S-TEC

Sixty | Two

Pilot's Operating Handbook

List of Effective Pages	* Asterisk indicates pages changed, added, or deleted by current revision.

Record of Revisions	Retain this record in front of handbook. Upon receipt of a revision, insert changes and complete table below.	
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1.1 Document Organization

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1.2 Purpose

This Pilot's Operating Handbook (POH) provides Pre-Flight and In-Flight operating procedures for the S-TEC System Sixty Two Autopilot (AP).

Note:

This POH must be carried in the A/C and made available to the pilot at all times. It can only be used in conjunction with the Federal Aviation Administration (FAA) approved Aircraft Flight Manual (AFM) or Aircraft Flight Manual Supplement (AFMS). Refer to the applicable AFM or AFMS for A/C specific information, such as unique ground tests, limitations, and emergency procedures.

Note:

The System Sixty Two autopilot is a tool provided to aircraft owners, that serves to assist them with cockpit workload management. The ability of the autopilot to provide optimum assistance and performance is directly proportional to the pilot's knowledge of its operating procedures. Therefore, it is highly recommended that the pilot develop a thorough understanding of the autopilot, its modes, and operating procedures in Visual Meteorological Conditions (VMC), prior to using it under Instrument Flight Rules (IFR).

1.3 General Control Theory

The System Sixty Two is a rate based autopilot. When in control of the roll axis, the autopilot senses turn rate, as well as closure rate to the selected course, along with the non-rate quantities of heading error, course error, and course deviation indication. When in control of the pitch axis, the autopilot senses vertical speed, acceleration, and closure rate to the selected glideslope, along with the non-rate quantities of altitude and glideslope deviation indication. These sensed data provide feedback to the autopilot, which processes them in order to control the aircraft through the use of mechanisms coupled to the control system. In most aircraft, the roll servo is coupled to the ailerons. The pitch servo is coupled to the elevator. Activation of roll axis control must always precede activation of pitch axis control.

The optional autotrim function senses when the aircraft needs to be trimmed about the pitch axis, and responds by driving the trim servo in the proper direction to provide trim. The trim servo is coupled to the elevator trim tabs.

The optional yaw damper senses excessive adverse yaw about the yaw axis, and responds by driving the yaw servo in the proper direction to provide damping. The yaw servo is coupled to the rudder.

The optional flight director is a display of the flight profile.

1.4 Modes of Operation

1.4.1 Roll Axis Control

Heading (HDG) Mode

Used to Turn onto a Selected Heading and Hold it

Navigation (NAV) Mode

Used to Intercept and Track a VOR Course

Navigation Approach (NAV APR) Mode

Used to Intercept and Track a LOC Front Course Inbound

Reverse (REV) Mode

Used to Intercept and Track a VOR Back Course Inbound

Reverse Approach (REV APR) Mode

Used to Intercept and Track a LOC Back Course Inbound

1.4.2 Pitch Axis Control

Altitude Hold (ALT HOLD) Mode

Used to Hold Altitude

Vertical Speed (VS) Mode

Used to Hold Vertical Speed

Glideslope (GS) Mode

Used to Intercept and Track Glideslope

1.5 Block Diagram

The System Sixty Two Block Diagram is shown in Fig. 1-1.

The Yaw Damper Block Diagram is shown in Fig. 1-2.

The Flight Director Block Diagram is shown in Fig. 1-3.

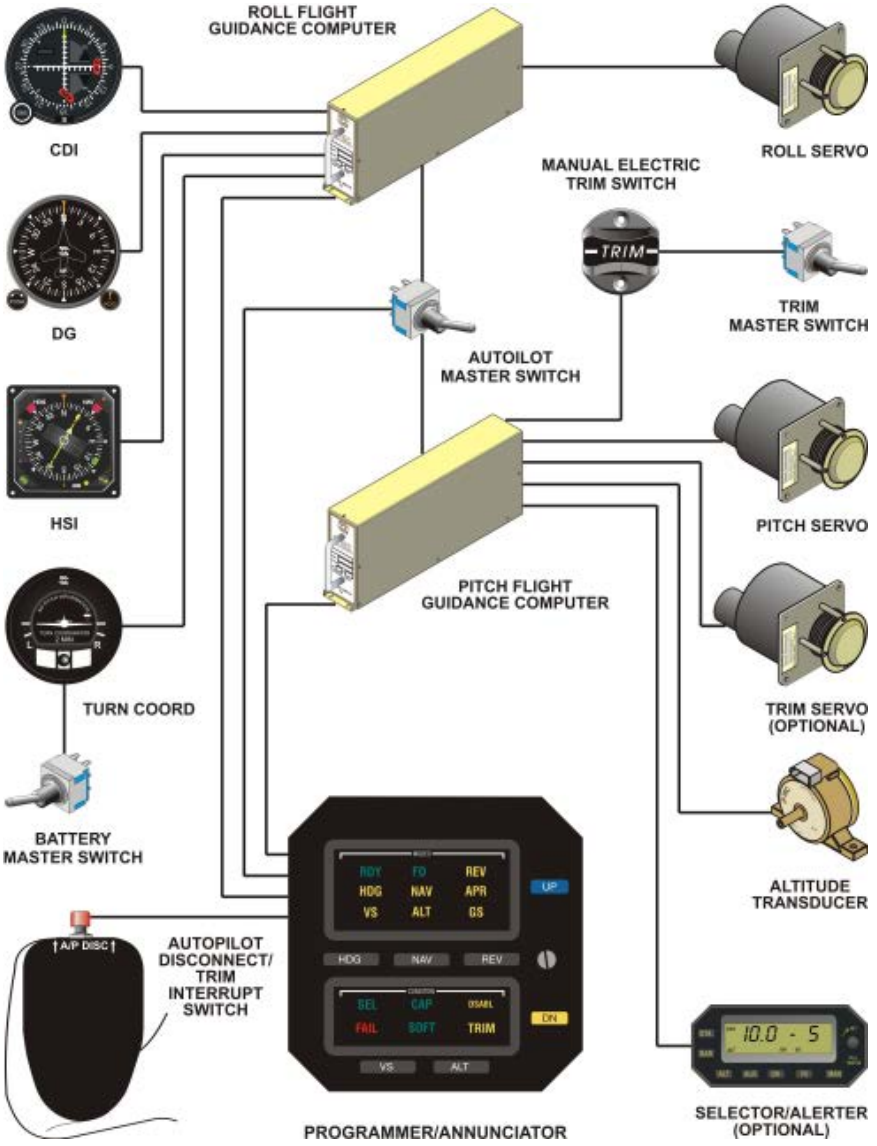

Fig. 1-1. System Sixty Two Block Diagram

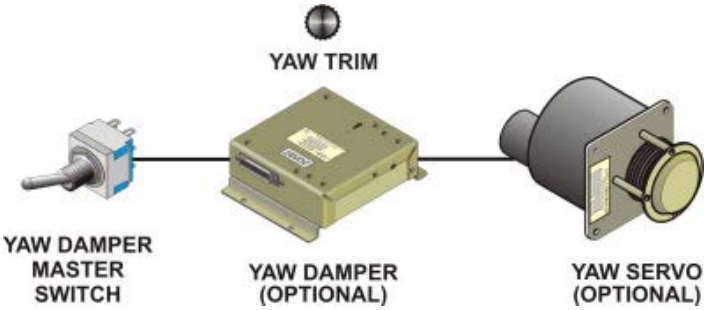

Fig. 1-2. Yaw Damper Block Diagram

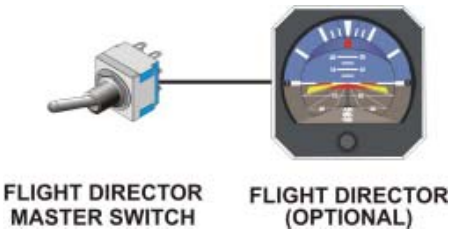

Fig. 1-3. Flight Director Block Diagram

SECTION 2
PRE-FLIGHT PROCEDURES

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2.1 Pre-Flight Test

Prior to takeoff and with engine running, perform the actions shown in Table 2-1. For each action, verify the corresponding response where applicable.

Table 2-1. Pre-Flight Test (continued on page 2-5)

ACTION	RESPONSE
Note: *If a Flight Director is installed, then the FD annunciation appears on the AP display whenever one (or both) of the following conditions exist:* *Autopilot Master Switch in ON position* *Flight Director Master Switch in ON position* *For the purpose of brevity, this Pre-Flight Test precludes the installation of a Flight Director. The pilot should make allowance for this exception accordingly, if a Flight Director is installed.*	
1. Set Yaw Damper Master Switch to OFF position (if installed).	------
2. Set Trim Master Switch to OFF position (if installed).	------
3. Set Battery Master Switch to ON position.	------
4. Set Avionics Master Switch to ON position.	------
5. Set Autopilot Master Switch to ON position.	RDY annunciation only appears on AP display within 3 minutes, as shown in Fig. 2-1.
Note: *Should a Turn Coordinator failure be detected, the RDY annunciation will not appear as shown in Fig. 2-2, and the autopilot will not operate.*	

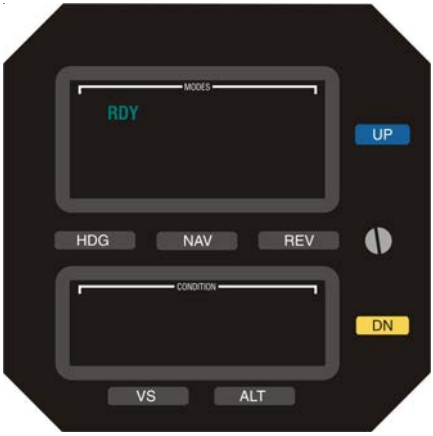

Fig. 2-1. AP Display, RDY for Operation

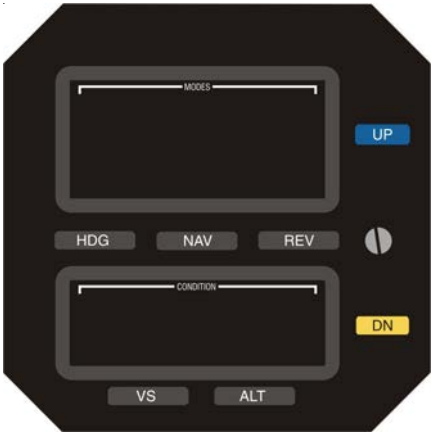

Fig. 2-2. AP Display, Turn Coordinator Failure, RDY Does Not Appear

Table 2-1. Pre-Flight Test (continued from page 2-3)

ACTION	RESPONSE
6. Set Autopilot Master Switch to TEST position.	The following annunciations all appear on AP display, as shown in Fig. 2-3: RDY FD REV HDG NAV APR VS ALT GS SEL CAP DSABL FAIL SOFT TRIM UP switch and DN switch lamps are both illuminated on AP display.
7. Set Heading Bug under Lubber Line.	------
8. Move A/C Control Wheel left and right, to sense its freedom of movement about roll axis.	------
9. Press HDG mode selector switch to engage heading mode.	------
10. Attempt movement of A/C Control Wheel left and right.	A/C Control Wheel's reduced freedom of movement indicates that Roll Servo is engaged. Roll Servo can be overridden. If not, set Autopilot Master Switch to OFF position and do not use.
11. Move A/C Control Wheel forward and aft, to sense its freedom of movement about pitch axis.	------
12. Press ALT mode selector switch to engage altitude hold mode.	------

Table 2-1. Pre-Flight Test (continued from page 2-5)

ACTION	RESPONSE
13. Attempt movement of A/C Control Wheel forward and aft.	A/C Control Wheel's reduced freedom of movement indicates that Pitch Servo is engaged. Pitch Servo can be overridden. If not, set Autopilot Master Switch to OFF position and do not use.
14. Press/Hold UP switch, while maintaining a grasp on A/C Control Wheel.	Pitch Servo disengages after ½ second, as sensed by the increased freedom of A/C Control Wheel movement about pitch axis.
15. Release UP switch, while maintaining a grasp on A/C Control Wheel.	Pitch Servo immediately re-engages, as sensed by the reduced freedom of A/C Control Wheel movement about pitch axis.
16. Press/Hold DN switch, while maintaining a grasp on A/C Control Wheel.	Pitch Servo disengages after ½ second, as sensed by the increased freedom of A/C Control Wheel movement about pitch axis.
17. Release DN switch, while maintaining a grasp on A/C Control Wheel.	Pitch Servo immediately re-engages, as sensed by the reduced freedom of A/C Control Wheel movement about pitch axis.
18. Set Autopilot Master Switch to ON position.	All annunciations except RDY are extinguished. UP switch and DN switch lamps are extinguished.
19. Press HDG mode selector switch to engage heading mode.	HDG annunciation only appears on AP display, as shown in Fig. 2-4.
20. Turn Heading Bug to the left side of Lubber Line.	A/C Control Wheel turns to the left.

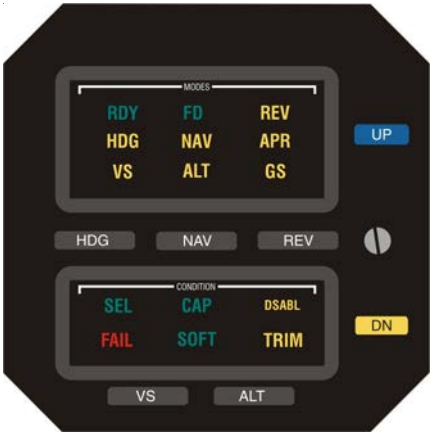

Fig. 2-3. AP Display, All Annunciations Appear

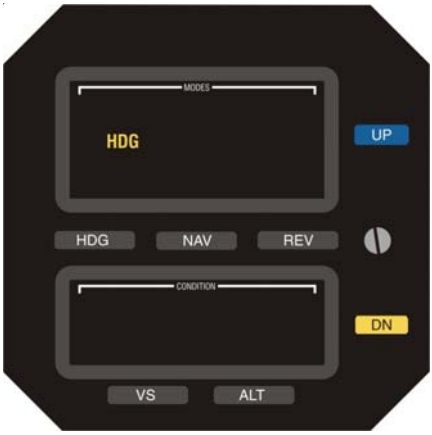

Fig. 2-4. AP Display, HDG Mode Engaged

Table 2-1. Pre-Flight Test (continued from page 2-6)

ACTION	RESPONSE
21. Turn Heading Bug to the right side of Lubber Line.	A/C Control Wheel turns to the right.
22. Set Heading Bug under Lubber Line.	A/C Control Wheel stops.
Note: *If it is not possible to select a local VOR frequency on Navigation Receiver, then proceed to step 36. Otherwise, proceed to step 23.*	
23. Select local VOR frequency on Navigation Receiver.	------
Note: *Proceed to either step 24 (HSI) or step 30 (DG).*	
24. Turn Course Pointer until CDI needle is centered.	------
25. Turn A/C until Course Pointer is under Lubber Line, to null course error input to autopilot.	------
26. Press NAV mode selector switch to engage navigation mode.	NAV and SOFT annunciations only appear on AP display, as shown in Fig. 2-5.
27. Turn Course Pointer left until CDI needle deflection is 2 dots right of center.	A/C Control Wheel turns to the right.
28. Turn Course Pointer right until CDI needle deflection is 2 dots left of center.	A/C Control Wheel turns to the left.
29. Turn Course Pointer left until CDI needle deflection is centered.	A/C Control Wheel stops.

Table 2-1. Pre-Flight Test (continued from page 2-8)

ACTION	RESPONSE
Note: Proceed to step 35.	
30. Turn OBS until CDI needle is centered.	------
31. Press NAV mode selector switch to engage navigation mode.	NAV and SOFT annunciations only appear on AP display, as shown in Fig. 2-5.
32. Turn OBS until CDI needle deflection is 2 dots right of center.	A/C Control Wheel turns to the right.
33. Turn OBS until CDI needle deflection is 2 dots left of center.	A/C Control Wheel turns to the left.
34. Turn OBS until CDI needle is centered.	A/C Control Wheel stops.

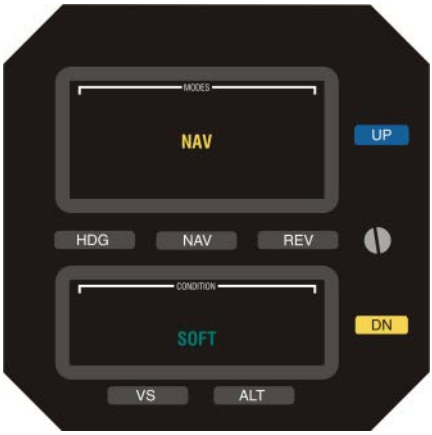

Fig. 2-5. AP Display, NAV Mode Engaged, SOFT Condition

Table 2-1. Pre-Flight Test (continued from page 2-9)

ACTION	RESPONSE
35. Press HDG mode selector switch to engage heading mode.	HDG annunciation only appears on AP display.
36. Press ALT mode selector switch to engage altitude hold mode.	HDG and ALT annunciations only appear on AP display, as shown in Fig. 2-6.
37. Move A/C Control Wheel until elevator is in neutral position.	------
38. Press/Hold UP switch.	A/C Control Wheel moves in aft direction.
39. Release UP switch.	A/C Control Wheel continues moving in aft direction.
40. Press/Hold DN switch.	A/C Control Wheel slows to a stop in aft direction, and then moves in forward direction.
41. Release DN switch.	A/C Control Wheel continues moving in forward direction.
42. Press VS mode selector switch to engage vertical speed mode.	A/C Control Wheel stops. HDG and VS annunciations only appear on AP display, as shown in Fig. 2-7.
43. Press/Hold UP switch.	A/C Control Wheel moves in aft direction.
44. Release UP switch.	A/C Control Wheel continues moving in aft direction.

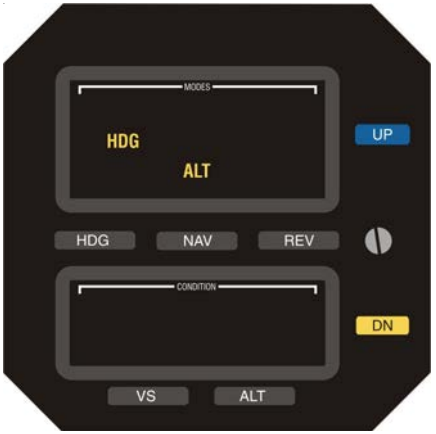

Fig. 2-6. AP Display, HDG and ALT HOLD Modes Engaged

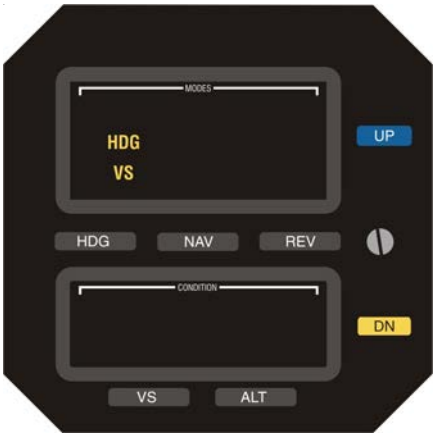

Fig. 2-7. AP Display, HDG and VS Modes Engaged

Table 2-1. Pre-Flight Test (continued from page 2-10)

ACTION	RESPONSE
45. Press/Hold DN switch.	A/C Control Wheel slows to a stop in aft direction, and then moves in forward direction.
46. Release DN switch.	A/C Control Wheel continues moving in forward direction.
47. Press ALT mode selector switch to engage altitude hold mode.	A/C Control Wheel stops. HDG and ALT annunciations only appear on AP display.
Note: *If autopilot is equipped with autotrim, then proceed to step 52. Otherwise, proceed to step 48.*	
48. Move A/C Control Wheel as far forward as possible.	After 3 seconds, TRIM annunciation appears on AP display as shown in Fig. 2-8, UP switch lamp becomes illuminated, and audible alert sounds a steady tone. After 7 seconds, TRIM annunciation flashes, UP switch lamp flashes, and audible alert becomes periodic.
49. Move A/C Control Wheel aft until TRIM annunciation is extinguished.	UP switch lamp is extinguished, and audible alert is squelched.
50. Move A/C Control Wheel as far aft as possible.	After 3 seconds, TRIM annunciation appears on AP display as shown in Fig. 2-8, DN switch lamp becomes illuminated, and audible alert sounds a steady tone. After 7 seconds, TRIM annunciation flashes, DN switch lamp flashes, and audible alert becomes periodic.

Table 2-1. Pre-Flight Test (continued from page 2-12)

ACTION	RESPONSE
51. Move A/C Control Wheel forward until TRIM annunciation is extinguished.	DN switch lamp is extinguished, and audible alert is squelched.
Note: Proceed to step 67.	
52. Set Trim Master Switch to ON position.	------
53. Move A/C Control Wheel as far forward as possible.	After 3 seconds, Elevator Trim Wheel begins to run nose up with increasing speed.
54. Move A/C Control Wheel aft until Elevator Trim Wheel stops.	------

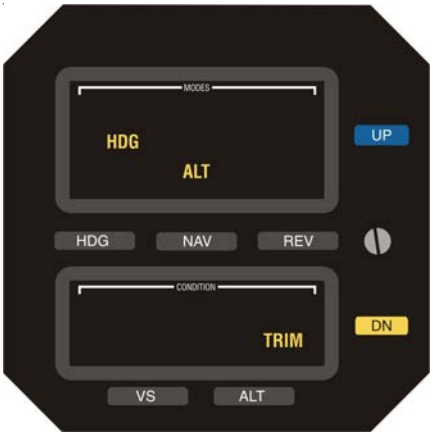

Fig. 2-8. AP Display, HDG and ALT HOLD Modes Engaged, Trim Required

Table 2-1. Pre-Flight Test (continued from page 2-13)

ACTION	RESPONSE
55. Move A/C Control Wheel as far aft as possible.	After 3 seconds, Elevator Trim Wheel begins to run nose down with increasing speed.
56. Move A/C Control Wheel forward until Elevator Trim Wheel stops.	------
57. Press either forward or aft on both segments of Manual Electric Trim Switch.	Autopilot disconnects as follows: RDY annunciation appears flashing, while all other annunciations are extinguished. After 5 seconds, RDY annunciation stops flashing but remains.
58. Press/Hold either forward or aft on only one segment of Manual Electric Trim Switch, but not both.	Elevator Trim Wheel does not begin to run.
59. Press/Hold forward on both segments of Manual Electric Trim Switch.	Elevator Trim Wheel runs nose down at full speed, and TRIM annunciation appears flashing on AP display.
60. Press/Hold AP DISC / TRIM INTR Switch.	Elevator Trim Wheel stops.
61. Release AP DISC / TRIM INTR Switch.	Elevator Trim Wheel resumes running nose down at full speed.
62. Release Manual Electric Trim Switch.	Elevator Trim Wheel stops. TRIM annunciation is extinguished.

Table 2-1. Pre-Flight Test (continued from page 2-14)

ACTION	RESPONSE
63. Press/Hold aft on both segments of Manual Electric Trim Switch.	Elevator Trim Wheel runs nose up at full speed, and TRIM annunciation appears flashing on AP display.
64. Press/Hold AP DISC / TRIM INTR Switch.	Elevator Trim Wheel stops.
65. Release AP DISC / TRIM INTR Switch.	Elevator Trim Wheel resumes running nose up at full speed.
66. Release Manual Electric Trim Switch.	Elevator Trim Wheel stops. TRIM annunciation is extinguished.
Note: *If autopilot is equipped with a Yaw Damper, then proceed to step 68. Otherwise, proceed to step 77.*	
67. Press AP DISC / TRIM INTR Switch.	Autopilot disconnects as follows: RDY annunciation appears flashing, while all other annunciations are extinguished. After 5 seconds, RDY annunciation stops flashing but remains.
Note: *If autopilot is equipped with a Yaw Damper, then proceed to step 68. Otherwise, proceed to step 77.*	

Table 2-1. Pre-Flight Test (continued from page 2-15)

ACTION	RESPONSE
68. Actuate A/C Rudder Pedals alternately in succession, to sense their freedom of movement about yaw axis.	------
69. Set Yaw Damper Master Switch to ON position.	------
70. Turn Yaw Trim Knob until A/C Rudder Pedals stop.	------
71. Attempt actuation of A/C Rudder Pedals alternately in succession.	A/C Rudder Pedals' reduced freedom of movement indicates that Yaw Servo is engaged. Yaw Servo can be overridden. If not, set Yaw Damper Master Switch to OFF position, and do not use.
72. Turn Yaw Trim Knob fully CCW.	Left A/C Rudder Pedal slowly moves forward.
73. Turn Yaw Trim Knob fully CW.	Right A/C Rudder Pedal slowly moves forward.
74. Turn Yaw Trim Knob CCW until A/C Rudder Pedals stop.	------
75. Set Yaw Damper Master Switch to OFF position.	------
76. Actuate A/C Rudder Pedals alternately in succession.	A/C Rudder Pedals' increased freedom of movement indicates that Yaw Servo is disengaged.
77. Trim A/C for takeoff.	------

SECTION 3
IN-FLIGHT PROCEDURES

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3.1 Normal Operating Procedures

3.1.1 Heading (HDG) Mode

Set the Heading Bug to the desired heading on the compass card (HSI or DG), and then press the HDG mode selector switch to engage the heading mode. The HDG annunciation will appear as shown in Fig. 3-1, to acknowledge that this mode is engaged. The autopilot will turn the aircraft onto the selected heading and hold it. A new heading can be subsequently selected by setting the Heading Bug to it.

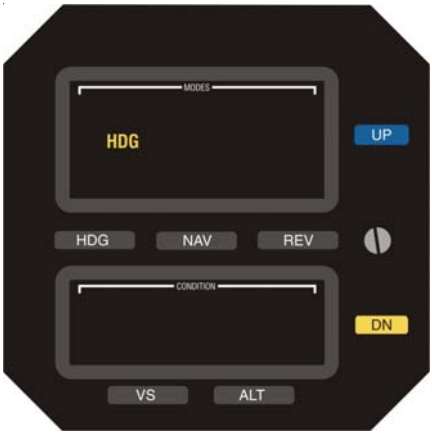


Fig. 3-1. AP Display, HDG Mode Engaged

3.1.2 Navigation (NAV) Mode

Select the VOR frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to desired course on compass card.

Heading System DG

Set Heading Bug and OBS to desired course on each respective compass card.

Press the NAV mode selector switch to engage the navigation mode. The NAV annunciation will appear as shown in Fig. 3-2, to acknowledge that this mode is engaged.

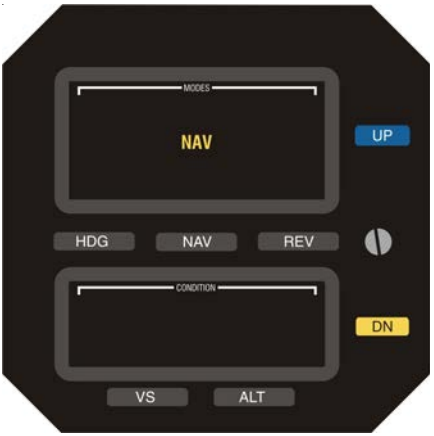


Fig. 3-2. AP Display, NAV Mode Engaged

If the Course Deviation Indication (CDI) is at full scale (100%) needle deflection from center, then the autopilot will establish the aircraft on a 45° intercept angle relative to the selected course. Even if CDI needle deflection is less than 100%, the autopilot may still establish an intercept angle of 45°, provided that the aircraft's closure rate to the selected course is sufficiently slow. Otherwise, the intercept angle will be less than 45°.

As the aircraft approaches the selected course, the autopilot senses the corresponding rate at which CDI needle deflection approaches center (closure rate), in order to initiate the aircraft's turn onto the course at the proper point, and thereby prevent overshoot. The point at which this turn begins is variable, being further from the course at faster closure rates, and closer to the course at slower closure rates. Although closure rate is principally a function of groundspeed, the distance of the aircraft from the VOR station also has an effect. Nevertheless, the turn will always begin between 100% and 20% CDI needle deflection.

During this stage of the intercept sequence, the autopilot operates at maximum gain and sensitivity to closure rate. In addition, it limits the aircraft's turn rate to 90% of a standard rate turn, although for some higher performance (turboprop) aircraft this is 75%.

When the aircraft arrives at 15% CDI needle deflection, the course is captured. At that instant, a step reduction in autopilot gain occurs, so that the Course Pointer (HSI) or Heading Bug (DG) has sufficient authority to complete the intercept. In addition, the sensitivity to closure rate is reduced. The overall authority of the autopilot during this stage of the intercept sequence is called the CAP condition, which is acknowledged by the appearance of the CAP annunciation as shown in Fig. 3-3.

Fifteen seconds after course capture, a second step reduction in autopilot gain occurs, to limit the aircraft's turn rate to 45% of a standard rate turn, although for some higher performance (turboprop) aircraft this is 37.5%. In addition, the sensitivity to closure rate is reduced again. The overall authority of the autopilot during this stage of the intercept sequence is called the CAP SOFT condition, which is acknowledged by the appearance of the SOFT annunciation as shown in Fig. 3-4.

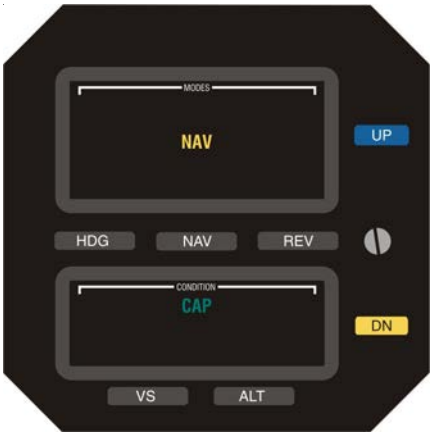


Fig. 3-3. AP Display, NAV Mode Engaged, CAP Condition

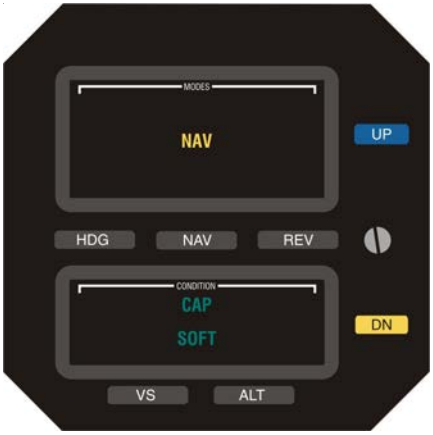


Fig. 3-4. AP Display, NAV Mode Engaged, CAP SOFT Condition

Thirty seconds after course capture, the autopilot establishes the required crosswind correction angle.

Seventy five seconds after course capture, a third step reduction in autopilot gain occurs, to limit the aircraft's turn rate to 15% of a standard rate turn, although for some higher performance (turboprop) aircraft this is 12.5%. In addition, the sensitivity to closure rate is reduced once more. This is acknowledged by the extinguishment of the CAP annunciation, as shown in Fig. 3-5. It marks the end of the intercept sequence, and the beginning of tracking. The overall authority of the autopilot during tracking is called the SOFT condition.

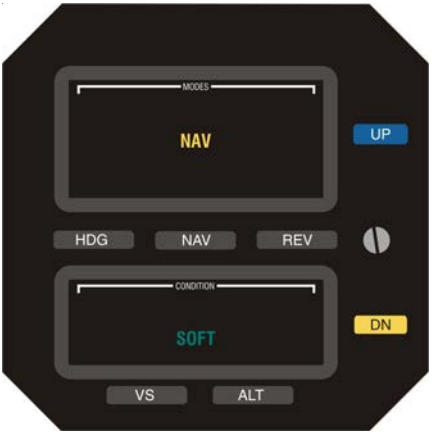


Fig. 3-5. AP Display, NAV Mode Engaged, SOFT Condition

The pilot should make speed, distance, and time considerations during the 75 second period from course capture to the beginning of tracking, to account for the aircraft's position. For example at 115 kts, a distance of 2.4 nautical miles will be traveled in 75 seconds.

If it should happen that the Course Pointer (HSI) or Heading Bug (DG) is already within 5° of the selected course, and CDI needle deflection is less than 10%, then the autopilot will immediately establish the SOFT condition upon engagement of the navigation mode.

While tracking in the SOFT condition, the autopilot ignores short term CDI needle deflections (excursions), to thereby inhibit aircraft scalloping during VOR station passage. Should CDI needle deflection exceed 50% for a period of 60 seconds, the autopilot will revert to the CAP SOFT condition as a means to re-establish the aircraft on course.

The NAV annunciation will flash whenever CDI needle deflection exceeds 50%, or the NAV Flag is in view. In the latter event, the FAIL annunciation will also appear.

3.1.2.1 Pilot Selectable Intercept Angle

To select an intercept angle other than 45°, set the Heading Bug to the desired intercept heading on the compass card, such that the difference between this heading and the desired course is the intercept angle. Then set the Course Pointer (HSI) or OBS (DG) to the desired course. Press and hold the HDG mode selector switch, and then press the NAV mode selector switch to engage the heading mode and arm the navigation mode. The HDG and NAV annunciations will appear as shown in Fig. 3-6, to acknowledge this.

The autopilot will establish the aircraft on the selected intercept angle (heading), until it must turn the aircraft onto the selected course to prevent overshoot. At that point in the intercept sequence, the HDG annunciation will extinguish to indicate engagement of the navigation mode.

If the selected intercept angle is greater than 35°, then the HDG annunciation will extinguish at 90% CDI needle deflection. However, if the selected intercept angle is less than 35°, then the HDG annunciation will extinguish at 20% CDI needle deflection. In addition, the course is captured at one of the following points:

15% CDI needle deflection (Roll Computers with Mod Code K and below)

20% CDI needle deflection (Roll Computers with Mod Code L and above)

If the heading system is a DG, at the moment the HDG annunciation extinguishes, immediately set the Heading Bug to the course in order to input a course error to the autopilot. Otherwise, the autopilot will lack sufficient authority to turn the aircraft onto the course.

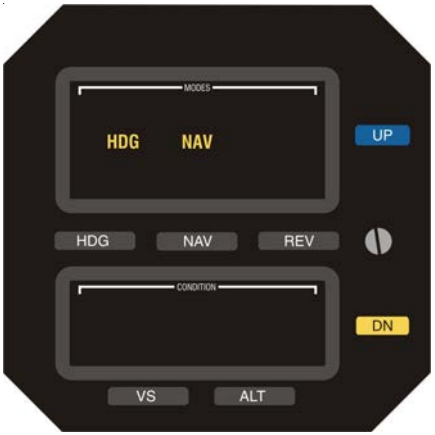


Fig. 3-6. AP Display, HDG Mode Engaged, NAV Mode Armed

3.1.3 Altitude Hold (ALT HOLD) Mode

The altitude hold mode can only be engaged if a roll mode (HDG, NAV, NAV APR, REV, REV APR) is already engaged. With a roll mode engaged and the aircraft at the desired altitude, press the ALT mode selector switch to engage the altitude hold mode. The ALT annunciation will appear as shown in Fig. 3-7, to acknowledge that this mode is engaged. The autopilot will hold the aircraft at its current (captured) absolute pressure altitude.

This altitude may be modified for barometric pressure changes, by pressing and holding either the UP switch for an increase in altitude, or the DN switch for a decrease in altitude. The altitude changes 20 feet for each second the respective switch is pressed and held. The range is ±200 feet from the original captured altitude.

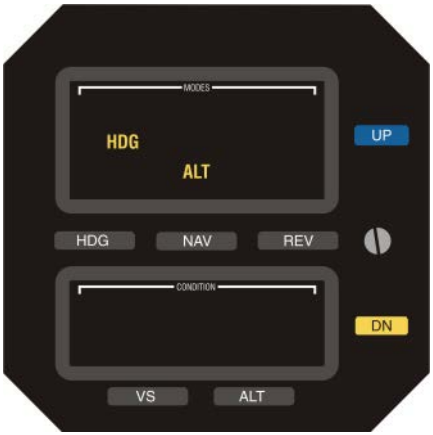


Fig. 3-7. AP Display, HDG and ALT HOLD Modes Engaged

3.1.4 Vertical Speed (VS) Mode

Caution:

The vertical speed mode is used to establish and hold a PILOT selected vertical speed. Since the autopilot receives no airspeed information, it is the responsibility of the pilot to ensure that the vertical speed selection is within the operating limits of the aircraft's capabilities. Selection of a vertical speed beyond the capability of the aircraft can create a condition of reduced airspeed, and possibly lead to a stall condition.

The vertical speed mode can only be engaged if a roll mode (HDG, NAV, NAV APR, REV, REV APR) is already engaged. With a roll mode engaged and the aircraft at the desired vertical speed, press the VS mode selector switch to engage the vertical speed mode. The VS annunciation will appear as shown in Fig. 3-8, to acknowledge that this mode is engaged. The autopilot will hold the aircraft at its current (captured) vertical speed.

This vertical speed may be modified by pressing and holding either the UP switch or the DN switch. In a climb, pressing and holding the UP switch increases the climb rate, whereas pressing and holding the DN switch decreases the climb rate. In a descent, pressing and holding the DN switch increases the descent rate, whereas pressing and holding the UP switch decreases the descent rate.

The vertical speed changes 160 FPM for each second the respective switch is pressed and held. The range is ±1600 FPM from the original captured vertical speed.

During a climb, should the aircraft become unable to hold the captured vertical speed for a period of fifteen seconds, the VS annunciation will flash as an alert to the potential for an impending stall condition. In that event, immediately increase the aircraft's thrust if possible, reduce the commanded vertical speed using the DN switch, or both, until the VS annunciation stops flashing.

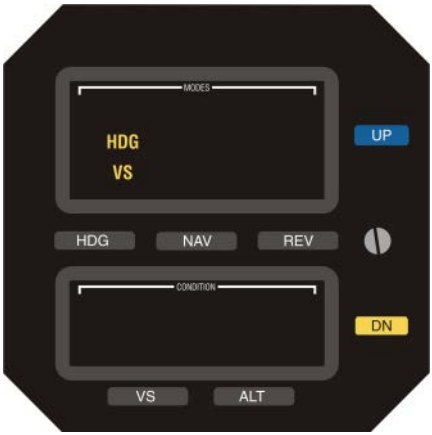


Fig. 3-8. AP Display, HDG and VS Modes Engaged

3.1.5 Elevator Trim

3.1.5.1 Manual Elevator Trim

If the autopilot is not equipped with autotrim, or is so equipped but the Trim Master Switch is in the OFF position, and a pitch mode (ALT HOLD, VS, GS) is engaged, then the autopilot will provide an annunciation whenever it is necessary to manually trim the aircraft about the pitch axis using the Elevator Trim Wheel.

Should the pitch servo loading exceed a preset threshold for a period of three seconds, the TRIM annunciation will appear as shown in Fig. 3-9, and either the UP or DN switch lamp will illuminate, as a prompt to trim the aircraft in the indicated direction. In addition, an audible alert will sound a steady tone. If no action is taken after four more seconds, then both the TRIM annunciation and illuminated switch lamp will flash, and the audible alert will become periodic. Once the aircraft has been sufficiently trimmed, such that the pitch servo loading is below the preset threshold, the TRIM annunciation and switch lamp will extinguish, and the audible alert will be squelched.

3.1.5.2 Automatic Elevator Trim

If the autopilot is equipped with autotrim, the Trim Master Switch is in the ON position, and a pitch mode (ALT HOLD, VS, GS) is engaged, then the autopilot will automatically trim the aircraft about the pitch axis.

Should the pitch servo loading exceed a preset threshold for a period of three seconds, the trim servo will become active, and so the Elevator Trim Wheel will run either nose up or nose down with increasing speed. Once the aircraft has been sufficiently trimmed, such that the pitch servo loading is below the preset threshold, the trim servo will become inactive and so the Elevator Trim Wheel will stop.

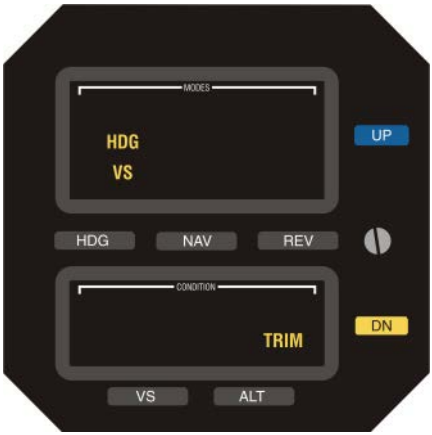


Fig. 3-9. AP Display, Manual Trim Prompt

3.1.5.3 Manual Electric Elevator Trim

If the autopilot is equipped with autotrim, then there will also be the Manual Electric Trim Switch located on the Control Wheel. This switch can be used to trim the aircraft about the pitch axis from the RDY, or when only a roll mode (HDG, NAV, NAV APR, REV, REV APR) is engaged, provided that the Trim Master Switch is in the ON position.

To trim the aircraft nose up, press aft and hold both segments of the Manual Electric Trim Switch. The TRIM annunciation will appear flashing as shown in Fig. 3-10, and the Elevator Trim Wheel will run nose up at full speed. Upon release of this switch, the TRIM annunciation will extinguish and the Elevator Trim Wheel will stop.

To trim the aircraft nose down, press forward and hold both segments of the Manual Electric Trim Switch. The TRIM annunciation will appear flashing as shown in Fig. 3-10, and the Elevator Trim Wheel will run nose down at full speed. Upon release of this switch, the TRIM annunciation will extinguish and the Elevator Trim Wheel will stop.

Should the Manual Electric Trim Switch ever be actuated when a pitch mode (ALT HOLD, VS, GS) is engaged, the autopilot will disconnect.

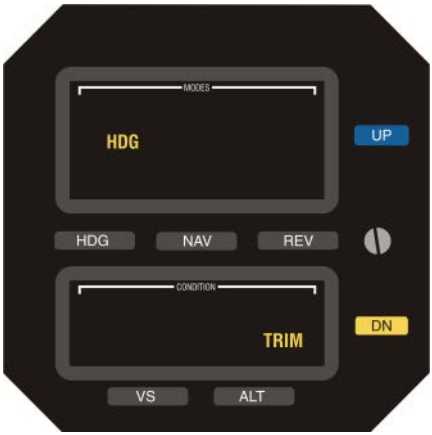


Fig. 3-10. AP Display, Manual Electric Trim in Progress

3.2 Precision Approach Procedures

3.2.1 Straight-In ILS Approach

Execute a straight-in intercept and track of the FRONT INBOUND LOC course (reference section 3.3.3), while holding the approach altitude. The NAV, APR, ALT, CAP, and SOFT annunciations will appear as shown in Fig. 3-11.

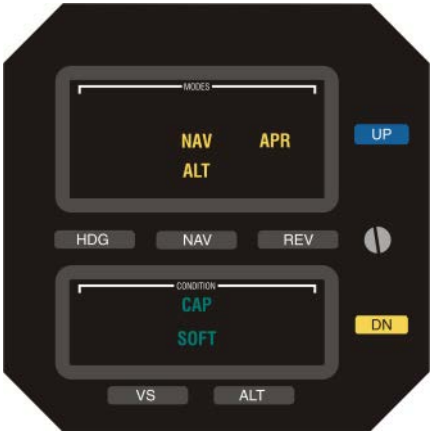


Fig. 3-11. AP Display, NAV APR and ALT HOLD Modes Engaged

Once the following conditions have existed simultaneously for a period of ten seconds, the GS annunciation will appear to acknowledge that the glideslope mode has automatically armed, as shown in Fig. 3-12:

1. NAV APR mode engaged
2. ALT mode engaged
3. NAV Flag out of view
4. GS Flag out of view
5. LOC frequency selected
6. A/C within 50% CDI needle deflection of LOC centerline
7. A/C more than 60% Glideslope Deviation Indication (GDI) needle deflection below GS centerline

If the last condition cannot be met because the aircraft is too near the GS centerline, then manual arming of the glideslope mode can be instantly achieved by pressing the ALT mode selector switch.

The armed glideslope mode can be subsequently disabled by pressing the NAV mode selector switch. The GS annunciation will flash, and the DSABL annunciation will appear to acknowledge this, as shown in Fig. 3-13. To then re-arm the glideslope mode, press the NAV mode selector switch again. The GS and DSABL annunciations will immediately extinguish, but the GS annunciation will re-appear after ten seconds.

With the glideslope mode armed, once the aircraft arrives at 5% GDI needle deflection below the GS centerline, the ALT annunciation will extinguish to indicate engagement of the glideslope mode, as shown in Fig. 3-14.

Note:

If the approach positions the aircraft slightly above the GS centerline, then manual engagement of the glideslope mode can be instantly achieved by pressing the ALT mode selector switch.

Caution:

Manual engagement of the glideslope mode above the GS centerline will result in the aircraft moving aggressively toward the GS centerline. Do not manually engage the glideslope mode if GDI needle deflection is greater than 10% above the GS centerline.

The GS annunciation will flash whenever GDI needle deflection exceeds 50%, or the GS Flag is in view. In the latter event, the FAIL annunciation will also appear.

At the Decision Height (DH), disconnect the autopilot to execute either a landing or go-around (GA).

A pictorial of this procedure is shown in Fig. 3-15.

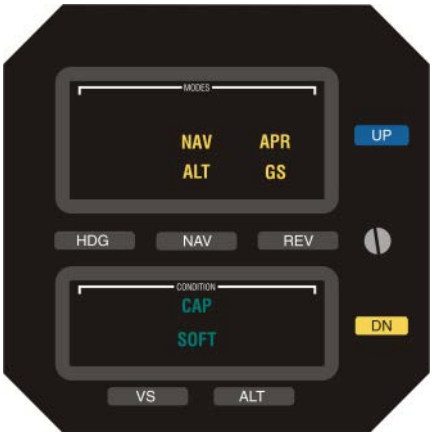


Fig. 3-12. AP Display, NAV APR and ALT HOLD Modes Engaged, GS Mode Armed

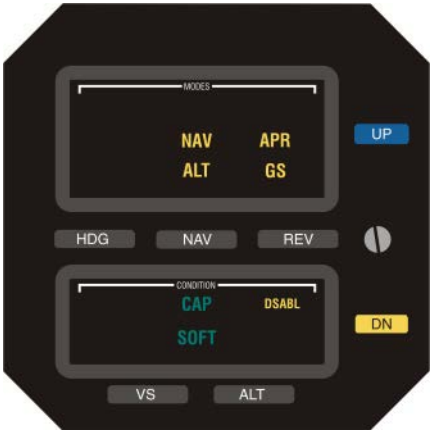


Fig. 3-13. AP Display, NAV APR and ALT HOLD Modes Engaged, GS Mode Disabled

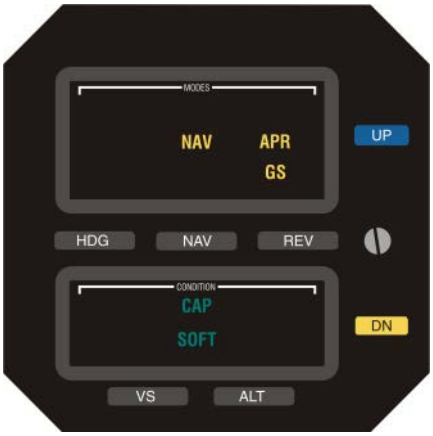


Fig. 3-14. AP Display, NAV APR and GS Modes Engaged

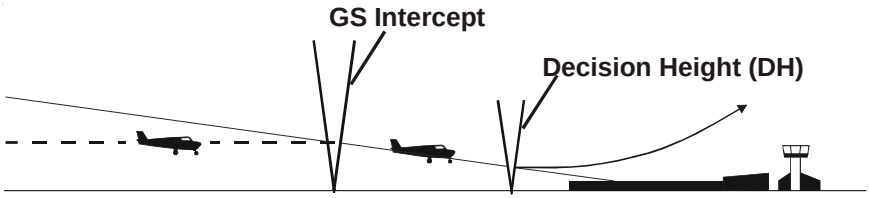


Fig. 3-15. Straight-In ILS Approach

3.2.2 ILS Approach with Procedure Turn

Execute a procedure turn intercept and track of the FRONT INBOUND LOC course (reference section 3.3.5) above the approach altitude, just until the aircraft is established on the FRONT INBOUND PROCEDURE TURN heading, with the heading mode still engaged. Establish the desired vertical descent speed, and then press the VS mode selector switch to engage the vertical speed mode. Upon reaching the approach altitude, press the ALT mode selector switch to engage the altitude hold mode. Press the NAV mode selector switch to engage the navigation approach mode, such that the autopilot will execute a straight-in intercept and track of the FRONT INBOUND LOC course (reference section 3.3.3). Execute a straight-in intercept and track of the glideslope (reference section 3.2.1).

3.3 Non-Precision Approach Procedures

3.3.1 Straight-In Back Course Approach

Select the LOC frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to FRONT INBOUND LOC course on compass card.

Heading System DG

Set Heading Bug to BACK INBOUND LOC course on compass card.

Press the REV mode selector switch to engage the reverse approach mode. The REV and APR annunciations will appear as shown in Fig. 3-16, to acknowledge that this mode is engaged. The autopilot will intercept and track the BACK INBOUND LOC course. To ensure that it has sufficient overall authority, the autopilot will track this course in the CAP SOFT condition, which is acknowledged by the appearance of those respective annunciations as shown in Fig. 3-17. If the heading system is a DG, then the autopilot will fly the aircraft in the direction opposite to that of CDI needle deflection.

The REV annunciation will flash whenever CDI needle deflection exceeds 50%, or the NAV Flag is in view. In the latter event, the FAIL annunciation will also appear.

A summary pictorial of this procedure is shown in Fig. 3-18.

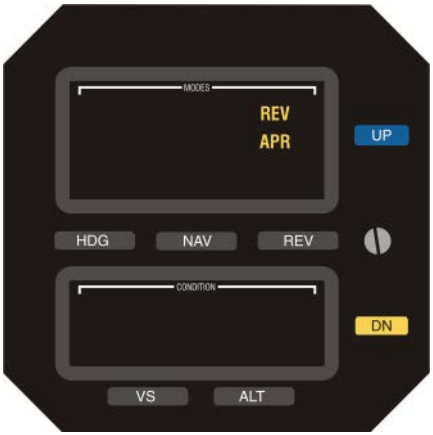


Fig. 3-16. AP Display, REV APR Mode Engaged, Before LOC Back Course Intercept

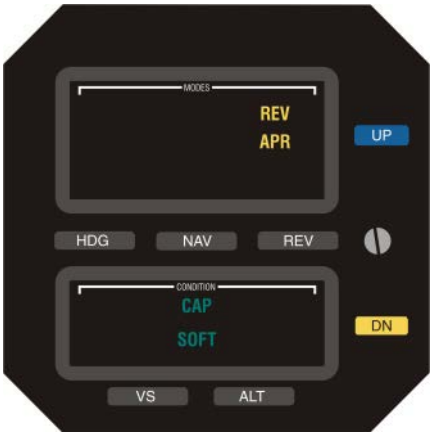
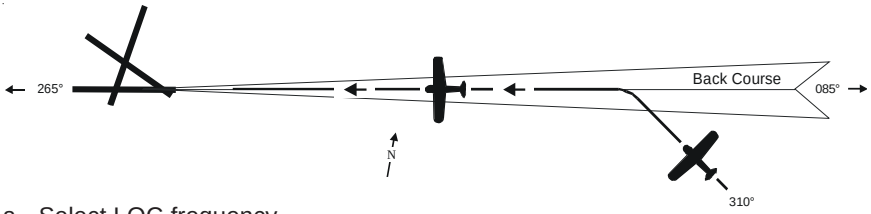


Fig. 3-17. AP Display, REV APR Mode Engaged, Track LOC Back Course Inbound



a. Select LOC frequency.

b. Heading System HSI

Set Course Pointer to FRONT INBOUND LOC course.

Heading System DG

Set Heading Bug to BACK INBOUND LOC course.

c. Press REV mode selector switch to engage reverse approach mode.

d. Intercept and track BACK INBOUND LOC course.

Fig. 3-18. Straight-In Back Course Approach

3.3.1.1 Pilot Selectable Intercept Angle

To select an intercept angle, set the Heading Bug to the desired intercept heading on the compass card, such that the difference between this heading and the BACK INBOUND LOC course is the intercept angle. If the heading system is an HSI, set the Course Pointer to the FRONT INBOUND LOC course on the compass card.

Press and hold the HDG mode selector switch, and then press the REV mode selector switch to engage the heading mode and arm the reverse approach mode. The HDG, REV, and APR annunciations will appear as shown in Fig. 3-19, to acknowledge this.

The autopilot will establish the aircraft on the selected intercept angle (heading), until it must turn the aircraft onto the BACK INBOUND LOC course to prevent overshoot. At that point in the intercept sequence, the HDG annunciation will extinguish to indicate engagement of the reverse approach mode. At the moment this occurs, if the heading system is a DG, immediately set the Heading Bug to the BACK INBOUND LOC course, in order to input a course error to the autopilot. Otherwise, the autopilot will lack sufficient authority to turn the aircraft onto the course.

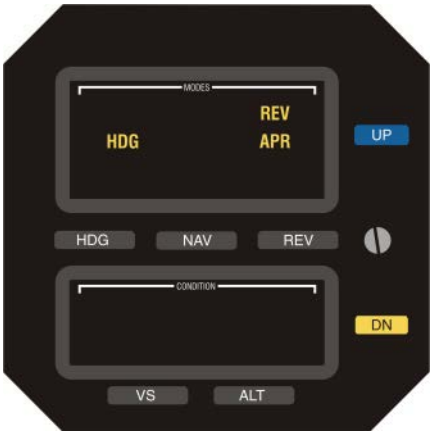


Fig. 3-19. AP Display, HDG Mode Engaged, REV APR Mode Armed

3.3.2 Back Course Approach with Procedure Turn

Select the LOC frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to FRONT INBOUND LOC course on compass card.

Heading System DG

Set Heading Bug to FRONT INBOUND LOC course on compass card.

Press the NAV mode selector switch to engage the navigation approach mode. The NAV and APR annunciations will appear as shown in Fig. 3-20, to acknowledge that this mode is engaged. The autopilot will intercept and track the BACK OUTBOUND LOC course. To ensure that it has sufficient overall authority, the autopilot will track this course in the CAP SOFT condition, which is acknowledged by the appearance of those respective annunciations as shown in Fig. 3-21.

At the appropriate time, set the Heading Bug to the BACK OUTBOUND PROCEDURE TURN heading, and then press the HDG mode selector switch to engage the heading mode. Hold this heading until the point at which it is time to turn the aircraft again. At that point, turn the Heading Bug in two successive 90° increments, to establish the aircraft on the BACK INBOUND PROCEDURE TURN heading.

Heading System HSI

Course Pointer remains unchanged on compass card.

Heading System DG

Set Heading Bug to BACK INBOUND LOC course on compass card.

Press the REV mode selector switch to engage the reverse approach mode. The REV and APR annunciations will appear as shown in Fig. 3-22, to acknowledge that this mode is engaged. The autopilot will intercept and track the BACK INBOUND LOC course. To ensure that it has sufficient overall authority, the autopilot will track this course in the CAP SOFT condition, which is acknowledged by the appearance of those respective annunciations as shown in Fig. 3-23. If the heading system is a DG, then the autopilot will fly the aircraft in the direction opposite to that of CDI needle deflection.

A summary pictorial of this procedure is shown in Fig. 3-24.

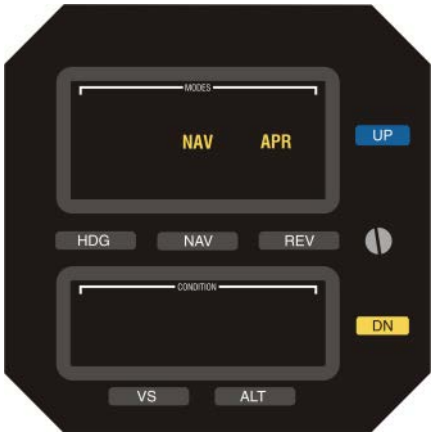


Fig. 3-20. AP Display, NAV APR Mode Engaged, Before LOC Back Course Intercept

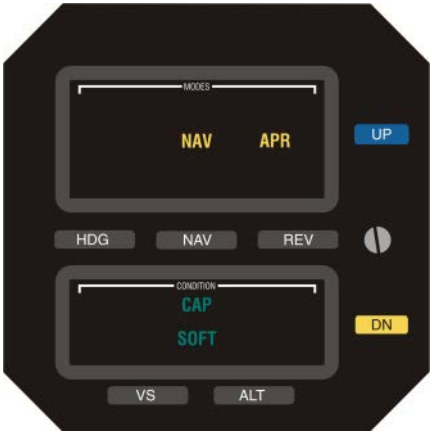


Fig. 3-21. AP Display, NAV APR Mode Engaged, Track LOC Back Course Outbound

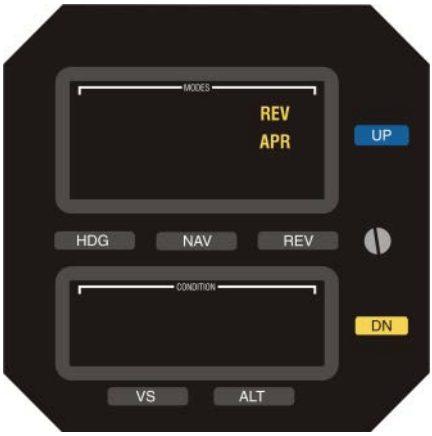


Fig. 3-22. AP Display, REV APR Mode Engaged, Before LOC Back Course Intercept

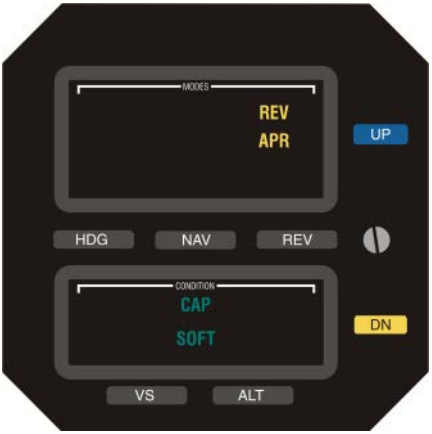
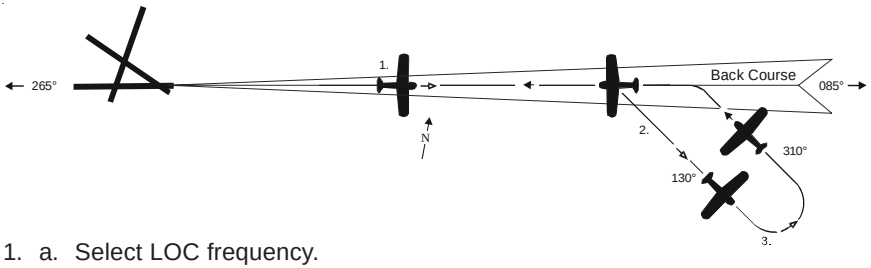


Fig. 3-23. AP Display, REV APR Mode Engaged, Track LOC Back Course Inbound



1. a. Select LOC frequency.

   b. Heading System HSI

      Set Course Pointer to FRONT INBOUND LOC course.

      Heading System DG

      Set Heading Bug to FRONT INBOUND LOC course.

   c. Press NAV mode selector switch to engage navigation approach mode.

   d. Intercept and track BACK OUTBOUND LOC course.

2. a. At appropriate time, set Heading Bug to BACK OUTBOUND PROCEDURE TURN heading.

   b. Press HDG mode selector switch to engage heading mode.

3. a. Turn Heading Bug in two successive 90° increments, to establish aircraft on BACK INBOUND PROCEDURE TURN heading.

   b. Heading System HSI

      Course Pointer remains unchanged.

      Heading System DG

      Set Heading Bug to BACK INBOUND LOC course.

   c. Press REV mode selector switch to engage reverse approach mode.

   d. Intercept and track BACK INBOUND LOC course.

Fig. 3-24. Back Course Approach with Procedure Turn

3.3.3 Straight-In LOC Approach

Select the LOC frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to FRONT INBOUND LOC course on compass card.

Heading System DG

Set Heading Bug to FRONT INBOUND LOC course on compass card.

Press the NAV mode selector switch to engage the navigation approach mode. The NAV and APR annunciations will appear as shown in Fig. 3-25, to acknowledge that this mode is engaged. The autopilot will intercept and track the FRONT INBOUND LOC course. To ensure that it has sufficient overall authority, the autopilot will track this course in the CAP SOFT condition, which is acknowledged by the appearance of those respective annunciations as shown in Fig. 3-26.

A summary pictorial of this procedure is shown in Fig. 3-27.

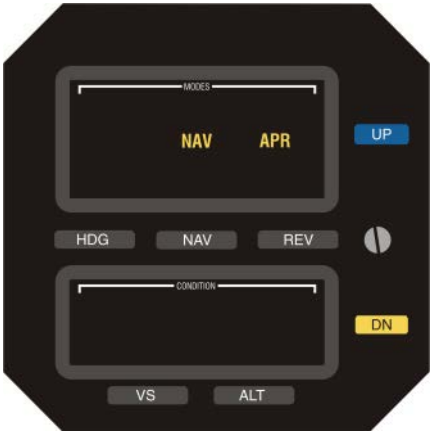


Fig. 3-25. AP Display, NAV APR Mode Engaged, Before LOC Front Course Intercept

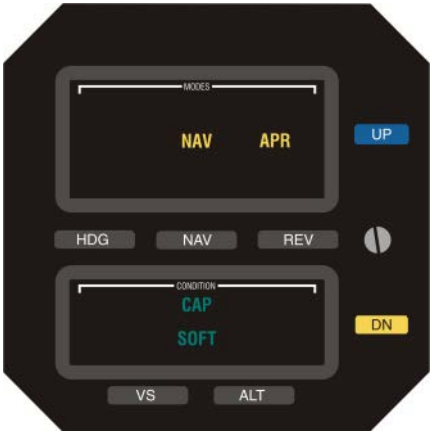
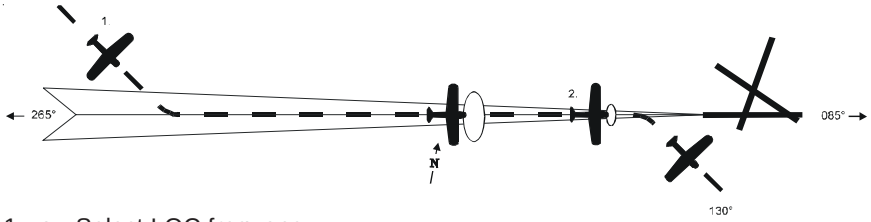


Fig. 3-26. AP Display, NAV APR Mode Engaged, Track LOC Front Course Inbound



1. a. Select LOC frequency.

   b. Heading System HSI

      Set Course Pointer to FRONT INBOUND LOC course.

      Heading System DG

      Set Heading Bug to FRONT INBOUND LOC course.

   c. Press NAV mode selector switch to engage navigation approach mode.

   d. Intercept and track FRONT INBOUND LOC course.

2. a. At middle marker, if missed approach is declared, disconnect autopilot.

   b. Stabilize aircraft.

   c. Set Heading Bug to missed approach heading.

   d. Press HDG mode selector switch to engage heading mode.

Fig. 3-27. Straight-In LOC Approach

3.3.4 Straight-In VOR Approach

Select the VOR frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to FRONT INBOUND VOR course on compass card.

Heading System DG

Set Heading Bug and OBS to FRONT INBOUND VOR course on each respective compass card.

Press the NAV mode selector switch to engage the navigation mode. The NAV annunciation will appear as shown in Fig. 3-28, to acknowledge that this mode is engaged. The autopilot will intercept and track the FRONT INBOUND VOR course. It will track this course in the SOFT condition, which is acknowledged by the appearance of that annunciation and the extinguishment of the CAP annunciation, as shown in Fig. 3-29.

A summary pictorial of this procedure is shown in Fig. 3-30.

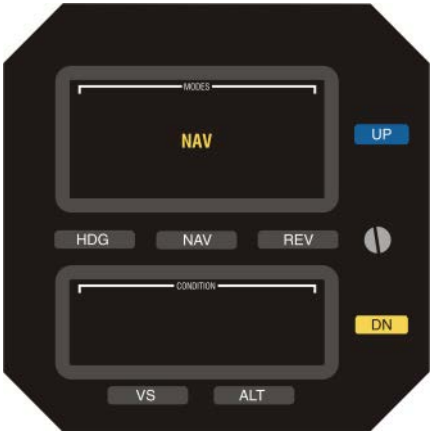


Fig. 3-28. AP Display, NAV Mode Engaged, Before VOR Front Course Intercept

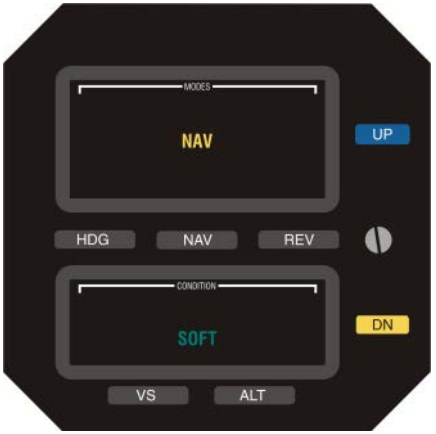
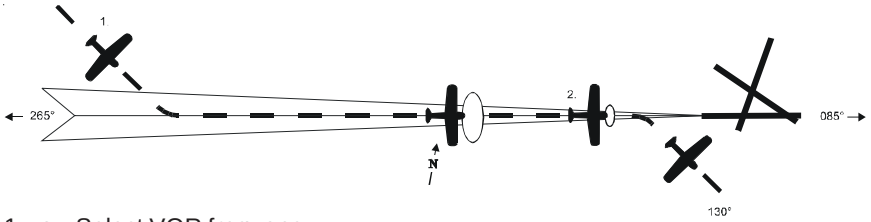


Fig. 3-29. AP Display, NAV Mode Engaged, Track VOR Front Course Inbound



1. a. Select VOR frequency.

   b. Heading System HSI

      Set Course Pointer to FRONT INBOUND VOR course.

      Heading System DG

      Set Heading Bug and OBS to FRONT INBOUND VOR course.

   c. Press NAV mode selector switch to engage navigation mode.

   d. Intercept and track FRONT INBOUND VOR course.

2. a. At middle marker, if missed approach is declared, disconnect autopilot.

   b. Stabilize aircraft.

   c. Set Heading Bug to missed approach heading.

   d. Press HDG mode selector switch to engage heading mode.

Fig. 3-30. Straight-In VOR Approach

3.3.5 LOC Approach with Procedure Turn

Select the LOC frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to FRONT INBOUND LOC course on compass card.

Heading System DG

Set Heading Bug to BACK INBOUND LOC course on compass card.

Press the REV mode selector switch to engage the reverse approach mode. The REV and APR annunciations will appear as shown in Fig. 3-31, to acknowledge that this mode is engaged. The autopilot will intercept and track the FRONT OUTBOUND LOC course. To ensure that it has sufficient overall authority, the autopilot will track this course in the CAP SOFT condition, which is acknowledged by the appearance of those respective annunciations as shown in Fig. 3-32. If the heading system is a DG, then the autopilot will fly the aircraft in the direction opposite to that of CDI needle deflection.

At the appropriate time, set the Heading Bug to the FRONT OUTBOUND PROCEDURE TURN heading, and then press the HDG mode selector switch to engage the heading mode. Hold this heading until the point at which it is time to turn the aircraft again. At that point, turn the Heading Bug in two successive 90° increments, to establish the aircraft on the FRONT INBOUND PROCEDURE TURN heading.

Heading System HSI

Course Pointer remains unchanged on compass card.

Heading System DG

Set Heading Bug to FRONT INBOUND LOC course on compass card.

Press the NAV mode selector switch to engage the navigation approach mode. The NAV and APR annunciations will appear as shown in Fig. 3-33, to acknowledge that this mode is engaged. The autopilot will intercept and track the FRONT INBOUND LOC course. To ensure that it has sufficient overall authority, the autopilot will track this course in the CAP SOFT condition, which is acknowledged by the appearance of those respective annunciations as shown in Fig. 3-34.

A summary pictorial of this procedure is shown in Fig. 3-35.

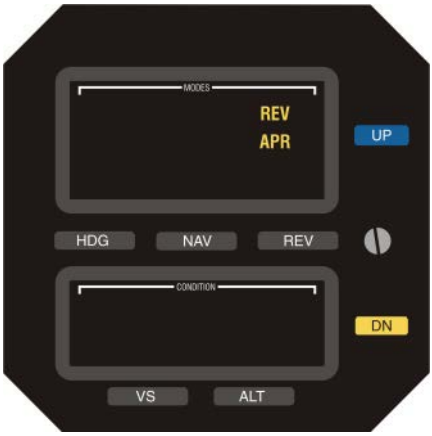


Fig. 3-31. AP Display, REV APR Mode Engaged, Before LOC Front Course Intercept

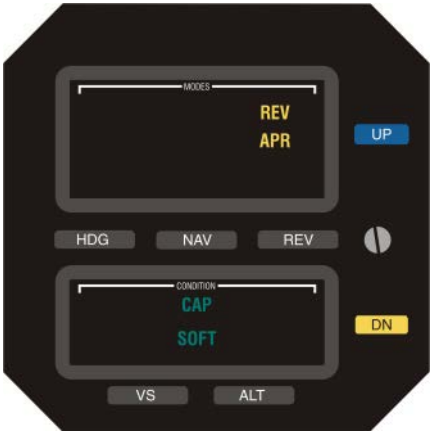


Fig. 3-32. AP Display, REV APR Mode Engaged, Track LOC Front Course Outbound

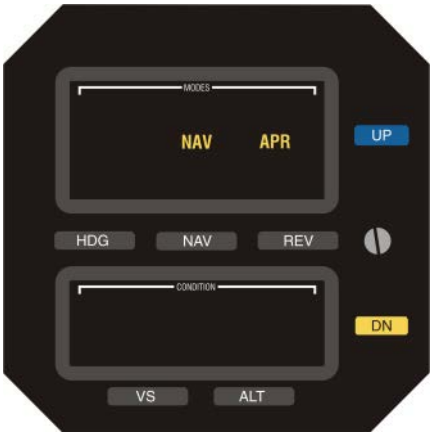


Fig. 3-33. AP Display, NAV APR Mode Engaged, Before LOC Front Course Intercept

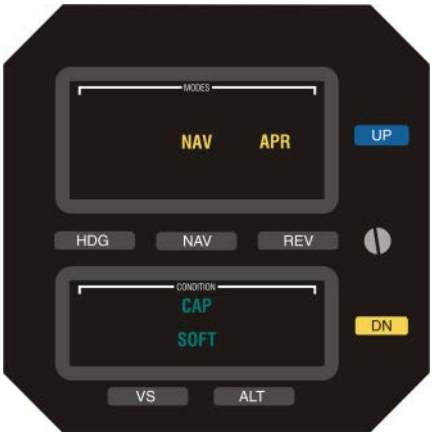
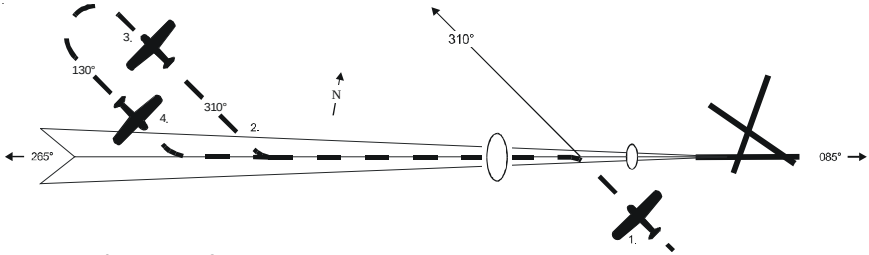


Fig. 3-34. AP Display, NAV APR Mode Engaged, Track LOC Front Course Inbound



1. a. Select LOC frequency.

   b. Heading System HSI

      Set Course Pointer to FRONT INBOUND LOC course.

      Heading System DG

      Set Heading Bug to BACK INBOUND LOC course.

   c. Press REV mode selector switch to engage reverse approach mode.

   d. Intercept and track FRONT OUTBOUND LOC course.

2. a. At appropriate time, set Heading Bug to FRONT OUTBOUND PROCEDURE TURN heading.

   b. Press HDG mode selector switch to engage heading mode.

3. a. Turn Heading Bug in two successive 90° increments, to establish aircraft on FRONT INBOUND PROCEDURE TURN heading.

4. a. Heading System HSI

      Course Pointer remains unchanged.

      Heading System DG

      Set Heading Bug to FRONT INBOUND LOC course.

   b. Press NAV mode selector switch to engage navigation approach mode.

   c. Intercept and track FRONT INBOUND LOC course.

   d. At middle marker, if missed approach is declared, disconnect autopilot.

   e. Stabilize aircraft.

   f. Set Heading Bug to missed approach heading.

   g. Press HDG mode selector switch to engage heading mode.

Fig. 3-35. LOC Approach with Procedure Turn

3.3.6 VOR Approach with Procedure Turn

Select the VOR frequency on the Navigation Receiver.

Heading System HSI

Set Course Pointer to FRONT INBOUND VOR course on compass card.

Heading System DG

Set Heading Bug and OBS to BACK INBOUND VOR course on each respective compass card.

Press the REV mode selector switch to engage the reverse mode. The REV annunciation will appear as shown in Fig. 3-36, to acknowledge that this mode is engaged. The autopilot will intercept and track the FRONT OUTBOUND VOR course. It will track this course in the SOFT condition, which is acknowledged by the appearance of that annunciation and the extinguishment of the CAP annunciation, as shown in Fig. 3-37.

At the appropriate time, set the Heading Bug to the FRONT OUTBOUND PROCEDURE TURN heading, and then press the HDG mode selector switch to engage the heading mode. Hold this heading until the point at which it is time to turn the aircraft again. At that point, turn the Heading Bug in two successive 90° increments, to establish the aircraft on the FRONT INBOUND PROCEDURE TURN heading.

Heading System HSI

Course Pointer remains unchanged on compass card.

Heading System DG

Set Heading Bug and OBS to FRONT INBOUND VOR course on each respective compass card.

Press the NAV mode selector switch to engage the navigation mode. The NAV annunciation will appear as shown in Fig. 3-38, to acknowledge that this mode is engaged. The autopilot will intercept and track the FRONT INBOUND VOR course. It will track this course in the SOFT condition, which is acknowledged by the appearance of that annunciation and the extinguishment of the CAP annunciation, as shown in Fig. 3-39.

A summary pictorial of this procedure is shown in Fig. 3-40.

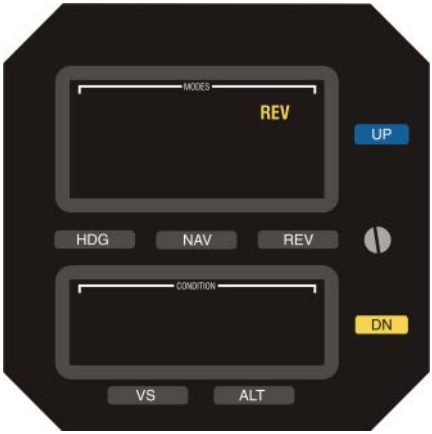


Fig. 3-36. AP Display, REV Mode Engaged, Before VOR Front Course Intercept

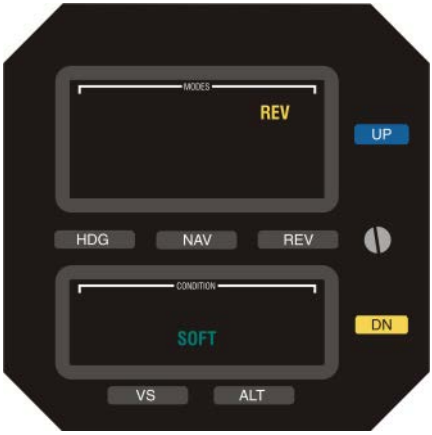


Fig. 3-37. AP Display, REV Mode Engaged, Track VOR Front Course Outbound

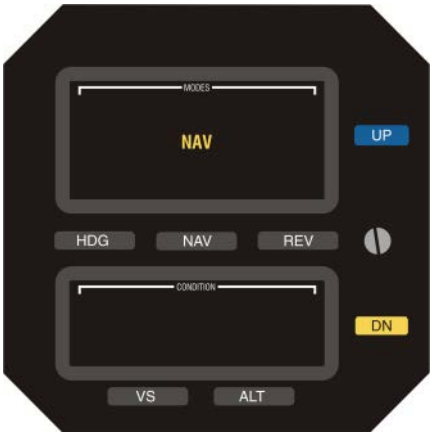


Fig. 3-38. AP Display, NAV Mode Engaged, Before VOR Front Course Intercept

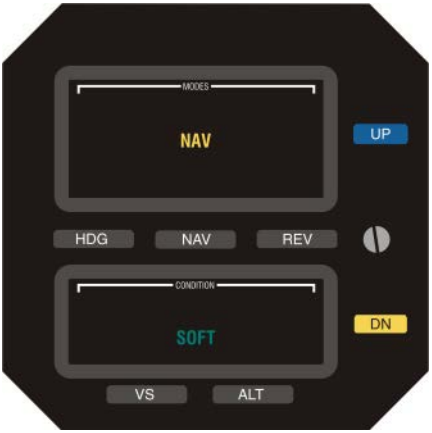
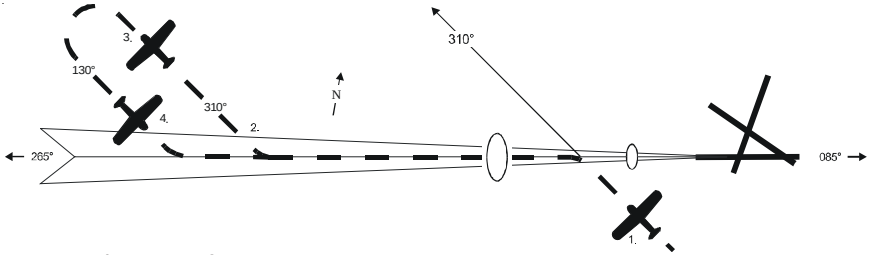


Fig. 3-39. AP Display, NAV Mode Engaged, Track VOR Front Course Inbound



1. a. Select VOR frequency.

   b. Heading System HSI

      Set Course Pointer to FRONT INBOUND VOR course.

      Heading System DG

      Set Heading Bug and OBS to BACK INBOUND VOR course.

   c. Press REV mode selector switch to engage reverse mode.

   d. Intercept and track FRONT OUTBOUND VOR course.

2. a. At appropriate time, set Heading Bug to FRONT OUTBOUND PROCEDURE TURN heading.

   b. Press HDG mode selector switch to engage heading mode.

3. a. Turn Heading Bug in two successive 90° increments, to establish aircraft on FRONT INBOUND PROCEDURE TURN heading.

4. a. Heading System HSI

      Course Pointer remains unchanged.

      Heading System DG

      Set Heading Bug and OBS to FRONT INBOUND VOR course.

   b. Press NAV mode selector switch to engage navigation mode.

   c. Intercept and track FRONT INBOUND VOR course.

   d. At middle marker, if missed approach is declared, disconnect autopilot.

   e. Stabilize aircraft.

   f. Set Heading Bug to missed approach heading.

   g. Press HDG mode selector switch to engage heading mode.

Fig. 3-40. VOR Approach with Procedure Turn

3.4 Flight Director Operation

The optional Flight Director (FD) is a display of the flight profile. It is commanded by the autopilot. A pair of Steering Command Bars and an Aircraft Reference Symbol (ARS) are the principal FD components of interest. The position of the Steering Command Bars can be adjusted by the pilot, using the Parallax Adjustment shown in Fig. 3-41. The FD operates in either the FD/AP mode or the FD mode.

Fig. 3-41. FD Parallax Adjustment

3.4.1 FD/AP Mode

Set the Autopilot (AP) Master Switch to the ON position, as shown in Fig. 3-42. The position of the FD Master Switch does not matter. The FD annunciation will appear as shown in Fig. 3-43, to acknowledge that the FD is powered-up. Engage a roll mode (HDG, NAV, NAV APR, REV, REV APR) and a pitch mode (ALT HOLD, VS, GS). The autopilot will steer the aircraft toward the Steering Command Bars, until the ARS is tucked into them. The FD provides a visual indication of how accurately the autopilot is tracking its own roll and pitch commands. A typical view of the FD with the FD/AP mode engaged is shown in Fig. 3-44.

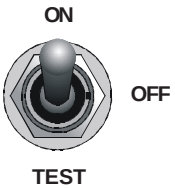


Fig. 3-42. AP Master Switch in ON Position

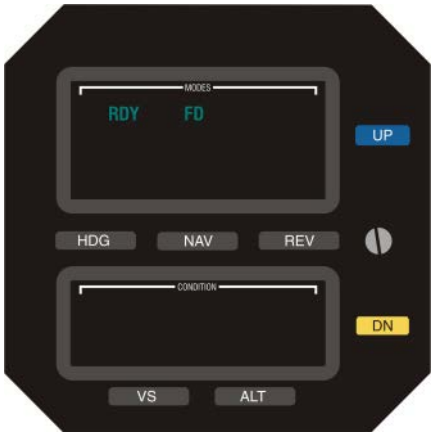


Fig. 3-43. AP Display, FD Powered-Up

Fig. 3-44. FD Display, FD/AP Mode Engaged

3.4.2 FD Mode

With a roll mode (HDG, NAV, NAV APR, REV, REV APR) and a pitch mode (ALT HOLD, VS, GS) engaged, set the FD Master Switch to the ON position, as shown in Fig. 3-45. Set the AP Master Switch to the OFF position, as shown in Fig. 3-46. This disengages both the roll servo and pitch servo, although the previously engaged roll mode and pitch mode annunciations will still appear on the AP display, along with the FD annunciation. The pilot must steer the aircraft toward the Steering Command Bars, until the ARS is tucked into them. The FD provides a visual indication of how accurately the pilot is tracking the autopilot's roll and pitch commands. A typical view of the FD with the FD mode engaged is shown in Fig. 3-47.

Fig. 3-45. FD Master Switch in ON Position

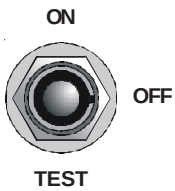


Fig. 3-46. AP Master Switch in OFF Position

Fig. 3-47. FD Display, FD Mode Engaged

3.5 Yaw Damper Operation

The optional Yaw Damper serves to dampen excessive adverse yaw. It operates in either the AUTO mode or ON mode, depending upon the position of the Yaw Damper Master Switch shown in Fig. 3-48.

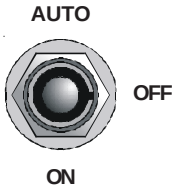


Fig. 3-48. Yaw Damper Master Switch

The Yaw Damper Trim Knob, shown in Fig. 3-49, is used to center the slip/skid ball when the yaw servo is engaged.

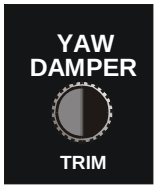


Fig. 3-49. Yaw Damper Trim Knob

3.5.1 AUTO Mode

With the Yaw Damper Master Switch in the AUTO position, the yaw servo will become automatically engaged whenever a roll mode (HDG, NAV, NAV APR, REV, REV APR) is engaged.

3.5.2 ON Mode

With the Yaw Damper Master Switch in the ON position, the yaw servo will be engaged at all times, entirely independent of autopilot operation.

3.5.3 Yaw Damper Trim

With the yaw servo engaged, rotate the Yaw Damper Trim Knob to center the slip/skid ball.

3.6 Autopilot Disconnect

The autopilot can be disconnected by any of the following means:

1. Press AP DISC / TRIM INTR Switch typically located on Control Wheel.

2. Press either forward or aft on both segments of Manual Electric Trim Switch located on Control Wheel, whenever a pitch mode (ALT HOLD, VS, GS) is engaged.

3. Set AP Master Switch to OFF position.

4. Pull AP Circuit Breaker.

3.7 Automatic Trim Disable

In the event of a trim runaway, the automatic trim function can be disabled by executing the following sequence:

1. Press/Hold AP DISC / TRIM INTR Switch typically located on Control Wheel.

2. Set Trim Master Switch to OFF position.

3. Pull Trim Circuit Breaker.

SECTION 4
OPERATING PARAMETERS

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4.1 Roll Axis Limits

Turn Rate

Piston A/C:

90% Standard Rate Turn (HDG, NAV, NAV APR, REV, REV APR Modes)

Turboprop A/C:

75% Standard Rate Turn (HDG, NAV, NAV APR, REV, REV APR Modes)

All A/C:

4.2 Pitch Axis Limits

Altitude

32,000 FT

Vertical Force Due to Acceleration

0.60 g

Vertical Speed

1600 FPM Climbing or Descending

Modes

A pitch mode (ALT HOLD, VS, GS) can only be engaged after a roll mode (HDG, NAV, NAV APR, REV, REV APR) has been engaged.

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SECTION 5
GLOSSARY

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Term	Meaning
A/C	Aircraft
ADJ	Adjustment
ALT	Altitude
AP	Autopilot
APR	Approach
ARS	Aircraft Reference Symbol
CAP	Capture
CCW	Counter–Clockwise
CDI	Course Deviation Indication
CRS	Course
CW	Clockwise
DG	Directional Gyro
DH	Decision Height
DISC	Disconnect
DSABL	Disable
FAA	Federal Aviation Administration
FD	Flight Director
FPM	Feet–per–Minute
FT	Feet
GA	Go Around
GDI	Glideslope Deviation Indication
GS	Glideslope
HDG	Heading
HSI	Horizontal Situation Indicator
IFR	Instrument Flight Rules
ILS	Instrument Landing System
INTR	Interrupt
KTS	Knots
LOC	Localizer
MAP	Missed Approach Point
NAV	Navigation
NM	Nautical Miles
OBS	Omnibearing Selector
PFGC	Pitch Flight Guidance Computer
PLX	Parallax
PN	Part Number
POH	Pilot's Operating Handbook
RDY	Ready
REV	Reverse
RFGC	Roll Flight Guidance Computer
SEL	Selector
VMC	Visual Meteorological Conditions
VOR	Very High Frequency Omnidirectional Radio Range
VS	Vertical Speed
YD	Yaw Damper

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Notice:

Contact S-TEC Customer Support at 800-872-7832 for a Service Repair Order (SRO) number prior to the return of any component for any reason.

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