

INSIGHT INSTRUMENT CORPORATION

Check Wiring Before Installation

It's easier/cheaper to check and recheck all harness's and connections than repairing them later!

Heading Gyro INSTALLATION MANUAL

DOCUMENT 4000-701 DATE: MAY 29, 2002 REV. B

PLEASE READ INSTRUCTIONS
COMPLETELY
BEFORE PROCEEDING
WITH INSTALLATION

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1. PLANNING THE INSTALLATION

The Insight Instrument Corporation Heading gyro is a plug-in replacement for the DN-101 Lear Jet heading gyro. Read all installation instructions and examine the aircraft to determine existing aircraft equipment before proceeding with installation.

1.1 HEADING GYRO INSTALLATION OPTIONS

There are no installation options for the Heading Gyro.

2. HARDWARE INSTALLATION

2.0 INSTALL HEADING GYRO WIRING

There are no wiring changes to be made for the installation of the Heading gyro.

2.1 INSTALLING THE HEADING GYRO

Prior to disturbing the existing configuration, conduct the LVL mode test described in section 3.5 using the original DN-101 gyro. If this test fails, either the Autopilot, aircraft wiring, or gyro is at fault. With the AC and DC power off, remove old DN-101 gyro from the airplane. Plug the new Heading Gyro into the existing rack and tighten up the rack screws. The hardware installation is complete. Retain the old DN-101 gyros for the exchange program return.

3. HEADING GYRO GROUND TEST

3.1 FAST SLAVE MODE

Turn AC and DC power on to the avionics. The flag on the heading indicator should be down. The heading indicator should align itself within five degrees of the actual aircraft heading and the flag should pull. If the heading is off by more than five degrees or the flag does not pull check for strong magnetic field disturbances that can influence the flux gate sensor such as tugs, carts, steel hangar structure, underground plumbing or electrical conduits, etc. Please notice that the flux gate sensors are located in the wing tips or tip tanks. The Heading gyro fast slew rate is about 30 degrees per minute.

3.2 MANUAL SLAVE MODE

Once the Fast Slave Mode test has been successfully completed (the gyro aligned and the flag pulled), select FREE position on the SLAVE/FREE switch and use the L/R switch to manually slew the compass in both directions. In manual mode, the gyro slew rate is about 30 degrees per minute. Slew the heading about 15 degrees, turn back to SLAVE mode and confirm the heading aligns again within the same five degrees range and that the flag gets pulled.

3.3 TWENTY MINUTES DRIFT TEST

Manually slew the heading about 30 degrees from the aircraft heading and then power down the airplane. Wait for at least 20 minutes or until the gyro stops spinning. Without moving the airplane, power up the avionics and confirm that the heading gyro slaves back to the same heading within five degrees.

3.4 COMPASS CALIBRATION

A Compass swing based on AC 43.13-1B, paragraph 12-37, using the approved manufacturer's data found in the Honeywell Sperry Installation & Maintenance Manual, the C-14(X) Compass System Section III pages 3-1 and 3-2 and the Learjet Aircraft Maintenance Manual, must be preformed.

3.5 LEVEL MODE TEST

Proceed with this test to verify heading track function during autopilot LVL mode. Zero the heading bug to the 12 o'clock position. Engage the autopilot on the ground in LVL mode. Move the airplane with a tug and tow bar 10 to 15 degrees to the right. Observe that the heading bug moves left and confirm the auto-pilot commands a left turn by watching the flight director command bars and control wheel motion. If you wish, you may confirm motion in the opposite direction by moving the aircraft to the left of it's original heading.

Note: You can temporarily disable the autopilot control of the pitch axis by pulling the PITCH circuit breaker to avoid unnecessary pitch servo motion and noise. Restore any pulled breakers before leaving the airplane.

4. HEADING GYRO IN-FLIGHT TEST

4.1 TAXI TEST

During taxi, confirm gyro rotates as necessary by observing objects with known heading, crosscheck the compass heading with the runway heading.

4.2 LEVEL MODE TEST

After take-off at any convenient speed and altitude, activate autopilot in LVL mode and observe airplane heading for five minutes. In stable air or light turbulence, LVL mode should maintain aircraft heading within two degrees. Confirm LVL mode has been selected by observing the LVL annunciator lamp. DO NOT CONFUSE LVL mode with basic stabilization mode where no lateral mode annunciators are lit. Basic stabilization mode will fly wings level but will not maintain heading. Fly the aircraft with the autopilot in basic stabilization mode (with the level mode off) and observe the reduced heading stability. If this test is performed at low altitudes in turbulent conditions the airplane should show a significantly better heading behavior with the level mode on.