, around the PT-200 tube, and in one "strip", between the two bands, as shown in Fig. 13. Note that the "strip" should be on the "underside" of the body tube.

Now, spread cement around the perimeter of the bottom side of the Large Body Panel, and allow to set for 10 minutes. Wrap the Panel around the tube, starting one edge of the Panel on the middle of the "strip" of cement (Fig. 14). Pull the Panel tightly around the tube, and press the remaining edge of the panel firmly into (the other half of) the "strip" of cement.

NOTE: The rear edge of the Panel should butt up against the tips of the Pylons.

K Cut out the Tube Cutting Pattern from the pattern sheet. Wrap the Pattern around one of the remaining body tubes, and place a piece of tape where the ends meet, to hold the pattern in place. Using the pattern as a guide, mark the tube to cut the end at an angle (Fig. 15).

L Using a modeling knife, or single edge razor blade, cut the tube along the mark made with the pattern above. Once cut, the end of the tube should have an angled, flat profile, when viewed from the side. Any unevenness may be smoothed out by laying a sheet of fine sandpaper on a table, and sanding the edge flat.

M The other end of the tube must also be cut. The angle of the cut must be oriented so that the tube appears as in Fig. 16. Finally cut the last tube in the same way, to give two identical tubes.

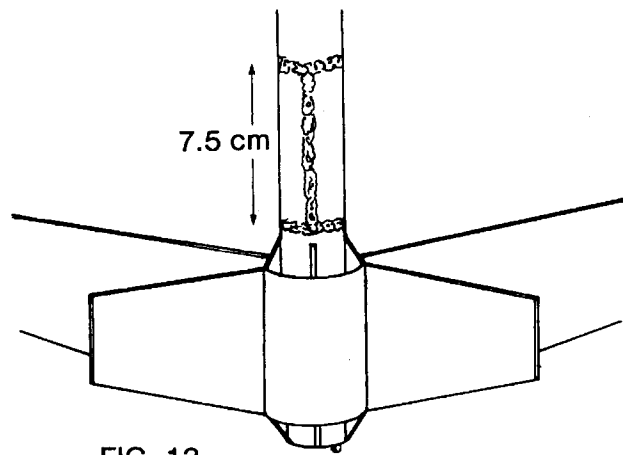


FIG. 13

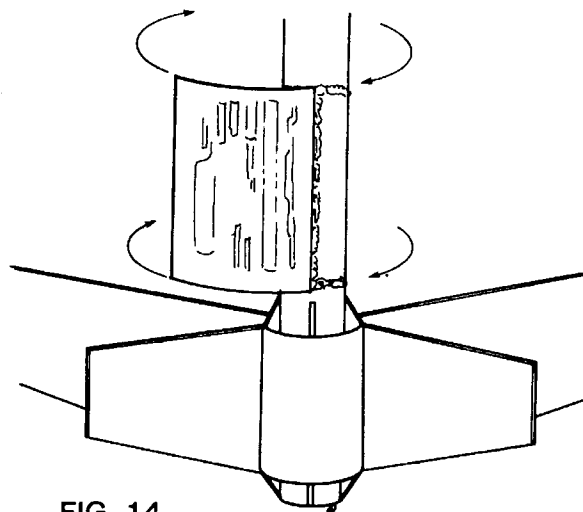


FIG. 14

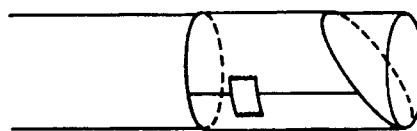


FIG. 15



FIG. 16

N Spread glue in a thin line along the shortest side of one of the tubes, (as shown in Fig. 17). Then stick it to the PT-400 tube, so that it sits snugly under one of the wings.

Glue the other tube under the other wing in the same way. The two tubes should sit with their ends matching up against the end of the PT-400 tube, and they should be oriented as shown in Fig. 18.

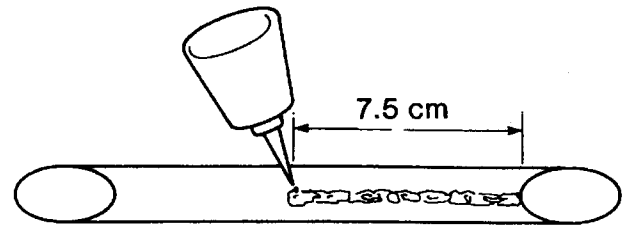


FIG. 17

FINISHING THE Balsa PARTS

Raw balsa is unsightly, coarse and grainy if painted before the grain is "filled" and the surface is "sealed". Model rockets look professional if the time is taken to finish the balsa. The Canaroc Guide to Space Modelling contains tips on finishing and may be consulted for assistance.

A Butyrate dope is used in the most common method of finishing balsa. You will find it at most hobby outlets. To assist in filling the balsa grain, cornstarch, talc, or baby powder may be rubbed into each balsa part. Brush on thick coat of dope, being sure to do both sides of each piece at the same time (in order to avoid warping).

B After the dope has dried completely, lightly sand the balsa surfaces with fine sandpaper. The sanding operation removes the excess thickness of dope and speeds up the process of filling the grain.

C After repeating the doping/sanding operation three or four times, the balsa grain should be filled and the surfaces smooth. The last sanding operation should be done with extra fine sandpaper.

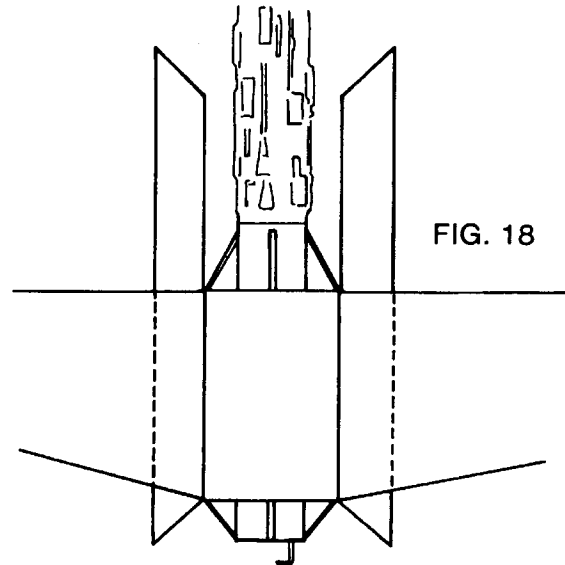


FIG. 18

TOPVIEW

B Remove any roughness from the ends of the plastic tubes, by sanding lightly with fine sandpaper.

C Using a pointed razor knife, lightly scrape the inside edge of one end of each 6 mm plastic tube (Fig. 19).

CONSTRUCTING THE LASER CANNONS

A Using a razor knife, or razor saw, cut out four "7 cm" lengths of the 6 mm plastic tube. Then cut out an additional four "3.5 cm" lengths of the 3 mm plastic tube.

TWIST KNIFE GENTLY

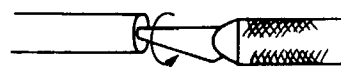


FIG. 19

D "Force" a 3 mm tube into the "scraped" end of each 6 mm tube. Approximately 2.5 cm of the 3 mm tube should remain protruding from the 6 mm tube (Fig. 20). Make sure that the 3 mm tube is properly aligned in the larger tube.



ATTACHING THE LASER CANNONS

A Using contact cement, glue the Laser Cannons together to make two pairs of Cannons.

B Mark the wings, a distance of 6.5 cm from their root edges. (It is easiest to do this measurement along the leading edge of each wing). Then on the bottom side of the wings, adjacent to the marks just made, place marks 4 cm back from the leading edge.

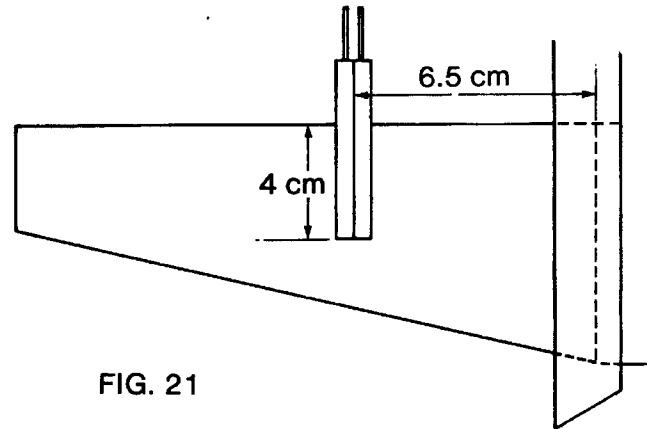


FIG. 21

C Cement the Cannon Pairs in place on the bottomside of the wings, using the above markings, and Fig. 21 as a guide.

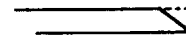


FIG. 22

CONSTRUCTING AND MOUNTING THE ION CANNON

A Take the remaining (16.5 cm long) piece of plastic tube, and slice off one of the ends at a 45° angle. Sand the cut smooth with a piece of fine sandpaper. (Fig. 22)



FIG. 23

B Place a mark on the Section of PT-400 tube, between the two rudders, at a point 1.5 cm from the rear of the tube.

C Spread a line of contact cement on the "shortest" side of the Ion Cannon (ie. the plastic tube) as shown in Fig. 23.

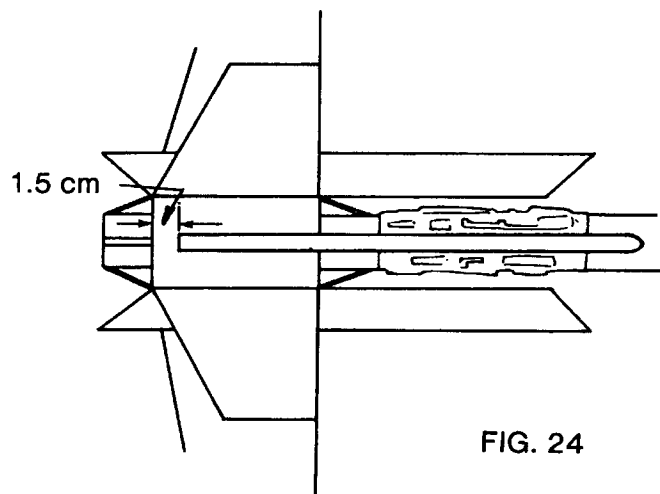
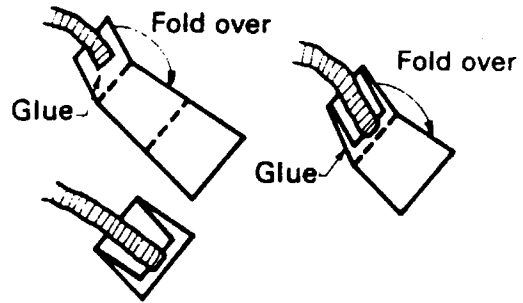


FIG. 24

D Lay the model on its back, and press the Ion Cannon into place between the two rudders (as shown in Fig. 24).

MOUNTING THE LAUNCH LUG

- A Glue the launch lug (using white glue) to the section of PT-400 tube. Center the launch lug over the Pylon which sits between the two wings.



CONSTRUCTING THE PARACHUTE

- A Construct the parachute as instructed on the pattern.

INSTALLING THE SHOCK CORD

- A Cut out the shock cord anchor from the pattern sheet.
- B Construct the anchor as shown in Fig. 25. Fold the panels so that the shock cord rolls up with it.
- C Spread glue on the folded side of the anchor and insert it into the front of the body tube at least 5 cm inside. Press it firmly against the wall of the tube (Fig. 26).

FIG. 25

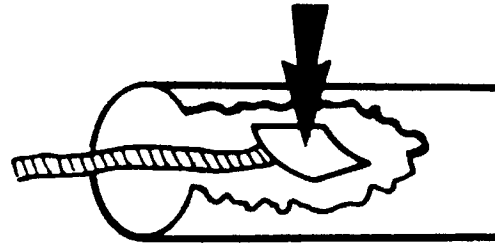


FIG. 26

ATTACHING THE NOSE CONE

- A Pierce a hole in the eyelet of the nose cone to attach shock cord. Trim off and sand smooth any flash along the seam of the nose cone.
- B Test fit the nose cone into the body tube. The shoulder of the nose cone should slide easily into the tube and come on smoothly without excess force. If it is too tight, then sand the shoulder with fine sandpaper until it does fit properly.
- C Take the free end of the shock cord, and the knotted end of the parachute shroud lines, and tie them (separately) to the eyelet. Make sure that the knots are very tight.

strokes. Do not apply the paint too thickly, or it will "run" and leave a "sag" in the surface. Allow the first coat of paint at least one hour to dry before applying the second coat. Let the model dry overnight before applying decals.

DECALS

To apply decals, please follow instructions on back of decals. For placement, see front of box.

PAINTING

The entire model must be given two coats of white spray paint. When spray painting, hold the can about 20 to 30 cm from the model, and spray in even

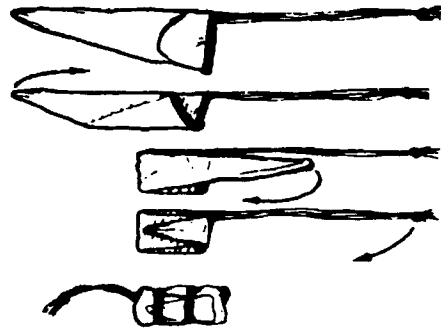
FLYING

A Install the engine by sliding it into the engine tube until it is locked firmly between the two ends of the engine retainer.

B Push down a piece of recovery wadding into the top of the tube. This wadding serves to protect the plastic parachute from melting by the hot gases of the engine's ejection charge. There should be about 2 to 3 cm thickness to wadding to create a good piston between the parachute and the engine.

C Fold the parachute in the following manner:

- hold the tip of the parachute with one hand and the shroud lines with the other.
- gather together all of the free corners so that the parachute forms a triangle.
- fold over the corners.
- fold over the parachute into thirds.
- wrap the shroud lines around the bundle.



D Insert the parachute into the tube. Push in the shock cord and remaining shroud lines, then slide on the nose cone.

E Install an igniter into the engine according to the instructions provided with the engines.

F Slide the rocket onto the launch rod, sliding the rod through the launch lug. This will guide the rocket at the moment of launch.

G Attach the igniter clips to the leads of the igniter.

H Insert the safety key into your launch controller, give a 5 second count-down and press the button to launch your model.

For further tips see Canaroc's
GUIDE TO SPACEMODELLING.



MANUFACTURED BY
IRWIN TOY LTD.
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Toronto, Canada
M6K 1X6

STARFIGHTER SCORPION 54016

IMPORTANT! Please Read before constructing Kit!

The Parts List should be amended as follows:

- P) 1 - 30.5 cm Plastic Tube (6mm)
- Q) 1 - 18.4 cm Plastic Tube (3mm)
- R) 1 - 16.5 cm Plastic Tube (6mm)

Prior to your first flight with the Scorpion, check the location of the Centre of Gravity (C. G. -balance point) of the flight ready model.

The C.G. should be no further back than the rear or the Large Body Panel (or leading edge of the pylons.)

If it is necessary to move the C.G. forward, add small amounts of modelling clay to the base of the nose cone. (Masking tape may be wrapped around the clay to hold it in place.)

CHASSEUR ASTRAL SCORPION 54016

IMPORTANT! Veuillez lire avant de construire votre modèle réduit.

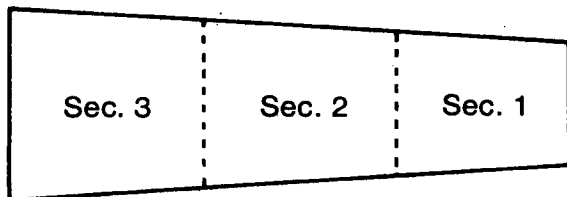
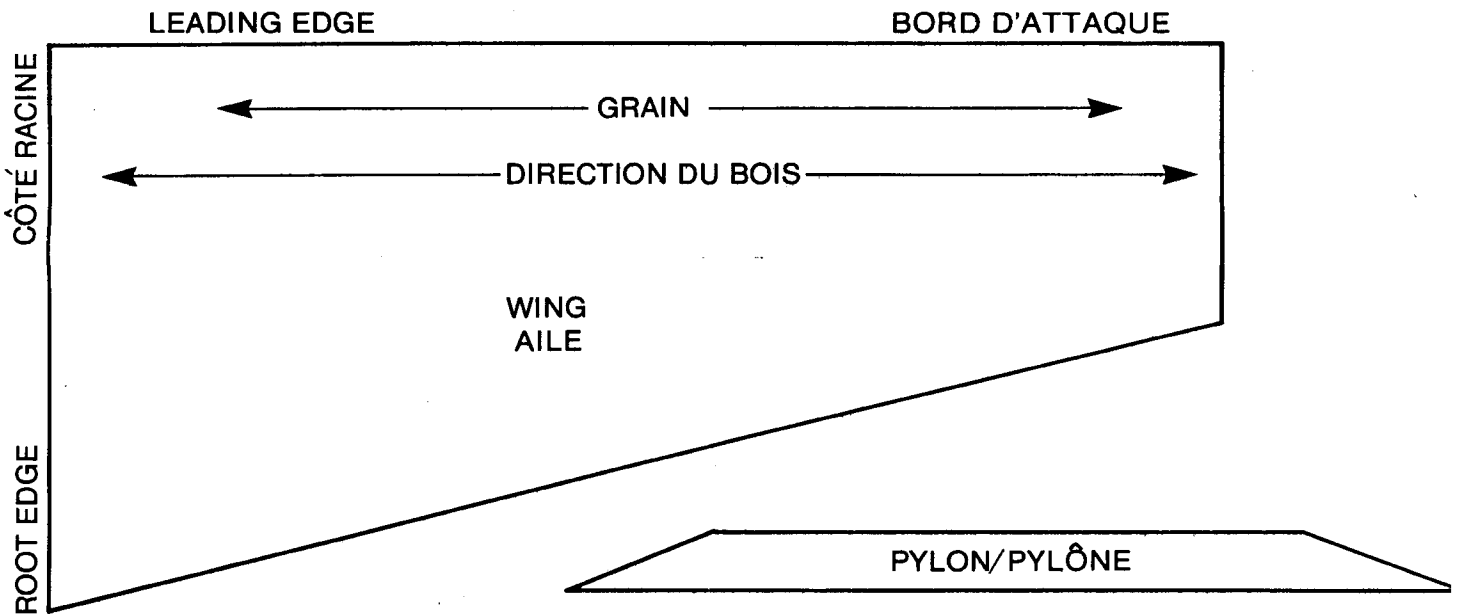
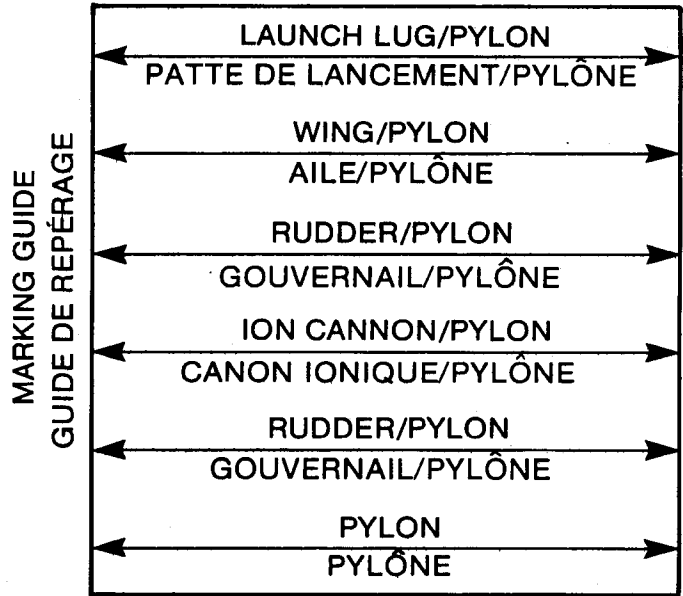
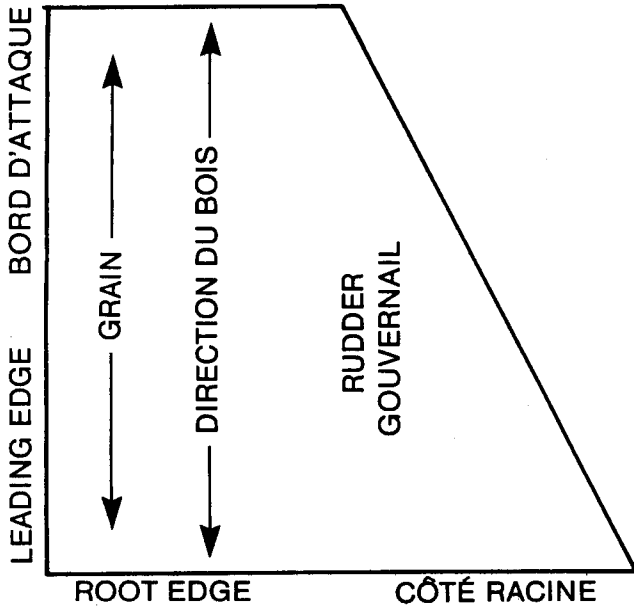
La Liste des Pièces devrait être modifiée comme suit:

- P) 1 Tube en plastique de 30.5 cm (diamètre 6mm)
- Q) 1 Tube en plastique de 18.4 cm (diamètre 3mm)
- R) 1 Tube en plastique de 16.5 cm (diamètre 6mm)

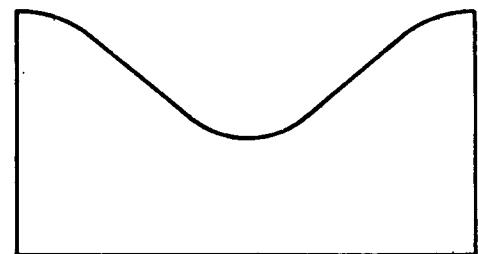
Avant de lancer votre modèle réduit de fusée, Scorpion pour la première fois, vérifiez le repérage du centre de gravité (le point d'équilibre) de la maquette.

Le centre de gravité ne devrait être plus en arrière que le derrière du grand panneau de corps (ou le bord d'attaque des pylones.)

S'il faut avancer le centre de gravité, ajoutez de petits morceaux de pâte à modeler à la base du nez conique. (On peut envelopper la pâte du ruban-cache pour la fixer.)



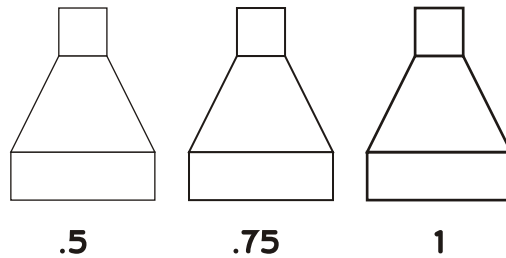
SHOCK CORD MOUNT
CORDON AMORTISSEUR



PT - 100 TUBE CUTTING
PATTERN
PATRON DE COUPAGE
DU TUBE PT-100

MAKING A CANAROC BNC-200D WITH A FORWARD CREW COCKPIT.

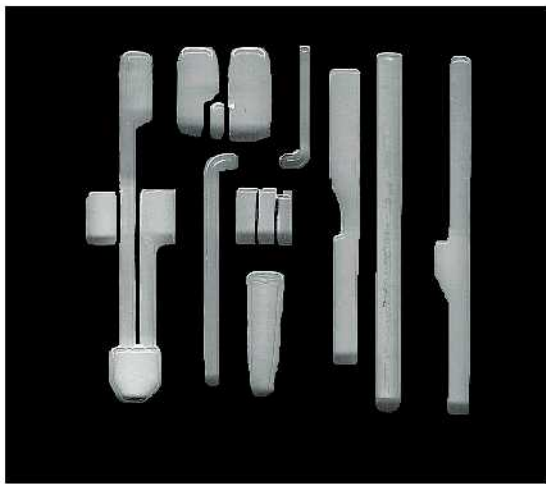
TO MAKE A CANAROC BNC-200D, TAKE A STANDARD BNC 200A
'CHALLENGER' NOSECONE, AND TRACE THE BELOW COCKPIT
PATTERN ONTO IT. THEN, USING A SANDING STICK (NAIL GRINDER),
SAND THE CONE TO MATCH THE PHOTOS BELOW OF AN ORIGINAL
PNC 200D.



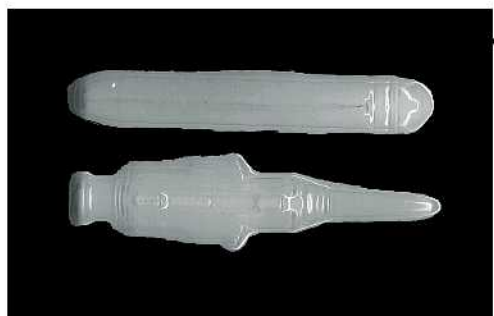
THESE PATTERNS ARE ALL THE SAME SIZE, BUT USE
DIFFERENT LINE WIDTH. USE THE ONE THAT SHOWS
UP BEST ON YOUR PRINTER.



CANAROC Starfighter Scorpion Plastic Body Panels



1"



Clear plastic body panels were the flat areas were Colored black to show the raised areas on the plastic Panels.

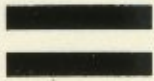
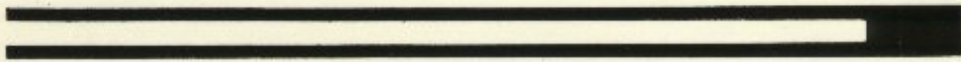
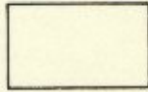
CANAROC Starfighter Scorpion Nose Cone

1"

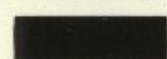
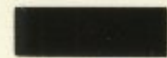
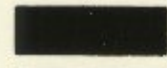
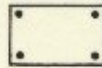
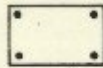
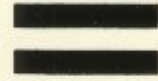


Plastic Canaroc Nose Cone
fits BT-50 Body Tube.

GKC - 247



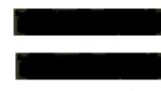
scorpion



GKC-247



scorpion



Starfighter Scorpion

Parts List:

<u>OEM Parts</u>	<u>Parts currently available</u>
1) PT-400 Body Tube 7.6cm 1	BT-60 3" 1
2) PT-200 Body Tube 35.2cm 1	BT-50 13 7/8" 1
3) 2 x PT-100 Body Tube 17.8cm 1	2 x BT-20 7" 1
4) ET-100 Engine Tube	BT-20 2.75" 1
5) PN-200 Nose Cone	custom turned balsa cone
6) Centering Rings x 2	CR2050 x 2
7) Engine retainer	70mm engine hook
8) Parachute 30cm	12" parachute
9) Shroudline	shroudline 72" 1
10) Tape discs x 8	Tape discs x 6 or 8
11) Shock Chord	1/8" elastic chord 24" 1
12) Launch Lug	1/8" Launch lug
13) balsa sheets x 4	1/16" balsa as needed
14) large vacuform body detail panel	not available at this time
15) small vacuform body detail panel	not available at this time
16) 6mm rigid plastic tubing 30.5 cm 1	1/4" x 12" rigid plastic tubing
17) 3mm rigid plastic tubing 18.4 cm 1	1/8" x 7.25" rigid plastic tubing
18) 6mm rigid plastic tubing 16.5 cm 1	1/4" x 6.5" rigid plastic tubing
19) Decal sheets	reprodecals