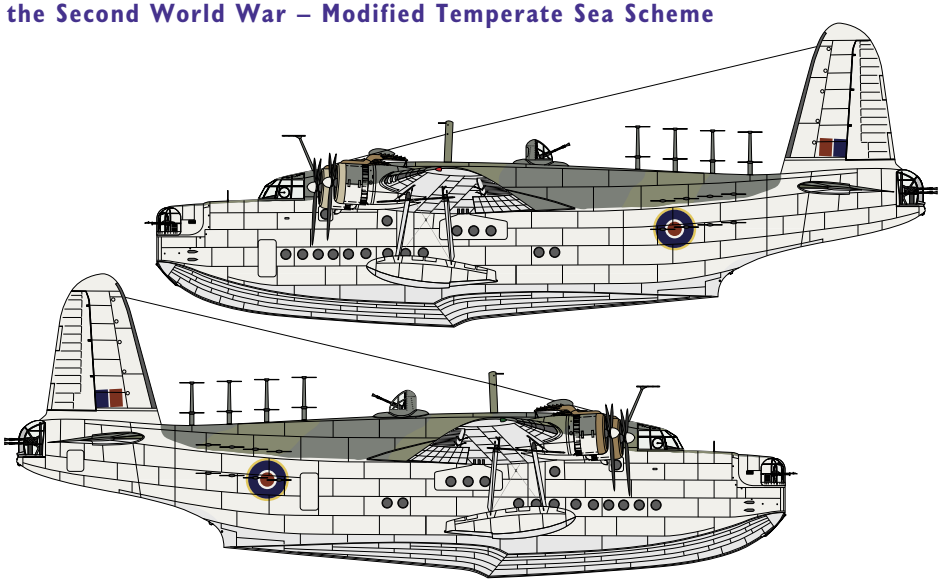
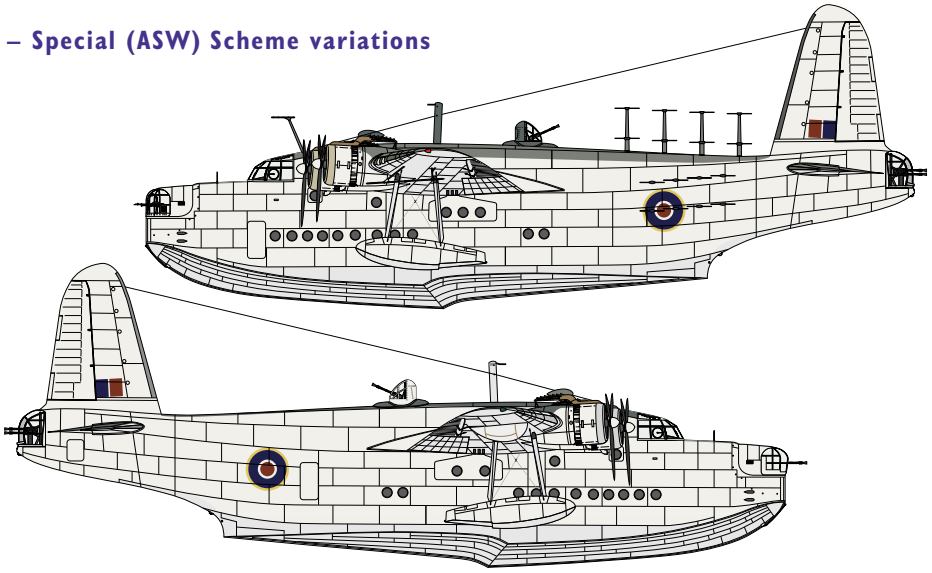
Sunderland Finish & Markings in RAF Coastal Command service during the Second World War – Modified Temperate Sea Scheme



After an initial period of entering service sporting overall aluminum dope, camouflage paint soon began to appear on Sunderlands in the form of the Temperate Sea Scheme (TSS, comprising Dark Slate Grey and Extra Dark Sea Grey) upper surfaces. Sky was the colour specified for the lower surfaces of flying boats (ammendment A.513 to AMO A.926/40 dated 10 July 1941) but during a transitional period some aircraft had the aluminum dope remaining below. A few aircraft based in the Middle East / Mediterranean did carry the Night Bomber Scheme, but this is beyond the scope of this edition.

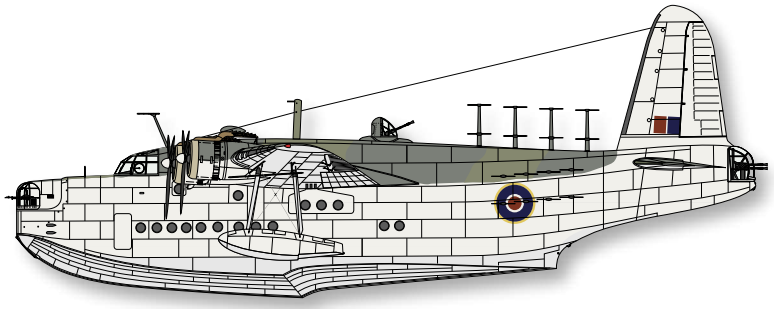
In the summer of 1942 – a few months after the national markings were standardized to those included in this set – a special over-ocean version of the TSS had come into use comprising the same original TSS uppers with matte White under and side surfaces (AMO. A664, Appendix I, dated 2 July 1942). The goal was to reduce the aircraft's silhouette against the often cloud filled North Atlantic sky. (*continued on page 2*)

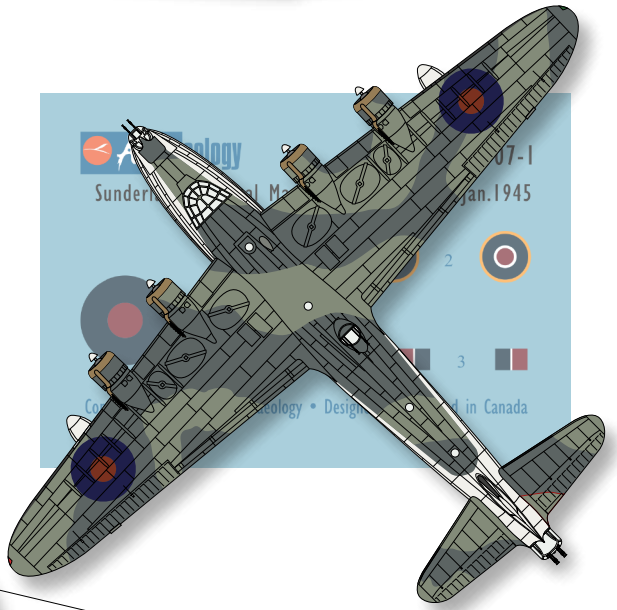
– Special (ASW) Scheme variations

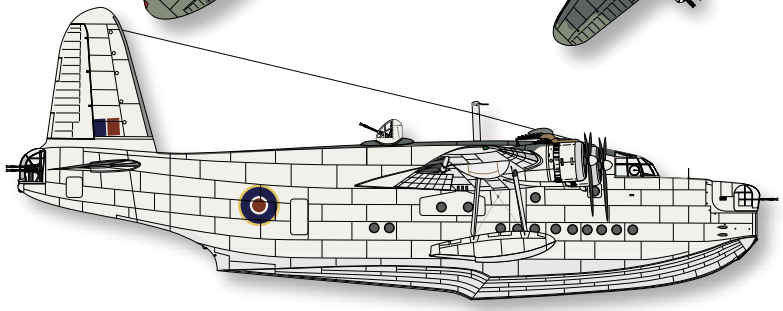


Aviaeology Colours & Codes ADD14c107-1

Sunderland National Markings (typical from May 1942 to January 1945)







This package provides one variant of the national markings applied to all marques of Sunderland in service with the RAF from mid-May 1942 to early January. During that period, the aircraft carried a number of different camouflage schemes, starting with a special over-ocean variant of the earlier Temperate Sea Scheme and later standardizing on a mostly white ASW scheme. Typical variations are noted and illustrated within. This set provides for one 1/144 scale model.

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1/144 scale

Sunderland finish schemes from May 1942 to January 1945 (continued)

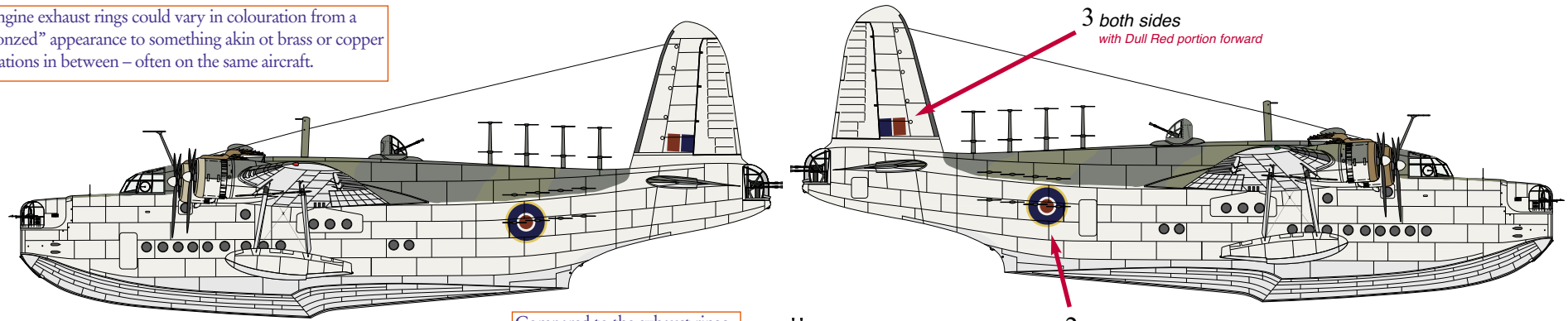
This eventually developed into the ASW scheme* with the white carried even further up the fuselage so as to nearly dissappear when viewing the aircraft in profile. As with many other Coastal Command general reconnaissance aircraft, it wasn't long before the two-colour disruptive pattern on the upper surfaces was replaced by an overall application of Extra Dark Sea Grey.

The new scheme specification also called for the under surfaces of the wings and tail to be overcoated with a gloss transparent dope and, additionally for flying boats, an anti-fouling White (specification DTD420B) overcoating the standard White on the "underwater surfaces of the hull and wing-tip floats." Other typical special finish areas are noted in the illustrations.

There is some ambiguity with regard to later wartime evolutions of this scheme. For example, some sources suggest that the upper EDSG was eventually replaced by Dark Sea Grey and even Medium Sea Grey. While this has been determined to be the case for post-war aircraft, it may be that the EDSG appeared as Dark or Medium, having faded after some time in service on Sunderlands with longer service histories.

** Often referred to as such, but not the official name for the scheme.*

The steel engine exhaust rings could vary in colouration from a lightly "bronzed" appearance to something akin ot brass or copper and all variations in between – often on the same aircraft.



Temperate Sea Scheme (modified)

These illustrations show a typical conversion from the earlier TSS, with the white finishes** covering most of the aircraft. The anti-fouling finish may have also extended up the sides of the fuselage to where the waterline occurred on Sunderlands carrying typical payloads.

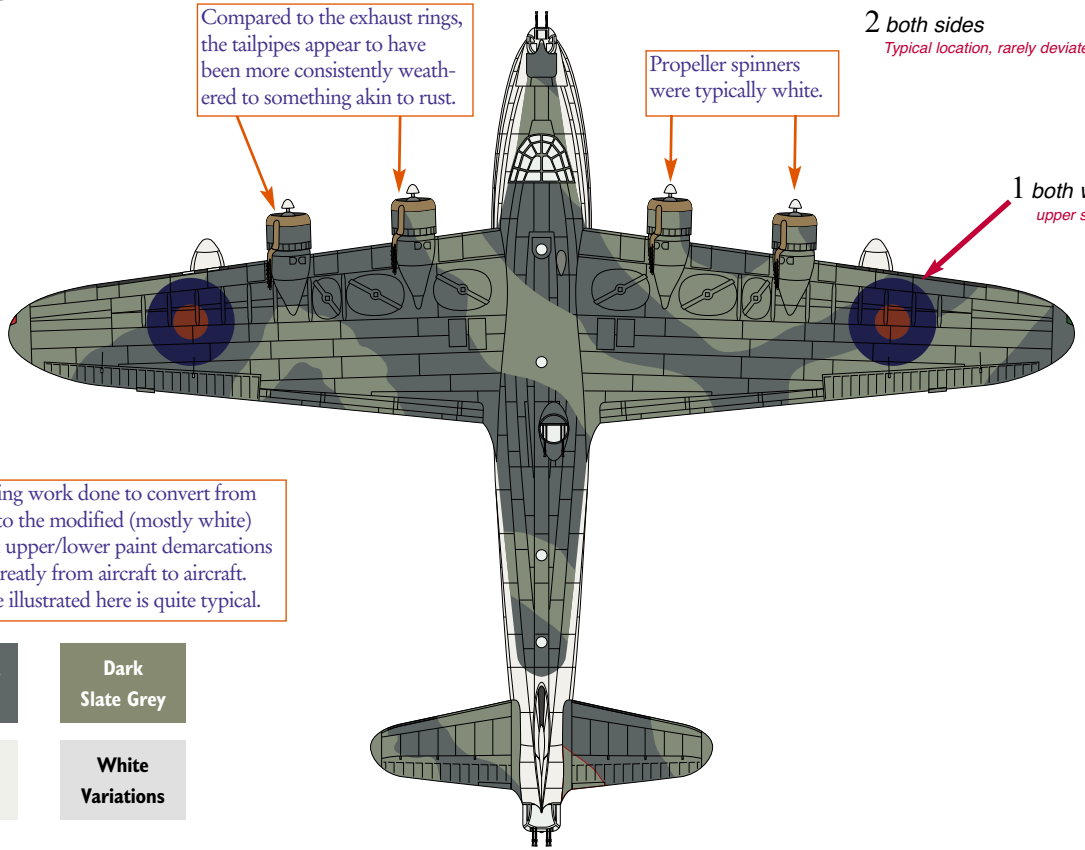
The framing of the nose and tail turrets were typically matte White. Depending on the individual aircraft and its maintenance history, the upper turret framing and rear portion could be in the local camouflage colours (as illustrated here), overall EDSG, overall matte white, or overall Smooth Night (matte black)***

*** White finishes include the matte White camouflage paint covering most of the side surface areas, the same camouflage paint, but gloss-coated on the wing and tail undersurfaces,and the anti-fouling white (to specification DTD420B) on the fuselage and float water-contact areas.*

**** Black-finished upper turrets may have been diverted from those procured by MAP for Sterling bomber production.*

Compared to the exhaust rings, the tailpipes appear to have been more consistently weathered to something akin to rust.

Propeller spinners were typically white.



The refinishing work done to convert from the original to the modified (mostly white) TSS resulted upper/lower paint demarcations that varied greatly from aircraft to aircraft. The example illustrated here is quite typical.

Extra Dark Sea Grey	Dark Slate Grey
Matte White	White Variations

Legends

detail notes

Decal callouts
decal notes

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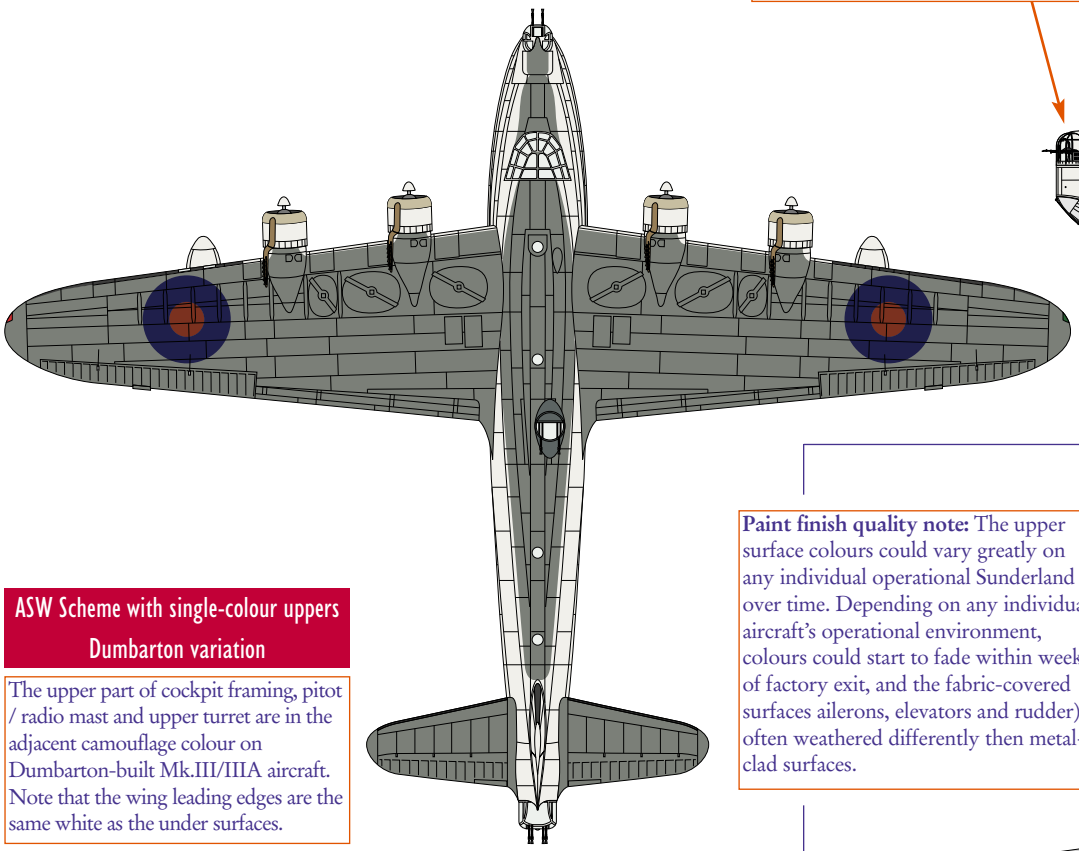
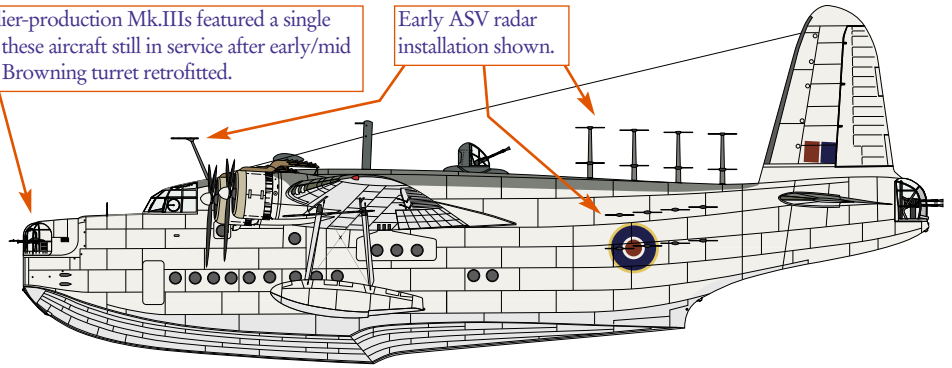
All decal placements are shown on page 2



Many Sunderlands, including earlier-production Mk.IIIs featured a single Vickers .303 nose turret. Some of these aircraft still in service after early/mid 1944 may have had the later twin Browning turret retrofitted.

Early ASV radar installation shown.

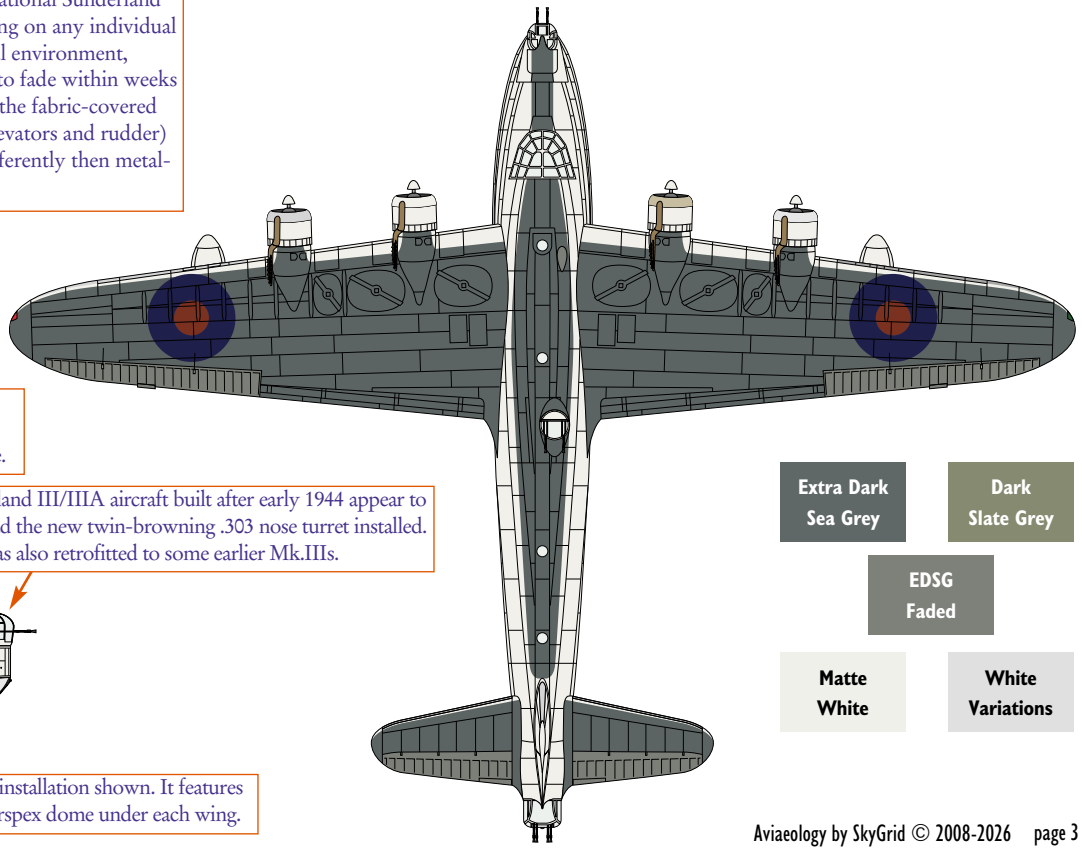


Anti-conspicuity White: From at least early 1944 onwards, any conspicuous features on the leading edges of anti-submarine tasked Coastal Command aircraft were "whited out" with special-purpose coatings developed for application to surfaces such as rubber de-icer boots and cowl-front exhaust collector rings. This is often seen in period photos with varying degrees of wear and tear evident, ranging from flaking, abrasion, and discoloration to the entire underlying surface material being completely exposed (likely awaiting renewal of the coating when the reference photo was taken).

Paint finish quality note: The upper surface colours could vary greatly on any individual operational Sunderland over time. Depending on any individual aircraft's operational environment, colours could start to fade within weeks of factory exit, and the fabric-covered surfaces ailerons, elevators and rudder) often weathered differently then metal-clad surfaces.

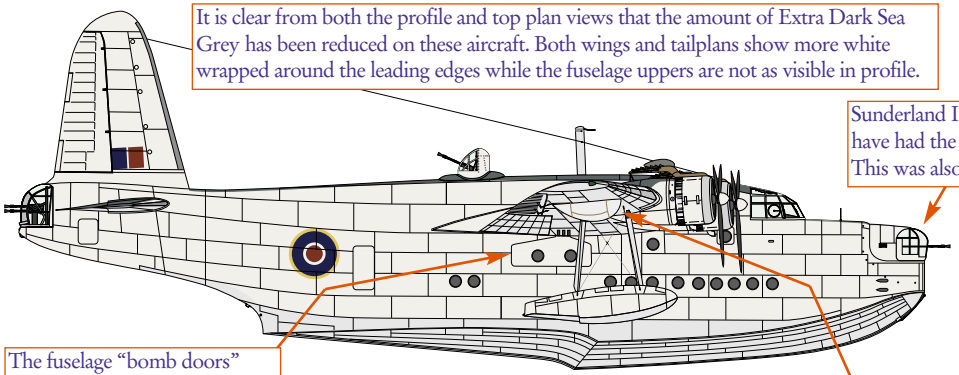
ASW Scheme with single-colour uppers Dumbarton variation

The upper part of cockpit framing, pitot / radio mast and upper turret are in the adjacent camouflage colour on Dumbarton-built Mk.III/IIIA aircraft. Note that the wing leading edges are the same white as the under surfaces.



ASW Scheme with single-colour uppers Shorts-Belfast 1944 variation

It is clear from both the profile and top plan views that the amount of Extra Dark Sea Grey has been reduced on these aircraft. Both wings and tailplans show more white wrapped around the leading edges while the fuselage uppers are not as visible in profile.



Sunderland III/IIIA aircraft built after early 1944 appear to have had the new twin-browning .303 nose turret installed. This was also retrofitted to some earlier Mk.IIIs.

The fuselage "bomb doors" (sliding sections under the wing roots) had 2 porthole windows on Shorts-Belfast built aircraft.

Late ASV radar installation shown. It features a gloss-white perspex dome under each wing.

Extra Dark Sea Grey	Dark Slate Grey
EDSG Faded	
Matte White	White Variations

Aviaeology Decals

Preparation & Application Guidelines

1. Make sure the model surface is glass smooth for best results. The glossier the prepared surface, the better. Before applying decals, it is especially helpful to overcoat flat paint finishes with a gloss coat that hardens completely. The timing to achieve a high quality surface can vary due to factors such as humidity, temperature, or how thoroughly the underlying paint has dried. There are specialty model-hobby products out there, but clear gloss acrylics designed for artwork or some acrylic floor finishes can also give good results.

2. If the model surfaces have gritty or "pebbly" areas remaining after gloss application, buff it out with fine grit (600 or better) wet/dry sandpaper. After thoroughly washing away the sanding residue, let the area dry thoroughly before recoating.

3. Prepare a shallow dish with lukewarm, preferably distilled water. Adding a very small droplet of dish soap promotes soaking, which eases decal/paper separation.

4. Cut out the desired individual decal element and place it in the water, design-side UP. Most modelers develop a sixth sense for when the decal will loosen just enough, but 30-60 usually does it. As the backing paper becomes thoroughly soaked, the decal begins to separate from it and the adhesive layer becomes active. Some decal papers, such as that in current use for our digital production, will darken noticeably when fully saturated.

5. As the decal loosens from the backing paper, remove it from the water, handling just the paper while trying to avoid mechanical contact with the design or its clear carrier film edges (for our digital decals, also see the best practice "tips" elsewhere in this package).*

6. Set the model so that the surface receiving the decal is facing upwards, approximately horizontal. Use a brush or pipette to put a droplet of softened water on the area where the decal will be placed. Instead of water, a mild decal solution (such as Micro Set) can also be used. Or if using our digital decals, a stronger solution (such as Solvaset) may be used in place of water or Micro Set to help the decal snuggle down over more prominent details.

7. Bring the soaked decal paper close to this little puddle and slide the decal element off of the paper onto the puddle. A flat paintbrush, second pair of tweezers, or fingertip, may help in coaxing it from the paper. Be careful not to rip the thin decal film being transferred.

8. Gently manoeuvre the decal into its final position without pressing it too tightly to the model surface. The idea being that the liquid between the decal and the model serves as a buffer, delaying the activation of the decal's adhesive until positioned correctly.

9. Once positioned, pad the decal with a flat brush or cotton bud. The goal here is to squeeze out the water puddle from under the decal while keeping it in position. Be aware that the decal adhesive will start to take hold after you begin this step. Working out from the centre is the best practice – especially for larger decals – since it also pushes out air or liquid that may otherwise remain trapped under the decal film when dry.

10. As it dries, the decal adhesive will snuggle the decal down more tightly onto the surface. If you see any trapped voids, puncture them with a hobby knife tip, sewing needle, or similar sharp instrument, and pad as needed. If desired, stronger decal setting/softening solutions such as Micro Sol or Solvaset can also now be applied to tighten the decal more firmly to the surface of the model.

11. After the decals are completely set, any adhesive residue visible near them can be gently wiped away with a dampened cotton bud. If any of the adjacent clear-coat has "fogged" a little during application, such milkiness will often disappear under additional clear coating.

12. Give all decals ample time to really snuggle into the paintwork and then apply 1 or 2 overall gloss coats prior to any final matte/satin finish application or weathering steps.

* If this set contains a digitally printed sheet (the sheet part number is prefixed with "ADD"), please consult the additional "Tips for using decals printed on continuous carrier film" which describes a simple process to easily minimize the amount of carrier film transferred to the model.

Aviaeology Tips for using decals printed on continuous carrier film

Best practices for our ADD (or any other) digital decals printed in this way.

During application to the model, our digitally printed decals perform easily as well as our screen-printed decals. Both are produced using very thin carrier films on specially-designed waterslide transfer papers featuring state-of-the-art water-activated release agents and latent adhesives.

The most noticeable difference is that these digital editions have the colours printed on top of a continuous (coated across the entire paper sheet) clear carrier film where, in screen-printing, the clear is applied only in register with each decal element plus a little around the perimeter of individual elements. A potential problem inherent in either system is that any part of the carrier film that remains clear after transfer may be subject to "silvering" – a visual artefact wherein room light can make visible any voids trapping liquid or air between the surface finish of the model and the clear carrier film.

As a rule of thumb, the more clear film remaining, the higher the likelihood of silvering. Model finishing techniques have been developed to completely and consistently eliminate silvering. As recommended in our own guidelines, these usually start with the application of a high-gloss clear finish prior to decal application and at least one additional gloss coat prior to any final clear-coat finish (whether flat, satin, or additional gloss) application or weathering action. The quality of the initial gloss coat is particularly important for consistent success.

If you do encounter silvering on a regular or even random basis within your personal decal application technique, then trimming the decal as close as possible to the actual colour elements may help minimize its visibility. This is especially true of decals printed on a continuous clear carrier film.

One problem that can occur when using this "trim as close as possible" technique is that rough cuts – such as those made with dull scissors or knives used either too firmly or at the wrong angle to the paper – can distort the cut edges of the otherwise flat-laying clear film. This, in turn, can affect the visibility of these edges.

To help avoid this possibility, begin by first cutting individual decal elements roughly from the sheet with as much as possible of the surrounding clear area intact. Then, on a flat surface using a fresh #11 (or similar pointed-tip) blade, gently score through the carrier film all the way around the decal element, keeping the score line as close to the coloured element as possible. Practice being very gentle with the scoring action, gliding the knife tip along just hard enough to penetrate the clear film while at the same time not pushing too much of a "ridged valley" into the underlying paper. The advantage here is that the force used to separate the decal element from the surrounding film is minimized.

After the usual soaking step, this "freed" clear film can be removed separately from the paper and discarded, with minimal film remaining to slide onto the model surface.

This method gives more light-handed control in making those detailed closer-to-the-image perimeter cuts, while at the same time resulting in less physical distortion of the delicate edges of the carrier film that will be applied to the model.