

PROPELLER (McCAULEY) - ADJUSTMENT/TEST

1. General

- A. This section gives information necessary to do a functional test for the dynamic balancing of the propeller. This data is applicable to all McCauley 3GFR34C703/106 GA-0 series propellers installed on the Model 208.
- B. The correctable propeller imbalance is a result of variations in the respective component weight and installation. The installation of balance weights in the correct position is an effective method to reduce the effects of these physical variations.
- C. The unknown factors in this problem are the amount and location of weight to be added. The balancer equipment will indicate the amount of imbalance in velocity (inches per second - IPS). This is translated into the amount of weight to be added and the angular location of the weight. The amount and location of weight added to the propeller is found with the balancer equipment. Refer to the manufacturer manual provided with the equipment for the balancing procedures.
- D. Applicable Documents.
 - (1) Applicable Caravan I Pilot's Operating Handbook.
 - (2) Applicable Caravan I Pilot's Checklist.
 - (3) McCauley MPC700 Propeller Overhaul Manual and MPC26 Owner/Operator Information Manual (refer to List of Vendor Publications).

2. Balancing Requirements

- A. Balancing Requirements for the Dynamic Balancing and Functional Test Procedure (Refer to Figure 501).
 - (1) Dynamic balance the McCauley 3GFR34C703/106 GA-0 series propellers installed on the Model 208 after all the engine rigging is satisfactorily completed. Refer to Engine Control Rigging - Adjustment and Test.

NOTE: If after five attempts the dynamic balance of the propeller is still not satisfactorily balanced, refer to MPC26 Owner/Operator Information Manual, Vibration Troubleshooting to help find the source of the vibration. If it is determined the propeller needs to be statically balanced, remove the propeller from the airplane and have it statically balanced by an authorized McCauley repair station. After the propeller static balance has been completed, do the dynamic balance procedure again.

NOTE: The maximum permitted vibration of the McCauley 3GFR34C703/106 GA-0 series propellers is 0.07 IPS.
 - (2) Remove all the dynamic balance weights from the propeller.
 - (3) Remove the propeller shaft oil seal cavity drain plug.
 - (4) Install the adapter and vibration sensor in the propeller shaft oil seal drain port.
 - (5) Position the airplane into the wind and away from buildings and blast fences.

NOTE: Do not balance the propellers when it is raining or when the wind gusts are 5 knots over any prevailing, steady wind.
 - (6) Use the Aces equipment, or equivalent, to dynamically balance the propeller. Refer to the manufacturer manual provided with the equipment for the balancing procedures.

3. Initial Weight Installation

- A. Install the Initial Weight (Refer to Figure 502).
 - (1) Use the propeller balancing equipment to find the initial weight installation location. Refer to the correct manufacturer manuals for dynamic propeller balancing procedures.
 - (2) Remove the screw from the spinner identified for the initial weight location.

NOTE: For initial weight installation, the weights can be installed on the outside of the spinner. The initial weight installation uses AN502-10-XX screws.
 - (3) Find the number of AN970-3 washers necessary to equal the initial correction weight found in the dynamic propeller balancing procedure plus the weight of the A-1635-133 screw removed from the spinner. Refer to the correct manufacturer manuals for dynamic propeller balancing procedures.
 - (a) Use the scale listed in the manufacturer manual to weigh the hardware used for the initial weight installation.

NOTE: The total number of AN970-3 washers (4.1 grams per washer) cannot exceed 6 at any one

location. If more than 6 washers are necessary, they must be equally located between adjacent locations. One AN970-3 washer must be placed forward of the spinner bulkhead for stress relief. All the other AN970-3 washers must be put aft of the spinner bulkhead. The AN502-10-XX screw may not project past the MS21083-N3 nut more than 0.125 inches.

- (4) Change the number of washers to adjust for the AN502-10-XX screw necessary to attach the initial weights on the outside of the spinner.
- (5) Install the AN502-10-XX screw and AN970-3 washers in the spinner attachment screw hole.
- (6) Use the propeller balancing equipment to find the weight and angle correction. Refer to the manufacturer manual provided with the equipment for the balancing procedures.

4. Final Weight Installation

- A. Install the Final Weight (Refer to Figure 502 and Figure 503).

NOTE: For final weight installation, the spinner must be removed. The final weights are installed on the spinner bulkhead. The final weight installation uses an AN502-10-XX screw, an NAS1149F0332P washer, and a MS21083-N3 nut.

- (1) Remove the AN502-10-XX screw and AN970-3 washers installed during the initial weight installation.
- (2) Remove the screws and washers from the spinner.
- (3) Remove the spinner from the airplane.
- (4) Change the total weight of the removed washers and AN502-10-XX screw, to adjust for the weight of the removed A-1635-133 screw, and the attaching NAS1149F0332P washer and MS21083-N3 nut.
- (5) Install the final weight hardware inside the spinner bulkhead in the hole nearest to the location found in the weight and angle correction.

NOTE: The total number of AN970-3 washers (0.145 ounces or 4.1 grams per washer) cannot exceed six at any one location. If more than six washers are necessary, they must be equally located between adjacent locations. One AN970-3 washer must be put forward of the spinner bulkhead for stress relief. All of the other AN970-3 washers must be put aft of the spinner bulkhead. The AN502-10-XX screw must not extend past the MS21083-N3 nut more than 0.125 inches.

CAUTION: Make sure you obey the procedure that follows as written. This will help prevent damage to the equipment.

- (6) Lightly push the spinner against the spinner support.
- (7) Make sure that the spinner holes align with the spinner bulkhead holes.
NOTE: The spinner holes must be approximately 1/2 hole diameter forward from the bulkhead holes.
- (8) If the holes do not align correctly, add or remove shims as necessary.
- (9) When the shims are correct, push hard on the front of the spinner to align the spinner holes with the spinner bulkhead holes.
- (10) Install the screws and washers in the spinner bulkhead.
- (11) After the final installation of the weights, do a test of the propeller balance to make sure the propeller is within permitted balance limits. Refer to the correct manufacturer manuals for dynamic propeller balancing procedures.
- (12) Remove the adapter and vibration sensor from the propeller shaft oil seal drain port.
- (13) Install the propeller shaft oil seal cavity drain plug.

Figure 501 : Sheet 1 : Vibration Sensor

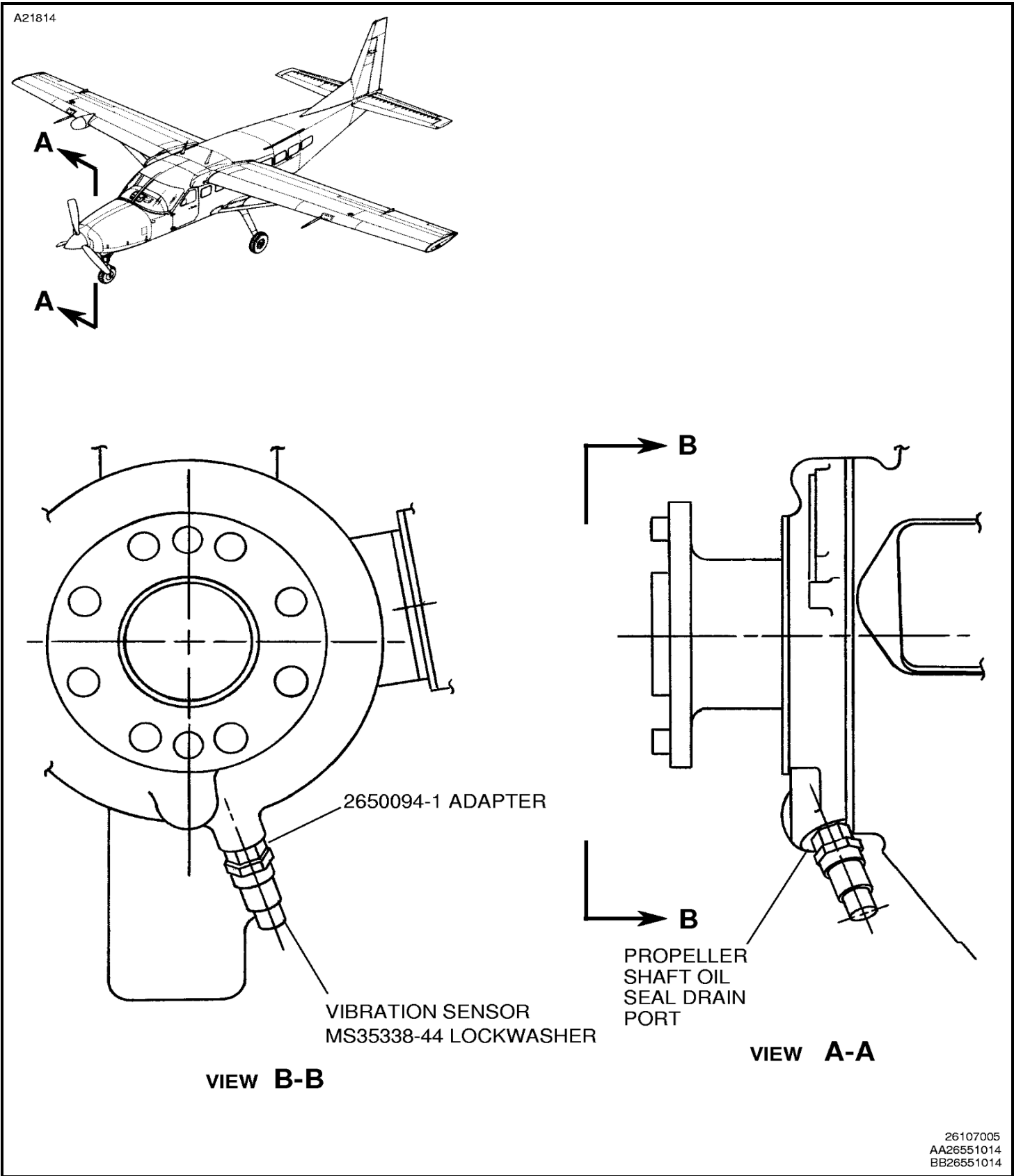


Figure 502 : Sheet 1 : Balance Weight Location

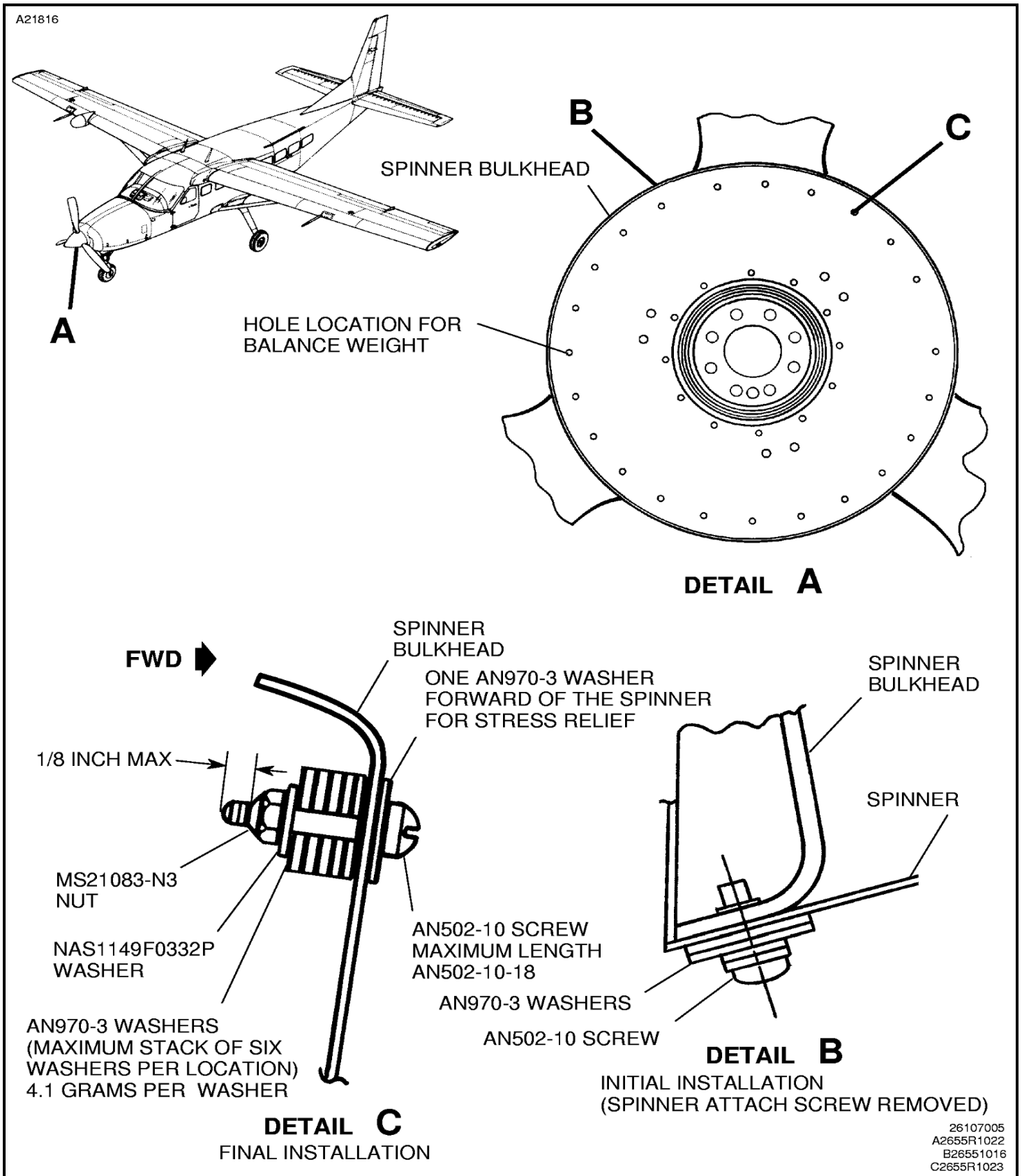


Figure 503 : Sheet 1 : McCauley Spinner

