

Tail code characters for WWII Imperial Japanese Navy aircraft

Modeling Notes

Although there were many shape/size variations, the characters used for painting tail codes on Imperial Japanese Navy Air Force aircraft were based loosely on a single predominant character style. Given the large number of variations (often in detail only), it is impractical to replicate each one in a general coverage range such as this. Nonetheless, these sets provide for the most commonly used shapes and a few variations where feasible

For models requiring thinner, taller character shapes to replicate a desired code, characters can be revised by cutting apart and reassembling on the model to make up the additional strokes. These decals can be cut with a sharp hobby blade while the decal sheet is laying flat on a smooth, rigid cutting surface. For optimum results, the benefits to be had from using a fresh, sharp blade at a low cutting angle should not be underestimated; cuts/joins will be much cleaner and the chance of unsightly carrier film rips reduced. Aim for butt joints as opposed to overlaps if possible in the interest of “the thinner the better” for the finished model. Start by cutting the character to be modified horizontally and then, using another (of the same character if possible) with the same number of vertical strokes, cut out the desired extra height with two horizontal slices. Apply these bits from the baseline of the modified marking, up... bottom bit of the original characters in the whole code string first, then the additional-height central bits, then cap them all with the top part of the original character. Alternately, paint can be used to fill the space between the top and bottom of the original characters after your decals are applied and dry, but before topcoating.

Sized mainly for single-engined aircraft, the current (November 2024) range includes Yellow, Red, Black, and White editions. The real-world (1/1 scale) character height represented in these sets is nominally 280mm. This works out to just under 6mm in 1/48 scale and 4mm in 1/72 scale. With this in mind, it can be seen that some of the characters in the one scale may work for larger or smaller aircraft in the other scale. Other variations may be produced in future pending information and interest. This has become even more likely, now that we use a digital production method for the series.

Please note that the “m” in the catalogue number indicates that the set you have in hand has been modified since its initial release. This is the 3rd modification round for this particular set. The primary change with this iteration is the move to a new-technology (2024) digital press which affords us a near print-on-demand (nPOD) small-batch production workflow. In addition to all output being “fresh off the press,” larger press sheets provide for a general increase in the overall character count for each set in the series.

References and Acknowledgments

Japanese Naval Aircraft Camouflage and Markings of WWII (Donald W. Thorpe - Aero)
 Nippon's Naval Air Force (Ian K. Baker)
 Koku-Fan Illustrated #38: Japanese Imperial Navy Aircraft Camouflage and Markings
 Japanese Aircraft of the Pacific War (Rene Francillion - Naval Institute Press)
 Model Art #272: Camouflage and Markings of the Imperial Japanese Navy Fighters in WWII

Tennessee Katsuta Original hand-drawn characters (circa 1991-92), colour and sizing research, and guide to reference materials.

Alfred Greer Additional reference material and information.

Terry Higgins Digital reproduction of all shapes (2010-2011) based on Tennessee's drawings. Since all originals appear to have been rendered by hand (*not* based on structured typography such as fonts), this was the best method to ensure that a high degree of authenticity at scale.

IJN WWII aircraft tail codes – 280mm Black



This package provides at least four of each Japanese character, four of each Roman alphabet character, and four or more (up to 10, especially for the “0” character) of each numeral character, with a nominal real-world height of 280 mm (approximately 6 mm in 1/48 scale). Different mixes of characters are also available in Red, White, and Black. All are also available in 1/72 scale.

AOD48c020m3 / AOD72c020m3: IJN World War 2 Aircraft Tail Codes – 280 mm Yellow

AOD48c021m3 / AOD72c021m3: IJN World War 2 Aircraft Tail Codes – 280 mm Red

AOD48c022m3 / AOD72c022m3: IJN World War 2 Aircraft Tail Codes – 280 mm Black

AOD48c023m3 / AOD72c023m3: IJN World War 2 Aircraft Tail Codes – 280 mm White

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 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.
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 final finish application or weathering steps.

* If this set is one of our digitally printed series (catalogue 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.

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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 its perimeter. 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 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, then trimming the decal as close as possible to the actual colour elements will 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 clear film, which can, in turn, affect finish coat smoothness at 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), 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 needed 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.

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