2.33. EMERGENCY EQUIPMENT

2.33.1 MAGNETIC COMPASS

The airplane is equipped with a non-stabilised magnetic compass, installed over the instrument panel, that displays the airplane magnetic heading in all the normal or emergency flight conditions.

The magnetic compass consists in a rotating card with 5° increments labelled every 30°, which rotates against a fixed index sufficiently close to the card to minimise the reading parallax error.
Two internal compensating magnets (for E-W and N-S directions) are provided for compensating the errors induced by possible perturbing local permanent magnetic fields.

The magnetic compass is equipped with a lamp that, in the event of dual generator failure, is powered by the EPU.

Two Compass Calibration Cards are provided identified by "BATTERY OFF" and "AVIONICS ON" placards respectively.

The AVIONICS ON Card provides compass deviation with a 30° step with Battery and Avionics ON and all erratic loads OFF, so that the magnetic compass can be used:

– to compare the AHCs Heading indication in case of miscompare/misleading of primary means (PFDs) of displaying heading information;

– in case of total loss of primary means (PFDs) of displaying heading information, as stand-by instrument.

The BATTERY OFF Card provides compass deviation with a 30° step so that the magnetic compass can be used as stand-by instrument for heading information, in the event of dual generator and battery failure.

2.33.2 INTEGRATED STAND-BY INSTRUMENT

The Integrated Standby Instrument GH-3100 consists of a standby attitude and air data indicator, incorporating a strap-down inertial sensor, two pressure sensors and a color active matrix liquid crystal display. It provides the pilot with attitude, altitude and airspeed information in the event of failure of the primary attitude and/or air data instruments.

The inertial sensor provides tilt angles in roll, pitch and angular rates used in a strapdown algorithm to compute attitude and slip.
The pressure sensors are used to compute airspeed and altitude data. This information is presented in digital readout and rolling tape formats.

A bezel mounted light sensor provides automatic display dimming capability, with manual offset control achieved through the menu mode.

Heading information, displayed on the Standby Instrument, is not reliable. A dedicated label is installed on the Cockpit Instrument Panel, near to the Stand-by Instrument, informs the pilot that Heading Information shown on the GH-3100 display must be disregarded.

The ISI is powered by the 28 Vdc Emergency Power Bus through the "STANDBY INSTR" 3-ampere circuit breaker on pilot's C/B panel.
The ISI also receives 5 Vdc for lighting through the Avionics lights circuit. The power is supplied by the Emergency Power Bus through the "EMER LTS" 3-amperes circuit breaker on pilot's C/B panel.

In the event of total loss of airplane DC sources (DC generators and battery), the Emergency Power Bus is automatically powered through the Emergency Power Unit to assure at least 30 minutes of operative time to the ISI.

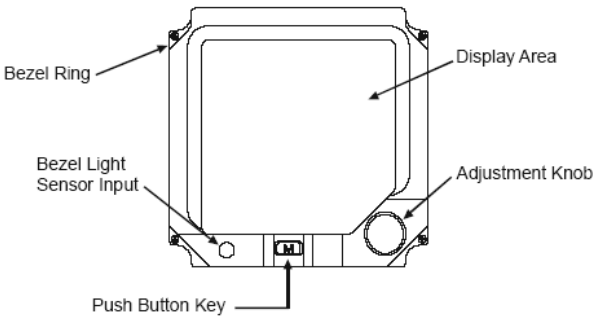

Figure 2.33-1. Integrated Stand-by Instrument

2.33.3 EMERGENCY LOCATOR TRANSMITTER

The Techtest Ltd. Type 503 Automatic Fixed Emergency Locator Transmitter ELT(AF) is a battery powered system consisting of a transmitter, a G-switch unit, a mounting tray, an antenna and a remote control unit.

The transmitter, complete with a battery package, and the G-switch are close coupled and installed on the mounting tray as a single unit housed in the vertical fin top fairing together with the system antenna. The remote control unit is located on the pilot instrument panel.
When activated the transmitter can operate as a beacon on the 121.5 and 243.0 MHz emergency frequencies as well as on the 406.025 MHz frequency including the digitally encoded message for reception by the COSPAS/SARSAT satellite system.

The system features an automatic activation through the G-switch in the event of an airplane impact or can be manually activated by the crew through the cockpit control panel.
The G-switch is provided with a test switch spring loaded to the OFF position and a 3-position (ON, OFF and ARM) switch. Normal operations of the ELT are initiated by setting to ARM the 3-position switch: in the armed condition the system is readied and can be activated by either the G-switch sensing an excess load or by manual switching from the cockpit control panel. In addition the ELT can be manually activated at the G-switch by moving from OFF or ARM to ON the 3-position switch.

If the ELT is switched to ON at the G-switch the following actions are requested for switching it to OFF again:

– Moving of the 3-position switch from ON through OFF to ARM

– Pressing the separate test switch to TEST momentarily

– Moving the 3-position switch to OFF.

The cockpit control panel is provided with a 3-position switch, protected by a safety guard against inadvertent operations, and an indicator lamp associated with an in-built sounder. The switch shall rest in the center OFF position during normal operations. The ON position allows the intentional manual activation of the ELT. The momentary spring loaded TEST/RESET position allows either starting the system test or resetting the ELT to OFF after either an intentional manual switching to ON or a G-switch triggering to ON due to an excessive load sensed during ground handling: in both events an 11-seconds delay and warning is allowed before the system switching to ON. During the delay period the lamp and sounder give a series of warning pulses.

The system test requires that the ELT is in the armed condition. The test can be initiated by pressing and helding either the cockpit control panel 3-position switch

to the TEST/RESET position or the G-switch unit test switch to the TEST position. After actuating the test switch a delay of some 3 to 4 seconds will occur before two swept tones and indicator lamp illuminations are generated followed after a short space by a beep.
The two swept tones are a check of the 121.5 MHz and 243.0 MHz, and the beep of the 406.025 MHz.

NOTE

Normally the test will give the indicated pass results on the second or third attempt after a period of inactivity.

NOTE

In order to save the ELT battery capacity and assure the battery full operating life it is recommended that the system test rate is limited to a maximum of one test of one cycle per day.

The ELT system is powered from the airplane 28 Vdc RH AVIONICS bus through the ELT 3 Amp circuit breaker, located on the copilot circuit breaker panel, and the AVIONICS Master Switch.

The ELT transmitter battery package assures a minimum 24 hours use at 406.025 MHZ and 48 hours use at 121.5 MHz and 243.0 MHz during 5 years of unused installed life, provided that just only one system test per day is performed.

The G-switch is provided with an internal rechargeable battery that maintains the system at an operational readiness for 10 hours after a total loss of the airplane electrical power supply. Should the airplane power supply to the ELT system be removed for more than 10 hours with the ELT left switched ON then the G-switch internal battery will be discharged. The restoration of the airplane power to the ELT immediately starts the recharge cycle and the safety feature is restored. The battery is fully operational within 30 minutes of power being restored to the ELT system. The G-switch battery needs to be replaced every 2.5 years.

In the event of a prolonged airplane out of service period the ELT system should be switched from ARM to OFF in order to disarm the operations.

2.33.4 UNDERWATER ACOUSTIC BEACON (IF INSTALLED)

An optional Dukane DK100 Underwater Acoustic Beacon can be installed on the left wall of the rear baggage compartment by means of a suitable mounting support.

The completely independent battery-powered beacon, not connected to the airplane electrical power supply system, allows localizing the airplane, in the event of a water crash, up to a 20,000 ft depth.

The equipment radiates a pulse acoustic signal as long as its water sensitive switch is sunk for at least 30 days.
The 37.5 KHz. pulse acoustic signal can be detected at a distance from 1800 up to 3600 meters depending disturbing elements.

The beacon internal battery requires to be replaced every 6 years, while a periodic equipment cleaning and testing is recommended on a 6-months interval basis.