

TECHNIQUE OF SMOOTHING LEADING EDGES OF SAILPLANES

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The metal surface (alclad or other metals) must be thoroughly cleaned, free of grease, oil or dust. If the surface which is to be finished has never been sprayed before, it is recommended that a light etching solution be used before spraying the first coat of zinc chromate primer.

After spraying the first coat of zinc chromate primer, allow about one hour to dry. Then spray a second, slightly heavier coat of the chromate primer. Check the surface to make sure all rivet heads, butt joints, and skin laps have a good coating of zinc chromate primer.

Then spray three heavy coats (sprayed spanwise and chordwise) of a red oxide primer surfacer, allowing about one hour drying time between coats. Since this is the base for your whole paint job, care should be taken to avoid sags and runs while spraying. The reason for using a red oxide primer surfacer will be explained a little later on. Allow these last three coats of primer surfacer to dry over night.

The next step is to start building up the surface with a gray spot putty (un-thinned). This should be spread with a spatula on to the surface in very thin layers about 1/64 of an inch thick allowing a minimum of 30 minutes between coats. If more than five or six coats are required to bring the surface up to contour, then the first five or six coats should be thoroughly air-dried for a minimum of twenty-four hours before laying on any further coats of primer surfacer. This operation should be repeated until the primer surfacer has covered the rivets and skin laps.

After the surface has been built up to the necessary height and allowed to dry, start sanding out the more obvious high spots with a coarse (180) wet-or-dry paper. Change over to a finer paper (240) for smoothing down to contour. Whenever the red oxide surface starts to show, stop sanding in this area. This is the reason the red oxide primer surfacer was

used; in order to let you know that you are getting close to the metal surface.

For final contour a chalked thin wooden spline about 3/16" thick x 1" wide x about 15" long with a small handle at each end can be used. Chalk one side and lay the spline

the chalk will rub off, and the low spots will be clean. If the high spot is due to a rivet head or skin lap then it will be necessary to fill in around it with spot putty. If the high spot is due to an excessive amount of spot putty, it can be sanded off to fair in with the low spots. Keep repeating this process moving along the span of the wing until such time as you can lay the spline down on the wing and leave a fairly even coat of chalk.

By using this spline method for checking contour, we have been able to get the waviness down to within 0.004 of an inch. To contour the surface down to a waviness of ± 0.002 inch it will be necessary to use an instrument such as shown in Figure 1.

When the surface is contoured to a waviness accuracy of ± 0.002 inch it is ready for the usual finishing coats of enamel.

Suggestions

Extra care should be taken throughout the job to keep the surface free of grease and oil.

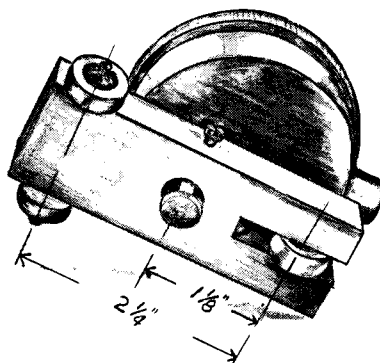
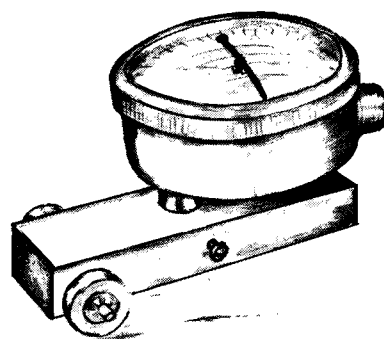
Due to the high shrinkage rate of primer surfacer and spot putty always allow as much time as possible between coats for drying. It is suggested that if a fairly heavy surface of spot putty needs to be used to cover the rivet heads, skin lips, etc., that before putting on the enamel a period of one week to 10 days be allowed for drying time after the final coats of spot putty have been

contoured. The reason for this is so that if there is an additional shrinkage it can be filled and sanded before finishing with the enamel.

If forced drying is used with heat lamps etc., they should be kept about four feet from the surface to avoid blistering.

If the surface to be contoured is al-

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WAVINESS GAGE USING A MODEL G81 FEDERAL
DIAL INDICATOR

down chordwise on the surface with chalked side in contact with wing. Pull a slight amount of pressure outward as you press the spline down along the contour so that the spline will not lift off the surface as you bend it around the section to be contoured. Move it back and forth chordwise about a 1/4" and lift it off the surface. Where there is a high spot,