CHAPTER 34

NAVIGATION

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NAVIGATION SYSTEMS - DESCRIPTION/OPERATION

1. General

Not all AA-5, AA-5A, and AA-5B aircraft will have identical navigational equipment installed. As new systems with more effective applications become available, presently installed equipment may be replaced by these newer items. The basic items that provide minimum requirements to comply with FAA regulations are available on all aircraft. More diverse navigational items are installed as a customer option. It is the intent of this manual to present procedures and instructions adequate for minor inspection and flight line maintenance of all navigation equipment that may be installed on the aircraft including the optional items. Overhaul or shop maintenance of the navigation equipment must be performed in accordance with the individual manufacturers data.

PITOT AND STATIC PRESSURE SYSTEMS - DESCRIPTION/OPERATION

1. General

The pitot and static pressure systems supply impact (pitot) and atmospheric (static) pressure to various instruments. Some of these instruments require static pressure only; others require both static and pitot pressure for operation (see Figure 1). Both Systems operate independently of each other.

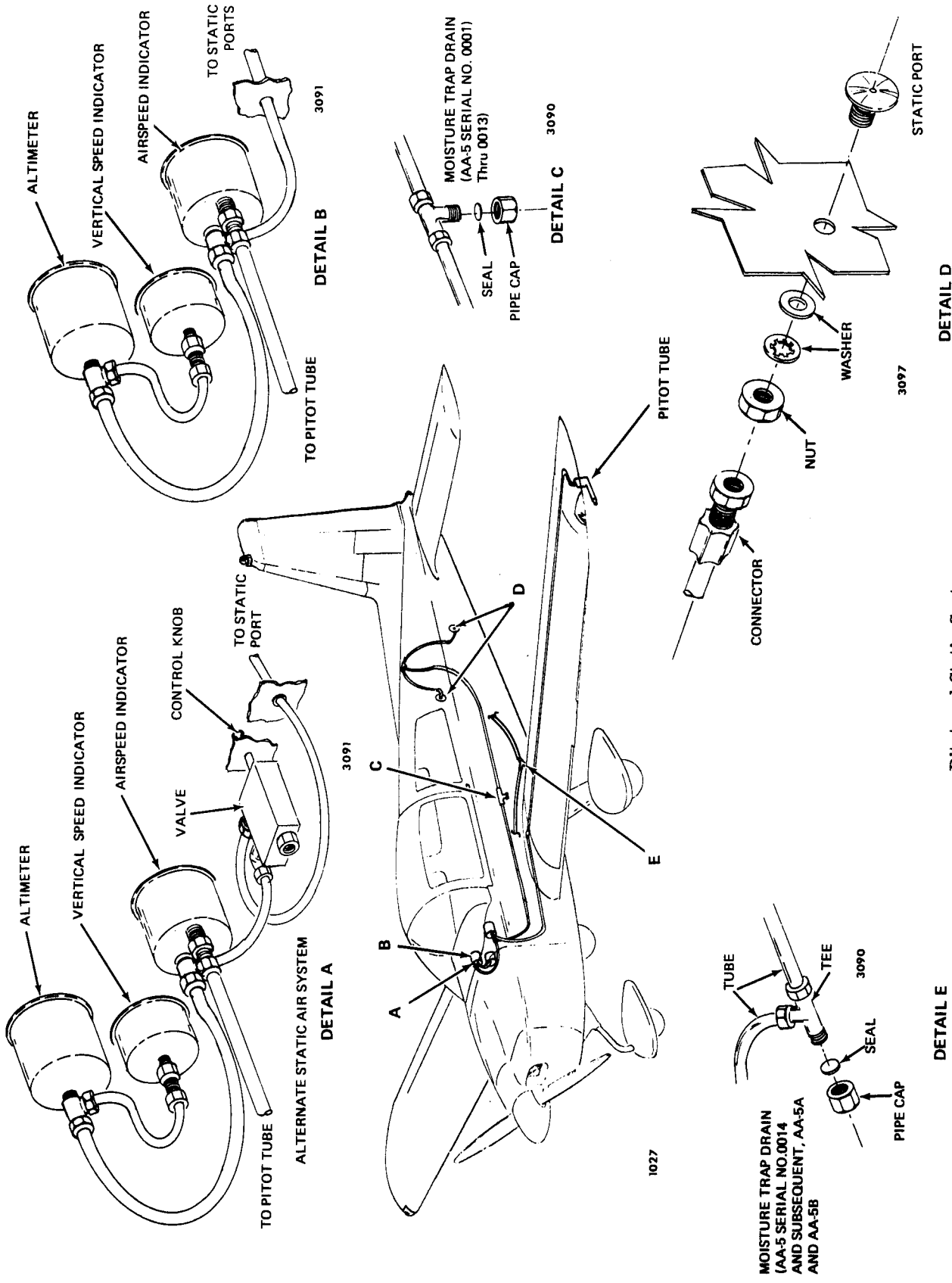
The pitot and static systems consists of metal and plastic tubing which convey ram air pressure and atmospheric pressure to the airspeed indicator, vertical speed indicator, and altimeter.

Ram air pressure is picked up by the pitot tube located under the left wing tip. From the pitot tube, a line runs along the trailing edge of the wing to the wing root and then to the instruments.

At the 100-hour inspection or when the airspeed indicator fails to operate properly the pitot line should be disconnected at the elbow or the plastic connection located inside the wing root in order to drain any moisture accumulation.

The static system, consisting of a static port on each side of the aft fuselage, conducts atmospheric pressure to the instruments. The line which runs from the ports to the instruments incorporates a moisture trap located behind the left rear seat upholstery side panel. It is recommended that the moisture trap drain be serviced at each static system test, or more often if fluctuations are observed in instruments connected to the static system, or if moisture is noted inside the cover glass of the airspeed indicator.

As an optional item the pitot tube is equipped with an electrical heating element for icing protection. The switch that controls the heating element is located on the instrument panel. Ref. Chapter 30 for complete details on pitot heat system. Also offered as an option is an alternate static air source. The control knob for the alternate static air source is located on the instrument panel.



Pitot and Static System
Figure 1

PITOT AND STATIC PRESSURE SYSTEMS – TROUBLESHOOTING

1. Troubleshooting Pitot and Static Pressure Systems

TROUBLE	PROBABLE CAUSE	REMEDY
Airspeed indicator fails to indicate.	Static bottons blocked. Obstruction in pitot or static lines.	Check all lines and fittings for obstruction and clean as necessary.
	Water in static system.	Drain static system.
	Pitot line kinked or disconnected.	Check all pitot lines and repair as required.
Airspeed indicator fluctuates or indicates incorrectly.	Leak in pitot or static systems.	Tighten all connections system until no leakage is evident.
	Defective instrument.	Replace instrument.
	Instrument leakage.	Test instrument individually and replace if necessary.
Altimeter fails to operate.	Clogged static lines.	Check all lines and fittings and blow out as required.
	Defective instrument.	Replace instrument.
Altimeter fluctuates.	Instrument leakage	Test instruments individually and replace if necessary.
	Defective instrument.	Replace instrument.
	Leak in static system.	Tighten all connections and test system until no leakage is evident.
Vertical speed indicator fails to operate, fluctuates, or reads incorrectly.	Obstruction in static lines.	Remove, inspect and clean all static lines.
	Defective instrument.	Replace instrument.
	Instrument leakage.	Test instrument individually and replace if necessary.

PITOT AND STATIC PRESSURE SYSTEMS - MAINTENANCE PRACTICES

1. Removal/Installation of Pitot and Static Pressure System Components

   A. Remove Pitot Tube (Figure 201)

      (1) Remove left wing tip to gain access to pitot tube attaching hardware.

      (2) Disconnect pitot tube air inlet line and wiring.

      (3) Remove hardware supporting pitot tube mount to wing spar and wing rib.

      (4) Remove pitot tube assembly.

   B. Install Pitot Tube Assembly

      (1) Place pitot tube assembly in position and install attaching hardware.

      (2) Connect pitot tube air inlet line and wiring.

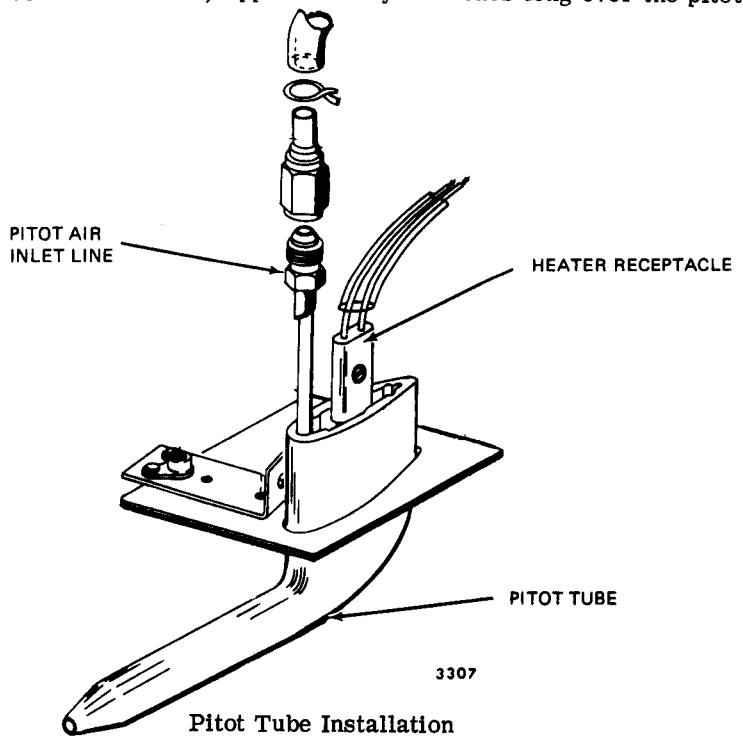
      (3) Replace wing tip.

2. Pitot and Static Pressure System Leakage Test

   A. Test the Pitot System

      CAUTION: NEVER APPLY SUCTION TO THE PITOT TUBE UNLESS THE AIRSPEED INDICATOR IS DISCONNECTED.

      (1) Insert a surgical type rubber hose, approximately 24 inches long over the pitot tube.



Pitot Tube Installation
Figure 201

(2) Apply pressure by closing the opposite end of the tube and slowly roll up rubber hose until the airspeed indicator registers between 120-150 mph.

(3) Secure the rolled-up end of the hose to prevent it from unrolling.

(4) After two or three minutes, recheck the airspeed indicator. Any leakage in the system will result in a lower airspeed indication. If the reading has decreased more than 1 mph per minute, an undesirable leak exists somewhere in the system.

NOTE: Be sure the test hose is not losing pressure.

(5) To eliminate the leak, check all connections and tighten all fittings in the system as necessary and apply thread sealant sparingly as required. Inspect the pitot line in the wing root and replace the hose if it appears deteriorated.

(6) Repeat steps (1) through (4)

B. Test the Static System

CAUTION: NEVER APPLY POSITIVE PRESSURE TO THE STATIC SYSTEM UNLESS ALL INSTRUMENTS ARE DISCONNECTED.

FAR 91.170 requires that static systems and altimeters be checked every 24 months for IFR. The most common method of testing static systems is covered in FAR 43, Appendix E, "Altimeter System Test and Inspection". Additional information may be found in FAA Advisory Circular No. AC 43-203 A. An approved alternate method specifically for the AA-5, AA-5A and AA-5B is listed below. Perform testing as follows:

(1) Ensure that altimeter has been tested and approved by an appropriately rated repair facility per FAR Part 43, Appendix E, prior to aircraft system test.

(2) Seal off one static port opening with plastic tape. This must provide an air tight seal.

(3) Attach a source of suction to the remaining static port. If an alternate static source is installed, assure that control is in OFF position.

NOTE: One method of applying suction is to insert a hypodermic syringe into the static port and slowly withdraw the plunger of the syringe. Ensure the syringe does not leak and an airtight seal is maintained during test.

(4) Slowly apply suction until the altimeter indicates a 1000-foot increase in altitude.

(5) Secure the suction source to maintain a closed system. Leakage shall not exceed a decrease of 100 feet of altitude per minute, as indicated on the altimeter.

(6) If the leakage rate exceeds 100 feet per minute, check and retighten all connections and fittings.

(7) Repeat steps (1) through (6).

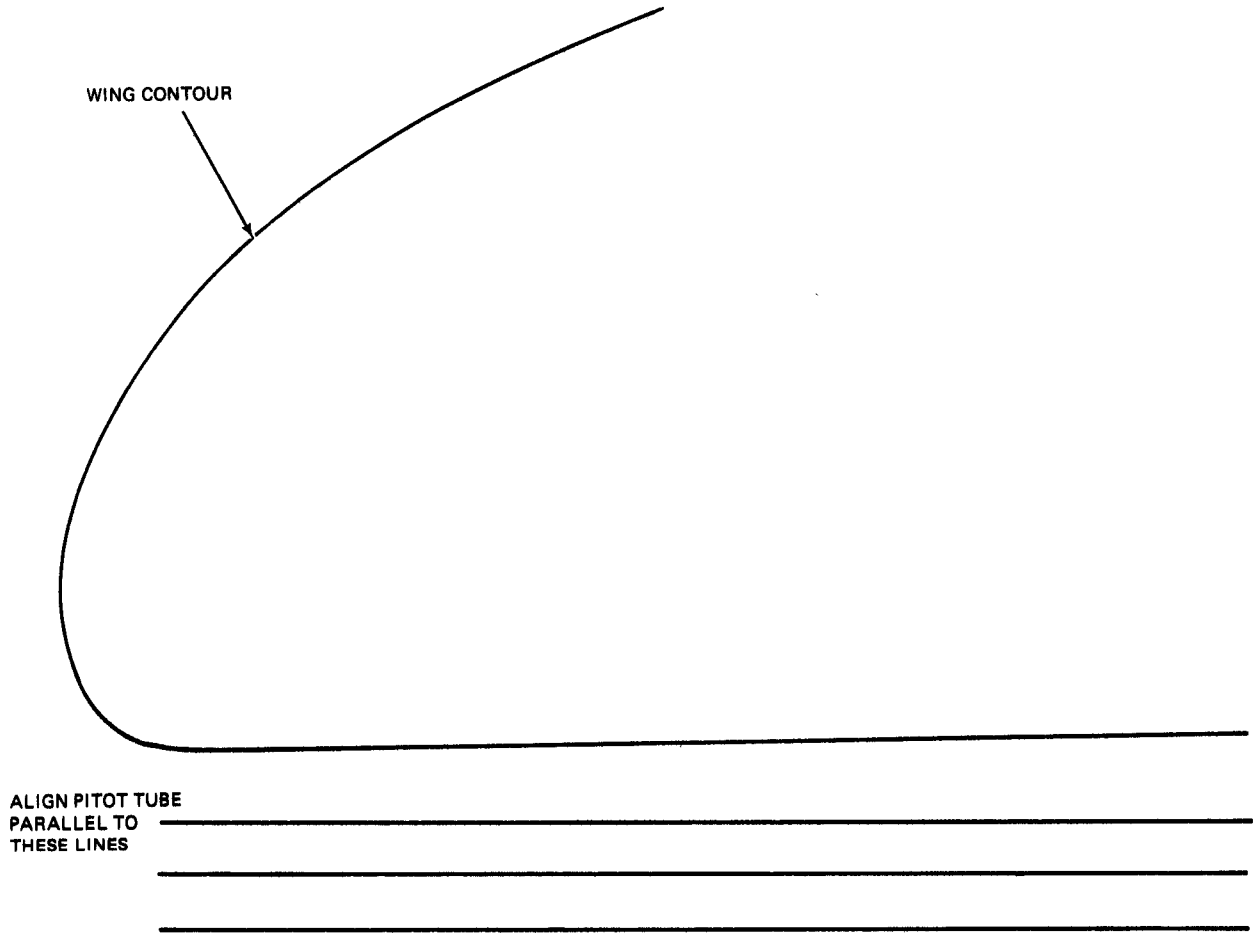
(8) If the leakage rate is still too high, disconnect the static lines from the individual instruments.

(9) Proceeding one at a time, and using suitable fittings, connect the lines together so that the altimeter is the only instrument still connected to the static pressure system.

(10) Repeat the leakage test to determine whether the static pressure system or the instruments disconnected from the system are the cause of leakage. If the instruments are at fault, they must be repaired by an appropriately rated repair station or replaced. If the static pressure system is at fault, repeat the procedure given in step (6).

3. Pitot Tube Alignment.

Figure 202 shows an outline of the wing contour and a series of parellel lines. To check the proper alignment of the pitot tube, make a template conforming to the lines shown in Figure 202. If the pitot tube is properly aligned, it should parallel one of the lines.



Pitot Tube Alignment Template
Figure 202

AIR TEMPERATURE GAUGE - DESCRIPTION/OPERATION

1. General

The outside air temperature gauge is located on the upper center of the windshield. The gauge is a mechanically operated instrument actuated by expansion of a metallic element to give the temperature indication on the face of the instrument. The range of temperature readings are from 144° F (64° C) to -64° F (-54° C).

AIR TEMPERATURE GAUGE – MAINTENANCE PRACTICES

1. Removal/Installation of Air Temperature Gauge

   A. Remove Air Temperature Gauge (Figure 201)

      (1) Hold the gauge on the inside of the windshield and unscrew and remove hexagonal gauge cover.

      (2) Remove washers and tube adapter from outside of windshield.

      (3) Remove gauge, tube adapter, and washers from inside of windshield.

   B. Install Air Temperature Gauge

      (1) Assemble tube adapter and washers on gauge stem (Figure 201).

      (2) Apply one or two drops of Loctite sealant, grade EV to the gauge stem threads.

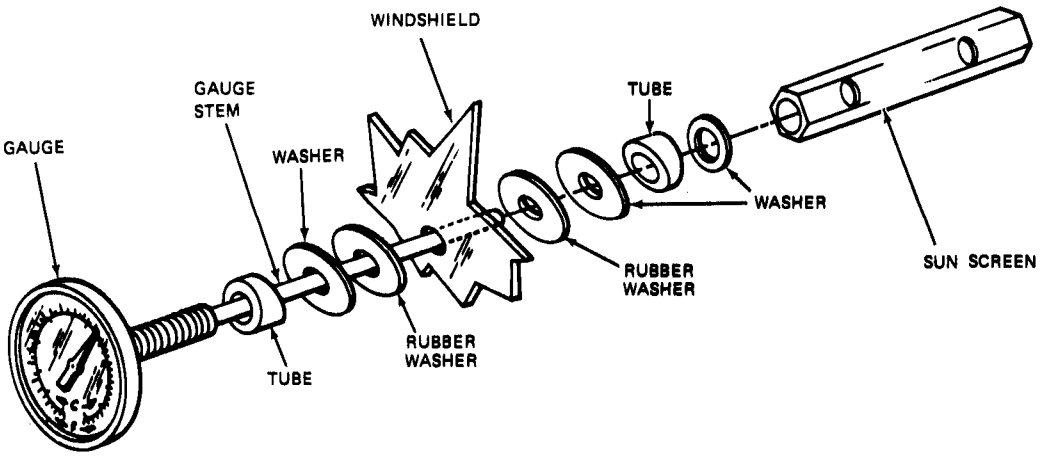
      (3) Insert gauge stem through mounting hole from inside the windshield.

      (4) Assemble tube adapter and washers on gauge stem on outside of windshield (See Figure 201).

      (5) Apply a small bead of Presstite soft putty around gauge stem between rubber washer and metal washer on outside of windshield.

      CAUTION: DO NOT OVERTIGHTEN OR STEM THREADS WILL SEPARATE FROM GAUGE CASE.

      (6) Install sun screen on gauge stem and tighten snug tight using hands only.

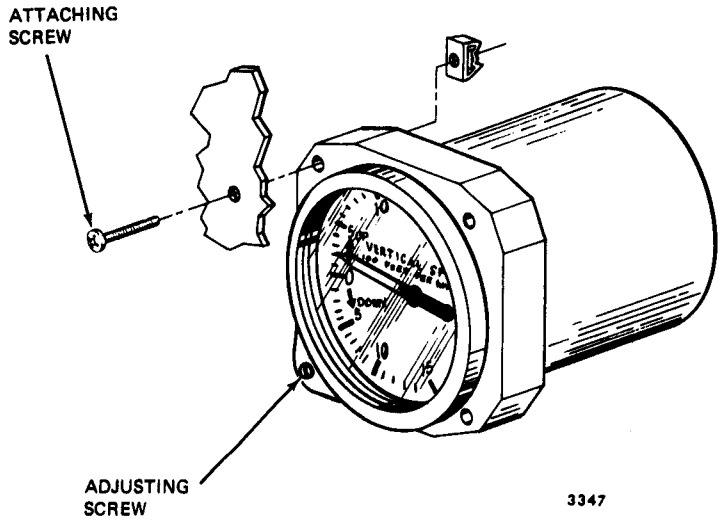


Air Temperature Gauge Installation
Figure 201

VERTICAL SPEED INDICATOR - DESCRIPTION/OPERATION

1. General

The vertical speed indicator (Figure 1), located on the instrument panel, measures the rate of change in static pressure when the aircraft is climbing or descending. By means of a pointer and dial this instrument will indicate the rate of ascent or descent of the aircraft in feet per minute. But due to the lag of the instrument, the aircraft will be climbing or descending before the instrument starts to read and the instrument will continue to read after the aircraft has assumed level flight. In rough air the lag of the instrument should not be considered a malfunction.



Vertical Speed Indicator
Figure 1

VERTICAL SPEED INDICATOR – TROUBLESHOOTING

1. Troubleshooting Vertical Speed Indicator

TROUBLE	PROBABLE CAUSE	REMEDY
Pointer fails to respond.	Obstruction in static line.	Disconnect all instruments connected to the static line. Clear line. Remove cap at low place in static line and drain line.
Pointer oscillates.	Leaks in static lines.	Disconnect all instruments connected to the static line. Check individual instruments for leaks. Reconnect instruments to static line and test installation for leaks.
	Defective mechanism.	Replace instrument.
Rate of climb indicates when aircraft is banked.	Water in static line.	Remove cap at low place in static line and drain line.
Pointer has to be set before every flight.	Temperature compensator inoperative.	Replace instrument.
Pointer cannot be reset to zero.	Diaphragm distorted.	Replace instrument.
Instrument reads very low during climb or descent.	Instrument case broken or leaking.	Replace instrument.

VERTICAL SPEED INDICATOR - MAINTENANCE PRACTICES

1. Removal/Installation of Vertical Speed Indicator

   A. Remove Vertical Speed Indicator.

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Locate vertical speed indicator on instrument panel and loosen fitting to disconnect tubing from rear of indicator.

      (4) Remove three screws and nuts mounting vertical speed indicator to instrument panel and remove indicator.

   B. Install Vertical Speed Indicator

      (1) Position vertical speed indicator in place on instrument panel and install three screws and nuts securing vertical speed indicator to instrument panel.

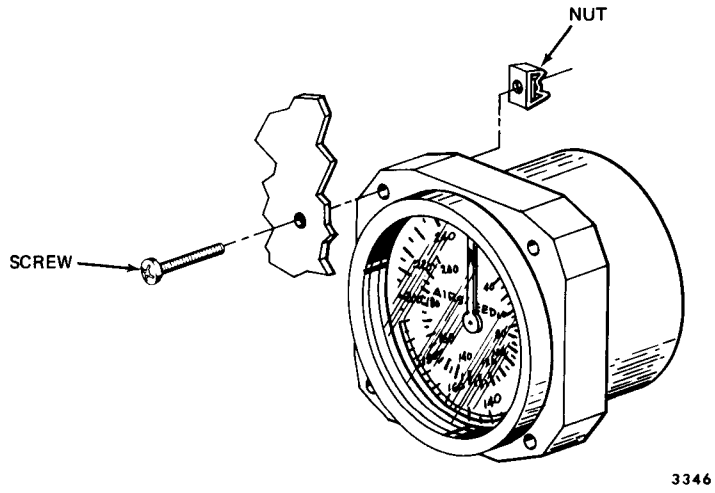
      (2) Connect tubing to back of indicator. Secure by tightening fitting.

      (3) Position deck assembly in place and install screws securing deck assembly to instrument panel.

AIRSPEED INDICATOR - DESCRIPTION/OPERATION

1. General

The airspeed indicator (Figure 1) located on the instrument panel provides a means of indicating the speed of the aircraft passing through the air. The airspeed indication is derived from the differential pressure between pitot air pressure and static air pressure. This instrument has its diaphragm vented to the pitot air source and its case vented to the static air system. As the aircraft increases speed, the pitot air pressure increases, causing the diaphragm to expand. A mechanical linkage picks up this motion and moves the instrument pointer to the indicated speed. The instrument dial is calibrated in knots and miles per hour, and also has the necessary operating range markings for safe operation of the aircraft.



Airspeed Indicator
Figure 1

AIRSPEED INDICATOR – TROUBLESHOOTING

1. Troubleshooting Airspeed Indicator

TROUBLE	PROBABLE CAUSE	REMEDY
Pointer of airspeed indicator does not indicate properly.	Leak in instrument case or in pitot lines.	Check for leak and seal.
Pointer of airspeed indicator oscillates.	Defective mechanism.	Replace instrument.
Instrument reads high.	Pointer not on zero.	Replace instrument.
	Leaking static system.	Find leak and correct.
Instrument reads low.	Pointer not on zero.	Replace instrument.
	Leaking static system.	Find leak and correct.
	Pitot tube not aligned correctly.	Realign pitot tube. See Section 34-1-1.
Airspeed changes as aircraft is banked.	Water in pitot line.	Remove static line from altimeter and blow out pitot line from cockpit to pitot tube.

AIRSPEED INDICATOR - MAINTENANCE PRACTICES

1. Removal/Installation of Airspeed Indicator

   A. Remove Airspeed Indicator

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Locate airspeed indicator on instrument panel and loosen fittings to disconnect tubing from the connections on back of indicator.

      (4) Remove four mounting screws securing airspeed indicator to instrument panel and remove indicator.

   B. Install Airspeed Indicator

      (1) Position airspeed indicator in place on instrument panel and install four screws securing airspeed indicator to instrument panel.

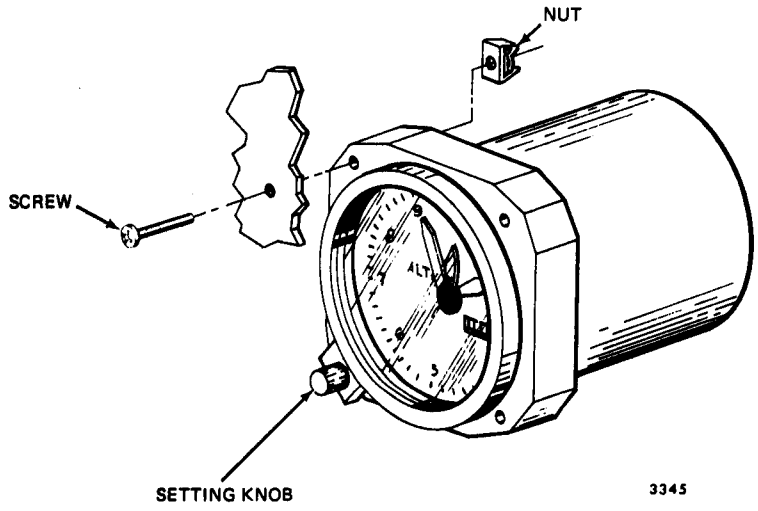
      (2) Connect tubing to connections on back of indicator.

      (3) Place deck assembly in position and install screws securing deck assembly to instrument panel.

ALTIMETER - DESCRIPTION/OPERATION

1. General

The altimeter (Figure 1), located on the instrument panel indicates pressure altitude in feet above sea level. The indicator has three pointers and a dial scale; the long pointer is read in hundreds of feet, the middle pointer in thousands of feet and the short pointer in ten thousands of feet. A barometric pressure window is located on the right side of the indicator dial. The barometric pressure indication is set by the knob located on the lower left corner of the instrument. The altimeter consists of a sealed diaphragm that is connected to the pointers through a mechanical linkage. The instrument case is vented to the static air system, and as static air pressure changes the diaphragm changes causing the pointers to move through the mechanical linkage.



Altimeter
Figure 1

ALTIMETER — TROUBLESHOOTING

1. Troubleshooting the Altimeter

TROUBLE	PROBABLE CAUSE	REMEDY
Excessive scale error.	Improper calibration adjustment.	Replace instrument.
Excessive pointer oscillation.	Defective mechanism.	Replace instrument.
High or low reading.	Improper venting.	Eliminate leak in static pressure system.
Setting knob is hard to turn.	Wrong lubrication or lack of lubrication.	Replace Instrument.
Inner reference marker fails to move when setting knob is rotated.	Out of engagement.	Replace instrument.
Setting knob setscrew loose or missing.	Not tight when altimeter was reset.	Tighten instrument screw, if loose. Replace instrument, if screw is missing.
Cracked or loose cover glass.	Case gasket hardened.	Replace instrument.
Dull or discolored markings.	Age.	Replace markings.
Barometric scale and reference markers out of synchronism.	Slippage of mating parts.	Replace instrument.
Barometric scale and reference markers out of synchronism with pointers.	Drive in mechanism.	Reset pointers, per AC43.13-1 Chapter 7 dated June 12, 1969.
Altimeter sticks at altitude or does not change with change of altitude.	Water or restriction in static line.	Remove static lines from all instruments, and blow line clear from cockpit to static ports.
Altimeter changes reading as aircraft is banked.	Water in static line.	Remove drain cap from static line and drain water from line.
Altimeter requires resetting frequently.	Temperature compensator inoperative.	Replace instrument.

ALTIMETER - MAINTENANCE PRACTICES

1. Removal/Installation of Altimeter

   A. Remove Altimeter

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Locate altimeter on instrument panel and loosen fittings to disconnect tubing from tee connection on back of instrument.

      (4) Remove three screws securing altimeter to instrument panel and remove altimeter.

   B. Install Altimeter

      (1) Position altimeter in place on instrument panel and install three mounting screws securing altimeter to instrument panel.

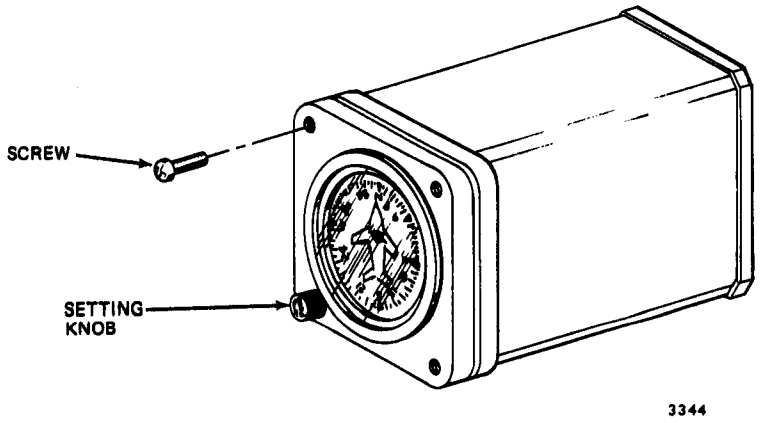
      (2) Connect tubing to tee connection on back of altimeter.

      (3) Place deck assembly in position and install screws securing deck assembly to instrument panel.

DIRECTIONAL GYRO - DESCRIPTION/OPERATION

1. General

The directional gyro (Figure 1) located on the instrument panel is a flight instrument incorporating an air driven gyro stabilized in the vertical plane. This instrument operates off the vacuum system (See Chapter 37). The gyro is rotated at high speed by lowering the pressure in the airtight case and simultaneously allowing atmospheric air pressure to enter the instrument against the gyro buckets. Due to gyroscopic inertia, the spin axis continues to point in the same direction even though the aircraft yaws to the right or left. This relative motion between the gyro and the instrument case is shown on the instrument dial which is similar to a compass card. The dial, when set to agree with the aircraft magnetic compass, provides a positive indication free from swing and turning error. The gyro should only be checked to the heading on which it was first set. Due to internal friction, spin axis error, air turbulence and airflow, the gyro should be set at least every 15 minutes for accurate operation.



Directional Gyro
Figure 1

DIRECTIONAL GYRO — TROUBLESHOOTING

1. Troubleshooting Directional Gyro

TROUBLE	PROBABLE CAUSE	REMEDY
Excess drift in either direction.	Setting error.	Reset gyro.
	Defective instrument.	Replace instrument.
	High or low vacuum. If vacuum is not correct check for the following:	
	a. Relief valve improperly adjusted.	a. Adjust.
	b. Incorrect gauge reading.	b. Replace gauge.
	c. Pump failure.	c. Repair or replace.
	d. Vacuum line kinked or leaking.	d. Check and repair. Check for collapsed inner wall of hose.
	e. Dirty filters	e. Replace filters.
Dial spins during turn.	Limits (55° bank) of gimbal exceeded.	Recage gyro in flight.
Dial spins continuously.	Defective mechanism.	Replace instrument.

DIRECTIONAL GYRO - MAINTENANCE PRACTICES

1. Removal/Installation of Directional Gyro

   A. Remove Directional Gyro

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Disconnect lines from fittings on back of gyro.

      (4) Disconnect electrical connector from back of gyro on aircraft equipped with automatic pilot.

      (5) Remove reset knob (two knobs if aircraft equipped with automatic pilot.)

      (6) Remove three mounting screws and slide gyro backward out of instrument panel.

   B. Install Directional Gyro

      (1) Position directional gyro in place on instrument panel and install three mounting screws.

      (2) Install reset knob (two knobs) if aircraft is equipped with automatic pilot.

      (3) Connect electrical connector to back of gyro on aircraft equipped with automatic pilot.

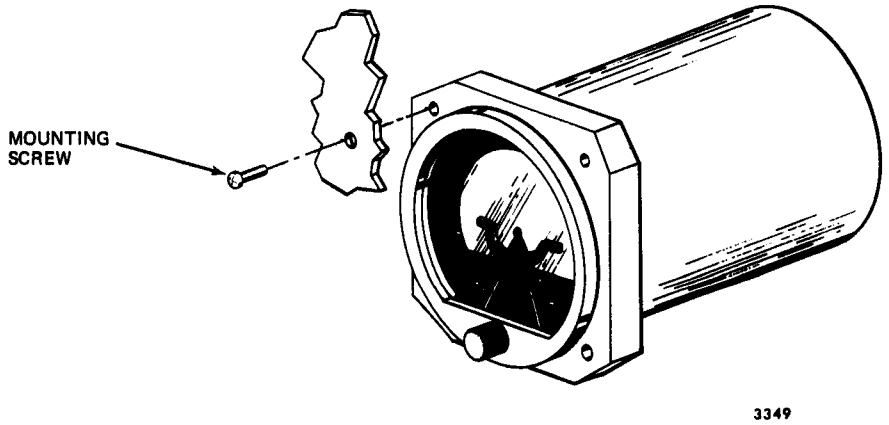
      (4) Connect lines to fittings on back of gyro.

      (5) Position deck assembly in place and install screws securing deck assembly to instrument panel.

ATTITUDE GYRO - DESCRIPTION/OPERATION

1. General

The attitude gyro (Figure 1) located on the instrument panel is essentially an air driven gyroscope rotating in a horizontal plane and is operated by the same principal as the directional gyro. Due to the gyroscopic inertia, the spin axis continues to point in the vertical direction, providing a constant visual reference to the attitude of the aircraft relative to pitch and roll axis. A bar across the face of the indicator represents the horizon and aligning the miniature aircraft to the horizon bar simulates the alignment of the aircraft to the actual horizon. Any deviation simulates the deviation of the aircraft from the true horizon. The attitude gyro is marked for different degrees of bank.



Attitude Gyro
Figure 1

ATTITUDE GYRO — TROUBLESHOOTING

1. Troubleshooting the Attitude Gyro

TROUBLE	PROBABLE CAUSE	REMEDY
Bar fails to respond.	Insufficient vacuum.	Check pump and tubing.
	Filters dirty.	Replace filter.
Bar does not settle.	Insufficient vacuum.	Check line and pump. Adjust valve.
	Incorrect instrument.	Check part number.
	Defective instrument.	Replace.
Bar oscillates or shimmies continuously.	Instrument loose in panel.	Tighten mounting screws.
	Vacuum too high.	Adjust valve.
	Defective mechanism.	Replace instrument.
Instrument does not indicate level flight.	Instrument not level in panel.	Loosen screws and level instrument.
	Aircraft out of trim.	Trim aircraft.
Instrument tumbles in flight.	Low vacuum.	Reset regulator.
	Dirty filters.	Replace filters.
	Line to filter restricted.	Replace line.
	Plug missing or loose in instrument.	Replace or tighten plug.

ATTITUDE GYRO - MAINTENANCE PRACTICES

1. Removal/Installation of Attitude Gyro

   A. Remove Attitude Gyro.

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Loosen clamps and disconnect lines from gyro.

      (4) On aircraft equipped with automatic pilot, disconnect electrical plug from gyro.

      (5) Remove the four mounting screws that secures gyro to instrument panel and remove gyro.

   B. Install Attitude Gyro

      (1) Position attitude gyro in place on instrument panel and install four mounting screws.

      (2) Connect electrical plug to gyro on aircraft equipped with automatic pilot.

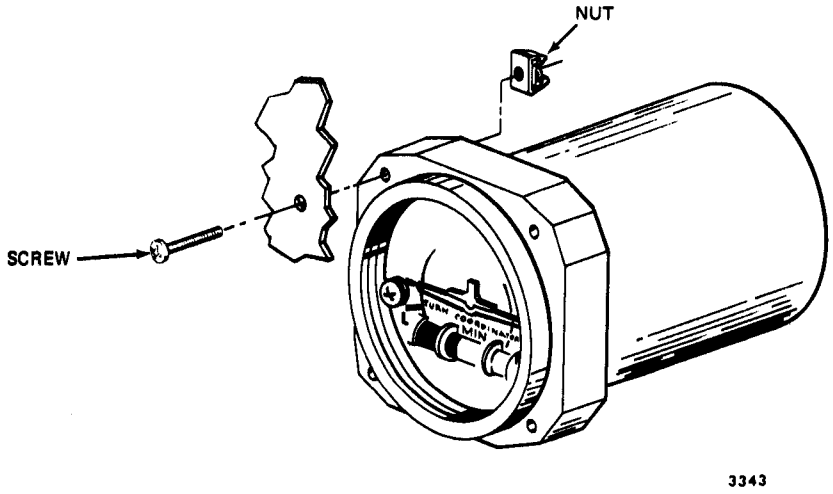
      (3) Connect lines and install clamps in place at back of gyro.

      (4) Position deck assembly in place and install screws securing deck assembly to instrument panel.

TURN AND BANK INDICATOR - DESCRIPTION/OPERATION

1. General

The turn and bank indicator (Figure 1) located on the instrument panel is electrically driven, therfore it will only operate when the master switch is on. The turn portion of the indicator is a gyroscope, while the bank portion of the indicator is a ball sealed in a curved glass tube filled with damping fluid. There are two styles of this unit. The first is the old style with a vertical needle in the center of the dial. This instrument reads only the rate of turn, and unless the aircraft is turning the needle will not move, regardless of bank angle. The other style is the turn coordinator which indicates both the rate of turn and rate of roll. With this type indicator, when the aircraft is rolled right and left rapidly the indicator will move, indicating a turn, but if the aircraft is held in a bank and rudder is applied the indicator will come back to zero indicating no turn.



Turn and Bank Indicator
Figure 1

TURN AND BANK INDICATOR – TROUBLESHOOTING

1. Troubleshooting Turn and Bank Indicator

TROUBLE	PROBABLE CAUSE	REMEDY
Pointer fails to respond.	Foreign matter lodged in instrument.	Replace instrument.
	Master switch OFF.	Place master switch ON.
	Blown fuse.	Replace fuse.
Incorrect sensitivity.	Out of calibration.	Replace instrument.
	Aircraft not in coordinated turn.	Center ball in turn.
Ball sticky.	Flat spot on ball.	Replace instrument.
Ball not in center when aircraft is correctly trimmed.	Instrument not level in panel.	Level instrument.

TURN AND BANK INDICATOR - MAINTENANCE PRACTICES

1. Removal/Installation of Turn and Bank Indicator

   A. Remove Turn and Bank Indicator.

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Disconnect electrical plug from indicator.

      (4) Remove the four mounting screws and nuts that secure indicator to instrument panel and remove indicator.

   B. Install Turn and Bank Indicator

      (1) Position turn and bank indicator in place on instrument panel and install the four mounting screws and nuts.

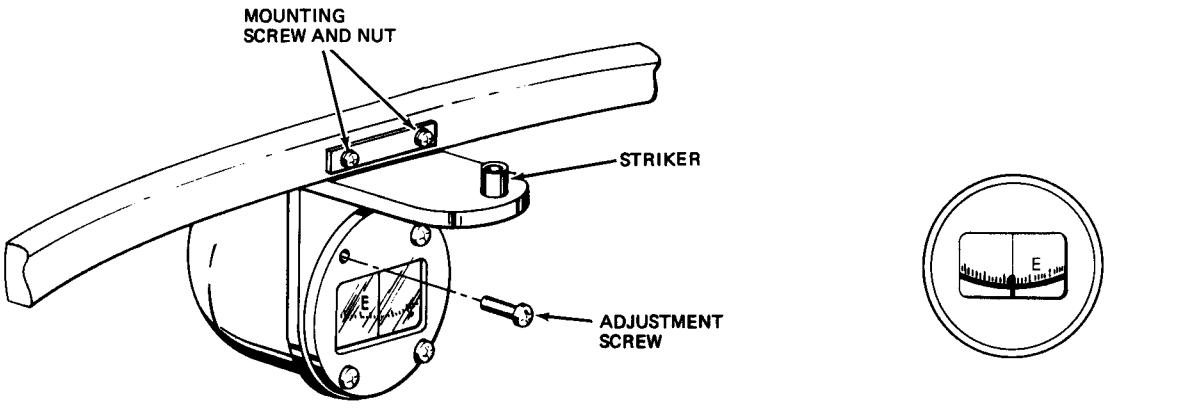
      (2) Connect electrical lead to rear of indicator.

      (3) Position deck assembly in place and install screws securing deck assembly to instrument panel.

MAGNETIC COMPASS - DESCRIPTION/OPERATION

1. General

The magnetic compass (Figure 1), located either on the instrument panel or the top center of the windshield frame is the liquid-filled, compensating type, incorporating two adjustable magnets. No maintenance is required for the magnetic compass except to swing it on a compass rose. Adjustments may be made to the instrument by the two screws located on the front face using a non-magnetic screwdriver of brass, aluminum, or non-magnetic stainless steel. The compass correction card is located in the card holder mounted on the instrument.



Magnetic Compass
Figure 1

MAGNETIC COMPASS – TROUBLESHOOTING

1. Troubleshooting the Magnetic Compass

TROUBLE	PROBABLE CAUSE	REMEDY
Excessive card error.	Compass not properly compensated.	Compensate instrument.
	External magnetic interference.	Locate magnetic interference and eliminate if possible.
Excessive card oscillation.	Insufficient liquid.	Replace instrument.
Card sluggish.	Weak card magnet.	Replace instrument.
	Excessive pivot friction or broken jewel.	Replace instrument.
Liquid leakage.	Loose bezel screws.	Replace instrument.
	Broken cover glass.	Replace instrument.
	Defective sealing gaskets.	Replace instrument.
Discolored markings.	Age.	Replace instrument.
Defective light.	Burned out lamp or broken circuit.	Check lamp or continuity of wiring.
Card sticks.	Altitude compensating diaphragm collapsed.	Replace instrument.
Card does not move when compensating screws are turned.	The gears that turn compensating magnets are stripped.	Replace instrument.

MAGNETIC COMPASS - MAINTENANCE PRACTICES

1. Removal/Installation of Magnetic Compass

   A. Remove Magnetic Compass.

      (1) Remove two mounting screws and nuts.

      (2) Disconnect electrical lead and remove compass.

   B. Install Magnetic Compass

      (1) Connect electrical lead to magnetic compass.

      (2) Position magnetic compass in place and install mounting screws and nuts.

TRANSPONDER — DESCRIPTION/OPERATION

1. General

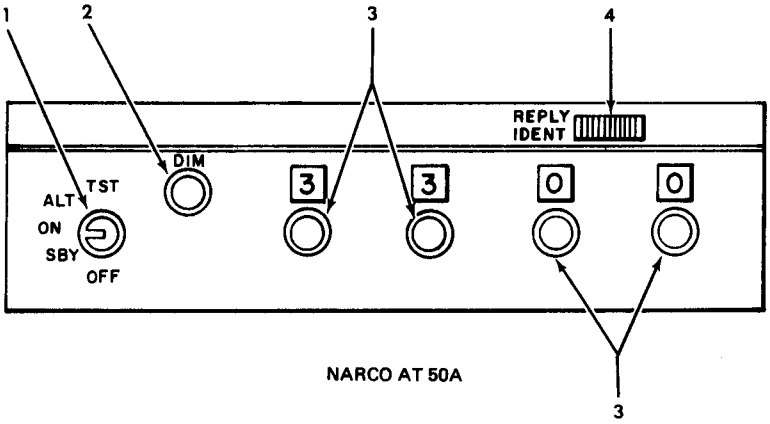
The transponder is radar beacon equipment designed to fulfill the role of the airborne beacon under the requirements of the Air Traffic Control Radar Beacon System (ATCRBS).

The use of the transponder enables the air traffic controller to identify the aircraft and therefore provides more positive control. Range and azimuth are established by the return from the transponder's pulsed transmitter in reply to a routing interrogation from the ground radar site.

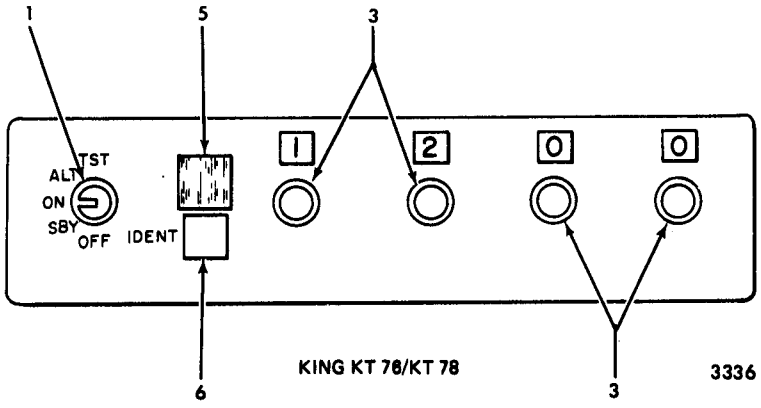
The transponder reply is a set of pulses, selected in number, and positioned in time, one with respect to the other. Information is conveyed to the ground in this manner. An identity code number, selected at the front panel by the pilot is transmitted as a Mode A reply. Mode C, altitude reporting, is an additional capability designed into the transponder. However, in order to convey altitude information, the transponder must be used in conjunction with an altimeter and be operated in "ALT" mode.

An additional feature of the transponder and beacon system is the S.P.I. (Special Pulse, Identification). After pressing the ident button the transponder, when interrogated, will reply with a special pulse that will cause the associated pip on the controllers display to "bloom" effecting immediate recognition.

All operating controls for the transponder are mounted on its front panel. Many AA-5, AA-5A, and AA-5B aircraft are equipped with either a NARCO 50A/AT-150, KING KT76/KT78A or COLLINS TDR-950/950L transponder. Operating controls for both models are shown in Figures 1 and 2. NARCO AT-150, KING KT-78A, and COLLINS TDR-950/950L transponder available on 1978 model AA-5A and AA-5B.



NARCO AT 50A



KING KT 76/KT 78

3336

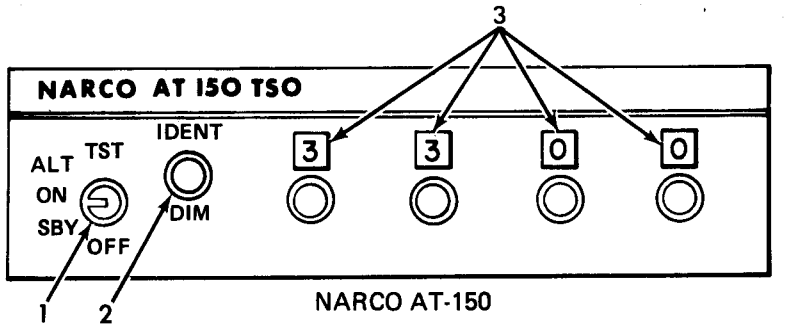
1. Function Selector
2. Dim Control
3. Code Selectors
4. Monitor Light and Ident Button
5. Monitor Light
6. Ident Button

Transponders
Figure 1

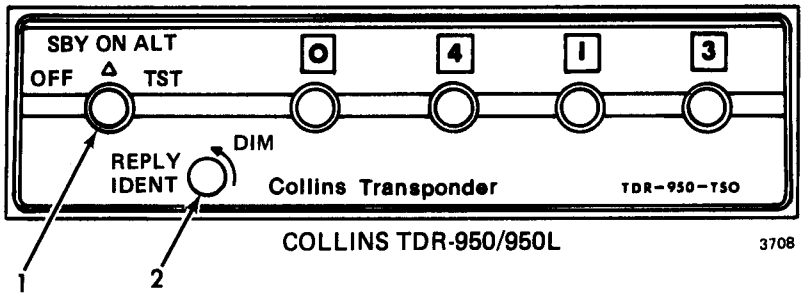
1. Function Selector

2. DIM/IDENT Control
(Pull for Ident)

3. Code Selector



NARCO AT-150



COLLINS TDR-950/950L 3708

Transponders
Figure 2

TRANSPONDER — MAINTENANCE PRACTICES

1. Removal/Installation of Transponder

   A. Remove Transponder

      (1) Ensure that master power switch is in the OFF position.

      (2) Locate transponder in avionics panel on the instrument panel.

      (3) Turn locking (allen) screw clockwise to release transponder unit from its mounting case. Use 5/64 inch hex (allen) wrench.

      CAUTION: DO NOT PULL TRANSPONDER FREE OF MOUNT BY GRASPING THE CONTROL KNOBS.

      (4) Grasp the body of the transponder and carefully slide transponder from avionics panel mount. A slight left to right movement might help in disconnecting unit from connector plug.

   B. Install Transponder

      (1) Ensure that master power switch is in the OFF position.

      (2) Grasp the transponder by the sides and carefully slide transponder into avionics panel mount until plug connection is fully engaged.

      (3) Turn locking (allen) screw counterclockwise to secure transponder unit to its mounting case. Use 5/64 inch hex (allen) wrench.

2. Removal/Installation of Transponder Antenna

   A. Remove Transponder Antenna (Figure 201).

      (1) Ensure that master power switch is in the OFF position.

      (2) Locate transponder antenna forward of center spar (Station 90).

      (3) Disconnect coax cable from antenna.

      (4) With phenolic scraper, remove sealant from around nut which secures antenna to fuselage.

      (5) Loosen nut and remove antenna.

   B. Install Transponder Antenna

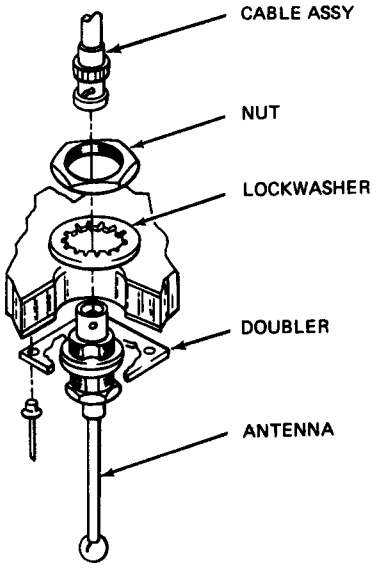
      (1) Ensure Master switch is OFF.

      (2) Position transponder antenna into mounting hole located at fuselage Station 90.

      (3) Install nut securing antenna to the fuselage.

      (4) Apply Presstite putty sealant around attaching nut.

      (5) Connect coax cable to antenna.



Transponder Antenna Installation
Figure 201

ADF SYSTEM — DESCRIPTION/OPERATION

1. General

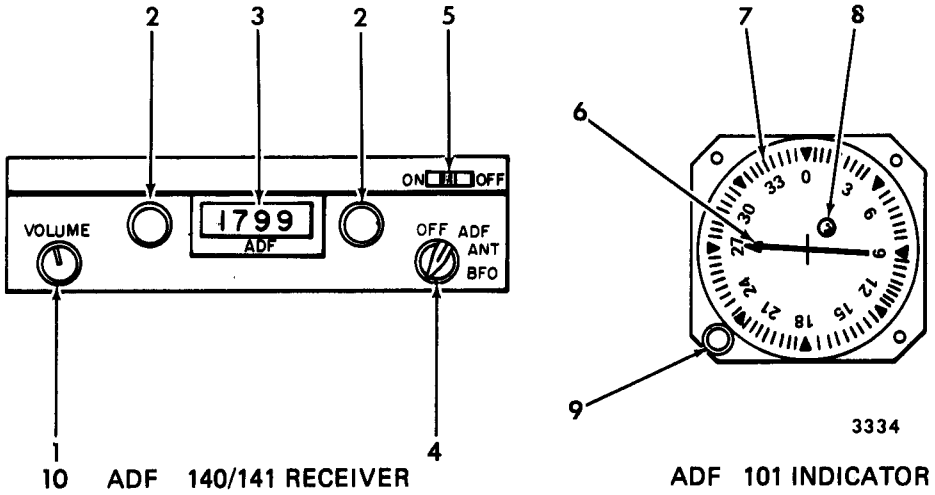
The automatic direction finder (ADF) system consists of a receiver, an indicator, R.F.I. filter, antennas, related cables, and associated wiring. The receiver and the indicator is located on the instrument panel. All operating controls for the ADF are located on the front of the receiver and the indicator.

Several different models of ADF equipment are available for installation in the aircraft. Three different models are described in this section.

2. NARCO ADF 140/ADF 141 Automatic Direction Finder with ADF 101 Indicator

The NARCO ADF 140/ADF 141 automatic direction finder, Figure 1, is an airborne radio receiver that indicates the relative direction to the station to which it is tuned. The ADF 140/141 receives and detects the radio signal, and the bearing information is displayed on the ADF 101 indicator. ADF 141 available on 1978 model AA-5A and AA-5B.

The ADF receives signals in the frequency range of 200-1799 KHz with individual frequencies in increments of 1 KHz.

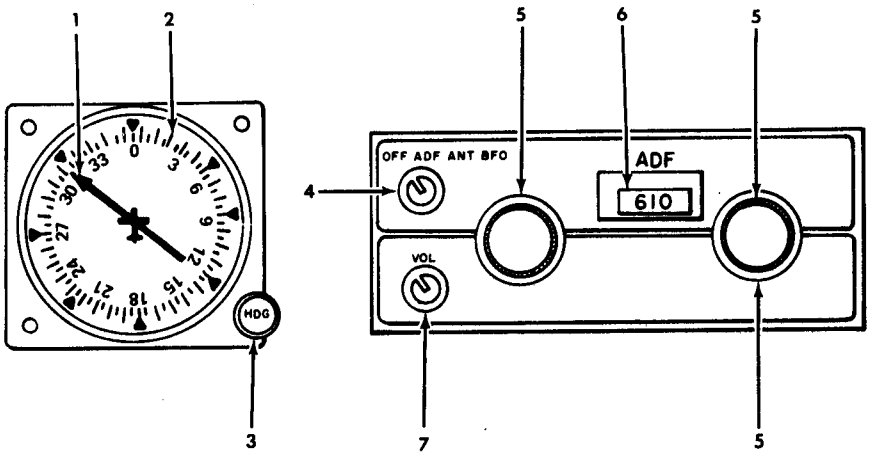


1. Volume Control
2. Frequency Selectors
3. Frequency Indicator
4. Function Switch
5. Ident Switch
6. Bearing Indicator
7. Bearing Scale
8. Low Level Signal Light
9. Rotation/Test Knob
10. Volume/Ident (ADF 141)

NARCO ADF 140/ADF 101 Automatic Direction Finder
Figure 1

3. KING KR85/KI 225 Automatic Direction Finder

The KING KR 85 automatic direction finder (Figure 2) is a solid state receiver which provides an aural reception and bearing information capability within the frequency range of 200 KHz to 1699 KHz. The channels may be selected in 1 KHz increments. The KR 85 is capable of automatic needle stowage. This is, when the radio is turned to the "ANT" function, the needle automatically seeks the 90° position and then turns off the servo system so that all pointing functions are discontinued.



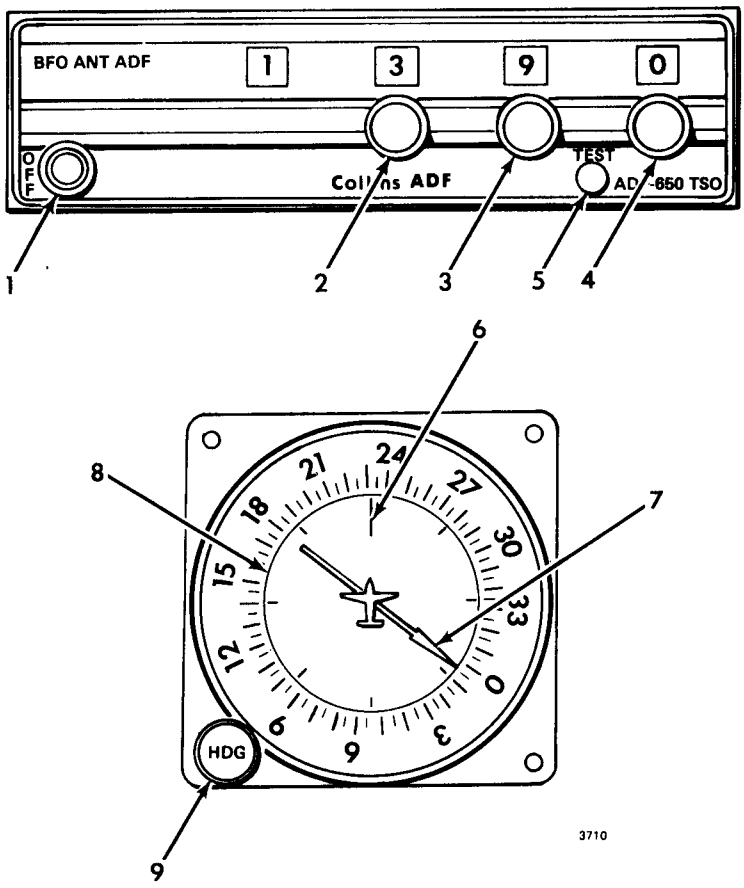
1. ADF Pointer
2. Index Rotatable Card
3. Heading Selector
4. Function Selector
5. Frequency Selector
6. Frequency Display
7. Volume Control

KING KR 85/KI 225 Automatic Direction Finder
Figure 2

4. COLLINS ADF 650/IND-650 Automatic Direction Finder (See Figure 3.)

The COLLINS ADF-650 is a solid state receiver which operates within the frequency range of 200 KHz and 1799 KHz. Frequency selection is made using the three control knobs located on the front of the unit. If the desired station has an identification tone, pull the VOL/ID control out for reception of ID signal. The ANT mode will provide the clearest reception of station ident. This equipment is available on 1978 Model AA-5A and AA-5B.

Pressing the test button while in ADF mode will cause the indicator pointer to rotate 90 degrees from its prior position if the ADF-650 system is operating properly.



1. ON/OFF/VOL/ID Control
2. 100 KHz/1 MKz Frequency Control
3. 10 KHz Frequency Control
4. 1 KHz Frequency Control
5. Self-Test Switch
6. Lubber Line
7. ADF Bearing Pointer
8. Compass Card
9. Heading Selector

COLLINS ADF-650/IND-650 Automatic Direction Finder
Figure 3

ADF SYSTEM — MAINTENANCE PRACTICES

1. Removal/Installation of ADF Indicator

   A. Remove Instrument Panel Mounted Indicator

      (1) Remove screws securing deck assembly to instrument panel.

      (2) Raise deck assembly and tape to windshield.

      (3) Disconnect electrical wiring from rear of ADF indicator.

      (4) Remove the three mounting screws securing ADF indicator to instrument panel and remove indicator.

   B. Install Instrument Panel Mounted Indicator

      (1) Position indicator in place on instrument panel and install three mounting screws.

      (2) Connect electrical wiring to rear of indicator.

      (3) Position deck assembly in place and install screws securing deck assembly to instrument panel.

2. Removal/Installation of ADF Receiver

   A. Remove Receiver

      (1) Ensure that master power switch is in the OFF position.

      (2) Locate ADF receiver in avionics panel on the instrument panel.

      (3) Loosen ADF receiver unit by turning locking (allen) screw clockwise. Use 5/64 inch hex (allen) wrench.

      CAUTION: DO NOT PULL ADF RECEIVER FREE FROM INSTRUMENT PANEL BY GRASPING THE CONTROL KNOBS.

      (4) Pull the ADF receiver unit straight forward. Be extremely careful not to bend connector pins. A slight left to right movement might help to release unit from connector plug.

   B. Install Receiver

      (1) Ensure that master power switch is OFF.

      (2) Slide ADF receiver unit into mounting position on instrument panel. Be extremely careful not to bend connector pins.

      (3) Secure ADF receiver unit to mounting case by turning locking (allen) screw counterclockwise. Use 5/64 inch hex (allen) wrench.

3. Removal/Installation of ADF Loop Antenna

   A. Remove ADF Loop Antenna (See Figure 201.)

      NOTE: This procedure is typical for ADF equipment furnished by either NARCO or KING.

      (1) Ensure master power switch is OFF.

      (2) Locate ADF loop antenna on bottom of fuselage at station 147.1.

      (3) Remove two screws attaching loop antenna to fuselage and loop cable and plate assembly.

(4) Disconnect loop antenna from loop cable.

(5) Remove two screws attaching loop cable and plate assembly to fuselage.

(6) Remove carpet and access cover on baggage compartment floor.

(7) Through access opening, remove loop cable and plate assembly.

B. Install ADF Loop Antenna

(1) Ensure that master power switch is in the OFF position.

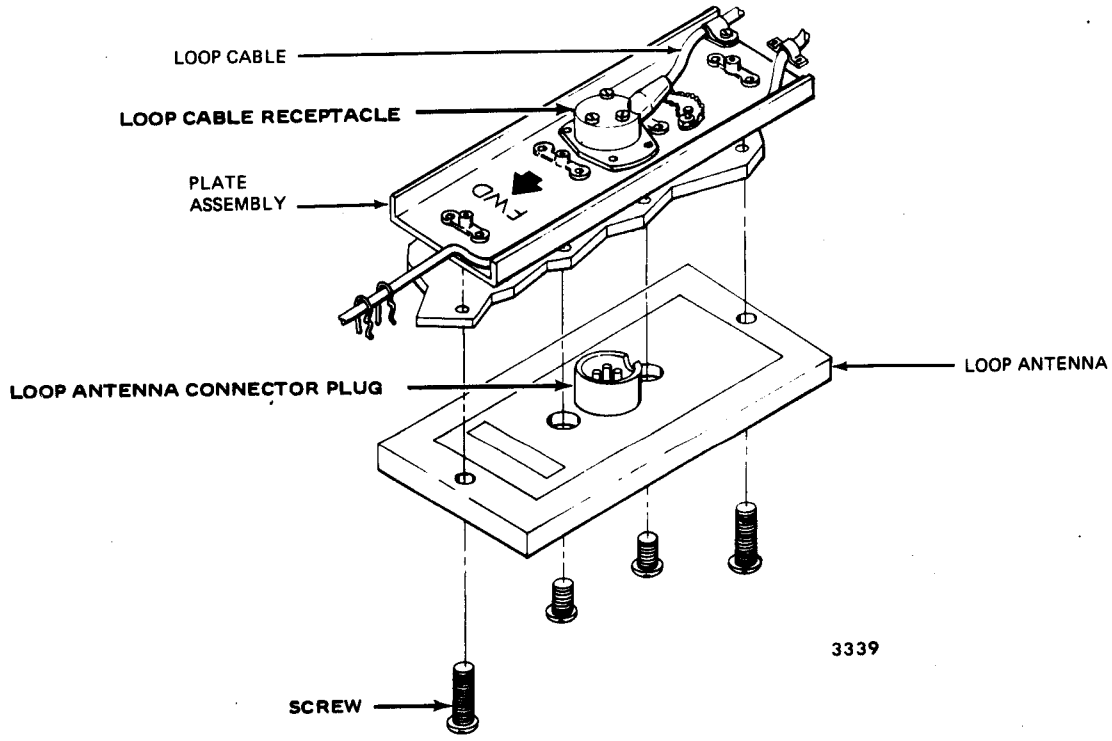
(2) Through access hole in baggage compartment floor, align loop cable and plate assembly with holes in fuselage floor at Station 147.1. Make sure arrow on plate points to the forward end of aircraft.

(3) On outside of fuselage, install two screws attaching loop cable and plate assembly to fuselage.

(4) Making sure arrow on loop antenna points to the forward end of the aircraft, plug loop antenna into loop cable receptacle.

(5) Install two screws attaching loop antenna to fuselage and plate assembly.

(6) Install access cover to baggage compartment floor and secure carpet to floor.



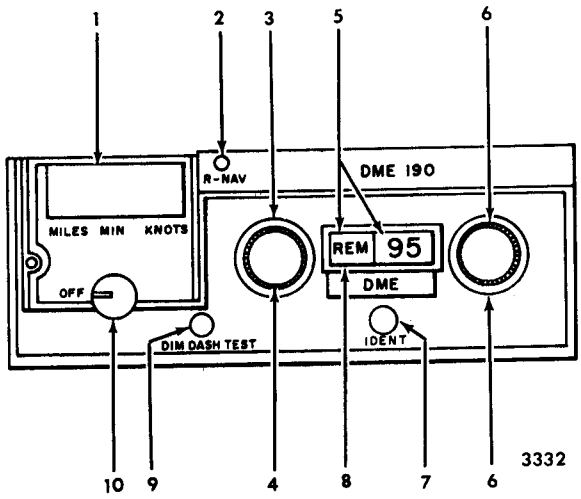
ADF Loop Antenna Installation
Figure 201

DME SYSTEM — DESCRIPTION/OPERATION

1. General

A typical Distance Measuring Equipment (DME) system consists of a panel mounted 200 channel UHF transmitter-receiver and an externally mounted antenna. The transceiver has a single selector knob that changes the DME's mode of operation to provide the pilot with: distance-to-station, time-to-station, or ground speed readouts. The DME is designed to operate in altitudes up to a maximum of 50,000 feet at ground speeds up to 250 knots and has a maximum slant range of 199.9 nautical miles. Depending upon type of equipment installed it is possible to channel DME system from a remote location.

All operating controls for the DME are mounted on its front panel. The DME 190 shown in Figure 1 depicts a typical installation.



1. Readout Window
2. R-NAV Indicator Lamp
3. Remote Channeling Selector (When Modified for R-NAV operation)
4. Whole Megahertz Selector Knob
5. Frequency Indicator
6. Fractional Megahertz Selector Knobs
7. Ident Volume
8. Indicates Remote Tuning (When modified for R-NAV operation)
9. Dim/Push Test Knob
10. Mode Selector Switch

NARCO DME 190 Distance Measuring Equipment
Figure 1

DME SYSTEM - MAINTENANCE PRACTICES

1. Removal/Installation of DME Transmitter-Receiver

   A. Remove DME Transmitter-Receiver

      (1) Locate DME transmitter-receiver in instrument panel.

      (2) Ensure that master power switch is OFF.

      (3) Turn locking (allen) screw clockwise to release DME unit from its mounting case. Use 5/64 inch hex (allen) wrench.

      CAUTION: DO NOT PULL DME TRANSMITTER-RECEIVER FREE OF MOUNT BY GRASPING THE CONTROL KNOBS.

      (4) Grasp the body of the transmitter-receiver and with a slight rocking motion while pulling outward, free receiver from connector plug and slide receiver from instrument panel mount.

   B. Install DME Transmitter-Receiver

      (1) Ensure that master power switch is OFF.

      (2) Grasp the transmitter-receiver by the sides and carefully slide transmitter-receiver into instrument panel mount until connector plug is fully engaged.

      (3) Turn locking (allen) screw counterclockwise to secure DME unit to its mounting case. Use 5/64 inch hex (allen) wrench.

VOR SYSTEM — DESCRIPTION/OPERATION

1. General

The primary and most widely used system of navigation in the United States today is the very high frequency omni-directional range (VOR). The VOR system consists of both ground stations and airborne radio equipment. This chapter defines and discusses the airborne portion of the system only. A more detailed coverage of the use and procedures applicable to the VOR system is presented in the manufacturer's technical data.

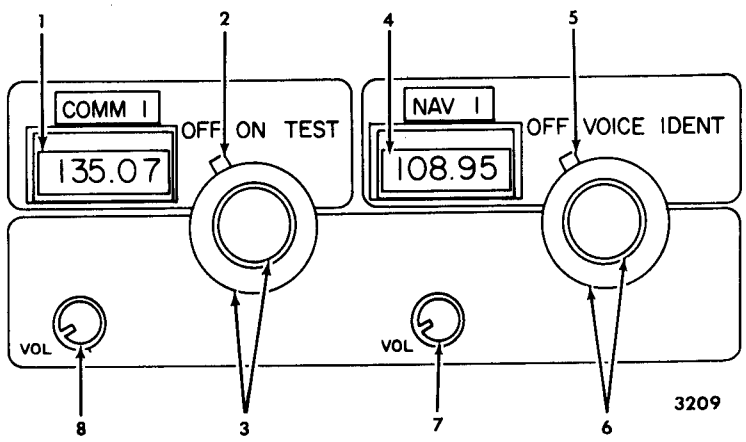
The VOR receivers exist in a variety of forms. One type now in use is the NAV/COM set which combines both the communication and navigation functions. One part of this set is a radio transceiver, the other a navigation receiver with a separate VOR indicator.

Other sets in use incorporate a receiver with an indicator built into the control panel as an integral part of the set. Another widely used unit is the combination VOR receiver and indicator. The AA-5, AA-5A, and AA-5B uses equipment distributed by different manufacturers. The NARCO, KING, and COLLINS VOR receivers and indicators are described in this section.

2. KING KX 107B/175B NAV/COM Transceiver

The KING KX 170B/KX 175B NAV/COM combines in a single panel mounted unit a 720 channel VHF COM transceiver and an independent 200 channel VHF NAV receiver. The NAV receiver supplies VOR/LOC information to navigational converters and provides frequency selection for remote mounted distance measuring equipment and glideslope receivers.

All operating controls for the transceiver are mounted on the front panel and identified in Figure 1.



1. COM Frequency Readout
2. COM ON-OFF Test Control
3. COM Frequency Selector Controls
4. NAV Frequency Readout
5. NAV OFF-Voice-Ident Control
6. NAV Frequency Selector Controls
7. NAV Volume Control
8. COM Volume Control

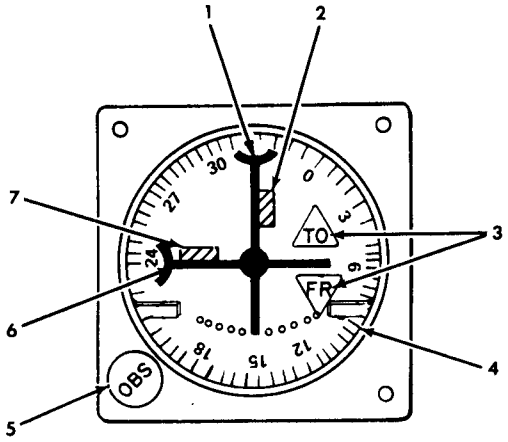
KING KX 170B/KX 175B NAV/COM Transceiver
Figure 1

3. KING VOR/LOC-GS Indicators

The KING KI 201C/VOR indicator is designed to operate with VHF navigational equipment such as the KX 170 to provide OMNI (VOR) or LOCALIZER (LOC) information. The VHF navigational receiver receives and detects the OMNI or LOCALIZER information. The KI 201C converts this information to DC signals which drive the LEFT-RIGHT needle and the TO-OFF-FROM flag of the visual indicator.

The KI 214 ILS indicator performs the same functions as the KI 201C. In addition, it contains a 40 channel glide-slope receiver and the visual indicators include an UP-DOWN glideslope needle with an OFF warning flag.

All operating controls for the indicator are mounted on the front panel and are identified in Figure 2.

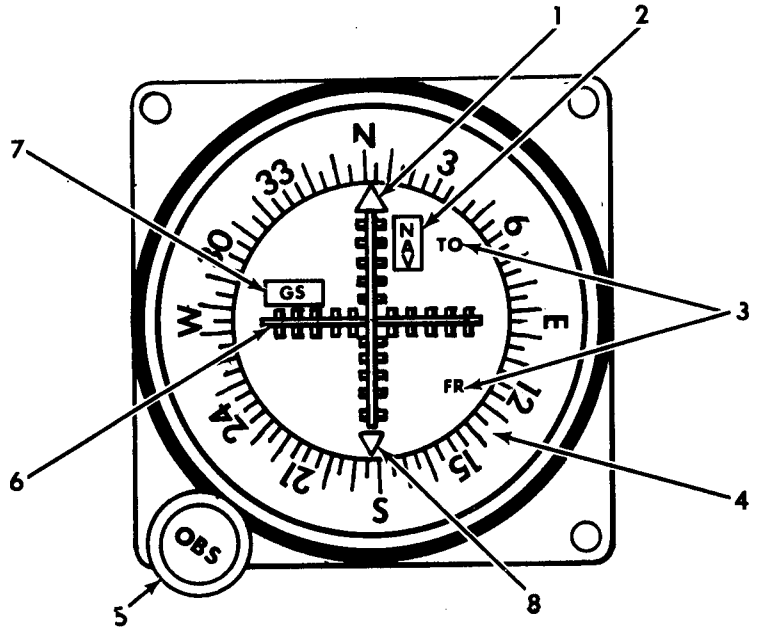


1. VOR/LOC Deviation Indicator
2. VOR/LOC Warning Flag
3. To-From Flag
4. Azimuth Card
5. OBS Knob
6. Glideslope Needle (KI-214)
7. Glideslope Warning Flag (KI-214)

KING KI 201C/VOR/LOC-GS Indicator
Figure 2

The KING KI-203 and KI-208 are designed for use with KX-175B transceiver to provide VOR/LOC information. The navigational receiver portion of the KX-175B receives and detects the VOR and localizer frequencies. The KI-203 and KI-208 converts the information to DC signals which drive the LEFT-RIGHT and the TO-NAV-FROM flag of the visual indicator.

The KING KI-204 and KI-209 provide the same information as the KI-203 and KI-208. In addition, it can accept the information from the glideslope receiver to provide full ILS information. The glideslope receiver drives the UP-DOWN glideslope needle and the glideslope warning flag.



1. VOR/LOC Deviation Needle
2. NAV Warning Flag
3. TO-FROM Flag
4. Azimuth Ring
5. OBS Control
6. Glideslope Needle (KI-204/209)
7. Glideslope Warning Flag (KI-204/209)
8. Heading Indicator

KING KI-203/204/208/209 VOR/LOC-GS Indicator
(1978 Model, AA- 5A and AA-5B)
Figure 2A

4. NARCO NAV 14 Navigation Receiver and DGO 10 Display Unit

The NAVCO NAV 14 is a fully independent NAV receiver designed to drive the DGO 10 pictorial navigation display.

The NAV 14 and DGO 10 provide the following:

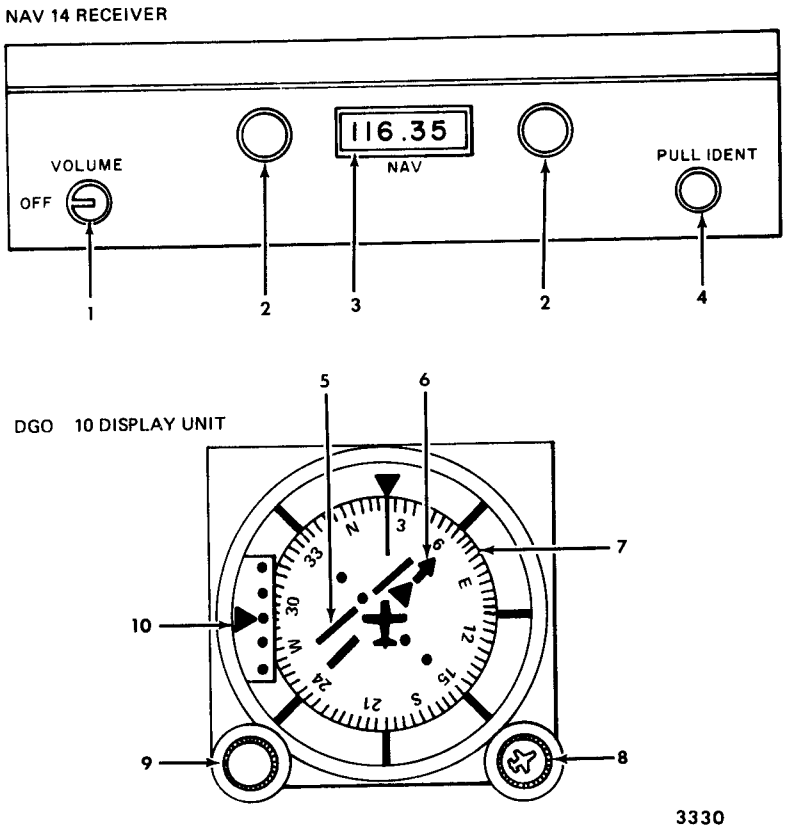
A. 200 channel navigation receiver (108.00 to 117.95 MHz).

B. 160 channel backup communication receiver (118.00 to 125.95 MHz).

C. Remote DME channeling capability.

D. VOR/LOC presentation.

All operating controls for the NAV 14 and DGO 10 are mounted on their front panels and are identified in Figure 3.



1. Off Volume Control
2. Frequency Selectors
3. Frequency Readout
4. Ident
5. Course Deviation Indicator
6. OBS Pointer
7. Heading Scale
8. OBS Knob
9. DG Set Knob
10. Glideslope Indicator

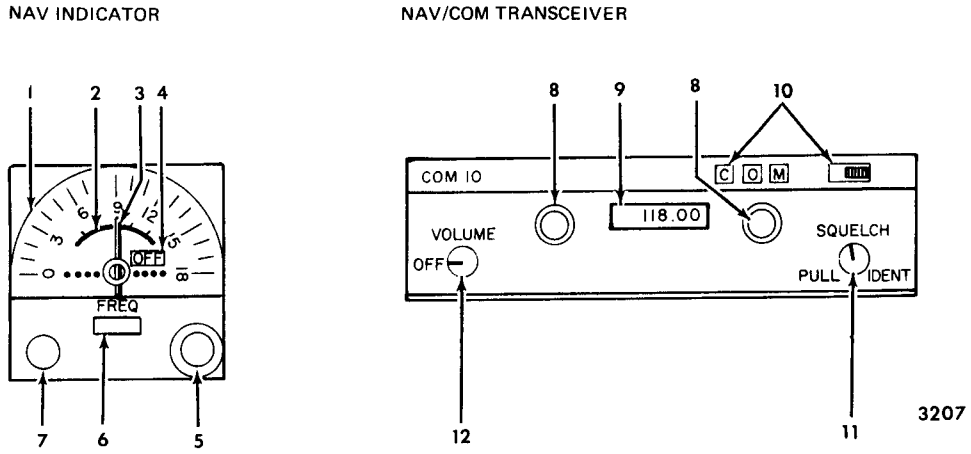
NARCO NAV 14 Navigation Receiver and DGO 10 Display Unit
Figure 3

5. NARCO NAV 10/COM10 ( ) System

The NARCO NAV 10/COM 10 ( ) system consists of two seperate panel mounted units. These units are treated as a system because the NAV 10 is dependent upon the COM 10 ( ) for receiver circuitry. The mode of operation is determined by the function selector switch located on the COM 10 ( ) unit. This section describes the operation of the navigation portion only, see Chapter 23 for a description of the VHF communication section.

The system is capable of receiving 200 VHF navigation channels from 108.00 MHz through 117.95 and for localizer information between 108.10 MHz and 111.95 MHz. When a VOR channel is selected the indicator needle shows left or right deviation from the chosen course. When localizer channel (frequency) is selected the indicator needle shows left or right deviation from runway center line.

All operation controls for the system are located on the front panels and are identified in figure 4.



1. Azimuth Card
2. Reciprocal Card
3. VOR/LOC Deviation Indicator
4. OFF-TO-FROM Indicator
5. NAV Frequency Selector
6. NAV Frequency Indicator
7. OMNI Bearing Selector
8. Com Frequency Selector Knob
9. Frequency Readout
10. NAV/COM Function Selector
11. Squelch
12. Volume Control

NARCO NAV 10/COM 10 ( ) Units
Figure 4

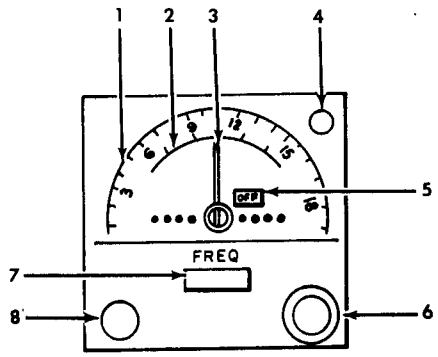
6. NARCO NAV 11-NAV 12 Navigation System Unit

The NARCO NAV 11-NAV 12 navigation system consists of a panel-mounted unit that provides navigational information. The NAV 11 and NAV 12 systems are similar with regard to VOR reception. The NAV 12 system has the added capability of receiving and displaying glideslope information to enable full ILS approaches rather than the localizer only approaches possible with the NAV 11.

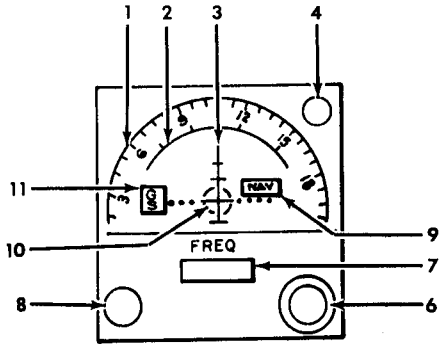
The NAV 11 system receives and displays VOR stations as follows: Even tenths between 108.00 and 111.85 MHz and all channels 112.00 through 117.95 MHz. In addition, it receives and displays localizer channels (odd tenths, 108.10 through 111.95 MHz).

The NAV 12 system receives and displays the same VOR and ILS localizer signals as the NAV 11 system. In addition, the NAV 12 system receives and displays the UHF glide slope signals to provide full ILS approach display.

All operating controls for the navigation system are located on its front panel and are identified in Figure 5.



NAV 11 UNIT



3329

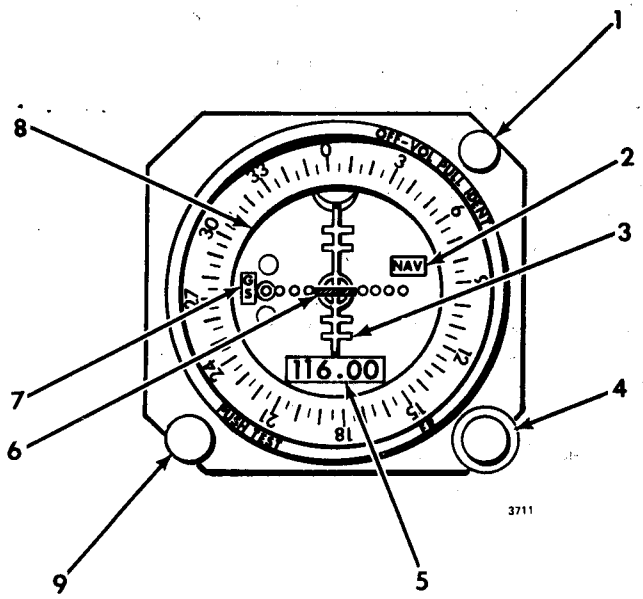
NAV 12 UNIT

1. Azimuth Card
2. Reciprocal Card
3. VOR/LOC Deviation Indicator
4. VOL-ID Control
5. OFF-TO-FROM Indicator
6. Frequency Selector
7. Frequency Indicator
8. OMNI Bearing Selector
9. NAV-TO-FROM Indicator
10. Glideslope Indicator
11. Glideslope Flag

NARCO NAV 11 NAV 12 Navigation System Units
Figure 5

7. NARCO NAV 121-NAV 122 Navigation System (1978 Model, AA-5A and AA-5B)

The NAV 121 is a completely self contained VOR/LOC receiver and indicator. The NAV 122 is identical to the NAV 121 with the addition of a glideslope receiver and glideslope display.



1. OFF-VOL Control (Pull for station IDENT)
2. NAV-TO-FROM Flag
3. VOR/LOC Deviation Needle
4. Frequency Control
5. Frequency Indicator
6. Glideslope Deviation Needle (NAV-122)
7. Glideslope Warning Flag (NAV-122)
8. Compass Ring
9. Omni Bearing Selector (OBS)

NARCO NAV 121-NAV 122 Navigation System
(1978 Model, AA-5A and AA-5B)
Figure 6

8. COLLINS Navigation System (1978 Model, AA-5A and AA-5B)

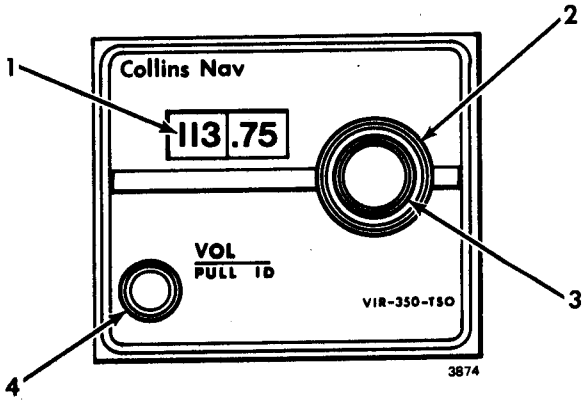
The units used in the COLLINS navigation system are the VIR-350, VIR-351, GLS-350, IND-350, and IND-351.

The VIR-350 (Figure 7) NAV receiver can be used with the IND-350 or IND-351 to display VOR or LOC information. Station frequency selection is made with the frequency control. If the VOR station has an IDENT code, the tone can be heard by pulling the VOL control out. The VIR-350 NAV receiver can be used with the GLS-350 glideslope receiver and the IND-351 to provide glideslope information.

The VIR-351 (Figure 8) NAV receiver will perform the same function as the VIR-350 plus will give a digital readout of the bearing of the selected VOR station. The VOR station frequency selection is made with the TO/FREQ/FROM control in the FREQ position. The selected frequency is displayed in the electronic display. The bearing of the selected VOR station is displayed in the electronic display with the TO/FREQ/FROM control in the FROM position. The bearing, in degrees, is followed by the letter F in the electronic display. The heading to the selected VOR station (radial + 180 degrees) may be displayed by selecting the TO position (no letter appears after the bearing displayed). Three dashes will appear in the electronic display if no signal is received or if a localizer frequency is selected and the control switch is in the TO or FROM position.

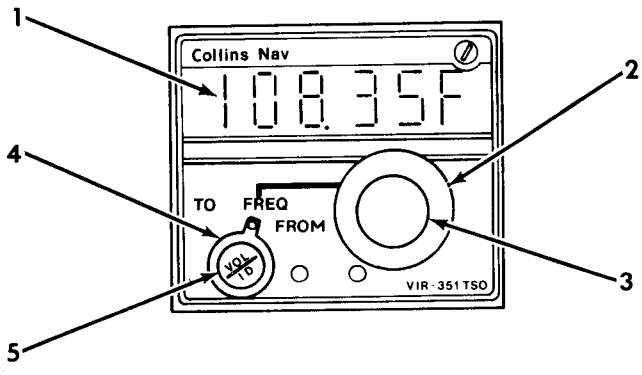
The IND-350 and IND-351 (Figure 9) provide a visual display for VOR/LOC indication and glideslope information (IND-351 only). The VOR/LOC deviation bar indicates the direction and amount of deviation from a selected VOR or localizer course. Appearance of the NAV flag indicates that unreliable information is being supplied to the VOR/LOC deviation bar. The glideslope deviation bar indicates the position above or below the correct glideslope. The GS flag (IND-351 only) indicates an unreliable glideslope signal when tuned to a localizer frequency.

The GLS-350 (Figure 10) glideslope receiver is used with the NAV receiver to provide glideslope information to the IND-351. The receiver is automatically tuned when the NAV receiver is tuned to a localizer frequency.



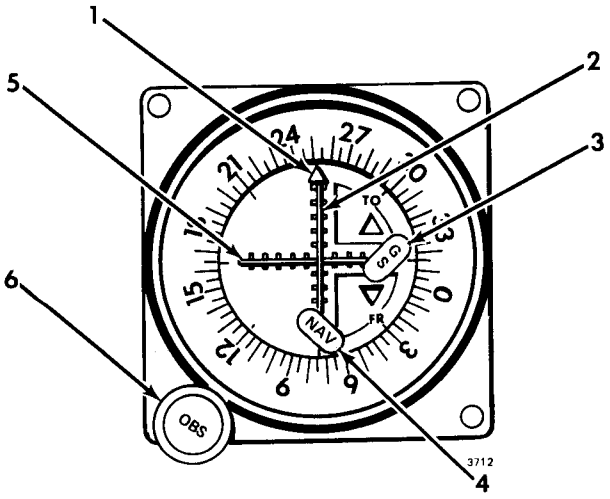
1. Frequency Display
2. MHz Frequency Selector
3. KHz frequency selector
4. ON/OFF Volume Control (Pull for IDENT)

VIR-350 Navigation Receiver
Figure 7



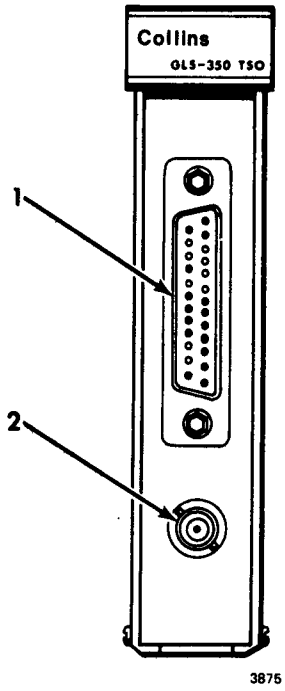
1. Electronic Display
2. MHz Frequency Selector
3. KHz Frequency Selector
4. Display Select
5. ON/OFF/VOL/ID Control (Pull for IDENT)

VIR-351 Navigation Receiver
Figure 8



1. Course Index
2. VOR/LOC Deviation Bar
3. GS Flag (IND-351 only)
4. NAV Flag
5. Glideslope Deviation Bar (IND-351 only)
6. Omni Bearing Selector

IND-350/351 VOR/LOC/GS Indicator
Figure 9



1. Coax Cable Connector
2. Control Cable Connector

GLS-350 Glideslope Receiver
Figure 10

NAVIGATION (VOR) SYSTEM - MAINTENANCE PRACTICES

1. Removal/Installation of Navigation (VOR) System Units

NOTE: When removing or installing avionics equipment always ensure that the Master power switch is OFF.

A. Removal of Navigation Transceiver Unit

(1) Locate, on the instrument panel, the transceiver used for navigation.

(2) Turn locking (allen) screw clockwise to release transceiver unit from its mounting case. Use 5/64 hex (allen) wrench.

(3) Pull unit straight out. Be extremely careful not to bend connector pins. A slight left to right movement might help to release unit from connector plug.

NOTE: Do not use front panel controls as handles in removing unit from instrument panels.

B. Installation of Navigation Transceiver Unit

(1) Slide the transceiver unit straight forward into its mounting case. Ensure connector plug is fully engaged. Be extremely careful not to bend connector pins.

(2) Turn locking (allen) screw counterclockwise to secure transceiver unit to its mounting case. Use 5/64 inch hex (allen) wrench.

C. Removal of Navigation (OMNI head) Unit

(1) Remove screws securing deck assembly to instrument panel.

(2) Raise deck assembly and tape to windshield.

(3) Disconnect electrical plug from rear of navigation unit that is to be removed.

(4) Remove the mounting hardware securing navigation unit to instrument panel.

(5) Remove navigation unit.

D. Installation of Navigation (OMNI head) Unit

(1) Position navigation unit in place on instrument panel and install mounting hardware securing unit to instrument panel.

(2) Connect electrical plug to rear of navigation unit.

(3) Position deck assembly in place and install screws securing deck assembly to instrument panel.

2. Removal of NAV Antenna (Figure 201)

A. Removal of NAV antenna (Figure 201)

(1) Ensure the master power switch is OFF.

(2) Remove rudder tip, to gain access to NAV antenna connections.

NOTE: Be careful not to damage flashing beacon assembly.

(3) Locate NAV antenna at top of vertical stabilizer.

(4) Disconnect cable assembly from antenna rods, and remove rods.

NOTE: Do not allow cable assembly to drop down inside vertical stabilizer.

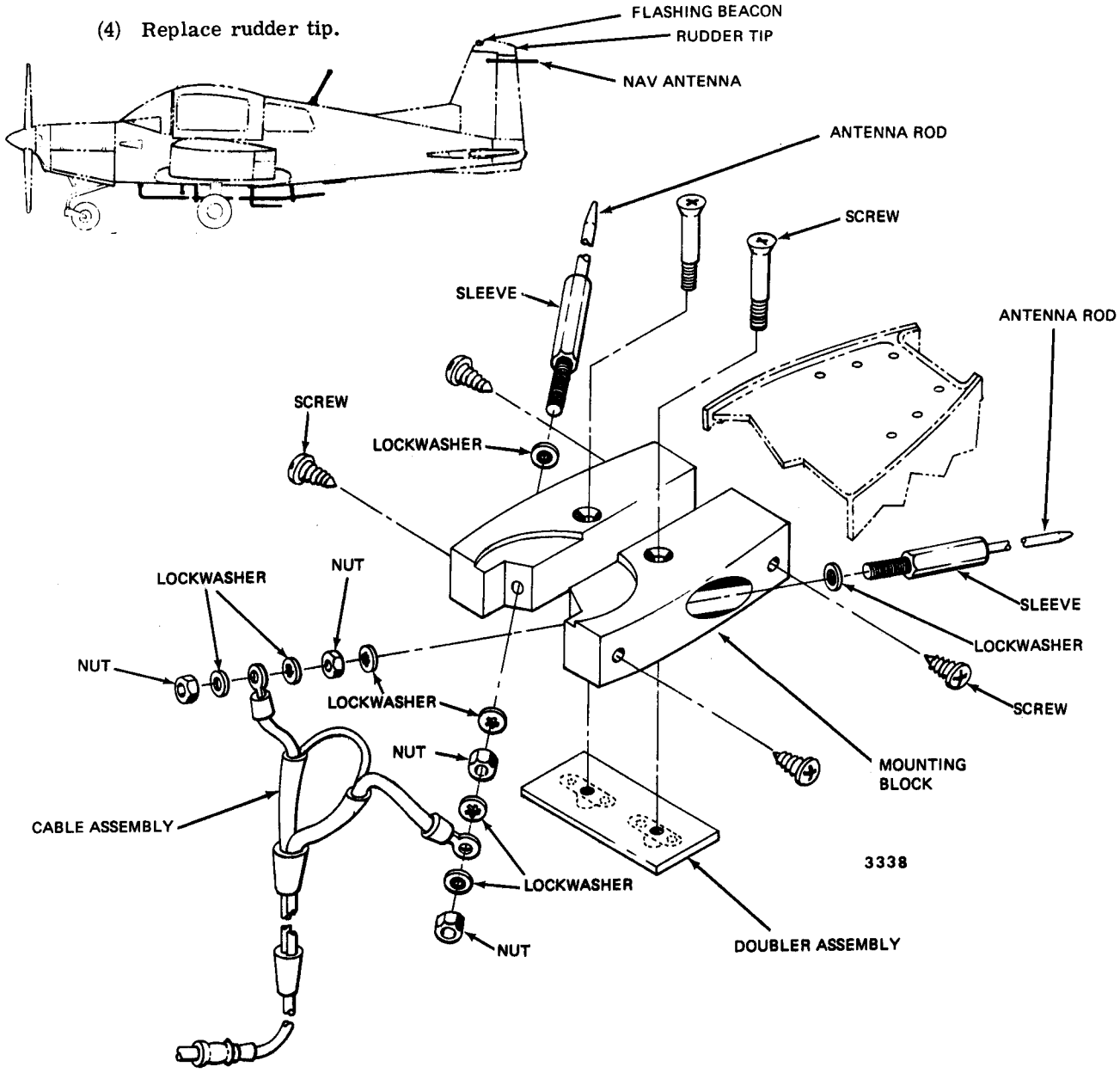
B. Installation of NAV Antenna

(1) Ensure the master power switch is OFF.

(2) Insert antenna rod ends into mounting block.

(3) Connect cable assembly to antenna rods.

(4) Replace rudder tip.



NAV Antenna Installation
Figure 201