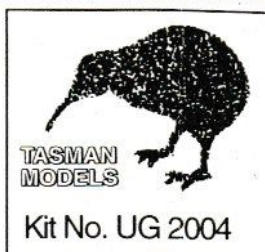


# UPGRADE

## 1/72

## Bristol Beaufort Mk I/VI



### BEAUFORT HISTORY.

In August 1935 the UK Air Ministry issued specifications for a new design for a four-seat medium-range reconnaissance bomber and a three-seat coastal torpedo-bomber to replace the Avro Anson and Vickers Vildebeest respectively. Bristol submitted their Types 149 and 150 which were modelled on the Blenheim I.

The Bristol team however soon saw the advantage of combining the roles into a single design and in April 1936 they submitted Type 152. The Air Ministry issued new specifications which resulted in them accepting both Blackburn's B-26 (later named Botha) and Bristol's 152 - the Beaufort - as there was little difference to choose from on paper. The Ministry intended to use the Botha to replace the Anson & Vildebeest in the UK and the Beaufort, with its longer range, to replace the Vildebeest in the Far East.

The silver-painted first prototype was rolled out at Filton on 27 September 1938 and took to the air on 15 October. Problems immediately became apparent with severe engine overheating and tailplane turbulence. A new Blenheim-style engine cowling and much larger oil cooler intakes soon rectified the overheating and fitting semi-circular plates to the wing trailing edge behind the nacelles took care of the turbulence. These plates were later removed when larger engines were installed which improved air flow over the wings.

The Beaufort entered squadron service just after the start of the war in November 1939. Though designed primarily as a torpedo-bomber it more often saw service as a minelayer and standard bomber. There were a number of notable torpedo missions in the two years of European service. These included an attack on the German battle cruiser Gneisenau by 22 Sqn on 6 April 1941. During this attack Flying Officer Kenneth Campbell, flying OA-X serialled N1016 (one of this kit's decal options), scored a hit on the Gneisenau but his aircraft crashed immediately afterwards killing him and the three crew. He was awarded the Victoria Cross posthumously for this action.

Beauforts went into service with four major Commonwealth air forces - the RAAF, RNZAF, SAAF and RCAF. By far the smallest of these was the RNZAF's 489 Sqn who operated six Mk I aircraft in the torpedo-bomber role at RAF Leuchars in Scotland between late 1941 and early 1942. A shortage of Beauforts resulted in the amalgamation of the aircraft from three squadrons, including 489's, into 39 Sqn thus ending its brief Kiwi use. The Canadians took on charge a dozen Beauforts (formerly operated by the RAF in Canada) between late November 1942 and April 1943 split between 149 'Seawolf' Sqn and 32 OTU. Their brief operational service, consisting of mainly uneventful patrol work, ended in August 1943 when the nine surviving machines were placed in longterm reserve and the squadrons were re-equipped with Venturas. The aircraft later became instructional airframes and the last three were struck off charge in March 1947.

The SAAF took delivery of a total of 58 Beauforts starting with 18 delivered to South Africa in late December 1941 to cover the vital Cape shipping route. In April 1942 all remaining aircraft were actively involved in the invasion of Vichy-controlled Madagascar. At the conclusion of this campaign in September the nine remaining aircraft were returned to the SAAF. When 16 Sqn was transferred to the Middle East in May 1943 they swapped their Blenheims for a total of 40 ex-RAF Beauforts. These saw action in the invasion of both Sicily and Italy and in December 1943 they were returned to the RAF.

Over a third of the total 2129 Beauforts built were done so under license in Australia. A total of 17 squadrons flew the Beaufort, a majority of them the Mk VIII version, from 1941 till the end of the war. While the majority of these squadrons were kept based in Australia, a number of them were in constant action against Japanese forces north of Australia right up to the very end of the

war. A small number of Beauforts were converted to freighter versions (nick-named the 'Beaufreighter') by deleting the rear turret and installing an enlarged fairing in its place.

The end of the war spelt the end for the vast majority of the surviving Beauforts as there was no market for such obsolete and trouble-plagued aircraft. By the late 1950's there was not a single complete aircraft left. Fortunately enough major parts have survived, or have been recovered from wrecks, to enable a number of full restoration projects to be started in recent years although it is doubtful that we will ever see one take to the air again.

### BEAUFORT CONSTRUCTION.

The FROG Beaufort was first released in 1963 (FROG released over 300,000 of this kit in the following 20 years) and falls far short of current kit standards. Most areas of this kit need attention if a presentable model is to result and we have provided a number of parts to correct most of the more notable inaccuracies.

### FUSELAGE.

The major change required to the fuselage halves involves cutting a section out of the nose in order to fit the one-piece new Falcon ClearVax clear parts. The FROG clear parts are both quite inaccurate and have the clarity of a Coke bottle. Use the side-view drawing supplied to razor-saw the marked area off the nose parts.

To remove the clear nose parts from the backing sheet, start by ensuring that you have a new, straight-edged, blade in your modelling knife. Note that there is a ledge around the clear part - start by placing the tip of the blade in the junction of the ledge and side of the part at a 45 degree and very lightly score around the full perimeter (just breaking the surface). This will produce a channel for you to follow when you score around the part for a second time - with just a little more pressure this time. Keep repeating this process until the part breaks free of the backing. If you rush this process (or use a blunt knife-blade) then you risk having the knife slip/slide off and ruin the part. Take care not to scuff any of the clear areas as they will not polish out. Use fine sandpaper or wet-dry paper to tidy up any remaining rough edges.

For gluing we recommend using only a wood glue such as PVA. Dont use any of the super glues as the vapour given off them can permanently cloud the clear parts and ordinary tube or liquid glues will not react with the clear parts. One useful side benefit of a water-based glue is that it doubles as a filler to seal the joint lines and remains slightly flexible. The clarity of these replacement parts makes it necessary for the addition of internal detailing in order that the nose interior looks a little 'busy'. A selection of detail photos plus cut-away drawings are supplied to help you with this. A new under-nose gun turret is supplied but only the RAAF A9-66 option with this kit had it installed.

Cut the Frog clear upper gun turret 3mm from the bottom and add the new Falcon vacformed turret to the base.

If you are building this kit as one of the RAAF options on the decal sheet you will have to add an extension to the leading edge of the fin. Using the sideview drawings on the colour scheme sheet as a guide, cut about 2mm off the fin leading edge (dont touch the rudder - it is the same size for all versions) to provide a mating surface for super-gluing a piece of plasticard to. Shape the plasticard addition to match the drawing.

### WINGS, ENGINES & TAILPLANES.

Only the RNZAF & RAF options in this kit had the wing trailing edge extension fitted (as moulded on this kit's wings) so if you are building any of the remaining schemes then remove this flush with the trailing edge. The Beaufort has fairly prominent wingtip navigation lights. The best way of simulating these is to cut the very tip of each wingtip off and superglue a strip of clear plastic (or sprue) in its place. File and sand this to the correct wingtip shape and polish it smooth.

The carburettor intakes outboard of either engine are both in the wrong position and under-sized. We recommend that you replace them with new pieces. The simplest method is to shape a short section of thick-walled plastic tubing, set it into the wing leading edge and smooth it in.

New vacformed engine nacelles are supplied for the Mk I version. Rather than using the traditional method of using a sanding board to remove the backing thickness of plastic there is a much quicker way - use a sharp blade at a very shallow angle to cut the parts directly off the backing sheet. Follow the same basic instructions we have given for cutting out the clear canopies and you wont go wrong. Give the mating surfaces of the parts a slight rubbing down after they have come off the backing sheet. Take care to maintain a perfectly circular front lip to the nacelles.

The kit's tailplanes are not exactly accurate but are relatively easy to correct - refer to the planview drawing in these instruction sheets for the accurate shape (the main inaccuracy lies in the dividing line between the tailplane and aileron).

### DECAL APPLICATION.

A single clear film covers the whole decal sheet so each item will need to be individually carefully cut out. To maximise the number of options we can provide, we have minimised the space between each item. It is therefore recommended that you use the tip of a sharp knife to separate each decal from the backing sheet. Before separating each decal we recommend that you give it a coat of Micro Scale's Super Film. This liquid dries in seconds and gives decals a super-thin but super-tough coating and prevents handling damage if the decal is handled roughly. We recommend it for use on all decals.

Our decals are very thin and should go down over surface detailing without the need of setting or solvent solutions although they are compatible with products like Micro Sol and Micro Set.

Dip the decal in warm water for a couple of seconds and put aside on a piece of cloth for about thirty seconds. Slide the edge of the decal slightly over the edge of the decal paper and position it precisely where it is to go on the model. When it is in position hold the decal in position and pull the decal paper completely away. This will minimise the amount of moving around on the model required and lessen any loss of decal adhesive. Use a soft cloth to press the decal down and remove any trapped air/water. Leave for 24 hours before applying any varnish. Ensure that you apply the decals to a smooth, glossy surface or you will risk silvering them.

### ACKNOWLEDGEMENTS.

We would like to express our gratitude to the following friends who greatly contributed to the production of this kit:-

Tore Martin (Falcon ClearVax) for the patternmaking and moulding of the vacformed parts; Malcolm Laird (Ventura Decals) for the computer-generated decal artwork and boxart assistance; Kelvin Andrews for his excellent Beaufort boxtop drawing and Judy Laird for her design of the new UPGRADE logo.

# Bristol Beaufort I Cutaway Drawing Key

- 1 Starboard navigation light
- 2 Formation keeping light
- 3 Starboard aileron, fabric covered
- 4 Aileron tab
- 5 Aileron hinge control
- 6 Starboard ASV Mk II radar aerial
- 7 Oil cooler intake
- 8 Starboard outboard fuel tank
- 9 Pneumatic dive brake (few aircraft only) open
- 10 Dive brake operating bellows
- 11 Flap hydraulic jack
- 12 Starboard undercarriage wheel bay
- 13 Inboard fuel tank
- 14 Fuel vent
- 15 Carburettor air intake
- 16 Engine bearer struts
- 17 Cooling air outlet gills
- 18 Bristol Taurus VI 14-cylinder sleeve-valve radial engine
- 19 Engine cowlings
- 20 Exhaust collector ring
- 21 de Havilland three-bladed propeller
- 22 Spinner
- 23 Twin Vickers K-type 0.303-in (7.7-mm) nose guns on gimbal mounts
- 24 Windproof sealing apertures
- 25 Ammunition drums
- 26 Bomb aiming windows
- 27 Bomb sight
- 28 Pitot tube
- 29 Nose ASV Mk II radar aerial
- 30 Nose compartment construction
- 31 Bomb aiming prone position
- 32 Navigator's chart table

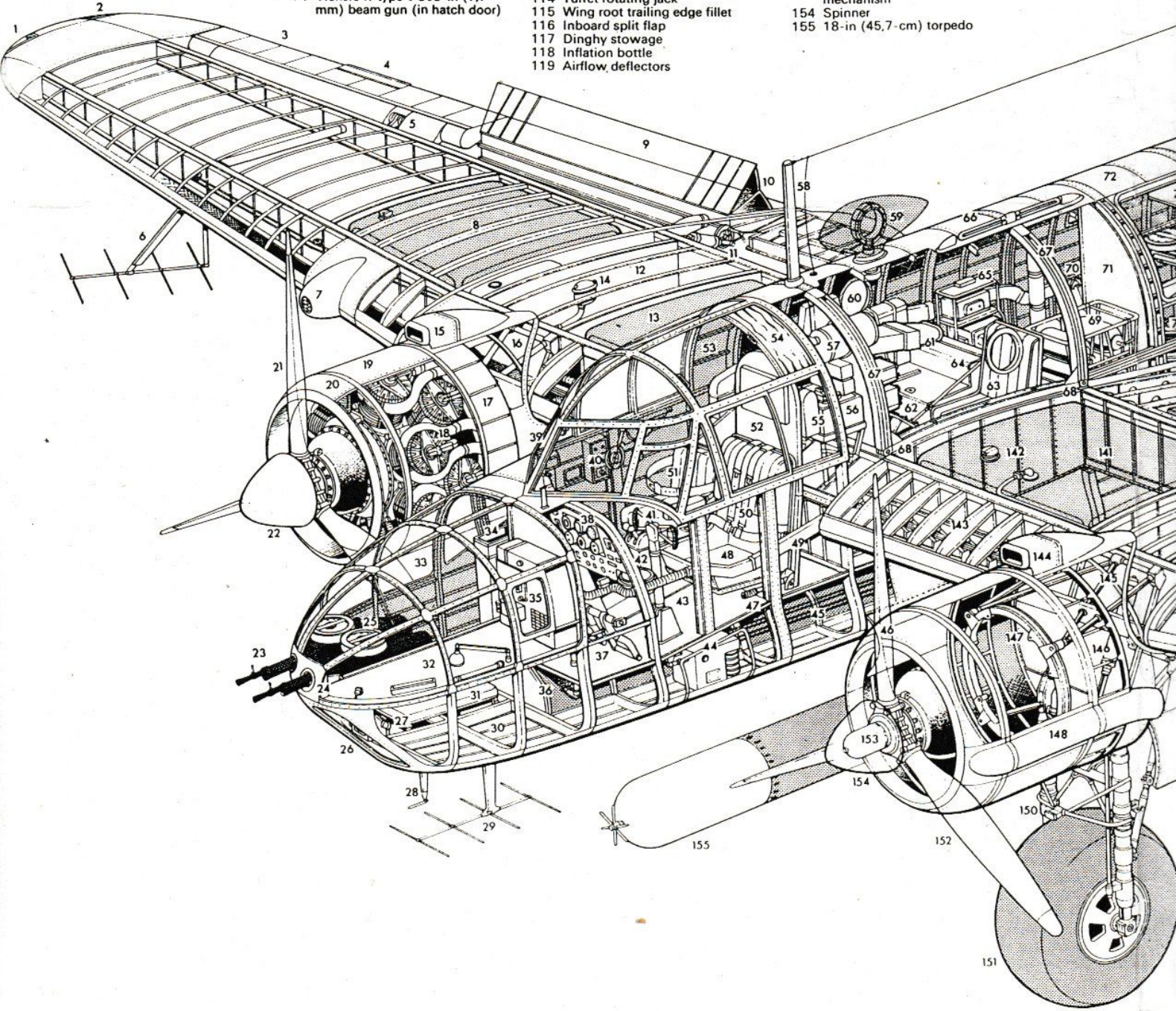
- 33 Nose glazing
- 34 Chart case
- 35 Navigator's instrument panel
- 36 Forward end of semi-recessed torpedo housing
- 37 Rudder pedals
- 38 Pilot's instrument panel
- 39 Windscreen panels
- 40 Pilot's fixed gun sight
- 41 Control column
- 42 Compass
- 43 Pilot's floor
- 44 Autopilot controller
- 45 Control cable runs
- 46 Bomb doors
- 47 Seat adjusting lever
- 48 Pilot's seat
- 49 Heater air duct
- 50 Safety harness
- 51 Navigator's seat
- 52 Pilot's armoured backplate
- 53 Cockpit roof escape hatch
- 54 Sliding sun blind
- 55 Parachute stowage
- 56 Radio equipment
- 57 Hydraulic fluid tank
- 58 Aerial mast
- 59 D/F loop aerial
- 60 Cabin side window
- 61 Radar viewfinder
- 62 Radio console
- 63 Radio operator's seat
- 64 Rear spar step
- 65 Radio equipment racks
- 66 Flush mounted roof aerial
- 67 Fuselage double frame
- 68 Wing spar attachments
- 69 Oxygen bottles
- 70 Top of flare launch tube
- 71 Cabin bulkhead
- 72 Fuselage skin plating
- 73 Entry hatch
- 74 Vickers K-type 0.303-in (7.7-mm) beam gun (in hatch door)

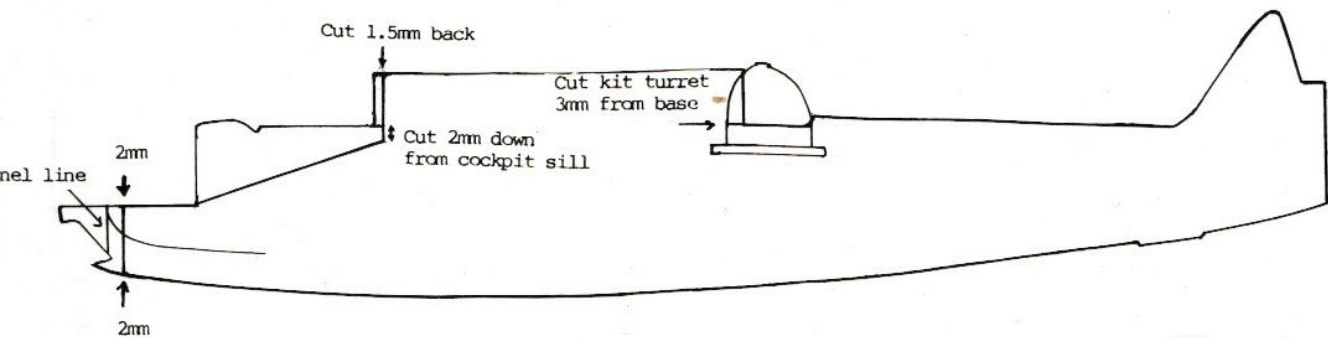
- 75 Toilet
- 76 Gunner's seat
- 77 Turret mechanism
- 78 Aerial mast
- 79 Turret fume extractor
- 80 Rotating Bristol B IV Mk I turret
- 81 Twin Vickers K-guns
- 82 Fuselage upper longeron
- 83 Radar equipment racks
- 84 Fuselage frame construction
- 85 Dive brake de-icing fluid tank
- 86 Carburettor de-icing tank
- 87 Vertical control cable shaft
- 88 Rear fuselage joint frame
- 89 Dust proof fabric bulkhead
- 90 Fin root fairing
- 91 Fin spar attachment
- 92 Tailplane construction
- 93 Starboard elevator
- 94 Tailfin construction
- 95 Aerial cable
- 96 Rudder balance weight
- 97 Rudder construction
- 98 Tail navigation lights
- 99 Rudder tab
- 100 Elevator tab
- 101 Port elevator
- 102 Port tailplane
- 103 Rudder control horn
- 104 Elevator hinge controls
- 105 Tailplane fixing double frames
- 106 Tailwheel retraction mechanism
- 107 Lockheed tailwheel unit
- 108 Tailwheel housing, fixed tailwheel on early aircraft
- 109 Tailplane control cables
- 110 Fuselage lower longeron
- 111 Emergency landing flare chute
- 112 Ballast weights
- 113 Walkway
- 114 Turret rotating jack
- 115 Wing root trailing edge fillet
- 116 Inboard split flap
- 117 Dinghy stowage
- 118 Inflation bottle
- 119 Airflow deflectors

- 120 Port upper surface dive brake (see item 9)
- 121 Outboard flap housing
- 122 Port aileron construction
- 123 Aileron tab
- 124 Formation keeping light
- 125 Port navigation light
- 126 Wing rib construction
- 127 Aileron cable duct
- 128 Leading edge nose ribs
- 129 Port ASV Mk II radar aerial
- 130 Landing and taxiing lamps
- 131 Ammunition box
- 132 Fixed Browning 0.303-in (7.7-mm) machine gun (port wing only)
- 133 G45 gun camera
- 134 Port outboard fuel tank, capacity 91 Imp gal (413 l)
- 135 Outer wing panel spar joints
- 136 Oil cooler
- 137 Ram air intake
- 138 Cabin heater
- 139 Engine oil tank
- 140 Main undercarriage wheel bay
- 141 Port inboard fuel tank, capacity 194 Imp gal (882 l)
- 142 Filler cap
- 143 Engine control ducting
- 144 Carburettor air intake
- 145 Engine bearer struts
- 146 Undercarriage hydraulic retraction jack
- 147 Engine mounting ring frame
- 148 Exhaust pipe fairing
- 149 Mainwheel doors
- 150 Vickers oleo-pneumatic undercarriage leg struts
- 151 Port mainwheel
- 152 de Havilland three-bladed propeller
- 153 Propeller pitch change mechanism
- 154 Spinner
- 155 18-in (45.7-cm) torpedo

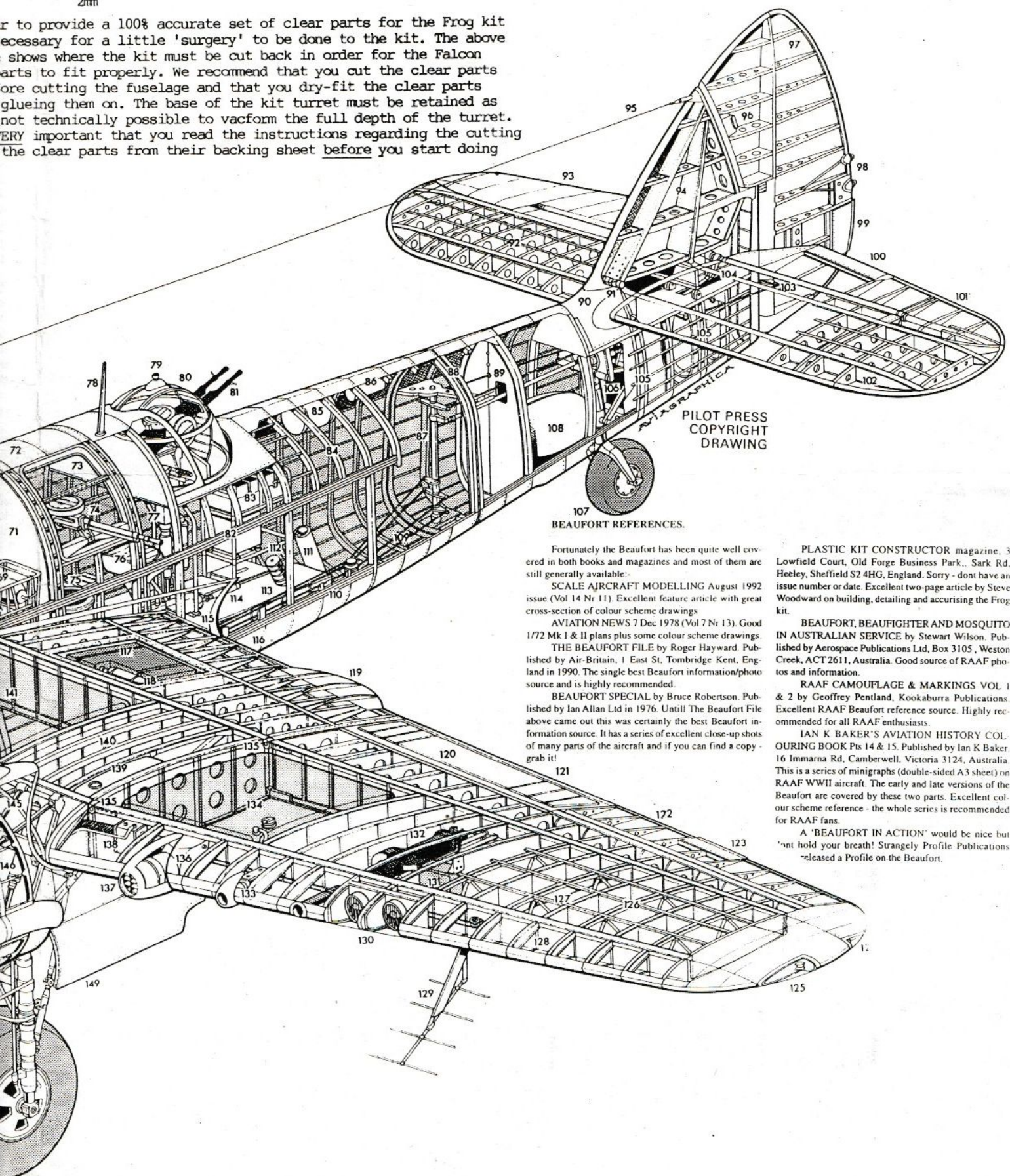
Panel line

In order to provide a clear profile shows where clear parts to fit out before cutting. It is VERY important of the clear it.





r to provide a 100% accurate set of clear parts for the Frog kit necessary for a little 'surgery' to be done to the kit. The above shows where the kit must be cut back in order for the Falcon parts to fit properly. We recommend that you cut the clear parts before cutting the fuselage and that you dry-fit the clear parts glueing them on. The base of the kit turret must be retained as not technically possible to vacform the full depth of the turret. VERY important that you read the instructions regarding the cutting the clear parts from their backing sheet before you start doing

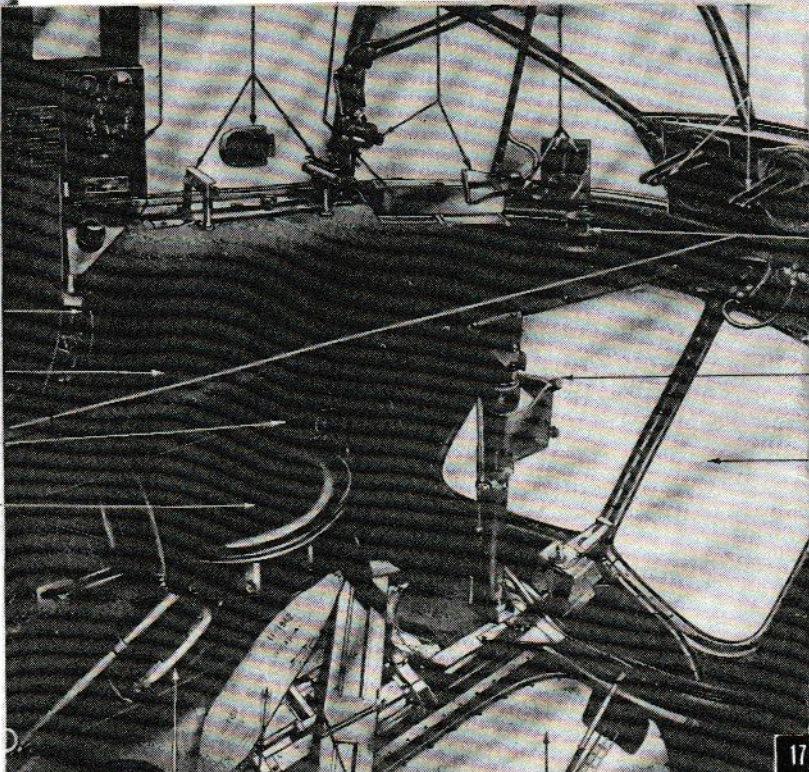
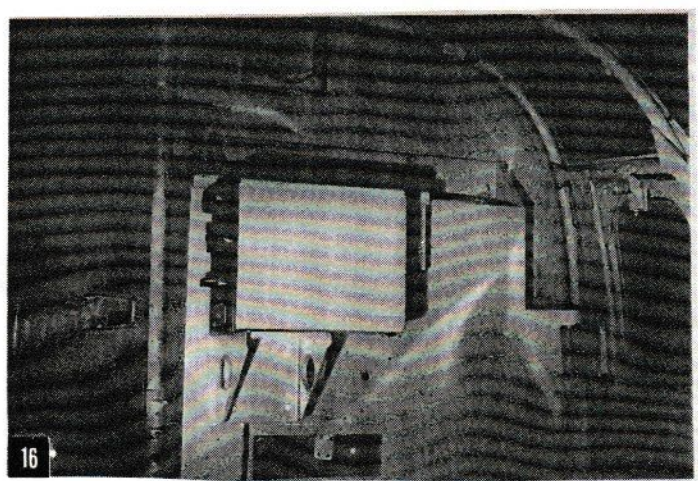
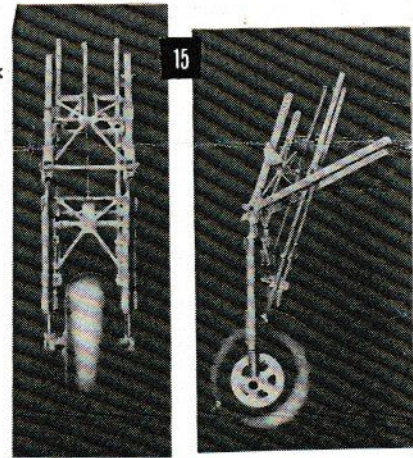
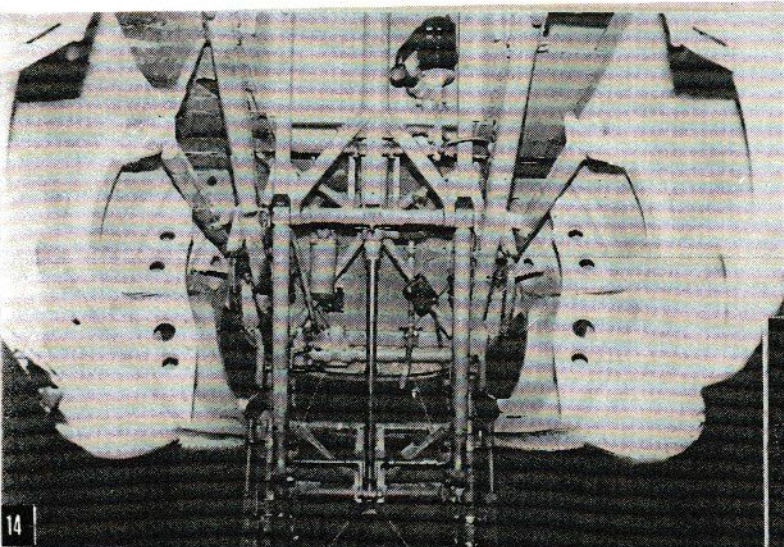
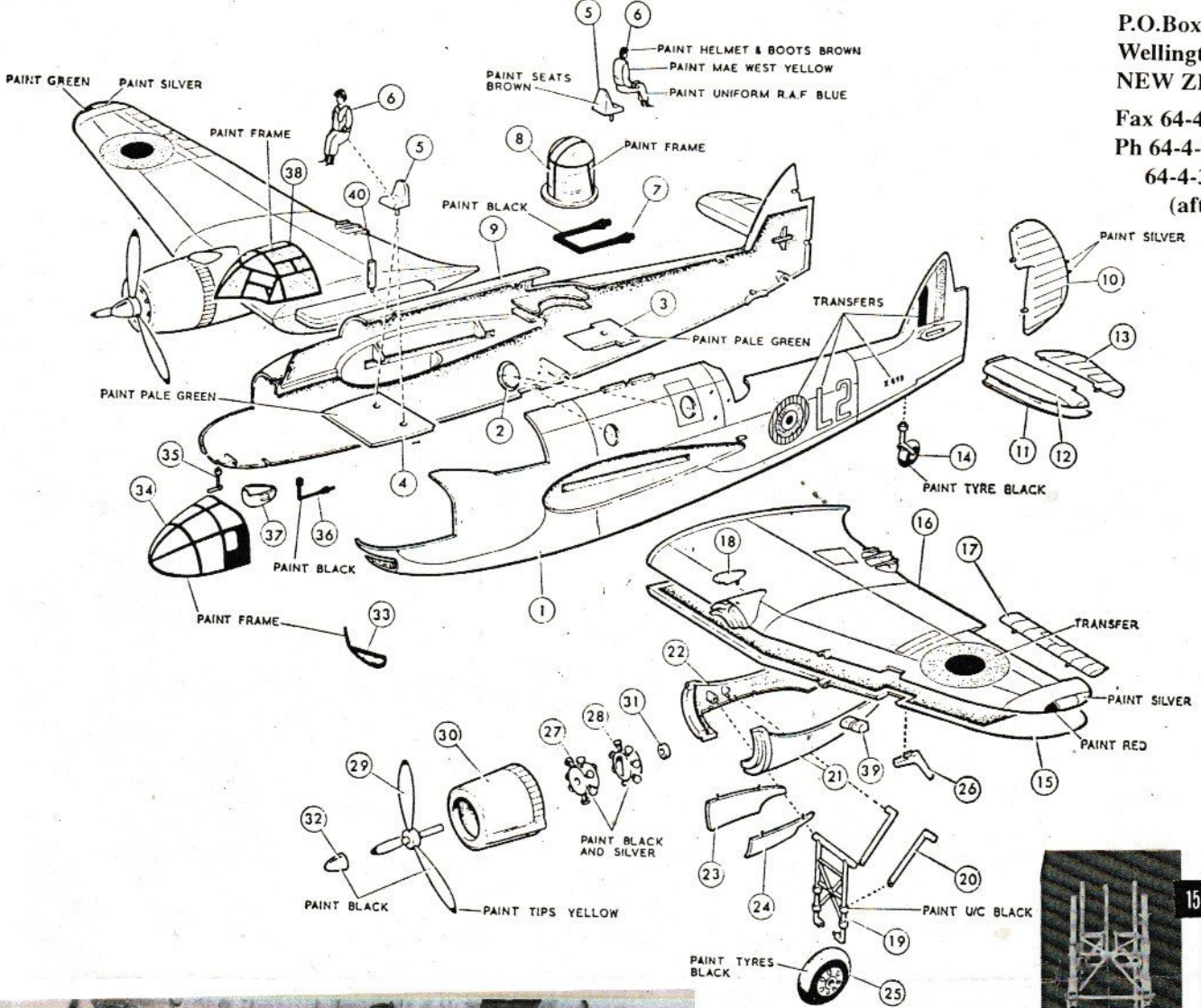


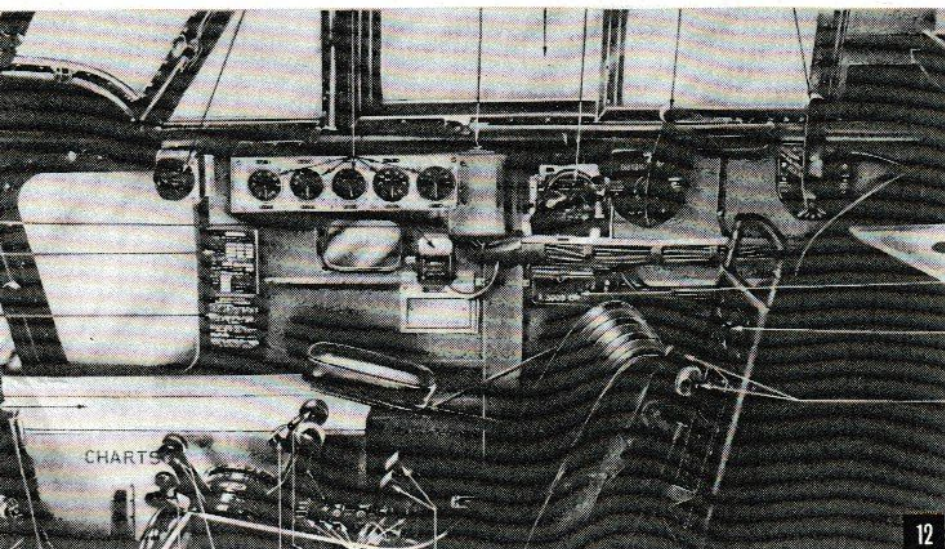
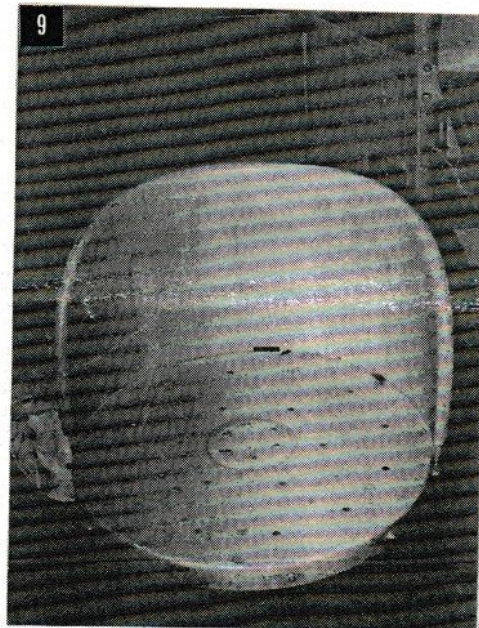
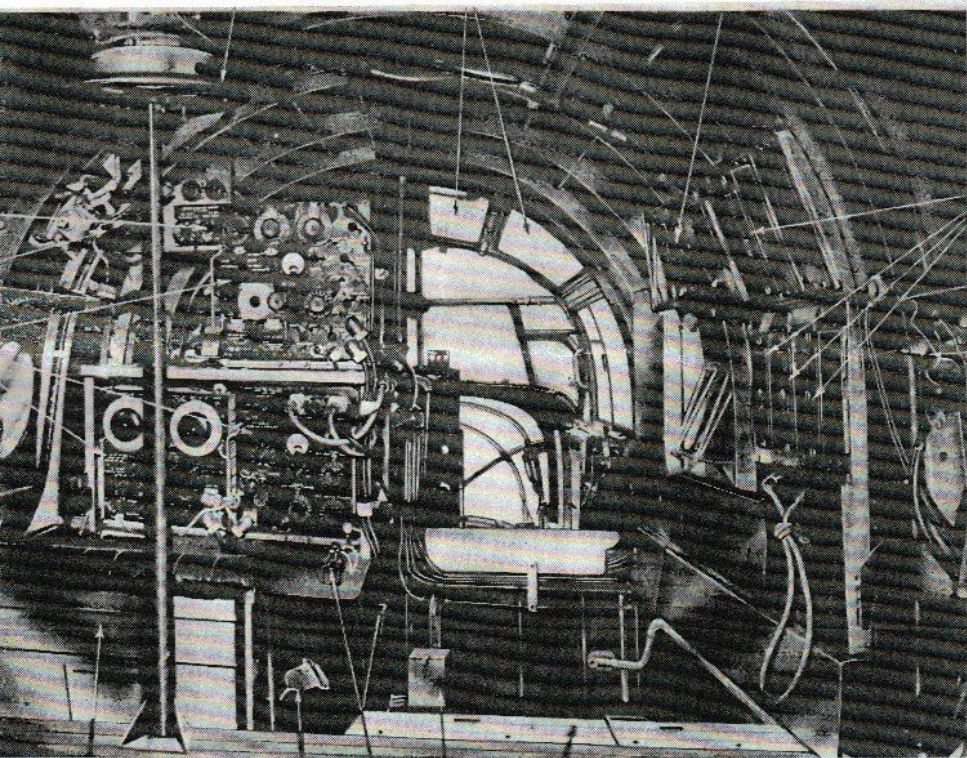
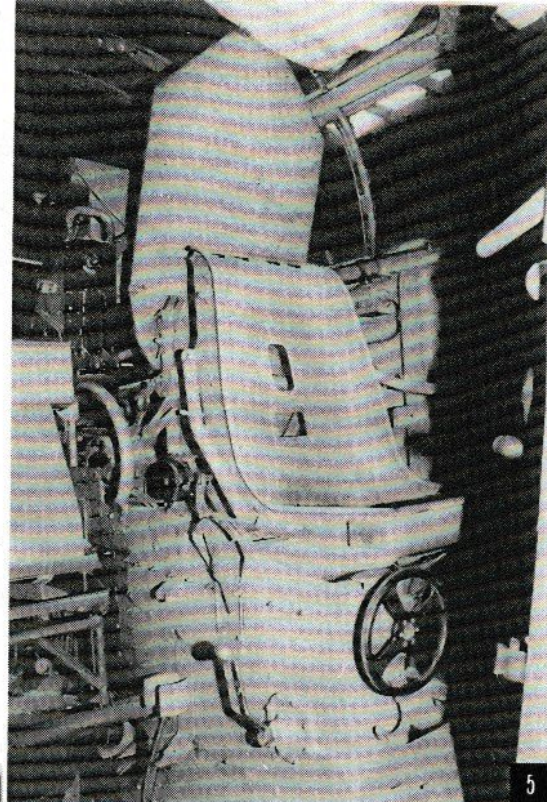
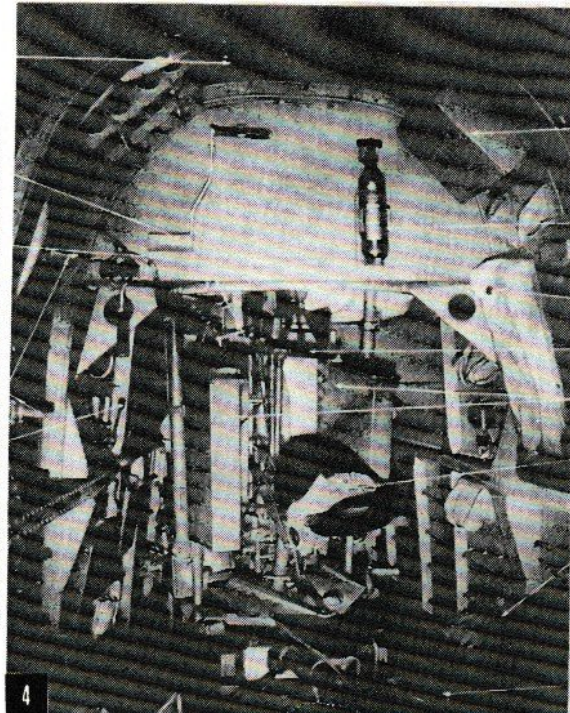
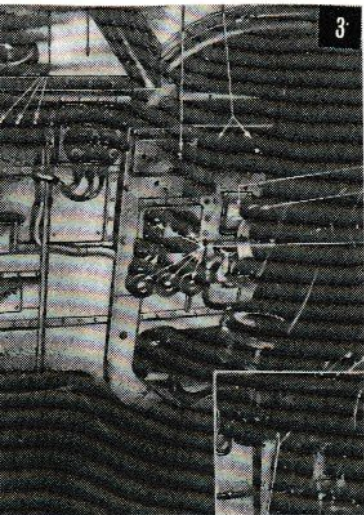
Fortunately the Beaufort has been quite well covered in both books and magazines and most of them are still generally available:

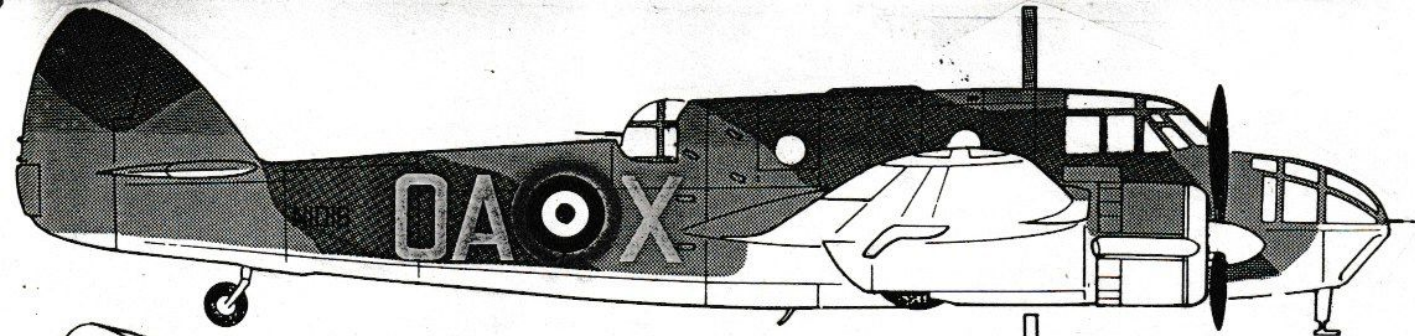
- SCALE AJRCRAFT MODELLING August 1992 issue (Vol 14 Nr 11). Excellent feature article with great cross-section of colour scheme drawings
- AVIATION NEWS 7 Dec 1978 (Vol 7 Nr 13). Good 1/72 Mk I & II plans plus some colour scheme drawings
- THE BEAUFORT FILE by Roger Hayward. Published by Air-Britain, 1 East St, Tonbridge Kent, England in 1990. The single best Beaufort information/photo source and is highly recommended.
- BEAUFORT SPECIAL by Bruce Robertson. Published by Ian Allan Ltd in 1976. Until The Beaufort File above came out this was certainly the best Beaufort information source. It has a series of excellent close-up shots of many parts of the aircraft and if you can find a copy - grab it!

- PLASTIC KIT CONSTRUCTOR magazine, 3 Lowfield Court, Old Forge Business Park, Sark Rd, Heeley, Sheffield S2 4HG, England. Sorry - don't have an issue number or date. Excellent two-page article by Steve Woodward on building, detailing and accurising the Frog kit.
- BEAUFORT, BEAUFIGHTER AND MOSQUITO IN AUSTRALIAN SERVICE by Stewart Wilson. Published by Aerospace Publications Ltd, Box 3105, Weston Creek, ACT 2611, Australia. Good source of RAAF photos and information.
- RAAF CAMOUFLAGE & MARKINGS VOL 1 & 2 by Geoffrey Pentland, Kookaburra Publications. Excellent RAAF Beaufort reference source. Highly recommended for all RAAF enthusiasts.
- IAN K BAKER'S AVIATION HISTORY COLOURING BOOK Pts 14 & 15. Published by Ian K Baker, 16 Immarna Rd, Camberwell, Victoria 3124, Australia. This is a series of minigraphs (double-sided A3 sheet) on RAAF WWII aircraft. The early and late versions of the Beaufort are covered by these two parts. Excellent colour scheme reference - the whole series is recommended for RAAF fans.
- A 'BEAUFORT IN ACTION' would be nice but don't hold your breath! Strangely Profile Publications released a Profile on the Beaufort.

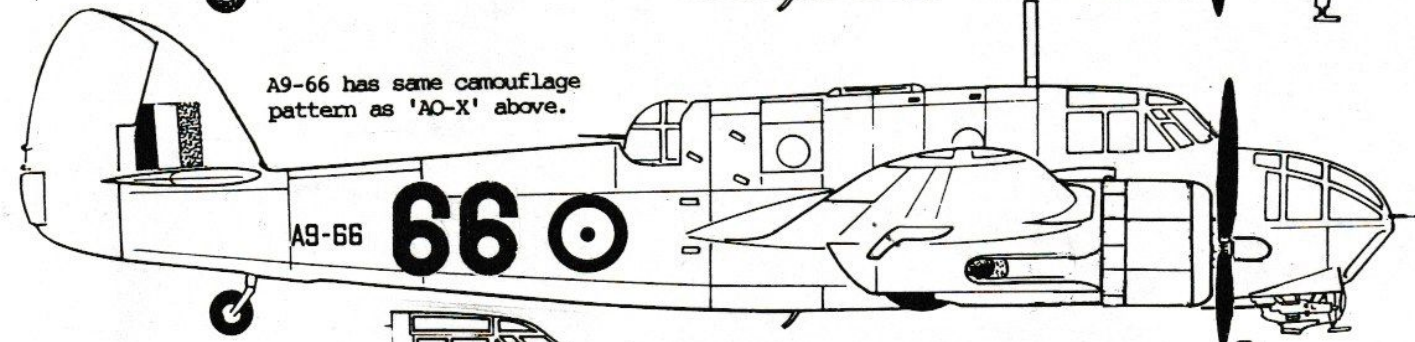
P.O.Box 14-263,  
Wellington.3.,  
NEW ZEALAND  
Fax 64-4-4720124  
Ph 64-4-4728632  
64-4-3882144  
(after hours)



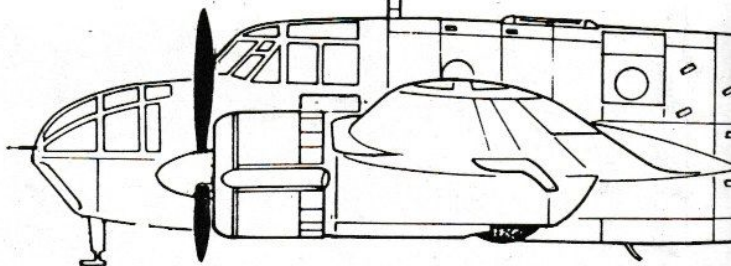
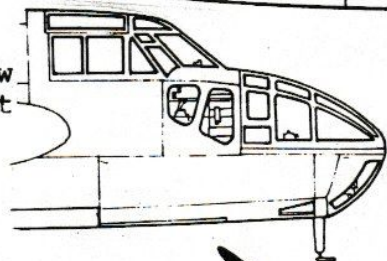




A9-66 has same camouflage pattern as 'AO-X' above.



Port window arrangement



A9-146 "146" RAAF East Sale 7

Nice easy one to paint as it is Foli all with all lettering/numbering in yellow aircraft show it with a very new paint sch ally no weathering (despite being on of t Beauforts). Note the positioning of the "146" under the nose. The very small "1 sheet goes on the middle of vthe extreme Prop hubs are red and the prop tips are y

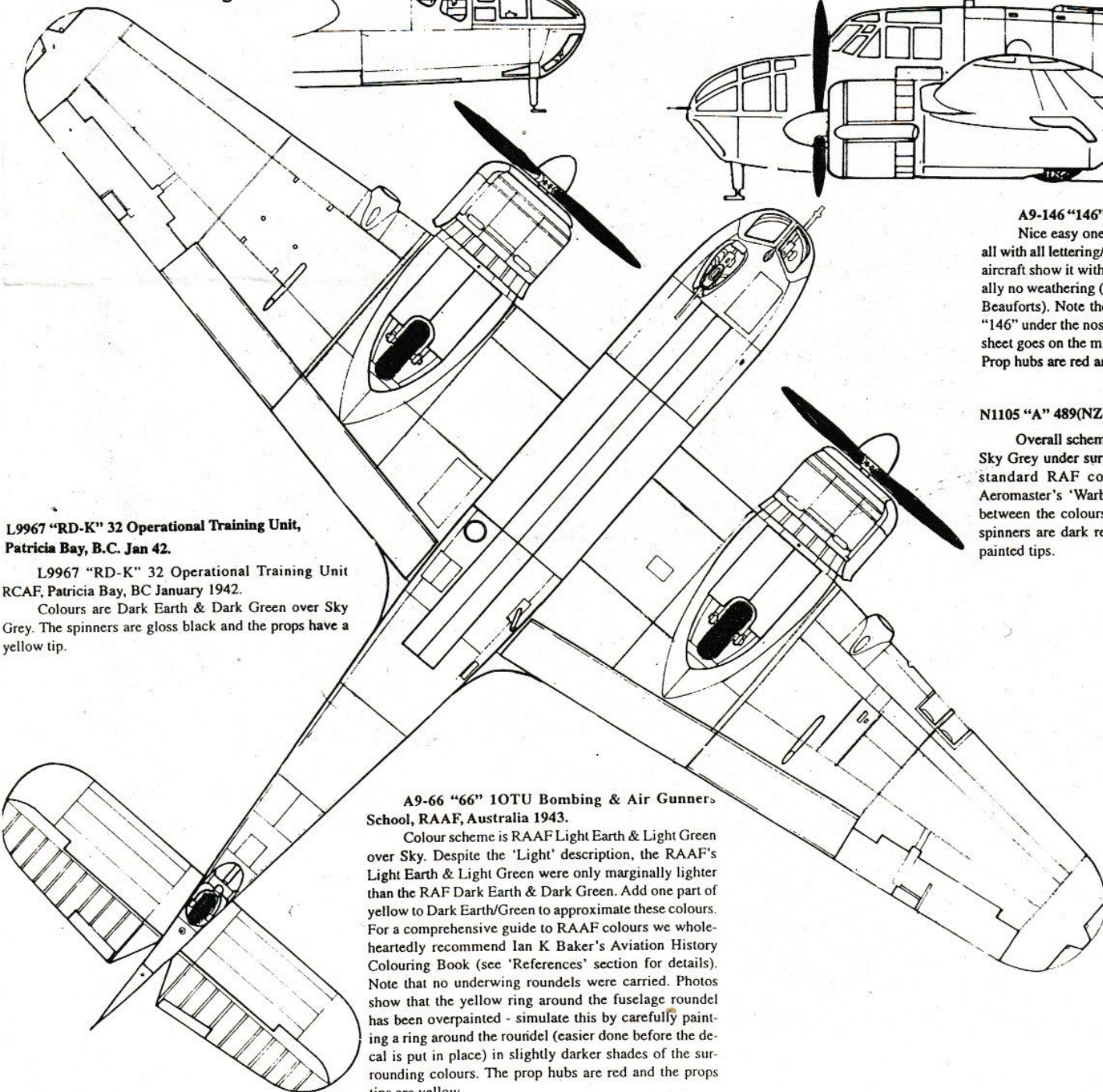
N1105 "A" 489(NZ) Sqn Leuchars AB,

Overall scheme is Dark Green & D Sky Grey under surfaces. Most paint ran standard RAF colours in them (w Aeromaster's 'Warbirds' paints). The de between the colours is hard so dont fea spinners are dark red and the prop bla painted tips.

L9967 "RD-K" 32 Operational Training Unit, Patricia Bay, B.C. Jan 42.

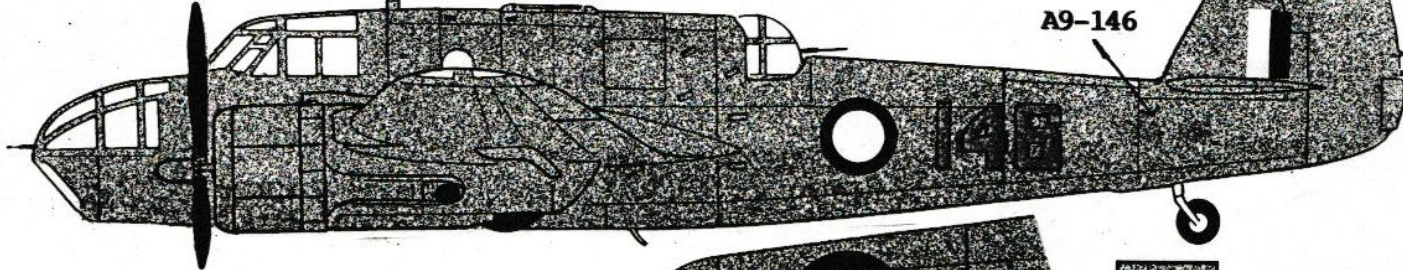
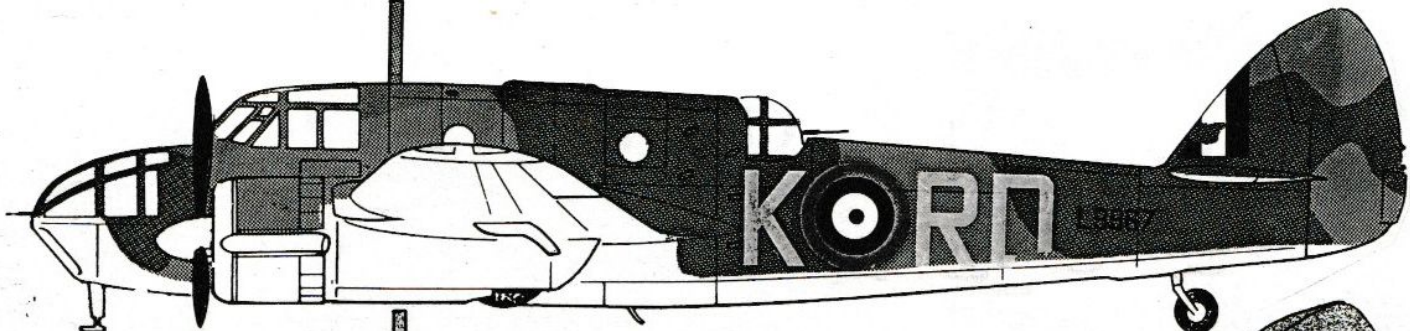
L9967 "RD-K" 32 Operational Training Unit RCAF, Patricia Bay, BC January 1942.

Colours are Dark Earth & Dark Green over Sky Grey. The spinners are gloss black and the props have a yellow tip.

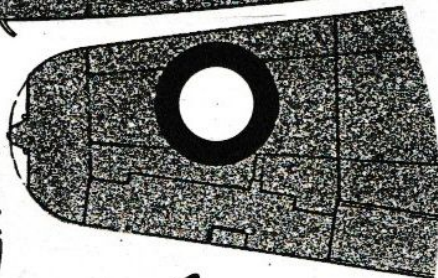
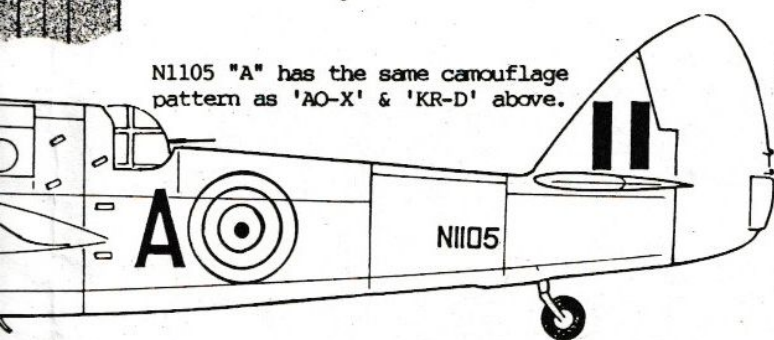


A9-66 "66" 10TU Bombing & Air Gunners School, RAAF, Australia 1943.

Colour scheme is RAAF Light Earth & Light Green over Sky. Despite the 'Light' description, the RAAF's Light Earth & Light Green were only marginally lighter than the RAF Dark Earth & Dark Green. Add one part of yellow to Dark Earth/Green to approximate these colours. For a comprehensive guide to RAAF colours we wholeheartedly recommend Ian K Baker's Aviation History Colouring Book (see 'References' section for details). Note that no underwing roundels were carried. Photos show that the yellow ring around the fuselage roundel has been overpainted - simulate this by carefully painting a ring around the roundel (easier done before the decal is put in place) in slightly darker shades of the surrounding colours. The prop hubs are red and the props are yellow.



N1105 "A" has the same camouflage pattern as 'AO-X' & 'KR-D' above.

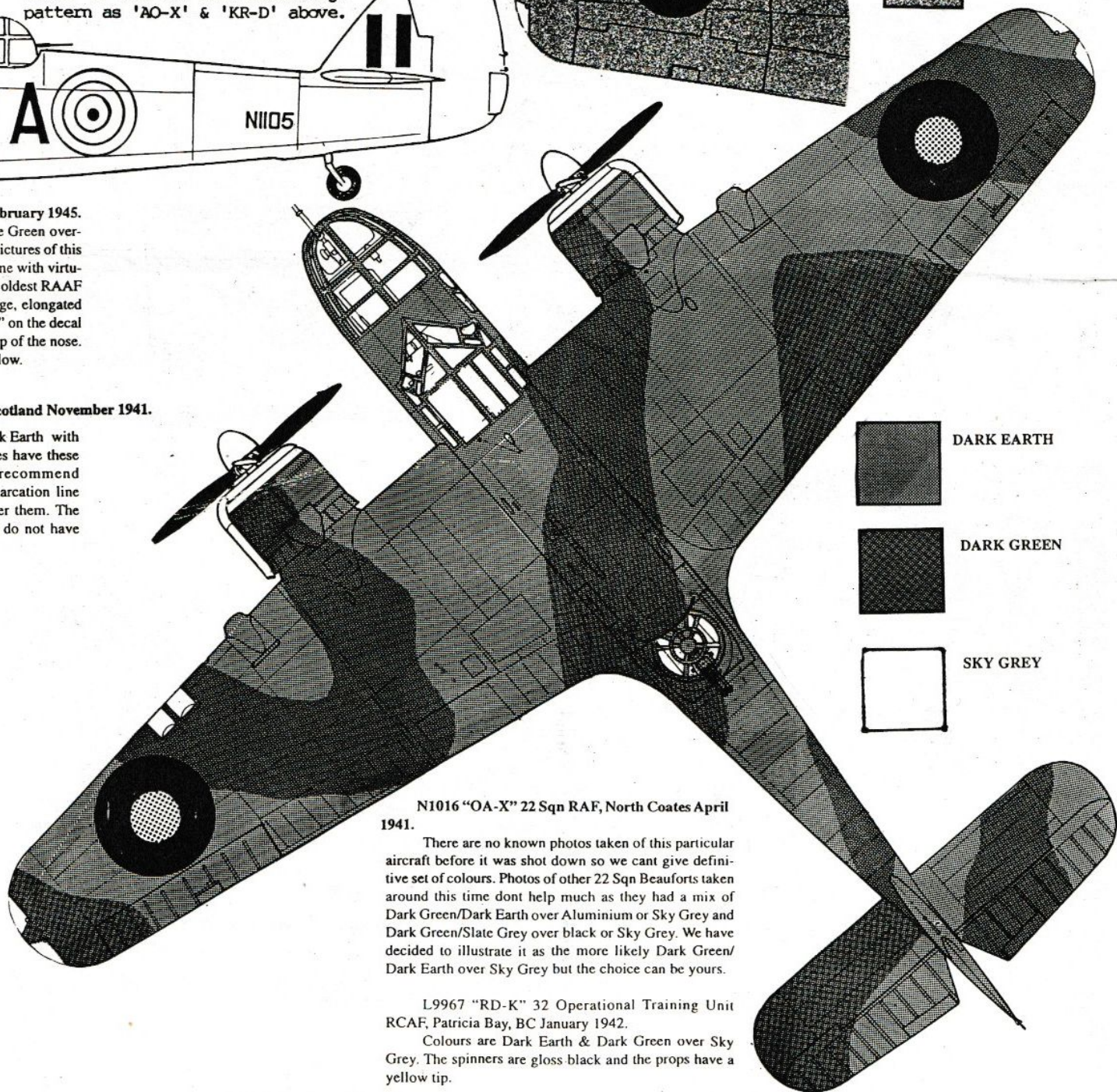


FOLIAGE GREEN

East Sale 7 February 1945.  
 as it is Foliage Green over-  
 ing in yellow. Pictures of this  
 new paint scheme with virtu-  
 being on of the oldest RAAF  
 oning of the large, elongated  
 very small "146" on the decal  
 vthe extreme tip of the nose.  
 prop tips are yellow.

uchars AB, Scotland November 1941.

Dark Green & Dark Earth with  
 most paint ranges have these  
 in them (we recommend  
 paints). The demarcation line  
 so dont feather them. The  
 the prop blades do not have



DARK EARTH



DARK GREEN



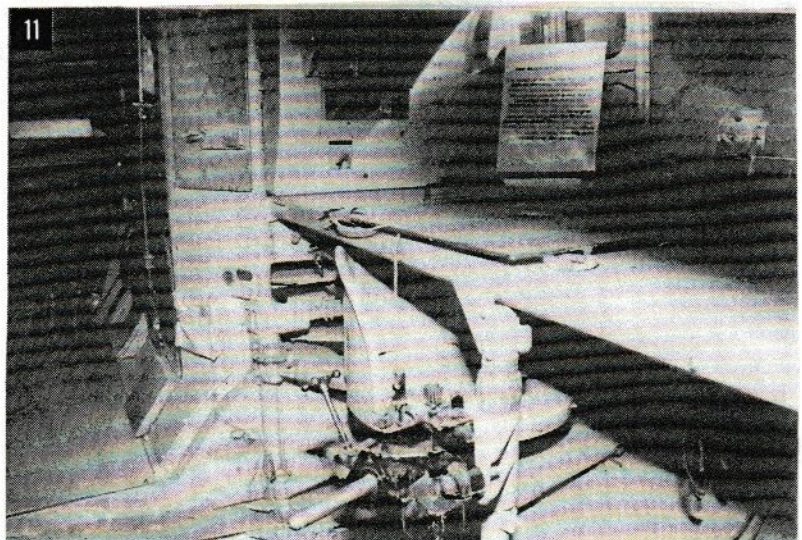
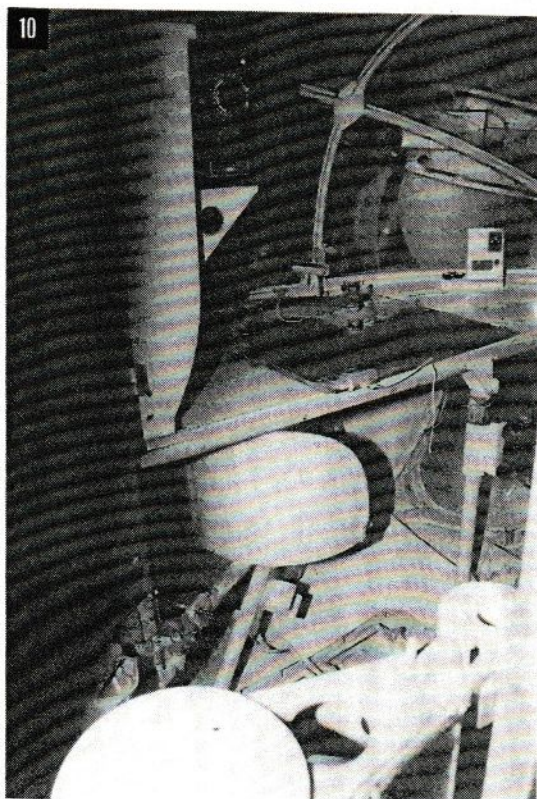
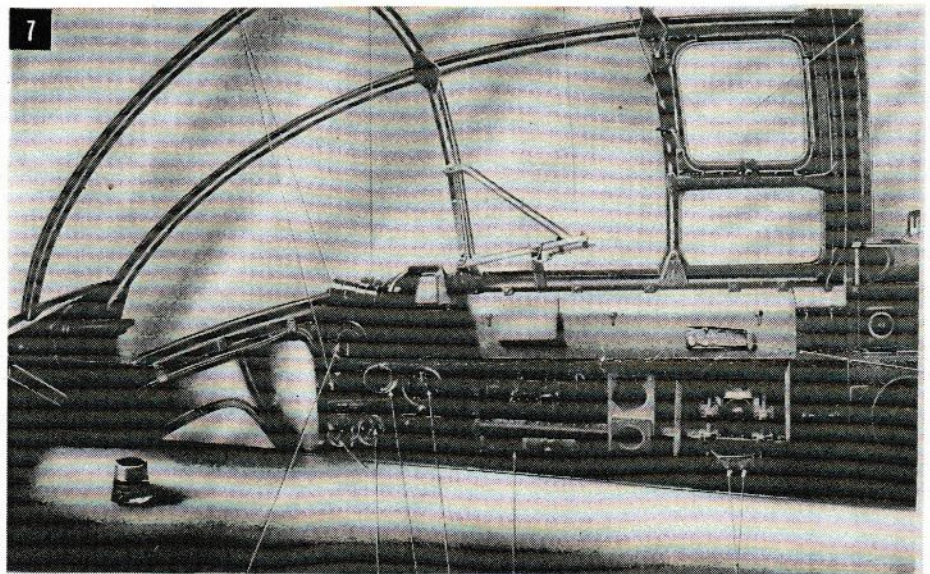
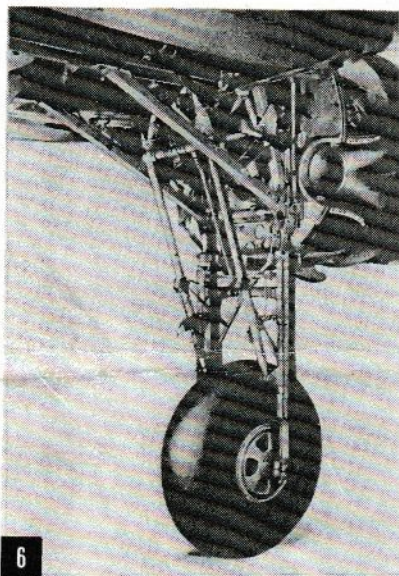
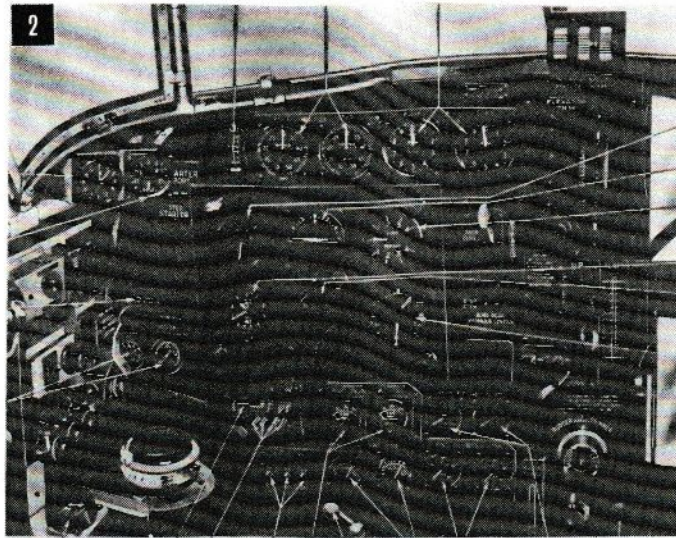
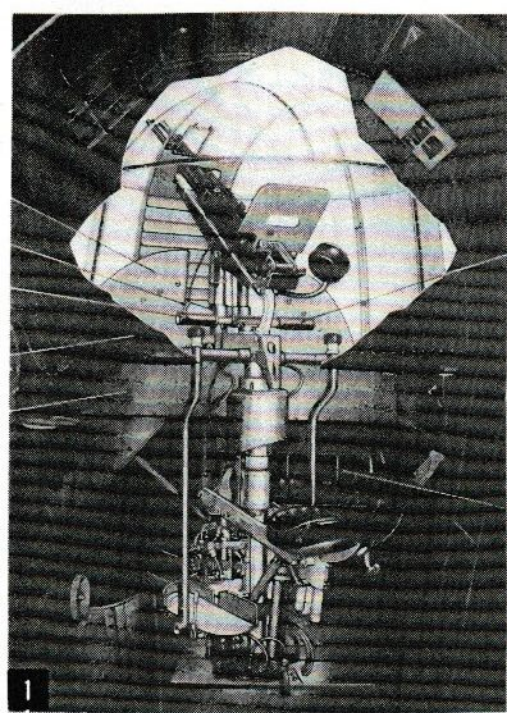
SKY GREY

N1016 "OA-X" 22 Sqn RAF, North Coates April 1941.

There are no known photos taken of this particular aircraft before it was shot down so we cant give definitive set of colours. Photos of other 22 Sqn Beauforts taken around this time dont help much as they had a mix of Dark Green/Dark Earth over Aluminium or Sky Grey and Dark Green/Slate Grey over black or Sky Grey. We have decided to illustrate it as the more likely Dark Green/Dark Earth over Sky Grey but the choice can be yours.

L9967 "RD-K" 32 Operational Training Unit RCAF, Patricia Bay, BC January 1942.

Colours are Dark Earth & Dark Green over Sky Grey. The spinners are gloss black and the props have a yellow tip.





# PHOTO INDEX.

1. Rear Gunner's compartment showing the Mk.1E turret installation. 2. Main instrument panel (semi-gloss black). 3. Left side of pilot's cockpit - most instruments are semi-gloss black and the cockpit wall & seat are RAF Cockpit Green. 4. Another view of the rear gunner's position (RAF Cockpit Green). 5. Pilot's seat. Note raised base and armour-plating plus shade curtain above the seat (light beige colour). Everything is Cockpit Green. 6. Main under-carriage system. 7. Right side of navigator's/bomb aimer's compartment. Note wooden table in foreground. 8. Wireless operator's compartment behind pilots cockpit. All instrument boxes/panels are semi-gloss black with the rest Cocpit Green. 9. Navigator's seat. This is on a swivel which allows stowage under the table. 10. The navigator's position showing the seat stowed. 11. Another angle on the navigator's position 12. Right side of pilot's cockpit. 13. Part of the forward cockpit wall between pilot's area and navigator's position. 14. Front end of main under-carriage well (inside of doors are not painted here otherwise colour is Cockpit Green). 15. Rear and side-view of main under-carriage system. 16. Top part of navigator's bulkhead. 17. Another view of the navigators position.

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