



North American BT-9s in USAAC markings, Randolph Field, Texas circa 1940. Photo SDASM archive.

Belcher Bits BK8: North American BT-9

Introduction

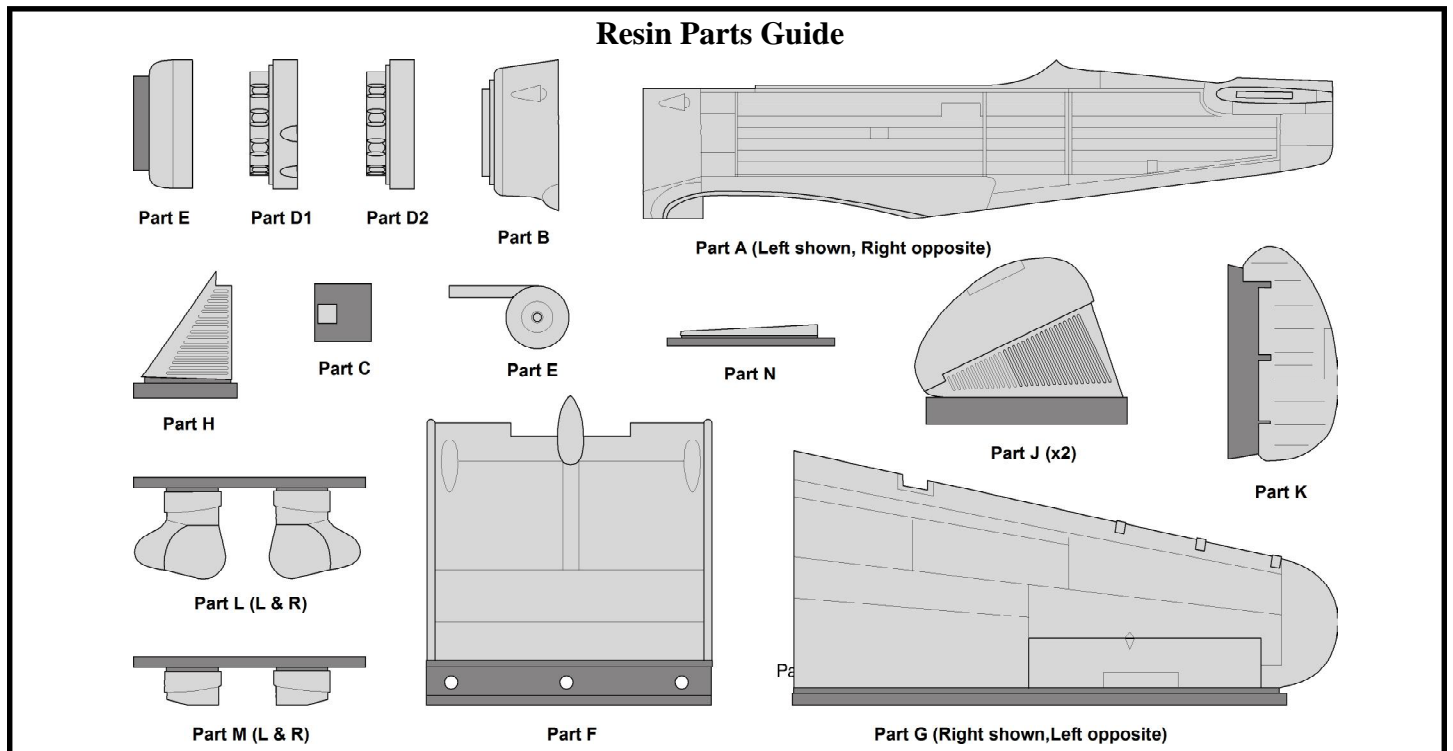
North American's NA-16 trainer was the sire of a long line of military trainers, the AT-6 Texan being the most famous. However, there were many other variations on the same airframe. The prototype NA-16 was rebuilt into the NA-18 and sold to Argentina. The first production variant was the NA-19, bought for the USAAC as the BT-9. These aircraft used the R-975 engine with its distinctive forward exhaust collector ring, had fabric covered fuselages and all employed the early wing with its straight trail-

ing edge and rounded wingtips. Several attempts were made to improve the nasty stall characteristics of these early variants...the final answer implemented on the AT-6 was new outer wing panels with a slight forward sweep to the trailing edge, a 6" longer fuselage and a different shaped rudder.

The BT-9 was actually delivered in four batches. The very first production variant of the North American trainers was the NA-19, 42 of which were ordered for the USAAC as the BT-9. This was a flight trainer with no armament provision, and can

be recognized by the curved bottom edge of the fixed rear canopy. Another 40 NA-19As were also ordered for the Organized Reserve as the BT-9A. These aircraft had the movable rear canopy (with the straight bottom edge) and could mount a flexible gun there. There were some other detail differences inside the cockpits as well.

In late 1936, 117 NA-23s were ordered as BT-9B. This aircraft was virtually identical to the BT-9. At the same time, 67 NA-29s were ordered as the BT-9C, these being essentially a repeat of the BT-9A.



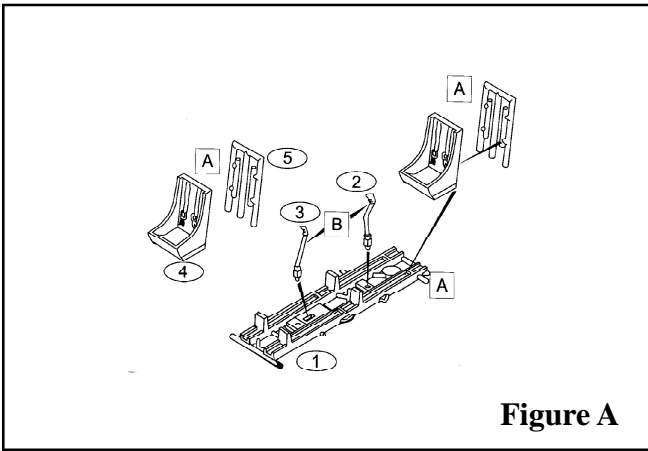


Figure A

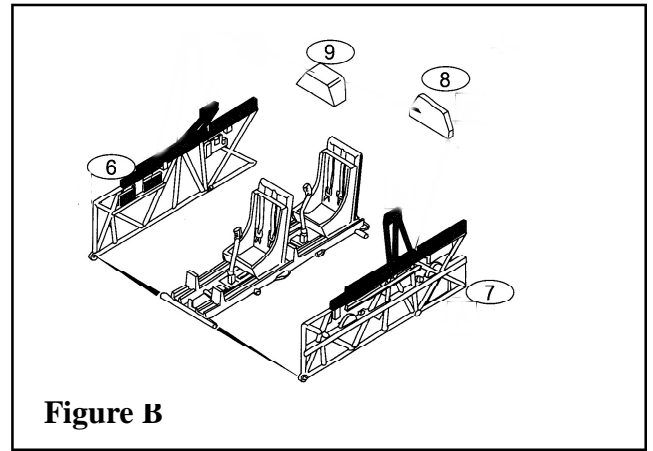


Figure B

In summary, the BT-9 and BT-9B were strictly flight trainers with fixed rear canopy. The BT-9A and BT-9C were more operational trainers and could mount a flexible gun in the rear cockpit.

The Kit

This kit includes a complete Occidental Harvard Mk II kit, necessary

resin parts to convert the kit to a BT-9 or 9B, a set of EZ Mask canopy masks and a set of decals with schemes for a couple BT-9s as well as a French NA-57 (outwardly identical to the BT-9).

Fuselage

The BT-9s (and other early NA trainers) had what is known as a short-arm rear

fuselage, which was 6" shorter than the later T-6. The difference in length is all at the after end. The elevators are actually in the same location relative to the wing, but the later long-arm fuselages moved the vertical fin back 6 inches. Furthermore, these early machines all had the fabric sided fuselages. Just for interest's sake there were a couple later variants which had a metal covered short fuselage, but all long fuselages were metal covered. Assemble the kit interior, using Figs A and B. Interior colour is interior green with aluminum lacquer rollover structure. Seats would have been bare metal; the pilots used seat pack parachutes. Paint the instrument panels and side consoles black; the instruments can be picked out with a white pencil, or by careful drybrushing.

Glue the resin fuselage halves (Parts A) together with the upper cowling piece (part 15) and forward instrument panel (part 12) using Fig. C. Kit part 10 will need a little trimming to allow the fuselage halves to mate properly. When you glue on part 15 so the panel lines up, there will be a small gap at the leading edge of the canopy rail. Fill this gap with small scraps of plastic because the canopy will not fit if you glue part 15

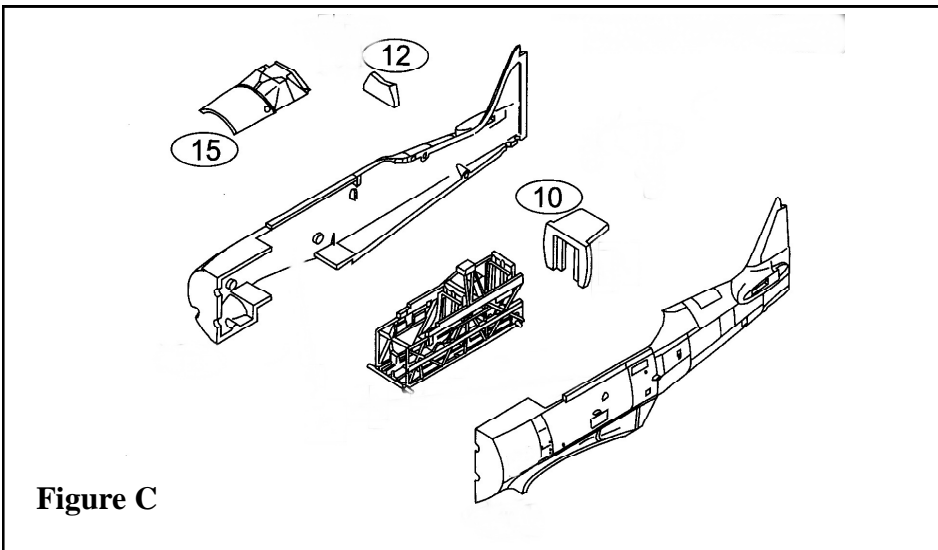


Figure C

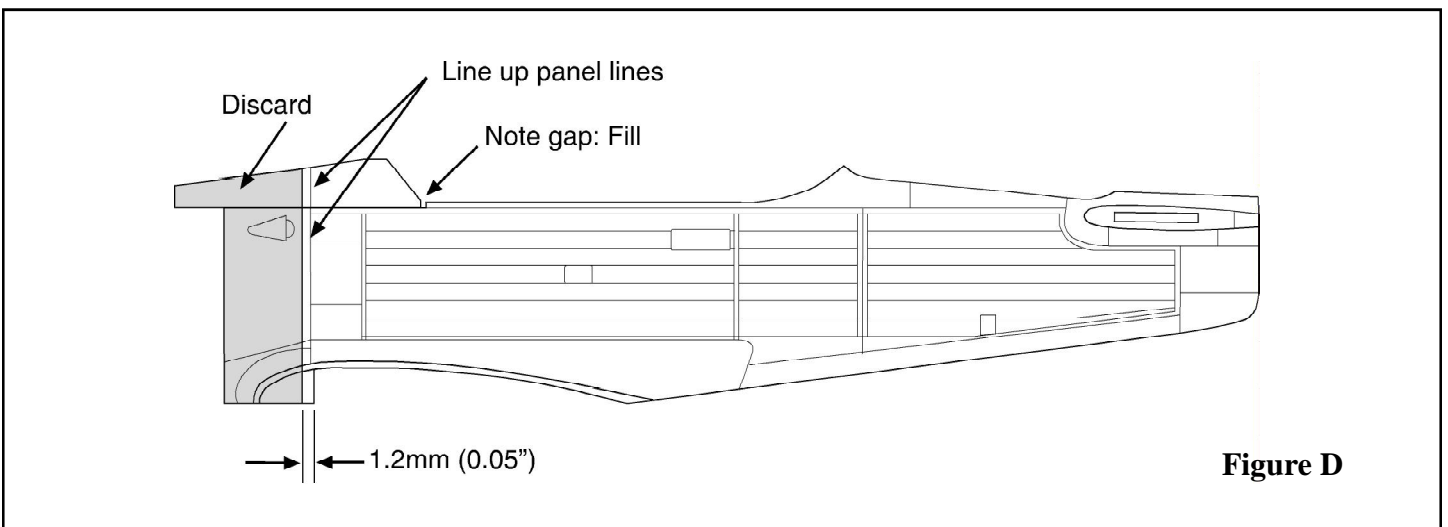


Figure D

further back. I would also recommend leaving off the tailwheel until the end.

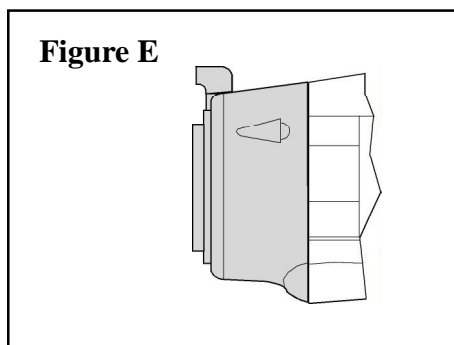
The resin fabric fuselages are common for both these BT-9s, and Harvard Mk Is so for the BT-9, the nose will need to be modified. Using Fig. D, cut off the forward fuselage where indicated. Glue on the accessory section (resin part B); the protrusions on the back of this part should key in with the lower section of the fuselage. Fill seams in the upper cowling area.

The resin fuselage will require some substantial grinding or filing on the bottom to fit well with the resin centre section. Best to do this at this stage so you can test fit the centre section easily.

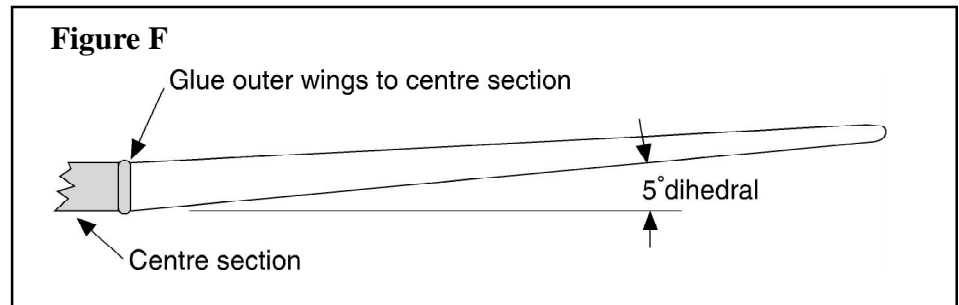
Glue the carburetor air intake (resin part C) on the top front of the accessory section. See Figure E.

Cowling

The cowling is supplied in two pieces (the forward cowling as part E and the rear



cowling and engine face as part D1 or D2. The first BT-9s had four (what I assume were) cowling vents on the sides of the rear section. I have seen photos of these with what appear to be flared tubes sticking out slightly, and others where only the cowling bulges were visible. Later BT-9s do not show these bulges, although one photograph is close enough to see that the bulge cutouts were apparently covered with plain sheet metal. A bit of a mystery here, and I provide both a vented and non-vented part. I would suggest painting the engine before assembly. The interior of the cowling was also probably natural metal, but could have been zinc chromate primer. Remove the moulding ring from the front cowling, open up the small hole in the right side, sand the cowling lip to a smooth radius and glue to the rear part, lining up the keyed slot at the top. Fill the seam between the two. This whole assembly can be painted and attached later if you prefer ... the cowling assembly has a small hole on its back face which registers with a small protrusion on the accessory sec-



tion to ensure the cowling only fits one way.

Wing

I recommend doing the wing separately from the fuselage since it involves gluing the outer wing panels on a new centre section, it will be easier to ensure the same dihedral on both wings. Glue the outer wing panels (resin part G) to the replacement centre section (resin part F). Note that the resin part incorporates the complete fairing strip, so the outer wing parts are centred on the butt edge. All three parts are moulded with the flaps raised; if you want to drop flaps, you are in for a world of work and on your own.

A word on BT-9 wings. The first batches had a nasty tip stall. One early fix was to fit slats on the outer wing leading edges. This helped, but the problem still existed. Later, the wings were de-skinned, the structure twisted down 2 degrees at the tip and new wing skins installed. Unfortunately, this twist is impossible to identify from photographs, so if you see a photo of a BT-9 without slats, it is either very early (pre-slat) or later with the twisted wing (post-slat). If you want to model one without slats, file off the protruberances on the leading edges of the wings and sand the area smooth. If you want to depict an aircraft with the slats, sand the resin slats flat on the bottom, and glue them in place on these protuberances. The slat should extend just slightly beyond the leading edge of the wing.

When dry, fit the completed wing to the fuselage. Some filling will be required at the joint between the wing and the resin accessory section, as well as a bit along the root.

Tail Area

I recommended doing the wings first, so that when you come to glue on the tail parts, it will be easy to line everything either in line or at right angles. The corrugated skin vertical fin (resin part H) is glued in place, lining up the after edge with the end of the fuselage. File that surface flat and test fit the rudder, but do not glue that in place

yet. It is probably better to paint the rudder separately and glue it on later.

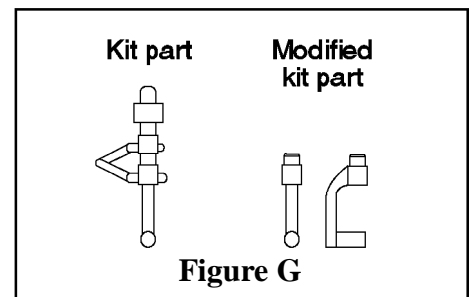
The port and starboard resin tailplanes (resin part J) can be glued in place and seams filled. Remember these should be parallel to the wing centre section.

Landing Gear

Check your references ... early BT-9s were seen with full spats, while later on, the lower section was removed. Usually, the spats were the same colour as the fuselage, so it may make sense to paint these items separately and glue in place when the model is completed; note the open sections face outboard.

If you are opting for full spats, cut off the spats (resin parts L) from their base and paint. The Occidental kit provides three tires, one with a diamond tread pattern. Toss it in the spare box, and sand the line tread patterns off the other two tires ... if you can reduce their width slightly, they will look better. Reduce the thickness of the wheels (part 35) by sanding the back face. The wheels and their covers (part 36) can be glued together and painted separately from the tire. The inner face of the tire should be natural metal. The final step is to glue the tire into the spat.

For those a/c with lower section of the spats removed, abbreviated fairings are also provided. Cut off resin parts M from their base; again, you may wish to paint these separately and glue on later. Modify the kit landing gear as shown in Fig.G These shortened gear legs (painted natural metal) fit into the holes in the fairings. The wheels and tires are finished as above, and fit on the kit axles.



The tail wheel from the kit (part 11) is used but with modification. Cut off the mounting pins and the rear section aft of the tailwheel strut. Sand the top flat and glue in position where indicated on the drawing.

Canopy

Depending on the way you like to deal with canopies, you may want to fit the fixed portions such as the windscreen (part 49) and the rear canopy section (part 53a) prior to painting. The Occidental kit includes optional canopy sections for early and later Harvards; be sure to use the early ones with the additional canopy frames; kit parts 50a (front), 51a (middle) and 52a (rear).

This kit includes a set of EZ Mask canopy masks for your convenience. This self-adhesive film is pre-cut to fit the Occidental kit canopy, and will definitely save you time in masking. Mix a small amount of detergent with water, use a sharp knife to lift the canopy mask section off the backing and a pair of tweezers to dip it in

the soapy water. Place it where indicated on the canopy; the soapy water will allow you to move it into position. Once the mask is properly positioned, press it in place and pat it dry. Once all the masks are positioned and dried, the canopy is ready for painting.

Final Steps

Following painting, clear wing landing light covers part 48 (starboard) and 48a (port) are glued in place on the port and starboard wings respectively. The Occidental kit does not make any attempt to show the lamps; these could be made from small bits of sprue or railroad lamp lenses.

On the starboard side just aft of the accessory section are two small venturi. Too small for resin parts, you should make these up from stretched sprue ends.

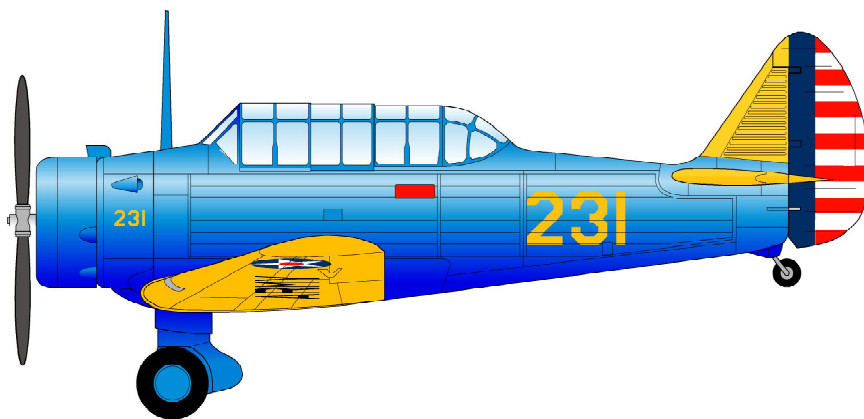
BT-9s used a tall antenna mast fitted on the forward cowling area, just to the port side of the centreline. Fit resin part N after all other work is completed to avoid break-

ing during handling.

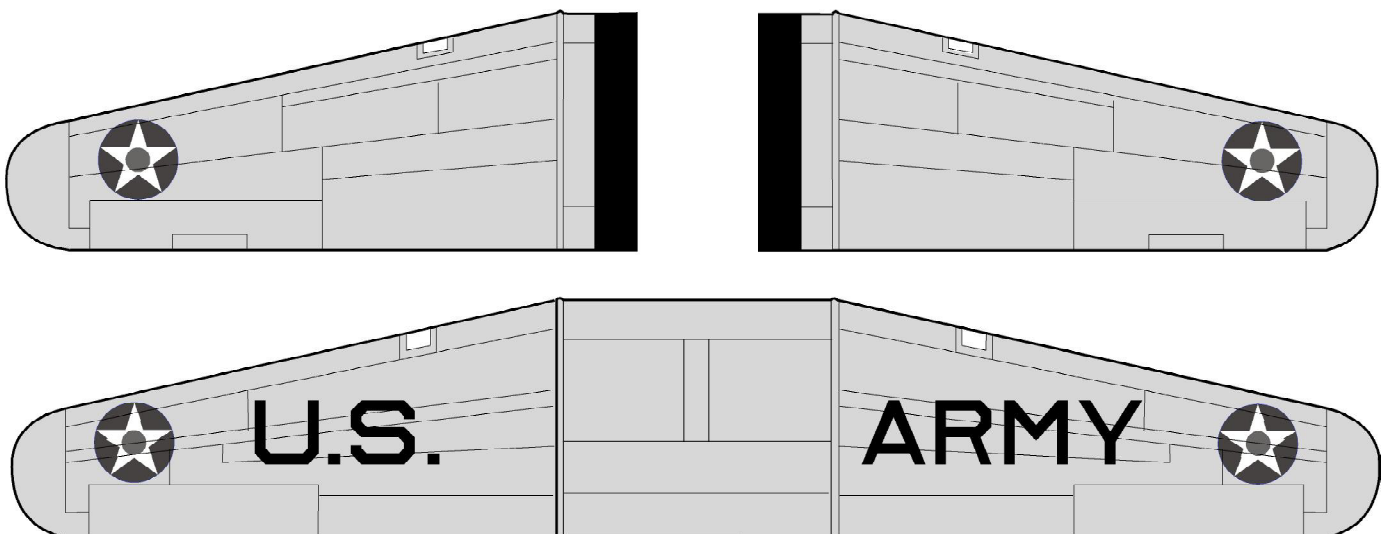
Glue the pitch control weights (parts 24A) to the kit prop (part 24) hub. The prop is natural metal with black on the rear faces of the blades.

References:

1. **North American Aircraft 1934-1998 Vol. 1**, by Norm Avery, published by Narkeiwicz / Thompson
2. **North American NA-16/AT-6/SNJ**, Warbird Tech Series Volume 11, by Dan Hagedorn, published by Specialty Press
3. **T-6 Texan in Action**, by Larry Davis, Squadron/Signal Publications.
4. **Harvard!** by Dave Fletcher and Doug Macphail, published by DCF Flying Books.
5. **The Incredible T-6 Pilot Maker** by W. Ohlrich and J. Ethell, published by Specialty Press, 1983.
6. **North American's T-6** by Dan Hagedorn, published by Specialty Pres, 2009



*BT-9B, Randolph Field, Texas ca.1937. Common to USAAC aircraft of this period, fuselage was USAAC Light Blue (similar to True Blue FS 15102), with Yellow (similar to Orange Yellow FS 13538) wings, fin, and elevators. The anti-glare panel forward of the windscreen was black as were walkways on wings.. Rudder was Insignia Blue leading edge and 13 red and white stripes. The aircraft number was carried in yellow on the blue fuselage, and in black on the wing leading edges centred between the landing light and the fairing strip covering the outboard wing joint. Fire extinguisher panel was red with black lettering.
Ref: T-6 Warbird Tech, p.21*



Belcher Bits BK3: BT-14

U.S. ARMY

53ED544

52ED344

344 344 344 544

344 344 344 544

217G217G

01112 01112

BS BS

47 47

10 10 100

Use the roundels for the upper and lower wings. The US ARMY can be used for under the wing. The rest of the markings on this sheet are not applicable to the BT-9. The yellow numbers on this sheet are the right size but do not match the correct darker colour of those on the number strips.

1 2 3 5 6 7 4 8 9 0

1 2 3 5 6 7 4 8 9 0

Use these numbers for the BT-9s. The smaller yellow numbers are sometimes seen on the side of the cowlings or forward fuselage. The smaller black

Belcher Bits BK4: Yale

NAA 64 P.2 No. 85

NAA 64 P.2 No. 85

DRXDDR

DRXD6

NAA 64 P2 NO.17

NAA 64 P2 NO.17

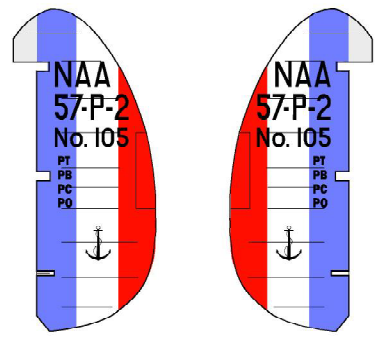
NAA 64 P2 NO.17

3448

3448

34483448

Use four wing roundels at left and two smaller fuselage roundels at right. The rest of the markings on this sheet are not applicable to the NA-57.



5

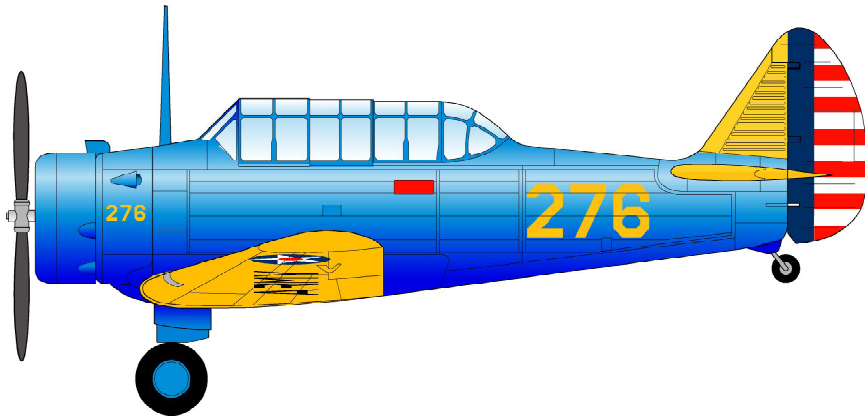
5 BA

THE ESTABLISHED

57-P-2

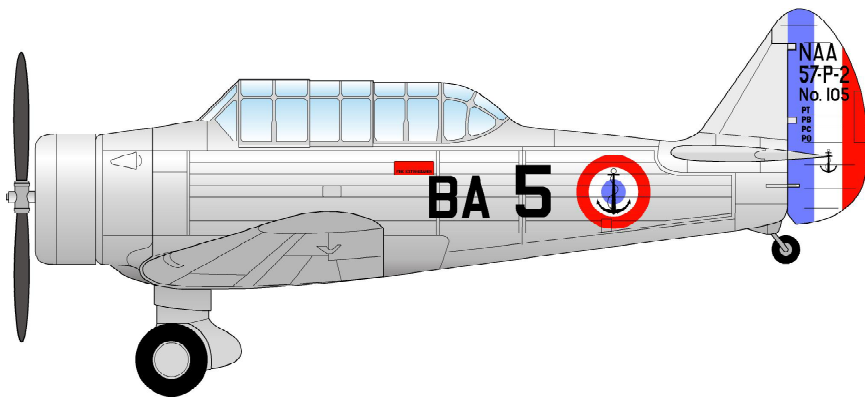
NAA No. 105

Use the outer two anchors for the wing roundels and the smaller inner one for the fuselage roundel. The smallest anchors are used on the rudder. The tail markings are printed with NAA separate from the 57-P-2 because these markings are lined up with the rudder leading edge. See the sketch above for layout.



BT-9, 46th School Squadron, Randolph Field, Texas ca.1941. Identical markings to those of 231. This machine has the landing gear with removed spats.

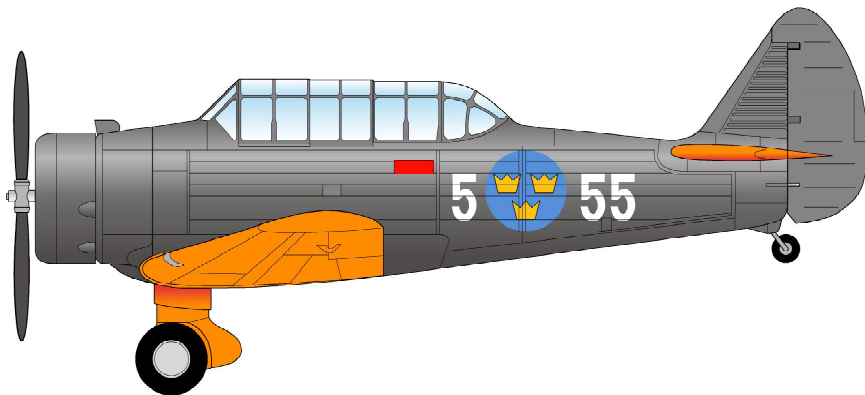
Ref: Warbird Tech T-6, p.16



NA-57, French Navy 1940

One of 214 aircraft delivered to France between 1939 and 1940, most serving with the Armee de l'Air; the first 30 were delivered to the Navy. These were essentially identical to BT-9Bs with a few instrument-related changes. Overall painted aluminum with a blue-white-red striped rudder.

Ref: Warbird Tech T-6, p.16



NA-31, Royal Swedish Air Force 1937

One NA-31 was sold to Sweden with licensing arrangements, and 136 were eventually built in 3 batches. Again, essentially identical to the BT-9B.

There is an example in the Swedish Air Force Museum which has been built from a Wirraway fuselage with the engine from a Yale. As such, it is probably the only fabric fuselage North American trainer remaining in the world. The USAF museum should have tried to do the same instead of trying to pass off an ex-RCAF Yale as a BT-9!

Although we do not provide the markings for this aircraft, they are not too difficult to source. Dark Grey fuselage with orange-yellow wings and tailplanes.

Ref: Warbird Tech T-6, p.16