

Chapter Two

still running. Gyros are so sensitive to shock that other objects should not be allowed to bump against the gyro either. A good rule of thumb is: if you set a gyro down on a hard object and you can hear it, you have probably set the gyro down too hard. Reputable repair shops always work on gyros with a cushioned pad underneath.

In the airplane, gyro instruments, especially attitude indicators, should be “caged” prior to doing aerobatics if the instrument has a caging mechanism. The pilot should always avoid abrupt braking of the aircraft because deceleration places heavy loads on gyro bearings, yet another good reason for a carefully planned approach and minimum braking landing roll.

Troubleshooting

Heading indicators with excessive drift (more than 3 degrees in fifteen minutes), turn indicators with sluggish response, and attitude indicators that are slow to erect and/or show inappropriate deviation from level flight could be suffering from any one of several problems. Probably the most common cause is worn bearings; it’s the friction that causes excessive precession.

Such symptoms may also indicate insufficient power to the gyro. In an air-driven system, this could be an inoperative pump, improperly set regulator, leaking pneumatic lines or fittings, or an obstruction in the venturi. With an electric gyro, the culprit is probably low system voltage caused by an inoperative or malfunctioning generator. Check the vacuum gauge when there is a problem with air-driven gyros or the ammeter/warning light with the electric-driven type. If those appear normal, inspect the appropriate connections to the back of the instrument case.

If you have the old venturi system, the first thing you should do is check the venturi for blockage. Worn or damaged bearings make themselves known in another way—gyro whine. If you listen carefully right after engine shutdown, you will hear the still rapidly spinning gyros whine if the bearings are going bad.

Excessively low suction gauge readings could be the result of the pressure regulator setting being too low or a leak in a line or fitting. High readings could be the result of a high pressure-regulator setting, but it can also indicate a clogged filter. A clogged filter is similar to a straw in an extra thick milk shake. If the end of the straw clogs up, the harder you draw, the lower the pressure until the straw collapses. It’s the same principle, so in this case the worst thing you could do would be to lower the pressure regulator setting; even less air would get to the gyro. A good rule of thumb is: never lower the pressure regulator valve setting without first checking the filter.

Safety Precautions

The single most important safety precaution is to know the system in your aircraft. Know where appropriate circuit breakers are, have a plan for saving battery power to operate the most essentially instruments, and know which instruments are driven by electricity and which by vacuum or pressure. For instance, if a vacuum pump shaft failed during an instrument takeoff, the air-driven gyros would slowly wind down. More than one pilot has