

with solvents. All other openings should also be covered before cleaning the engine assembly. Caustic cleaning solutions should be used cautiously and should always be properly neutralized after their use.

INTERIOR CARE

To remove dust and loose dirt from the upholstery and carpet, clean the interior regularly with a vacuum cleaner.

Blot up any spilled liquid promptly with cleansing tissue or rags. Don't pat the spot; press the blotting material firmly and hold it for several seconds. Continue blotting until no more liquid is taken up. Scrape off sticky materials with a dull knife, then spot-clean the area.

Oil spots may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place on the fabric to be cleaned. Never saturate the fabric with a volatile solvent; it may damage the padding and backing materials.

Soiled upholstery and carpet may be cleaned with foam-type detergent, used according to the manufacturer's instructions. To minimize wetting the fabric, keep the foam as dry as possible and remove it with a vacuum cleaner.

If your airplane is equipped with leather seating, cleaning of the seats is accomplished using a soft cloth or sponge dipped in mild soap suds. The soap suds, used sparingly, will remove traces of dirt and grease. The soap should be removed with a clean damp cloth.

The plastic trim, headliner, instrument panel and control knobs need only be wiped off with a damp cloth. Oil and grease on the control wheel and control knobs can be removed with a cloth moistened with Stoddard solvent. Volatile solvents, such as mentioned in paragraphs on care of the windshield, must never be used since they soften and craze the plastic.

SECTION 9 SUPPLEMENTS (Optional Systems Description & Operating Procedures)

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Cessna 300 Nav/Com (Type RT-528E-1)	(6 pages)
Cessna 300 Nav/Com (Type RT-328T)	(6 pages)
Cessna 300 ADF (Type R-546E)	(6 pages)
Cessna 300 Transponder (Type RT-359A) and Optional Altitude Encoder (Type EA-401A)	(6 pages)
DME (Type 190)	(4 pages)
HF Transceiver (Type PT10-A)	(4 pages)
SSB HF Transceiver (Type ASB-125)	(4 pages)
Cessna 400 Marker Beacon (Type R-402A)	(4 pages)
Cessna 200A Autopilot (Type AF-295B)	(6 pages)
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INTRODUCTION

This section consists of a series of supplements, each covering a single optional system which may be installed in the airplane. Each supplement contains a brief description, and when applicable, operating limitations, emergency and normal procedures, and performance. Other routinely installed items of optional equipment, whose function and operational procedures do not require detailed instructions, are discussed in Section 7.

SUPPLEMENT

EMERGENCY LOCATOR TRANSMITTER (ELT)

SECTION 1

GENERAL

The ELT consists of a self-contained dual-frequency radio transmitter and battery power supply, and is activated by an impact of 5g or more as may be experienced in a crash landing. The ELT emits an omnidirectional signal on the international distress frequencies of 121.5 and 243.0 MHz. (Some ELT units in export aircraft transmit only on 121.5 MHz.) General aviation and commercial aircraft, the FAA, and CAP monitor 121.5 MHz, and 243.0 MHz is monitored by the military. Following a crash landing, the ELT will provide line-of-sight transmission up to 100 miles at 10,000 feet. The duration of ELT transmissions is affected by ambient temperature. At temperatures of +21° to +54°C (+70° to +130°F), continuous transmission for 115 hours can be expected; a temperature of -40°C (-40°F) will shorten the duration to 70 hours.

The ELT is readily identified as a bright orange unit mounted behind the baggage compartment wall in the tailcone. To gain access to the unit, remove the baggage compartment wall. The ELT is operated by a control panel at the forward facing end of the unit (see figure 1).

SECTION 2

LIMITATIONS

There is no change to the airplane limitations when this equipment is installed.

SUPPLEMENT

CESSNA 300 NAV/COM (720-Channel - Type RT-328T)

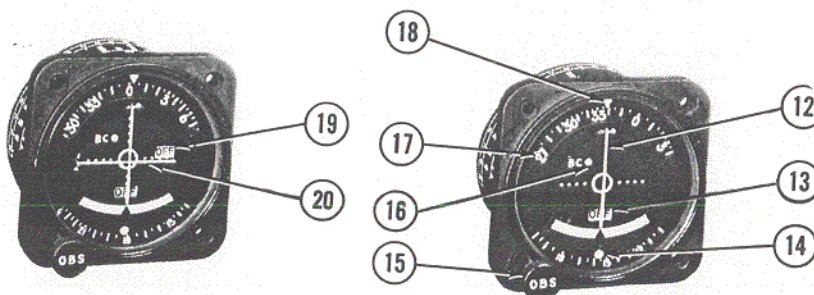
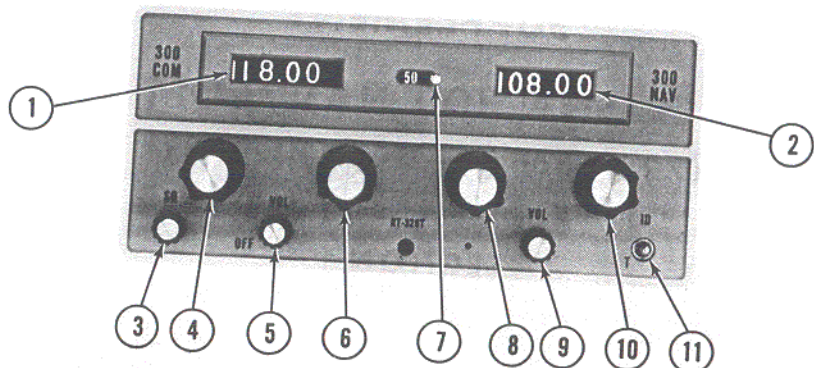
SECTION I GENERAL

The Cessna 300 Nav/Com (Type RT-328T), shown in Figure 1, consists of a panel-mounted receiver-transmitter and a single- or dual-pointer remote course indicator. The set includes a 720-channel VHF communication receiver-transmitter and a 200-channel VHF navigation receiver, both of which may be operated simultaneously.

The communication receiver-transmitter receives and transmits signals between 118.000 and 135.975 MHz in 25-kHz steps. The navigation receiver receives and interprets VHF omnidirectional and localizer signals between 108.00 and 117.95 MHz in 50-kHz steps. The communication receiver-transmitter and the navigation receiver are synthesizer-controlled and are tuned automatically when the frequency is selected.

A DME receiver-transmitter or a glide slope receiver, or both, may be interconnected with the Cessna 300 Nav/Com set for automatic selection of the associated DME or GS frequency. When a VOR frequency is selected on the Nav/Com, the associated VORTAC or VOR-DME station frequency will also be selected automatically; likewise, if a localizer frequency is selected, the associated glide slope frequency will be selected automatically.

All controls of the Cessna 300 Nav/Com, except the omni bearing selector knob (OBS), which is located on the course indicator, are mounted on the front panel of the receiver-transmitter. The course indicator includes either a single pointer and related OFF flag for VOR/LOC indication only, or dual pointers and related OFF flags for both VOR/LOC and glide slope indications. The course indicator also incorporates a back-course lamp (BC) which lights when back-course operation is selected. In addition, when two or more radios are installed, a transmitter selector switch and a speaker-phone selector switch are provided. Each control function is described in Figure 1.



1. RECEIVER-TRANSMITTER FREQUENCY INDICATOR.
2. NAVIGATION RECEIVER FREQUENCY INDICATOR.
3. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate receiver audio. Clockwise rotation increases background noise (decreases squelch action); counterclockwise rotation decreases background noise.
4. COMMUNICATION RECEIVER-TRANSMITTER MEGAHERTZ SELECTOR - Selects communication receiver-transmitter frequency in 1-MHz steps between 118 and 135 MHz.
5. OFF/ON VOLUME CONTROL - Turns set on and controls volume of audio from communications receiver.
6. COMMUNICATION RECEIVER-TRANSMITTER FRACTIONAL MEGAHERTZ SELECTOR - Selects communication receiver-transmitter fractional frequency in .05-MHz steps between .000 and .950 MHz or between .025 and .975 MHz depending on position of 50-25 MHz selector switch.

Figure 1. Cessna 300 Nav/Com (Type RT-328T) (Sheet 1 of 2)

7. 50-25 FRACTIONAL MHz SELECTOR SWITCH - In "50" position, enables communication whole MHz frequency readout to display, and communication fractional MHz control to select fractional part of frequency in .05-MHz steps between .000 and .950 MHz. In "25" position, frequency display and coverage is in .05-MHz steps between .025 and .975.

NOTE

The third-decimal-place digit is not shown on the receiver-transmitter frequency readout.

8. NAVIGATION RECEIVER MEGAHERTZ SELECTOR - Selects navigation receiver frequency in 1-MHz steps between 108 and 117 MHz; simultaneously selects paired glide slope frequency or DME channel.
9. NAVIGATION RECEIVER VOLUME CONTROL - Controls volume of audio from navigation receiver only. Clockwise rotation increases audio level.
10. NAVIGATION RECEIVER FRACTIONAL MEGAHERTZ SELECTOR - Selects navigation receiver frequency in .05-MHz steps between .00 and .95 MHz; simultaneously selects paired glide slope frequency or DME channel.
11. COMBINED IDENTIFIER SIGNAL SELECTOR AND VOR SELF-TEST SELECTOR SWITCH - When VOR station is selected in ID position, station identifier is audible; in center (unmarked) position, identifier is off; in T (momentary on) position, tests VOR navigation circuits.
12. COURSE DEVIATION POINTER - Indicates course deviation from selected omni bearing or localizer centerline.
13. OFF/TO-FROM (OMNI) INDICATOR - Operates only with VOR or localizer signal. "OFF" position (flag) indicates unreliable signal. When "OFF" position disappears, indicator shows whether selected VOR course is "TO" or "FROM" the station (if LOC frequency is selected, indicator will only show "TO").
14. RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.
15. OMNI BEARING SELECTOR (OBS) - Selects desired course to or from a VOR station.
16. BC - Amber light illuminates when an optional system is installed and the autopilot's back-course button is engaged; indicates CDI needle is reversed on selected receiver when tuned to a localizer frequency (Type IN-514B or IN-525B Indicators Only).
17. BEARING DIAL.
18. COURSE INDEX - Indicates selected VOR course.
19. GLIDE SLOPE "OFF" FLAG - When visible, indicates unreliable glide slope signal or no glide slope signal. The flag disappears when a reliable glide slope signal is being received.
20. GLIDE SLOPE DEVIATION POINTER - Indicates deviation from normal glide slope.

Figure 1. Cessna 300 Nav/Com (Type RT-328T) (Sheet 2 of 2)

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed. However, the pilot should be aware that on many Cessna airplanes equipped with the windshield mounted glide slope antenna, pilots should avoid use of 2700 \pm 100 RPM (or 1800 \pm 100 RPM with a three bladed propeller) during ILS approaches to avoid propeller interference caused oscillations of the glide slope deviation pointer.

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO TRANSMIT:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) COM Frequency Selector Knobs -- SELECT operating frequency.
- (3) 50-25 Fractional MHz Selector Switch -- SELECT operating frequency.
- (4) OFF/VOL Control -- ON.
- (5) Mike Button -- DEPRESS.

TO RECEIVE:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) SPEAKER/PHONE Switch -- SELECT desired mode.
- (3) COM/NAV Frequency Selector Knobs -- SELECT operating frequency.
- (4) 50-25 Fractional MHz Selector Switch -- SELECT operating frequency (not selected for navigational frequencies).
- (5) VOL Control -- ADJUST to listening level (OFF/VOL knob must be ON).
- (6) SQ Control -- ROTATE counterclockwise to decrease background noise.

TO OPERATE IDENT FILTER:

- (1) ID-T Switch -- CENTER (unmarked) to include filter in audio circuit of both receivers.
- (2) ID-T Switch -- ID position disconnects filter from audio circuit to hear navigation station identifier (Morse Code) signal.

NOTE

The ID-T switch should be left in ID position for best communications reception.

TO SELF TEST VOR NAVIGATION CIRCUITS:

- (1) Tune to usable VOR signal from either a VOR station or a test signal.
- (2) OBS Knob -- ROTATE course index to 0°.
- (3) ID-T Switch -- T position. Vertical pointer should center and OFF-TO-FROM indicator should show FROM.
- (4) ID-T Switch -- T position and rotate OBS knob to displace course index approximately 10° to either side of 0°. Vertical pointer should deflect full scale in direction corresponding to course index displacement.
- (5) ID-T Switch -- CENTER (unmarked) position for normal VOR operation.

NOTE

This test does not fulfill the requirements of FAR 91.25.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

CESSNA 300 ADF

(Type R-546E)

SECTION 1

GENERAL

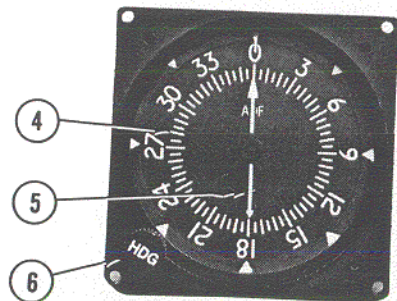
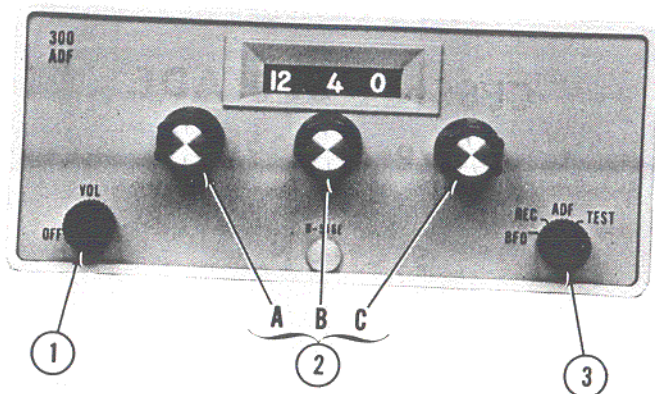
The Cessna 300 ADF is a panel-mounted, digitally tuned automatic direction finder. It is designed to provide continuous 1 kHz digital tuning in the frequency range of 200 kHz to 1,699 kHz and eliminates the need for mechanical band switching. The system is comprised of a receiver, loop antenna, bearing indicator and a sense antenna. In addition, when two or more radios are installed, speaker-phone selector switches are provided. Each control function is described in Figure 1.

The Cessna 300 ADF can be used for position plotting and homing procedures, and for aural reception of amplitude-modulated (AM) signals.

With the function selector knob at ADF, the Cessna ADF provides a visual indication, on the bearing indicator, of the bearing to the transmitting station relative to the nose of the airplane. This is done by combining signals from the sense antenna with signals from the loop antenna.

With the function selector knob at REC, the Cessna ADF uses only the sense antenna and operates as a conventional low-frequency receiver. In the REC, position, the indicator will automatically move to the pointer stop position. This feature alerts the operator to non-ADF operation by positioning and retaining the pointer at the 3:00 o'clock position.

The Cessna 300 ADF is designed to receive transmission from the following radio facilities: commercial broadcast stations, low-frequency range stations, FAA radio beacons, and ILS compass locators.



1. OFF/VOL - Controls primary power and audio output level. Clockwise rotation from OFF position applies primary power to receiver; further clockwise rotation increases audio level.
2. FREQUENCY SELECTORS - Knob (A) selects 100-kHz increments of receiver frequency, knob (B) selects 10-kHz increments, and knob (C) selects 1-kHz increments.

Figure 1. Cessna 300 ADF Operating Controls and Indicators (Sheet 1 of 2)

3. FUNCTION

BFO: Set operates as communication receiver using only sense antenna and activates 1000-Hz tone beat frequency oscillator to permit coded identifier of stations transmitting keyed CW signals (Morse Code) to be heard.

REC: Set operates as standard communication receiver using only sense antenna.

NOTE

In this position an automatic pointer stow feature will alert the pilot to non-ADF operation by positioning and retaining the pointer at the 3:00 o'clock position when the 300 ADF is in the REC function.

ADF: Set operates as automatic direction finder using loop and sense antennas.

TEST: Momentary-on position used during ADF operation to test bearing reliability. When held in TEST position, slews indicator pointer clockwise; when released, if bearing is reliable, pointer returns to original bearing position.

4. INDEX (ROTATABLE CARD) - Indicates relative, magnetic, or true heading of aircraft.
5. POINTER - Indicates station bearing in degrees of azimuth, relative to the nose of the aircraft. When heading control is adjusted, indicates relative, magnetic, or true bearing from which radio signal is being received.
6. HEADING CONTROL - Rotates card to induce relative, magnetic, or true bearing information.

Figure 1. Cessna 300 ADF Operating Controls and Indicators (Sheet 2 of 2)

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed.

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO OPERATE AS A COMMUNICATIONS RECEIVER ONLY:

- (1) OFF/VOL Control -- ON.
- (2) Function Selector Knob -- REC.

NOTE

Indicator's pointer will stow at a 3:00 o'clock position to alert the pilot to non-ADF operation.

- (3) Frequency Selector Knobs -- SELECT operating frequency.
- (4) ADF SPEAKER/PHONE Switch -- SELECT speaker or phone position as desired.
- (5) VOL Control -- ADJUST to desired listening level.

TO OPERATE AS AN AUTOMATIC DIRECTION FINDER:

- (1) OFF/VOL Control -- ON.
- (2) Frequency Selector Knobs -- SELECT operating frequency.
- (3) ADF SPEAKER/PHONE Switch -- SELECT speaker or phone position.
- (4) Function Selector Knob -- ADF position and note relative bearing on indicator.
- (5) VOL Control -- ADJUST to desired listening level.

NOTE

When switching stations place function selector knob in REC position. Then, after station has been selected,

return selector knob to ADF to resume automatic direction finder operation (this practice prevents the bearing indicator from swinging back and forth as frequency dial is rotated).

TO TEST RELIABILITY OF AUTOMATIC DIRECTION FINDER:

- (1) Function Selector Knob -- ADF position and note relative bearing on indicator.
- (2) Function Selector Knob -- TEST position and observe that pointer moves away from relative bearing at least 10 to 20 degrees.
- (3) Function Selector Knob -- ADF position and observe that pointer returns to same relative bearing as in step (1).

TO OPERATE BFO:

- (1) OFF/VOL Control -- ON.
- (2) Function Selector Knob -- BFO.
- (3) Frequency Selector Knobs -- SELECT operating frequency.
- (4) ADF SPEAKER/PHONE Switch -- SELECT speaker or phone position.
- (5) VOL Control -- ADJUST to desired listening level.

NOTE

A 1000-Hz tone is heard in the audio output when a CW signal (Morse Code) is tuned in properly.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

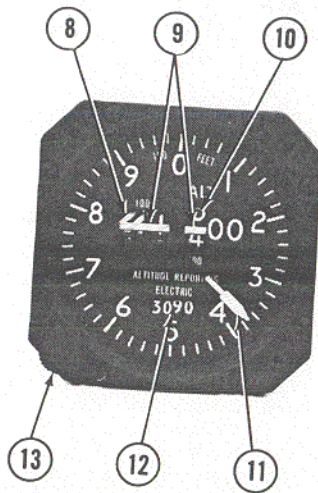
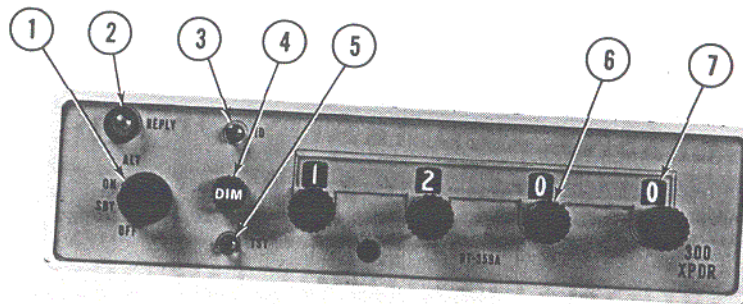
SUPPLEMENT
CESSNA 300 TRANSPONDER
(Type RT-359A)
AND
OPTIONAL ALTITUDE ENCODER
(Type EA-401A)

SECTION 1
GENERAL

The Cessna 300 Transponder (Type RT-359A), shown in Figure 1, is the airborne component of an Air Traffic Control Radar Beacon System (ATCRBS). The transponder enables the ATC ground controller to "see" and identify the aircraft, while in flight, at distances beyond the primary radar range.

The Cessna 300 Transponder consists of a panel-mounted unit and an externally-mounted antenna. The transponder receives interrogating pulse signals on 1030 MHz and transmits coded pulse-train reply signals on 1090 MHz. It is capable of replying to Mode A (aircraft position identification) and Mode C (altitude information) interrogations on a selective reply basis on any of 4,096 information code selections. When an optional panel-mounted EA-401 altitude encoder (not part of a standard 300 Transponder system) is included in the avionic configuration, the transponder can provide altitude reporting in 100-foot increments between -1000 and +35,000 feet.

All Cessna 300 Transponder operating controls, with the exception of the optional altitude encoder's barometric pressure set knob, are located on the front panel of the unit. The barometric pressure set knob is located on the altitude encoder. Function of the operating controls is described in Figure 1.



1. **FUNCTION SWITCH** - Controls application of power and selects transponder operating mode, as follows:
 OFF - Removes power from transponder (turns set off).
 SBY - Applies power for equipment warm-up.
 ON - Applies operating power and enables transponder to transmit Mode A reply pulses.
 ALT - Applies operating power and enables transponder to transmit either Mode A reply pulses or Mode C altitude information pulses selected automatically by the interrogating signal.
2. **REPLY LAMP** - Provides visual indication of transponder replies. During normal operation, lamp flashes when reply pulses are transmitted; when special pulse identifier is

Figure 1. Cessna 300 Transponder (Sheet 1 of 2)

- selected, lamp glows steadily for duration of IDENT pulse transmission. (Reply Lamp will also glow steadily during initial warm-up period.)
3. **IDENT SWITCH** - When depressed, selects special pulse identifier to be transmitted with transponder reply to effect immediate identification of aircraft on ground controller's display. (Reply Lamp will glow steadily during duration of IDENT pulse transmission.)
4. **DIMMER CONTROL** - Allows pilot to control brilliance of reply lamp.
5. **SELF-TEST SWITCH** - When depressed, causes transponder to generate a self-interrogating signal to provide a check of transponder operation. (Reply Lamp will illuminate to verify self test operation.)
6. **REPLY-CODE SELECTOR SWITCHES (4)** - Selects assigned Mode A (or Mode C) reply code.
7. **REPLY-CODE INDICATORS (4)** - Displays selected Mode A (or Mode C) reply code.
8. **100-FOOT DRUM TYPE INDICATOR** - Provides digital altitude readout in 100-foot increments between -1000 feet and +35,000 feet.
9. **OFF INDICATOR WARNING FLAG** - Flag appears when power is removed from the system.
10. **100-FOOT DRUM TYPE INDICATOR** - Provides digital altitude readout in 100-foot increments between 0 feet and 1000 feet.
11. **20-FOOT INDICATOR NEEDLE** - Indicates altitude in 20-foot increments between 0 feet and 1000 feet.
12. **BAROMETRIC PRESSURE SET INDICATOR - DRUM TYPE** - Indicates selected barometric pressure in the range of 27.9 to 31.0 inches of mercury.
13. **BAROMETRIC PRESSURE SET KNOB** - Dials in desired barometric pressure setting in the range of 27.9 to 31.0 inches of mercury.

Figure 1. Cessna 300 Transponder (Sheet 2 of 2)

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionics equipment is installed.

SECTION 3 EMERGENCY PROCEDURES

TO TRANSMIT AN EMERGENCY SIGNAL:

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Switches -- SELECT 7700 operating code.
- (3) ID Switch -- DEPRESS to effect immediate identification of aircraft on ground controller's display.
- (4) DIM Control -- ADJUST light brilliance of reply lamp.

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF ALL COMMUNICATIONS:

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Switches -- SELECT 7700 operating code for 1 minute, then select 7600 operating code for 15 minutes and then repeat this procedure for remainder of flight.
- (3) ID Switch -- DEPRESS to effect immediate identification of aircraft on ground controller's display.
- (4) DIM Control -- ADJUST light brilliance of reply lamp.

SECTION 4 NORMAL PROCEDURES

BEFORE TAKEOFF AND WHILE TAXIING:

- (1) Function Switch -- SBY.

TO TRANSMIT MODE A (AIRCRAFT POSITION IDENTIFICATION) CODES IN FLIGHT:

- (1) Reply-Code Selector Switches -- SELECT assigned code.

- (2) Function Switch -- ON.
- (3) DIM Control -- ADJUST light brilliance of reply lamp.

NOTE

During normal operation with function switch in ON position, REPLY lamp flashes indicating transponder replies to interrogations.

- (4) ID Button -- DEPRESS momentarily when instructed by ground controller to "squawk IDENT" (REPLY lamp will glow steadily, indicating IDENT operation).

TO TRANSMIT MODE C (ALTITUDE INFORMATION) CODES IN FLIGHT:

- (1) Altitude Encoder Barometric Pressure Set Knob -- DIAL assigned barometric pressure.
- (2) Reply-Code Selector Switches -- SELECT assigned code.
- (3) Function Switch -- ALT.

NOTE

When directed by ground controller to "stop altitude squawk", turn Function Switch to ON for Mode A operation only.

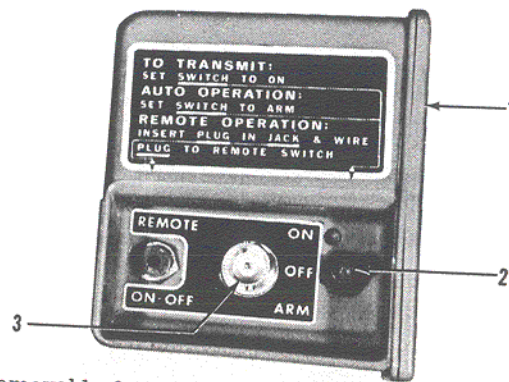
NOTE

Pressure altitude is transmitted, and conversion to indicated altitude is done in ATC computers. Altitude squawk will agree with indicated altitude when altimeter setting in use by the ground controller is set in the altitude encoder.

- (4) DIM Control -- ADJUST light brilliance of reply lamp.

TO SELF-TEST TRANSPONDER OPERATION:

- (1) Function Switch -- SBY and wait 30 seconds for equipment to warm-up.
- (2) Function Switch -- ON.
- (3) TST Button -- DEPRESS (Reply lamp should light brightly regardless of DIM control setting).



1. COVER - Removable for access to battery.
2. FUNCTION SELECTOR SWITCH (3-position toggle switch):
 - ON - Activates transmitter instantly. Used for test purposes and if "g" switch is inoperative.
 - OFF - Deactivates transmitter. Used during shipping, storage and following rescue.
 - ARM - Activates transmitter only when "g" switch receives 5g or more impact.
3. ANTENNA RECEPTACLE - Connection to antenna mounted on top of the tailcone.

Figure 1. ELT Control Panel

SECTION 3 EMERGENCY PROCEDURES

Immediately after a forced landing where emergency assistance is required, the ELT should be utilized as follows.

- (1) ENSURE ELT ACTIVATION: Turn a radio transceiver ON and select 121.5 MHz. If the ELT can be heard transmitting, it was activated by the "g" switch and is functioning properly. If no emergency tone is audible, gain access to the ELT and place the function se-

lector switch in the ON position.

- (2) PRIOR TO SIGHTING RESCUE AIRCRAFT: Conserve airplane battery. Do not activate radio transceiver.
- (3) AFTER SIGHTING RESCUE AIRCRAFT: Place ELT function selector switch in the OFF position, preventing radio interference. Attempt contact with rescue aircraft with the radio transceiver set to a frequency of 121.5 MHz. If no contact is established, return the function selector switch to ON immediately.
- (4) FOLLOWING RESCUE: Place ELT function selector switch in the OFF position, terminating emergency transmissions.

SECTION 4 NORMAL PROCEDURES

As long as the function selector switch remains in the ARM position, the ELT automatically activates following an impact of 5g or more over a short period of time.

Following a lightning strike, or an exceptionally hard landing, the ELT may activate although no emergency exists. To check your ELT for inadvertent activation, select 121.5 MHz on your radio transceiver and listen for an emergency tone transmission. If the ELT can be heard transmitting, place the function selector switch in the OFF position and the tone should cease. Immediately place the function selector switch in the ARM position to re-set the ELT for normal operation.

SECTION 5 PERFORMANCE

There is no change to the airplane performance data when this equipment is installed.

SUPPLEMENT

CESSNA 300 TRANSCEIVER

(Type RT-524A)

SECTION 1 GENERAL

The Cessna 300 Transceiver, shown in Figure 1, is a self-contained communications system capable of receiving and transmitting on any one of 360 manually tuned, crystal-controlled channels. The channels are spaced 50 kHz apart and cover a frequency range of 118.00 thru 135.95 MHz.

The 300 Transceiver system consists of a panel-mounted receiver/transmitter, a spike antenna and interconnecting cables. The system utilizes the airplane microphone, headphone and speaker.

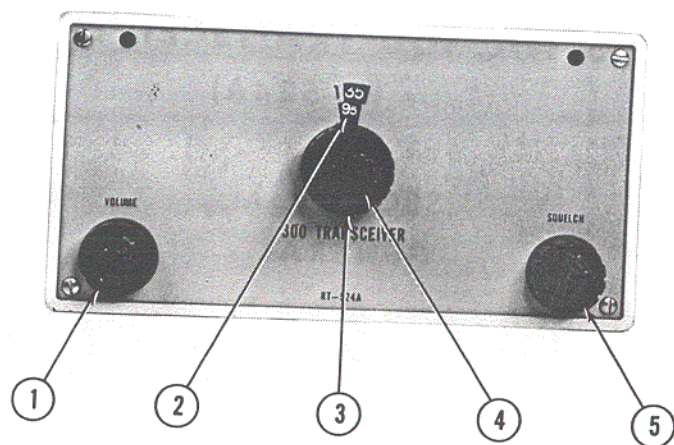
All of the required operating controls are mounted on the front panel of the 300 Transceiver except the microphone switch. In addition, when two or more radios are installed, a transmitter selector switch and a speaker-phone selector switch are provided. Each control function is described in Figure 1.

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed.

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.



1. OFF/ON VOLUME CONTROL - Turns complete set on and controls volume of audio from receiver.
2. RECEIVER-TRANSMITTER FREQUENCY DIAL.
3. RECEIVER-TRANSMITTER FREQUENCY SELECTOR - Selects receiver-transmitter frequency in 1-MHz steps between 118.00 and 135.00 MHz.
4. RECEIVER-TRANSMITTER FRACTIONAL FREQUENCY SELECTOR - Selects receiver-transmitter fractional frequency in 0.05-MHz steps.
5. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate receiver audio. Clockwise rotation increases background noise (decreases squelch action); counterclockwise rotation decreases background noise.

Figure 1. Cessna 300 Transceiver Controls

SECTION 4 NORMAL PROCEDURES

TO TRANSMIT:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) Frequency Selector Knobs -- SELECT operating frequency.
- (3) Radio VOLUME Control -- ON.
- (4) Mike Button -- DEPRESS.

TO RECEIVE:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) SPEAKER/PHONE Switch -- SELECT desired mode.
- (3) Frequency Selector Knobs -- SELECT operating frequency.
- (4) Radio VOLUME Control -- ON and adjust to listening level.
- (5) SQUELCH Control -- ROTATE counterclockwise to decrease background noise.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

CESSNA 300 NAV/COM

(VOR Only - Type RT-308C)

SECTION 1

GENERAL

The Cessna 300 Nav/Com (Type RT-308C), shown in Figure 1, consists of a panel-mounted receiver-transmitter (RT-308C) and a single course deviation indicator (IN-514R or IN-514B). The RT-308C Receiver-Transmitter includes a 360-channel VHF communication receiver-transmitter and a 160-channel VHF navigation receiver, both of which may be operated simultaneously.

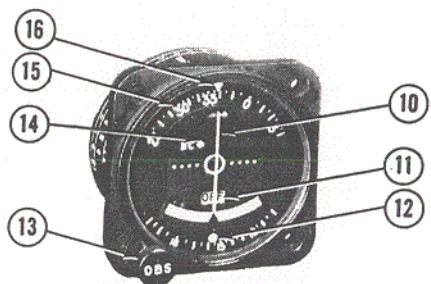
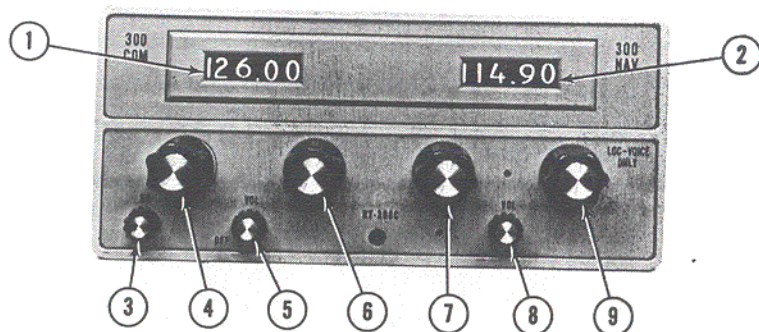
The communication receiver-transmitter receives and transmits signals between 118.00 and 135.95 MHz in 50 kHz steps. The navigation receiver receives and interprets VHF omnidirectional range (VOR) signals between 108.00 and 117.95 MHz. Although localizer signals (all odd-tenth frequencies between 108.1 and 111.9 MHz) can also be received, the navigation receiver does not include the circuits required to actuate the course deviation needle. However, the audio portion of the localizer is audible so that flight information, such as that broadcast in certain areas on selected localizer frequencies by the Automatic Terminal Information Service (ATIS), may be heard.

All controls for the Cessna 300 Nav/Com (Type RT-308C), except the omni bearing selector (OBS), are mounted on the front panel of the receiver-transmitter. The course selector and the navigation indicators are included in the course deviation indicator. The communication receiver-transmitter and the navigation receiver are synthesizer-controlled and are tuned automatically when the frequency is selected. In addition, when two or more radios are installed, a transmitter selector switch and a speaker-phone selector switch are provided. Each control function is described in Figure 1.

SECTION 2

LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed.



1. RECEIVER-TRANSMITTER FREQUENCY INDICATOR.
2. NAVIGATION RECEIVER FREQUENCY INDICATOR.
3. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate receiver audio. Clockwise rotation increases background noise (decreases squelch action); counterclockwise rotation decreases background noise.
4. COMMUNICATION RECEIVER-TRANSMITTER MEGAHERTZ SELECTOR - Selects communication receiver-transmitter frequency in 1-MHz steps between 118 and 135 MHz.

Figure 1. Cessna 300 Nav/Com (Type RT-308C) - VOR only (Sheet 1 of 2)

5. OFF/ON VOLUME CONTROL - Turns complete set on and controls volume of audio from communication receiver.
6. COMMUNICATION RECEIVER-TRANSMITTER FRACTIONAL MEGAHERTZ SELECTOR - Selects communication receiver-transmitter fractional frequency in 0.05 MHz steps between 0.00 and 0.95 MHz.
7. NAVIGATION RECEIVER MEGAHERTZ SELECTOR - Selects navigation receiver frequency in 1-MHz steps between 108 and 117 MHz.
8. NAVIGATION RECEIVER VOLUME CONTROL - Controls volume of audio from navigation receiver only. Clockwise rotation increases audio level.
9. NAVIGATION RECEIVER FRACTIONAL MEGAHERTZ SELECTOR - Selects navigation receiver frequency in 0.05 MHz steps between 0.00 and 0.95 MHz.
10. COURSE DEVIATION POINTER - Indicates course deviation from selected omni bearing.
11. OFF/TO-FROM (OMNI) INDICATOR - Operates only with VOR signal. "OFF" position (flag) indicates unreliable signal or no signal. When "OFF" position disappears, indicator shows whether selected course is "TO" or "FROM" the station.
12. RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.
13. OMNI BEARING SELECTOR (OBS) - Selects desired course to or from a VOR station.
14. BACK COURSE (BC) INDICATOR LIGHT (On IN-514B Only) - Not used with this radio.
15. BEARING DIAL.
16. COURSE INDEX - Indicates selected VOR course.

Figure 1. Cessna 300 Nav/Com (Type RT-308C) - VOR only (Sheet 2 of 2)

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionics equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO TRANSMIT:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) COM Frequency Selector Knobs -- SELECT operating frequency.
- (3) OFF/VOL control -- ON.
- (4) Mike Button -- DEPRESS.

TO RECEIVE:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) SPEAKER/PHONE Switch -- SELECT desired mode.
- (3) COM/NAV Frequency Selector Knobs -- SELECT frequency.
- (4) VOL Control -- ADJUST to listening level (OFF/VOL knob must be ON).
- (5) SQ Control -- ROTATE counterclockwise to decrease background noise.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionics equipment is installed.

SUPPLEMENT

CESSNA 300 NAV/COM (360-Channel - Type RT-528E-1)

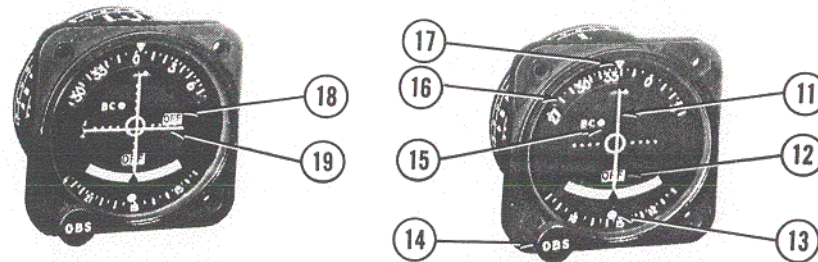
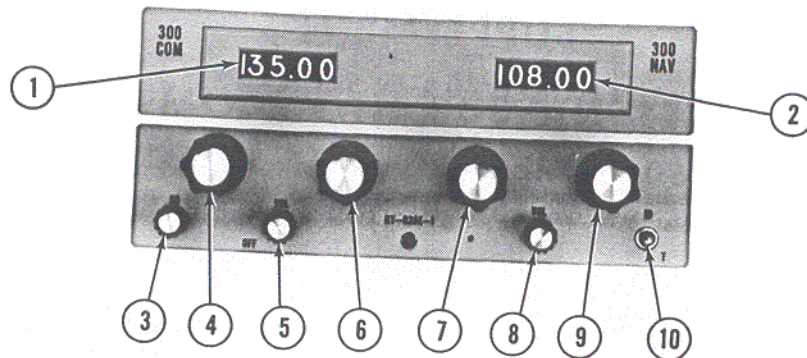
SECTION 1 GENERAL

The Cessna 300 Nav/Com (Type RT-528E-1), shown in Figure 1, consists of a panel-mounted receiver-transmitter and a single- or dual-pointer remote course indicator. The receiver-transmitters include a 360-channel VHF communication receiver-transmitter and a 200-channel VHF navigation receiver.

The communication receiver-transmitter receives and transmits signals between 118.00 and 135.95 MHz in 50 kHz steps. The navigation receiver receives and interprets VOR and localizer signals between 108.00 and 117.95 MHz in 50 kHz steps. The communication receiver-transmitter and the navigation receiver are synthesizer-controlled and are tuned automatically when the frequency is selected.

A DME receiver-transmitter or a glide slope receiver, or both, may be interconnected with the Cessna 300 Nav/Com set for automatic selection of the associated DME or GS frequency. When a VOR frequency is selected on the Nav/Com, the associated VORTAC or VOR-DME station frequency will also be selected automatically; likewise, if a localizer frequency is selected, the associated glide slope frequency will be selected automatically.

All controls of the Cessna 300 Nav/Com, except the omni bearing selector knob (OBS), which is located on the course indicator, are mounted on the front panel of the receiver-transmitter. The course indicator includes either a single pointer and related OFF flag for VOR/LOC indication only, or dual pointers and related OFF flags for both VOR/LOC and glide slope indications. The course indicator also incorporates a back-course lamp (BC) which lights when back-course operation is selected. In addition, when two or more radios are installed, a transmitter selector switch and a speaker-phone selector switch are provided. Each control function is described in Figure 1.



1. RECEIVER-TRANSMITTER FREQUENCY INDICATOR.
2. NAVIGATION RECEIVER FREQUENCY INDICATOR.
3. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate receiver audio. Clockwise rotation increases background noise (decreases squelch action); counterclockwise rotation decreases background noise.
4. COMMUNICATION RECEIVER-TRANSMITTER MEGAHERTZ SELECTOR - Selects communication receiver-transmitter frequency in 1-MHz steps between 118 and 135 MHz.
5. OFF/ON VOLUME CONTROL - Turns complete set on and controls volume of audio from communication receiver.
6. COMMUNICATION RECEIVER-TRANSMITTER FRACTIONAL MEGAHERTZ SELECTOR - Selects communication receiver-transmitter fractional frequency in 0.05-MHz steps between 0.00 and 0.95 MHz.

Figure 1. Cessna 300 Nav/Com (Type RT-528E-1) (Sheet 1 of 2)

7. NAVIGATION RECEIVER MEGAHERTZ SELECTOR - Selects navigation receiver frequency in 1-MHz steps between 108 and 117 MHz.
8. NAVIGATION RECEIVER VOLUME CONTROL - Controls volume of audio from navigation receiver only. Clockwise rotation increases audio level.
9. NAVIGATION RECEIVER FRACTIONAL MEGAHERTZ SELECTOR - Selects navigation receiver frequency in 0.05-MHz steps between 0.00 and 0.95 MHz.
10. COMBINED IDENTIFIER SIGNAL SELECTOR AND VOR SELF-TEST SELECTOR SWITCH - When VOR station is selected in ID position, station identifier is audible; in center (unmarked) position, identifier is off; in T (momentary on) position, tests VOR navigation circuits.
11. COURSE DEVIATION POINTER - Indicates course deviation from selected omni bearing or localizer centerline.
12. OFF/TO-FROM (OMNI) INDICATOR - Operates only with VOR or localizer signal. "OFF" position (flag) indicates unreliable signal. When "OFF" position disappears, indicator shows whether selected VOR course is "TO" or "FROM" the station (if LOC frequency is selected, indicator will only show "TO").
13. RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.
14. OMNI BEARING SELECTOR (OBS) - Selects desired course to or from a VOR station.
15. BC - Amber light illuminates when an optional autopilot system is installed and the autopilot's back-course button is engaged; indicates CDI needle is reversed on selected receiver when tuned to a localizer frequency (type IN-514B or IN-525B indicators only).
16. BEARING DIAL.
17. COURSE INDEX - Indicates selected VOR course.
18. GLIDE SLOPE "OFF" FLAG - When visible, indicates unreliable glide slope signal or no glide slope signal. The flag disappears when a reliable glide slope signal is being received.
19. GLIDE SLOPE DEVIATION POINTER - Indicates deviation from normal glide slope.

Figure 1. Cessna 300 Nav/Com (Type RT-528E-1) (Sheet 2 of 2)

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed. However, the pilot should be aware that on many Cessna airplanes equipped with the windshield mounted glide slope antenna, pilots should avoid use of 2700 \pm 100 RPM (or 1800 \pm 100 RPM with a three bladed propeller) during ILS approaches to avoid propeller interference caused oscillations of the glide slope deviation pointer.

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO TRANSMIT:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) COM Frequency Selector Knobs -- SELECT operating frequency.
- (3) OFF/VOL Control -- ON.
- (4) Mike Button -- DEPRESS.

TO RECEIVE:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) SPEAKER/PHONE Switch -- SELECT desired mode.
- (3) COM/NAV Frequency Selector Knobs -- SELECT frequency.
- (4) VOL Control -- Adjust to listening level (OFF/VOL knob must be ON).
- (5) SQ Control -- ROTATE counterclockwise to decrease background noise.

TO OPERATE IDENT FILTER:

- (1) ID-T Switch -- CENTER (unmarked) to include filter in audio circuit of both receivers.

- (2) ID-T Switch -- ID position disconnects filter from audio circuit to hear navigation station identifier (Morse Code) signal.

NOTE

The ID-T switch should be left in ID position for best communications reception.

TO SELF TEST VOR NAVIGATION CIRCUITS:

- (1) Tune to usable VOR signal from either a VOR station or a test signal.
- (2) OBS Knob -- ROTATE course index to 0°.
- (3) ID-T Switch -- T position. Vertical pointer should center and OFF-TO-FROM indicator should show FROM.
- (4) ID-T Switch -- T position and rotate OBS knob to displace course index approximately 10° to either side of 0°. Vertical pointer should deflect full scale in direction corresponding to course index displacement.
- (5) ID-T Switch -- CENTER (unmarked) position for normal VOR operation.

NOTE

This test does not fulfill the requirements of FAR 91.25.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

DME (Type 190)

SECTION 1 GENERAL

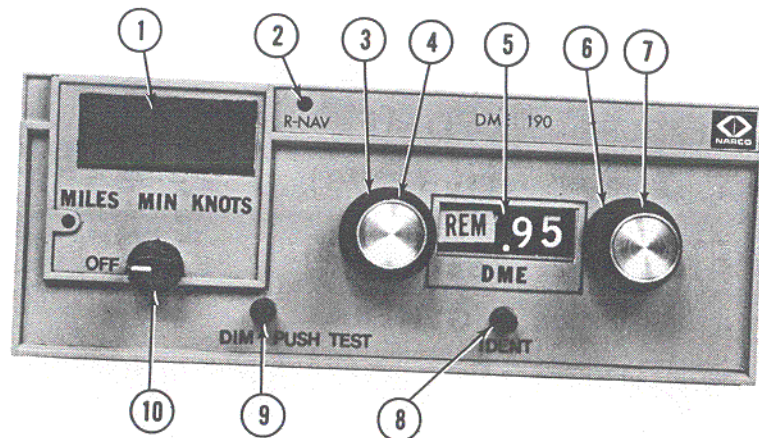
The DME 190 (Distance Measuring Equipment) system consists of a panel mounted 200 channel UHF transmitter-receiver and an externally mounted antenna. The transceiver has a single selector knob that changes the DME's mode of operation to provide the pilot with: distance-to-station, time-to-station, or 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.

The DME can be channeled independently or by a remote NAV set. When coupled with a remote NAV set, the MHz digits will be covered over by a remote (REM) flag and the DME will utilize the frequency set by the NAV set's channeling knobs. When the DME is not coupled with a remote NAV set, the DME will reflect the channel selected on the DME unit. The transmitter operates in the frequency range of 1041 to 1150 MHz and is paired with 108 to 117.95 MHz to provide automatic DME channeling. The receiver operates in the frequency range of 978 to 1213 MHz and is paired with 108 to 117.95 MHz to provide automatic DME channeling.

All operating controls for the DME are mounted on the front panel of the DME and are described in Figure 1.

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed.



1. **READOUT WINDOW** - Displays function readout in miles (distance-to-station), minutes (time-to-station) or knots (ground speed).
2. **R-NAV INDICATOR LAMP** - The green R-NAV indicator lamp is provided to indicate the DME is coupled to an R-NAV system. Since this DME is not factory installed with an R-NAV system on Cessna airplanes, the R-NAV indicator lamp should never be illuminated. However, if an R-NAV system is coupled to the DME, and when in R-NAV mode, the R-NAV lamp will light which indicates that the distance readout is to the "way point" instead of the DME station. The DME can only give distance (Miles) in R-NAV mode.
3. **REMOTE CHANNELING SELECTOR** - This knob is held stationary by a stop when not coupled to a remote NAV receiver. When coupled to a remote NAV receiver, a stop in the selector is removed and the selector becomes a two position selector. In the first position, the DME will utilize the frequency set by the DME channeling knobs. In the second position, the MHz digits will utilize the frequency set by the NAV unit's channeling knobs.
4. **WHOLE MEGAHERTZ SELECTOR KNOB** - Selects operating frequency in 1-MHz steps between 108 and 117 MHz.
5. **FREQUENCY INDICATOR** - Shows operating frequency selected on the DME or displays remote (REM) flag to indicate DME is operating on a frequency selected by a remote NAV receiver.

Figure 1. DME 190 Operating Controls (Sheet 1 of 2)

6. **FRACTIONAL MEGAHERTZ SELECTOR KNOB** - Selects operating frequency in 50 kHz steps. This knob has two positions, one for the 0 and one for the 5.
7. **FRACTIONAL MEGAHERTZ SELECTOR KNOB** - Selects operating frequency in tenths of a Megahertz (0-9).
8. **IDENT KNOB** - Rotation of this control increases or decreases the volume of the received station's Ident signal. An erratic display, accompanied by the presence of two Ident signals, can result if the airplane is flying in an area where two stations, using the same frequency, are transmitting.
9. **DIM/PUSH TEST KNOB** -
DIM: Controls the brilliance of the readout lamp's segments. Rotate the control as desired for proper lamp illumination in the function window (The frequency window is dimmed by the aircraft's radio light dimming control).
PUSH TEST: This control is used to test the illumination of the readout lamps, with or without being tuned to a station. Press the control, a readout of 188.8 should be seen with the mode selector switch in the MIN or KNOTS position. The decimal point along with 188.8 will light in the MILES mode. When the control is released, and had the DME been channeled to a nearby station, the distance to that station will appear. If the station channeled was not in range, a "bar" readout will be seen (--.- or -- -).
10. **MODE SELECTOR SWITCH** -
OFF: Turns the DME OFF.
MILES: Allows a digital readout to appear in the window which represents slant range (in nautical miles) to or from the channeled station.
MIN: Allows a digital readout (in minutes) to appear in the window that it will take the airplane to travel the distance to the channeled station. This time is only accurate when flying directly TO the station and after the ground speed has stabilized.
KNOTS: Allows a digital readout (in knots) to appear in the window that is ground speed and is valid only after the stabilization time (approximately 2 minutes) has elapsed when flying directly TO or FROM the channeled station.

Figure 1. DME 190 Operating Controls (Sheet 2 of 2)

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO OPERATE:

- (1) Mode Selector Switch -- SELECT DME function.
- (2) Frequency Selector Knobs -- SELECT desired operating frequency and allow equipment to warm-up at least 2 minutes.

NOTE

If frequency is set on remote NAV receiver, place remote channeling selector in the REM position.

- (3) PUSH TEST Control -- PUSH and observe reading of 188.8 in function window.
- (4) DIM Control -- ADJUST.
- (5) IDENT Control -- ADJUST audio output in speaker.
- (6) Mode Selector Functions:
 - MILES Position -- Distance-to-Station is slant range in nautical miles.
 - MIN Position -- Time-to-Station when flying directly to station.
 - KNOTS Position -- Ground Speed in knots when flying directly to or from station.

CAUTION

After the DME 190 has been turned OFF, do not turn it on again for 5 seconds to allow the protective circuits to reset.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

HF TRANSCEIVER

(Type PT10-A)

SECTION 1 GENERAL

The PT10-A HF Transceiver, shown in Figure 1, is a 10-channel AM transmitter-receiver which operates in the frequency range of 2.0 to 18.0 Megahertz. The transceiver is automatically tuned to the operating frequency by a Channel Selector. The operating controls for the unit are mounted on the front panel of the transceiver. The system consists of a transceiver, antenna load box, fixed wire antenna and associated wiring.

The Channel Selector Knob determines the operating frequency of the transmitter and receiver. The frequencies of operation are shown on the frequency chart adjacent to the channel selector.

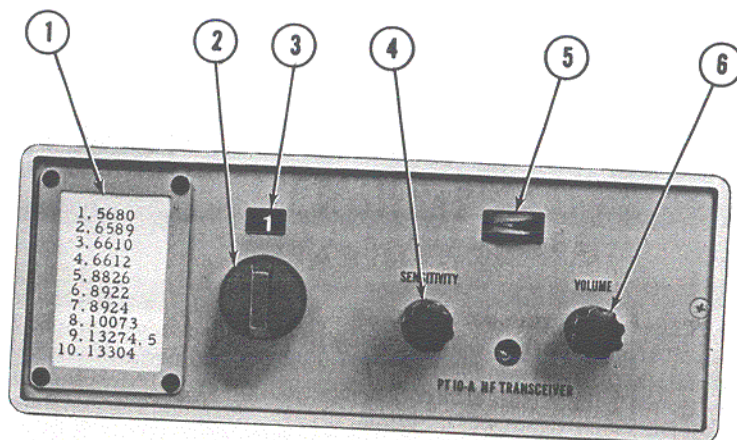
The VOLUME control incorporates the power switch for the transceiver. Clockwise rotation of the volume control turns the set on and increases the volume of audio.

The meter on the face of the transceiver indicates transmitter output.

The system utilizes the airplane microphone, headphone and speaker. When two or more radios are installed, a transmitter selector switch and a speaker-phone switch are provided.

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed.



1. **FREQUENCY CHART** - Shows the frequency of the channel in use (frequencies shown may vary and are shown for reference purposes only).
2. **CHANNEL SELECTOR** - Selects channels 1 thru 10 as listed in the frequency chart.
3. **CHANNEL READOUT WINDOW** - Displays channel selected in frequency chart.
4. **SENSITIVITY CONTROL** - Controls the receiver sensitivity for audio gain.
5. **ANTENNA TUNING METER** - Indicates the energy flowing from the transmitter into the antenna. The optimum power transfer is indicated by the maximum meter reading.
6. **ON/OFF VOLUME CONTROL** - Turns complete set on and controls volume of audio.

Figure 1. HF Transceiver (Type PT10-A)

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO OPERATE:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) SPEAKER/PHONE Switch -- SELECT desired mode.
- (3) VOLUME Control -- ON (allow equipment to warm up and adjust audio to comfortable listening level).
- (4) Frequency Chart -- SELECT desired operating frequency.
- (5) Channel Selector -- DIAL in frequency selected in step 4.
- (6) SENSITIVITY Control -- ROTATE clockwise to maximum position.

NOTE

If receiver becomes overloaded by very strong signals, back off SENSITIVITY control until background noise is barely audible.

NOTE

The antenna tuning meter indicates the energy flowing from the airplane's transmitter into the antenna. The optimum power transfer is indicated by the maximum meter reading.

- (7) To Transmit -- DEPRESS microphone switch button and speak directly into microphone.
- (8) To Receive -- RELEASE microphone switch button.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

SSB HF TRANSCEIVER

(Type ASB-125)

SECTION 1 GENERAL

The ASB-125 HF transceiver is an airborne, 10-channel, single sideband (SSB) radio with a compatible amplitude modulated (AM) transmitting-receiving system for long range voice communications in the 2 to 18 MHz frequency range. The system consists of a panel mounted receiver/exciter, a remote mounted power amplifier/power supply, an antenna coupler and an externally mounted, fixed wire, medium/high frequency antenna.

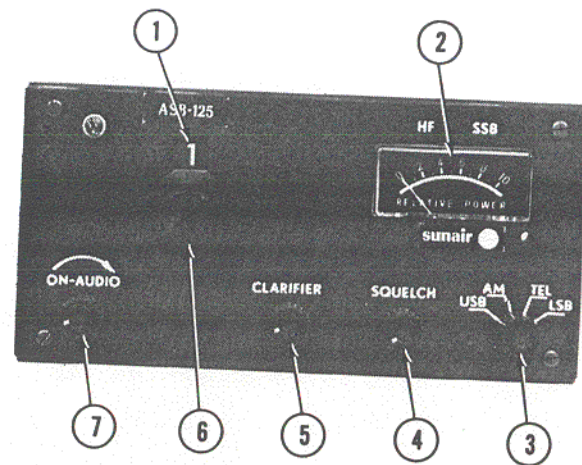
A channel selector knob determines the operating frequency of the transceiver which has predetermined crystals installed to provide the desired operating frequencies. A mode selector control is provided to supply the type of emission required for the channel, either sideband, AM or telephone for public correspondence. An audio knob, clarifier knob and squelch knob are provided to assist in audio operation during receive. In addition to the aforementioned controls, which are all located on the receiver/exciter, a meter is incorporated to provide antenna loading readouts.

The system utilizes the airplane microphone, headphone and speaker. When two or more radios are installed, a transmitter selector switch and a speaker-phone switch are provided.

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed. However, the pilot should be aware of the two following radio limitations:

- (1) For sideband operation in the United States, Canada and various



1. CHANNEL WINDOW - Displays selected operating channel.
2. RELATIVE POWER METER - Indicates relative radiated power of the power amplifier/antenna system.
3. MODE SELECTOR CONTROL - Selects one of the desired operating modes:
 - USB - Selects upper side band operation for long range voice communications.
 - AM - Selects compatible AM operation and full AM reception.
 - TEL - Selects upper sideband with reduced carrier, used for public correspondence telephone and ship-to-shore.
 - LSB - (Optional) Selects lower sideband operation (not legal in U. S., Canada and most other countries).
4. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate receiver audio. Clockwise rotation increases background noise (decreases squelch action); counterclockwise rotation decreases background noise.
5. CLARIFIER CONTROL - Used to "clarify" single sideband speech during receive while in USB mode only.
6. CHANNEL SELECTOR CONTROL - Selects desired channel. Also selects AM mode if channel frequency is 2003 kHz, 2182 kHz or 2638 kHz.
7. ON - AUDIO CONTROL - Turns set ON and controls receiver audio gain.

Figure 1. SSB HF Transceiver Operating Controls

other countries, only the upper sideband may be used. Use of lower side band is prohibited.

- (2) Only AM transmissions are permitted on frequencies 2003 kHz, 2182 kHz, and 2638 kHz. The selection of these channels will automatically select the AM mode of transmission.

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO OPERATE:

- (1) XMTR SEL Switch -- SELECT transceiver.
- (2) SPEAKER/PHONE Switch -- SELECT.
- (3) ON-AUDIO Control -- ON (allow equipment to warm up for 5 minutes for sideband or one minute for AM operation and adjust audio to comfortable listening level).
- (4) Channel Selector Control -- SELECT desired operating frequency.
- (5) Mode Selector Control -- SELECT operating mode.
- (6) Squelch Control -- ADJUST the audio gain counterclockwise for normal noise output, then slowly adjust clockwise until the receiver is silent.
- (7) Clarifier Control -- ADJUST when upper single sideband RF signal is being received for maximum clarity.
- (8) Mike Button -- DEPRESS to transmit voice communications.

NOTE

Voice communications are not available in the LSB mode.

NOTE

Lower sideband (LSB) mode is not legal in the U. S., Canada, and most other countries.

**SECTION 5
PERFORMANCE**

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT
CESSNA 400 MARKER BEACON
(Type R-402A)

**SECTION 1
GENERAL**

The system consists of a 75 MHz marker beacon receiver, three indicator lights, one speaker/phone switch, a light dimming control, an ON/OFF/VOLUME control, and a 75 MHz marker beacon antenna. In addition, on 150, 182, 206, 207, 210 and 337 series models, a HI-LO sensitivity selector switch and a press-to-test button are provided. On all 172, 177, 177RG, 180 and 185 series models, a single, three position switch is provided for HI-LO sensitivity selection or test selection.

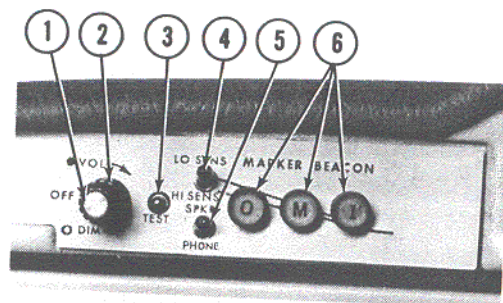
This system provides visual and aural indications of 75 MHz ILS marker beacon signals as the marker is passed. The following table lists the three most currently used marker facilities and their characteristics.

MARKER FACILITIES

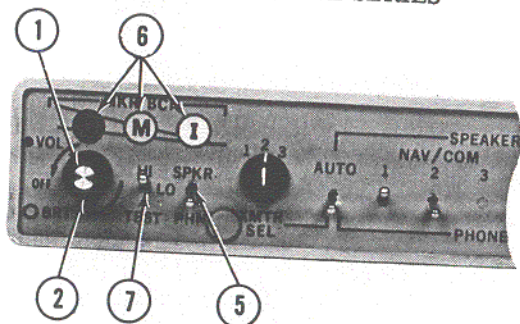
MARKER	IDENTIFYING TONE	LIGHT*
Inner	Continuous 6 dots/sec (3000 Hz)	White
Middle	Alternate dots and dashes (1300 Hz)	Amber
Outer	2 dashes/sec (400 Hz)	Blue

* When the identifying tone is keyed, the respective indicating light will blink accordingly.

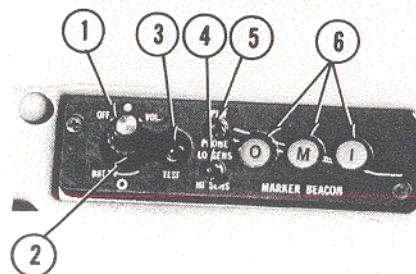
Operating controls and indicator lights are shown and described in Figure 1.



TYPICAL INSTALLATION
ON ALL 150 MODEL SERIES



TYPICAL INSTALLATION
ON ALL 172, 177, 177RG,
180 & 185 MODEL SERIES



TYPICAL INSTALLATION
ON ALL 337 MODEL SERIES

Figure 1. Cessna 400 Marker Beacon Operating Controls
and Indicator Lights (Sheet 1 of 2)

1. OFF/VOLUME CONTROL - The small, inner control turns the set on or off and adjusts the audio listening level. Clockwise rotation turns the set on and increases the audio level.
2. DIM/BRT CONTROL - The large, outer control provides light dimming for the marker lights. Clockwise rotation increases light intensity.
3. TEST SWITCH - (150, 182, 206, 207, 210 & 337 Model Series Only) When the press-to-test switch button is depressed, the marker beacon lights will illuminate, indicating the lights are operational (the test position is a lamp test function only).

NOTE

Turn the set on, and rotate the DIM control clockwise (fully on) in order to view the marker beacon lights during test.

4. LO/HI SENS SWITCH - (150, 182, 206, 207, 210 & 337 Model Series Only) In the LO position (Up), receiver sensitivity is positioned for ILS approaches. In the HI position (Down), receiver sensitivity is positioned for airway flying.
5. SPEAKER/PHONE SWITCH - Selects speaker or phone for aural reception.
6. MARKER BEACON INDICATOR LIGHTS - Indicates passage of outer, middle and inner marker beacons. The OUTER light is blue, the MIDDLE light is amber and the INNER light is white.
7. HI/LO/TEST SWITCH - (172, 177, 177RG, 180 & 185 Model Series Only) In the HI position (Up), receiver sensitivity is positioned for airway flying. In the LO position (Center), receiver sensitivity is positioned for ILS approaches. In the TEST position (Down), the marker lights will illuminate, indicating the lights are operational (the test position is a lamp test function only).

NOTE

Turn the set on, and rotate the BRIGHT control clockwise (fully on) in order to view the marker beacon lights during test. The TEST position on the switch is spring loaded to return the switch to the LO SENS position when TEST position is released.

Figure 1. Cessna 400 Marker Beacon Operating Controls
and Indicator Lights (Sheet 2 of 2)

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed.

SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed.

SECTION 4 NORMAL PROCEDURES

TO OPERATE:

- (1) OFF/VOL Control -- VOL position and adjust to desired listening level.
- (2) LO/HI SENS Switch -- SELECT HI position for airway flying or LO position for ILS approaches.
- (3) SPKR/PHONE Switch -- SELECT speaker or phone audio.
- (4) TEST Switch -- PRESS and ensure that marker beacon indicator lights are operative.

NOTE

Ensure that BRT control is on enough to view the marker beacon.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

CESSNA NAVOMATIC 200A AUTOPILOT (Type AF-295B)

SECTION 1 GENERAL

The Cessna 200A Navomatic is an all electric, single-axis (aileron control) autopilot system that provides added lateral and directional stability. Components are a computer-amplifier, a turn coordinator, an aileron actuator, and a course deviation indicator(s) incorporating a localizer reversed (BC) indicator light.

Roll and yaw motions of the airplane are sensed by the turn coordinator gyro. The computer-amplifier electronically computes the necessary correction and signals the actuator to move the ailerons to maintain the airplane in the commanded lateral attitude.

The 200A Navomatic will also capture and track a VOR or localizer course using signals from a VHF navigation receiver.

The operating controls for the Cessna 200A Navomatic are located on the front panel of the computer-amplifier, shown in Figure 1. The primary function pushbuttons (DIR HOLD, NAV CAPT, and NAV TRK), are interlocked so that only one function can be selected at a time. The HI SENS and BACK CRS pushbuttons are not interlocked so that either or both of these functions can be selected at any time.

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed. However, the following autopilot limitations should be adhered to during airplane operation:

BEFORE TAKE-OFF AND LANDING:

- (1) A/P ON-OFF Switch -- OFF.

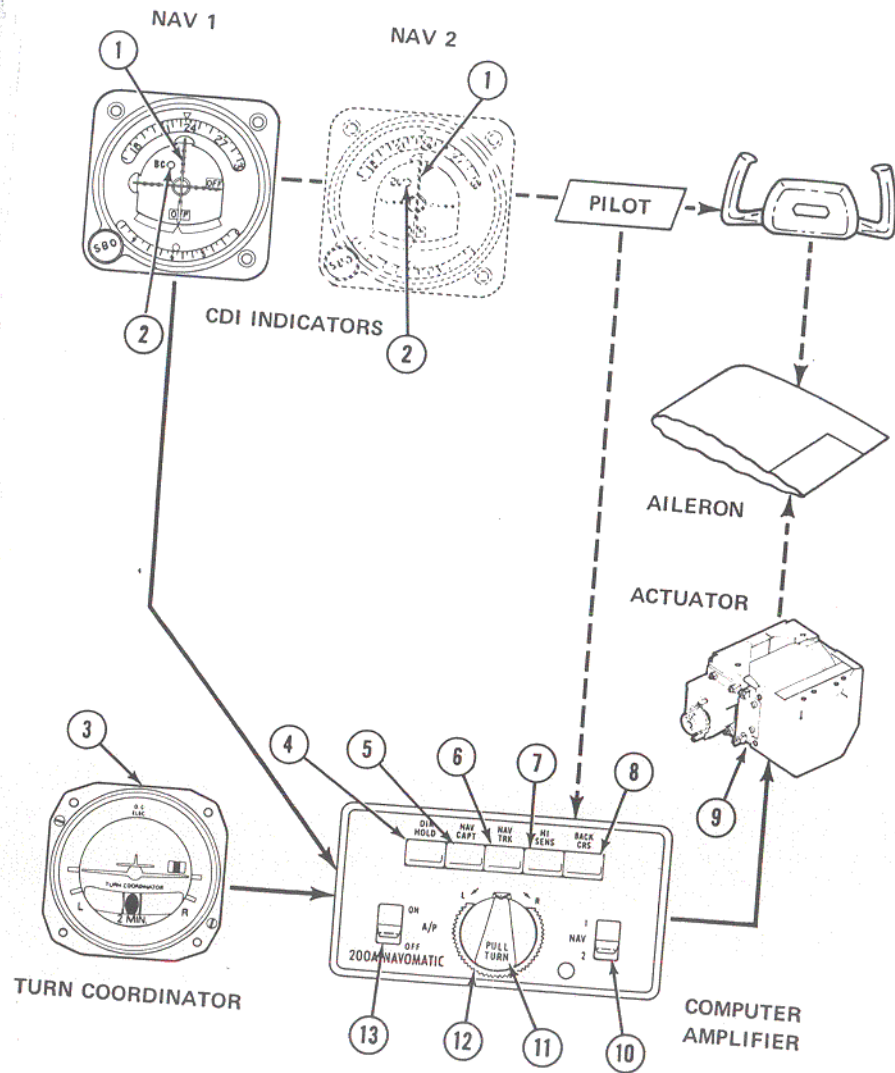


Figure 1. Cessna 200A Autopilot, Operating Controls and Indicators
(Sheet 1 of 2)

1. COURSE DEVIATION INDICATOR - Provides VOR/LOC navigation inputs to autopilot for intercept and tracking modes.
2. LOCALIZER REVERSED INDICATOR LIGHT - Amber light, labeled BC, illuminates when BACK CRS button is pushed in (engaged) and LOC frequency selected. BC light indicates course indicator needle is reversed on selected receiver (when tuned to a localizer frequency). This light is located within the CDI indicator.
3. TURN COORDINATOR - Senses roll and yaw for wings leveling and command turn functions.
4. DIR HOLD - Airplane holds direction it is flying at time button is pushed.
5. NAV CAPT - Airplane will turn to and capture selected VOR or LOC course.
6. NAV TRK - Airplane tracks selected VOR or LOC course.
7. HI SENS - During NAV CAPT or NAV TRK operation, this high sensitivity setting increases autopilot response to NAV signal to provide more precise operation during localizer approach. In low sensitivity position (pushbutton out), response to NAV signal is dampened for smoother tracking of enroute VOR radials; it also smooths out effect of course scalloping during NAV operation.
8. BACK CRS - Used with LOC operation only. With A/P switch OFF or ON, and when navigation receiver selected by NAV switch is set to a localizer frequency, it reverses normal localizer needle indication (CDI) and causes localizer reversed (BC) light to illuminate. With A/P switch ON, reverses localizer signal to autopilot.
9. ACTUATOR - The torque motor in the actuator causes the ailerons to move in the desired direction.
10. NAV - Selects NAV 1 or NAV 2 navigation receiver.
11. PULL TURN - When pulled out and centered in detent, airplane will fly wings-level; when turned to the right (R), the airplane will execute a right, standard rate turn; when turned to the left (L), the airplane will execute a left, standard rate turn. When centered in detent and pushed in, the operating mode selected by a push button is engaged.
12. TRIM - Used to trim autopilot to compensate for minor variations in aircraft trim or weight distribution. (For proper operation, the aircraft's rudder trim must be manually trimmed before the autopilot is engaged.)
13. A/P - Turns autopilot ON or OFF.

Figure 1. Cessna 200A Autopilot, Operating Controls and Indicators
(Sheet 2 of 2)

- (2) BACK CRS Button -- DISENGAGED (OUT). (Refer to Section 4 of this supplement and see Step 6 and Caution note under "NAV CAPTURE (VOR/LOC)".)

NAV CAPTURE (VOR/LOC):

- (1) Fly a manual intercept procedure if more than 15 miles from the station or more than 3 minutes from intercept.

SECTION 3 EMERGENCY PROCEDURES

TO OVERRIDE THE AUTOPILOT:

- (1) Airplane control Wheel -- ROTATE as required to override autopilot.

NOTE

The servo may be overpowered at anytime without damage.

TO TURN OFF AUTOPILOT:

- (1) A/P ON-OFF Switch -- OFF.

SECTION 4 NORMAL PROCEDURES

BEFORE TAKE-OFF AND LANDING:

- (1) A/P ON-OFF Switch -- OFF.
(2) BACK CRS Button -- OFF (see Caution note under Nav Capture).

NOTE

Periodically verify operation of amber warning light(s), labeled BC on CDI(s), by engaging BACK CRS button with a LOC frequency selected.

INFLIGHT WINGS LEVELING:

- (1) Airplane Trim -- ADJUST.
(2) PULL-TURN Knob -- PULL out and center in detent.
(3) A/P ON-OFF Switch -- ON.
(4) Autopilot TRIM Control -- ADJUST for zero turn rate.

COMMAND TURNS:

- (1) PULL-TURN Knob -- PULL and ROTATE.

DIRECTION HOLD:

- (1) PULL-TURN Knob -- PULL out and center in detent.
(2) DIR HOLD Button -- PUSH.
(3) PULL-TURN Knob -- PUSH in detent position.
(4) Autopilot TRIM Control -- READJUST to minimize heading drift.

NAV CAPTURE (VOR/LOC):

- (1) PULL-TURN Knob -- PULL out.
(2) NAV 1-2 Selector Switch -- SELECT desired VOR receiver.
(3) Nav Receiver OBS -- SET VOR course (if tracking omni).
(4) NAV CAPT Button -- PUSH.
(5) HI SENS Button -- PUSH.
(6) BACK CRS Button -- PUSH only if intercepting localizer front course outbound or back course inbound.

CAUTION

With BACK CRS button pushed in and localizer frequency selected, the CDI on selected nav radio will be reversed even when the autopilot switch is OFF.

- (7) PULL-TURN Knob -- TURN airplane parallel to course. Then PUSH for automatic intercept. If more than 15 miles from the station or more than 3 minutes from intercept, use a manual intercept procedure.
(8) NAV TRK Button -- PUSH when CDI centers and airplane is within $\pm 5^\circ$ of course heading.
(9) HI SENS Button -- DISENGAGE for omni tracking (leave ENGAGED for localizer).

NAV TRACKING (VOR/LOC):

- (1) PULL-TURN Knob -- PULL out.

- (2) NAV 1-2 Selector Switch -- SELECT desired VOR receiver.
- (3) Nav Receiver OBS -- SET VOR course (if tracking omni).
- (4) NAV TRK Button -- PUSH.
- (5) HI SENS Button -- PUSH for localizer; disengage for omni.
- (6) BACK CRS Button -- PUSH only if tracking localizer front course outbound or back course inbound.

CAUTION

See caution paragraph under Nav Capture.

- (7) PULL-TURN Knob -- PUSH when airplane is on course and on heading.
- (8) Autopilot TRIM Control -- READJUST as required to maintain track.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed.

SUPPLEMENT

CESSNA NAVOMATIC 300A AUTOPILOT (Type AF-395A)

SECTION 1 GENERAL

The Cessna 300A Navomatic is an all electric, single-axis (aileron control) autopilot system that provides added lateral and directional stability. Components are a computer-amplifier, a turn coordinator, a directional gyro, an aileron actuator and a course deviation indicator(s) incorporating a localized reversed (BC) indicator light.

Roll and yaw motions of the airplane are sensed by the turn coordinator gyro. Deviations from the selected heading are sensed by the directional gyro. The computer-amplifier electronically computes the necessary correction and signals the actuator to move the ailerons to maintain the airplane in the commanded lateral attitude or heading.

The 300A Navomatic will also intercept and track a VOR or localizer course using signals from a VHF navigation receiver.

The operating controls for the Cessna 300A Navomatic are located on the front panel of the computer-amplifier and on the directional gyro, shown in Figure 1. The primary function pushbuttons (HDG SEL, NAV INT, and NAV TRK), are interlocked so that only one function can be selected at a time. The HI SENS and BACK CRS pushbuttons are not interlocked so that either or both of these functions can be selected at any time.

SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equip-

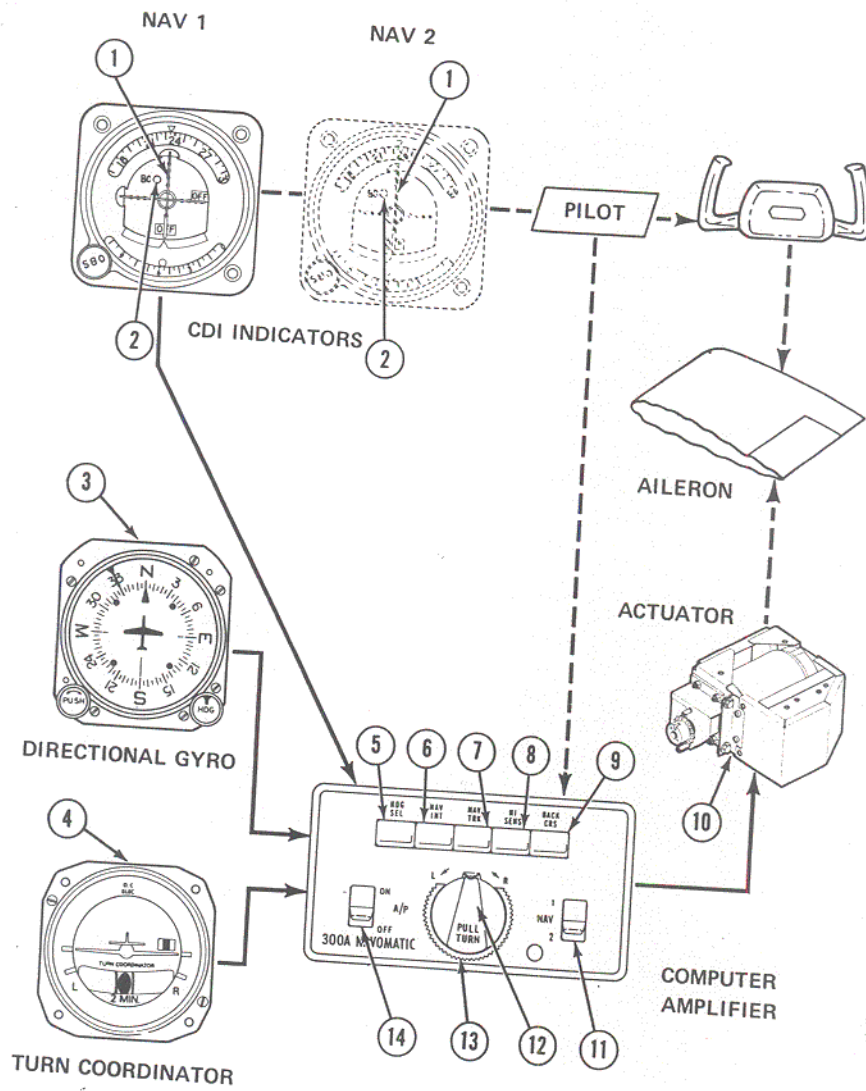


Figure 1. Cessna 300A Autopilot, Operating Controls and Indicators
(Sheet 1 of 2)

1. COURSE DEVIATION INDICATOR - Provides VOR/LOC navigation inputs to autopilot for intercept and tracking modes.
2. LOCALIZER REVERSED INDICATOR LIGHT - Amber light, labeled BC, illuminates when BACK CRS button is pushed in (engaged) and LOC frequency selected. BC light indicates course indicator needle is reversed on selected receiver (when tuned to a localizer frequency). This light is located within the CDI indicator.
3. DIRECTIONAL GYRO INDICATOR - Provides heading information to the autopilot for heading intercept and hold.
4. TURN COORDINATOR - Senses roll and yaw for wings leveling and command turn functions.
5. HDG SEL - Aircraft will turn to and hold heading selected by the heading "bug" on the directional gyro.
6. NAV INT - When heading "bug" on DG is set to selected course, aircraft will turn to and intercept selected VOR or LOC course.
7. NAV TRK - When heading "bug" on DG is set to selected course, aircraft will track selected VOR or LOC course.
8. HI SENS - During NAV INT or NAV TRK operation, this high sensitivity setting increases autopilot response to NAV signal to provide more precise operation during localizer approach. In low-sensitivity position (pushbutton out), response to NAV signal is dampened for smoother tracking of enroute VOR radials; it also smooths out effect of course scalloping during NAV operation.
9. BACK CRS - Used with LOC operation only. With A/P switch OFF or ON, and when navigation receiver selected by NAV switch is set to a localizer frequency, it reverses normal localizer needle indication (CDI) and causes localizer reversed (BC) light to illuminate. With A/P switch ON, reverses localizer signal to autopilot.
10. ACTUATOR - The torque motor in the actuator causes the ailerons to move in the desired direction.
11. NAV - Selects NAV 1 or NAV 2 navigation receiver.
12. PULL TURN - When pulled out and centered in detent, airplane will fly wings-level; when turned to the right (R), the airplane will execute a right, standard rate turn; when turned to the left (L), the airplane will execute a left, standard rate turn. When centered in detent and pushed in, the operating mode selected by a push button is engaged.
13. TRIM - Used to trim autopilot to compensate for minor variations in aircraft trim or lateral weight distribution. (For proper operation, the aircraft's rudder trim must be manually trimmed before the autopilot is engaged.)
14. A/P - Controls primary power to autopilot servo (turns autopilot ON or OFF).

Figure 1. Cessna 300A Autopilot, Operating Controls and Indicators
(Sheet 2 of 2)

- (11) HI SENS Button -- Disengage for omni tracking (leave HI SENS Button engaged for localizer).

NAV TRACKING (VOR/LOC):

- (1) PULL-TURN Knob -- PULL out.
- (2) NAV 1-2 Selector Switch -- SELECT desired VOR receiver.
- (3) Nav Receiver OBS -- SET VOR course (if tracking omni).
- (4) Heading Selector Knob -- ROTATE bug to selected course (VOR or localizer).
- (5) Directional Gyro -- SET for magnetic heading.
- (6) NAV TRK Button -- PUSH.
- (7) HI SENS Button -- PUSH for localizer; disengage for omni.
- (8) BACK CRS Button -- PUSH only if tracking localizer front course outbound or back course inbound.

CAUTION

See caution paragraph under Nav Intercept.

- (9) PULL-TURN Knob -- PUSH when CDI is within 1 dot and airplane is within $\pm 10^\circ$ of course heading.

NOTE

If CDI remains steadily off center, readjust autopilot lateral trim control as required.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionics equipment is installed.

ment is installed. However, the following autopilot limitations should be adhered to during airplane operation:

BEFORE TAKE-OFF AND LANDING:

- (1) A/P ON-OFF Switch -- OFF.
- (2) BACK CRS Button -- DISENGAGED (OUT). (Refer to Section 4 of this supplement and see Step 8 and Caution note under "NAV INTERCEPT (VOR/LOC)".)

SECTION 3 EMERGENCY PROCEDURES

TO OVERRIDE THE AUTOPILOT:

- (1) Airplane Control Wheel -- ROTATE as required to override autopilot.

NOTE

The servo may be overpowered at any time without damage.

TO TURN OFF AUTOPILOT:

- (1) A/P ON-OFF Switch -- OFF.

SECTION 4 NORMAL PROCEDURES

BEFORE TAKE-OFF AND LANDING:

- (1) A/P ON-OFF Switch -- OFF.
- (2) BACK CRS Button -- OFF (see caution note under Nav Intercept).

NOTE

Periodically verify operation of amber warning light(s), labeled BC on CDI(s), by engaging BACK CRS button with a LOC frequency selected.

INFLIGHT WINGS LEVELING:

- (1) Airplane Trim -- ADJUST.

PULL-TURN Knob -- PULL out and center in detent.
A/P ON-OFF Switch -- ON.
Autopilot TRIM Control -- ADJUST for zero turn rate.

HEADING SELECT:

- (1) Directional Gyro -- SET to airplane magnetic heading.
- (2) Heading Selector Knob -- ROTATE bug to desired heading.
- (3) Heading Select Button -- PUSH.
- (4) PULL-TURN Knob -- PUSH.

NOTE

Airplane will return automatically to selected heading.
If airplane fails to hold the precise heading, readjust
autopilot lateral TRIM knob as required or disengage
autopilot and reset manual trim.

NAV INTERCEPT (VOR/LOC):

- (1) PULL-TURN Knob -- PULL out.
- (2) NAV 1-2 Selector Switch -- SELECT.
- (3) Nav Receiver OBS -- SET VOR course (if tracking omni).
- (4) Heading Selector Knob -- ROTATE bug to selected course (VOR or localizer).
Directional Gyro -- SET for magnetic heading.
NAV INT Button -- PUSH.
HI SENS Button -- PUSH for localizer and "close-in" omni intercepts.
BACK CRS Button -- PUSH only if intercepting localizer front or back course inbound.

CAUTION

With BACK CRS button pushed in and localizer frequency selected, the CDI on selected nav radio will be reversed even when the autopilot switch is OFF.

PULL-TURN Knob -- PUSH.

NOTE

Airplane will automatically turn to a 45° intercept angle.

- (1) NAV TRK Button -- PUSH when CDI centers (within one dot) and airplane is within ±10° of course heading.