

## Crankshaft Oil Seal Loss

In recent months there seems to have been an increase in the number of crankshaft oil seal losses. This, as Australian Magna Liset discovered, causes loss of all lubricating oil resulting in a siezed engine. Fortunately Magna had just completed the long over water flight from Australia to New Zealand before the seal popped out.

Some old narrow deck Lycoming engines have a sheet metal retaining washer screwed to the crankshaft end of the case. This covers the oil seal thus holding the seal in place, even if it tries to slip out. It seems that later model tractor application of these engines don't require any retainer. Pusher applications may not follow the same rule, however. (Lycoming disagrees with the statement and says neither pusher nor tractor applications need the retainers, see below) The next time you are at your airplane see if your engine has the retainer. I have an O-235-C and there is no retainer plate or screw holes on it.

The oil seal retainer installation is covered by Lycoming Service Instruction No. 1073A. It seems Lycoming made a crankshaft oil seal retaining plate safety kit, part number 74034. This kit included 2 oil seal retaining plates PN 74026, 4 # 10-24 capscrews PN 74330, and 4 plain # 10 washers PN STD-425.

All Lycoming engines, that I can recall, have cast bosses in place on the crankcase. These bosses are, sometimes, drilled and tapped for screws to hold the oil seal retainer ring. Perhaps it would be wise to install such a seal retaining method on all our engines.

If your engine is down for overhaul it would be a simple matter to drill and tap the bosses for a small screw (perhaps #10-24?) to hold the retaining washer. Such a washer could be easily made from flat thin aluminium stock (perhaps .032 2024T3 ?). If

your engine is not apart you might consider cleaning the end of the crankcase **VERY CAREFULLY** and RTV - ing two halves of a split washer to the end of the case to retain the seal. **Caution:** be sure to use a fuel and oil proof type of RTV. Those of you who are running the B & C style of alternator drive pulley may be already covered. My pulley is so close to the crankcase that I don't see how the relatively wide seal could sneak by it.

Of course no engine discussion is complete without a little CYA. To that end I called Gary Earon of Lycoming at (717) 327-7096. He said that the above idea would require field approval and the usual official paper chase. I indicated these were in experimental aircraft and he said it didn't make any difference because they were certified engines. He wouldn't offer any suggestion or feeling about the above retainer plate so I thought I'd find out what causes oil seals to "pop out".

Gary said, "There are only two reasons for oil seal loss: excessive crankcase pressure and improper oil seal installation."

I asked how one might check for

excessive crankcase pressure and he indicated pressure should be measured using an air speed indicator as a pressure gage. The "air speed" should fall between 45 and 60 mph at full throttle. (For those of you using a water manometer that means no more than 1.7")

The "airspeed" indicator would be connected with the static port going to ambient air pressure and the pitot port going to the oil filler tube. He suggested making a plug that fits the filler tube and temporarily replaces the dip stick. This plug would have a tube installed that allows attachment to the pitot side of the "air speed" indicator. The static port would be connected to the normal static ambient air pressure

The correct method of oil seal installation is listed on Lycoming Service Instruction #1324A which Gary said would be available from any mechanic. I contacted 3 different A & Ps to find they did not have such a thing. Lycoming's official answer was to contact Avial for a copy. I called the closest one, which is in Columbus, Ohio at (614) 258-3477, and requested a copy of the bulletin. They indicated they would send me one at no charge.

