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Service Bulletin 001-90

Subject: Lancair 200 & 235, GM2Q Component Part and
Maintenance to avoid Shimmy.

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GM2O History:

On Lancair 200 & 235's only, the CM 20 casting attaches the nose gear swivel bolt (5/8" diameter) to the upper gear, GM16 weldment. Engineering data indicates no problems with this assembly and several years of service have supported that position. All parts are 100% x-rayed so part consistency is verified.

In the past six months, we've received two reports (the first ever) of breakage in this part where the bolt head passes through the center of the part. While we can not make any solid conclusions as to why these two isolated cases resulted and no comment can be made as to the severity of the particular use nor pilot expertise, we wish to advise all 235 operators of these two cases.

Action:

Service history and engineering would suggest operator and/or installation-maintenance error. However the more prudent action is to eliminate any adverse possibility by placing a service life on this part in the event that some uniquely steady, continual pounding such as might occur on a grass runway, etc. might account for these two sole cases by accelerating an otherwise naturally long fatigue life. A conservative service life of 200 landing/take off cycles has been established since an alternative is very simple and inexpensive.

To extend service life, a fully machined from extrusion vs. cast GM2O has been produced. The properties are sufficiently higher with the solid machined component that a service life of 1,500 hrs can be initially established and will likely be extended.

We are making this fully retrofitable GM2O-B component available on a cost basis for all first time replacements (during the next three months - which will hopefully preclude an otherwise high inventory cost). The new GM2O-B is a direct replacement with essentially identical dimensions.

The original AN10 bolt should be pressed into the GM2O-B and the fork travel stops will have to be drilled and set as was performed on the original 0M20. Replacement time is estimated to be approximately one and one half hours.

The GM2O-B is now in stock. First time cost is \$27.00 including shipping within the U.S. Overseas shipment is additional. Please contact our office if you wish to order this GM2O-B component.

L,ancair 200 & 235 (ONLY) Nose Gear Maintenance

History:

The early Lancair models (200 & 235) are equipped with a trailing arm nose gear assembly using synthetic rubber donuts" for dampening. The anti-shimmy system consists of bellville washers compressed to produce resistance. When properly maintained the system has proven to be effective however it is clear that careful inspection and maintenance is mandatory.

Since most engines seem to leak oil, the dampening system is often forced to reside in a hot, oily environment which is detrimental to system longevity. Failure to maintain shimmy dampening can lead to shimmy when compounded by other factors.

Action:

It is recommended that at least once every month, the assembly be checked.

Check for tightness and stiffness. This can be accomplished by simply having someone hold the tail down while you rotate the nose wheel assembly left and right to verify a stiff, tight condition. Tighten as necessary and/or replace the bellville washers. Four to six bellville washers are required. They must be assembled (as illustrated in the assembly manual) such that they are “cupped” together with half facing up and the other half facing down. (ie: three cupped together facing up, three cupped together facing down.) Consult your assembly manual.

Make sure that all oil and grease are removed from the slip plate located between the GM1G and GM2O components. This area must be kept clean.

Also, loose (Timken) wheel bearings are often found in planes inspected in the field. This can induce or amplify a shimmy condition. Check that the nose wheel, when given a brisk spin-up, will not rotate freely more than one half to one revolution. Also check for any signs of gauling of the axle spacers since a loose wheel can lead to gauling. Tighten and/or replace as necessary.

These regular inspections are critical to the prevention of shimmy and must become routine for all operators. The oleo style nose strut, as used on all other Lancair models, requires much less maintenance while also providing a superior ride. A version of this oleo strut has been produced for easy retro fit onto existing model 200 and 235's. You are welcome to contact our office for information on this installation.