

Considerations for interior detail.

Fudging true scale accuracy for a “scale look” and clean appearance in the cockpit:

A scale model of a metal skinned aircraft will not have the same internal volume of space as the full scale aircraft. For models, scale accuracy is determined by the exterior skin surface and related dimensional profiles. The cockpit being the most often detailed interior area of an aircraft versus gun bays and wheel wells demands lots of attention.

In most cases if not all cases, the construction of a model will have greater fuselage skin thickness than an exact scale version would allow. Material properties do not scale very well and we usually build from a different material altogether than the original article. Invariably skin thicknesses will be much greater on a model. This reduction of interior volume can affect all three axis X, Y, Z of a part or will affect only the Y & Z axis of a part, the x-axis being to scale forward and aft for the fuse length.

X-axis runs fore & aft along the fuse length or wing chord, L/E to T/E.

Y-axis is left & right (port & stbd) either side of the fuse centreline or along the wing span.

Z-axis is up or down depth of the fuse or wing chamber.

Using the Spitfire as an example, the full scale a/c will have a skin thickness of .036", a 1/5 scale model built with traditional balsa wood technique will have a skin thickness of at least 1/8" for a “light” construction and more commonly have 1/4" thick walls. This will reduce the “exact scale” dimensions required to faithfully reproduce a scale cockpit.

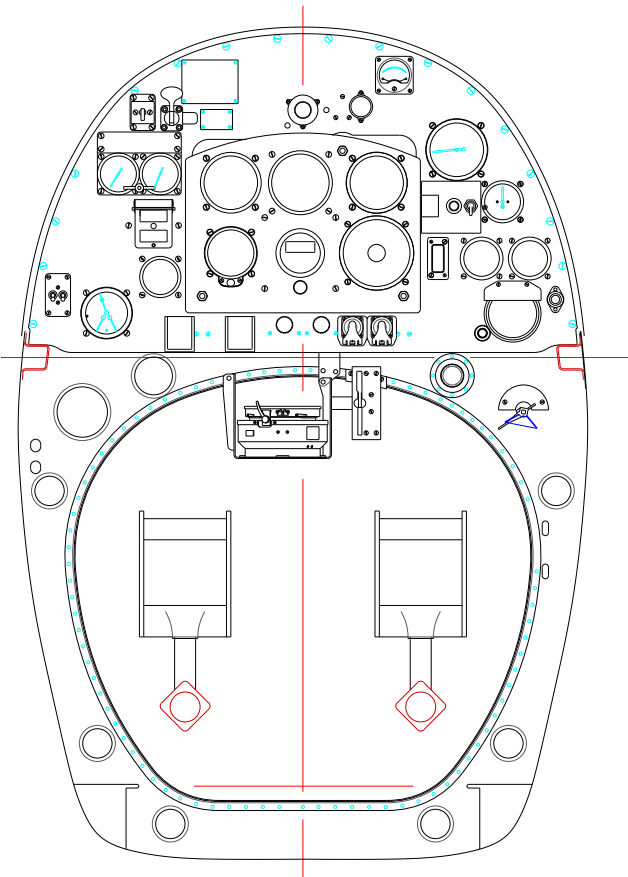
The solution is easy, reduce the size of those items in the cockpit interior that are affected by the reduced volume of the cockpit in the model. The instrument panel and fuse frame details can be proportionally shrunk using a photocopier or a scanner and printer. Take a copy of the instrument panel and reduce the size of the drawing so that it fits inside the new dimensions. This will give you a well proportioned instrument panel with proper spacing between instruments etc... All gauges and knobs will be in proportion to each other and thus appear correct and to “scale” in the Y & Z-axis. The X-axis i.e. length of knobs etc... and depth of or protrusion of gauge faces will be to scale as the length of the cockpit is generally faithfully reproduced because the frame faces can be maintained on the model. Sometimes the depth of the gauges have to be 1/2 the scale x-axis so they do not appear distorted and cast too large a shadow between gauges,

If exact scale gauges and knobs were to be used the spacing between them would be out of proportion and the over all “look” would appear crowded.

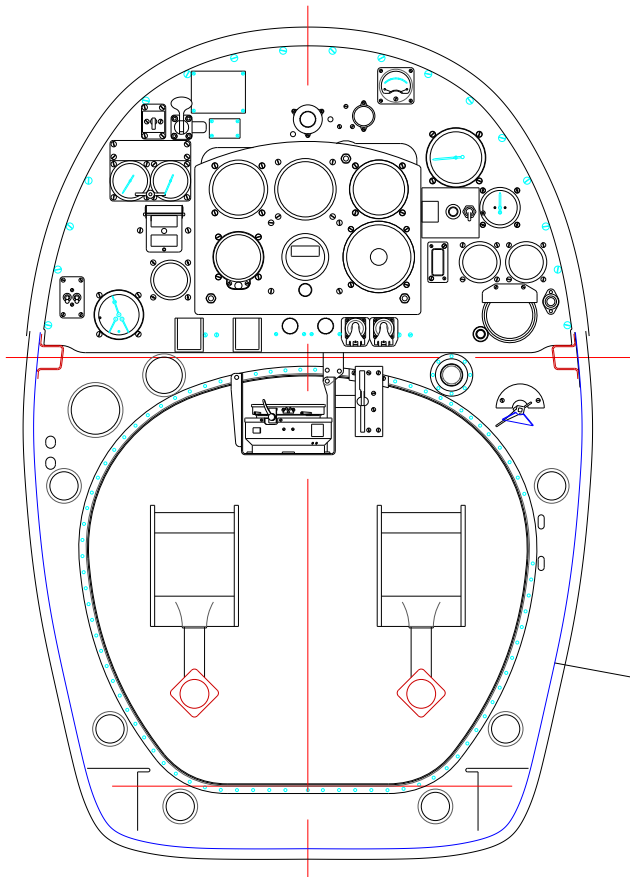
You need to apply the shrinkage allowance in the appropriate axis. The X-axis or length of the cockpit is usually to scale so you end up leaving side wall equipment, pilot seat, the scale length fore and aft while reducing width and depth to account for the change in volume in Y & Z-axis. The Z-axis usually is affected because the canopy thickness is not to scale either.

You may end up shrinking items by a different scale factor on each axis to allow for differences in material thicknesses for each axis and how they encroach on interior space. This does not apply to things that are round or circular or a square as this would produce a distorted oval or rectangle. So the smallest axis will force you to shrink the part more than is otherwise required. It certainly can be a fiddle!

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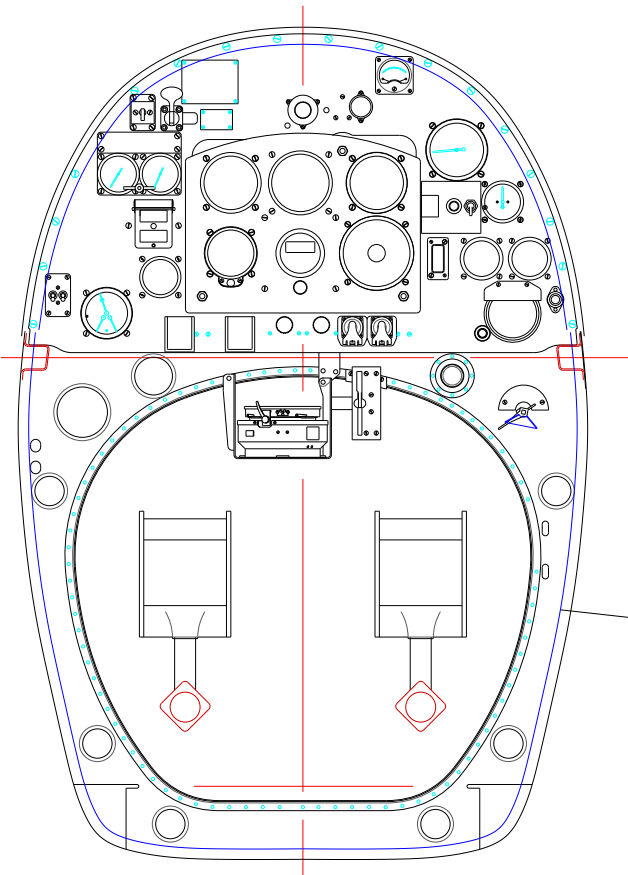


Accurate Scale



Model skin

Instruments and frame
shrunk by model skin
thickness



Model skin

Gauges left to scale
note how model skin
interfears. All gauges
would need to be pushed
inward.