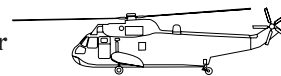


Belcher Bits Set No. BB4:
1/48 RCN TBM / AS3 Avengers
Kit: Accurate Miniatures TBM-3

Belcher Bits

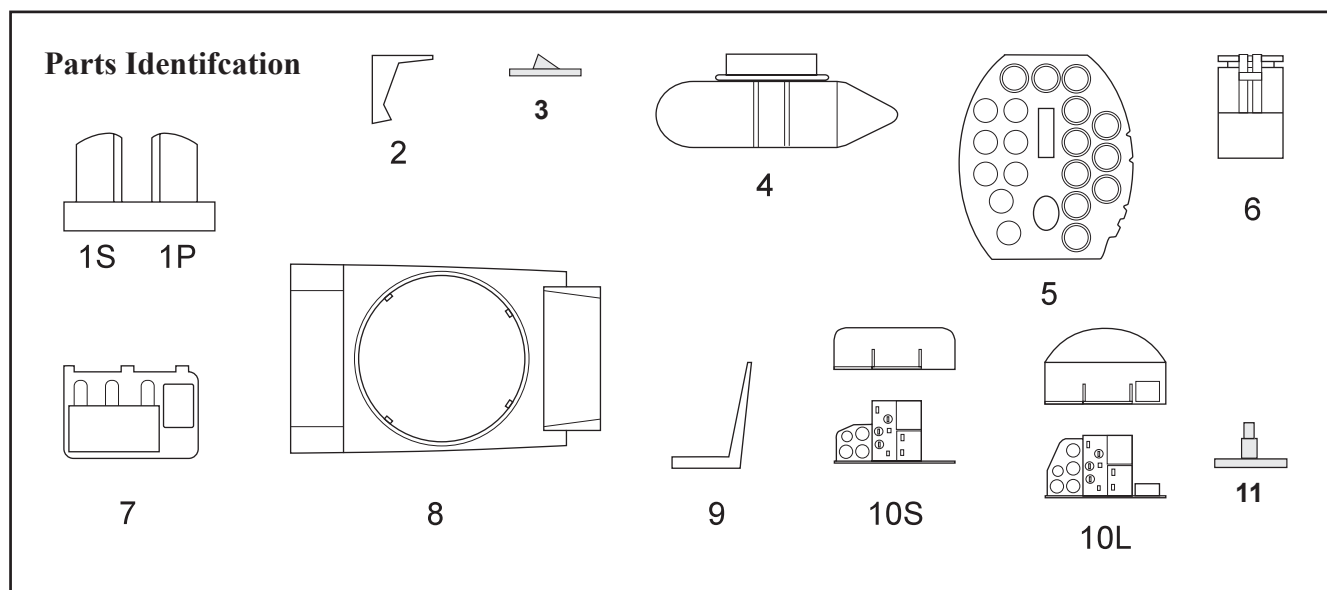


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Background

When the Royal Canadian Navy looked for a replacement for the Fairey Firefly in the ASW attack role, the Grumman Avenger was a natural choice. Rugged and war tested, it could operate from the smaller carriers in RCN service, yet was capable of carrying airborne radar as well as torpedos or rockets. During the period 1950-52, the RCN took delivery of 125ex-USN TBM-3Es. These were put to use as delivered, but soon were modified to make them more capable ASW machines.

Fairey Aviation modified a number of machines to the AS3 standard. This involved the removal of the turret and the extension of the greenhouse in a manner similar to (but NOT identical) to the USN TBM-3S. Early machines had a short greenhouse extension; later machines were fitted with a slightly longer version. In all cases, the turret race was retained and a rotating seat for the Observer was installed instead. In the after part of the greenhouse extension, flight and navigation instruments were mounted as well as a radar repeater for the AN/APS-4 radar mounted under the starboard wing. Below the Observer was the Observer's Mate position; at its after end was stowage for sonobuoys and smoke markers. These were ejected through a launch tube exiting through the blanked off ventral gunners position. The Observer's Mate's takeoff and landing position was in a rearward-facing folding seat on the aft side of the turnover pylon; this position was accessed through a crawlway linking the after compartment with the radio compartment.



TBM-3E

All RCN machines were based on the TBM-3E, so the following mods must be made to ANY variant. Assemble the kit according to instructions, except for the following:

- a) The notch at the bottom of the cowling flaps and the prominent indentation just above the exhaust pipe on the TBM-3 cowling must be filled. Glue in the port and starboard parts (**resin pieces 1P and 1S**) and fill seams at the leading and trailing edges of the parts.
- b) Left and right ventral windows (kit parts 76 and 77) can be glued in place, seams filled and overpainted. The ventral gun window (part 78) is replaced by the **resin piece 2**. For the interior, don't bother installing kit parts 34 or 36 and save the nice 0.30" mg (part 35) for another project.
- c) Most, but not all TBM-3Es had external tailhooks. Check your references. If you need one, do not install kit part 22 inside. Once the fuselage halves have been assembled, fill the hole in the extreme tail. Use **resin part 3** and install where indicated in **Figure 1**. Cut the tailhook to 1-1/4" (32mm) long, drill a small hole in the aft end of the resin part and glue the tailhook in place.

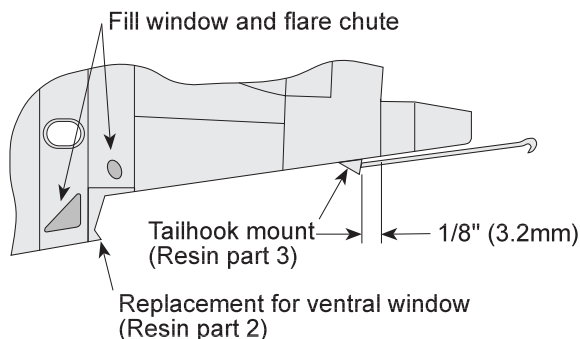


Figure 1

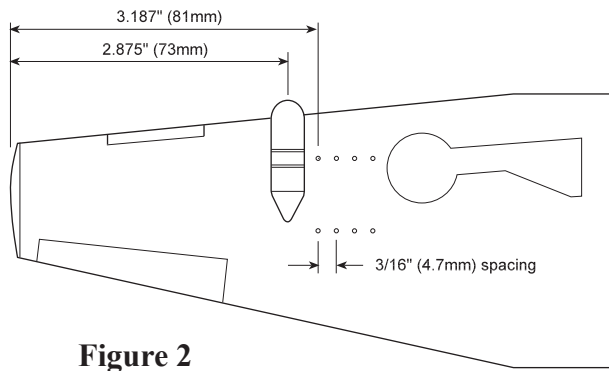


Figure 2

d) RCN Avengers were armed with rockets mounted on zero length launchers as supplied with the kit. However, the kit locations for the rocket launchers are incorrect for RCN machines, being too far out the wing and too widely spaced. Use **Figure 2** to re-site the launchers. Even if you don't mount the rockets, the launcher parts should be installed.

d) Most machines were fitted with the AN/APS-4 radar pod (**resin part 4**) under the starboard wing as shown at left. It is centred in line with the leading row of launcher stubs. The actual rack was suspended off the wing slightly by two pins at the front and back of the rack; use wire to represent these and shim so that the pod is parallel to line of flight. The pod is white with aluminum bands.

AS3 (Initial Short Greenhouse)

Tape the fuselage halves together, mark the cut lines on the rear fuselage as in **Figure 3**, and remove as indicated. Use a flat file to finish the edges, and use the kit turret base (part 58) to check your work. This top face of this part should be just flush with the bottom edge of the cutout area.

Assemble the kit according to instructions, except for the following:

a) The flare stowage bulkhead (**resin part 5**) is installed in the rear fuselage. It is best to glue it to the port side half ... there are several grooves in that side of the bulkhead to clear the stringers. The bulkhead is attached just behind the fuselage frame just ahead of the aft window

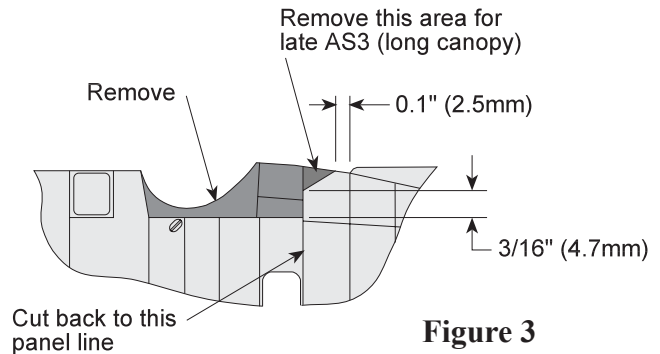


Figure 3

- b) Remove the oxygen cylinder from the rear of the cockpit floor (part 25).
- c) The folded-up Observer's Mate seat (**resin part 6**) attaches to the rear of the uppermost rectangular box sticking out of part 25. There is a strip on the back of the seat which goes on the right side of that box. Confused? See **Figure 4**. Seat is interior colour, seat belts are light grey.
- d) The kit radio equipment tray (part 32) is replaced by **resin part 7**. Tray is interior colour, radio equipment is dark grey.
- e) On the bomb bay bulkhead (kit part 26), a modification is required. There is a spindly looking thing sticking up which on a real Avenger is the electrical slip ring connection to the turret. Remove the wire leading off to port. This will represent the support for the Observers seat (see below).
- f) The kit turret base (part 58) is replaced by **resin part 8**. The four small blocks on the inside of the turret ring represent the attachment points for the

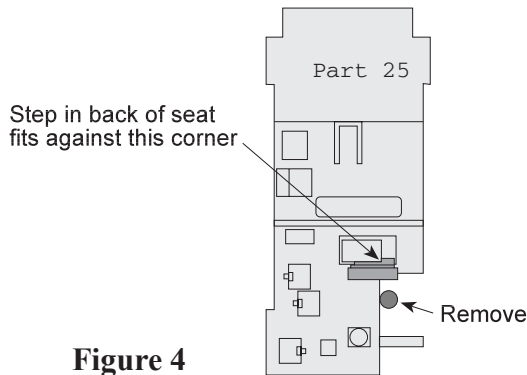


Figure 4

seat supporting structure. It works best to install the Observer's seat in this part prior to fitting it into the fuselage. The Observer's seat (**resin part 9**) is basically suspended by several struts from the turret ring as well as being supported from underneath. The kit is designed to have the seat face forward, but since it rotated 360°, you can modify the mounting ring slightly and pick your orientation.

Make a construction jig by temporarily gluing 1/4" supports under the turret base, then temporarily attach the base and the seat to a small flat base. Using **Figure 5**, cut lengths of 0.020" (0.5mm) diameter plastic rod or stretched sprue and glue between the small blocks on the seat and the blocks on the turret ring. There should also be short lengths of rod between the after turret ring blocks and the back of the seat edge, about halfway up the seat. Once all these braces are firmly glued in place, the temporary jig can be removed. Finally, for the ambitious, there is the attachment of the shoulder belts, the front halves of which are moulded to the seat. These pass through the loop at the top of the seat and join in a V about 10 inches behind the loop. The apex of the V is attached to yet another strut whose bottom end is attached to the turret ring. It is fiddly but possible to represent this with lead foil strip and plastic rod. The whole assembly is interior green, with grey belts. When this is fitted in the fuselage, the seat should just sit on top of slip ring modified earlier. If not, trim or shim as required.

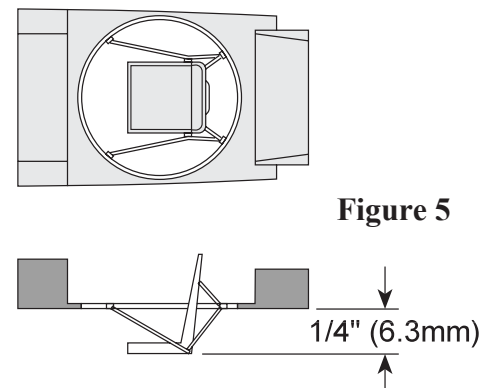


Figure 5

- g) On the shelf behind the Observer's seat is the location for the rear equipment rack (**resin part 10S**). Glue this in place. On the port side of this equipment rack is the location for the radar repeater (**resin part 11**). The radar repeater should point towards the Observer. The rack is interior green, with dark grey/black equipment.
- h) The vacuform greenhouse should be carefully trimmed and glued in place. Note that for the short greenhouse the small panel on the starboard side **ONLY** is clear (see **Figure 6**). Use the kit windscreen (part 67) and sliding pilot windows (parts 68L and R). The radio antenna (part 50) should fit the vacuform section with a little trimming on the bottom.
- i) There was a 5" flare / sonobuoy launcher tube installed in the blanked-off ventral gunners window. Use the length of 1/8" aluminum tubing supplied and drill a hole in **resin part 2** so that the tube points down at about 45 degrees.

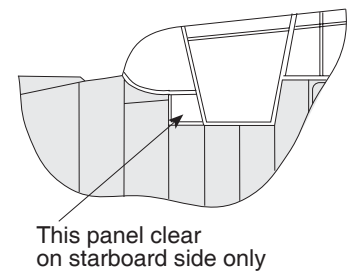


Figure 6

AS3 (Later Long Greenhouse)

Assembly is as for the early version with the following exceptions:

- The cut line for the greenhouse extension has the aft end cut at an angle as shown in **Figure 3**. To be safe, mark the corner as shown on the drawing but don't cut right to the lines. Instead, carefully cut out the vacuform piece and use it as an aid to cutting the fuselage.
- The small semi-circular extension at the end of the replacement turret base (**resin part 8**) should be filed off so that the shelf behind the Observer is flat. The gap behind this will be filled by the equipment rack.
- Use the alternate rear equipment rack (**resin part 10L**). The radar repeater (**resin part 11**) glues on top of the small box on the port side, again pointing towards the Observer.

AS3 Target Tug

Note: This kit does NOT include all the parts necessary to build an AS3 target tug. However, the flashy paint scheme with those yellow and black banded wing, stabilizers and nose are just too good to ignore. Therefore, I have included the serial number on the decal sheet and for those ambitious enough to try their hand at a little scratchbuilding, read on.

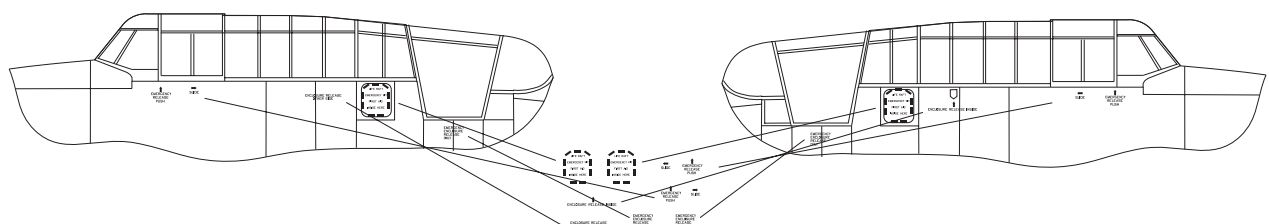
Photographs of the AS3 target tugs are relatively rare and unfortunately, none clearly show the towing winch. Rather than guess its shape and configuration, I have chosen not to supply the winch. It is likely similar to those units seen on Ansons, with a tapered strut sticking out from the fuselage, on which was mounted a wooden four-bladed propeller about 30" in diameter. The strut could be rotated so that the propeller points up to prevent it from windmilling in the slipstream. The photos do show that the sonobuoy launch tube in the blanked-off ventral gunners position was removed and the tow cable was run out through this area and that that oval side windows were removed and the holes covered with bulged rectangular plexiglass observation ports on both sides. These are provided on the vacuform sheet for those willing to cobble together a winch. Assembly is as for the **late** version with the following exceptions:

- Both oval windows in the side are covered with rectangular bulged observation ports. Do not install kit clear parts 72 and 75. When painting is completed, cut the two vacuform ports from the sheet, carefully sand the back faces to match the curve of the fuselage and glue in place.
- The ventral window replacement part (**resin part 2**) does **NOT** have the launch chute installed.

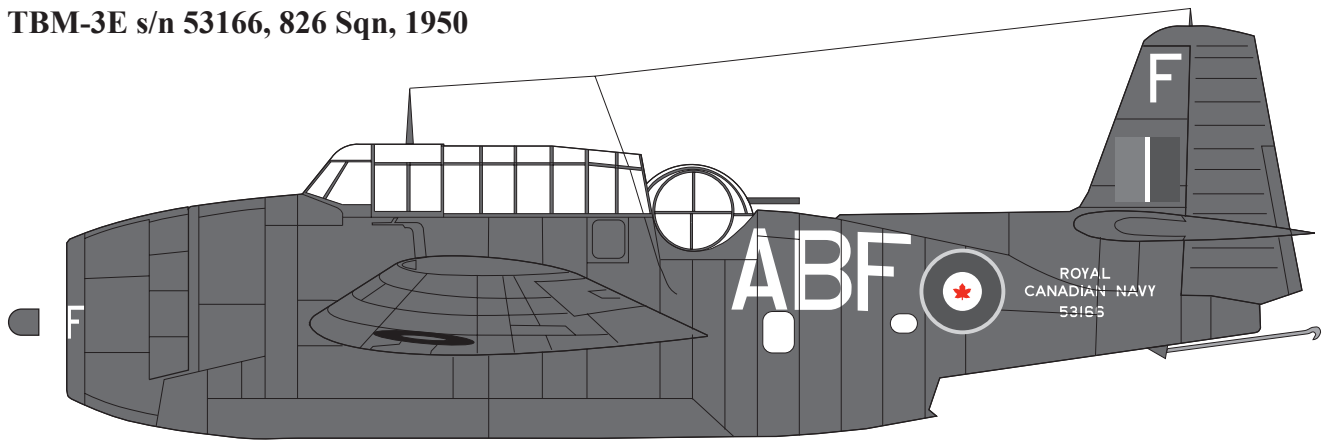
References:

The best reference, bar none, is "**The Grumman Avenger in the Royal Canadian Navy**" by Leo Pettipas (1988). Leo is a recognized authority on RCN Aviation and has written several other works on the RCN, listed below. I venture to say that if it isn't written by Leo, it's probably wrong. Most other Avenger references such as Squadron's "TBM Avenger in Action" invariably label the RCN Avenger as a TBM-3S ... not so. Other RCN Avenger references include **Canadian Naval Aviation 1945-1968** by Leo Pettipas (1986) and **Aircraft of the RCN** by Leo Pettipas (1988).

Stencil Location: Common to TBM and AS 3



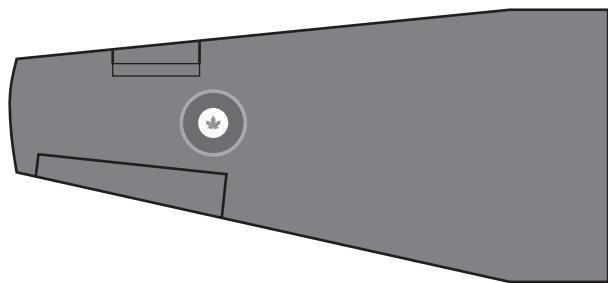
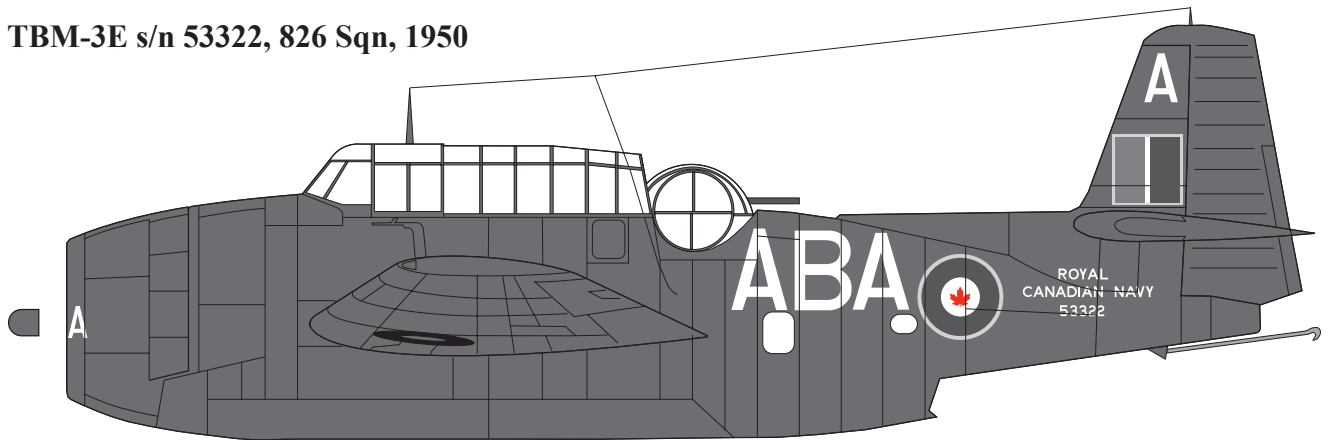
TBM-3E s/n 53166, 826 Sqn, 1950



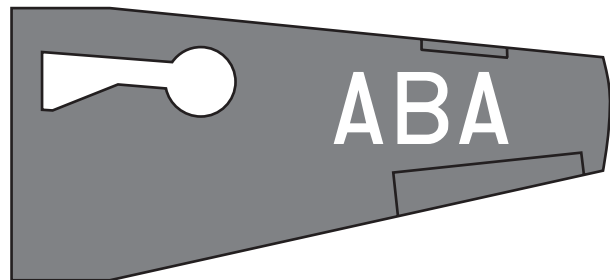
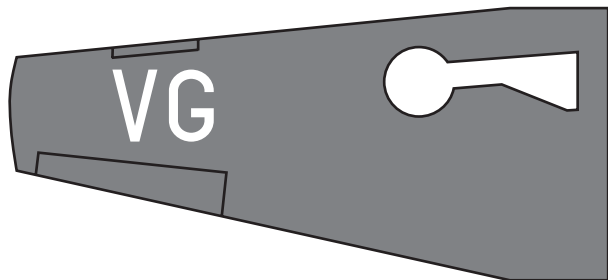
Above, one of the two variations on marking scheme for the TBM-3E in RCN service. This machine is overall Gloss Sea Blue (in fact, on some machines one can see where the US markings were painted out and RCN markings overpainted). Fuselage roundel was 30" diameter with a thin yellow ring. On this machine, the maple leaf in the centre of the roundel is differently shaped than standard RCN style. There was no border to the fin flash on the tail (flashes have red forward on both sides). Squadron code and aircraft number (ABA) in 30" white letters. Markings are symmetrical; ABA is forward of the roundel on the starboard side. Aircraft number repeated on the tail (18") and nose (12").

Below, the other variation. Identical to ABF above, except for the thin yellow border to the fin flash and the standard RCN leaf shape (although these were smaller than in a standard roundel).

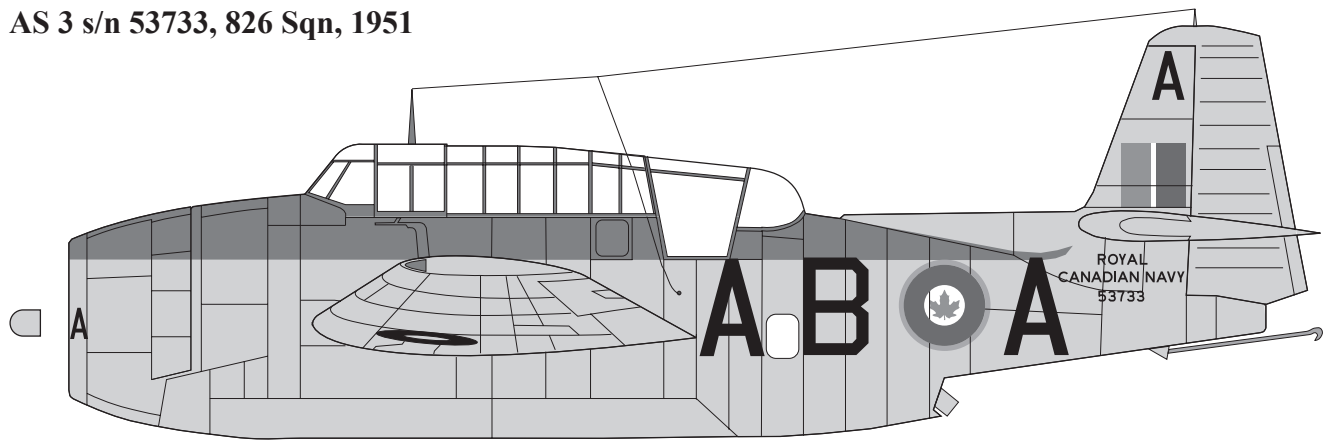
TBM-3E s/n 53322, 826 Sqn, 1950



Upper surface: 30" roundel with thicker yellow ring.
Under surfaces: 30" white letters, VG under starboard, ABA under port

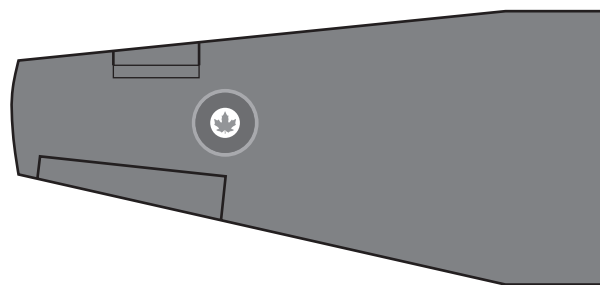
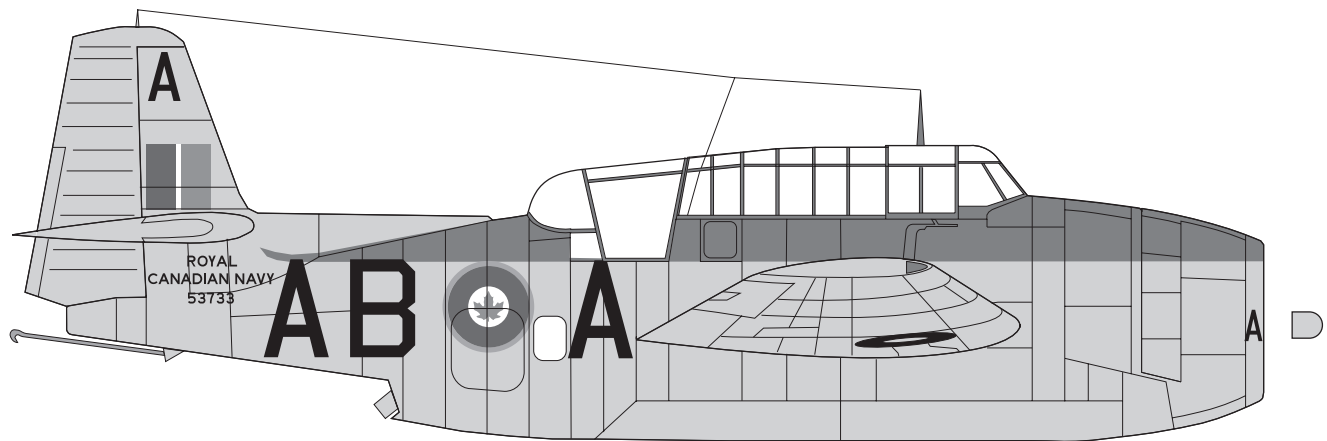


AS 3 s/n 53733, 826 Sqn, 1951



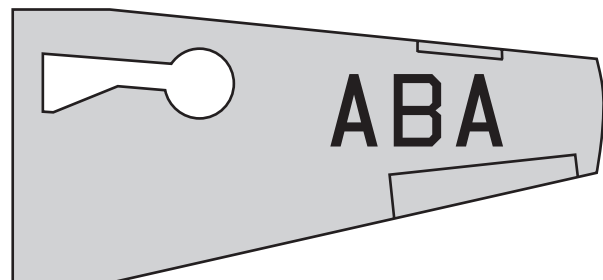
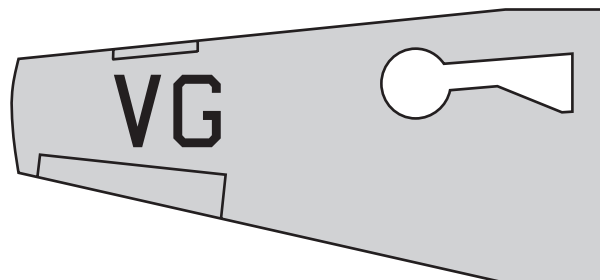
This represents one of the early short greenhouse versions of the AS3. Colours are dark grey 501-102 (similar to EDSG) over light grey 501-106 (similar to Sea Grey Medium). Fuselage roundels are 30" diameter with the larger RCN style leaf and thicker yellow ring. Squadron codes and aircraft number are 36" black letters. Aircraft numbers are repeated on the tail (18") and nose (12"). **Note: Due to an error, these smaller letters were left off the decal sheet. However, they should be easy to replace from other sources. Sorry.** The fin flash is 24" square. Starboard side markings are similar, but shifted so that only the aircraft number is forward of the roundel.

This scheme, as shown on 826 Sqn (later 881 Sqn) was also seen on 825 Sqn (later 880 Sqn) machines (code BD) and also by Training Air Group (TF).

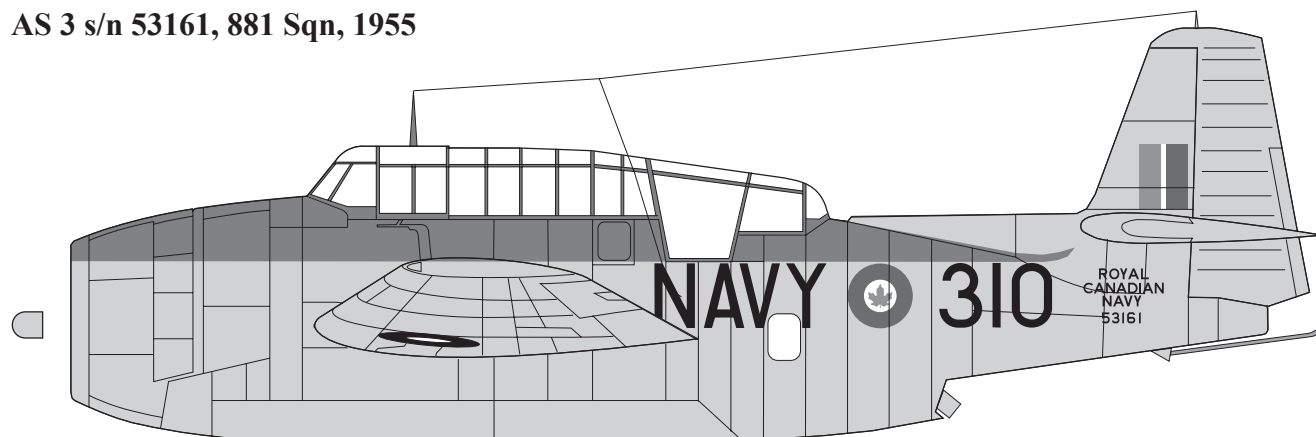


Upper surface: 30" roundel with thicker yellow ring, centred on inboard corner of aileron.

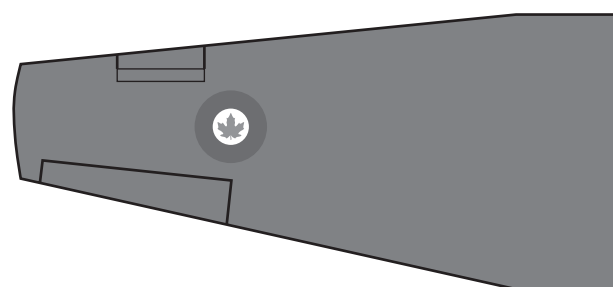
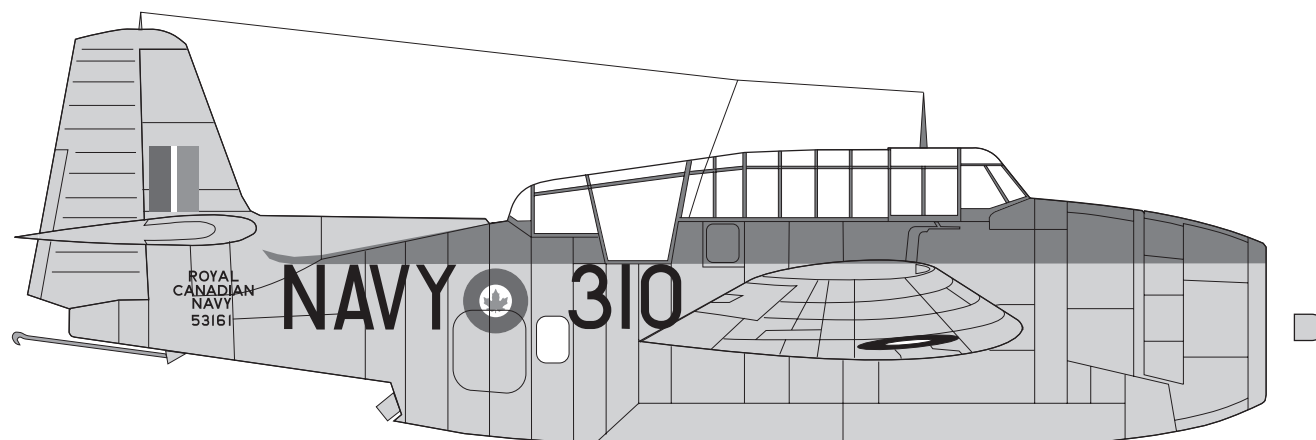
Under surfaces: 30" black letters, VG under starboard, ABA under port. Letters aligned with outer edge of slat.



AS 3 s/n 53161, 881 Sqn, 1955

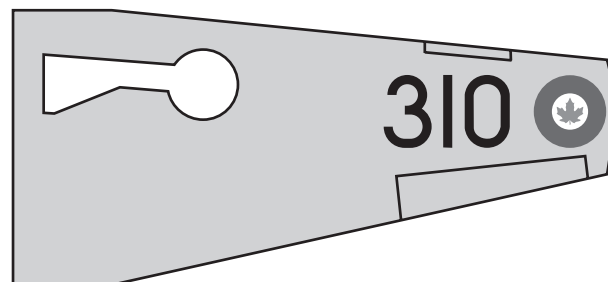
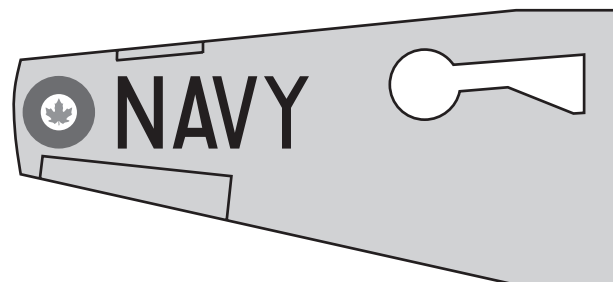


This represents a later long greenhouse version of the AS3. Colours are dark grey 501-102 (similar to EDSG) over light grey 501-106 (similar to Sea Grey Medium). Fuselage roundels are 24" diameter. NAVY and aircraft number are 24" black letters. Aircraft number was sometimes repeated under the nose or on both sides of the nose in 8" black numbers. The fin flash is 18" x 24". Starboard side markings are similar, but shifted so that the aircraft number is forward of the oval window.

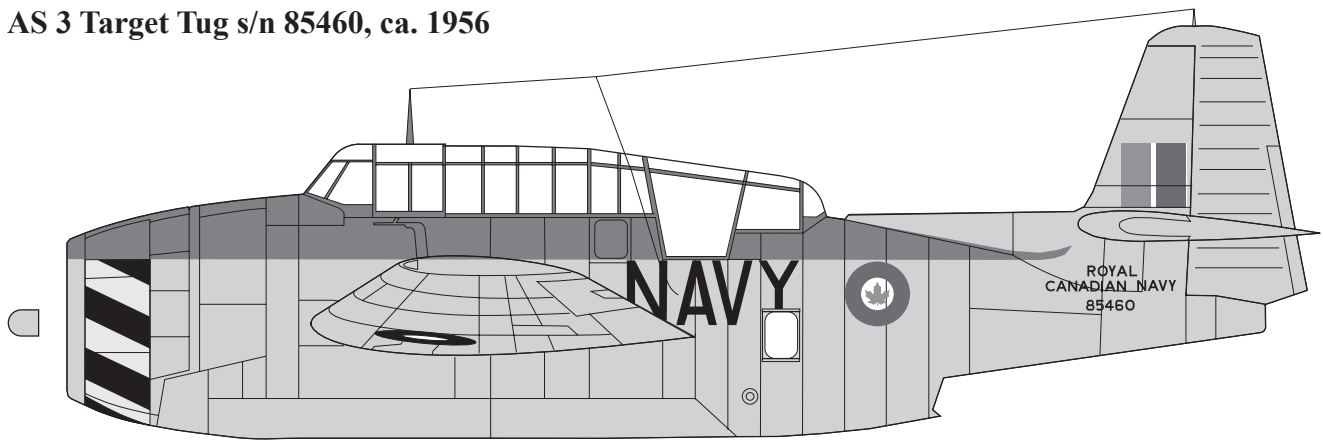


Upper surface: 36" roundel , centred on inboard corner of aileron.

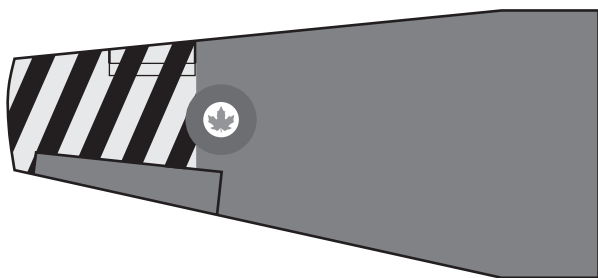
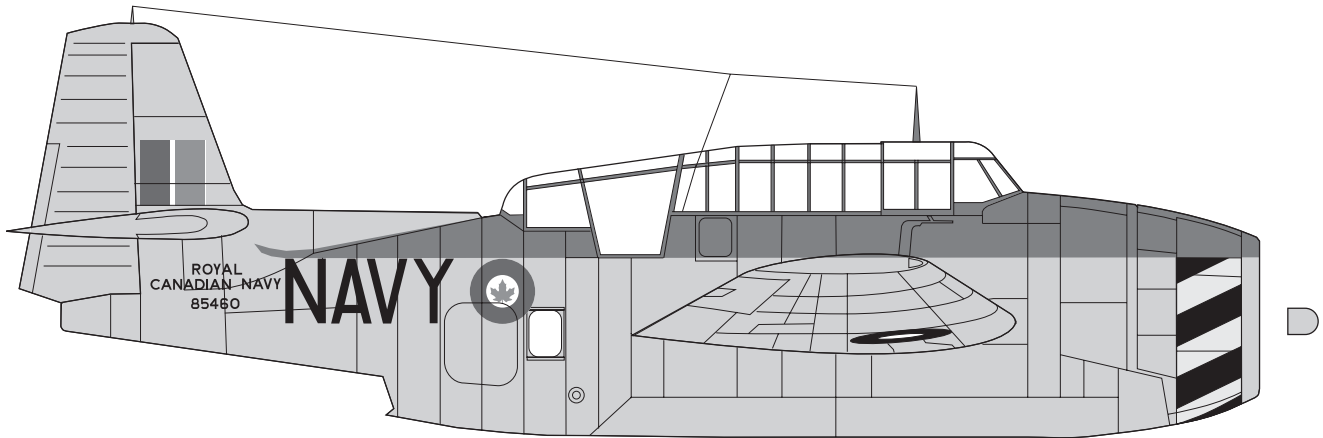
Under surfaces: 36" roundel at extreme ends both sides. 36" black letters, NAVY under starboard, 310 under port. Letters aligned with outer edge of slat.



AS 3 Target Tug s/n 85460, ca. 1956



Similar to the markings for a later long greenhouse version of the AS3. Colours are dark grey 501-102 (similar to EDSG) over light grey 501-106 (similar to Sea Grey Medium). Fuselage roundels are 24" diameter with NAVY in 24" black letters. The fin flash is 24" square, not the 18" x 24" normally seen on later machines. Yellow and black striped band over light grey area on nose. Wingtips and horizontal stabilizers also have yellow and black stripes.



Upper surface: 36" roundel , centred on inboard corner of aileron. Yellow and black stripes up to end of slat.

Under surfaces: 36" roundel at extreme ends both sides. .

