

Learjet Technical Tip

ATA Code: 21-30-00

Learjet 31A Model Takeoff Pressurization Bump Anomalies

It has been noted that some of the later **Learjet 31A** models experience intermittent, large transitional pressurization bumps shortly after takeoff rotation. Extensive work and testing has been accomplished on many of these aircraft in an effort to resolve the erratic takeoff pressurization bump anomalies, along with the replacement of numerous components in the pressurization and bleed air system, but to no avail. What's more confusing about this situation is that the **31A-model** pressurization system is for all practical purposes, identical to the later **35A/36A** and **31-model "510"** pressurization system, of which, seldom experience large transient pressure bump anomalies at takeoff.

One **31A-model** customer has developed the following cockpit procedure that seems to help dampen these large transient bumps after takeoff:

After the cabin air switch is selected **ON** (at least **60** seconds before the aircraft is lined up on the runway for takeoff) and the aircraft has experienced it's two cabin pressure bumps, reposition the pressurization module "rate selector" from the **9:00 0'clock** position to approximately the **10:30 position**. On takeoff rotation, the cabin will momentarily down-rate approximately **900** feet per minute and then swing back to an up-rate of approximately **2,000-fpm**. The most noticeable part of the **31A-model** pressurization bump anomaly is the second abrupt down-rate swing to approximately **2,000 to 3,000-fpm**. This second large transitional swing seems to be the most noticeable to passengers and flight crews with sensitive ears. With the altitude controller rate knob set to the **10:30 position** the second large down-rate bump should be reduced to approximately **500 to 800-fpm** and then smoothly settle back up to what the rate control knob is selected to. During climb out the copilot should then reposition the rate knob back to the **9:00 o'clock – 500-fpm** setting for the remainder of the flight.

For more Learjet environmental system expertise, don't hesitate to contact **Learjet Technical Specialist Danny Brown** at **1-800-255-4193**, extension **236** for any of your troubleshooting needs. If you don't already have a copy of Danny's technical brief "**It's In the Bumps**" covering the complete operation and troubleshooting of the **Learjet 30 series "510"** pressurization system, please give him a call. You may also contact Emily Mason at 970-261-1308 or Ken Rice at 970-261-4249 for more information.