ASSEMBLY TIP: Read all instructions before beginning work on your model. Make sure you have all parts and supplies.

TEST FIT ALL PARTS TOGETHER BEFORE APPLYING ANY GLUE!
If any parts don’t fit properly, sand as required for precision assembly.

PARTS  Locate the parts shown below and lay them out on the table in front of you. DO NOT USE THIS DRAWING TO ASSEMBLE YOUR ROCKET.

- WHITE ENGINE MOUNT TUBE BT-20J (1) (30408)
- GREEN ADAPTER RING AR250 (2) (30164-2)
- GREEN ENGINE BLOCK AR520 (1) (30162-2)
- WOOD DOWELS 1/8" X 9" (2) (32054)
- BT-50 10.75 in. (27.3 cm)
- BODY TUBE (1) (31682)
- YELLOW SPACER TOOL ET-2 (1) (35003)
- ENGINE HOOK EH-2 (1) (35021)
- LAUNCH LUG 1/8" X 2 3/8" LL-2B (1) (38178)
- RUBBER SHOCK CORD 1/4" X 18" (1) (38308)
- PLASTIC NOSE CONE PNC-50E (1) (61299)
- PLASTIC PARTS SET (61300)
- DECAL (61140)
- BALSA SHEET A (2) (61301)
- BALSA SHEET B (2) (61302)
- ASSEMBLED PARACHUTE 12" (30 CM) (35801)
- CLAY WEIGHT (4) (65705)
- ENGINE MOUNTING PLATE (2) (30000)

SUPPLIES  In addition to the parts included in the kit you will also need:

- SCISSORS
- PENCIL
- RULER
- FINE SANDPAPER
- CARPENTER’S GLUE
- MODELING KNIFE
- MASKING TAPE
- HOBBY SAW
- PLASTIC CEMENT
- SPRAY PRIMER (WHITE)
- SPRAY PAINT (LIGHT GRAY, NEUTRAL GRAY, ORANGE, INTERMEDIATE BLUE)
- CLEAR SPRAY PRIMER (OPTIONAL)
- WAX PAPER
- PAINT PEN
- SANDING BLOCK
1. MARKING BODY TUBE LINES

A. Cut out tube marking guide.

B. Wrap marking guide around BT-50 body tube and secure with tape. Mark at arrows for wings and launch lug (LL), then remove guide.

C. Using a door frame, extend all marks the entire length of body tube.

2. ASSEMBLE ENGINE MOUNT

A. Mark white engine mount tube at 1/4" (6 mm), 1" (25 mm), and 2-1/2" (6.4 cm) from one end.

B. Cut 1/8" (3 mm) slit at 2-1/2" (6.4 cm) mark.

C. Use scrap balsa to smear glue just short of the 2-1/2" mark (6.4 cm) inside engine mount tube.

D. Mark yellow spacer tool 1/4" (6 mm) from end.

E. Push engine block into engine mount tube with spacer tool up to 1/4" (6 mm) mark. Remove spacer tool immediately.

F. Insert engine hook.

G. Sand inside edges of both green adapter rings as needed.

H. Apply a ring of glue just past the 1" (25 mm) mark. Slide ring onto tube down to the 1" (25 mm) mark. Apply a ring of glue just past the 2-1/2" (6.4 cm) mark. Slide the other green adapter ring onto tube down to the 2-1/2" (6.4 cm) mark. Apply glue fillets to both sides of rings. Let dry completely.

3. INSERT ENGINE MOUNT

A. Using a piece of scrap balsa smear glue inside BT-50 body tube 2-1/4" (5.7 cm) from end.

B. Align engine hook with launch lug line (LL). Push engine mount into body tube to the 1/4" (6 mm) mark. Let dry.
4. ASSEMBLE WINGS

A. Fine sand all 4 balsa sheets, both sides.

NOTE: Place a piece of wax paper on a flat surface prior to assembling balsa wing parts.

B. Using a modeling knife, carefully remove wings. Do not cut off mounting tabs.

C. Line up balsa wing pieces as shown and glue left and right wing halves together as shown. Make sure all edges are aligned and straight. Check with straight edge. Place a sheet of wax paper on top of completed wing halves. Place a book on top and let dry completely.

D. Repeat for other wing. Let both wings dry completely.

E. Sand both wings smooth on both sides.

F. Position wings as shown. Carefully sand a 45° angle along the entire length of each wing. Check angles using the Beveled Edge Guide at right. Do not sand TOO MUCH material away.

5. ASSEMBLE AND ATTACH AIR INTAKES

A. Remove air intake parts from balsa sheet B and gently sand "nibs" flush. DO NOT cut or sand off mounting tabs.
5. ASSEMBLE AND ATTACH AIR INTAKES

...Continued from page 3

B. Apply glue to bottom edges as shown, and glue to air intake bottom. DO NOT glue curved end yet.

D. Curving rear section carefully, glue as shown. Temporarily tape together with masking tape.

C. Apply glue to top edges of air intake assembly, and glue to left wing by inserting tabs into slots as shown. Let dry completely.

E. Repeat for right wing. Let both wings dry overnight before removing tape.

6. ASSEMBLE MISSILE RACKS

A. Apply glue as shown. Press rails into slot equal distance. Repeat for second rack. Let dry.

7. ASSEMBLE MISSILES

A. Using a razor saw, cut six 2" (5.1 cm) pieces.

HINT: Use a hobby mitre box for a straight cut.

B. Apply plastic cement to ends of dowel. Align fins, push onto dowel, let dry.

C. Repeat for other five missiles.
8. ATTACH WINGS / INTAKES

WING LINES FROM STEP 1

Shock Cord Mount to be used later in step 14.

FLAT SURFACE REAR VIEW

A. Apply a line of glue to beveled edges of right and left wing. Attach wings to body tube, with body tube and wings on a flat surface. Keeping all three on flat surface, hold in place until wings are firmly attached. Let dry completely.

9. PREPARE AND ATTACH STABILIZERS

A. Using a razor saw, cut two 3/4" (19 mm) pieces of dowel. Sand ends to remove burrs.

B. Apply glue to dowel, press into place as shown. Let dry.

NOTE: Wings and stabilizers must be attached correctly for stable flight.

C. Apply glue to stabilizers as shown. Press into wing slots. Let dry.

10. ATTACH MISSILE RACKS AND LAUNCH LUG

A. Apply glue to rack. Push tabs into wing slots. Let dry.

B. Measure 5-1/2" (14.0 cm) from end of body tube on launch lug (LL) line.

C. Apply glue to edge of launch lug. Attach at 5-1/2" (14.0 cm) mark. Let dry.
11. INSTALL NOSE WEIGHT

A. Form the clay weights into thin "snakes".
B. If necessary, enlarge hole in rear of nose cone with modeling knife to allow easier insertion of clay snakes.
C. Insert clay snakes into nose cone.
D. Pack clay snakes tightly into tip of nose cone using the end of a pencil. Use ALL the clay.
E. Using a modeling knife, remove excess flash and clean eyelet of the nose cone. Caution: Do not cut off eyelet.

12. FINISHING YOUR ROCKET

A. Lightly sand all assembly joints (notch and slots).
B. Apply glue fillets to all joints, smooth with finger. Let dry.
C. First spray rocket with white primer. Let dry and sand. Repeat until rocket is smooth. Follow the paint scheme on the package, including the missiles as shown above.
D. When paint is completely dry, continue with steps below for applying water transfer decals.
E. Use the kit panel photo and above and below photos as a guide to apply decals.
F. To apply water transfer decal, cut out an individual section of the decal and dip in lukewarm water for about 10 seconds (one at a time).
G. When decal slides freely away from backing paper, slip it onto the model and position it in place.
H. Use a napkin or tissue to blot away any excess water. Allow the decal to dry completely.
I. Apply glue, and attach missiles as shown. (Follow views in step 13 below.)
J. OPTIONAL: Clear coat entire rocket after paint dries and after decal placement.

13. ATTACH MISSILES

A. Apply glue along rail as shown. Place missile on edge of rail with fins oriented as shown in end view. Let dry completely before proceeding with remaining missiles.
B. Repeat for other side. Let dry.
14. INSTALL SHOCK CORD MOUNT

A. Cut out shock cord mount from Page 5.
B. Fold.
C. Apply glue. Fold forward.
D. Apply glue. Fold forward.
E. Squeeze tightly and hold for one minute.
F. Glue mount 1” (25 mm) inside front of body tube. Hold until glue sets. Let dry.

15. ATTACH PARACHUTE AND SHOCK CORD

A. Pass shroud lines through eyelet.
B. Form a loop with shroud lines.
C. Pass parachute through loop.
D. Tie shock cord to nose cone using a double knot.

HELPFUL HINT: IF NOSE CONE FIT IS...
- TOO LOOSE
  - ADD MASKING TAPE.
- TOO TIGHT
  - SAND FOR FIT.

16. PREPARE PARACHUTE FOR FLIGHT

A. Insert 3-4 squares of loosely crumpled recovery wadding into rocket.
B. Spike parachute.
C. Fold.
D. Roll.
E. Wrap shroud lines loosely. Insert ‘chute, shock cord and nose cone into body tube.

IMPORTANT: Wadding must be in place and slide freely for rocket to work properly.

NOTE: Only Estes wadding (302274) recommended.

IMPORTANT: Parachute should slide easily into body. If fit is too tight, unfold and repack again.

PREPARE ENGINE

WARNING: FLAMMABLE
To avoid serious injury, read instructions & NAR Safety Code included with engines. PREPARE ENGINE ONLY WHEN YOU ARE OUTSIDE AT THE LAUNCH SITE PREPARING TO LAUNCH!
If you do not use your prepared engine, remove the igniter before storing engine.

A. Separate igniter and plug.
B. Insert igniter.
C. Insert plug.
D. Push down.
E. Gently bend igniters to form leads as shown.
E. Insert engine into rocket.
**COUNTDOWN AND LAUNCH**

**KEY ALWAYS OUT UNTIL FINAL COUNTDOWN!**

1... 8" (20.3 cm)  

MASKING TAPE

2...

3...

15 FT. (5 M)

4...

5...

4... 3... 2... 1...

INSERT KEY. PUSH DOWN FIRMLY AND HOLD.

WHILE HOLDING KEY DOWN, PRESS LAUNCH BUTTON UNTIL LIFTOFF!

**PRECAUTIONS**

**PRE-LAUNCH CHECK**

For safety, never launch a damaged rocket. Check the rocket's body, nose cone and fins. Also, check the engine mount, recovery system and launch lug(s). Repair any damage before launching the rocket.

**FLYING YOUR ROCKET**

Choose a large field (500 ft. [152 m] square) free of dry weeds and brown grass. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great. Launch only with little or no wind and good visibility.

Always follow the National Association of Rocketry (NAR) SAFETY CODE.

**MISFIRES**

TAKE THE KEY OUT OF THE CONTROLLER. WAIT ONE MINUTE BEFORE GOING NEAR THE ROCKET! Disconnect the igniter clips and remove the engine. Take the plug and igniter out of the engine. If the igniter has burned, it worked but did not ignite the engine because it was not touching the propellant inside the engine. Put a new igniter all the way inside the engine without bending it. Push the plug in place. Repeat the steps under Countdown and Launch.
BODY TUBE - BT 50 - 10.75 INCHES LONG
ENGINE TUBE - BT 20 - 2.75 INCHES LONG
FINS - 1/8 BALSA
LAUNCH LUG - 2 3/8 X 1/8 INCH
SHOCK CORD - 20 INCHES X 1/4
WOOD DOWELS - 9 INCHES X 1/8
NOSE WEIGHT - 30g