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Service Bulletin 009-92

Subject: Lancair 235 & 320 Oleo nose gear struts
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Pages: 2

We have been notified by the strut manufacturer, Esco of Australia, that a modification to the piston assembly is recommended for increased shimmy dampening resistance purposes. The following is reprinted from the Esco Service Bulletin.

This procedure may be performed either in position on the aircraft or on the bench. If done on the aircraft, a syringe with a nozzle tube no bigger than 1/4" diameter must be used to refill with oil. If done in position on aircraft, proceed as follows:

1.1 Secure tail of aircraft with weights or similar hold-down method.
1.2 With load off nose leg, remove wheel and fork assembly from flange (1).
1.3 Disconnect drag link from nose leg at (30).
1.4 Carefully bleed nitrogen from unit by depressing valve core (24).
1.5 Remove valve (35) and drain majority of oil by swinging leg into horizontal position.
1.6 Cut safety lock wire (20), and remove 2 hexagon bolts (19).
1.7 Remove 3 retaining screws (17) and carefully extract the cylinder rod, piston, cylinder nose and rotation key assembly. Note: Some tapping with a mallet or block of wood on the top of the flange (1) may be necessary. As the "0" rings (8) and (12) pass the holes in the sides of the cylinder wall, take care that they are not damaged, the flat end of a wooden pencil is handy here to ease the "O" rings past these holes.
1.8 After removal of this assembly, dry off oil with clean dry lint free cloth and inspect for any damage to components, particularly the "O" ring seals.
1.9 Slide the rotation sleeve (9) and nose (5) away from underside of piston (11) for approximately 2". Note: As some stick slip of main seal and rod wiper always occurs, it may be necessary to move the cylinder nose (5) initially, by bumping the flange (1) down on a block of wood while holding the assembly by hand around rotation sleeve (9).
1.10 Again check for damage to components, then by winding the split spacer washer (37) which is provided with this instruction, around the cylinder rod (3), fit between piston (11) and rotation sleeve (9), as shown in illustration.
1.11 To re-assemble, firstly push the rotation sleeve (9) and cylinder nose (5) up against the piston (11) as shown in illustration (note, the just fitted spacer washer will now be holding the rotation sleeve slightly away from the piston, which is what is intended, to allow some oil flow at full extension).
1.12 Re-position the rotation key (21) in the rotation sleeve (9) making sure that the round cord rotation seal (34) is also fitted to the key.
1.13 Now carefully insert the cylinder rod assembly into the cylinder body and push into place by holding around the cylinder nose. Before finally pushing the cylinder nose right into position, rotate it so that the 3 tapped fixing holes line up with the 3 boles in the end of the cylinder body.
1.14 Insert the 3 retaining screws (17) and then by rotating the cylinder rod (3), align the 2 tapped holes in the rotation key (21) with the 2 holes in the cylinder body.
1.15 Insert the 2 hexagon bolts (19) together with their associated bonded washers (22) and tighten to between 35 and 40 inch lbs. of torque.
1.16 With the cylinder rod in the fully extended position, charge the unit with 170 ml (5.7 U.S. fluid oz.) for 320 struts and 160 ml (5.4 fluid oz.) for 235 oleo struts of shell fork oil 20, via the valve (35) hole, utilizing a syringe.

1.17 Re-insert valve (35) with its associated seal (25) and tighten. Wipe unit down with dry cloth so that any oil leakage can be seen.
1.18 Pressurize unit with nitrogen gas to approx. 170 psi and check for any obvious leakage of oil at any point
1.19 With the wheel and fork assembly back in position, but clear of the ground, turn the fork back and forth slowly between the internal stops until a constant and firm resistance is felt. If correct, no change in turning resistance will be noticed when the wheel/fork assembly is moved quickly through about ±5°, as would occur in a shimmy situation.
1.20 Safety wire the 2 hexagon bolts (19) and re-attach the drag link.
1.21 Lower the nose of the aircraft so that the nose leg is taking the weight and adjust the nitrogen pressure so that the approx. 1 inch of cylinder rod travel is used when the aircraft is sitting normally on the ground.
1.22 Allow at least 24 hours, then check that no oil leakage has occurred, or that the unit has not compressed any further than the initial setting.
2.1 If the change out is performed off the aircraft, remove the strut and secure it in a vise by lightly clamping the top of the cylinder body between soft wood vee blocks. Perform change as described above.

The change is recommended for all struts with serial numbers from 1 - 461. The serial number of your particular strut can be located on the bottom of the strut flange that bolts to the fork assembly. (This requires removing the four bolts securing the fork and reading the number stamped on the bottom of the round strut flange.)

We at Lancair have performed several of these change out procedures and find it to be quite easily accomplished. The added internal ring has been supplied by Esco to Lancair International and is available at no charge to all customers.

ACTION:

1. Check your strut serial number. While your kit serial number will be close, it is recommended that you still check the actual strut number.
2-a If you wish to make this change yourself, please contact our office and we will forward the part along with the Esco drawing 91078.
2-b If you prefer, Lancair will perform this change for you. In this case, please remove your strut and wheelJfork assembly. Ship only the strut to Lancair International with your name clearly attached to it (print your name on a piece of tape attached to strut body). We will perform this change and process the strut and ship it back to you as quickly as possible, typically within three working days.