

## Flight Control Products & Systems

### ST-180 HSI Slaved Compass System

An all-electric, technically advanced Horizontal Situation Indicator with Slaving Panel, remote-mounted Magnetic Flux Sensor and Slaved Electric Gyro.



#### Features/Functions

- 3 ATI Panel Mounted HSI.
- VOR/LOC/GPS, GS, Magnetic Heading, and Selected Heading (Bug) on single display.
- Remote directional gyro slaved to magnetic flux sensor; corrects for gyro precession and drift, and displays actual compass information; no periodic manual adjustments required.
- All-electric system.

- Two emergency failure modes.
- See reverse side for operational information.

#### Specifications

- Weights: HSI – 3.0 lbs.; Remote Electric Gyro – 3.4 lbs.; Flux Sensor – 0.3 lbs.
- Power Requirements: 13.75 or 27.5 VDC
- FAA TSOs: C34e, C36e, C40c, C6d, C9c, C52a, and C6c
- HSI Internal Lighting: 5, 14 or 27.5 VDC; white or red

# Operation of the ST-180 HSI Slaved Compass System

## General

The ST-180 Horizontal Situation Indicator (HSI) system combines a magnetically slaved gyroscopic compass with a VOR/LOC and Glide Slope display. The resulting instrument display provides the pilot with a pictorial of the aircraft position and heading relative to the selected VOR, GPS or Localizer course. The GPS Annunciator light illuminates when GPS is the selected mode.

The ST-180 system consists of the following units:

1. Horizontal Situation Indicator (HSI)
2. Remote Directional Electric Gyro (DG)
3. Magnetic Flux Sensor
4. Slaving Panel

In addition to these components, the system requires inputs from a VOR/LOC receiver and converter, and a glide slope receiver.

In operation, the flux sensor detects the aircraft direction relative to the earth's magnetic field, and provides that information to the slaving amplifier, which provides the signal to drive the compass card to display the aircraft heading.

When the aircraft is in turning flight, the magnetic sensor provides errors similar to those of a magnetic compass. To reduce the effects of turning error, the directional gyroscope is used to provide short term stability, and its signal is mixed with the flux signal in a way that allows the DG to provide the headings and heading rate during turns, and, in level flight, to be updated by the flux sensor signal to correct any gyroscopic precession.

The result is an instrument that provides highly accurate aircraft heading in both turning and straight flight, without a requirement for the pilot to manually adjust for precession as in a standard directional gyro.

The system includes an automatic emergency mode (AEM) which will activate automatically 3 minutes after the reset button is pushed if the compass card position (HDG) does not agree with the flux detector

heading during that period. When the AEM is activated, the AEM indicator LED in the HSI instrument will illuminate.

In the AEM, the display will continue to function as a magnetic indicator similar to the operation of a vertical card magnetic compass. In addition, the system can be operated as a Directional Gyro if the slaving portion fails, providing the pilot with maximum system safety and flexibility.

## Horizontal Situation Indicator

The HSI instrument display combines continuously slaved aircraft heading information and VOR/LOC/GS displays in one unit. The instrument provides autopilot heading bug, VOR/LOC course pointer and aircraft magnetic heading outputs for use with other aircraft systems which utilize standard ARINC inputs.

## Flux Sensor

The Flux Sensor senses the direction of the earth's magnetic field and transmits this information to the slaving amplifier in the Directional Gyro unit. This slaving information is used to correct gyroscopic precession, thus providing accurate, stabilized, magnetic heading information to the pilot's display unit.

## Remote Gyro

The electrically powered Directional Gyroscope is a heavy rotor unit providing high accuracy and reliability. The DG is erected electrically in response to slaving signals.

## Slaving Panel

The Slaving Panel is mounted on the instrument panel and has a switch to select either free or slaved gyro operation, and a switch and meter to slave the gyro to match the output of the Flux Sensor.

*For further, detailed operational information, consult the ST-180 Pilot's Operating Handbook.*



S-TEC/Meggitt  
One S-TEC Way  
Municipal Airport  
Mineral Wells, TX 76067-9236

Tel: 940-325-9406 or Toll-free 800-872-7832  
Fax: 940-325-3904  
E-mail: info@s-tec.com  
Web Site: www.s-tec.com