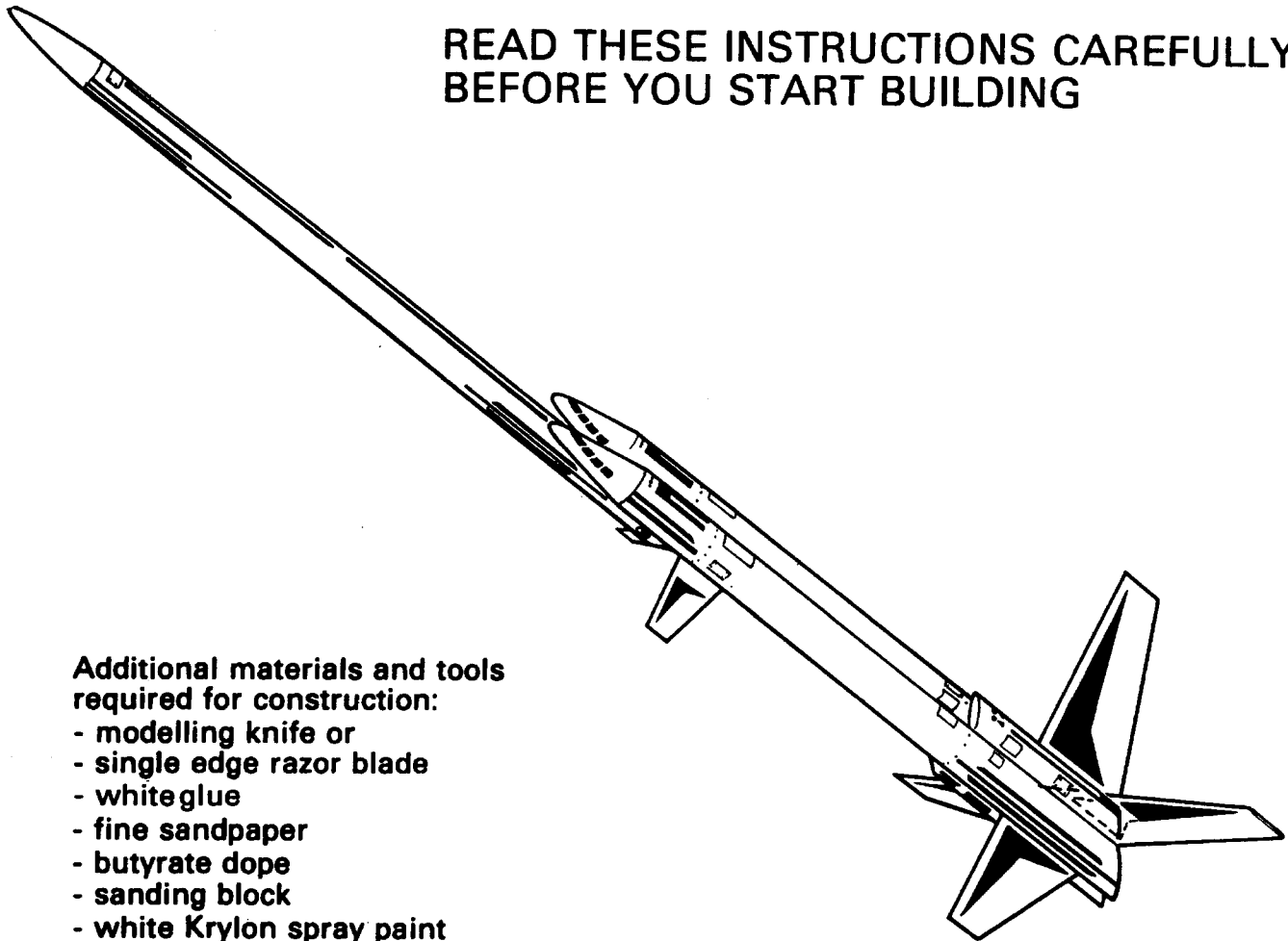


starship antares

ASSEMBLY INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY
BEFORE YOU START BUILDING



**Additional materials and tools
required for construction:**

- modelling knife or
- single edge razor blade
- white glue
- fine sandpaper
- butyrate dope
- sanding block
- white Krylon spray paint
- scissors
- pencil

**Additional items required to
fly the Starship Antares are:**

- Heat Wadding
- Trans-A-Pad Launcher
- Countdown Controller
- Canaroc Engines
- masking tape

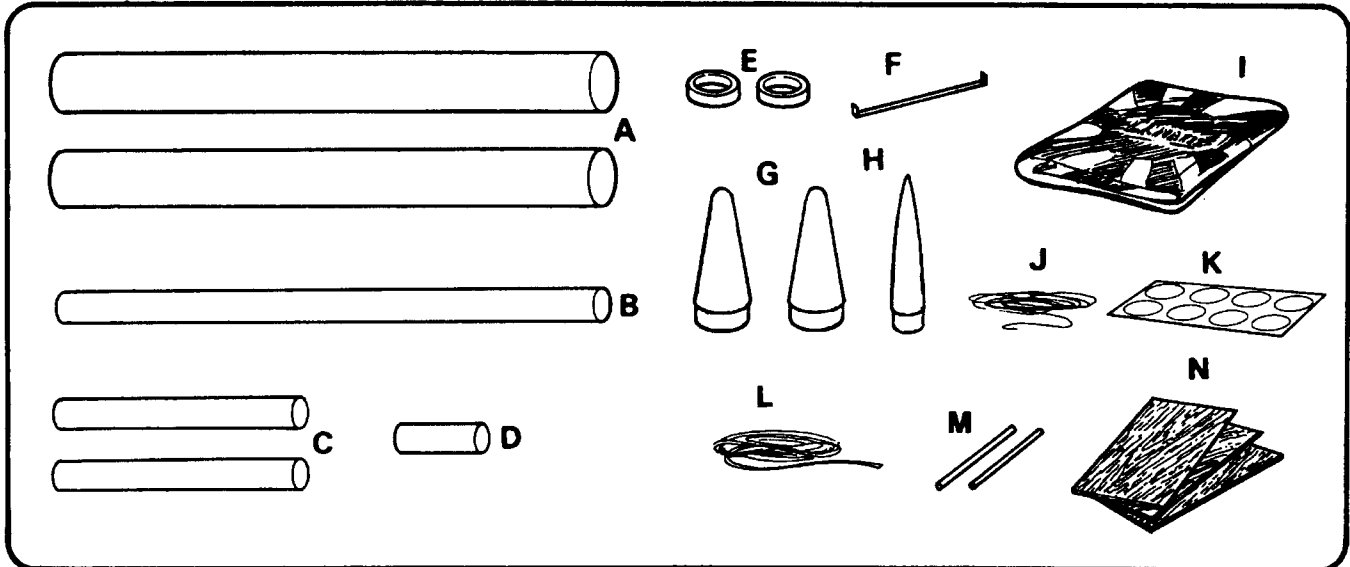
DECALS POSITIONED
AS SHOWN

ALL DECALS REPEATED
ON OPPOSITE SIDE

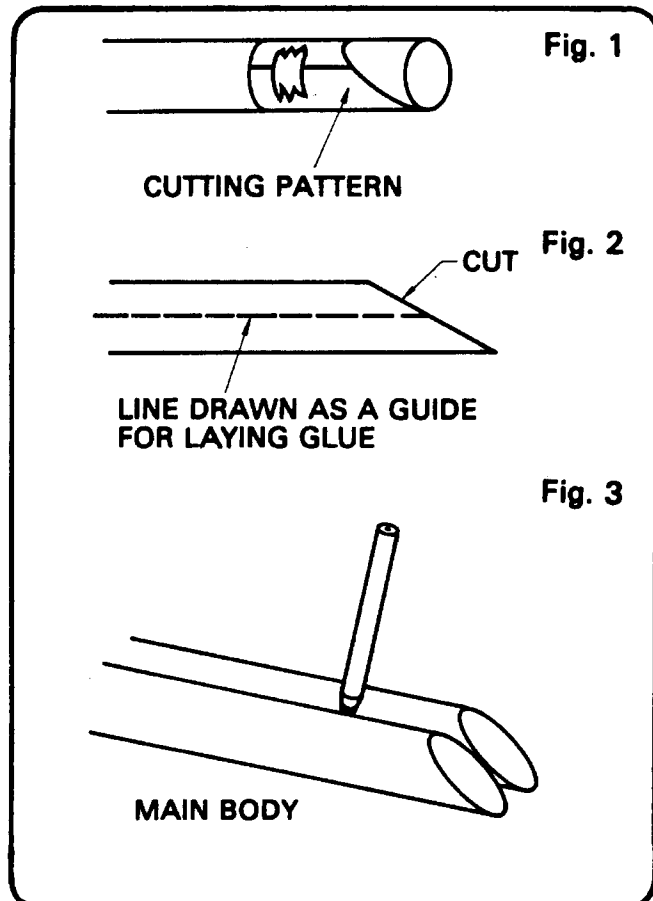
PARTS LIST

- A) 2 - PT-200 Body Tubes (45.7 cm)
- B) 1 - PT-100 Body Tube (45.7 cm)
- C) 2 - PT-100 Body Tubes (21.1 cm)
- D) 1 - ET-100 Engine Tube
- E) 2 - Centering Rings
- F) 1 - Engine Retainer
- G) 2 - PN-200A Nose Cones
- H) 1 - PN-100B Nose Cone

- I) 1 - Parachute
- J) 1 - Shroud Lines
- K) 8 - Tape Disks
- L) 1 - Shock Cord
- M) 2 - Launch Lugs
- N) 3 - Balsa Sheets
- O) 2 - Decal Sheets (not shown)



1. Cut out the Tube Cutting Patterns from the pattern sheet. Wrap the pattern for the large tube (PT-200) around an end of one of the tubes and place a piece of tape on the pattern where the ends meet to hold it in place. Using the pattern as a guide, mark the tube for an angled cut (Fig. 1). Repeat this for the other large (PT-200) tube.
2. Using a modelling knife, single edge razor blade, or a razor saw, cut the tubes along the line marked from the pattern. After being cut, the tubes will have an even, flat angle when viewed from the side (Fig. 2).
3. The two large tubes must be glued together, side by side. Lay the tubes side-by-side and orient them so that the angle cuts match up and are even with each other (Fig. 3). Run a pencil along the joint between the two tubes to make a line that can be used as a guide for gluing (Fig. 2).
4. Lay a thin line of glue along the line marked down the tube. Put the two large tubes together on the glue line, and orient them (as shown in Fig. 3) so that the angle cuts at the end of the tubes match up, flush with each other. Set this, (the Main Body), aside, sitting flat, and let dry.



- Repeat the tube marking and cutting procedure for the two 21.1 cm PT-100 tubes. These two tubes must be cut at both ends, to the lengths shown in Fig. 4. Be careful to mark and cut the two tubes so that the cut angles are properly oriented (see Fig. 4). The 45.7 cm PT-100 tube, the Forward Tube, must also be marked and cut on one end.

NOTE: All cuts may be sanded smooth with a sanding block to remove any unevenness or burrs.

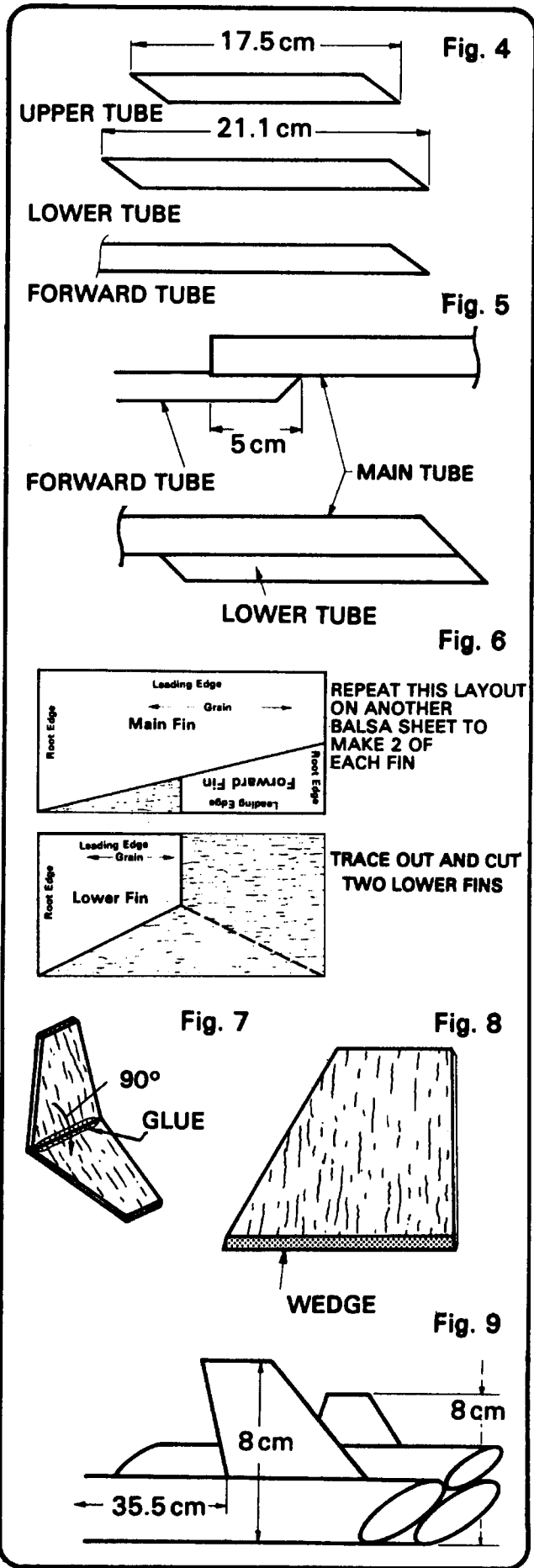
- Glue the Forward Tube and the Lower Tube to the Main Body. The Forward Tube is positioned as shown in Fig. 5, on the bottom, front end of the Main Body. The Lower Tube is positioned at the rear so that its angled cut is even and continuous with the angle of the large tubes. To keep the Forward Tube in place while drying, a piece of masking tape can be wrapped around it and the Main Body. Place the assembly upside down, on a flat surface, and let it dry.

- Cut out the fin patterns. Trace them onto the balsa sheets as shown in Fig. 6. Carefully cut out all of the balsa pieces using a razor knife. Two fins of each pattern are required (as shown in Fig. 6).

- The leading and trailing edges of all of the fins should be rounded. The tip edge may be left flat. Round the edges by sanding very lightly with fine sandpaper.

- Glue the two Forward Fins together at right angles (90°) as shown in Fig. 7. Set aside to dry.

- Sand the root edges of the lower fins to a wedge, as shown in Fig. 8. Spread glue onto both sides of the wedged root edge. Lay the rocket on its back, and stick each fin root into the joint between the Lower Tube and the Main Body; positioned so that the leading edge of the fins are 35.5 cm from the front of the Main Body. Prop up the tip of each fin to a height of 8 cm, and leave them to dry (Fig. 9).



11. When the forward fins have dried, glue them into place, positioned immediately behind the Forward Tube. The forward fins should be aligned so that each fin tip is the same height above the work surface. Set aside to dry. (Fig. 10).

12. Glue the Upper Tube into position on the top of the Main Body; aligned so that it is even with the angled cuts of the other tubes. (Fig. 11).

13. Sand the root edges of the main fins into a wedge shape, as was done with the lower fins. Spread glue along the root edges of both main fins and stick the root edges into the joint between the Upper Tube and the Main Body. Position the leading edges of the main fins so that they are 35.5 cm aft of the front of the Main Body. With the rocket sitting on the two sets of lower fins, on a flat surface, prop up the tips of the main fins 18 cm and leave them till the glue dries. When the glue has dried, apply another line of glue to every fin joint for strength. Smooth out the glue by running a fingertip along the joints.

14. Cut out the shock cord mount from the pattern sheet. Construct the mount as shown Fig. 12; folding the panels of the mount so that the shock cord rolls with it. Spread glue on the folded side of the mount and insert it into the front of the left main body tube at least 5 cm. Press it firmly against the wall of the tube.

15. NOSE CONE (PN-200A)

- A Pierce a hole in the eyelet with the modelling knife to attach the shock cord.
- B Tie the free end of the shock cord mount to the eyelet with a firm knot.
- C Trim off and sand smooth any flash along the seam of the nose cone.

16. Trim the launch lugs, as shown in Fig. 13, with a knife. Glue the forward lug along the joint between the forward fin and the Main Body, on the left side of the Main Body. Glue the rear lug at the joint between the rear lower fin and the Main Body tube on the left side. Sight through the lug to make sure that they line up straight.

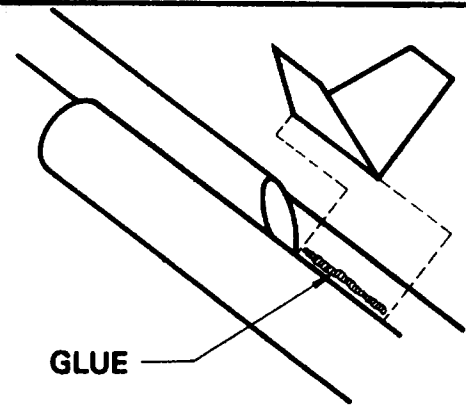


Fig. 10

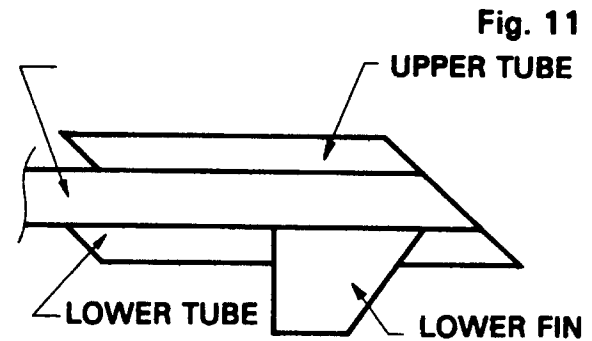


Fig. 11

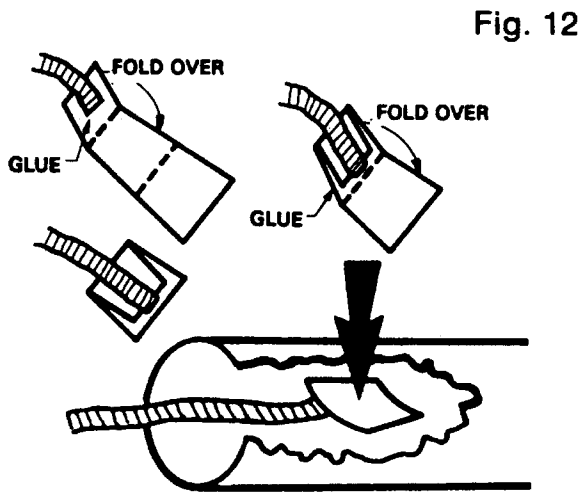


Fig. 12

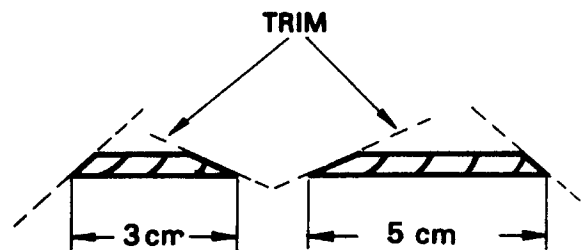


Fig. 13

17. A To construct the engine mount, first test fit the two centering rings on the engine tube. If you have difficulty in sliding the rings onto the tube, then lift a layer of paper from the inside of the ring with the edge of a sharp knife; then peel away a single layer (Fig. 14). The ring should then slide easily onto the engine tube.

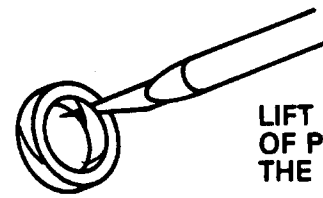
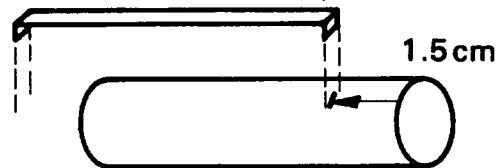


Fig. 14

- B Mount the engine retainer by cutting a small slit in the engine tube 1.5 cm from one end (Fig. 15). Push the bent end of the retainer into the slit. Spread glue around the outside of the engine tube 5 cm from the front. Slide a centering ring onto the tube from the front, over the retainer wire, and position it 5 cm from the front (Fig. 16).

ENGINE RETAINER

Fig. 15



ENGINE TUBE

Fig. 16

- C Spread glue around the outside of the engine tube 1.5 cm from the front. Slide the other centering ring onto the front of the tube so that it is positioned 1.5 cm from the front of the tube (Fig. 17). Set the engine mount aside to dry.

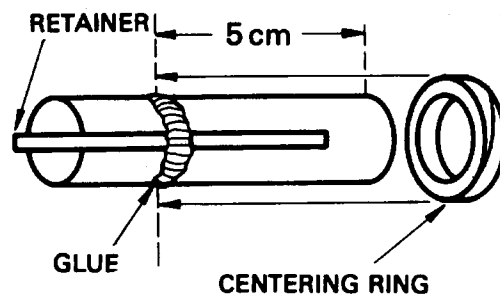
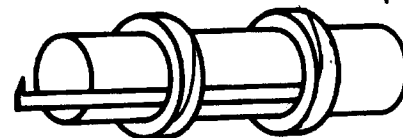


Fig. 17

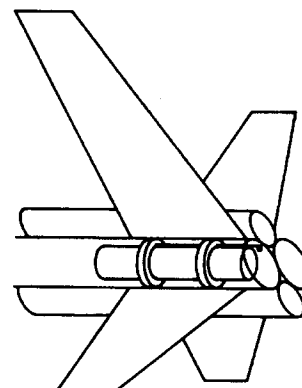
18. When the engine mount is dry, test fit it inside the rear of the left main body tube. Note that this must be the same tube in which the shock cord is installed. If the centering rings are too tight, remove the outer layer of paper from the rings. Place glue on your finger and spread it around in a ring on the inside rear of the left tube, as far as you can reach. The ring of glue should be about 6 cm from the rear. Insert the engine mount, and slide it into the tube until the engine tube is completely inside the angled section of the main tube. (Fig. 18).



- 19 The two remaining nose cones (PN-200A and PN-100B) may now be glued into place.

First lightly sand the shoulders of the nose cones with fine sandpaper. Spread white glue inside the top end of the Forward Tube and push the PN-100B into place. Repeat this procedure for the PN-200A, by gluing it into the remaining Main Tube.

Fig. 18



- 20 A Construct the parachute as instructed on the pattern.

- B Tie the knotted end of the shroud lines to the eyelet in the base of the nose cone.

21 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. The most common method of finishing balsa is using butyrate dope, available from most hobby outlets. To assist in filling the balsa grain, cornstarch, talc, or baby powder may be rubbed onto the balsa and worked into the grain. Brush on a thick coat of dope, and do both sides of all fins at once 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 surface smooth. The last sanding operation should be done with extra fine sandpaper.

22 PAINTING.

See the Canaroc Guide to Space Modelling for painting tips. Apply white spray paint, in several thin coats, over the entire model. Paint should always be applied in thin coats to speed drying and prevent unsightly "sags".

When spray painting, hold the can about 20 to 30 cm from the model, and spray in even strokes.

23 DECALS

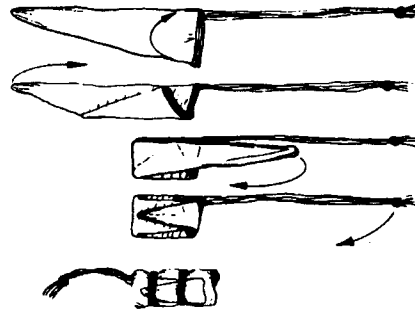
To apply decals, please follow instructions on back of decal sheet. See illustration on first page.

24 FLYING.

A Install the engine simply 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. The wadding serves to protect the plastic parachute from melting by the hot gases of the engine's ejection charge. There should be about a 3 cm thickness of 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 shroud lines around the bundle.



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

E Install an igniter into the engine, following the instructions with the engine.

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

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

H Insert the safety key into the launch controller, give a 5 second countdown and press the button to launch the model.

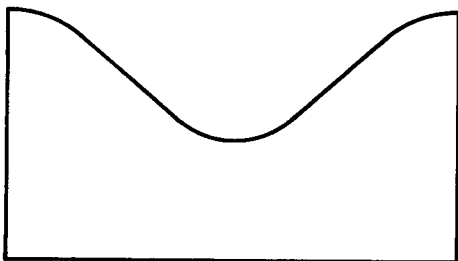
CANAROC



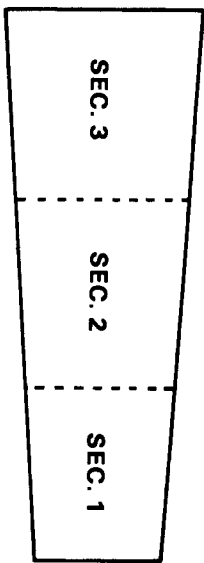
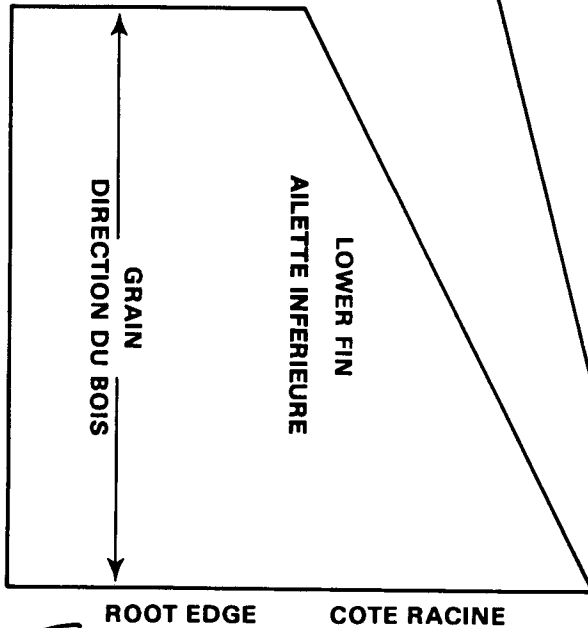
MANUFACTURED BY
IRWIN TOY LTD.
43 Hanna Avenue
Toronto, Canada
M6K 1X6

**STARSHIP ANTARES #54014
PATTERN SHEET
FEUILLE DE MODELE**

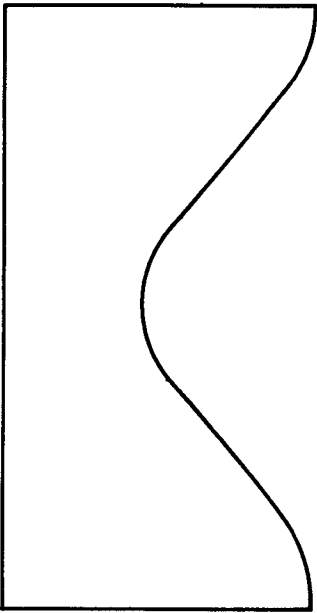
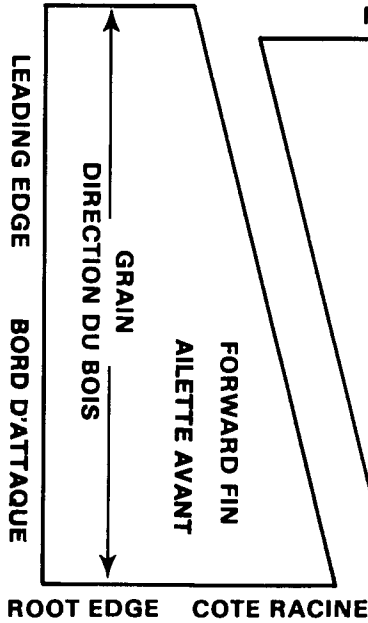
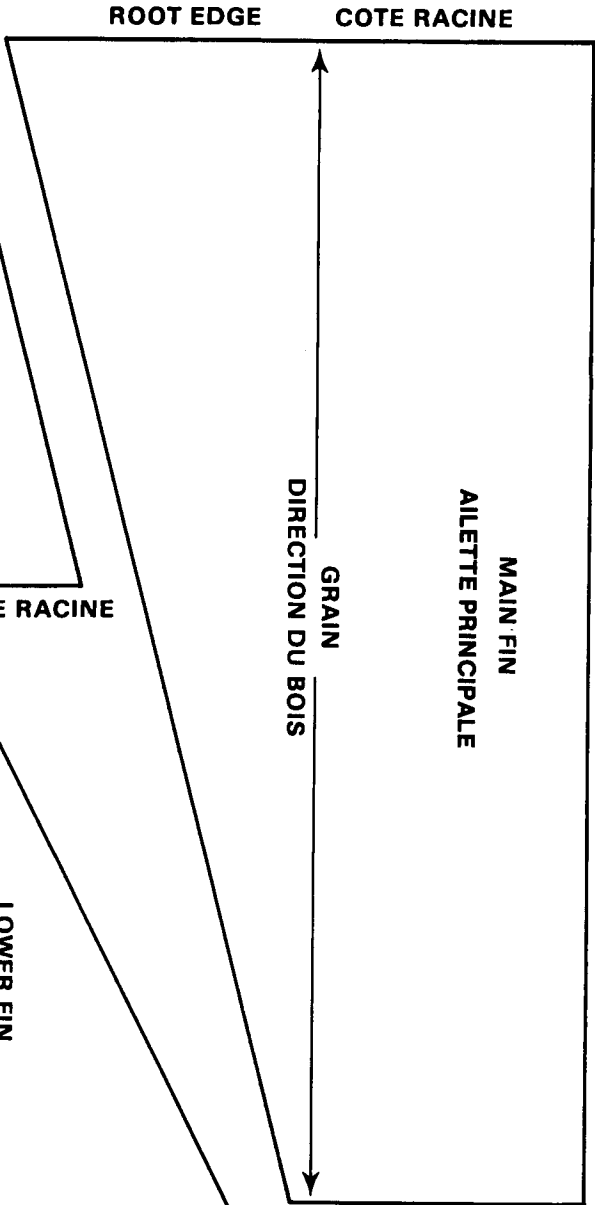
**PT-100
TUBE CUTTING PATTERN
PATRON DE COUPAGE
DU TUBE**



54014012



**SHOCK CORD MOUNT
MONTAGE DU CORDON AMORTISSEUR**



**PT-200 TUBE CUTTING PATTERN
PATRON DE COUPAGE
DU TUBE**

Canaroc Antares

A



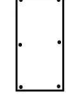
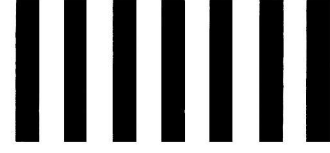
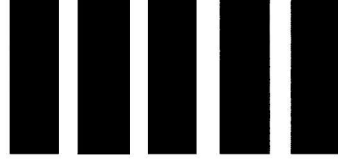
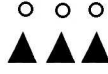
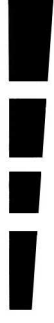
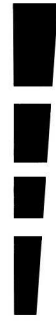
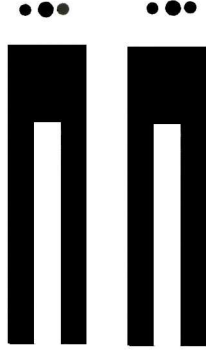
B



antares

GKC-6801

GKC-6801







Starship Antares

Parts List:

<u>OEM Parts</u>	<u>Parts currently available</u>
1) 2 x PT-200 Body Tube 45.7 cm l. x2	BT-50 18" l. x 2
2) PT-100 Body Tube 45.7 cm l.	BT-20 18" l.
3) PT-100 Body Tube 21.1cm l.	BT-20 8 5/16" l.
4) ET-100 Engine Tube	BT-20 2.75" l.
5) 2 x PN-200A Nose Cone	custom turned 'Challenger Style' balsa cone x 2
6) PN-100B Nose Cone	ESTES or BMS BNC-20N, and screw eye
7) 2 x CR-1020 Centering Ring	CR2050 x 2
8) ER-1 Engine retainer	70mm engine hook
9) PK-18 Parachute 45cm	18" parachute
10) SL-1 Shroudline	shroudline 72" l.
11) TS-1 Tape strips x 8	Tape discs x 6 or 8 depending on 6 or 8 sided chute
12) SC-1 Shock Chord	1/8" elastic chord 24" l.
13) 2 x LL-2 Launch Lug	1/8" Launch lug x 2
14) balsa sheets x 3	1/16" balsa as needed
15) Decal sheets	repro decals

NOTE: This rocket may be built as a twin engine cluster by building a second engine mount, and adding a second recovery system in the right hand body tube. If built as a cluster, two 12" parachutes are recommended over the single 18".