

HISTORY

It took only ten months—from December 1940 to September 1941—to design and build the AS 51 Horsa MK I. This versatile airplane was Britain's most effective glider, and, in fact, the Horsa proved to be one of the most successful military gliders of the war. It was first used in the November 1942 attack on a Norwegian Heavy Water plant where Germany was developing an atomic bomb. The Horsa also saw action in the air over Sicily, Arnhem, and the Rhine River. Gliders played a central role in the D-Day invasion of Normandy, carrying 20% of all reinforcements and supplies. Most of those gliders were Horsas.

The Horsa was generally towed aloft by an obsolescent bomber such as the Whitley, Sterling, or Halifax. The ubiquitous C-47 Dakota was also used, but the Sterlings and Halifaxes were more effective because they were more powerful than other tow planes. The Horsas were large aircraft, carrying 25 combatequipped troops and two crew members; and the bombers were usually capable of pulling only one glider.

Tow lines attached to a pair of points on the upper main landing gear attachment secured the MK I, while the Horsa MK II was towed from a fixture on the nose wheel strut.

The Horsas were, perhaps, the most advanced gliders built during the war. Sophisticated instrumentation in addition to power operated flaps and brakes, and a power device for jettisoning the landing gear for touchdown on rough terrain distinguished this aircraft. Flaps, brakes, and jettison devices were controlled by a precharged air tank located under the central console. Due to these large flaps the plane was able to execute crucial, spot landings.

The MK I primarily carried troops, while the Horsa MK II, a longer plane with a swing-nose, saw duty as a vehicle transport. In order to speed unloading after landing, explosive bolts were used to detach the rear fuselage of each plane.

Reference Sources

"Rise and Fall of a Weapon," Air Enthusiast, Vol. II (Fine Scroll Ltd.) Airspeed Aircraft Since 1931, H. A. Taylor (Putnam & Co.) Aircraft of the Royal Airforce Since 1918, Owenthetford (Putnam & Co.) British Parachute Forces 1940-45, H. Davis (Arco)

SPECIFICATIONS

Span

Length MK I, 67' MK II, 67' 11" 8370 lbs. Weight Empty Weight Maximum MK I, 15,500 lbs. MK II, 15,750 lbs. Normal Towing 150 mph Speed Gliding Speed 100 mph Stall Speed 70-80 mph Normal Capacity 25 plus 2 pilots

BEFORE STARTING

- Study the illustrations and sequence of assembly before beginning.
- Decide how much detail you wish to add to your model and whether or not you intend to modify or "convert" the basic model in any way. Study carefully all available reference material before beginning to ensure an authentic model.
- Due to the amount of parts in this kit, do not detach the parts from the runners (sprue) until you need them. This helps avoid confusion and lost parts.
- When cementing the parts together, check the way in which one part fits together with another. This ensures a neat job.
- Always remember, when working with plastic model cement and paint, make sure your work is well-ventilated. The fumes from plastic modeling products can be harmful if inhaled.

PREPARATION OF PARTS

- Never tear parts off the runners (sprue). Use a Testor Hobby Knife, nail clippers, or small wire cutters.
- It is possible some parts may require a little attention with a file or sandpaper to ensure a proper fit and neat appearance. Hobby files and Testor Hobby Sandpaper appropriate for model-building are available in most good hobby shops.

 If you desire, you may fill any seams (where parts go together) or imperfections with Testor Contour Putty for Plastic Models which is also available at good hobby shops.

PAINTING

You can obtain an excellent finish on your model using Testor PLA Flat Enamels and overspraying according to the instructions in the APPLYING DECALS section.

First of all, be sure your brushes are soft, clean and flexible. (Keep them that way by cleaning them thoroughly with Testor Paint Thinner.)

Never use inexpensive brushes! A selection of Testor Shed-Proof Brushes will serve you well.

Wash plastic parts before detaching them from the sprue. Use warm water and liquid detergent. Let the parts air dry and avoid excessive handling.

Most parts should be painted while still attached to the sprue. Paint in one direction only. If your paint is the correct consistency, brush strokes will disappear as the color dries. If the paint seems too thick, thin it with Testor Paint Thinner. Let the paint dry completely before handling. When the parts are dry, assemble the model, following the directions closely. Remember, cement will not stick to painted surfaces. Using your Testor Hobby Knife, carefully remove paint from all surfaces to be cemented. After you have assembled your model you may touch up areas where cement has marred the finish.

DETAIL PAINTING

It is best to paint small parts before assembly if you are to produce a neat model. They may be painted while still attached to the sprue or may be detached and held with tweezers or "magic" type transparent tape. Remember to allow the painted parts to dry thoroughly before handling, and always scrape paint away from the surfaces that are to be cemented, as the paint will not allow the part to stick.

Wheels may be detached from the sprue and fitted onto toothpicks or matchsticks for painting. Then just hold the paintbrush against the edge of the wheel and rotate the wheel to obtain a neat, fast finish.

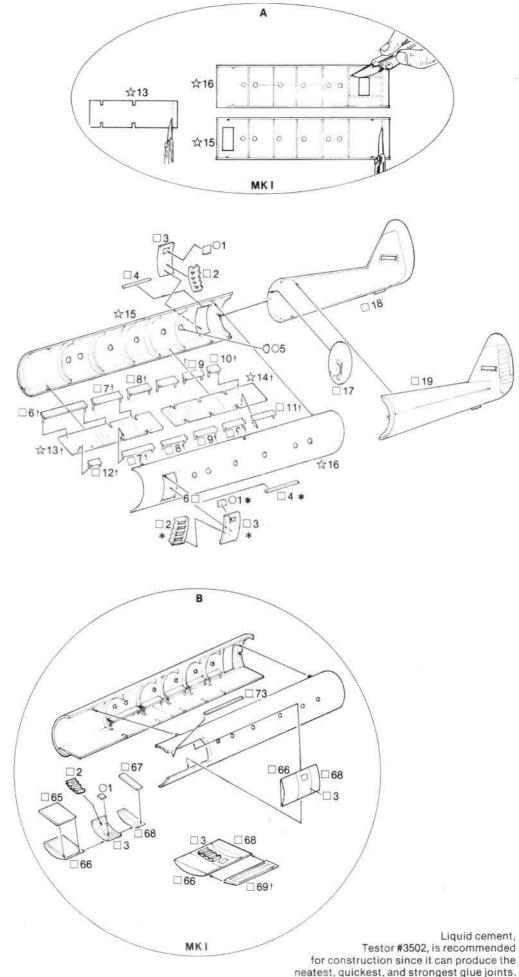
NOTE: Before beginning assembly you must decide which version of the Horsa you want to build — the MK I or MK II. Specific variations in assembling the MK I and the MK II are noted in the following instructions. Use the illustrations in the APPLYING DECALS section for information on how to paint the specific version you want your model to represent.

PARTS 1-19, 65-69, 73

Preliminary Painting

- □2 stairs, □3 inside of doors, ☆15, ☆16 interior of fuselage, □17 bulkhead, □65, □67 ramps, □69 ramp extension both sides:
 - "Light Gray" (Mix one part #1163 Flat Battle Gray with one part #1168 Flat White.)
- ☐ 6-☐ 12, ☐ 17 seats:

 "Green Gray" (Mix one part #1163 Flat
 Battle Gray with one part #1164 Flat
 O.D. Green.)
- ☆13 and ☆14 floor: #1163 Flat Battle Gray
- □ 1. For the MK I version you must cut off a short section of the front of the fuselage sides ☆ 15 and ☆ 16 and the floor ☆ 13. (See Drawing A) The cut lines are well defined on the inside of the parts. You must also cut out the larger front door opening on ☆ 16.
- □ 2. Assemble the four doors by cementing
 ○1 and □2 to □3. Two of these assemblies are used as the rear doors of both the MK I and MK II versions. Another is used as the front door of the MK II. For the front door of the MK I version (refer to Drawing B), assemble □65 to □66 and □67 to □68. Then cement □66 to one side of □3 and □68 to the other side of □3. If the door will be "open," cement □69 to this assembly as shown. Discard □69 if door will be "closed."
- □ 3. Set the doors aside if they will be fixed in the "open" position." If they are to be fixed "closed," install them at this time. For the MK II version, cement one narrow door ○1/□ 2/□ 3 to the rear opening on fuselage side ☆ 15 and one narrow door to the front opening on fuselage side ☆ 16. For the MK I version, cement rear door as for MK II and cement wide door ○1/□ 2/□ 3/□65-□68 to the front opening on fuselage side ☆ 16 which has been enlarged (see Drawing B).
- □ 4. Install the windows (12) ○5 into the openings in ☆15 and ☆16. Use as little cement as possible. To install clear windows neatly, use white glue thinned slightly with water. Note that this is not a strong glue, so let parts set well and don't handle the model on the window area once the windows have been installed.
- □ 5. Assemble the seats □ 6-□ 12 to the floor ☆13 and ☆14. If the doors will be "closed," seats and floor may be omitted.
- □ 6. The floors ☆ 13 and ☆ 14 may now be glued to one side of the fuselage ☆ 15. While the glue is still soft, the other side of the fuselage ☆ 16 may be glued to ☆ 15. At this point, make sure that the floor/seat assembly is properly aligned.
- ☐ 7. Next glue ☐ 17 to ☐ 18 and then ☐ 19 to ☐ 18. The tail section ☐ 18/☐ 19 can now be glued to the main fuselage.
- □ 8. Finally, install gutters □ 4 over top of rear door. For the MK II version, cement □ 4 over top of front door. For the MK I version, cement □ 73 over top of front door as shown in Drawing B.



Optional

^MK II

Apply small amounts of cement, using the tip of a 00 brush, to the surfaces to be joined while holding the parts in place. Do **not** use large amounts of cement.

Preliminary Painting

□ 26 instrument panel and □ 27 tow release lever: #1149 Flat Black

□ 25 air tank:

#1150 Flat Red

□ 29 control trim wheels and □ 30 control wheel:

#1149 Flat Black

□ 28 console, □ 32 and □ 33 seats: "Light Gray" (Mix one part #1168 Flat White with one part #1163 Flat Battle Gray.)

□ 34 and □ 35 cushions: #1164 Flat O.D. Green

□ 34 seat belts:

#1170 Flat Light Tan

□ 20 rudder pedals, □ 21 floor and □ 31 control column:

#1163 Flat Battle Gray

□ 22 interior of nose, □ 23 door, □ 24 bulkhead, 36 horizontal panel: "Light Gray" (See above)

☐ 1. Assemble the seat halves (2) ☐ 32 to (2) □ 33. Then install cushions (2) □ 34 and (2) □ 35 to the seats □ 32/□ 33

□ 2. Cement (4) □ 20 to floor □ 21. Glue □ 21 into nose piece 22. Then cement the seats □ 32-□ 35 to the floor □ 21.

□3. Cement tank □25 to console □28. Add controls (2) 29, one to each side of □ 28. Cement □ 26 and □ 27 to □ 28.

□ 4. Cement control columns (2) □ 30 to (2)

☐ 5. When parts assembled in stage 3 and 4 above are dry, cement console and control columns to cockpit floor □21 as shown.

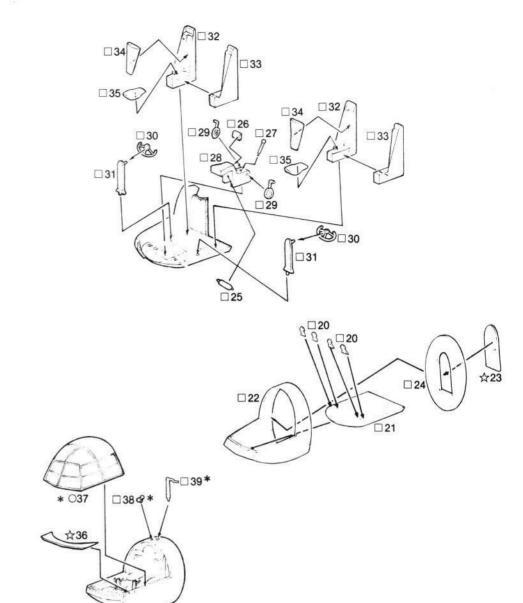
☐ 6. At this point, if you want to have the model stand on its landing gear without propping up the tail, you can put lead or BB shot under the floor of the nose and the front of the fuselage. Approximately 3/4 ounce will be required. (The lead is not supplied with this kit.) Put as much as will fit in the floor of the nose; and the rest in the fuselage front, under the floor. It may be necessary to flatten some of the shot to get it in position. Use white glue to hold the lead in place. It may take four to eight hours to dry. You can tape the front end of the fuselage to hold in the shot, letting it dry in an upright position. However, taping the nose will cut off air, preventing the white glue from drying; so set the nose in an upright position to dry, using no

□ 7. Glue door ☆23 to bulkhead □ 24 in either an "open" or "closed" position. Install ☆36 to console. Do not assemble canopy O37 and details □ 38 and □ 39 at this time. See Step 6.

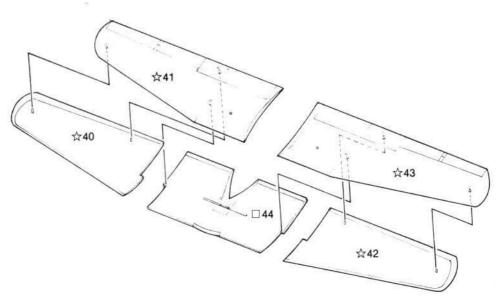
PARTS 40-44

□ 1. Glue upper sections of wings ☆ 40 and ☆42 to lower sections of wings ☆41 and ☆43 respectively.

□ 2. Glue the wing assemblies ☆40/ ☆41 and ☆42/ ☆43 to either side of the center section 44.



* Do not assemble at this time.



4 PARTS 45-48

- □ 1. Cement wing, assembled in Step 3, to fuselage. Prop up the fuselage in an upside down position for easier alignment. Be sure that the vertical tail is at a right angle to the wing.
- □ 2. When wing/fuselage assembly is set, install the horizontal tail surfaces. Cement □ 45 to one side of the vertical tail and □ 46 to the other side as shown. Again, prop up the plane in an upside down position with the wing parallel to your table and the vertical tail perpendicular to your table. Make sure the horizontal tail surfaces are parallel with the wing surface. Nothing will detract from your model's appearance more than wings
- that are out of line with the tail.

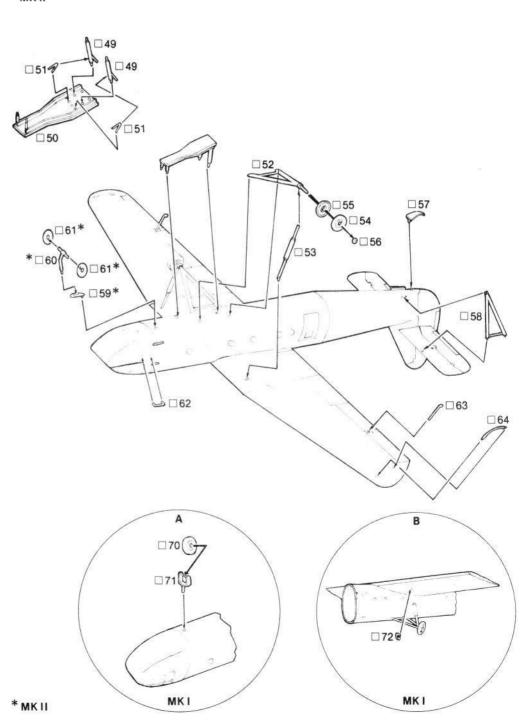
 3. Now glue the nose, assembled in Step 2, to the fuselage.
- □ 4. For the MK II version, cement the nose hinge pieces □ 47 and □ 48 to fuselage side as shown.

* MK II

5 PARTS 49-64, 70-72

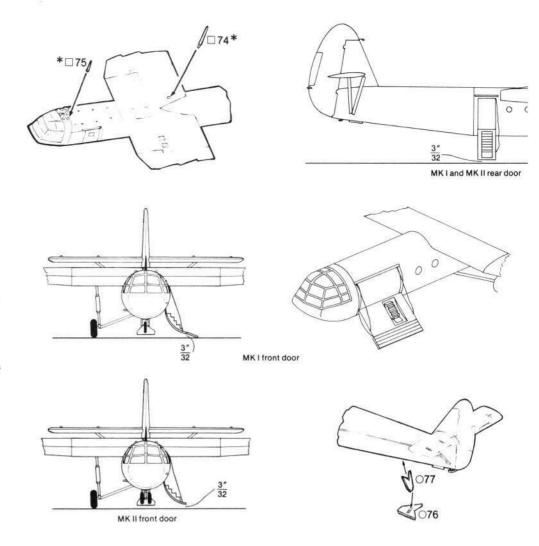
Preliminary Painting

- □ 54, □ 61, □ 70 tires: #1183 Rubber
- □ 1. Cement struts (2) □ 49 and (2) □ 51 to skid ○50.
- □ 2. To assemble landing gear for MK II version, cement (2) □ 61 to either side of □ 60, and □ 59 to □ 60, as shown. For the MK I version landing gear, cement □ 70 to □ 71 as shown in Drawing A.
- □ 3. Cement main landing gear wheels (2)
 □ 54 to (2) □ 55. Then place this assembly on the axle of (2) □ 52. Retain with (2) □ 56, using a small amount of glue.
- □ 4. Turn the model over on its back for the following assemblies. Install tail skid □ 57 to underneath side of tail section. Cement handgrip □ 62 to side of nose as shown.
- □ 5. Fit tail struts (2) □ 58 in place as shown and cement.
- □ 6. For the MK I version, glue (2) □ 72 in place on the wing where the strut □ 53 joins the wing, as described in stage 7 below. (Refer to Drawing B.)
- □ 7. Install side of one main landing gear □ 52 to fuselage. Assemble strut □ 53 between wing and □ 52.
- 8. Attach appropriate nose wheel assemblies (see stage 2 above) to bottom of fuselage as shown. Use assembly □ 59-□ 61 for the MK II version and assembly □ 70/□ 71 for the MK I. (Refer to Drawing A.)
- □ 9. Install the other main landing gear to the other side of plane as described in stage 7 above. Be careful to align this assembly with the first side by placing a light piece of cardboard across the main landing gear and the tail skid □ 57. Make sure that the cardboard is laying parallel to the wing, adjusting strut as necessary.
- □ 10. When landing gear is dry, glue main skid □ 49-□51, assembled in stage 1 above, in place as shown.
- □ 11. Install the tiedowns (2) □ 64 and balances (2) □ 63 to undersides of wing.



6 PARTS 37, 38, 39, 74, 75

- □ 1. Now turn the model right side up. Install venturi □ 38 and pitot assembly □ 39 to top of nose as shown in Step 2.
- □ 2. For the MK I version, install the antenna posts □ 74 and □ 75 as shown.
- □3. If the doors are to be fixed "open," install them at this time. Cement the bottom of the doors to the bottom of the openings in fuselage sides. On the forward-most edges attach a very light thread or stretched sprue from the edge of the door to the top corner of the door opening. Repeat on the other side of the door for the large front door of the MK I. See drawing for positioning. Doors should hang 3/32 inch off the table surface. For the large door of the MK I, □69 should slant down to touch the table surface.
- 4. If desired, you can add an antenna to the MK I version. Use a very light thread, wire, or stretched sprue between the antenna posts \$\sup\$74 and \$\sup\$75.
- □ 5. Install canopy ○37, being sure the inside is clean before cementing to nose. See drawing in Step 2.
- □ 6. Cement stand parts ○76 to ○77. Plane sits in the groove on ○77.



* MK I

7 PARTS 78-83

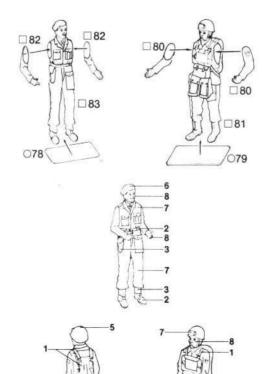
Painting Instructions

The following numbers correspond to those on the illustrations to the right. Mix the paint as indicated:

- "Off White" (Mix four parts #1168 Flat White with one part #1167 Flat Desert Tan.)
- 2. #1149 Flat Black
- 3. "Light Brown: (Mix one part #1164 Flat O.D. Green, one part #1167 Flat Desert Tan, and one part #1168 Flat White.)
- "Green" (Mix two parts #1164 Flat O.D. Green with one part #1149 Flat Black.)
- "Dark Green" (Mix one part #1164 Flat O.D. Green with one part #1149 Flat Black.)
- 6. "Dark Red" (Mix two parts #1150 Flat Red with one part #1149 Flat Black.)
- "Light Khaki" (Mix two parts #1164 Flat O.D. Green with one part #1167 Flat Desert Tan.)
- 8. "Flesh" (Mix two parts #1167 Flat Desert Tan with one part #1168 Flat White.)

NOTE: For more information on painting the figures, refer to the FIGURE PAINTING/ WEATHERING page. However, the facial detail is recommended only for experienced model builders.

- □ 1. Cement one arm □ 82 to each shoulder of figure □ 83. Cement □ 83 to stand ○78.
- □ 2. Cement one arm □ 80 to each shoulder of figure □ 81. Cement □ 81 to stand ○79.



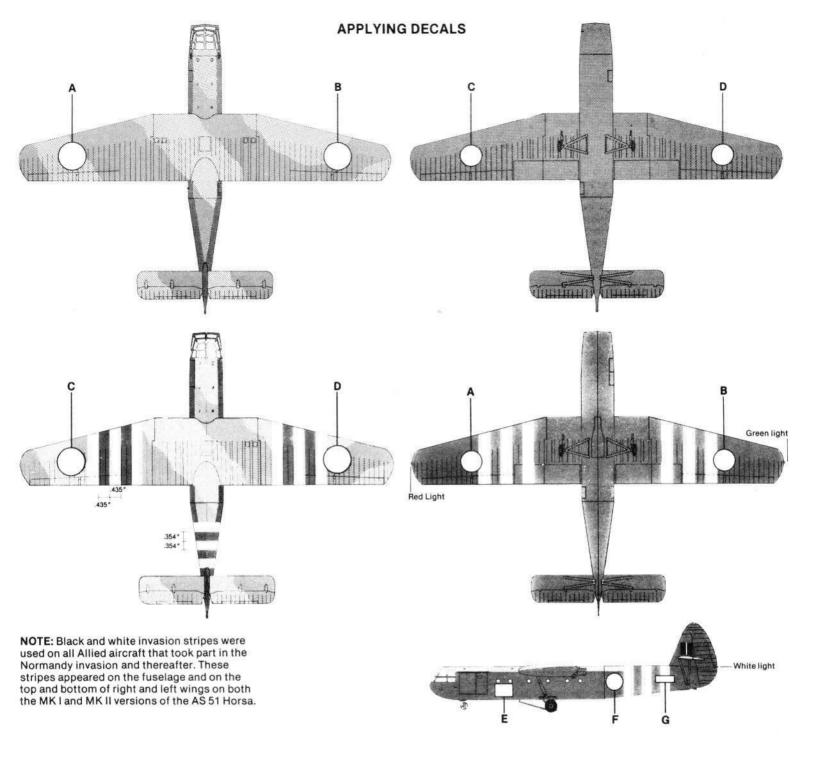
IMPORTANT

Every effort was made to insure the completeness of this kit — however, should any part be missing, write directly to:

THE TESTOR CORPORATION 620 BUCKBEE STREET ROCKFORD, ILLINOIS 61101

Print your name and address plainly, when writing. Request parts by name and include the kit name and number.

| ZIP |
|--------|
| (1) |
| STOCK# |
| |



#1168 Flat White

#1149 Flat Black

"Dark Earth" (Mix five parts #1167 Flat Desert Tan with one part #1149 Flat Black.)

"Dark Green" (Mix three parts #1164 Flat O.D. Green with one part #1149 Flat Black.) Select one of the four versions below. Place the decals in the positions indicated by the matching letters in the illustrations above and on the facing page.

| | Α | В | С | D | E | F | G |
|----------------------------|---|---|---|---|------------|--------|---|
| MK I USAAF Invasion | | | | | | DP 725 | |
| MK I RAF | 0 | 0 | 0 | 0 | | RJ 245 | 0 |
| MK II RAF Invasion | 0 | 0 | 0 | 0 | 3 3 | TK 829 | 0 |
| MK II USAAF Invasion | | | | | | LF 938 | |

FIGURE PAINTING

Figures add dimension and life to your models. Painting figures is considered by many to be the most difficult aspect of modeling. However, if you are willing to take your time and practice, it can become the most rewarding.

After you have assembled your figure, it should be primed with a coat of #1168 Flat White. Use Testor spray paint or an airbrush if you have one. It is nearly impossible to get proper coverage with a brush. Accessories may be glued on at this point, but this sometimes makes certain areas of the figure difficult to reach with a brush. In these cases it is more convenient to paint these pieces separately and attach them to the finished figure.

Always use flat paints. Testor Flat Paints are manufactured for use on military vehicles and airplanes. However, when using Flat Paint for clothing on the figures, it is necessary to add talcum powder to the paint in order to make the painted surface appear really flat. Add powder to the paint gradually, testing it until the paint has no gloss. A #0 brush with a fine point is best for painting figures. Smaller brushes do not hold enough paint. Put some #1170 Flat Light Tan on a pallette and mix in a little thinner so the paint flows smoothly off your brush. Apply an even coat over all the flesh areas. A second coat may be required for proper coverage. Now paint the eyes with #1149 Flat Black. These can be indicated by black slits. If they need shaping up, you can do this by painting around them with #1170 Flat Light Tan

Begin shading by adding a very small amount of #1185 Rust with Flat Light Tan. Fill in under the cheek bones. Proceed mixing progressively darker tones using Flat Light Tan and Rust until you finally use pure Rust. Use this color to outline all areas where the flesh meets the clothing (collar, cuffs, gloves, etc.). Finally, mix a small amount of #1183 Rubber with the Rust and paint fine lines in the mouth, nostrils, under eyebrows, inside ears and between fingers. Add highlights by mixing #1168 Flat White with Flat Light Tan.

Now begin shading the clothing. After the uniform is painted the proper color, hold it directly underneath a strong light. Notice where all the shadows fall. Mix #1149 Flat Black with your uniform color and fill in these areas, carefully following the sculpted wrinkles on the figure. You can blend the color on the uniform to this shadow color by lightly moistening your clean brush with thinner and carefully going over where these colors meet.

After you are satisfied with the shadows, hold the figure under the light again. Notice the areas where the light hits the strongest. Mix a little #1168 Flat White with the base color and carefully apply the highlights to these areas. Remember, the shadows go under the folds and the highlights go on top of the folds. Finally, you can outline all straps, belts, pockets, collars, and edges of clothing with a thin wash of #1149 Flat Black.

Observe real faces and clothing and notice how the light falls on them. Adapt these ideas to your figures, trying to make them as realistic as possible. You can also learn a lot from studying other people's figures. Don't be too subtle in your shading — contrast is what gives figures life.

Practice and experience are the best teachers, so do not be discouraged if you aren't pleased with your first few attempts. Always take your time and strive for a neat, crisp appearance. Have patience. It takes time to learn a new skill and it's worth it.

WEATHERING HINTS

Nearly all military aircraft show some signs of wear. The process by which the modeler imparts this look to the model is referred to as weathering. Many times the weathering, that is, the representing on the model of soot, oil stains, or chipped paint, etc., can really make a model stand out and give it amazing authenticity.

After you have painted your model the proper colors, you can add the decals. If you first paint your model with Testor Glosscote, the decal carrier film will seem to disappear. Apply one or two coats of Glosscote for a smooth, glossy finish. Then, after the paint dries, apply the decals. This gives them a "painted on" look. If you want your model to have a matte finish, wait 24 hours for the decals to dry. Then spray on one or two coats of Testor Dullcote. After this dries, you can begin weathering.

Always try to be logical in applying weathering techniques. For instance, you wouldn't want to put exhaust stains on a model and then apply a bright clean decal to the sooty area. Airplanes are normally well cared for, so they don't usually appear very battered. However, soot stains do tend to collect behind exhaust stacks and sometimes oil leaks onto the outside of the plane. Paint chips sometimes appear on leading edges or where crew members or maintenance men walk across the plane. However, try to remember that any well kept plane would only show minimum amounts of wear.

There are two methods of showing exhaust stains. The first is with an airbrush. This is a rather expensive item and requires practice to get the right effect. The second method is by using soft artist pastels or charcoal in shades of gray or black. Begin by grinding this material into a fine powder. Apply the powder to the model by rubbing it on with an old paint brush. Apply the color thicker and blacker near the exhaust outlet, and feather it out as it gets further away from the outlet. You should practice this on an old model or on a scrap of paper before trying it on your model. This technique is not very permanent, so it is a good idea to give your model a coat or two of Testor Dullcote to avoid rubbing off the

Oil stains should be done very subtley. Oil really has very little color, so it only leaves light stains. Tint a small amount of thinner lightly with black paint. Add a small drop to the area you want to appear oily. Now with a strong breath, blow the "oil" back along the plane. Keep in mind the direction in which the plane flies, making sure you are blowing the "oil" from front to back. It is very easy to overdo this, so remember, one or two places are usually enough.

Paint chips are the simplest technique, but like the others, are easily overdone. An average military plane wouldn't have very many chips. They usually appear on the cutting edges of the propeller blades, the leading edges of wings and flying surfaces, and any areas where crew members or mechanics walk across the plane (i.e., wing roots). Use #1181 Testor Aluminum for paint chips, applying with a fine pointed brush. With a very little amount of paint on the brush, apply the chips in small dots, the smaller the better. Large amoeba shaped chips look too obtrusive. Be wary of fabric covered control surfaces though; they don't chip.

carefully apply the highlights to these areas. Remember, the shadows go *under* the folds and the highlights go *on top* of the folds. Finally, you can outline all straps, belts, pockets, collars, and edges of clothing with a thin wash of #1149 Flat Black.

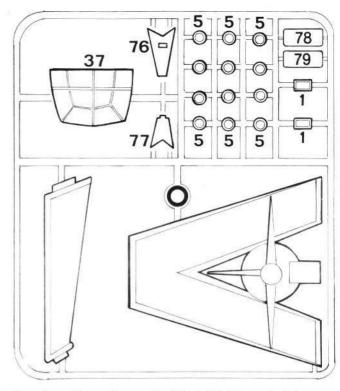
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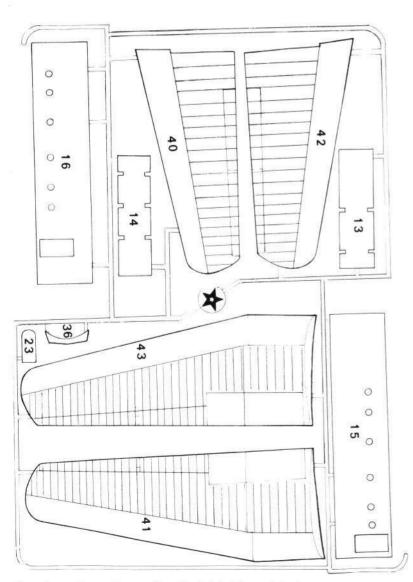
APPLYING DECALS

- Spray entire model with Testor Glosscote #1261. Decals adhere best to a smooth surface and the shinier the finish, the smoother it is. Allow the Glosscote to dry thoroughly before going further.
- Select the decals you plan to use, and cut each of them out from the decal sheet with small scissors or Testor Hobby Knife.
- Working with only one decal at a time, dip the decal in clean water for no more than five seconds, then remove it from the water and place on a dry paper towel for about one minute.
- 4. When the decal slides easily on the backing paper, slide it to the edge of the paper and onto the surface of the model with a soft paintbrush or tweezers. Remember: the decals are very thin and can be easily ripped if care is not taken. Work slowly and patiently.
- 5. Once the decal is in the desired position, apply a small amount of Testor Decal Set #8804. This will help the decal to conform to any irregularities in the surface of the model (rivets, curves, etc.). Allow the decal to dry undisturbed. Should you find the decal has moved or should you desire to purposely move it, apply a little Decal Set to a soft brush and push the decal slowly into the desired position.
- When the decals are completely dry (usually overnight), apply a coat of Testor Dullcote #1260 to the entire model. This will give it an authentic, dull finish and protect the surface of the model.

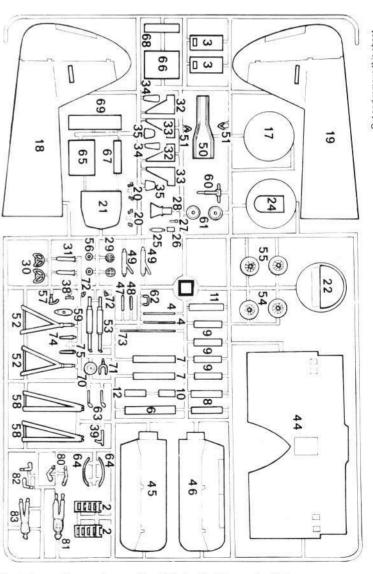
Remove this page from the instruction sheet. Use the drawings of the complete sprue as a part-locating reference when building the model.



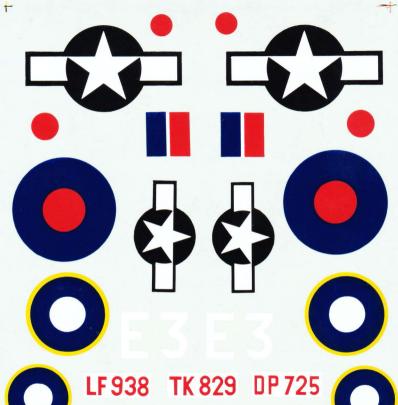
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RJ 245 HORSA



RJ 245

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