

Method for Servicing Nose and Main Gear Struts on Lancair Legacy, ES, and IV with Esco Struts

Filling Struts with oil (both Nose and Main Gear)

1. The proper oil to use in the struts is 30W motorcycle fork oil.
2. The bleeding process is VERY IMPORTANT to ensure proper strut performance. There should be no air in the system prior to filling with nitrogen.
3. To properly bleed the system, use a large syringe and Tygon tubing (or other clear, flexible tubing) that will fit over the schrader valve. With the strut in a VERTICAL POSITION:
 - a. Connect the Tygon tubing to the schrader valve (with core removed) and the syringe (with plunger removed). Fill the syringe with oil and then manually extend and compress the strut. The syringe MUST BE HELD ABOVE THE SCHRADER VALVE to make certain that the air can evacuate the system. The air should visibly move up the tubing into the open syringe while extending and compressing the strut.
 - i. For the nose gear, be absolutely sure to move the strut to the midpoint of travel, where the centering cam is disengaged, and TURN THE NOSE WHEEL side-to-side to ensure there is no air in the anti-shimmy mechanism.
 - b. It will take multiple extensions and compressions of the strut to bleed all the air from the system. The air has been bled from the system when there are no more bubbles coming out of the strut.
 - c. The strut is full of fluid when it is in the fully COMPRESSED position and all the air has been properly bled. When the strut is full, remove the tygon tubing from the schrader valve and allow any excess oil to drain from the valve until it stops on its own.
4. Once the strut is full of fluid, replace the schrader valve core, and continue with the instructions below to fill the struts with NITROGEN.

Nose Gear

1. Remove the weight from the nose gear, either by pushing down on the tail, hooking the tail to a tail-stand, or hoisting the front of the aircraft from the engine hoist point.
2. With the nose gear fully EXTENDED, fill the strut with NITROGEN to approximately 225-275 PSI. (The actual pressure in the system will vary with the aircraft type and which device is used to fill the strut with nitrogen. The above is a safe starting pressure. The method below is for checking the extension of the strut, and is the final check for proper servicing).
3. To verify that this is the correct pressure for your aircraft, allow the weight to load the nose gear. The strut should compress approximately 1 to 1.5 inches depending on the loading of the aircraft (heavier will compress more). You may need to jostle the aircraft to get the nose gear to compress to verify the pressure is correct.
4. To adjust the extension amount, either slowly add more nitrogen or, with a rag over the schrader valve, slowly let pressure out by pressing the valve stem with a small tool.
5. One extra check that can be done to make certain there is no air in the shimmy dampening system is to put grease between two sheet-metal plates (approximately 1 foot square) and place the nose gear on top of the plates. The nose gear should be loaded by the weight of the aircraft while on the grease plates as this allows the centering cam to disengage. You can then turn the nose wheel side-to-side while listening for air in the system as well as feeling the dampening of the system. The dampening should be roughly 20-50 ft-lbs.

Main Gear (Legacy)

1. Remove the weight from the main gear by jacking the aircraft up until the wheels are off the ground.
2. With the main gear struts fully EXTENDED, fill them with NITROGEN to approximately 375-425 PSI. (The actual pressure in the system will vary with the device used to fill the strut with nitrogen. The above is a safe starting pressure. The method below is for checking the extension of the strut, and is the final check for proper servicing).
3. To verify that this is the correct pressure for your aircraft, allow the weight to load the main gear. The struts should compress approximately 1 to 2 inches. You may need to jostle the aircraft to get the struts to compress to verify the pressure is correct.
4. To adjust the extension amount, either slowly add more nitrogen or, with a rag over the schrader valve, slowly let pressure out by pressing the valve stem with a small tool.