

INSTALLATION INSTRUCTIONS

DISCHARGERS & RETAINERS

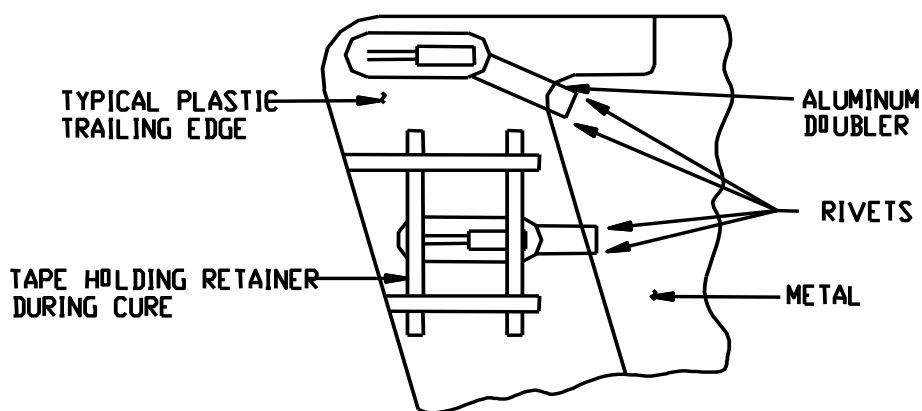


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GENERAL

This section describes the installation of Dayton-Granger discharger retainers. The information contained in this section may also be used as guidance in installing other types of discharger retainers. The two recommended methods of installation in order of preference are riveting and adhesive bonding.

FIGURE 1



A conductive path to the metal airframe is always required across a plastic surface, and is normally made with an aluminum doubler at least one inch wide and 0.010 inch thick (See Figure 1).

REQUIRED TIME

The initial installation of Dayton-Granger discharger retainers should be scheduled when the aircraft will be available for at least 24 hours. Installation may be scheduled for less elapsed time as experience is gained.

REQUIRED FACILITIES

It is highly desirable to have the aircraft inside a hangar, particularly if work is to be done at night. Otherwise, any moisture on aircraft surfaces will severely hamper the adhesive bonding process.

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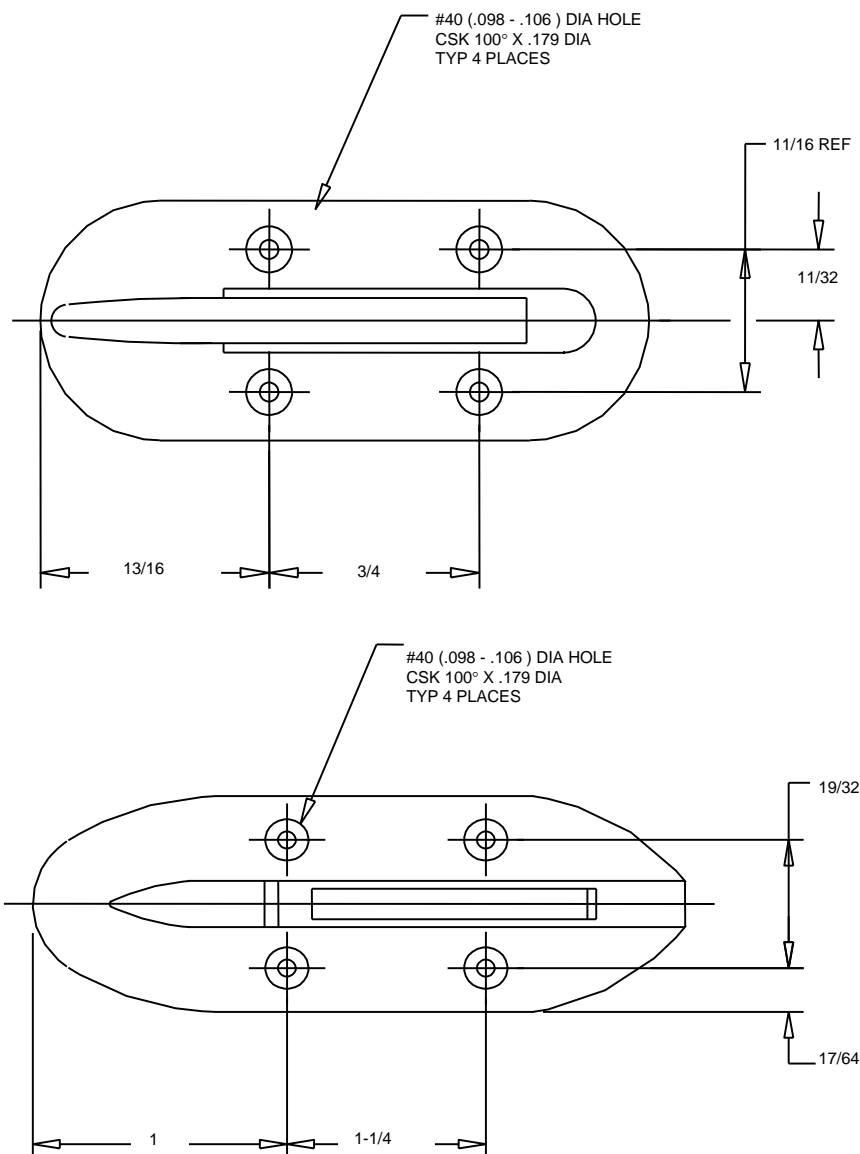


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AIRCRAFT WORK STANDS

It is highly desirable that stands be available at all the aircraft extremities. Since a number of operations using different materials and equipment are required at each discharger location, the job can be done more rapidly if it is possible to reach all the discharger locations at any one extremity without the necessity of moving stands. If wing, elevator, or rudder tip sections can be easily removed from the aircraft, it may be efficient to do so in order to apply the appropriate discharger retainers.

FIGURE 2



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RIVETING

GENERAL

All models of the retainers may be riveted to the aircraft. Suggested rivet hole patterns are shown above in Figure 2. Some installations may require the use of doubler plates under the aircraft skin for adequate stiffness.

The flanges of the 611R-series may be slightly bent or formed for an exact fit to the aircraft skin curvature. A number of different radii are available in the 611R-4A through 611R-16A series to fit most applications. It may be necessary to select the nearest smaller radius from the series then gently form-to-fit using a wood block and soft hammer. Do all forming operations before drilling the rivet holes.

MATERIAL REQUIRED

1. Selected static dischargers to be installed
2. Selected discharger retainers to be installed
3. Flexible non-conductive epoxy kit, P/N 15348 (one kit per 7 retainers required).
4. Clean-up towel
5. Sandpaper 400 - 600 grit
6. Edge sealant compound RTV 3140 or equivalent
7. Select type of rivet to be used:
 - A: Blind rivet: Cherry rivet CR-756-3-4 or equivalent
 - B. Solid rivet: NASM20426AD3 or NAS1097AD3 minimum size
8. Tools: For blind rivets, rivet tool pulling head H803C or equivalent.
For solid rivets, bucking bars are required.
9. Electric drill and #40 drill bit (.098 in., 2.49 mm)

RIVETING PROCEDURE (Method A)

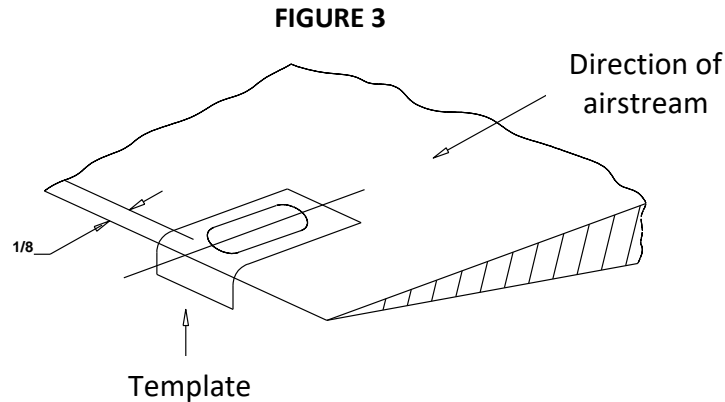
1. Select the location where the discharger retainers are to be mounted and, with a pencil, scribe the outline of the base on the surface. (Retainer sanding templates, P/N 16268 and P/N 16269, can be used for this purpose). See Figure 3 below.
2. Tape the retainer sanding template, or equivalent, in place. Sand the aircraft surface through the retainer sanding template until the aircraft surface is smooth and all paint glaze has been removed. It is not necessary to completely remove existing paint.

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3. After all aircraft retainer areas have been sanded, position the respective discharger retainer over the sanded area and drill the required holes through the retainer and aircraft structure. Clean all burrs, sanding grit and all other debris from the retainer and aircraft bond area. Keep the retainer in close proximity to the mating contact surface to avoid mixing of the retainers after drilling.
4. Mix flexible non-conductive epoxy kit, P/N 15348, and butter the sanded area on the aircraft, as well as the bottom of the mating discharger retainer. Immediately place the retainer over the sanded area and draw down the four rivets.
5. After the rivets have been installed, wipe all excess epoxy from the discharger retainer and surrounding surface. Leave a small amount of epoxy around the circumference of the retainer to help seal the interface against water penetration.
6. After approximately 6 hours at room temperature, or when the epoxy has hardened, apply and edge sealant compound RTV 3140 or equivalent around the circumference of the retainer and rivet heads to further seal the interface against water penetration.
7. Measure the DC resistance of the interface. This resistance should be less than 0.1 ohms on new bonds. (*)

(*) If this resistance is exceeded, there is a possibility of moderate to heavy structural burning in the area of the retainer. One half (0.5) ohm is a realistic maximum value of bonding resistance under which most lightning strikes will not cause skin damage. The higher the resistance, the greater is the possibility of skin burning due to lightning.
8. Install the respective static discharger on the respective discharger retainer.
9. Measure the resistance of the discharger with a 500V megohmmeter.
10. Resistance tolerance:

Tip Discharger	6 - 120 Megohms
Trailing Discharger	6 - 200 Megohms

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ADHESIVE BONDING (Method B)

When riveting cannot be utilized because of thin aircraft skin or honeycomb surfaces, it is recommended that a pure aluminum gasket technique be utilized. The technique utilizes an aluminum gasket with upward and downward protrusions which makes electrical contact with the aircraft surface and discharger retainer. The retainer and the gasket are epoxied in place with the use of a flexible non-conductive epoxy, P/N 15348.

MATERIAL REQUIRED

1. Selected static dischargers to be installed
2. Selected discharger retainers to be installed
3. Flexible non-conductive epoxy kit, P/N 15348, (one kit per 7 retainers required)
4. Clean-up towel
5. Sandpaper 400 - 600 grit (without aluminum oxide)
6. Pure aluminum gaskets (trailing P/N 16181, tip P/N 16243)
7. Grease-free solvent
8. Heat clamp or "C" clamp
9. Trailing retainer sanding template, P/N 16268, and tip retainer sanding template, P/N 16269
10. Torque tool, P/N 16284, or equivalent

ADHESIVE BONDING PROCEDURE

This procedure outlines the pure aluminum gasket attachment technique. However, it also applies if the conductive epoxy technique is utilized. If the conductive epoxy technique is used, the aluminum gasket is not required and conductive epoxy, P/N 16307, should be substituted for non-conductive epoxy, P/N 15348.

1. Select the location where the discharger retainers are to be mounted and with a pencil scribe the outline of the base on the surface. (Retainer sanding templates, P/N 16268 and P/N 16269, can be used for this purpose).
2. Tape the retainer sanding template or equivalent in place. Apply a solvent or stripper to remove all paint within the various bond areas.
3. Sand all aircraft bonding surfaces and the bottoms of all retainers with the 400 to 600 grit sandpaper. Make sure all oxide has been removed and wiped clean with a paper towel.
4. Mix thoroughly the flexible non-conductive epoxy, P/N 15348. Apply a small amount of the mixed epoxy to the bonding area on the aircraft and bottom of the retainer. Place gasket onto adhesive area of aircraft, and retainer on top of gasket (the gasket should now be sandwiched between the aircraft skin and the retainer). Clamp down firmly on retainer assuring that good metal-to-metal contact has been made. The heat clamp or "C" clamp should be used to clamp the retainer in position until the epoxy cures.

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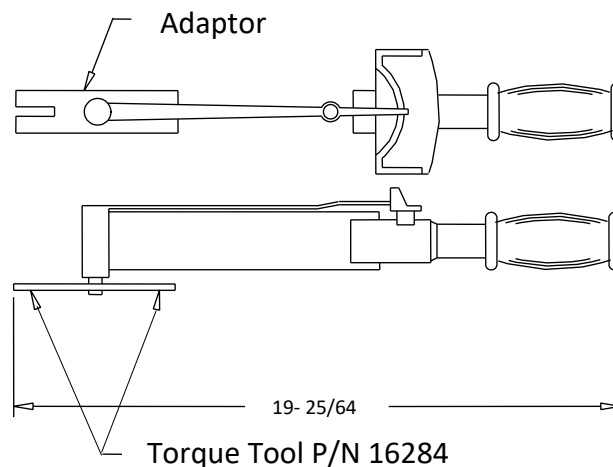
- Remove excess epoxy but be sure that there is a fillet of epoxy around the entire edge of mounting base to avoid entry of moisture. With the use of the "C" clamp, the adhesive will set-up in four to six hours at room temperature, but full cure will take 24 hours.

NOTE: The heat clamp provides a convenient way of clamping the retainer to the aircraft and also accelerates the cure. If it is used, the adhesive will set up in 15 minutes with full cure being obtained in 1 hour with the temperature set at 150° F.

- Inspect cured adhesive bonds as follows:
 - Inspect all discharger retainers thoroughly. Remove and re-install retainer if there is any evidence of cracks in adhesive fillet between retainer and aircraft surface.
 - Using torque tool, P/N 16284, (Figure 4) check all mounting bases to the following values as read on the torque tool scale. (Be sure adhesive is fully cured and is completely cool before torquing).

Model 610R-9A (Trailing) 250 ± 25 inch pounds
Model 611R-series (Airfoil tips) 200 ± 25 inch pounds

FIGURE 4



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7. After the bond has been checked, clean the sides of the retainer and adjacent aircraft surface with solvent. Apply a thin ribbon of sealant (RTV 3140 or equivalent) to serve as a fillet between retainer and the aircraft surface. Be sure that sealant covers all bond lines between adhesive and adjacent metal surfaces.
8. When sealant is fully cured, install the discharger on the retainer. Be sure that the discharger is properly seated and that the set screw is firmly securing the discharger. Use 1/16" Allen Wrench on nullfield dischargers.
9. Measure the resistance of this discharger with a 500V megohmmeter.
Resistance tolerance: Tip Discharger 6 - 120 megohms