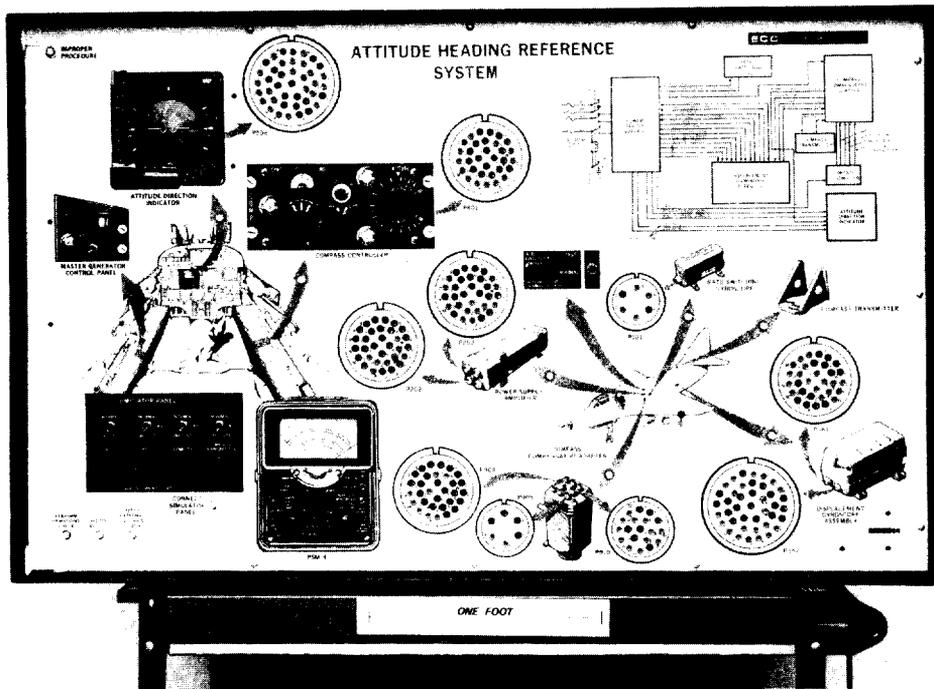


DIRECTORY OF NAVAL TRAINING DEVICES



ATTITUDE HEADING REFERENCE SYSTEM T/A, DEVICE 6E24

TRAINING CATEGORY:

BASIC SCIENCE (Electricity)

ORIGINATING AGENCY:

DCNO/AIR

SECURITY CLASSIFICATION:

Device 6E24 is unclassified.

PURPOSE:

The purpose of the training device is to represent the Attitude Heading Reference System of carrier fixed wing aircraft. The training device will enable the student to get classroom experience in performing an operational check and diagnosing and replacing malfunctioning components or circuits.

INTENDED USE:

The trainees will generally be enlisted personnel, E-3 and below. Training will take place at Aviation Electrician's Mate School. A trainer will provide for the testing of a greater number

of trainee discriminations than would be provided using actual aircraft. The troubles have a degree of difficulty and are similar to actual troubles experienced in the Aviation Electrician's Mate field.

FUNCTIONAL DESCRIPTION:

The AJB-3 Attitude Heading Reference System (AHR) provides continuous display of aircraft attitude through 360 degrees of roll, pitch, and azimuth.

The AHR is comprised of seven (7) major components.

1. **Power Supply:** an amplifier that controls and supplies power to the system's components. Power requirements are 3-Phase, 115 VAC, 400 Hz. and 28 VDC.
2. **Displacement Gyroscope Assy:** a hermetically sealed unit containing two (2) gyros; the vertical gyro and the directional gyro. The vertical gyro supplies pitch and roll attitude signals, and the directional gyro supplies azimuth signals.
3. **Rate Switching Gyroscope:** senses the rate at which the aircraft is turning.

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4. All Attitude Indicator (AAI): provides continuous, accurate and unlimited visual display of aircraft attitude through 360 degrees of pitch, roll and azimuth.
5. Compass Controller: selects the mode of directional gyro control and provides controls for manual fast synchronism and latitude compensating directional gyro slaving.
6. Compass Transmitter: the compass transmitter (flux valve) is the magnetic directional sensing unit of the system. It is usually located in the wing or tail area of the aircraft. The flux valve detects the direction of earth's magnetic field.
7. Compass Compensator Adapter: provides heading outputs, mechanical compensation for the flux valve and slaving voltages for directional gyro.

The training device shall simulate an Attitude Heading Reference System (AHRS) as close as possible using a multimeter for finding and identifying electrical malfunctions. The AHRS trainer shall display all components and controls required to operate the system as contained in the carrier fixed wing aircraft. An A-4E aircraft shall be used as a model for the trainer.

The trainer shall consist of the following major components:

1. Display Panel - shall depict the operation of the AHRS. It shall contain the pilot/copilot's station, the AHRS schematic, and a PSM-4 multimeter.
2. Master Console - shall contain student evaluation indicators. The master console shall enable the instructor to insert one of 18 malfunctions into the simulated system.
3. System Schematic Diagram - a schematic and parts list shall be furnished.
4. Protective Cover - made of heavy duty vinyl and equipped with heavy duty zipper and pocket to store manuals.
5. Training Device Clock - shall indicate total time the device has been connected to power.

An alarm system shall be available to the instructor. It shall alert the student and instructor when a wrong procedure has been attempted. When the alarm is triggered, the training situation shall freeze with no further operations capable of being performed. A reset button is available to reset the trainer after counseling the student. The system shall be built with a replace/repair counter which counts everytime a student attempts a repair/replace action, and also an elapsed time indicator. These items shall indi-

cate if a trainee is attempting to analyze the system or is randomly selecting repair/replace actions and the time expended to correct a malfunction.

PHYSICAL INFORMATION:

The trainer frame structure shall be constructed from an aluminum alloy weldment or welded steel beam components. The dimensions of the trainer display area shall be approximately 1.2 meters long by 0.75 meters high. Total weight of the trainer display panel shall not exceed 45 Kilograms.

The panel face shall be a light color (white/beige) with the components and connecting lines a dark color. Front panel markings shall be covered with a wear resistant coating to prevent marring or obliteration of the markings.

ENVIRONMENTAL CHARACTERISTICS:

The training equipment shall withstand the following climatic conditions:

Temperature

- (1) Operating: 15° to 45° C
- (2) Nonoperating and Storage: -20° to 65° C

Relative Humidity - up to 95% condensation due to temperature change.

INSTALLATION AREA:

Classroom

POWER REQUIREMENTS:

The trainer is designed to permit operation from a 110/115 volt, 60 Hz power source with a maximum load of 30 amperes.

PUBLICATIONS FURNISHED:

Operator/Maintenance Manuals

RELATED TRAINING DEVICES:

6E12 thru, 6E22, 6E25, 11H68/8A

PERSONNEL:

Instructor: One (1)
Student: One (1) or Two (2)

CONTRACT IDENTIFICATION:

Manufactured by Educational Computer Corp., Orlando, FL under NAVTRASYS-SCEN Contract No. N61339-78-C-0139.

LOCAL STOCK NUMBER:

6910-LL-C00-4742