

Aircraft Navigation & Magnetic Compass Trainer

Model NAV-100A



NAV-100A Aircraft Navigation & Magnetic Compass System Training Set is designed to teach the operational logic and system components of a navigation & magnetic compass. Trainees can operate a Navigation & Magnetic Compass system in this set and observe from indicator screen.

They can also learn maintenance principles.

This trainer also allows to perform practical tasks of EASA PART 147 ATA-34-20-01 / ATA-34-50-00.

Optional NAV/COM Tester

Specifications

Features

- Fully functional and configured like a typical aircraft **Navigation** system.
- Fully functional and configured like a typical aircraft **Magnetic Compass** system.
- Compass System provides the pilot with a simple, comprehensive visual display of the aircraft's heading and position in relation to a desired course.
- Complete slaved compass system that includes a magnetic slaving transmitter, a slaving control and compensator unit, a directional gyro for stabilization of the system, and the Pictorial Navigation Indicator (PNI) itself.
- Combine the display functions of the standard Directional Gyro with VOR/LOC course deviation indication and Glideslope deviation and flag into one compact display.
- The Pictorial Navigation Indicator provides a pictorial display of the horizontal navigation situation. Also provides manual controls for course and heading datum selections. Outputs from the system are for automatic pilot or flight director, VOR receivers and additional compass loads
- The Directional Gyro is a remote mounted unit which, in conjunction with the Magnetic Azimuth Transmitter, provides a gyro-stabilized magnetic heading to the system Indicator. In addition to the slaving circuitry this unit contains an internal power supply which provides excitation voltages for the Magnetic Azimuth Transmitter and positive and negative D.C. voltages for the Pictorial Navigation Indicator and the Slaving Accessory.

- The Magnetic Azimuth Transmitter senses the direction of the earth's magnetic field and transmits this information to the Pictorial Navigation Indicator.
- The Slaving Accessory is a panel mounted unit which contains the slaving meter, slaving switches, and corrector circuitry which compensates for the effect of local magnetic disturbances on the Magnetic Azimuth Transmitter.
- The trainer should allow trainees to understand fundamentals of aircraft magnetic compass system and its components.
- The system mounted on a metal/aluminum mobile stand.
- Metal/aluminum frame with 4 wheels. 2 of 4 wheels are lockable.

Components

- Navigation Device
- Pictorial Navigation Indicator(HSI)
- Directional Gyro
- Flux Detector(The Magnetic Azimuth Transmitter)
- Slaving Accessory
- Nav Antenna
- Digital instrument
- DC Power Box
- Circuit Breaker

Components Technical Specs

- Navigation Device
 - 1.3" high flat-pack, NAV unit
 - 200-channel navigation receiver
 - Built-in 40 channel Glideslope receiver available as option (see table below)
 - Features simultaneous gas discharge display of both active and standby frequencies
 - Flip-flop frequency transfer button
 - Electrically Alterable Read Only Memory (EAROM) provides non-volatile storage of two frequencies
 - Used with VOR/LOC/GS indicators
 - operate an HSI
 - All solid-state system employs digital frequency synthesizer for NAV frequency control

- Crystal filter provides added protection against channeling interference for improved selectivity on 50 kHz frequencies
- Operates on any DC voltage from 11 to 33 volts

- DME CHANNELING: 5 wire 2x5 code MHz & kHz lines; 1 wire 50 kHz line; 1 DME common line
- NAV ACCURACY: +/-15 deg. max. error/95% probability
- NAV FREQ. RANGE: 108.00-117.95 MHz
- GS FREQ. RANGE: 329.15-335.00 MHz
- GS SENSITIVITY: Typically 12uv (hard) for half flag 20uv (hard) max
- COURSE DEVIATION RESPONSE: 0.6 seconds max
- IDENT FILTER: 15dB minimum tone rejection
- AUDIO OUTPUT: 50mW @ 500 ohms
- GS CHANNELS: 40 (150 kHz spacing)
- GS SELECTIVITY: 6dB max at +/-25 kHz, 60dB min at +/-300 kHz
- SPURIOUS RESPONSES: Down at least 60dB

- Pictorial Navigation Indicator
 - Lubber Line
 - Nav Warning Flag
 - Heading Select Bug
 - Compass warning Flag
 - Selected Course pointer
 - To/From indicator
 - GS Deviation Scale
 - Compass Card
 - VOR/LOC Deviation Bar
- Directional Gyro
 - Remote mounted
 - Original Mounted Tray
 - Power: 14 or 28 volt dc
 - 300 degree free turnable system for testing
- Flux Detector(The Magnetic Azimuth Transmitter)
- Slaving Accessory
 - Slave/Free Gyro Switch
 - Slaving Meter indicator

- CW/CCW Adjustment
- Digital instrument for Gyro degree
 - Size: Min 7 inch
 - Touchable
 - Real Times
- Magnetic Compass

34-20-01 – Magnetic Compass removal/Installation

- **NAV/COM Tester**

Output Power;

- ADF = -12 +/-3 dbm
- VOR= -10 +/-3 dbm
- ILS Localizer= -10 +/-3 dbm
- ILS GS = -17 +/-3 dbm
- ILS MKR = -15 +/-3 dbm
- DME = -12 +/-3 dbm
- TXPDR = -12 +/-3 dbm
- VOR radial accuracy; +/- 1 deg
- ILS localizer DDM accuracy; +/- 15%
- ILS glide slope DDM accuracy; +/- 15%
- DME accuracy; +/- 0.1NM
- Transponder specs;
- PRF 235+/-5 Mode A,C 50 +/-2 Mode S
- P2 level equal P1 +/- 0.1 dbm
- P2 position 2 +/-0.01 uS from P1
- P3 position 8 +/- .01uS or 21 +/- 0.02uS Rel to P1
- Pulse width 0.8 +/-0.01uS P1,P2,P3
- Frequency 1030 MHz Tx, 1090 MHz Rx , +/- 2.5ppm
- Reply % 0 to 100% displayed +/- 0.5%
- Reply window 2.5 to 3.5uS F1 from P3
- Pulse Width reads out to +/- 50nS resolution
- X Data Pulse Must=0 for good read
- SPI Displays ID message

NOTE: Avionics devices brand/model and some technical specs can be change due to market availability.

Documentation

- User's Manual
- Study Guide
- Instructor's Guide
- Device's original Manual
- Device's original Wiring Diagrams
- Components Diagrams

Power Specs

- Electrical box
- Residual current device
- Emergency Button
- Energy Signal Lamp
- 110 VAC 60 Hz or 220-240 VAC 50 Hz