MPC-25

McCAULEY™

# Governor Operator/Owner Manual

## Warranty Registration Card

Governor Model _____ Governor S/N _____

Date of First Installation on Aircraft _____

Owner's Name _____

Company _____

Address _____

_____

City/State/Postal Code _____

Country _____

Telephone _____ Telefax _____

PLACE
STAMP
HERE

McCauley Propeller Systems
Product Support
Dept. 767
P.O. Box 7704
Wichita, KS 67277-7704
USA

McCauley Propeller Systems
Product Support
Dept. 767
P.O. Box 7704
Wichita, KS 67277-7704
USA
Telephone: 316-831-4021
Telefax: 316-831-3858

Contact McCauley Product Support Department for the nearest McCauley Authorized Overhaul Facility.

*The following warranty is expressly for new governors or governors remanufactured by McCauley Propeller Systems. Governors overhauled or reconditioned by facilities other than McCauley will have a warranty as specified by the facility performing the work.*

McCauley Propeller Systems, a division of The Cessna Aircraft Company, Wichita, Kansas, U.S.A. ("McCAULEY"), expressly warrants new and remanufactured products produced and sold by McCauley to be free from defects in material and workmanship under normal use and service for a period of thirty-six (36) months after delivery to the original retail purchaser or until the expiration of the maximum hours of use or calendar limits for overhaul published by McCauley for the subject product, whichever occurs first.

McCauley's obligation under this limited warranty is **limited to repairing or replacing**, at its option, any propeller, propeller parts, governor or governor parts determined by McCauley to have been defective and which is properly returned by the owner, with a written statement describing the alleged defect, to any McCauley Authorized Service Center authorized to service the individual McCauley product. The repair or replacement of defective parts will be made without charge to the owner for parts, or labor for removal and installation, except export/import duties, and/or sales or use taxes, if any, which are solely the owner's responsibility. A part replaced pursuant to this limited warranty will be warranted by McCauley under the same terms as the original

part for the remainder of the applicable warranty period of the original part. This limited warranty is not intended to and does not cover the costs of normal maintenance or overhaul.

In addition, McCauley will **repair or replace**, at its option, any propeller, propeller parts, governor, or governor parts requiring replacement due to manufacturing defect if found at or before the first recommended overhaul interval as described in McCauley published service information. This first overhaul coverage does **not** include labor, standard overhaul replacement parts, parts repairable via published service information (re-plating, painting, etc.), other costs associated with the propeller or governor overhaul, or export/import duties, and/or sales or use taxes, nor does it apply to defects found after McCauley published overhaul hour or calendar limits. The provisions of this limited warranty do not apply to: any McCauley parts which have been subject to misuse, negligence or accident or which have been repaired or altered in any way so as, in the judgment of McCauley, to adversely affect their performance, stability or reliability; to normal maintenance services (such as cleaning, mechanical adjustments and maintenance inspections); to the replacement of service items made in connection with normal maintenance; to normal deterioration of soft trim and appearance items (such as paint and rubberlike items) due to wear and exposure; to propellers, governors or parts found defective beyond the McCauley recommended overhaul period; or to parts which have been improperly installed by entities other than McCauley and/or McCauley Authorized Service Centers.

The McCauley limited warranty is void on any new or remanufactured product installed, without McCauley's prior written approval, on a non-type certificated engine, or on any engine which has received an overhaul or modification which is not approved by the engine manufacturer and that results in a change to the vibratory environment of the engine such as, but not limited to, an alteration of horsepower, operating RPM, crankshaft damper configuration, compression ratio, magneto timing, camshaft design, or any other overhaul or modification not expressly approved by the original engine manufacturer.

To the extent allowed by applicable law, THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED IN FACT OR BY LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES OF REPAIR OR REPLACEMENT SET FORTH HEREIN ARE THE ONLY REMEDIES UNDER THIS WARRANTY. McCAULEY DISCLAIMS ANY OBLIGATION OR LIABILITY, WHETHER IN CONTRACT OR IN TORT, INCLUDING LOSS OF USE OF THE PRODUCT WARRANTED, LOSS OF TIME, INCONVENIENCE, LOSS OF PROFITS, COMMERCIAL LOSS OR ANY OTHER DIRECT, CONSEQUENTIAL, SPECIAL OR INCIDENTAL DAMAGES. THIS WARRANTY IS IN LIEU OF ANY OBLIGATION OR LIABILITY ON THE PART OF McCAULEY TO ANYONE OF ANY NATURE WHATSOEVER by reason of the manufacture, sale, lease or use of the warranted products and McCauley neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with such warranted products. The United Nations Convention on Contracts for the International Sale of Goods, 1980, and any successor thereto, is expressly excluded from this warranty.

## Details

The information in this guide is intended for general reference use only. The procedures explained in this guide may **not** be applicable for your installation.

If any question exists regarding these procedures, contact McCauley Product Support at **316-831-4021**.

Always consult the aircraft Type Certificate Data Sheet or owner/operator's handbook before modification to governor or installation.

## General Facts About McCauley Governors

Engine redline RPM may or may not be reached during a full power static run-up. In a Constant Speed Propeller, the governor is not controlling the propeller at this time; the propeller is against its low pitch stop. Attempting to increase propeller static run-up RPM by adjusting the governor high RPM screw will have no effect and will probably result in a propeller overspeed during the takeoff roll.

On an aircraft, several considerations determine both the low and high blade angle settings. Normally 25 to 100 RPM below rated takeoff RPM is desirable and acceptable during a static run-up. McCauley's practice is to set the low blade angle so that rated takeoff RPM is not reached until the aircraft has reached some significant groundspeed during roll out. At this time, and only this time, the propeller is controlled by the governor.

The advantage of this practice is that the maximum static RPM can be used as a check on developed horsepower as with a fixed pitch propeller. Any loss of maximum horsepower over time is readily apparent during a preflight static run up. If propeller remains in low pitch after takeoff, engine will overspeed. Control of the propeller at this point is with the throttle.

## Governor Installation Instructions

1. Prepare new mounting gasket, P/N B-20024. Coat gasket with Dow Corning #7 compound release agent or equivalent before installation.

2. Check that mounting studs project a minimum of 1.250 in. (31.75 mm) from face of engine pad.

3. Clean engine pad, studs, and mounting hardware before installing new mounting gasket. Ensure governor drive spline mates correctly with engine accessory drive spline.

4. If drive spline does not align correctly with engine accessory drive rotate engine crankshaft until splines engage correctly.

5. Attach mounting hardware and torque the 4 mounting nuts to 100-140 lbf-in. (11.3/ 15.82 Nm).

6. If installing a push/pull bracket remove only those screws necessary to install bracket. Install push/pull linkage brace to top of governor and torque screw to 18-24 lbf-in. (2.0/2.7 Nm).

## Governor Installation Instructions (cont'd)

7. Reconnect push-pull control to outermost hole on governor control lever and adjust linkage per aircraft service information.

8. Flight check aircraft for proper RPM setting. Record amount of change required at different flight conditions. Tests should be done in smooth air.

9. If adjustment is required, remove cowling, cut lockwire, loosen jam nut, and turn max RPM screw clockwise or counterclockwise.

**NOTE:** One full turn clockwise will reduce RPM by approximately 25 RPM. One full turn counterclockwise will increase RPM by approximately 25 RPM.

10. Also check for oil leaks - none permitted.

# Calibration Procedures Following Installation of McCauley Governors

1. Run-up aircraft: after engine oil temperature is in operating range, cycle governor/ propeller at least 5 times to remove air oil passages in governor and propeller.

2. For feathering governors - Perform a propeller feathering check as outlined in the aircraft flight manual or pilot's operating handbook before the first flight of aircraft following installation.

3. Perform Static Run-up:

   Lock aircraft brakes. Place cockpit propeller RPM lever in high RPM (takeoff) position. Advance throttle slowly to maximum permitted engine manifold pressure limits, but do not exceed limits. Manifold will vary depending on barometer reading and distance from sea level. Record propeller RPM. If local wind conditions are over 5 knots, repeat check with aircraft pointed in opposite direction and average the two numbers. As a general rule, propeller RPM should be at redline or 100 RPM below redline limit during the above check.

## Calibration Procedures Following Installation of McCauley Governors (cont'd)

4. Perform Flight Test:

   During takeoff acceleration, record maximum propeller RPM. When sufficient altitude is reached, level out aircraft, leaving propeller control in full RPM position. Maintain this setting for three (3) to five (5) minutes while monitoring propeller RPM. Do not allow RPM to exceed redline by moving the propeller control aft. Following this check, two conditions may exist which require adjustment:

   A. If propeller RPM is exceeding redline limit, reduce it to redline using propeller control. Leaving propeller at this redline RPM setting, land aircraft and shutdown. Remove cowling and note position of control arm on governor. Adjust governor high RPM screw clockwise so it just touches stop on governor control arm; this will ensure that the correct arm position for governor redline RPM setting cannot be exceeded.

   B. If propeller RPM is below redline limit with max RPM setting on the propeller cockpit control, note RPM and land. Remove engine cowling and adjust the governor high RPM screw counterclockwise to increase RPM. Note that one full screw turn will cause an increase of approximately 25 RPM. Perform another test flight to confirm adjustments were sufficient.

5. Check governor for leakage; none permitted.

## Governor Maintenance

McCauley Governors require no regularly scheduled maintenance, but the following practices can insure dependable operation:

1. Changing engine oil at frequent periods will greatly extend the operation and life of your governor.

2. Maintaining a dynamically balanced propeller will limit vibrations that effect wear on governor parts.

3. Checking tightness and security of all external screws, nuts and levers as part of each routine engine inspection will help maintain optimal, safe performance.

4. Performing regular system maintenance will benefit the governor. The engine, propeller, and governor work as a system: each component depends on the other to perform its job. A properly maintained engine will help ensure the ability of the governor to maintain a constant RPM under varying flight conditions.

## Governor Troubleshooting

1. **Symptom:** Propeller Surging or "Wandering"

   **Possible Cause:** Excessive Transfer Bearing Leakage - Engine with excessive transfer bearing leakage can experience surging since the governor may not be able to get enough pressure to the propeller. This causes a delay in propeller responsiveness and by the time the propeller responds to earlier governor inputs, they have changed, resulting in propeller "wandering."

   **Corrective Action:** Perform a transfer bearing leakage test per engine manufacturer's instructions. If test indicates a high rate of leakage (even though it may still be on the high side of "acceptable" tolerance), this may be your cause. Install the suspect governor on a known "good" aircraft. If the problem disappears, engine work may be indicated.

   **Possible Cause:** Malfunctioning Magnetos

   **Corrective Action:** Follow troubleshooting procedures in manufacturer's manual.

## Governor Troubleshooting (cont'd)

**Possible Cause:** Dirty Engine Oil - contaminants in dirty engine oil can cause blockage of close tolerance passages in governor, leading to erratic operation.

**Corrective Action:** Timely engine oil changes, as often as every 30 hours, should eliminate this problem.

2. **Symptom:** Propeller RPM changing and holding new setting

**Possible Cause:** Excessive "Play" in Aircraft Propeller Control Linkage - excessive "play" in the linkage between the governor and the cockpit control often leads to erratic operation.

**Solution:** Trace linkage, locate unsecured sections, and tighten as needed. Please note that although linkage may appear to allow full governor control while the engine is off, it may not in the air. Engine vibration and "stretch" of the mount during operation can often aggravate the condition. Therefore, it is important the entire length of linkage be properly secured, even if the ends alone are tight.

## Governor Troubleshooting (cont'd)

3. **Symptom:** Propeller resistant to pitch movement

   **Possible Cause:** (NOTE: This is rarely the cause of RPM malfunction.) This can be caused by either excessively tight shimming of the propeller blades, or internal corrosion or part failure, causing binding.

   **Corrective Action:** Check amount of blade "play." A total lack of blade "shake" may indicate excessively tight blade shims. If this is suspected, have propeller checked by a qualified FAA-approved propeller repairman. This check and any correction may be performed on the aircraft.

4. **Symptom:** Governor exposed to Propeller Ground Strike, Propeller/Engine Lightning Strike, Engine Detonation, Oil Contamination, or Sudden Engine Stoppage

   **Possible Cause:** Definition of ground strike or lightning strike can be found in McCauley Service Bulletin 215[X]; definition of engine detonation, engine oil contamination, sudden engine stoppage can be found in engine manufacturer's service information.

   **Corrective Action:** Governors must be tagged with specific damage and overhauled.

# Governor Overhaul Requirements and Storage Requirements

1. Overhaul Requirements - McCauley has published overhaul requirements for all governor models. Refer to McCauley Service Bulletin 137[X].

2. Long Term Storage of Governors - The following is applicable to new and overhauled governors prior to entering service (engine installation). Storage time is determined from date of manufacture or overhaul:

   A. Storage must be in a clean and dry environment, preferably in the original shipping carton and above ground level, to minimize exposure to dirt and moisture.

   B. If storage period exceeds two (2) years, before entering service perform the following inspection:

      (1) Inspect externally for damage and corrosion.

      (2) Test run the governor on a governor test bench to verify correct operation and check for leakage. This must be accomplished only by an FAA approved propeller repair station or governor overhaul facility in accordance with the governor service manual.

## Governor Overhaul Requirements and Storage Requirements (cont'd)

C. If storage period exceeds five (5) years, before entering service perform the following inspection and parts replacement:

(1) Disassemble as necessary to replace **all** rubber seals and gaskets. Total disassembly (such as disassembling the flyweight assembly) is not required unless evidence of corrosion warrants further disassembly.

(2) Inspect parts for damage and corrosion, repair/replace parts as necessary. Critical inspection areas are I.D. of drive gear, O.D. of the pilot spool, and "toes" of flyweight. Work must be accomplished only by an FAA approved propeller repair station or governor overhaul facility in accordance with the governor service manual.

(3) Test run the governor on a governor test bench to verify correct operation and check for leakage. This must be accomplished only by an FAA approved propeller repair station or governor overhaul facility in accordance with the governor service manual.

## Governor Installation Record

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