SECTION 9

SUPPLEMENTS

This section consists of a series of supplements, each covering a single system which may be installed in the TBM 700 and/or TBM 850 airplane. Each supplement contains a brief description, and when applicable, operating limitations, emergency and normal procedures, and performance. The supplements are arranged numerically (See "List of Supplements and Validities") to make it easier to locate a particular supplement. Some installed items of optional equipment, whose function and operational procedures do not require detailed instructions, are discussed in Section 7.

Limitations contained in the following supplements are Airworthiness Authorities approved and adherence to these limitations is mandatory.

NOTE

The Supplements Section must include approved Supplements for all optional equipment installed on the airplane. Additional Supplements for optional equipment not installed on this airplane may be included and can be removed if desired.

LIST OF SUPPLEMENTS AND VALIDITIES

Supp. No.		Edition Date
A -	General All From S / N 1	31.01.90
1 -	"BENDIX / KING" autopilot type KFC 275 TBM 700A and TBM 700B From S / N 1	31.03.90
2 -	"BENDIX / KING" vertical speed and altitude selector type KAS 297C All From S / N 1	31.03.90
3 -	"BENDIX / KING" RDS 81 weather radar TBM 700A and TBM 700B From S / N 1	30.11.90
4 -	"BENDIX / KING" RDS 82 weather radar TBM 700A and TBM 700B From S / N 1	30.11.90
5 -	"BENDIX / KING" RDS 82 VP vertical profile weather radar TBM 700A and TBM 700B From S / N 1	30.11.90
6 -	"BFG" WX-500 or WX-950 or WX-1000 or 1000+ or 1000E stormscope All From S / N 1	30.11.90
7 -	7-place accomodation TBM 700A and TBM 700B From S / N 1	28.02.91

LIST OF SUPPLEMENTS AND VALIDITIES (cont'd)

Supp. No.		Edition Date
8 -	"BENDIX / KING" GC 381A radar graphics interface TBM 700A and TBM 700B From S / N 1	28.02.91
9 -	"BENDIX / KING" EFS 40 All From S / N 1	31.05.91
10 -	"BENDIX / KING" autopilot type KFC 325 All From S / N 1	31.05.91
11 -	"CASEY COPTER" freon air conditioning TBM 700A From S / N 24	31.05.92
12 -	Window and capability of Camera / Observation TBM 700A From S / N 1	31.01.94
13 -	"BENDIX / KING" KLN90A GPS navigation system interfaced with HSI KI 525A TBM 700A and TBM 700B From S / N 1	30.04.94
14 -	"BENDIX / KING" KLN90A GPS navigation system interfaced with EHSI OF EFS 40 TBM 700A and TBM 700B From S / N 1	30.06.94
15 -	"KEITH" vapor cycle cooling system TBM 700A and TBM 700B From S / N 96	30.06.94

LIST OF SUPPLEMENTS AND VALIDITIES (cont'd)

Supp. No.		Edition Date
16 -	"BENDIX / KING" KRA 405 radar altimeter All From S / N 1	30.09.95
17 -	"BENDIX / KING" KLN90B GPS navigation system interfaced with EHSI OF EFS 40 TBM 700A and TBM 700B From S / N 1	30.04.96
18 -	"L'HOTELLIER" Engine fire detection system TBM 700A From S / N 1	31.01.96
19 -	"SHADIN" ETM (Engine Trend Monitor) TBM 700A, TBM 700B and TBM 850 From S / N 1	31.01.96
20 -	"BENDIX / KING" GC 360A radar graphics interface TBM 700A and TBM 700B From S / N 1	29.02.96
21 -	"BENDIX / KING" KLN90B GPS navigation system interfaced with the HSI KI525A TBM 700A and TBM 700B From S / N 1	30.04.96
22 -	"BENDIX / KING" RDR 2000 vertical profile weather radar All From S / N 1	30.06.96
23 -	AMS 44 dual channel audio control box TBM 700A From S / N 1	31.07.96

LIST OF SUPPLEMENTS AND VALIDITIES (cont'd)

Supp. No.		Edition Date
24	- "NAVCAL" flight inspection system capability TBM 700A From S / N 1	31.07.96
25	- "EVENTIDE" ARGUS 7000 CE moving map display TBM 700A and TBM 700B From S / N 1	10.06.98
26	- "BENDIX / KING" KLN90B GPS (B-RNAV) navigation system interfaced with EFS 40 EHSI TBM 700A, TBM 700B and TBM 700C From S / N 1	30.11.98
27	- "BENDIX / KING" KLN90B GPS (B-RNAV) navigation system interfaced with electromechanical HSI TBM 700A and TBM 700B From S / N 1	15.06.99
28	- "BFG" SKYWATCH SKY 497 or SKY 899 traffic advisory system All From S / N 1	31.08.99
29	- "EROS/INTERTECHNIQUE" gaseous oxygen system (30000 ft) TBM 700A and TBM 700B From S / N 40, plus S / N 24 and 36	30.09.99
30	- Cargo transportation capability TBM 700B and TBM 700C1 airplanes equipped with option OPT70 52002A "Pilot door"	15.06.01
31	- Intentionally left free	

LIST OF SUPPLEMENTS AND VALIDITIES (cont'd)

Supp. No.		Edition Date
32	- "GARMIN GNS 430" GPS navigation system interfaced with electromechanical instruments TBM 700A and TBM 700B From S / N 1	30.04.00
33	- Intentionally left free	
34	- "GARMIN GNS 430" GPS (B-RNAV) navigation system interfaced with EHSI OF EFS 40 TBM 700A and TBM 700B From S / N 1	31.08.00
35	- "HONEYWELL" KMD 850 Multi-function display TBM 700B, TBM 700C and TBM 850 From S / N 192	31.01.01
36	- "GARMIN GNS 530" GPS (B-RNAV) navigation system interfaced with EHSI OF EFS 40 All From S / N 1	31.10.01
37	- "EROS/INTERTECHNIQUE" gaseous oxygen system (31000 ft) TBM 700A and TBM 700B From S / N 40, plus S / N 24 and 36	30.08.01
38	- Operation at 31000 ft TBM 700A and TBM 700B From S / N 40, plus S / N 24 and 36	30.08.01
39	- KGP 560 "HONEYWELL" EGPWS system All From S / N 1	31.10.01
40	- Cargo transportation capability without pilot door TBM 700 airplanes equipped with the large door	15.11.01

LIST OF SUPPLEMENTS AND VALIDITIES (cont'd)

Supp. No.		Edition Date
41	- TBM 700C2 TBM 700C2 From S / N 244, plus S / N 205 and S / N 240	15.02.03
42	- "HONEYWELL" KMH 880 EGPWS/TAS system All From S / N 1	30.09.02
43	- Provision for TBM 700C2 TBM 700C1 From S / N 244, plus S / N 205 and S / N 240	10.12.02
44	- Chip detection system All From S / N 1	10.02.05

EASA Approval Number : EASA.A.C.02395

Date : November 28, 2005

SUPPLEMENT

"BENDIX / KING" VERTICAL SPEED AND ALTITUDE SELECTOR TYPE KAS 297C

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is provided to acquaint the pilot with the limitations as well as the normal and emergency operating procedures of the BENDIX / KING KAS 297C Vertical Speed and Altitude Selector when added to a KFC 275 or KFC 325 Flight Control System.

The KAS 297C provides the pilot with the following features : ability to select vertical speed hold ; ability to select, arm and, upon approaching the selected altitude, automatically transfer into Altitude Hold ; altitude alerting as specified by the regulation.

SECTION 2
LIMITATIONS

When the airplane is equipped with the KAS 297C, in addition to the autopilot, limitations are identical to those of the standard airplane plus those of the autopilot.
Refer to Section 2 "Limitations" of the basic Pilot's Operating Handbook and of the Autopilot Supplement.

SECTION 3
EMERGENCY PROCEDURES

No change in the basic emergency procedures of the airplane described in Section 3 "Emergency Procedures" of the basic Pilot's Operating Handbook and of the Autopilot Supplement.

SECTION 4
NORMAL PROCEDURES

These procedures supplement those of standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook and of the Autopilot Supplement.

BEFORE TAXIING

KAS 297C TEST

1 - "TEST" knob of KMC 321 ..... **PRESS**

2 - Check :

- All legends and digits are displayed on the KAS 297C.

VERTICAL SPEED MODES

MODE ENGAGEMENT

1 - Select knob ..... **PULL, then ROTATE to display the desired vertical speed**

2 - "ENG" push-button ..... **PRESS**

VERTICAL SPEED CHANGE

1 - Using "CWS"

- "CWS" push-button ..... **PRESS until the desired vertical speed is displayed**
- "CWS" push-button ..... **RELEASE when the desired vertical speed is reached**

The autopilot will maintain the desired vertical speed.

2 - Using Vertical Trim Control

- Vertical Trim Control ..... **PRESS either "UP" or "DN"**

The search of the new vertical speed will be performed at the rate of 100 ft/min per second.

- Vertical Trim Control ..... **RELEASE when desired time in seconds has passed (for example : press 5 seconds for a change of 500 ft/min)**

The autopilot will maintain the desired vertical speed.

CAUTION

VERTICAL SPEED HOLD MODE USE REQUIRES MONITORING OF THE INDICATED SPEED ESPECIALLY WHEN INDICATED SPEEDS ARE LOW (CLIMB) OR HIGH (DESCENT).

CAUTION

WHEN NEARING A PRESELECTED ALTITUDE. VERTICAL TRIM USE OR PRESELECTED ALTITUDE CHANGES WHILE THE SYSTEM IS IN CAPT MODE, WILL CANCEL THE MODE AND THE PRESELECTED ALTITUDE WILL BE DISREGARDED. THE SYSTEM MUST BE RE-ARMED BY THE PILOT. IF THE AIRPLANE HAS PASSED BEYOND THE SELECTED ALTITUDE, THE PILOT MUST ALSO RE-ESTABLISH THE NECESSARY INTERCEPT ATTITUDE

ALTITUDE PRESELECT MODES

MODE ENGAGEMENT

1 - Select knob ..... **PRESS, then ROTATE to display the desired altitude**

2 - "ARM" push-button ..... **PRESS**

3 - Display an airplane attitude or a longitudinal mode ("IAS" or "VS") necessary to intercept the selected altitude.

SECTION 5

PERFORMANCE

No change in the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

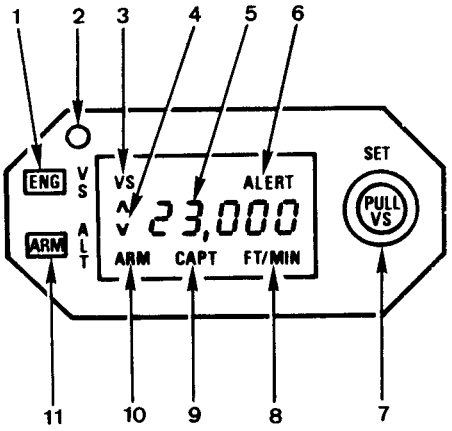
SECTION 6

WEIGHT AND BALANCE

Weight and balance corresponding to the KAS 297C "BENDIX KING" autopilot are given in the optional equipment list attached to Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

SECTION 7
DESCRIPTION

7.1 - KAS 297C CONTROLS AND DISPLAYS



S-4-700-22-0003

Figure 9.2.1 - KAS 297C CONTROLS AND DISPLAYS

Item 1 - VERTICAL SPEED MODE (ENG) BUTTON
When pressed will engage the Vertical Speed Hold mode. When pressed a second time will disengage the Vertical Speed Hold mode. When pressed with altitude displayed, will engage the Vertical Speed Hold mode and re-sync the Vertical speed Hold mode to the current vertical speed of the airplane.

Item 2 - PHOTOCELL
Automatically dims display according to the cockpit ambient light.

Item 3 - VERTICAL SPEED (VS) ANNUNCIATOR
Illuminates when the Vertical Speed Hold mode is engaged.

Item 4 - VERTICAL SPEED UP / DOWN CARETS (^ or v)
Indicates whether the selected vertical speed is up or down.

Item 5 - GAS DISCHARGE DISPLAY
Displays selected altitude from 100 to 35000 feet or the selected vertical speed from 0 to 3000 ft per minute up or down.

Item 6 - ALTITUDE ALERT (ALERT) ANNUNCIATOR
The ALERT annunciator is illuminated 1000 ft prior to the selected altitude, goes out 300 ft prior to the selected altitude and illuminates momentarily when the selected altitude is reached. Once the selected altitude is reached, the light signifies that the 300 ft "safe band" has been exceeded and will remain on until 1000 ft from the selected altitude. The alert light is accompanied by a 2 second, pulsating aural tone anytime the light initially comes on.

Item 7 - VERTICAL SPEED / ALTITUDE SELECT KNOB
Concentric knobs which allow easy setting of altitude or vertical speed. The small knob (inner) has an IN and OUT position.
Altitude is displayed and selected when the small knob is in the IN position. When rotated the small knob selects altitude in 100 foot increments with roll over into the 1000 digits. The larger knob (outer) selects altitude in 1000 foot increments with roll over into the 10000 digits.
Vertical speed is displayed and selected when the small knob is in the OUT position. When rotated the small knob selects vertical speed in 100 ft / min increments.
The larger knob selects vertical speed in 1000 ft / min increments up to a maximum of 3000 ft / min.

Item 8 - MODE (FT or FT / MIN) ANNUNCIATOR
Indicates FT / MIN when in the Vertical Speed Hold mode and FT when in the Altitude Select mode.

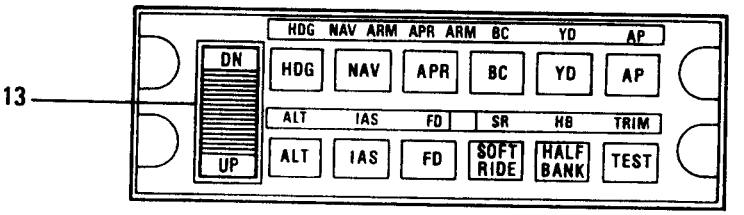
Item 9 - ALTITUDE CAPTURE (CAPT) ANNUNCIATOR
Indicates the KAS 297C has switched the autopilot from Pitch Attitude Hold or Vertical Speed Hold mode into the pitch roundout mode (CAPT). The point, just prior to transfer into Altitude Hold, at which the CAPT mode becomes active varies with the vertical speed, i.e. the higher the rate of climb, the sooner the CAPT mode becomes active ; at low rates of climb the activation of the CAPT mode and transfer to altitude hold occur almost simultaneously. Engagement of any vertical mode or use of vertical trim, when in CAPT mode, will cancel this mode.

Item 10 - ALTITUDE SELECT MODE (ARM) ANNUNCIATOR
Indicates that the Altitude Select mode is armed to capture the selected altitude.

Item 11 - ALTITUDE SELECT MODE (ARM) BUTTON
When pressed and the selected altitude is displayed, will arm the Altitude Select mode. The Altitude Select (ARM) mode will cancel altitude hold (ALT) if ALT is already engaged. If Altitude Select (ARM) mode is present when GS couple occurs, the GS mode will cancel Altitude Select (ARM) mode. The engagement of ALT by the pilot's use of the ALT switch will cancel the altitude Select (ARM) mode.

Item 12 - CONTROL WHEEL STEERING (CWS) BUTTON (Not shown) - When pressed, in addition to the normal autopilot functions, the CWS also interfaces with the KAS 297C. When operating in the Vertical Speed Hold mode, the CWS will re-sync the vertical Speed Hold mode to the current vertical speed of the airplane. If altitude is displayed when the CWS is pressed, the display will automatically display vertical speed as long as the CWS is depressed. CWS does not affect the Altitude Select mode.

7.2 - KMC 321 CONTROL BOX



S.4.700.22.0016

Figure 9.2.2 - KMC 321 CONTROL BOX

Item 13 - VERTICAL TRIM CONTROL
When in the Vertical Speed Hold mode this control can be used to slew the vertical speed up or down at 100 ft / min for every second the rocker switch is held down. If altitude is being displayed at the time the rocker switch is depressed, vertical speed will be displayed until 1 - 2 seconds after the rocker switch is released.

7.3 - CIRCUIT-BREAKERS

Autopilot components are supplied through following circuit-breakers :

LABEL	FUNCTION
AP / TRIMS	Supplies power to the KCP 220, the autopilot pitch, roll and yaw servos and the "PITCH TRIM", "AIL TRIM", "RUD TRIM" and "AP DISC" circuit-breakers.
AP ALERT	Supplies power to the KAA 15 audible alarm.
AP ALT SEL	Supplies power to the KAS 297C.
HSI RMI	Supplies the compass system.
PITCH TRIM	Supplies power to the manual electric pitch trim.
AP DISC	Delivers a control signal (28 VDC switched by "AP DISC TRM INT" switch) to the KCP 220 autopilot computer and to the KAA 15 alarm unit.

INTENTIONALLY LEFT BLANK

SUPPLEMENT

"BFG" WX-500 OR WX-950 OR WX-1000 OR 1000+ OR 1000E STORMSCOPE

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement supplies information to the pilot about limitations, normal and emergency procedures when the optional "BFG" WX-500 or WX-950 or WX-1000 or 1000+ or 1000E stormscope is installed on the TBM700 airplane. The stormscope must be used within limits of this supplement.

SECTION 2
LIMITATIONS

These limitations supplement those of standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

The "BFG" stormscope systems signal displays are not intended for the purpose of penetrating thunderstorm areas or areas of severe turbulence ; such intentional use is prohibited.

NOTE :
Range selection determines receiver sensitivity and therefore relative range. Displayed range is based on signal strength and is not to be used for accurate determination of thunderstorm location.

WX-1000 or 1000+ or 1000E

The "BFG" stormscope checklist functions are for reference only.

All

CAUTION

THE STORMSCOPE MUST NOT BE USED FOR THUNDERSTORM PENETRATION

- The Stormscope "BFG" Pilot's Handbook, Series II, No. 75-0299-7690-1 (WX-1000 or 1000+ or 1000E)
  or
- The WX-950 Pilot's guide, Series II, No. 009-10951-001
  or
- The WX-500 Pilot's guide, Series II, No. 009-11501-001 and the "GARMIN" GNS 530 Pilot's Guide, No. 190-00181-00,

at their last revision, shall be readily available to the pilot, each time the "BFG" stormscope operation is foreseen.

SECTION 3

EMERGENCY PROCEDURES

Installation and operation of "BFG" stormscope do not change the basic emergency procedures of the airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

SECTION 4

NORMAL PROCEDURES

Normal operating procedures of the "BFG" stormscope are outlined in :

- the Pilot's Handbook, Series II, No. 75-0299-7690-1 at its last revision for "BFG" stormscope model WX-1000 or 1000+ or 1000E
  or
- the WX-950 Pilot's Guide, Series II, No. 009-10951-001 at its last revision for "BFG" stormscope model WX-950
  or
- the WX-500 Pilot's Guide, Series II, No. 009-11501-001 at its last revision for "BFG" stormscope model WX-500.

SECTION 5

PERFORMANCE

Installation and operation of "BFG" stormscope do not change the basic emergency procedures of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Informations hereafter supplement the ones given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	34 - NAVIGATION			
A	Stormscope WX-1000+ (OPT 70 34009A)	BFG	16.535 (7.500)	228.35 (5.800)
A	Stormscope WX-1000 (OPT 70 34009B)	BFG	15.432 (7.000)	230.71 (5.860)
A	Stormscope, EFIS coupled WX-1000+ (OPT 70 34009C)	BFG	15.432 (7.000)	230.71 (5.860)
A	Stormscope, EFIS coupled - Remote installed control WX-1000E (OPT 70 34009D)	BFG	9.502 (4.310)	269.09 (6.835)
A	Stormscope, EFIS coupled WX-1000E (OPT 70 34009E)	BFG	15.939 (7.230)	230.94 (5.866)
A	Stormscope, shared with the SKYWATCH WX-1000E (OPT 70 34009F)	BFG	15.939 (7.230)	230.94 (5.866)
A	Stormscope, shared with the SKYWATCH WX-1000+ (OPT 70 34009G)	BFG	16.535 (7.500)	228.35 (5.800)
A	Stormscope WX-950 (OPT 70 34041)	BFG	4.696 (2.130)	191.85 (4.873)
A	Stormscope, shared with the GNS 530 GPS WX-500 (OPT 70 34056)	BFG	4.938 (2.240)	232.28 (5.900)

SECTION 7
DESCRIPTION

The "BFG" (Series II) stormscope, weather mapping system provides a visual screen readout of the electrical discharges associated with thunderstorms. This information with proper interpretation, will allow the pilot to detect severe thunderstorm activity. A series of green dots or of strike points will be displayed on the screen to indicate the electrical discharge areas.

Dots or strike points may be displayed on two selectable wiews : 360° view of surrounding airspace and 120° view of forward airspace only.

The display scope provides full scale selectable ranges of 200, 100, 50 and 25 NM.

Post-MOD70-125-23

Stormscope setting to ON or OFF is performed by using the "RADIO MASTER" switch.

INTENTIONALLY LEFT BLANK

SUPPLEMENT

"BENDIX / KING"

EFS 40

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement provides information necessary for airplane utilization when the system EFIS "BENDIX / KING" EFS 40 type is installed on TBM 700 airplane.

SECTION 2
LIMITATIONS

These limitations supplement those of standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

The installation of EFS 40 EFIS is subordinated to the installation of the modification Nr MOD 70-010-24 "Alternator Ventilation".

The using of COMPOSITE MODE is only authorized when one of both displays is out of order or when ventilation of one of both displays is out of order.

To undertake an IFR-flight :
- The EADI and EHSI must be available.
- The stand-by horizon must be available.
- No red or yellow "SG" or "DU" warning must be present.
- The "CHECK CONFIG" warning must not be present.
- ATTITUDE FAIL and HDG warnings must not be present.

CAUTION

EFS 40 CONFIGURATION OF THE TBM 700 AIRPLANE IS MENTIONED ON FIGURE 9.9.1. MODIFICATION OF THIS CONFIGURATION IS PROHIBITED

1	VIEW / EDIT OPERATING CHAR			
2	ITEM	SG	RK1	RK2
4	DCLTR GS ON BC	1	1	1
6	DISPLAY WIND VEC	1	1	1
7	DISPLAY DRIFT	1	1	1
9	DME DIST ONLY	1	1	1
1	VIEW / EDIT OPERATING			
2	ITEM	SG	RK1	RK2
6	DCLTR UNUS ATT	1	1	1
1	VIEW / EDIT OPERATING			
2	ITEM	SG	RK1	RK2
4	VERT PTR TYPE	2	2	2
5	DISPLAY FMS MSG	1	1	1
9	RISING RUNWAY	1	1	1
11	CMD BAR FILTER	1	1	1

NOTE :
Confirm all missing lines above mentioned as follows :

SG	*RK1*	*RK2*
0	*0*	*0*

Figure 9.9.1 - TABLE OF OPERATING CONFIGURATIONS CERTIFIED FOR TBM 700 AIRPLANE

The "BENDIX / KING Pilot's Guide EFS 40 system" P/N 006-08701-00001K at its latest revision shall be readily available for the operation of the EFIS.

SECTION 3
EMERGENCY PROCEDURES

These procedures supplement those of standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Manual.

TABLE OF CONTENTS OF EMERGENCY PROCEDURES

TRANSITION TO COMPOSITE MODE

CAUTION

THE USE OF COMPOSITE MODE IS ONLY AUTHORIZED WHEN ONE OF BOTH DISPLAYS IS OUT OF ORDER OR WHEN VENTILATION OF ONE OF BOTH DISPLAYS IS OUT OF ORDER

1 - Control the attitudes referring to stand-by horizon

2 - Select COMPOSITE MODE by pressing CMPST push-button

When COMPOSITE figuration appears :

3 - Fully reduce brightness of the faulty display

4 - Control referring to the remaining display

CAUTION

THE AUTOPILOT DISENGAGES AS SOON AS COMPOSITE MODE IS SELECTED. AS SOON AS COMPOSITE FIGURATION APPEARS, THE AUTOPILOT CAN BE REENGAGED

RED WARNING ATTITUDE FAIL

This warning, displayed on EADI center, indicates a vertical gyro failure. It causes pitch and roll attitudes scales removal and involves autopilot disconnection.

- Control the attitude referring to stand-by horizon.

RED WARNING HDG

This warning, displayed on EHSI lubber line indicator location, indicates a directional gyro failure.
It involves autopilot transition to wings level basic mode.

- Control the heading referring to emergency compass.

NOTE :
. *Only bearing information remains valid for ADF.*
. *Only QDM and course deviation information remain valid for the VOR.*

EADI FAILURE

If EADI symbols partially or completely disappear, the display is out of order.

In order to reconfigure the system, apply transition to COMPOSITE MODE procedure.

EHSI FAILURE

If EHSI symbols partially or completely disappear, the display is out of order.

In order to reconfigure the system, apply transition to COMPOSITE MODE procedure.

YELLOW WARNING DU

This warning, displayed on the lower left corner of the EADI or EHSI, indicates a loss of airflow of the concerned display.

- If the failure occurs BEFORE FINAL APPROACH PHASE, apply transition to COMPOSITE MODE procedure.
- If the failure occurs DURING FINAL APPROACH, continue without changing anything.

NOTE :
In the worst ambient temperature conditions, the display correctly operates during at least 30 minutes after annunciation.

YELLOW WARNING SG

This warning, displayed on the lower left corner of the EADI and at the lower right corner of the EHSI, indicates a loss of airflow of the symbol generator.

1 - Reduce, if possible, displays brightness

2 - Lighten the display information if possible (radar image, navigation secondary information)

NOTE :
In the worst ambient temperature conditions, the symbol generator correctly operates during at least 30 minutes after annunciation.

RED WARNING CP

This warning, displayed on the L.H. of the EHSI and at the lower left corner of the EADI, indicates that a control panel switch of the EHSI has become stuck.

In this case, ALL CURRENTLY SELECTED CONDITIONS ARE FROZEN.

SELF-TEST DISPLAY

A self-test display during the flight indicates :

- that the pilot pressed the TST / REF push-button during more than 3 seconds,
- or that the TST / REF push-button remained stuck after having been briefly depressed.

In the case of a stuck button, the EADI and the EHSI return to normal display after 6 seconds.

RED CROSS DISPLAY ON HEADING BUG

A red cross, displayed on the HEADING BUG, indicates a HDG rotactor failure.

In this case, THE HEADING SELECTION IS FROZEN.

RED CROSS DISPLAY ON COURSE POINTER

A red cross, displayed on head and tail of the COURSE pointer, indicates a CRS rotactor failure.

In this case, THE COURSE SELECTION IS FROZEN.

RED WARNING RCP

This warning, displayed on the lower left corner of the EHSI, indicates a radar control panel failure.

NOTE :
In case of absence of specific radar screen, the radar goes automatically into ST-BY mode, regardless of radar control panel setting, whenever a weather radar mode is not selected for EHSI.

RED WARNINGS ATTITUDE FAIL AND HDG

These warnings indicate a failure of directional and vertical gyros power supply converter.
It involves autopilot disconnection as well as the removal of ADF information.

- Control referring to emergency instruments.
- Set "EFIS MASTER" switch to OFF.

SMALL RED WARNING SG

This warning, displayed on EHSI upper part or on EADI lower part, indicates that information present on the concerned display are no longer valid.

- Use these information, particularly the attitudes, only after validation with emergency instruments and only as additional information.

BIG RED WARNING SG

This warning, displayed on the entire EADI or EHSI screen, indicates that the symbols generator of the concerned display is unusable. It involves the autopilot disconnection.

- Control referring to corresponding emergency instruments.
- Fully reduce brightness of the concerned display.

OPTION OPT70–01–018 (if installed)

YELLOW WARNING

This warning displayed on the L.H. side of the heading bug, indicates a heading difference greater than 6° between the EHSI and HSI#2 directional gyros.

– Determine the wrong heading source by referring to a 3rd heading source.

INTENTIONALLY LEFT BLANK

SECTION 4
NORMAL PROCEDURES

4.1 - GENERAL

These procedures supplement those of standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

4.2 - LIST OF GROUND CHECKS

BEFORE TAXIING

1 - Check no flags
"DU", "SG", "CP"

EFS 40 SYSTEM AUTOTEST (if desired)

1 - "TST / REF" button ..... **PRESS and HOLD for 3 seconds**

2 - Check :

- the EHSI and EADI test images appear
- the "SELF TEST PASS" or "SELF TEST FAIL" message is annunciated in the center of each test pattern

If the "SELF TEST FAIL" message appears, the EFS 40 system must be serviced.

4.3- LIST OF INFLIGHT CHECKS

SELECTION OF NAVIGATION SYSTEM

1 - Push-button [1 2] ..... **PRESS**

NOTE :
If only one navigation sensor is installed, the display will not cycle and the sensor annunciation will not show a system number.

SELECTION OF THE PRIMARY NAVIGATION SENSOR

1 - Push-button [NAV] ..... **PRESS**

A press of the NAV push-button sequentially selects the primary navigation sensor. The sequence movement is :

- VOR, LOR (if installed), ADF then VOR, etc...

NOTE :
When the VOR navigation sensor is selected and an ILS frequence displayed, or if the KNS 81 is in RNAV mode, the VOR annunciation is respectively replaced by LOC or RNAV.

SELECTION OF THE 360-DEGREE HSI MODE

1 - Push-button [HSI] ..... **PRESS**

A press of the HSI push-button, sequentially selects the 360-degree display formats. The movement sequence is :

- COMPASS ROSE
- COMPASS ROSE AND NAVIGATION MAP
- COMPASS ROSE AND NAVIGATION MAP AND RADAR IMAGE (if radar installed)

SELECTION OF BEARING POINTERS

1 - Push-button [→] or [⇒] ..... **PRESS**

The button [→] is paired with the white single bar pointer.

The button [⇒] is paired with the magenta double bar pointer.

A press of the bearing pointer buttons, sequentially selects the navigation sensors which are interfaced with the pointers.

The movement sequence is :

- no pointer (declutter function)
- VOR
- LOR (if installed)
- ADF
- no pointer, etc...

SELECTION OF BEARING POINTERS (Cont'd)

NOTE :

- *The pointers are displayed only if a valid radio-electric information exists.*
- *The VOR position is withdrawn from the sequence if an ILS frequence is selected.*
- *The DME information is displayed below the sensor annunciation - in VOR function, if a VOR-DME frequence is selected - in ADF function, if a VOR-DME frequence is selected and the DME positioned to "HOLD".*
- *The distance indication is displayed only if a valid DME signal is really received.*

SELECTION OF THE "ARC" DISPLAY MODE

1 - Push-button [A R C] ..... **PRESS**

A press of the ARC push-button, sequentially selects the ARC display formats. An approximate 85-degree sector display of the compass is presented. The movement sequence is :

ARC - ARC + NAV - ARC + NAV + RADAR (if installed) - ARC + RADAR (if installed) - ARC...

RANGE SELECTION

1 - Push-button [Δ] or [∇] ..... **PRESS**

A press of the buttons [Δ] or [∇] respectively selects the next higher or lower range to be displayed while in the NAV MAP or RADAR modes of operation. The selectable ranges are :

5 NM - 10 NM - 20 NM - 40 NM - 80 NM - 160 NM - 240 NM - 320 NM - 1000 NM.

COURSE SELECTION

1 - CRS knob ..... **ROTATE**

Pushing the center of the CRS knob will cause the course pointer to slew to the direct course to the selected NAVAID or active waypoint.

HEADING SELECTION

1 - HDG knob ..... **ROTATE**

Pushing the center of the HDG knob will cause the heading bug to slew to the present aircraft heading.

SETTING OF GROUND SPEED OR TIME TO THE STATION

1 - TST / REF button ..... **PRESS**

When the EFIS system is coupled with the KLN 90A or KLN 90B GPS, a press of the TST / REF button displays one after the other in NAVIGATION MAP mode the following items on the screen background :

- FPL ID
- AIRPORT
- NAVAIDS.

CAUTION

WHEN THE TST / REF BUTTON IS PRESSED AND HELD FOR 3 SECONDS, IT INITIATES THE EFS 40 SYSTEM TEST AND DISENGAGES THE AUTOPILOT

SECTION 5
PERFORMANCES

The installation and the operation of "BENDIX/KING" EFS 40 system do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	01 – SPECIFIC OPTIONAL EQUIPMENT			
A	Heading#1/Heading#2 EHSI miscompare (OPT70 3401018)	KING	0.033 (0.015)	125.98 (3.200)
	34 – NAVIGATION			
O	EFIS (EFS 40 + AP) KFC 325 (OPT 70 34001)	KING		
	– with standby horizon M32 RC ALLEN RCA 22		71.716 (32.530)	133.19 (3.383)
	– with horizon M32 EDO AIRE /SIGMATEK 5000B		71.520 (32.440)	132.60 (3.368)

SECTION 7
DESCRIPTION

7.1 - EFS 40 CONTROLS

1) EADI
2) EHSI
3) Push-button of EFS 40 self-test or of DME ground speed or time-to-station alternate display
4) Scale setting push-button in MAP or WEATHER mode
5) ARC symbologic mode selecting push-button
6) Selected heading bug knob
7) ERMI dual pointer selecting push-button
8) EHSI brightness setting knob
9) ERMI single pointer selecting push-button
10) Navigation course selecting knob
11) EHSI figuration modes selecting push-button
12) Navigation source selecting push-button
13) Navigation system selecting push-button
14) MARKER test and level selecting toggle switch
15) EADI brightness setting knob
16) COMPOSITE MODE selecting push-button
17) CMPST push-button light test
18) DME frequence tuning selecting rotary switch
19) EFIS MASTER switch - see Figure 9.9.4

Figure 9.9.2 (1 / 2) - CONTROLS AND DISPLAY

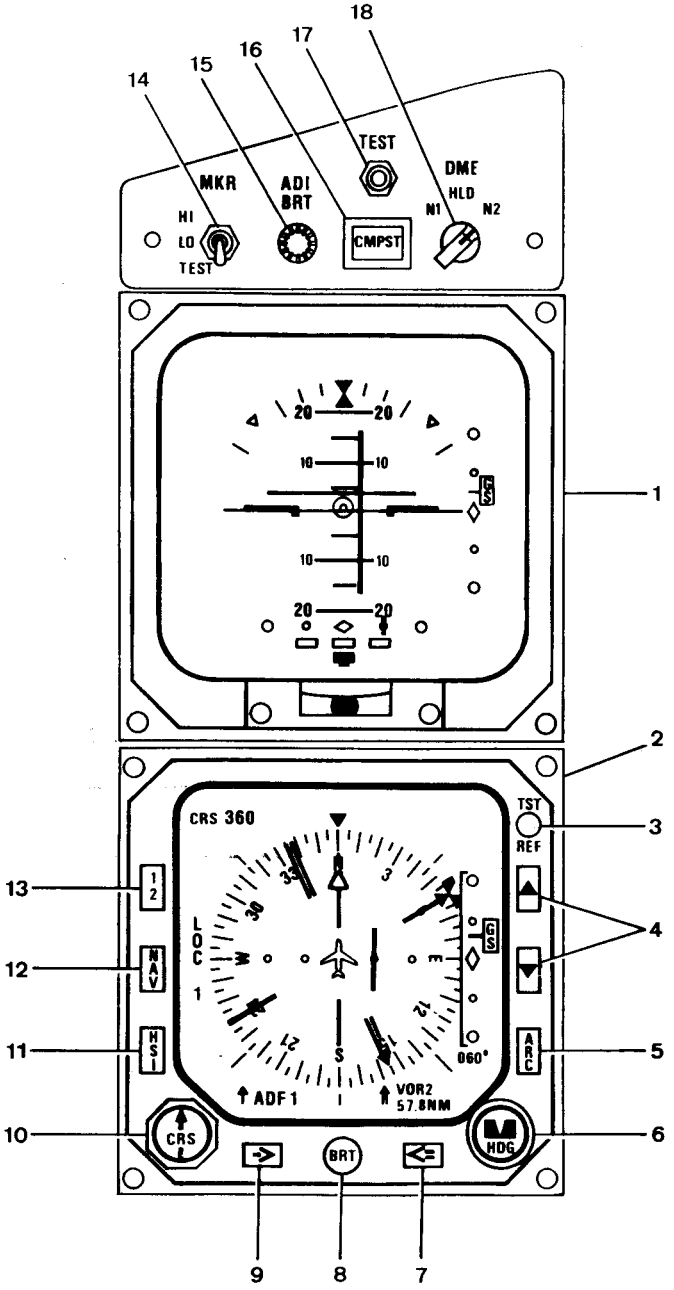


Figure 9.9.2 (2 / 2) - CONTROLS AND DISPLAY

Item 3 - TST / REF button - It allows to self-test the EFS 40 system by pressing at least 3 seconds. A brief switching allows to alternately display DME ground speed or time-to-station.

Item 4 - PUSH-BUTTONS Δ and ∇ - They allow to modify the range scale either in NAV MAP or WEATHER mode.

Item 5 - ARC PUSH-BUTTON - It allows to select the desired ARC figuration :
by switching:
. ARC COMPASS ROSE
. ARC NAV MAP
. ARC NAV MAP WITH WEATHER
. ARC COMPASS ROSE WITH WEATHER

Item 6 - HDG KNOB - It allows to set the bug to the desired heading. Depress to synchronise with the present heading.

Item 7 - PUSH-BUTTON < = - It allows to allocate the ERMI dual pointer to the different navigation sensors.

Item 8 - BRT KNOB - It allows to set the EHSI brightness.

Item 9 - PUSH-BUTTON => - It allows to allocate the ERMI single pointer to the different navigation sensors.

Item 10 - CRS KNOB - It allows to display the desired radial. Depress to select the present QDM.

Item 11 - HSI PUSH-BUTTON - It allows to select the EHSI desired figuration :
by switching :
. HSI COMPASS ROSE
. HSI NAV MAP
. HSI NAV MAP WITH WEATHER

Item 12 - NAV PUSH-BUTTON - It allows to select the primary navigation source.

Item 13 - NAVIGATION SYSTEM SELECTING PUSH-BUTTON - It allows to select the navigation system used (system 1 or 2).

Figure 9.9.3 (1 / 2) - EHSI CONTROLS

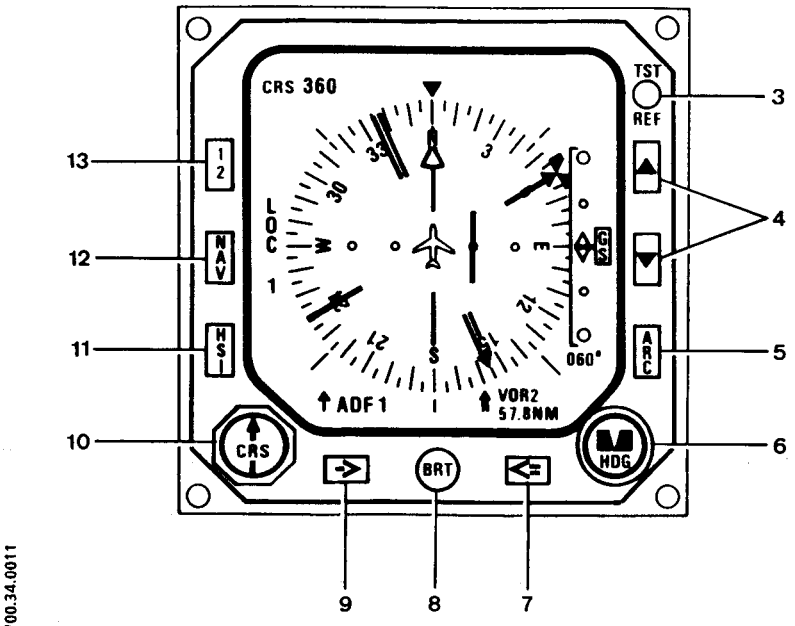


Figure 9.9.3 (2 / 2) - EHSI CONTROLS

Item 14 - MKR TOGGLE - It allows to test the Marker system (TEST) and select the receiver sensitivity (LO, HI).

Item 15 - ADI BRT KNOB - EADI display brightness setting knob.

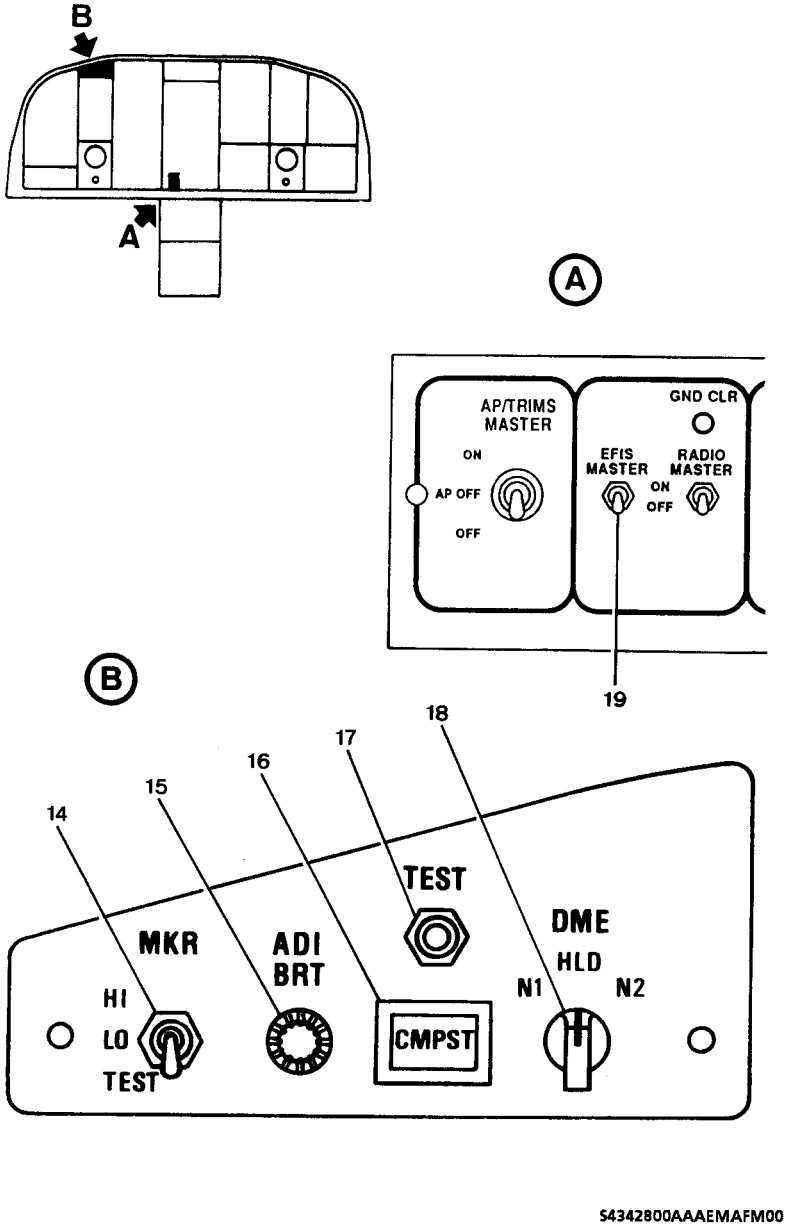
Item 16 - CMPST PUSH-BUTTON - Push-button allowing to select COMPOSITE MODE figuration, which is an image uniting EADI display information with some navigation information including a heading scale along the horizon line.

Item 17 - TEST PUSH-BUTTON - It allows to test the CMPST push-button lamp.

Item 18 - DME ROTARY SWITCH - It allows to tune DME receiver frequency to the navigation system 1 or 2 (N_1 and N_2 positions). Furthermore, when tuning is performed, the rotator allows to memorize the selected frequency in the DME receiver (HLD position).

Item 19 - EFIS MASTER SWITCH - It controls the power to all EFIS system components.

Figure 9.9.4 (1 / 2) - EADI CONTROLS



S4342800AAAEMAFM00

Figure 9.9.4 (2 / 2) - EADI CONTROLS

INTENTIONALLY LEFT BLANK

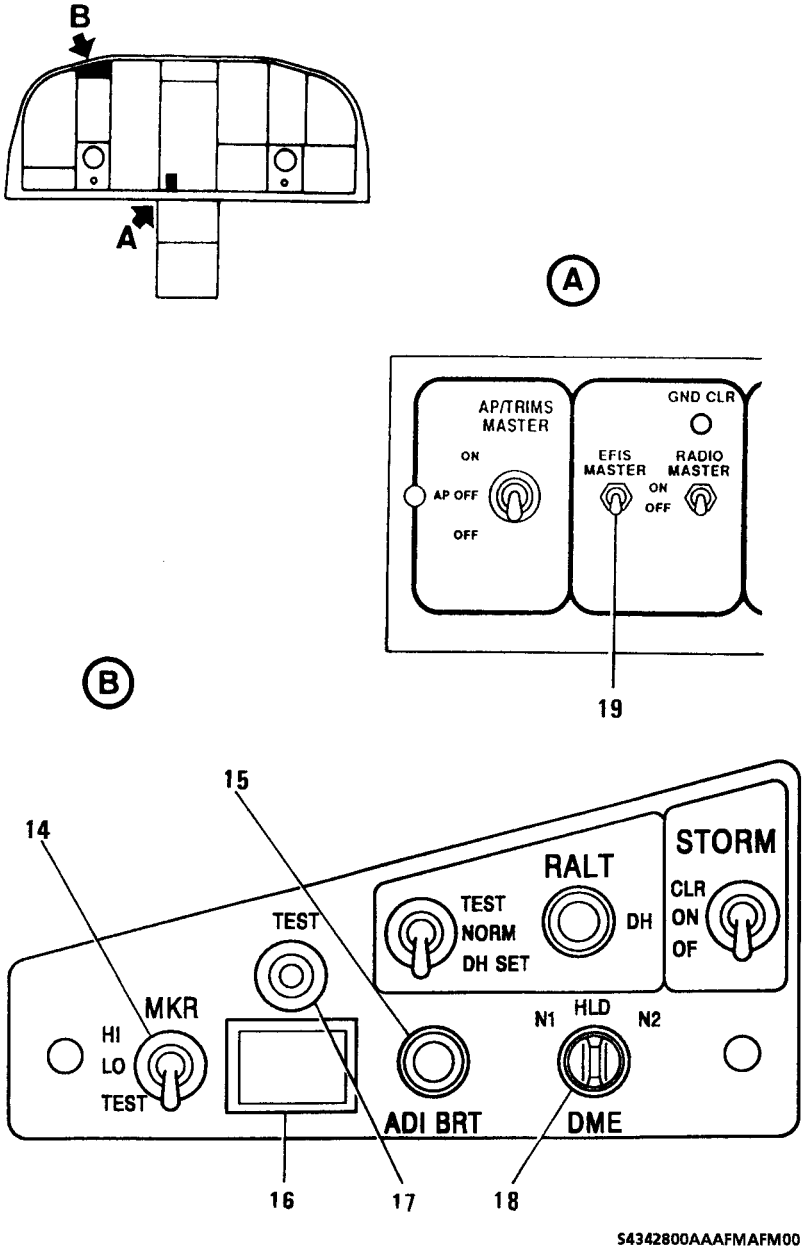


Figure 9.9.4A (2 / 2) - EADI CONTROLS

7.2 - EADI SYMBOLOGY

1) Roll scale
2) Pitch scale
3) Airplane symbol (for split-cue FD command bars)
4) Side-slip indicator
5) Radar altimeter display
6) Glide Slope scale
7) Decision height alert
8) Airplane symbol (for single-cue FD command bars)
9) Localizer scale
10) Selected decision height display
11) Rate of turn display
12) FD command bars (split-cue)
13) Autopilot modes annunciator
14) FD command bars (single-cue)

Figure 9.9.5 (1 / 2) - EADI

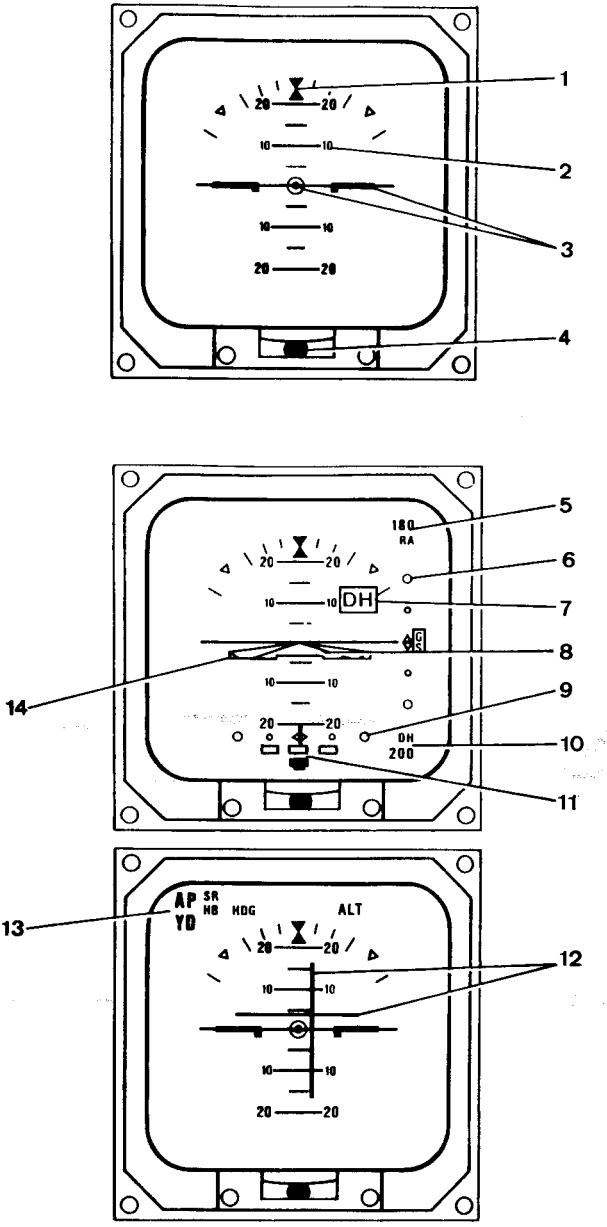


Figure 9.9.5 (2 / 2) - EADI

7.3 - EHSI SYMBOLOGY

1) Selected course
2) Lubber line
3) Selected heading bug
4) Distance bound to the primary navigation source (or other navigation system when in HLD function)
5) Ground speed or time-to-station or navigation source frequency when in HLD function
6) Glide Slope scale
7) Glide Slope pointer
8) Selected heading value
9) Heading rose
10) ERMI dual pointer
11) DME 2 distance
12) Navigation system allocated to ERMI dual pointer
13) DME 1 distance
14) Navigation system allocated to ERMI single pointer
15) ERMI single pointer
16) Deviation bar
17) Navigation system Nr 1 or Nr 2 used
18) Primary navigation source selected
19) Airplane symbol
20) Selected radial pointer

Figure 9.9.6 (1 / 2) - STANDARD EHSI SYMBOLOGY

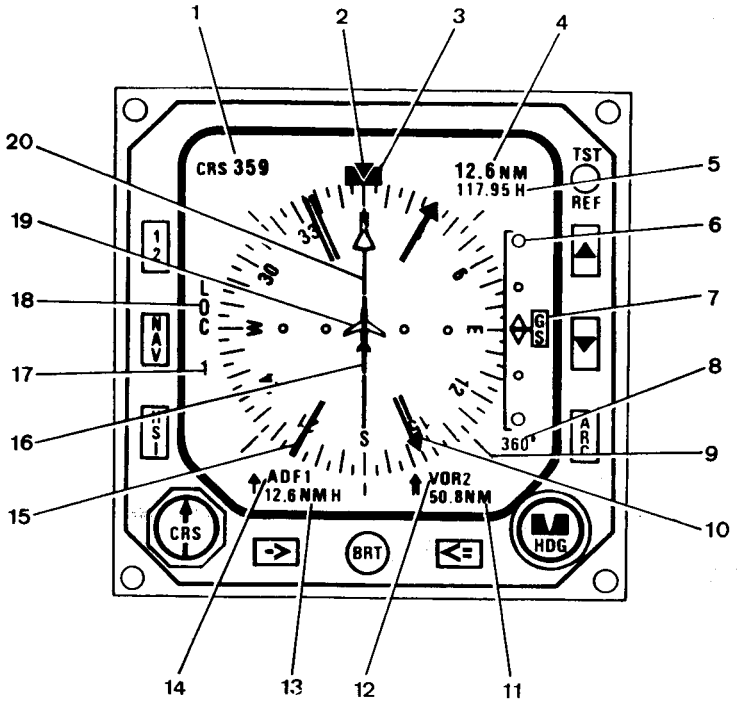
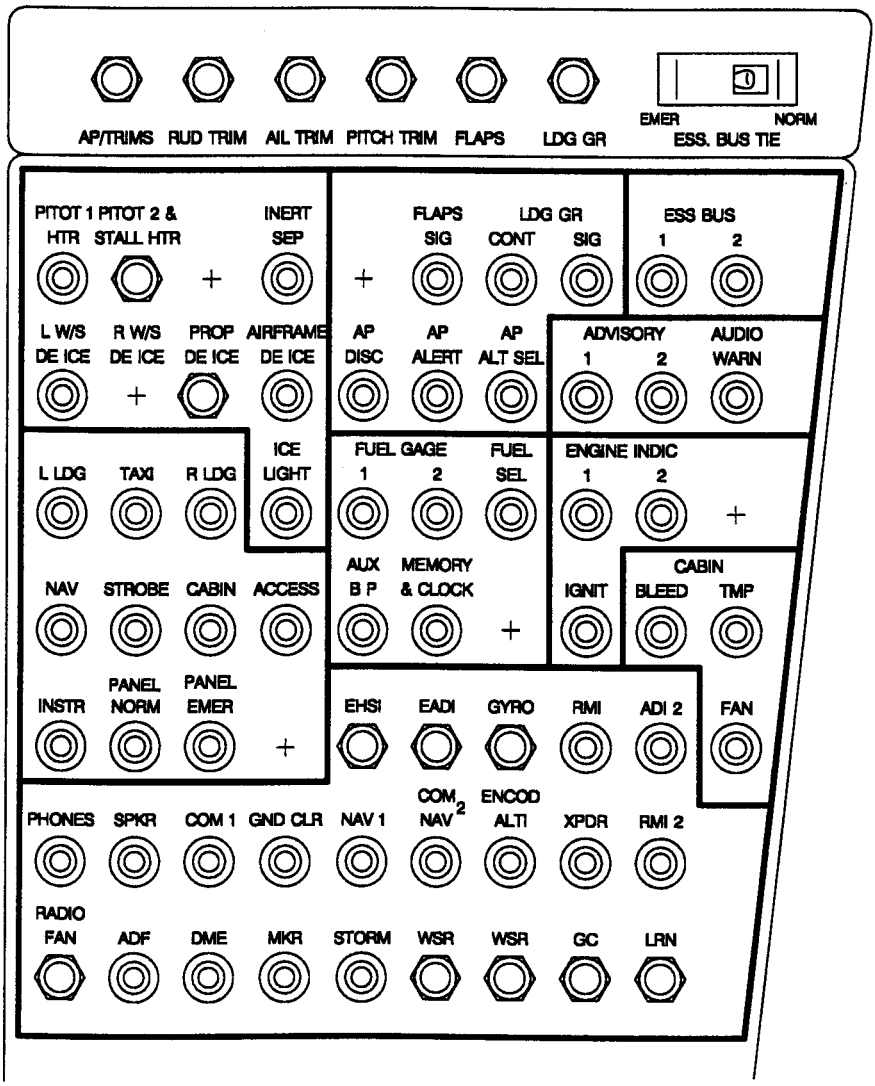


Figure 9.9.6 (2 / 2) - STANDARD EHSI SYMBOLOGY

AP / TRIMS	AP & trims general protec.
RUD TRIM	Rudder trim protec.
AIL TRIM	Aileron trim protec.
PITCH TRIM	Pitch trim protec.
FLAPS	Flaps protec.
LDG GR	Landing gear general protec.
ESS BUS TIE	Essential bus NORM & EMER switch
PITOT 1 HTR	Pitot 1 deicing protec.
PITOT 2 & STALL HTR	Pitot 2 and stall warning deicing protec.
INERT SEP	Inertial separator protec.
LW/S DE ICE	L.H. windshield deicing protec.
RW/S DE ICE	R.H. windshield deicing protec.
PROP DE ICE	Propeller deicing protec.
AIRFRAME DE ICE	Empennage and wing leading edges deicing protec
ICE LIGHT	L.H. wing leading edge lighting protec.
L LDG	L.H. landing light protec.
TAXI	Taxi light protec.
R LDG	R.H. landing light protec.
NAV	Navigation lights protec.
STROBE	Strobe lights protec.
CABIN	Passenger's reading lamps protec.
ACCESS	FWD dome light, cabin, baggage compartment bottom & access door lighting protec.
INSTR	Instruments light. protec.
PANEL NORM	Instrument panel normal lighting protec.
PANEL EMER	Instrument panel emergency lighting protec.
FUEL GAGE 1	L.H. gage protec.
FUEL GAGE 2	R.H. gage protec.
FUEL SEL	Timer protec.
AUX BP	Fuel pump protec.
MEMORY & CLOCK	Stop watch and flowmeter protec.
ENGINE INDIC 1	Power plant cont. protec. : Oil temp. & pres., torque, propeller
ENGINE INDIC 2	Power plant cont. protec. : Ng, flowmeter & ITT
IGNIT	Power plant ignit. protec.

ADVISORY 1	Visual warn. protec.
ADVISORY 2	Visual warn. protec.
AUDIO WARN	Audio warnings protec.
FLAPS SIG	Flaps signalization protec.
LDG GR CONT	Landing gear control protec.
LDG GR SIG	Landing gear signalization protec.
AP DISC	Trim and AP cont. protec.
AP ALERT	Trim and AP audio signalization protec.
AP ALT SEL	Altitude selector protec.
ESS BUS 1	Essential bus 1 circuit protec.
ESS BUS 2	Essential bus 2 circuit protec.
EHSI	EHSI protec.
EADI	EADI protec.
GYRO	Gyros protec.
RMI	RMI protec.
ADI 2	ADI Nr 2 protec.
PHONES	Reception line protec.
SPKR	Loudspeaker line protec.
COM 1	VHF 1 protec.
GND CLR	Ground communication protec.
NAV 1	NAV 1 radio protec.
COM 2 NAV	VHF 2 & NAV 2 radio protec.
ENCOD ALTI	Encoding altimeter protec.
XPDR	Transponder protec.
RMI 2	RMI 2 protec.
RADIO FAN	Radio fan protec. + radio master
ADF	ADF protec.
DME	DME protec.
MKR	MKR protec.
STORM	Stormscope protec.
WSR	Weather radar protec.
GC	Radar graphic protec.
LRN	LORAN long range navigation protec.
CABIN BLEED	Cabin air bleed valve protec.
CABIN TEMP	Cabin temperature valve protec.
FAN	Ground fan protec.

Figure 9.9.7 (1 / 2) - EFIS CIRCUIT BREAKERS PANEL



I4255004AAAHMA8201

Disjoncteur déclenchable
"PULL-OFF" type circuit breaker

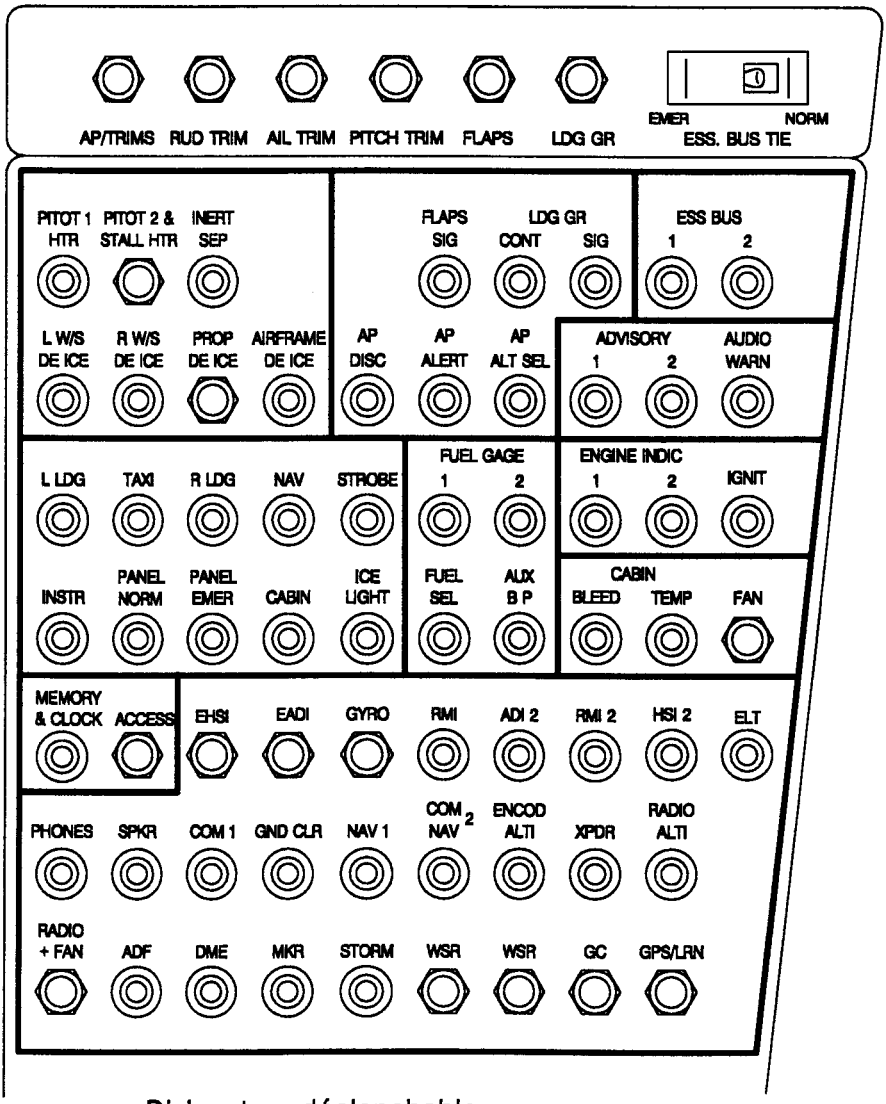
Disjoncteur non déclenchable
Circuit breaker which cannot be pulled off

Figure 9.9.7 (2 / 2) - EFIS CIRCUIT BREAKERS PANEL

AP / TRIMS	AP & trims general protec.
RUD TRIM	Rudder trim protec.
AIL TRIM	Aileron trim protec.
PITCH TRIM	Pitch trim protec.
FLAPS	Flaps protec.
LDG GR	Landing gear general protec.
ESS BUS TIE	Essential bus NORM &
PITOT 1 HTR	Pitot 1 deicing protec.
PITOT 2 & STALL HTR	Pitot 2 and stall warning deicing protec.
INERT SEP	Inertial separator protec.
LW/S DE ICE	L.H. windshield deicing protec.
RW/S DE ICE	R.H. windshield deicing protec.
PROP DE ICE	Propeller deicing protec.
AIRFRAME DE ICE	Empennage and wing leading edges deicing protec.
FLAPS SIG	Flaps signalization protec.
LDG GR CONT	Landing gear control protec.
LDG GR SIG	Landing gear signalization protec.
AP DISC	Trim and AP cont. protec.
AP ALERT	Trim and AP audio signalization protec.
AP ALT SEL	Altitude selector protec.
ESS BUS 1	Essential bus 1 circ. protec.
ESS BUS 2	Essential bus 2 circ. protec.
ADVISORY 1	Visual warn. protec.
ADVISORY 2	Visual warn. protec.
AUDIO WARN	Audio warnings protec.
L LDG	L.H. landing light protec.
TAXI	Taxi light protec.
R LDG	R.H. landing light protec.
NAV	Navigation lights protec.
STROBE	Strobe lights protec.
INSTR	Instruments light. protec.
PANEL NORM	Instrument panel normal lighting protec.
PANEL EMER	Instrument panel emergency lighting protec.
CABIN	Passenger's reading lamps protec.
ICE LIGHT	L.H. wing leading edge lighting protec.

FUEL GAGE 1	L.H gage protec.
FUEL GAGE 2	R.H gage protec.
FUEL SEL	Timer protec.
AUX BP	Fuel pump protec.
ENGINE INDIC 1	Power plant cont. protec. : Oil temp. & pres., torque, propeller
ENGINE INDIC 2	Power plant cont. protec. : Ng, flowmeter & ITT
IGNIT	Power plant ignit. protec.
CABIN BLEED	Cabin air bleed valve protec.
CABIN TEMP	Cabin temperature valve protec.
FAN	Ground fan protec.
MEMORY & CLOCK	Stop watch and flowmeter protec.
ACCESS	FWD dome light, cabin, baggage compartment bottom, access door lighting & access door closing geared motor protec.
EHSI	EHSI protec.
EADI	EADI protec.
GYRO	Gyros protec.
RMI	RMI protec.
ADI 2	ADI Nr 2 protec.
RMI 2	RMI 2 protec.
HSI 2	HSI 2 protec.
ELT	ELT 90 protec.
PHONES	Reception line protec.
SPKR	Loudspeaker line protec.
COM 1	VHF 1 protec.
GND CLR	Ground communication protec.
NAV 1	NAV 1 radio protec.
COM 2 NAV	VHF 2 & NAV 2 radio protec.
ENCOD ALTI	Encoding altimeter protec.
XPDR	Transponder protec.
RADIO ALTI	RADIO ALTI protec.
RADIO + FAN	Radio fan protec. + radio master
ADF	ADF protec.
DME	DME protec.
MKR	MKR protec.
STORM	Stormscope protec.
WSR	Weather radar protec.
GC	Radar graphic protec.
LRN	LORAN long range navigation protec.

Figure 9.9.7A (1 / 2) - EFIS CIRCUIT BREAKERS PANEL



Disjoncteur déclenchable
"PULL-OFF" type circuit breaker

Disjoncteur non déclenchable
Circuit breaker which cannot be pulled off

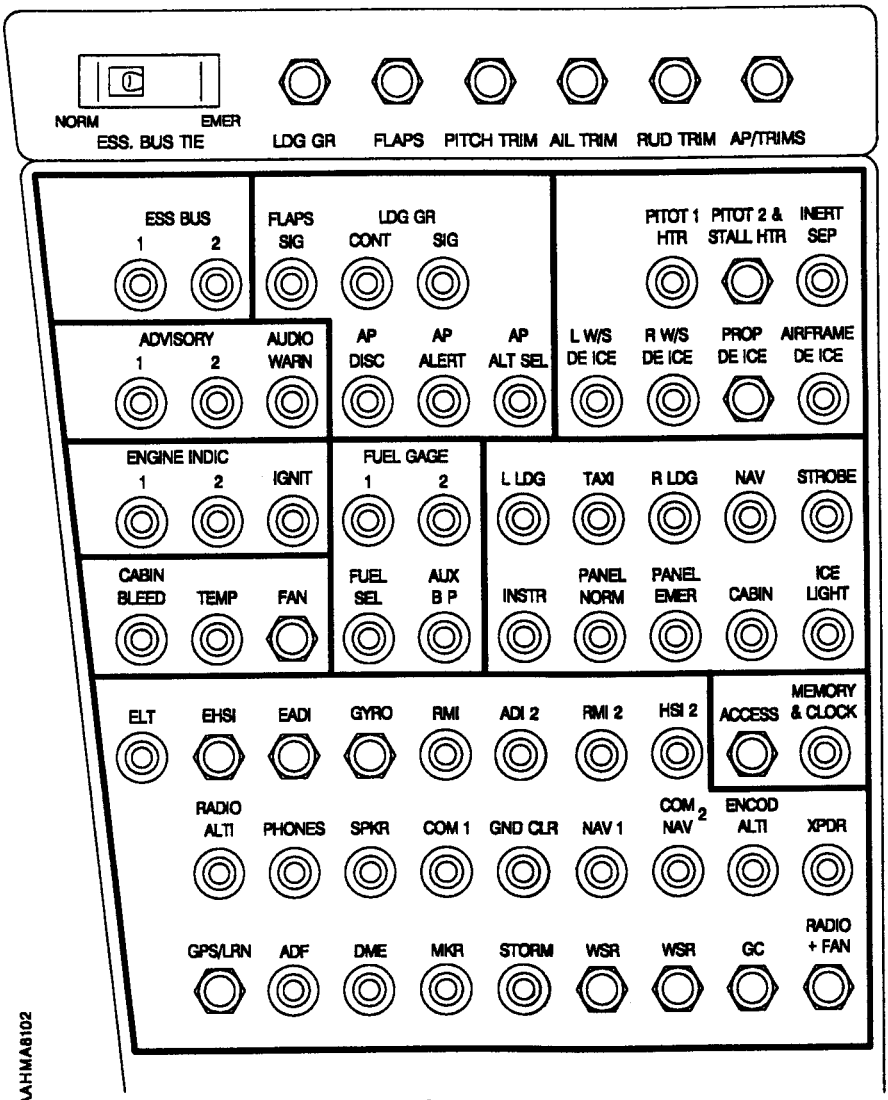
I4255004AAAHMA8002

Figure 9.9.7A (2 / 2) - EFIS CIRCUIT BREAKERS PANEL

AP / TRIMS	AP & trims general protec.
RUD TRIM	Rudder trim protec.
AIL TRIM	Aileron trim protec.
PITCH TRIM	Pitch trim protec.
FLAPS	Flaps protec.
LDG GR	Landing gear general protec.
ESS BUS TIE	Essential bus NORM &
PITOT 1 HTR	Pitot 1 deicing protec.
PITOT 2 & STALL HTR	Pitot 2 and stall warning deicing protec.
INERT SEP	Inertial separator protec.
LW/S DE ICE	L.H. windshield deicing protec.
RW/S DE ICE	R.H. windshield deicing protec.
PROP DE ICE	Propeller deicing protec.
AIRFRAME DE ICE	Empennage and wing leading edges deicing protec.
FLAPS SIG	Flaps signalization protec.
LDG GR CONT	Landing gear control protec.
LDG GR SIG	Landing gear signalization protec.
AP DISC	Trim and AP cont. protec.
AP ALERT	Trim and AP audio signalization protec.
AP ALT SEL	Altitude selector protec.
ESS BUS 1	Essential bus 1 circ. protec.
ESS BUS 2	Essential bus 2 circ. protec.
ADVISORY 1	Visual warn. protec.
ADVISORY 2	Visual warn. protec.
AUDIO WARN	Audio warnings protec.
L LDG	L.H. landing light protec.
TAXI	Taxi light protec.
R LDG	R.H. landing light protec.
NAV	Navigation lights protec.
STROBE	Strobe lights protec.
INSTR	Instruments light. protec.
PANEL NORM	Instrument panel normal lighting protec.
PANEL EMER	Instrument panel emergency lighting protec.
CABIN	Passenger's reading lamps protec.
ICE LIGHT	L.H. wing leading edge lighting protec.

FUEL GAGE 1	L.H gage protec.
FUEL GAGE 2	R.H gage protec.
FUEL SEL	Timer protec.
AUX BP	Fuel pump protec.
ENGINE INDIC 1	Power plant cont. protec. : Oil temp. & pres., torque, propeller
ENGINE INDIC 2	Power plant cont. protec. : Ng, flowmeter & ITT
IGNIT	Power plant ignit. protec.
CABIN BLEED	Cabin air bleed valve protec.
CABIN TEMP	Cabin temperature valve protec.
FAN	Ground fan protec.
MEMORY & CLOCK	Stop watch and flowmeter protec.
ACCESS	FWD dome light, cabin, baggage compartment bottom, access door lighting & access door closing geared motor protec.
ELT	ELT 90 protec.
EHSI	EHSI protec.
EADI	EADI protec.
GYRO	Gyros protec.
RMI	RMI protec.
ADI 2	ADI Nr 2 protec.
RMI 2	RMI 2 protec.
HSI 2	HSI 2 protec.
RADIO ALTI	RADIO ALTI protec.
PHONES	Reception line protec.
SPKR	Loudspeaker line protec.
COM 1	VHF 1 protec.
GND CLR	Ground communication protec.
NAV 1	NAV 1 radio protec.
COM 2 NAV	VHF 2 & NAV 2 radio protec.
ENCOD ALTI	Encoding altimeter protec.
XPDR	Transponder protec.
LRN	LORAN long range navigation protec.
ADF	ADF protec.
DME	DME protec.
MKR	MKR protec.
STORM	Stormscope protec.
WSR	Weather radar protec.
GC	Radar graphic protec.
RADIO + FAN	Radio fan protec. + radio master

Figure 9.9.7B (1 / 2) - EFIS CIRCUIT BREAKERS PANEL



I4255004AAAHMA8102

Disjoncteur déclenchable
"PULL-OFF" type circuit breaker

Disjoncteur non déclenchable
Circuit breaker which cannot be pulled off

Figure 9.9.7B (2 / 2) - EFIS CIRCUIT BREAKERS PANEL

INTENTIONALLY LEFT BLANK

SUPPLEMENT

"BENDIX / KING" AUTOPILOT

TYPE KFC 325

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is provided to acquaint the pilot with the limitations as well as normal and emergency operating procedures of the BENDIX / KING KFC 325 Digital Autopilot. The limitations presented are pertinent to the operation of the KFC 325 System as installed in the TBM 700 airplane. The Autopilot must be operated within the limitations herein specified.

The KFC 325 Autopilot is certified in this airplane with 3 axis control, pitch, roll and yaw damper. The various instruments and the controls for the operation of the KFC 325 System are described in the following pages.

The KFC 325 Autopilot has an electric pitch trim system which provides autotrim during autopilot operation and manual electric trim for the pilot when the autopilot is not engaged. The trim system is designed to withstand any single inflight malfunction.

A lockout device prevents autopilot engagement until the system has been successfully preflight tested.

The following conditions will cause the Autopilot to automatically disconnect :

A - Power failure.

B - Internal Flight Control System failure.

C - Roll rates in excess of 10° / sec. except when the "CWS" push-button is held depressed.

D - Pitch rates in excess of 5° / sec. except when the "CWS" push-button is held depressed.

E - Accelerations outside of a 0.3 g to 1.6 g envelope (1.0 g's being normal for straight and level flight).

F - The presence of "ATTITUDE FAIL" and big "SG" flags.

G - A movement of the roll trim except when the "CWS" push-button is held depressed.

H - A movement of the pitch trim.

SECTION 2
LIMITATIONS

These limitations supplement those of standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

A - During autopilot operation, a pilot with seat belt fastened must be seated at the left pilot position.

B - The autopilot and yaw damper must be OFF during takeoff and landing.

C - Do not engage autopilot below 1000 ft (300 m) above ground level in cruise or climb.

D - Do not use autopilot in approach under 200 ft (60 m).

E - Autopilot engagement is prohibited with the "PITCH TRIM" circuit-breaker pulled.

F - IAS for localizer interception is limited to 160 kt.

G - In "APR" mode - "GS" coupled, flaps must be fully extended in landing position before crossing the OM.

NOTE 1 :
Use of basic pitch attitude hold mode is recommended during operation in severe turbulence.

NOTE 2 :
It is recommended not to use the autopilot with a too high rate of descent below 2000 ft (600 m) above ground level.

SECTION 3
EMERGENCY PROCEDURES

These procedures supplement those of standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

AUTOPILOT OR ELECTRIC PITCH TRIM MALFUNCTION

1 - "AP / TRIMS DISC INT" push-button ..... **PRESSED and HELD**

2 - "AP / TRIMS MASTER" switch ..... **OFF**

3 - "AP / TRIMS DISC INT" push-button ..... **RELEASED**

4 - If necessary, control wheel ..... **RETRIM**

CAUTION

WHEN DISCONNECTING THE AUTOPILOT AFTER A PITCH TRIM MALFUNCTION, HOLD THE CONTROL WHEEL FIRMLY ; UP TO 30 POUNDS OF FORCE ON THE CONTROL WHEEL MAY BE NECESSARY TO HOLD THE AIRPLANE LEVEL

NOTE :
Maximum altitude losses due to autopilot malfunction :

Configuration	*Altitude loss*
Cruise, climb	*200 ft*
Maneuver, descent	*800 ft*
Approach	*90 ft*

ENGINE FAILURE (AUTOPILOT COUPLED)

1 - "AP / TRIMS DISC INT" push-button ..... **PRESSED**

2 - In case of engine failure, apply the basic airplane Pilot's Operating Handbook procedures.

SECTION 4
NORMAL PROCEDURES

4.1 - GENERAL

These procedures supplement those of standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

4.2 - LIST OF GROUND CHECKS

BEFORE TAXIING

AUTOPILOT AUTOTEST

1 - Check no flags
"ATTITUDE FAIL", "HDG", "SG", "DU"

2 - "TEST" button ..... **PRESS**

3 - Check :

- All annunciator lights of control box ON ("TRIM" annunciator flashing).
- After approximately 5 seconds, all annunciator lights of control box OFF except "AP" which will flash approximately 12 times prior to extinguishing and red "AP" of EADI which will flash approximately 5 times prior to extinguishing and be accompanied by the autopilot audible disconnect tone.

NOTE :
If "TRIM" warning light on the mode controller or if the "PTRM" annunciator on the EADI stays ON, the autotrim did not pass preflight test. The "AP / TRIMS MASTER" switch must be turned to "AP OFF" position. The flight director may be used but the electric pitch trim will be inoperative and the autopilot should not be engaged.

BEFORE TAXIING (Cont'd)

MANUAL ELECTRIC TRIM TEST

1 - Actuate left side of split switch unit to the fore and aft positions. The trim wheel should not move on its own. Rotate the trim wheel manually against the engaged clutch to check the pilot's trim overpower capability.

2 - Actuate right side of split switch unit to the fore and aft positions. Trim wheel should not move on its own and normal trim wheel force is required to move it manually.

3 - Press the "AP / TRIMS DISC INT" push-button down and hold.
Manual electric trim should not operate either nose up or nose down when both halves of the split switch are actuated to the fore and aft positions.

AUTOMATIC ELECTRIC TRIM TEST

1 - "AP" button ..... **PRESS**
to engage autopilot

2 - Control wheel ..... **MOVE**
aft, fore, left and right to verify that the autopilot can be overpowered

3 - "AP / TRIMS DISC INT" push-button ..... **PRESS**
Verify that the autopilot disconnects and all flight director modes are cancelled

4 - Trim ..... **SET**
to takeoff position

BEFORE TAKEOFF

1 - "AP / TRIMS DISC INT" push-button ..... **PRESS**

4.3 - LIST OF INFLIGHT CHECKS

AUTOPILOT ENGAGEMENT

"AP" button ..... **PRESS**

Note "AP", "FD" and "YD" annunciators ON. If no other flight director modes are selected at the time of autopilot engagement the mode of operation will be flight director wings level and pitch attitude hold.

CAUTION

DO NOT EXERT ANY PRESSURE ON THE PITCH CONTROL AS THE AUTOPILOT WILL RUN THE PITCH TRIM TO OPPOSE YOUR ACTION

NOTE :
Significant balance changes can occur with speed / power changes or fuel imbalance. With AP engaged it is therefore necessary to check regularly that the plane is trimmed in the roll axis by pressing the "CWS" push-button and if needed retrimming the plane. In case of action on the roll trim, the "CWS" push-button must be kept depressed, otherwise the AP will disconnect.

BASIC MODES

USING CWS

1 - "CWS" push-button ..... **PRESS and MOVE airplane nose to the desired attitude**

2 - "CWS" push-button ..... **RELEASE**

The autopilot will maintain airplane pitch attitude up to the pitch limits of + 15° or - 10°.

USING VERTICAL TRIM

1 - Vertical trim control ..... **PRESS either "UP" or "DOWN" to modify airplane attitude at a rate of 0.7 deg / sec. up to the pitch limits of + 15° or - 10°**

2 - Vertical trim control ..... **RELEASE when desired airplane attitude is reached**

The autopilot will maintain the desired pitch attitude.

ALTITUDE MODES

ALTITUDE HOLD

1 - "ALT" mode selector button ..... **PRESS**
Note ALT mode annunciator ON

The autopilot will maintain the selected pressure attitude.

ALTITUDE CHANGE

1 - Using "CWS" (recommended for altitude changes greater than 100 ft).

- "CWS" push-button ..... **PRESS**
and fly airplane to desired pressure altitude

- "CWS" push-button ..... **RELEASE**
when desired pressure altitude is reached

The autopilot will maintain the desired pressure altitude.

2 - Using Vertical Trim (recommended for altitude changes less than 100 ft).

- Vertical trim control ..... **PRESS**
either "UP" or "DOWN"

Vertical Trim will seek an altitude rate of change of about 500 ft / min.

- Vertical trim control ..... **RELEASE**
when desired pressure altitude is reached

The autopilot will maintain the desired pressure altitude.

SPEED MODES

INDICATED AIRSPEED HOLD

1 - "IAS" mode selector button ..... **PRESS**
Note the IAS mode annunciator ON

The autopilot will maintain the current indicated airspeed.

SELECTED INDICATED AIRSPEED CHANGE

1 - Using "CWS" (recommended for airspeed changes of 10 KIAS or greater)

- "CWS" push-button ..... **PRESS**
and fly airplane to desired airspeed

- "CWS" push-button ..... **RELEASE**
when desired airspeed is reached

The autopilot will maintain the desired airspeed.

2 - Using Vertical Trim (recommended for airspeed changes less than 10 KIAS).

- Vertical trim control ..... **PRESS**
either "UP" or "DOWN"

Vertical Trim will seek a new airspeed at a rate of about 0.75 knots per second.

- Vertical trim control ..... **RELEASE**
when desired time in seconds has past
i.e. 10 KIAS change desired hold V / T
for approximately 13 seconds

The autopilot will maintain the desired airspeed.

HEADING MODES

HEADING HOLD

1 - Heading selector knob ..... **SET bug to desired heading**

2 - "HDG" mode selector button ..... **PRESS**
Note HDG mode annunciator ON

The autopilot will automatically turn the airplane to the selected heading

MANUAL HEADING CHANGE (basic mode)

1 - "CWS" push-button ..... **PRESS and TURN airplane to the desired heading**

2 - "CWS" push-button ..... **RELEASE**

The autopilot will maintain airplane in wings level attitude.

NOTE :
Airplane heading may change in the wings level mode due to an airplane out of trim condition.

HEADING CHANGE ("HDG" mode)

1 - Heading selector knob ..... **SET bug to desired heading**

The autopilot will automatically turn the airplane to the new selected heading.

NAVIGATION MODE

1 - Course bearing pointer ..... **SET to desired course**

2 - Establish intercept angle using wings level or "HDG" modes.

3 - "NAV" mode selector button ..... **PRESS**

- If the Course Deviation Bar is greater than 2 to 3 dots : the airplane will continue in "HDG" mode (or wings level if "HDG" not selected) with the "NAV-ARM" annunciators illuminated. When the computed capture point is reached, the "HDG" will disengage, the "ARM" annunciator will turn off and the selected course will be automatically captured and tracked.
- If the D-Bar is less than 2 to 3 dots : the "HDG" mode will disengage upon selecting "NAV" mode ; the "NAV" annunciator will illuminate and the capture / track sequence will automatically begin.

NOTE :
When making relatively small course changes with "NAV" mode engaged, it may be necessary to reinitiate the "NAV" coupling procedures described in the previous paragraph. This will force the autopilot back into a capture mode, allowing the system to establish tracking the new course more rapidly.

CAUTION

IT IS BETTER NOT TO PERFORM AUTOMATIC CAPTURE OF AN "ADF" HEADING.

IT IS RECOMMENDED TO ENGAGE "NAV" MODE WHEN ADF CAPTURE IS PERFORMED.

APPROACH MODE

1 - Course bearing pointer ..... **SET to desired course**

2 - Establish intercept angle using wings level or "HDG" modes.

3 - "APR" mode selector button ..... **PRESS**

- If the Course Deviation Bar is greater than 2 to 3 dots : the airplane will continue in "HDG" mode (or wings level if "HDG" not selected) with the "APR-ARM" annunciators illuminated. When the computed capture point is reached the "HDG" will disengage, the "ARM" annunciators will turn off and the selected course will be automatically captured and tracked.

- If the D-Bar is less than 2 to 3 dots : the "HDG" mode will disengage upon selecting "APR" mode ; the "APR" annunciator will illuminate steady and the capture / track sequence will automatically begin.

BC APPROACH MODE

1 - Course bearing pointer ..... **SET to the ILS front course inbound heading**

2 - Establish intercept angle using wings level or "HDG" mode.

3 - "BC" mode selector button ..... **PRESS**

- If the Course Deviation Bar is greater than 2 to 3 dots : the airplane will continue in "HDG" mode (or wings level if "HDG" not selected) with "APR-ARM", "BC" annunciated. When the computed capture point is reached the "HDG" will disengage, the ARM annunciators will turn off and the selected course will be automatically captured and tracked.
- If the D-Bar is less than 2 to 3 dots : the "HDG" mode will disengage upon selecting "BC" mode ; the "APR" and "BC" annunciators will illuminate and the capture / track sequence will automatically begin.

CAUTION

WHENEVER THE AIRPLANE IS EQUIPPED WITH "BENDIX / KING" EFS 40, AND THE EHSI FIGURATION IS ON HSI NAV MAP,THE LOCALIZER CDI LEFT-RIGHT DEVIATION IS AUTOMATICALLY CORRECTED BY THE EFS 40 TO ELIMINATE THE NEED TO FLY REVERSE SENSING ON THE BACK COURSE. BC IS ANNUNCIATED AND THE CDI IS CORRECTED FOR PROPER STEERING COMMANDS WHEN THE AIRPLANE HEADING DEVIATES MORE THAN 105° FROM THE COURSE POINTER. THE COURSE POINTER SHOULD BE SET TO THE LOCALIZER FRONT COURSE INBOUND HEADING.

GLIDE SLOPE MODE

NOTE :
"Glide Slope" coupling is inhibited when operating in "NAV" or "APR" + "BC" modes. "Glide Slope" coupling occurs automatically in the "APR" mode.

1 - "APR" mode ..... **ENGAGED**

2 - At Glide Slope centering ..... **CHECK "GS" annunciator ON**

NOTE :
The autopilot can capture "Glide Slope" from above or below the beam while operating in either pitch attitude hold, IAS hold, VS hold or ALT hold modes.

NOTE :
If after "Glide Slope" coupling the "Glide Slope" signal becomes inadequate ("GS" flag in view), the "Glide Slope" annunciator will flash at least six times before extinguishing and the system will transfer to pitch attitude hold.
If a valid "Glide Slope" signal returns within six seconds the system will automatically recouple.
If a valid "Glide Slope" signal does not return within six seconds, the airplane must once again pass through the "Glide Slope" beam to achieve "Glide Slope" coupling.

GO-AROUND MODE

1 - Power lever "GA" push-button ..... **PRESS**
to disengage the autopilot (if engaged) and engage the flight director (if not engaged) in a wings level, pitch up command. Note GA mode annunciator ON

2 - MISSED APPROACH ..... **EXECUTE**

3 - Airplane ..... **TRIM**

4 - Lateral guidance (Select one mode)

- "HDG" mode ..... **SET bug and PRESS "HDG" push-button**
- "NAV" mode ..... **PRESS "NAV" push-button**
- "APR" mode ..... **PRESS "APR" push-button**

Glide Slope coupling will be inhibited so that the LOC can be tracked outbound (the autopilot will not couple to false Glide Slope signals as long as "GA" is engaged.

"GA" is disconnected whenever a vertical mode is engaged.

HALF-BANK ANGLE MODE

"HALF-BANK" mode button ..... **PRESS**

The commanded bank angle will be reduced to $\frac{1}{2}$ the normal value. This mode is functional during "HDG" and "NAV" mode operations but will be automatically deselected and inhibited during "APR" (normal or BC) coupled operations.

SOFT RIDE MODE

"SOFT RIDE" mode button ..... **PRESS**

This mode softens the autopilot's commands to provide a smoother ride during operations in turbulence. The normal autopilot performance (maintaining heading, maintaining wings level, maintaining attitude, maintaining airspeed and / or maintaining altitude) will be degraded by use of the Soft Ride mode.

BEFORE LANDING

"AP / TRIMS DISC INT" push-button ..... **PRESS**
to disengage autopilot and yaw damper

4.4 - FLIGHT DIRECTOR OPERATION

The flight director modes of operation are the same as those used for autopilot operations except the autopilot is not engaged and the pilot must maneuver the airplane to satisfy the flight director commands.

SECTION 5
PERFORMANCE

The installation and the operation of the autopilot do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

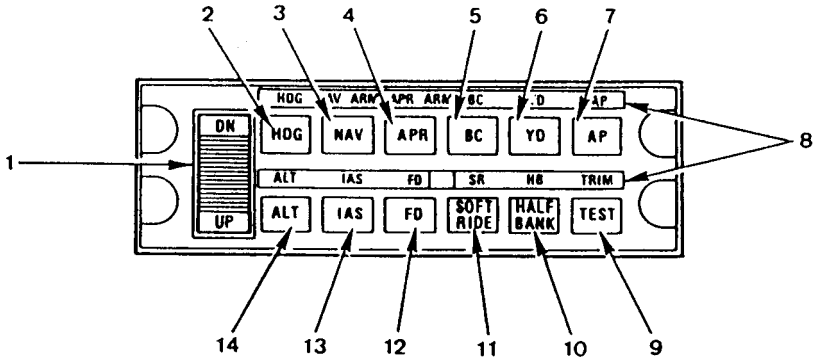
SECTION 6
WEIGHT AND BALANCE

Weight and balance corresponding to KFC 325 "BENDIX KING" autopilot are given in the optional equipment list attached to Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

SECTION 7
DESCRIPTION

7.1 - KMC 321 CONTROLLER

This mode controller consists of nine Flight Director mode select push-buttons (Push On - Push Off), mode annunciators, the vertical trim control, the yaw damper engage / disengage push-button, the autopilot engage / disengage push-button and the preflight test push-button.



S-4-700-22-0007

Figure 9.10.1 - KMC 321 AUTOPILOT MODE CONTROLLER

Item 1 - VERTICAL TRIM CONTROL
A spring loaded to center rocker switch which will provide up or down pitch command changes :

- While in Pitch Attitude Hold mode will adjust the pitch attitude at a rate of 0.7° / sec.
- While in Altitude Hold mode will adjust the altitude at a rate of 500 ft / min.
- While in Indicated Airspeed Hold mode will adjust the airspeed at a rate of 0.75 kt / sec.
- While in the Vertical Speed Hold mode will adjust the vertical speed at a rate of 100 ft / min / sec.

Item 2 - HEADING (HDG) MODE SELECTOR PUSH-BUTTON
When pushed, will select the Heading mode which commands the airplane to turn to and maintain the heading selected by the heading bug on the EHSI. A new heading may be selected at any time and will result in the airplane turning to the new heading with a maximum bank angle of about 25°. Selecting "HDG" mode will cancel "NAV", "APR" or "BC" track modes.

Item 3 - NAVIGATION (NAV) MODE SELECTOR PUSH-BUTTON
When pushed, will select the Navigation mode. The mode provides all angle intercepts, automatic beam capture and tracking of "VOR", "RNAV", "ADF" or LOC signals. The "NAV-ARM" annunciators located above this push-button will illuminate until the automatic capture sequence is initiated, then "ARM" will extinguish. The EADI mode annunciator will annunciate the same sequence. A loss of radionavigation signal during more than 7.5 sec. will turn autopilot to wings level attitude basic mode. In that case, "NAV" mode flashes on the EADI mode annunciator.

Item 4 - APPROACH (APR) MODE SELECTOR PUSH-BUTTON
When pushed, will select the Approach mode. This mode provides all angle intercepts, automatic beam capture and tracking of "VOR", "RNAV" or "LOC" signals plus glideslope coupling in the case of an ILS. The tracking gain of the "APR" mode is greater than the gain in the "NAV" mode. The "APR-ARM" annunciators located above this button will illuminate until the automatic capture sequence is initiated, then "ARM" will extinguish. The EADI mode annunciator will annunciate the same sequence.

Item 5 - BACK COURSE APPROACH (BC) MODE SELECTOR PUSH-BUTTON
When pushed will select the Back Course Approach mode. This mode functions identically to the Approach mode except that response to LOC signals is reversed. Glideslope coupling is inhibited in the Back Course Approach mode. The "BC" annunciators (both the KMC 321 and the EADI) will illuminate when this mode is activated plus the Approach Mode annunciators will function as described in Item 4.

Item 6 - YAW DAMPER ENGAGE (YD) PUSH-BUTTON
When pushed, engages the yaw damper independent of the autopilot. When pushed with the yaw damper engaged, disengages the yaw damper.

Item 7 - AUTOPILOT ENGAGE (AP ENG) PUSH-BUTTON
When pushed, engages autopilot and yaw damper if all logic conditions are met. When pushed again, disengages autopilot but does not disengage the yaw damper.

Item 8 - MODE ANNUNCIATORS
The mode symbol located above each mode push-button will illuminate when the mode is engaged except for the "NAV" and "APR" modes. When either the "NAV", "APR" or "BC" mode push-button is pressed, the appropriate "ARM" annunciator above either the "NAV" or "APR" mode push-button will illuminate until the automatic beam capture sequence is initiated. At beam capture "NAV" or "APR" will be annunciated above either the "NAV" or "APR" mode push-button. Normally, the "NAV" or "APR" coupled conditions follow an "ARM" condition but the coupled condition may be entered into directly if the beam capture criteria are met when "NAV", "APR" or "BC" is selected.

Item 9 - PREFLIGHT TEST (TEST) PUSH-BUTTON
When momentarily pushed, initiates preflight test sequence which automatically turns on all annunciator lights, tests the roll and pitch rate monitors, tests the autotrim fault monitor, checks the manual trim drive voltage and tests all autopilot valid and disengage logic. If the preflight test is successfully passed, the "AP" annunciator light will flash for approximately 6 seconds (an audible tone will also sound simultaneously with the annunciator flashes).
The autopilot cannot be engaged until the autopilot preflight tests are successfully passed.

Item 10 - HALF BANK (HB) MODE SELECTOR PUSH-BUTTON
When pushed, engages the Half Bank mode which reduces the certified autopilot commanded maximum bank angle to one half the normal value. This mode is automatically disengaged when the "APR" or "BC" mode is activated.

Item 11 - SOFT RIDE (SR) MODE SELECTOR PUSH-BUTTON
When pushed, engages the Soft Ride mode which reduces the autopilot commands. This command reduces the autopilot aggressivenesss which results in a more comfortable ride in turbulent air conditions. This mode is only intended to be used during turbulent air conditions. Routine use of this mode during all flight conditions will result in less than optimum autopilot performance. This mode is automatically disengaged when the "APR" or "BC" mode is activated.

Item 12 - FLIGHT DIRECTOR (FD) MODE SELECTOR PUSH-BUTTON
When pushed, will select the Flight Director mode bringing the Command Bar in view on the EADI and will command wings level and pitch attitude hold.

Item 13 - INDICATED AIRSPEED HOLD (IAS) MODE SELECTOR PUSH-BUTTON
When pushed, engages the Indicated Airpseed Hold mode. The autopilot varies the airplane pitch attitude in order to maintain the selected airspeed during changing air conditions, power changes and / or airplane configuration changes.

Item 14 - ALTITUDE HOLD (ALT) MODE SELECTOR PUSH-BUTTON
When pushed, will select the Altitude Hold mode, which commands the airplane to maintain the pressure altitude existing at the moment of selection.
Engagement may be accomplished in climb, descent, or level flight. In the "APR" mode, altitude hold will automatically disengage when the Glideslope is captured.

7.2 - GO-AROUND PUSH-BUTTON

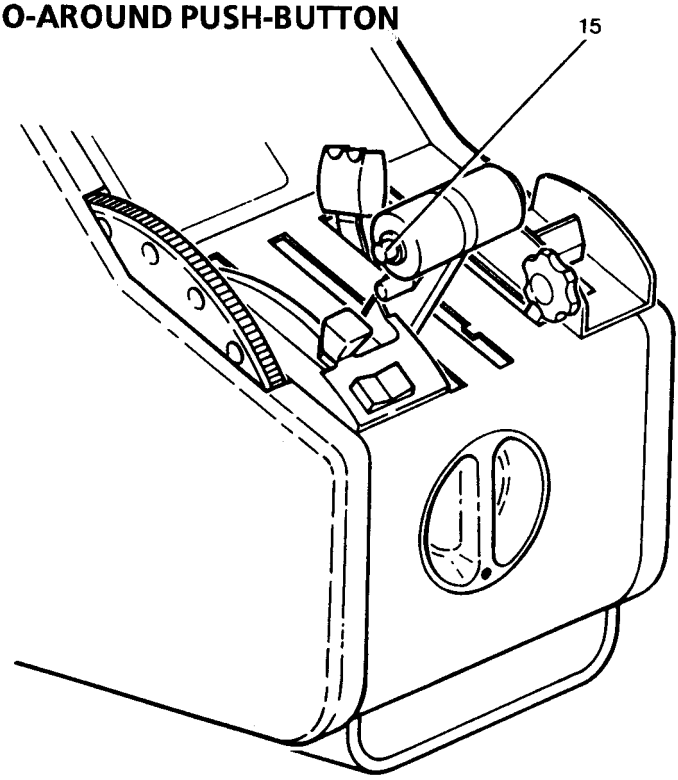
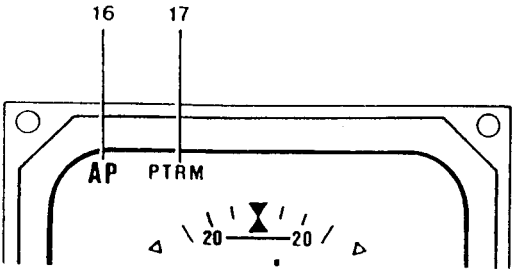
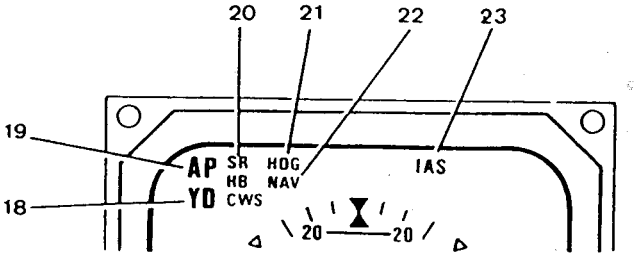


Figure 9.10.2 - GO-AROUND PUSH-BUTTON

Item 15 - GO AROUND (GA) MODE SELECTOR PUSH-BUTTON
The button located on the left side of the throttle lever, when pressed, disengages the autopilot and "NAV" or "APR" modes, if engaged. Flight director gives order which allows keeping a fixed pitch up attitude of 8 degrees. GA will annunciate on the EADI mode annunciator. The autopilot and any lateral mode may be re-engaged after the GO AROUND attitude has been manually established. Initiation of any other vertical mode cancels GO AROUND. If GO AROUND is active, Glideslope mode is inhibited.

7.3 - MODE ANNUNCIATOR ON EADI





S4 700 22 0010

Figure 9.10.3 - MODE ANNUNCIATOR ON EADI

Item 16 - AUTOPILOT (red AP) ANNUNCIATOR
Flashes for a short time whenever the autopilot is disengaged (an audible tone operates too during 2 seconds).

Item 17 - TRIM WARNING LIGHT (red PTRM)
Illuminates continuously whenever trim power is not on or the system has not been preflight tested. The "PTRM" warning light illuminates and is accompanied by an audible warning whenever a manual trim fault is detected. The Manual Trim System is monitored for the Trim Servo running without a command. The "PTRM" warning light will illuminate and be accompanied by an audible warning tone whenever an autotrim failure occurs. The autotrim system is monitored for the following failures : trim servo running without a command ; trim servo not running when commanded to run ; trim servo running in the wrong direction.

Item 18 - YAW DAMPER (YD) ANNUNCIATOR
Illuminates continuously whenever the yaw damper is engaged. Flashes for a short time whenever the yaw damper is disengaged.

Item 19 - AUTOPILOT (green AP) ANNUNCIATOR
Illuminates whenever the autopilot is engaged.

Item 20 - MODE ANNUNCIATORS
SR (soft ride) : indicates that mode, which softens autopilot commands, is engaged.

HB (half-bank) : indicates that mode, reducing bank angle by a half, is engaged. This mode is automatically disengaged when approach mode is engaged.

CWS : indicates that pilot is pressing "CWS" push-button, which activates the flight director in attitude and wings level hold mode. If autopilot is engaged, it allows to activate control wheel steering.

Item 21 - ENGAGED LATERAL MODE (green)
Possible modes are "HDG", "NAV", "APR", "LOC" or "BC".

Item 22 - ARMED LATERAL MODE (white)
Possible modes are "NAV", "APR", "LOC" or "BC".

Item 23 - ENGAGED LONGITUDINAL MODE (green)
Possible modes are "ALT", "ALTC", "IAS", "VS" or "GS".

7.4 - DIRECTIONAL GYRO SLAVING CONTROL

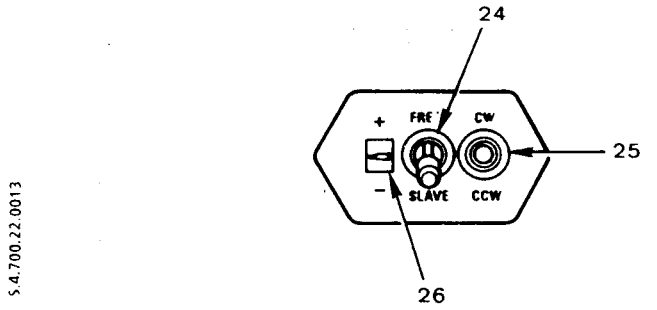


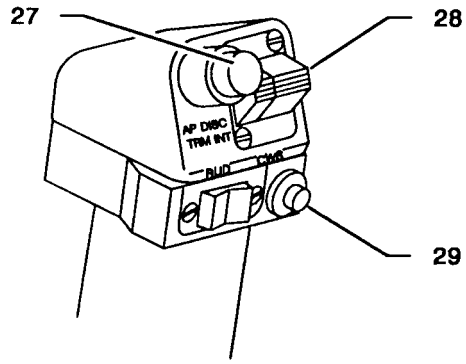
Figure 9.10.4 - KA 51B SLAVING CONTROL AND COMPENSATOR UNIT

Item 24 - FREE / SLAVE COMPASS SLAVE SWITCH
Selects either the manual (FREE) or automatic slaving (SLAVE) mode for the compass system.

Item 25 - CW / CCW COMPASS MANUAL SLAVE SWITCH
With the FREE / SLAVE compass slave switch in the FREE position, allows manual compass card to rotate either clockwise or counterclockwise. The switch is spring loaded to the center position.

Item 26 - SLAVING METER
Indicates the difference between the displayed heading and the magnetic heading. Deflection upwards indicates a clockwise error of the compass card. Deflection downwards indicates a counterclockwise error of the compass card.

7.5 - AUTOPILOT CONTROL WHEEL SWITCH CAP



I422000AAAGMA8100

Figure 9.10.5 - AUTOPILOT CONTROL WHEEL SWITCH CAP

Item 27 - AUTOPILOT DISCONNECT / TRIM INTERRUPT (AP / TRIMS DISC INT) PUSH-BUTTON
When shortly depressed, will disengage the autopilot and cancel all operating flight director modes. When depressed and held will interrupt all electric trims power (stop trims motion).

Item 28 - MANUAL ELECTRIC PITCH TRIM CONTROL SWITCHES
A split switch unit in which the left half provides power to engage the trim servo clutch and the right half to control the direction of motion of the trim servo motor. Both halves of the split trim switch must be actuated in order for the manual electric trim to operate in the desired direction. When the autopilot is engaged, operation of the manual electric trim will automatically disconnect the autopilot. (The flight director will remain engaged and the yaw damper will remain engaged if already engaged).

Item 29 - CONTROL WHEEL STEERING (CWS) PUSH-BUTTON
When depressed, allows pilot to manually control the airplane (disengages the pitch, roll and pitch trim servos) without cancellation of any of the selected modes. Will engage the flight director mode if not previously engaged. Automatically synchronizes the flight director / autopilot to the pitch attitude present when the CWS switch is released, to the present pressure altitude when operating in the Altitude hold mode, to the present Vertical Speed when operating in the vertical speed hold mode or to the present Indicated Airspeed when operating in the indicated airspeed hold mode.

7.6 -"AP / TRIMS MASTER" AND "EFIS MASTER" SWITCHES

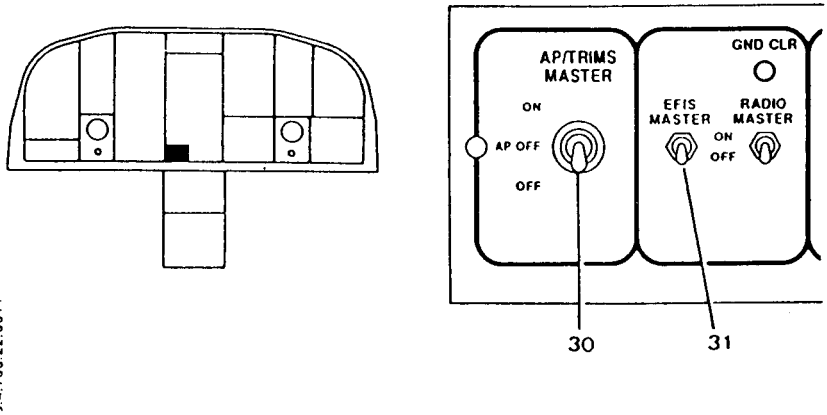


Figure 9.10.6 - "AP / TRIMS MASTER" AND "EFIS MASTER" SWITCHES

Item 30 - "AP / TRIMS MASTER" SWITCH
Controls power to all autopilot components and to all electric trims. When set to AP OFF position, autopilot and electric pitch trim are inoperative. When set to OFF position, autopilot and electric trims are inoperative.

Item 31 - "EFIS MASTER" SWITCH
Supplies all components of EFIS system including vertical and directional gyros.

7.7 - CIRCUIT-BREAKERS

Autopilot components are supplied through following circuit-breakers :

LABEL	FUNCTION
AP / TRIMS	Supplies power to KCP 220 autopilot computer, to KS 270A pitch servo, to KS 271A roll servo, to KS 271A yaw servo and to "PITCH TRIM", "AIL TRIM", "RUD TRIM", "AP DISC" and "AP ALT SEL" circuit-breakers.
AP ALERT	Supplies power to the KAA 15 alarm unit.
AP ALT SEL	Supplies power to the KAS 297C vertical speed and altitude selector.
GYRO	Supplies power to the KSG 105 directional compass, to the KVG 350 vertical unit and to the KRG 332 yaw rate gyro.
PITCH TRIM	Supplies power to the KS 272A electric pitch trim.
AP DISC	Delivers a control signal (28 VDC switched by "AP DISC TRM INT" switch) to the KCP 220 autopilot computer and to the KAA 15 alarm unit.
EADI	Supplies power to the SG 465 symbols generator, EADI section
EHSI	Supplies power to the SG 465 symbols generator, EHSI section, to the navigation computer and to the KN 40 navigation converter.

SUPPLEMENT

"BENDIX / KING" KRA 405 RADAR ALTIMETER

TABLE OF CONTENTS

SECTION 1

GENERAL

This supplement provides information necessary for airplane utilization when the "BENDIX / KING" KRA 405 radar altimeter is installed on TBM 700 airplane.

The radar altimeter provides the pilot with altitude information within –20 ft and 2500 ft.

SECTION 2

LIMITATIONS

These limitations complete those of standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

The radio altimeter is not approved as an additional accurate approach aid.

SECTION 3

EMERGENCY PROCEDURES

The emergency procedures given hereafter complete those of the standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

- During the test, if the radio altimeter does not indicate 50 ft ± 5 ft, the information provided by the radio altimeter must not be used.
- If the DH annunciator (EFIS) or the DH lamp (KNI 415) does not illuminate when the TEST button is depressed, the approach decision height will not be annunciated.
- If the flag comes into view, the information provided by the radar altimeter must not be used.

SECTION 4

NORMAL PROCEDURES

The normal procedures given hereafter complete those of the standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

After engine starting :

1. Adjust the DH (Decision Height) to 25 ft.
2. Depress the TEST button. The indicated altitude should be 50 ft ± 5 ft. The DH annunciator or the DH lamp should be out.
   When releasing the TEST button, the DH lamp must come on and, if the KNI 415 indicator is installed, the warning tone must sound when the adjusted altitude is reached.
3. With the TEST button depressed, slowly increase the adjusted DH. When the DH annunciator or the DH lamp comes on, the adjusted altitude should be 50 ft ± 5 ft. The DH annunciator or the DH lamp should also be illuminated at all altitudes above 50 feet.
4. Release the TEST button. The indicated altitude should be 0 ft ± 5 ft.

Prior to landing :

1. Select the decision height.
2. Depress the TEST button. The indicated altitude should be 50 ft ± 5 ft and, if the KNI 415 indicator is installed, the warning tone must sound. The DH annunciator or the DH lamp must come on and the warning tone must sound if the adjusted DH is greater than 50 ft.
3. Check that the radar altimeter pointer (KNI 415) or the DH annunciator (EFIS) indicates approximately 2500 ft by using the altimeter as a reference.

SECTION 5

PERFORMANCE

The installation of the "BENDIX / KING" KRA 405 radar altimeter does not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6

WEIGHT AND BALANCE

Weight and balance corresponding to the "BENDIX / KING" KRA 405 radar altimeter are given in the optional equipment list attached to Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

INTENTIONALLY LEFT BLANK

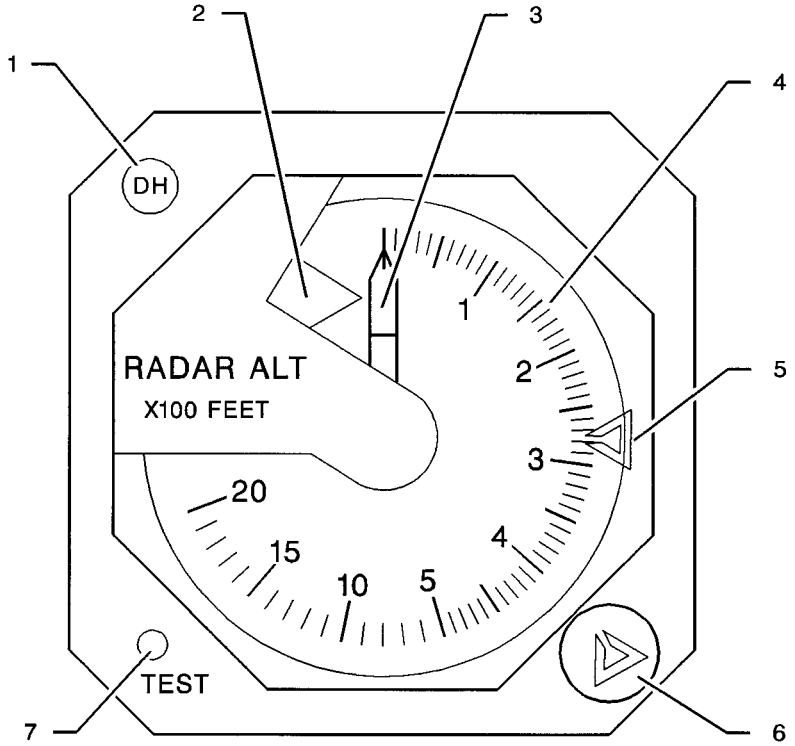
SECTION 7
DESCRIPTION

STANDARD VERSION : KNI 415 INDICATOR (Figure 9.16.1)

The DH lamp can be disabled by depressing it and rearmed by depressing it once again.

1) DH lamp
2) Flag
3) Indicator pointer
4) Altitude scale
5) DH bug
6) DH knob
7) Self–test button

Figure 9.16.1 (1 / 2) – KNI 415 INDICATOR



I4341400AAAAMA8001

Figure 9.16.1 (2 / 2) – KNI 415 INDICATOR

EFIS VERSION (Figure 9.16.2)

1) Radar altimeter altitude display
2) DH annunciator
3) Selected decision height
4) DH selection pull–knob
5) TEST button

Figure 9.16.2 (1 / 2) – RADAR ALTIMETER : EFIS VERSION
WITHOUT KNI 415 INDICATOR

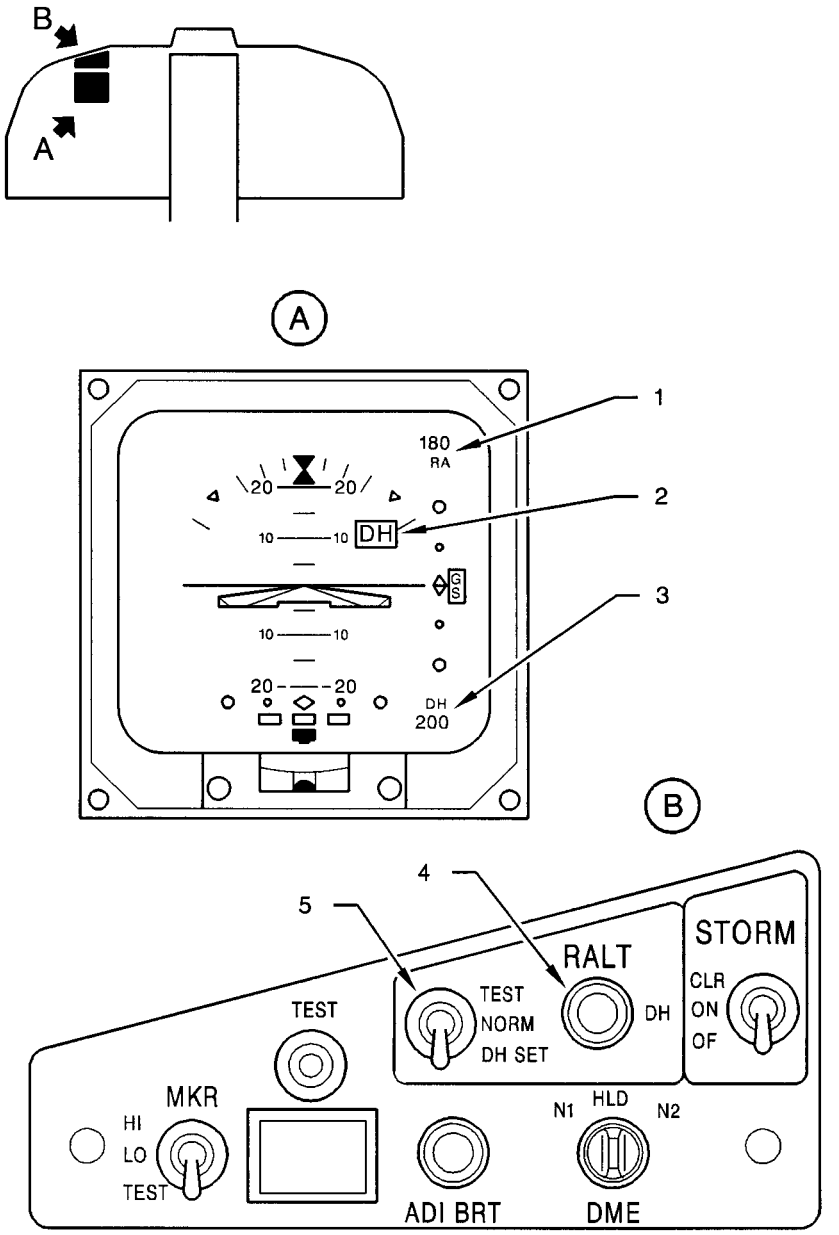


Figure 9.16.2 (2 / 2) – RADAR ALTIMETER : EFIS VERSION WITHOUT KNI 415 INDICATOR

COMBINED VERSION

The radar altimeter information given in the EADI system are a recopy of the indications and selections made on the KNI 415 indicator.

SUPPLEMENT

SHADIN
ENGINE TREND MONITOR

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is provided to acquaint the pilot with the limitations as well as the description and the operations necessary for operating a TBM 700 aircraft equipped with the SHADIN ETM Option.

The generals hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook when the TBM 700 is equipped with the SHADIN ETM Option.

The SHADIN Engine Trend Monitor (referred to as ETM) provides the pilot with a complete, accurate and detailed record of the aircraft's operation, pertaining to both the engine and the airframe.

Furthermore, the ETM provides parameters which will assist the pilot in the conduct of the flight.
The most important information can be recorded anytime in the ETM system. Once analyzed, these records make it possible to immediately detect any deviations of the operating parameters and thus schedule appropriate maintenance operations.
Any exceedance in operating parameters is automatically recorded.

The SHADIN ETM can be connected to a navigation system (LORAN, GPS).

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook when the TBM 700 aircraft is equipped with the SHADIN ETM Option.

The information related to navigation and flight parameters are a recopy of the aircraft instruments and must not be used as primary means of flight control.

The ETM Operation Manual, at its latest revision, must be easily accessible to the pilot each time the ETM system is used.

SECTION 3
EMERGENCY PROCEDURES

The installation and the operation of the ETM system do not involve any emergency procedure modification described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

SECTION 4
NORMAL PROCEDURES

The procedures hereafter supplement those of standard aircraft described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook when the TBM 700 aircraft is equipped with the SHADIN ETM Option.

The SHADIN ETM operation normal procedures are described in the "Operation Manual", at the latest revision.

Nevertheless, it is important to note the following points :

BEFORE STARTING THE ENGINE

17 - SHADIN ETM

Fuel remaining	Check
Added fuel	Insert
Fuel flow page	Select

CRUISE

4 - SHADIN ETM

When the cruise parameters are fully established :

RECORD	Push

SECTION 5
PERFORMANCE

Installation and operation of the SHADIN ETM system do not modify the performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Weight and balance corresponding to the SHADIN ETM system are given in the optional equipment list attached to Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

SECTION 7
DESCRIPTION

7.1 - DESCRIPTION

The ETM is designed to monitor, display and record all engine operation parameters as well as aerodynamic airdata. The system provides the pilot with a centralized source of information for engine monitoring, fuel management, navigation and airdata parameters.

The system consists of three major components :

- the panel-mounted indicator / computer
- the various engine and environment transducers
- the external data recorder with the datakey, located under the L.H. back seat

7.2 - CONTROLS

The different controls are described hereafter - see Figure 9.19.1.

1 - DISPLAY
The window display of the ETM. It contains two lines, with 12 characters per line.

2 - RECORD BUTTON
This button is used to manually generate an output report.

3 - STOPWATCH START / STOP SWITCH
When the stopwatch is activated, this switch starts and stops it.

4 - STOPWATCH RESET BUTTON
Press this button to activate the stopwatch. Resets the stopwatch once it has been stopped.

5 - PAGE UP / DOWN SWITCH
Used for scrolling through the pages of each file.

6 - INCREMENT / DECREMENT SWITCH
This switch is used to scroll through subpages and increment or decrement an input value such as gross weight or fuel added.

7 - ROTARY SWITCH
Selects from four files : ETM, NAV, FUEL, AIRDATA.

8 - ENTER / TEST BUTTON
Used to activate the self test.

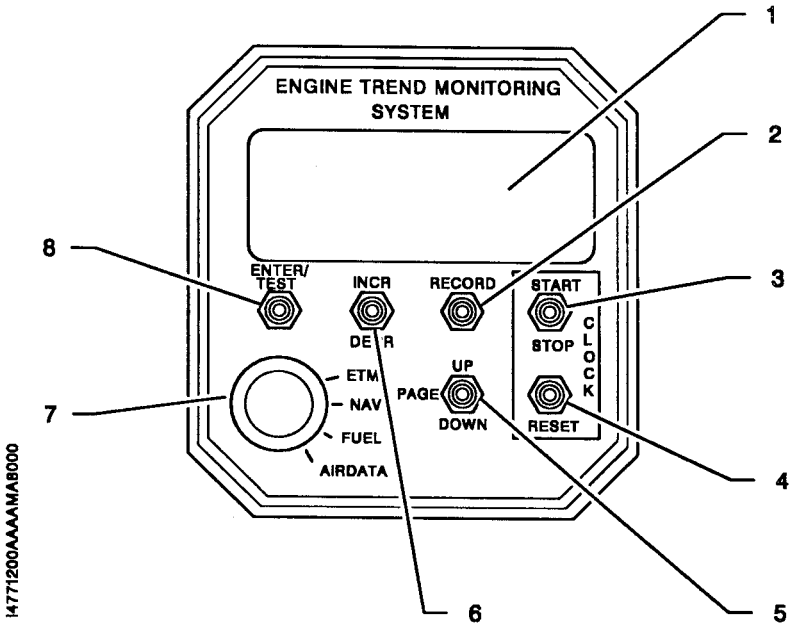


Figure 9.19.1 - ETM SHADIN

SECTION 8
HANDLING, SERVICING AND MAINTENANCE

DATAKEY OPERATION

The key is inserted into its receptacle in the aircraft prior to turning power on and removed after power is turned off. While inserted the reports which are recorded during the flight are electronically written to a memory chip in the key. When the key is removed from the aircraft it can then be carried to a personal computer with a receptacle attached for the key and downloaded.

Operating using the Datakey

a - Insert initialized key into aircraft receptacle prior to power up (turn 90°).

b - Conduct flight.

c - Remove key after power down.

NOTE :
The key will hold several flights of data depending of the number of events per flight. The key should be downloaded as soon as practical after removal. Exposure to electrostatic charges can cause permanent damage.

SUPPLEMENT

"BENDIX/KING" RDR 2000 VERTICAL PROFILE WEATHER RADAR

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement supplies information necessary for the operation of the airplane when the optional "BENDIX/KING" RDR 2000 vertical profile color weather radar system is installed in the TBM 700 airplane.

SECTION 2
LIMITATIONS

These limitations supplement those of standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

On ground, the radar radiation is inhibited, when the landing gear shock absorbers are compressed. However, it is important to obey the following restrictions :

- Do not operate the radar during refueling operations or in the vicinity of trucks or containers containing flammables or explosives.
- Do not allow personel within 15 feet of area being scanned by antenna when system is transmitting.

2.1 - RDR 2000 weather radar not interfaced with KMD 850 multi-function display

The "BENDIX/KING" RDR 2000 Pilot's Guide P/N 006-08755-0000 at its latest revision shall be readily available to the pilot whenever the operation of the radar system is predicted.

2.2 - RDR 2000 weather radar interfaced with KMD 850 multi-function display

The "BENDIX/KING" RDR 2000 Pilot's Guide P/N 006-08755-0000, the KMD 550/850 Pilot's Guide P/N 006-18222-0000 and the KMD 850 Wx Radar Pilot's Guide Addendum P/N 006-18235-0000 at their latest revision shall be readily available to the pilot whenever the operation of the radar system is predicted.

SECTION 3

EMERGENCY PROCEDURES

Installation and operation of "BENDIX/KING" RDR 2000 vertical profile weather radar system do not change the basic emergency procedures of the airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

CAUTION

IN CASE OF AP COMPUTER FAILURE, THE ANTENNA STABILIZATION WILL NOT BE OPERATIVE

SECTION 4

NORMAL PROCEDURES

The normal procedures hereafter supplement those of the standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

Normal operating procedures for the vertical profile weather radar system are outlined in the Pilot's Guides, the references of which are given in Section 2 "Limitations" of this Supplement.

AFTER ENGINE STARTING

- Radar function selection switch ..... **TST**
  Check the antenna scanningand that there is no failure message.
- Radar function selection switch ..... **SBY**

TAKE OFF

- Radar ..... **As required**

If the radar is switched "ON" with the landing gear shock absorbers compressed, the "TX FLT" message appears in the KMD 850 screen (if installed) LH. lower corner or in the radar screen (if KMD 850 not installed) RH. lower corner. The radar radiation is inhibited. The radar automatically radiates, as soon as the aircraft takes off.

BEFORE LANDING

- Radar function selection switch ..... **SBY**

ENGINE SHUT-DOWN

RDR 2000 weather radar interfaced with KMD 850 :

- "RADIO MASTER" switch ..... **OFF**

RDR 2000 weather radar not interfaced with KMD 850 :

- Radar function selection switch ..... **OFF**

SECTION 5
PERFORMANCE

Installation of "BENDIX/KING" RDR 2000 vertical profile weather radar system results in a 5 KIAS decrease in maximum cruise performance and a 3 KIAS decrease in Long Range cruise performance described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT		EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	34 - NAVIGATION				
A	Weather radar (OPT70 34040A)	RDR 2000	KING	21.054 (9.550)	163.70 (4.158)
A	Weather radar GC 360A coupled (OPT70 34040B)	RDR 2000	KING	25.154 (11.410)	161.22 (4.095)
A	Weather radar EFIS coupled (OPT70 34040E)	RDR 2000	KING	21.054 (9.550)	163.70 (4.158)
A	Weather radar KMD 850 coupled (OPT70 34040F)	RDR 2000	KING	11.530 (5.230)	173.46 (4.406)
A	Weather radar EFIS and GC 360A coupled (OPT70 34040G)	RDR 2000	KING	25.154 (11.410)	161.22 (4.095)
A	Weather radar EFIS coupled (with CP 466A) (OPT70 34040H)	RDR 2000	KING	17.394 (7.890)	167.20 (4.247)

SECTION 7
DESCRITION

7.1 - RDR 2000 weather radar not interfaced with KMD 850 multi-function display

All modes and controls, as well as radar clutter display are arranged on a specific screen.

1 - Manual gain control knob
2 - NAV mode selector button
3 - Ground Mapping mode selector button
4 - Vertical Profile mode selector button
5 - Weather and Weather-Alert toggle selector button
6 - Screen brightness control knob
7 - Left or right Track mode annunciation
8 - Degrees of Track left or right of airplane nose
9 - Vertical Profile mode annunciation
10 - Relative altitude reference line
11 - Plus & minus thousands of feet from relative altitude
12 - Radar function selection switch
13 - Range selector buttons
14 - Left or right Track mode selector buttons
15 - Antenna tilt control
16 - Range rings
17 - Weather or Weather-Alert mode annunciation
18 - VP scan angle
19 - "TX FLT" annunciation

Figure 9.22.1 (1/2) - Indicator

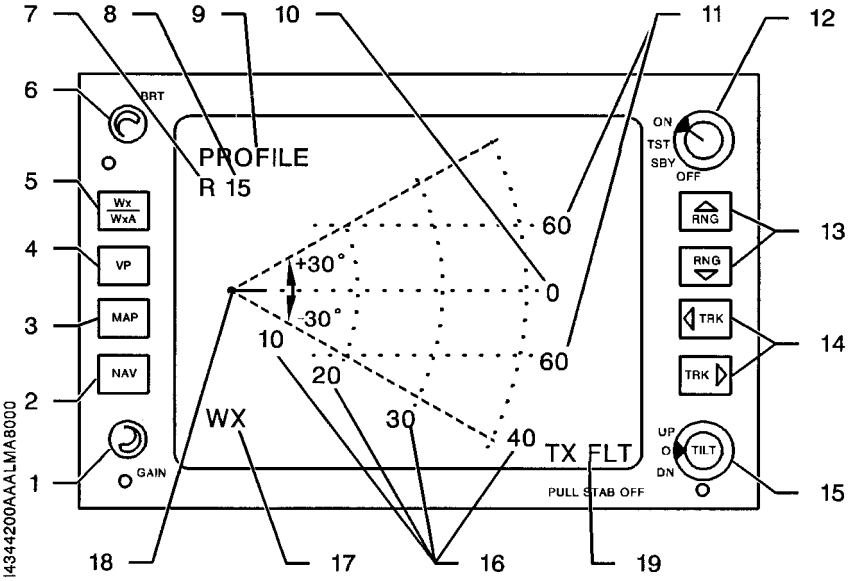
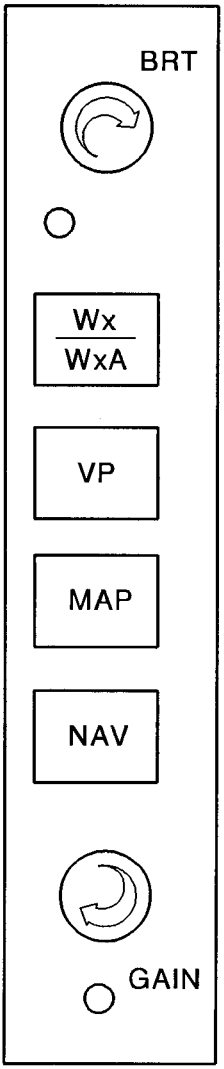


Figure 9.22.1 (2/2) - Indicator

OPERATIONAL CONTROLS



BRT Controls brightness of the indicator display.

Wx / WxA Alternately selects between weather (Wx) and "weather-alert" (WxA) modes of operation. "Wx" or "WxA" will appear on the lower left of the display. Areas of high rainfall appear in magenta color. When the WxA mode is selected, magenta areas of storms flash between magenta and black.

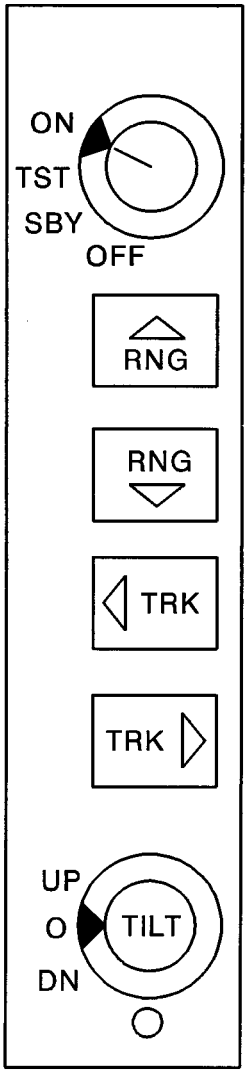
VP Selects and deselects the Vertical Profile mode of operation. Selecting the VP mode of operation will not change the selected mode of operation : TST, Wx, WxA or GND MAP. Once in VP, these modes may be changed as desired. VP will engage from the NAV MAP mode, but NAV will be disabled during VP operation.

GND MAP Places indicator in ground-mapping mode disables weather-alert feature and activates gain control. (The magenta is not activated in the GND MAP mode).

NAV MAP Places indicator in navigation mode so that preprogrammed waypoints may be displayed. If other modes are also selected, the NAV display will be superimposed on them. This button is effective only if an optional radar graphics unit and Flight Management System is installed. If actuated without these units, it will cause NO NAV to appear at lower left of screen. The radar is still capable of displaying weather.

GAIN Manual gain control becomes active when GND MAP is selected. In all other modes, gain is internally set.

LOG Used only when the "BENDIX/KING" IU 2023 series radar graphics unit is installed along with a compatible long range navigation system, a listing of the latitudes and longitudes of selected waypoints will be displayed. If a compatible RNAV is installed, selected VOR frequencies, along with bearings and distances to waypoints, will be presented. No radar transmission occurs in this mode.



ON Radar switch-on/off.

TST The test pattern is displayed on the indicator, no transmission occurs.

SBY After 30 seconds in this mode, the system is in a state of readiness. No radar transmission occurs, and the antenna is parked in the down position. "STBY" is displayed in the lower left of the display.

OFF Removes primary power from the radar indicator and the sensor. The antenna is parked down.

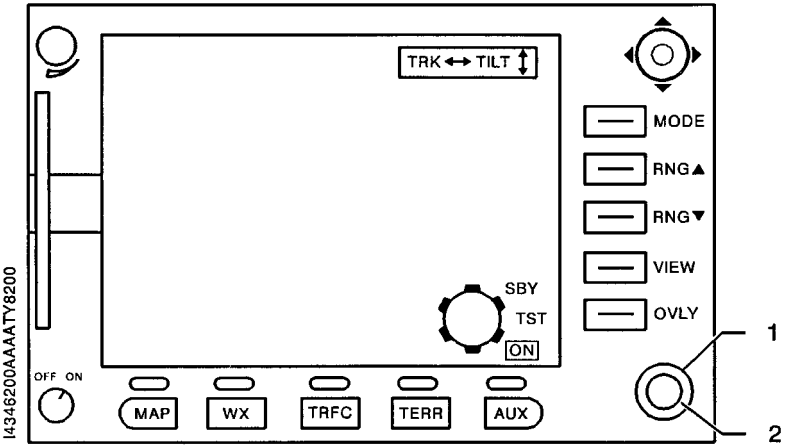
RNG When pressed clears the display and advances the indicator to the next range. Upper button increases range, lower button decreases it. Selected range is displayed in lower right corner on the last range mark and distance to other range rings is displayed along the lower edge.

TRK When pressed provides a yellow azimuth line and a digital display of the azimuth line placement left or right from the nose of the airplane. For VP operations, the TRK button performs two functions.

1) Prior to engaging VP, the appropriate button (left or right) is used to place the track line at the desired azimuth angle to be vertically scanned (sliced). When VP is engaged, the slice will be taken at the last position of the track line, whether it is visible or not. If the track line has not been selected after power has been applied to system and VP is engaged, the slice will be taken at 0° (directly in front of the airplane).
2) Continuously holding the TRK button will result in the system "slicing" in two-degree increments.

TILT Permits manual adjustment of antenna tilt 15° up or down for best indicator presentation. The tilt angle is displayed in the upper right corner of the display. Depending on mode status of the indicator the readout may be in tenths of degree. Pull the Tilt selector knob out for "STAB OFF" operations. "STAB OFF" will appear in the upper left corner of the display. Tilt functions are disabled in VP mode.

7.2 - RDR 2000 weather radar interfaced with KMD 850 multi-function display



WX : KMD 850 radar function selection

Figure 9.22.2 - KMD 850 Multi-function display

When the KMD 850 is set to radar function, equivalences between KMD 850 and radar standard operationial controls described in chapter 7.1 are as follows :

KMD 850 CONTROL	RDR 2000 STANDARD OPERATIONAL CONTROL
MODE	WX/GND MAP
RNG▼ / RNG▲	RNG
VIEW	VP
Joystick horizontal movement	TRK
Joystick vertical movement	TILT
1 - Outer knob	SBY / TST / ON
2 - Inner knob	GAIN

From S/N 196

Radar setting to ON or OFF is performed by using the "RADIO MASTER" switch.

SUPPLEMENT

"BFG" SKYWATCH
SKY 497 OR SKY 899
TRAFFIC ADVISORY SYSTEM

TABLE OF CONTENTS

INTENTIONALLY LEFT BLANK

SECTION 1

GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TBM 700 airplane is equipped with the option "BFG" SKYWATCH SKY 497 OR SKY 899 TRAFFIC ADVISORY SYSTEM.

The SKYWATCH traffic advisory system relies on information obtained from nearby aircraft transponders. It does neither detect, nor track aircraft which are not equipped with an operating ATCRBS transponder.

SECTION 2

LIMITATIONS

The installation of the "BFG" SKYWATCH traffic advisory system does not change the basic limitations of the airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

REMARK :
The SKYWATCH is a TAS (advisory means), not a TCAS.

SECTION 3

EMERGENCY PROCEDURES

The installation of the "BFG" SKYWATCH traffic advisory system does not change the emergency procedures of the airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

SECTION 4

NORMAL PROCEDURES

Normal operating procedures of the "BFG" SKYWATCH traffic advisory system are outlined in :

- the Pilot's Guide for the "BFG" SKYWATCH™ traffic advisory system, Model SKY 497 P/N 009-10801-001 Rev. B dated 06/00 or any applicable following edition
  or
- the Pilot's Guide for the "BFG" SKYWATCH® HP traffic alert/advisory system, Model SKY 899 P/N 009-11901-001 Rev. A dated 08/01 or any applicable following edition and :
  - . the Multi-function Display Traffic Avoidance Function (TCAS/TAS) Pilot's Guide Addendum P/N 006-18238-0000 Rev. 0 dated 04/01 or any applicable following edition, if data are displayed on a KMD 850 MFD,
  - . the "GARMIN" GNS 530 Pilot's Guide, P/N 190-00181-00 Revision A dated 04/00 or any applicable following edition, if data are displayed on a GNS 530 GPS.

WARNING

DO NOT ATTEMPT EVASIVE MANEUVERS BASED SOLELY ON TRAFFIC INFORMATION SHOWN ON THE SKYWATCH DISPLAY. INFORMATION ON THE DISPLAY IS PROVIDED TO THE FLIGHT CREW AS AN AID IN VISUALLY ACQUIRING TRAFFIC; IT IS NOT A REPLACEMENT FOR ATC AND SEE & AVOID TECHNIQUES

When the SKYWATCH traffic advisory system issues a Traffic Alert (aural or visual), look outside for the intruder aircraft. When you spot an intruder aircraft, use normal right-of-way procedures to maintain separation.

SECTION 5

PERFORMANCE

The installation of the "BFG" SKYWATCH traffic advisory system does not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6

WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	34 - NAVIGATION			
A	Traffic advisory system SKYWATCH™ SKY 497 (OPT70 34047A)	BFG	15.780 (7.16)	145.91 (3.706)
A	Traffic advisory system (EFIS version) SKYWATCH™ SKY 497 (OPT70 34047B)	BFG	13.140 (5.96)	150.12 (3.813)
A	Traffic advisory system SKYWATCH® HP SKY 899 (OPT70 34059)	BFG	12.720 (5.77)	151.18 (3.840)

SECTION 7
DESCRIPTION

The SKYWATCH is an airborne Traffic Advisory System (TAS). It monitors the airspace around your aircraft and advises the flight crew where to look for transponder equipped aircraft that may pose a collision threat.

SKYWATCH SKY 497

The traffic can be displayed on the stormscope display, whether a stormscope system is installed or not.

The display range is 2 NM or 6 NM.

SKYWATCH SKY 899

The traffic can be shown on a dedicated screen (KMD 850 MFD or GNS 530 GPS) and/or on the EFS 40.

The controls ("TEST" or "TEST/MODE", "ON", "OFF" and "ST-BY/OPR") are remote from the screen (see Figures 9.28.1 and 9.28.2).

The display range is between 2 NM and 20 NM.

All

The traffic detected is displayed, when the vertical separation between your own aircraft altitude and the intruder altitude ranges :

MODE	From	Up to
ABV (Look up)	- 2700 ft	+ 9000 ft
NRM (Normal)	- 2700 ft	+ 2700 ft
BLW (Below)	- 9000 ft	+ 2700 ft

The Traffic Advisory (TA) criteria, which initiates a visual and/or an aural alert, are (sensitivity level B) :

- detection of an intruder aircraft within a 0.55 NM horizontal radius and a ± 800 ft relative altitude,
- approach of an intruder aircraft on a course that will intercept your course within 20 to 30 seconds.

Post-MOD70-125-23

SKYWATCH setting to ON or OFF is performed by using the "RADIO MASTER" switch.

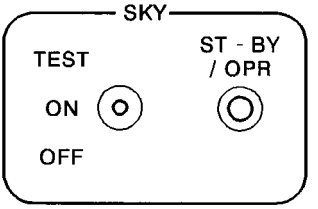
AIRCRAFT EQUIPPED WITH THE KRA 405B RADIO ALTIMETER

When the aircraft is at a ground height lower than 2000 ft, the Traffic Advisory (TA) criteria, which initiate a visual and/or an aural alert, are (sensitivity level A) :

- detection of an intruder aircraft within a 0.2 NM horizontal radius and a ± 600 ft relative altitude,
- approach of an intruder aircraft on a course that will intercept your course within 15 to 20 seconds.

When the aircraft is at a ground height lower than 1700 ft, the traffics which ground height is lower than 380 ft will no longer be displayed.

The aural traffic alert is inhibited when the height detected by the radio altimeter is below 400 ft.

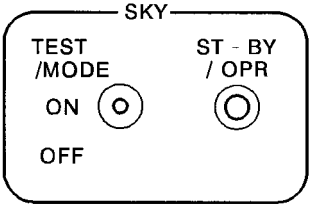


I4344400AAAAMA8000

TEST : Held position for test

ST-BY/OPR : 1st press : Skywatch stand-by
2nd press : OPR selection

Figure 9.28.1 - SKYWATCH SKY 899 remote control : EFS 40 display impossible



I4344400AAAAMA8200

ST-BY/OPR : Skywatch stand-by

TEST/MODE : 1st case : When the SKY 899 is in stand-by, tests the Skywatch
2nd case : When the SKY 899 is in OPR, changes display type (NORM, BLW, ABV) in the EFS 40
NOTE :
EFS 40 TEST/REF knob enables selection of SKY 899 Skywatch data display in the EFS 40.

Figure 9.28.2 - SKYWATCH SKY 899 remote control with display on EFS 40

SUPPLEMENT

"HONEYWELL" KMD 850 MULTI-FUNCTION DISPLAY

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TBM 700 airplane is equipped with the option ""HONEYWELL" KMD 850 MULTI-FUNCTION DISPLAY".

The generalities hereafter supplement those of the standard airplane described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option ""HONEYWELL" KMD 850 MULTI-FUNCTION DISPLAY".

The KMD 850 is a multifunction display screen which allows to display topographical type information (rivers, roads, ...), aeronautical type information (VOR, Airport, NDB, ...), as well as information issued from a weather radar, a stormscope, an EGPWS and the active flight plan issued from a GPS.

Aeronautical items of information are stored in a data card. This data base is updated every 28 days by replacing the data card.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option ""HONEYWELL" KMD 850 MULTI-FUNCTION DISPLAY".

KMD 550/850 Multi-function Display Pilot's Guide, P/N 006-18222-0000, Revision 0 dated Oct/2000 or any applicable following edition, shall be readily available to the pilot.

The KMD 850 may be used only as an aid to navigation, if :

- navigation is based on other approved instruments,
- the KMD 850 data base is current and compatible with the flight,
- KMD 850 and associated GPS data bases cover the same geographical areas.

CAUTION

KMD 850 TOPOGRAPHICAL DATA MUST NOT BE USED FOR TERRAIN AND/OR OBSTACLES AVOIDANCE

SECTION 3

EMERGENCY PROCEDURES

Installation and operation of the "HONEYWELL" KMD 850 Multi-function Display do not change the emergency procedures described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

SECTION 4

NORMAL PROCEDURES

The normal procedures hereafter supplement those of the standard aircraft described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""HONEYWELL" KMD 850 MULTI-FUNCTION DISPLAY".

KMD normal operating procedures recommended by the manufacturer are outlined in the KMD 550/850 Multi-function Display Pilot's Guide, P/N 006-18222-0000, Revision 0 dated Oct/2000 or any applicable following edition.

SECTION 5
PERFORMANCE

The installation and the operation of the "HONEYWELL" KMD 850 Multi-function Display do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	34 - NAVIGATION			
A	Multi-function display KMD 850 (OPT70 34054)	HONEYWELL	6.415 (2.910)	153.54 (3.900)

SECTION 7
DESCRIPTION

1 - Brightness control
2 - Data card
3 - LCD display
4 - Available function
5 - ON/OFF control
6 - Selected function indicators
7 - Function select keys
8 - Control knobs (inner and outer)
9 - Power key labels
10 - Soft labels
11 - Joystick
12 - Power keys
13 - Fault indicator

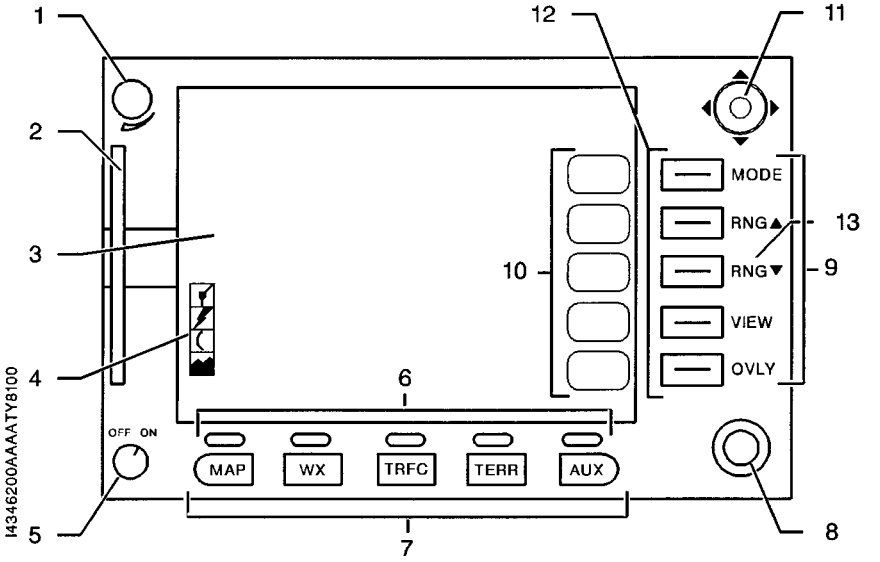


Figure 9.35.1 - KMD 850 Multi-function display (front view)

SUPPLEMENT

"GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TBM 700 airplane is equipped with the option ""GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40".

Approved utilization types :

- IFR in continental and Terminal Enroute areas as additional source,
- B-RNAV,
- Non precision approaches (GPS, VOR, VOR-DME, TACAN, NDB, NDB-DME, RNAV).

Conformity means :

- ACJ 20X4 and ACJ 20X5
- AC 20-138.

The generalities hereafter supplement those of the standard airplane described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option ""GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40".

This supplement does not constitute an operational utilization authorization.

The GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means using information provided by satellites (the GNS 530 system is able to track up to 12 satellites at a time). It also uses data recorded in a data base. The data base is housed in a Navdata card to be inserted in the front face and is updated every 28 days by replacing the card.

Each data base contains information about airports, communication frequencies, VORs, NDBs, Intersections, SIDs, STARs, instrument approaches, flight service stations ...

There is also room for up to 1000 user defined waypoints and 20 different flight plans.

SECTION 2
LIMITATIONS

2.1 - General

The limitations hereafter supplement those of the standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option ""GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40".

"GARMIN" GNS 530 Pilot's Guide, P/N 190-00181-00 Revision A dated 04/00 or any applicable following edition, shall be readily available to the pilot, each time the GPS navigation system is used.

The system must utilize the following software versions or more recent ones :

Subsystem	Software
MAIN	2.06
GPS	2.10

Data base updating must be verified before each flight.

The navigation sources required for the anticipated flight shall be serviceable and allow an immediate crossed check on available ground aids or shall allow to return to primary navigation sources in case of GPS navigation loss.

Use of GPS as a navigation source is **PROHIBITED**, unless the pilot verifies the currency of the data base and the coordinates of each selected waypoint.

Procedures during flight preparation

During flight preparation, the pilot must get information about GPS constellation, via aeronautical data (consultation of GPS NOTAM).

When less than 24 satellites are available (or less than 23 if equipment uses pressure altitude information), the pilot must make sure that RAIM function is available on the projected route and for the flight period in B-RNAV areas.

RAIM function prediction can be done using prediction software integrated into GNS 530 or any other approved software such as the one provided for the users by EUROCONTROL on INTERNET.

If a loss of RAIM function is predicted on the chosen route for a period of more than 5 minutes, the flight cannot be done. In that case, the flight will either be postponed or another route will be chosen. The prediction software must then be used again.

Preflight procedures

During preflight checks, it is necessary to verify data base validity (updating of the last AIRAC cycle).

The onboard equipment must be initialized in compliance with manufacturer procedures (refer to "GARMIN GNS 530 Pilot's Guide").

In case a pre-programmed or an already stored flight plan is used, an accurate check of the waypoints is also required.

General in-flight procedures

Before entering a B-RNAV area, the pilot must make sure that RAIM function is available.

Flight plan activation, WPT and LEG changes as well as any modification of initialization data must be done in compliance with equipment User's Manual.

For every navigation into areas reserved for B-RNAV, the pilot must be provided with a predicted availability of RAIM on the route, if the constellation disposes of less than 23 satellites.

The check of navigation system information consistency must be regularly performed during the flight :

- when reaching each waypoint or before reaching the position report point of the ATC,
- before leaving a published route and then every 15 minutes during this type of operation (function "Direct To").

The check of position information consistency may be performed by comparing this position with the one determined by the primary radionavigation sources.

2.2 - SID/STAR

The use of SIDs and STARs stored in GPS data base is only authorized, if the pilot has checked that GPS procedure corresponds to the one given in the official documentation (coordinates of various points and paths between points).

2.3 - Instrument approach (Non precision approach)

Use of the GPS to perform an instrument approach is possible, as long as this use is approved by the air navigation local authority for the approach in question.

Instrument approaches performed with the GPS must be achieved according to approved approach procedures given in the GPS data base. The data base must be kept up to date and base data accuracy checked with regard to the official documentation, preferably before the flight.

a) Instrument approaches must be performed in GPS approach mode and the RAIM must be available at the final approach fix (FAF).

b) Precision approaches (ILS, LOC, LOC-BC, MLS ...) must not be performed with the GPS.

c) If a landing is required on a diversion field, an other means than GPS must be available to perform approach to this field. Required on board equipment must be serviceable and ground aids must be operational.

Instrument approaches can only be performed, as long as used point coordinates are referenced with regard to WGS 84 system or an equivalent system.

SECTION 3

EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option ""GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40".

EHSI NAV FLAG

In navigation GPS#1 (OPT70-23024) :

Return to VOR, ADF or (if installed) GPS#2 navigation sources and to remaining operational navigation equipment.

Selection of GPS#2 (if installed and BRNAV authorized) ..... **PRESS ONCE on "1-2" push-button of the EHSI**

or

Selection of VOR or ADF ..... **PRESS ONCE or TWICE on "NAV" push-button of the EHSI**

In navigation GPS#2 (OPT70-23025) :

Return to VOR, ADF or GPS#1 navigation sources and to remaining operational navigation equipment.

Selection of GPS#1 (if BRNAV authorized) ..... **PRESS ONCE on "1-2" push-button of the EHSI**

or

Selection of VOR or ADF ..... **PRESS ONCE or TWICE on "NAV" push-button of the EHSI**

"MSG" ANNUNCIATOR ILLUMINATION

In navigation with GPS associated to the warning :

"MSG" push-button of associated GPS ..... **PRESS**

Check the message.

NOTE :
A single "stand-alone" GPS certified as B-RNAV navigation means is required to fly in B-RNAV areas.

In case of loss of RAIM function, the navigation information remains available but its integrity is no longer controlled.

- If RAIM loss occurs out of B-RNAV area, the aircraft must not enter B-RNAV area.
- If RAIM loss occurs in B-RNAV area, GPS navigation can be continued as long as cross-checkings done with conventional means (VOR, DME, NDB and dead reckoning elements) enable making sure that B-RNAV accuracy criteria are observed. When this condition is not met, the Air Traffic Control must be contacted to return to conventional navigation.

If GPS navigation information is lost or declared not valid, use the other available navigation means. If this occurs during instrument approach final phase, a go-around must be made, except if the other approved radio means to perform approach are displayed and available.

SECTION 4

NORMAL PROCEDURES

The normal procedures hereafter supplement those of the standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option ""GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40".

Normal operating procedures of the GPS recommended by the manufacturer are outlined in the "GARMIN" GNS 530 Pilot's Guide at the latest revision and Memory Jogger at the latest revision.

However, it is important to precise the following points for the GPS use on TBM 700 :

SET UP CONDITIONS

- Verify if the data base is current. Verify data on the self test page.
- Verify that altitude data is valid for the GPS prior to flight.
- In case of B-RNAV use :

  During the preflight planning phase, the availability of GPS integrity (RAIM) shall be confirmed for the intended flight (route and time).

  B-RNAV flight dispatch shall not be made in the event of a continuous loss of RAIM for more than 5 minutes predicted in any part of the intended flight.

  When less than 24 satellites are available (or less than 23 if equipment uses pressure altitude information), the pilot must make sure that RAIM function is available on the projected route and for the flight period in B-RNAV areas.

  When 23 or more satellites are available, the prediction of satellite position is valid for 7 days. Their predicted availability is ensured for 48 hours by EUROCONTROL.

  When less than 23 satellites are available, the predicted availability of RAIM shall be confirmed short before each flight.

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"CDI" push-button of the GPS

This push-button may be used to select data to be displayed on electromechanical instruments (CDI or HSI).

This push-button is ineffective on the EHSI.

EHSI presentation "NAV" push-button

This push-button may be used to select data for presentation on the pilot's EHSI ; either NAV data from NAV 1 or NAV 2 navigation receiver or GPS#1 or (if installed) GPS#2 data or ADF data.

"NAV" symbol is green, **"GPS1"** symbol is blue, **"GPS2"** symbol is yellow and **"ADF"** symbol is green.

Colors relative to EHSI symbols are as follows :

CONFIGURATION	TEXTS	LEG OR NEEDLE
GPS1	Blue	Active leg : Blue Not active leg : White
GPS2	Yellow	Active leg : Yellow Not active leg : White
ADF	Green	Magenta
VOR1	Green	White
VOR2	Yellow	Magenta
LOC1	Green	Green
LOC2	Yellow	Yellow

"MSG" message annunciator

CAUTION

"MSG" ANNUNCIATOR MAY BE PERMANENTLY ILLUMINATED IF THERE EXISTS A PERMANENT MESSAGE. WHEN A NEW MESSAGE APPEARS, "MSG" ANNUNCIATOR JUST FLASHES.

"MSG" message annunciator will flash to alert the pilot of a situation that requires his attention. Press the **"MSG" push-button** located on the GPS to view the message (Chapter 12 of "GARMIN" GNS 530 Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).

"MSG" message annunciator (white color) of the GPS system interfaced with EHSI is displayed on the L.H. side of the EHSI. **"MSG1" message annunciator** of GPS#1 system (OPT70-23024) and/or **"MSG2" message annunciator** of GPS#2 system (OPT70-23025) are displayed on L.H. instrument panel (amber indication - see Figure 9.36.1, Detail A).

"WPT" Waypoint annunciator

This annunciator illuminates 10 seconds before warning "TURN TO XXX".

"WPT" Waypoint annunciator is also displayed on the L.H. side of the EHSI.

"APR" annunciator is also displayed on the L.H. side of the EHSI.

Flight director/autopilot coupled operation

The EHSI may be coupled with KFC 325 autopilot.

Engaging the "NAV" mode on the autopilot mode controller will make the FD appear on the EADI. The FD uses selected course and left/right steering information presented on the EHSI.

This information is related to the navigation source (VOR, GPS or ADF) selected by the push-button "NAV" on the EHSI.

When "AP" is engaged on the mode controller, the autopilot is then coupled to the EHSI and uses displayed information (track and course deviation).

When the GPS suspends the linked navigation (GPS "SUSP" annunciator), the autopilot continues keeping same heading.

NOTE :
When the EHSI is selected on GPS navigation source, the RMI remains selected on NAV 1 source (VOR or RNAV).

REMARK :
The change of steering source for the autopilot, when the latter is set to "NAV" side mode, implies a sequence of checks, some of which may be omitted or require a particular attention. Therefore it is strongly recommended to temporarily disengage the autopilot "NAV" mode before changing source.

GPS flight plan

In the active flight plan, addition of a STAR or an approach is always made at the end of the flight plan. In the scope of these additions, the pilot must pay attention not to duplicate points.

Non precision approach with coupled autopilot

The EHSI must be set in "HSI Compass Rose" mode.

Coupling with autopilot must be made in "NAV" mode, except in the following cases :
- holding pattern,
- landing pattern turn,
- interrupted approach,

which have to be made in "HDG" mode.

For memory, the approach particular point name in the GARMIN system is as follows :
- IA = IAF
- FA = FAF ou FAP
- MA = MAP
- MH = MAHP

SECTION 5

PERFORMANCE

The installation and the operation of the "GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40 do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6

WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	23 - COMMUNICATIONS			
A	COM-NAV-GPS # 1 GNS 530 (B-RNAV) interfaced with EHSI (OPT70 23024)	GARMIN	- 1.852 (- 0.840)	169.13 (4.296)
A	COM-NAV-GPS # 2 GNS 530 interfaced with GI 106A CDI and EHSI (OPT70 23025)	GARMIN	1.852 (0.840)	143.15 (3.636)

SECTION 7
DESCRIPTION

Normal operating procedures of the "GARMIN GNS 530" GPS NAVIGATION SYSTEM (B-RNAV) INTERFACED WITH EHSI OF EFS 40 are described in the "GARMIN" GNS 530 Pilot's Guide at the latest revision.

7.1 "GNS 530 System # 1" OPTION (OPT70-23024)

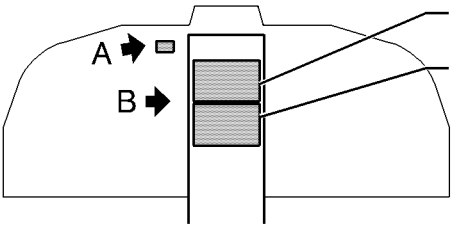
The option includes the GPS#1 system consisting of :

- one "GNS 530" GPS - see Figure 9.36.1 :
  This GPS may be a navigation source for the autopilot. Course deviation information is then displayed on the EHSI.
- one "MSG1" repeater on pilot's instrument panel.

7.2 "GNS 530 System # 2" OPTION (OPT70-23025)

The option includes the GPS#2 system consisting of :

- one "GNS 530" GPS - see Figure 9.36.1 :
  This GPS may be a navigation source for the autopilot. Course deviation information is then displayed on the EHSI.
- one GI 106A CDI,
- one "MSG2" repeater on pilot's instrument panel.



GPS#1 system

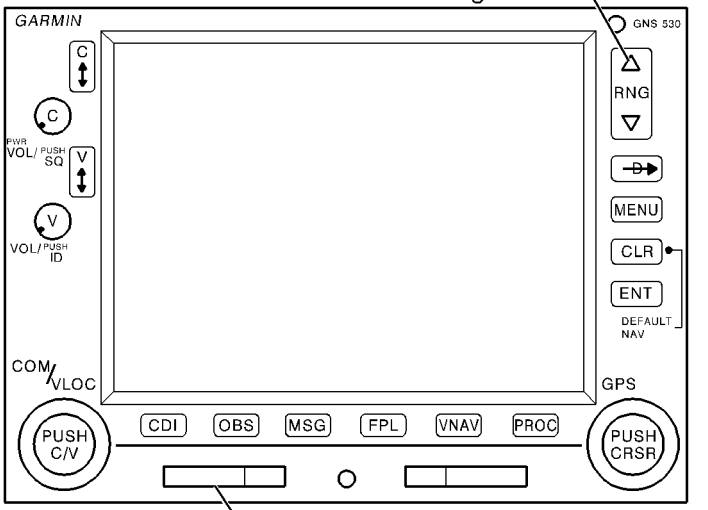
GPS#2 system

A

MSG - 1 or 2 MSG amber annunciator(s)

Map scale change

B



NavData card

I4345100AAVMA8100

C - COM volume

V - VOR volume

PUSH C/V - Selection of VOR/VHF frequencies

PUSH CRSR - Selection of group pages

Group selection:
- NAV
- WPT
- AUX
- NRST

CDI - Navigation source (VLOC/GPS)selection

OBS - OBS/Leg mode selection

MSG - Message viewing

FPL - Create
- Edit
- Activate

VNAV - Vertical navigation

PROC Procedures :
- Arrival
- Departure
- Approach

D "Direct TO"

Figure 9.36.1 - "GARMIN GNS 530" GPS SYSTEMS

SUPPLEMENT

KGP 560 "HONEYWELL" EGPWS SYSTEM

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TBM 700 airplane is equipped with the option "KGP 560 "HONEYWELL" EGPWS SYSTEM".

The EGPWS system is an aid for the pilot enabling him to detect if the airplane path is in compliance with the overflown terrain relief.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "KGP 560 "HONEYWELL" EGPWS SYSTEM".

Following documents or any further edition applicable to the latter, shall be readily available to the pilot, each time the EGPWS system is used.

- KMD 550/850 Multi-function Display Pilot's Guide, P/N 006-18222-0000 Revision 1 dated April/2001,
- KMD 550/850 Multi-function Display/Terrain Function (EGPWS) Pilot's Guide Addendum, P/N 006-18236-0000 Revision 1 dated April/2001,
- KGP 560 General aviation Enhanced Ground Proximity Warning System - TSO C151a Class B - Pilot's Guide, P/N 006-18254-0000 Revision 1.

The EGPWS system provides terrain proximity alerting and detection to the pilot. It must not be used for airplane vertical and horizontal navigation.

AC 2318 recommendation : in order to avoid unwillingly warnings, the EGPWS must be inhibited for any landing on a terrain which is not mentioned in the data base.

SECTION 3

EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "KGP 560 "HONEYWELL" EGPWS SYSTEM".

WARNING LIGHT "TERR N/A" ON

1 - MD41 "TEST" switch ..... **PUSH**

If the following voice message is heard :
"EGPWS Computer OK - External faults : Display configuration"
or
"EGPWS Computer OK - External faults : Display bus inactive" :

2 - Check the KMD 850 is set to ON.

For all other messages :

The EGPWS system is not operational.

SECTION 4

NORMAL PROCEDURES

The normal procedures hereafter supplement those of the standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "KGP 560 "HONEYWELL" EGPWS SYSTEM".

BEFORE TAKEOFF

1 - MD41 "TEST" switch ..... **PUSH**

2 - "EGPWS System OK" voice message ..... **HEARD**

4.1 - WARNINGS

"PULL UP" AURAL WARNING

The red "TERR" warning light illuminates.

1 - Level the wings.

2 - Display the maximum power.

3 - Choose the optimum rate of climb adapted to airplane configuration and speed, until the warning disappears.

"Terrain Terrain Pull up", "Obstacle Obstacle Pull up", AURAL WARNINGS

The red "TERR" warning light illuminates.

Adjust airplane path in order to make the warning disappear.

4.2 - CAUTIONS

"Caution terrain", "Caution obstacle", "Too low terrain" AURAL WARNINGS

The amber "TERR" warning light illuminates.

Adjust airplane path in order to make the warning disappear.

"DON'T SINK" AURAL WARNING

The amber "TERR" warning light illuminates.

Re-establish a positive rate of climb.

"SINK RATE" AURAL WARNING

The amber "TERR" warning light illuminates.

Reduce rate of descent.

SECTION 5
PERFORMANCE

The installation and the operation of the KGP 560 "HONEYWELL" EGPWS system do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	34 - NAVIGATION			
A	EGPWS KGP 560 (OPT70 34060)	HONEYWELL	2.535 (1.150)	185.39 (4.709)

SECTION 7
DESCRIPTION

7.1 COMPONENTS OF THE OPTION

The EGPWS option is constituted of the following components :

- a KA 92 GPS antenna,
- a KGP 560 computer with integrated GPS,
- an MD41-1208 control box.

The KGP 560 information are displayed on a KMD 850 screen, when the "TERR" function is activated by the pilot. The GPS # 1 flight plan may be overlaid on the EGPWS display.

7.2 FUNCTIONS OF THE EGPWS SYSTEM

The EGPWS system has 5 functions :

- "Look ahead" function
  This function provides a protection ahead of the airplane with a 1 minute prediction ("Caution terrain" or "Caution obstacle" aural warning associated with the illumination of the amber "TERR" warning light) and a 30 seconds prediction ("Terrain Terrain Pull up" or "Obstacle Obstacle Pull up" aural warning associated with the illumination of the red "TERR" warning light).

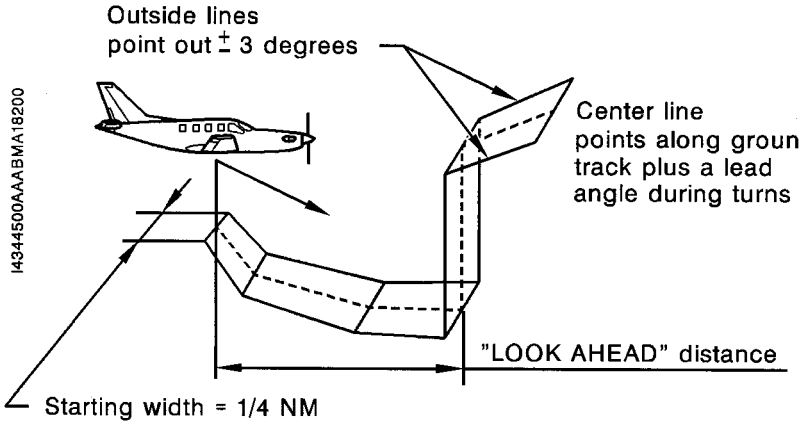
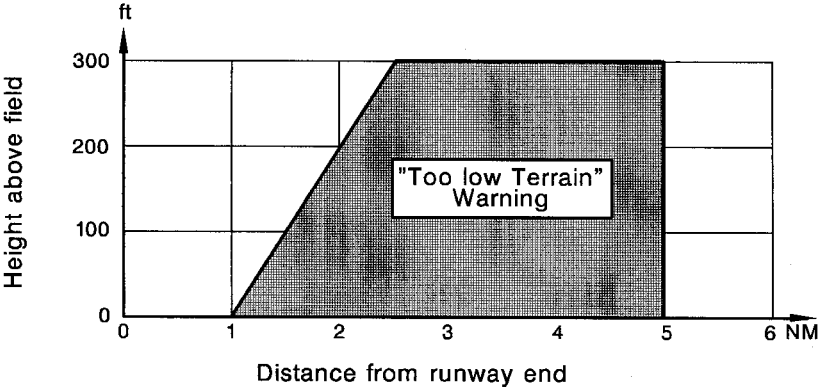


Figure 9.39.1

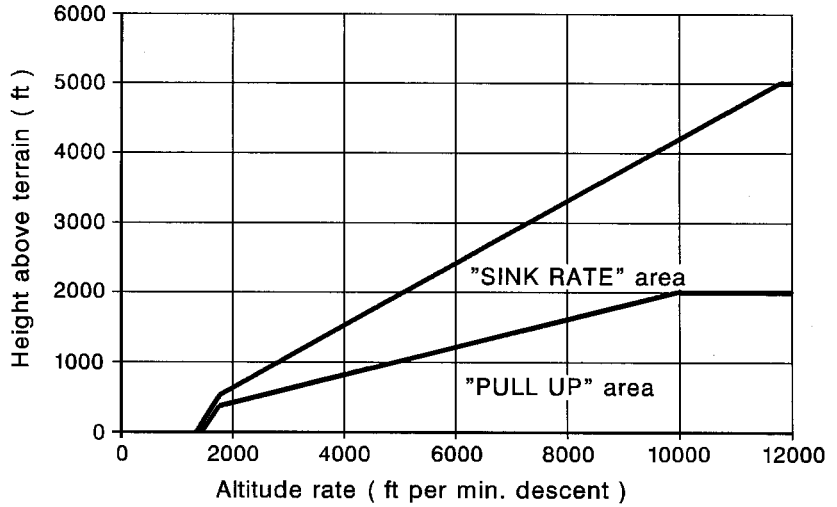
- "Runway Field Clearance Floor" (RFCF) function
This function is active, when the airplane flies at less than 5 NM from a runway known in the KGP 560 data base ; it generates the "Too low terrain" aural warning and the illumination of the amber "TERR" warning light.



I4344500AAAAMA18000

Figure 9.39.2 - "Too low terrain" warning area

- "Excessive rate of descent" function
This function has a lower priority than the "Look ahead" function ; it generates the "Sink rate" aural warning (illumination of the amber "TERR" warning light) and the "Pull up" aural warning (illumination of the red "TERR" warning light).



I4344500AAAAMA18200

Figure 9.39.3 - "Sink rate" and "Pull up" warnings areas

- "Loss of altitude/negative rate of descent after takeoff" function
  This function is active until the airplane reaches an altitude of approximately 700 ft above the runway ; it generates the "Don't sink" aural warning and the illumination of the amber "TERR" warning light.

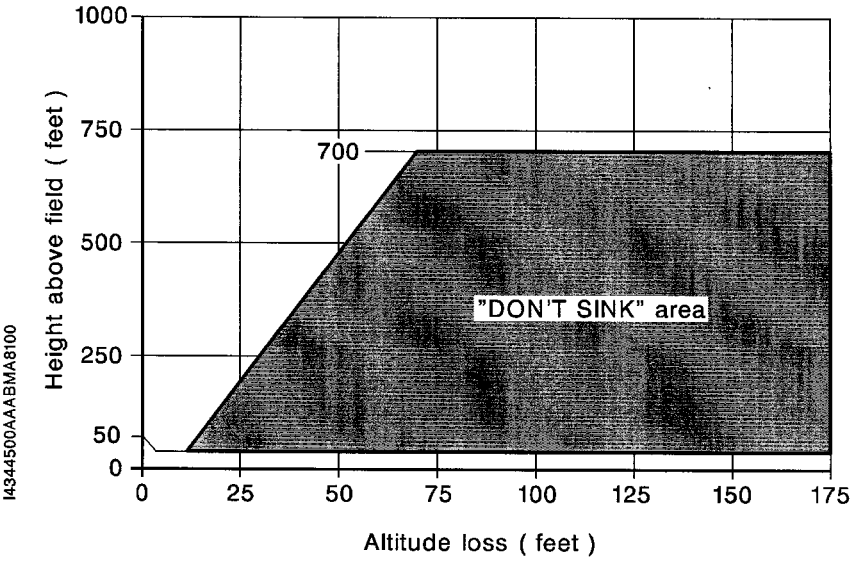
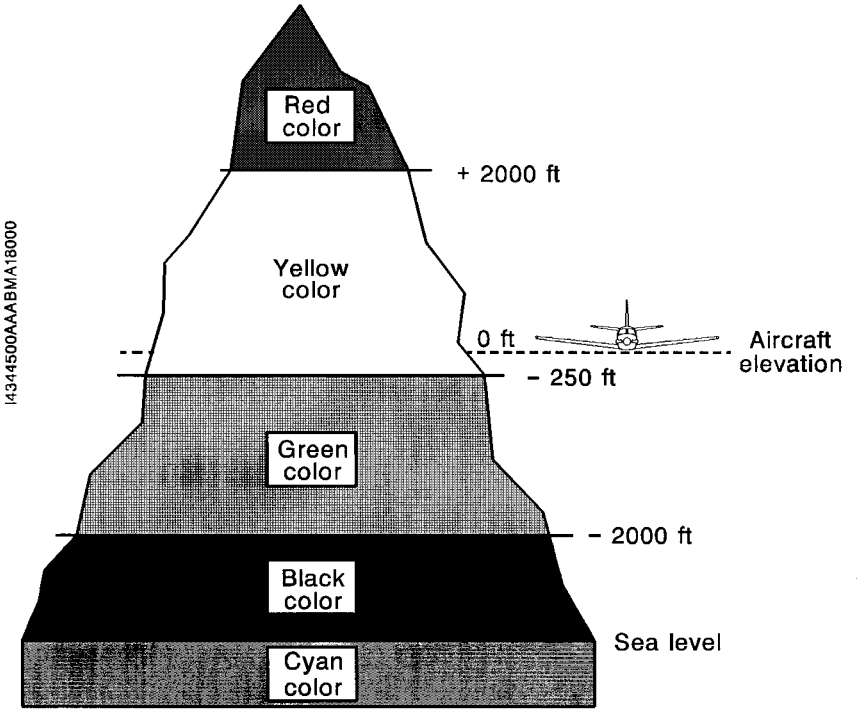


Figure 9.39.4 - "Don't sink" warning area

- "500 ft" function
  This function is active, when the airplane flies at less than 5 NM from a runway known in the KGP 560 data base ; it generates a "500 ft" aural warning. This warning is re-initialized when the airplane reaches a height of 700 ft above the terrain altitude.

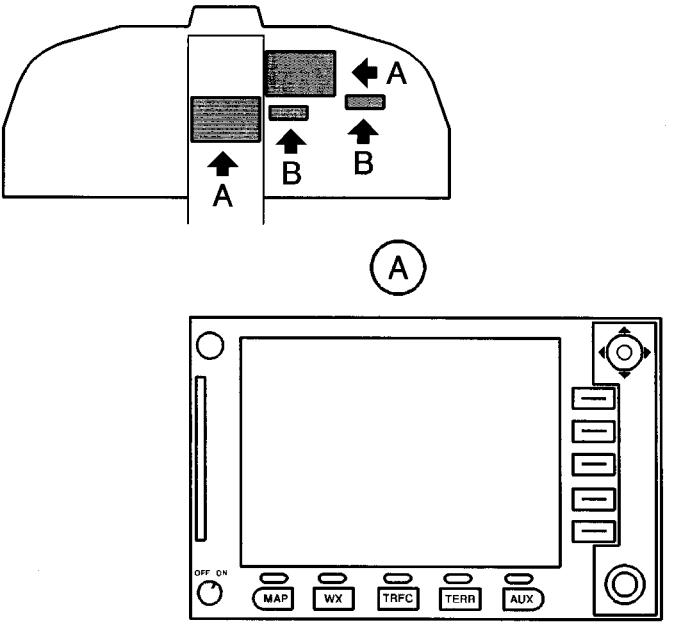
7.3 TERRAIN AWARENESS DISPLAY



7.4 OBSTACLE DATA BASE

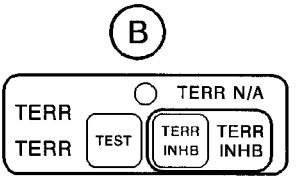
Data for known obstacles such as towers, buildings, antennas, etc. is contained on the same data card as the terrain and airport data. Presently, there are some 70000-plus obstacles in the database, but they are all in the area of North America. As more reliable information becomes available, Honeywell will expand the capability to provide alerting and warning for obstacles in other areas of the world.

Obstacles in the database are those known obstacles more than 100 feet AGL, so obstacles of lower height will not produce GA-EGPWS "Obstacle" alerts or warnings. However, terrain elevations are "rounded" up to the next 100 feet, so alerting and warning protection is generally available for known obstacles that are less than 100 feet AGL.



KMD 850

TERR : EGPWS mapping selection



MD41 - 1208

TEST : EGPWS system test switch

TERR INHB : EGPWS warning inhibition switch

TERR (red) : Warnings
TERR (amber) : Cautions
TERR INHB (white) : Inhibited EGPWS warnings
TERR N/A (amber) : EGPWS system not operational

I4344500AAAAMA8100

Figure 9.39.5 - EGPWS system

SUPPLEMENT

"HONEYWELL" KMH 880 EGPWS/TAS SYSTEM

TABLE OF CONTENTS

INTENTIONALLY LEFT BLANK

SECTION 1

GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TBM 700 airplane is equipped with the option "HONEYWELL" KMH 880 EGPWS/TAS SYSTEM.

The KMH 880 system provides two functions which are aids for the pilot :

- the EGPWS function enables to detect if the airplane path is in compliance with the overflown terrain relief.
- the TAS function enables to monitor the traffic by relying on information obtained from nearby airplane transponders. This function does neither detect, nor track airplane which are not equipped with an operating ATCRBS transponder.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "HONEYWELL" KMH 880 EGPWS/TAS SYSTEM.

The KMH 880 EGPWS function provides terrain proximity alerting and detection to the pilot. It must not be used for airplane vertical and horizontal navigation.

AC 2318 recommendation : in order to avoid unwillingly warnings, EGPWS function must be inhibited for any landing on a terrain which is not mentioned in the data base.

REMARK :
The KMH 880 TAS function is an advisory means, not a TCAS.

Following documents or any further edition applicable to the latter, shall be readily available to the pilot, each time the KMH 880 system is used.

- KMD 550/850 Multi-function Display Pilot's Guide, P/N 006-18222-0000 Revision 1 dated April/2001,
- KMD 550/850 Multi-function Display/Terrain Function (EGPWS) Pilot's Guide Addendum, P/N 006-18236-0000 Revision 1 dated April/2001,
- Multi-function Display Traffic Avoidance Function (TCAS/TAS) Pilot's Guide Addendum P/N 006-18238-0000 Revision 0 dated 04/01 or any applicable following edition, if data are displayed on a KMD 850 MFD,
- KTA 870/KMH 880 Traffic Advisory System/Multi-Hazard Awareness System Pilot's Guide, P/N 006-18265-0000 Revision 0 dated 03/01 or any applicable following edition,
- EFS 40/50 Pilot's Guide, P/N 006-08701-0000 dated 08/15/93 or any applicable following edition,
- "GARMIN" GNS 530 Pilot's Guide, P/N 190-00181-00 Revision A dated 04/00 or any applicable following edition, if data are displayed on a GNS 530 GPS.

SECTION 3

EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "HONEYWELL" KMH 880 EGPWS/TAS SYSTEM.

WARNING LIGHT "TERR N/A" ON

1 - MD41 "TEST" switch ..... **PUSH**

If the following voice message is heard :
"EGPWS Computer OK - External faults : Display configuration"
or
"EGPWS Computer OK - External faults : Display bus inactive" :

2 - Check the KMD 850 is set to ON.

For all other messages :

The EGPWS function is not operational.

SECTION 4

NORMAL PROCEDURES

The normal procedures hereafter supplement those of the standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "HONEYWELL" KMH 880 EGPWS/TAS SYSTEM.

BEFORE TAKEOFF

1 - MD41 "TEST" switch ..... **PUSH**
2 - "EGPWS System OK" voice message ..... **HEARD**
3 - KMD 850 "TRFC" knob ..... **PRESS**
4 - TAS function test (KMD 850) ..... **OK**
5 - "TAS" knob (on KMD 850 "TRFC" page) ..... **ON**

4.1 - WARNINGS OF THE EGPWS FUNCTION

"PULL UP" AURAL WARNING

The red "TERR" warning light illuminates.

1 - Level the wings.

2 - Display the maximum power.

3 - Choose the optimum rate of climb adapted to airplane configuration and speed, until the warning disappears.

"Terrain Terrain Pull up", "Obstacle Obstacle Pull up", AURAL WARNINGS
The red "TERR" warning light illuminates. Adjust airplane path in order to make the warning disappear.

4.2 - CAUTIONS OF THE EGPWS FUNCTION

"Caution terrain", "Caution obstacle", "Too low terrain" AURAL WARNINGS
The amber "TERR" warning light illuminates. Adjust airplane path in order to make the warning disappear.

"DON'T SINK" AURAL WARNING
The amber "TERR" warning light illuminates. Re-establish a positive rate of climb.

"SINK RATE" AURAL WARNING
The amber "TERR" warning light illuminates. Reduce rate of descent.

4.3 - KMH 880 TAS FUNCTION

WARNING

DO NOT ATTEMPT EVASIVE MANEUVERS BASED SOLELY ON TRAFFIC INFORMATION SHOWN ON DISPLAY ASSOCIATED TO THE KMH 880 TAS FUNCTION. INFORMATION ON THE DISPLAY IS PROVIDED TO THE FLIGHT CREW AS AN AID IN VISUALLY ACQUIRING TRAFFIC; IT IS NOT A REPLACEMENT FOR ATC AND SEE & AVOID TECHNIQUES

When the KMH 880 TAS function issues a Traffic Alert (aural or visual), look outside for the intruder airplane. When you spot an intruder airplane, use normal right-of-way procedures to maintain separation.

SECTION 5

PERFORMANCE

The installation and the operation of the "HONEYWELL" KMH 880 EGPWS/TAS SYSTEM do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6

WEIGHT AND BALANCE

Information hereafter supplement the one given for the standard airplane in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT		EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	34 - NAVIGATION				
A	EGPWS/TAS system (OPT70 34061A)	KMH 880	HONEYWELL	15.63 (7.09)	158.42 (4.024)
A	EGPWS/TAS system (with antenna KA92) (OPT70 34061B)	KMH 880	HONEYWELL	15.89 (7.21)	166.02 (4.217)

SECTION 7
DESCRIPTION

7.1 COMPONENTS OF THE OPTION

The KMH 880 option is constituted of the following components :

- a KA 92 GPS antenna (airplanes equipped with a "HONEYWELL" GPS),
- an MD41-1208 control box for EGPWS function of the option,
- a KMH 880 computer,
- two KA 815 antennas.

KMH 880 terrain type information is displayed on a KMD 850 screen, when the "TERR" function is activated by the pilot.

Traffic information can be displayed on a dedicated screen (KMD 850 and/or GNS 530) and/or on the EFS 40.

KMH 880 traffic type information is displayed on a KMD 850 screen, when the "TRFC" function is activated by the pilot.

Use EFS 40 "TEST/REF" knob to display TAS information on the EFS 40.

7.2 MODES OF THE KMH 880 EGPWS FUNCTION

The KMH 880 EGPWS function has 5 modes :

- "Look ahead" mode
  This mode provides a protection ahead of the airplane with a 1 minute prediction ("Caution terrain" or "Caution obstacle" aural warning associated with the illumination of the amber "TERR" warning light) and a 30 seconds prediction ("Terrain Terrain Pull up" or "Obstacle Obstacle Pull up" aural warning associated with the illumination of the red "TERR" warning light).

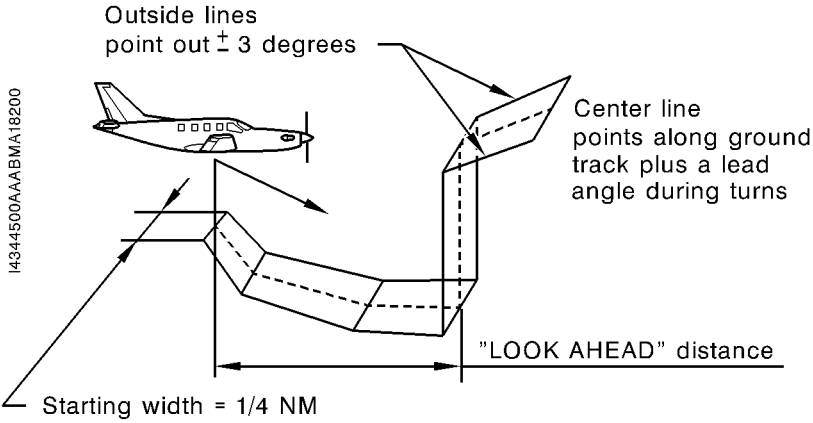


Figure 9.42.1

- "Runway Field Clearance Floor" (RFCF) mode
  This mode is active, when the airplane flies at less than 5 NM from a runway known in the KMH 880 data base ; it generates the "Too low terrain" aural warning and the illumination of the amber "TERR" warning light.

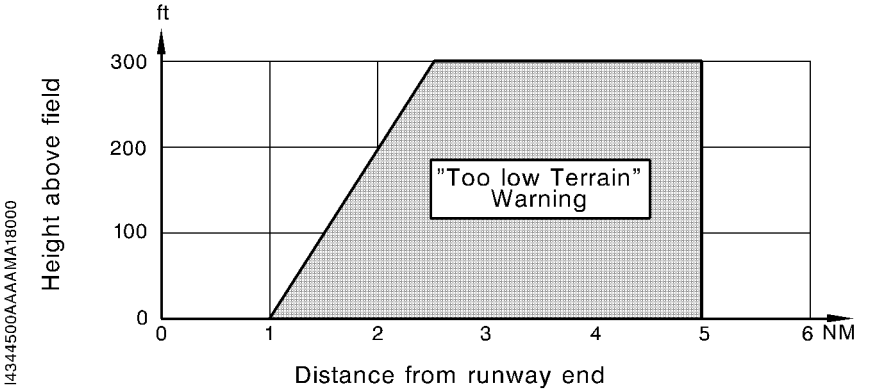


Figure 9.42.2 - "Too low terrain" warning area

- "Excessive rate of descent" mode
  This mode has a lower priority than the "Look ahead" mode ; it generates the "Sink rate" aural warning (illumination of the amber "TERR" warning light) and the "Pull up" aural warning (illumination of the red "TERR" warning light).

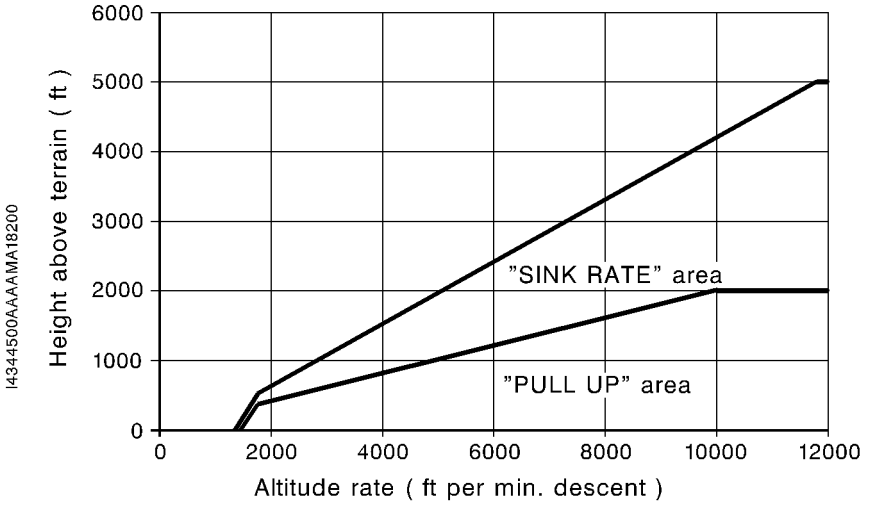


Figure 9.42.3 - "Sink rate" and "Pull up" warnings areas

- "Loss of altitude/negative rate of descent after takeoff" mode
  This mode is active until the airplane reaches an altitude of approximately 700 ft above the runway ; it generates the "Don't sink" aural warning and the illumination of the amber "TERR" warning light.

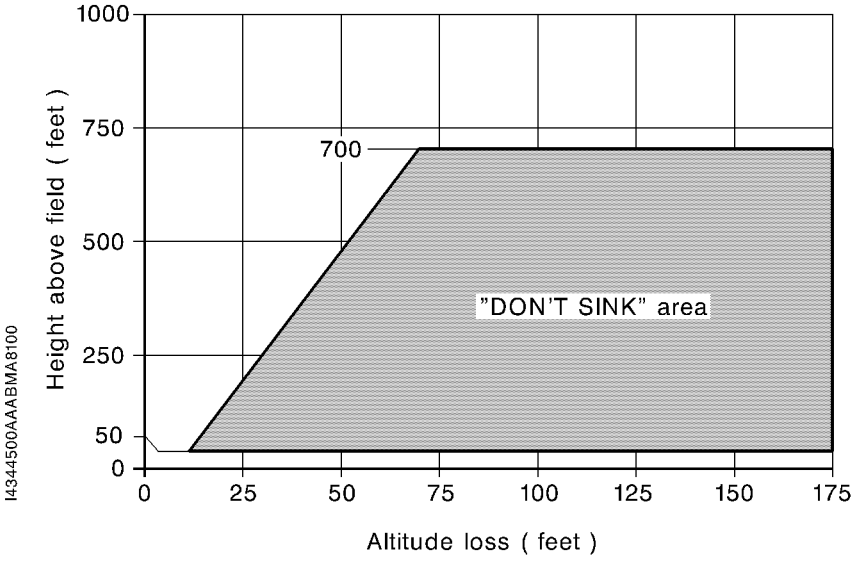


Figure 9.42.4 - "Don't sink" warning area

- "500 ft" mode
  This mode is active, when the airplane flies at less than 5 NM from a runway known in the KMH 880 data base ; it generates a "500 ft" aural warning. This warning is re-initialized when the airplane reaches a height of 700 ft above the terrain altitude.

7.3 TERRAIN AWARENESS DISPLAY

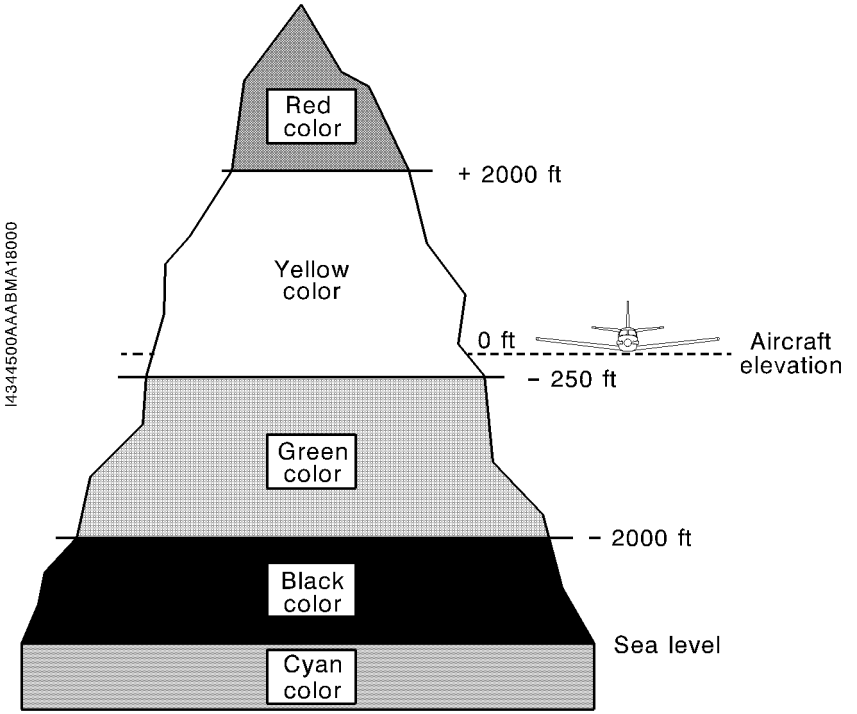


Figure 9.42.5

7.4 OBSTACLE DATA BASE

Data for known obstacles such as towers, buildings, antennas, etc. is contained on the same data card as the terrain and airport data. Presently, there are some 70000-plus obstacles in the database, but they are all in the area of North America. As more reliable information becomes available, Honeywell will expand the capability to provide alerting and warning for obstacles in other areas of the world.
Obstacles in the database are those known obstacles more than 100 feet AGL, so obstacles of lower height will not produce GA-EGPWS "Obstacle" alerts or warnings. However, terrain elevations are "rounded" up to the next 100 feet, so alerting and warning protection is generally available for known obstacles that are less than 100 feet AGL.

7.5 KMH 880 TAS FUNCTION

Traffic detected is displayed, when the vertical separation between your own airplane altitude and the intruder altitude ranges :

MODE	From	Up to
ABV (Look up)	- 2700 ft	+ 9000 ft
NRM (Normal)	- 2700 ft	+ 2700 ft
BLW (Below)	- 9000 ft	+ 2700 ft

Traffic Advisory (TA) criteria, which initiate a visual and/or an aural alert, are (sensitivity level B) :

- detection of an intruder airplane within a 0.55 NM horizontal radius and a ± 800 ft relative altitude,
- approach of an intruder airplane on a course that will intercept your course within 20 to 30 seconds.

Airplanes equipped with the radio altimeter

When the airplane is at a ground height lower than 2000 ft, Traffic Advisory (TA) criteria, which initiate a visual and/or an aural alert, are (sensitivity level A) :

- detection of an intruder airplane within a 0.2 NM horizontal radius and a ± 600 ft relative altitude,
- approach of an intruder airplane on a course that will intercept your course within 15 to 20 seconds.

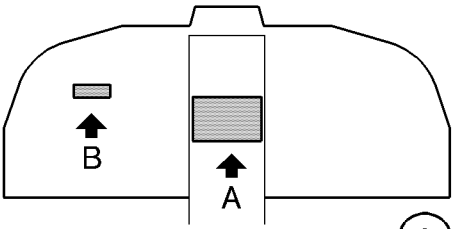
The aural traffic alert is inhibited when the height detected by the radio altimeter is below 600 ft.

TAS function will be automatically activated, if following conditions are combined :

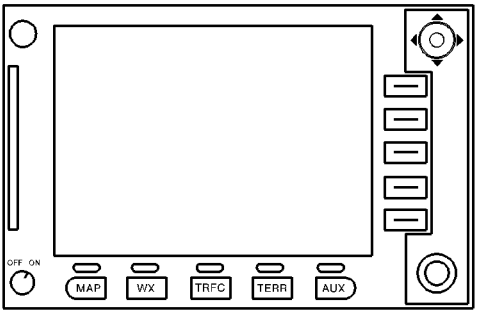
- radio altimeter height is greater than 50 ft,
- KMD 850 TAS selector (outer knob icon) is set to ON.

7.6 SWITCH-ON

To switch ON or OFF the KMH 880, use "RADIO MASTER" switch.



A

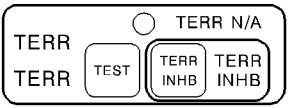


KMD 850

TERR : EGPWS mapping selection

TRFC : TAS function selection

B



MD41 - 1208

TEST : EGPWS function test switch

TERR INHB : EGPWS warning inhibition switch

TERR (red) : Warnings
TERR (amber) : Cautions
TERR INHB (white) : Inhibited EGPWS warnings
TERR N/A (amber) : EGPWS system not operational

I4344500AAACMA8100

Figure 9.42.6 - KMH 880 system

INTENTIONALLY LEFT BLANK

SUPPLEMENT

CHIP DETECTION SYSTEM

TABLE OF CONTENTS

SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TBM 700 airplane is equipped with the option "CHIP DETECTION SYSTEM".

SECTION 2
LIMITATIONS

The installation and the operation of the CHIP DETECTION SYSTEM do not change the limitations of the airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

SECTION 3
EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard airplane described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "CHIP DETECTION SYSTEM".

OIL CONTAMINATION CHIP

Indication : amber warning light [CHIP] on

On ground

Before engine start :

1 - Do not start engine.

After engine start or after landing :

1 - Return to parking area.

2 - Shut down engine.

3 - Inspect chip detector(s) and engine, if required.

In flight

1 - Check and monitor engine parameters.

2 - Land as soon as practical.

3 - Shut down engine.

4 - Inspect chip detector(s) and engine, if required.

SECTION 4

PROCEDURES NORMALES

The normal procedures hereafter supplement those of the standard airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook, when the TBM 700 airplane is equipped with the option "CHIP DETECTION SYSTEM".

When the amber warning light "CHIP" goes on, it causes the illumination of the "Master Warning" light.

SECTION 5

PERFORMANCE

The installation and the operation of the CHIP DETECTION SYSTEM do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6

WEIGHT AND BALANCE

Information hereafter supplement those given for the standard aircraft in Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

A or O	OPTIONAL EQUIPMENT	EQUIPMENT SUPPLIER	WEIGHT per unit lb (kg)	ARM in. (m)
	79 - LUBRICATION			
A	Chip detection system (2 detectors) (MOD70-0169-79A)		Negligible	/
A	Chip detection system (1 detector) (MOD70-0169-79B)		Negligible	/

SECTION 7
DESCRIPTION

The chip detection system enables the monitoring of engine oil system.

The system includes one chip detector installed on propeller reduction gear box and, if installed, a second chip detector installed on engine accessory gear box.

In case of chip detection, amber warning light “CHIP” goes on on advisory panel.

INTENTIONALLY LEFT BLANK