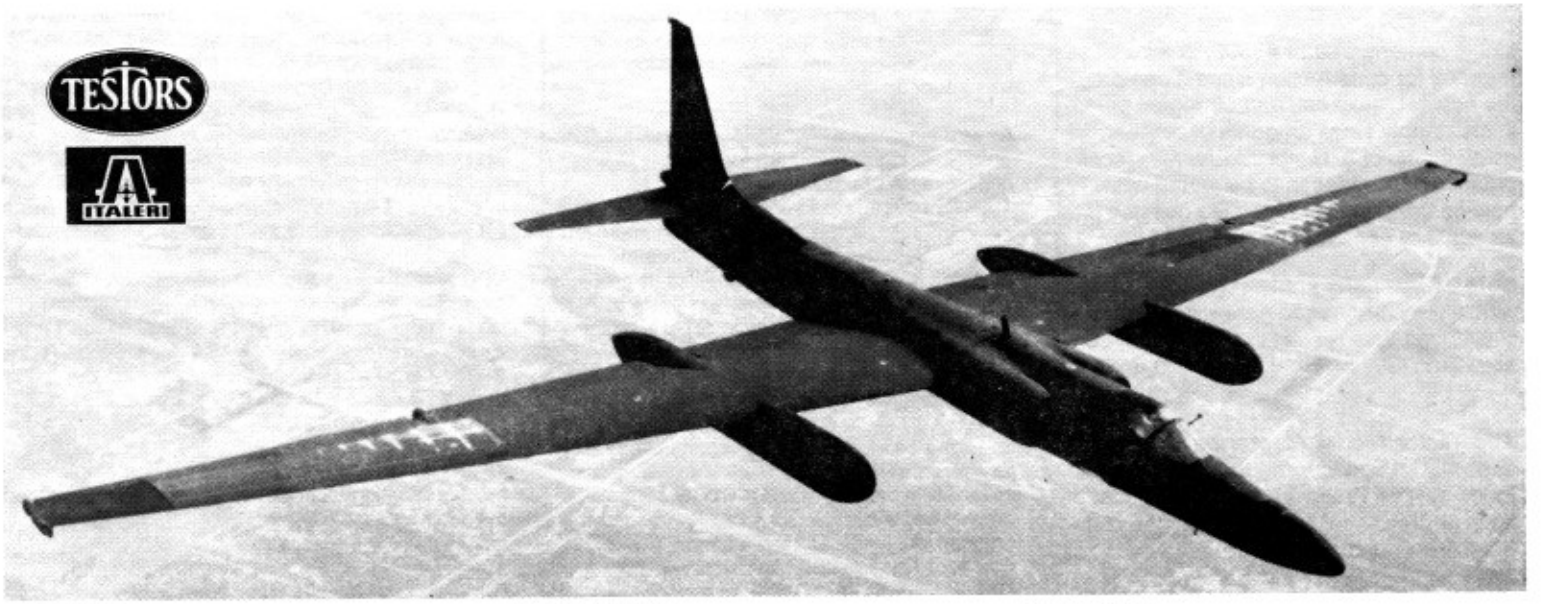
TR-1A/TR-1B/ER-2 Instructions

No. 580



HISTORY

Developed by the CIA, as a follow-on to their Lockheed U-2C (Testor Kit no. 507), the U-2R and the later, TR-1, were wholly different aircraft. Much larger than the 80 ft. span U-2A/C, the 104' - 8" span TR-1 carries a greater load of sensors while also being a more comfortable airplane for the pilots who fly long-duration spy missions.

The TR-1A flew for the first time on 1 August 1981 while the demilitarized version, the ER-2, built for NASA, was ready to begin testing on 11 May 1981.

The airplanes feature unique huge "super pods" mounted on the wings. These pods allow a great variety of sensors to be carried aloft. Each pod can carry 650 lbs. of sensor equipment. The nose of the airplane is also changeable and can carry 650 lbs. of equipment. Forward of the main landing gear and immediately back of the cockpit, the "Q-bay," can also carry sensors - usually cameras. If no equipment is carried in the nose, 1300 lbs of gear can be carried in the "Q-bay." The aircraft is extremely versatile because of the great on-board reconnaissance gear capacity.

All the airplanes are difficult to fly. To teach pilots the required skills, the TR-1B 2-place airplane was developed. Two TR-1B aircraft were built and the first TR-1B flight was made on 23 February 1983. Painted a beautiful gloss white, the TR-1B looks like a huge sailplane rather than a military aircraft.

The entire U-2/TR-1 series of aircraft, going back to 1955, have proved themselves adaptable, efficient, and very cost effective. The early CIA and current USAF missions are often cloaked in secrecy but the airplanes and their brave pilots have earned - the hard way - a place in history.

SPECIFICATIONS

Span	104' - 8"
Length	63' - 1"
Weight	40, 300 lbs. ER-2
	41, 300 lbs. TR-1A
	41, 550 lbs. TR-1B
Engine	Pratt & Whitney J75-P-13B
	17,000 lb. thrust
Max. Speed	Mach .8
Max. Altitude	75,000 ft.

REFERENCES

Lockheed U-2, AeroGraph 3, Jay Miller; (Aerofax, Inc.)
U-2 Spyplane In Action, Larry Davis; (Squadron/Signal Publications, Inc.)
Lockheed U-2R/TR-1, MiniGraph 26; Miller/Pocock; (Aerofax, Inc.)
ER-2 Investigators Handbook, High Altitude Missions Branch; NASA, Ames Research Center

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 runner of the parts tree until you need them. This helps avoid confusion and lost parts.
4. When cementing the parts together, check the way one part fits together with another. This assures a neat job with no surprises.
5. Always remember when working with plastic model cement and paint to keep your work area well ventilated. The fumes from plastic modeling products can be harmful if inhaled.

PREPARATION OF PARTS

1. Never tear parts off the runner (parts tree). Use a Testor Hobby Knife, fingernail clippers, or a small wire cutters to remove the parts from the tree.
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 finish preparation products and paints. Detailed descriptions of paint types and color are included on the pages that follow.

Good brushes are essential for proper detailing. Testor ***Model Master*** brushes are recommended and available at good hobby stores. Be sure you have the entire selection for all your modeling needs. Always clean them in Testor thinner, wash in soap and water, and store with bristles upward when not in use.

Wash plastic parts before detaching them from the parts tree. Warm water and liquid dishwashing detergent will remove the oils left from the manufacturing process. Let the parts dry and avoid excessive handling. Immediately before painting, wipe the parts with a "tac rag" (available at auto parts stores) to remove dust and lint.

Most small parts are best painted while still attached to the parts tree. You can also detach them and hold with tweezers or "magic" tape while painting. Paint in one direction only. If your paint is the correct thickness brush strokes will disappear as the color dries. If the paint seems too thick, thin with Testor Paint Thinner. Wheels may be detached from the parts tree and fit onto toothpicks or matchsticks for painting. Just hold the paintbrush against the edge of the wheel and rotate the stick and wheel to obtain a neat finish.

Let the paint dry completely before handling. When the parts are dry, assemble the model, following the directions closely. Remember cement will not hold strongly to painted surfaces. Use your Testor Hobby Knife to carefully remove paint from all surfaces to be cemented. After you have assembled the model you can touchup areas where cement might have marred the finish.

Tweezers will be useful in assembling the many small parts in this kit. The type used by postage stamp collectors is recommended.

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 Testor ***Model Master*** No. 2 brush, to the surfaces to be joined while holding the parts in place. **Do not** use large amounts of cement.

Note: Clear parts are best glued in place with white glue. White glue will not mar the plastic and thus results in a better appearance than conventional model cement.

The Testor ***Model Master*** paint system is specially designed to be used on military models. The **Preliminary Painting** instructions on this sheet indicate which ***Model Master*** colors to use as indicated by name and Federal Standard (**FS**) number. These colors are called out by ***bold italic type***. Wherever ***Model Master*** colors are not applicable the required Testor color will be called out by number and name in **regular bold type.**

EXPANDED HISTORY

The Lockheed TR-1 is an outgrowth of the famous U-2C spyplane which gained prominence in May of 1960 when a U-2 was downed near Sverdlovsk, Russia. On a Central Intelligence Agency photographic spy mission that day, the descent of the U-2C onto Soviet soil was clear indication a newer and better performing airplane was needed.

As with the original U-2 airplane, it was the CIA which initiated the program for the new U-2R derivative. A production contract was let in August of 1966. One year later, on August 28th, 1967, the new, larger, and very much improved U-2R lifted from the North Base test area at Edwards AFB in California. And like its predecessor, the U-2R was very capable of flying at 74,000 foot altitude on missions which could last over 7 hours and bring back intelligence information the quality of which is unmatched in the modern era of technological spying.

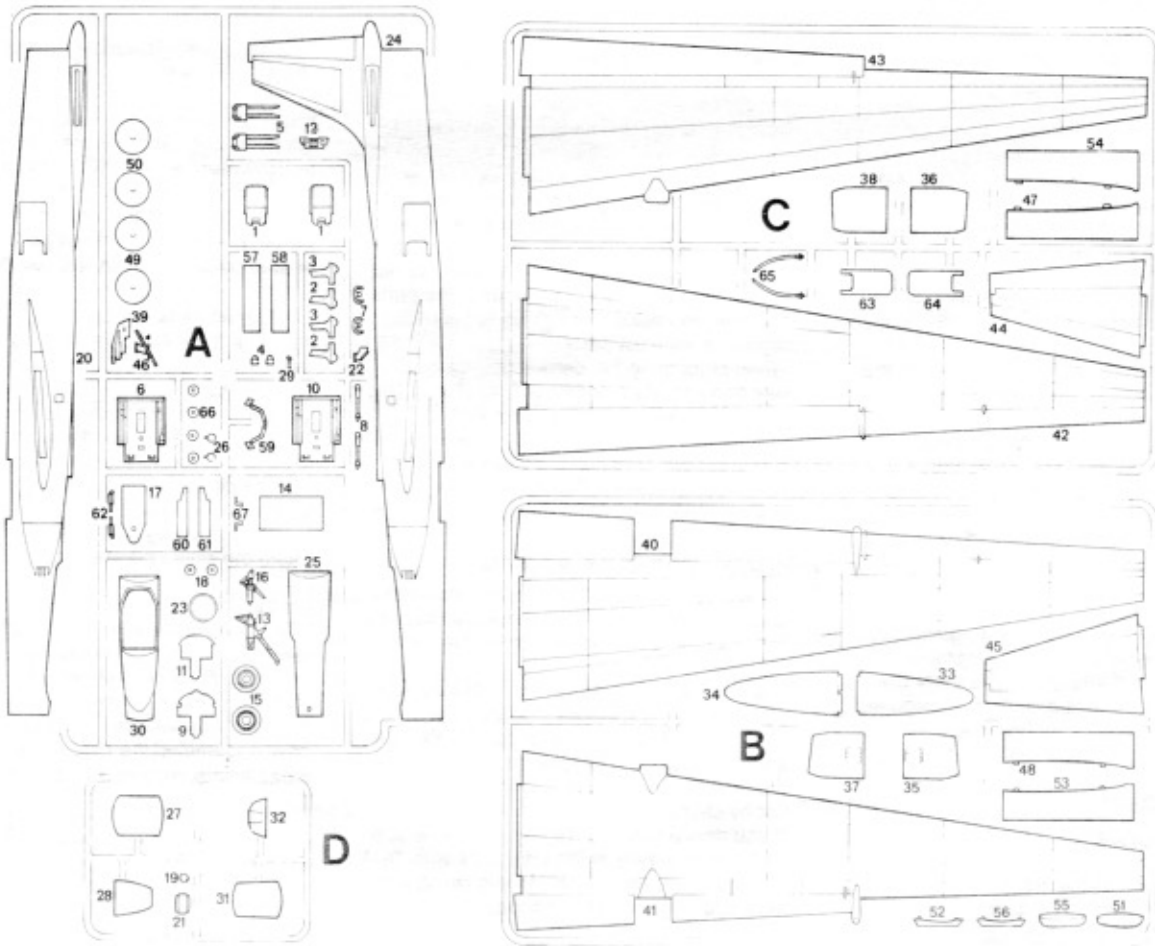
Spanning 103 feet - a 23 foot span increase over its earlier sistership - the U-2R also had greater cabability in carrying a wider variety of photographic and electronic sensors. Its flight test program was short and the airplane, under CIA direction, entered operational service from McCoy AFB in Florida and 2 airplanes were sent to fly with Nationalist Chinese pilots from Taiwan. The airplane later achieved operational high marks while in service with the US Air Force flying from the airbase at U-Tapoa, Thailand, in missions over North Vietnam.

With CIA operational control, numerous flights were flown over Communist China and Central and South America. By 1974 the CIA had withdrawn itself from U-2R operations and former Agency aircraft were absorbed by the USAF. In August of 1976 U-2R's were deployed to RAF Mildenhall in England. Flying from England to the very edges of the Communist-bloc countries, the U-2R airplanes, configured to perform electronic intelligence over Europe, began flying missions which are done to this day.

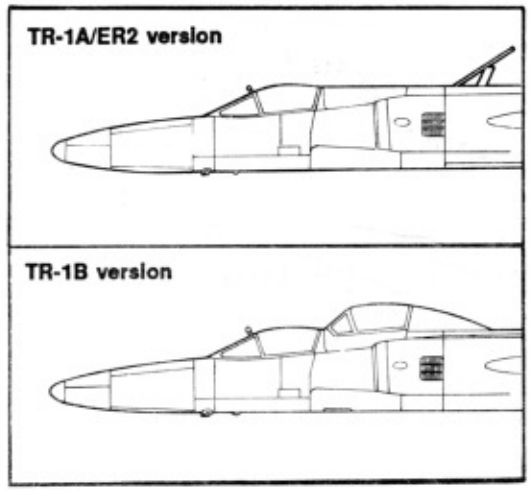
In early 1978 details of a newer version of the U-2R were announced. Called the TR-1A, this new version carried synthetic aperture radar and UPD-X sidelooking airborne radar(SLAR). The production contract for the TR-1A was announced in November of 1979. It was also announced 2 aircraft were to be built for NASA designated ER-2. They have since taken their place next to the other 2 civilian U-2C's flown by NASA at Moffett Field, California.

All-in-all, the U-2 series of aircraft is one of the most fascinating technical and historical studies to ever come on the aviation scene. From clandestine secret spy missions to very helpful civilian flights with NASA, the long-winged high-flying "Dragon Lady" (as she was known in her early days) has seen a life of secrecy, headlines, takeoffs and landings aboard aircraft carriers and more than a few escapades which may never be openly discussed. She is indeed mysterious...and the best of the spies.

Use the drawings of the complete parts trees as a part locating reference while building the model.



A Beginning Note
You can build this kit in one of 3 ways: a black reconnaissance single seat TR-1A as might be flown by the USAF on secret "spy" missions; a gloss white 2-place trainer flown by the USAF as the TR-1B; or as the ER-2 single seat long range, high altitude research aircraft flown by NASA. It is important you decide **now** which aircraft you will build. Study the photos on the box and the Markings and Painting pages 9, 10 and 11. A photo of the TR-1A is on the cover of the instruction sheet and photos of the TR-1B and ER-2 are on page 12. Once you decide which to build you can begin assembly.



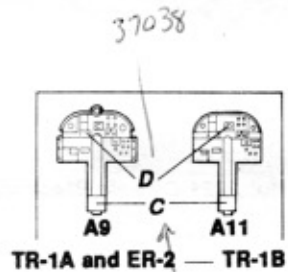
1 TR-1A / ER-2 COCKPIT

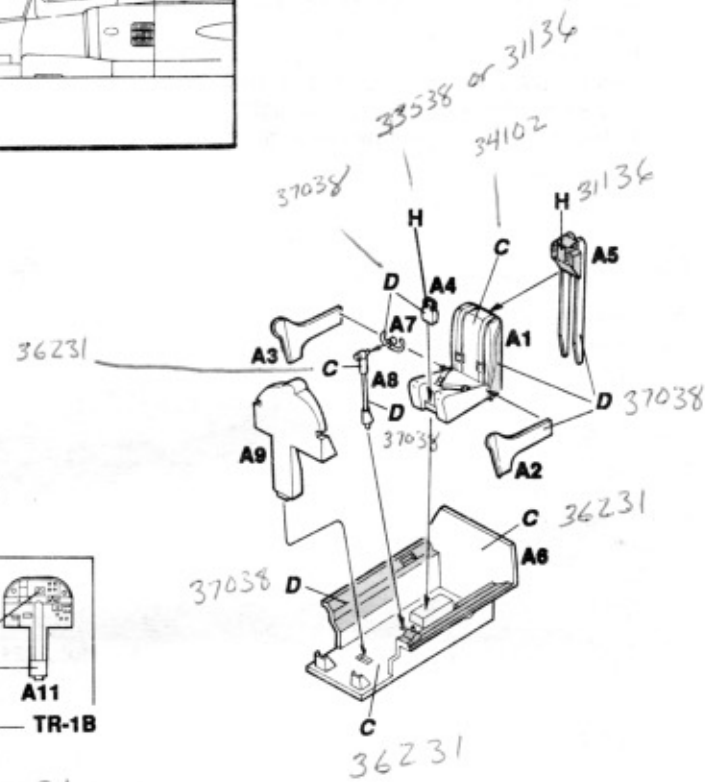
Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

Assembly

1. Cement seat sides, **A2** and **A3**, to seat, **A1**. Now add seat ejection rails, **A5**, to seat. Now cement ejection ring, **A4**, to seat. Cement seat to cockpit tub, **A6**.
2. Cement instrument panel, **A9**, to cockpit floor as shown.
3. Cement control wheel, **A7**, to control column, **A8**. Now cement the unit to cockpit floor.





COLOR KEY

A ***No. 2921 Classic Black with No. 1960 Clear Flat overall***
B ***FS 13538 Chrome Yellow***
C ***FS34102 Dark Gull Gray***
D ***FS 37038 Flat Black***
E ***FS 17178 Chrome Silver***
F ***No. 1780 Steel***
G ***No. 2716 British Green Metallic***

Testor Bottle Paints

H **No. 1104 Red**
J **No. 1184 Zinc Chromate**

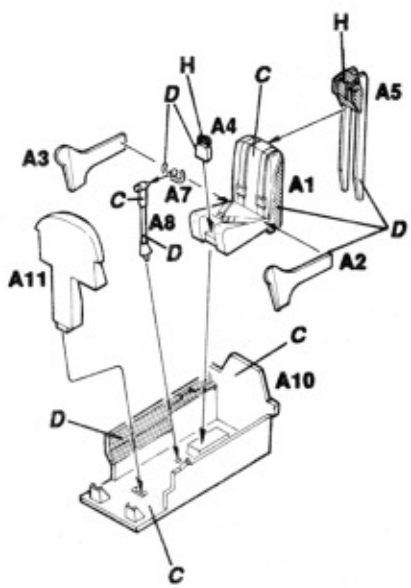
2 TR-1B REAR COCKPIT

Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

Assembly

1. Cement seat sides, **A2** and **A3**, to seat, **A1**. Now add seat ejection rails, **A5**, to seat. Now cement ejection ring, **A4**, to seat. Cement seat to cockpit tub, **A10**.
2. Cement instrument panel, **A11**, to cockpit floor as shown.
3. Cement control wheel, **A7**, to control column, **A8**. Now cement unit to cockpit floor.



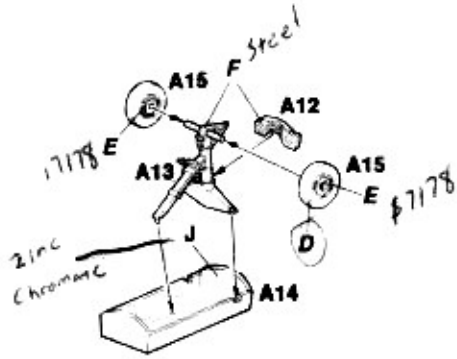
3 FORWARD MAIN LANDING GEAR / ALL

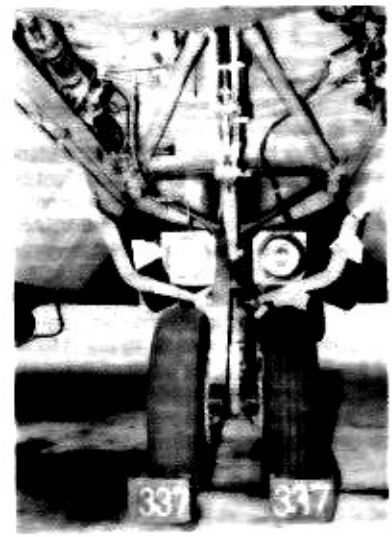
Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

Assembly

1. Cement landing light unit, **A12**, to forward main strut, **A13**, as shown. Now cement strut, **A13**, to main gear well box, **A14**.
2. Cement tire and hub units, **A15**, to strut as shown. Allow unit to dry thoroughly so that the landing gear has strength.





Photos Jim Goodall Collection

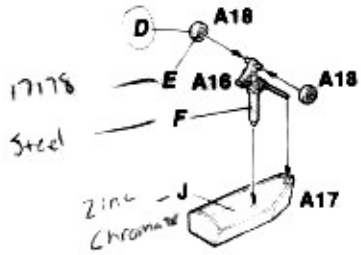
4 REAR MAIN GEAR / ALL

Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

Assembly

1. Cement strut, **A16**, to rear gear well box, **A17**.
2. Cement tire and hub units, **A18**, to strut. Allow to dry. Overnight is not a bad idea.



Technical Note
The tires on the rear main landing gear are solid rubber.

COLOR KEY

- ***A*** ***No. 2921 Classic Black with No. 1960 Clear Flat overall***
- ***B*** ***FS 13538 Chrome Yellow***
- ***C*** ***FS34102 Dark Gull Gray***
- ***D*** ***FS 37038 Flat Black***
- ***E*** ***FS 17178 Chrome Silver***
- ***F*** ***No. 1780 Steel***
- ***G*** ***No. 2716 British Green Metallic***

Testor Bottle Paints

- **H** **No. 1104 Red**
- **J** **No. 1184 Zinc Chromate**

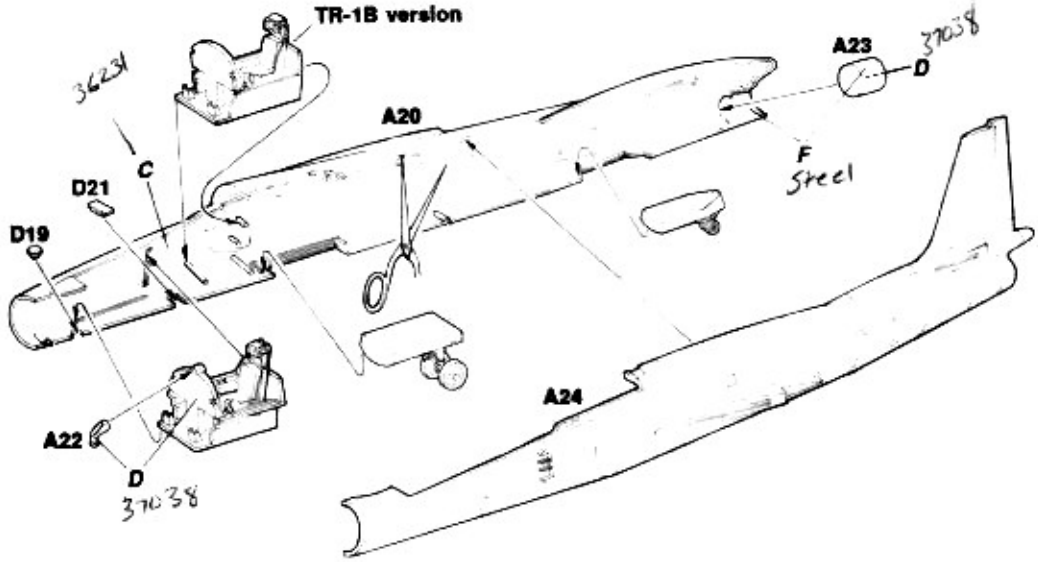
5 FUSELAGE UNIT / ALL

Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

Assembly

1. Cement camera window, **D21**, and driftsight port, **D19**, into place as shown.
2. Add driftsight optics unit, **A22**, to forward cockpit tub built in **Step 1**. Now cement cockpit into place in right fuselage half, **A20**, as shown. Cement front main landing gear unit and rear main landing gear unit into place.
3. If building the 2-seat TR-1B drill out the little plastic walls where shown on both fuselage halves - see parts. Do not drill out for TR-1A/ER-2.
4. If building TR-1B glue rear cockpit tub into place.
5. Now glue left fuselage half, **A24**, to right fuselage half.
6. Now cement tailpipe, **A23**, into place.
7. While the cement is still soft be sure everything is in place and lined up properly. Now set fuselage unit aside to dry at least overnight.



6 TR-1A / ER-2 UPPER FUSELAGE

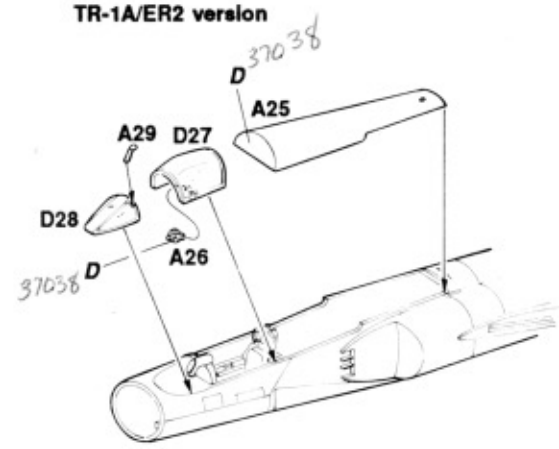
Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

Assembly

1. Cement Q-bay/E-bay hatch, **A25**, into place on fuselage.
2. Cement windscreen, **D28**, into place.
3. Cement - carefully - defrosting fan, **A26**, into place on canopy, **D27**.
4. If you are building your model with canopy closed, cement canopy, **D27**, into place as shown.
5. If you plan an open canopy, as in the photograph at right, set the canopy aside and cement into place as one of the last things you do. The same is true for the rear looking mirror, **A29**. It is best to add these as your last step.

TR-1A/ER2 version



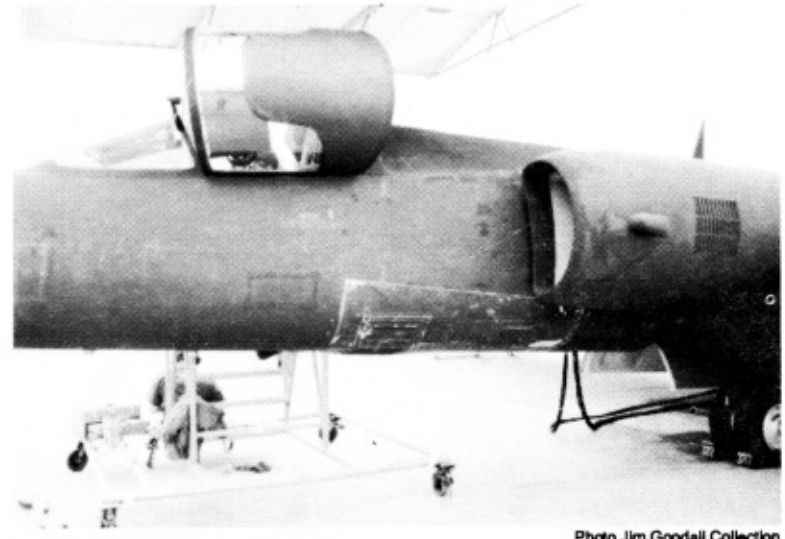


Photo Jim Goodall Collection

Photo shows the open canopy position. The rear cockpit canopy of the TR-1B is also hinged in this manner. Note the paint demarcation inside the intake - see **Step 8**.

COLOR KEY

- ***A*** ***No. 2921 Classic Black with No. 1960 Clear Flat overall***
- ***B*** ***FS 13538 Chrome Yellow***
- ***C*** ***FS34102 Dark Gull Gray***
- ***D*** ***FS 37038 Flat Black***
- ***E*** ***FS 17178 Chrome Silver***
- ***F*** ***No. 1780 Steel***
- ***G*** ***No. 2716 British Green Metallic***

Testor Bottle Paints

- ***H*** **No. 1104 Red**
- ***J*** **No. 1184 Zinc Chromate**

7 TR-1B UPPER FUSELAGE

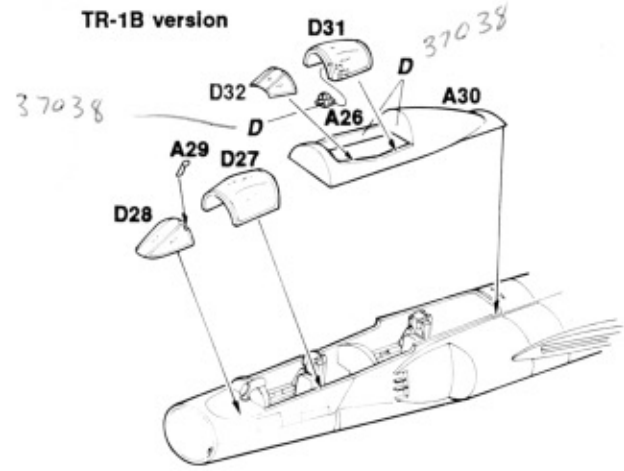
Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY**.

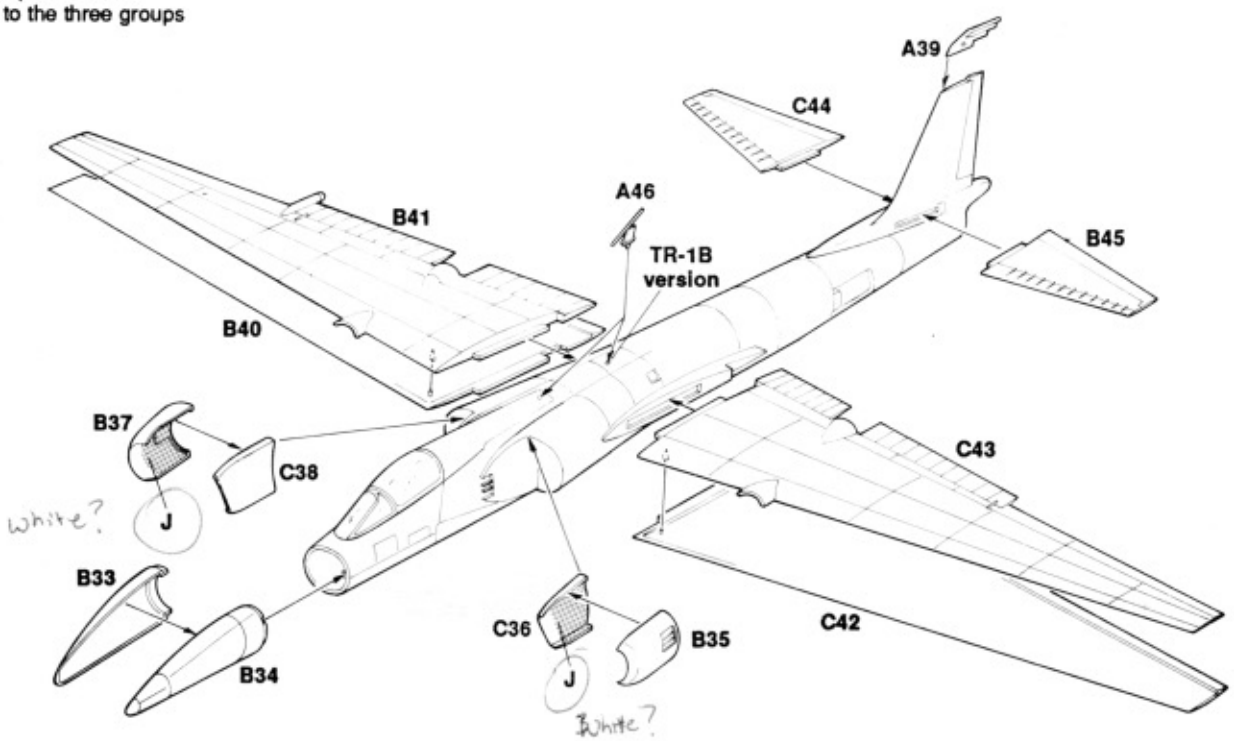
Assembly

1. Cement the fairing hatch, **A30**, into place. Now add the windscreens, **D28** and **D32**, as shown.
2. Add the defrosting fans, **A26**, to the canopies, **D27** and **D31**. See **Step 6** for fan placement on canopy, **D27**.
3. Cement canopies into place now if you are building your model with canopies closed.
4. If building open canopies read line 5 of **Step 6** above.

TR-1B version



Special thanks to members of the 99th Strategic Reconnaissance Squadron at Beale AFB, California for their help in making an authentic model possible. Thanks too are due the High Altitude Missions Branch of NASA at the Ames Research Center at Moffett Field, California and the Advanced Development Projects group at Lockheed Aircraft Corporation for assisting, within the limits of security, in development of this model. This kit is dedicated to the three groups named above.



8 BASIC AIRPLANE

Preliminary Painting

Inside of intake components **B35**, **C36**, **B37**, **C38**, 1/4" back of leading edges: Testor **No. 1184 Zinc Chromate**.

Assembly

1. Cement nose halves, **B33** and **B34** together. When dry cement nose to fuselage.
2. Cement ECM and vent tube fairing, **A39**, to tip of vertical tail surface.
3. Cement left and right intake cheek components, **B35** and **C36**, **B37** and **C38**, together. When dry cement them to the fuselage as shown.
4. Cement left stabilizer, **B45**, and right stabilizer, **C44**, to fuselage. See drawing at bottom of page and be sure the parts are accurately lined up as shown in front view.
5. Cement the wing halves together as shown but do not, yet, cement to fuselage. Instead go to page 7, **Steps 9 and 10**.
6. Cement wing assemblies to fuselage as shown after completing **Steps 9 and 10**. Be sure everything is in alignment as shown in front view at bottom of page. Let dry thoroughly - overnight is best. Now go to page 8.

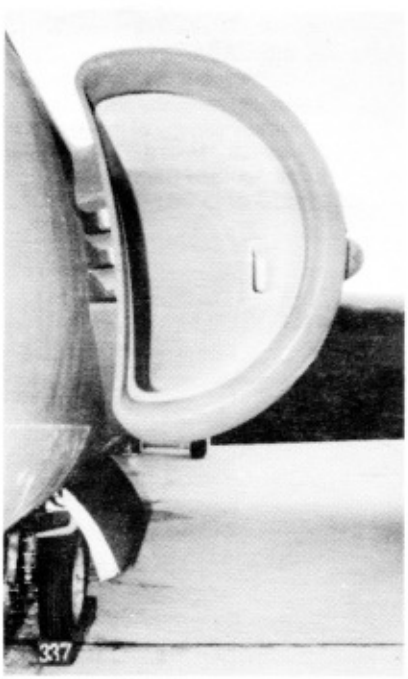


Photo Jim Goodall Collection

COLOR KEY

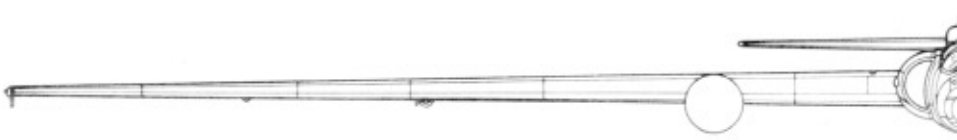
- *A No. 2921 Classic Black with No. 1960 Clear Flat overall*
- *B FS 13538 Chrome Yellow*
- *C FS34102 Dark Gull Gray*
- *D FS 37038 Flat Black*
- *E FS 17178 Chrome Silver*
- *F No. 1780 Steel*
- *G No. 2716 British Green Metallic*

Testor Bottle Paints

- H No. 1104 Red
- J No. 1184 Zinc Chromate

Technical Note

The small vaned intake between the intake scoops and the fuselage are intakes to the air-conditioning and pressurization systems. The small scoop in the main intake sidewall is the inlet to the engine oil cooler. The outlet is the square area on the outside of the scoop.



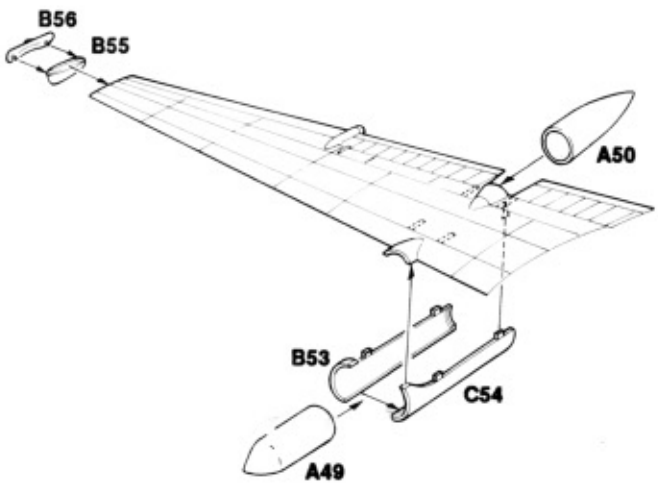
9 LEFT WING

Preliminary Painting

There is no preliminary painting.

Assembly

1. Cement "super pod" center sections, **B53** and **C54**, together and to bottom of wing as shown.
2. Cement wingtip endplate skid, **B55**, to end of wing. Now cement ECM fairing, **B56**, to endplate.
3. Cement "super pod" aft fairing, **A50**, to wing unit. Now cement "super pod" nose fairing, **A49**, to wing unit as shown.



Technical Note

The wings of the Lockheed TR-1 are very flexible. The wingtips droop down while on the ground yet bow upward while in flight. See photos on page 12.

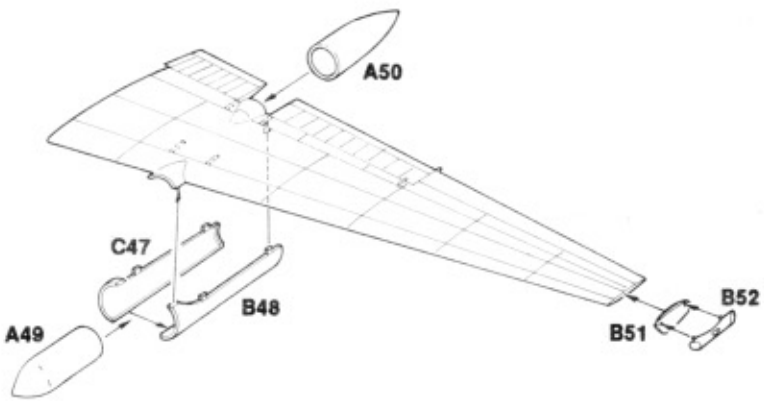
10 RIGHT WING

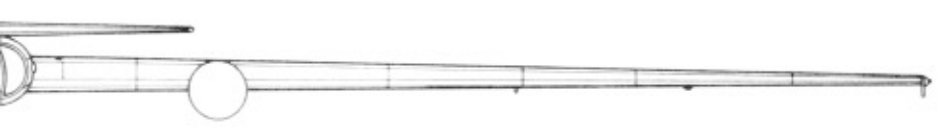
Preliminary Painting

There is no preliminary painting.

Assembly

1. Follow the sequence in **Step 9** but substitute the part numbers shown at right.
2. When the wing units are dry return to line 6 of **Step 8** and cement them to the fuselage.





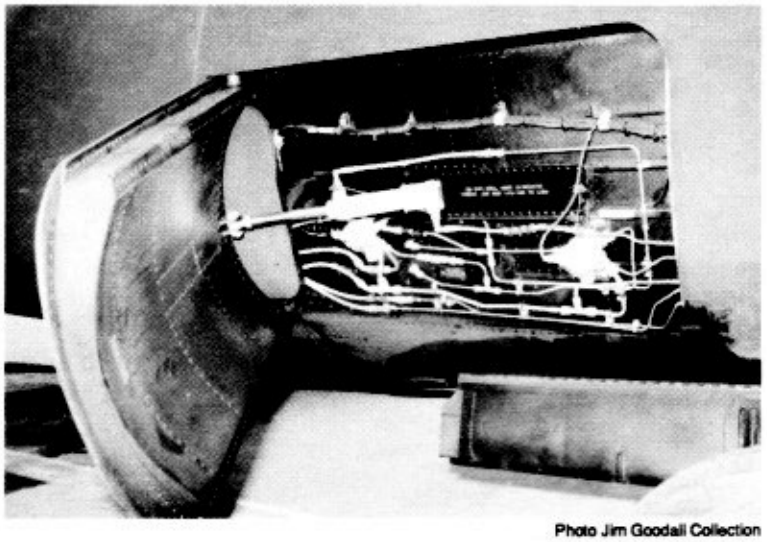


Photo Jim Goodall Collection

Technical Note
Speed brakes are mostly used at lower altitudes to increase descent rates. Deployment at high altitude has little effect.

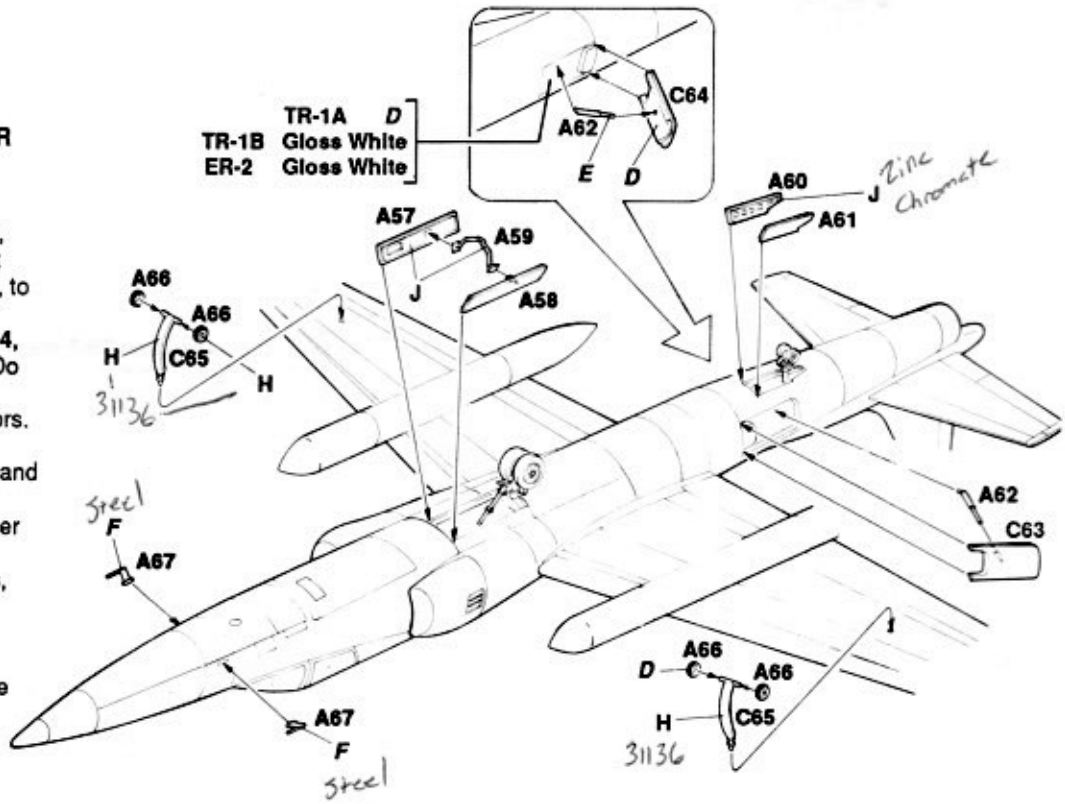
11 FINAL ASSEMBLY

Preliminary Painting

Paint parts as indicated by letters in the assembly step illustration and the **COLOR KEY.**

Assembly

1. Cement the landing gear doors, **A57, A58, A60, A61,** into place first. Next add main gear door folding link, **A59,** to doors and to landing gear.
2. The speed brake doors, **C63** and **C64,** can be built extended or retracted. Do not use extension cylinders, **A62,** if building the model with retracted doors. Assemble as shown.
3. Cement the dropaway "pogos," **C65** and **C66,** as shown. It is better these be merely stuck into the wing holes rather than glued into place.
4. Now cement the airspeed pitot tubes, **A67,** to both sides of the fuselage.
5. Place the model on its landing gear. You can now add the rear looking mirror, **A29,** and open canopies. See **Steps 6 and 7** on page 5.
6. The assembly is complete.



COLOR KEY

- ***A*** ***No. 2921 Classic Black with No. 1960 Clear Flat overall***
- ***B*** ***FS 13538 Chrome Yellow***
- ***C*** ***FS34102 Dark Gull Gray***
- ***D*** ***FS 37038 Flat Black***
- ***E*** ***FS 17178 Chrome Silver***
- ***F*** ***No. 1780 Steel***
- ***G*** ***No. 2716 British Green Metallic***

Testor Bottle Paints

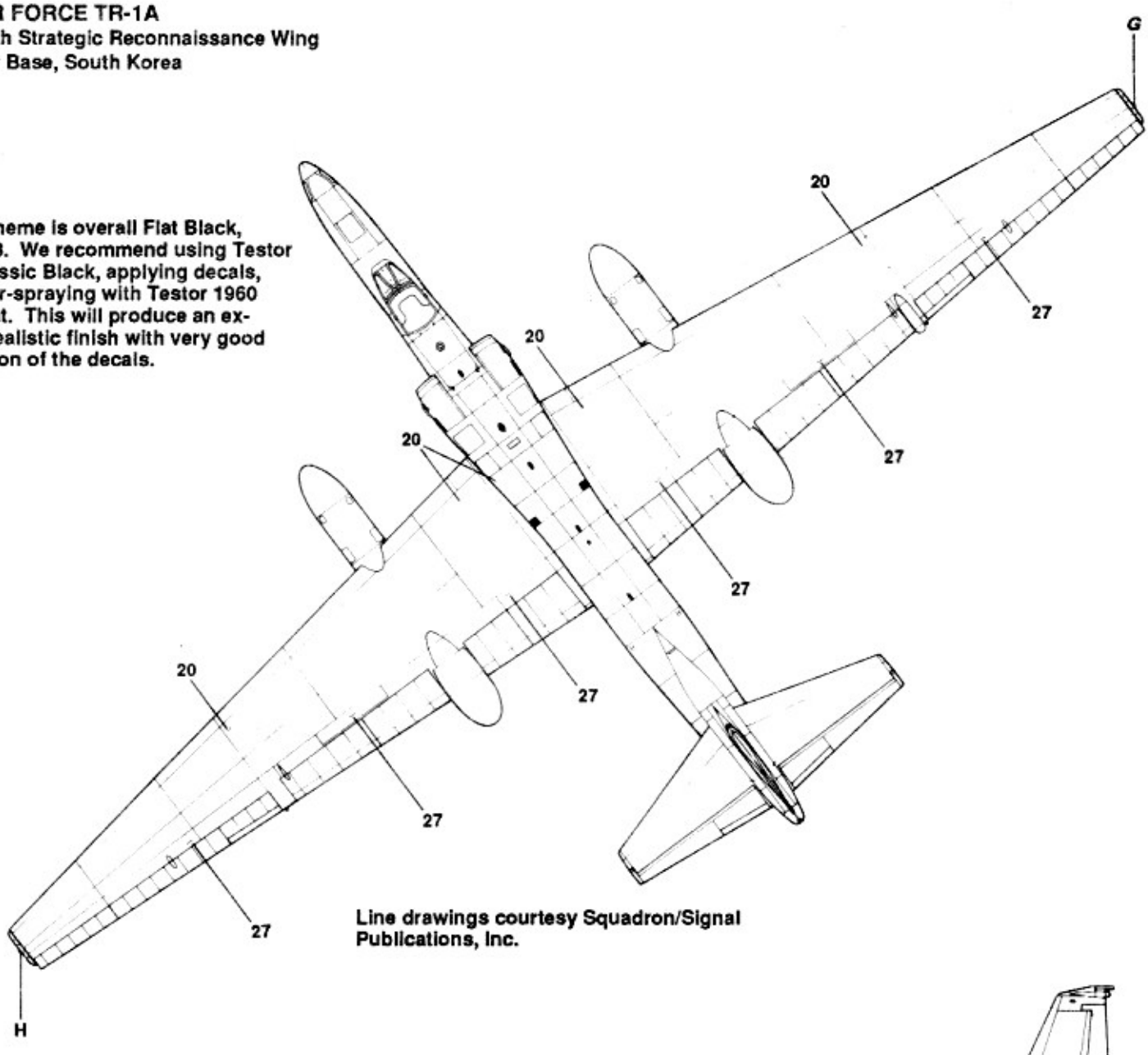
- **H** **No. 1104 Red**
- **J** **No. 1184 Zinc Chromate**

APPLYING DECALS

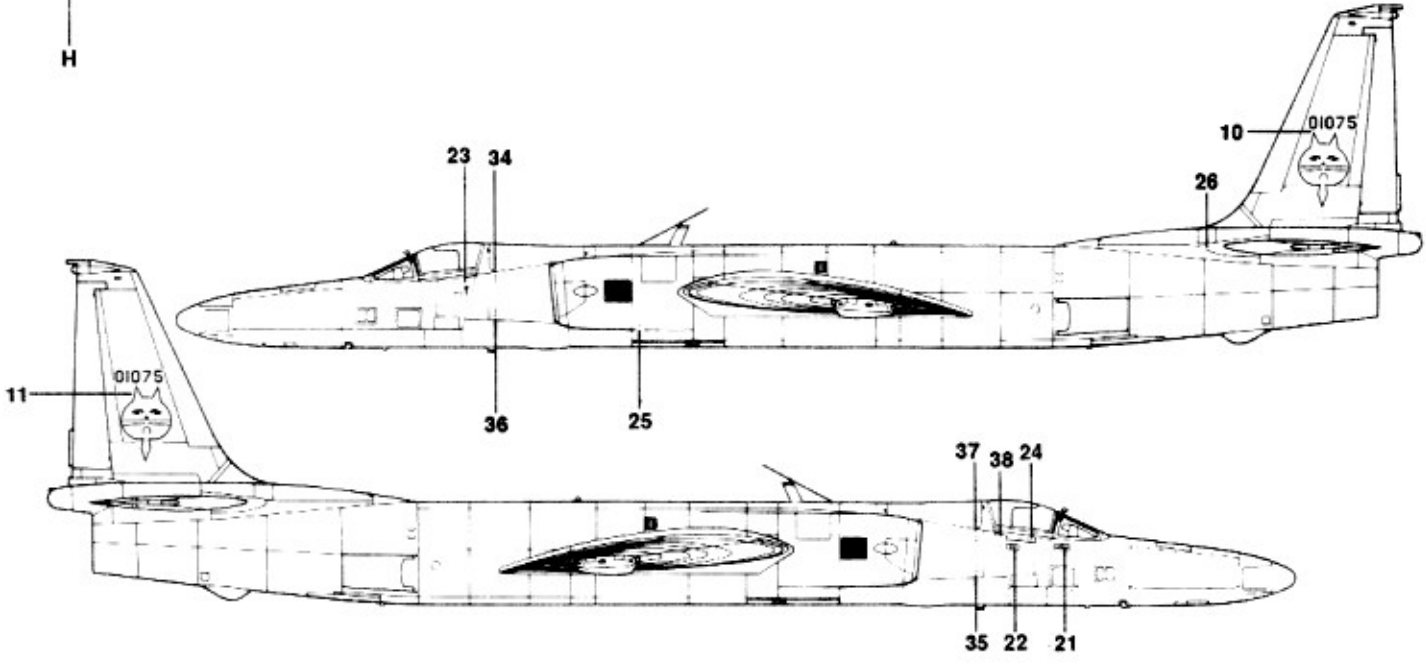
1. After carefully masking clear areas, spray entire model with Testor Glosscote #1261. Decals adhere best to a smooth surface and the shinier the finish the smoother it is. Allow the Glosscote to dry before going further.
2. Select the decals you plan to use and cut them from the decal sheet with scissors or a Testor Hobby Knife.
3. Working with only one decal at a time, dip the decal in clear water for no more than five seconds. 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, and onto, the surface of the model with a soft Testor ***Model Master*** paint brush or tweezers. Remember the decals are very thin and can be easily ripped. Work slowly and carefully.
5. Once the decal is in the desired position apply a small amount of Testor Decal Set #8804. This will help the decal conform to any irregularities in the surface of the model. Allow the decal to dry undisturbed. Should you desire to purposely move it before it has dried, 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. Now you can carefully remove the masking from the clear parts.

U.S. AIR FORCE TR-1A
Det. 2, 9th Strategic Reconnaissance Wing
Osan Air Base, South Korea

Paint scheme is overall Flat Black, FS 37038. We recommend using Testor 2921 Classic Black, applying decals, then over-spraying with Testor 1960 Clear Flat. This will produce an excellent realistic finish with very good application of the decals.

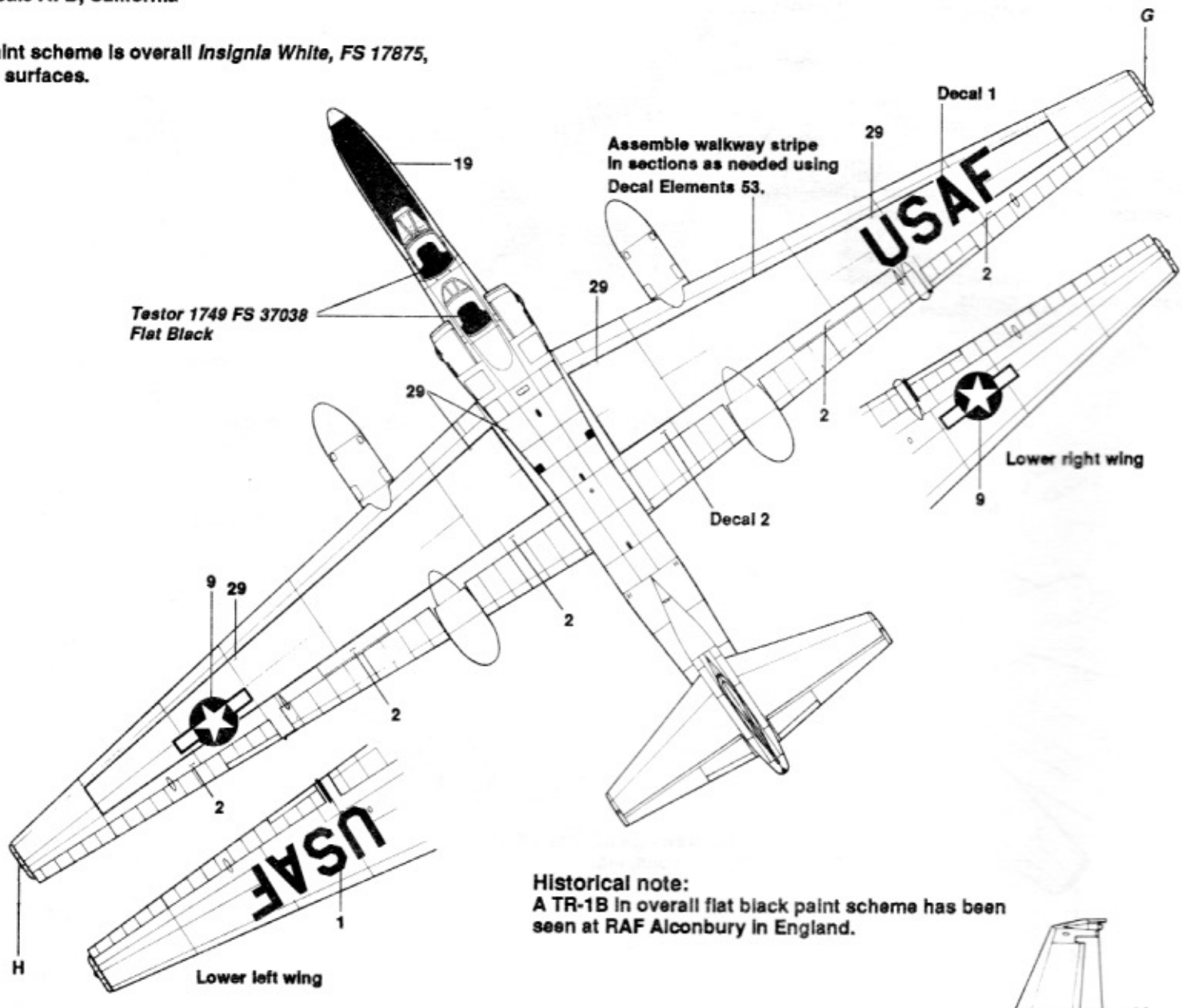


Line drawings courtesy Squadron/Signal Publications, Inc.

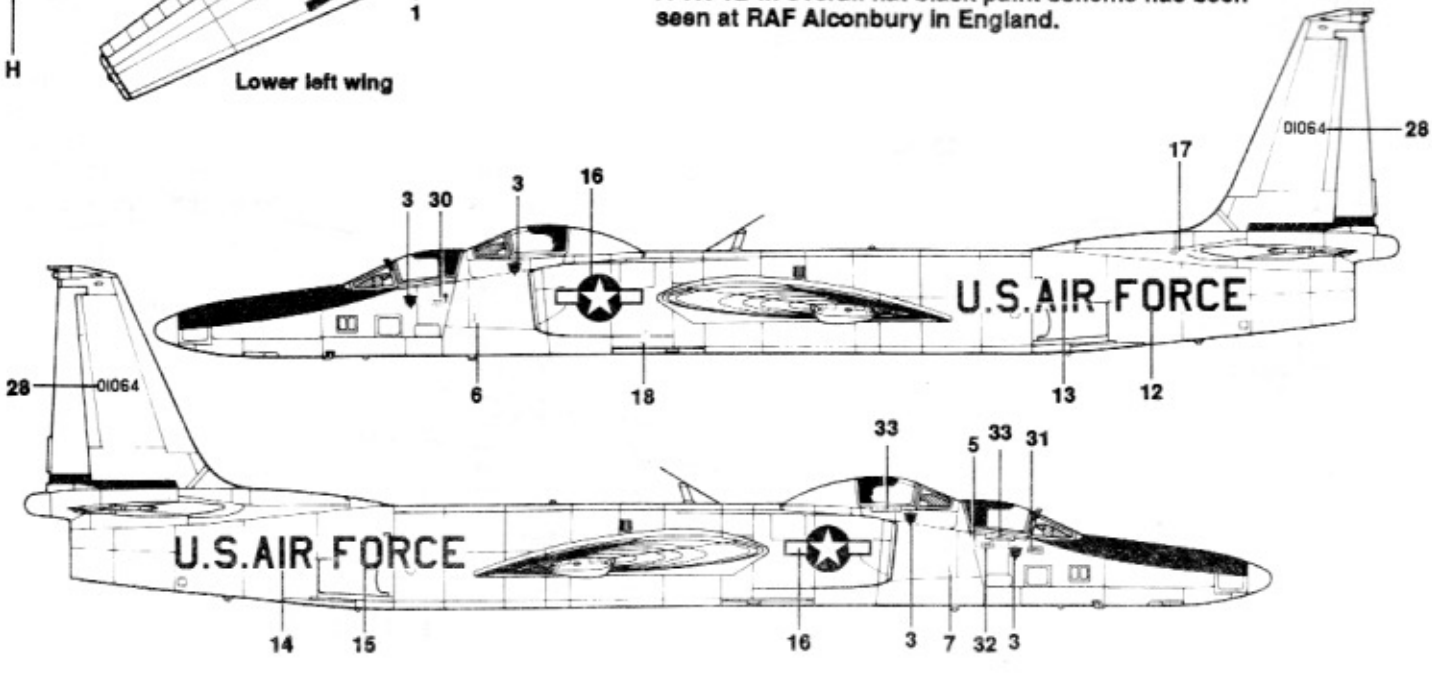


U.S. AIR FORCE TR-1B
5th Strategic Reconnaissance Training Squadron
Beale AFB, California

Paint scheme is overall *Insignia White, FS 17875*, all surfaces.



Historical note:
A TR-1B in overall flat black paint scheme has been seen at RAF Alconbury in England.

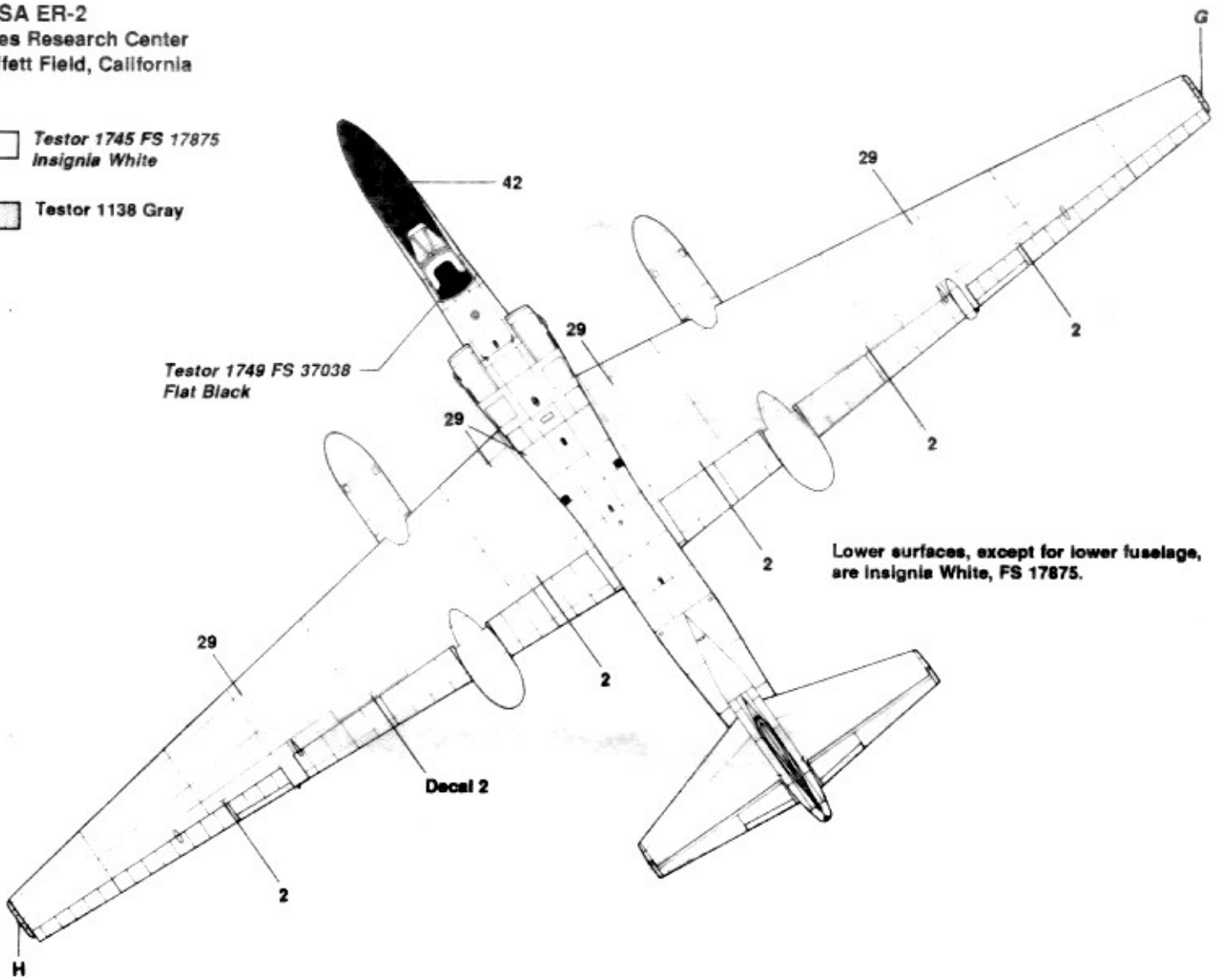


NASA ER-2
Ames Research Center
Moffett Field, California

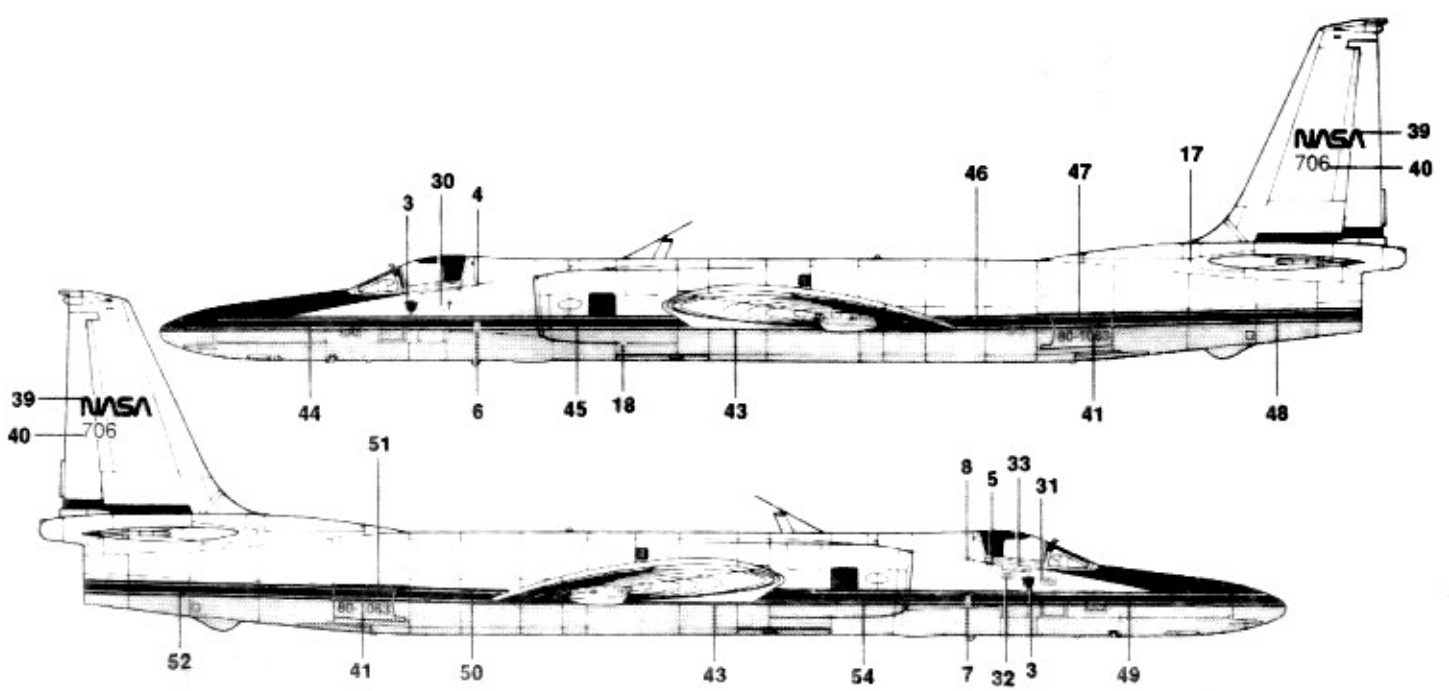
Testor 1745 FS 17875
Insignia White

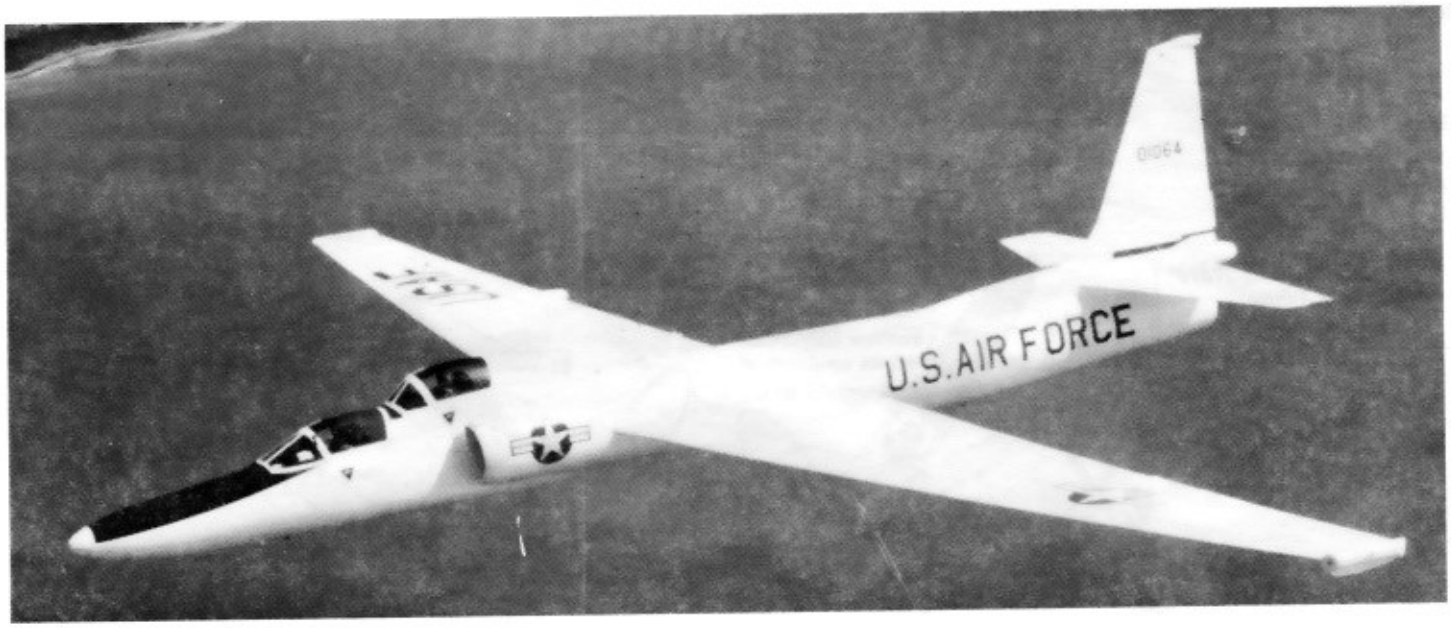
Testor 1138 Gray

Testor 1749 FS 37038
Flat Black



Lower surfaces, except for lower fuselage, are Insignia White, FS 17875.





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