

PARTS

Your scale model Honest John rocket kit consists of the following parts as illustrated in the drawing at right:

- A: 1 Engine Tube--Part #BT-20J
- B: 1 Body Tube--Part #BT-50W
- C: 1 Balsa Fin Stock--Part #BFS-30C
- D: 1 Balsa Fin Stock--Part #BFS-20J
- E: 1 Nose Cone--Part #BNC-50AD
- F: 1 Tube Coupler--Part #TC-50C
- G: 1 Engine Block--Part #EB-20A
- H: 1 Screw Eye--Part #SE-1
- I: 1 Nose Cone Wrench--Part #NCW-1
- J: 1 Shock Cord 4'--Part #SC-1
- K: 1 Shock Cord 9'--Part #SC-1A
- L: 1 Suet Paper Reinforcing--Part #PPM-1
- M: 1 Launching Lug--Part #LL-2A
- N: 1 Parachute, 12"--Part #PK-12
- O: 1 Spacer Ring Set--Part #TA-27
- P: 72" Shroud Line--Part #SLT-1B
- Q: 6 Tape Strips--Part #TD-2
- R: 1 Decal Sheet--Part #KD-27
- S: 1 Pattern & Shroud Sheet--Part #SP-27

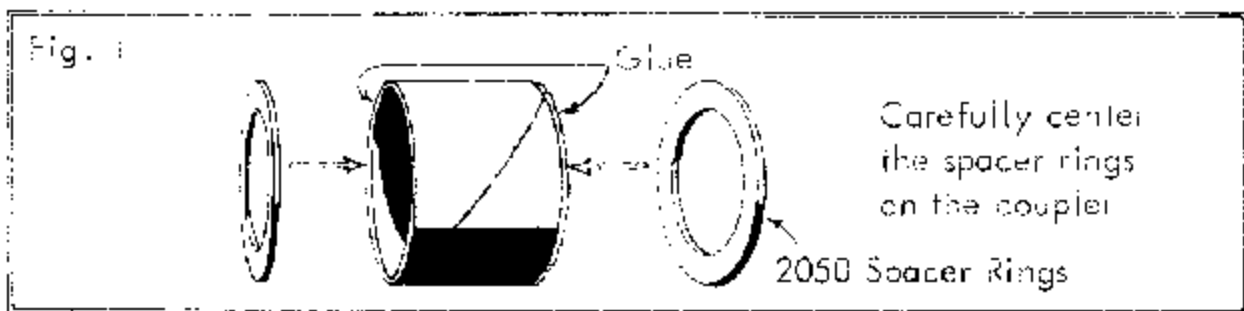
In addition to the materials included in your kit you will also need the following tools and materials:

- 1) Modeling knife or single edge razor blade
- 2) Scissors
- 3) Extra-strong white glue
- 4) Ball point pen or pencil
- 5) Fine and extra fine grit sandpaper
- 6) White and black paint or cope

Read the entire assembly instructions carefully before beginning work on your rocket. Then start construction, following each step in order, checking off each step as it is completed.

Assembly

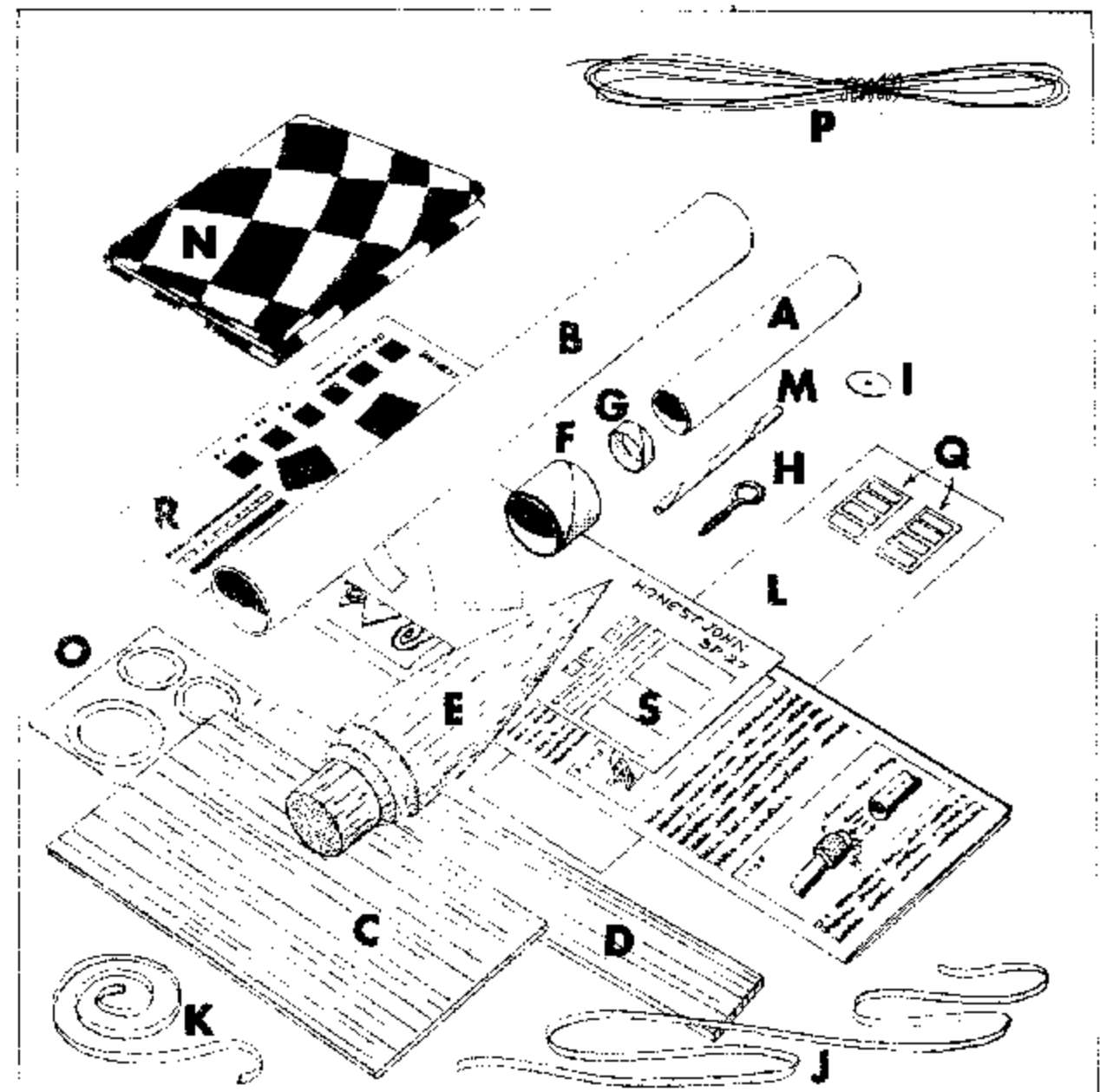
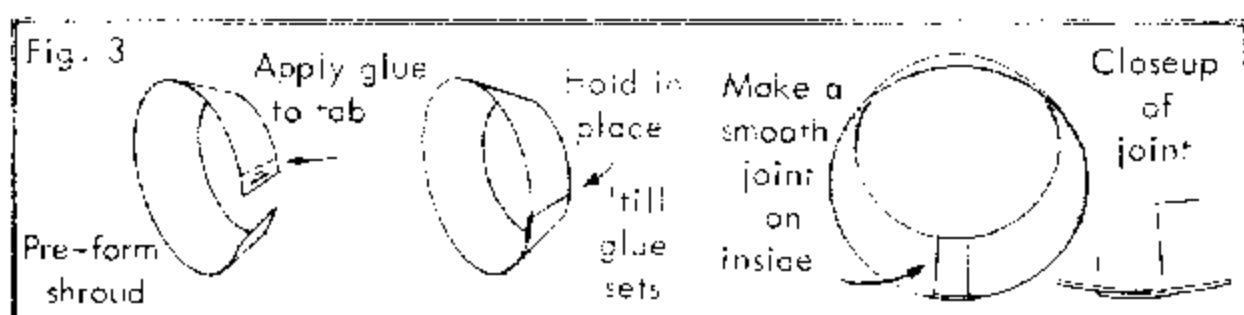
(1) Glue the adapter ring to each end of the tube coupler as shown in fig. 1. The rings should be centered perfectly on the coupler. Apply enough glue to make a permanent, strong joint, but do not leave any excess glue on the outside of the unit. Set the assembly aside to dry thoroughly.



(2) Glue the engine block in one end of the 2-3/4" long engine holder tube. To do this, apply glue to the last 1/4" of the inside of the tube, then slide the engine block into the tube until the end of the block is even with the end of the tube (see fig. 2).



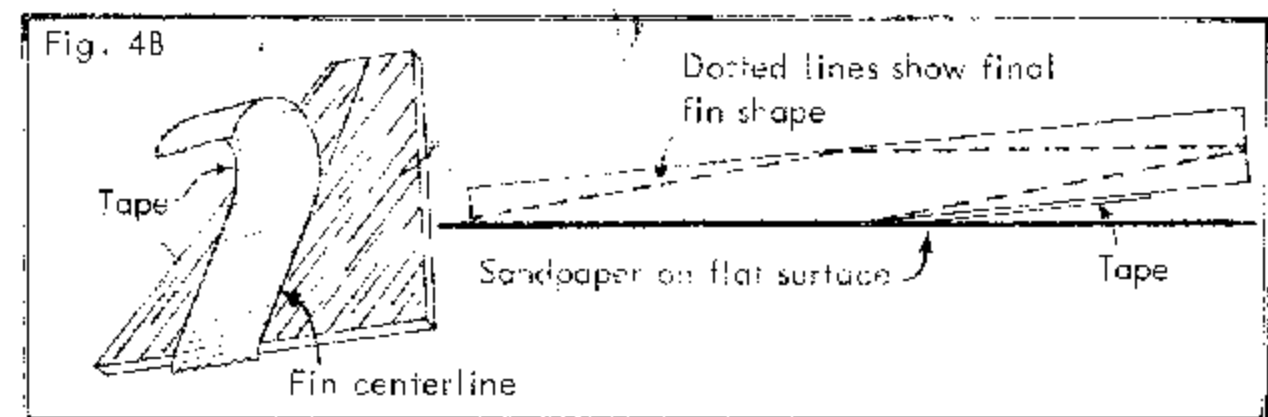
(3) Cut out the dummy nozzle shroud along the edge lines. This must be done carefully if it is to fit correctly. Form the shroud into a cone with the markings to the outside. Apply glue to the flap and press it into position. Hold it in place until the glue sets, then set aside to finish drying.



(4) Cut out the fin pattern. Lay the pattern on the balsa fin stock with the grain of the wood and grain shown on the pattern matched perfectly. Trace out four copies of the fin. Cut out fins carefully. The accuracy of your scale model depends on

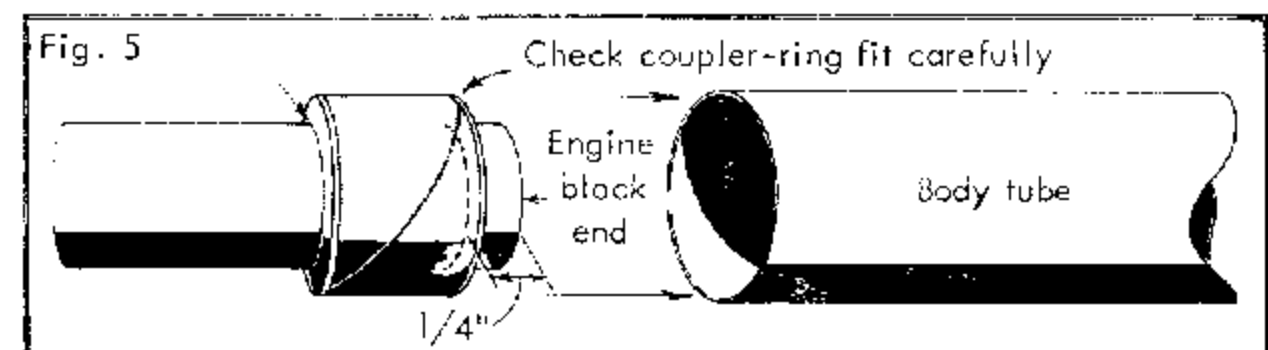


the amount of time and effort put into it--for exact scale, the fins should be sanded to the shape shown in fig. 4B. To do this, cut the fin pattern apart on its center line. Lay the front half of the pattern on a fin, match the front edges and mark the centerline. Repeat on both sides of all four fins. Apply a strip of masking tape to the fin so its edge matches the centerline as

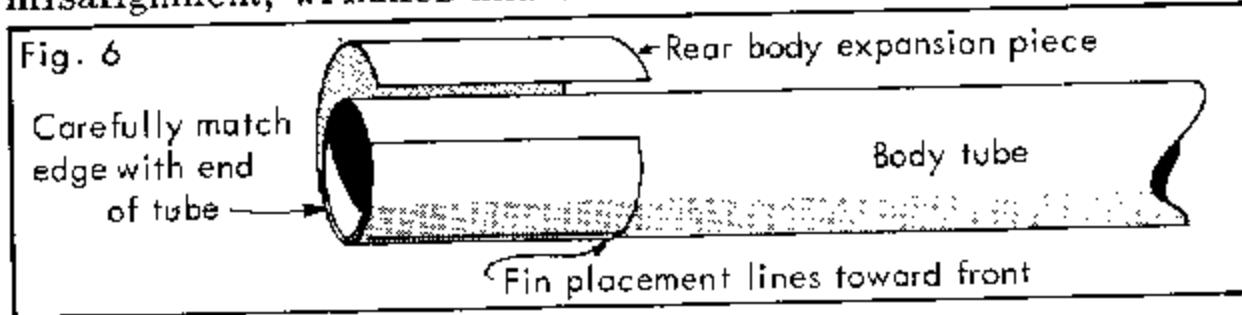


shown and begin sanding. When one side has been sanded, remove the tape and apply another piece with the opposite edge on the line. Follow this procedure until all four sections of each of the fins have been sanded.

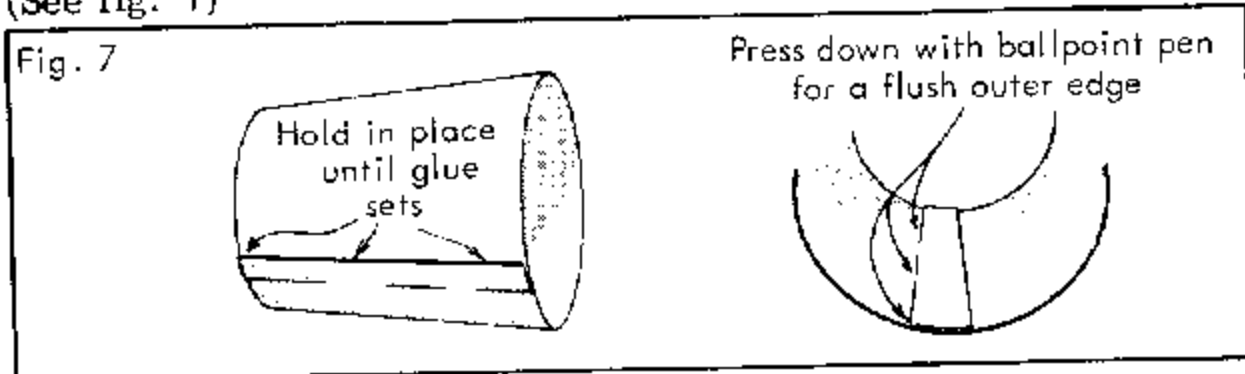
(5) Sand the rings on the ring-coupler unit so they are even with the coupler and the unit slides smoothly (and easily) inside the BT-50W body tube. Push the engine holder tube, engine block end first, through the rings on the ring-coupler unit. Allow the engine block end of the tube to extend forward 1/4" from the ring-coupler unit. Apply a fillet of glue to the ring-tube joints. Set the unit aside to dry thoroughly.



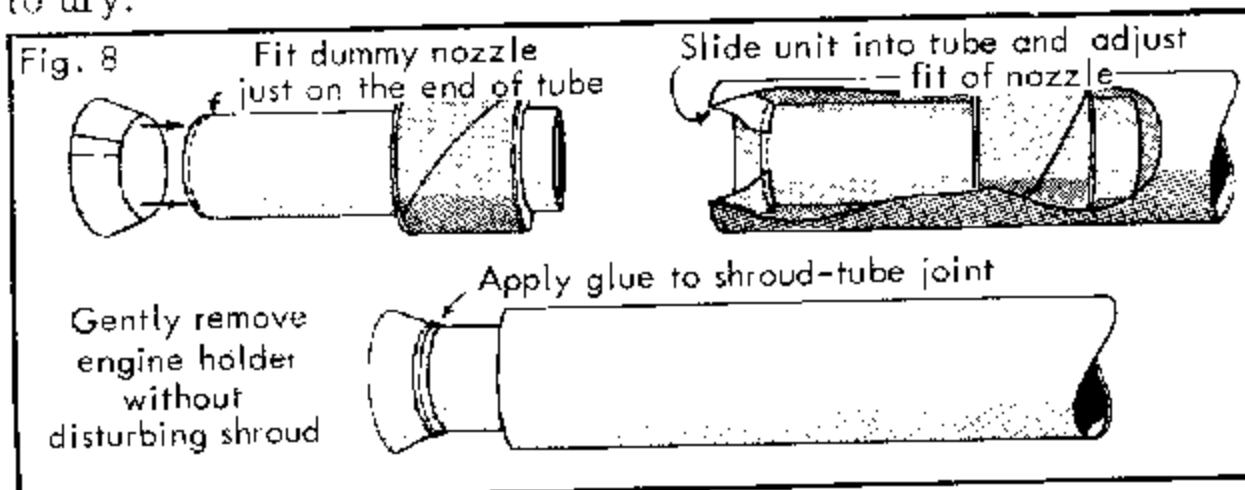
- ☑ (6) Cut out the rear body expansion pattern and lay it on the paper reinforcing material. Trace around the four sides of this pattern, then copy the 3 fin placement lines carefully. (The 4th fin will go over the joint when the piece is in place.) Carefully cut out this part and peel the backing paper from it. Place the rear edge of the part even with the rear of the body tube as shown and apply the PRM to the tube. Work slowly to prevent misalignment, wrinkles and air bubbles.



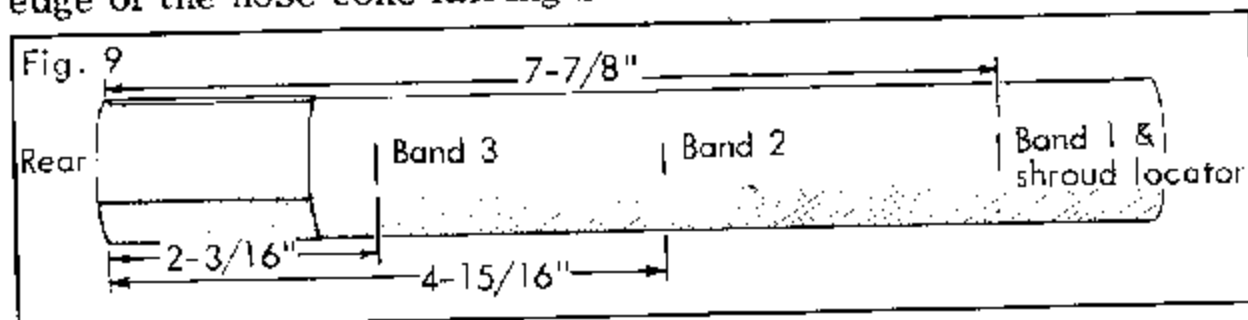
- ☑ (7) Cut out the nose cone fairing shroud along its edge lines. Form the shroud with its markings to the outside. Apply glue to the flap and press it into position. Set the shroud aside to dry. (See fig. 7)



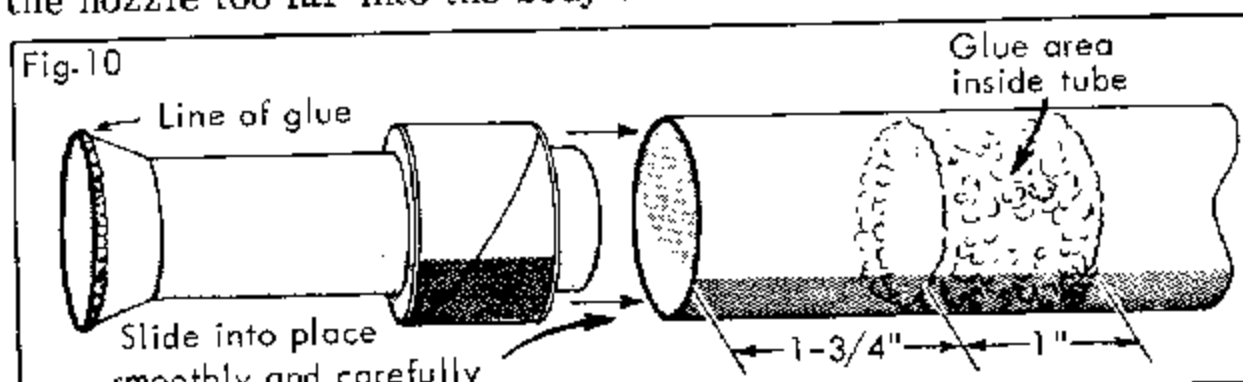
- ☑ (8) Slip the dummy nozzle onto the rear end of the engine holder tube so it is 1/16" from the end, but do not glue it in place yet. Insert this assembly into the end of the BT-50W tube and adjust the shroud to contact all sides of the BT-50W tube. Make the shroud even with the edge of the tube all around. Remove the engine holder assembly just far enough to expose the shroud fully and apply a line of glue around the shroud-engine tube joint. Do not disturb the shroud during this operation. Carefully remove the engine holder unit from the body and set aside to dry.



- ☑ (9) Carefully measure and mark the band positions shown in fig. 9. The dimensions given are all to the forward edges of the bands. The mark for band 1 is also the location for the rear edge of the nose cone fairing shroud.

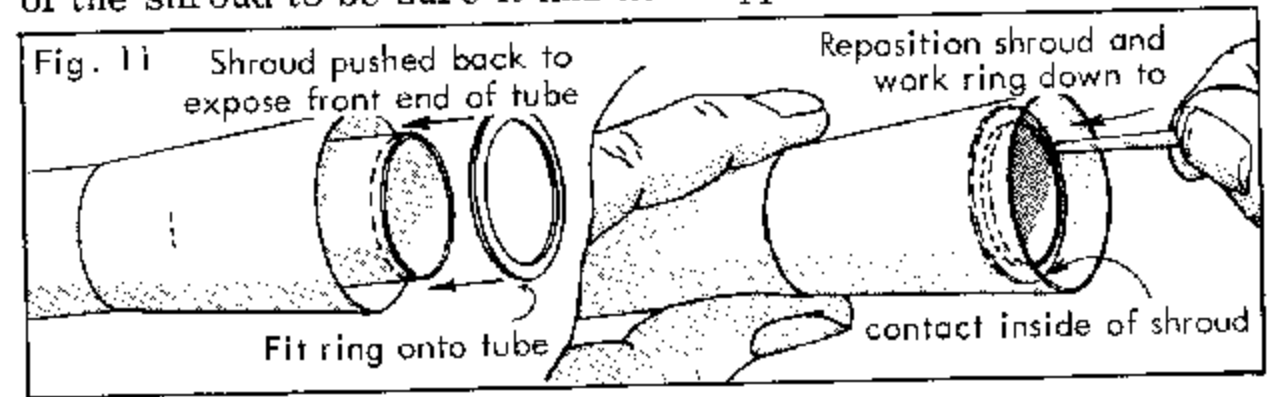


- ☑ (10) Smear glue around the inside of the body tube to cover an area 1" wide starting 1-3/4" from the rear of the tube (the end to which the expansion strip has been applied). Apply a line of glue around the outside edge of the dummy nozzle and slide the engine mount unit into the rear of the body until the outer edge of the nozzle is against or just inside the rear edge of the body tube. Do not pause or the glue may set with the mount in the wrong position. Do not move too quickly or you may push the nozzle too far into the body tube.

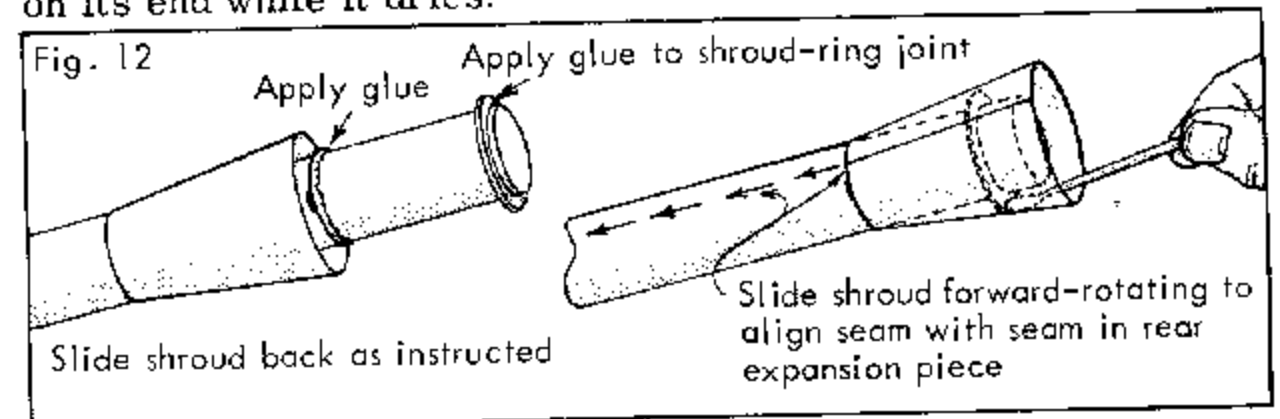


- ☑ (11) Slip the nose cone fairing shroud onto the front of the body tube as shown. Slide the shroud far enough to expose the

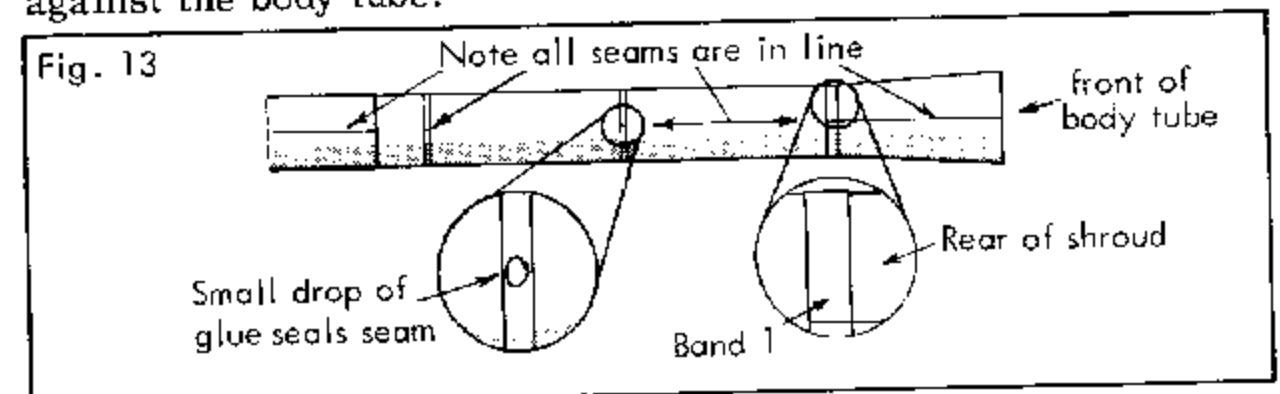
front end of the body tube. Slip the remaining ring just over the front of the body tube. Slide the shroud forward until its rear edge rests on the line for band 1. Hold the shroud at this position and with a brush handle or pencil, work the ring down the body tube until the outer edge of the ring contacts the inside of the shroud all around. Double check the position of the rear edge of the shroud to be sure it has not slipped.



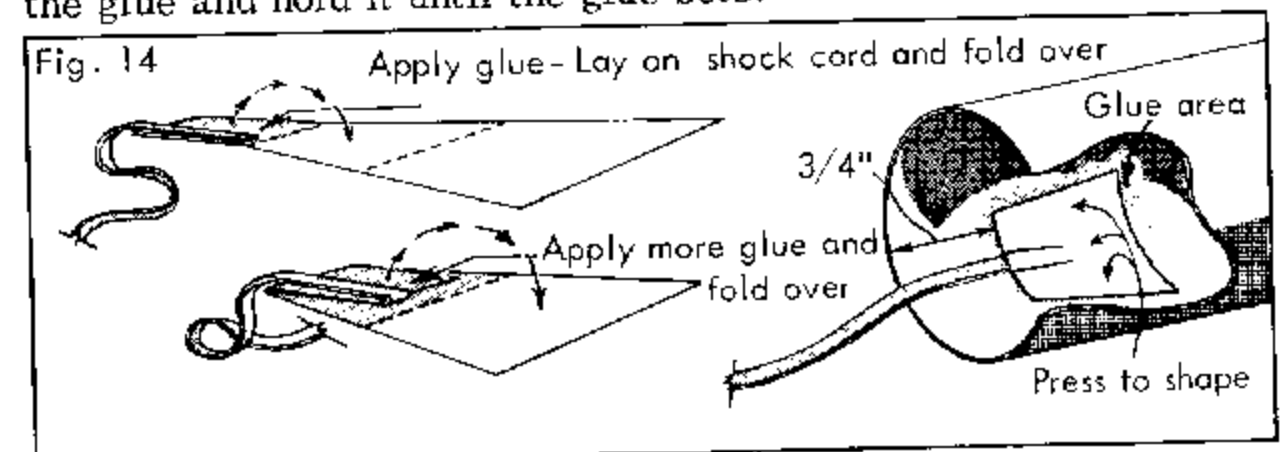
- ☑ (12) Slide the shroud back to expose the band 1 mark and apply a line of glue around the body tube on the forward side of the mark. Apply a fillet of glue on both sides of the body-ring joint and slide the shroud forward again, aligning the rear of the shroud to just show the band 1 mark. At the same time rotate the shroud so its seam will line up with the seam in the expansion piece at the rear of the body. Finish the installation with a fillet of glue all around the ring-shroud joint and stand the assembly on its end while it dries.



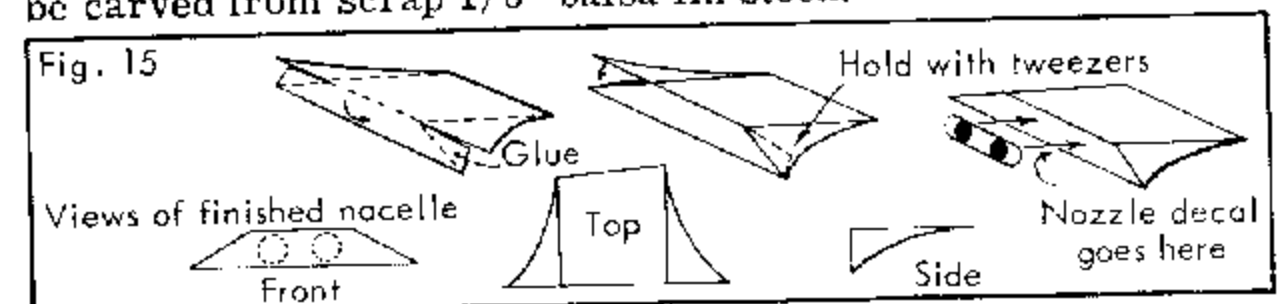
- ☑ (13) Cut out the patterns for the joint bands and trace around them onto the PRM as you did in step 6. Cut out the bands. Strip the backing paper from band 1 about half way and carefully place the band into position, stripping the backing paper out of the way a little at a time. Do the same with bands 2 and 3 in their locations as shown in fig. 13. A very small drop of glue at each of the band joints will help seal the joint and keep the ends tight against the body tube.



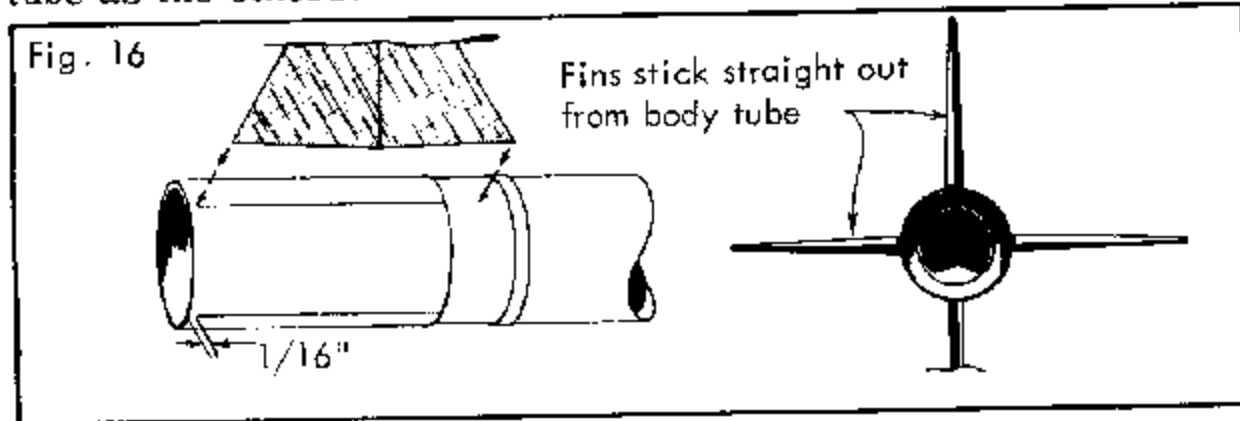
- ☑ (14) Cut out the shock cord mount. Prefold it on the dotted lines, then flatten it out. Smear glue over section 1. Lay the end of the longer shock cord in place and fold section 1 over. Apply glue to the back of section 2 and fold again. Clamp the unit together with your fingers while the glue sets. Apply glue to the inside of the body tube over an area approximately the same as the shock cord mount, starting at least 3/4" from the front of the tube and extending rearward. Press the mount onto the glue and hold it until the glue sets.



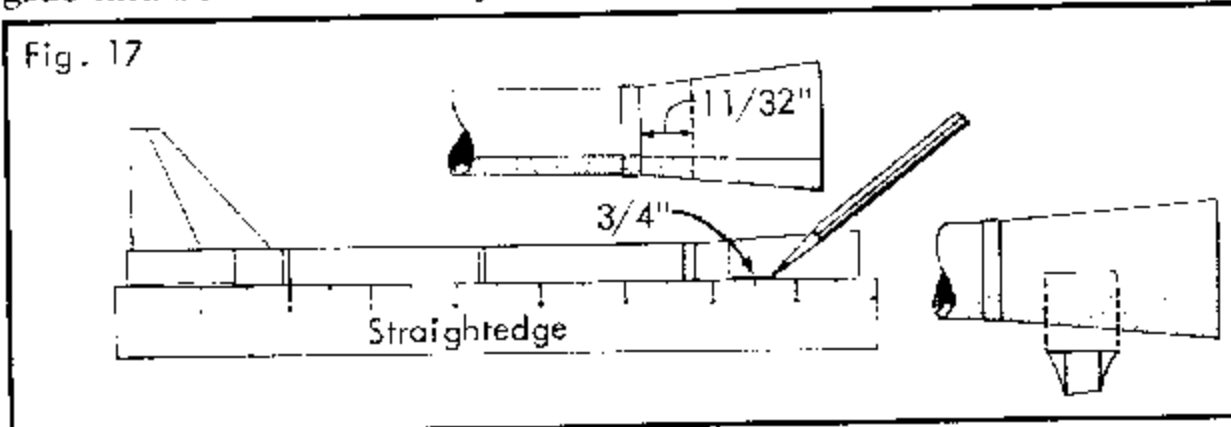
- ☑ (15) Cut out the four spin rocket nacelles and carefully assemble them as shown in fig. 15. If desired, the nacelles may be carved from scrap 1/8" balsa fin stock.



(16) Apply a line of glue to the root edge of a fin. Place the trailing edge of the fin exactly on the end of one of the guide lines and seat the rest of the root. The fin should stick straight out from the body tube and be in line with the centerline of the body tube. The trailing edge should be $1/16''$ from the rear edge of the body tube. Do the same with the other three fins, lining up the last one over the joint in the rear body expansion piece with its trailing edge the same distance from the rear edge of the tube as the others.



(17) Draw a faint pencil line around the nose cone fairing shroud $11/32''$ ahead of the rear edge of the shroud. Place a straightedge along the fin and in line with the centerline of the body tube. Draw a $3/4''$ line on the shroud from the pencil line forward. Do this with the other 3 fins. Apply a line of glue around the bottom edge of a spin rocket nacelle and place it on the fairing shroud on one of the four lines just drawn. Do this with the remaining 3 spin rocket nacelles. Wipe away any excess glue and set the assembly aside to dry.



(18) Cut out the four launch clip bases from the pattern and shroud sheet. Cut four rear and two front stand-off pieces from the BFS-20B sheet balsa. Using tweezers, hold a rear stand-off piece and apply glue to the root edge. Select one of the rear launch clip bases and put the stand-off in place on either location

mark. Be sure both stand-off pieces are (see fig. 18). Repeat this step with the

Fig. 23

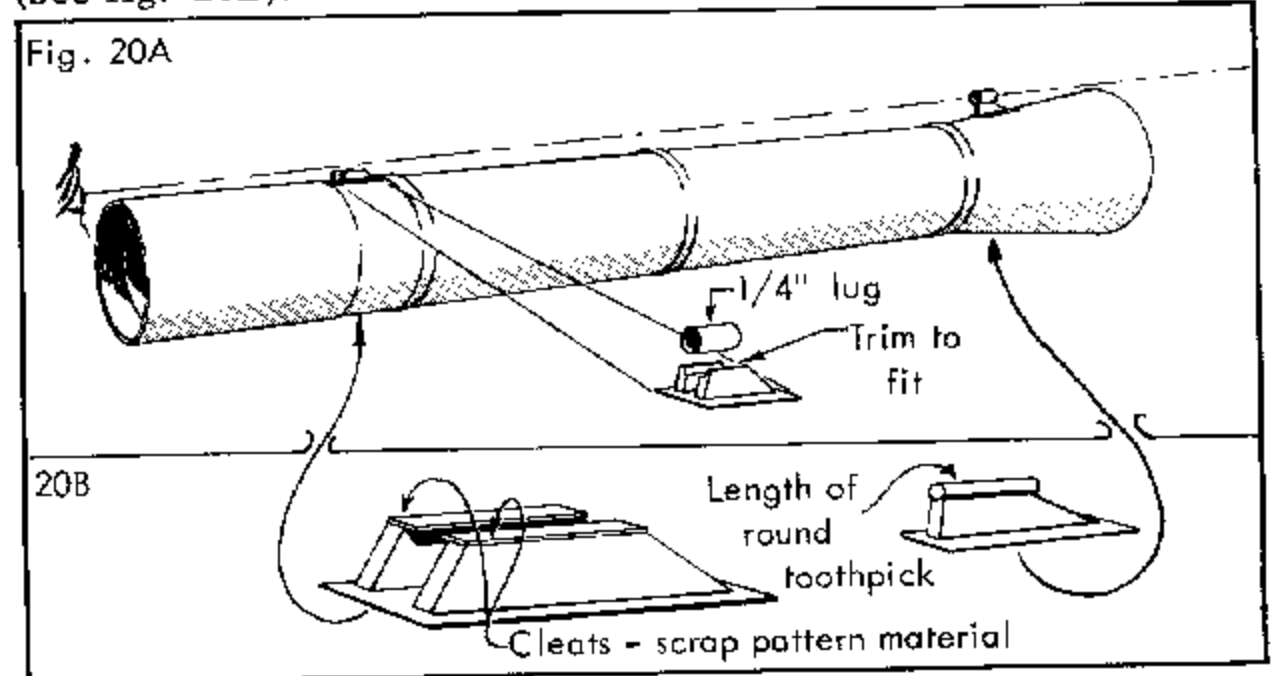
Cut off

Wrap

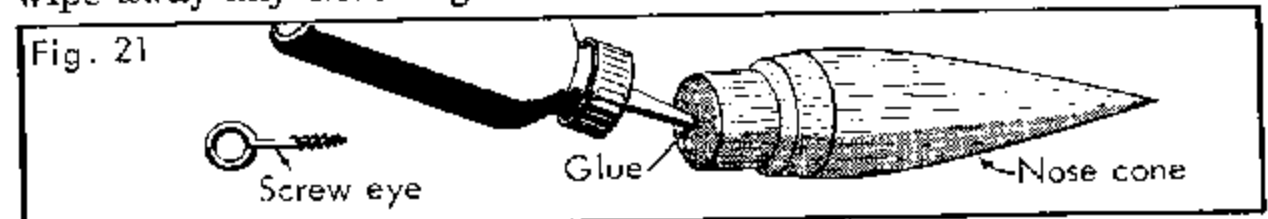
Long

mark. Spread glue on remaining location marked the same way

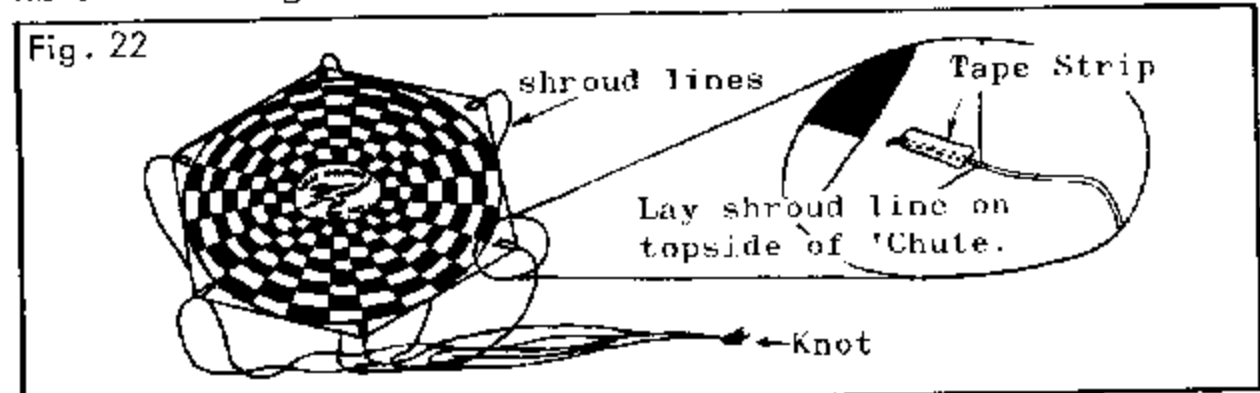
addition of cleats on the rear unit and a dowel piece on the front (see fig. 20B).



(21) Insert the screw eye into the base of the nose cone. Remove the screw eye, press the nozzle of the glue bottle to the hole and squirt glue into the hole. Replace the screw eye and wipe away any excess glue.

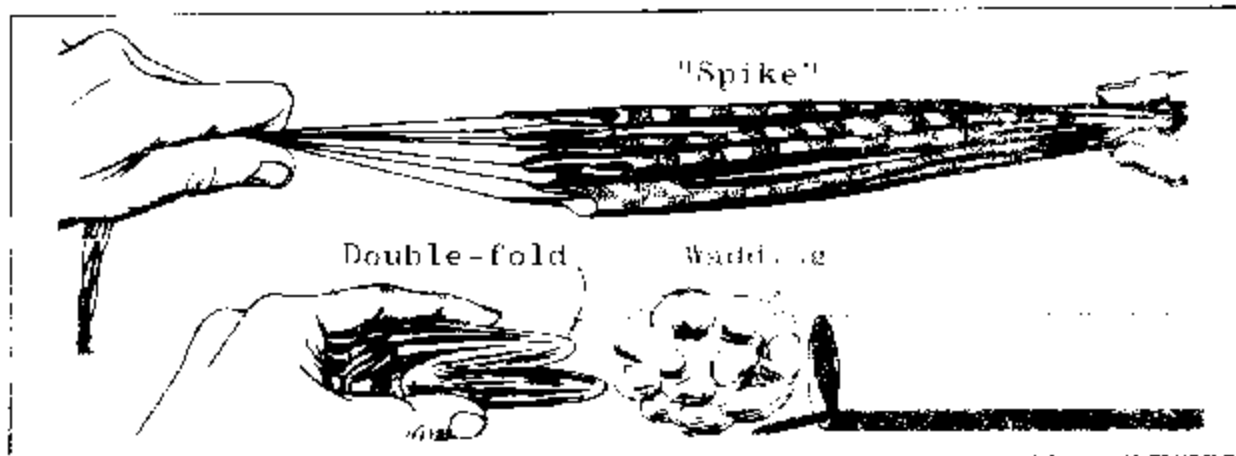


(22) Cut out the parachute on its edge lines as indicated on the plastic. Cut six 12" lengths of shroud line cord and attach one shroud line to each point of the parachute with a tape strip as shown in fig. 22. Tie the free ends of the lines together.



(23) Tie the free end of the long shock cord to the screw eye in the nose cone. Stretch the rubber as shown and wrap the tape strip tightly around the end of the cord. Tie the parachute

"spike" shape. Fold this spike in three sections as shown in the illustration. Push the folded parachute down into the tube on



top of the wadding and pack the shroud lines and shock cords on top of the parachute. Slide the nose cone into place.

- (12) Install an electrical igniter in the engine as directed in the instructions which came with the engine.
- (11) Wrap the engine with masking tape until it makes a tight fit in the engine holder tube. This fit must be tight so the engine will not blow out when the ignition charge is activated. Insert the engine into the tube until its forward end rests against the engine block.
- (10) Remove the safety interlock or key from the launch control panel. (If a simple spring switch is used, install the protector on the switch to separate the contacts.) Carry the key or interlock on the person of the launch control officer.
- (9) Place the rocket on the launcher. Check to be sure the panel is disarmed. Clean the micro-clips and attach them to the igniter.
- (8) Clear the launch area, alert the recovery crew and the observers.
- (7) Check for low flying aircraft and unauthorized persons in the recovery area.
- (6) Arm the launch panel.
- (5) (4) (3) (2) (1) LAUNCH!

H. J. Info

HONEST JOHN was the U.S. Army's first surface-to-surface unguided rocket used as a long-range artillery weapon. It is stabilized during flight by fins and is provided initial guidance by means of a 25-foot launching rail. Eight small solid propellant spin rockets housed in four shrouds behind the warhead are triggered upon the HONEST JOHN'S leaving its launch rail and impart a slow spin to the missile in flight to average out fin misalignments and thrust misalignments in order to improve accuracy.

The Honest John's solid propellant booster was originally developed as a launch booster for the Navy's "Talos" XSAM-N-6 ram-jet anti-aircraft missile but was later replaced by an improved booster. Early experiments with JATO rockets adapted to fly as fin-stabilized missiles were carried out in 1950 at White Sands and led to the combination of the M6(X202-E2) booster with a 30-inch diameter special warhead to produce the HONEST JOHN. The first Honest John was fired at White Sands on June 30, 1951.

The weight of the HONEST JOHN solid propellant booster is 3,783 pounds. A total weight of 2.5 tons is reported for the complete "H.J." It has an approximate range of 25 miles. The H-J engine produces 84,000 pounds of thrust for 5.2 seconds.

Production of the HONEST JOHN was undertaken in 1952 with Douglas Aircraft Company as prime contractor and with Radford Arsenal manufacturing the solid propellant engine. Hundreds of rounds were fired at White Sands to establish battlefield range tables, effect of winds on trajectory, and proper design of the truck-mounted mobile launcher. Considerable difficulty was experienced with quenching the huge cloud of exhaust smoke produced at launch, a factor which might make an H-J launch site a perfect target following the launch of the missile. The missile was placed in the hands of special rocket artillery batteries and deployed to such overseas locations as Western Germany.

Because of the mass production status of the M6 rocket engine, it has been used with modifications as a booster for some types of sounding rockets and research vehicles by NASA.

Catalog Number 651-K-27

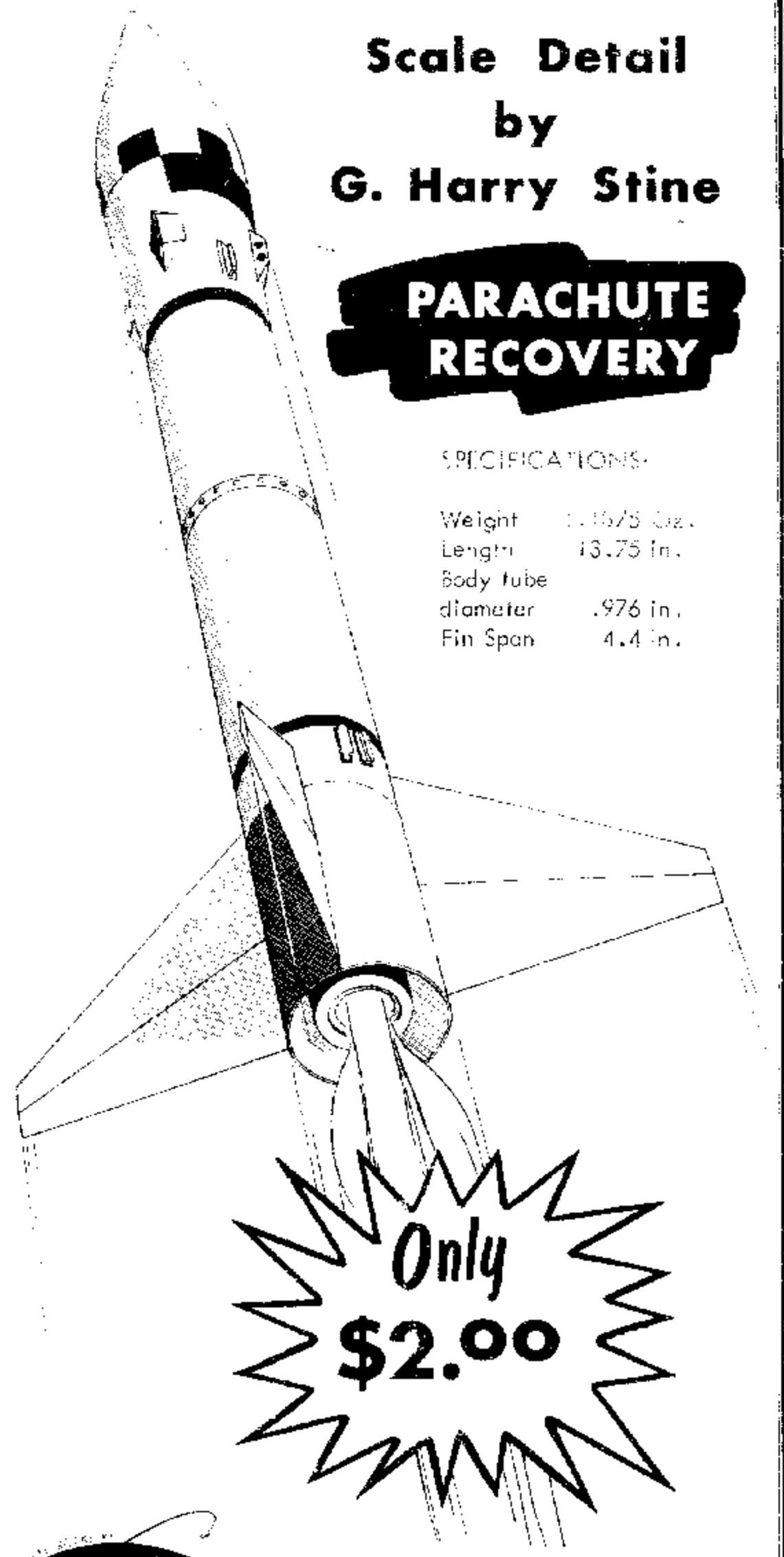
U. S. ARMY HONEST JOHN Flying Scale Model

Scale Detail
by
G. Harry Stine

**PARACHUTE
RECOVERY**

SPECIFICATIONS:

Weight	1.1575 Oz.
Length	13.75 in.
Body tube diameter	.976 in.
Fin Span	4.4 in.



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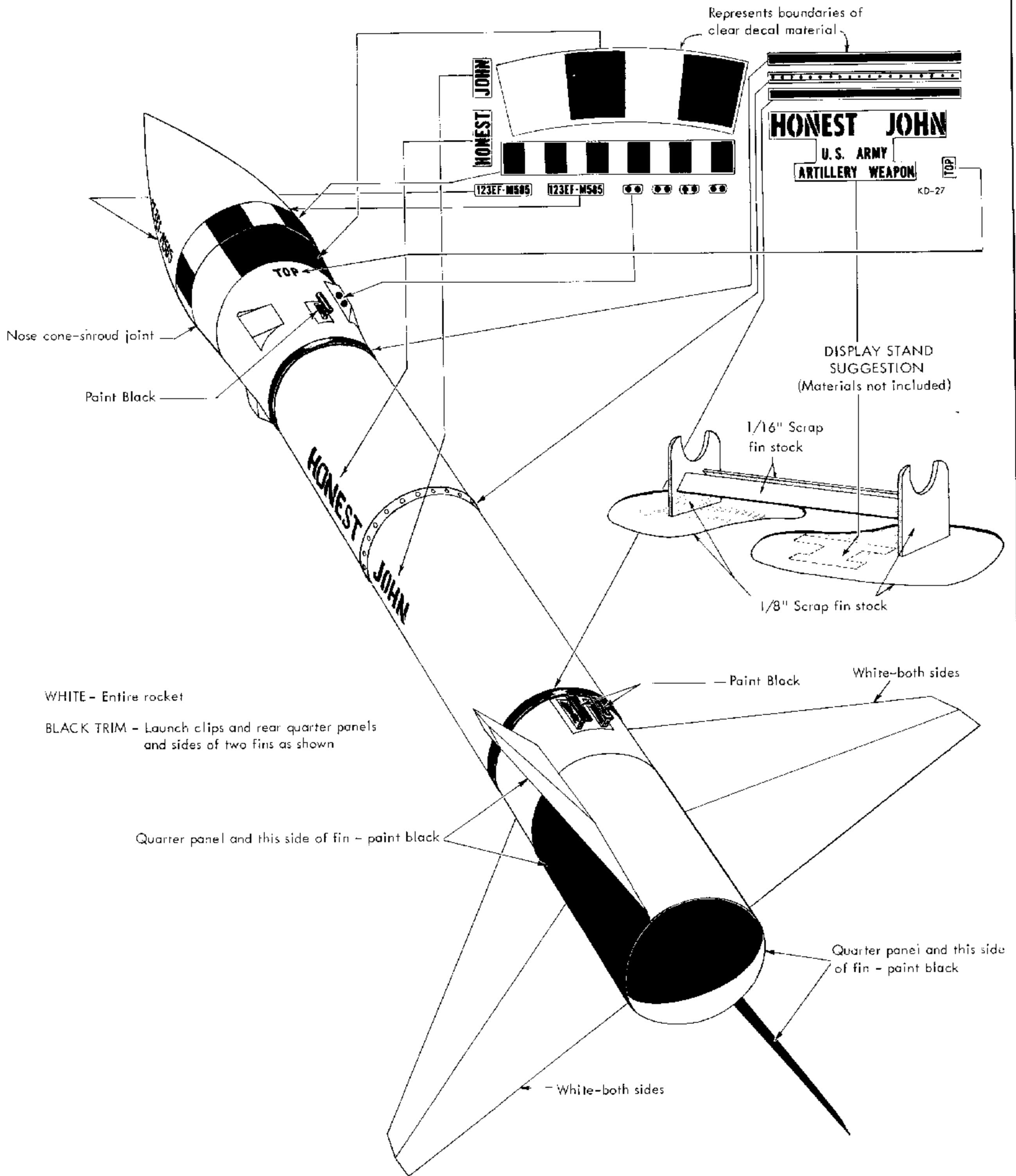
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Paint & Decal Directions



Exploded View

