

# SECTION 9 SUPPLEMENTS

## (Optional Systems Description & Operating Procedures)

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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

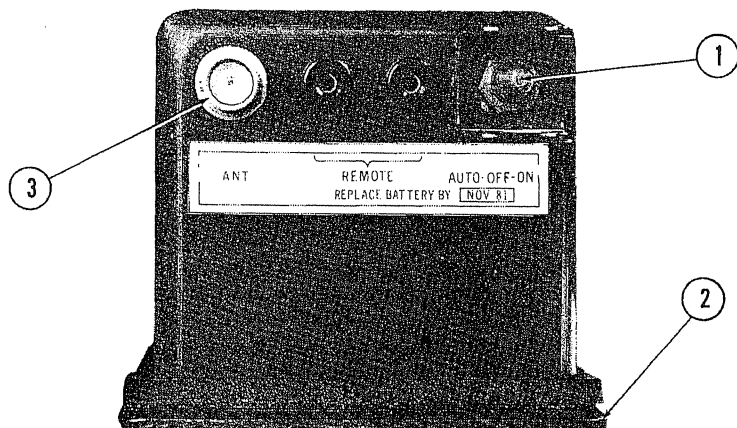
### GENERAL

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 omni-directional 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 ELT supplied in domestic aircraft transmits on both distress frequencies simultaneously at 75 mw rated power output for 48 continuous hours in the temperature range of -40°F to +131°F (-40°C to +55°C). The ELT unit in export aircraft transmits on 121.5 MHz at 25 mw rated power output for 100 continuous hours in the temperature range of -40°F to +131°F (-40°C to +55°C).

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.



1. 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.
- AUTO - Activates transmitter only when "g" switch receives 5g or more impact.

2. COVER - Removable for access to battery pack.

3. ANTENNA RECEPTACLE - Connects to antenna mounted on top of 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 selector 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 AUTO 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 AUTO 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 NAV/COM

### (COM/VOR, No LOC - 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 needle 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.

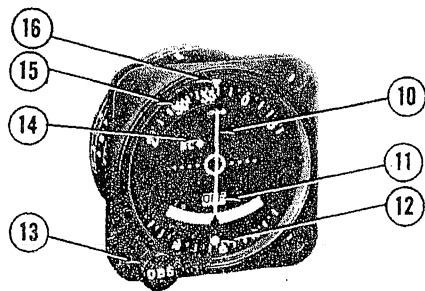
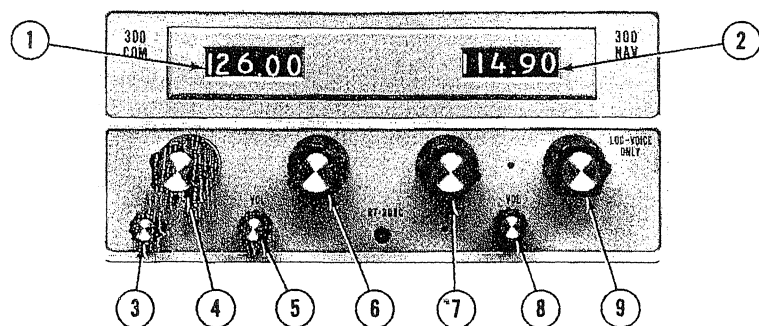
The communication receiver-transmitter receives and transmits signals between 118.00 and 135.95 MHz in 50 kHz steps. The navigation receiver receives and interprets VHF omnidirectional range (VOR) signals between 108.00 and 117.95 MHz. Although localizer signals (all odd-tenth frequencies between 108.1 and 111.9 MHz) can also be received, the navigation receiver does not include the necessary circuits to interpret the signals for localizer indications. 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 communication 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. Clockwise rotation increases audio level.
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 fractional frequency in 0.05 MHz steps between 0.00 and 0.95 MHz.
10. COURSE DEVIATION POINTER - Indicates 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 (shows OFF when localizer frequency is selected). When "OFF" position disappears, indicator shows whether selected course is "TO" or "FROM" VOR 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 - Rotated by OBS to select course at index.
16. COURSE INDEX - Indicates selected VOR course.

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

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 avionic equipment is installed.

## SECTION 4 NORMAL PROCEDURES

### COMMUNICATIONS TRANSCEIVER OPERATION:

- (1) OFF/VOL Control -- TURN ON and adjust to desired listening level.
- (2) XMTR SEL Switch -- SET to desired transceiver.
- (3) SPEAKER/PHONE (or AUTO) Switch -- SET to desired mode.
- (4) COM Frequency Selector Knobs -- SELECT desired operating frequency.
- (5) SQ Control -- ROTATE counterclockwise to decrease background noise as required.
- (6) Mike Button:
  - a. To Transmit -- DEPRESS and SPEAK into microphone.
  - b. To Receive -- RELEASE.

### NAVIGATION RECEIVER OPERATION:

- (1) COM OFF/VOL Control -- TURN ON.
- (2) SPEAKER/PHONE (or AUTO) Switch -- SET to desired mode.
- (3) NAV Frequency Selector Knobs -- SELECT desired operating frequency.
- (4) NAV VOL Control -- ADJUST to desired listening level.
- (5) OBS Knob -- SELECT desired course.

## SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

## SUPPLEMENT

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

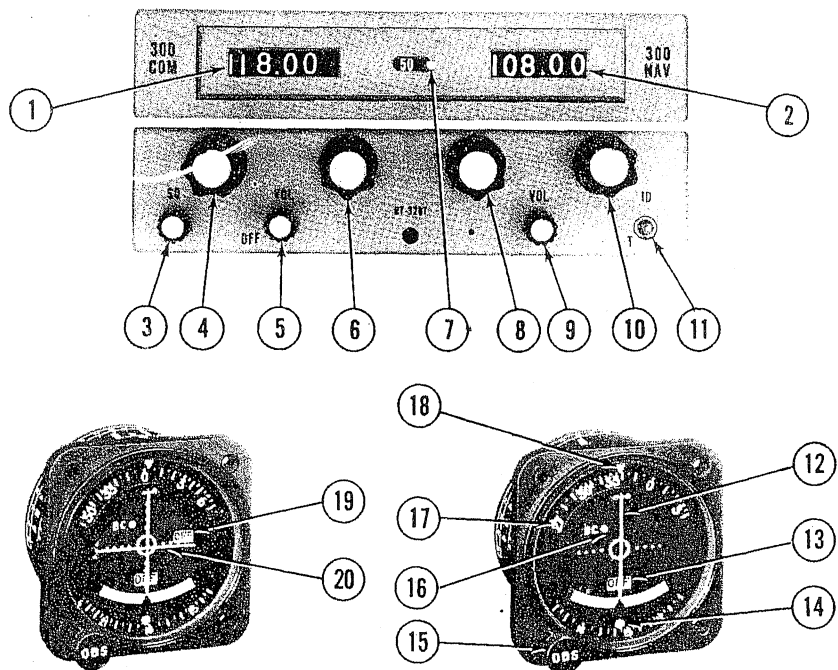
## SECTION 1 GENERAL

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 deviation indicator (CDI). 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 optional back-course operation is selected. Each control function is described in Figure 1, and the audio control panel supplied with this equipment is shown and described in Section 7 of this handbook.



1. RECEIVER-TRANSMITTER FREQUENCY INDICATOR.
2. NAVIGATION RECEIVER FREQUENCY INDICATOR.
3. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate communication 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 (7).

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. As shown in Figure 1, selected Com frequency is 118.000 MHz. With the switch in the other position, 118.0 2 is 118.025 MHz or 118.0 7 is 118.075 MHz.

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 paired glide slope frequency or DME channel.
11. COMBINED IDENTIFIER SIGNAL SELECTOR AND VOR SELF-TEST SELECTOR SWITCH (ID-T SWITCH) - With VOR or LOC station 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 deviation from selected omni bearing or localizer centerline.
13. OFF/TO-FROM 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 - During LOC operation, when optional Back-Course operation is selected, amber lamp illuminates to alert the pilot that CDI indication is reversed.
17. BEARING DIAL - Rotated by OBS to select course at index.
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 ±100 RPM (or 1800 ±100 RPM with a three bladed propeller) during ILS approaches to avoid oscillations of the glide slope deviation pointer caused by propeller interference.

## SECTION 3 EMERGENCY PROCEDURES

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

## SECTION 4 NORMAL PROCEDURES

### COMMUNICATIONS TRANSCEIVER OPERATION:

- (1) OFF/VOL Control -- TURN ON and adjust to desired listening level.
- (2) XMTR SEL Switch -- SET to desired transceiver.
- (3) SPEAKER PHONE (or AUTO) Switch -- SET to desired mode.
- (4) 50-25 Fractional MHz Selector Switch -- SELECT desired frequency (does not affect navigation frequencies).
- (5) COM Frequency Selector Knobs -- SELECT desired operating frequency.
- (6) SQ Control -- ROTATE counterclockwise to decrease background noise as required.
- (7) Mike Button:
  - a. To Transmit -- DEPRESS and SPEAK into microphone.
  - b. To Receive -- RELEASE.

### NAVIGATION RECEIVER OPERATION:

- (1) COM OFF/VOL Control -- TURN ON.
- (2) SPEAKER/PHONE (or AUTO) Switch -- SET to desired mode.
- (3) NAV Frequency Selector Knobs -- SELECT desired operating frequency.

- (4) NAV VOL Control -- ADJUST to desired audio level.
- (5) ID-T Switch:
  - a. To Identify Station -- SET to ID to hear navigation station identifier (Morse Code) signal.
  - b. To Filter Out Station Identifier Signal -- SET to CENTER (unmarked) position to include filter in audio circuit.
- (6) QBS Knob -- SELECT desired course.

### TO SELF TEST VOR NAVIGATION CIRCUITS:

- (1) COM OFF/VOL Control -- TURN ON.
- (2) NAV Frequency Selector Switches -- SELECT usable VOR station signal.
- (3) OBS Knob -- SET for 0° course at index; CDI pointer centers or deflects left or right, depending on bearing of signal; OFF/TO-FROM indicator shows TO or FROM.
- (4) ID-T Switch -- PRESS to T and HOLD at T; CDI pointer should center and OFF/TO-FROM indicator should show FROM.
- (5) OBS Knob -- TURN to displace course approximately 10° to either side of 0° (while holding ID-T switch at T); CDI pointer should deflect full scale in direction corresponding to course displacement. OFF/TO-FROM indicator should still show FROM.

### 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. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.



## SUPPLEMENT

### CESSNA 300 NAV/COM (720-Channel - Type RT-385A)

#### SECTION 1

#### GENERAL

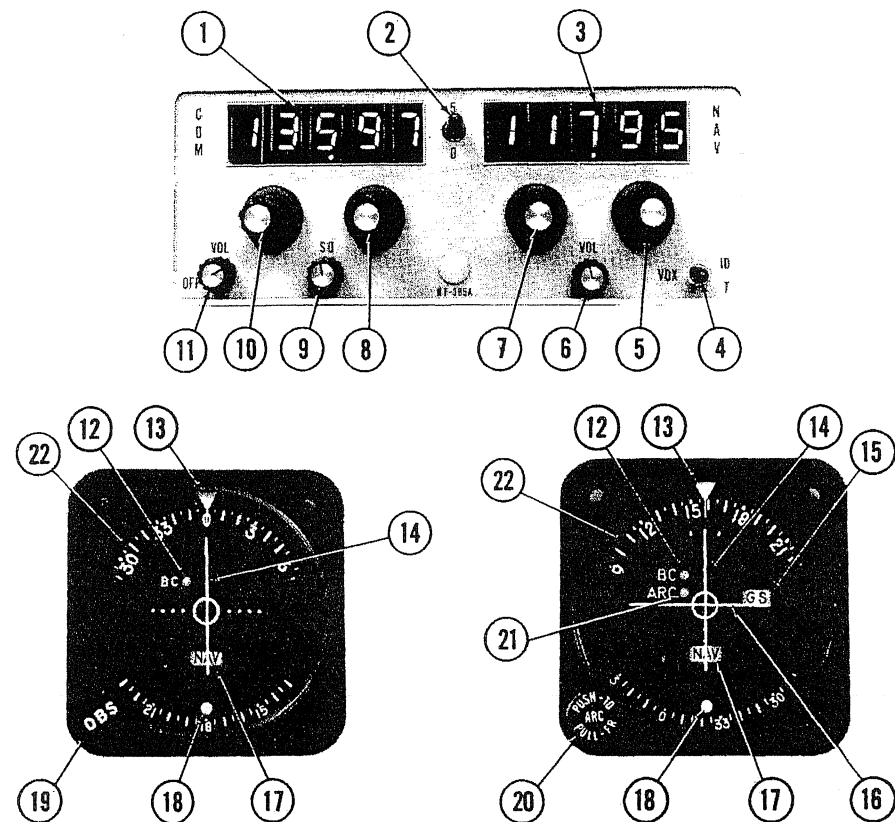
The Cessna 300 Nav/Com (Type RT-385A), shown in figure 1, consists of a panel-mounted receiver-transmitter and a single or dual-pointer remote course deviation indicator.

The set includes a 720-channel VHF communications receiver-transmitter and a 200-channel VHF navigation receiver, both of which may be operated simultaneously. The communications receiver-transmitter receives and transmits signals between 118.000 and 135.975 MHz in 25-kHz steps. The navigation receiver receives omni and localizer signals between 108.00 and 117.95 MHz in 50-kHz steps. The circuits required to interpret the omni and localizer signals are located in the course deviation indicator. Both the communications and navigation operating frequencies are digitally displayed by incandescent readouts on the front panel of the Nav/Com.

A DME receiver-transmitter or a glide slope receiver, or both, may be interconnected with the Nav/Com set for automatic selection of the associated DME or glide slope 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.

The course deviation indicator includes either a single-pointer and related NAV flag for VOR/LOC indication only, or dual pointers and related NAV and GS flags for both VOR/LOC and glide slope indications. Both types of course deviation indicators incorporate a back-course lamp (BC) which lights when optional back course (reversed sense) operation is selected. Both types may be provided with Automatic Radial Centering which, depending on how it is selected, will automatically indicate the bearing TO or FROM the VOR station.

All controls for the Nav/Com, except the standard omni bearing selector (OBS) knob or the optional automatic radial centering (ARC) knob located on the course deviation indicator, are mounted on the front panel of



1. COMMUNICATION OPERATING FREQUENCY READOUT (Third-decimal-place is shown by the position of the "5-0" switch).
2. 5-0 SWITCH - Part of Com Receiver-Transmitter Fractional MHz Frequency Selector. In "5" position, enables Com frequency readout to display and Com Fractional MHz Selector to select frequency in .05-MHz steps between .025 and .975 MHz. In "0" position, enables COM frequency readout to display and Com Fractional MHz Selector to select frequency in .05-MHz steps between .000 and .950 MHz.

NOTE

The "5" or "0" may be read as the third decimal digit, which is not displayed in the Com fractional frequency display.

Figure 1. Cessna 300 Nav/Com (Type RT-385A), Operating Controls and Indicators (Sheet 1 of 3)

3. NAVIGATION OPERATING FREQUENCY READOUT.
4. ID-VOX-T SWITCH - With VOR or LOC station selected, in ID position, station identifier signal is audible; in VOX (Voice) position, identifier signal is suppressed; in T (Momentary On) position, the VOR navigational self-test function is selected.
5. NAVIGATION RECEIVER FRACTIONAL MEGAHERTZ SELECTOR - Selects Nav frequency in .05-MHz steps between .00 and .95 MHz; simultaneously selects paired glide slope frequency and DME channel.
6. NAV VOL CONTROL - Adjusts volume of navigation receiver audio.
7. NAVIGATION RECEIVER MEGAHERTZ SELECTOR - Selects NAV frequency in 1-MHz steps between 108 and 117 MHz; simultaneously selects paired glide slope frequency and DME channel.
8. COMMUNICATION RECEIVER-TRANSMITTER FRACTIONAL MEGAHERTZ SELECTOR - Depending on position of 5-0 switch, selects COM frequency in .05-MHz steps between .000 and .975 MHz. The 5-0 switch identifies the last digit as either 5 or 0.
9. SQUELCH CONTROL - Used to adjust signal threshold necessary to activate COM receiver audio. Clockwise rotation increases background noise (decreases squelch action); counterclockwise rotation decreases background noise.
10. COMMUNICATION RECEIVER-TRANSMITTER MEGAHERTZ SELECTOR - Selects COM frequency in 1-MHz steps between 118 and 135 MHz.
11. COM OFF-VOL CONTROL - Combination on/off switch and volume control; turns on NAV/COM set and controls volume of communications receiver audio.
12. BC LAMP - Amber light illuminates when the autopilot or reverse sense option is installed and the reverse sense switch or autopilot's back-course function is engaged; indicates course deviation pointer is reversed on selected receiver when tuned to a localizer frequency.
13. COURSE INDEX - Indicates selected VOR course.
14. COURSE DEVIATION POINTER - Indicates course deviation from selected omni course or localizer centerline.
15. GLIDE SLOPE "GS" FLAG - When visible, red GS flag indicates unreliable glide slope signal or improperly operating equipment. Flag disappears when a reliable glide slope signal is being received.
16. GLIDE SLOPE DEVIATION POINTER - Indicates deviation from ILS glide slope.
17. NAV/TO-FROM INDICATOR - Operates only with a VOR or localizer signal. Red NAV position (Flag) indicates unusable signal. With usable VOR signal, indicates whether selected course is TO or FROM station. With usable localizer signal, shows TO.

Figure 1. Cessna 300 Nav/Com (Type RT-385A), Operating Controls and Indicators (Sheet 3 of 3)

18. RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.
19. OMNI BEARING SELECTOR (OBS) - Rotates course card to select desired course.
20. AUTOMATIC RADIAL CENTERING (ARC - PUSH-TO/PULL-FR) SELECTOR - In center detent, functions as conventional OBS. Pushed to inner (Momentary On) position, turns OBS course card to center course deviation pointer with a TO flag, then returns to conventional OBS selection. Pulled to outer detent, continuously drives OBS course card to indicate bearing from VOR station, keeping course deviation pointer centered, with a FROM flag. ARC function will not operate on localizer frequencies.
21. AUTOMATIC RADIAL CENTERING (ARC) LAMP - Amber light illuminates when Automatic Radial Centering is in use.
22. COURSE CARD - Indicates selected VOR course under course index.

Figure 1. Cessna 300 Nav/Com (Type RT-385A), Operating Controls and Indicators (Sheet 2 of 3)

the receiver-transmitter. In addition, when two or more radios are installed, aircraft mounted transmitter selector and speaker/phone switches 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 that on many Cessna airplanes equipped with the windshield mounted glide slope antenna, pilots should avoid use of  $2700 \pm 100$  RPM on airplanes equipped with a two-bladed propeller or  $1800 \pm 100$  RPM on airplanes equipped with a three-bladed propeller during ILS approaches to avoid oscillations of the glide slope deviation pointer caused by propeller interference.

## SECTION 3 EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when this avionic equipment is installed. However, if the frequency readouts fail, the radio will remain operational on the last frequency selected. The frequency controls should not be moved due to the difficulty of obtaining a known frequency under this condition.

## SECTION 4 NORMAL PROCEDURES

### COMMUNICATION RECEIVER-TRANSMITTER OPERATION:

1. COM OFF/VOL Control -- TURN ON; adjust to desired audio level.
2. XMTR SEL Switch -- SET to desired 300 Nav/Com (on audio control panel).
3. SPEAKER/PHONE (or AUTO) Switch -- SET to desired mode (on audio control panel).
4. 5-0 Fractional MHz Selector Switch -- SELECT desired operating frequency (does not affect navigation frequencies).
5. COM Frequency Selector Switches -- SELECT desired operating frequency.
6. SQ Control -- ROTATE counterclockwise to decrease background noise as required.

7. Mike Button:  
a. To Transmit -- DEPRESS and SPEAK into microphone.

## NOTE

Sidetone may be selected on all models except 152 models by placing the AUTO selector switch in either the SPEAKER or PHONE positions. On 152 models, sidetone is constant in both the SPEAKER and PHONE positions. However, the 152 models have a SIDETONE VOL control that may be used to adjust or suppress speaker sidetone.

- b. To Receive -- RELEASE mike button.

## NAVIGATION OPERATION:

1. COM OFF/VOL Control -- TURN ON.
2. SPEAKER/PHONE (or AUTO) Switch -- SET to desired mode (on audio control panel).
3. NAV Frequency Selector Knobs -- SELECT desired operating frequency.
4. NAV VOL -- ADJUST to desired audio level.
5. ID-VOX-T Switch:
  - a. To Identify Station -- SET to ID to hear navigation station identifier signal.
  - b. To Filter Out Station Identifier Signal -- SET to VOX to include filter in audio circuit.
6. ARC PUSH-TO/PULL-FROM Knob (If Applicable):
  - a. To Use As Conventional OBS -- PLACE in center detent and select desired course.
  - b. To Obtain Bearing TO VOR Station -- PUSH (ARC/PUSH-TO) knob to inner (momentary on) position.

## NOTE

ARC lamp will illuminate amber while the course card is moving to center with the course deviation pointer. After alignment has been achieved to reflect bearing to VOR, automatic radial centering will automatically shut down, causing the ARC lamp to go out.

- c. To Obtain Continuous Bearing FROM VOR Station -- PULL (ARC/PULL-FR) knob to outer detent.

## NOTE

ARC lamp will illuminate amber, OBS course card will

turn to center the course deviation pointer with a FROM flag to indicate bearing from VOR station.

7. OBS Knob (If Applicable) -- SELECT desired course.

## VOR SELF-TEST OPERATION:

1. COM OFF/VOL Control -- TURN ON.
2. NAV Frequency Selector Switches -- SELECT usable VOR station signal.
3. OBS Knob -- SET for 0° course at course index; course deviation pointer centers or deflects left or right, depending on bearing of signal; NAV/TO-FROM indicator shows TO or FROM.
4. ID/VOX/T Switch -- PRESS to T and HOLD at T; course deviation pointer centers and NAV/TO-FROM indicator shows FROM.
5. OBS Knob -- TURN to displace course approximately 10° to either side of 0° (while holding ID/VOX/T to T). Course deviation pointer deflects full scale in direction corresponding to course displacement. NAV/TO-FROM indicator shows FROM.
6. ID/VOX/T Switch -- RELEASE for normal 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. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

## SUPPLEMENT

### CESSNA 300 ADF

(Type R-546E)

#### SECTION 1

#### GENERAL

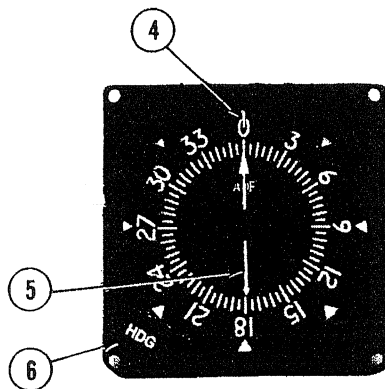
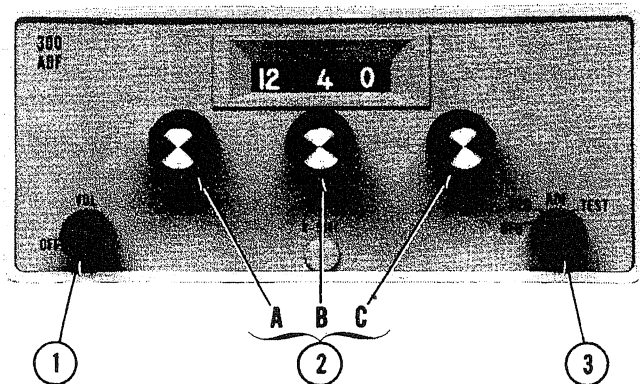
The Cessna 300 ADF is a panel-mounted, digitally tuned automatic direction finder. It is designed to provide continuous 1 kHz digital tuning in the frequency range of 200 kHz to 1,699 kHz and eliminates the need for mechanical band switching. The system is comprised of a receiver, loop antenna, bearing 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 300 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 300 ADF uses only the sense antenna and operates as a conventional low-frequency receiver.

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 CONTROL - 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.

3. FUNCTION SWITCH:

BFO: Selects operation 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: Selects operation as standard communication receiver using only sense antenna.

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, as selected by HDG control.
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 of radio signal.
6. HEADING CONTROL (HDG) - Rotates card to set in relative, magnetic, or true bearing information.

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

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.
- (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.

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. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

**SUPPLEMENT**

**CESSNA 300 TRANSPONDER**  
**(Type RT-359A)**

**AND**

**OPTIONAL ENCODING ALTIMETER**  
**(Type EA-401A)**

**SECTION 1**

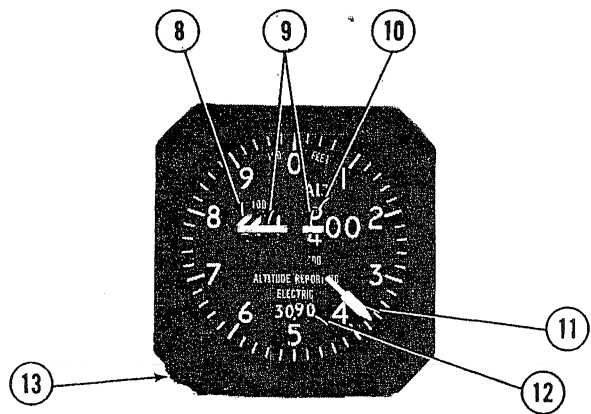
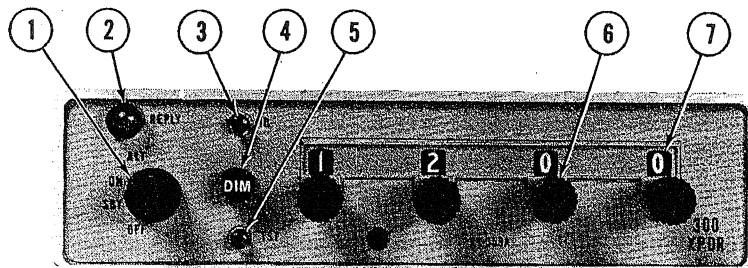
**GENERAL**

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, on the control center's radar-scope more readily.

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 identification) and Mode C (altitude reporting) interrogations on a selective reply basis on any of 4,096 information code selections. When an optional panel-mounted EA-401A Encoding Altimeter (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 altimeter setting knob, are located on the front panel of the unit. The altimeter setting knob is located on the encoding altimeter. Functions of the operating controls are described in Figure 1.





1. **FUNCTION SWITCH** - Controls application of power and selects transponder operating mode, as follows:  
 OFF - Turns set off.  
 SBY - Turns set on for equipment warm-up.  
 ON - Turns set on and enables transponder to transmit Mode A (aircraft identification) reply pulses.  
 ALT - Turns set on and enables transponder to transmit either Mode A (aircraft identification) reply pulses or Mode C (altitude reporting) pulses selected automatically by the interrogating signal.
2. **REPLY LAMP** - Lamp flashes to indicate transmission of reply pulses; glows steadily to indicate transmission of IDENT pulse or satisfactory self-test operation. (Reply Lamp will also glow steadily during initial warm-up period.)

Figure 1. Cessna 300 Transponder and Encoding Altimeter (Sheet 1 of 2)

3. **IDENT (ID) 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 (DIM) CONTROL** - Allows pilot to control brilliance of reply lamp.
5. **SELF-TEST (TST) SWITCH** -- When depressed, causes transponder to generate a self-interrogating signal to provide a check of transponder operation. (Reply Lamp will glow steadily to verify self test operation.)
6. **REPLY-CODE SELECTOR KNOBS (4)** - Select assigned Mode A reply code.
7. **REPLY-CODE INDICATORS (4)** - Display selected Mode A reply code.
8. **1000-FOOT DRUM TYPE INDICATOR** - Provides digital altitude readout in 1000-foot increments between -1000 feet and +35,000 feet. When altitude is below 10,000 feet, a diagonally striped flag appears in the 10,000 foot window.
9. **OFF INDICATOR WARNING FLAG** - Flag appears across altitude readout when power is removed from the altimeter to indicate that readout is not reliable.
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. **ALTIMETER SETTING SCALE - DRUM TYPE** - Indicates selected altimeter setting in the range of 27.9 to 31.0 inches of mercury on the standard altimeter or 950 to 1050 millibars on the optional altimeter.
13. **ALTIMETER SETTING KNOB** - Dials in desired altimeter setting in the range of 27.9 to 31.0 inches of mercury on the standard altimeter or 950 to 1050 millibars on the optional altimeter.

Figure 1. Cessna 300 Transponder and Encoding Altimeter (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

TO TRANSMIT AN EMERGENCY SIGNAL:

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Knobs -- SELECT 7700 operating code.
- (3) ID Switch -- DEPRESS then RELEASE to effect immediate identification of aircraft on ground controller's display.

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF ALL COMMUNICATIONS (WHEN IN A CONTROLLED ENVIRONMENT):

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Knobs -- SELECT 7700 operating code for 1 minute; then SELECT 7600 operating code for 15 minutes and then REPEAT this procedure at same intervals for remainder of flight.
- (3) ID Switch -- DEPRESS then RELEASE at intervals to effect immediate identification of aircraft on ground controller's display.

## SECTION 4 NORMAL PROCEDURES

BEFORE TAKEOFF:

- (1) Function Switch -- SBY.

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

- (1) Reply-Code Selector Knobs -- 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 REPORTING) CODES IN FLIGHT:

- (1) Off Indicator Warning Flag -- VERIFY that flag is out of view on encoding altimeter.
- (2) Altitude Encoder Altimeter Setting Knob -- SET IN assigned local altimeter setting.
- (3) Reply-Code Selector Knobs -- SELECT assigned code.
- (4) 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 by the transponder for altitude squawk and conversion to indicated altitude is done in ATC computers. Altitude squawked will only agree with indicated altitude when the local altimeter setting in use by the ground controller is set in the encoding altimeter.

- (5) 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 or ALT.

- (3) TST Button -- DEPRESS and HOLD (reply lamp should light with full brilliance regardless of DIM control setting).
- (4) TST Button -- Release for normal operation.

## SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

# SUPPLEMENT

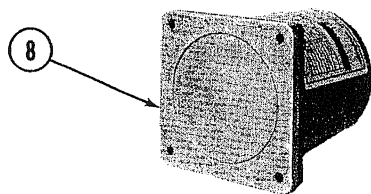
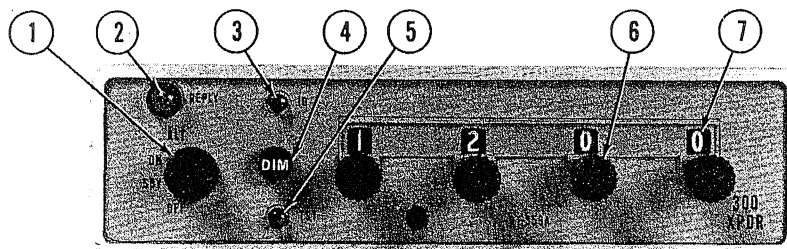
## CESSNA 300 TRANSPONDER (Type RT-359A) AND OPTIONAL ALTITUDE ENCODER (BLIND)

### 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, on the control center's radarscope more readily.

The Cessna 300 Transponder system consists of a panel-mounted unit and an externally-mounted antenna. The transponder receives interrogation pulse signals on 1030 MHz and transmits pulse-train reply signals on 1090 MHz. The transponder is capable of replying to Mode A (aircraft identification) and also Mode C (altitude reporting) when coupled to an optional altitude encoder system. The transponder is capable of replying on both modes of interrogation on a selective reply basis on any of 4,096 information code selections. The optional altitude encoder system (not part of a standard 300 Transponder system) required for Mode C (altitude reporting) operation consists of a completely independent remote-mounted digitizer that is connected to the static system and supplies encoded altitude information to the transponder. When the altitude encoder system is coupled to the 300 Transponder system, altitude reporting capabilities are available in 100-foot increments between -1000 and +20,000 feet.

All Cessna 300 Transponder operating controls are located on the front panel of the unit. Functions of the operating controls are described in Figure 1.



1. **FUNCTION SWITCH** - Controls application of power and selects transponder operating mode as follows:

OFF - Turns set off.  
 SBY - Turns set on for equipment warm-up or standby power.  
 ON - Turns set on and enables transponder to transmit Mode A (aircraft identification) reply pulses.  
 ALT - Turns set on and enables transponder to transmit either Mode A (aircraft identification) reply pulses or Mode C (altitude reporting) pulses selected automatically by the interrogating signal.

2. **REPLY LAMP** - Lamp flashes to indicate transmission of reply pulses; glows steadily to indicate transmission of IDENT pulse or satisfactory self-test operation. (Reply lamp will also glow steadily during initial warm-up period.)

Figure 1. Cessna 300 Transponder and Altitude Encoder (Blind)  
(Sheet 1 of 2)

3. **IDENT (ID) 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 (DIM) CONTROL** - Allows pilot to control brilliance of reply lamp.
5. **SELF-TEST (TST) SWITCH** - When depressed, causes transponder to generate a self-interrogating signal to provide a check of transponder operation. (Reply lamp will glow steadily to verify self-test operation.)
6. **REPLY-CODE SELECTOR KNOBS (4)** - Select assigned Mode A reply code.
7. **REPLY-CODE INDICATORS (4)** - Display selected Mode A reply code.
8. **REMOTE-MOUNTED DIGITIZER** - Provides an altitude reporting code range of -1000 feet up to the airplane's maximum service ceiling.

Figure 1. Cessna 300 Transponder and Altitude Encoder (Blind)  
(Sheet 2 of 2)

## SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed. However, a placard labeled "ALTITUDE ENCODER EQUIPPED" must be installed near the altimeter.

## SECTION 3 EMERGENCY PROCEDURES

TO TRANSMIT AN EMERGENCY SIGNAL:

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Knobs -- SELECT 7700 operating code.
- (3) ID Switch -- DEPRESS then RELEASE to effect immediate identification of aircraft on ground controller's display.

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF ALL COMMUNICATIONS (WHEN IN A CONTROLLED ENVIRONMENT):

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Knobs -- SELECT 7700 operating code for 1 minute; then SELECT 7600 operating code for 15 minutes and then REPEAT this procedure at same intervals for remainder of flight.
- (3) ID Switch -- DEPRESS then RELEASE at intervals to effect immediate identification of aircraft on ground controller's display.

## SECTION 4 NORMAL PROCEDURES

BEFORE TAKEOFF:

- (1) Function Switch -- SBY.

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

- (1) Reply-Code Selector Knobs -- 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 REPORTING) CODES IN FLIGHT:

- (1) Reply-Code Selector Knobs -- SELECT assigned code.
- (2) 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 by the transponder for altitude squawk and conversion to indicated altitude is done in ATC computers. Altitude squawked will only agree with indicated altitude when the local altimeter setting in use by the ground controller is set in the aircraft altimeter.

- (3) 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 or ALT.
- (3) TST Button -- DEPRESS (reply lamp should light brightly regardless of DIM control setting).
- (4) TST Button -- Release for normal operation.

## SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

## SUPPLEMENT

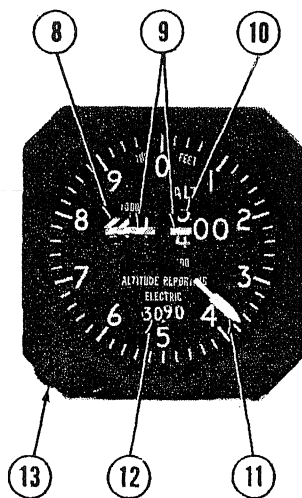
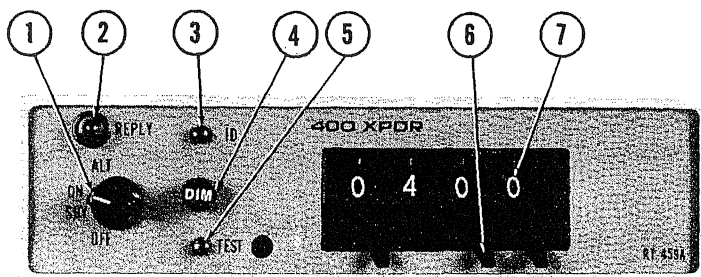
### CESSNA 400 TRANSPONDER (Type RT-459A) AND OPTIONAL ENCODING ALTIMETER (Type EA-401A)

#### SECTION 1 GENERAL

The Cessna 400 Transponder (Type 459A), 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, on the control center's radar scope more readily.

The 400 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 identification) and Mode C (altitude reporting) interrogations on a selective reply basis on any of 4,096 information code selections. When an optional panel mounted EA-401A Encoding Altimeter (not part of 400 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 400 Transponder operating controls, with the exception of the optional altitude encoder's altimeter setting knob, are located on the front panel of the unit. The altimeter setting knob is located on the encoding altimeter. Functions of the operating controls are described in Figure 1.



1. FUNCTION SWITCH - Controls application of power and selects transponder operating mode as follows:  
 OFF - Turns set off.  
 SBY - Turns set on for equipment warm-up or standby power.  
 ON - Turns set on and enables transponder to transmit Mode A (aircraft identification) reply pulses.  
 ALT - Turns set on and enables transponder to transmit either Mode A (aircraft identification) reply pulses or Mode C (altitude reporting) pulses selected automatically by the interrogating signal.
2. REPLY LAMP - Lamp flashes to indicate transmission of reply pulses; glows steadily to indicate transmission of IDENT pulse or satisfactory self-test operation. (Reply Lamp will also glow steadily during initial warm-up period.)
3. IDENT (ID) 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 (DIM) CONTROL - Allows pilot to control brilliance of Reply Lamp.
5. SELF-TEST (TST) SWITCH - When depressed, causes transponder to generate a self-interrogating signal to provide a check of transponder operation. (Reply Lamp will glow steadily to verify self test operation.)
6. REPLY-CODE SELECTOR SWITCHES (4) - Select assigned Mode A Reply Code.
7. REPLY-CODE INDICATORS (4) - Display selected Mode A Reply Code.
8. 1000-FOOT DRUM TYPE INDICATOR - Provides digital altitude readout in 1000-foot increments between -1000 feet and +35,000 feet. When altitude is below 10,000 feet, a diagonally striped flag appears in the 10,000-foot window.
9. OFF INDICATOR WARNING FLAG - Flag appears across altitude readout when power is removed from altimeter to indicate that readout is not reliable.
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. ALTIMETER SETTING SCALE - DRUM TYPE - Indicates selected altimeter setting in the range of 28.1 to 30.99 inches of mercury on the standard altimeter or 946 to 1049 millibars on the optional altimeter.
13. ALTIMETER SETTING KNOB - Dials in desired altimeter setting in the range of 27.9 to 31.0 inches of mercury on standard altimeter or 950 to 1050 millibars on the optional altimeter.

Figure 1. Cessna 400 Transponder and Encoding Altimeter Operating Controls (Sheet 1 of 2)

Figure 1. Cessna 400 Transponder and Encoding Altimeter Operating Controls (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

TO TRANSMIT AN EMERGENCY SIGNAL:

- (1) Function Switch -- ON.
- (2) Reply-Code Selector Switches -- SELECT 7700 operating code.
- (3) ID Switch -- DEPRESS then RELEASE to effect immediate identification of aircraft on ground controller's display.

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF ALL COMMUNICATIONS (WHEN IN A CONTROLLED ENVIRONMENT):

- (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 at same intervals for remainder of flight.
- (3) ID Switch -- DEPRESS then RELEASE at intervals to effect immediate identification of aircraft on ground controller's display.

## SECTION 4 NORMAL PROCEDURES

BEFORE TAKEOFF:

- (1) Function Switch -- SBY.

TO TRANSMIT MODE A (AIRCRAFT 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 REPORTING) CODES IN FLIGHT:

- (1) Off Indicator Warning Flag -- VERIFY that flag is out of view on encoding altimeter.
- (2) Altitude Encoder Altimeter Setting Knob - SET IN assigned local altimeter setting.
- (3) Reply-Code Selector Switches -- SELECT assigned code.
- (4) 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 by the transponder for altitude squawk and conversion to indicated altitude is done in ATC computers. Altitude squawked will only agree with indicated altitude when the local altimeter setting in use by the ground controller is set in the encoding altimeter.

- (5) 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 or ALT.
- (3) TST Button -- DEPRESS and HOLD (Reply lamp should light with full brilliance regardless of DIM control setting).
- (4) TST Button -- Release for normal operation.

## SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

# SUPPLEMENT

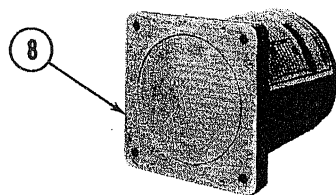
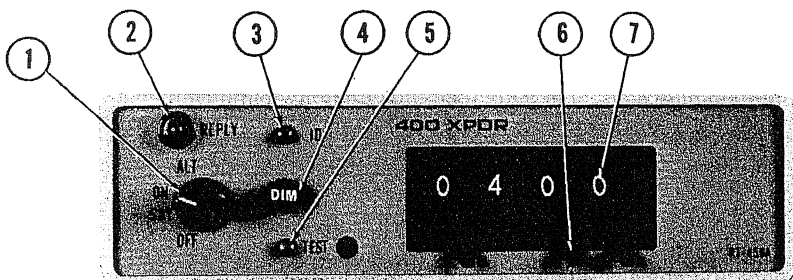
## CESSNA 400 TRANSPONDER (Type RT-459A) AND OPTIONAL ALTITUDE ENCODER (BLIND)

### SECTION 1 GENERAL

The Cessna 400 Transponder (Type RT-459A), 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, on the control center's radar-scope more readily.

The Cessna 400 Transponder system consists of a panel-mounted unit and an externally-mounted antenna. The transponder receives interrogating pulse signals on 1030 MHz and transmits pulse-train reply signals on 1090 MHz. The transponder is capable of replying to Mode A (aircraft identification) and also to Mode C (altitude reporting) when coupled to an optional altitude encoder system. The transponder is capable of replying on both modes of interrogation on a selective reply basis on any of 4,096 information code selections. The optional altitude encoder system (not part of a standard 400 Transponder system) required for Mode C (altitude reporting) operation, consists of a completely independent remote-mounted digitizer that is connected to the static system and supplies encoded altitude information to the transponder. When the altitude encoder system is coupled to the 400 Transponder system, altitude reporting capabilities are available in 100-foot increments between -1000 feet and the airplane's maximum service ceiling.

All Cessna 400 Transponder operating controls are located on the front panel of the unit. Functions of the operating controls are described in Figure 1.



1. **FUNCTION SWITCH** - Controls application of power and selects transponder operating mode as follows:
  - OFF - Turns set off.
  - SBY - Turns set on for equipment warm-up or standby power.
  - ON - Turns set on and enables transponder to transmit Mode A (aircraft identification) reply pulses.
  - ALT - Turns set on and enables transponder to transmit either Mode A (aircraft identification) reply pulses or Mode C (altitude reporting) pulses selected automatically by the interrogating signal.
2. **REPLY LAMP** - Lamp flashes to indicate transmission of reply pulses; glows steadily to indicate transmission of IDENT pulse or satisfactory self-test operation. (Reply lamp will also glow steadily during initial warm-up period.)

Figure 1. Cessna 400 Transponder and Altitude Encoder (Blind)  
(Sheet 1 of 2)

3. **IDENT (ID) 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 (DIM) CONTROL** - Allows pilot to control brilliance of reply lamp.
5. **SELF-TEST (TST) SWITCH** - When depressed, causes transponder to generate a self-interrogating signal to provide a check of transponder operation. (Reply lamp will glow steadily to verify self-test operation.)
6. **REPLY-CODE SELECTOR SWITCHES (4)** - Select assigned Mode A reply code.
7. **REPLY-CODE INDICATORS (4)** - Display selected Mode A reply code.
8. **REMOTE-MOUNTED DIGITIZER** - Provides an altitude reporting code range of -1000 feet up to the airplane's maximum service ceiling.

Figure 1. Cessna 400 Transponder and Altitude Encoder (Blind)  
(Sheet 2 of 2)

## SECTION 2 LIMITATIONS

There is no change to the airplane limitations when this avionic equipment is installed. However, a placard labeled "ALTITUDE ENCODER EQUIPPED" must be installed near the altimeter.

## 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 then RELEASE to effect immediate identification of aircraft on ground controller's display.

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF ALL COMMUNICATIONS (WHEN IN A CONTROLLED ENVIRONMENT):

- (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 at same intervals for remainder of flight.
- (3) ID Switch -- DEPRESS then RELEASE at intervals to effect immediate identification of aircraft on ground controller's display.

## SECTION 4 NORMAL PROCEDURES

BEFORE TAKEOFF:

- (1) Function Switch -- SBY.

TO TRANSMIT MODE A (AIRCRAFT 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 REPORTING) CODES IN FLIGHT:

- (1) Reply-Code Selector Switches -- SELECT assigned code.
- (2) 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 by the transponder for altitude squawk and conversion to indicated altitude is done in ATC computers. Altitude squawked will only agree with indicated altitude when the local altimeter setting in use by the ground controller is set in the aircraft altimeter.

- (3) 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).
- (4) TST Button -- RELEASE for normal operation.

## SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

## SUPPLEMENT

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

#### SECTION 1 GENERAL

The system consists of a 75 MHz marker beacon receiver, three indicator lights, a speaker/phone selector switch, a light dimming control, an ON/OFF/VOLUME control, and a 75 MHz marker beacon antenna. In addition, a HI-LO-TEST switch is provided on all airplanes except the 152 series airplanes for sensitivity selection and test selection. On 152 series airplanes, a HI-LO sensitivity selector switch is provided with a separate press-to-test button.

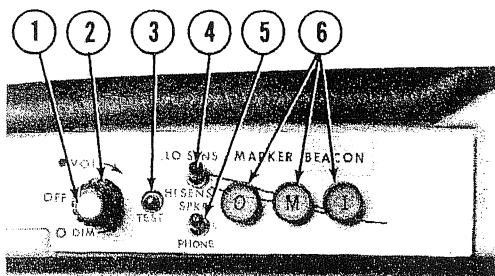
This system provides visual and aural indications of 75 MHz ILS marker beacon signals as the marker is passed. The following table lists the three most currently used marker facilities and their characteristics.

#### MARKER FACILITIES

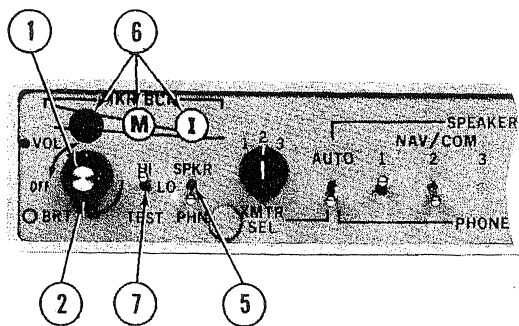
MARKER	IDENTIFYING TONE	LIGHT*
Inner	Continuous 6 dots/sec (300 Hz)	White
Middle	Alternate dots and dashes (1300 Hz)	Amber
Outer	2 dashes/sec (400 Hz)	Blue

\* 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 152 MODEL SERIES



TYPICAL INSTALLATION  
ON ALL MODELS EXCEPT  
152 MODEL SERIES

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 - (152 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).
4. LO/HI SENS SWITCH - (152 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 - (All Models Except 152 Model Series) 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).

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

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.
5. BRT Control -- SELECT BRT (full clockwise). ADJUST as desired when illuminated over marker beacon.

## SECTION 5 PERFORMANCE

There is no change to the airplane performance when this avionic equipment is installed. However, the installation of an externally mounted antenna or several related external antennas, will result in a minor reduction in cruise performance.

## SUPPLEMENT

## CESSNA 400 GLIDE SLOPE (Type R-443B)

### SECTION 1 GENERAL

The Cessna 400 Glide Slope is an airborne navigation receiver which receives and interprets glide slope signals from a ground-based Instrument Landing System (ILS). It is used with the localizer function of a VHF navigation system when making instrument approaches to an airport. The glide slope provides vertical path guidance while the localizer provides horizontal track guidance.

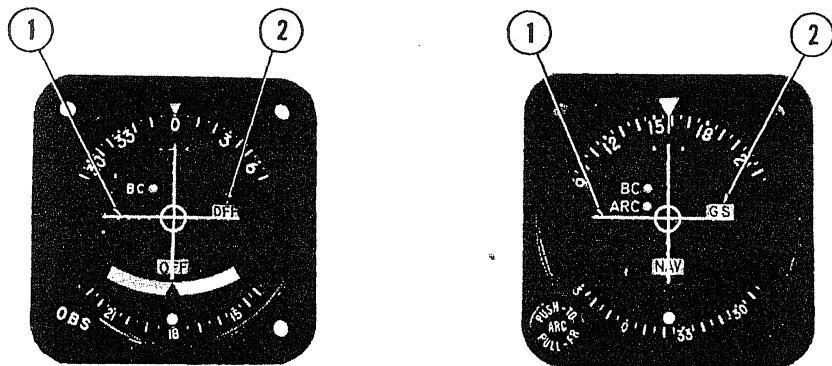
The Cessna 400 Glide Slope system consists of a remote-mounted receiver coupled to an existing navigation system, a panel-mounted indicator and an externally-mounted antenna. The glide slope receiver is designed to receive ILS glide slope signals on any of 40 channels. The channels are spaced 150 kHz apart and cover a frequency range of 329.15 MHz through 335.0 MHz. When a localizer frequency is selected on the NAV receiver, the associated glide slope frequency is selected automatically.

Operation of the Cessna 400 Glide Slope system is controlled by the associated navigation system. The functions and indications of typical 300 series glide slope indicators are pictured and described in Figure 1. The 300 series glide slope indicators shown in Figure 1 depict typical indications for all Cessna-crafted glide slope indicators. However, refer to the 400 Nav/Com or HSI write-ups if they are listed in this section as options for additional glide slope indicators.

### 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 ±100 RPM on airplanes equipped with a two-bladed propeller or 1800 ±100 RPM on airplanes equipped with a three-bladed propeller during ILS approaches to avoid oscillations of the glide slope deviation pointer caused by propeller interference.

TYPICAL 300 SERIES GLIDE SLOPE INDICATORS



1. GLIDE SLOPE DEVIATION POINTER - Indicates deviation from normal glide slope.
2. GLIDE SLOPE "OFF" OR "GS" FLAG - When visible, indicates unreliable glide slope signal or improperly operating equipment. The flag disappears when a reliable glide slope signal is being received.

**CAUTION**

Spurious glide slope signals may exist in the area of the localizer back course approach which can cause the glide slope "OFF" or "GS" flag to disappear and present unreliable glide slope information. Disregard all glide slope signal indications when making a localizer back course approach unless a glide slope (ILS BC) is specified on the approach and landing chart.

Figure 1. Typical 300 Series VOR/LOC/ILS Indicator

SECTION 3  
EMERGENCY PROCEDURES

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

SECTION 4  
NORMAL PROCEDURES

TO RECEIVE GLIDE SLOPE SIGNALS:

- (1) NAV Frequency Select Knobs -- SELECT desired localizer frequency (glide slope frequency is automatically selected).
- (2) NAV/COM VOX-ID-T Switch -- SELECT ID position to disconnect filter from audio circuit.
- (3) NAV VOL Control -- ADJUST to desired listening level to confirm proper localizer station.

**CAUTION**

When glide slope "OFF" or "GS" flag is visible, glide slope indications are unusable.

SECTION 5  
PERFORMANCE

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