

## ***Size Requirements for Different Aircraft***

Almost universally for U.S.-registered, standard certificated, fixed-wing aircraft, the marks must be at least 12 inches high. A glider may display marks at least 3 inches high.

In all cases, the marks must be of equal height, two-thirds as wide as they are high, and the characters must be formed by solid lines one-sixth as wide as they are high. The letters “M” and “W” may be as wide as they are high.

The spacing between each character may not be less than one-fourth of the character width. The marks required by 14 CFR part 45 for fixed-wing aircraft must have the same height, width, thickness, and spacing on both sides of the aircraft.

The marks must be painted or, if decalcomanias (decals), be affixed in a permanent manner. Other exceptions to the size and location of the marks are applicable to aircraft with Special Airworthiness certificates and those penetrating ADIZ and DEWIZ airspace. The current 14 CFR part 45 should be consulted for a complete copy of the rules.

## **Decals**

Markings are placed on aircraft surfaces to provide servicing instructions, fuel and oil specifications, tank capacities, and to identify lifting and leveling points, walkways, battery locations, or any areas that should be identified. These markings can be applied by stenciling or by using decals.

Decals are used instead of painted instructions because they are usually less expensive and easier to apply. Decals used on aircraft are usually of three types: paper, metal, or vinyl film. These decals are suitable for exterior and interior surface application.

To assure proper adhesion of decals, clean all surfaces thoroughly with aliphatic naphtha to remove grease, oil, wax, or foreign matter. Porous surfaces should be sealed and rough surfaces sanded, followed by cleaning to remove any residue.

The instructions to be followed for applying decals are usually printed on the reverse side of each decal. A general application procedure for each type of decal is presented in the following paragraphs to provide familiarization with the techniques involved.

### **Paper Decals**

Immerse paper decals in clean water for 1 to 3 minutes. Allowing decals to soak longer than 3 minutes causes the backing to separate from the decal while immersed. If decals are allowed to soak less than 1 minute, the backing does not separate from the decal.

Place one edge of the decal on the prepared receiving surface and press lightly, then slide the paper backing from beneath the decal. Perform any minor alignment with the fingers. Remove water by gently blotting the decal and adjacent area with a soft, absorbent cloth. Remove air or water bubbles trapped under the decal by wiping carefully toward the nearest edge of the decal with a cloth. Allow the decal to dry.

### **Metal Decals with Cellophane Backing**

Apply metal decals with cellophane backing adhesive as follows:

1. Immerse the decal in clean, warm water for 1 to 3 minutes.
2. Remove it from the water and dry carefully with a clean cloth.
3. Remove the cellophane backing, but do not touch adhesive.
4. Position one edge of the decal on the prepared receiving surface. On large foil decals, place the center on the receiving surface and work outward from the center to the edges.
5. Remove all air pockets by rolling firmly with a rubber roller, and press all edges tightly against the receiving surface to ensure good adhesion.

### **Metal Decals With Paper Backing**

Metal decals with a paper backing are applied similarly to those having a cellophane backing. However, it is not necessary to immerse the decal in water to remove the backing. It may be peeled from the decal without moistening. Follow the manufacturer's recommendation for activation of the adhesive, if necessary, before application. The decal should be positioned and smoothed out following the procedures given for cellophane-backed decals.

### **Metal Decals with No Adhesive**

Apply decals with no adhesive in the following manner:

1. Apply one coat of cement, Military Specification MIL-A-5092, to the decal and prepared receiving surface.
2. Allow cement to dry until both surfaces are tacky.
3. Apply the decal and smooth it down to remove air pockets.
4. Remove excess adhesive with a cloth dampened with aliphatic naphtha.

### **Vinyl Film Decals**

To apply vinyl film decals, separate the paper backing from the plastic film. Remove any paper backing adhering to the adhesive by rubbing the area gently with a clean cloth