

**CANADIAN AERO MANUFACTURING**  
**INSTRUCTIONS FOR CONTINUING AIRWORTHINESS**  
**SLEEVE, Part Numbers CAM633039 and CAM633039M43**  
 CI-08-50 Revision: B Issue Date: May 01, 2003 Print Date: 01/05/03 Page 1 of 1

This ICA is Transport Canada Accepted

**RECORD OF REVISIONS**

Revision	Effective date for new revision	Date of withdrawal of previous revision	Person making revision	Organization
B	May 1, 2003	N/A	Ron Newburg	CAM
A	May 16, 2001	N/A	Jim Watson	CAM
Original	Sep. 01, 1999	N/A	Jim Watson	CAM

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## **1. INTRODUCTION:**

1.1 All CAM Sleeves are currently manufactured as per Canadian Aero Manufacturing PDA01-11, issue # 2 or later approved revisions.

1.2 These instructions apply to CAM Sleeves with Part Numbers CAM633039 and CAM633039M43. This ICA describes the installation and required maintenance elements.

1.3 The function of the Sleeve is to hold the starter adapter clutch spring firmly by one end, so that when the starter motor turns the gear attached to the other end of the clutch spring, the spring tightens around the drum on the shaft gear, which is between the sleeve and the gear. Once the spring has tightened around the shaft gear, it is locked to the gear (being driven by the starter motor) and is turning the engine over via the shaft gear. As soon as the engine starts and the starter motor stops, the shaft gear accelerates, the spring releases and stops turning in the sleeve.

1.4 Distribution of this ICA is accomplished at the time of sale of a CAM Sleeve. This ICA is also available via the CAM website. Should there be a revision, the latest version will be available on the CAM website.

1.5 Revisions of this ICA are done by entire replacement only. All pages are at the same revision status, and are in effect as shown in the Header.

## **2. ELIGIBILITY:**

2.1 This replacement Sleeve may be installed on the engines as per CAM Document No. CA-C-01 (Rev: B-2) or later approved revision.

## **3. INSTALLATION:**

3.1 Install this sleeve using the alignment fixture # CAMT0890-AB or CAMT0890C. The fixture can be made locally as per CAM Drawing No. 0890 supplied in this package. It is the responsibility of the installer to ensure that the position and orientation of the sleeve in the housing is correct and complies with the requirements of these instructions.

3.2 Heat the housing to about 250°F (drops of water bounce and bubble). Support the housing to prevent deformation and remove the old sleeve using the hydraulic press, shearing the three brass retaining pins. Ensure that 500°F is not exceeded during heating by the use of a 500°F Tempstick.

3.3 Clean and inspect the housing to ensure its fitness for re-use. Refer to the prevailing TCM publications.

3.4 Ensure that the location for the new brass retaining pins will not place the edge of any new pin within .05" of the edge of the boss, or a previously installed pin.

3.5 Fit the new Sleeve CAM 633039 or CAM633039M43 into the Top Plate Assembly of the fixture such that it will locate properly when installed. The two oil drain holes must be at the bottom, and the depth of the Sleeve must be the same as the one removed.

3.6 Refer to the Fixture Application List to determine which Base Plate Assembly is required for the housing being repaired. Test fit the entire fixture to the housing to establish the correct

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position before heating. Ensure that the arrow on the fixture points to the starter motor mounting flange. Heat the housing to 500°F (confirming by the use of the tempstick). Refit the fixture to the housing and allow the sleeve to slide into position. Allow assembly to cool.

3.7 Drill the three new pin holes through the sleeve pin holes with a 1/8" drill, ensuring the total distance that the drill passes through the sleeve and into the housing is at least 0.45", but no deeper than 0.5". Ensure that the hole does not exit the other side of the housing.

3.8 Install the three pins made from 1/8" brass rod obtained locally with Loctite Permanent Threadlocker #262 or equivalent. Dress the pins smooth to the inside diameter of the Sleeve with a suitable grinder.

**4. CONTINUING AIRWORTHINESS INSTRUCTIONS:**

4.1 **Over the long term, wear can be expected in the contact area of the CAM633039 sleeve. Inspect this area for wear.** When the inside diameter of this area on the CAM633039 sleeve is greater than 2.3480 inches, a CAM539800-XXX-P4OD spring may be installed in place of the original spring. When the inside diameter of CAM633039 is greater than 2.354 inches remove the sleeve from service. If the inside diameter of CAM633039M43 sleeve is greater than 2.300 inches, remove this sleeve from service.

**5. TROUBLESHOOTING:**

The sleeve can be presumed not to be operating properly if engagement of the sleeve and a properly operating motor, does not result in the prompt and continuous rotation of the propeller.

<b>Observation</b>	<b>Possible cause</b>	<b>Recommended action</b>
Starter motor can be heard while engaged, but propeller does not turn	Drive broken or slipping moderately	Remove and inspect the sleeve, and repair as required as per this ICA
Propeller turns non-continuously while clutch spring engaged	Starter adapter slipping, probably due to worn sleeve	Remove and inspect the sleeve, and repair as required as per this ICA

Note: Any questions regarding the sleeve should be addressed to Canadian Aero Manufacturing, 2648 Ego Side road, Orillia, Ontario, Canada L3V 6H3; Tel # (705) 326 1368.

Residents of USA may call for assistance to Niagara Air Parts, Inc., 9900 Porter Road, Niagara Falls, New York, USA 14304; Tel. # (800) 565 4268.

The preceding constitutes the entire ICA for Canadian Aero Manufacturing Sleeves.

**E N D**