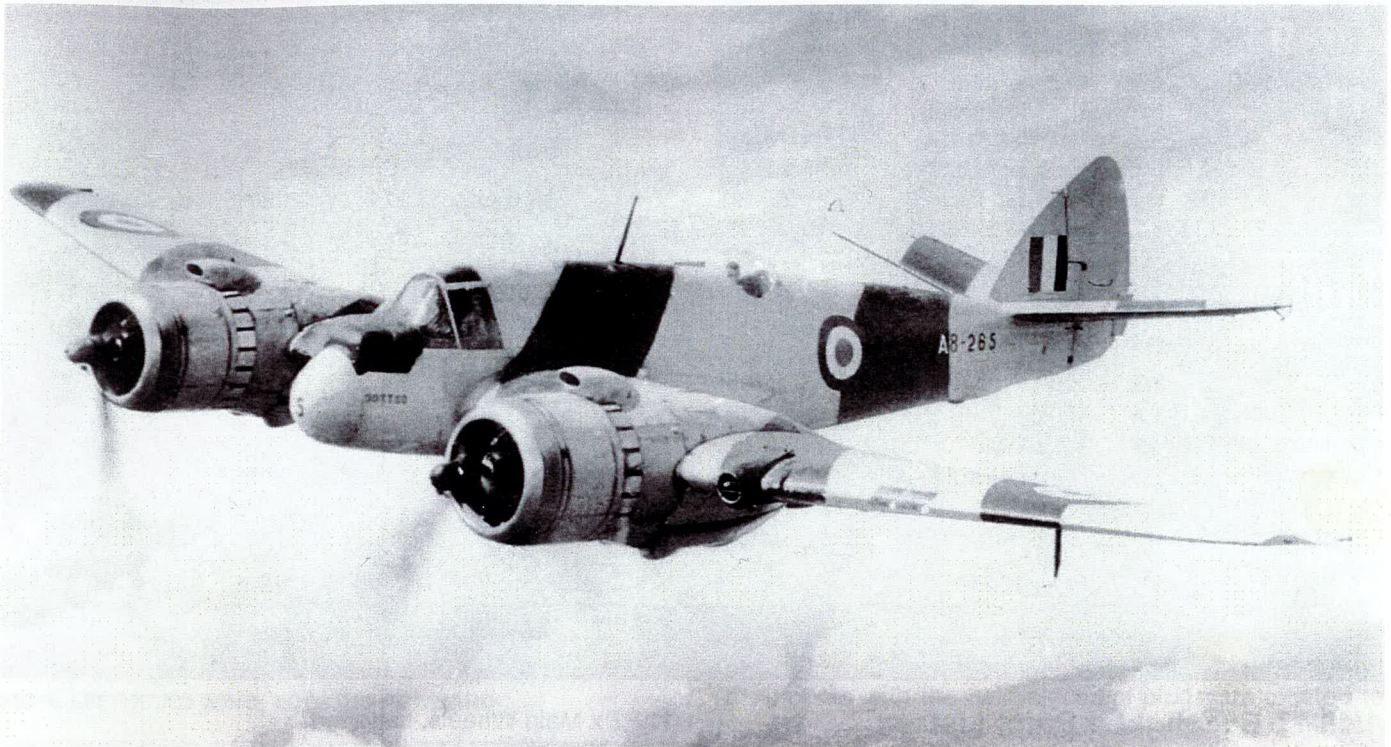


## 1/48 SCALE TARGET TOWING BEAUFIGHTER FOR THE TAMIYA MK VI KIT



### INTRODUCTION

With the introduction of faster fighter aircraft into the RAAF post World War Two, the need arose for more powerful and faster target towing aircraft to replace the obsolete Fairey Battles and Vultee Vengeances. In November 1945, Beaufighter A8-265 was converted to target towing configuration, followed over a period of years by 14 other new Mk.21 aircraft. These aircraft were operated by the 'Target Towing and Special Duties Flight' based at Richmond, (NSW). This flight was reformed as Number 30 (Target Towing) Squadron, based initially at Richmond, then Canberra (ACT), before returning to Richmond where it was disbanded on 21 March 1956. The Squadron's Beaufighters were used to tow winged targets, banners and drogues for air to air and ground to air live firing.

This conversion is designed for the 1/72 scale Hasegawa Beaufighter Mk.21 kit. Apart from the installation of this conversion there are other notes pertaining to the kit assembly which are essential to the accuracy of the finished model included in this instruction booklet.

Study all the steps and notes before commencing, so that you are familiar with all the details, as some steps have to be completed prior to assembly or specifically after assembly as described.

It is assumed that you have various modelling tools at your disposal. Access to a digital vernier caliper for accurate measurement is vital; the dual Imperial/Metric type is recommended. Both measuring systems are used in this instruction depending upon which system of measurement provides the most accurate measurement. Because of this, there may be more significant figures than are needed for accurate measurement. Full size templates are provided as an alternative where possible. Refer to the Beaufighter Mk 21 station drawing included in this instruction.

#### References:

Beaufighters in the Pacific, Neville Parnell, self published, 2005, Canberra, Australia. ISBN 0-646-44316-X

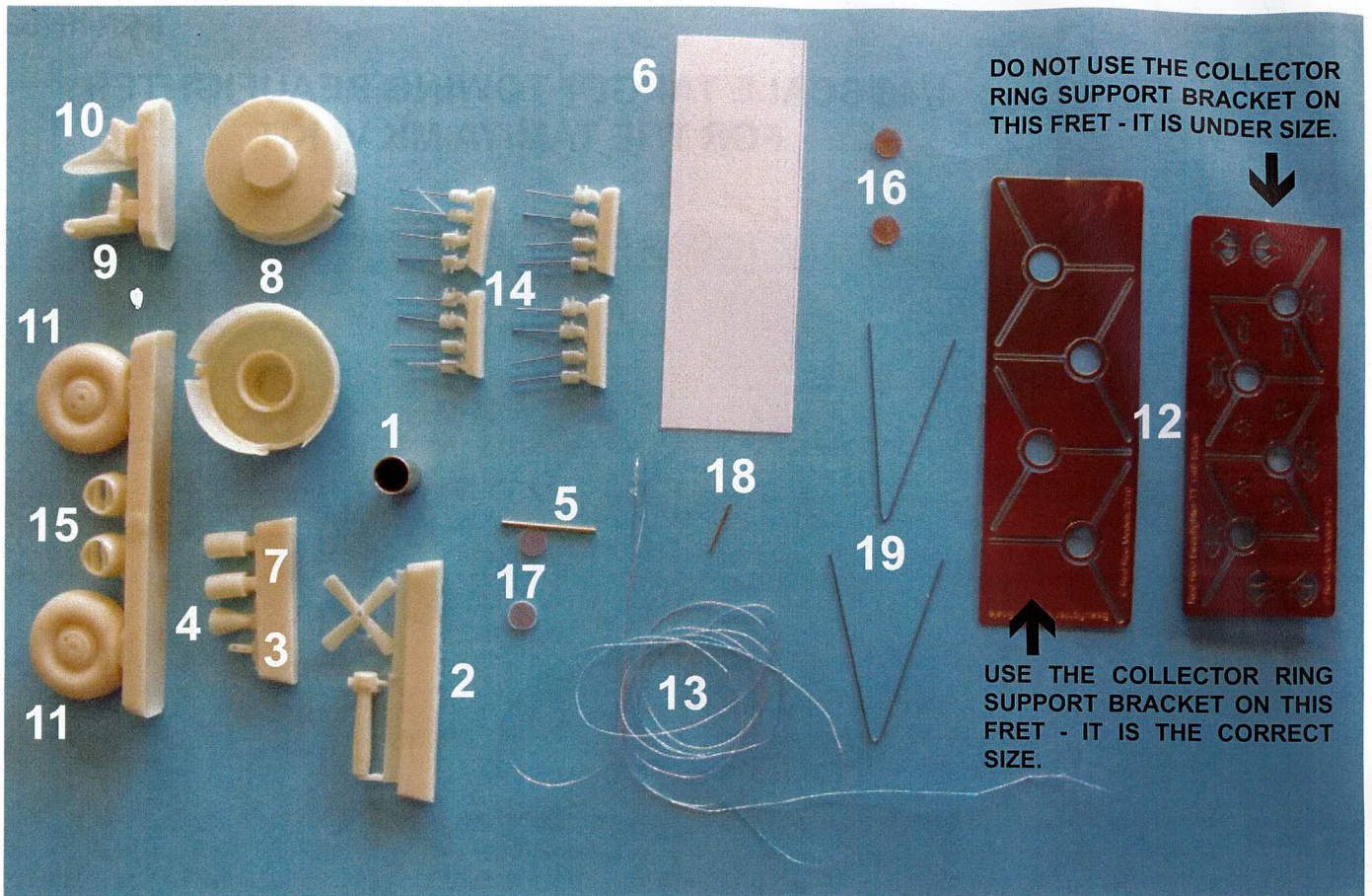
Beaufort, Beaufighter and Mosquito in Australian Service, Stewart Wilson, Aerospace Publications, Western Creek, Australia, 1990. ISBN 0 9587978-4 6

The Australian Beaufighter Mk 21 Descriptive Manual, RAAF Publication No. 615 January, 1945.

The Bristol Beaufighter – A Comprehensive Guide for the Modeller, Richard A. Franks, SAM Publications, 2002, Bedford, United Kingdom. ISBN 0 9533465 5 2

RAAF Directorate of Technical Services Drawing E10492 for Beaufighter Target Tug Conversion





DO NOT USE THE COLLECTOR RING SUPPORT BRACKET ON THIS FRET - IT IS UNDER SIZE.

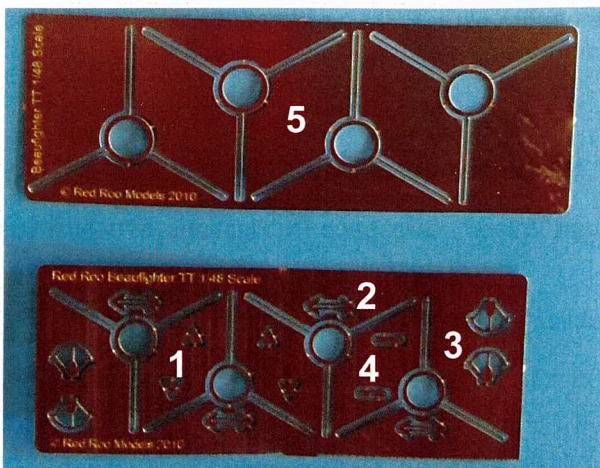
USE THE COLLECTOR RING SUPPORT BRACKET ON THIS FRET - IT IS THE CORRECT SIZE.

### 1/48 TT Beaufighter Parts List:

1. 1 x Target Chute, brass tube
2. 1 x Target Towing Winch and Windmill, resin casting
3. 1 x Target Towing Pulley Bracket, resin casting
4. 1 x Target Towing Pulley Fairing, resin casting
5. 1 x Target Towing Pulley Mast, brass wire 0.03 in x 3/4in
6. 1 x Piece 0.005in plastic card 1in x 3 1/4in
7. 2 x Short Exhaust Pipes, resin casting
8. 2 x Cowl Flap Assembly, resin casting
9. 1 x Pilot's Seat, resin casting
10. 1 x Observer's Seat, resin casting
11. 2 x Main Wheels, flattened
12. 1 x PE brass fret, containing four parts for tailplane, two for fin and 1 for fuselage
13. 1 x 42in metallic thread tow cable and empennage guard
14. 16 x Rocket Mounts, four left and right hand front and four left and right hand rear
15. 2 x Oil Cooler fairings
16. 2 x Oil Cooler circular mesh
17. 2 x Plastic card backing disks (for mesh)
18. 1 x Brass wire 0.020in x 1/2in (for wingtip rear facing resin position lights)
19. 2 V-shaped 0.015in wire (for oil cooler, lower cable bracket stud and IFF antenna)

### 1/48 TT Beaufighter PE Fret Parts:

1. E1 Fin Reinforcement Plate.
  2. E2 Tailplane Reinforcing Plate.
  3. E3 Cable Guard Support.
  4. E4 Cable Support Lug.
  5. E5 Collector Ring Support Bracket.
- NB: Spares have been provided on this fret in case of mishaps!





## STEP 1 – INSTALLATION OF THE WING ROCKET MOUNTS

Note - No rocket mounts on A8-265.

A. Blank off the two sets of outer gun apertures on the right hand wing leading edge and the two pairs of outer shell holes in the lower right hand wing. Refer to the photographs which show the different positions of the two sets of apertures for the 0.50in machine gun shell ejection openings if you desire to correct the kit items on both sides (see Figs 1 and 2). Back up the holes with a



FIG 1. LEFT HAND WING, LOOKING FORWARD



FIG 2. RIGHT HAND WING, LOOKING FORWARD

piece of 0.005in plastic card before filling or use scrap plastic card to fill the holes.

As the two guns are not mounted in line, there is a longer barrel protrusion forward of the wing leading edge for the inner gun (see Fig 3). Not all the TT aircraft had the guns fitted – check the colour scheme drawing. A square of aircraft fabric was doped in place over the hole in the wing leading edge and painted to match the surrounding colour when the guns were removed. This fabric when doped taut had a scalloped effect in the hole.

Note: the kit supplied rocket rails and mounting plates (parts number A11 and A12) are **not** applicable to the DAP Mk 21 Target Towing version.

B. Using Template A mark the location holes for the

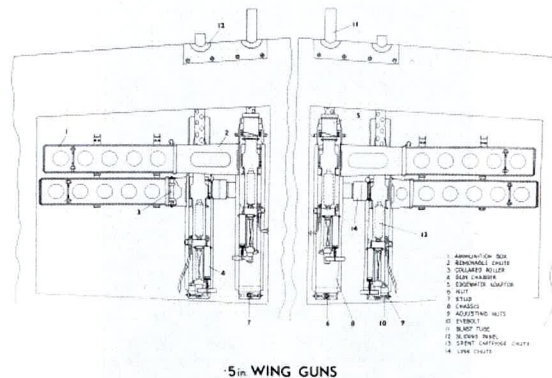


FIG 3. GUN BARREL PROTRUSIONS FORWARD OF LEADING EDGE.

rocket mounts. Locate the template on the lower left wing aligning its edge with the front spar line and the inner end of the outer wing. Mark the eight location points through the template with a pointed tool and drill the holes to the same diameter as the wire locators on the mounts. Reverse the template and repeat these operations on the other wing using a Number 78 drill/0.016in hole.

C. When installing these mounts, note the five degree angle on the top, as the mounts hang vertically from the wing undersurface. The wires in the mounts require the lower forward end trimmed level with the mount and the upper locating end cut to suit the space inside the wing. The mounts with the twin electrical plugs are located to the rear (see Figs 4, 5 and 6). Use a straight edge (eg steel ruler or square) to keep each pair of mounts aligned fore and aft when gluing them in place. Note: the mounts are painted the same colour as the surrounding area of the wing, ie yellow or black.

## STEP 2 – INSTALLATION OF EMPENNAGE TOWING CABLE GUARD

Refer to Fig 7, which shows the empennage Towing Cable Guard.

A. Place template B on one side of the fin and mark the point indicated by X. Drill through the fin with a 0.016in (No. 78) drill. Glue a reinforcement triangle (PE part E1) onto the fin on each side using the shank of the drill to keep the holes aligned. Note the alignment of the triangle to the fin trailing edge as per Fig 7. Note: do not use super glue for this operation as you risk gluing the drill in place through the fin. Use Gator's Grip glue so you can carefully



FIG 4. FRONT ROCKET PYLON



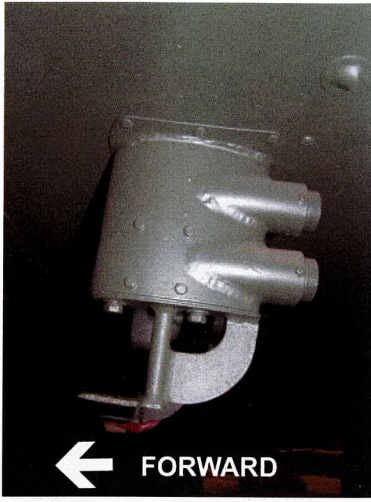


FIG 5. REAR ROCKET PYLON

withdraw the drill bit once the glue begins to cure.

- B. Draw a straight line from the outer point of each tailplane parallel to its trailing edge (see Fig 8).
- C. Mark the centre of the etched reinforcing plate (PE part E2) and gently fold it around the end of the tail plane keeping the ends level until it matches the contour, with the pencil line visible in the slot.
- D. Use the fine razor saw on the edge of the fret to cut a slot in the tip of the tailplane the same distance as the slot in the arrowhead plate (part E2).
- E. Check that the cable guard (PE part E3) fits into the tip so that the inner end of the centre bar is level with the outer edge. The edges of the guard mounting should be just proud of the reinforcing plate (E2).



FIG 6. ROCKET MOUNTS - RIGHT WING

- F. Once satisfied that everything fits neatly, glue parts E2 into position, using the shank of the saw blade in the slot to keep the plates aligned. Note: do not install the cable guard (E3) at this time; wait until the model is finished and final rigging takes place in order to prevent damage.
- G. When the fuselage is assembled mark and drill a 0.016in (No. 78) drill on the underneath centre line, exactly 9mm forward of the rear end of the fuselage (not the rudder). Glue a length of 0.015in wire in this hole to provide an anchor point for the lower cable connector lug (etched part E4). Glue the lug in place at right angles to the centre line using this wire to locate the centre. When dry, smooth down the joint.
- H. Continue with the assembly of the model in the normal manner as indicated in the kit instructions and after painting the model and applying the decals continue

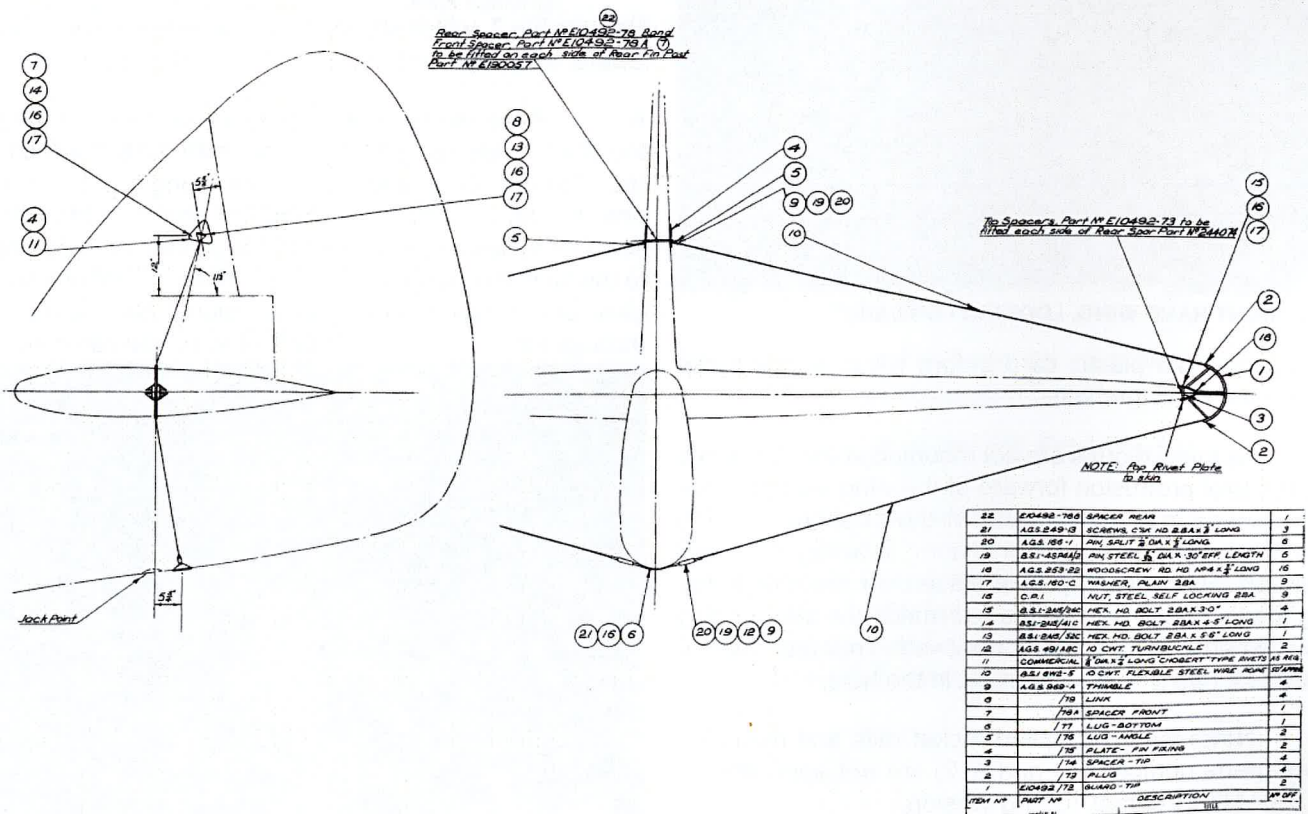
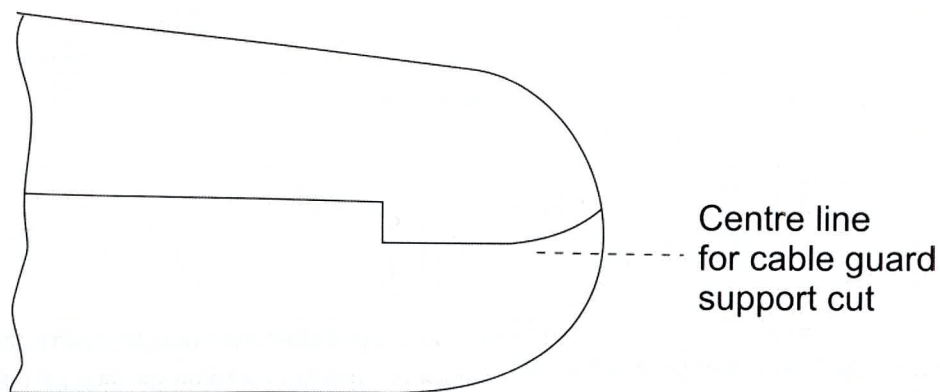


FIG 7. CABLE GUARD RIGGING DIAGRAM (ABOVE)





**FIG 8. TAILPLANE CABLE GUARD CENTRE LINE**

with Step I. Glue the cable guard supports E3 into position in the tailplane tips and complete parts I and J.

I. Having applied the fin flashes and pierced the decal over the holes in the centre of the triangular reinforcing plate, dip one end of the 13in length of metallic thread in some liquid super glue to stiffen it so it can be threaded through the hole in the fin. Centralise this length, then apply a small drop of super glue in the notch in the centre of the outer edge of part E3 on one side and tack the thread in place. When dry apply a coat of PVA glue, such as Gator's Grip, to the outer edge. Wait until the glue is tacky and then dress the thread around the edge. Additional coats can be applied when the previous one is dry to seal and secure the thread around the curved edge. Tension the thread and apply a small drop of super glue to either side of the hole in the fin to secure it. Repeat this procedure to secure the thread to part E3 on the opposite tailplane. Once satisfied that the upper section of the thread is secured, thread the lower ends through the appropriate holes in the lower lug E4. Double the line back, tension it and secure it with super glue to itself to form the tensioning turnbuckle. When dry trim off the surplus thread.

J. Touch up the paintwork on E3. Note: the upper half is painted Aluminium (Yellow for A8-265 and -359) and the lower half is Black.

### STEP 3 – INSTALLATION OF THE WINCH

A. Before commencing work on the fuselage identify the first vertical line on the right hand side of the right hand side aft of the wing trailing edge and make a pencil line (line A) vertically 0.161in (4.09mm) aft. Draw a horizontal line (line B) 0.392in (9.96mm) below the horizontal panel line to create a cross as shown in Fig 9. Glue an additional thickness of plastic card of a suitable size on the inside of the fuselage and deepen the hole so as to provide extra support.

B. Drill a hole of a smaller diameter than the shaft of the winch through the fuselage at this point.

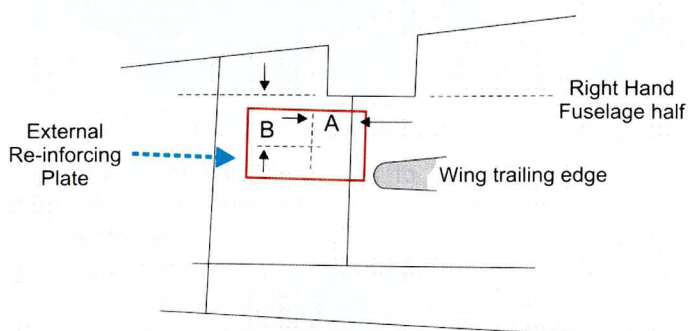
C. Cut an oblong of 0.005in plastic card for the fuselage external reinforcing plate 0.866in x 0.59in (22mm x 15mm). Locate its centre by drawing diagonal lines from corner to corner and drill a hole using the same drill bit as

for step B.

D. Glue this plate on the outside of the fuselage with super glue or PVA glue as shown in Fig 9. Use the shank of the drill to make sure the holes are aligned.

E. When the glue is dry carefully enlarge the hole until the inner end of the winch body is a neat fit.

Note: Do not install the winch until after the model is assembled and painted.



**FIG 9. LOCATING THE HOLE FOR THE WINCH SHAFT AND POSITIONING THE REINFORCING PLATE**

F. Paint the winch body Dull Aluminium and windmill a suitable varnished wood colour.

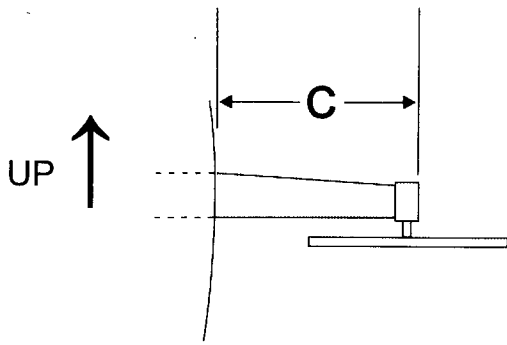
G. Glue the winch body in place, noting that the outside length (C) is 0.5905in (15mm) and add the windmill (see Fig 10). Note: when not in use the windmill is turned out of the airflow and faces horizontally down, especially when the aircraft is on the ground.

### STEP 4 – INSTALLATION OF THE TARGET DROGUE CHUTE

Refer to Fig 11.

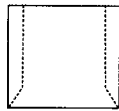
A. The rear entrance hatch, part A6, requires the handle recess to be filled in and the oblong and round raised sections at the aft end sanded flush. Remove the two hinges as this section is now fixed. Do not cut in half as per kit Step 3. Draw a centre line and a cross line 0.51in (13mm) from the forward end – see drawing in Fig 11. Drill a hole 1/4in in diameter at this point and then carefully enlarge it until the 9/32in diameter brass tube is a neat fit. Make sure the hole is central. Note: for reference, the





**FIG 10. POSITIONING THE WINCH SHAFT IN RELATION TO THE FUSELAGE SKIN**

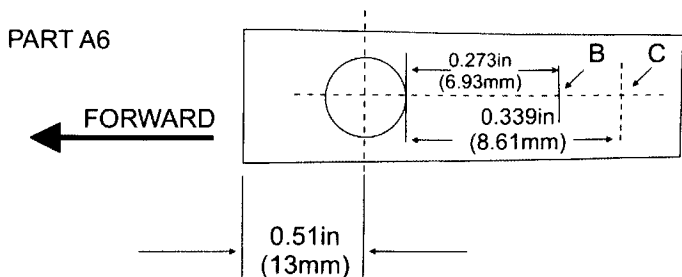
centre line of this hole is in line with the aft end of the wing fillet. Place this part into the recess in the fuselage halves A4 and A18, then using this hole as a guide carefully drill through the fuselage underneath, but not through the floor (A16). To facilitate gluing part A6 flush with the fuselage without needing filler, glue a square of 0.005in plastic card over the bottom of the rear entrance hatch oblong in the floor (A16). This will support the aft edge of A6. Trim the hinge support in the fuselage to achieve a flush fit. Then glue a thick piece of plastic card strip down the inside centre of this hatch to provide a support for the pulley mast (see Fig 11 - hole B).



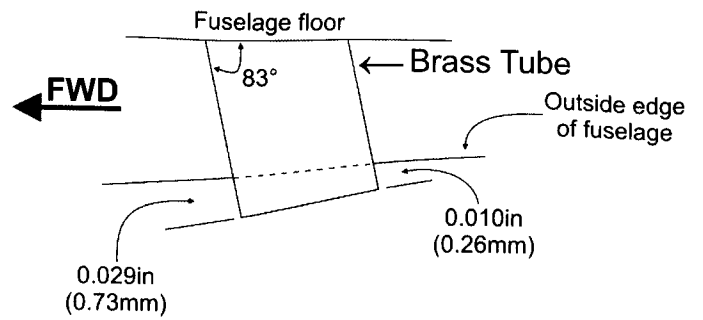
**FIG 13. DRAWING ABOVE SHOWS THE CHAMFER REQUIRED**

B. File one end of the brass tube to an angle of 83° as shown in Fig 12 so that this end of the tube butts against the bottom of the floor (A16). The other end protrudes outside the fuselage at an angle pointing aft. Use the shank of a 1/4in drill inside the tube as a handle when filing. Carry out dry fit checks and adjust the length until the tube extends outside the fuselage as shown in Fig 12. Clean and de-burr the tube. Note: the lower end of the tube is at 90° to its length. As these dimensions are minute, create a template by tracing or cutting out and pasting Template C on a piece of card. Use this card to locate the target chute tube at the correct angle and extension. Chamfer the inside of the bottom of the brass tube to create a thinner wall end as shown in Fig 13.

C. After fuselage assembly, including part A6, glue the target chute to the floor using the template against the fuselage and seal any gaps around its outer edge with liquid filler.



**FIG 11. POSITIONING THE TARGET CHUTE (1)**



**FIG 12. POSITIONING THE TARGET CHUTE (2)  
STEP 5 – INSTALLATION OF PULLEY MAST**

- A. Ensure that a thick strap of plastic is glued down the inside centre of the rear entrance hatch of part A6 (see Step 4, paragraph A).
- B. Measure 0.273in (6.93mm) aft of the target chute hole rear edge and mark on the centre line. Drill a hole using a 0.031in (No 68) drill at this point vertically up through A6 into the reinforcing strip.
- C. Measure 0.339in (8.61mm) aft of the target chute hole rear edge and mark on the centre line. Drill a hole using a 0.031in (No 68) drill at this point vertically up through A6 into the reinforcing strip. Refer to Fig 11 or use template D.
- D. Glue the pulley support to the 0.030in brass wire mast and install it in hole B so it just fits inside the pulley fairing. Hole C is for the rest of the towing cable which goes around the pulley and aft (refer to Fig 14 for concept visualisation).
- F. Paint the mast and pulley assembly Aluminium. Glue one end of the metallic thread into hole C, the exit hole for the towing cable and thread it through the aft hole of the pulley support and trail it aft.

#### STEP 6 – INSTALLATION OF PULLEY FAIRING

A. Glue the Pulley Fairing onto a section of 0.005in plastic sheet. Trim the outer edge parallel to the fairing to create a flange approximately 0.015in (0.4mm) wide. Seal the joint with liquid filler to form a smooth joint. Trim the inside of the sheet so that the fairing is a neat fit onto the fuselage over the pulley mast.

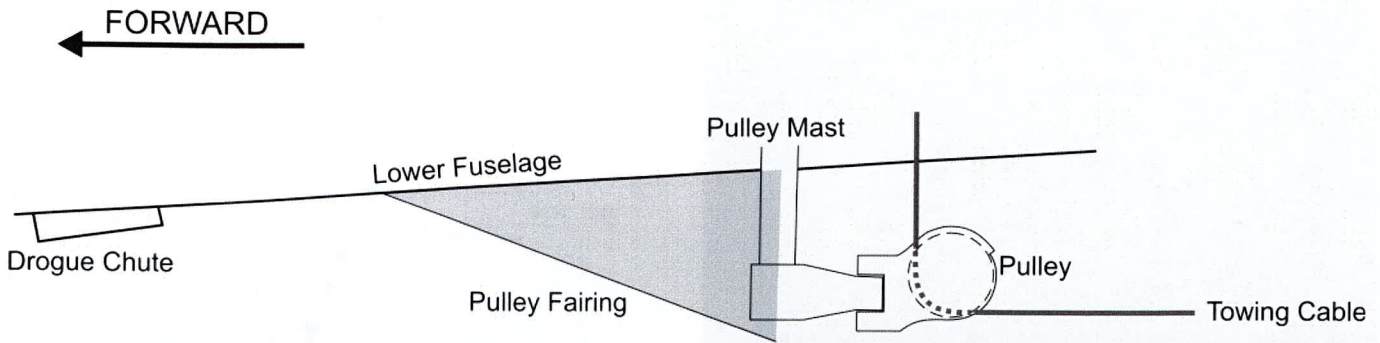
B. Glue the fairing into position on the centre line of part A6 so that the centre aft edge is just covers the mast.

#### STEP 7 – MISCELLANEOUS PARTS

A. Fit new straight exhaust pipes in place of kit parts. The nose portion of the engine cowl (D27) is the exhaust collector and is made of stainless steel and is a dull stainless steel colour, unless fitted with its shroud (refer to General Modifications section).

B. Fit the open cowl flaps in place of the kit parts. The colour of the cowl flaps depended on any engine changes after initial painting. The standard colour demarcation meant that the lower half was Trainer Yellow, however, some engines had anodised (a dull grey/Aluminium





**FIG 14. PULLEY MAST AND SUPPORT INSTALLATION**

colour) cowl flaps with satin black guides for the full diameter. Refer to your chosen subject drawing and the general colour notes.

C. Fit the pilot's and observer's seats after having detailed and painted the cockpit to your requirements.

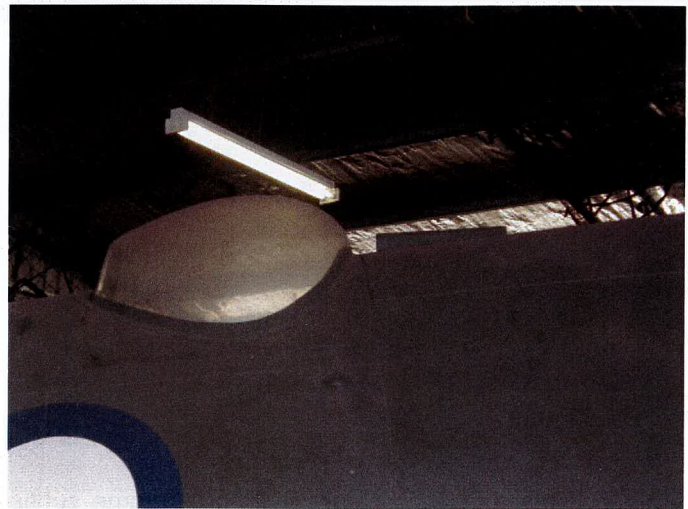
D. Make and fit the external stiffener to the centre line of the top of the fuselage ahead of the observer's Perspex fairing (refer to Figs 15 and 16). This stiffener is easily made from 0.040in thick scrap plastic and is slightly rounded on top.

**STEP 8 – GENERAL MODIFICATIONS REQUIRED FOR THIS CONVERSION**

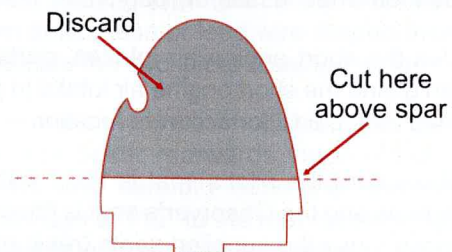
The modifications outlined in this step are required to make the Tamiya kit represent a DAP Mk 21 TT Beaufighter or a standard Mk 21 Beaufighter and are listed in no particular order. Often these modifications can be undertaken while waiting for major sub-assemblies to dry. All of these modifications should be completed before the delicate PE parts and metalised line needed for the tail plane cable guards are fitted as they involve considerable handling of the model.

A. Part A2, the cockpit armour plate bulkhead and doors. Cut off the upper section of the armour plate and doors above the main spar and discard (see Fig 17). Cut off the two cannon ammunition boxes on part A16 between A2 and A17 and blank off the resulting holes for the Beaufighter Mk 21 TT only. Note that the interior colour of the DAP Beaufighters was RAF Grey-Green BS283 (FS 34226).

B. Install the rear wing transparencies, parts E2 and E3. Fill and sand smooth any gaps or seams. DAP Mk 21 Beaufighters did not have these fitted, instead having small tubular resin position lights extending rearward from the



**FIG 16. THE EXTERNAL STIFFENER**



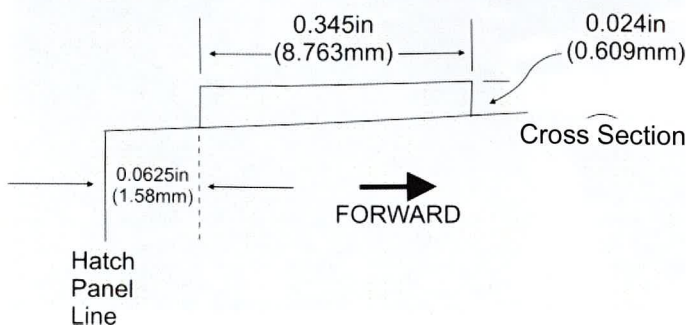
**FIG 17. COCKPIT BULKHEAD MODIFICATIONS**

trailing edge of the wingtip (see Fig 18). Use a razor saw to cut a slot in both wing tips in line with the inboard edge of the aft transparency. Cut a length of 0.020in brass wire and round the end with sand paper before gluing them in place to represent these resin lights. Fill any imperfections and sand smooth to blend with the wing surfaces. Trim so that a scale 3ins or 1.6mm protrudes aft. Cover with small pieces of masking tape until you are ready to paint the model, thereby avoiding jaggng the brass wires on clothing, children, wives, pets and yourself.

C. Do not use the ADF loop and fairing parts; A24, A25 and E7 for the Beaufighter Mk 21 TT.

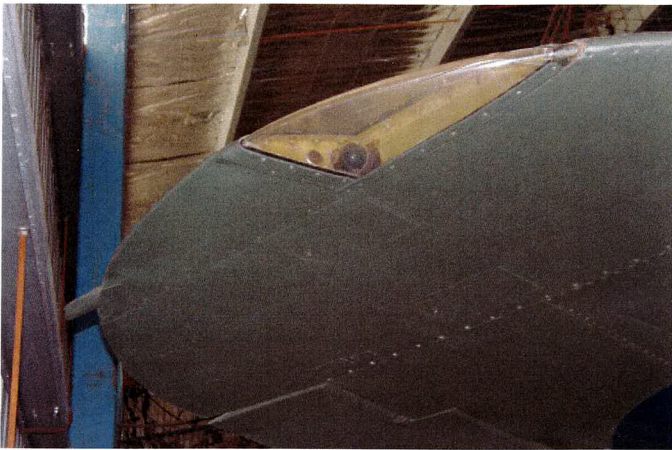
D. Do not open holes in the lower wing halves, B2 and B3 (refer to Step 1) for the Beaufighter Mk 21 TT.

E. Clean up and paint the inside edges of the wing front outer corners, where the transparencies representing the navigation lights are to be fitted and paint Yellow Zinc Chromate (see Figs 19 and 20). Drill a small hole in the rear edge of parts E3 and E4. Paint the interior of the hole:



**FIG 15. DIMENSIONS FOR THE EXTERNAL STIFFENER**





**FIG 18. THE REARWARD FACING RESIN LIGHT FITTED TO THE WING TIP AND RIGHT HAND NAVIGATION LIGHT**

RED on the left hand side part and GREEN on the right hand side part to represent the navigation lights (refer to Fig 18 and 19).

F. Fill in the four gun apertures in the nose, and the four shell holes in the lower wing part B1. A slight depression in the apertures will be acceptable as these were faired over with doped fabric strips. Note Mk 21 Beaufighters did not have the outer two guns in the right wing, so fill and sand the leading edge holes to conform to the wing contour. Refer to Fig 3.

G. Fit and fair in part A13 (Autopilot Cover) to the fuselage nose top in front of the windscreen (refer to Fig 19). Note that the kit part will require some subtle modification to reflect the correct shape of the fairing.

H. Use tail wheel assembly part A7.

I. Use the short engine air intakes, parts D18 and D19. When gluing the short engine air intake in place, use the cowl flap as a guide for accurate location.

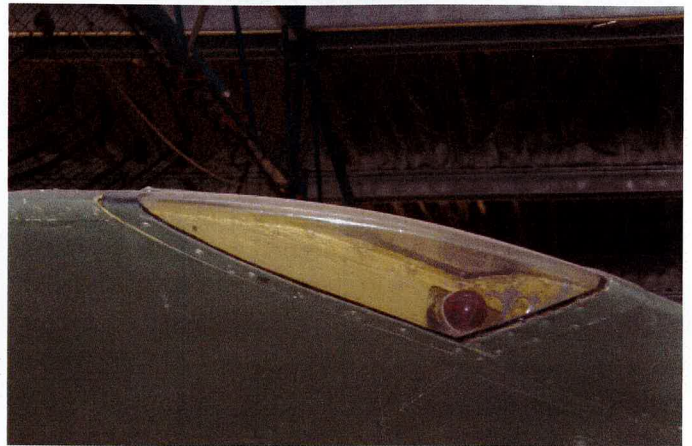
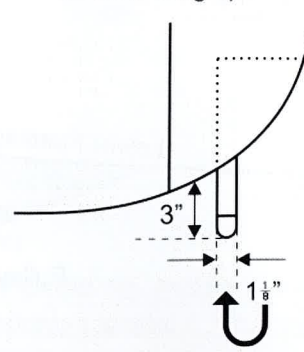
J. Make sure the pilot's seat is fitted with a British Sutton Harness and the Observer's seat is fitted with a lap strap harness – use the supplied seats (resin parts 9 and 10). The colour of these harnesses was Buff Linen.

K. The Beaufighter had three identification lights that were five inches in diameter fitted under the rear fuselage. Carefully countersink three holes 0.10in (2.6mm) in diameter in the engraved circles in the kit fuselage – add the forward one as per Fig 20. Make sure you avoid drilling through the fuselage. When the model has received its overall paint scheme paint these three holes as follows: RED (front), GREEN (centre) and YELLOW (rear). Once the paint has dried fill the holes with either gloss clear varnish or Kristal Kleer.

L. Paint the mast of the part A26 to match the under surface colour (Trainer Yellow) and the Pitot Head a Dull Bronze colour.

M. The engine nose exhaust collector ring was supported internally by three rods (painted Black, use etched part E5) attached to the front of the engine gear housing and the rear of the collector at the one, five and nine o'clock positions (see Fig 21 and 22). The collector ring and exhaust pipe shroud on the side cowl were a dull stainless steel colour, not burnt iron, copper or

Wing tip resin lights -  
on both wing tips

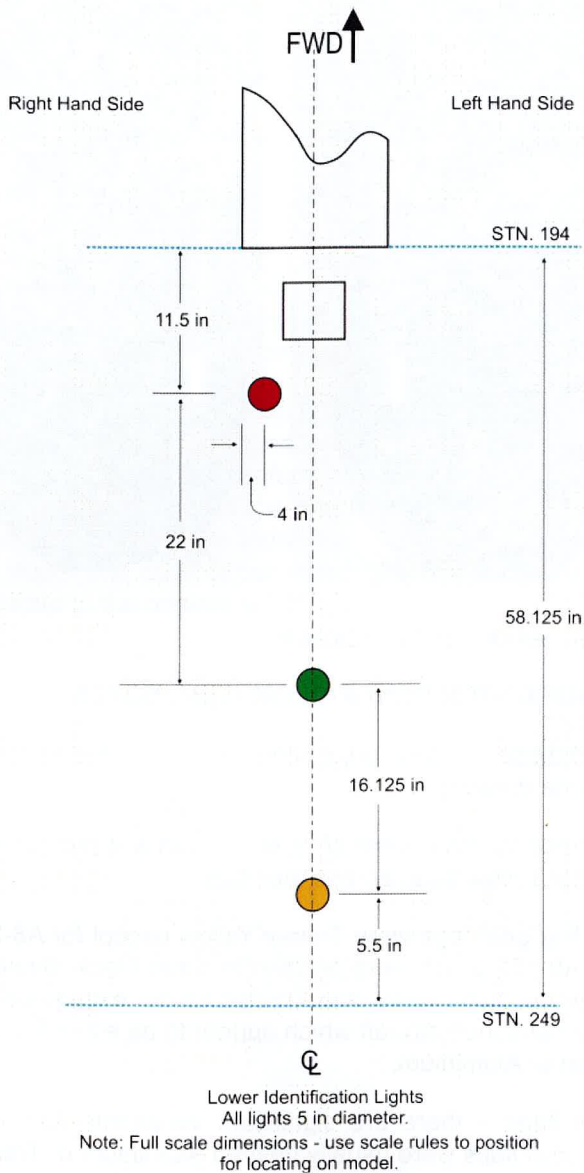


**FIG 19. THE RED LEFT HAND NAVIGATION LIGHT**



**FIG 19. THE AUTOPILOT COVER FAIRING ON THE DAP MK 21**





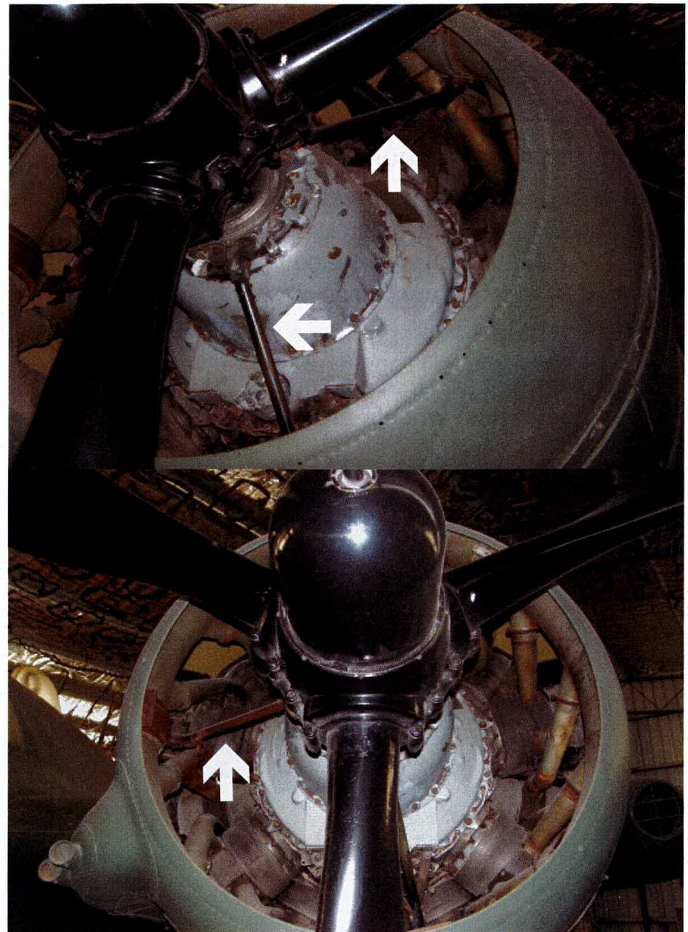
**FIG 20. IDENTIFICATION LIGHTS ON THE DAP MK 21**

bronze as often suggested. Note: some Beaufighters had a heat deflector shroud over the nose of the exhaust collector. This appears on A8-265 and it may be Trainer Yellow, albeit probably heat affected - your choice! Due to the neat modular design of the engines in this kit it is recommended that the engine (D7), cowling (D27) and replacement cowl flaps all be painted as separate parts and fitted after the model is painted. This will enable easy and accurate masking, especially of the nose exhaust collector ring, etc.

As part of this procedure position the pre-painted etched part E5 onto the engine nose gear box, and adjust the angle and length of each leg so that it is attached to the rear of the collector ring. When satisfactory glue into place maintaining the rods as the one, five and nine o'clock positions as viewed from the front.

Refer to the colour profiles for the various colour demarcations in particular the cowl flaps and the separating fingers.

N. Do not use the flame damper exhausts; use the short pipe exhaust as supplied in the conversion (resin part 7). These exhausts were a heat affected stainless steel and not badly burnt due to their distance from the engine cylinders.



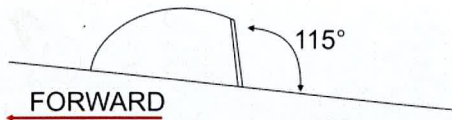
**FIG 21 AND 22 . ENGINE COLLECTOR RING SUPPORTS**

O. Beaufighter Mk 21 aircraft did not have the cockpit/cabin heating pipe (part A10). Replace this part with a loom of fine fuse or lead wire draped over the front spar to replicate the cockpit to fuselage wiring.

P. The rear canopy was modified to give the observer/winch operator better rearwards vision. To achieve this take part E5 and carefully sand the rear edge back, keeping the edge at 115° to the rear fuselage surface and square until it is level with the rear edge of the opening in the fuselage (refer to Fig 23). Allow for the thickness of the new end sheet. Trim a suitable piece of clear plastic to the shape of the open end and glue in place to seal the aperture. Alternatively, sand the canopy back to match the rear edge of the fuselage opening as described above and then shape a piece of clear plastic to fit the inside contour, glue in place and when dry trim away the lower excess. Note: Use clear drying glue that will not fog the clear parts such as Gator's Grip or GS Watch Cement. Use template E to check the angle of the modified part E5 to the rear fuselage. Add the external stiffener as shown in Figs 15 and 16.

Q. Drill a 0.016in/Number 78 Drill hole vertically through the replacement oil coolers (resin part 15) so that it is central in the horizontal vanes. See Fig 24. Lightly countersink each end of the hole, glue a length of 0.015in wire in place and then fill the holes. Paint the mesh and interior Dull Aluminium. Then carefully glue the new radiator mesh to its backing disc and install it behind the vanes. Attach this assembly to the wing. Note: when painting the model, mask the front of this part with a disc of paper to prevent the paint clogging the radiator mesh (see Fig 24).

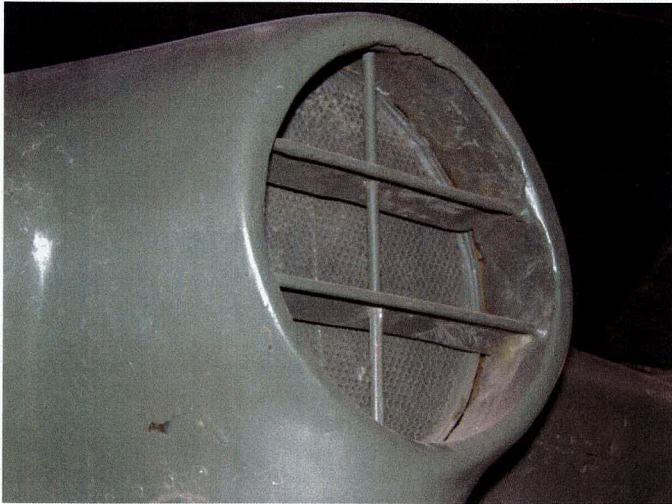




**FIG 23 . OBSERVER'S CANOPY - REAR FACE ANGLE**

R. Note that the elevator trim tab actuators as depicted in the kit are incorrect and should be removed from the elevator upper surfaces and replicated on the underside using scrap plastic sheet and brass wire as depicted in Fig 25.

S. Remember that Beaufighters were heavy! Replacement main wheels are supplied to avoid the tip-



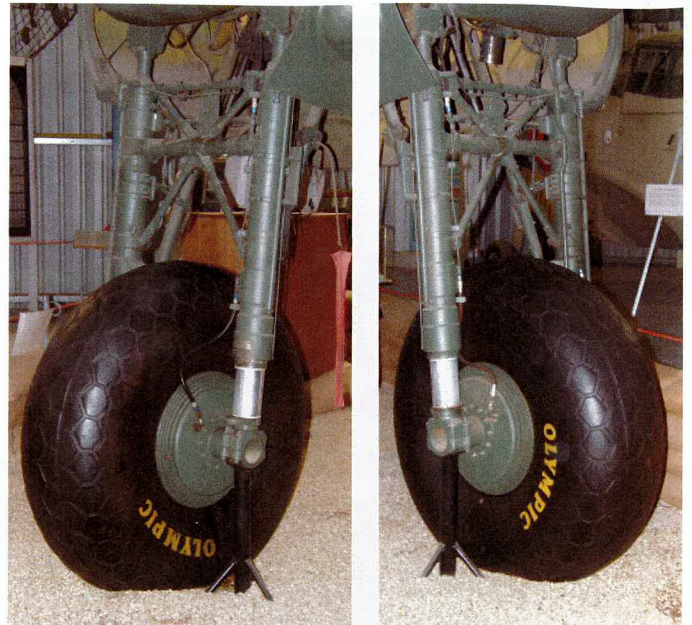
**FIG 24 . OIL COOLER STRUCTURE**

toe ballerina look. When installing the new resin wheels note that the hole in the hub is at the 11 o'clock position; ie on the forward side of the landing gear leg. This is the connection for the black brake hose connection, which is on both sides of the dual brake assembly. Make these lines from soft wire, shape and locate as per the reference photographs below (Fig 26).

T. Refer to Figs 26 and 27 for details on positioning the flare chute, the HF trailing aerial mast mount and the Very Pistol flare tube.



**FIG 25 . CORRECT LOCATION OF TRIM TAB ACTUATORS**



**FIG 26 . BRAKE LINES LOCATION**

### BEAUFIGHTER GENERAL PAINTING NOTES

Read these notes in conjunction with your selected colour scheme drawings.

All propeller blades are Matt Black with a 4 (scale) inch Trainer Yellow band across their tips.

Landing gear legs were Trainer Yellow except for A8-265 and A8-359 which were finished in Satin Black. Similarly the wheel hubs were also Trainer Yellow except for the aforementioned aircraft which appear to be either Foliage Green or Aluminium.

Cowl flaps – there are significant variations observed. The cowl flaps were usually painted Aluminium or Trainer Yellow in colour to match the aircraft colour scheme. However, A8-359 has some in Foliage Green and those fitted to A8-364 are anodised aluminium. Both these aircraft have the cowl flap operating fingers finished in Satin Black. The engine nose cowl and exhaust pipe shroud are dull stainless steel (**not** bronze or burnt iron as is continually quoted!) with the actual exhaust outlet a light, burnt stainless steel colour because of its distance from the hot exhaust gases. A8-265 is the only aircraft with the engine nose cowl shroud fitted which is also painted Trainer Yellow.

The engine crankcase is Light Admiralty Grey, with the cylinders a metallic silver grey colour. The area behind the cylinders is Satin Black. The three-legged nose cowl support is also Satin Black and the interior of the cowls are finished in Zinc Chromate Yellow.

The interior of the wheel wells is RAF Grey Green (FS 34226) and the wheel well doors and upper section of the landing gear is Zinc Chromate Yellow.

The target towing winch body is light metallic grey with the windmill blades made of varnished wood.

The pitot head is stainless steel while the supporting mast is Trainer Yellow. The oil radiators on the wings are dull aluminium (internally).



Note: - The rocket mounts under the wings have been omitted for clarity in the colour scheme side view drawings.

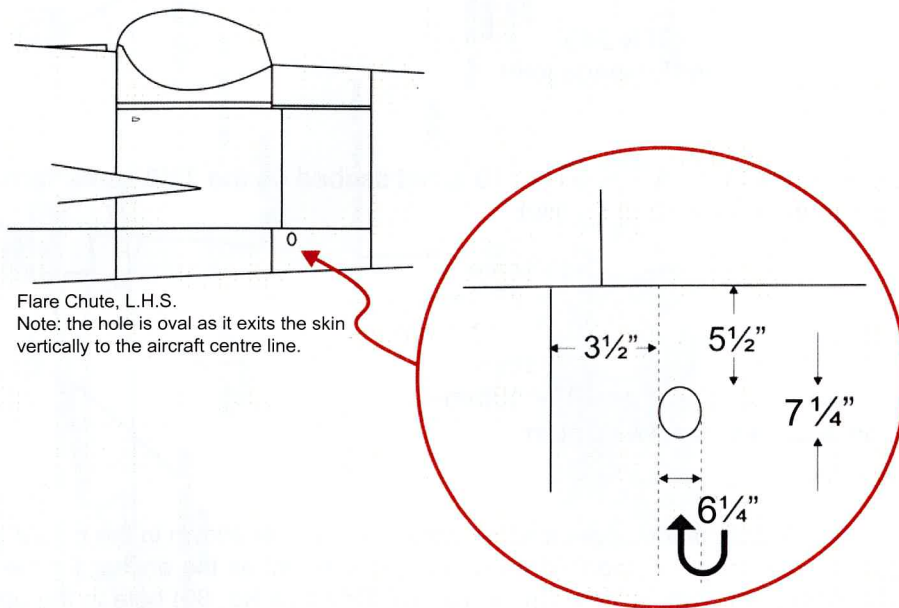
**T.T. BEAUFIGHTER PAINTING NOTES**

**Masking the Black Stripes**

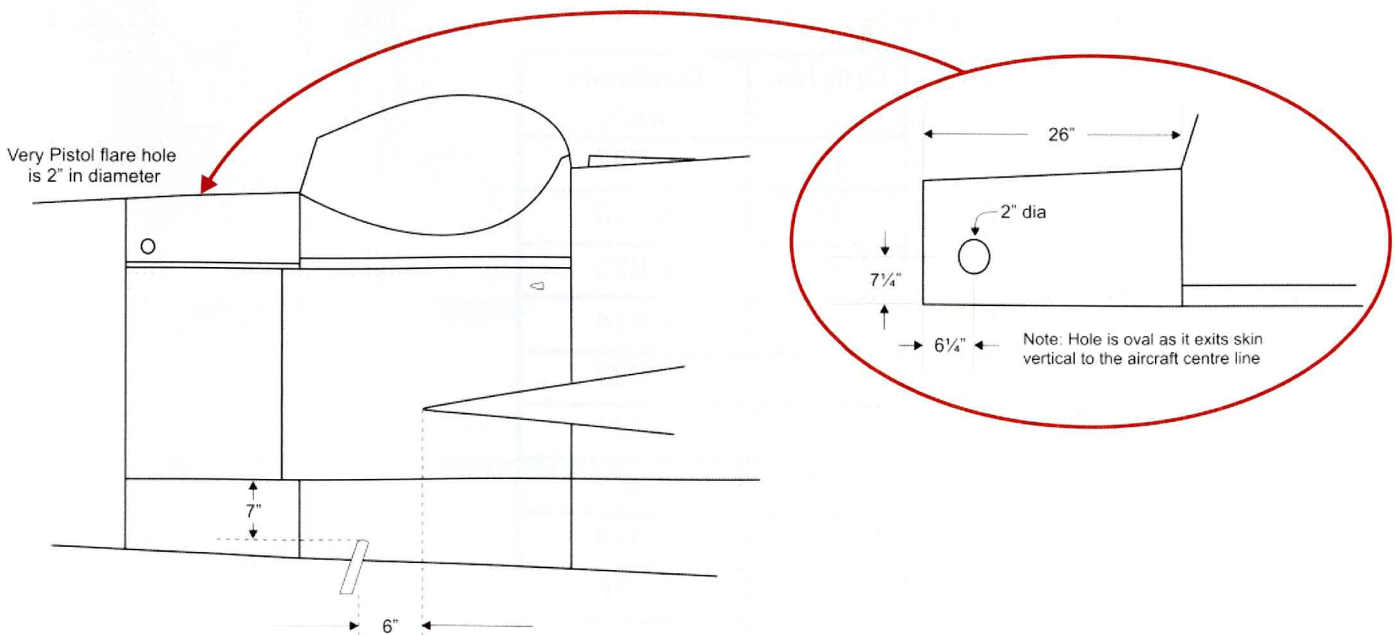
When laying out the black stripes the concept is that they are a scale 3 feet wide with a scale 6 feet wide yellow band between them and that they are all at a 60° angle to the aircraft centre line, facing aft.

However, when creating the profile drawings it was noted when plotting these stripes, using their known starting points as seen in the reference photographs, that the width of the yellow sections was not consistent. Note this when masking, as the individual profile drawings reflect the depth and care of our research and we believe are accurate to the original subject.

Whilst A8-265 and A8-359 appear the same at first glance, the black stripes on these two aircraft originate in different positions. The post 1948 colour scheme of Aluminium upper surfaces and the yellow and black stripes underneath are in identical places but the yellow band on the upper wing and fuselage surfaces moves around – therefore we urge you to study the views of your selected subject very carefully. We strongly recommend using long, thin strips of masking tape to progressively lay out the black stripes over the yellow underside colour. Using the drawings select a starting point beneath the wings and work in toward the fuselage. Be prepared to adjust the width and position several times before painting the stripes.



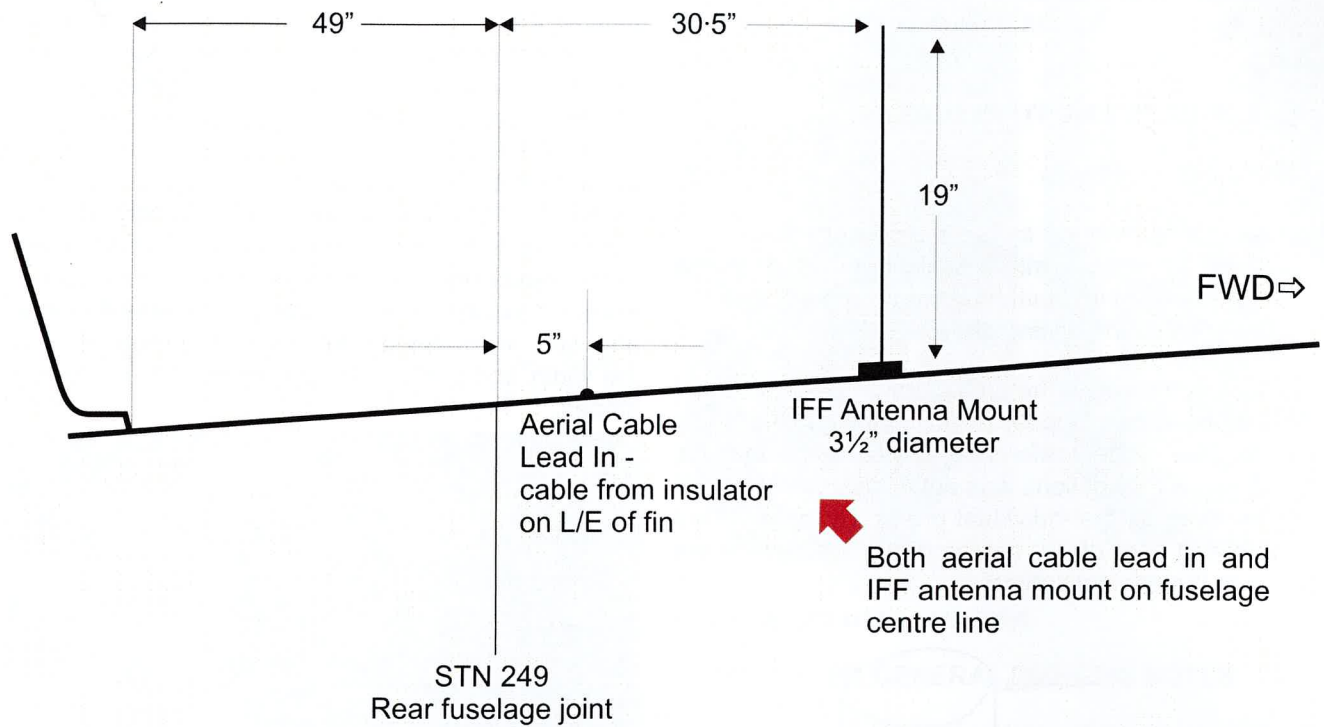
**FIG 26 . FLARE CHUTE LOCATION**



HF trailing aerial outlet mast is approximately 3" in diameter and airfoil in section.

**FIG 27 . LOCATION OF HF TRAILING AERIAL MAST MOUNT AND VERY PISTOL FLARE TUBE**





NOTE: The rear fuselage joint at STN 249 is not scribed on the 1/48 scale Tamiya kit. Take measurements forward of fin fillet.

1/48 scale  
 49" = 25.9mm  
 30.5" = 16.1mm  
 5" = 3mm  
 19" = 10mm

**FIG 28 . AERIAL WIRE LEAD IN AND IFF ANTENNA MOUNT**

**Radio Antenna Installation.**

Drill a 0.016in (Drill Size No 73) hole in the upper leading edge of the fin, as shown in the colour scheme and stations drawings, and superglue a short length of the 0.015in wire in place to act as the anchor for the antenna wire which stretches forward to the mast (part number Q9). Drill a 0.013in (Drill size No. 80) hole in the upper fuselage for the antenna lead in wire and a 0.016in hole for the IFF antenna rod as shown on the drawing (Fig 28). The IFF rod protrudes 10mm from the fuselage and is made from a piece of 0.015in wire. Rig the antenna with your choice of filament such as EZ-Line as shown in Fig 29.

Drill No.	Decimals Inch
70	0.028
71	0.026
72	0.025
73	0.024
74	0.022
75	0.021
76	0.02
77	0.018
78	0.016
79	0.014
80	0.013



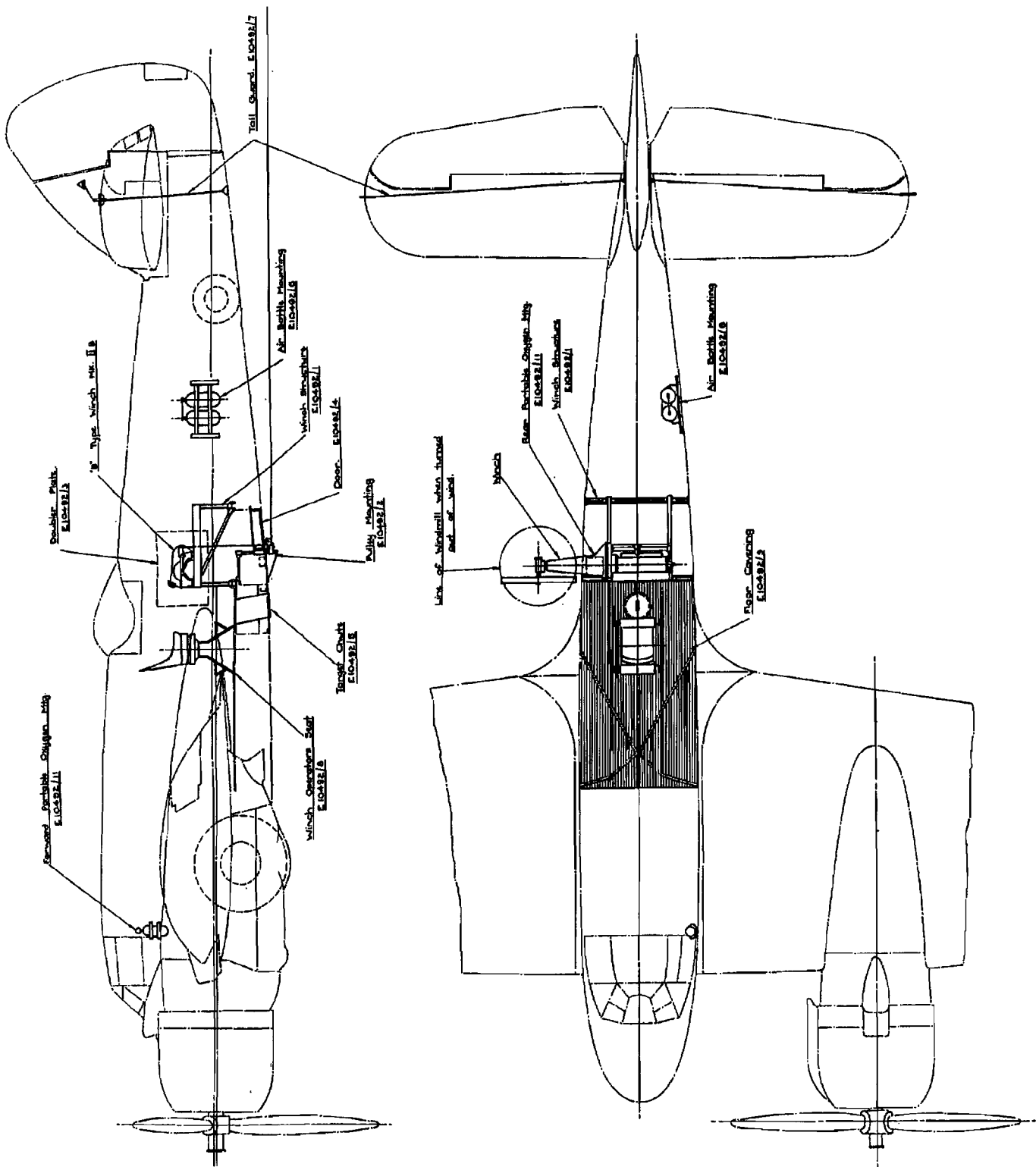
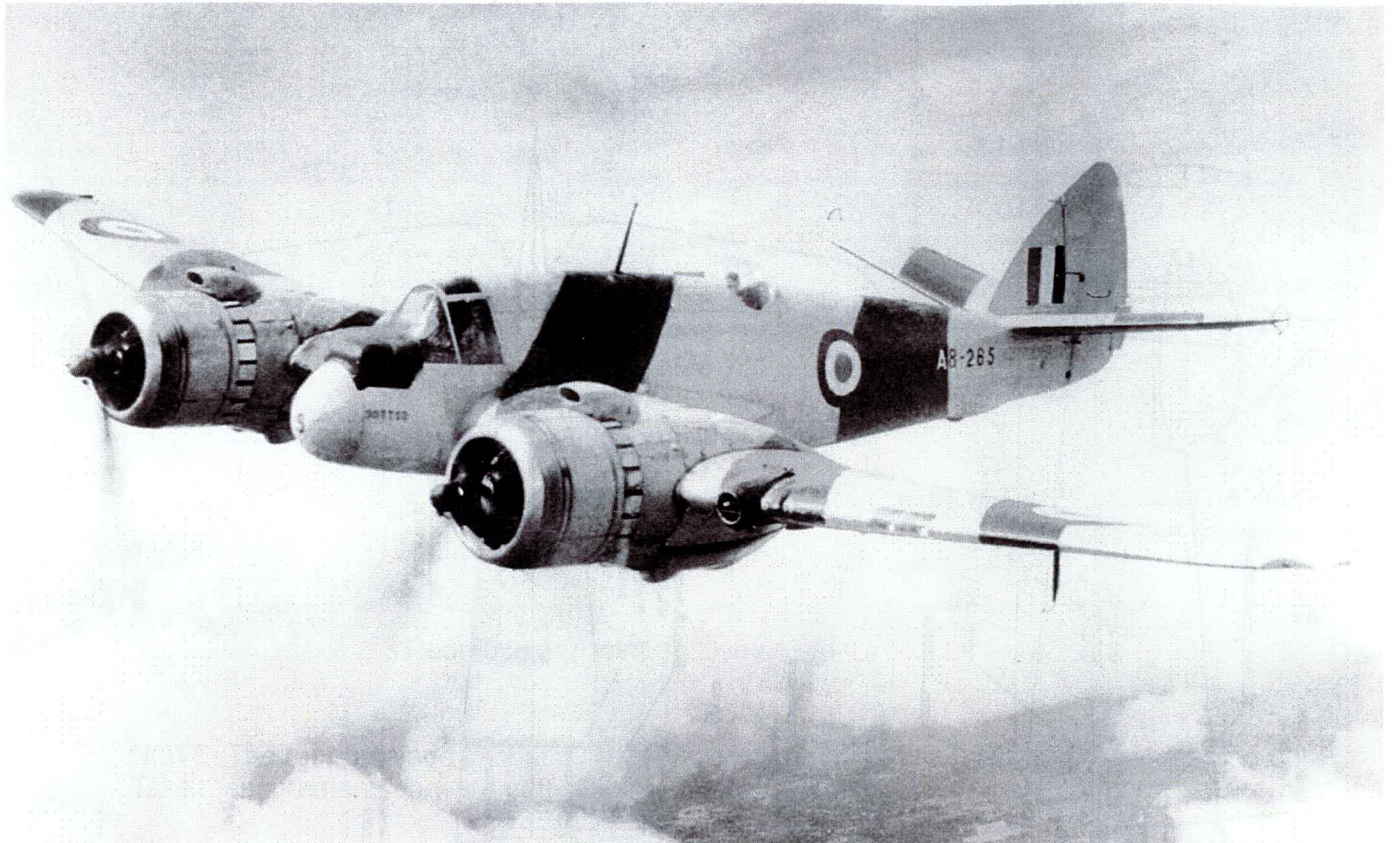


FIG 30 . RAAF DRAWING DEPICTING THE MAJOR COMPONENTS OF THE TT BEAUFIGHTER LAYOUT



# AIRCRAFT HISTORIES AND COLOUR NOTES



## A8-265

This aircraft was delivered from the Department of Aircraft Production (DAP) factory at Fishermans Bend in Port Melbourne (Vic) to Number 1 Aircraft Depot (1AD) at Laverton (Vic) on 19 June 1945. The aircraft remained in storage until selected as the prototype target towing aircraft. The conversion was carried out by 1 AD and involved installing a Type B winch in the rear fuselage with a drogue exit chute in the belly and cable guards around the empennage. The aircraft was then painted in its new colour scheme.

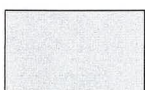
After trials the aircraft was issued to Number 1 Communications Unit in July 1946 and at the end of that month transferred to Station Head Quarters Richmond (NSW) for target towing duties. There it was operated by Number 30 Target Towing Squadron (30 TT Sqn).

Damaged by a towing tractor at Laverton, it was repaired by 1AD and returned to 30 TT Sqn on 3 March 1950. It continued in its target towing role until 1 April 1954 when it was received by the Aircraft Research and Development Unit (ARDU) at Laverton for a prototype radio installation. It remained there until approval for conversion to components was received on 1 September 1955. The aircraft was transferred to the graveyard at Tocumwal (NSW) in late October and it was finally sold for scrap to Sims Metal Pty Ltd on 28 June 1957.

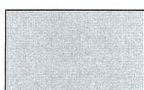
**Note** - our reference photographs for this aircraft show that it **did not** have the rocket mount stubs fitted in this colour scheme.

### Legend:

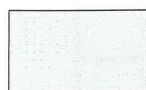
Use this colour legend for the profile drawings on the following pages.



Aluminium Lacquer  
FS595B - 17178



Stainless Steel



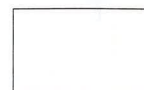
Anodised Aluminium



Oxford Blue  
BS381C - 105



Post Office Red  
BS381C - 538



White  
FS595B - 17925



K3/185  
Trainer Yellow  
BS381C - 356



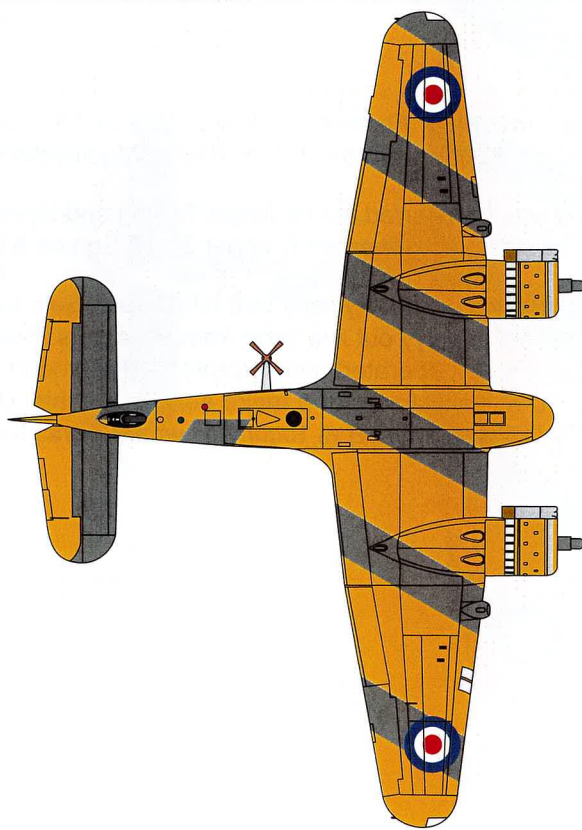
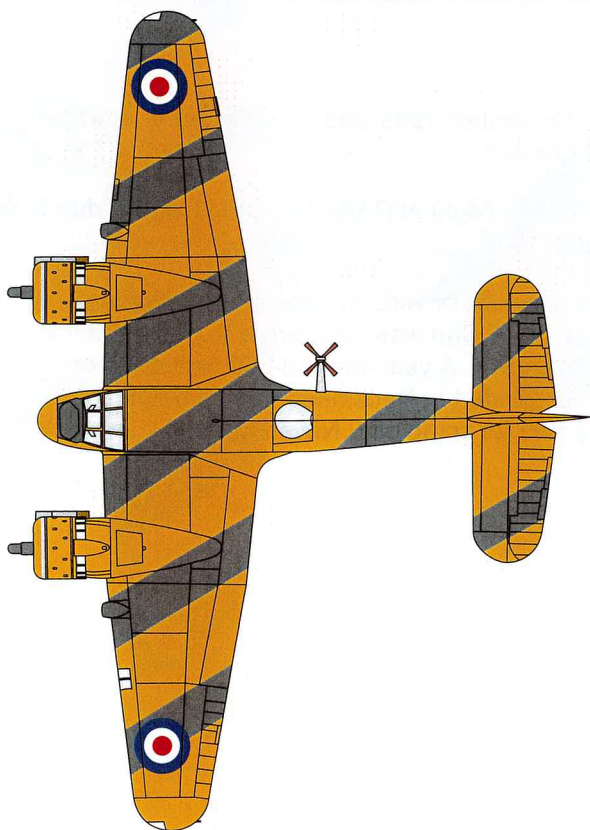
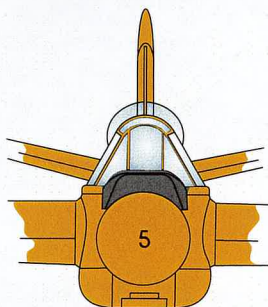
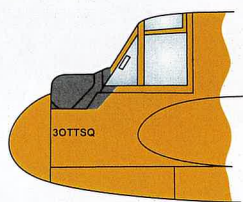
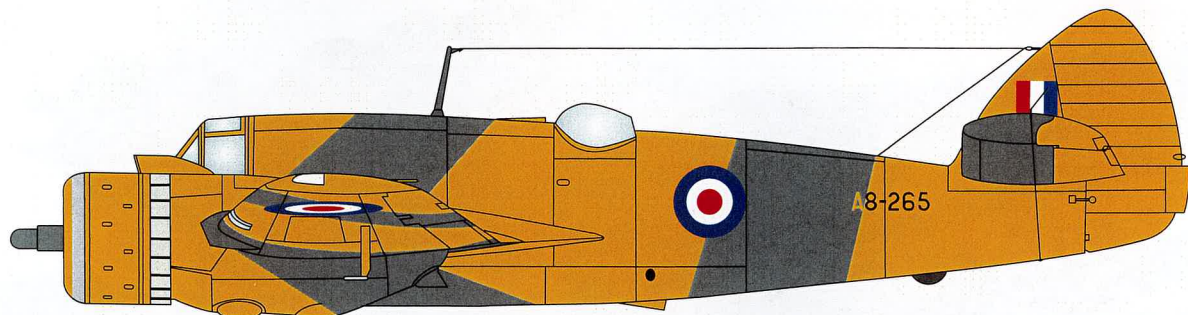
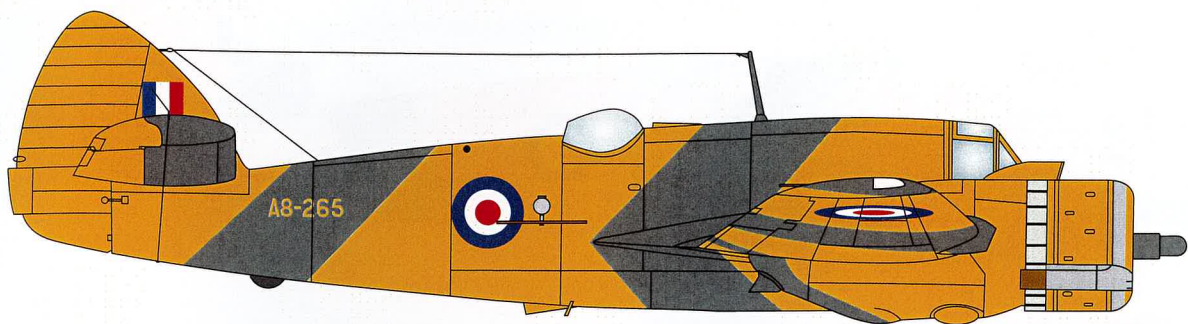
K3/177  
Foliage Green  
FS595B - 27092



Black  
FS595B - 37038

Colours referred to are quoted as BS381C: 1980 and 1996 edition and FS595 1994 edition.









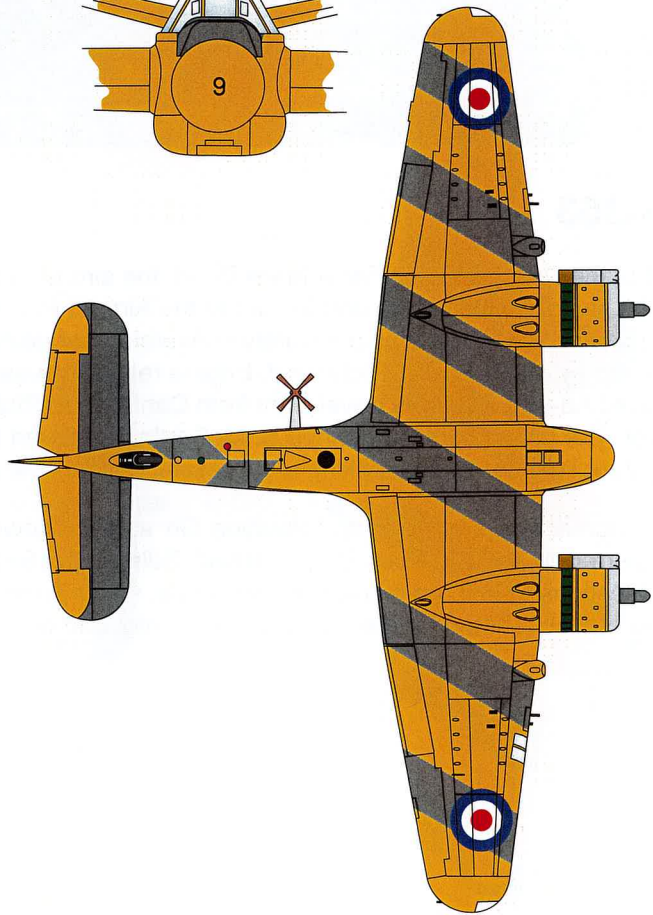
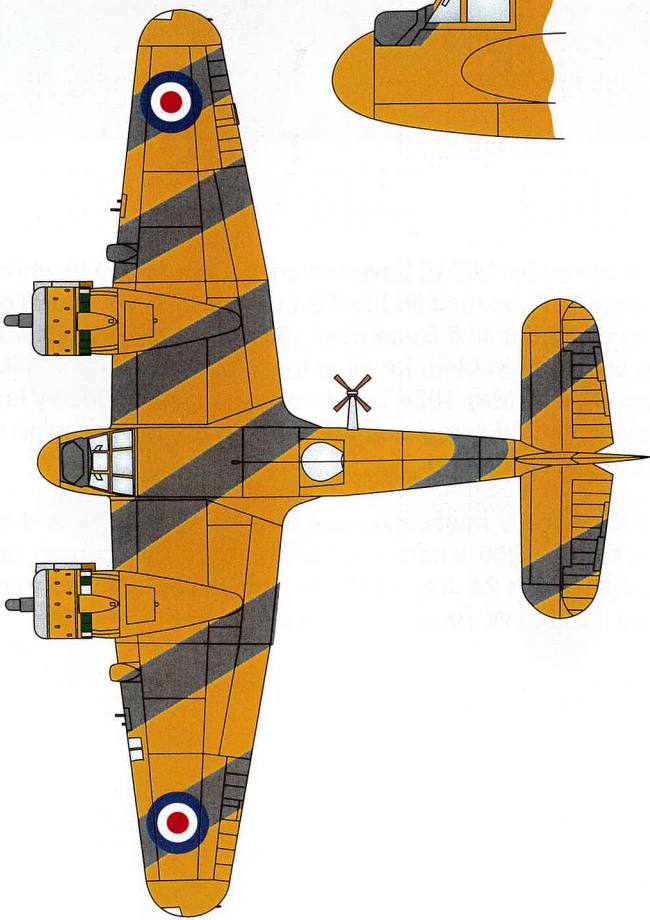
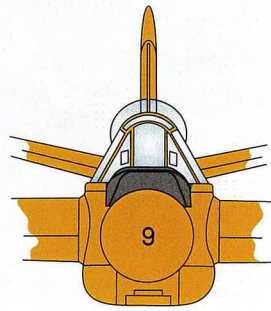
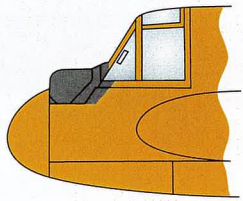
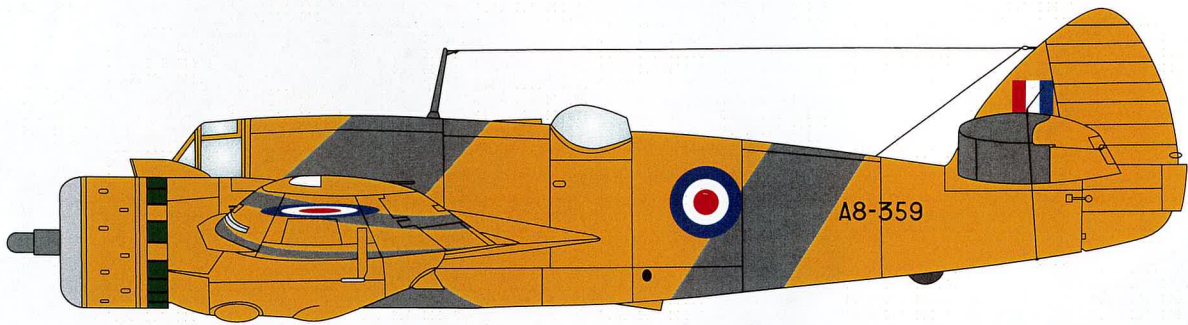
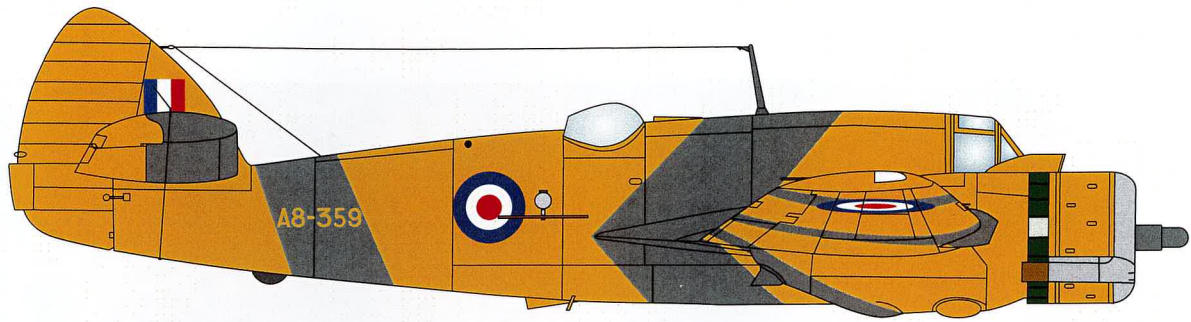
## **A8-359**

This Beaufighter arrived ex Fishermans Bend (Vic) at 1AD on 6 December 1945 and was placed in storage until October 1946 when it underwent the Target Towing Modification at this unit.

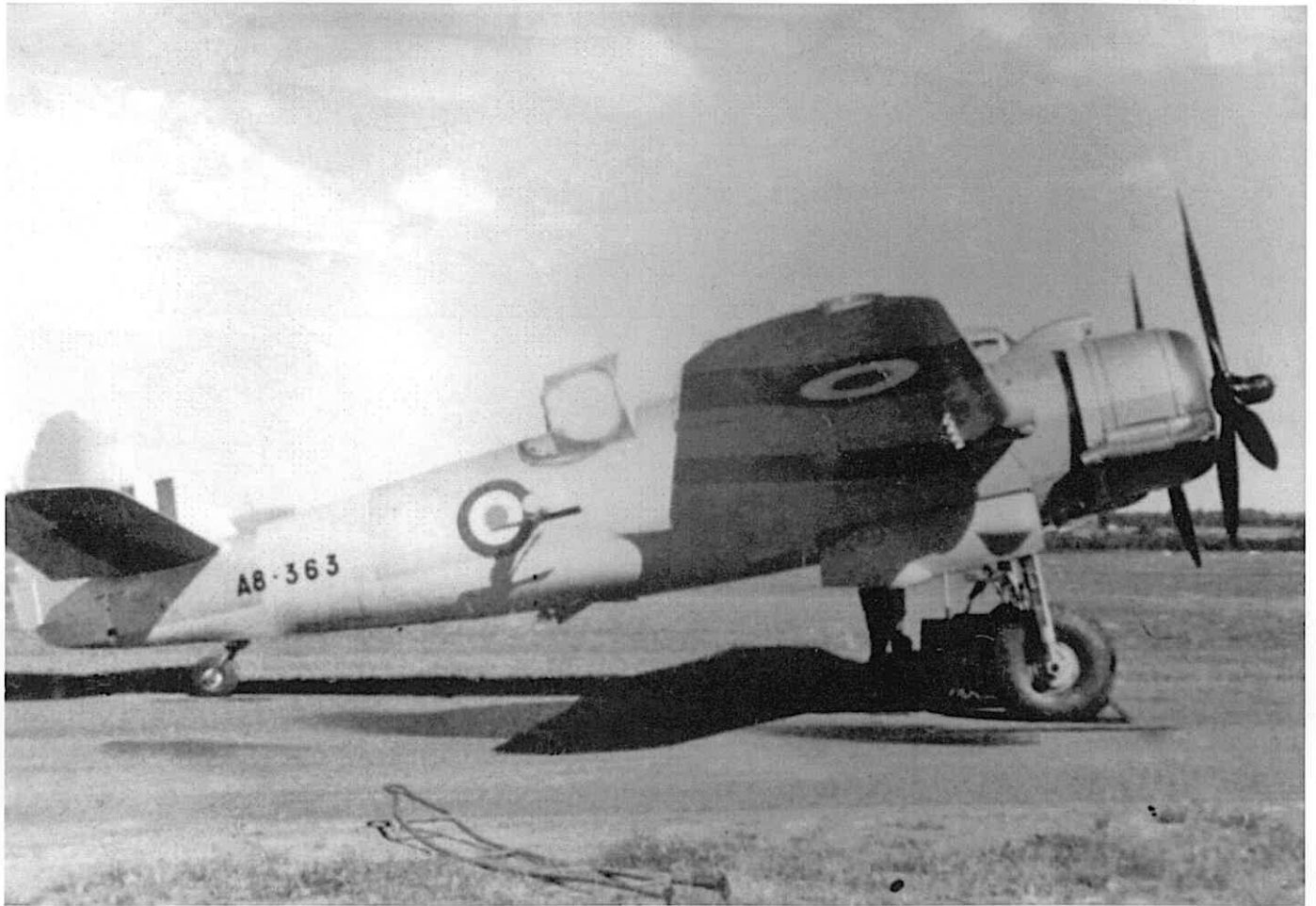
On completion it was transferred to the Target Towing and Special Duties Flight at RAAF Richmond, which due to the demand for its services was renamed Number 30 TT Sqn on 8 March 1948.

An aircraft from this unit would regularly visit RAAF East Sale to tow drogues or winged targets for graduates from the Air Armament School to carry out live firing from Mustangs. Number 30 TT Sqn was transferred to RAAF Canberra in September 1952 where it operated until returning to Richmond in April 1954. A year later A8-359 was delivered to the Bristol Aviation Co at Bankstown for a major service but this was suspended in December and ultimately the aircraft was moved to 1AD Detachment B at Tocumwal where it was finally sold for scrap on 8 November 1957.







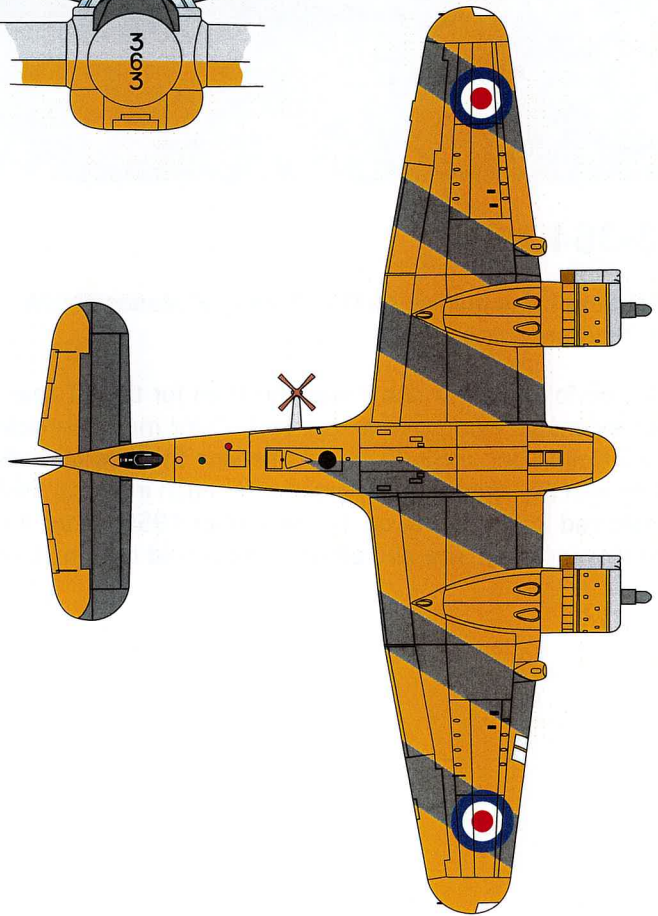
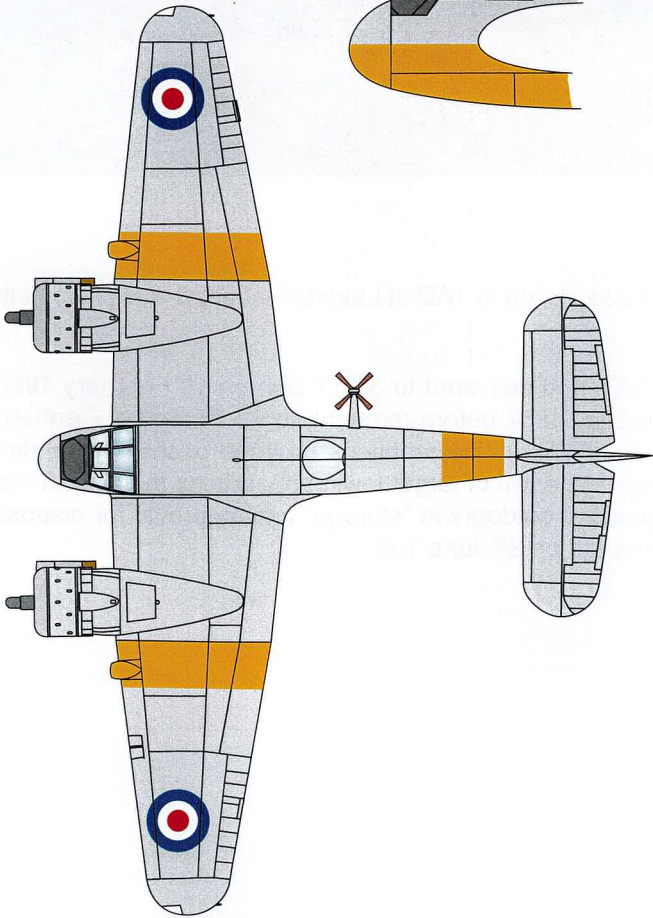
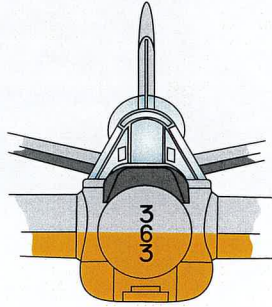
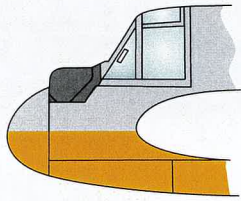
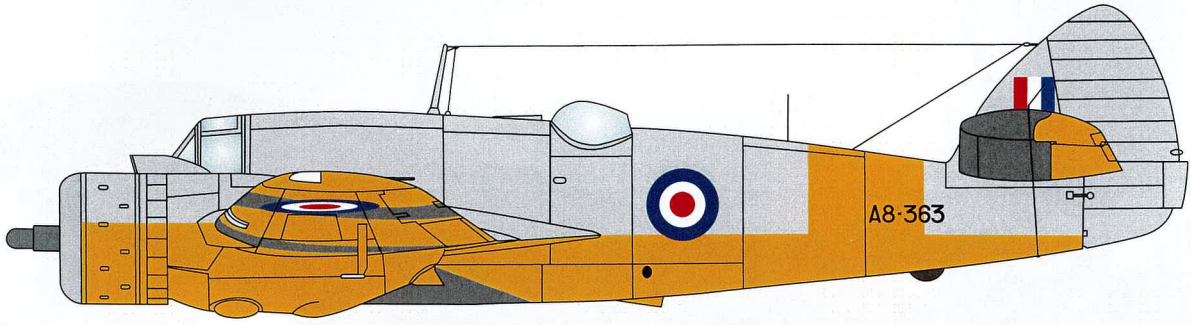
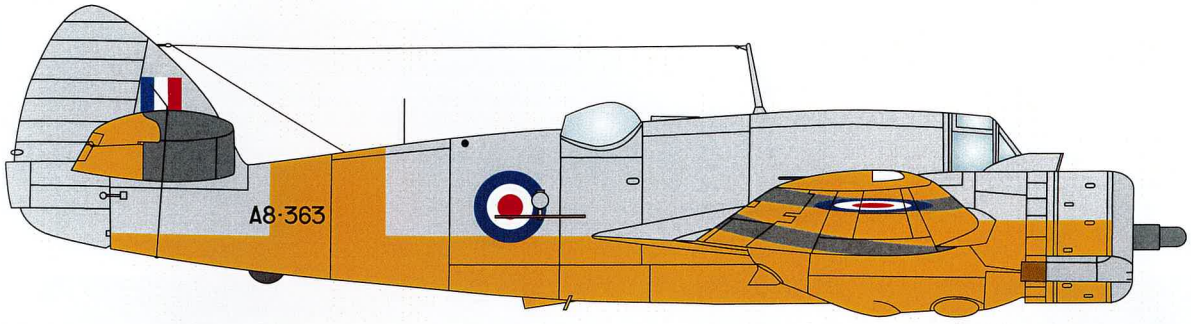


## **A8-363**

Built at the DAP factory at Fishermans Bend, the aircraft was received by 1AD at Laverton on 10 January 1946 where it went straight into storage until issued to the Aircraft Repair Section to be modified to the target towing configuration in February 1951. This was a leisurely conversion not being completed until 6 December 1951 when the aircraft was received by 30 TT Sqn at Richmond. Engine reliability was an on-going problem for all of these aircraft and one case involved A8-363. During a travel flight from Canberra to Richmond on 20 May 1954 the starboard engine suddenly lost power. The pilot, Flight Sergeant J.S. McCarthy feathered the engine and completed the flight on the other engine in very poor light conditions making a successful asymmetric landing at Richmond.

The aircraft was sent to Bristol Aviation Co at Bankstown (NSW) for a major overhaul later in 1954. It was then transferred to the Air Trials Unit at RAAF Edinburgh (SA) in March 1956 where the maintenance unit carried out modifications to suit the missile recovery role, which were completed on 24 July 1956. On completion of these trials the aircraft was listed for disposal and eventually sold on 2 April 1958 to W. Brown and Sons for scrap.







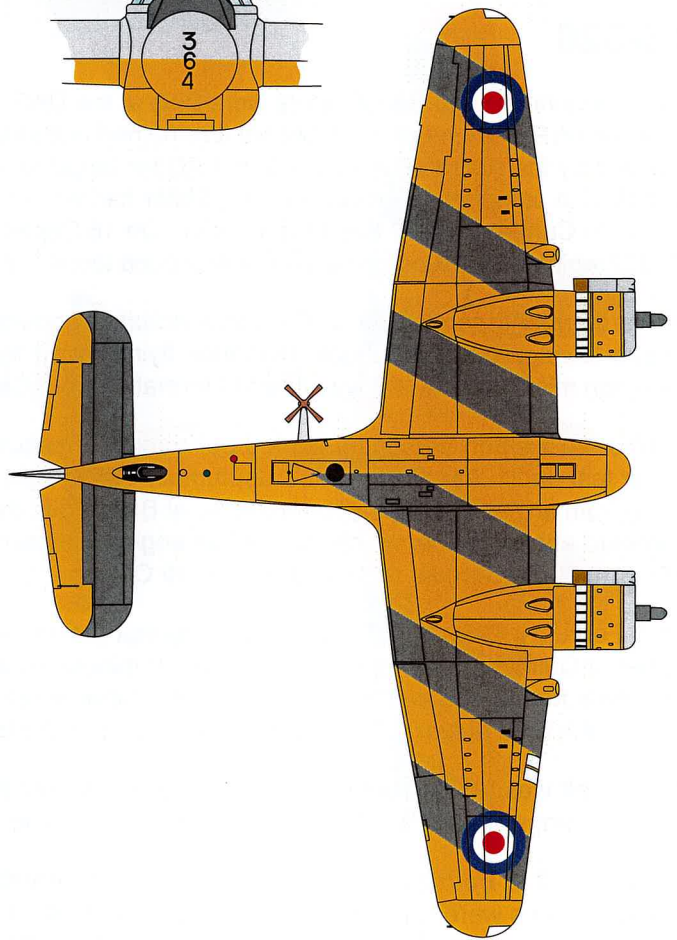
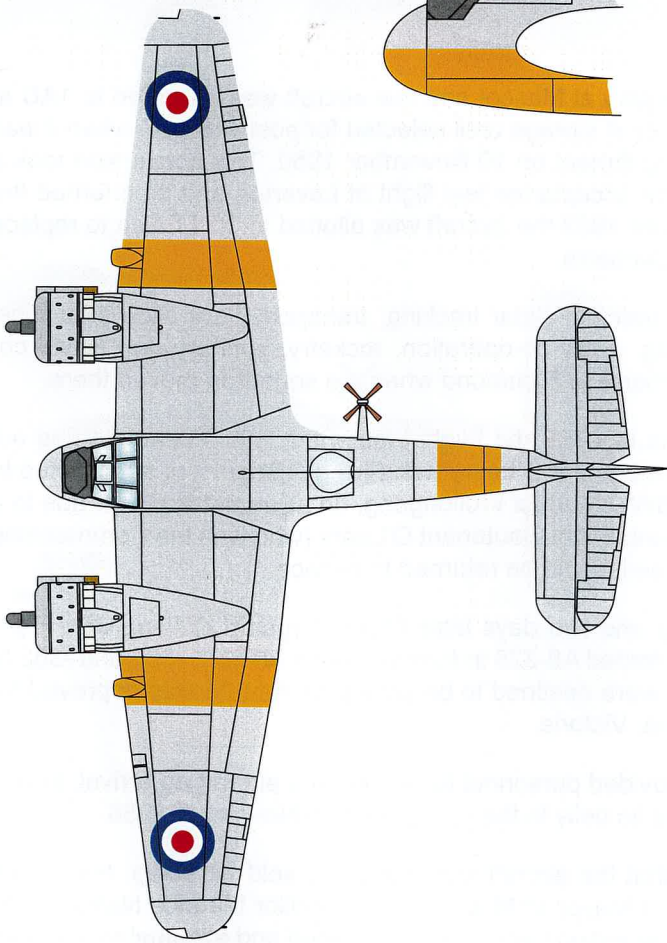
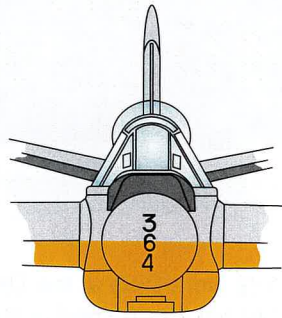
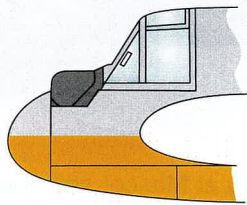
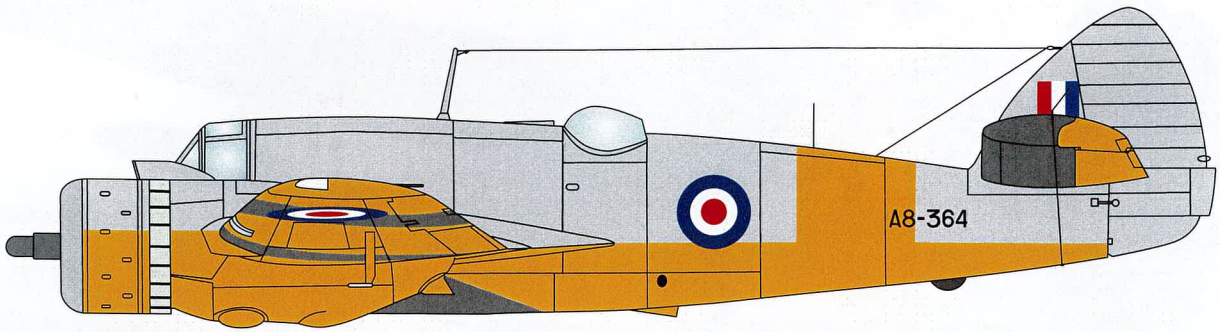
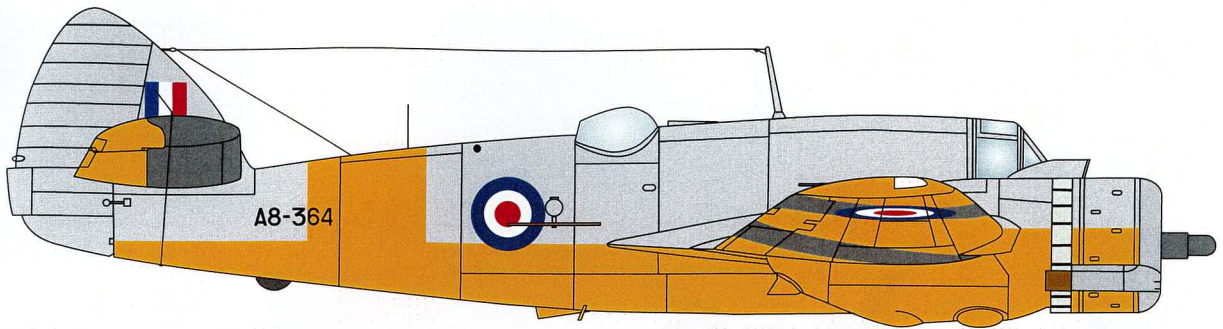


## **A8-364**

This aircraft was built at the DAP factory at Mascot (NSW) and was ferried to 1AD at Laverton where it was placed into Cat B storage.

Selected for post-war use it was modified for the TT role by 1AD and delivered to 30 TT Sqn on 10 February 1950. After extensive flying it was sent to 1AD for major servicing in May 1952 before returning to 30 TT Sqn at Canberra on 25 November 1953. During its service the aircraft suffered in-flight engine problems on three occasions, landing safely with the aircraft undamaged after each incident. With the wind down of target towing operations the aircraft was transferred to Tocumwal on 13 December 1955 where it languished outdoors in "storage" until approval for disposal the following May. The aircraft was finally sold to Sims Metal Pty Ltd on 28 June 1957.









## A3-328

Even serial numbered Beaufighters were built at the DAP factory at Mascot and this aircraft was delivered to 1AD at Laverton on 9 September 1945, where it remained in Category B storage until selected for post-war use, when it was received by the Aircraft Repair Section 1 AD for target towing fitment on 10 November 1950. This conversion took a long time to complete. Pilot Officer J.W. Slater carried out the acceptance test flight at Laverton and then ferried the aircraft to Canberra on 12 September 1953. On 18 September 1953 the aircraft was allotted to 30 TT Sqn to replace A8-352 which had swung on take-off and ground looped at Canberra.

Typical missions carried out at Canberra included general training, radar tracking, transport, navigation exercises, drogue towing, low level attack, formation flying, night flying, Army co-operation, rocketry, gunnery and Naval co-operation missions. A8-328 was flown in formation from Canberra to Richmond when the squadron moved there.

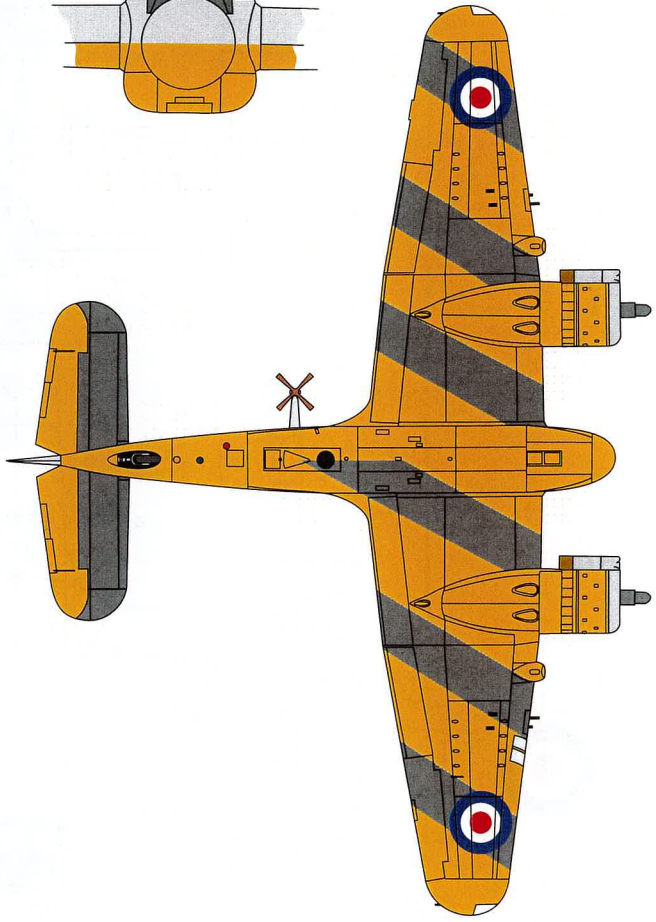
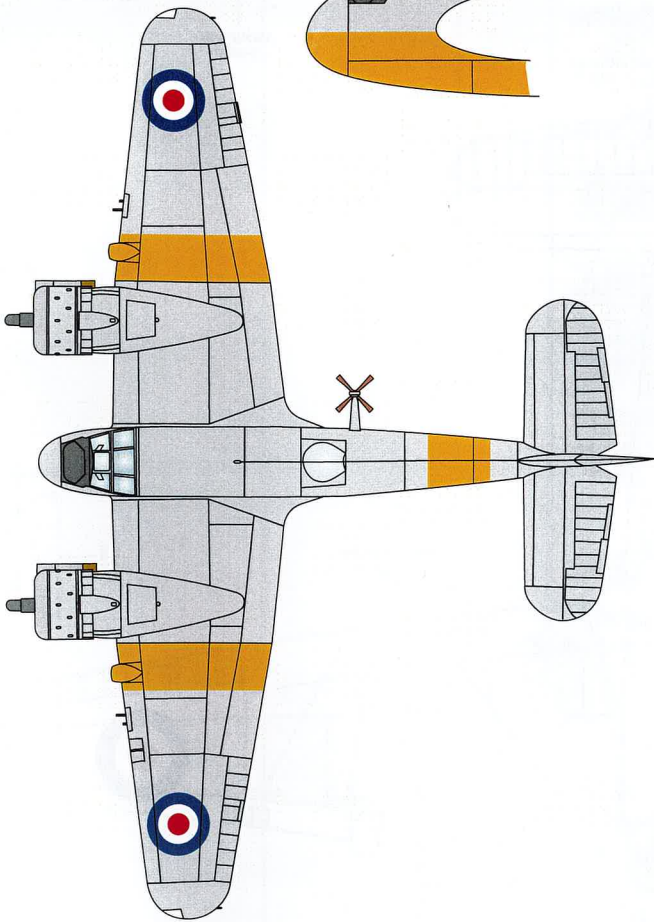
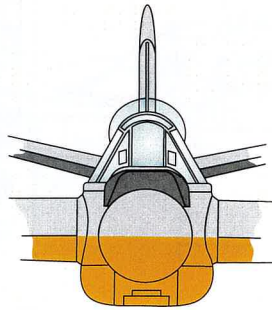
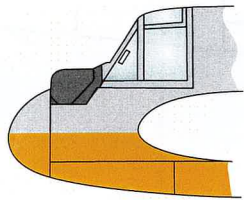
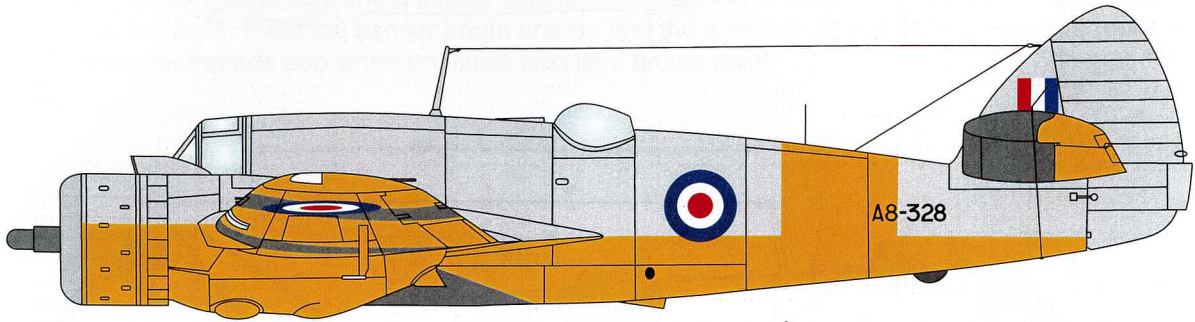
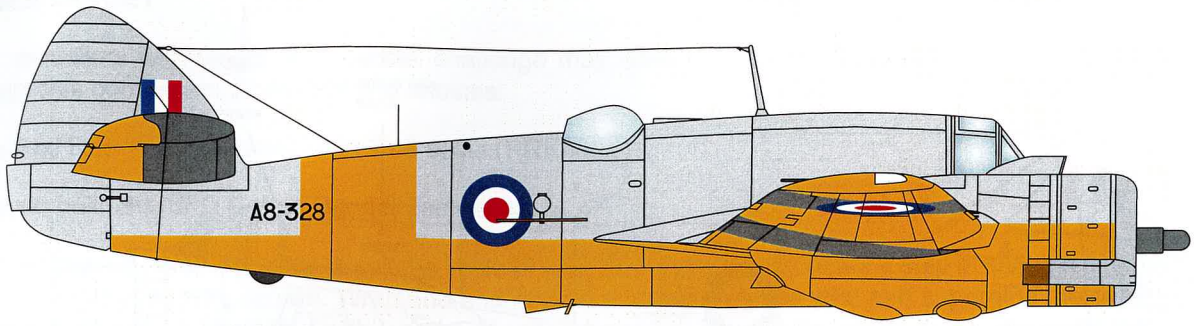
Number 30 TT Sqn personnel carried out a major inspection in 1955 and Flight Lieutenant F.P. O'Leary carried out the air test on 21 July 1955. On 28 September 1955 Flight Lieutenant O'Leary with Flying Officer Hunt aboard had to return from an Army co-operation exercise at Bass Point (NSW), south of Wollongong, on asymmetric power due to a starboard engine failure, which required an engine replacement. Flight Lieutenant O'Leary (who was the Commanding Officer of 30 TT Sqn) air tested A8-328 on 25 October 1955 so it could be returned to service.

On 1 February 1956 30 TT Sqn ceased normal functioning and two days later Flight Sergeant O'Neal, with Flight Sergeant Quilkey as Navigator, on a 1 hour 50 minute flight, ferried A8-328 in formation with A8-350, -358 and -362 to Tocumwal for storage and disposal. Whilst the other aircraft were destined to be scrapped, A8-328 was approved for issue to the Lord Mayor's Children's Holiday Camp at Portsea, Victoria.

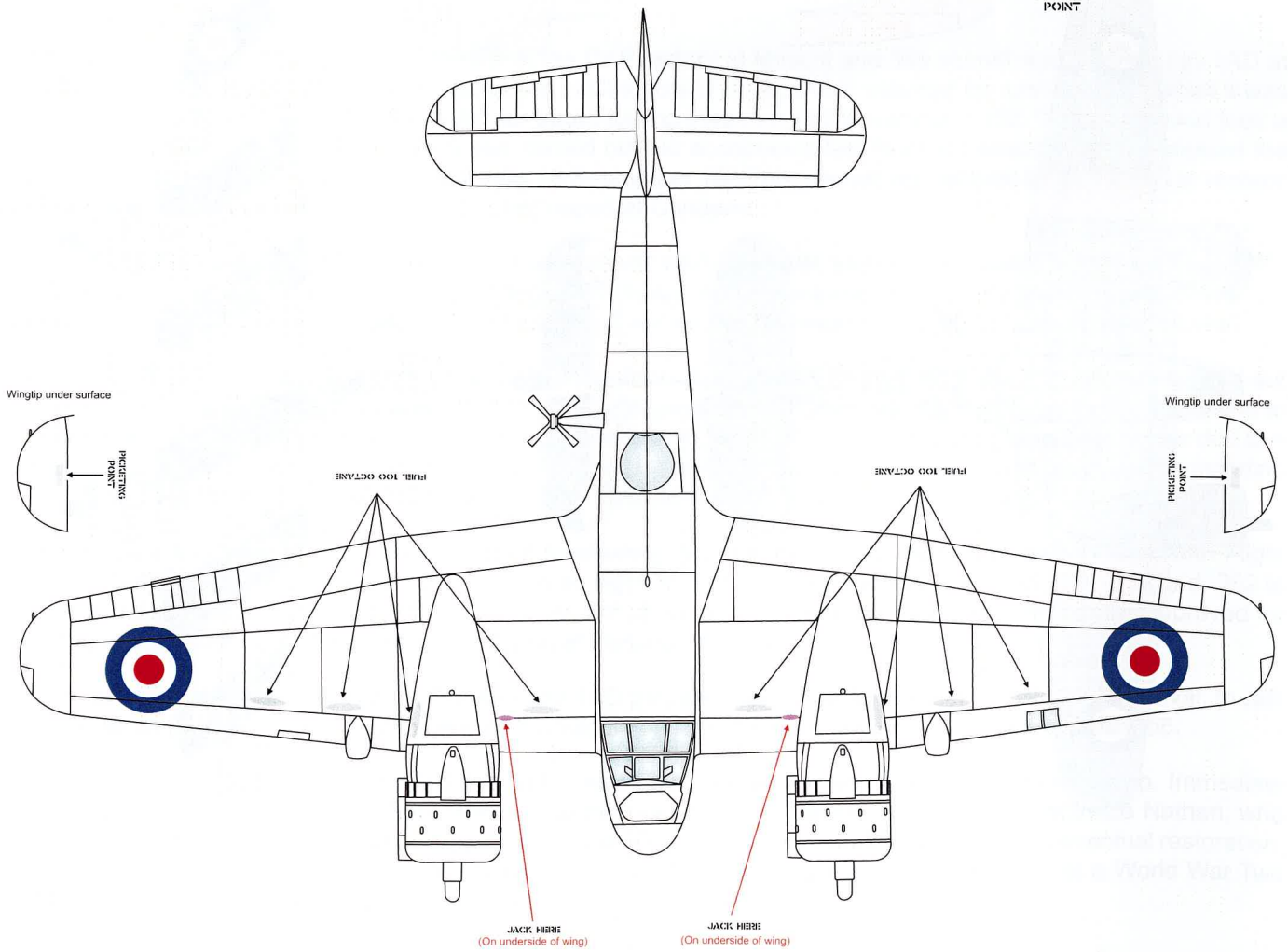
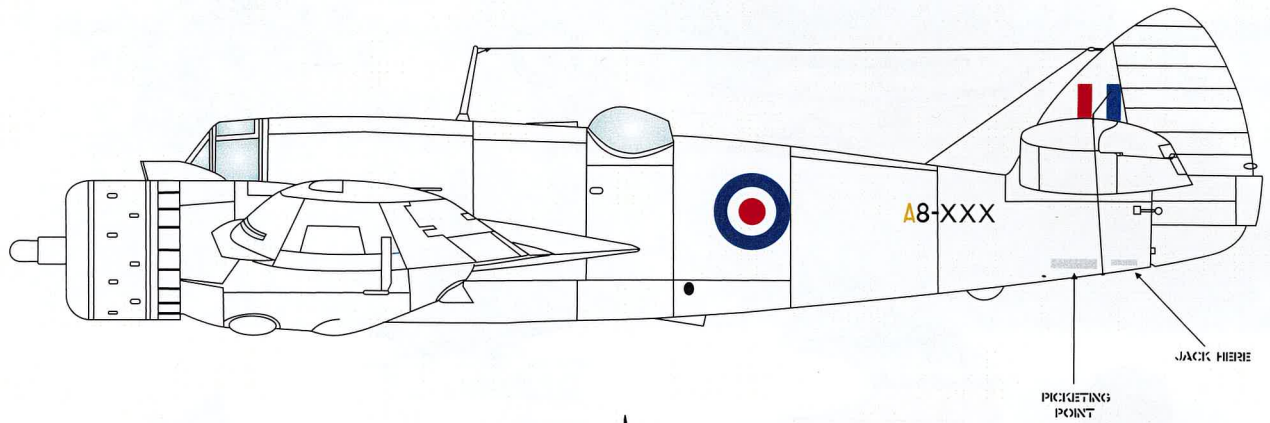
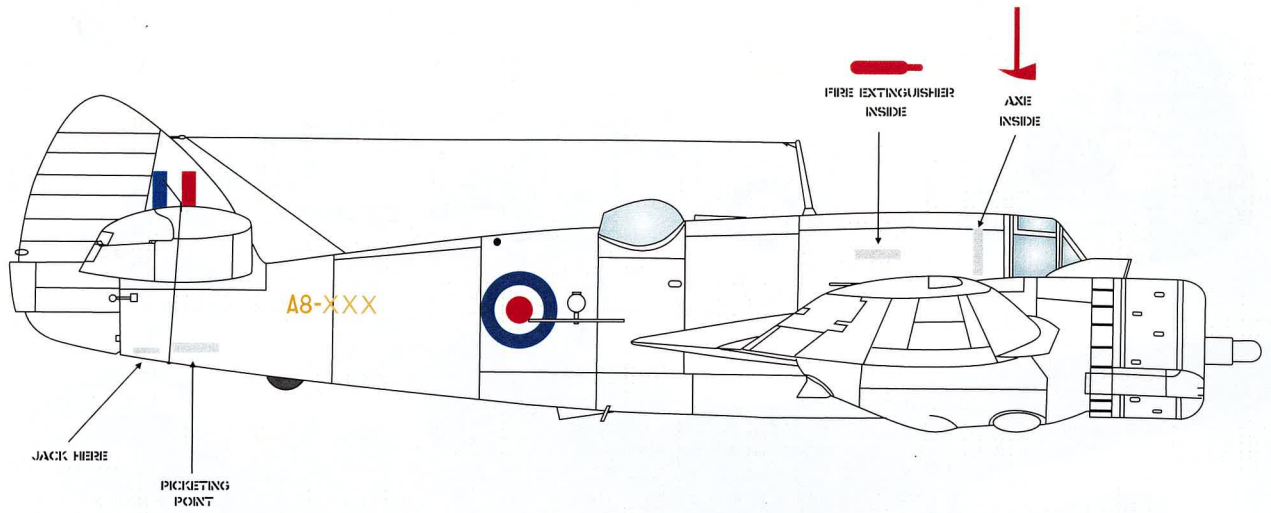
The aircraft was transported by road to Portsea and 1AD provided personnel to re-erect the aircraft on arrival, to refit the outer wings and retract the landing gear so it would lie on its belly in the playground, in November 1956.

During a visit to Portsea in January 1962 the writer learnt that the aircraft was due to be sold for scrap. Immediate representations were made to the Right Honourable the Lord Mayor of Melbourne, Councillor Maurice Nathan, who donated the aircraft to the newly formed Australian Aircraft Restoration Group for preservation and eventual restoration. A8-328 is now on display at the Australian National Aviation Museum at Moorabbin Airport (Vic) in a World War Two colour scheme. It is the only survivor!









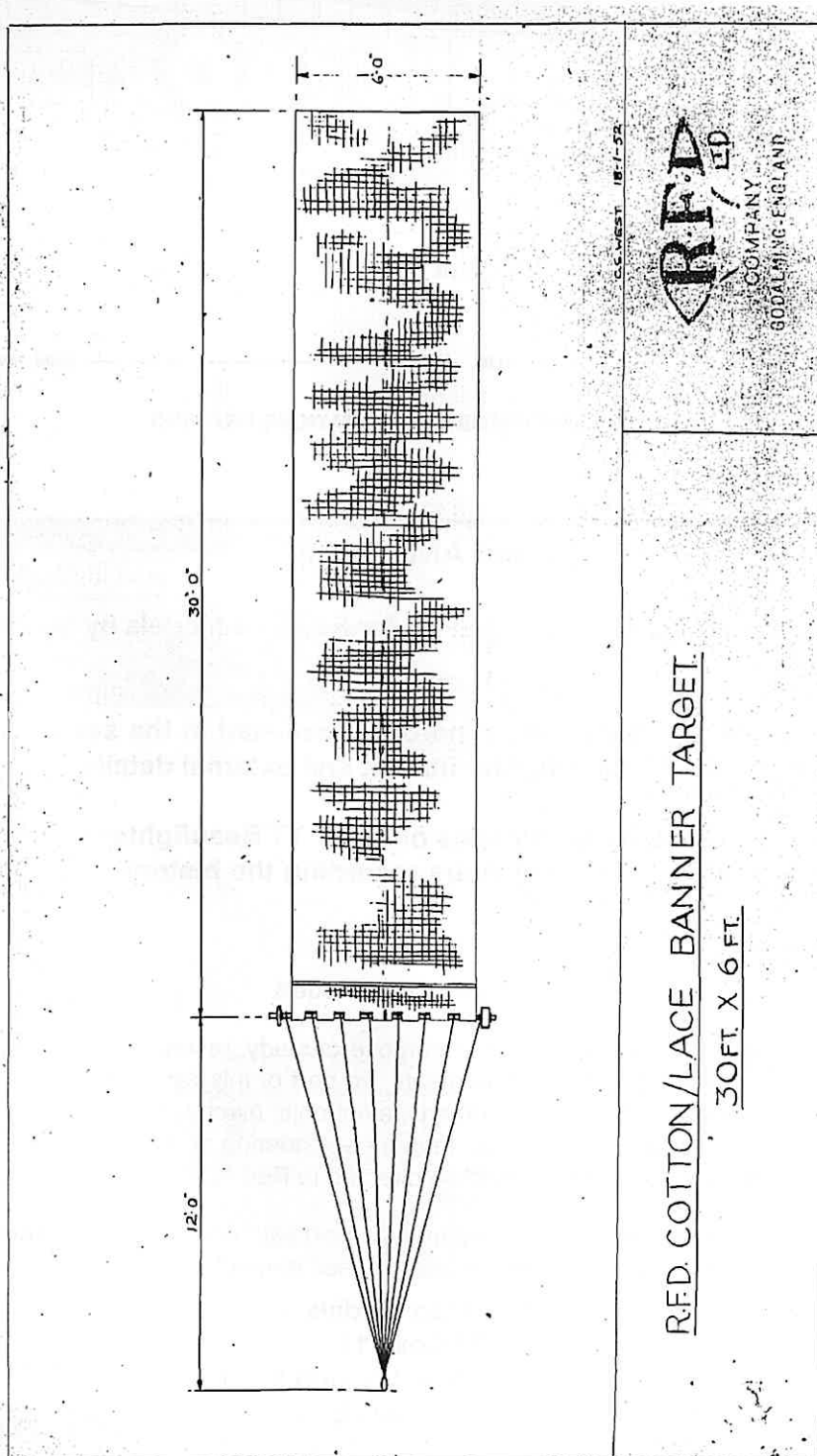
Stencil Location Drawing

## BANNER TARGET

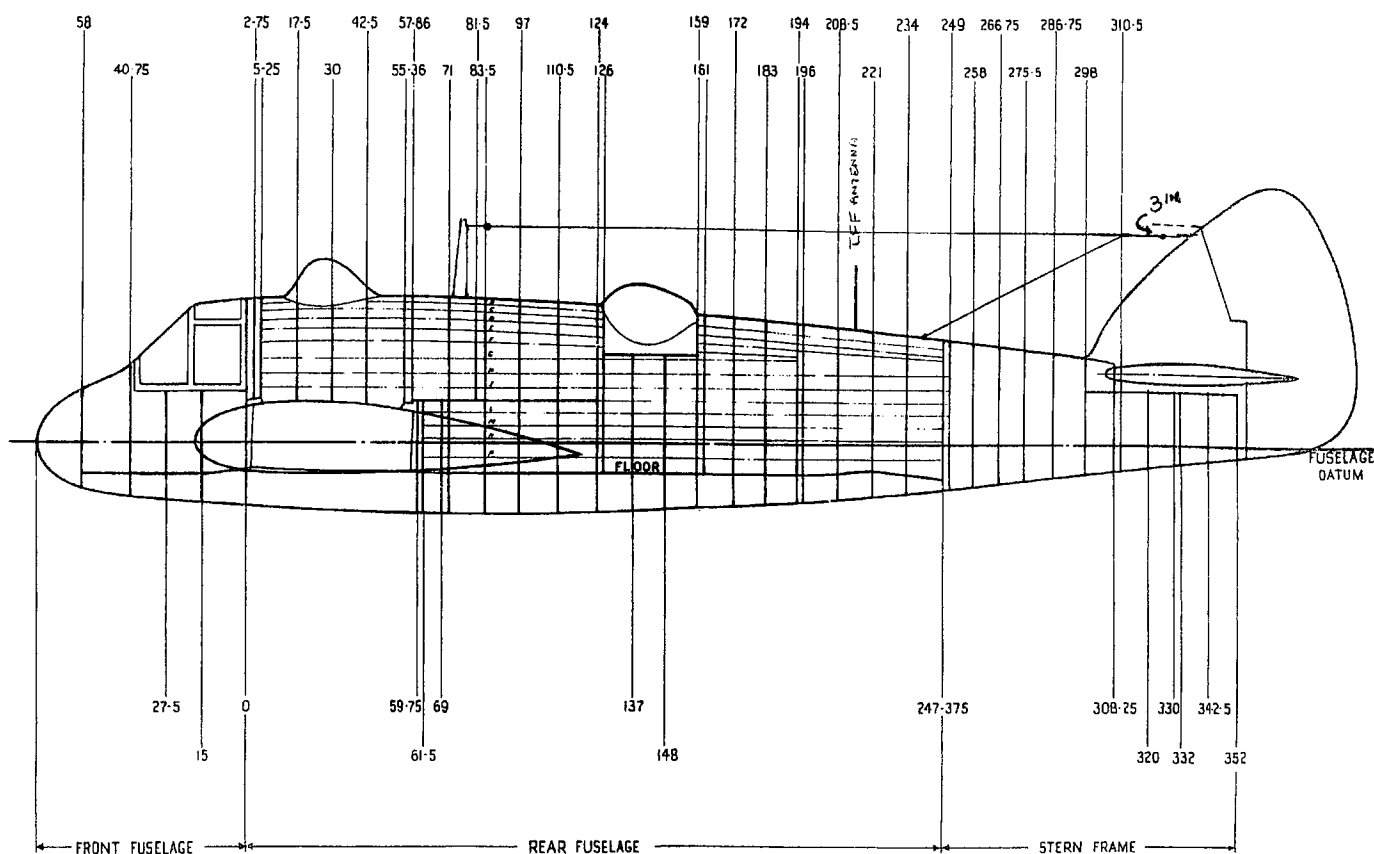
Those modellers who would like another challenge may wish to consider connecting a target to the tow cable to complete this conversion. There are two choices:

- A. The Red Roo Winged Target kit in 1/48 scale (RRK48001).
- B. Scratch build the RFD Cotton Banner Target.

Scale the drawing measurements to suit the scale of your Beaufighter and cut out a strip of suitable fine mesh material, such as fibreglass fly wire screen. Wrap one end around a length of brass wire and superglue the overlap. The eight lengths of rope can be simulated with lengths of cotton threaded through the mesh and tied around the wire. Stretch these tight and thread through a small ring (such as a small piece of jewellery chain), double back and glue. Add a plastic washer to the top of the wire and a thicker washer to the bottom to simulate the weight which was used to keep the banner upright in flight. Paint the banner bright orange and the washers a steel colour. Paint the ropes with diluted PVA glue to de-fur the threads and when dry finish with light brown paint.







**FIG 29 . BEAUFIGHTER MK 21 STATIONS DRAWING**

### CAST AND CREW:

This multi-media detail set was created exclusively for Red Roo Models by master modeller Richard Hourigan.

Special thanks are due to Fred Harris who generously assisted in the search for and provision of RAAF drawings relevant to the TT Beaufighter fitment and external details.

Neville Parnell graciously provided photographs of RAAF TT Beaufighters and information from his research and records gathered over many years recording the history of the Beaufighter in RAAF service.

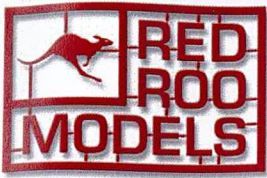
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We state that we are using trademark names in an editorial context with no intention of infringement of those trademarks. Trademarked names, as always, remain the property of their respective owners.

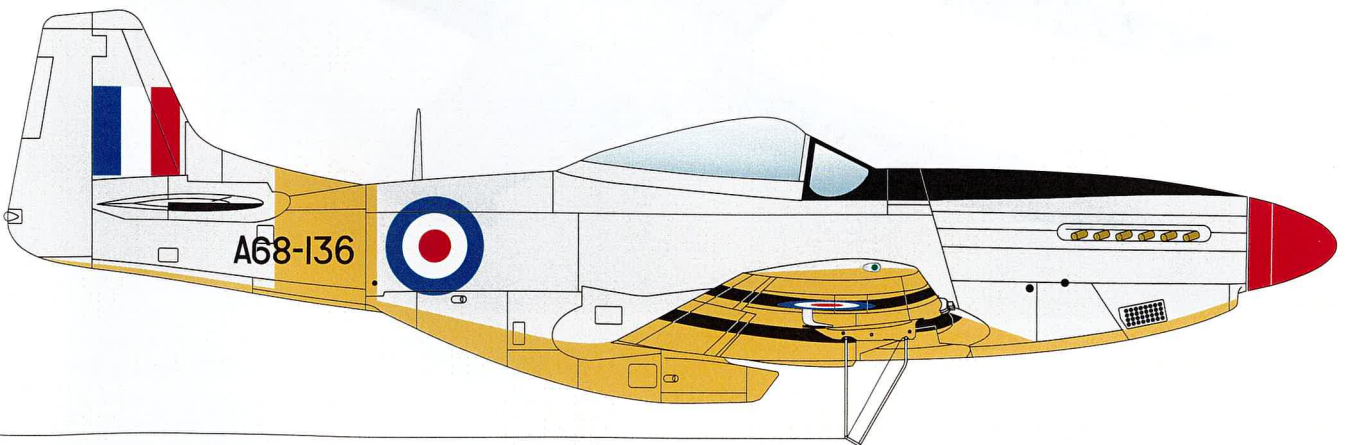
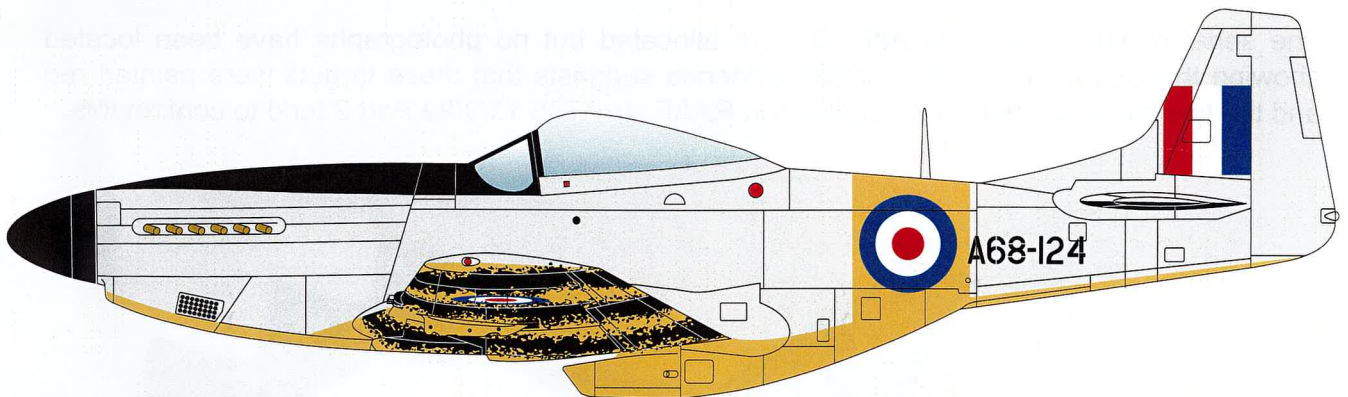
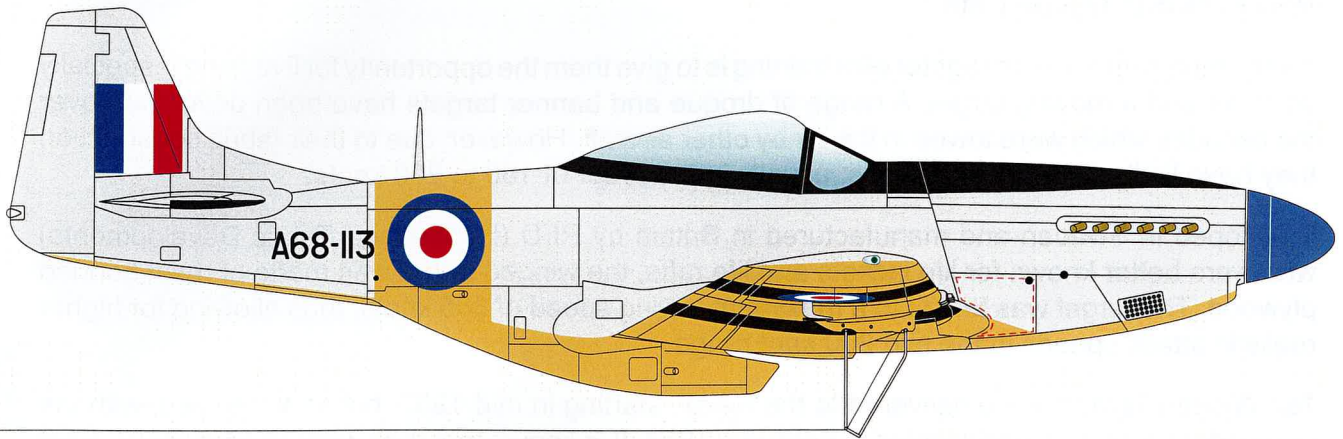
**Red Roo Models**  
**PO Box 113**  
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**AUSTRALIA**

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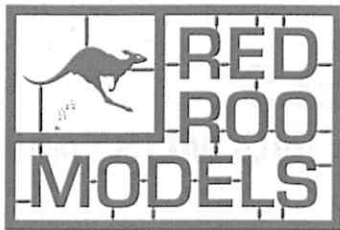
# RED ROO MODELS

## 1/48 SCALE CAC TARGET TOWING MUSTANG DETAIL SET



*"A Southern Cross Mustangs Authorised Product"*





# RFD WINGED TARGET 1/48 SCALE RESIN KIT

RRK48001

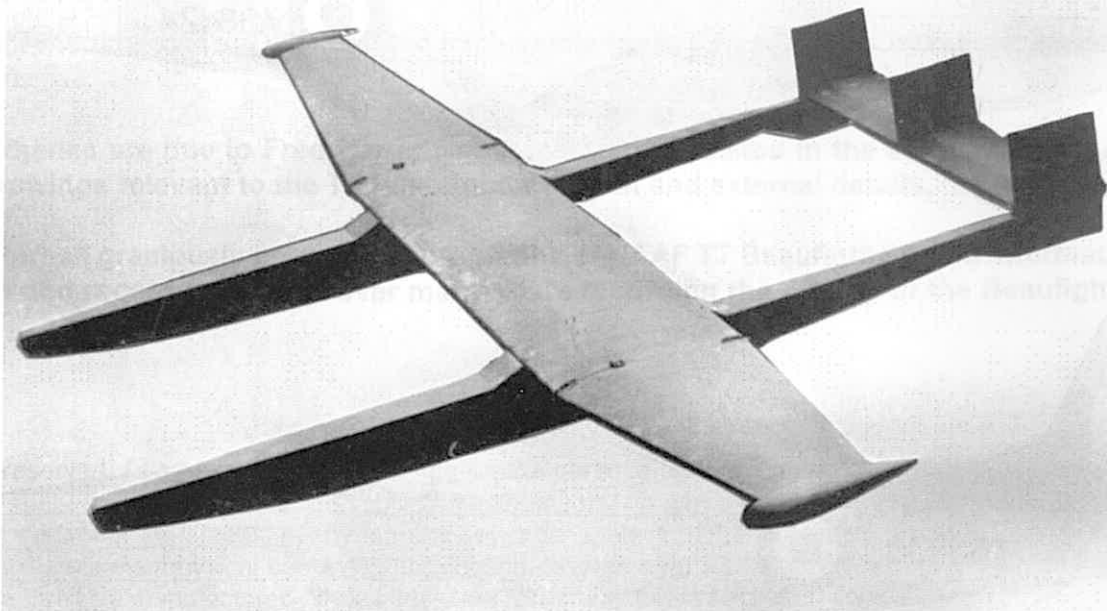
## RFD WINGED TARGET MK I

A very important aspect of fighter pilot training is to give them the opportunity for live firing, especially air to air and a moving target. A range of drogue and banner targets have been developed over the decades which were towed in the air by other aircraft. However, due to their fabric construction they have limited maximum speeds, usually in the order of 150 to 200 knots.

Developed in Sweden and manufactured in Britain by RFD (Rubberised Fabric Developments) who were better known for life jackets and life rafts, the winged target was made of resin bonded plywood. The target was tested to a maximum towing speed of 365 knots, thus allowing for higher realistic attack speeds in the mid 200 knot range.

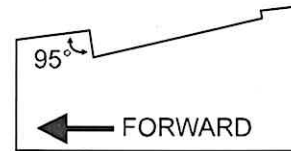
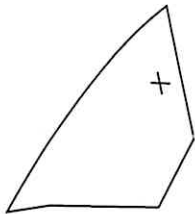
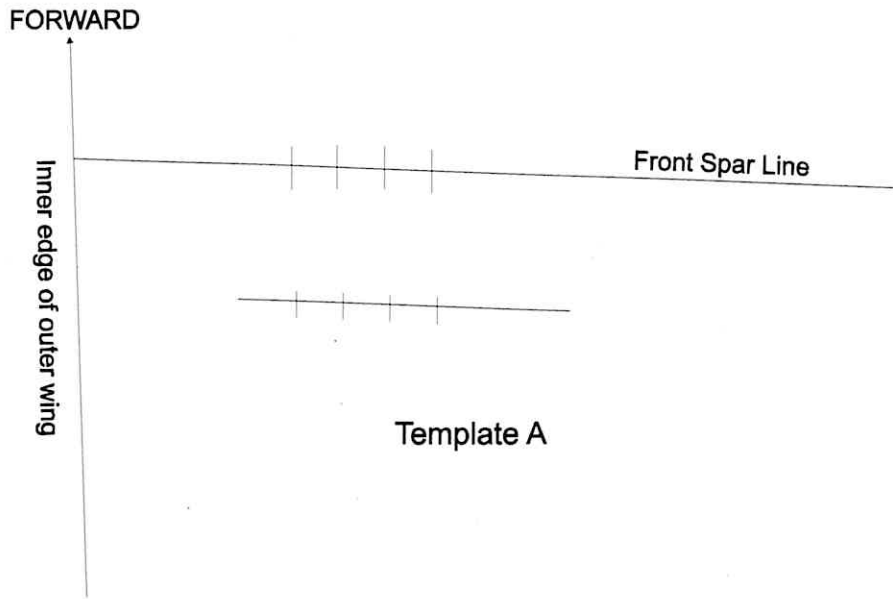
Ten Winged Targets were delivered to the RAAF, starting in mid 1952, but saw little use, with the remainder being declared surplus in February 1954. It is known that they were used at RAAF East Sale, towed by Beaufighter TT Mk 21's of Number 30 Target Towing Squadron to provide realistic targets for graduating Fighter Pilot Instructors from the Air Armament School.

The serial numbers A88-1 to A88-10 were allocated but no photographs have been located showing this application. Unconfirmed evidence suggests that these targets were painted red and the two black and white photographs in RAAF file A705 15/9/99 Part 2 tend to confirm this.

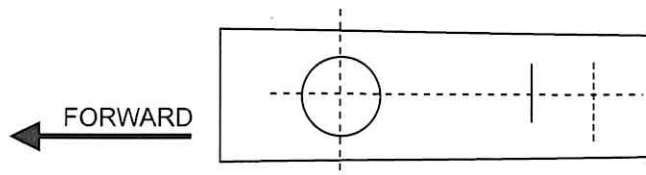


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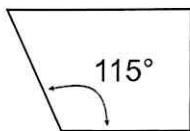
# 1/48 Scale Template Sheet



Template B



Template D



Template for setting correct angle of observer's hood

Template E





A8-328

A8-364

A8-265

A8-265

A8-359

A8-359

A8-328

A8-364

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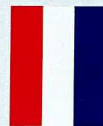
A8-359

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303

3 TTSQ

3 TTSQ



A8-363

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A8-363

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RRR48156 Beaufighter TT © 2011 Red Roo Models

