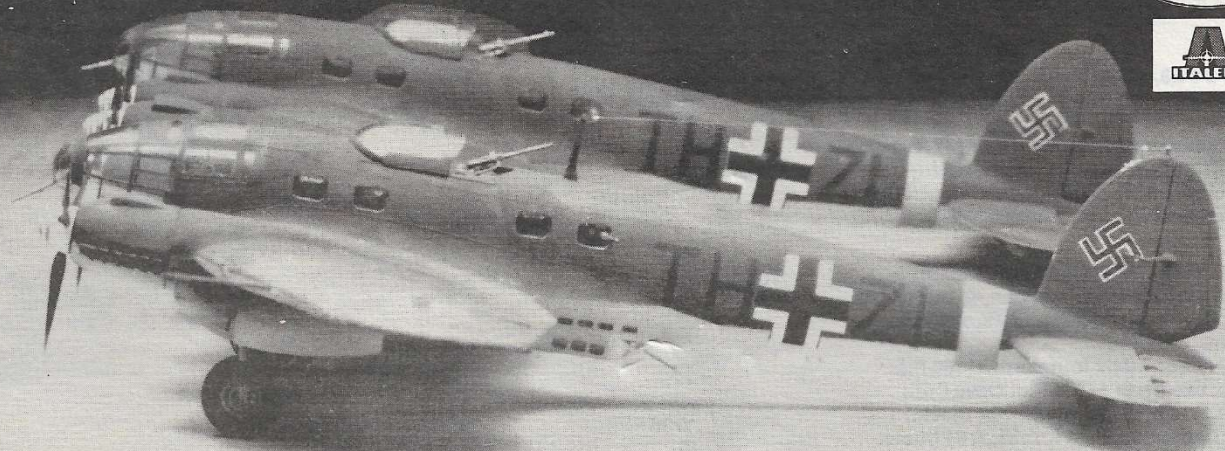


# He 111 Z-1 ZWILLING

No. 867

TESTORS



## HISTORY

The Heinkel He 111 Z was an emergency solution to some poor planning by the German High Command. The planned invasion of Britain was to have been carried out partly by glider operations—and earlier events had indicated a need for much larger gliders. To this end the giant Me 321 glider was produced. Unfortunately, there was no single aircraft of sufficient power available to pull these giant gliders. A system using three tow planes per glider proved very hazardous. The solution was found in joining two He 111 bombers together through a new center wing section containing an additional engine. This unusual aircraft was the five-engined Heinkel 111 Z or Zwilling (twin). With the rapid pace of the war at this time the severe need for operational use of the gliders disappeared, and so only about a dozen of the unusual tow planes were produced.

The 111 Z, though somewhat clumsy, was quite satisfactory in the function for which it was designed. It served in various supply and evacuation operations from 1942 to late 1944. The use of these aircraft was severely limited because of the lack of sufficiently large airfields in many areas and the limited design range of the tug-tow combination in loaded condition.

The Zwilling was, along with its tow, the Messerschmitt Me 321 glider, among the most unusual and daring aircraft designs to come out of WW II. The 111 Z was conceived and first flown in only about six months time. But its main purpose—the invasion of Britain—had already faded from the realm of possibility and it was destined to serve in the backwaters of the war. The Me 321 glider, the Zwilling's companion, is the subject of Testor Kit #865.

### Reference Sources

- Warplanes of the Third Reich**, W. Green (Doubleday Publications) — 3-view drawings, data history
- German Aircraft of the Second World War**, Smith, Kay, and Creek (Putnam Publications) — data, history
- The Heinkel He 111 in Action**, Feist/Dario (Squadron Signal Publications) — photo, history
- Dora Kurfurst und Rts 13**, Vol. 2, K. Reis Jr. (D. Hoffman Publications) — rare photos, German text
- The Heinkel He 111**, Famous Aircraft #62, June 1975 (Koko Fan Publications) — photos, Japanese text

## SPECIFICATIONS

Span	116' 2"
Length	53' 9½"
Weight Empty	47,400 lbs.
Weight Maximum	63,000 lbs.
Speed Maximum	
@ 19,600'	272 mph
Speed Cruise	227 mph
Ceiling	33,500'
Towing Speed	137 mph
Crew	7-9
Armament	One 20 mm cannon Two 13 mm machine guns Five 7.9 mm machine guns
Power	Five Junkers 211F2 engines of 1350 hp

## BEFORE STARTING

1. Study the illustrations and sequence of assembly before beginning.
2. 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.
3. 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.
4. When cementing the parts together, check the way in which one part fits together with another. This ensures a neat job.
5. 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

1. Never tear parts off the runners (sprue). Use a Testor Hobby Knife, nail clippers, or small wire cutters.
2. 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.
3. 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.

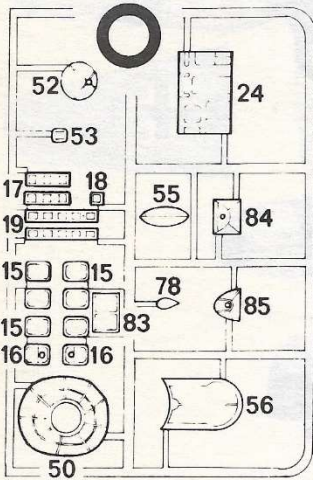
Most parts should be painted while still attached to the sprue. Paint in one direction only. If your paint is the correct consistency, brush strokes will disappear as the color dries. If the paint seems too thick, thin it with Testor Paint Thinner. Let the paint dry completely before handling. When the 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

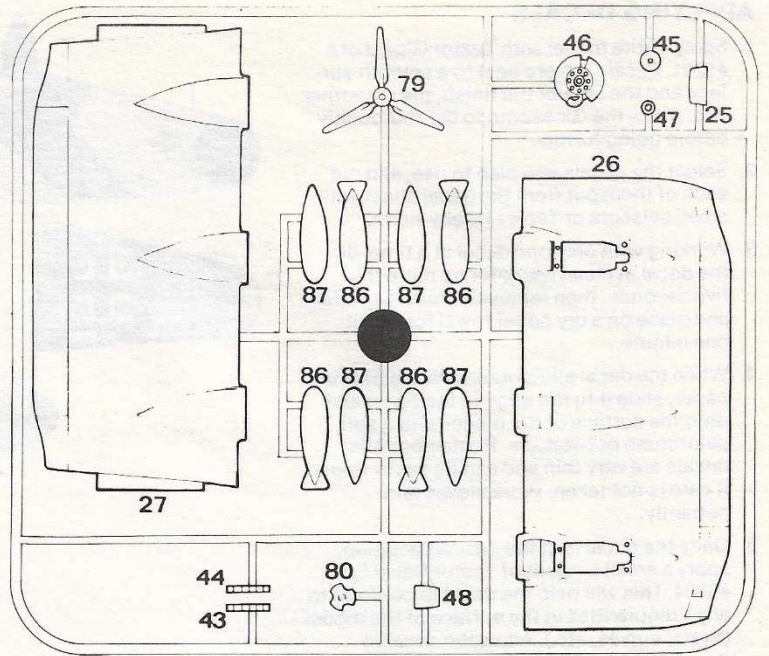
It is best to paint small parts before assembly if you are to produce a neat model. They may be painted while still attached to the sprue or may be detached and held with tweezers or "magic" type transparent tape. Remember to allow the painted parts to dry thoroughly before handling, and always scrape 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.

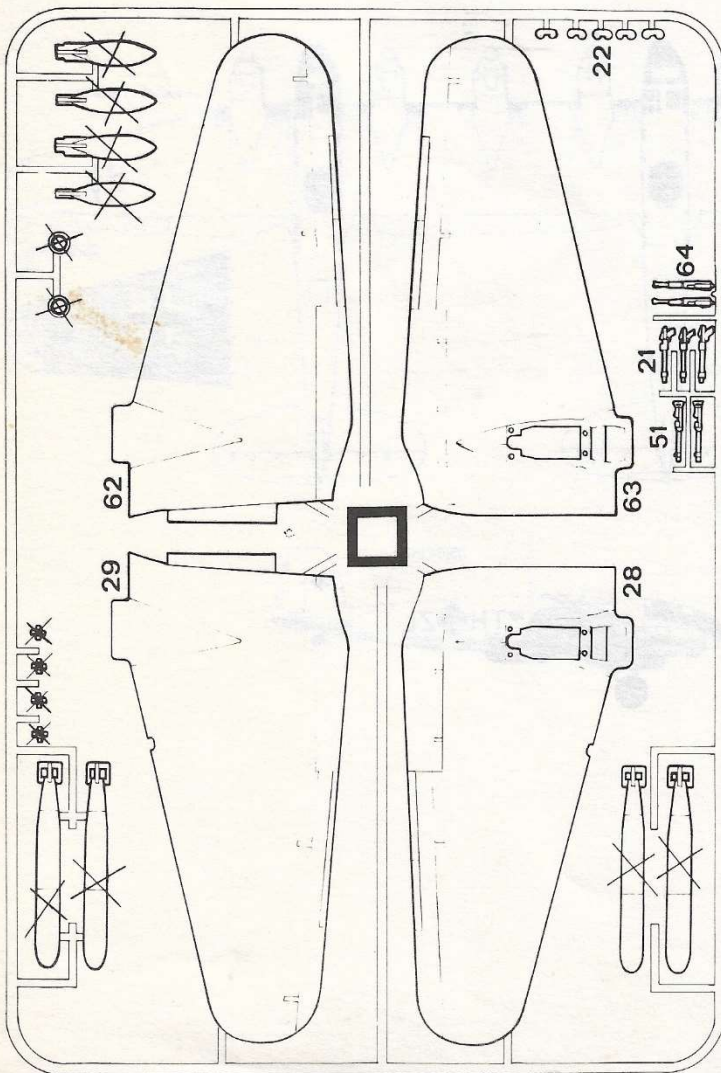
Remove this page from the instruction sheet.  
 Use the drawings of the complete sprue as a  
 part-locating reference when building the model.



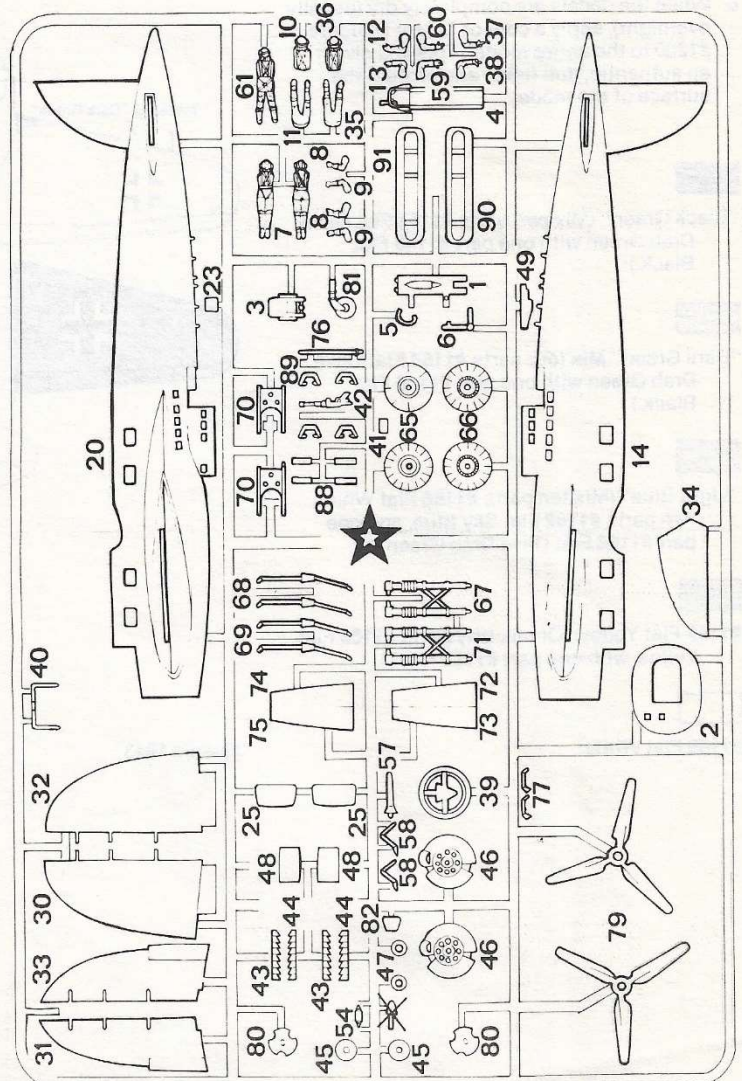
Parts from this section are identified with this symbol: ○



Parts from this section are identified with this symbol: ●



Parts from this section are identified with this symbol: □



Parts from these sections are identified with this symbol:  
 There are two ☆ sprues.

**NOTE:** Decide which of the two paint schemes, described on the **APPLYING DECALS** page, you want to use on your Zwilling. All parts not singled out in **Preliminary Painting** should be painted the primary body colors.

# 1 PARTS 1-23, 35-38, 59-61

## Preliminary Painting

**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 cockpit floor, ☆2 forward bulkhead, ☆3 pilot's seat, ☆4 gunner's pan, ☆14 and ☆20 interior of fuselage sides, ☆23 back of control panel:

"Gray Green" (Mix four parts #1168 Flat White, two parts #1164 Flat Olive Drab Green, and one part #1149 Flat Black.)

☆5 control wheel, ☆7, ☆11, ☆35, ☆61 boots, ☆23 front of control panel: #1149 Flat Black

☆3 cushions on seats, ☆6 control column, □21, □22 machine guns: #1180 Steel

☆7, ☆10, ☆36, ☆61 vest: "Yellow" (Mix two parts #1169 Flat Yellow, one part #1166 Flat Military Brown, and one part #1168 Flat White.)

☆7-☆13, ☆35-☆38, and ☆59-☆61 uniform: #1166 Flat Military Brown

☆7, ☆10, ☆11, ☆35, ☆36, ☆61 straps: "Dirtied White" (Mix twenty parts #1168 Flat White with one part #1166 Flat Military Brown.)

☆7, ☆10, ☆36, ☆61 face, ☆8, ☆9, ☆12, ☆13, ☆37, ☆38, ☆59, ☆60 hands: "Flesh" (Mix two parts #1167 Flat Desert Tan with one part #1168 Flat White.)

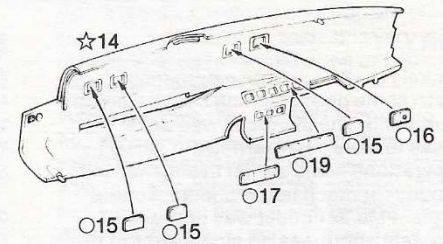
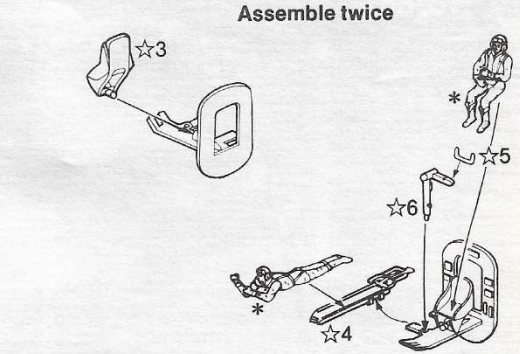
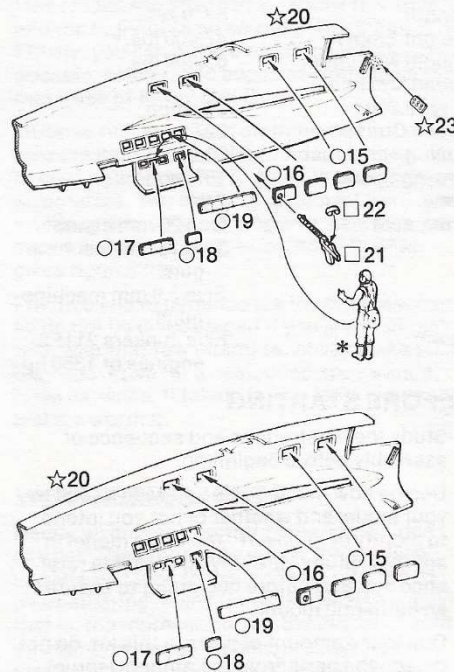
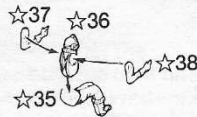
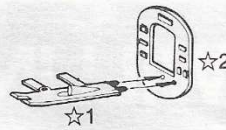
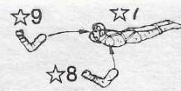
☆7, ☆10, ☆61, ☆36 collar and helmet: "Dark Brown" (Mix one part #1166 Flat Military Brown with one part #1149 Flat Black.)

☆23 knobs on control panel: #1168 Flat White

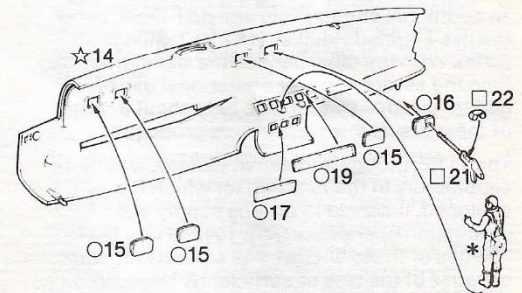
**NOTE:** Before starting construction, carefully look over the parts, frames, drawings, and 3-view drawings as well as the photos on the box. This is a somewhat involved model due to the large number of parts, and being familiar with it in advance will help greatly during assembly. (Note the extra parts supplied, but not used, such as the bombs and torpedoes.)

The set up for each of the two fuselages is as follows: The normal crew for the left fuselage was the first pilot, mechanic, radio operator, and gunner. Full instrumentation, controls, and all the radio gear were contained in the left fuselage. The right fuselage usually carried a second pilot, mechanic, and gunner. The right fuselage had controls, but only minimal instrumentation. Since there were more guns available, one additional gunner could be carried in each fuselage. Use this information to install figures in your model. Follow the instructions for constructing both the left and right fuselages.

Liquid cement, Testor #3502, is recommended for construction since it can produce the neatest, quickest, and strongest glue joints. 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.



Left fuselage

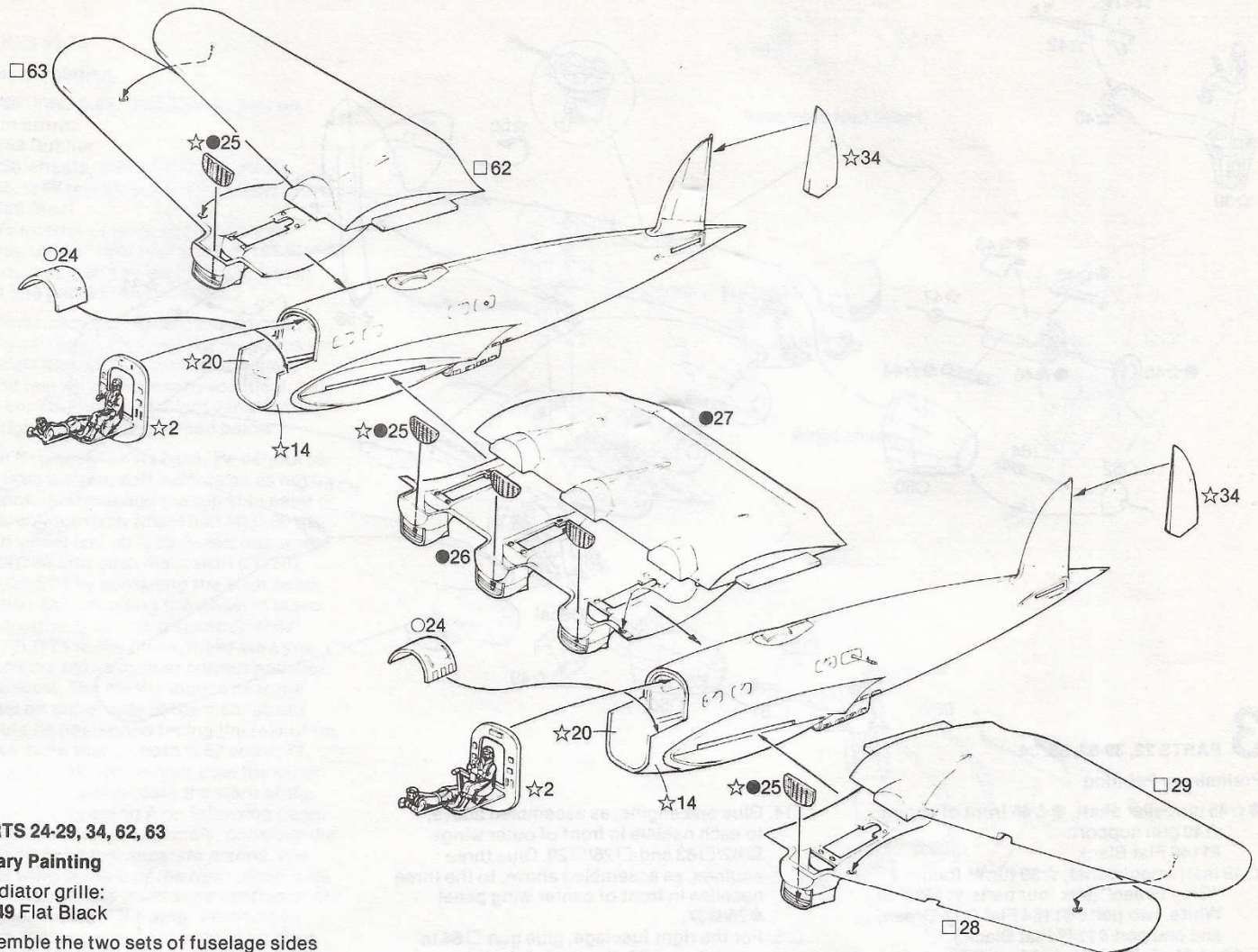


Right fuselage

\* Optional

- 1. If you are using figures in your model, you should build and paint them at this time. For the prone gunners, glue arms ☆8 and ☆9 to bodies ☆7. (There are four of these figures supplied.) To assemble the pilot figures, glue upper bodies ☆10 to legs ☆11. Then add arms ☆12 and ☆13 to upper bodies. (Two of these are supplied.) For the standing waist gunners, glue arms ☆60 and ☆59 to bodies ☆61. (There are two waist gunners.) To assemble the two top seated gunners, glue legs ☆35 to bodies ☆36, and add arms ☆37 and ☆38.
- 2. Glue cockpit floor ☆1 to forward bulkhead ☆2. Then add pilot's seat ☆3 to the cockpit floor ☆1. Glue the control column ☆6 to the floor and glue control wheel ☆5 to the control column.
- 3. Next, glue the gunner's pan ☆4 to the brackets on the cockpit floor ☆1. If desired, install the figures. Glue nose gunner ☆7-☆9 prone onto pan ☆4. Glue pilot ☆10-☆13 into seat ☆3.

- 4. Glue all the flat windows (3) ○15, ○16, ○17 and ○19 into side ☆14. Then glue (3) ○15, ○16, ○17, ○18, and ○19 into side ☆20. Note the off-center gun hole in each window ○16. These holes should be oriented to the rear in all cases. Although it isn't as strong as Testor Cement for Plastic Models, some modelers prefer to use "white glue" thinned half and half with water to install this kind of window. Run a small amount of glue around the inside edge of each window hole in hull, using a toothpick. Then insert the window. The white glue will be nearly invisible when dry, and it will also fill any gaps between the windows and fuselage sides.
- 5. Next glue the control panel ☆23 to fuselage side ☆20. Then build up two guns for the waist positions by gluing magazines □22 to stacks □21. Then mount these into the right rear window ○16 of the right side of fuselage ☆14 and into the left rear window ○16 of the left side of fuselage ☆20. Then glue one standing gunner ☆59-☆61 at each of these gun stations—as shown one to side ☆14 and one to side ☆20.

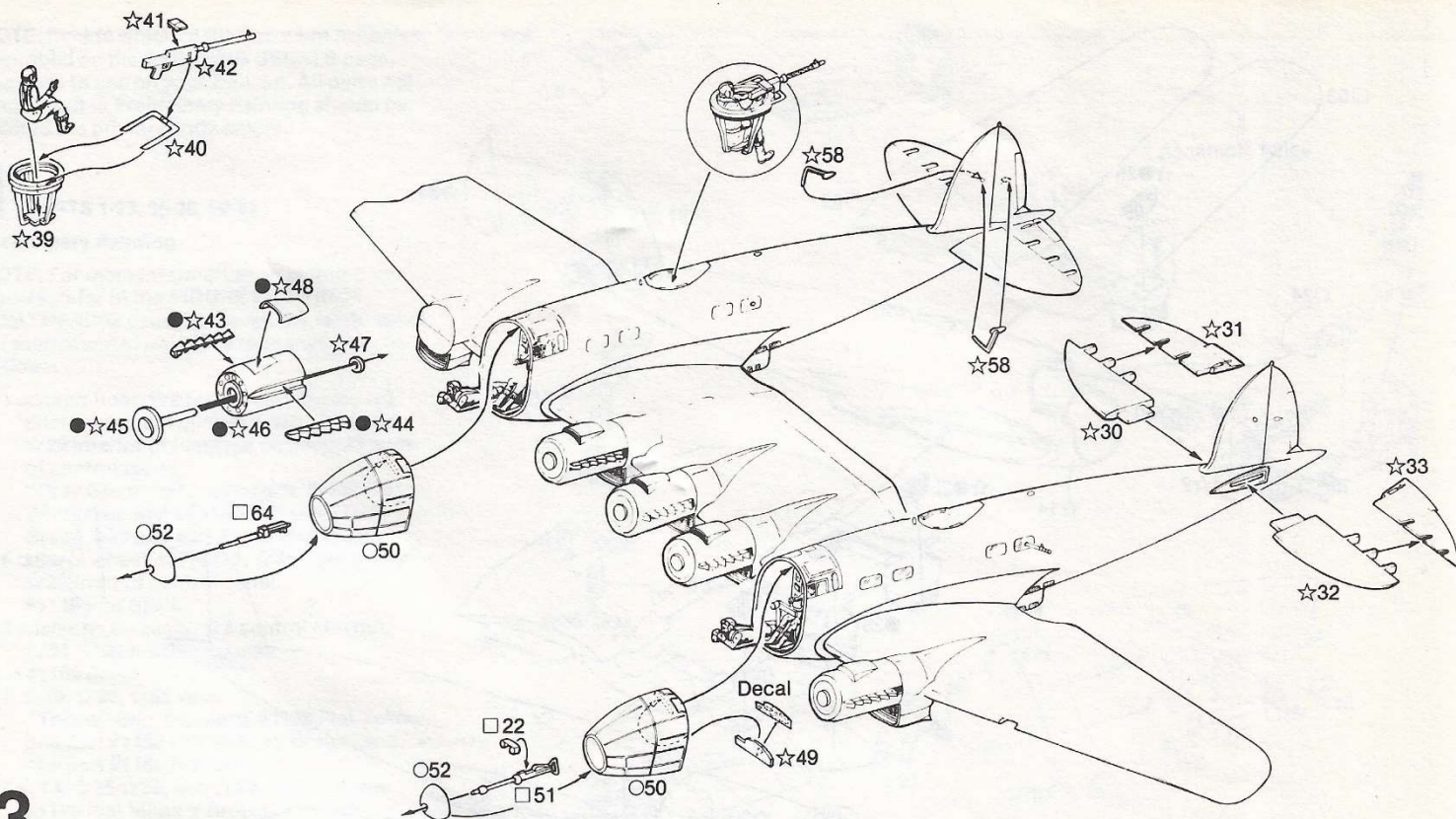


## 2 PARTS 24-29, 34, 62, 63

### Preliminary Painting

●☆25 radiator grille:  
#1149 Flat Black

- 1. Assemble the two sets of fuselage sides by first gluing one bulkhead ☆2 to each left fuselage side ☆14. Then glue each left fuselage side ☆14 to each right fuselage side ☆20. Add the canopy top ○24, as shown, to each fuselage.
- 2. Glue three radiator grilles ●☆25 to the inside of the lower half of nacelle on center wing ●26, glue one ●☆25 to nacelle on wing □28, and glue one ●☆25 to nacelle on wing □63 as shown. Glue left wing top □29 to left wing bottom □28. Then glue center wing top ●27 to center wing bottom ●26. And, glue right wing top □62 to right wing bottom □63.
- 3. Glue left fuselage to left side of center wing panel ●26/●27 and glue right fuselage to right side of center wing panel. The fuselages must be carefully checked for alignment. Be sure the tails are vertical to the wing and parallel to each other, and that the fuselages are in line with each other. This can be best obtained by propping up each tail cone with blocks of equal size. Misalignment will cause trouble later.
- 4. Next, glue right outer wing panel □62/□63 to right side of right fuselage and left outer wing panel □28/□29 to left side of left fuselage. While glue is drying, prop up the wing tips to maintain alignment.
- 5. Glue one rudder ☆34 to each fin as shown.



### 3 PARTS 22, 39-52, 58, 64

#### Preliminary Painting

●☆45 propeller shaft, ●☆46 front of engine, ☆40 gun support:  
#1149 Flat Black

☆49 instrument panel, ☆39 turret frame:  
"Gray Green" (Mix four parts #1168 Flat White, two parts #1164 Flat O.D. Green, and one part #1149 Flat Black.)

□22, ☆41, ☆42, □51, □64 machine gun:  
#1180 Steel

●☆43, ●☆44 exhausts:  
#1185 Rust (Or, for a more aged appearance, mix one part #1149 Flat Black with two parts #1185 Rust.)

- 1. Assemble the top turrets by gluing one gun support ☆40 to each turret frame ☆39. Install one gunner ☆35-☆38, assembled in Step 1, into each turret frame. Then assemble one magazine ☆41 to each gun stock ☆42. Glue each gun to each support ☆40.
- 2. Snap the top gun turrets, assembled above, in place, one in each fuselage. Use the tip of a ball point pen to push down on opposite sides of the top ring of turret. If the turret doesn't snap in place, remove it and shave the edge of the hole in fuselage slightly with a sharp knife. Try it again. The turret should snap nicely into place.
- 3. Next, build up the engine assemblies. There are a total of five identical engines—repeat following instructions for each. Slip propeller shaft ●☆45 into engine ●☆46 and glue retainer ☆47 onto end of shaft. Use glue carefully if you wish to have propeller spin freely. Glue exhaust ●☆43 to right side of engine ●☆46, and glue exhaust ●☆44 to left side of engine as shown. Add intake ●☆48 to top of engine.
- 4. Glue one engine, as assembled above, to each nacelle in front of outer wings □62/□63 and □28/□29. Glue three engines, as assembled above, to the three nacelles in front of center wing panel ●26/●27.
- 5. For the right fuselage, glue gun □64 to nose piece ○52. For the left fuselage, put magazine □22 to gun □51. Then glue this gun to other nose piece ○52.
- 6. For the left fuselage only, add the instrument panel ☆49 to the nose glaze section ○50. Add the decal to instrument panel.
- 7. Glue each nose piece ○52 to each nose section ○50: Glue nose piece ○52 and gun □64 to right side glazed nose section ○50. Glue this unit to right fuselage front. Attach nose piece ○52 and gun □51 to left side glazed nose section ○50 with instrument panel ☆49. Glue this unit to left fuselage front.
- 8. Add one balance horn ☆58 to each side of each vertical tail. Then assemble each elevator ☆31 to each stabilizer ☆30 and each elevator ☆33 to each stabilizer ☆32.
- 9. Place the model in a position which will allow viewing from several angles. Glue the stabilizers (2) ☆30 in place on the right side of each fuselage. Glue stabilizers (2) ☆32 in place on the left side of each fuselage. They should lie in a line parallel to center wing section. Prop up stabilizers in place until glue is dry. You may find it easier to assemble the two inboard stabilizers in place first, and then add the two outboard ones.

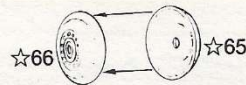
# 4 PARTS 65-75

## Preliminary Painting

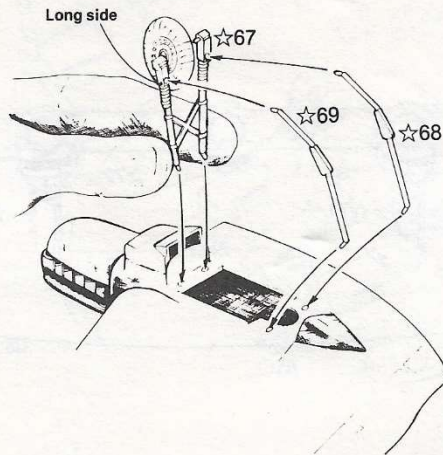
- ☆65, ☆66 tires, ☆67, ☆71 shock cover on main struts:  
#1183 Rubber
- ☆65, ☆66 wheels, ☆67, ☆71 main struts,  
☆68, ☆69 rear struts, ☆70 support struts:  
#1180 Steel
- ☆72-☆75 interior of landing gear doors:  
"Gray Green" (Mix four parts #1168 Flat White, two parts #1164 Flat O.D. Green, and one part #1149 Flat Black.)

**NOTE:** While assembling the landing gear, work very carefully, studying the diagrams and instructions below. The parts for the main struts and rear struts are nearly identical, but they are constructed with slight variations in left and right sides, as described below.

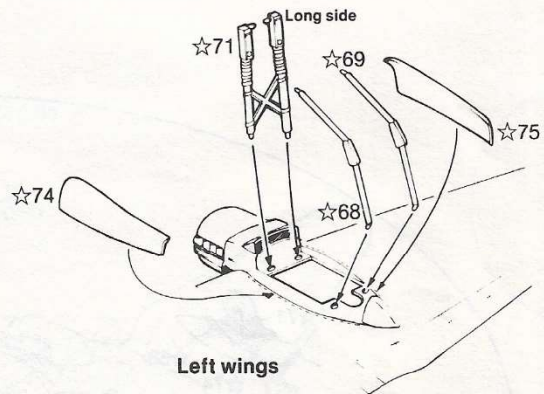
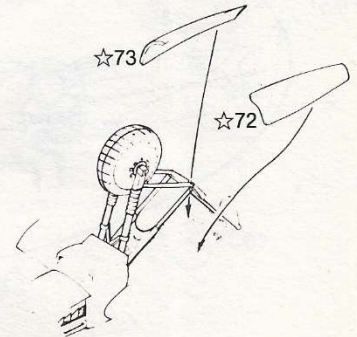
- 1. Turn the model on its back. Be careful to put it on a clean, soft surface so as not to scratch or damage the top side paint or details. Glue each wheel half (4) ☆66 to each wheel half (4) ☆65. Insert one wheel ☆65/☆66 into each main strut (2) ☆67 and (2) ☆71 by spreading the strut apart slightly and snapping the wheel in place.
- 2. Before gluing the main struts (2) ☆67 and (2) ☆71 to the plane, make sure you match the struts to their correct nacelles, as follows. The small dimples near the wheel on either side of the main struts should be positioned facing the rear of the plane. Note that on both ☆67 and ☆71, one side is slightly longer than the other. This is to accommodate the slant of the wings. See Drawing A on following page. *For this portion of assembly, consider the Zwilling to be two separate planes. The inner wing section of the right plane is its left wing, and the inner wing section of the left plane is its right wing.* With this in mind, the longer side of each main strut should be oriented to the outside of each wing. The right side of strut ☆67 is the longer side, so one ☆67 goes on each right wing. The left side of strut ☆71 is its longer side, so one strut ☆71 goes on each left wing. See Drawings A and B on following page.
- 3. Now, glue these main struts into the holes provided in the wheel well openings as shown. Slant the struts slightly to the rear (refer to side views on **APPLYING DECALS** page). Now glue in one support strut ☆70 to each junction of a main strut and nacelle. Place them at a 45° angle.
- 4. Before gluing the rear struts ☆68 and ☆69, make sure that you match them to the correct side of each main strut, as follows. Rear strut ☆69 is longer than rear strut ☆68. Therefore, each ☆69 should be glued to the longer side of each main strut ☆67 and ☆71, using holes provided as shown. Glue each rear strut ☆68 to the shorter side of each main strut. See #2 above and drawings.
- 5. Cut the landing gear doors ☆74/☆75 and ☆72/☆73 apart into right and left sides. Doors ☆72 and ☆73 go to the landing gear to the right of each fuselage, with ☆73 in the inboard position. Doors ☆74 and ☆75 go to the landing gear to the left of each fuselage, with ☆74 in the inboard position. Refer to Drawing A on following page to position doors at correct angle.



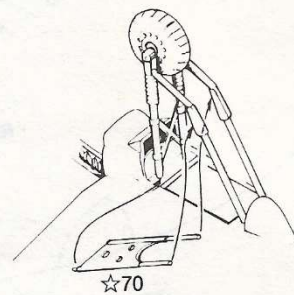
Assemble four times



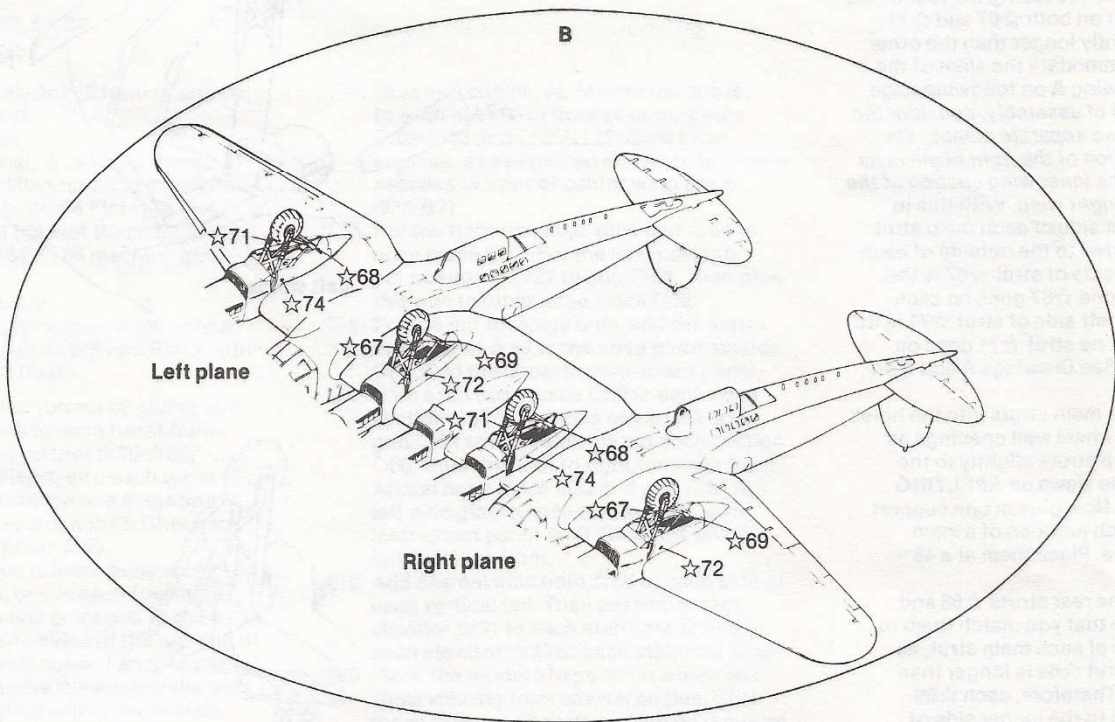
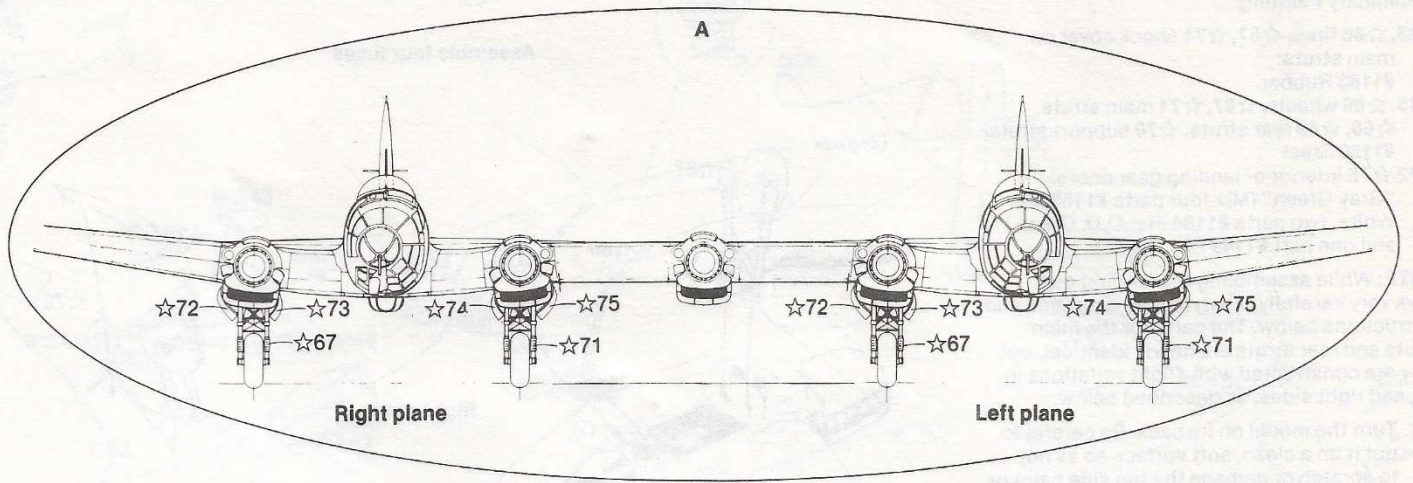
Right wings



Left wings



Assemble four times



# 5 PARTS 22, 51, 53-57, 76-91

## Preliminary Painting

☆81 tire, ☆54 radio direction finder, ☆79 propeller:

#1149 Flat Black

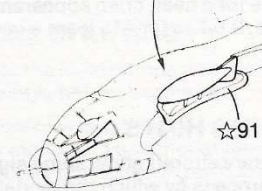
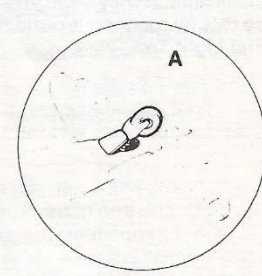
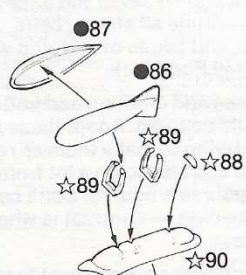
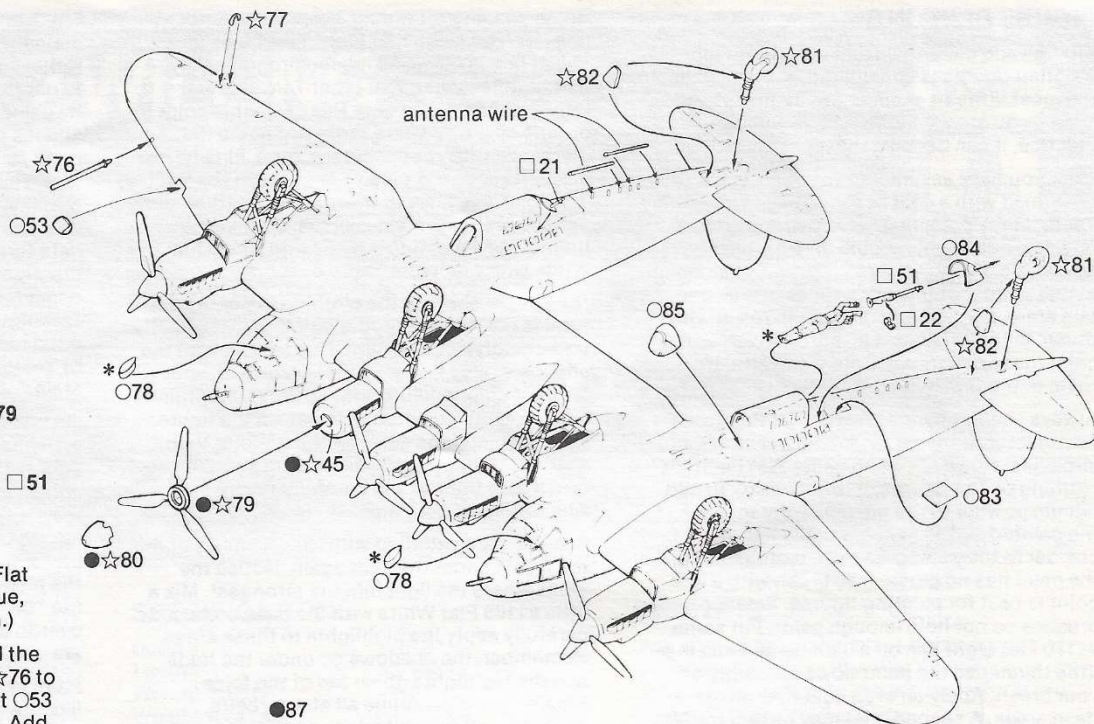
☆81 tail wheel, ☆89 mount, □21, □22, □51 machine gun:

#1180 Steel

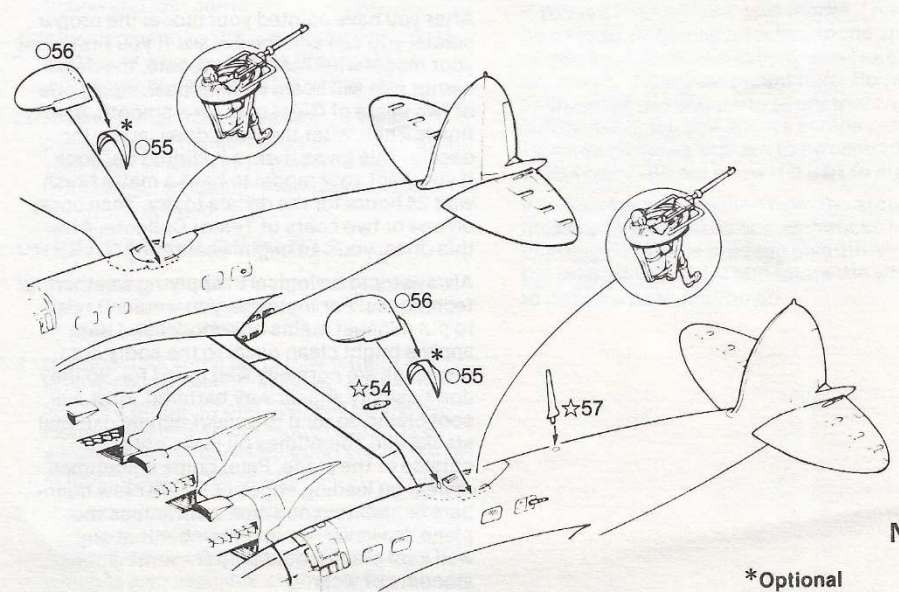
●86, ●87 auxiliary fuel tank:

"Light Blue" (Mix ten parts #1168 Flat White, two parts #1162 Flat Sky Blue, and one part #1164 Flat O.D. Green.)

- 1. With the plane still on its back, add the following details: Glue pitot tube ☆76 to outer left wing. Attach landing light ○53 to hole in leading edge of left wing. Add one bomb sight cover ○78, if desired, to underside of each nose. Add a trim tab control arm ☆77 to the rear edges of left and right ailerons.
- 2. Attach a tail wheel ☆81 to underside of each tail. Then carefully cement in a cover door ☆82 to each, as shown in Drawing A. Glue a forward bottom glaze section ○85 to each fuselage bottom.
- 3. Glue one magazine □22 to gun stock □21 and glue one magazine □22 to gun stock □51. While these are drying, glue a window ○83 to bottom of each fuselage as shown.
- 4. Next, glue gun □21/□22 to a rear bottom glaze section ○84 and glue gun □51/□22 to the other rear bottom glaze section ○84. Then, if desired, carefully glue gunner ☆7-☆9, assembled in Step 1, to inside bottom of fuselage so as to match position of gun. Glue rear glaze ○84 with gun □21/□22 to lower rear of left fuselage. Glue rear glaze ○84 with gun □51/□22 to lower rear of right fuselage.
- 5. Glue the auxiliary fuel tanks (4) ●86 and (4) ●87 together. Then glue one fairing ☆90 and another fairing ☆91 to each fuselage bottom as indicated. Add a plug ☆88 to the rear slot in each fairing. Put a mount ☆89 in the center and forward slots of each fairing. Glue in the fuel tanks ●86/●87 as shown.
- 6. With the model right side up, add a propeller ●☆79 to each propeller shaft ●☆45. Then glue a spinner ●☆80 onto each propeller.
- 7. Add the radio direction finder ☆54 to the top of the left fuselage only. If desired, add a folding visor ○55 to each canopy ○56. Then attach canopy ○56 to fuselage. Note position on side view drawing in **APPLYING DECALS** section. Also add antenna post ☆57 to top of left fuselage only.
- 8. Finally, add an antenna wire between post ☆57 and post on tip of tail. Also put two short wires across each of the pairs of three posts on both fuselage undersides. See side view drawings on **APPLYING DECALS** page. These antennas can be made from monofilament fish line, thread, or fine wire, .001 to .003 inches in diameter, taken from stranded electrical wire scraps.



Assemble twice





## 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 palette 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 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 stains.

Oil stains should be done very subtly. 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.

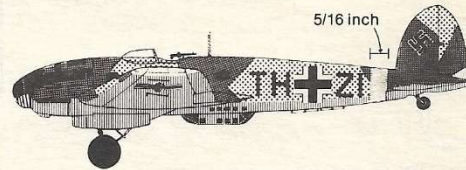
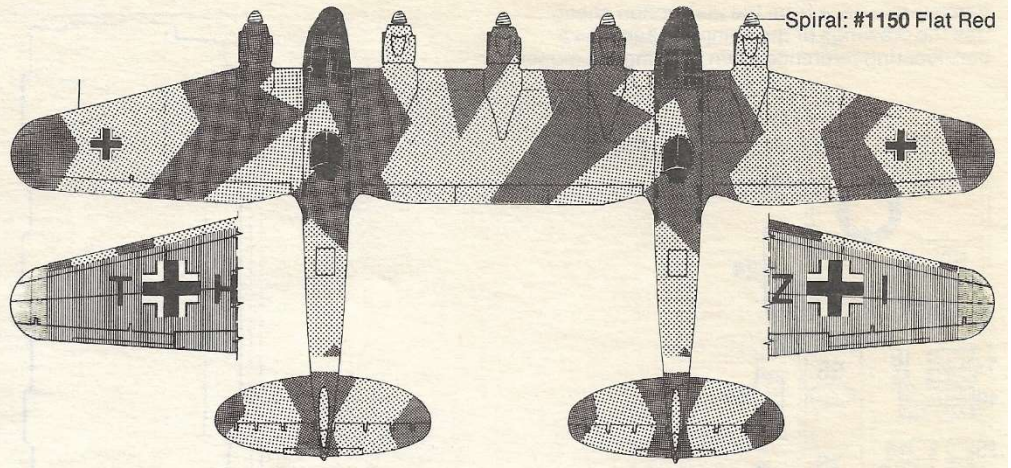
Paint chips are the simplest technique, but like the others, are easily overdone. An average military plane wouldn't have very many chips. They usually appear on the cutting edges of the propeller blades, the leading edges of wings and flying surfaces, and any areas where crew members or mechanics walk 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.

Experienced modelers do several things to aid them in their hobby. One of the most helpful is attending meetings of their local International Plastic Modeling Society chapter. Here they see and discuss modeling techniques. Your local hobby shop will help you locate your local I.P.M.S. group. Serious modelers also collect books and photographs to use as reference when they finish their models. Again, your local hobby shop can help. Last, but certainly not least, your own observation will prove helpful. Visit museums. Look at buildings and vehicles around you. Notice how rust streaks a metal roof. See the oil and dirt on a piece of road grading equipment. Study railroad boxcars and locomotives to see what the weather has done to them. Your own observation can be the best aid of all.

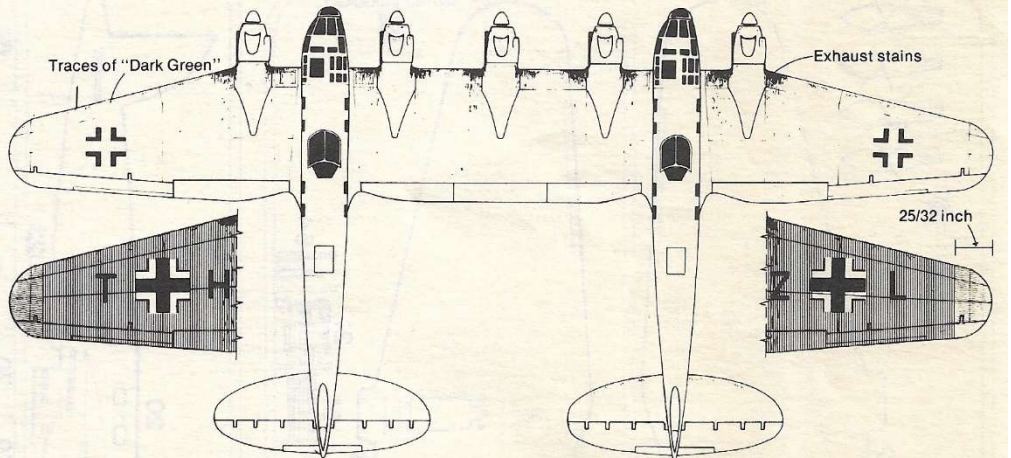
Remember: try not to overdo weathering — and *keep practicing*. Be patient, it takes time to discover and master all the tricks of this fascinating hobby.

## APPLYING DECALS

1. 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.
2. Select the decals you plan to use, and cut each of them out from the decal sheet with small scissors or Testor Hobby Knife.
3. 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.
6. 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.



Russia 1943



Russia 1943



"Black Green" (Mix two parts #1164 Flat Olive Drab Green with one part #1149 Flat Black.)



"Dark Green" Mix four parts #1164 Flat Olive Drab Green with one part #1149 Flat Black.)



"Light Blue" (Mix ten parts #1168 Flat White, two parts #1162 Flat Sky Blue, and one part #1164 Flat Olive Drab Green.)



#1169 Flat Yellow (Or mix fifty parts #1169 Flat Yellow with one part #1185 Rust.)



#1168 Flat White



HE 111 Z "ZWILLING"

MICRO SCALE DECAL

KIT NO. 867



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