



American Aviation Corporation  
318 Bishop Road Cleveland, Ohio 44143

# SERVICE

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Service Kit No. SK-109A  
(Supersedes Service Kit No. SK-109)

DATE: December 7, 1970

TITLE: Spinner/Back Plate Modification

MODELS AFFECTED: AA1-0001 thru 0216, 0218 thru 0253, 0255 thru 0263,  
0265 thru 0315, 0317 thru 0334, 0336, 0338, 0339,  
0341 thru 0344, 0346 thru 0349, 0351, 0353 thru 0359,  
0362 thru 0366, 0368, 0373, 0375, 0376, 0380, 0382,  
0383, 0385 thru 0390, 0392, 0394 thru 0406, 0411,  
0413, 0415 and 0416.

WEIGHT AND BALANCE CHANGE:  
Weight Increase : Negligible  
Arm:

Parts List

<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
2	506004-2	Doubler
6	901035-2	Washer - Modified
16	MS20426AD3-5	Rivet
4	MS20470AD3-4	Rivet

Description of Modification

1. Repositioning of the engine center line and/or modification of the forward cowl to obtain specified clearance around the backplate.
2. Modification of the backplate, if found to be in usable condition, per the Inspection Section of Service Bulletin No. 119.
3. Replacement of loose rivets and cleanup of propeller cutouts in the spinner, if the spinner has been found to be in usable condition per the Inspection Section of Service Bulletin No. 119.

Modification Instructions - Back Plate Clearance

CAUTION: If the engine center line is repositioned, all engine controls should be checked for proper operation, clearance and sponge.  
(Refer to Section 6 of the Yankee Service Manual)

1. Remove the sixteen (16) Philips head screws attaching the spinner to the backplate and remove the spinner.

NOTE: If the static clearance between the backplate and forward cowl complies with the dimensions shown below, disregard items 2 thru 6 in this section.

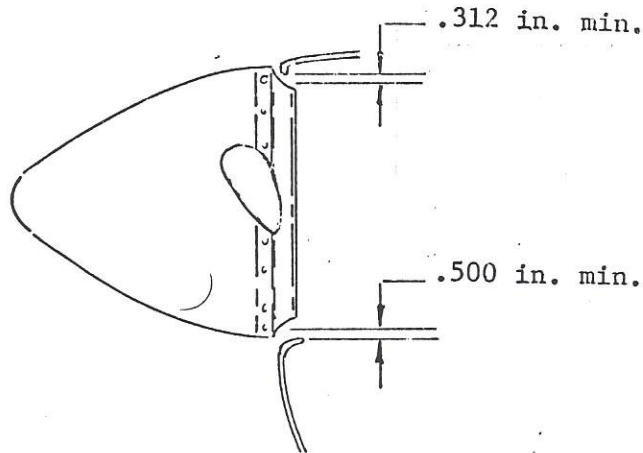


Figure 1. Backplate and Forward Cowl Clearance Dimensions.

2. Remove upper engine cowling and four (4) cotter pins which lock the nuts at the engine to engine mount attach points.
3. Torque the four (4) engine attach nuts to 40 inch pounds. This should result in a compression of the engine mount bushings to approximately 1.84 inches, as shown below.

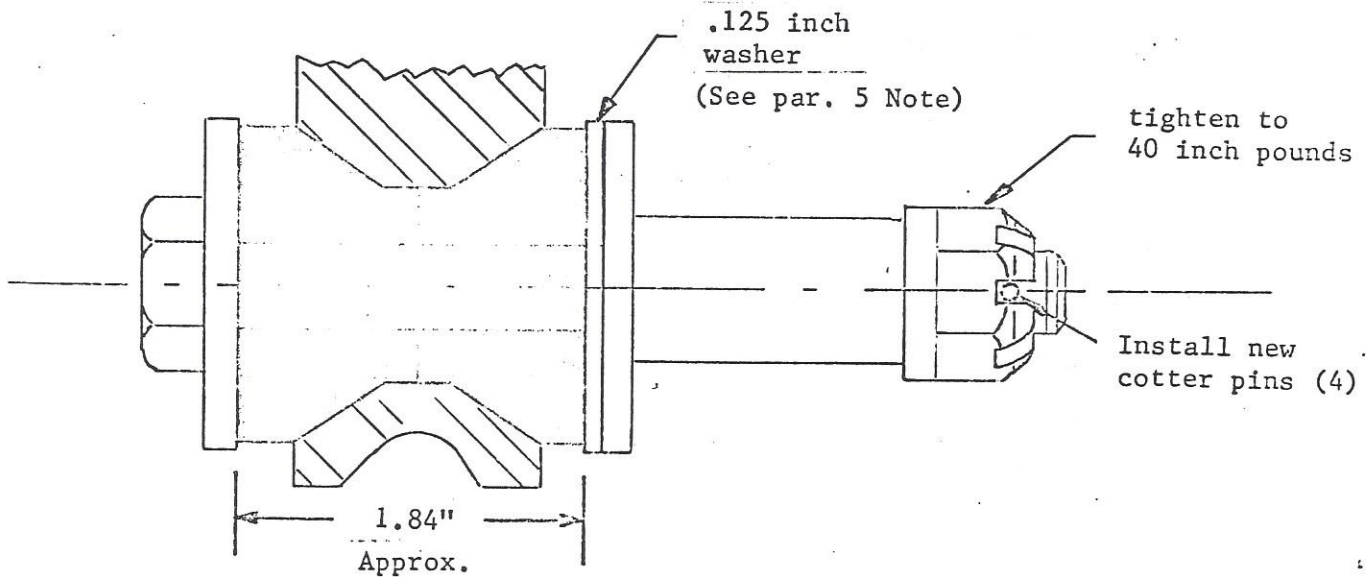


Figure 2. Engine Mount Torque and Dimensions.

NOTE: If the static clearance between the backplate and forward cowl now falls within the limits shown on figure 1, install new cotter pins and disregard items 4 thru 6 of this section.

- If the static clearance between the backplate and upper forward cowl is less than .312 inch, relieve the top flange of the forward cowl to provide .312 inch clearance.

CAUTION: Do not relieve the top flange of the forward cowl to less than .375 inch from the lower edge of the flange to the upper radius (See figure 3).

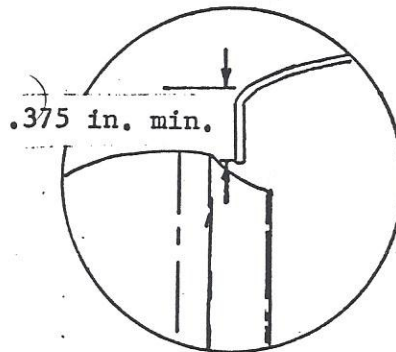


Figure 3. Upper flange dimension

- If adequate clearances cannot be obtained, check engine mount bushings for indication of deterioration, swelling or permanent set. If necessary, replace with eight (8) bushings (Lycoming Part Number 71032).

NOTE: On some aircraft, a .125 inch washer is installed between the engine mount and the engine support bushing (See fig. 2) on the lower mounts only. If these washers are presently installed, reinstall them in the same position.

- Install new cotter pins.

#### Modification Instructions - Back Plate

- See note below and remove the propeller by cutting the safety wire and removing the six (6) propeller attach bolts.

NOTE: Propeller/Crankshaft index should be noted for reference at reinstallation.

- Remove the twelve (12) backplate attaching nuts and washers and remove the backplate.
- Carefully smooth out the propeller cutout areas in the back plate as shown on figure 4. These areas should be sufficiently smoothed to eliminate all scratches and sharp edges. NOTE: If cracks are found in backplate, it must be replaced. Replacement backplates will have doublers installed.

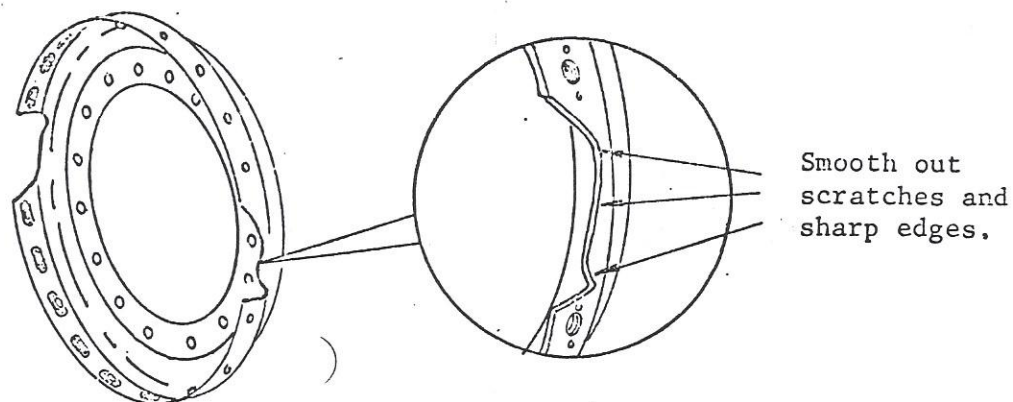


Figure 4. Backplate clean-up.

4. Refer to figure 5 and drill out the rivets that attach the eight (8) nut plates to the backplate (Two (2) nutplates adjacent to each cutout - both sides). Save the eight (8) nutplates.
5. Position the two (2) doublers (506004-2) in the backplate and attach the backplate to the ring gear support assembly using six (6) bolts, nuts and washers. Using small C-clamps, clamp the outer edges of the doublers to the backplate.

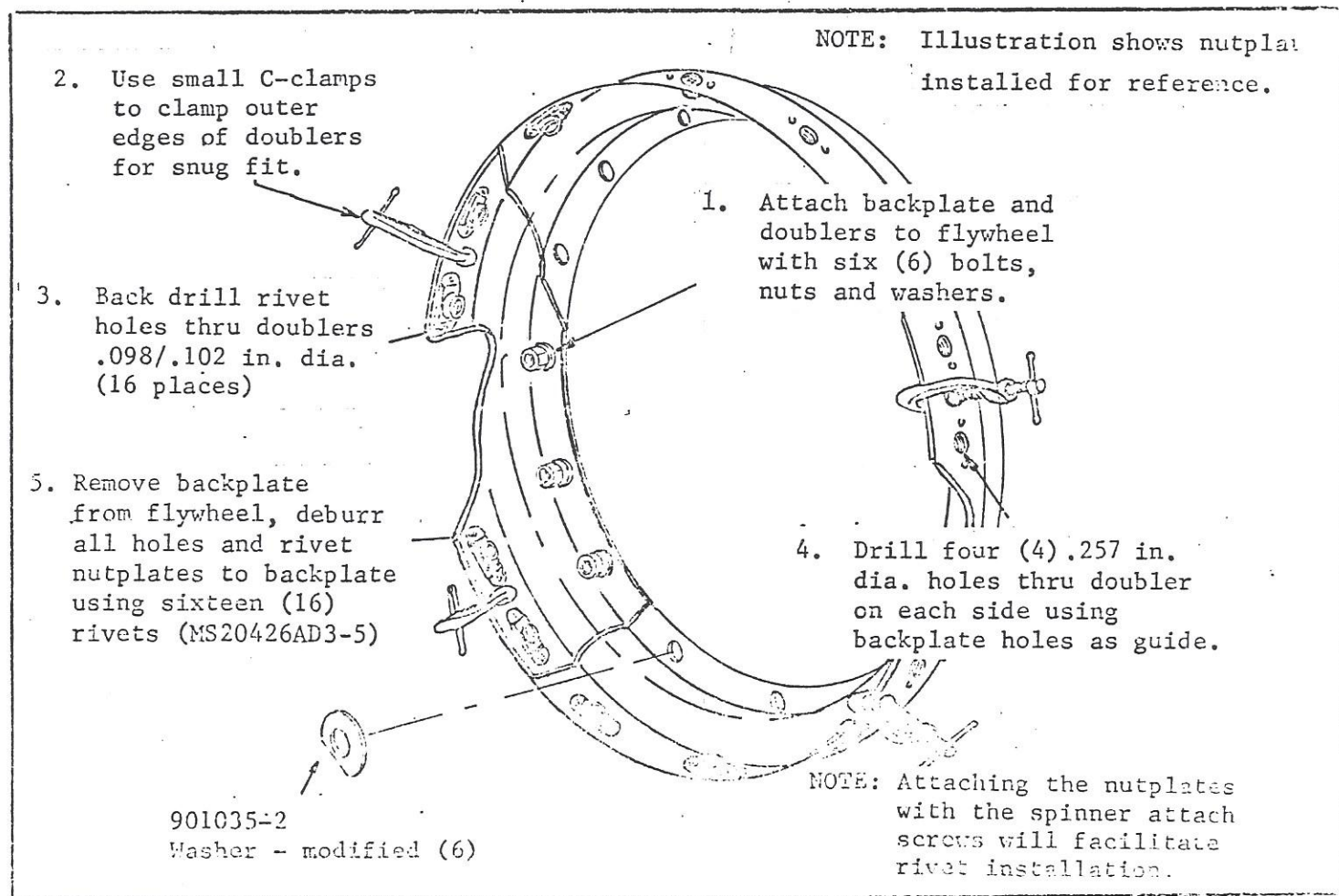


Figure 5. Doubler Installation

6. Locate and drill four (4) .193 in. dia. drain holes in the backplate as shown on figure 6 and as instructed in paragraphs 7, 8 and 9.

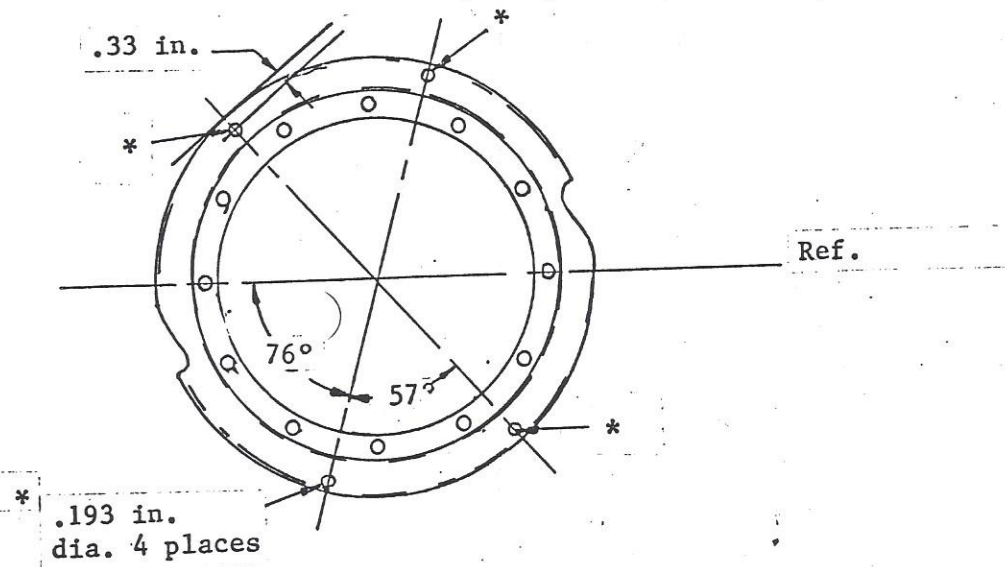


Figure 6. Drain Hole Locations.

7. Place the backplate on a flat surface as shown on figure 6 and place a straight edge across the centers of the first hole above the left propeller cutout and the first hole below the right propeller cutout. Mark a line across these points for reference.
8. Using a protractor, mark a line at 76° from reference line, then a line at 57° from the 76° line (See figure 6).
9. Drill four (4) .193 in. dia. holes .33 inches in from outer flange as shown on figure 6. Deburr holes.
10. Install the modified backplate to the engine exactly as removed, with the exception that six (6) washers - modified (part number 901035-2) are to be located against the forward face of the backplate not covered by the doublers and one (1) AN960-416 washer is to be used on top of each modified washer. Be sure to locate the trimmed edge of the modified washers adjacent to the radius in the backplate as shown on figure 5.
11. Index the propeller to the location from which it was removed. Torque the propeller attach bolts to 280-320 inch pounds and resafety.

Modification Instructions - Spinner

1. If loose or working rivets were found in the spinner bulkhead, replace rivets as necessary with MS20470AD3-4 rivets supplied with this kit.
2. Carefully smooth the propeller cutout areas in the spinner as shown below. These areas should be smoothed enough to remove all scratches and sharp edges.

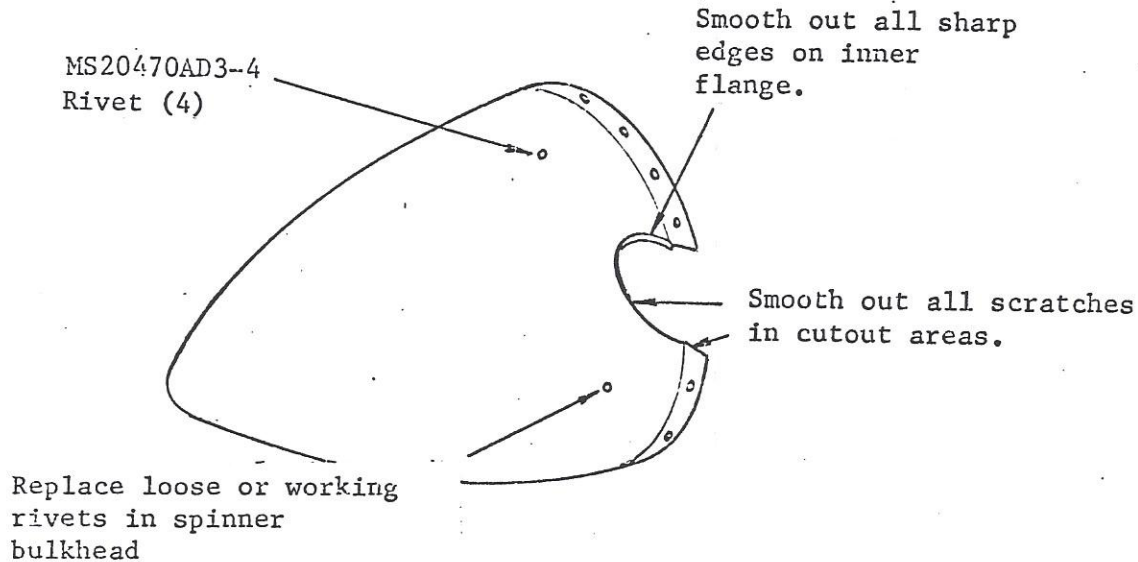


Figure 7. Spinner cutout cleanup.

3. Check spinner bulkhead fit in propeller and add plastic electrical tape as necessary to insure snug fit.
4. Install spinner and center carefully on the propeller axis. Spinner runout after installation must be less than 1/16 inch when measured at the forward end of the spinner. Spinner attach screws may be loosened, and spinner shifted to correct alignment. Retighten screws.
5. Install upper cowling.

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NOTE: Revised December, 1970 to change Lycoming part number for engine support bushings, page 3.