PILOT'S INFORMATION MANUAL

TB 200

EADS SOCATA

TB200

from S/N 1

P/N : T00. 18430322E0

PILOT'S INFORMATION MANUAL

CAUTION

THIS INFORMATION MANUAL IS A NON–OFFICIAL COPY OF THE PILOT'S OPERATING HANDBOOK AND MAY BE USED FOR GENERAL INFORMATION PURPOSES ONLY.
IT IS NOT KEPT CURRENT AND THEREFORE CANNOT BE USED AS A SUBSTITUTE FOR AIRWORTHINESS AUTHORITIES APPROVED MANUAL WHICH IS THE ONLY ONE INTENDED FOR OPERATION OF THE AIRPLANE.

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SECTION 1

GENERAL

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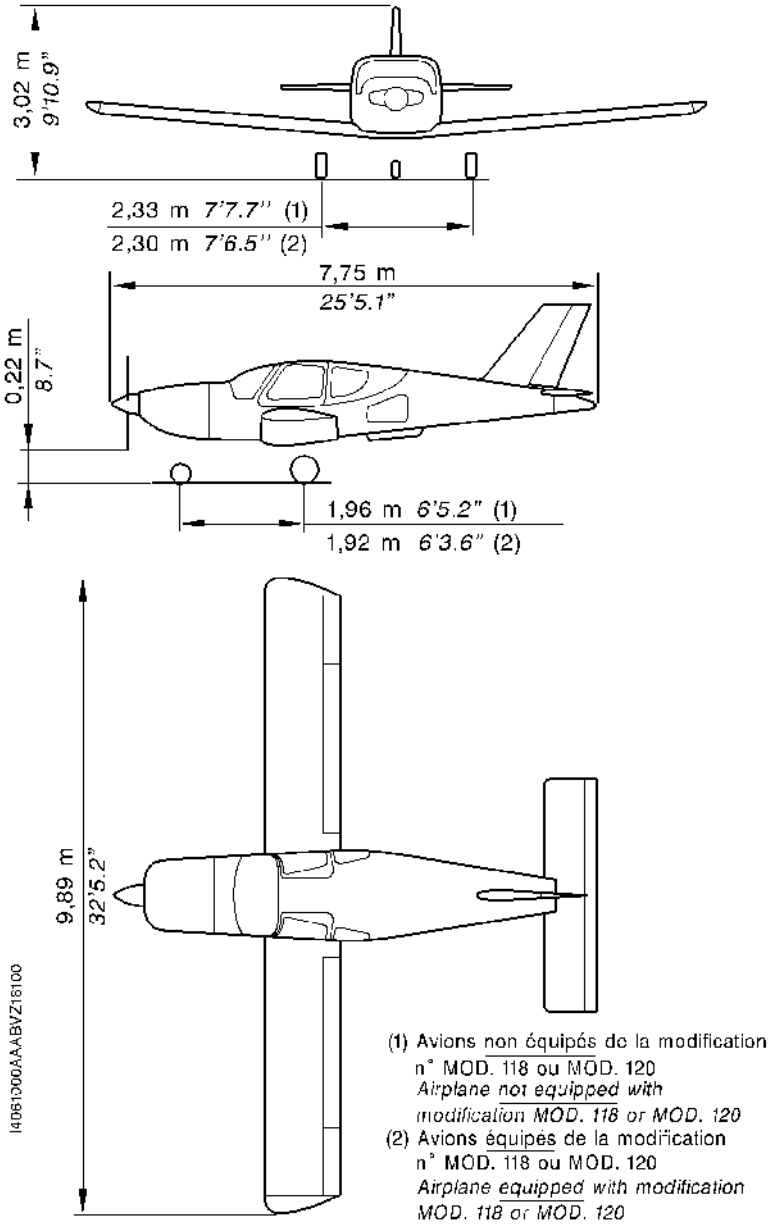

Figure 1.1 - THREE VIEW DRAWING

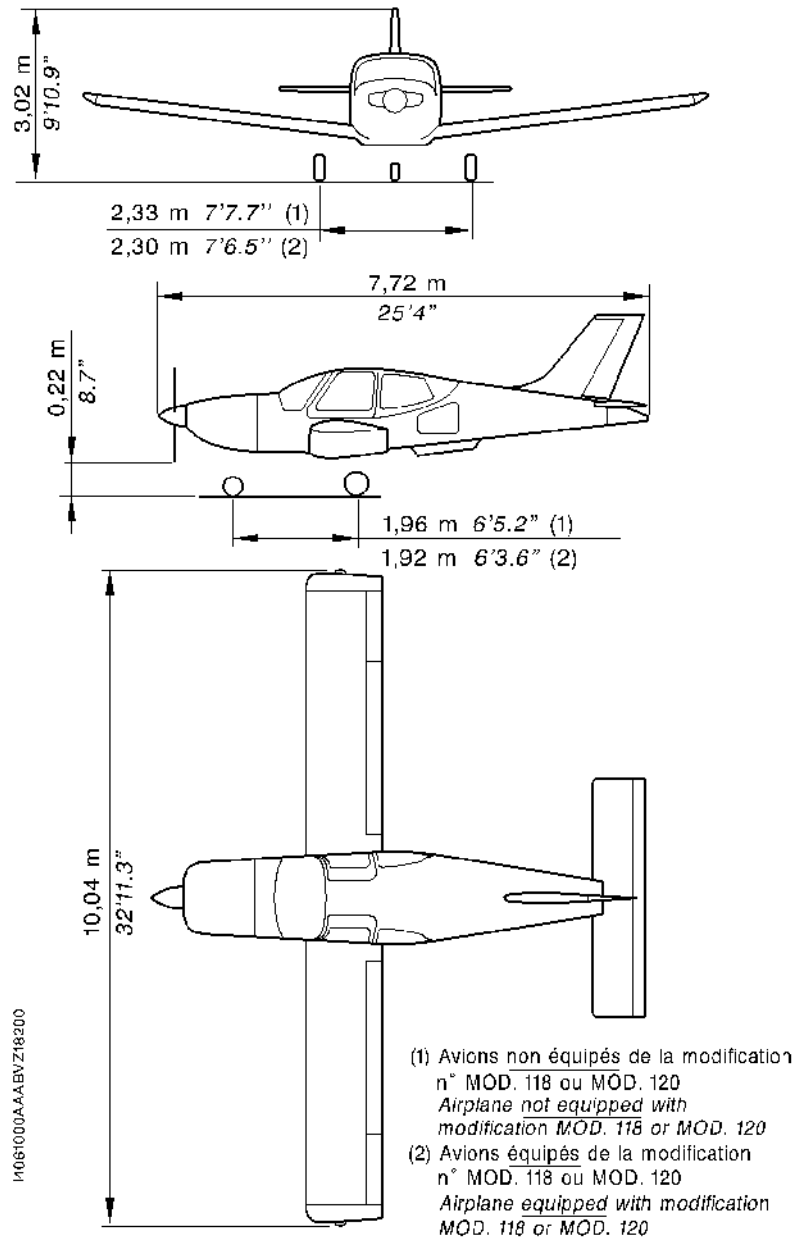

Figure 1.1A - THREE VIEW DRAWING

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GENERAL

This handbook contains 9 sections, and includes the material required by FAR Part 23 to be furnished to the pilot for operation of SOCATA Model TB 200 airplane. It also contains supplemental data supplied by SOCATA.

This section provides basic data and information of general interest. It also contains definitions or explanations of abbreviations and terminology commonly used.

The general for optional systems are given in Section 9 "Supplements" of this Manual and any airplane/country specifics are given in Section "Specifics" hereto.

DESCRIPTIVE DATA

ENGINE

Number of engines : 1
Engine Manufacturer : AVCO LYCOMING
Engine Model Number : IO-360-A1B6
Engine Type :
Four-cylinder, horizontally opposed, direct drive, air-cooled
Engine rated at 200 BHP at 2700 RPM.

PROPELLER

Number of propellers : 1
Propeller Manufacturer : HARTZELL
Propeller Model Number : HC-C2YK-1BF/F7666A-2
Number of blades : 2
Propeller Diameter :
Maximum : 74 inches (1.88 m)
Minimum : 72 inches (1.83 m)
Propeller Type :
Constant-speed, hydraulically-actuated
Propeller Governor : WOODWARD A210776

FUEL

Approved Fuel Grades (and Colors) :
100 LL Grade Aviation Fuel (Blue)
100 (Formerly 100/130) Grade Aviation Fuel (Green)

Total capacity : 55.4 U.S Gallons (210 Litres)
Total capacity each tank : 27.7 U.S Gallons (105 Litres)
Total usable : 53.8 U.S Gallons (204 Litres)

NOTE:
Isopropyl alcohol or ethylene glycol monomethyl ether may be added to the fuel supply. Additive concentrations shall not exceed 1 % for isopropyl alcohol or 0.15 % for ethylene glycol monomethyl ether. Refer to Section 8 "Handling, servicing and maintenance" for additional information.

OIL

CAUTION

DO NOT MIX DIFFERENT BRANDS OR TYPES OF OIL

Oil grades (specifications) and Viscosity (Reference : TEXTRON LYCOMING Service Bulletin No. 480 at last revision) :

Outside Air Temperatures	MIL-L-6082 Spec. Mineral Grades 50 first hours	MIL-L-22851 Spec. Dispersant Grades after 50 hours
All temperatures	.....	SAE 15W50 or SAE 20W50
Above 80°F (27°C)	SAE 60	SAE 60
Above 60°F (15°C)	SAE 50	SAE 40 or SAE 50
30°F (-1°C) to 90°F (32°C)	SAE 40	SAE 40
0°F (-18°C) to 70°F (21°C)	SAE 30	SAE 30, SAE 40 or SAE 20W40
Below 10°F (-12°C)	SAE 20	SAE 30 or SAE 20W30

Oil Capacity :

Sump : 8 Quarts (7.6 Litres)
Total : 8.45 Quarts (8 Litres)
Maximum oil consumption : 0.89 qt/hr.

Do not operate on less than 4 U.S. qt (3.8 litres). To minimize loss of oil through breather, fill to 6 U.S. qt (5.7 litres) for normal flights of less than 3 hours. For extended flights, fill to 8 U.S. qt (7.6 litres). These quantities refer to oil dipstick level readings. During oil and filter changes 0.45 additional U.S. qt (0.4 litres) is required for the filter.

MAXIMUM CERTIFICATED WEIGHTS

Takeoff : 2535 lbs (1150 kg)

Landing : 2535 lbs (1150 kg)

Weight in Baggage Compartment : 143 lbs (65 kg) ; refer to Section 6 for cargo loading instructions.

AIRPLANE WEIGHTS

Refer to the Weight sheet included in the I.I.R. (Individual Inspection Record).

NOTE :
Maximum useful load of your airplane must be calculated according to the weight given on the Weight sheet.

CABIN AND ENTRY DIMENSIONS

	Pre-MOD.151	Post-MOD.151
Maximum Cabin Width :	4.20 ft (1.28 m)	4.20 ft (1.28 m)
Maximum Cabin Length :	8.30 ft (2.53 m)	8.30 ft (2.53 m)
Maximum Cabin Height :	3.67 ft (1.12 m)	3.94 ft (1.20 m)
Number of Cabin Entries :	2	2
Maximum Entry Width :	3.45 ft (1.05 m)	3.48 ft (1.06 m)
Minimum Entry Width :	2.62 ft (0.80 m)	2.82 ft (0.86 m)
Maximum Entry Height :	2.30 ft (0.70 m)	2.46 ft (0.75 m)

BAGGAGE SPACE AND ENTRY DIMENSIONS

	Pre-MOD.151	Post-MOD.151
Maximum Compartment Width :	4.10 ft (1.25 m)	4.10 ft (1.25 m)
Minimum Compartment Width :	3.45 ft (1.05 m)	3.45 ft (1.05 m)
Maximum Compartment Length :	2.95 ft (0.90 m)	2.95 ft (0.90 m)
Minimum Compartment Length :	2.20 ft (0.67 m)	2.20 ft (0.67 m)
Maximum Compartment Height :	2.03 ft (0.62 m)	2.03 ft (0.62 m)
Minimum Compartment Height :	1.35 ft (0.41 m)	1.35 ft (0.41 m)
Entry Width :	2.10 ft (0.64 m)	2.10 ft (0.64 m)
Entry Height :	1.44 ft (0.44 m)	1.80 ft (0.55 m)

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

GENERAL AIRSPEED TERMINOLOGY AND SYMBOLS

KCAS : ***Knots Calibrated Airspeed*** is indicated airspeed corrected for position and instrument error and expressed in knots. Knots calibrated airspeed is equal to KTAS in standard atmosphere at sea level.

MPH CAS : ***Miles per hour Calibrated Airspeed***

KIAS : ***Knots Indicated Airspeed*** is the speed shown on the airspeed indicator and expressed in knots.

MPH IAS : ***Miles per hour Indicated Airspeed***

KTAS : ***Knots True Airspeed*** is the airspeed expressed in knots relative to undisturbed air which is KCAS corrected for altitude, temperature and compressibility.

V_A : ***Maneuvering Speed*** is the maximum speed at which full or abrupt control movements may be used.

V_{FE} : ***Maximum Flap Extended Speed*** is the highest speed permissible with wing flaps in a prescribed extended position.

V_{NE} : ***Never Exceed Speed*** is the speed limit that may not be exceeded at any time.

V_{NO} : ***Maximum Structural Cruising Speed*** is the speed that should not be exceeded except in smooth air, and then only with caution.

V_{SO} : ***Stalling Speed or the minimum steady flight speed*** at which the airplane is controllable in the landing configuration.

V_{S1} : ***Stalling Speed or the minimum steady flight speed*** obtained in a specific configuration.

METEOROLOGICAL TERMINOLOGY

ISA : ***International Standard Atmosphere :*** Its temperature is 59°F (15°C) at sea level pressure altitude and decreases by 3.6°F (2°C) for each 1000 ft of altitude.

OAT : ***Outside Air Temperature*** is the free air static temperature. It is expressed in either degrees Celsius or degrees Fahrenheit.

Pressure Altitude :
Is the altitude read from an altimeter when the altimeter's barometric scale has been set to 29.92 inches of mercury (1013.2 hPa).

QNH : Setting at the pressure corresponding to the reading of actual airplane altitude

ENGINE POWER TERMINOLOGY

BHP : ***Brake Horsepower*** is the power developed by the engine.

MP : ***Manifold Pressure*** is a pressure measured in the engine's induction system and is expressed in inches of mercury (in.Hg).

RPM : ***Revolutions Per Minute*** is engine speed.

AIRPLANE PERFORMANCE AND FLIGHT PLANNING TERMINOLOGY

Climb Gradient :
Is the demonstrated ratio of the change in height during a portion of climb, to the horizontal distance traversed in the same time interval.

Demonstrated crosswind velocity :
Is the velocity of the crosswind component for which adequate control of the airplane during take-off and landing was actually demonstrated during certification tests. The value shown is not considered to be limiting.

g : Is acceleration due to gravity.

Unusable Fuel :
Fuel remaining after a runout test has been completed in accordance with governmental regulations.

WEIGHT AND BALANCE TERMINOLOGY

Reference Datum :
Is an imaginary vertical plane from which all horizontal distances are measured for balance purpose.

Arm : Is the horizontal distance from the reference datum to the center of gravity (C.G.) of an item.

Moment : Is the product of the weight of an item multiplied by its arm. (Moment divided by the constant 1000 is used in this handbook to simplify balance calculations by reducing the number of digits).

Center of gravity (C.G.) :
Is the point at which an airplane, or equipment, would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.

C.G. Limits : ***Center of Gravity Limits*** are the extreme center of gravity locations within which the airplane must be operated at a given weight.

Useful Load : Is the difference between take-off weight and the basic airplane weight.

Maximum Take-off Weight :
Is the maximum weight approved for the start of the take-off run.

Maximum Landing Weight :
Is the maximum weight approved for landing touch-down.

GENERAL ABBREVIATIONS

A	:	Ampere
ALT or ALTr	:	Alternator
ALTr FLD	:	Alternator field (energization)
A/P	:	Autopilot
BAT	:	Battery
C	:	Consumption
CHT	:	Cylinder head temperature
°C	:	Degree Celsius (Centigrade)
°F	:	Degree Fahrenheit
EGT	:	Exhaust gas temperature
EXC	:	Energization
ft	:	Foot (Feet)
ft/min	:	Feet per minute
HOR	:	Electric horizon
hPa	:	Hectopascal
hr	:	Hour
in	:	Inch
in.Hg	:	Inch of mercury
kg	:	Kilogram
kt	:	Knot (1 nautical mile/hr - 1852 m/hr)
l	:	Litre
lb	:	Pound
LDG	:	Landing gear
m	:	Metre
min	:	Minute
mm	:	Millimetre
P/N	:	Part Number
psi	:	Pounds per square inch
qt	:	Quart
QTY	:	Quantity
SM	:	Statute Mile
R.M. SWITCH	:	RADIO MASTER switch
S/N	:	Serial Number
sq.ft	:	Square foot

GENERAL ABBREVIATIONS (Cont'd)

Std : Standard
U.S Gal : U.S Gallon
V : Volt

RADIO ABBREVIATIONS

ADF	:	Automatic Direction Finder System
ADI	:	Attitude Director Indicator
ATC	:	ATC transponder
COM	:	Communications Transceivers
DME	:	Distance Measuring Equipment
ELT	:	Emergency Locator Transmitter
HF	:	High Frequency
HSI	:	Horizontal Situation Indicator
IFR	:	Instrument Flight Rules
ILS	:	Instrument Landing System
MKR	:	Marker Radio Beacon
NAV	:	Navigation Indicators and/or Receivers
RMI	:	Radio Magnetic Indicator
UHF	:	Ultra-High Frequency
VFR	:	Visual Flight Rules
VHF	:	Very High Frequency
VOR	:	VHF Omnidirectional Range
VOR/LOC	:	VHF Omnidirectional Range Localizer
VSI	:	Vertical Speed Indicator
XPDR	:	Transponder

CONVERSION FACTORS

IMPERIAL AND U.S UNITS TO METRIC UNITS			METRIC UNITS TO IMPERIAL AND U.S UNITS		
MULTIPLY	BY	TO OBTAIN	MULTIPLY	BY	TO OBTAIN
FEET	0.3048	METRE	METRE	3.2808	FEET
INCH	25.4	mm	mm	0.03937	INCH
Imp.Gal	4.546	Litre	Litre	0.220	Imp.Gal
U.S Gal	3.785	Litre	Litre	0.264	U.S Gal
lb	0.45359	kg	kg	2.2046	lb

STANDARD ATMOSPHERE

Pressure altitude (ft)	Pressure (hPa)	°C	°F
0	1013.2	+ 15.0	+ 59.0
2000	942.1	+ 11.0	+ 51.8
4000	875.0	+ 7.0	+ 44.6
6000	811.9	+ 3.1	+ 37.6
8000	752.6	- 0.8	+ 30.5
10000	696.8	- 4.8	+ 23.4
12000	644.3	- 8.7	+ 16.2
14000	595.2	- 12.7	+ 9.2
16000	549.1	- 16.6	+ 2.2
18000	505.9	- 20.6	- 5.0
20000	465.6	- 24.6	- 12.4

CONVERSION TABLE

NOTE :
The standard pressure of 1013.2 hPa is equal to 29.92 inches of mercury.

950 28.05	951 28.08	952 28.11	953 28.14	954 28.17	955 28.20	956 28.23	957 28.26	958 28.29	959 28.32
960 28.35	961 28.38	962 28.41	963 28.44	964 28.47	965 28.50	966 28.53	967 28.56	968 28.58	969 28.61
970 28.64	971 28.67	972 28.70	973 28.73	974 28.76	975 28.79	976 28.82	977 28.85	978 28.88	979 28.91
980 28.94	981 28.97	982 29.00	983 29.03	984 29.06	985 29.09	986 29.12	987 29.15	988 29.18	989 29.20
990 29.23	991 29.26	992 29.29	993 29.32	994 29.35	995 29.38	996 29.41	997 29.44	998 29.47	999 29.50
1000 29.53	1001 29.56	1002 29.59	1003 29.62	1004 29.65	1005 29.68	1006 29.71	1007 29.74	1008 29.77	1009 29.80
1010 29.83	1011 29.85	1012 29.88	1013 29.91	1014 29.94	1015 29.97	1016 30.00	1017 30.03	1018 30.06	1019 30.09
1020 30.12	1021 30.15	1022 30.18	1023 30.21	1024 30.24	1025 30.27	1026 30.30	1027 30.33	1028 30.36	1029 30.39
1030 30.42	1031 30.45	1032 30.47	1033 30.50	1034 30.53	1035 30.56	1036 30.59	1037 30.62	1038 30.65	1039 30.68
1040 30.71	1041 30.74	1042 30.77	1043 30.80	1044 30.83	1045 30.86	1046 30.89	1047 30.92	1048 30.95	1049 30.98

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SECTION 2

LIMITATIONS

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GENERAL

SOCATA Model TB 200 is certificated in the Normal Category.

- Basic general technical conditions :
  FAR 23 Regulations, amendments 1 to 16.

This airplane must be flown in compliance with the limits specified by placards or markings and with those given in this section and throughout this Manual.

This section of the airplane Pilot's Operating Handbook presents the various operating limitations, the significance of such limitations, instrument markings, color coding, and basic placards necessary for the safe operation of the airplane, its power plant and installed equipment.

The limitations for optional systems are given in Section 9 "Supplements" of this Manual and any airplane/country specifics are given in Section "Specifics" hereto.

AIRSPEED LIMITATIONS

Airspeed limitations and their operational significance are shown in Figure 2.1.

	SPEED	KCAS	KIAS	REMARKS
V_{NE}	Never Exceed Speed	165	165	Do not exceed this speed in any operation
V_{NO}	Maximal Structural Cruising Speed	128	128	Do not exceed this speed except in smooth air, and then only with care
V_A	Maneuvering Speed	122	122	Do not make abrupt or full control movements above this speed
V_{FE}	Maximum Flap Extended Speed	95	95	Do not exceed this speed with flaps extended

Figure 2.1 - AIRSPEED LIMITATIONS

AIRSPEED INDICATOR OR TRUE AIRSPEED INDICATOR MARKINGS

Airspeed indicator or true airspeed indicator markings and their color code significance are shown in Figure 2.2.

MARKING	KIAS VALUE OR RANGE	SIGNIFICANCE
White Arc	54 - 95	Full Flap Operating Range Lower limit is maximum weight V_{SO} in landing configuration. Upper limit is maximum speed permissible with flaps extended
Green Arc	61 - 128	Normal Operating Range Lower limit is maximum weight V_{S1} with flaps retracted. Upper limit is maximum structural cruising speed
Yellow Arc	128 - 165	Operations must be conducted with caution and only in smooth air
Red line	165	Maximum speed for all operations

Figure 2.2 - AIRSPEED INDICATOR OR TRUE AIRSPEED INDICATOR MARKINGS

POWER PLANT LIMITATIONS

Number of engines : 1

Engine Manufacturer : AVCO LYCOMING

Engine Model Number : IO-360-A1B6

Engine Operating Limits for Takeoff and Continuous Operations :
Maximum Power : 200 BHP
Maximum Engine Speed : 2700 RPM
Maximum Cylinder Head Temperature : 500°F (260°C)
Maximum Oil Temperature : 244°F (118°C)

Oil Pressure :
Minimum : 25 psi (1.7 bar)
Maximum : 115 psi (7.9 bars)

Fuel Pressure :
Minimum : - 2 psi (- 0.14 bar)
Maximum : 35 psi (2.41 bars)

Fuel Grades : See Fuel Limitations

Oil Grades (Specification) :
MIL-L-6082 Aviation Grade Mineral Oil or
MIL-L-22851 Aviation Grade Dispersant Oil

Number of propellers : 1

Propeller Manufacturer : HARTZELL

Propeller Model Number : HC-C2YK-1BF/F7666A-2

Propeller Diameter :
Minimum : 72 inches (1.83 m)
Maximum : 74 inches (1.88 m)

STARTER OPERATION LIMITS

Starter operation sequence is limited to 10 seconds.

Should several sequences be necessary, respect following spacing :

1st sequence

wait ..... 1 minute

2nd sequence

wait ..... 1 minute

3rd sequence

wait ..... 15 minutes

4th sequence

POWER PLANT INSTRUMENT MARKINGS

Power plant instrument markings and their color code significance are shown in Figure 2.3.

INSTRUMENT	Red Line or Arc Minimum Limit	Yellow Arc Caution Range	Green Arc Normal Operating	Red Line Maximum Limit
Tachometer	---	---	600 to 2700 RPM	2700 RPM
Oil Temperature	---	Below 104°F (40°C)	104 to 244°F (40 to 118°C)	244°F (118°C)
Fuel pressure Fuel flow	---	---	0 to12 psi 0 to 20.3 Gal / hr	12 psi 20.3 Gal / hr
Oil Pressure (1)	25 psi	25 to 60 psi and 95 to 115 psi	60 to 95 psi	115 psi
Oil Pressure (2)	25 psi	25 to 55 psi and 95 to 115 psi	55 to 95 psi	115 psi
Cylinder head temperature (3)	---	435 to 500°F (224 to 260°C) (4)	200 to 435°F (93 to 224°C) (4)	500°F (260°C)

(1) Alternative No. 1 Pre-MOD.87

(2) Alternative No. 2 Post-MOD.87 (Engine monito. cluster "PEINTATEC")

(3) If installed on airplane

(4) Optional marking (according to instrument model)

Figure 2.3 - POWER PLANT INSTRUMENT MARKINGS

WEIGHT LIMITS

Maximum Take-off Weight : 2535 lbs (1150 kg)
Maximum Landing Weight : 2535 lbs (1150 kg)

Maximum Weight in Baggage Compartment : 143 lbs (65 kg) ; refer to Section 6 for cargo loading.

CENTER OF GRAVITY LIMITS

Forward :
42.6 inches (1.083 m) aft of datum at 2535 lbs (1150 kg)
39.8 inches (1.010 m) aft of datum at 2359 lbs (1070 kg)
37.3 inches (0.949 m) aft of datum at 2138 lbs (970 kg) or less.

Aft :
47.4 inches (1.205 m) aft of datum at all weights.

Reference datum : Front face of firewall.
Straight line variation between points.
Leveling point : Upper fuselage spar

NOTE :
It is the responsibility of the pilot to ensure that the airplane is properly loaded. See Section 6 "Weight and Balance" for proper loading instructions.

MANEUVER LIMITS

This airplane is certificated in the normal category.
The normal category is applicable to airplane intended for non-aerobatic operations.
These include any maneuvers incidental to normal flying, stalls (except whip stalls), lazy eights, zooms and steep turns in which the angle of bank is no more than 60°.

Aerobatic maneuvers, including spins, are not approved.

DESIGN LIMIT LOAD FACTORS

Flaps up :	+ 3.8 g	and	- 1.5 g
Flaps down :	+ 2.0 g	and	0

CAUTION

INTENTIONAL NEGATIVE LOAD FACTORS ARE PROHIBITED

KINDS OF OPERATION LIMITS

The airplane is equipped for day VFR operations and may be equipped for night VFR and day & night IFR operations. See Supplements Section of this Manual.

Flight into known icing conditions is prohibited.

FUEL LIMITATIONS

2 Tanks :	27.7 U.S Gallons	(105 Litres)	each
Total Fuel :	55.4 U.S Gallons	(210 Litres)	
Usable Fuel :	53.8 U.S Gallons	(204 Litres)	
Unusable Fuel :	1.6 U.S Gallons	(6 Litres)	

NOTE :
Usable fuel (up to unusable fuel) can be safely used during all normal airplane maneuvers.
FOR STEEP NOSE DOWN ATTITUDE (rapid descent) select a fuel tank with at least 7 U.S Gallons (a quarter of tank capacity).
FOR PRONOUNCED OR LONG SIDE SLIPPING select the fuel tank (with usable fuel) at the opposite side of the low wing.

CREW LIMITATIONS

Minimum crew : 1 pilot
(1 pilot required at L.H. station)

SEATING LIMITS

Front seats : 2

Rear seats : 2 when accommodated with 2 seat belts or
3 when accommodated with 3 seat belts
[maximum total weight on rear seats :
454 lbs (206 kg)]

USE OF DOORS

Flight with doors open or ajar is prohibited.

VACUUM GAGE MARKINGS (if installed)

MARKING	CORRESPONDING VALUE
Green	Normal operating from 4.4 to 5.2 in.Hg
Red lines	at 4.4 and 5.2 in.Hg

PLACARDS

NOTE :
The placards described in the Section 9 "Supplements" replace or supplement those described in this paragraph.

(1) In full view of the pilot, forward of overhead lights

Placard in lbs :

THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN FORM OF PLACARDS, MARKINGS AND FLIGHT MANUAL.

NEGATIVE LOAD FACTOR	PROHIBITED
AEROBATIC MANEUVERS	PROHIBITED
INTENTIONAL SPINS	PROHIBITED
ICING CONDITIONS	PROHIBITED
MAXIMUM TAKEOFF AND LANDING WEIGHT	2535 lbs
MANEUVERING SPEED V_A	122 KIAS
NEVER EXCEED SPEED V_{NE}	165 KIAS
MAXIMUM FLAPS EXTENDED SPEED V_{FE}	95 KIAS
DESIGN LOAD FACTOR (MAXIMUM)	
FLAPS UP	+ 3.8 - 1,5
FLAPS DOWN	+ 2 - 0

Placard in kg :

THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN FORM OF PLACARDS, MARKINGS AND FLIGHT MANUAL.

NEGATIVE LOAD FACTOR	PROHIBITED
AEROBATIC MANEUVERS	PROHIBITED
INTENTIONAL SPINS	PROHIBITED
ICING CONDITIONS	PROHIBITED
MAXIMUM TAKEOFF AND LANDING WEIGHT	1150 kg
MANEUVERING SPEED V_A	122 KIAS
NEVER EXCEED SPEED V_{NE}	165 KIAS
MAXIMUM FLAPS EXTENDED SPEED V_{FE}	95 KIAS
DESIGN LOAD FACTOR (MAXIMUM)	
FLAPS UP	+ 3.8 - 1,5
FLAPS DOWN	+ 2 - 0

FLIGHT CONDITIONS : DAY VFR
ICING CONDITIONS NOT ALLOWED

(2) Calibration chart on compass

I4113003AAADVZ8000A

For	N	30	60	E	120	150
Steer						
For	S	210	240	W	300	330
Steer						

DATE: RADIO ON

(3) On Baggage door

I4113006AAADVZ8000A

65 kg - 143 lbs MAXIMUM
FOR LOADING INSTRUCTIONS
SEE "WEIGHT AND BALANCE
DATA" IN FLIGHT MANUAL

(4) Near fuel tank caps

I4112500AAAAWZ8200

CARBURANT
FUEL - KRAFTSTOFF
AVGAS 100 LL
26.9 US _ 22.4 UK. GAL
102 L

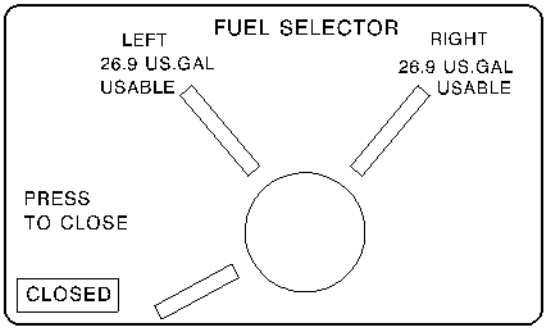
(5) On the back side of access door to oil filler cap

I4112102AAABVZ8100

Oil system
capacity
8 l
8.4 qt

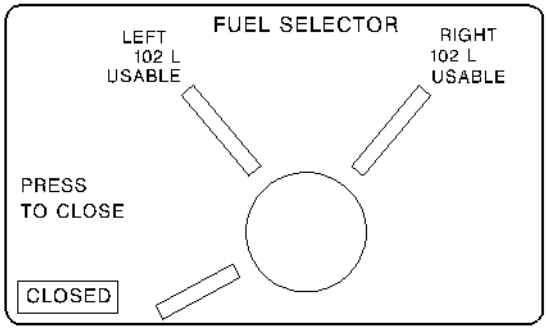
(6) On the fuel selector

Markings in U.S. Gallons :



I4113004AAATVZ18300

Markings in Litres :



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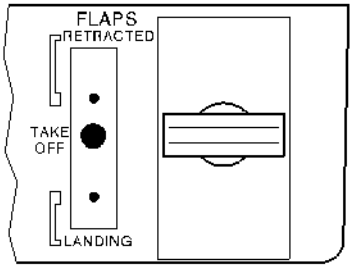
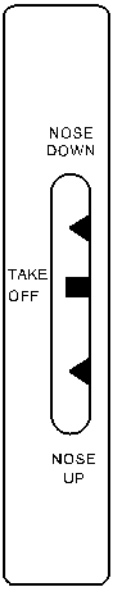
(7) Near the wing flap control



I4113004AAAEVZ8000A

(8) Near the stabilator tab position indicator

I4113004AAAFVZB201

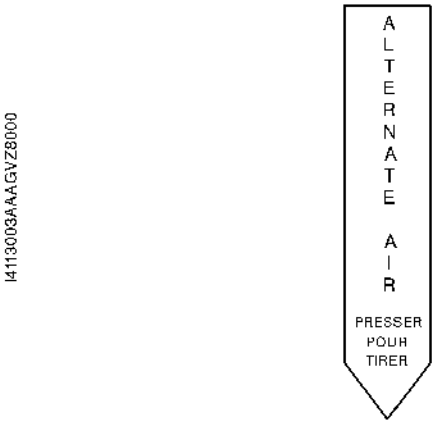


(9) If three belts are installed at the rear seats :

I4113002AAAAYZB001

MASSE MAXI POUR 3 PASSAGERS AUX PLACES AR.
MAX GEWICHT FÜR 3 PASSAGIERE AUF DEM RÜCKSITZ } 206 Kg
MAX WEIGHT FOR 3 PASSENGERS ON REAR SEATS } 454 Lbs

(10) On L.H. side of central console, under instrument panel strip



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SECTION 3

EMERGENCY PROCEDURES

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GENERAL

This section provides the pilot with procedures that enable him to cope with emergencies that may be encountered in operating the SOCATA Model TB 200 airplane. If proper preflight inspections, operating procedures, and maintenance practices are used, emergencies due to airplane or engine malfunction should be rare. Likewise, careful flight planning and good pilot judgment can minimize enroute weather emergencies. However, should any emergency develop, the guidelines in this section should be considered and applied as necessary to correct the problem.

The emergency procedures for optional systems are given in Section 9 "Supplements" of this Manual and any airplane/country specifics are given in Section "Specifics" hereto.

AIRSPEEDS FOR SAFE OPERATIONS (IAS)

Engine failure after take-off	70 KIAS
Maneuvering speed	122 KIAS
Best glide speed	86 KIAS
Precautionary landing with engine power	65 / 70 KIAS

ENGINE FAILURES

ENGINE FAILURE DURING TAKE-OFF RUN

Throttle	REDUCED
Brakes	APPLY
Mixture	IDLE CUT-OFF
Magneto selector	OFF
Main switch	OFF
Fuel selector	OFF

ENGINE FAILURE IMMEDIATELY AFTER TAKE-OFF

Airspeed	70 KIAS
Mixture	FULL RICH
Fuel selector	SWITCH TANKS
Fuel pump	ON

If the engine does not start :

Mixture	IDLE CUT-OFF
Fuel selector	OFF
Fuel pump	OFF
Land	STRAIGHT AHEAD
Magneto selector	OFF
Main switch	OFF

WARNING

LANDING STRAIGHT AHEAD IS USUALLY ADVISABLE

ENGINE FAILURE IN FLIGHT

Glide speed	86 KIAS
Mixture	FULL RICH
Fuel gages	CHECK
Fuel selector	SWITCH TANKS
Magneto selector	BOTH
Fuel pump	ON

If icing conditions are unintentionally encountered :

"Alternate Air"	FULLY PULLED

If the engine does not start :

Mixture	IDLE CUT-OFF
Throttle	OPEN
Starter	ENGAGE (if propeller stopped)
When the engine runs (windmilling)	SLOWLY ENRICH UNTIL RE-START

NOTE :
Engine re-starting can be performed without particular limitations in all airplane flight envelope.

If the engine does not start, get ready for an emergency landing without engine power.

NOTE :
Gliding distance - see Figure 3.4

LOW OIL PRESSURE

Oil warning light	ILLUMINATED
Pressure indicator	IN RED LOW SECTOR
Throttle	REDUCE AS FAR AS POSSIBLE
Oil temperature	CHECKED
If oil temperature in red sector	REDUCE THROTTLE

Prepare for a forced landing and land as soon as possible.

LOW FUEL FLOW

Fuel pump	OPERATING
Fuel gages	CHECKED
Fuel selector	SWITCH TANKS

ENGINE VIBRATION

Engine vibration is generally due to defective spark plugs or too rich a mixture.

Mixture RESET

If vibration persist :

RPM SET FOR MINIMUM VIBRATION RANGE

Land as soon as possible.

PROPELLER GOVERNOR FAILURE

In case of oil pressure drop in the governor system or pitch control failure, the propeller moves to low pitch.

Oil pressure	CHECKED
Oil temperature	CHECKED
Throttle	AS REQUIRED
Airspeed	REDUCED

Avoid rapid application of power.

CAUTION : MAXIMUM RPM : 2700

FORCED LANDINGS

EMERGENCY LANDING WITHOUT ENGINE POWER

Glide speed	86 KIAS
Radio	TRANSMIT MAYDAY on 121.5 MHz or on the appropriate frequency giving location and intentions
Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE
Mixture	IDLE CUT-OFF
Fuel selector	OFF
Magneto selector	OFF
Flaps	AS REQUIRED

When the landing is secured :

Flaps	LANDING
Approach speed	65 / 70 KIAS
Main switch	OFF

PRECAUTIONARY LANDING WITH ENGINE POWER

Flaps	LANDING
Approach speed	65 / 70 KIAS
Radio	ADVISE ATC OF INTENTIONS
Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE
Field	FLY OVER selected field
Main switch	OFF
Touch-down	FLARE OUT and keep nose high
Mixture	IDLE CUT-OFF
Fuel selector	OFF
Magneto selector	OFF
Brakes	AS REQUIRED

DITCHING

Radio	TRANSMIT MAYDAY on 121.5 MHz or on the appropriate frequency giving location and intentions
Flaps	LANDING
Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE
Airspeed	70 KIAS
Flight path	Parallel to swells
Before touch-down :	
Main switch	OFF
Mixture	IDLE CUT-OFF
Fuel selector	OFF
Magneto selector	OFF
Touch-down	FLARE OUT and keep nose high

FIRES

ENGINE FIRE DURING START

Mixture	IDLE CUT-OFF
Starter (10 sec. maxi.)	GO ON STARTING
Throttle	FULL THROTTLE
Fuel selector	OFF

If fire goes on :

Main switch	OFF
Magneto selector	OFF

Evacuate passengers and extinguish fire using all available means (fire extinguisher if installed).

ENGINE FIRE IN FLIGHT

Visual detection	SMOKE - FLAMES
Fuel selector	OFF
Mixture	IDLE CUT-OFF
Fuel pump	OFF
Throttle	FULL THROTTLE
Cabin air cooling & demisting	FIRE CUT-OFF (-)

After engine has stopped :

Magneto selector	OFF
"ALTr FLD" switch-breaker	OFF
Forced landing	EXECUTE (as described in "Emergency Landing Without Engine Power")

WARNING

NO ATTEMPT SHOULD BE MADE TO RESTART THE ENGINE AFTER A FIRE

ELECTRICAL FIRE IN FLIGHT

* *If FIRE is in ENGINE COMPARTMENT :*

Main switch	OFF
Cabin air cooling & demisting	FIRE CUT-OFF

Land as soon as possible.

* *If FIRE is in CABIN :*

Main switch	OFF
"ALTr FLD" switch-breaker	OFF
All electrical switches (except magnetos)	OFF
Cabin air cooling & demisting	FIRE CUT-OFF
Fire extinguisher (if installed)	ACTIVATE

* *If FIRE APPEARS TO BE OUT* and electrical power is necessary to continue flight :

Main switch	ON
Circuit breakers	CHECK for faulty circuit do not close
Radio/electrical switches	ON, one at a time
Cabin air cooling	OPEN, when fire is out

CABIN FIRE

Main switch	OFF
Cabin air cooling & demisting	FIRE CUT-OFF
Fire extinguisher (if installed)	ACTIVATE

WARNING

AFTER DISCHARGING A FIRE EXTINGUISHER WITHIN A CLOSED CABIN, WHEN FIRE IS EXTINGUISHED, PARTIALLY OPEN CABIN AIR COOLING TO VENTILATE THE CABIN AND PREVENT SUFFOCATION

Land as soon as possible.

WING FIRE

Navigation and landing lights	OFF
Anticollision lights (if installed)	OFF
Pitot heat switch (if installed)	OFF

Land as soon as possible.

ICING

FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED

Cabin temperature	FULL HOT
Pitot heating (if installed)	ON
Demisting	OPEN
"Alternate Air"	FULLY PULLED
Engine	INCREASE POWER without exceeding red line and periodically change RPM to minimize ice buildup on propeller

Turn back or change altitude to obtain best outside air conditions.
If icing continues plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.

NOTE :
With an ice accumulation on or near the wing leading edges, a higher stalling speed may be expected. Plan all maneuvers accordingly.

LANDING WITHOUT STABILATOR CONTROL

Fly the airplane using pitch trim and throttle.

- *Long final :*

Airspeed	80 KIAS
Flaps	LANDING
Fuel pump	ON
Mixture	FULL RICH
Propeller	HIGH RPM
Throttle and pitch trim	ADJUST SO AS TO MAINTAIN A RATE OF DESCENT LOWER THAN 500 ft/min

- *Final :*

FLARE OUT near the ground with the pitch trim.

CAUTION

REDUCE THROTTLE ONLY AFTER TOUCH-DOWN

AILERON CONTROL FAILURE

Should an aileron control efficiency loss occur (accidental disconnection), fly the airplane using rudder for lateral control.

If flaps are extended, set rapidly sufficient speed (70 KIAS at least) and retract flaps.

Land with retracted flaps at 80 KIAS.

RADIO MASTER SWITCH FAILURE (if installed)

When radio navigation equipment cannot be set under voltage due to RADIO MASTER switch malfunction :

"R.M. SWITCH" circuit breaker OPEN

Radionavigation equipment are supplied again and flight can go on normally.

ELECTRICAL FAILURE : IMMEDIATE ACTION

ELECTRICAL EQUIPMENT FAILURE

Check the circuit breakers panel.
If the circuit breaker is open, close it once only.
If it trips again, do not try to close the circuit breaker, the equipment has failed.

ALTERNATOR FAILURE (SIMPLIFIED PROCEDURE)

"ALTr" warning light ON

Pre-MOD.182

Voltmeter :
- Green sector CONTINUE FLYING
- Red/yellow sector :
  "ALTr FLD" switch-breaker OFF then ON

Post-MOD.182

Voltmeter :
- 26 < V < 29 CONTINUE FLYING
- < 26 :
  "ALTr FLD" switch-breaker OFF then ON

All

"ALTr" warning light REMAINS ON
"ALTr FLD" switch-breaker OFF
Nonessential electrical load items OFF

CAUTION

SEE HEREAFTER CHECK-OUT PROCEDURE FOR NIGHT VFR OR IFR (see Figure 3.1)

CAUTION

CHECK BATTERY DISCHARGE IN THIS CASE, ENDURANCE IS REDUCED AS ELECTRICAL POWER IS ONLY SUPPLIED BY BATTERY

Battery approximate duration : 40 min (Night IFR emergency conditions).

ELECTRICAL FAILURE : CHECK-OUT PROCEDURE FOR NIGHT VFR AND IFR

ALTERNATOR FAILURE (See Figure 3.1)

BATTERY FAILURE (See Figure 3.2)

TOTAL ELECTRICAL FAILURE (See Figure 3.3)

KEY: CB : Circuit breaker
PCB : Pull-off type circuit breaker
SB : Switch-breaker

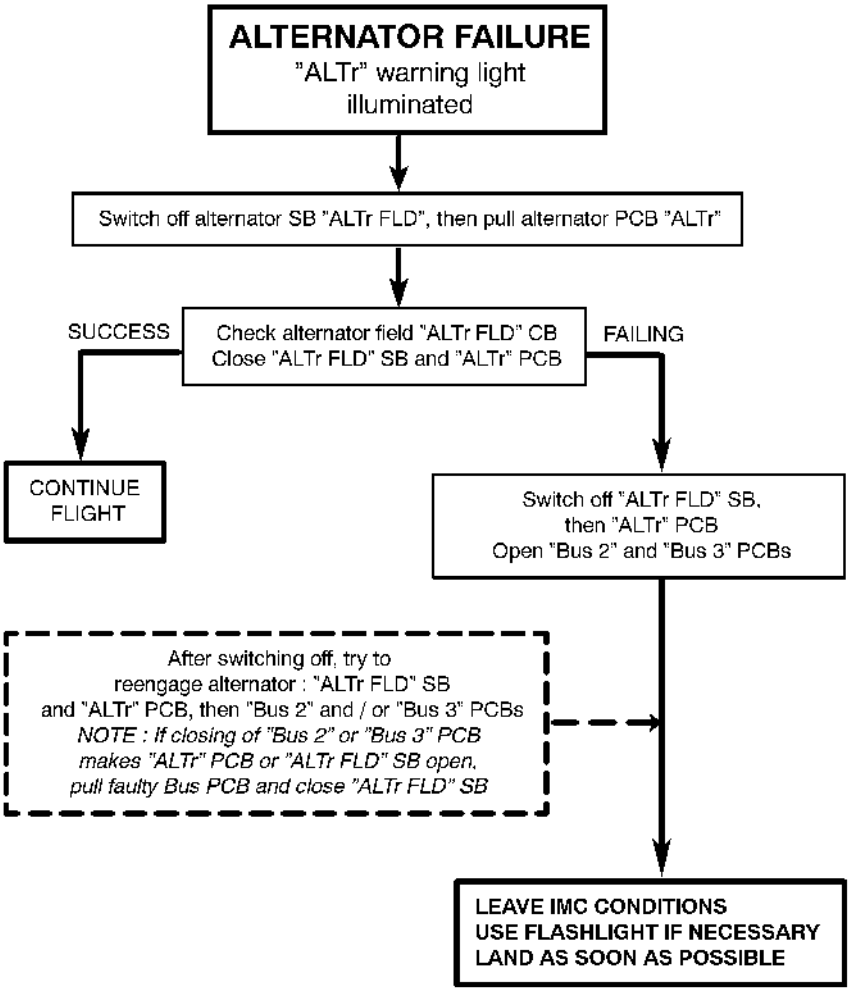

Figure 3.1 - ALTERNATOR FAILURE DIAGRAM

AIRSPEED INDICATING SYSTEM FAILURE

In case of erroneous indications in flight :

Pitot heating (if installed)	ON
Alternate static source (if installed)	EMERGENCY (Pulled)

In case of alternate static source utilization, open air outlets and/or actuate cabin air selector flow lever to open position. Then, airspeed indicator and altimeter errors are not significant.

If erroneous indications persist, carry out a precautionary approach maintaining an adequate airspeed margin above stall warning activation speed.

Recommended parameters :

Propeller	FULL FORWARD
Manifold pressure	AS REQUIRED (Approach : 15 in.Hg)

LANDING WITHOUT FLAPS (Flaps locked, retracted)

"FLAPS" circuit breaker	OPEN
Flaps control	ACTUATED

If the procedure is not successfull, perform the same operations as for a normal landing and maintain a 80 KIAS approach speed.

Plan a landing distance increased by approximately 60 %.

For landing performance, refer to Section 5 "Performance".

INVOLUNTARY SPIN

INTENTIONAL SPINS ARE PROHIBITED

However, should inadvertent spin occur, the following recovery procedure is recommended :

Rapid and simultaneous action :

Throttle	REDUCED
Rudder control	HOLD OPPOSITE DIRECTION OF ROTATION
Stabilator control	FULL FORWARD
Ailerons	NEUTRAL

Spin with flaps :

Same procedure, except retract flaps as soon as possible.

When spinning stops, centralize rudders, level the wings and ease out of the ensuing dive.

JAMMED DOORS

Pre-MOD.151

In case of jammed doors and in case of emergency : JETTISON REAR WINDOWS, kicking with foot on the upper part.

OPTIMUM GLIDE WITHOUT ENGINE RUNNING

- Speed 85 KIAS at maximum weight
- Propeller wind milling
- Flaps up
- Zero wind

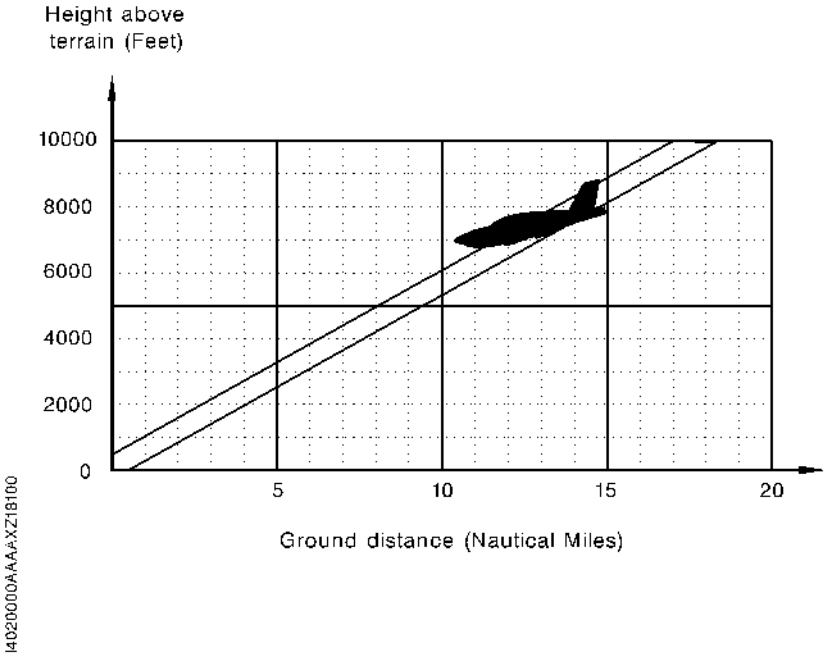

Figure 3.4 - OPTIMUM GLIDE WITHOUT ENGINE RUNNING

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SECTION 4

NORMAL PROCEDURES

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GENERAL

This section provides procedures for the conduct of normal operation of the SOCATA Model TB 200 airplane.

The normal procedures for optional systems are given in Section 9 "Supplements" of this Manual and any airplane/country specifics are given in Section "Specifics" hereto.

AIRSPEEDS FOR SAFE OPERATIONS (IAS)

Following speeds are those important for safe operation of airplane.

These data are valid for standard airplane used at maximum weight in normal conditions.

- Best rate of climb
  - . Flaps retracted — 80 KIAS
  - . Flaps in takeoff position — 73 KIAS
- Best angle of climb
  - . Flaps retracted — 65 KIAS
  - . Flaps in takeoff position — 62 KIAS
- Operating speed in turbulent air — 128 KIAS
- Maximum speed with flaps in takeoff position — 95 KIAS
- Maximum speed with flaps in landing position — 95 KIAS
- Final approach speed (flaps in landing position) — 72 KIAS
- Maximum demonstrated crosswind — 25 kt
- Speed at best glide angle — 86 KIAS

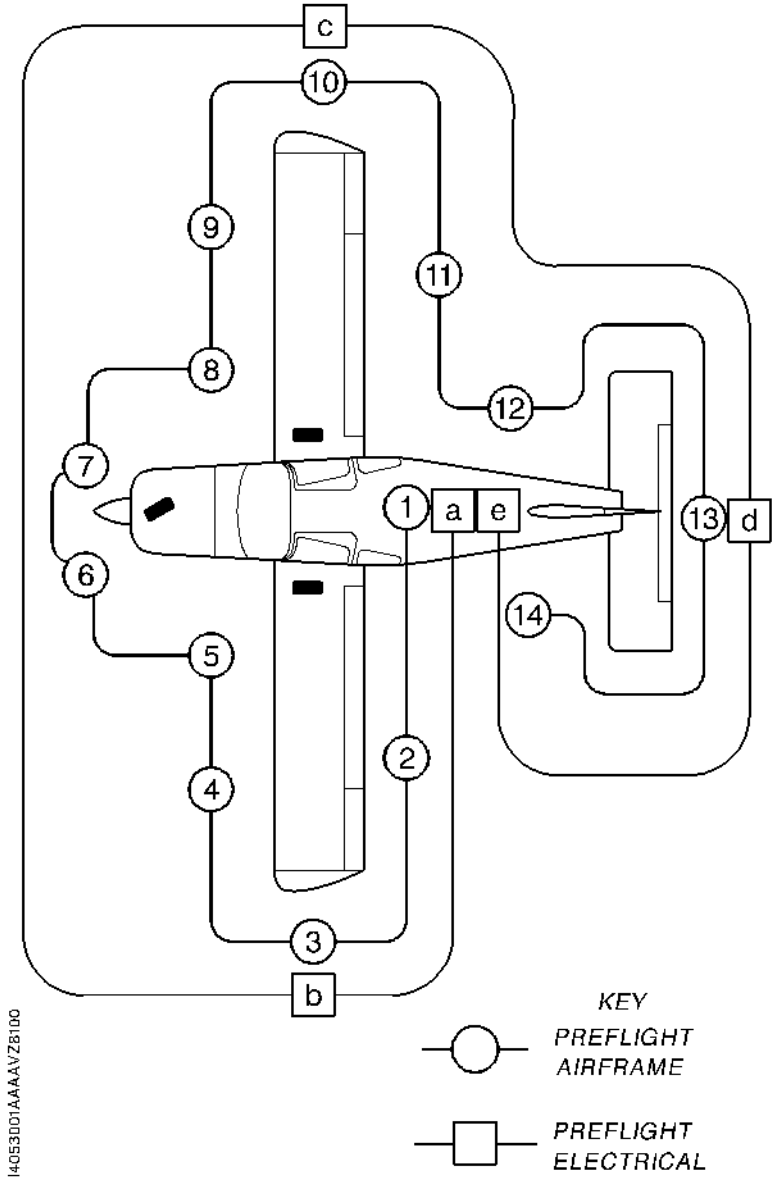

Figure 4.1 – PREFLIGHT INSPECTIONS

PREFLIGHT INSPECTIONS (See Figure 4.1)

AIRFRAME

1 - Cabin

Pilot door	OPEN
Control lock	REMOVED
Magneto selector	OFF
Mixture	IDLE CUT-OFF
Main switch	ON
Flaps	LANDING
Pitch trim	TAKE-OFF
Fire extinguisher (if installed)	Check pressure
Main switch	OFF
Fuel selector	OPEN (L.H.)

Proceed with the external preflight inspection moving clockwise around the airplane.

2 - L.H. wing trailing edge

Flap and aileron	Check controls, hinges, plays, deflections

3 - L.H. wing

Wing tip, lights and landing lights	Undamaged

4 - L.H. wing leading edge

Wing	Free from frost, snow, ice
Pitot	Cover removed, clean, unobstructed
Tie-down	REMOVED
Stall warning device	Clean, check deflection
Fuel tank	Check level
Fuel tank cap	SECURED
Fuel tank draining	Fuel free from water and sediment
Fuel tank drain	Check CLOSED

5 - L.H. main landing gear

Chocks	REMOVE
Tire	Check condition
Shock absorber	Normal position
Fairing	Check condition, cleanliness and normal position

6 - Forward fuselage

Windshield and window panels	Clean
Engine cowling attachment	Check
Oil	Check level and absence of leak
Propeller	Clean, good condition
Propeller cone	Check (no slack)
Air intakes	Clean
Oil pump breather	Unobstructed
Exhaust pipe	Check
Fuel filter draining	Fuel free from water and sediment
Fuel filter drain	Check CLOSED

7 - Nose landing gear

Towing fork	REMOVE
Tire	Check
Shock absorber	Normal position
Fairing	Check condition, cleanliness and normal position

8 - R.H. main landing gear

Chocks	REMOVE
Tire	Check condition
Shock absorber	Normal position
Fairing	Check condition, cleanliness and normal position

9 - R.H. wing leading edge

Fuel tank draining	Fuel free from water and sediment
Fuel tank drain	Check CLOSED
Fuel tank	Check level
Fuel tank cap	SECURED
Tie-down	REMOVED
Wing	Free from frost, snow and ice

10 - R.H. wing

Wing tip and lights	Undamaged

11 - R.H. wing trailing edge

Flap and aileron	Check controls, hinges, plays, deflections

12 - R.H. rear fuselage

R.H door lock	UNLOCKED
Static port	Cover removed, clean
Window panels	Clean

13 - Stabilizers

Fin	Check
Rudder	Check controls, hinges, plays, frictions
Stabilator and stabilator tab	Check controls, hinges, deflections, plays, frictions
Tail cone and navigation light Pre-MOD.151	Good condition

14 - L.H. rear fuselage

Static port	Cover removed, clean
Baggage compartment door	SECURED
Window panels	Clean

ELECTRICAL SYSTEMS

a - Cabin

"ALTr FLD" switch-breaker	OFF
Fuel pump	OFF
Main switch	ON
Engine monitoring cluster (Post-MOD.182)	Tested

NOTE :
Should the AMP lamp flash during test, contact your maintenance department as soon as possible (loss of one of the power supplies).

- V/A switch	V
Advisory panel	Tested
Fuel gages	Check
Flaps	RETRACT
Instrument lights	ON
Navigation lights	ON
Anticollision lights (if installed)	ON
Strobe lights (if installed)	ON
Recognition lights (if installed) (Post-MOD.151)	ON
Pitot heating (if installed)	ON
Landing and taxi lights	ON

b - L.H. wing

Navigation light	Illuminated
Anticollision light (if installed)	Flashing
Recognition light (if installed) (Post-MOD.151)	Illuminated
Landing and taxi lights	Illuminated

WARNING

DO NOT TOUCH PITOT DIRECTLY IT CAN BE HOT ENOUGH TO BURN SKIN

Heated pitot (if installed)	Check heat
Stall warning device	Aural warning

NOTE :
Landing and taxi lights and Pitot heating OFF before carrying on inspection will prevent battery from being run down.

c - R.H. wing

Navigation light	Illuminated
Anticollision light (if installed)	Flashing
Recognition light (if installed) (Post-MOD.151)	Illuminated

d - Airplane rear part

Navigation light Pre-MOD.151	Illuminated
Strobe light (if installed)	Flashing
Anticollision light (if installed)	Flashing

e - Cabin

Navigation lights	OFF
Strobe lights (if installed)	OFF
Anticollision lights (if installed)	OFF
Recognition lights (if installed) (Post-MOD.151)	OFF
Pitot heating (if installed)	OFF
Landing and taxi lights	OFF
Instrument lights	OFF
Main switch	OFF

BEFORE STARTING ENGINE

Preflight inspection	Carried out
Doors	CLOSED, check catches in place
Main switch	OFF
Parking brake	Set
Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE
Flight controls	Check operation
Pitch trim	Check deflection
Fuel selector	OPEN (L.H. or R.H.)
Circuit breakers (side panel)	Closed
Magneto selector	OFF
"Radio master" switch (if installed)	OFF
"Alternate Air"	PUSHED
Alternate static source (if installed)	PUSHED

ENGINE STARTING

Main switch	ON
Parking brake light "PARK"	Illuminated
Anticollision lights (if installed)	ON

NORMAL PROCEDURE

"Alternate Air"	PUSHED
Throttle	Approximately 0.40 in. (1 cm)
Propeller	FULL FORWARD
Mixture	IDLE CUT-OFF
Fuel pump	ON
Pump warning light	ON
Mixture	FULL RICH

When flow reaches 4 to 6 U.S. Gal/h :

Mixture	IDLE CUT-OFF
Area	Clear
Magneto/start selector	START (10 sec. maxi)

When the engine starts :

Magneto selector	BOTH
Mixture applied slowly to	FULL RICH
Oil pressure	Green sector

If no oil pressure indication after 30 sec., shutdown engine.

Fuel pump	OFF
Engine	1000 to 1200 RPM during heating

HOT ENGINE PROCEDURE

"Alternate Air"	PUSHED
Throttle	Approximately 0.40 in. (1 cm)
Propeller	FULL FORWARD
Mixture	IDLE CUT-OFF
Fuel pump	ON
Mixture	FULL RICH during 1 sec. then IDLE CUT-OFF
Fuel pump	OFF
Area	Clear
Magneto/start switch	START (10 sec. maxi)

NOTE :
Refer to Section 2 "Limitations" for starter operation limits.

When the engine starts :

Magneto selector	BOTH
Mixture applied slowly towards	FULL RICH
Oil pressure	Green sector

If no oil pressure indication after 30 sec., shutdown engine.

Engine	1000 to 1200 RPM

FLOODED ENGINE PROCEDURE

NOTE :
Refer to Section 2 "Limitations" for starter operation limits.

Failed starting may be due to excess fuel producing black smoke or even backfire.

Proceed as follows :

Fuel pump	Check OFF
Mixture	IDLE CUT-OFF
Throttle	HALF OPEN
Magneto/start selector	START (10 sec. maxi)

When the engine starts :

Magneto selector	BOTH
Mixture applied slowly towards	FULL RICH
Oil pressure	Green sector

If no oil pressure indication after 30 sec., shutdown engine.

Engine	1000 to 1200 RPM

If the engine does not start :

Perform the same procedure as for HOT ENGINE.

AFTER STARTING ENGINE

ELECTRICAL POWER CHECK :

"ALTr FLD" switch-breaker OFF

- "ALTr" warning light	ON
- Voltmeter	Yellow sector
or (Post-MOD.182)	> 24

"ALTr FLD" switch-breaker ON

- "ALTr" warning light	OFF
- Voltmeter	Green sector
or (Post-MOD.182)	26 < V < 29

Turn-and-bank indicator (if installed)	ON
Vacuum gage (if installed)	Checked
Advisory panel test	Positive
"Radio master" switch (if installed)	ON
All radios and navaids	ON
Fuel selector	Set to fullest tank
Flaps	Checked and RETRACTED

TAXIING

Parking brake	Release
Brakes	Checked
Flight instruments	Checked
Taxi light	As required

Avoid exceeding 1200 RPM as long as the oil temperature indicator pointer is within yellow sector.

Steering the airplane with the rudder pedals only is generally sufficient. The combined use of the rudder pedals and the brakes permits tight turns, if necessary.

Check operation of gyroscopic instruments (horizontal attitude, heading and turn-and-bank indicators) by means of alternate turns.

ENGINE RUN-UP

Parking brake	Set
Engine control friction	Adjusted
Oil temperature	Green sector
Oil pressure	Green sector
Mixture	FULL RICH
"Alternate Air"	PUSHED
Fuel selector	Set to fullest tank

PROPELLER CHECK :

Propeller	FULL FORWARD
Throttle	2000 RPM
Propeller	Cycle twice (maxi. 500 RPM drop) Return to high RPM (FULL FORWARD)

MAGNETO CHECK :

Throttle	2000 RPM
Magneto selector	L. then BOTH R. then BOTH
Maximum RPM drop on each magneto	200 RPM
Maximum difference between magnetos	50 RPM

"ALTERNATE AIR" CHECK :

"Alternate Air"	Pulled
Manifold pressure	Maintained
"Alternate Air"	Pushed

MAXIMUM POWER CHECK (or when releasing brakes before take-off) :

Full throttle	2700 RPM

BEFORE TAKE-OFF

Seats, seat belts, shoulder harnesses	Check
Doors	LOCKED
Controls	Free
Pitch trim	TAKE-OFF
Flaps	TAKE-OFF
Magneto selector	BOTH
"Alternate Air"	As required
Propeller	FULL FORWARD
Mixture	FULL RICH
Fuel selector	Check set to fullest tank
Fuel pump	ON
Oil temperature	Green sector
Oil pressure	Green sector
Voltmeter	Green sector
or (Post-MOD.182)	26 < V < 29
Altimeter	Set
Heading indicator (if installed)	Set
Horizontal attitude gyro (if installed)	Set
Parking brake	RELEASE - Light OFF
Cabin blower (if installed)	OFF
Landing lights	As required
Navigation lights	As required
Pitot heating (if installed)	As required
Transponder (if installed)	As required

TAKE-OFF

Lined up on runway	Check heading gyro Check emergency compass
Smoothly apply full power	
Engine parameters	Check
Airspeeds	See Section 5 "Take-off performance"
STANDARD AIRSPEEDS :	
Rotation	63 KIAS
Initial climb	70 KIAS
WHEN SAFELY AIRBORNE :	
Brakes	Apply
AT 300 ft :	
Climb speed	73 KIAS
Flaps	RETRACT
AT 1000 ft :	
Fuel pump	OFF
External lights	As required

CLIMB

Mixture	FULL RICH
Throttle	FULL POWER
Propeller	FULL FORWARD (2700 RPM)
Optimum climb speed	80 KIAS

NOTE :
Climb can also be carried out at higher speeds (better visibility towards front, better engine cooling) and lower power ratings (lower noise level).

CAUTION

CLIMB AT BEST ANGLE OF CLIMB SHOULD BE USED ONLY IN EXCEPTIONAL CASES SINCE THE ENGINE IS LESS COOLED

CRUISE

Power	Adjusted
Pitch trim	Adjusted
Mixture	Adjusted

Normal cruise between 60 % and 75 %, see Section 5 "Performance".

Adjust mixture on "FULL RICH" for power higher than 75 %.

RECOMMENDATIONS :

In practice, it is recommended to change tank every half-hour when observing fuel pressure and not to exceed a fuel imbalance of 13.2 U.S Gallons (50 Litres).

During take-off from high elevation airport or during prolonged climbs, roughness or loss of power may result from overrichness.
In such a case, adjust mixture control only enough to obtain smooth operation and not for economy. In that case, monitor temperature indicators.
Rough operation due to overrich fuel / air mixture is most likely to be encountered at altitudes above 5000 ft.

CAUTION

ALWAYS ENRICH MIXTURE BEFORE INCREASING POWER

Flight into known icing conditions is PROHIBITED.

In case of unintentional icing encounter (precipitation or clouds with outside air temperature at or below 39.3°F (+ 4°C)), fully pull the "Alternate Air" control which is located below the instrument panel on left side of central console. This action lightly reduces power and modifies negligently cruise performance but reduces climb rate by about 15 %.

See Section 3 "Emergency procedures", Paragraph "Icing".

Leave icing conditions as soon as possible.

Remember to replace the "Alternate Air" control in OFF position after leaving the icing area and when you are sure there is no ice on the airframe.

DESCENT

Power setting as required for descent.

Every 1500 ft, apply engine power to prevent excess engine cooling and spark plugs fouling. Avoid too long descents with manifold pressure lower than 14 in. Hg.

Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE

APPROACH - LANDING

FINAL :

Airspeed	78 KIAS
Flaps	TAKE-OFF
Fuel pump	ON
Mixture	FULL RICH
Propeller	FULL FORWARD
"Alternate Air"	Pulled or pushed as required
Brakes	Checked
Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE
Landing lights	ON

SHORT FINAL :

Flaps	LANDING
Airspeed	See Section 5 "Landing Performance"
Standard airspeeds	73 KIAS

GO-AROUND

Smoothly apply full power	
Airspeed	70 / 73 KIAS
When climb rate is positive :	
Flaps	TAKE-OFF
Airspeed	73 KIAS
Flaps	RETRACTED
Climb	78 KIAS

AFTER LANDING

Fuel pump	OFF
Flaps	RETRACTED
Landing light	OFF
Taxi light	As required
Trim	TAKE-OFF
Radio equipment	As required
Pitot heating (if installed)	OFF
"Alternate Air"	Pushed

SHUT-DOWN/SECURING AIRPLANE

Parking brake	Set
Turn and bank indicator (if installed)	OFF
Anticollision lights (if installed)	OFF
Taxi light	OFF
Lights	OFF
"Radio master" switch (if installed)	OFF
Throttle	REDUCED

WARNING

THE TEST HEREAFTER MUST BE IMPERATIVELY CARRIED OUT WITH ENGINE POWER LOWER THAN 1000 RPM ; THE FAILURE TO OBSERVE THIS RULE MAY LEAD TO EXHAUST SYSTEM DAMAGE

Magnetos cut-off test (*)	OFF, then BOTH
Throttle	900 to 1000 RPM
Mixture	IDLE CUT-OFF

AFTER ENGINE STOPS :

Magneto selector	OFF
"ALTr FLD" switch-breaker	OFF
Main switch	OFF
Fuel selector	OFF
Protection for pitots and static ports	Installed
Control lock	Installed
Chocks/Tie-downs	If necessary

(*) Depending on the kind of operation, it is not necessary to perform this test more than once a day, but just before securing the airplane

PARTICULAR USES

STALLS

CAUTION

ATTEMPT PRACTICE STALLS ONLY WITH SUFFICIENT ALTITUDE FOR RECOVERY

Power-on stalls require an extremely steep pitch attitude. If the center of gravity is at or near its aft limit, a slight tendency toward wing rocking or a wing drop may occur when the stabilator is deflected near its stop.

Aerodynamic warning (pre-stall buffet) is low with power idle, and more pronounced at higher power settings. Stall recovery can be effected immediately by easing the stick forward. Altitude loss is minor in all cases and is minimized by prompt application of power at the onset of the stall.

The stall warning horn will sound from 5 to 10 knots before stall speed.

FLIGHT WITH CROSSWIND

TAKE-OFF :

Apply full power before brake release.

Aileron control moved into wind.

Keep the airplane on runway centerline using the rudder.

Maintain nosewheel on ground up to 65 KIAS.

Lift-off cleanly in order to avoid subsequent touch-down.

LANDING :

When landing in a strong crosswind, use the landing flap setting.

Although the crab or combination method of drift correction may be used, the wing low method gives the best control. Maximum bank angle close to the ground is 15°.

After touch-down, keep the nosewheel on the ground, hold a straight course using rudder pedals.

NOTE : Demonstrated crosswind : 25 kt

FLIGHT IN TURBULENT AIR

Maximum airspeed	128 KIAS
Recommended airspeed	108 KIAS
Seats, seat belts, shoulder harnesses	ADJUSTED and SECURE

USE OF DOORS

In windy or gusty conditions, the doors should be firmly held during opening and closing and should be closed and locked immediately after entering or leaving the airplane. The doors must be closed and locked for all taxiing and flight operations.

SECTION 5

PERFORMANCE

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ACOUSTIC LIMITATION

With a noise level lower than the limit noise level of 4.6 d B (A) the TB 200 airplane complies with Chapter 10, appendix 6, annex 16 of the agreement relative to International Civil Aviation Organization (ICAO).

The noise limit authorized in above-mentioned ICAO conditions is of 85.2 d B (A) at a maximum takeoff weight of 2535 lbs (1150 kg).

The noise level which was determined in above-mentioned ICAO conditions at maximum continuous power and at 2700 RPM is 80.6 d B (A).

SOCATA TB 200 airplane has received the noise type certificate Nr N165 dated 30th October 1991.

AIRSPEED CALIBRATION

NORMAL STATIC SOURCE

Figure 5.1 - NORMAL STATIC SOURCE

NOTE :
The indicated airspeeds (IAS) suppose instrument error to be null.

ALTERNATE STATIC SOURCE

In case of alternate static source utilization, open air outlets and / or actuate cabin air selector flow lever to open position. Then, instrument error is slight.

ALTITUDE COMPENSATION

ALTERNATE STATIC SOURCE

In case of alternate static source utilization, open air outlets and / or actuate cabin air selector flow lever to open position. Then, instrument error is not significant.

STALLING SPEEDS

CONDITIONS : Weight : 2535 lbs (1150 kg)

Power OFF

CONFIGURATION	BANK					
	0°		30°		45°	
	KIAS	MPH IAS	KIAS	MPH IAS	KIAS	MPH IAS
FLAPS RETRACTED	61	70	66	76	73	84
FLAPS TAKE-OFF	58	66	63	71	69	79
FLAPS LANDING	54	62	58	67	64	74

NOTE :
The indicated airspeeds (IAS) suppose instrument error to be null.

Figure 5.2 - STALLING SPEEDS

WIND COMPONENTS

EXAMPLE : Wind speed : 20 kt
Angle between wind direction and flight path : 50°
Headwind : 13 kt
Crosswind : 15 kt

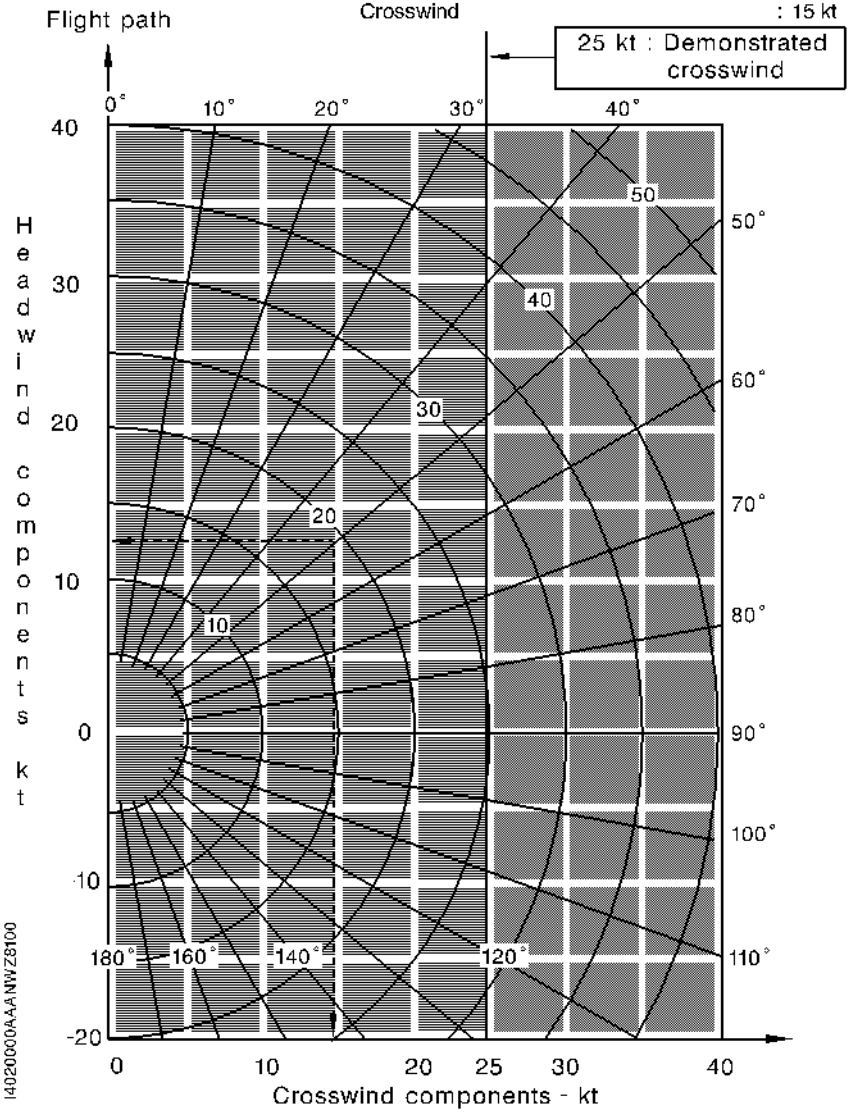

Figure 5.3 - WIND COMPONENTS

NOTICE

Measurements were taken with zero wind condition on dry and hard runway.

The performance are presented as a function of the altitude in feet and for three atmosphere conditions [ISA -20°C (- 36°F), ISA and ISA + 20°C (+ 36°F)].

Take-off and landing performance figures are based on a dry hard surface runway.

The total take-off and landing distances (taxiing and clear 50 ft) will be corrected as follows :

- Influence of runway condition :

Increase by :	7 %	on hard sod
	10 %	on short grass
	25 %	on high grass

- Influence of wind :
  - . Increase by 30 % for each 10 kt rear wind
  - . Reduce by 10 % for each 10 kt headwind.

TAKE-OFF PERFORMANCE

Flaps extended

The take-off runs correspond to tests conducted (in TARBES-OSSUN), on tarred runway and compensated for concrete runway.

TAKE-OFF PERFORMANCE

CONDITIONS : IAS : Lift off : 58 KIAS - 67 MPH IAS
Clear 50 ft : 65 KIAS - 75 MPH IAS
Weight : 1984 lbs (900 kg)
Take-off position flaps (10°)

NOTE :
See Paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	440	505	580	675	785
	Clear 50 ft (ft)	830	950	1100	1290	1525
ISA	Roll (ft)	520	600	695	810	950
	Clear 50 ft (ft)	980	1130	1325	1570	1885
ISA + 20°C (+ 36°F)	Roll (ft)	615	710	825	965	1130
	Clear 50 ft (ft)	1150	1335	1580	1895	2320

Figure 5.4 - TAKE-OFF PERFORMANCE (1984 lbs)

TAKE-OFF PERFORMANCE

CONDITIONS : IAS : Lift off : 63 KIAS - 73 MPH IAS
Clear 50 ft : 70 KIAS - 81 MPH IAS
Weight : 2535 lbs (1150 kg)
Take-off position flaps (10°)

NOTE :
See Paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Clear 50 ft (ft)	800	915	1060	1230	1435
	Clear 50 ft (ft)	1310	1500	1740	2040	2415
ISA	Roll (ft)	950	1095	1270	1480	1730
	Clear 50 ft (ft)	1560	1800	2105	2500	3010
ISA + 20°C (+ 36°F)	Roll (ft)	1120	1290	1500	1755	2055
	Clear 50 ft (ft)	1840	2145	2535	3050	3765

Figure 5.4A - TAKE-OFF PERFORMANCE (2535 lbs)

CLIMB PERFORMANCE

CONDITIONS : Airplane **with** landing gear **fairings**
Weight : 2535 lbs (1150 kg)
Indicated speed : 80 KIAS - 92 MPH IAS
Mixture : FULL RICH
Flaps retracted
Power : 2700 RPM - full throttle

PRESSURE ALTITUDE	CLIMB SPEED					
	ISA -20°C (- 36°F)		**ISA**		**ISA+20°C** (+ 36°F)	
	m/s	ft/min	m/s	ft/min	m/s	ft/min
500	5.28	1040	4.56	897	3.94	776
2500	4.73	932	4.04	794	3.44	677
4500	4.19	824	3.51	691	2.93	577
6500	3.64	717	2.99	588	2.43	478
8500	3.11	611	2.46	485	1.91	377
10500	2.56	503	1.94	382	1.41	278
12500	2.02	397	1.41	279	0.90	177

Figure 5.5 - CLIMB PERFORMANCE

CLIMB PERFORMANCE

CONDITIONS : Airplane **without** landing gear **fairings :** option Nr 525
Weight : 2535 lbs (1150 kg)
Indicated speed : 80 KIAS - 92 MPH IAS
Mixture : FULL RICH
Flaps retracted
Power : 2700 RPM - full throttle

PRESSURE ALTITUDE	CLIMB SPEED					
	ISA -20°C (- 36°F)		**ISA**		**ISA+20°C** (+ 36°F)	
Feet	m/s	ft/min	m/s	ft/min	m/s	ft/min
500	4.99	982	4.26	838	3.63	714
2500	4.43	872	3.72	732	3.11	612
4500	3.87	761	3.18	626	2.59	510
6500	3.31	652	2.64	520	2.07	407
8500	2.76	543	2.10	414	1.54	303
10500	2.20	433	1.57	308	1.02	201
12500	1.64	324	1.03	202	0.50	98

Figure 5.6 - CLIMB PERFORMANCE

CLIMB PERFORMANCE

CONDITIONS : Airplane **with** landing gear **fairings**
Weight : 2535 lbs (1150 kg)
Indicated speed : 80 KIAS - 92 MPH IAS
Mixture : FULL RICH
Flaps retracted
Power : 2700 RPM - full throttle

PRESS. ALT.	CLIMB FROM SEA LEVEL								
	ISA -20°C (- 36°F)			**ISA**			**ISA +20°C** (+ 36°F)		
Feet	TIME min's"	FUEL US Gal	DIST. NM	TIME min's"	FUEL US Gal	DIST. NM	TIME min's"	FUEL US Gal	DIST. NM
500	0'28"	0.13	0.7	0'32"	0.16	0.7	0'38"	0.18	0.8
2500	2'30"	0.71	3.4	2'54"	0.79	3.7	3'23"	0.90	4.3
4500	4'46"	1.32	6.4	5'36"	1.53	6.9	6'34"	1.74	8.2
6500	7'22"	2.03	9.5	8'44"	2.32	10.5	10'22"	2.69	12.4
8500	10'23"	2.80	13.0	12'27"	3.28	14.4	15'02"	3.83	17.4
10500	13'58"	3.70	16.8	17'04"	4.41	19.0	21'09"	5.31	23.5
12500	18'25"	4.81	21.3	23'08"	5.84	24.7	29'57"	7.32	31.8

Figure 5.7 - CLIMB PERFORMANCE

CLIMB PERFORMANCE

CONDITIONS : Airplane **without** landing gear **fairings :** option Nr 525
Weight : 2535 lbs (1150 kg)
Indicated speed : 80 KIAS - 92 MPH IAS
Mixture : FULL RICH
Flaps retracted
Power : 2700 RPM - full throttle

PRESS. ALT.	CLIMB FROM SEA LEVEL								
	ISA -20°C (- 36°F)			**ISA**			**ISA +20°C** (+ 36°F)		
Feet	TIME min's"	FUEL US Gal	DIST. NM	TIME min's"	FUEL US Gal	DIST. NM	TIME min's"	FUEL US Gal	DIST. NM
500	0'30"	0.13	0.7	0'35"	0.16	0.8	0'41"	0.18	0.9
2500	2'39"	0.74	3.7	3'08"	0.87	4.0	3'42"	1.00	4.7
4500	5'06"	1.43	6.8	6'04"	1.64	7.5	7'16"	1.93	9.0
6500	7'56"	2.17	10.2	9'34"	2.56	11.5	11'37"	3.01	13.9
8500	11'17"	3.04	14.1	13'51"	3.62	16.0	17'15"	4.41	19.9
10500	15'23"	4.07	18.5	19'23"	4.99	21.6	25'11"	6.29	27.9
12500	20'40"	5.36	23.9	27'13"	6.84	28.9	38'32"	9.38	40.4

Figure 5.8 - CLIMB PERFORMANCE

MAXIMUM PERFORMANCE ALTITUDE

Maximum performance altitude in standard temperature condition (ISA), corresponding to a vertical speed of 100 ft/min, is 16000 ft at take-off maximum weight.

ANTENNAS INFLUENCE ON PERFORMANCE

Installation of radio antennas reduces cruise performance as follows :

AERIAL	CRUISE SPEED		RANGE
	KIAS	MPH IAS	
VHF	- 0.48	- 0.56	- 0.30 %
VOR	- 0.59	- 0.68	- 0.37 %
Glide	- 0.32	- 0.37	- 0.20 %
ADF Loop antenna	- 0.75	- 0.87	- 0.47 %
ELT	- 0.16	- 0.19	- 0.10 %
Anticollision light	- 0.16	- 0.19	- 0.10 %
Strobe lights	- 0.43	- 0.50	- 0.27 %
Example : IFR	- 3.23	- 3.73	- 2%

Figure 5.9 - ANTENNAS INFLUENCE ON PERFORMANCE

LEVEL FLIGHT PERFORMANCE

Level flight performance are given for a weight of 2469 lbs (1120 kg) and for setting "Best Power" obtained with an EGT indicator.

Fuel : 53.8 U.S Gal (204 litres) usable

Various parameters such as the mixture setting, engine and propeller condition and the atmospheric conditions (wind, moisture, temperature and so on...) may noticeably vary the endurance and range.

Performance with minimum consumption

- Decrease speeds by 2 KIAS - 2 MPH IAS
- Decrease fuel consumption by 1.32 U.S Gal/hr (5 litres/hr)
- Add 15 % to distance to be cleared.

Settings with EGT indicator :

- Best economy mixture : from full rich, weaken slowly mixture until peak EGT.
- Best power mixture : From peak EGT, re-enrich until EGT temperature decreases by 75°F (3 divisions).

Settings without EGT indicator :

- Best economy mixture : from full rich, weaken slowly until first engine malfunctioning signs (vibration) appear and then re-enrich slowly.

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 500 ft

ISA : 57.2°F (14°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 **2500** **2400**	23.7 **24.4** **25.5**	138	121	139	122	46.4 45.8 45.2	12.3 12.1 11.9	20.5 20.2 20.0	10.1 9.9 9.8
70 %	2600 2500 **2400**	22.5 23.2 **24.2**	133	117	134	118	43.9 43.3 42.7	11.6 11.4 11.3	20.0 19.8 19.5	9.8 9.7 9.6
65 %	2500 **2400** **2300**	22.0 **22.9** **23.7**	129	113	130	114	41.0 40.3 39.7	10.8 10.6 10.5	19.4 19.1 18.8	9.5 9.4 9.2
60 %	2500 **2400** **2300**	20.8 **21.6** **22.4**	124	109	125	109	38.7 38.1 37.4	10.2 10.1 9.9	19.1 18.8 18.5	9.4 9.2 9.0
55 %	2400 **2300** 2200	20.4 **21.0** 21.9	118	104	119	104	35.7 35.1 34.4	9.4 9.3 9.1	18.5 18.2 17.8	9.0 8.9 8.7
50 %	2400 **2300** 2200	19.0 **19.7** 20.5	112	98	113	99	33.6 33.0 32.3	8.9 8.7 8.5	18.4 18.1 17.7	8.9 8.8 8.6

Figure 5.10 - LEVEL FLIGHT PERFORMANCE (500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 500 ft

ISA : 57.2°F (14°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 **2500** **2400**	23.7 **24.4** **25.5**	129	113	130	114	46.4 45.8 45.2	12.3 12.1 11.9	22.0 21.7 21.4	10.8 10.6 10.5
70 %	2600 2500 **2400**	22.5 23.2 **24.2**	124	109	125	110	43.9 43.3 42.7	11.6 11.4 11.3	21.5 21.3 21.0	10.5 10.4 10.3
65 %	2500 **2400** **2300**	22.0 **22.9** **23.7**	120	105	121	106	41.0 40.3 39.7	10.8 10.6 10.5	20.9 20.6 20.3	10.2 10.1 9.9
60 %	2500 **2400** **2300**	20.8 **21.6** **22.4**	115	101	116	101	38.7 38.1 37.4	10.2 10.1 9.9	20.6 20.3 19.9	10.1 9.9 9.7
55 %	2400 **2300** 2200	20.4 **21.0** 21.9	109	96	110	97	35.7 35.1 34.4	9.4 9.3 9.1	20.0 19.6 19.2	9.8 9.6 9.4
50 %	2400 **2300** 2200	19.0 **19.7** 20.5	103	90	104	91	33.6 33.0 32.3	8.9 8.7 8.5	19.9 19.6 19.1	9.7 9.6 9.4

Figure 5.11 - LEVEL FLIGHT PERFORMANCE (500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 2500 ft

ISA : 50°F (10°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 **2500** **2400**	23.2 **24.0** **25.0**	136	120	141	124	46.4 45.8 45.2	12.3 12.1 11.9	20.2 19.9 19.7	9.9 9.8 9.6
70 %	2500 **2400** **2300**	22.7 **23.7** **24.6**	131	116	136	120	43.3 42.7 42.1	11.4 11.3 11.1	19.5 19.2 18.9	9.6 9.4 9.3
65 %	2500 **2400** **2300**	21.5 **22.4** **23.3**	127	111	132	116	41.0 40.3 39.7	10.8 10.6 10.5	19.1 18.8 18.5	9.4 9.2 9.1
60 %	**2400** **2300** 2200	**21.2** **21.9** 22.9	122	107	126	111	38.1 37.4 36.8	10.1 9.9 9.7	18.6 18.2 17.9	9.1 8.9 8.8
55 %	2400 **2300** 2200	19.9 **20.6** 21.5	116	102	121	106	35.7 35.1 34.4	9.4 9.3 9.1	18.3 18.0 17.6	8.9 8.8 8.6
50 %	2400 **2300** 2200	18.6 **19.2** 20.1	110	96	114	100	33.6 33.0 32.3	8.9 8.7 8.5	18.1 17.8 17.4	8.8 8.7 8.5

Figure 5.12 - LEVEL FLIGHT PERFORMANCE (2500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE: 2500 ft

ISA : 50°F (10°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 **2500** **2400**	23.2 **24.0** **25.0**	127	111	132	116	46.4 45.8 45.2	12.3 12.1 11.9	21.7 21.4 21.1	10.6 10.5 10.3
70 %	2500 **2400** **2300**	22.7 **23.7** **24.6**	123	108	127	112	43.3 42.7 42.1	11.4 11.3 11.1	21.0 20.7 20.4	10.3 10.1 10
65 %	2500 **2400** **2300**	21.5 **22.4** **23.3**	118	103	122	107	41.0 40.3 39.7	10.8 10.6 10.5	20.6 20.3 20.0	10.1 9.9 9.8
60 %	**2400** **2300** 2200	**21.2** **21.9** 22.9	113	99	117	103	38.1 37.4 36.8	10.1 9.9 9.7	20.0 19.7 19.3	9.8 9.6 9.5
55 %	2400 **2300** 2200	19.9 **20.6** 21.5	107	94	111	98	35.7 35.1 34.4	9.4 9.3 9.1	19.7 19.4 19.0	9.7 9.5 9.3
50 %	2400 **2300** 2200	18.6 **19.2** 20.1	101	89	105	92	33.6 33.0 32.3	8.9 8.7 8.5	19.7 19.4 19.0	9.6 9.5 9.3

Figure 5.13 - LEVEL FLIGHT PERFORMANCE (2500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 4500 ft

ISA : 42.8°F (6°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 **2500** **2400**	22.6 **23.5** **24.5**	134	118	143	126	46.4 45.8 45.2	12.3 12.1 11.9	19.9 19.6 19.4	9.8 9.6 9.5
70 %	2500 **2400** 2300	22.2 **23.2** 24.2	130	114	139	122	43.3 42.7 42.1	11.4 11.3 11.1	19.2 18.9 18.7	9.4 9.3 9.1
65 %	2500 **2400** **2300**	21.1 **21.9** **22.8**	125	110	134	117	41.0 40.3 39.7	10.8 10.6 10.5	18.9 18.5 18.3	9.2 9 8.9
60 %	2500 **2400** **2300**	19.9 **20.7** **21.5**	120	105	128	112	38.7 38.1 37.4	10.2 10.1 9.9	18.6 18.3 18.0	9.1 8.9 8.8
55 %	2400 **2300** 2200	19.4 **20.1** 21.0	114	100	122	107	35.7 35.1 34.4	9.4 9.3 9.1	18.0 17.7 17.4	8.8 8.6 8.5
50 %	2400 **2300** 2200	18.1 **18.8** 19.6	108	95	116	102	33.6 33.0 32.3	8.9 8.7 8.5	17.9 17.5 17.2	8.7 8.6 8.4

Figure 5.14 - LEVEL FLIGHT PERFORMANCE (4500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 4500 ft

ISA : 42.8°F (6°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 **2500** **2400**	22.6 **23.5** **24.5**	125	110	134	117	46.4 45.8 45.2	12.3 12.1 11.9	21.3 21.1 20.8	10.4 10.3 10.2
70 %	2500 **2400** 2300	22.2 **23.2** 24.2	121	106	129	113	43.3 42.7 42.1	11.4 11.3 11.1	20.7 20.4 20.1	10.1 10.0 9.8
65 %	2500 **2400** **2300**	21.1 **21.9** **22.8**	116	102	124	109	41.0 40.3 39.7	10.8 10.6 10.5	20.3 20.0 19.7	10.0 9.8 9.6
60 %	2500 **2400** **2300**	19.9 **20.7** **21.5**	111	97	119	104	38.7 38.1 37.4	10.2 10.1 9.9	20.1 19.8 19.4	9.8 9.7 9.5
55 %	2400 **2300** 2200	19.4 **20.1** 21.0	105	92	113	99	35.7 35.1 34.4	9.4 9.3 9.1	19.5 19.2 18.8	9.5 9.4 9.2

Figure 5.15 - LEVEL FLIGHT PERFORMANCE (4500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 6500 ft

ISA : 35.78°F (2.1°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 2500	22.2 23.0	132	116	145	128	46.4 45.8	12.3 12.1	19.6 19.3	9.6 9.5
70 %	2600 2500 **2400**	21.1 21.8 **22.8**	128	112	141	124	43.9 43.3 42.7	11.6 11.4 11.3	19.2 18.9 18.7	9.4 9.3 9.1
65 %	2500 **2400** **2300**	20.7 **21.5** **22.4**	123	108	136	119	41.0 40.3 39.7	10.8 10.7 10.5	18.6 18.3 18.0	9.1 8.9 8.8
60 %	**2400** **2300** 2200	**20.3** **21.1** 22.0	118	103	130	114	38.1 37.4 36.8	10.1 9.9 9.7	18.1 17.7 17.4	8.8 8.7 8.5
55 %	2400 **2300** 2200	19.0 **19.8** 20.6	113	98	124	108	35.7 35.1 34.4	9.4 9.3 9.1	17.8 17.5 17.1	8.7 8.5 8.3
50 %	2400 **2300** 2200	17.7 **18.4** 19.2	106	93	117	103	33.6 33.0 32.3	8.9 8.7 8.5	17.6 17.3 16.9	8.6 8.5 8.3

Figure 5.16 - LEVEL FLIGHT PERFORMANCE (6500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 6500 ft

ISA : 35.78°F (2.1°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2600 2500	22.2 23.0	123	108	136	119	46.4 45.8	12.3 12.1	21.0 20.8	10.3 10.3
70 %	2600 2500 **2400**	21.1 21.8 **22.8**	119	104	131	115	43.9 43.3 42.7	11.6 11.4 11.3	20.7 20.4 20.1	10.1 10.0 9.8
65 %	2500 **2400** **2300**	20.7 **21.5** **22.4**	114	100	126	110	41.0 40.3 39.7	10.8 10.7 10.5	20.1 19.7 19.4	9.8 9.7 9.5
60 %	**2400** **2300** 2200	**20.3** **21.1** 22.0	109	96	120	105	38.1 37.4 36.8	10.1 9.9 9.7	19.5 19.2 18.9	9.5 9.4 9.2
55 %	2400 **2300** 2200	19.0 **19.8** 20.6	103	91	114	100	35.7 35.1 34.4	9.4 9.3 9.1	19.3 18.9 18.6	9.4 9.2 9.1

Figure 5.17 - LEVEL FLIGHT PERFORMANCE (6500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 8500 ft

ISA : 28.76°F (- 1.8°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2700	21.2	130	114	148	130	47.0	12.4	19.5	9.6
70 %	2600 2500	20.7 21.4	126	110	143	126	43.9 43.3	11.6 11.4	18.9 18.6	9.2 9.1
65 %	2600 2500 **2400**	19.6 20.3 **21.1**	121	106	138	121	41.6 41.0 40.3	11.0 10.8 10.6	18.6 18.3 18.0	9.1 9.0 8.8
60 %	2500 **2400** **2300**	19.1 **19.9** **20.7**	116	101	132	115	38.7 38.1 37.4	10.2 10.1 9.9	18.1 17.8 17.5	8.8 8.7 8.6
55 %	2400 **2300** 2200	18.6 **19.4** 20.2	111	97	126	110	35.7 35.1 34.4	9.4 9.3 9.1	17.5 17.2 16.9	8.6 8.4 8.2
50 %	2400 **2300** 2200	17.4 **18.1** 18.8	104	91	118	103	33.6 33.0 32.3	8.9 8.7 8.5	17.6 17.2 16.9	8.6 8.4 8.2

Figure 5.18 - LEVEL FLIGHT PERFORMANCE (8500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 8500 ft

ISA : 28.76°F (- 1.8°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTA :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
75 %	2700	21.2	121	106	138	121	47.0	12.4	21.0	10.3
70 %	2600 2500	20.7 21.4	117	102	133	116	43.9 43.3	11.6 11.4	20.4 20.1	10.0 9.8
65 %	2600 2500 **2400**	19.6 20.3 **21.1**	112	98	127	112	41.6 41.0 40.3	11.0 10.8 10.6	20.1 19.8 19.5	9.8 9.7 9.5
60 %	2500 **2400** **2300**	19.1 **19.9** **20.7**	107	94	122	107	38.7 38.1 37.4	10.2 10.1 9.9	19.6 19.3 18.9	9.6 9.4 9.3
55 %	2400 **2300** 2200	18.6 **19.4** 20.2	101	89	115	101	35.7 35.1 34.4	9.4 9.3 9.1	19.1 18.8 18.4	9.3 9.2 9.0

Figure 5.19 - LEVEL FLIGHT PERFORMANCE (8500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 10500 ft

ISA : 21.56°F (- 5.8°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
65 %	2600 2500	19.2 19.9	**119**	104	140	123	41.6 41.0	11.0 10.8	18.3 18.1	9.0 8.8
60 %	2600 2500 **2400**	18.0 18.7 **19.5**	**114**	100	134	117	39.3 38.7 38.1	10.4 10.2 10.1	18.2 17.9 17.6	8.8 8.7 8.6
55 %	2400 **2300** 2200	18.2 **19.0** 19.9	108	95	127	112	35.7 35.1 34.4	9.4 9.3 9.1	17.3 17.0 16.7	8.5 8.3 8.1
50 %	2400 **2300** 2200	17.0 **17.7** 18.4	101	88	119	104	33.6 33.0 32.3	8.9 8.7 8.5	17.5 17.2 16.8	8.5 8.3 8.2

Figure 5.20 - LEVEL FLIGHT PERFORMANCE (10500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 10500 ft

ISA : 21.56°F (- 5.8°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
old-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
65 %	2600 2500	19.2 19.9	110	97	129	113	41.6 41.0	11.0 10.8	19.8 19.5	9.7 9.6
60 %	2600 2500 **2400**	18.0 18.7 **19.5**	105	92	123	108	39.3 38.7 38.1	10.4 10.2 10.1	19.6 19.3 19.0	9.6 9.5 9.3

Figure 5.21 - LEVEL FLIGHT PERFORMANCE(10500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 12500 ft

ISA : 14.54°F (- 9.7°C)

CONDITIONS : - Airplane **with** landing gear **fairings**
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
60 %	2600 2500	17.7 18.4	**112**	98	136	119	39.3 38.7	10.4 10.2	17.9 17.6	8.7 8.6
55 %	2500 2400	17.2 17.9	106	94	129	113	36.3 35.7	9.6 9.4	17.3 17.0	8.5 8.3
50 %	2400 **2300** 2200	16.7 **17.3** 18.1	99	86	120	104	33.6 33.0 32.3	8.9 8.7 8.5	17.5 17.2 16.8	8.5 8.4 8.3

Figure 5.22 - LEVEL FLIGHT PERFORMANCE (12500 ft)

LEVEL FLIGHT PERFORMANCE

PRESSURE ALTITUDE : 12500 ft

ISA : 14.54°F (- 9.7°C)

CONDITIONS : - Airplane **without** landing gear **fairings** : option Nr 525
- Mixture adjusted to the best power
- Speed without antennas nor external lights
- Weight: 2469 lbs

NOTE :
Bold-faced types represent recommended power.

%	N	PA	CAS		TAS		MIXTURE ADJUSTING		SPECIFIC CONSUMPTION	
BHP	RPM	in.Hg	MPH	kt	MPH	kt	l / h	U.S. Gal / hr	l / 100 NM	U.S. Gal / 100 NM
60 %	2600 2500	17.7 18.4	103	90	125	109	39.3 38.7	10.4 10.2	19.4 19.1	9.5 9.3

Figure 5.23 - LEVEL FLIGHT PERFORMANCE (12500 ft)

LANDING PERFORMANCE

WEIGHT : 1984 LBS (900 kg)

CONDITIONS : Clear 50 ft : 68 KIAS - 78 MPH IAS
Flaps in landing position

NOTE :
See paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	470	510	550	585	615
	Clear 50 ft (ft)	1075	1135	1200	1275	1360
ISA	Roll (ft)	515	560	600	645	680
	Clear 50 ft (ft)	1170	1235	1300	1370	1455
ISA + 20°C (+ 36°F)	Roll (ft)	560	610	655	705	750
	Clear 50 ft (ft)	1265	1330	1400	1475	1565

Figure 5.24 - LANDING PERFORMANCE (1984 lbs)
(Flaps in landing position)

LANDING PERFORMANCE

WEIGHT : 2407 LBS (1092 kg)

CONDITIONS : Clear 50 ft : 72 KIAS - 83 MPH IAS
Flaps in landing position

NOTE :
See paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	590	635	675	715	750
	Clear 50 ft (ft)	1340	1410	1490	1565	1640
ISA	Roll (ft)	635	680	730	775	820
	Clear 50 ft (ft)	1430	1475	1590	1690	1740
ISA + 20°C (+ 36°F)	Roll (ft)	680	730	785	835	885
	Clear 50 ft (ft)	1620	1605	1690	1780	1870

Figure 5.25 - LANDING PERFORMANCE (2407 lbs)
(Flaps in landing position)

LANDING PERFORMANCE

WEIGHT : 2535 LBS (1150 kg)

CONDITIONS : Clear 50 ft : 73 KIAS - 84 MPH IAS
Flaps in landing position

NOTE :
See paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	625	665	705	745	785
	Clear 50 ft (ft)	1405	1490	1565	1650	1725
ISA	Roll (ft)	675	720	765	805	850
	Clear 50 ft (ft)	1475	1595	1675	1760	1840
ISA + 20°C (+ 36°F)	Roll (ft)	720	775	825	875	920
	Clear 50 ft (ft)	1610	1700	1770	1875	1960

Figure 5.26 - LANDING PERFORMANCE (2535 lbs)
(Flaps in landing position)

LANDING PERFORMANCE

WEIGHT : 1984 LBS (900 kg)

CONDITIONS : Clear 50 ft : 73 KIAS - 84 MPH IAS
Flaps retracted

NOTE :
See paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	597	636	679	732	784
	Clear 50 ft (ft)	1342	1404	1480	1565	1657
ISA	Roll (ft)	650	689	735	787	843
	Clear 50 ft (ft)	1427	1499	1578	1667	1765
ISA + 20°C (+ 36°F)	Roll (ft)	696	735	787	843	899
	Clear 50 ft (ft)	1522	1604	1690	1781	1886

Figure 5.27 - LANDING PERFORMANCE (1984 lbs)
(Flaps retracted)

LANDING PERFORMANCE

WEIGHT : 2407 LBS (1092 kg)

CONDITIONS : Clear 50 ft : 78 KIAS - 90 MPH IAS
Flaps retracted

NOTE :
See paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	720	770	820	870	925
	Clear 50 ft (ft)	1610	1700	1790	1892	2005
ISA	Roll (ft)	780	828	880	934	994
	Clear 50 ft (ft)	1720	1815	1907	2015	2128
ISA + 20°C (+ 36°F)	Roll (ft)	840	890	942	1004	1068
	Clear 50 ft (ft)	1837	1935	2032	2145	2258

Figure 5.28 - LANDING PERFORMANCE (2407 lbs)
(Flaps retracted)

LANDING PERFORMANCE

WEIGHT : 2535 LBS (1150 kg)

CONDITIONS : Clear 50 ft : 80 KIAS - 92 MPH IAS
Flaps retracted

NOTE :
See paragraph "NOTICE" for corrections due to wind and runway condition.

Tempe-rature	Distance	Pressure altitude (ft)				
		0	2000	4000	6000	8000
ISA - 20°C (- 36°F)	Roll (ft)	760	810	860	915	970
	Clear 50 ft (ft)	1700	1795	1885	1995	2110
ISA	Roll (ft)	820	870	920	980	1045
	Clear 50 ft (ft)	1810	1910	2005	2120	2240
ISA + 20°C (+ 36°F)	Roll (ft)	880	935	990	1055	1125
	Clear 50 ft (ft)	1930	2035	2135	2255	2375

Figure 5.29 - LANDING PERFORMANCE (2535 lbs)
(Flaps retracted)

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SECTION 6

WEIGHT AND BALANCE

TABLE OF CONTENTS

GENERAL

This section contains the procedure for determining the basic empty weight and moment of SOCATA Model TB 200 airplane. Procedures for calculating the weight and moment for various operations are also provided. A list of equipment available for this airplane is included at the back of this section.

It should be noted that the list of specific optional equipment installed on your airplane as delivered from the factory can be found in the records carried in the airplane.

IT IS THE RESPONSIBILITY OF THE PILOT TO ENSURE THAT THE AIRPLANE IS LOADED PROPERLY.

AIRPLANE WEIGHING PROCEDURES

Refer to Maintenance Manual for the procedures to be used.

NOTE :
Weighing carried out at the factory takes into account all items of equipment installed on the airplane. The list of these items of equipment and the weighing result are noted in the Individual Inspection Record.

BAGGAGE/CARGO LOADING

BAGGAGE

The baggage compartment is located at the back of rear passengers bench or, Post-MOD.151, seats. Loading can either be carried out through baggage compartment access door provided with a locking device, located on L.H. side of the airplane, or from the inside of the cabin, on upper part of the back of the bench or, Post-MOD.151, of the rear seats. In this case, a zip fastener allows folding the sound-proofing cloth.

Tie-down straps are provided for securing baggage on compartment floor.

CARGO

To facilitate the carrying of equipment, large or bulky items, the rear bench or, Post-MOD.151, the rear seats may be removed from the airplane.

To remove rear bench or seats : See Figure 6.1 (A, B, C)

- Lift up seating (Item 6) (kept in position with "Velcro" straps) of rear bench or, Post-MOD.151, of rear seats then, in this case, remove arm rest.
- If you want to free the back from its support plate, lift it up about 1.5 inch (3 cm) at both ends and pull it forward so that both attaching pins free from apertures.
- To remove the support plate (Item 5) and back (Item 1) :
  - . Unfasten attachments of sound-proofing cloth on cross-beam (Item 2)
  - . Pushing, unscrew ¼ turn both attaching pins of air regulation duct on rear floor (Item 4)
  - . Pull both latches inwards (Item 3)
  - . Lift up support plate (Item 5) to disengage it forward.

NOTE :
To reinstall rear bench or, Post-MOD.151, rear seats - see Figure 6.1 (a, b, c) reverse removal instructions.

IMPERATIVELY RESPECT WEIGHT AND BALANCE LIMITS

THE PILOT IS RESPONSIBLE FOR CORRECT BAGGAGE AND / OR CARGO LOADING. PRIOR TO ANY FLIGHT HE MUST MAKE SURE THAT WEIGHT, BALANCE AND TIE-DOWN ARE CORRECT.

- **Baggage weight :**

  Maximum 143 lbs (65 kg) at 102.36 in. (2.600 m)

- **Cargo weight (without baggage) :**

  Maximum 573 lbs (260 kg) at 74.80 in. (1.900 m)

CAUTION

WHEN IN CARGO CONFIGURATION, NO PASSENGERS ARE ALLOWED IN THE CARGO AREA

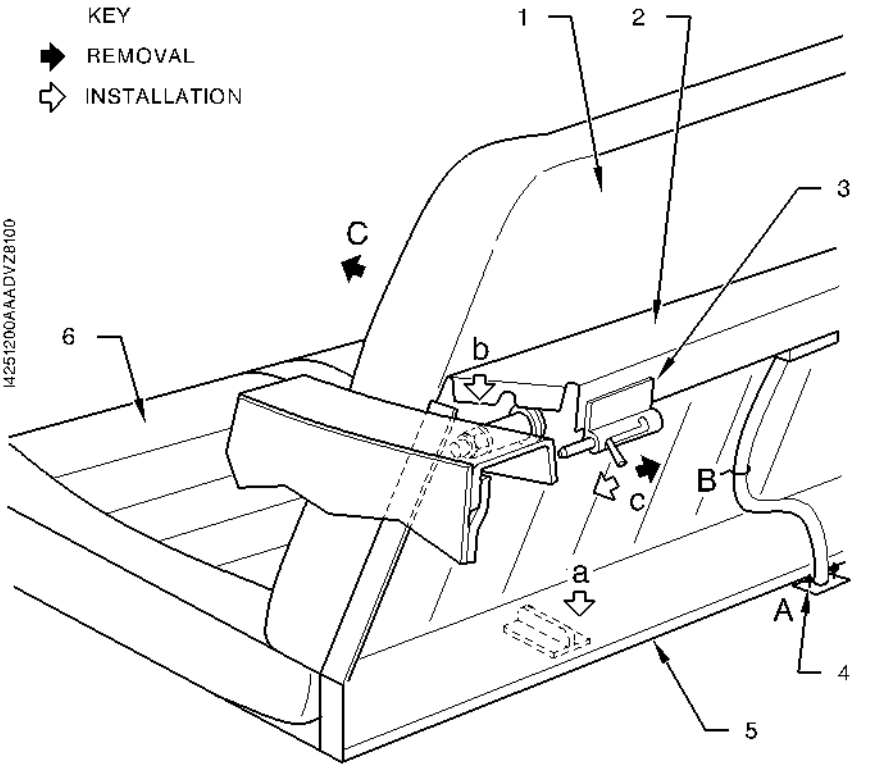

Figure 6.1 - REMOVAL AND INSTALLATION OF REAR BENCH OR, Post-MOD.151, REAR SEATS

DETERMINING WEIGHT AND BALANCE

GENERAL

This paragraph is intended to provide the pilot with a simple means of determining weight and balance of his airplane with regard to its empty characteristics and loading. The empty weight to be considered is the one noted on the last weighing form.

The data concerning loading are given on following graphs :

- Loading graph : see Figure 6.4
- Weight / Moment envelope : see Figure 6.5

To determine airplane loading within a given flight configuration, you only have to add up weights and moments of the various loads recorded and to add them to empty airplane data.

These values carried forward on weight / moment envelope must give a point within the limits drawn with continuous line.

If that is the case, loading is acceptable.

NOTE :
If moment is not directly known (optional equipment for example), determine it multiplying weight (lbs) by arm (in.).

UTILIZATION OF WEIGHT / MOMENT GRAPH

Extract translucent Figure 6.5 from the manual and take a pencil.

- On Figure 6.5, place point A (1) corresponding to your empty airplane [Our sample loading : 1587 lbs (720 kg) - 60.39 lb.in / 1000 (676.2 m.kg)]
- Superpose point A (1) and point A of graph ① Figure 6.4.
- Draw on weight / moment envelope the pilot straight line to get point A (2) corresponding to L.H. front seat loading.
  [Our sample loading : 170 lbs (77 kg) - 7.71 lb.in / 1000 (88.9 m.kg)].
- Superpose point A (2) and point A of graph ① Figure 6.4.
- Draw on weight / moment envelope the front passenger straight line to get point A (3) corresponding to R.H. front seat loading.
  [Our sample loading : 170 lbs (77 kg) - 7.71 lb.in / 1000 (88.9 m.kg)].

- Superpose point A (3) and point A of graph ①, draw the rear passengers straight line to get point B (1) related to rear seat loading.
  [Our sample loading : 2 persons 309 lbs (140 kg) - 25.49 lb.in / 1000 (293.3 m.kg)]
- Superpose point B (1) and point B of graph ②, draw the fuel straight line to get point B (2).
  [Our sample loading : 41.48 U.S Gal (157 litres) fuel - 249 lbs (113 kg) - 10.54 lb.in / 1000 (121.5 m.kg)]
- Superpose point B (2) and point B of graph ②, draw the baggage straight line to get point M.
  [Our sample loading : 33 lbs (15 kg) baggage - 3.20 lb.in / 1000 (37 m.kg)]

Since point M falls within weight / moment envelope, the loading is acceptable.

NOTE :
Option No. 0800.00M "L.H. or R.H. front seat back-off installation", option No. 0800.10M "L.H. front seat back-off installation" and/or option No. 0800.20M "R.H. front seat back-off installation" are marked on your airplane by a color ring (yellow / green) located on the 2 front supports (tubes) of each seat.
For C.G. location calculation, take 2-inch (50 mm) L.H. front seat or L.H. and R.H. front seats back-off installation into account.

CAUTION

OPTION(S) No. 0800.00M (Qty 1 or 2)
OR 0800.10M AND 0800.20M (See NOTE on page 6.6) :
2-in. (50 mm) back-off installation for L.H. and/or R.H. front seat(s)

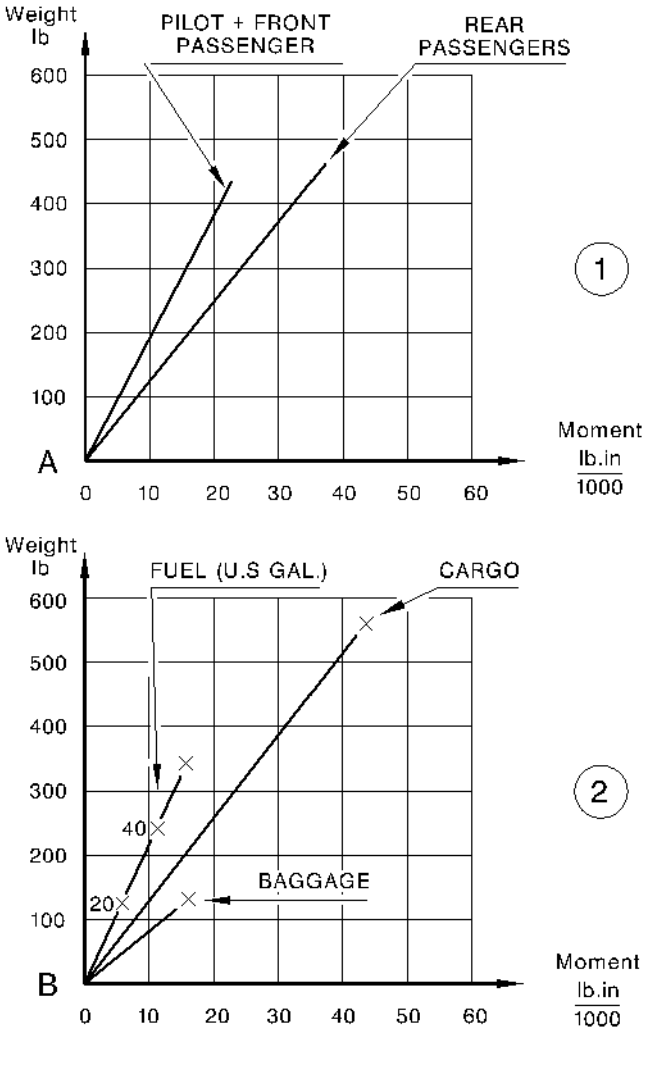

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Figure 6.4 - LOADING GRAPHS

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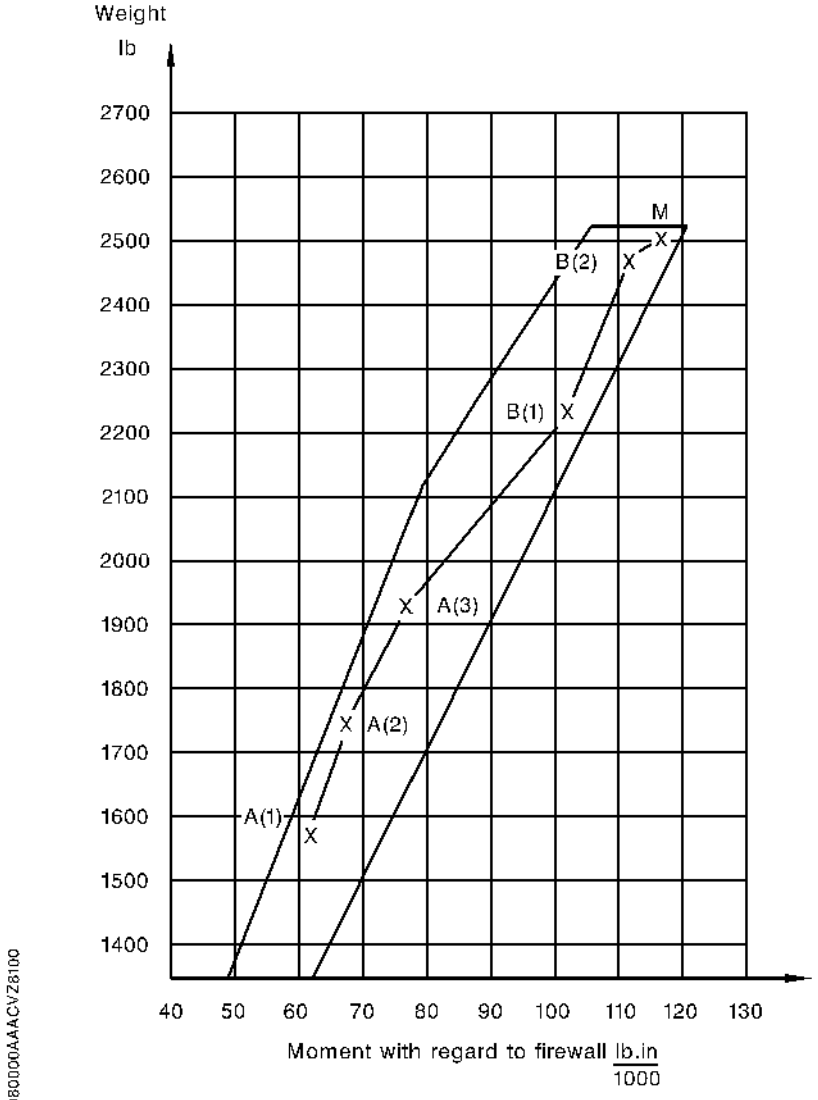

Figure 6.6 - LOADING SAMPLE

EQUIPMENT LIST

The following equipment list contains standard equipment installed on each airplane and available optional equipment.

A separate equipment list of items installed at the factory in your specific airplane is provided in your airplane file.

Columns showing weight (in pounds) and arm (in inches) provide the weight and center of gravity location for the equipment.

The equipment list provides the following information :

- Required or Standard items

  A letter "R" or "S" allows classifying of the equipment :
  "R" : equipment items required for certification
  "S" : standard equipment items

- Optional equipment (not restrictive list)

  A letter "O" or "A" allows classifying of the equipment :
  "O" : optional equipment items replacing required or standard items
  "A" : optional equipment items which are in addition to required or standard items

  In the following column, an item number allows identification of the optional equipment.

  The column marked "*" will be used to tick off the optional equipment installed on your airplane.

NOTE 1 :
Unless otherwise indicated (-), arms are positive values.
Positive arms are distances aft of the airplane datum ; negative arms are distances forward of the datum.

NOTE 2 :
*Equipment list with "**Pre-MOD. 151**" validity :*
S/N 948 to 1999, except S/N 1900
*Equipment list with "**Post-MOD. 151**" validity :*
S/N 2000 to 9999, plus S/N 1900

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		01 - SPECIFIC OPTIONAL EQUIPMENT			
A	H615 20M	Additional equipment for IFR France "Grey" - Up to S/N 1269		0.441 (0.20)	25.59 (0.65)
		- From S/N 1270		/ /	/ /
A	H616 20M	Additional equipment for night VFR France "Grey"		0.441 (0.20)	25.59 (0.65)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		21 - ENVIRONMENTAL SYSTEM			
		21-40 - Heating			
A	C598 00M	Radio console ventilation		1.543 (0.70)	6.30 (0.16)
A	C869 00M	Radio console forced ventilation (blower KING KA 33)		1.543 (0.70)	4.33 (0.11)
A	C869 20M	Radio console forced ventilation (blower KING KA 33)		1.543 (0.70)	12.99 (0.33)
A	F822 10M	Forced ventilation, rear passengers VETUS		2.756 (1.25)	136.61 (3.47)
A	F822 20M	Forced ventilation, rear passengers VETUS		2.756 (1.25)	136.61 (3.47)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		22 - AUTO FLIGHT			
		22-12 - Autopilot			
A	D675 00M	Altitude and vertical speed preselector KAS 297B KING		1.764 (0.80)	21.65 (0.55)
A	D675 10M	Altitude and vertical speed preselector KAS 297B KING (on R.H. instrument panel)		1.764 (0.80)	21.65 (0.55)
A	D675 20M	Altitude and vertical speed preselector KAS 297B KING (on radio console)		1.764 (0.80)	21.65 (0.55)
A	G668 00M	A/P KAP 100 KING		11.442 (5.19)	35.43 (0.90)
A	G668 10M	A/P KAP 100 KING with electrical pitch trim		17.659 (8.01)	67.72 (1.72)
A	G669 00M	A/P KAP 150 KING		21.363 (9.69)	76.38 (1.94)
A	G670 00M	A/P KFC 150 KING		21.561 (9.78)	75.59 (1.92)
A	G810 00M	Remote A/P modes annunciator KA 185-03 for KAP 150		0.661 (0.30)	23.62 (0.60)
A	G810 10M	Remote A/P modes annunciator KA 185-01 for KFC 150		0.661 (0.30)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		23 - COMMUNICATIONS			
		23-10 - Speech communications			
		23-11 - VHF capability			
A	23-001A	Audio selector/Intercom system PMA 7000MS PS ENGINEERING (stereo wiring)		3.814 (1.73)	26.77 (0.68)
A	23-001B	Audio selector/Intercom system PMA 7000MS PS ENGINEERING (mono wiring)		3.814 (1.73)	26.77 (0.68)
A	23-002A	Audio selector/Intercom system GMA 340 GARMIN		4.189 (1.90)	27.56 (0.70)
A	34-503A	Boom microphone headset AHX-05 Serie X BOSE			
		- Pilot		1.235 (0.56)	55.12 (1.40)
		- Front passenger		0.683 (0.31)	55.12 (1.40)
A	J524 30M	Interphone		0.441 (0.20)	11.81 (0.30)
A	J539 00M	VHF/COM capability (Loud-speaker "SONAVOX")		3.395 (1.54)	47.24 (1.20)
A	J539 20M	VHF/COM capability (Loud-speaker "AUDAX")		2.998 (1.36)	45.28 (1.15)
A	J688 00M	Boom microphone headset PELTOR		0.992 (0.45)	55.12 (1.40)
A	J827 00M	Intercommunication system SPA 400 ICS SIGTRONICS (Front and rear seats)		0.750 (0.34)	32.28 (0.82)
A	J827 10M	Intercommunication system SPA 400 AV SIGTRONICS (Front seats)		0.750 (0.34)	32.28 (0.82)
A	J893 00M	Headset (noise reducer) HDCII BOSE (pilot and front passenger)		4.189 (1.90)	55.12 (1.40)
A	J893 10M	Headset (noise reducer) HDCII BOSE (pilot)		2.094 (0.95)	55.12 (1.40)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	J894 00M	VHF/COM capability		3.219 (1.46)	45.27 (1.25)
A	J894 20M	VHF/COM capability		3.219 (1.46)	45.27 (1.25)
A	J912 00M	Boom microphone headset H10-13-4 DAVID CLARK		0.838 (0.38)	55.12 (1.40)
A	J928 00M	Boom microphone headset HMEC 25-KA SENNHEISER : Pilot and front passenger Rear passengers		 0.661 (0.30) 0.661 (0.30)	 55.12 (1.40) 94.49 (2.40)
A	J928 10M	Boom microphone headset HMEC 25-KAS SENNHEISER : Pilot and front passenger Rear passengers		 0.661 (0.30) 0.661 (0.30)	 55.12 (1.40) 94.49 (2.40)
A	K807 00M	Audio control box KMA 24H52 KING with interphone		2.205 (1.00)	27.56 (0.70)
A	K809 00M	Audio control box KMA 24H70 KING with audio selector threshold (4 transmitters/receivers)		2.381 (1.08)	31.50 (0.80)
A	K809 10M	Audio control box KMA 24H71 KING with audio selector threshold (5 transmitters/receivers)		2.381 (1.08)	31.50 (0.80)
A	K815 00M	Audio selection box KMA 24-02 KING		2.910 (1.32)	22.44 (0.57)
A	K815 10M	Audio selection box KMA 24-02 KING		2.910 (1.32)	22.44 (0.57)
A	052300 M	Boom microphone headset H10-30 DAVID CLARK		1.190 (0.54)	55.12 (1.40)
		23-12 - COM 1 installation			
A	K805 20M	VHF 1 KY 196 A 30 KING + KMA 24-02 (with VHF capability)		7.231 (3.28)	32.28 (0.82)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K805 30M	VHF 1 KY 196 A 30 KING (without VHF capability)		3.858 (1.75)	18.11 (0.49)
A	054910 M	VHF 1 faired antenna DMC 70 1/AX or DMC 70 1/A DORNE & MARGOLIN		0.661 (0.30)	127.32 (3.23)
		23-13 - COM 2 installation			
A	K805 00M	VHF/COM 2 KY 196 A 30 KING		3.825 (1.73)	22.83 (0.58)
A	054920 M	VHF 2 faired antenna DMC 70 1/AX or DMC 70 1/A DORNE & MARGOLIN		0.661 (0.30)	57.95 (1.47)
		23-60 - Static dischargers			
A	J884 00M	ESD protection		/	/

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		24 - ELECTRICAL POWER			
		24-30 - DC generation			
R		Alternator 70A ALU 8421 or ALU 8521 PRESTOLITE/ELECTROSYSTEMS or LW 14324 LYCOMING		12.985 (5.89)	- 37.80 (- 0.96)
R		Battery G242-10AH GILL		26.962 (12.23)	- 2.76 (- 0.07)
R		Battery relay 70 117 221.5 ESSEX		0.772 (0.35)	- 1.18 (- 0.03)
R		Voltage regulator TB20 61215 P/N BOO 368.5 LAMAR		0.375 (0.17)	3.94 (0.10)
A	C839 00M	Converter 28 V - 14 V LT- 71A KGS		1.653 (0.75)	39.37 (1.00)
A	D689 10M	Ammeter 28 V (with 60A shunt)		0.551 (0.25)	28.74 (0.73)
A	D907 00M	Voltmeter-ammeter indicator ELECTRONICS INTERNATIONAL		0.805 (0.37)	26.77 (0.68)
		24-40 - External power supply			
A	C825 00M	Ground power receptacle		3.527 (1.60)	47.24 (1.20)
A	C835 00M	Ground power receptacle (NATO)		3.682 (1.67)	49.61 (1.26)
A	C841 00M	Ground power extension (With option C835 00M)		4.740 (2.15)	91.73 (2.33)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		25 - EQUIPMENT AND FURNISHINGS			
		25-10 - Cockpit			
O	F778 00M	Leather seats assembly "Grey 95" PMV with head-rests (F778 15M) :			
		- Front seats (Qty 2) PMV		58.598 (26.85)	49.21 (1.25)
		- Rear seat PMV		17.064 (7.74)	84.65 (2.15)
O	F778 10M	Leather seats assembly "Chanel 95" PMV with head-rests (F778 25M) :			
		- Front seats (Qty 2) PMV		58.598 (26.85)	49.21 (1.25)
		- Rear seat PMV		17.064 (7.74)	84.65 (2.15)
A	F779 15M	Front head-rests "Blue 90" (Qty 2)		3.417 (1.55)	51.18 (1.30)
A	F879 15M	Front head-rests "Blue 95" (Qty 2) PMV		3.461 (1.57)	55.12 (1.40)
A	F879 25M	Front head-rests "Ficelle 95" (Qty 2) PMV		3.461 (1.57)	55.12 (1.40)
A	F879 35M	Rear head-rests "Blue 95" (Qty 2) PMV		3.461 (1.57)	90.55 (2.30)
A	F879 45M	Rear head-rests "Ficelle 95" (Qty 2) PMV		3.461 (1.57)	90.55 (2.30
O	067800 M	Leather seats assembly "Grey" PMV with head-rests (067815 M) :			
		- Front seats (Qty 2) PMV		48.060 (21.80)	49.21 (1.25)
		- Rear seat PMV		19.555 (8.87)	84.65 (2.15)
O	067810 M	Leather seats assembly "Chanel" PMV with head-rests (067825 M)			
		- Front seats (Qty 2) PMV		48.060 (21.80)	49.21 (1.25)
		- Rear seat PMV		19.555 (8.87)	84.65 (2.15)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	067815 M	Leather head-rests "Grey" (Qty 2)		3.086 (1.40)	55.12 (1.40) or 90.55 (2.30)
O	067820 M	Leather seats assembly "Grey" PMV with head-rests (067815 M) (Extended version) :			
		- Front seats (Qty 2) PMV		48.060 (21.80)	49.21 (1.25)
		- Rear seat PMV		19.555 (8.87)	84.65 (2.15)
A	067825 M	Leather head-rests "Chanel" (Qty 2)		3.086 (1.40)	55.12 (1.40) or 90.55 (2.30)
O	067830 M	Leather seats assembly "Chanel" PMV with head-rests (067825M) (Extended version) :			
		- Front seats (Qty 2) PMV		48.060 (21.80)	49.21 (1.25)
		- Rear seat PMV		19.555 (8.87)	84.65 (2.15)
A	067915 M	Head-rests "Cendre" (Qty 2)		2.161 (0.98)	55.12 (1.40) or 90.55 (2.30)
A	067925 M	Head-rests "Sable" (Qty 2)		2.161 (0.98)	55.12 (1.40) or 90.55 (2.30)
A	067935 M	Head-rests "Blue 95" (Qty 2) PMV		2.161 (0.98)	55.12 (1.40) or 90.55 (2.30)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	067945 M	Head-rests "Ficelle 95" (Qty 2) PMV		2.161 (0.98)	55.12 (1.40) or 90.55 (2.30)
A	067955 M	Rear head-rests "Blue 95" (Qty 2) PMV		3.461 (1.57)	90.55 (2.30)
A	067965 M	Rear head-rests "Ficelle 95" (Qty 2) PMV		3.461 (1.57)	90.55 (2.30)
		25-11 - Front seats			
R		Front seats TB10 74030		18.298 (8.30)	49.21 (1.25)
R		Front seats TB10 74095		23.622 (10.72)	51.18 (1.30)
R		Front seats TB10 74106x00/01		24.625 (11.17)	49.21 (1.25)
R		Front seats TB10 74106x02/03		25.055 (11.37)	49.21 (1.25)
O	F779 00M	Front seats "Blue 90" (Qty 2)		52.117 (23.64)	49.21 (1.25)
O	F879 00M	Front seats "Blue 95" (Qty 2) PMV		52.976 (24.03)	49.21 (1.25)
O	F879 10M	Front seats "Ficelle 95" (Qty 2) PMV		52.976 (24.03)	49.21 (1.25)
O	067900 M	Front seats "Cendre" (Qty 2) with head-rests (067915 M)		45.194 (20.50)	49.21 (1.25)
O	067910 M	Front seats "Sable" (Qty 2) with head-rests (067925M)		45.194 (20.50)	49.21 (1.25)
O	067940 M	Front seats "Blue 95" (Qty 2) PMV with head-rests (067935 M)		45.194 (20.50)	49.21 (1.25)
O	067950 M	Front seats "Ficelle 95" (Qty 2) PMV with head-rests (067945 M)		45.194 (20.50)	49.21 (1.25)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
O	067980 M	Front seats "Blue 95" (Qty 2) PMV with head-rests (067935 M)		52.271 (22.73)	49.21 (1.25)
O	067990 M	Front seats "Ficelle 95" (Qty 2) PMV with head-rests (067945 M)		52.271 (22.73)	49.21 (1.25)
O	080000 M	L.H. or R.H. front seat back-off installation (Pre-MOD.89)		0.331 (0.15)	37.80 (0.96)
O	080010 M	L.H. front seat back-off installation (Post-MOD.89)		0.882 (0.40)	37.80 (0.96)
O	080020 M	R.H. front seat back-off installation (Post-MOD.89)		0.882 (0.40)	37.80 (0.96)
O	100140 M	Tilting front seat "Blue 95"		18.300 (8.30)	49.21 (1.25)
O	100440 M	Tilting front seat "Ficelle 95"		18.300 (8.30)	49.21 (1.25)
		25-12 - Rear bench			
R		Rear seat : Back + seating TB10 74027		13.448 (6.10)	84.65 (2.15)
R		Rear seat : Back + seating TB10 74107		14.616 (6.63)	84.65 (2.15)
O	F879 20M	Rear seat "Blue 95" PMV		18.144 (8.23)	84.65 (2.15)
O	F879 30M	Rear seat "Ficelle 95" PMV		18.144 (8.23)	84.65 (2.15)
O	F899 00M	Rear bench "Blue 95" with arm-rest "LUXE" (Post-MOD.90)		15.939 (7.23)	84.65 (2.15)
O	F899 10M	Rear bench "Ficelle 95" with arm-rest "LUXE" (Post-MOD.90)		15.939 (7.23)	84.65 (2.15)
O	067920 M	Rear seat "Cendre" with head-rests (067915 M)		17.064 (7.74)	84.65 (2.15)
O	067930 M	Rear seat "Sable" with head-rests (067925 M)		17.064 (7.74)	84.65 (2.15)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
O	067960 M	Rear seat "Blue 95" PMV with head-rests (067935 M)		17.064 (7.74)	84.65 (2.15)
O	067970 M	Rear seat "Ficelle 95" PMV with head-rests (067945 M)		17.064 (7.74)	84.65 (2.15)
O	079900 M	Rear seat "Cendre" with central arm-rest		13.338 (6.05)	84.65 (2.15)
O	079910 M	Rear seat "Sable" with central arm-rest		13.338 (6.05)	84.65 (2.15)
O	079920 M	Rear seat "Blue 95" PMV with central arm-rest		13.338 (6.05)	84.65 (2.15)
O	079930 M	Rear seat "Ficelle 95" PMV with central arm-rest		13.338 (6.05)	84.65 (2.15)
		25-13 - Safety and harnesses belts			
R		Front seat belt TB10 79013 SECURAIGLON		2.646 (1.20)	47.24 (1.20)
R		Front seat belt TB10 79013 TRW REPA		2.646 (1.20)	47.24 (1.20)
R		Front seat belt TB10 79013 P/N 10.4022.000.002 ANJOU AERO		2.646 (1.20)	47.24 (1.20)
R		Rear seat belt TB10 79014 P/N 344.22.070.04.300 AIGLON		1.124 (0.51)	94.49 (2.40)
A	050210 M	3rd rear safety belt "Black"		0.882 (0.40)	84.65 (2.15)
O	056320 M	Rear reel safety belt		2.646 (1.20)	106.30 (2.70)
A	063700 M	Rear seat shoulder harness (Qty 2)		2.249 (1.02)	94.49 (2.40)
A	064000 M	3rd rear reel safety belt		1.918 (0.87)	106.30 (2.70)
A	064100 M	3rd rear seat shoulder harness		1.124 (0.51)	94.49 (2.40)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		25-14 - Central pedestal			
S		Lighter R.V.I : - Plug 5000 361 037 R.V.I - Fixed part 5000 361 635 R.V.I - Light 5000 462 170 R.V.I		0.154 (0.07)	37.80 (0.96)
S		Front ash-tray		0.882 (0.40)	43.31 (1.10)
S		Rear ash-tray		0.353 (0.16)	65.35 (1.66)
		25-15 - Upper duct			
A	052630 M	Sun visor PLEXIGLAS - Model 86		0.683 (0.31)	41.34 (1.05)
A	052640 M	Sun visor PLEXIGLAS - Model 91		0.683 (0.31)	41.34 (1.05)
		25-17 - Instrument panel			
O	057730 M	R.H. large instrument panel		4.740 (2.15)	23.62 (0.60)
O	057740 M	R.H. large instrument panel		4.740 (2.15)	23.62 (0.60)
		25-60 - Emergency equipment			
A	F902 00M	Axe		2.535 (1.15)	37.40 (0.95)
A	F903 00M	Life jackets (Qty 4)		8.818 (4.00)	124.80 (3.17)
A	H881 00M	First aid case		4.409 (2.00)	90.95 (2.31)
		25-61 - Emergency locator transmitter			
A	25-001A	Emergency locator transmitter ELT 91 SOCATA P/N ELT 91A 2560 000 000 (TSO)		3.351 (1.52)	103.15 (2.62)
A	J908 00M	Three-frequency emergency locator transmitter ELT 96 SOCATA (EUROCAE)		3.638 (1.65)	106.30 (2.70)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	J908 10M	Three-frequency emergency locator transmitter ELT 96 SOCATA (EUROCAE)		4.079 (1.85)	106.69 (2.71)
A	J924 00M	Emergency locator transmitter ELT 90 SOCATA (EUROCAE)		3.351 (1.52)	103.15 (2.62)
A	J931 00M	Emergency locator transmitter ELT 200 ARTEX (For export only)		2.866 (1.30)	103.15 (2.62)
A	J931 50M	Provisions assy for ELT 200 ARTEX (For export only)		0.220 (0.10)	103.15 (2.62)
A	J933 00M	Three-frequency emergency locator transmitter ELT 97 SOCATA (TSO)		3.638 (1.65)	106.30 (2.70)
A	051700 M	Emergency locator transmitter ELT 10 NARCO		3.307 (1.50)	119.29 (3.03)
A	051710 M	Emergency locator transmitter JOLLIET (aft baggage compartment)		3.086 (1.40)	119.29 (3.03)
A	051730 M	Emergency locator transmitter JE2 NG JOLLIET (forward baggage compartment)		3.086 (1.40)	109.45 (2.78)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		26 - FIRE PROTECTION			
A	F823 00M	Cabin halon extinguisher FH 15N AREOFEU		4.409 (2.00)	37.80 (0.96)
A	F823 10M	Cabin halon extinguisher H1-10 AIR MAIP		4.850 (2.20)	37.80 (0.96)
A	F823 20M	Cabin halon extinguisher H1-10 AIR MAIP (with special support)		5.313 (2.41)	37.80 (0.96)
A	F823 30M	Cabin halon extinguisher L'HOTELLIER		3.638 (1.65)	37.80 (0.96)
A	F883 00M	Cabin powder extinguisher AFT 15N AREOFEU		4.608 (2.09)	37.80 (0.96)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		27 - FLIGHT CONTROLS			
		27-20 - Yaw control			
R		Yaw, roll controls interconnection		2.138 (0.97)	16.14 (0.41)
		27-50 - Wing flaps (control)			
R		Flaps actuator TB10 61235 P/N 8375 AVIAC		5.071 (2.30)	61.81 (1.57)
R		Flaps actuator TB10 61235 P/N 700-239 LPMI		4.365 (1.98)	61.81 (1.57)
R		Flaps actuator TB10 61237 P/N 8308 AVIAC		5.534 (2.51)	61.81 (1.57)
O	C569 00M	Flaps preselection		0.220 (0.10)	39.37 (1.00)
O	C569 10M	Flaps preselection (with new switch)		0.220 (0.10)	39.37 (1.00)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		28 - FUEL SYSTEM			
		28-10 - Fuel tanks			
A	058030 M	Ferry fuel tank (TB20 52925)		63.933 (29.00)	78.35 (1.99)
A	058040 M	Ferry fuel tank (TB20 52925)		63.933 (29.00)	78.35 (1.99)
		28-20 - Fuel supply			
R		Fuel electric pump TB20 61218 P/N 8120-H WELDON		2.425 (1.10)	24.80 (0.63)
R		Fuel electric pump TB20 61218 P/N B8120-H WELDON		2.425 (1.10)	24.80 (0.63)
R		Fuel selector/filter TB20 52026		1.301 (0.59)	44.49 (1.13)
		28-40 - Fuel indication			
O	C866 00M	Fuel low level warning		0.728 (0.33)	33.46 (0.85)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		31 - INDICATING/RECORDING SYSTEMS			
		31-10 - Control and indicating panels			
R		Engine and fuel controls T200 76001		1.102 (0.50)	24.80 (0.63)
O	F634 00M	Raised radio console		3.131 (1.42)	23.62 (0.60)
		31-20 - Independent instruments			
A	D516 00M	Stop watch DODANE		0.441 (0.20)	35.43 (0.90)
A	D571 00M	Hourmeter DATCON		0.551 (0.25)	23.62 (0.60)
A	D638 00M	Digital chronometer (L.H. station) ASTROTECH		0.507 (0.23)	35.43 (0.90)
A	D638 10M	Digital chronometer (R.H. station) ASTROTECH		0.507 (0.23)	35.43 (0.90)
A	D638 20M	Digital chronometer (R.H. station) ASTROTECH		0.507 (0.23)	35.43 (0.90)
A	D680 00M	Quartz chronometer THOMMEN (60 minutes elapsed time indicator) P/N Q18.945.22.28.1KB or Q18.945.22.28.1ME		0.485 (0.22)	35.43 (0.90)
A	D680 10M	Quartz chronometer THOMMEN (60 minutes elapsed time indicator) P/N Q18.945.22.28.1KB or Q18.945.22.28.1ME (R.H. station)		0.485 (0.22)	35.43 (0.90)
A	D680 20M	Quartz chronometer THOMMEN (60 minutes elapsed time indicator) P/N Q18.945.22.28.1KB or Q18.945.22.28.1ME		0.485 (0.22)	35.43 (0.90)
A	D680 30M	Quartz chronometer THOMMEN (12 minutes elapsed time indicator) P/N Q18.948.22.28.1ME		0.485 (0.22)	35.43 (0.90)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	D806 00M	Three-axis accelerometer		0.992 (0.45)	23.62 (0.60)
A	D829 00M	Mechanical chronometer THOMMEN P/N B18.945.22.28.1K		0.485 (0.22)	35.43 (0.90)
A	D829 10M	Mechanical chronometer THOMMEN P/N B18.945.22.28.1K (R.H. station)		0.485 (0.22)	35.43 (0.90)
A	D833 00M	Digital clock/chronometer LC2 ASTROTECH		0.331 (0.15)	23.62 (0.60)
A	D844 00M	Mechanical chronometer Type 11.1 BREGUET		0.441 (0.20)	35.43 (0.90)
O	D911 00M	Hourmeter "Flight duration" DATCON NOTE : Tachometer-Hourmeter, refer to ATA 77		0.661 (0.30)	31.50 (0.80)
		31-50 - Central warning systems			
R		Advisory panel TB20 61222 (if GPS installed, refer to ATA 34)		0.397 (0.18)	22.83 (0.58)
A	C561 00M	Starter warning light		0.132 (0.06)	39.37 (1.00)
O	C900 00M	Advisory panel (extended) (Not valid for U.K. aircraft)		0.529 (0.24)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		32 - LANDING GEARS			
		32-10 - Main landing gear			
S		L.H. fairing TB10 48012006		11.905 (5.40)	62.20 (1.58)
S		R.H. fairing TB10 48012007		11.905 (5.40)	62.20 (1.58)
		32-20 - Nose landing gear			
S		Front fairing TB10 48014004 Rear fairing TB10 48014005		6.173 (2.80)	- 10.24 (- 0.26)
O	052500 M	Airplane without LDG fairings		- 29.983 (- 13.60)	47.24 (1.20)
		32-40 - Wheels and brakes			
R		Main LDG wheel assy (2) 40-97E Type III CLEVELAND		5.842 (2.65)	59.84 (1.52)
R		Main LDG wheel assy (2) 40-97F CLEVELAND		6.482 (2.94)	59.84 (1.52)
R		Main LDG brake assy (2) 91.50 CLEVELAND		1.918 (0.87)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 PLYS GOODYEAR (Pre-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 PRTT DUNLOP (Pre-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 PR P/N 606C61.6 GOODYEAR (Post-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 120TT MICHELIN (Post-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tube (2) 6.00-6 DUNLOP (Pre-MOD.118 or MOD.120)		1.653 (0.75)	59.84 (1.52)
R		Main LDG tube (2) P/N 092-315-0 MICHELIN (Post-MOD.118 or MOD.120)		2.425 (1.10)	59.84 (1.52)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
R		Main LDG tube (2) 15.6.00-6 TR GOODYEAR (Post-MOD.118 or MOD.120)		1.653 (0.75)	59.84 (1.52)
R		Nose LDG wheel assy 40-77 B CLEVELAND		2.822 (1.28)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 PRTT DUNLOP		6.393 (2.90) or 5.798 (2.63)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 120TT MICHELIN		6.393 (2.90)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 120TT AVIATOR		5.489 (2.49)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 PR P/N 505C61.8 GOODYEAR		5.291 (2.40)	- 16.93 (- 0.43)
R		Nose LDG tube 5.00-5 DUNLOP		1.455 (0.66)	- 16.93 (- 0.43)
R		Nose LDG tube TR67A P/N 092-308-0 MICHELIN		1.455 (0.66)	- 16.93 (- 0.43)
R		Nose LDG tube 5.00-5 TR67 GOODYEAR		1.455 (0.66)	- 16.93 (- 0.43)
A	052100 M	Braking control (R.H. post)		3.307 (1.50)	11.81 (0.30)
		32-60 - Position indicating system and alarms			
A	B877 00M	LDG simulator assy		0.595 (0.27)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		33 - LIGHTS			
		33-10 - Cockpit			
S		Rear cabin lighting TB20 64200		0.507 (0.23)	65.35 (1.66)
S		Instrument panel lighting TB20 64201		0.485 (0.22)	23.62 (0.60)
S		Front cabin lighting (emerg.) TB20 64200		0.220 (0.10)	44.09 (1.12)
A	E588 00M	Maps reading light		0.176 (0.08)	25.59 (0.65)
A	E873 00M	Emergency lighting system		4.079 (1.85)	104.72 (2.66)
		33-40 - External lighting			
S		Landing light G.E. 4591		0.353 (0.16)	35.43 (0.90)
S		Taxi light G.E. 4626		0.353 (0.16)	35.43 (0.90)
S		L.H. navigation light 3131 LABINAL		0.198 (0.09)	34.65 (0.88)
S		R.H. navigation light 3133 LABINAL		0.198 (0.09)	34.65 (0.88)
S		L.H. navigation light W1250 PR WHELEN		0.198 (0.09)	34.65 (0.88)
S		R.H. navigation light W1250 PG WHELEN		0.198 (0.09)	34.65 (0.88)
S		Rear navigation light 3175 LABINAL		0.154 (0.07)	239.76 (6.09)
S		Rear navigation light A555A-V-28V WHELEN		0.132 (0.06)	239.76 (6.09)
A	E537 00M	Strobe light JPC on vertical stabilizer		1.874 (0.85)	145.67 (3.70)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	E537 10M	Strobe lights JPC on vertical stabilizer and under fuselage		3.197 (1.45)	140.55 (3.57)
A	E537 20M	Strobe light JPC on vertical stabilizer (red glass)		1.874 (0.85)	145.67 (3.70)
A	E824 00M	Anticollision lights WHELEN (wing tips) A490A TS DF 14-28 - Light A625		5.423 (2.46)	107.48 (2.73)
A	E824 10M	Anticollision lights WHELEN (wing tips) A490A TS CF 14-28 - Light A625		5.423 (2.46)	107.48 (2.73)
A	E824 20M	Anticollision lights WHELEN (wing tips) A490A TS DF 14-28 - Light A625D		5.423 (2.46)	107.48 (2.73)
A	E824 30M	Anticollision lights WHELEN (wing tips) A490A TS CF 14-28 - Light A625D		5.423 (2.46)	107.48 (2.73)
A	E824 40M	Anticollision lights WHELEN (wing tips) A490A TS CF 14-28 - Light A625 P/N 01-077058-15		5.423 (2.46)	107.48 (2.73)
O	E826 00M	Strobe light WHELEN (tail) A490A TS DF 14-28 - Light A500 ASP		2.094 (0.95)	145.67 (3.70)
O	E826 10M	Strobe light WHELEN (tail) A490A TS CF 14-28 - Light A500 SP		2.094 (0.95)	145.67 (3.70)
O	E826 20M	Strobe light WHELEN (tail) A490A TS CF 14-28 - Light A500A		2.094 (0.95)	145.67 (3.70)
O	E848 00M	Light control box JX 128 FLASHELEK		0.551 (0.25)	55.31 (1.41)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		34 - NAVIGATION			
		34-10 - Flight environment data			
		34-11 - Air data systems			
R		Altimeter TB20 76222 P/N 5934 PD3 Code A253 UNITED INSTRUMENTS		0.816 (0.37)	25.59 (0.65)
R		True airspeed indicator with integrated lighting T200 76003 P/N 8100 Code B675 UNITED INSTRUMENTS		0.728 (0.33)	24.80 (0.63)
O	C515 10M	Heated pitot (Not valid for Russian & Ukrainian aircraft)		1.190 (0.54)	53.15 (1.35)
A	C635 00M	2nd heated pitot (R.H. wing)		1.190 (0.54)	47.24 (1.20)
A	D681 00M	2nd altimeter 20000 ft		1.433 (0.65)	19.69 (0.50)
A	D682 00M	Vertical speed indicator with integrated lighting P/N 7000 Code C83 UNITED INSTRUMENTS		1.014 (0.46)	23.62 (0.60)
A	D803 10M	Installation of 2nd airspeed indicator		1.213 (0.55)	23.62 (0.60)
A	D811 00M	Alti-coder KE 127 KING		1.433 (0.65)	17.72 (0.45)
A	D830 00M	Alti-coder 20000 ft TRANSCALL		1.433 (0.65)	17.72 (0.45)
A	D831 00M	Alti-coder 30000 ft TRANSCALL		1.433 (0.65)	17.72 (0.45)
A	D832 00M	2nd altimeter 35000 ft		1.433 (0.65)	19.69 (0.50)
A	D897 00M	2nd vertical speed indicator (R.H. station) P/N 7000 C83 UNITED INSTRUMENTS		1.521 (0.69)	23.62 (0.60)
A	D915 00M	Metric altimeter # 3 P/N 5940 UNITED INSTRUMENTS		0.926 (0.42)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
O	K608 20M	Alti-coder KEA 130A (35000 ft) KING		1.764 (0.80)	21.65 (0.55)
O	K608 30M	Alti-coder 20000 ft UNITED INSTRUMENTS		1.764 (0.80)	21.65 (0.55)
A	N846 00M	Altitude encoder AR850 NARCO		1.323 (0.60)	19.69 (0.50)
A	051100 M	Alternate static source (in cabin)		0.331 (0.15)	23.62 (0.60)
		34-13 - Outside temperature			
A	D804 00M	Outside air temperature indicator (standard connector on sensor)		0.551 (0.25)	23.62 (0.60)
A	D804 10M	Outside air temperature indicator (water-tight connector on sensor)		0.551 (0.25)	23.62 (0.60)
A	D804 20M	Outside air temperature indicator (water-tight connector on sensor) (OPT10 D804 10M retrofit)		0.551 (0.25)	23.62 (0.60)
A	D910 00M	Outside air temperature indicator (standard connector on sensor) DAVTRON		0.551 (0.25)	23.62 (0.60)
A	D910 10M	Outside air temperature indicator (water-tight connector on sensor) DAVTRON		0.551 (0.25)	23.62 (0.60)
A	D910 20M	Outside air temperature indicator (water-tight connector on sensor) DAVTRON		0.551 (0.25)	23.62 (0.60)
		34-20 - Attitude and direction			
		34-21 - Heading reference system			
A	34-302A	HSI assy KCS 55A HONEYWELL		12.721 (5.77)	67.32 (1.71)
A	D683 40M	Air-driven heading indicator AID		2.888 (1.31)	21.65 (0.55)
A	D914 00M	Heading gyro indicator SIGMA-TEK (on L.H. instrument panel)		2.668 (1.21)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	D914 10M	Heading gyro indicator SIGMA-TEK (on R.H. instrument panel)		2.976 (1.35)	19.69 (0.50)
A	D922 00M	Electric heading gyro indicator 205-1BL BFG		3.219 (1.46)	23.62 (0.60)
A	K660 00M	HSI assy KING without heading recopy		12.720 (5.77)	67.32 (1.71)
A	K660 10M	HSI assy KING with heading recopy capability		12.720 (5.77)	67.32 (1.71)
A	K660 20M	HSI assy KING with heading recopy capability (30/400 Hz) with vertical KA 51B		12.720 (5.77)	67.32 (1.71)
A	K660 30M	HSI assy KING with heading recopy capability (30/400 Hz) with horizontal KA 51B		12.720 (5.77)	67.32 (1.71)
A	K660 40M	HSI assy KING with heading recopy capability (30/400 Hz) (lighting control at R.H. station)		12.720 (5.77)	67.32 (1.71)
A	K660 50M	HSI assy KING with horizontal KA 51B (if GPS KLN 90B installed)		12.720 (5.77)	67.32 (1.71)
A	K660 60M	HSI assy KING with vertical KA 51B (if GPS KLN 90B installed)		12.720 (5.77)	67.32 (1.71)
A	067140 M	Heading indicator KG 107		2.690 (1.22)	20.47 (0.52)
		34-22 - Turn and bank indication			
R		Slip indicator Type 57 AIR PRECISION		0.110 (0.05)	23.62 (0.60)
R		Slip indicator P/N 35216 WINTER		0.110 (0.05)	23.62 (0.60)
O	34-002A	Electrical turn coordinator UNITED INSTRUMENTS		1.323 (0.60)	23.62 (0.60)
O	D691 00M	Turn-and-bank indicator UNITED INSTRUMENTS		1.675 (0.76)	23.62 (0.60)
O	D697 00M	Electrical turn coordinator CASTLEBERRY		1.698 (0.77)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	D818 10M	Slip indicator (R.H. station) UNITED INSTRUMENTS		1.675 (0.76)	23.62 (0.60)
		34-23 - Magnetic compass			
R		Compass TB20 76229 P/N C2400 L 4P (28 V) AIRPATH		0.595 (0.27)	20.47 (0.52)
		34-24 - ADI and standby horizon			
A	34-001A	Electrical attitude gyro indicator 1100-28L(5F) BFG (Not valid for U.K. aircraft)		2.866 (1.30)	24.41 (0.62)
A	34-001C	Electrical attitude gyro indicator 1100-28LS(5F) BFG (on L.H. instrument panel) (Not valid for U.K. aircraft)		2.866 (1.30)	24.41 (0.62)
A	34-001D	Electrical attitude gyro indicator 1100-28LS(5F) BFG (on L.H. instrument panel) (Not valid for U.K. aircraft)		2.866 (1.30)	24.41 (0.62)
A	D683 00M	Attitude gyro and heading gyro indicators AID (Not valid for U.K. aircraft)		5.093 (2.31)	21.65 (0.55)
A	D683 20M	Attitude gyro indicator AID (Not valid for U.K. aircraft)		2.205 (1.00)	21.65 (0.55)
A	D802 00M	Electrical attitude gyro indicator 305-2BL (on L.H. instrument panel) (Not valid for U.K. aircraft)		2.690 (1.22)	23.62 (0.60)
A	D802 10M	Electrical attitude gyro indicator 305-2BL-S (Not valid for U.K. aircraft)		2.690 (1.22)	23.62 (0.60)
A	D802 20M	Electrical attitude gyro indicator 305-2BL-S (Not valid for U.K. aircraft)		2.690 (1.22)	23.62 (0.60)
A	D802 40M	Electrical attitude gyro indicator 305-2BL (on R.H. instrument panel) (Not valid for U.K. aircraft)		2.690 (1.22)	23.62 (0.60)
A	D802 60M	Electrical attitude gyro indicator B305-2BL (on R.H. instrument panel) (Not valid for U.K. aircraft)		2.690 (1.22)	23.62 (0.60)
A	D867 00M	Electric attitude gyro indicator RCA26 BK-12 (R.H. seat) RC ALLEN (Not valid for U.K. aircraft)		2.315 (1.05)	21.65 (0.55)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	D913 00M	Attitude gyro indicator SIGMA-TEK (Not valid for U.K. aircraft)		2.161 (0.98)	23.62 (0.60)
A	067130 M	Attitude gyro indicator KG 258 for KAP 100 (Not valid for U.K. aircraft)		3.086 (1.40)	20.47 (0.52)
A	067230 M	Attitude gyro indicator KG 258 for KAP 150 (Not valid for U.K. aircraft)		3.086 (1.40)	20.47 (0.52)
A	067330 M	Attitude gyro indicator with Flight Director KI 256 for KFC 150		3.285 (1.49)	20.47 (0.52)
		34-25 - Radio magnetic indication			
A	K584 00M	RMI KI 22900 (without switching) KING		3.086 (1.40)	21.65 (0.55)
A	K584 10M	RMI KI 22900 (with switching) KING		3.307 (1.50)	21.65 (0.55)
A	K819 00M	RMI KNI 582 KING		3.417 (1.55)	21.65 (0.55)
		34-30 - Landing and taxiing aids			
		34-31 - Marker			
A	K676 00M	Marker receiver indicator KR 21 KING		1.257 (0.57)	21.65 (0.55)
		34-40 - Independent position determining			
		34-41 - Stormscope			
A	34-502A	Stormscope WX 500 BFG		4.960 (2.25)	117.32 (2.98)
A	J820 00M	Stormscope WX 1000 BFG (on panel strip)		15.432 (7.00)	83.07 (2.11)
A	J820 10M	Stormscope WX 1000 BFG (on R.H. instrument panel)		15.432 (7.00)	83.07 (2.11)
A	J828 00M	Stormscope WX 1000 + BFG		15.432 (7.00)	83.07 (2.11)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	J828 10M	Stormscope WX 1000 + BFG (with converter assy)		15.432 (7.00)	83.07 (2.11)
A	J918 00M	Stormscope WX-900 BFG		4.806 (2.18)	85.43 (2.17)
		34-50 - Dependent position determining			
		34-51 - NAV 1 installation			
A	K654 00M	Receiver VOR KN 53 NAV 1 VOR/ILS KING		5.026 (2.28)	68.11 (1.73)
A	K654 10M	Receiver VOR KN 53 NAV 1 VOR/LOC KING		6.790 (3.08)	55.12 (1.40)
A	K662 00M	NAV system KNS 81-10 KING		7.496 (3.40)	52.76 (1.34)
A	K662 20M	NAV system KNS 81-12 KING		7.496 (3.40)	52.76 (1.34)
A	K663 00M	VHF assy COM1/NAV1 (VOR/LOC) KX 155 with audio amplifier (with VHF capability) KING		11.486 (5.21)	35.43 (0.90)
A	K663 10M	VHF assy COM1/NAV1 (VOR/ILS) KX 155 (with VHF capability) KING		11.596 (5.26)	48.82 (1.24)
A	K663 40M	VHF assy COM1/NAV1 (VOR/LOC) KX 155 (with VHF capability) KING		11.486 (5.21)	35.43 (0.90)
A	K663 50M	VHF assy COM1/NAV1 (VOR/LOC) KX 155 (without VHF capability) KING		8.091 (3.67)	30.71 (0.78)
A	K663 60M	VHF assy COM1/NAV1 (VOR/ILS) KX 155 (without VHF capability) KING		8.201 (3.72)	49.21 (1.25)
A	K663 70M	VHF assy COM1/NAV1 (VOR/LOC) KX 155 with audio amplifier (without VHF capability) KING		8.091 (3.67)	30.71 (0.78)
A	K666 00M	VHF 1 VOR/LOC KX165-25 KING		12.566 (5.70)	39.37 (1.00)
A	K666 10M	VHF 1 VOR/ILS KX165-25 KING		14.087 (6.39)	35.43 (0.90)
A	K667 00M	NAV system KNS 80 KING		8.598 (3.90)	54.33 (1.38)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K812 00M	VHF assy COM1/NAV1 (VOR/ILS) KX 165 (with VHF capability) KING		11.118 (5.07)	49.61 (1.26)
A	K812 20M	VHF assy COM1/NAV1 (VOR/LOC) KX 165 (with VHF capability) KING		11.552 (5.24)	35.43 (0.90)
A	K812 50M	VHF assy COM1/NAV1 (VOR/LOC) KX 165 (without VHF capability) KING		8.157 (3.70)	30.71 (0.78)
A	K812 60M	VHF assy COM1/NAV1 (VOR/ILS) KX 165 (without VHF capability) KING		7.782 (3.53)	50.39 (1.28)
A	K813 00M	VOR/ILS indicator KI 206-04 KING		1.631 (0.74)	21.65 (0.55)
A	K813 10M	VOR/ILS indicator KI 206-05 KING		1.764 (0.80)	21.65 (0.55)
A	K814 00M	VOR/ILS indicator KI 204 KING		1.918 (0.87)	21.65 (0.55)
A	K847 00M	Converter VOR/LOC KN 72 KING		1.653 (0.75)	43.31 (1.10)
		34-52 - NAV 2 installation			
A	K654 20M	Receiver VOR KN 53 NAV 2 VOR/ILS KING		5.379 (2.44)	63.78 (1.62)
A	K654 30M	Receiver VOR KN 53 NAV 2 VOR/LOC KING		6.967 (3.16)	59.05 (1.50)
A	K663 20M	VHF assy COM2/NAV2 (VOR/LOC) KX 155 KING		7.760 (3.52)	24.80 (0.63)
A	K663 30M	VHF assy COM2/NAV2 (VOR/ILS) KX 155 KING		6.900 (3.13)	24.80 (0.63)
A	K666 20M	VHF 2 VOR/LOC KX165-25 KING		5.335 (2.42)	39.37 (1.00)
A	K666 30M	VHF 2 VOR/ILS KX165-25 KING		8.818 (4.00)	48.82 (1.24)
A	K812 10M	VHF assy COM2/NAV2 (VOR/ILS) KX 165 KING		6.482 (2.94)	24.80 (0.63)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K812 30M	VHF assy COM2/NAV2 (VOR/LOC) KX 165 KING		7.716 (3.50)	24.80 (0.63)
A	K813 00M	VOR/ILS indicator KI 206-04 KING		1.631 (0.74)	21.65 (0.55)
A	K813 10M	VOR/ILS indicator KI 206-05 KING		1.764 (0.80)	21.65 (0.55)
A	K814 00M	VOR/ILS indicator KI 204 KING		1.918 (0.87)	21.65 (0.55)
		34-53 - Transponder			
A	34-501A	Transponder GTX 320 GARMIN		3.086 (1.40)	29.53 (0.75)
A	34-504A	Transponder GTX 327 GARMIN		3.968 (1.80)	21.65 (0.55)
A	K656 00M	ATC KT 76 A KING on radio console		3.682 (1.67)	20.08 (0.51)
A	K656 20M	ATC KT 76 A KING on R.H. panel strip (with support)		3.836 (1.74)	21.65 (0.55)
A	K876 00M	Transponder ATC KT 71 KING		4.630 (2.10)	22.44 (0.57)
A	K876 10M	Transponder ATC KT 71 KING (on R.H. panel strip)		4.630 (2.10)	22.44 (0.57)
A	K929 00M	Transponder ATC KT 76C KING (on R.H. panel strip)		3.527 (1.60)	23.62 (0.60)
		34-54 - Automatic Direction Finder (ADF)			
A	34-300A	ADF assy KR 87 SC+ (Indicator KI 227.01) HONEYWELL		8.885 (4.03)	90.16 (2.29)
A	34-300B	ADF assy KR 87 SC+ (Indicator KI 227.00) HONEYWELL		8.885 (4.03)	90.16 (2.29)
A	34-300C	ADF assy KR 87 SC+ (Indicator KI 229) HONEYWELL		11.045 (5.01)	76.77 (1.95)
A	34-300D	ADF assy KR 87 SC+ (Indicator KNI 582) HONEYWELL		11.177 (5.07)	76.77 (1.95)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K655 00M	ADF KR 87.01/04 (Indicator KI 227.00) KING (on radio console)		8.730 (3.96)	90.16 (2.29)
A	K655 10M	ADF KR 87.01/04 (Indicator KI 227.01) KING (on radio console)		8.730 (3.96)	90.16 (2.29)
A	K655 20M	ADF KR 87 KING		8.025 (3.64)	96.06 (2.44)
A	K655 40M	ADF KR 87 (Indicator KI 227.01) KING (on R.H. panel strip)		8.730 (3.96)	90.16 (2.29)
A	K917 00M	ADF2 KR 87 KING		9.436 (4.28)	94.49 (2.40)
		34-55 - DME installation			
A	34-305A	DME KN 62A SC+ HONEYWELL		3.527 (1.60)	30.71 (0.78)
A	K657 00M	DME KN 62A KING		3.682 (1.67)	21.26 (0.54)
A	K657 10M	DME KN 64 KING		3.682 (1.67)	21.26 (0.54)
A	K664 00M	DME KN 63 KING		5.489 (2.49)	40.94 (1.04)
		34-57 - Global Positioning System (GPS)			
A	34-500A	Color Skymap capability CM 2000 SKYFORCE		0.970 (0.44)	30.51 (0.78)
A	J870 00M	GPS 100 AVD-140 GARMIN interfaced with HSI and A/P (VFR use only), including advisory panel TB20 61760 (For export only)		4.145 (1.88)	22.44 (0.57)
A	J870 10M	GPS 100 AVD-140 GARMIN "Stand alone"		3.593 (1.63)	22.44 (0.57)
A	J870 20M	GPS 100 AVD-140 GARMIN "Stand alone", with audio attenuation, including extended advisory panel		3.593 (1.63)	22.44 (0.57)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	J870 30M	GPS 100 AVD-140 GARMIN interfaced with HSI and A/P, with audio attenuation (VFR use only), including advisory panel (For export only)		4.145 (1.88)	22.44 (0.57)
A	J870 40M	GPS 100 AVD-140 GARMIN interfaced with HSI, with audio attenuation (VFR use only), including advisory panel (For export only)		4.145 (1.88)	22.44 (0.57)
A	J925 00M	GPS 150 GARMIN "Stand alone"		4.696 (2.13)	25.60 (0.65)
A	K860 00M	GPS KLN 90A KING "Stand alone"		8.466 (3.84)	22.44 (0.57)
A	K860 10M	GPS KLN 90A KING interfaced with HSI and A/P, with RMI		9.171 (4.16)	21.65 (0.55)
A	K860 20M	GPS KLN 90A KING "Stand alone" with extended advisory panel		8.466 (3.84)	22.44 (0.57)
A	K860 30M	GPS KLN 90A KING interfaced with HSI, with RMI		9.171 (4.16)	21.65 (0.55)
A	K860 40M	GPS KLN 90A KING interfaced with HSI and A/P, without RMI (For export only)		9.171 (4.16)	21.65 (0.55)
A	K899 00M	GPS KLN 90B KING interfaced with HSI and A/P, without RMI (KA91 antenna) (For export only)		9.943 (4.51)	21.26 (0.54)
A	K899 10M	GPS KLN 90B KING interfaced with HSI and A/P, without RMI (KA92 antenna) (For export only)		9.943 (4.51)	21.26 (0.54)
A	K899 30M	GPS KLN 90B KING interfaced with HSI and A/P, with RMI (KA92 antenna) (English-speaking countries)		9.943 (4.51)	21.26 (0.54)
A	K920 00M	GPS KLN 89B KING "Stand alone"		4.519 (2.05)	25.20 (0.64)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K926 00M	GPS KLN 89B KING interfaced with HSI KI 525A (KCS 55A compass system)		5.578 (2.53)	22.83 (0.58)
A	K927 00M	GPS KLN 90B KING interfaced with HSI and A/P, without RMI (KA92 antenna)		9.943 (4.51)	21.26 (0.54)
		34-60 - Flight management computing			
		34-62 - Multifunction display			
A	34-304A	MFD KMD 550 HONEYWELL		6.614 (3.00)	21.65 (0.55)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		37 - VACUUM			
		37-11 - Distribution (normal)			
A	A816 00M	Vacuum system with : Pump AIRBORNE 211CC or		4.784 (2.17)	0
		Pump AIRBORNE 215CC or		2.205 (1.00)	0
		Pump CHAMPION CH215CC (with AIRBORNE filter) or		3.285 (1.49)	- 15.75 (- 0.40)
		Pump AERO ACCESSORIES AA215CC (with AIRBORNE filter)		3.285 (1.49)	- 15.75 (- 0.40)
A	A904 00M	Vacuum pump SIGMA-TEK (with filter)		5.225 (2.37)	- 3.54 (- 0.09)
A	A904 10M	Vacuum pump SIGMA-TEK (with filter) (when stormscope installed, refer to ATA 34)		5.225 (2.37)	- 3.54 (- 0.09)
A	067150 M	Vacuum system (without attitude gyro indicator, nor heading, nor HSI)		2.579 (1.17)	10.24 (0.26)
		37-12 - Distribution (emergency)			
A	C632 00M	Auxiliary dry air pump		12.456 (5.65)	30.31 (0.77)
		37-20 - Indicating			
A	063100 M	Vacuum system warning light		0.198 (0.09)	0.39 (0.01)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		52 - DOORS			
		52-10 - Access doors			
A	H889 00M	Door stop system (metallic doors)		1.653 (0.75)	49.21 (1.25)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		53 - FUSELAGE			
A	B896 00M	Tail cone protection		0.661 (0.30)	215.67 (5.48)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		56 - WINDOWS			
S		Colourless windows assy :		27.558 (12.50)	53.15 (1.35)
		- Windshield TB21 24001		11.023 (5.00)	27.56 (0.70)
		- Door windows TB10 25030		8.598 (3.90)	55.12 (1.40)
		- Rear side windows TB10 22030		7.937 (3.60)	86.61 (2.20)
O	058520 M	Tinted windows assy :		27.558 (12.50)	53.15 (1.35)
		- Windshield TB21 24001		11.023 (5.00)	27.56 (0.70)
		- Door windows TB10 25030		8.598 (3.90)	55.12 (1.40)
		- Rear side windows TB10 22030		7.937 (3.60)	86.61 (2.20)
A	056200 M	L.H. little window		0.750 (0.34)	39.37 (1.00)
A	056210 M	R.H. little window		0.750 (0.34)	39.37 (1.00)
A	056220 M	L.H. tinted little window		0.750 (0.34)	39.37 (1.00)
A	056230 M	R.H. tinted little window		0.750 (0.34)	39.37 (1.00)
A	F868 00M	Ventilation scoops		0.220 (0.10)	79.53 (2.02)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		61 - PROPELLER			
R		Propeller HC-C2YK-1BF/F 7666 A-2 HARTZELL		54.233 (24.60)	- 47.64 (- 1.21)
		61-20 - Controls			
R		Propeller governor A210776 WOODWARD		3.241 (1.47)	- 3.24 (- 0.38)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		72 - PISTON ENGINE			
R		Engine IO-360-A1B6 LYCOMING		332.89 (151.00)	- 27.56 (- 0.70)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		73 - FUEL SYSTEM AND CONTROLS			
		73-30 - Indicating system			
A	73-001C	Digital fuel management system MICROFLO-L™ SHADIN		1.157 (0.53)	33.46 (0.85)
A	D838 40M	Fuel flow totalizer (l/h) FT 101A HOSKINS		1.720 (0.78)	29.53 (0.75)
A	D838 50M	Fuel flow totalizer (Gal/h) FT 101A HOSKINS		1.720 (0.78)	29.53 (0.75)
A	D905 20M	Digital fuel management system SHADIN		1.157 (0.53)	33.46 (0.85)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		74 - IGNITION			
		74-10 - Electric generation system			
R		L.H. magneto 66 HC 15SFNN SLICK		5.071 (2.30)	- 17.72 (- 0.45)
R		L.H. magneto 66 HP 0SANN SLICK		5.071 (2.30)	- 17.72 (- 0.45)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		77 - ENGINE INDICATING			
		77-10 - Power			
R		Tachometer TB09 76206 P/N LM 83 LMI		1.235 (0.56)	23.62 (0.60)
R		Manifold pressure-fuel flow/pressure T200 76002 P/N 6331 H157 UNITED INSTRUMENTS		0.948 (0.43)	25.59 (0.65)
O	D864 00M	Tachometer-Hourmeter NRF 80 LM 04 LMI		0.860 (0.39)	23.62 (0.60)
		77-20 - Temperature			
A	D536 00M	Exhaust gas temperature (EGT) ALCOR		0.882 (0.40)	21.65 (0.55)
A	D685	EGT/CHT - Probe on all cylinders		3.307 (1.50)	3.94 (0.10)
A	D685 00M	EGT/CHT - Probe on cylinder No. 3		1.323 (0.60)	19.69 (0.50)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		79 - LUBRICATION			
		79-10 - Storage			
A	065810 M	Oil drain door		0.220 (0.10)	- 25.59 (- 0.65)
		79-20 - Distribution			
R		Oil cooler 20466A NDM		2.646 (1.20)	- 16.54 (- 0.42)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		80 - STARTING			
R		Starter : - PRESTOLITE/ELECTROSYSTEMS MHB 4016 or MHB 6016 or - LYCOMING LW 15572 or 31B22474		17.990 (8.16) 8.091 (3.67 17.990 (8.16) 8.091 (3.67	- 39.37 (- 1.00) - 37.40 (- 0.95) - 39.37 (- 1.00) - 37.40 (- 0.95)
R		Starter 31B 21064 LYCOMING		11.376 (5.16)	- 39.37 (- 1.00)
R		Starter relay CE 1971 060 F PARIS RHONE		1.499 (0.68)	- 1.18 (- 0.03)

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S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		01 - SPECIFIC OPTIONAL EQUIPMENT			
A	H615 20M	Additional equipment for IFR France "Grey"		/	/
A	H616 20M	Additional equipment for night VFR France "Grey"		0.441 (0.20)	25.59 (0.65)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		21 - ENVIRONMENTAL SYSTEM			
		21-40 - Heating			
A	C869 20M	Radio console forced ventilation (blower KING KA 33)		1.543 (0.70)	12.99 (0.33)
A	F822 20M	Forced ventilation, rear passengers VETUS		2.756 (1.25)	136.61 (3.47)
		21-55 - Air conditioning			
A	21-001	Air conditioning system KEITH		67.000 (30.39)	72.83 (1.85)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		22 - AUTO FLIGHT			
		22-12 - Autopilot			
A	D675 00M	Altitude and vertical speed preselector KAS 297B KING		1.764 (0.80)	21.65 (0.55)
A	D675 10M	Altitude and vertical speed preselector KAS 297B KING (on R.H. instrument panel)		1.764 (0.80)	21.65 (0.55)
A	D675 20M	Altitude and vertical speed preselector KAS 297B KING (on radio console)		1.764 (0.80)	21.65 (0.55)
A	G668 00M	A/P KAP 100 KING		11.442 (5.19)	35.43 (0.90)
A	G668 10M	A/P KAP 100 KING with electrical pitch trim		17.659 (8.01)	67.72 (1.72)
A	G669 00M	A/P KAP 150 KING		21.363 (9.69)	76.38 (1.94)
A	G670 00M	A/P KFC 150 KING		21.561 (9.78)	75.59 (1.92)
A	G810 00M	Remote A/P modes annunciator KA 185-03 for KAP 150		0.661 (0.30)	23.62 (0.60)
A	G810 10M	Remote A/P modes annunciator KA 185-01 for KFC 150		0.661 (0.30)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		23 - COMMUNICATIONS			
		23-10 - Speech communications			
		23-11 - VHF capability			
S		VHF/COM capability TB10 65216 : - Loud-speaker - Hand microphone - Radio master switch		3.219 (1.46)	45.27 (1.25)
A	23-001A	Audio selector/Intercom system PMA 7000MS PS ENGINEERING (stereo wiring)		3.814 (1.73)	26.77 (0.68)
A	23-001B	Audio selector/Intercom system PMA 7000MS PS ENGINEERING (mono wiring)		3.814 (1.73)	26.77 (0.68)
A	23-002A	Audio selector/Intercom system GMA 340 GARMIN		4.189 (1.90)	27.56 (0.70)
A	34-503A	Boom microphone headset AHX-05 Serie X BOSE - Pilot - Front passenger		 1.235 (0.56) 0.683 (0.31)	 55.12 (1.40) 55.12 (1.40)
A	J912 00M	Boom microphone headset H10-13-4 DAVID CLARK		0.838 (0.38)	55.12 (1.40)
A	J928 00M	Boom microphone headset HMEC 25-KA SENNHEISER : Pilot and front passenger Rear passengers		 0.661 (0.30) 0.661 (0.30)	 55.12 (1.40) 94.49 (2.40)
A	J928 10M	Boom microphone headset HMEC 25-KAS SENNHEISER : Pilot and front passenger Rear passengers		 0.661 (0.30) 0.661 (0.30)	 55.12 (1.40) 94.49 (2.40)
A	K807 00M	Audio control box KMA 24H52 KING with interphone		2.205 (1.00)	27.56 (0.70)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K809 00M	Audio control box KMA 24H70 KING with audio selector threshold (4 transmitters/receivers)		2.381 (1.08)	31.50 (0.80)
A	K809 10M	Audio control box KMA 24H71 KING with audio selector threshold (5 transmitters/receivers)		2.381 (1.08)	31.50 (0.80)
A	K815 10M	Audio selection box KMA 24-02 KING		2.910 (1.32)	22.44 (0.57)
A	052300 M	Boom microphone headset H10-30 DAVID CLARK		1.190 (0.54)	55.12 (1.40)
		23-12 - COM 1 installation			
S		Faired antenna VHF 1 DMC 70 1/A DORNE & MARGOLIN		0.661 (0.30)	127.17 (3.23)
A	23-003A	VHF COM/NAV GPS#1 GNS 430 GARMIN interfaced with GI 106A		9.700 (4.40)	24.80 (0.63)
A	23-005A	COM1/NAV1 KX 155A VOR/ILS HONEYWELL (KN 72 and HSI indicator)		6.945 (3.15)	26.38 (0.67)
A	23-005D	COM1/NAV1 KX 155A VOR/ILS HONEYWELL (KI 204 indicator)		7.518 (3.41)	22.44 (0.57)
A	23-006A	COM1/NAV1/GPS1 GNS 430 #1 GARMIN interfaced with HSI		8.157 (3.70)	25.59 (0.65)
A	23-007A	COM1/NAV1/GPS1 GNS 530 GARMIN interfaced with HSI		10.141 (4.60)	23.23 (0.59)
A	K805	VHF/COM 1 KY 196 A 30 KING		3.858 (1.75)	18.11 (0.49)
		23-13 - COM 2 installation			
A	23-004	COM2/NAV2/GPS2 GNS 430 #2 GARMIN interfaced with GI 106A		9.700 (4.40)	25.20 (0.64)
A	23-005B	COM2/NAV2 KX 155A VOR/LOC HONEYWELL (KI 203 indicator)		6.945 (3.15)	22.44 (0.57)
A	23-005C	COM2/NAV2 KX 155A VOR/ILS HONEYWELL (KI 204 indicator)		7.474 (3.39)	22.44 (0.57)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K805 11M	VHF/COM 2 KY 196 A 30 HONEYWELL		5.071 (2.30)	28.74 (0.73)
A	054930 M	VHF 2 faired antenna DMC 70 1/AX DORNE & MARGOLIN		1.246 (0.56)	46.18 (1.17)
		23-60 - Static dischargers			
A	J884 00M	ESD protection		/	/

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		24 - ELECTRICAL POWER			
		24-30 - DC generation			
R		Alternator 70A ALU 8421 or ALU 8521 PRESTOLITE/ELECTROSYSTEMS or LW 14324 LYCOMING		12.985 (5.89)	- 37.80 (- 0.96)
R		Battery G242-10AH GILL		26.962 (12.23)	- 2.76 (- 0.07)
R		Battery relay 70 117 221.5 ESSEX		0.772 (0.35)	- 1.18 (- 0.03)
R		Voltage regulator TB20 61215 P/N BOO 368.5 LAMAR		0.375 (0.17)	3.94 (0.10)
R		Pedestal electrical equipment T200 61216		0.728 (0.33)	29.53 (0.75)
A	C839 00M	Converter 28 V - 14 V LT- 71A KGS		1.653 (0.75)	39.37 (1.00)
A	D907 00M	Voltmeter-ammeter indicator ELECTRONICS INTERNATIONAL		0.805 (0.37)	26.77 (0.68)
		24-40 - External power supply			
S		Ground power receptacle TB10 61830		3.682 (1.67)	49.61 (1.26)
A	C841 00M	Ground power extension (With option C835 00M)		4.740 (2.15)	91.73 (2.33)
		24-50 - Distribution			
R		Standard circuit breakers panel TB10 61212		1.962 (0.89)	29.92 (0.76)
R		Printed circuits assembly on firewall TB20 61210 including fuses printed circuit, lights warning printed circuit, pitot and alternator output printed circuit		0.948 (0.43)	0.39 (0.01)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		25 - EQUIPMENT AND FURNISHINGS			
		25-10 - Cockpit			
O	25-003A	Leather seats assembly with head-rests : - Front seats (Qty 2) PMV		55.115 (25.00)	50.20 (1.28)
		- Rear seat PMV		19.621 (8.90)	84.65 (2.15)
		25-11 - Front seats			
R		Front seats with head-rests TB10 74203		52.029 (11.80)	50.20 (1.28)
		25-12 - Rear bench			
R		Rear seats with head-rests TB10 74204		18.298 (8.30)	84.62 (2.15)
		25-13 - Safety and harnesses belts			
R		Front seat belt TB10 79013 P/N 10.4022.000.002 ANJOU AERO		2.646 (1.20)	47.24 (1.20)
S		Rear reel safety belt TB10 79000		2.646 (1.20)	106.30 (2.70)
A	064000 M	3rd rear reel safety belt		1.918 (0.87)	106.30 (2.70)
		25-14 - Central pedestal			
S		Lighter R.V.I : - Plug 5000 361 037 R.V.I - Fixed part 5000 361 635 R.V.I - Light 5000 462 170 R.V.I		0.154 (0.07)	37.80 (0.96)
S		Front ash-tray		0.882 (0.40)	43.31 (1.10)
S		Rear ash-tray		0.353 (0.16)	65.35 (1.66)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		25-15 - Upper duct			
S		Sun visor PLEXIGLAS		0.683 (0.31)	41.34 (1.05)
		25-17 - Instrument panel			
S		R.H. large instrument panel		4.740 (2.15)	23.62 (0.60)
		25-60 - Emergency equipment			
A	F902 00M	Axe		2.535 (1.15)	37.40 (0.95)
A	F903 00M	Life jackets (Qty 4)		8.818 (4.00)	124.80 (3.17)
A	H881 00M	First aid case		4.409 (2.00)	90.95 (2.31)
		25-61 - Emergency locator transmitter			
A	25-001A	Emergency locator transmitter ELT 91 SOCATA P/N ELT 91A 2560 000 000 (TSO)		3.351 (1.52)	103.15 (2.62)
A	J908 00M	Three-frequency emergency locator transmitter ELT 96 SOCATA (EUROCAE)		3.638 (1.65)	106.30 (2.70)
A	J908 10M	Three-frequency emergency locator transmitter ELT 96 SOCATA (EUROCAE)		4.079 (1.85)	106.69 (2.71)
A	J924 00M	Emergency locator transmitter ELT 90 SOCATA (EUROCAE)		3.351 (1.52)	103.15 (2.62)
A	J931 00M	Emergency locator transmitter ELT 200 ARTEX (For export only)		2.866 (1.30)	103.15 (2.62)
A	J931 50M	Provisions assy for ELT 200 ARTEX (For export only)		0.220 (0.10)	103.15 (2.62)
A	J933 00M	Three-frequency emergency locator transmitter ELT 97 SOCATA (TSO)		3.638 (1.65)	106.30 (2.70)
A	051730 M	Emergency locator transmitter JE2 NG JOLLIET (forward baggage compartment)		3.086 (1.40)	109.45 (2.78)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		26 - FIRE PROTECTION			
A	F823 00M	Cabin halon extinguisher FH 15N AREOFEU		4.409 (2.00)	37.80 (0.96)
A	F823 10M	Cabin halon extinguisher H1-10 AIR MAIP		4.850 (2.20)	37.80 (0.96)
A	F823 20M	Cabin halon extinguisher H1-10 AIR MAIP (with special support)		5.313 (2.41)	37.80 (0.96)
A	F823 30M	Cabin halon extinguisher L'HOTELLIER		3.638 (1.65)	37.80 (0.96)
A	F883 00M	Cabin powder extinguisher AFT 15N AREOFEU		4.608 (2.09)	37.80 (0.96)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		27 - FLIGHT CONTROLS			
		27-20 - Yaw control			
R		Yaw, roll controls interconnection		2.138 (0.97)	16.14 (0.41)
		27-50 - Wing flaps (control)			
R		Flaps actuator T200 61206 P/N 700-239 LPMI		4.365 (1.98)	61.81 (1.57)
R		Flaps control selector TB10 61227		0.331 (0.15)	31.50 (0.80)
R		Flaps position indicator TB20 61232		0.132 (0.06)	31.50 (0.80)
R		Flaps relay + support TB10 61236 : - 2 relays HG2-24 VDC MATSUSHITA - 2 supports HG2 SS MATSUSHITA		 0.551 (0.25) 0.110 (0.05)	 78.35 (1.99) 78.35 (1.99)
O	C569 10M	Flaps preselection (with new switch)		0.220 (0.10)	39.37 (1.00)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		28 - FUEL SYSTEM			
		28-10 - Fuel tanks			
A	058040 M	Ferry fuel tank (TB20 52925)		63.933 (29.00)	78.35 (1.99)
		28-20 - Fuel supply			
R		Fuel electric pump TB20 61218 P/N B8120-H WELDON		2.425 (1.10)	24.80 (0.63)
R		Fuel selector/filter TB20 52026		1.301 (0.59)	44.49 (1.13)
		28-40 - Fuel indication			
S		Fuel low level warning		0.728 (0.33)	33.46 (0.85)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		31 - INDICATING/RECORDING SYSTEMS			
		31-10 - Control and indicating panels			
R		Engine and fuel controls T200 76001 PEINTATEC or MORITZ		1.102 (0.50) 2.998 (1.36)	24.80 (0.63) 24.80 (0.63)
O	F634 00M	Raised radio console		3.131 (1.42)	23.62 (0.60)
O	F634 10M	Raised radio console (Post-MOD.170)		1.014 (0.46)	23.62 (0.60)
		31-20 - Independent instruments			
A	D571 00M	Hourmeter DATCON		0.551 (0.25)	23.62 (0.60)
A	D638 00M	Digital chronometer (L.H. station) ASTROTECH		0.507 (0.23)	35.43 (0.90)
A	D638 10M	Digital chronometer (R.H. station) ASTROTECH		0.507 (0.23)	35.43 (0.90)
A	D638 20M	Digital chronometer (R.H. station) ASTROTECH		0.507 (0.23)	35.43 (0.90)
A	D680 00M	Quartz chronometer THOMMEN (60 minutes elapsed time indicator) P/N Q18.945.22.28.1KB or Q18.945.22.28.1ME		0.485 (0.22)	35.43 (0.90)
A	D680 10M	Quartz chronometer THOMMEN (60 minutes elapsed time indicator) P/N Q18.945.22.28.1KB or Q18.945.22.28.1ME (R.H. station)		0.485 (0.22)	35.43 (0.90)
A	D680 20M	Quartz chronometer THOMMEN (60 minutes elapsed time indicator) P/N Q18.945.22.28.1KB or Q18.945.22.28.1ME		0.485 (0.22)	35.43 (0.90)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	D680 30M	Quartz chronometer THOMMEN (12 minutes elapsed time indicator) P/N Q18.948.22.28.1ME		0.485 (0.22)	35.43 (0.90)
A	D806 00M	Three-axis accelerometer		0.992 (0.45)	23.62 (0.60)
A	D829 00M	Mechanical chronometer THOMMEN P/N B18.945.22.28.1K		0.485 (0.22)	35.43 (0.90)
A	D829 10M	Mechanical chronometer THOMMEN P/N B18.945.22.28.1K (R.H. station)		0.485 (0.22)	35.43 (0.90)
A	D833 00M	Digital clock/chronometer LC2 ASTROTECH		0.331 (0.15)	23.62 (0.60)
O	D911 00M	Hourmeter "Flight duration" DATCON NOTE : Tachometer-Hourmeter, refer to ATA 77		0.661 (0.30)	31.50 (0.80)
		31-50 - Central warning systems			
R		Advisory panel TB20 61285		0.529 (0.24)	23.62 (0.60)
A	C561 00M	Starter warning light		0.132 (0.06)	39.37 (1.00)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		32 - LANDING GEARS			
		32-10 - Main landing gear			
S		L.H. fairing TB10 48012006		11.905 (5.40)	62.20 (1.58)
S		R.H. fairing TB10 48012007		11.905 (5.40)	62.20 (1.58)
		32-20 - Nose landing gear			
S		Front fairing TB10 48014004 Rear fairing TB10 48014005		6.173 (2.80)	- 10.24 (- 0.26)
O	052500 M	Airplane without LDG fairings		- 29.983 (- 13.60)	47.24 (1.20)
		32-40 - Wheels and brakes			
R		Main LDG wheel assy (2) 40-97F CLEVELAND		6.482 (2.94)	59.84 (1.52)
R		Main LDG brake assy (2) 91.50 CLEVELAND		1.918 (0.87)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 PLYS GOODYEAR (Pre-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 PRTT DUNLOP (Pre-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 PR P/N 606C61.6 GOODYEAR (Post-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tire (2) 6.00-6 6 120TT MICHELIN (Post-MOD.118 or MOD.120)		8.818 (4.00)	59.84 (1.52)
R		Main LDG tube (2) 6.00-6 DUNLOP (Pre-MOD.118 or MOD.120)		1.653 (0.75)	59.84 (1.52)
R		Main LDG tube (2) P/N 092-315-0 MICHELIN (Post-MOD.118 or MOD.120)		2.425 (1.10)	59.84 (1.52)
R		Main LDG tube (2) 15.6.00-6 TR GOODYEAR (Post-MOD.118 or MOD.120)		1.653 (0.75)	59.84 (1.52)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
R		Nose LDG wheel assy 40-77 B CLEVELAND		2.822 (1.28)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 PRTT DUNLOP		6.393 (2.90) or 5.798 (2.63)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 120TT MICHELIN		6.393 (2.90)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 120TT AVIATOR		5.489 (2.49)	- 16.93 (- 0.43)
R		Nose LDG tire 5.00-5 6 PR P/N 505C61.8 GOODYEAR		5.291 (2.40)	- 16.93 (- 0.43)
R		Nose LDG tube 5.00-5 DUNLOP		1.455 (0.66)	- 16.93 (- 0.43)
R		Nose LDG tube TR67A P/N 092-308-0 MICHELIN		1.455 (0.66)	- 16.93 (- 0.43)
R		Nose LDG tube 5.00-5 TR67 GOODYEAR		1.455 (0.66)	- 16.93 (- 0.43)
S		Braking control (R.H. post) TB10 45030		3.307 (1.50)	11.81 (0.30)
		32-60 - Position indicating system and alarms			
A	B877 00M	LDG simulator assy		0.595 (0.27)	23.62 (0.60)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		33 - LIGHTS			
		33-10 - Cockpit			
S		Rear cabin lighting TB20 64202		0.220 (0.10)	65.35 (1.66)
S		Instrument panel lighting TB20 64201		0.485 (0.22)	23.62 (0.60)
S		Front cabin lighting (emerg.) TB20 64202		0.507 (0.23)	44.09 (1.12)
S		Maps reading light		0.176 (0.08)	25.59 (0.65)
A	E873 00M	Emergency lighting system		4.079 (1.85)	104.72 (2.66)
		33-40 - External lighting			
S		Landing light G.E. 4591		0.353 (0.16)	35.43 (0.90)
S		Taxi light G.E. 4626		0.353 (0.16)	35.43 (0.90)
S		Navigation and anticollision lights assy WHELEN TB20 63212		4.431 (2.01)	64.96 (1.65)
A	33-001A	Recognition lights WHELEN		0.463 (0.21)	33.46 (0.85)
A	E537 00M	Strobe light JPC on vertical stabilizer		1.874 (0.85)	145.67 (3.70)
A	E537 10M	Strobe lights JPC on vertical stabilizer and under fuselage		3.197 (1.45)	140.55 (3.57)
A	E537 20M	Strobe light JPC on vertical stabilizer (red glass)		1.874 (0.85)	145.67 (3.70)
A	E826	Strobe light WHELEN (tail)		2.094 (0.95)	145.67 (3.70)
O	E848 00M	Light control box JX 128 FLASHELEK		0.551 (0.25)	55.31 (1.41)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		34 - NAVIGATION			
		34-10 - Flight environment data			
		34-11 - Air data systems			
R		Altimeter TB20 76222 P/N 5934 PD3 Code A253 UNITED INSTRUMENTS		0.816 (0.37)	25.59 (0.65)
R		True airspeed indicator with integrated lighting TB20 76223 P/N 8125 Code B605 UNITED INSTRUMENTS		0.728 (0.33)	24.80 (0.63)
S		Vertical speed indicator TB20 76224 P/N 7000 Code C83 UNITED INSTRUMENTS		1.014 (0.46)	23.62 (0.60)
S		Air data systems TB10 77200 : - Heated pitot - Alternate static source (in cabin)		 1.190 (0.54) 0.331 (0.15)	 53.15 (1.35) 23.62 (0.60)
A	C635 00M	2nd heated pitot (R.H. wing)		1.190 (0.54)	47.24 (1.20)
A	D681 00M	2nd altimeter 20000 ft		1.433 (0.65)	19.69 (0.50)
A	D803 10M	Installation of 2nd airspeed indicator		1.213 (0.55)	23.62 (0.60)
A	D811 00M	Alti-coder KE 127 KING		1.433 (0.65)	17.72 (0.45)
A	D830 00M	Alti-coder 20000 ft TRANSCALL		1.433 (0.65)	17.72 (0.45)
A	D831 00M	Alti-coder 30000 ft TRANSCALL		1.433 (0.65)	17.72 (0.45)
A	D832 00M	2nd altimeter 35000 ft		1.433 (0.65)	19.69 (0.50)
A	D897 00M	2nd vertical speed indicator (R.H. station) P/N 7000 C83 UNITED INSTRUMENTS		1.521 (0.69)	23.62 (0.60)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	D915 00M	Metric altimeter # 3 P/N 5940 UNITED INSTRUMENTS		0.926 (0.42)	23.62 (0.60)
O	K608 20M	Alti-coder KEA 130A (35000 ft) KING		1.764 (0.80)	21.65 (0.55)
O	K608 30M	Alti-coder 20000 ft UNITED INSTRUMENTS		1.764 (0.80)	21.65 (0.55)
A	N846 00M	Altitude encoder AR850 NARCO		1.323 (0.60)	19.69 (0.50)
		34-13 - Outside temperature			
S		Outside air temperature indicator (water-tight connector on sensor) T200 76004		0.551 (0.25)	23.62 (0.60)
A	D804 20M	Outside air temperature indicator (water-tight connector on sensor) (OPT10 D804 10M retrofit)		0.551 (0.25)	23.62 (0.60)
A	D910 20M	Outside air temperature indicator (water-tight connector on sensor) DAVTRON		0.551 (0.25)	23.62 (0.60)
		34-20 - Attitude and direction			
		34-21 - Heading reference system			
A	34-302A	HSI assy KCS 55A HONEYWELL		12.721 (5.77)	67.32 (1.71)
A	D914 00M	Heading gyro indicator SIGMA-TEK (on L.H. instrument panel)		2.668 (1.21)	23.62 (0.60)
A	D914 10M	Heading gyro indicator SIGMA-TEK (on R.H. instrument panel)		2.976 (1.35)	19.69 (0.50)
A	D922 00M	Electric heading gyro indicator 205-1BL BFG		3.219 (1.46)	23.62 (0.60)
A	K660 20M	HSI assy KING with heading recopy capability (30/400 Hz) with vertical KA 51B		12.720 (5.77)	67.32 (1.71)
A	K660 30M	HSI assy KING with heading recopy capability (30/400 Hz) with horizontal KA 51B		12.720 (5.77)	67.32 (1.71)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K660 50M	HSI assy KING with horizontal KA 51B (if GPS KLN 90B installed)		12.720 (5.77)	67.32 (1.71)
A	K660 60M	HSI assy KING with vertical KA 51B (if GPS KLN 90B installed)		12.720 (5.77)	67.32 (1.71)
A	067140 M	Heading indicator KG 107		2.690 (1.22)	20.47 (0.52)
		34-22 - Turn and bank indication			
R		Turn-and-bank indicator TB20 76825 UNITED INSTRUMENTS		1.675 (0.76)	23.62 (0.60)
O	34-002A	Electrical turn coordinator UNITED INSTRUMENTS		1.323 (0.60)	23.62 (0.60)
O	D697 00M	Electrical turn coordinator CASTLEBERRY		1.698 (0.77)	23.62 (0.60)
A	D818 10M	Slip indicator (R.H. station) UNITED INSTRUMENTS		1.675 (0.76)	23.62 (0.60)
		34-23 - Magnetic compass			
R		Compass TB20 76229 P/N C2400 L 4P (28 V) AIRPATH		0.595 (0.27)	20.47 (0.52)
		34-24 - ADI and standby horizon			
A	34-001A	Electrical attitude gyro indicator 1100-28L(5F) BFG (Not valid for U.K. aircraft)		2.866 (1.30)	24.41 (0.62)
A	34-001C	Electrical attitude gyro indicator 1100-28LS(5F) BFG (on L.H. instrument panel) (Not valid for U.K. aircraft)		2.866 (1.30)	24.41 (0.62)
A	34-001D	Electrical attitude gyro indicator 1100-28LS(5F) BFG (on L.H. instrument panel) (Not valid for U.K. aircraft)		2.866 (1.30)	24.41 (0.62)
A	067330 M	Attitude gyro indicator with Flight Director KI 256 for KFC 150		3.285 (1.49)	20.47 (0.52)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		34-25 - Radio magnetic indication			
A	K584 00M	RMI KI 22900 (without switching) KING		3.086 (1.40)	21.65 (0.55)
A	K584 10M	RMI KI 22900 (with switching) KING		3.307 (1.50)	21.65 (0.55)
A	K819 00M	RMI KNI 582 KING		3.417 (1.55)	21.65 (0.55)
		34-30 - Landing and taxiing aids			
		34-31 - Marker			
A	K676 00M	Marker receiver indicator KR 21 KING		1.257 (0.57)	21.65 (0.55)
		34-40 - Independent position determining			
		34-41 - Stormscope			
A	34-502A	Stormscope WX 500 BFG		4.960 (2.25)	117.32 (2.98)
A	J820 00M	Stormscope WX 1000 BFG (on panel strip)		15.432 (7.00)	83.07 (2.11)
A	J820 10M	Stormscope WX 1000 BFG (on R.H. instrument panel)		15.432 (7.00)	83.07 (2.11)
A	J828 10M	Stormscope WX 1000 + BFG (with converter assy)		15.432 (7.00)	83.07 (2.11)
A	J918 00M	Stormscope WX-900 BFG		4.806 (2.18)	85.43 (2.17)
		34-50 - Dependent position determining			
		34-51 - NAV 1 installation			
A	K663 51M	VHF assy COM1/NAV1 (VOR/LOC) KX 155 KING		7.100 (3.22)	23.23 (0.59)
A	K663 61M	VHF assy COM1/NAV1 (VOR/ILS) KX 155 KING		6.173 (2.80)	23.23 (0.59)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	K663 71M	VHF assy COM1/NAV1 (VOR/LOC) KX 155 with audio amplifier KING		7.870 (3.57)	24.80 (0.63)
A	K812 51M	VHF assy COM1/NAV1 (VOR/LOC) KX 165 KING		7.165 (3.25)	23.23 (0.59)
A	K812 61M	VHF assy COM1/NAV1 (VOR/ILS) KX 165 KING		5.644 (2.56)	23.23 (0.59)
A	K813 00M	VOR/ILS indicator KI 206-04 KING		1.631 (0.74)	21.65 (0.55)
A	K813 10M	VOR/ILS indicator KI 206-05 KING		1.764 (0.80)	21.65 (0.55)
A	K814 00M	VOR/ILS indicator KI 204 KING		1.918 (0.87)	21.65 (0.55)
A	K847 00M	Converter VOR/LOC KN 72 KING		1.653 (0.75)	43.31 (1.10)
		34-52 - NAV 2 installation			
A	K663 21M	VHF assy COM2/NAV2 (VOR/LOC) KX 155 KING		7.275 (3.30)	20.08 (0.51)
A	K663 31M	VHF assy COM2/NAV2 (VOR/ILS) KX 155 KING		6.415 (2.91)	23.23 (0.59)
A	K812 11M	VHF assy COM2/NAV2 (VOR/ILS) KX 165 KING		5.997 (2.72)	22.83 (0.58)
A	K812 31M	VHF assy COM2/NAV2 (VOR/LOC) KX 165 KING		7.341 (3.33)	23.23 (0.59)
A	K813 00M	VOR/ILS indicator KI 206-04 KING		1.631 (0.74)	21.65 (0.55)
A	K813 10M	VOR/ILS indicator KI 206-05 KING		1.764 (0.80)	21.65 (0.55)
A	K814 00M	VOR/ILS indicator KI 204 KING		1.918 (0.87)	21.65 (0.55)
		34-53 - Transponder			
A	34-501A	Transponder GTX 320 GARMIN		3.086 (1.40)	29.53 (0.75)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
A	34-504A	Transponder GTX 327 GARMIN		3.968 (1.80)	21.65 (0.55)
A	K656 00M	ATC KT 76 A KING on radio console		3.682 (1.67)	20.08 (0.51)
A	K656 20M	ATC KT 76 A KING on R.H. panel strip (with support)		3.836 (1.74)	21.65 (0.55)
A	K876 00M	Transponder ATC KT 71 KING		4.630 (2.10)	22.44 (0.57)
A	K876 10M	Transponder ATC KT 71 KING (on R.H. panel strip)		4.630 (2.10)	22.44 (0.57)
A	K929 00M	Transponder ATC KT 76C KING (on R.H. panel strip)		3.527 (1.60)	23.62 (0.60)
		34-54 - Automatic Direction Finder (ADF)			
A	34-300A	ADF assy KR 87 SC+ (Indicator KI 227.01) HONEYWELL		8.885 (4.03)	90.16 (2.29)
A	34-300B	ADF assy KR 87 SC+ (Indicator KI 227.00) HONEYWELL		8.885 (4.03)	90.16 (2.29)
A	34-300C	ADF assy KR 87 SC+ (Indicator KI 229) HONEYWELL		11.045 (5.01)	76.77 (1.95)
A	34-300D	ADF assy KR 87 SC+ (Indicator KNI 582) HONEYWELL		11.177 (5.07)	76.77 (1.95)
A	K655 00M	ADF KR 87.01/04 (Indicator KI 227.00) KING (on radio console)		8.730 (3.96)	90.16 (2.29)
A	K655 10M	ADF KR 87.01/04 (Indicator KI 227.01) KING (on radio console)		8.730 (3.96)	90.16 (2.29)
A	K655 20M	ADF KR 87 KING		8.025 (3.64)	96.06 (2.44)
A	K655 40M	ADF KR 87 (Indicator KI 227.01) KING (on R.H. panel strip)		8.730 (3.96)	90.16 (2.29)
A	K917 00M	ADF2 KR 87 KING		9.436 (4.28)	94.49 (2.40)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		34-55 - DME installation			
A	34-305A	DME KN 62A SC+ HONEYWELL		3.527 (1.60)	30.71 (0.78)
A	K657 00M	DME KN 62A KING		3.682 (1.67)	21.26 (0.54)
A	K657 10M	DME KN 64 KING		3.682 (1.67)	21.26 (0.54)
A	K664 00M	DME KN 63 KING		5.489 (2.49)	40.94 (1.04)
		34-57 - Global Positioning System (GPS)			
A	34-301A	GPS KLN 94 HONEYWELL interfaced with HSI		5.952 (2.70)	25.98 (0.66)
A	34-306A	GPS KLN 94 HONEYWELL "Stand alone"		4.850 (2.20)	28.74 (0.73)
A	34-500A	Color Skymap capability CM 2000 SKYFORCE		0.970 (0.44)	30.51 (0.78)
A	K920 10M	GPS KLN 89B KING "Stand alone"		4.519 (2.05)	25.20 (0.64)
A	K926 10M	GPS KLN 89B KING interfaced with HSI KI 525A (KCS 55A compass system)		5.578 (2.53)	22.83 (0.58)
A	K927 10M	GPS KLN 90B KING interfaced with HSI and A/P, without RMI (KA92 antenna)		9.943 (4.51)	21.26 (0.54)
		34-60 - Flight management computing			
		34-62 - Multifunction display			
A	34-304A	MFD KMD 550 HONEYWELL		6.614 (3.00)	21.65 (0.55)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		37 - VACUUM			
		37-11 - Distribution (normal)			
S		Vacuum pump SIGMA-TEK (with filter) or Vacuum pump CHAMPION or AERO ACCESSORIES (with AIRBORNE filter) TB20 78817		5.225 (2.37)	- 3.54 (- 0.09)
A	A904 10M	Vacuum pump SIGMA-TEK (with filter) (when stormscope installed, refer to ATA 34)		5.225 (2.37)	- 3.54 (- 0.09)
		37-12 - Distribution (emergency)			
A	C632 00M	Auxiliary dry air pump		12.456 (5.65)	30.31 (0.77)
		37-20 - Indicating			
S		Vacuum system warning light TB20 78817		0.198 (0.09)	0.39 (0.01)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		53 - FUSELAGE			
A	B896 00M	Tail cone protection		0.661 (0.30)	215.67 (5.48)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		56 - WINDOWS			
S		Colourless windows assy TB10 24000 :			
		- Windshield		11.640 (5.28)	27.56 (0.70)
		- Door window		4.056 (1.84)	55.12 (1.40)
		- Rear side window		2.535 (1.15)	86.61 (2.20)
A	F868 00M	Ventilation scoops		0.220 (0.10)	79.53 (2.02)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		61 - PROPELLER			
R		Propeller HC-C2YK-1BF/F 7666 A-2 HARTZELL		54.233 (24.60)	- 47.64 (- 1.21)
		61-20 - Controls			
R		Propeller governor A210776 WOODWARD		3.241 (1.47)	- 3.24 (- 0.38)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		72 - PISTON ENGINE			
R		Engine IO-360-A1B6 LYCOMING		332.89 (151.00)	- 27.56 (- 0.70)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		73 - FUEL SYSTEM AND CONTROLS			
		73-30 - Indicating system			
A	73-001C	Digital fuel management system MICROFLO-L™ SHADIN		1.157 (0.53)	33.46 (0.85)
A	D905 20M	Digital fuel management system SHADIN		1.157 (0.53)	33.46 (0.85)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		74 - IGNITION			
		74-10 - Electric generation system			
R		L.H. magneto 66 HC 15SFNN SLICK		5.071 (2.30)	- 17.72 (- 0.45)
R		L.H. magneto 66 HP 0SANN SLICK		5.071 (2.30)	- 17.72 (- 0.45)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		77 - ENGINE INDICATING			
		77-10 - Power			
R		Manifold pressure-fuel flow/pressure T200 76002 P/N 6331 H157 UNITED INSTRUMENTS		0.948 (0.43)	25.59 (0.65)
R		Tachometer-Hourmeter NRF 80 P/N LM 04 or LM 041/042/043/044 LMI		0.860 (0.39)	23.62 (0.60)
		77-20 - Temperature			
S		EGT/CHT TB20 76802 ALCOR		1.323 (0.60)	19.69 (0.50)

S/ R/ A/ O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		79 - LUBRICATION			
		79-10 - Storage			
A	065810 M	Oil drain door		0.220 (0.10)	- 25.59 (- 0.65)
		79-20 - Distribution			
R		Oil cooler 20466A NDM		2.646 (1.20)	- 16.54 (- 0.42)

S/R/A/O	ITEM OPT10	REQUIRED (R) OR STANDARD (S) OR OPTIONAL (A or O) EQUIPMENT	*	WEIGHT per unit lb (kg)	ARM in. (m)
		80 - STARTING			
R		Starter :			
		- PRESTOLITE/ELECTROSYSTEMS			
		MHB 4016 or		17.990	- 39.37
				(8.16)	(- 1.00)
		MHB 6016 or		8.091	- 37.40
				(3.67	(- 0.95)
		- LYCOMING			
		LW 15572 or		17.990	- 39.37
				(8.16)	(- 1.00)
		31B22474		8.091	- 37.40
				(3.67	(- 0.95)
R		Starter relay CE 1971 060 F PARIS RHONE		1.499	- 1.18
				(0.68)	(- 0.03)

SECTION 7

DESCRIPTION

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GENERAL

This section provides description and operation of the SOCATA Model TB 200 airplane and its systems. Some of the equipment described herein is optional and may not be installed in the airplane. Details of other optional systems and equipment are presented in Section 9 "Supplements" and any airplane/country specifics are given in Section "Specifics" hereto.

AIRFRAME

The TB 200 is an all-metal, four/five-place, cantilever low wing, single-engine airplane equipped with fixed tricycle landing gear and is designed to be used in normal category.

The fuselage consists of an all-metal aluminium alloy structure of semimonocoque design. It includes 10 frames. The main frames are as follows :

- Frame No. 0 on which firewall, engine mount and nose gear mount are fixed.
- Frame No. 1 on which wing front attachments are fixed.
- Frame No. 2 double frame which allows crossing and attachment of the wing spar.
- Frame No. 3 on which wing rear attachments are fixed.
- Frame No. 7 on which vertical stabilizer front attachment is fixed.
- Frame No. 8 on which vertical stabilizer rear attachment is fixed.
- Frame No. 9 on which horizontal stabilator hinge fittings are fixed.

The cabin section, from frame No. 0 to frame No. 6, is reinforced by horizontal spars made of extruded aluminium sections.

The streamlined fairing is ensured by a composite material upper duct which includes the two access "gull-wing" doors.

Access to the baggage compartment (behind the rear seat) is provided by a baggage door on the left side of the fuselage.

WINGS

The wings contain integral fuel tanks. They consist of stamped metal ribs riveted to the wing skin and to monobloc spar.

Wings characteristics :

Profile	RA16-3C3
Aspect ratio	8
Dihedral	4°5
Aerodynamic chord	4.002 ft - 1.220 m
True chord	4.085 ft - 1.245 m
Wing area	128.091 sq.ft - 11.90 m^2
Wing setting	+ 3°
Ailerons :	
Unit area	4.897 sq.ft - 0.46 m^2
Mean span	4.081 ft - 1.244 m
Recoil and slotted type wing flaps :	
Unit area	10.010 sq.ft - 0.93 m^2
Mean span	8.366 ft - 2.550 m

EMPENNAGE

The vertical stabilizer consists of a fin and a rudder.
The horizontal stabilizer is of stabilator type with an automatic anti-tab controlled in its stabilator tab function.
Both are of conventional metal structure type (spar, ribs and skin).

Empennage characteristics :

Conventional type vertical stabilizer :	
Fin area (fixed section) Pre-MOD.151	9.472 sq.ft - 0.88 m^2
Fin area (fixed section) Post-MOD.151	11.194 sq.ft - 1.04 m^2
Rudder area	6.781 sq.ft - 0.63 m^2
Stabilator type horizontal stabilizer :	
Span	10.499 ft - 3.200 m
Stabilator area, anti-tab included	26.694 sq.ft - 2.48 m^2
Tab area	5.813 sq.ft - 0.54 m^2
Tab automaticity	85 %

FLIGHT CONTROLS

SURFACES

The airplane is equipped with a conventional three-axis surface system, consisting of aileron, stabilator and rudder surfaces.

Each front seat is provided with a control wheel which actuates ailerons and stabilator through rods and bellcranks. The control wheel being actuated fully, ailerons deflection (angles reference : wing chord) must be :

- upwards 15° ± 1.5°
- downwards 15° ± 1.5°

Stabilator deflection (angles reference : fuselage upper spar) must be :

- nose-up - 17° ± 1°
- nose-down + 2° ± 1°

The stabilator consists of an automatic anti-tab, which automaticity is 85 %. This anti-tab can also be controlled through the pitch trim.

Each front seat is provided with a rudder pedal which controls the rudder through rods and bellcranks.

Rudder deflection (angles reference : fin chord) to the left and to the right is 25° ± 2°.

TRIM SYSTEMS

A manually-operated pitch trim is provided.

Stabilator trimming is accomplished by actuating on stabilator anti-tab through a control wheel vertically mounted on L.H. side of the control panel.

This control wheel actuates stabilator anti-tab through cables and an irreversibility system.

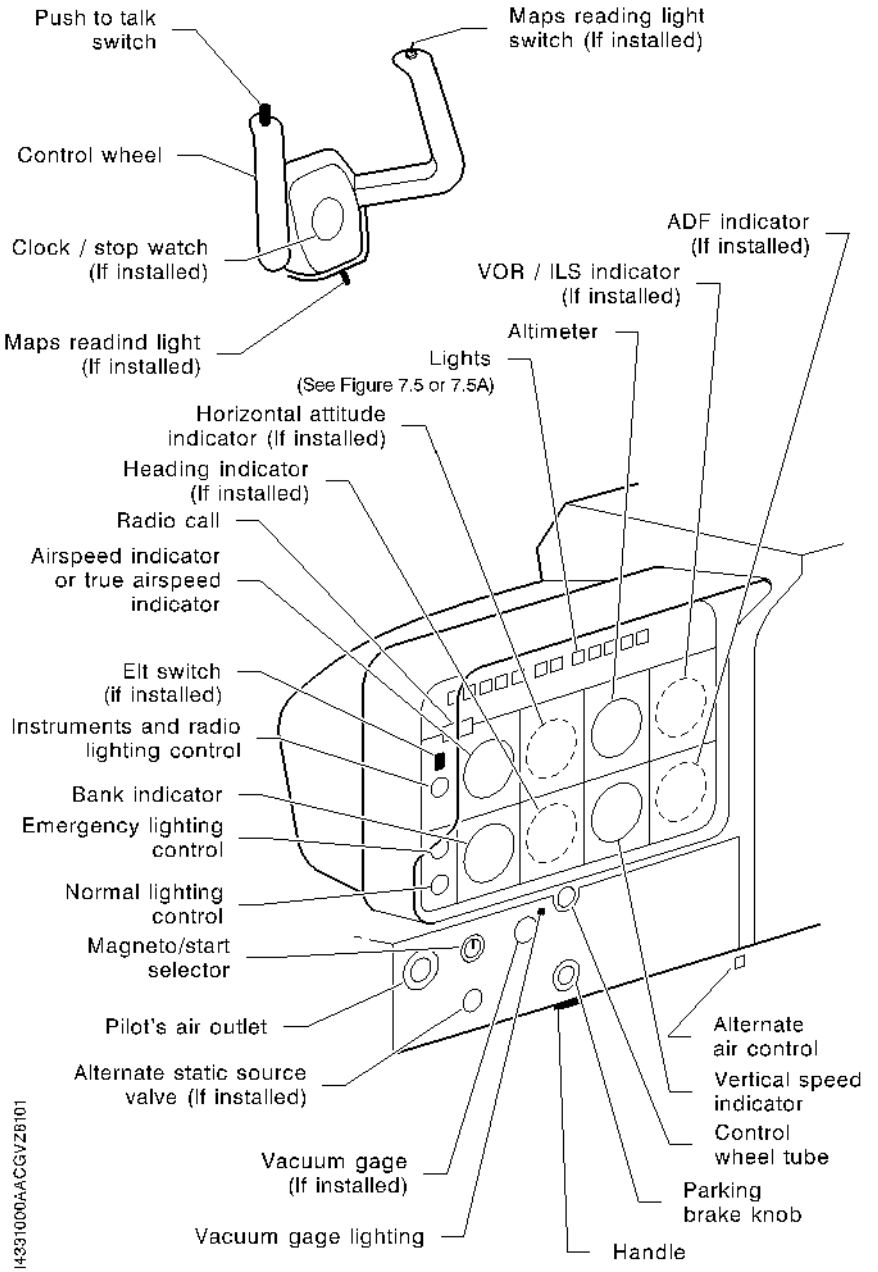

Figure 7.1 - EXAMPLE OF INSTRUMENT PANEL AND L.H. SUBPANEL

A pointer indicator located on the right of the trim control wheel gives the anti-tab position. Forward rotation of the control wheel will trim nose-down, conversely, rearward rotation will trim nose-up.

Stabilator tab deflection (angles reference : stabilator profile chord) with stabilator in maximum nose-up attitude must be :

- nose-up - 2.5° ± 0.5°
- nose-down - 17° ± 1.5°

INSTRUMENT PANEL

L.H. instrument panel (see Figure 7.1) is designed around the basic "T" configuration.
The gyros (if installed) are located in front of the pilot and arranged vertically. The airspeed indicator or the true airspeed indicator and the altimeter are to the left and right of the gyros, respectively.
The upper edge of the instrument panel contains the advisory panel (see Figure 7.5 or 7.5A) and registration (enabling airplane radio call).
The left side of the panel contains lighting controls and emergency locator transmitter switch (if installed).

The L.H. panel strip (see Figure 7.1) contains from left to right : L.H. air outlet, magneto/start selector, parking brake knob ; under panel strip, on L.H. side, "Alternate air" control ; alternate static source valve and vacuum gage (if installed) complete the L.H. panel strip.

The central console (see Figure 7.2 or 7.2A) contains in the upper edge, the engine monitoring cluster, then radionavigation equipment vertically mounted to console lower edge.

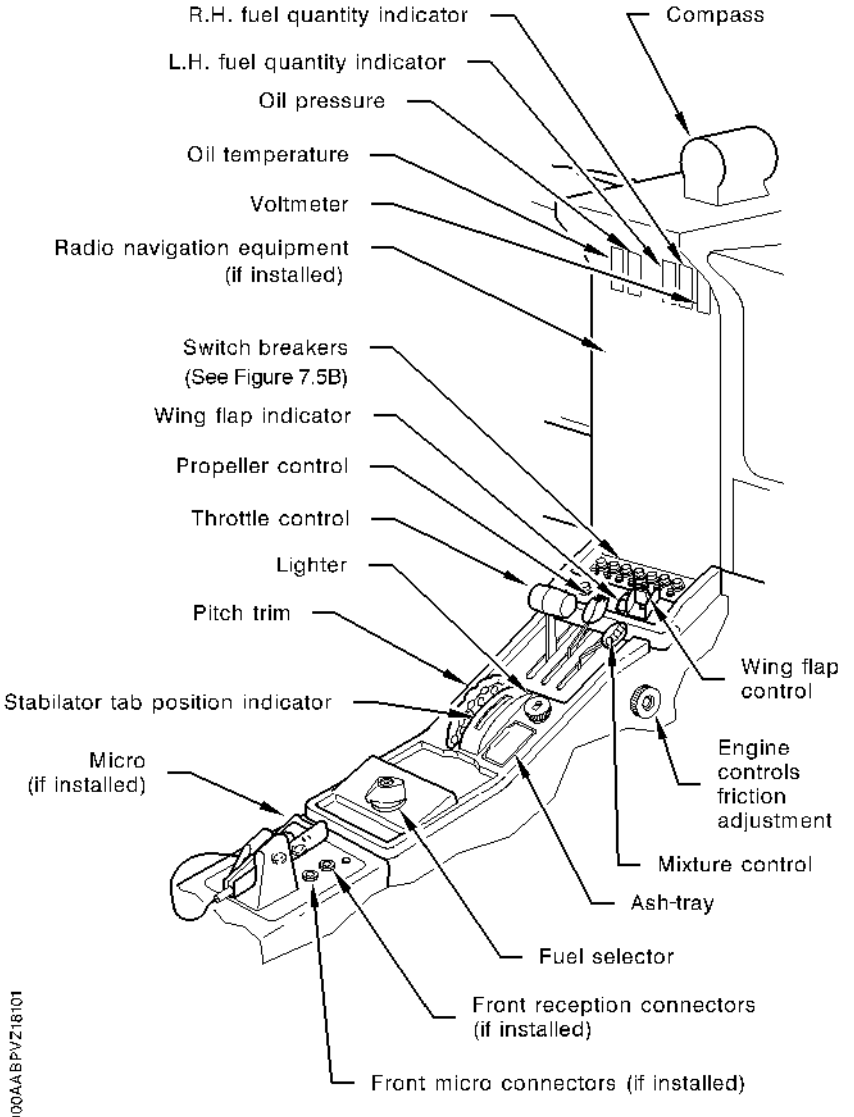

Figure 7.2 - EXAMPLE OF CONSOLE AND PEDESTAL

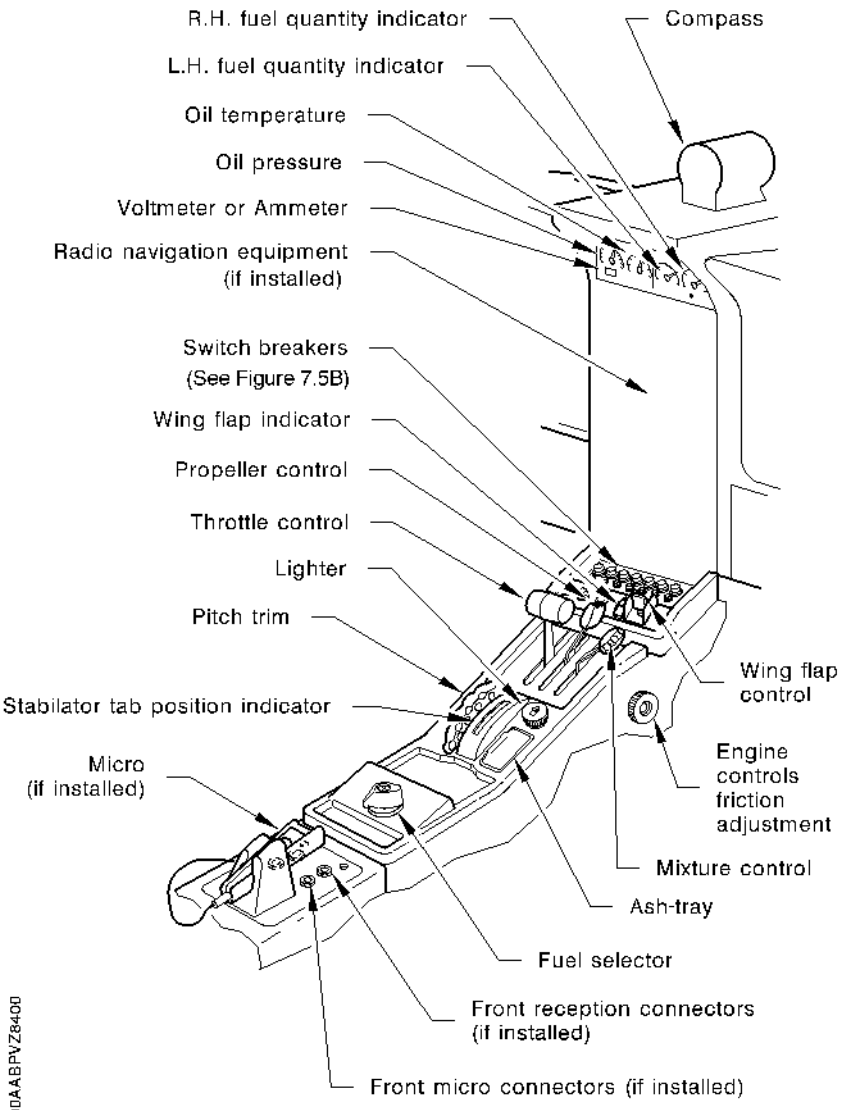

Figure 7.2A - EXAMPLE OF CONSOLE AND PEDESTAL

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The central pedestal (see Figure 7.2) contains fore to aft :

- the switch-breakers panel, flap control and indicator
- the engine controls (from left to right : throttle, propeller, mixture)
- the pitch trim and its indicator
- the lighter and the ash-tray
- the fuel selector
- the micro (if installed)
- the reception and micro jacks (if installed)
- on pedestal R.H. side, engine controls friction device.

Pre-MOD.151

The R.H. instrument panel (see Figure 7.3) contains the tachometer or tachometer-hourmeter and the manifold pressure-fuel flow/pressure dual indicator and spare locations for additional equipment [2nd altimeter, VOR/LOC indicator, outside air temperature, cylinder head temperature, exhaust gas temperature, ELT switch (according to ELT model)...].

Post-MOD.151

The R.H. instrument panel (see Figure 7.3A) contains the tachometer-hourmeter, the manifold pressure-fuel flow/pressure dual indicator, the outside air temperature indicator (OAT), the EGT/CHT indicator and spare locations for additional equipment [2nd altimeter, VOR/LOC indicator, ELT switch (according to ELT model)...].

The R.H. panel strip (see Figure 7.3) contains a location for radio equipment or any other one, cabin air selector, R.H. air outlet.

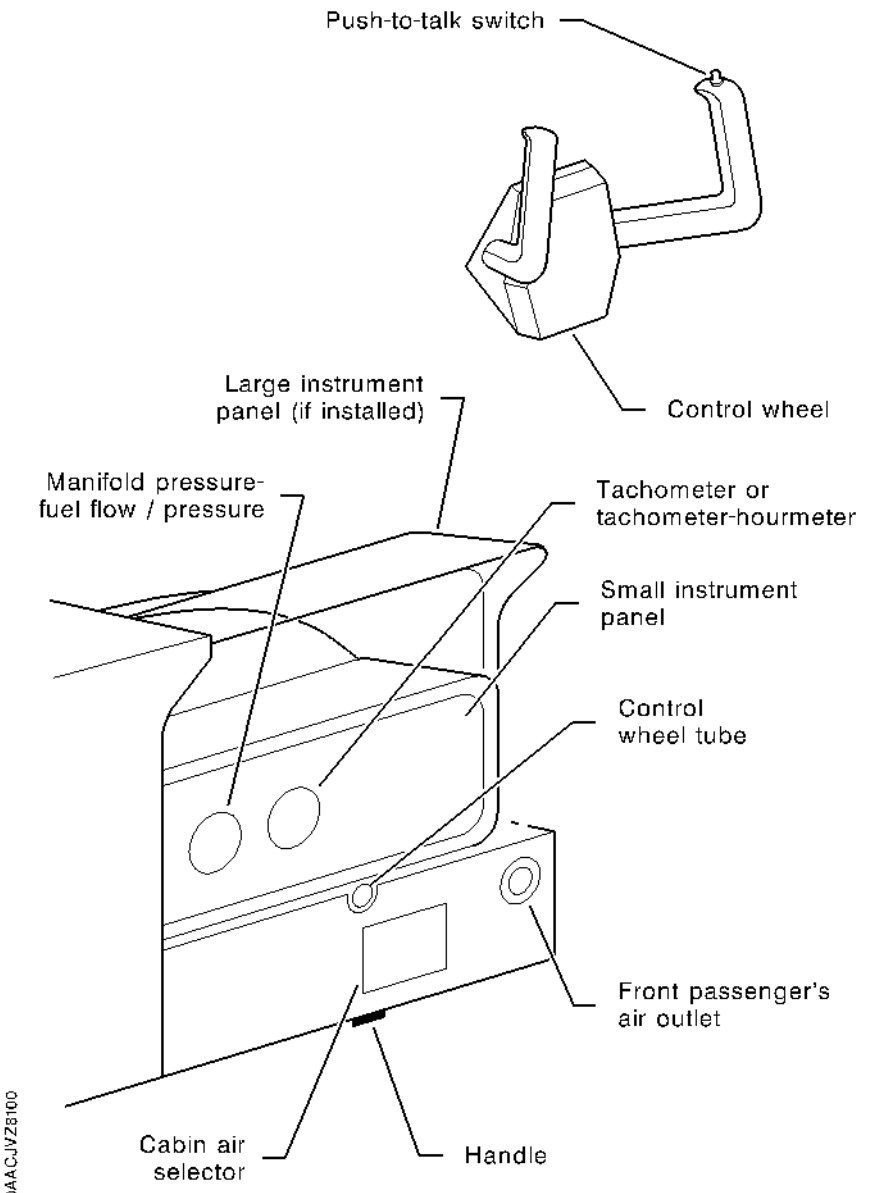

Figure 7.3 - EXAMPLE OF INSTRUMENT PANEL AND R.H.

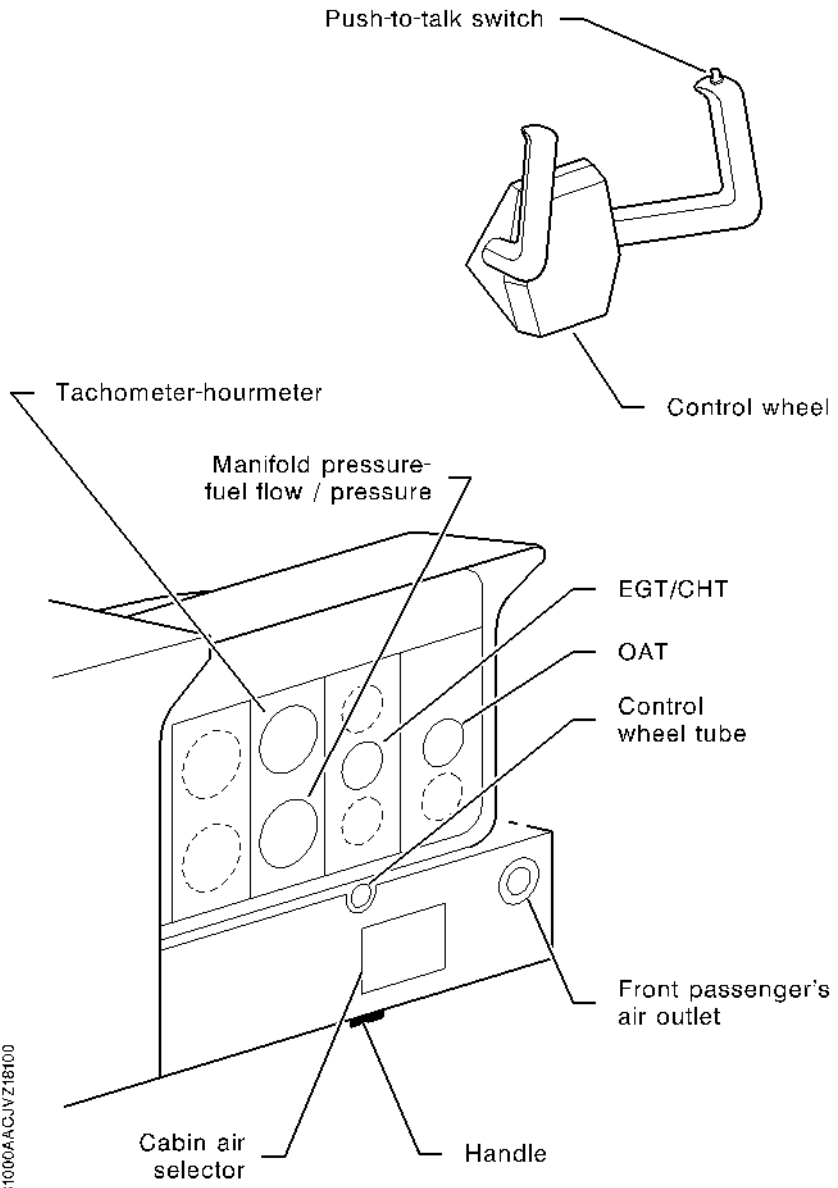

Figure 7.3A - EXAMPLE OF INSTRUMENT PANEL AND R.H. SUBPANEL

Upper duct central part (see Figure 7.4 or 7.4A) contains fore to aft :

- Front air outlets (if installed) Post-MOD.151,
- "Flight conditions" placard,
- "Instruction" plate,
- Front overhead lights,
- Radio loud-speaker (if installed),
- Blower switch (if installed),
- Autopilot alarm (if installed),
- Stall warning (buzzer),
- Altitude selector alarm (if installed),
- Autopilot alarm and altitude selector alarm (if installed) Post-MOD.151,
- Rear overhead light,
- Rear air outlets.

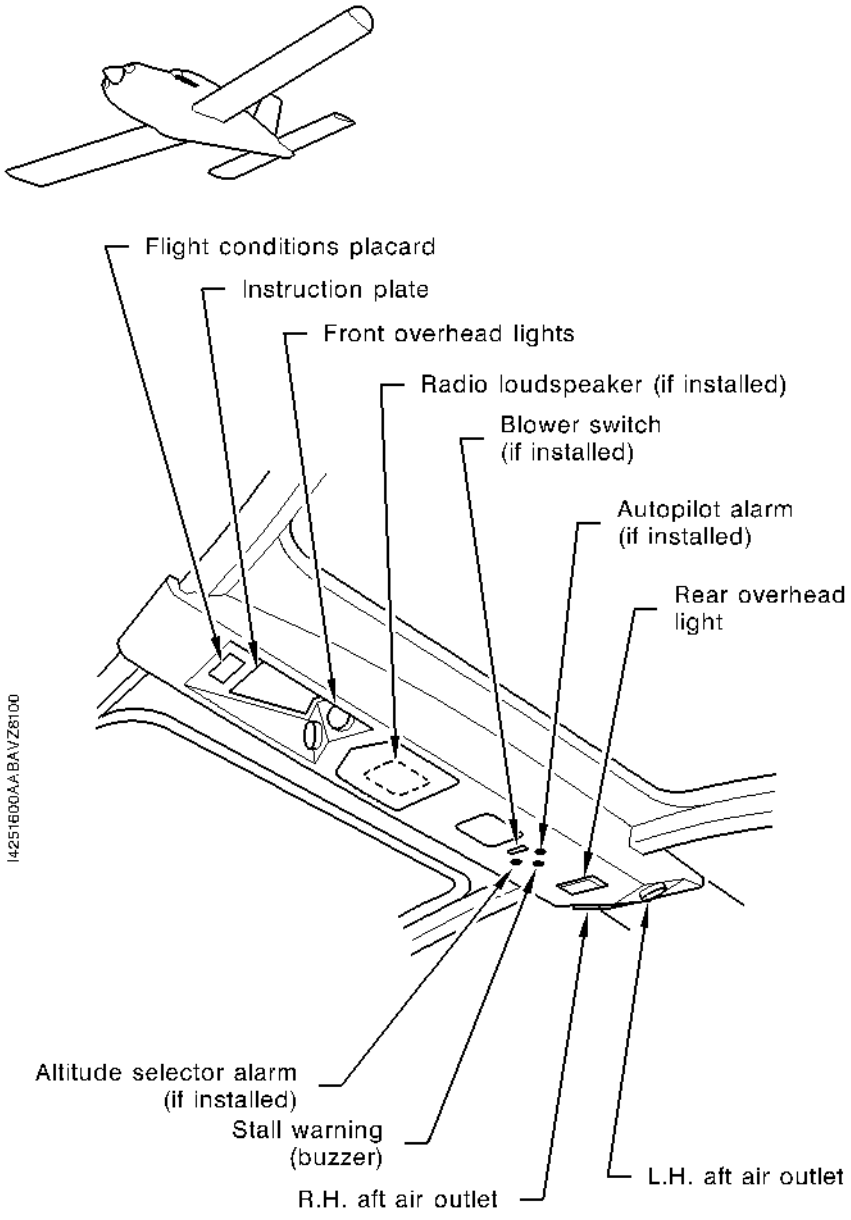

Figure 7.4 - EXAMPLE OF UPPER DUCT CENTRAL PART

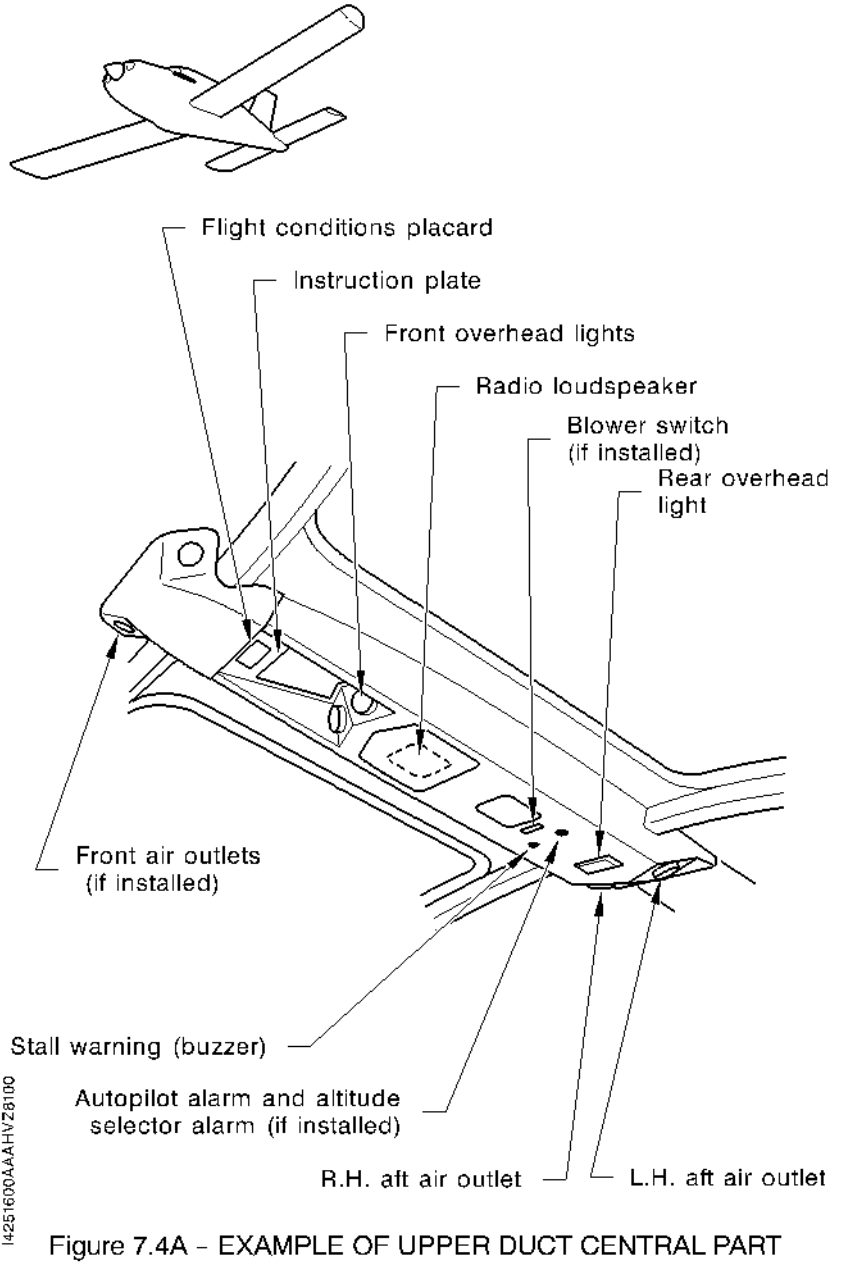

Figure 7.4A - EXAMPLE OF UPPER DUCT CENTRAL PART

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ADVISORY PANEL

The advisory panel (see Figure 7.5 or 7.5A) is located at the top edge of the L.H. instrument panel, directly in front of the pilot. The panel contains separate indicator lights which illuminate green, amber or red when a specific condition occurs in the associated airplane system. A green colored light is illuminated to indicate a normal or safe condition in the system. However, an illuminated amber lamp indicates that a cautionary condition exists, but which may not require immediate corrective action. When a hazardous condition exists requiring immediate corrective action, a red light illuminates.

A day / night switch is installed in the centre of the advisory panel to control the intensity of the green indicator lights and of the GPS annunciators (if GPS installed).

Additional annunciators, associated to the GPS (if installed) are installed in the centre of the advisory panel.

SWITCH-BREAKERS PANEL

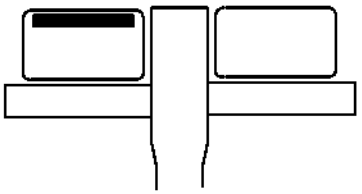
The general electrical equipment switch-breakers are located on the front part of the central pedestal.

The switch-breakers located on this panel are illustrated in Figure 7.5B.

CIRCUIT BREAKERS PANEL

The electrical equipment circuit breakers are located on a separate panel mounted on the L.H. cabin sidewall adjacent to the pilot.

Circuit breakers located on this panel are illustrated in Figure 7.6 or 7.6A.



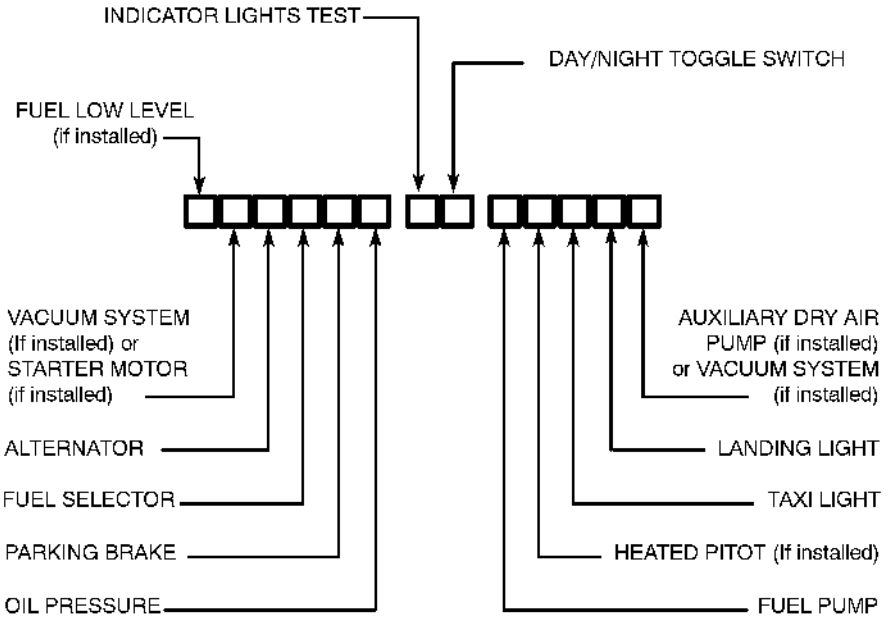
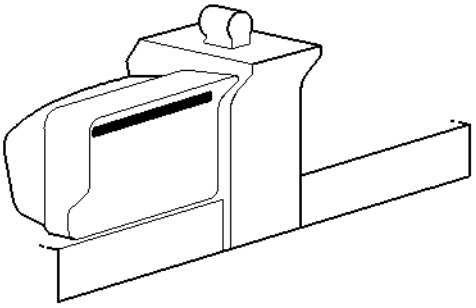


Figure 7.5 - ADVISORY PANEL (BASIC)



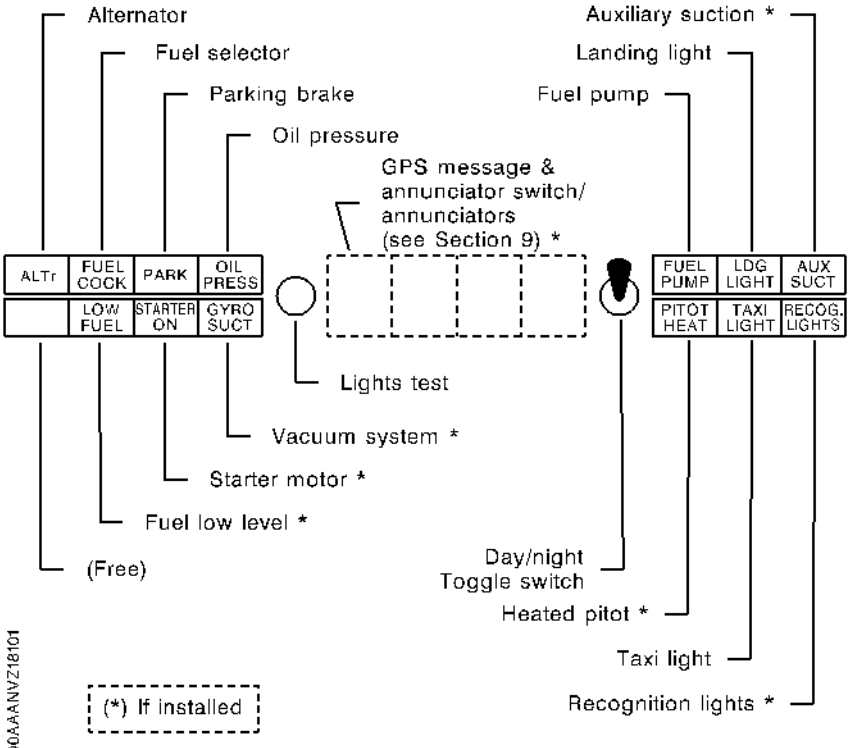
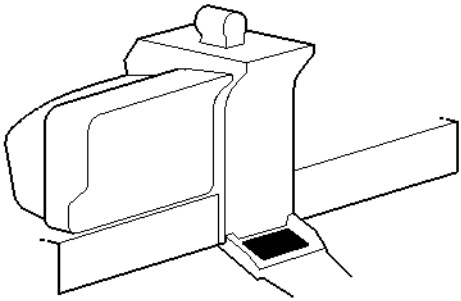


Figure 7.5A - ADVISORY PANEL (EXTENDED)



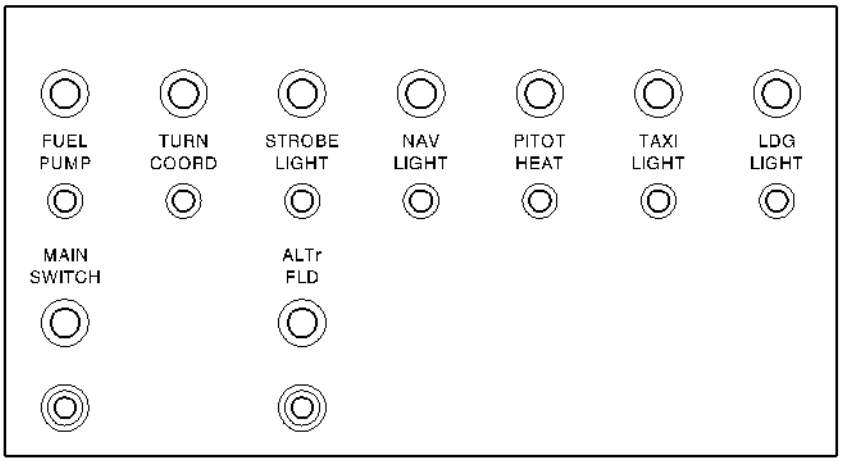


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Figure 7.5B - SWITCH-BREAKERS (SB)

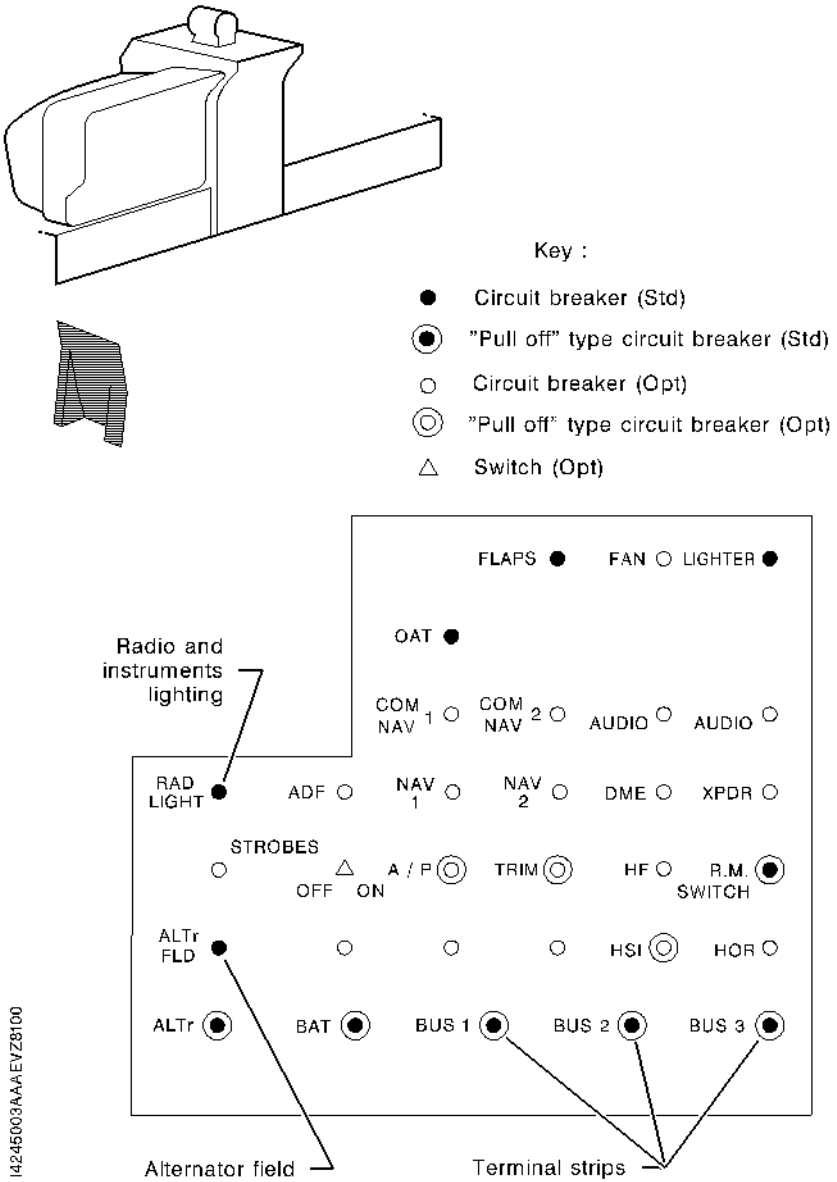

Figure 7.6 - CIRCUIT BREAKERS ASSEMBLY
(Typical arrangement)

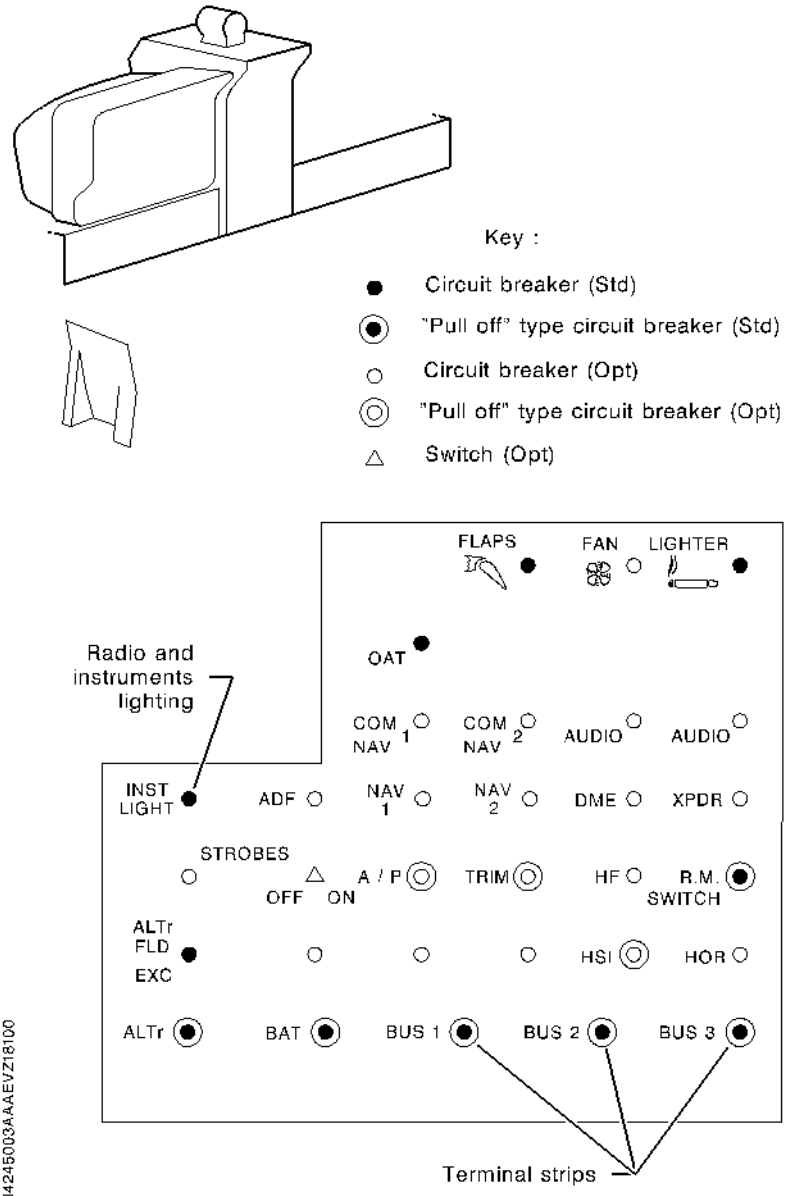

Figure 7.6A - CIRCUIT BREAKERS ASSEMBLY
(Typical arrangement)

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GROUND CONTROL

Effective ground control while taxiing is accomplished through nose-wheel steering by using the rudder pedals connected to nose-wheel through rods.

When a rudder pedal is fully pushed, the nose-wheel rotates through an arc of approximately 22° to the left and 18°30' to the right. By applying either left or right brake, the degree of turn may be increased.

The minimum turning radius of the airplane is obtained by using differential braking and nose gear steering (see Figure 7.7).

Moving the airplane by hand is most easily accomplished by attaching a tow bar (stowed in the baggage compartment) to the nose gear leg.

If the airplane is to be towed by vehicle, never turn the nose gear more than 22° to the left and 18°30' to the right or structural damage to the nose gear could result.

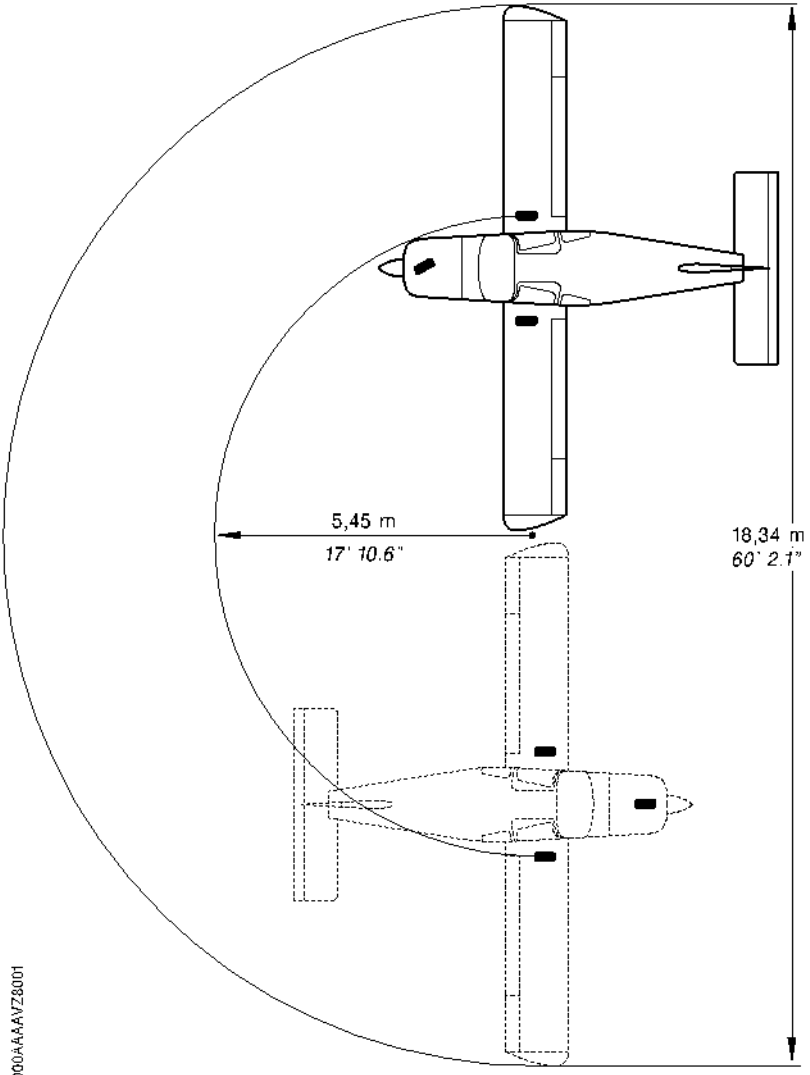

Figure 7.7 - MINIMUM TURNING RADIUS

WING FLAPS

The wing flaps are of the large span, single-slot type. They are retracted or extended by positioning to the desired flap deflection position the flaps control located on the pedestal, on R.H. side of the switch-breakers.

The switch lever tilts up or down with stops at 0° and 25°30'. If your aircraft is equipped with pre-setting flaps, the switch lever is moved up or down in a slotted panel with mechanical stops at "retracted" (0°) ; "take-off" (10°) and "landing" (25°30') positions (see Figure 7.2). An indicator located near the control provides various flaps positions.

The wing flaps system is protected by a 8-amp. circuit breaker, labelled "FLAPS" located on L.H. circuit breakers side panel (see Figure 7.6 or 7.6A).

LANDING GEAR

Aircraft <u>not equipped</u> with modification MOD. 118 or MOD. 120 :

The landing gear system is of stationary tricycle type with conventional steerable nose gear. Nose gear and main gears are equipped with telescopic and oil / air shock absorbers incorporated in landing gear leg. Each main gear wheel is equipped with a hydraulically-actuated, single-disc brake on the inboard side of the wheel.

Aircraft <u>equipped</u> with modification MOD. 118 or MOD. 120 :

The landing gear system is of stationary tricycle type with conventional steerable nose gear. The nose gear is equipped with a telescopic and oil / air shock absorber incorporated in the landing gear leg. Each main gear includes a rear shock compensating rocker beam connected to the landing gear leg by means of an oil / air shock absorber. Each main gear wheel is equipped with a hydraulically-actuated, single-disc brake on the inboard side of the wheel.

BAGGAGE COMPARTMENT

The baggage compartment extends from the rear bench or, Post-MOD.151, rear seats to the rear bulkhead of the cabin (former No. 6). The access is possible either through a lockable door located on the left side of the airplane, or from the inside of the cabin.

Prior to any flight, check that this door is locked.

To open the access door, proceed as follows :

POUSSER POUR TOURNER

PUSH TO TURN - DRÜCKEN UM ZU DREHEN

Figure 7.8

WARNING

ANY PARCEL OR BAGGAGE MUST BE FIXED WITH STRAPS. IT IS FORBIDDEN TO TRANSPORT PEOPLE IN THE BAGGAGE COMPARTMENT.

ANY MATERIAL THAT MIGHT BE DANGEROUS FOR THE AIRPLANE OR THE OCCUPANTS SHOULD NOT BE PLACED IN THE AIRPLANE

CARGO CONFIGURATION

The rear bench or, Post-MOD.151, rear seats may be taken off for easy loading in cargo configuration. For further information, refer to Section 6 "Weight and balance".

SEATS, SEAT BELTS AND SHOULDER HARNESSES

FRONT SEATS

The various possibilities of seats adjustment depend on the version chosen.

- To move the seat forward and rearward (*) :
  Use the adjustment bar located on the front part of the seat, under the seating and grasp handle under instrument panel strip.
- To tilt the seat (*) :
  Use the lever located on the outboard side of the seat.
- To change the seat back angle (if installed) :
  Use the knurled knob located at the bottom part on the inboard side of the seat back.
- To adjust the back, at lumbar level (if installed) :
  Use the knob located over the knurled knob on the inboard side of the seat back.
  Press on the knob and moderately lean back to the desired position, release the button, the seat back should fit perfectly with your back.

(*) Lift up adjustment bar or lever to unlock ; when in desired position, release it and make sure it is locked.

REAR BENCH OR, Post-MOD.151, REAR SEATS

- To remove rear bench or rear seats, refer to Section 6 "Weight and Balance".
  Rear bench or rear seats is/are not adjustable.

HEAD-RESTS (if installed)

- Before Model "95" :
  - To adjust and remove the head-rest :
    Simply make it slide vertically.
  - To fit the head-rest into the seat back :
    Turn the centering bush (bearing an arrow) of ¼ turn clockwise (in the arrow direction) and maintain it to fit the head-rest in the seat back.
- Model "95" :
  - To install, adjust and remove the head-rest, simply make it slide vertically.

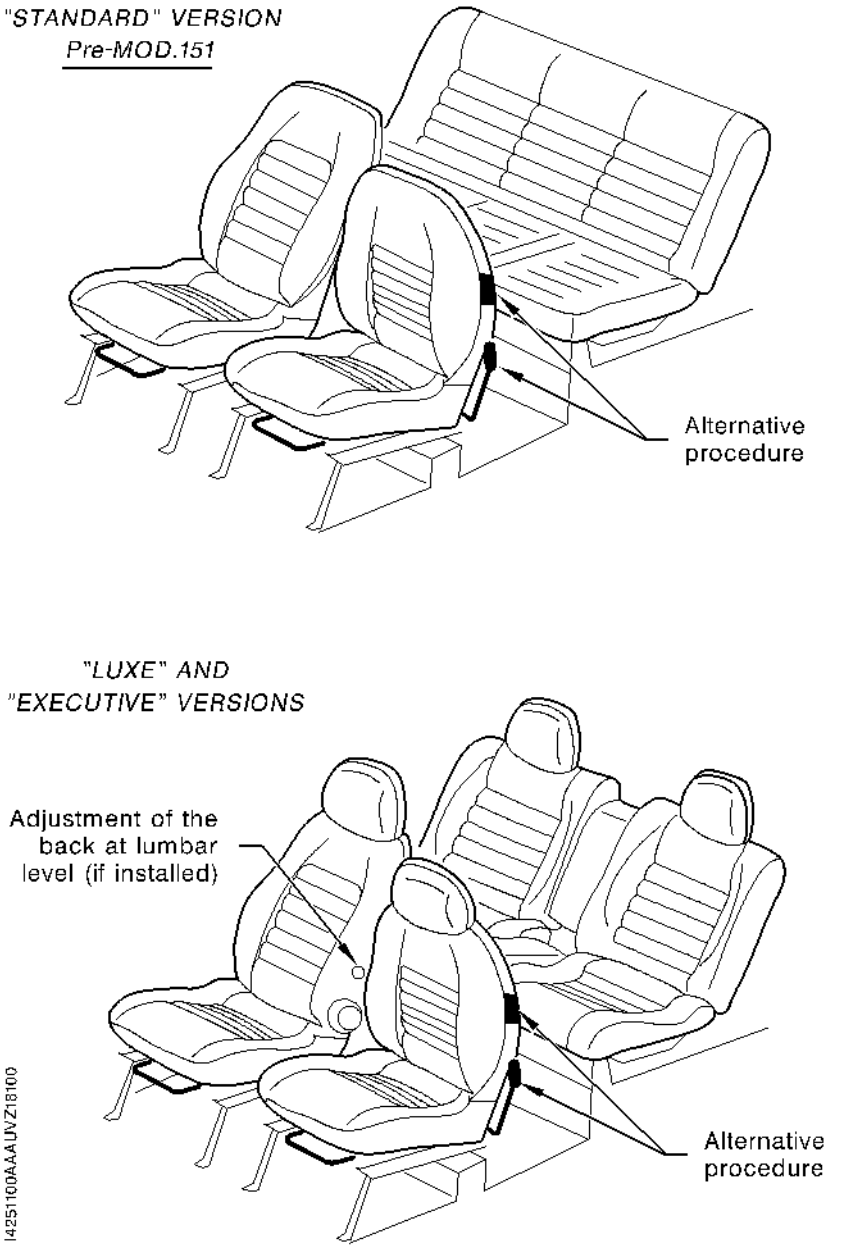

Figure 7.9 - FRONT SEATS AND REAR SEAT

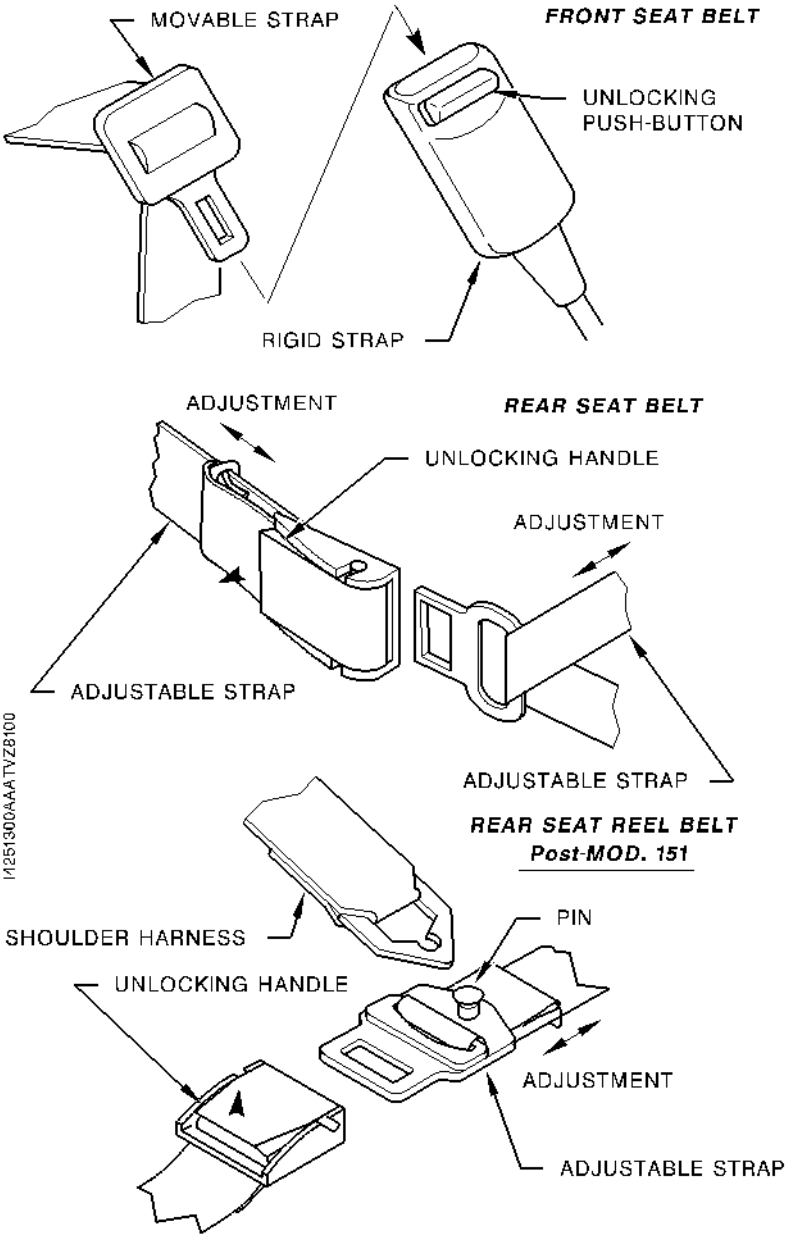

Figure 7.10 - SEAT BELTS

SEAT BELTS (see Figure 7.10)

RECOMMENDATIONS

Misuse of the safety belt may introduce a risk.
Be sure the belt is tightened when it is fastened.
To be effective, the seat belt shall not be twisted.
In any case and for all types of belts, check that they are not impeded in their operation.
Further to a severe accident, replace the belts which were installed when the accident happened.

Front seat belts

- To lock them :
  Engage movable strap into rigid strap up to clipping.
  Should a blocking occur during operation, slightly ease back [5 in. (10 cm) approximately], then unwind strap again.
- To unlock them :
  Depress red unlocking push-button to free movable strap.

Rear seat belts

- To lock them :
  Engage both straps up to clipping.
  Be sure the belt is properly tightened (adjustement is possible on both straps).
- To unlock them :
  Pull on unlocking handle to release straps.

Post-MOD.151

Rear seat reel belts

- To lock them :
  Engage reel shoulder harness rigid part on adjustable strap pin. Then engage straps so attached in the locking handle up to clipping.
  Be sure the belt is properly tightened.
- To unlock them :
  Pull on unlocking handle to release straps.
  Disengage shoulder harness rigid part from the pin.

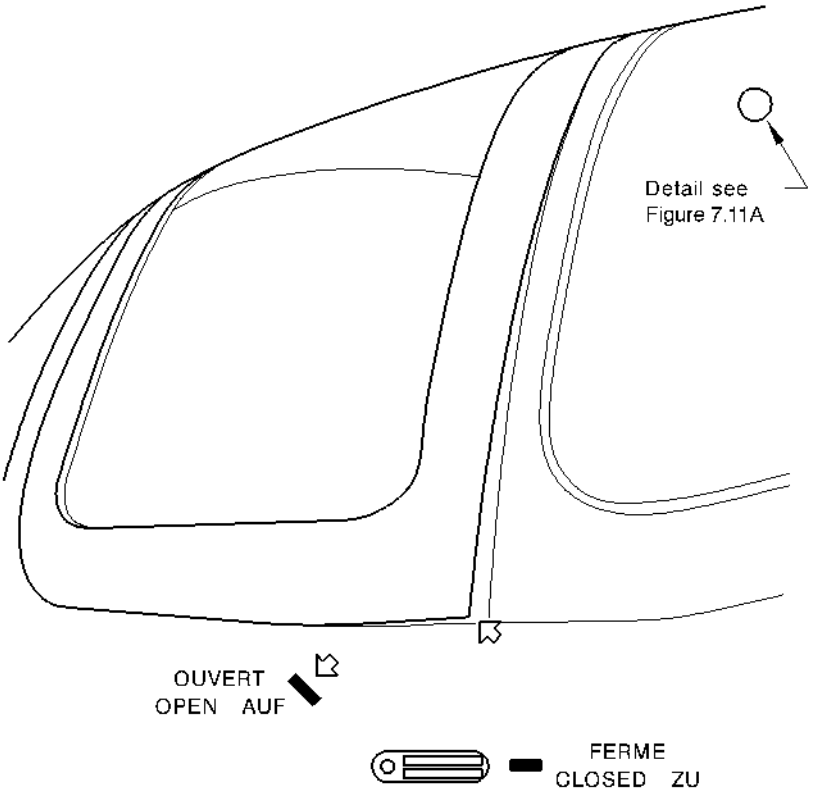

Figure 7.11 - DOORS OPENING AND CLOSING

I45210000AACCTY8100

Figure 7.11A - EMERGENCY EXIT - Pre-MOD.151

DOORS AND EXITS (see Figure 7.11)

DOORS

- To open them :
  Push handle forward.
  Lift the door at the location marked with a shaded arrow.
  Follow door up to maximum position.
- To close them :
  Close the door and set handle to "Closed" position .

WARNING

PRIOR TO EACH FLIGHT, CHECK THAT BOTH CABIN ACCESS DOORS ARE NOT KEY-LOCKED

CHECK THAT BOTH LOCKING HOOKS ARE PROPERLY NOTCHED

EXITS

Pre-MOD.151

In case of L.H. and R.H. doors locking, and if it is necessary to leave the airplane in a hurry (risks of fire, drowning...) jettisson one or both rear windows, kicking out at the location of the placard.

The placard (see Figure 7.11A) is located on both rear windows and is legible from the inside of the airplane.

CONTROLS LOCK

A locking pin located in lateral case on pilot's side is provided to block the control wheel.

To insert the blocking pin into the control wheel tube pull the control wheel backwards to approximately half-way and line up the tube hole with that of the fixed part on the panel. The blocking pin will be inserted vertically from top to bottom.

A safety device preventing the introduction of the magneto/start selector key forbids operation of the engine with blocked control wheel.

Pull the blocking pin upwards to free the control wheel and the magneto/start selector.

ENGINE

The TB 200 airplane is powered by a four-cylinder, horizontally opposed, direct drive LYCOMING IO-360-A1B6 engine rated at 200 BHP at 2700 RPM. It is provided with a starter, a 24-volt / 70-amp alternator, an all-weather shielded ignition harness, two magnetos, a vacuum pump drive, a fuel pump and a manifold air filter.

The engine cowl is a laminate cantilever structure, fixed on the firewall and made of two elements. The upper cowl is fitted with an inspection door provided to check oil level ; it can also be fitted with an access door to the propeller deicing fluid tank. The lower cowl is fitted with incorporated air intakes and may be fitted with an inspection door to easy quick drain. Both cowls are completely removable without requiring removal of the propeller.

The engine mount is made of steel tube, rigidly attached on firewall. Engine attachment is provided by dynafocal mounting brackets to attenuate vibrations.

Engine and accessories cooling is provided by a downwards airflow. Air penetrates through holes located on each side of the propeller cone, is guided around the engine by airproof deflectors, then conducted to two air outlets located on the lower cowl.

Engine inlet air penetrates through an air intake located on the front side of the lower cowl and goes directly through a filter, before being admitted in the air duct in front of the injection unit.

The air duct can also be air-feeded by an alternative air supply source, mechanically actuated by the "Alternate Air" control located on the L.H. side of the pedestal. This air source provides the injection unit with heated air if icing conditions are unintentionally encountered.

The stainless steel exhaust system comprises a silencer with a heat exchanger in order to provide cabin hot air supply. Exhaust gases are evacuated through the exhaust duct at the basis of engine lower cowl, on R.H. side.

In order to obtain the maximum engine performance and T.B.O, the pilot should apply the procedures recommended by Lycoming Operator's Manual concerning the engine.

ENGINE CONTROLS

- Engine manifold pressure is controlled by the throttle (large black knob) located on the control pedestal. In the forward position, the throttle is open (full power) ; in the aft position, it is closed (engine idling).
- The propeller governor is controlled by the propeller control (blue notched knob) located on the central pedestal. In the forward position, the propeller moves to "low pitch" position (high RPM), in the aft position, it moves to "high pitch" position (low RPM).
- The mixture is controlled by the mixture control (red notched knob) located on R.H. side of the central pedestal. In the forward position, the mixture is open (full rich) ; in the aft position, the mixture is closed (idle cut-off).
- In the event of the blockage of the manual air inlet filter (located below the propeller cone), the admission of back-up air is controlled by the "Alternate Air" control (grey square knob) located on the L.H. side of the central pedestal, to maneuver the "Alternate Air" control forward or rearward, press on the center of the knob :
  - When the control is pushed forward (normal admission), outside temperature air is carried through the air filter to the injection unit.
  - When the control is pushed back (back-up admission), air from the engine compartment is drawn by the injection unit (without going through the filter).
- Engine controls friction is controlled by a knurled knob located in the alignment of the controls on the R.H. side of the pedestal.

ENGINE INSTRUMENTS

Indicators enable the pilot to assure a permanent check of oil pressure, oil temperature, tachometer, manifold pressure, flowmeter and (if installed) EGT and CHT.

Post-MOD.182

A "TEST" knob, located on the engine monitoring cluster front face, enables to test :

- digital indicators,
- analogue indicators (pointers at 12 o'clock),
- lamps (VDC, AMP and PSI),
- equipment both power supplies are available. In case of loss of one of the power supplies, the yellow lamp (AMP) flashes during the test.

IGNITION - STARTER SYSTEM

Engine ignition is provided by two magnetos and two spark plugs per cylinder.

The R.H. magneto fires the R.H. lower and L.H. upper spark plugs ; the L.H. magneto fires the L.H. lower and R.H. upper spark plugs.

Ignition is controlled by a key-operated rotating selector, located on L.H. side of the L.H. panel strip.

The selector operates clockwise : "OFF" ; "L.H." magneto ; "R.H." magneto ; "L.H. + R.H." magnetos ; "STARTER" by pushing.

CAUTION

RELEASE THE PRESSURE ON THE KEY AFTER ENGINE START

NEW ENGINE BREAK-IN AND OPERATION

The engine has undergone a break-in at the factory and is ready for the full range of use. It is, however, recommended that cruising flights be accomplished at 65 to 75 % until a total of 50 hours has accumulated or oil consumption has stabilized.

However for new, remanufactured or recently overhauled engines, as well as engines on which cylinders have been recently installed, it is required to perform according to TEXTRON LYCOMING Service Bulletin No. 480 at last revision the following inspections :

- an inspection within the 10 first flight hours,
- an inspection within the 25 following flight hours.

Use dispersant oil in compliance with Specification MIL-L-22851 only after the first 50 hours.

ENGINE LUBRICATION SYSTEM

The engine is lubricated by an oil system (see Figures 7.12 and 7.12A or 7.12B) powered by a pump located on engine rear accessory housing. A sump located at the bottom of the engine allowing oil recovery, a cartridge throw-away type filter located on engine rear accessory housing and a strainer type filter located in the sump complete the system.
A pressure probe and a temperature probe transmitting the values to two indicators located on upper edge of the console enable the pilot to check the oil system.
An inspection door located on engine upper cowl provides access to oil system filling port.
A dipstick attached on the port blanking cap enables to check oil level in the sump. A cock located under the engine case enables a quick drain of the latter.

AIR INDUCTION SYSTEM

The engine is supplied with an air intake located under the propeller cone. This air intake is fitted with a filter which removes dust and other foreign matters from the induction air so that they do not penetrate into the air duct. However, in the event the air filter becomes blocked, the "Alternate Air" control enables to open an alternate air door allowing air to enter the engine.

For flights in sandy or dusty atmosphere, install a second specific filter.

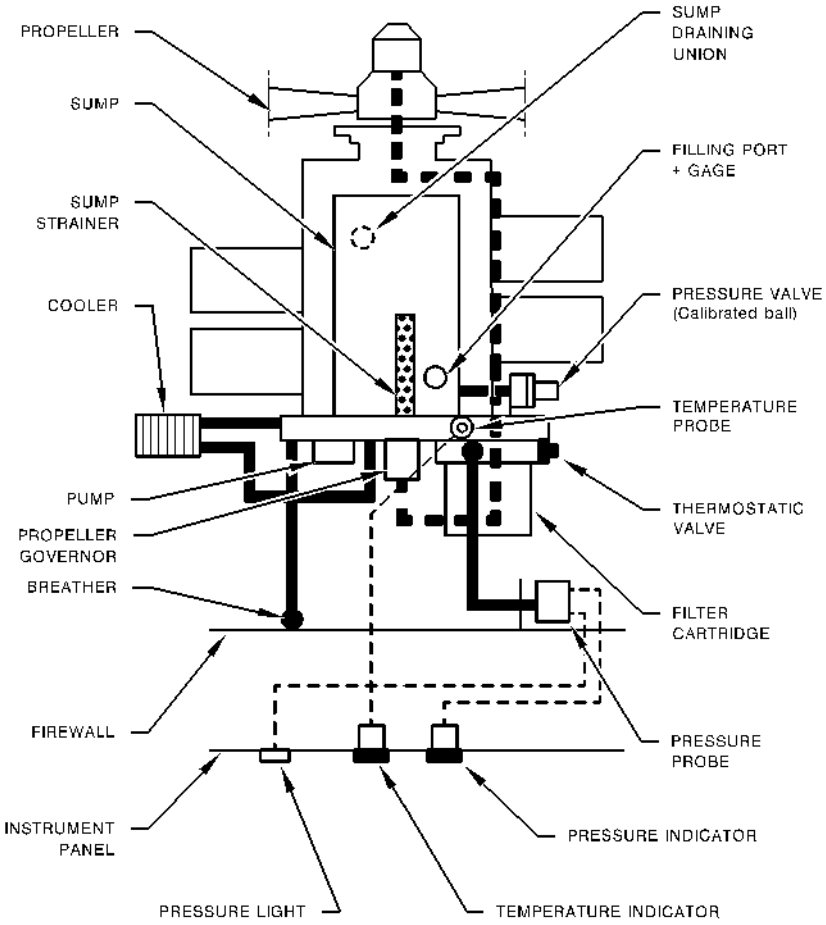

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Figure 7.12 - OIL SYSTEM DIAGRAM

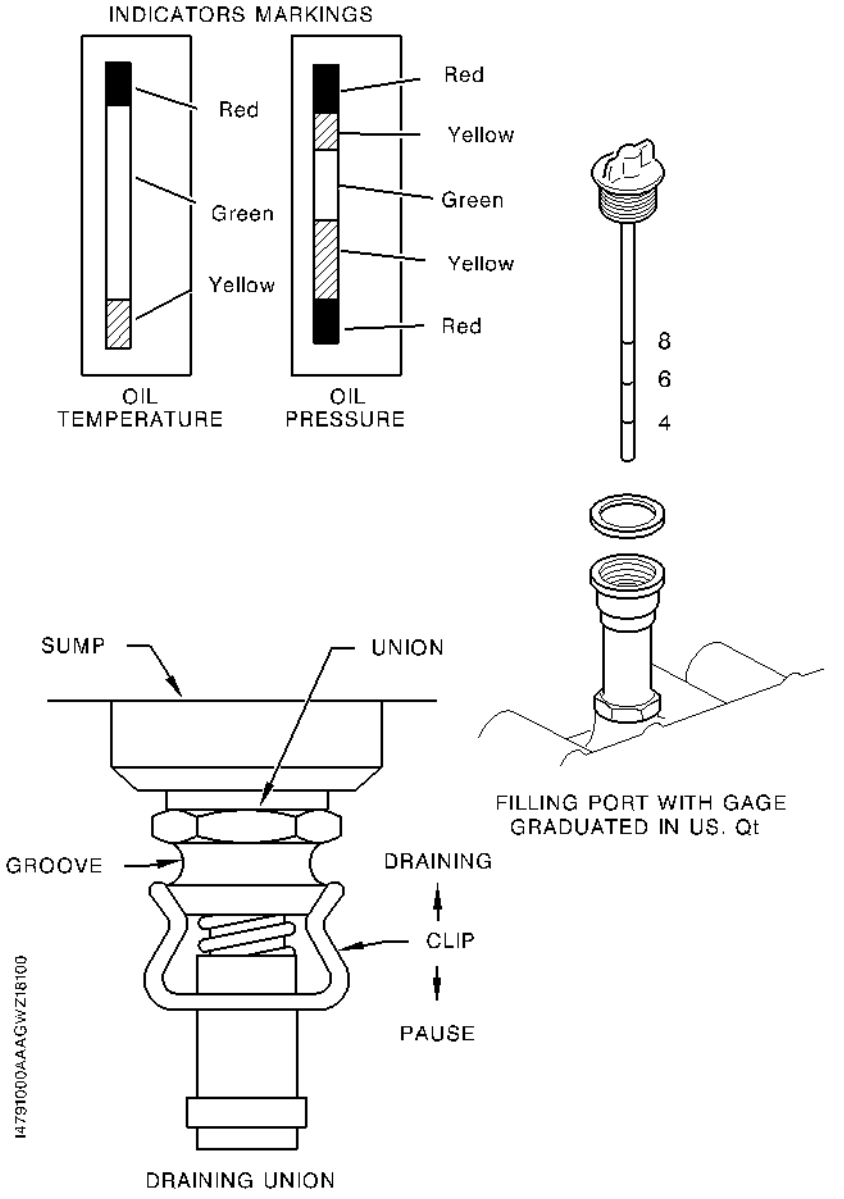
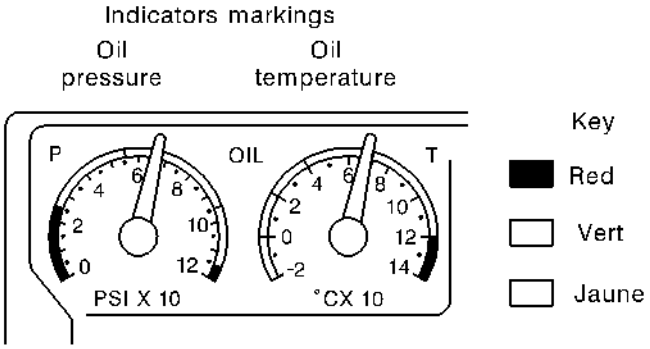


Figure 7.12A - OIL SYSTEM



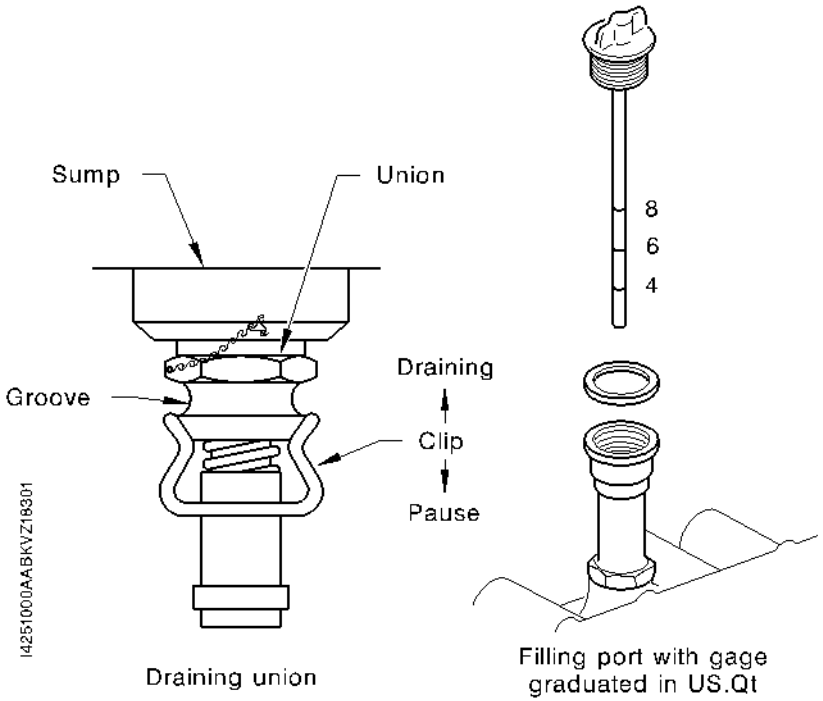


Figure 7.12B - OIL SYSTEM

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EXHAUST SYSTEM

Exhaust gas from each cylinder is collected by pipes to be conducted, in order to reduce its noise level to an exhaust duct which vents it outboard on R.H. side of lower engine cowl.

PROPELLER

The airplane is fitted with all-metal, two-bladed, constant-speed, governor-regulated propeller. The propeller control actuates on the governor. According to the control position, the governor determines propeller rotation speed, and thus the engine speed to be maintained. The governor controls flow of engine oil, boosted to high pressure by the governing pump, on a piston located in propeller hub. Oil pressure twists the blades toward high pitch (low RPM). When oil pressure to the piston is relieved, the blades twist to low pitch (high RPM).

FUEL SYSTEM

The fuel system (see Figures 7.13 and 7.14, 7.14A or 7.14B, 7.14C) consists of two vented integral fuel tanks (one in each wing), a selector valve, a filter, an auxiliary fuel pump as well as an engine-driven fuel pump, a fuel distributor and four fuel-injection nozzles.

Engine-driven fuel pump draws fuel from L.H. or R.H. tank through the three-position selector valve and a filter.

The selector valve is controlled through a knob labelled "FUEL SELECTOR" The selector valve knob has following positions labelled : "CLOSED", "LEFT", "RIGHT".

Then, the fuel goes through the auxiliary fuel pump (electric) and supplies the engine-driven fuel pump. The engine pump supplies under pressure the injection unit. The fuel is then conducted to the divider and to the injectors in the cylinders.

A dual indicator gives the manifold pressure as well as the fuel flow and pressure (the fuel pressure is a nozzle pressure picked up on the flow divider).

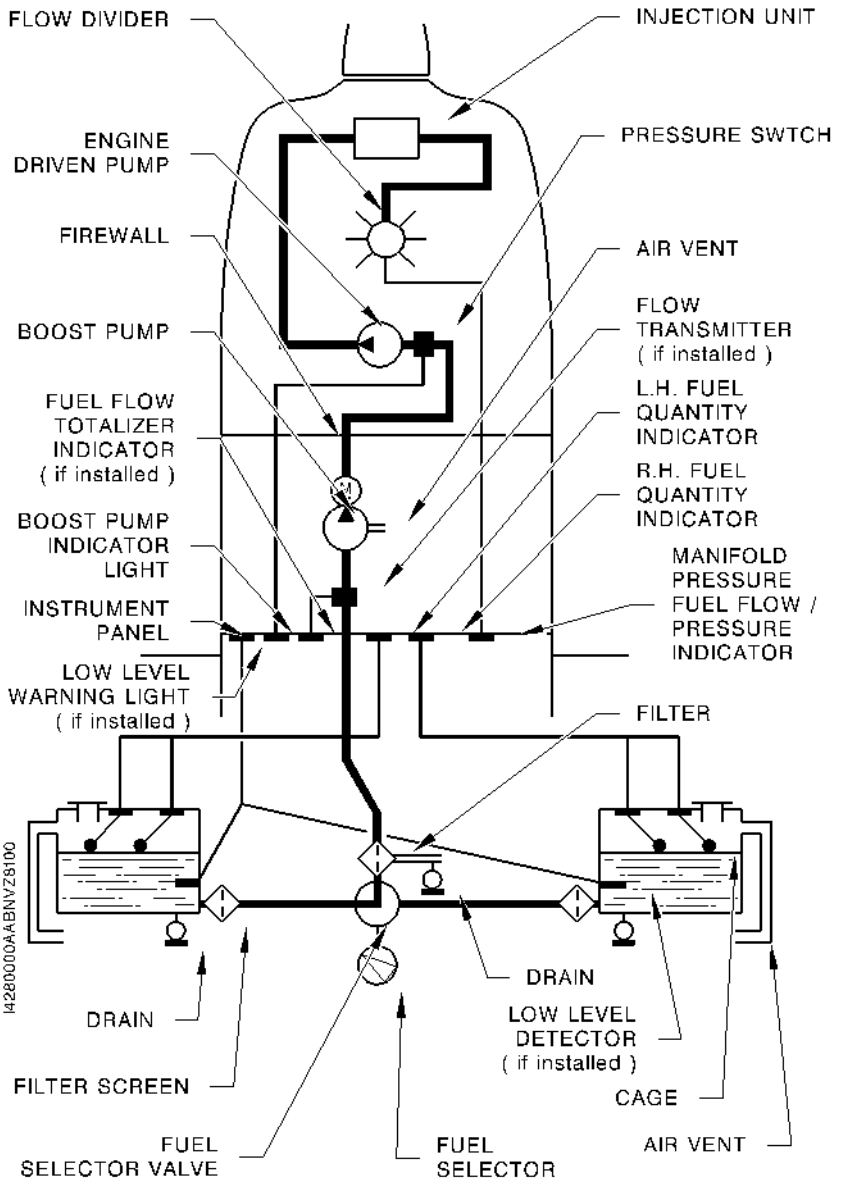


Figure 7.13 - FUEL SYSTEM

Fuel quantities :

- Total maximum : 55.4 U.S Gal. (210 l)
- Total usable : 53.9 U.S Gal. (204 l)
- Unusable : 1.6 U.S Gal. (6 l)

In cruise flight, a continuation of fuel flow must be assured as the new tank is being selected. When switching from one tank to the other, place the auxiliary fuel pump switch momentarily in the "ON" position until normal fuel flow has been restored.

Each fuel tank is equipped with its own ventilation system, an essential element in the operation of the fuel system. Should a vent become blocked, the fuel flow from the tank concerned is reduced and the engine may cut out. The ventilation is ensured by ducts which run to the lower surface of each wing.

Fuel quantity is measured by four fuel quantity gages and is shown by two fuel quantity indicators located on the upper portion of the central console.

Airplanes equipped with resistor/float gages

The float type gages, two on each wing, are attached to the rear of the tanks.

Airplanes equipped with capacity gages

The capacity type gages, two on each wing, are attached to the rear of the tanks, on the wing spar.

Fuel quantity measured by the gages is transmitted to the fuel quantity indicators by a gaging conditioner located under the seating of the rear bench or, Post-MOD.151, the rear seats.

All

The indicators are graduated in 1/4, 1/2, 3/4 and 4/4, with the zero indicating an empty tank. When the pointer of the indicator is at zero, approximately 0.8 U.S. Gal (3 litres) of unusable fuel remains in the tank.

The indicators cannot be relied upon for accurate readings during skids, slips or unusual attitudes. If both indicator pointers should rapidly move to a zero, check voltmeter and oil temperature indicators. If they are not indicating, an electrical malfunction has occurred.

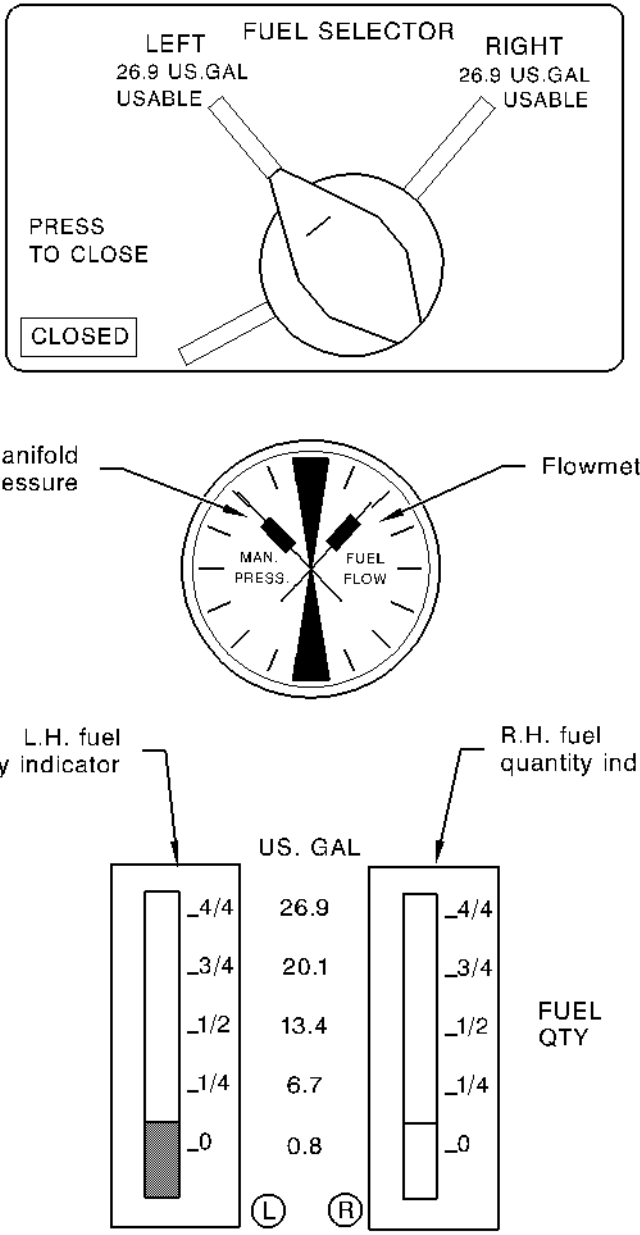
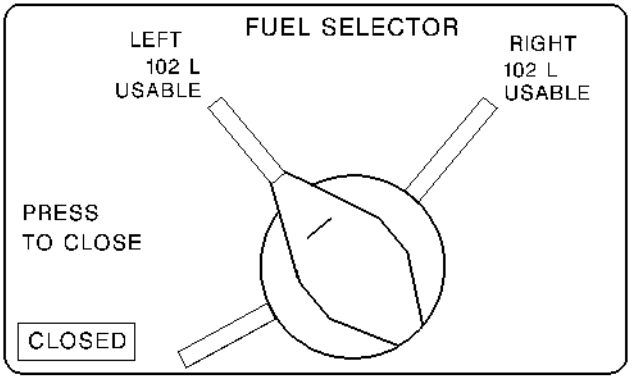
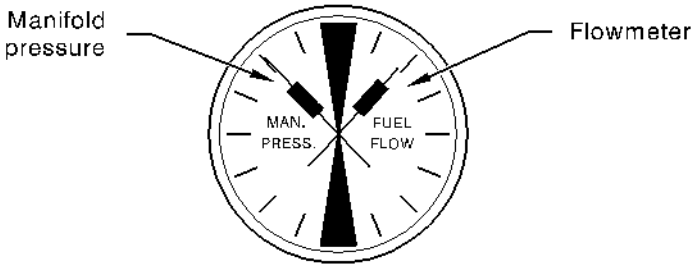


Figure 7.14 - FUEL SYSTEM MARKINGS (U.S. Gallons)





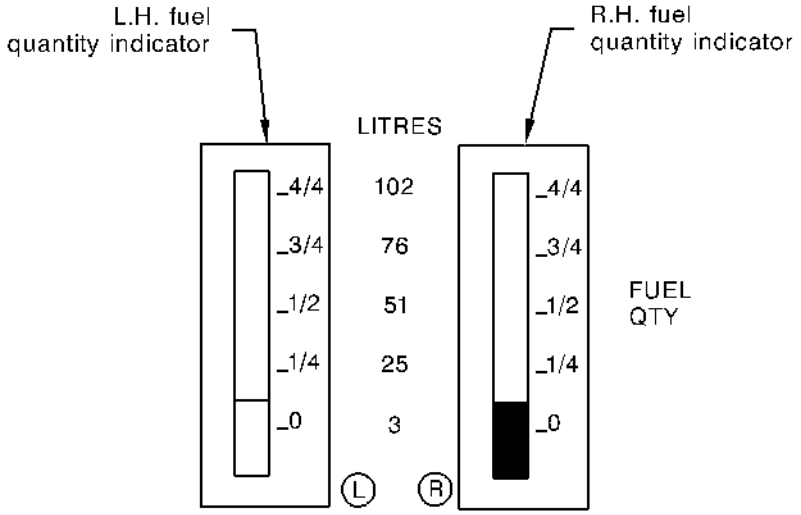


Figure 7.14A - FUEL SYSTEM MARKINGS (Litres)

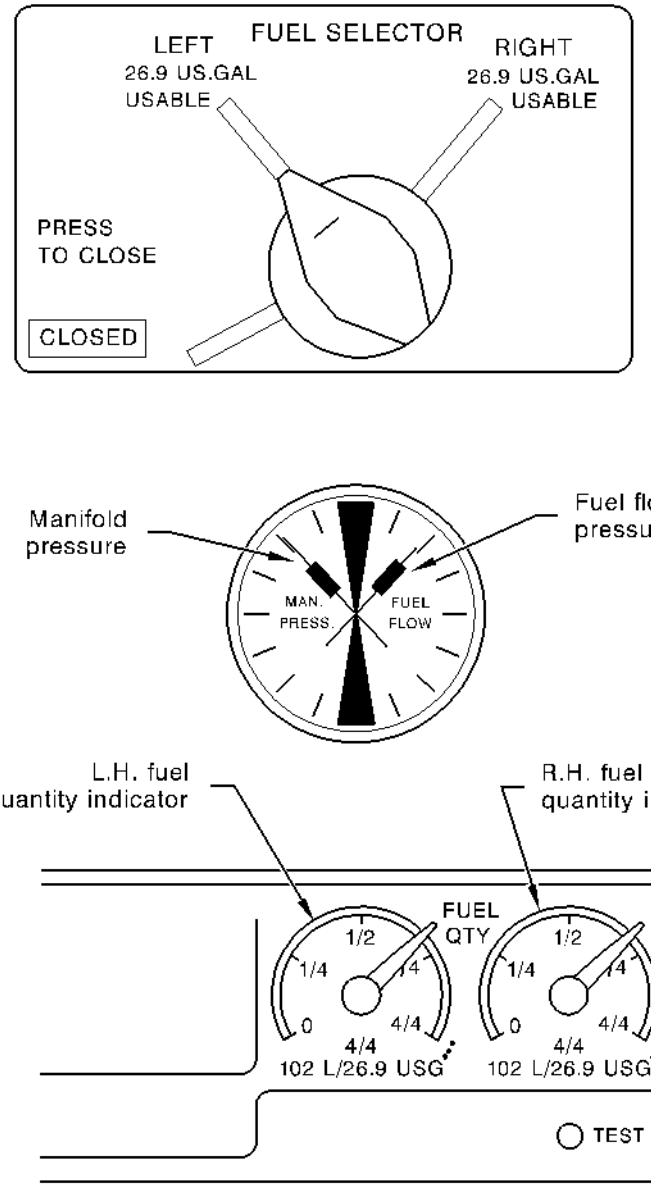
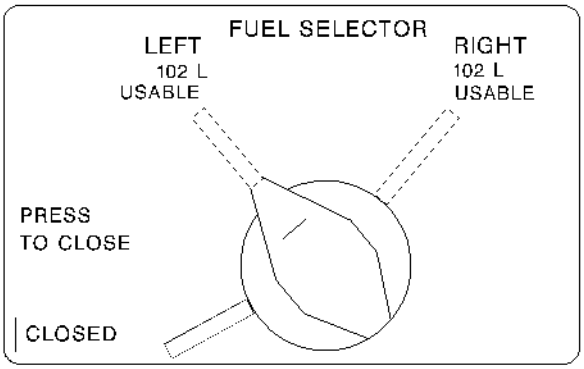
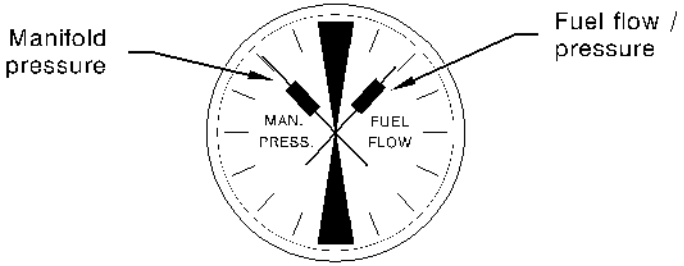


Figure 7.14B – FUEL SYSTEM MARKINGS (U.S. Gallons)





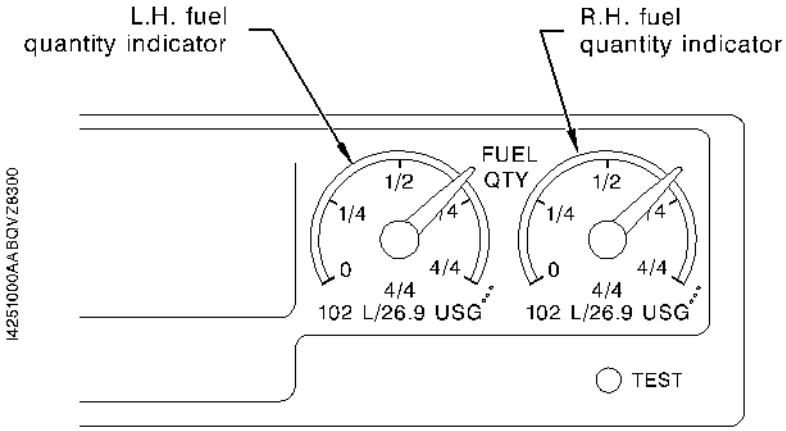


Figure 7.14C - FUEL SYSTEM MARKINGS (Litres)

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Post option C866 00M or Post-MOD.151

A low level warning light, located on the advisory panel, comes on whenever usable fuel quantity, remaining in one of both tanks (airplane in line of flight) reaches approximately 6.6 U.S. Gal (25 litres). In this configuration, the warning light illumination is controlled by a low level detector, located in each tank.

Post-MOD.171

A dual low level warning light, located on the L.H. instrument panel, receives information from R.H. and L.H. fuel tanks.
The warning light corresponding to the wing comes on whenever usable fuel quantity (airplane in line of flight) reaches approximately 6.6 U.S. Gal (25 litres). In this configuration, the warning light illumination is controlled by a low level detector, located in each tank.

All

The auxiliary fuel pump is controlled by a switch-breaker located on front part of pedestal.

An indicator light located on the advisory panel shows operation of the auxiliary pump.

The fuel system is equipped with drain valves to provide a means for the examination of the fuel in the system for contamination and grade. The system should be drained every day before the first flight and after each refueling by using the fuel sampler provided to drain fuel from the wing tank sump drain and the fuel strainers drains. The fuel tank sump drains are located just outboard of each main landing gear well and the fuel strainer drain is located under the R.H. front fuselage, near its intersection with R.H. wing.

The fuel tanks should be filled after each flight to minimize condensation, respecting the weight and balance limits.

The tanks are provided with a gage visible from the filling port.

Fuel tanks are full (fuel level not marked on the gage) when fuel is at the level of the filling port.

BRAKE SYSTEM

BRAKING (see Figure 7.15 ou 7.15A)

Braking is provided by hydraulic disk brakes actuated by brake pedals located on the L.H. station rudder pedals.

The R.H. station may also be equipped with brake pedals.

Differential braking helps to maneuver during taxiing :

- L.H. pedal actuates the L.H. wheel brake,
- R.H. pedal actuates the R.H. wheel brake.

PARKING BRAKE

- Parking brake is constituted with a knob located on the lower section of the L.H. strip, actuating a valve.
- To apply the parking brake, depress the pedals and turn the parking brake knob rightward.
- To release the parking brake, depress the pedals and set knob again in its vertical position (turn it leftward).
- An indicator light located on the advisory panel shows the position of the parking brake knob.

NOTE :
Operating the brake knob does not cause the parking brake to operate.

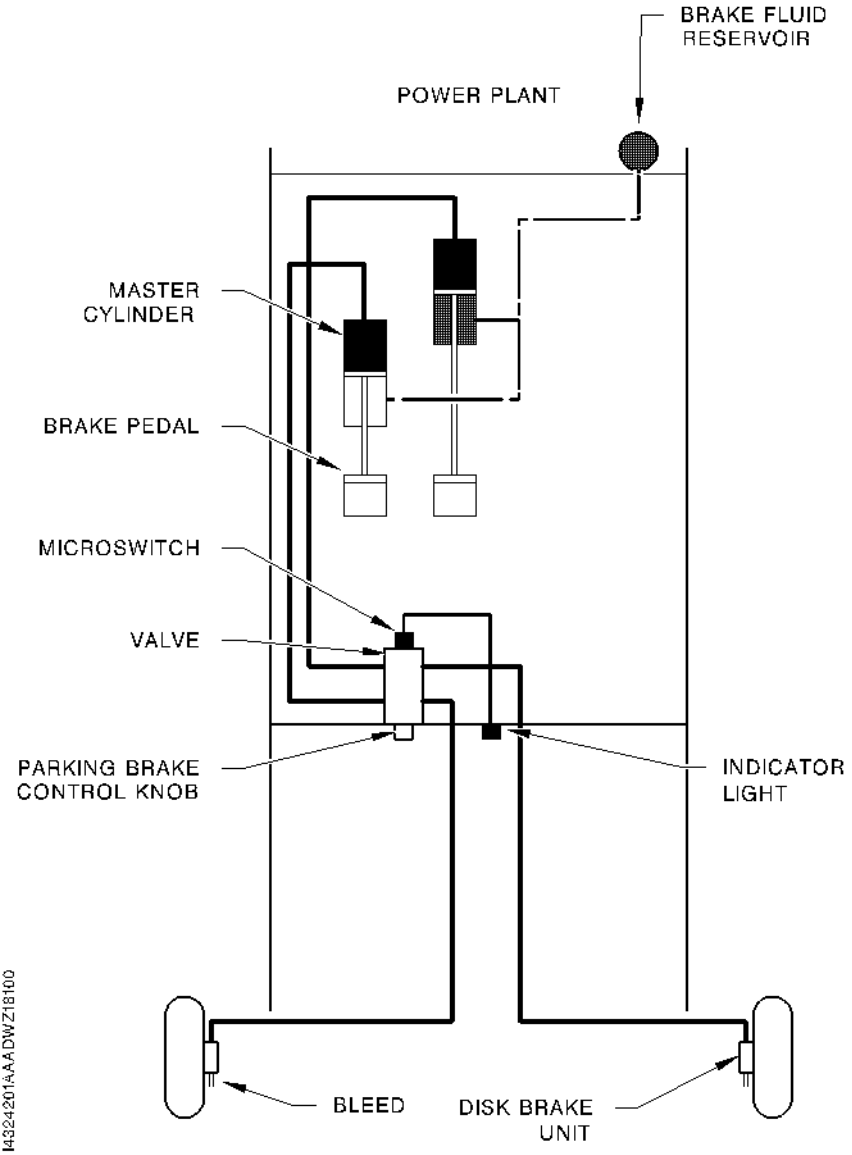

Figure 7.15 - BRAKE SYSTEM (L.H. station only)

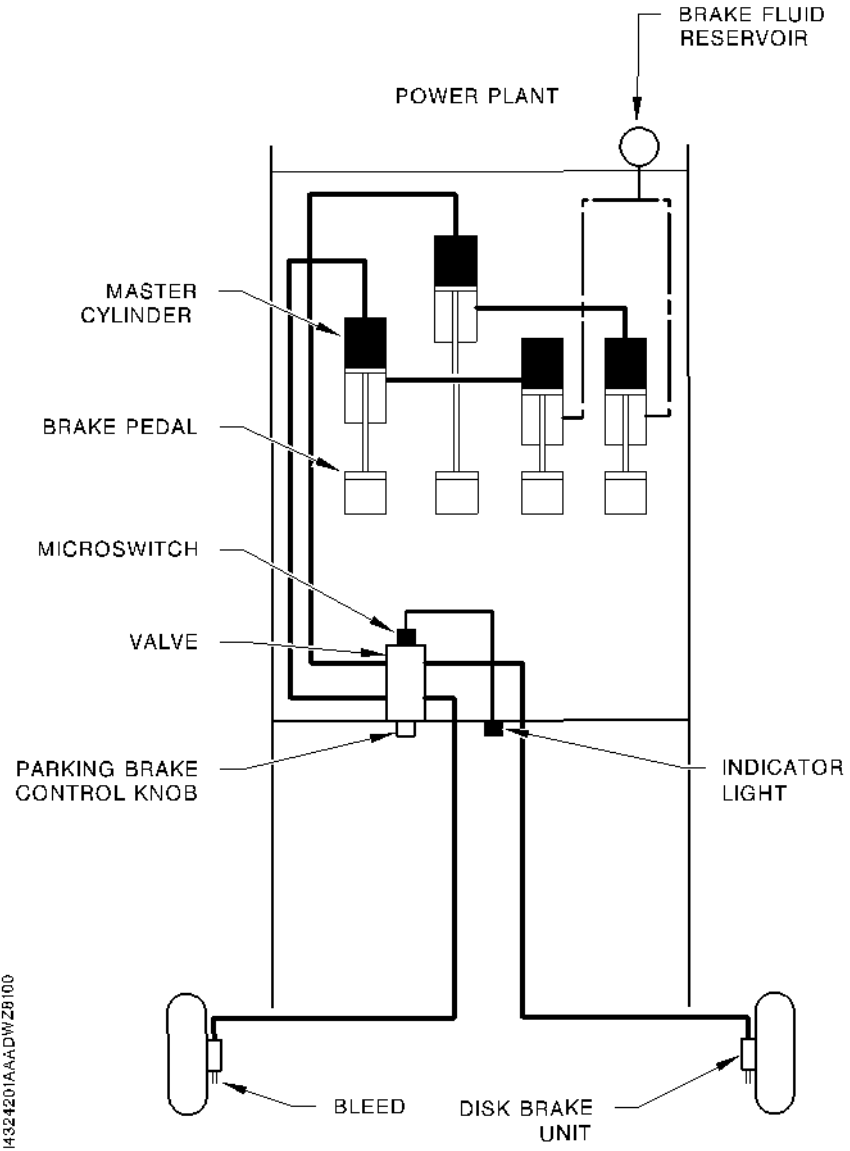

Figure 7.15A - BRAKE SYSTEM (L.H. + R.H. stations) (if installed)

STANDARD ELECTRICAL SYSTEM

The airplane is equipped with a 28-volt, direct-current electrical system (see Figures 7.16 and 7.16A). A belt-driven 70-amp alternator installed on the engine and a battery located in the engine compartment on firewall R.H. side supply the system.

The alternator is controlled by an alternator control unit providing voltage regulation, plus overvoltage sensing.

A "pull-off" type circuit breaker calibrated at 60 amps limits the alternator electrical load to the battery and the networks.

ALTERNATOR CONTROL UNIT

The alternator control unit located on the firewall, on cabin side provides the alternator voltage regulation and overvoltage protection.

In the event of overvoltage, the alternator control unit cuts off the alternator field and the amber (red on UK airplanes) warning light labelled "ALTr" illuminates. In this case only the battery powers the airplane mains.

The reset of the alternator control unit is operated by disconnecting and closing the switch-breaker labelled "ALTr FLD".

MAIN SWITCH

Battery connection to the electrical network is made through the switch-breaker labelled "MAIN SWITCH".

Before connecting ground power receptacle (if installed) on external power unit, check that main switch is OFF.

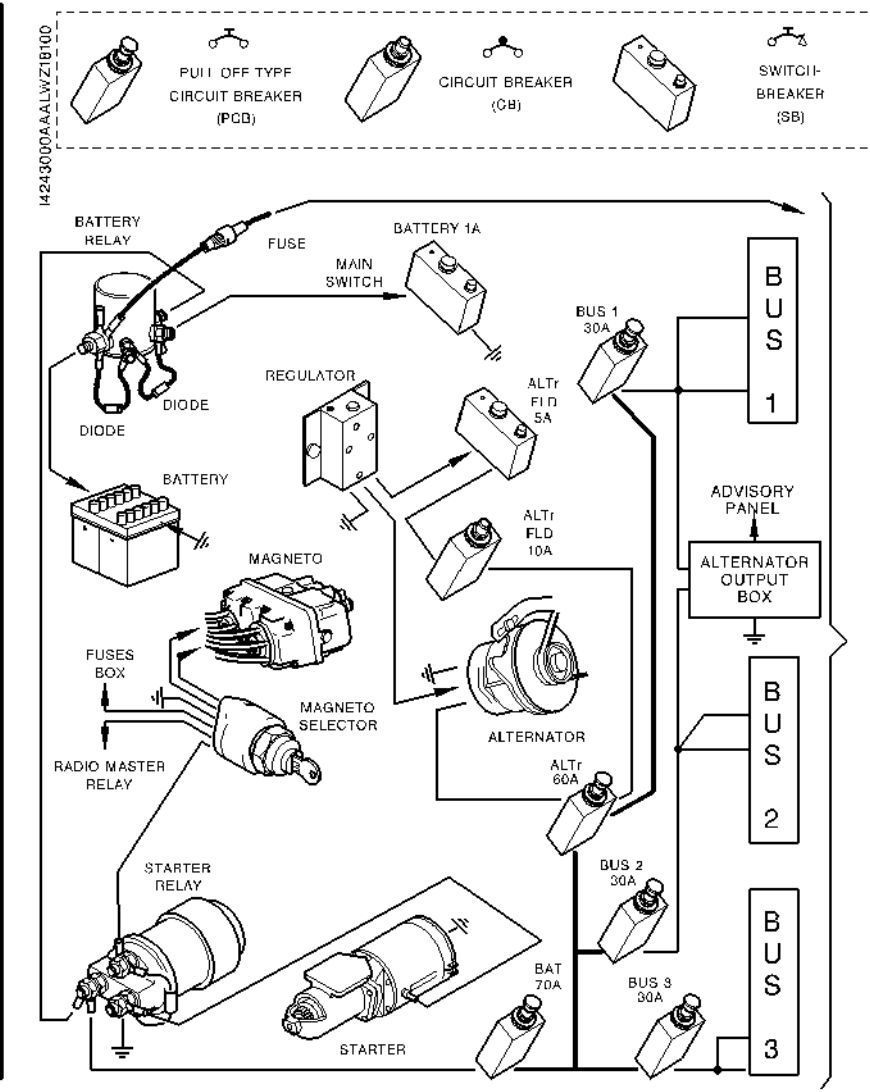

Figure 7.16 - TYPICAL ELECTRICAL SYSTEM

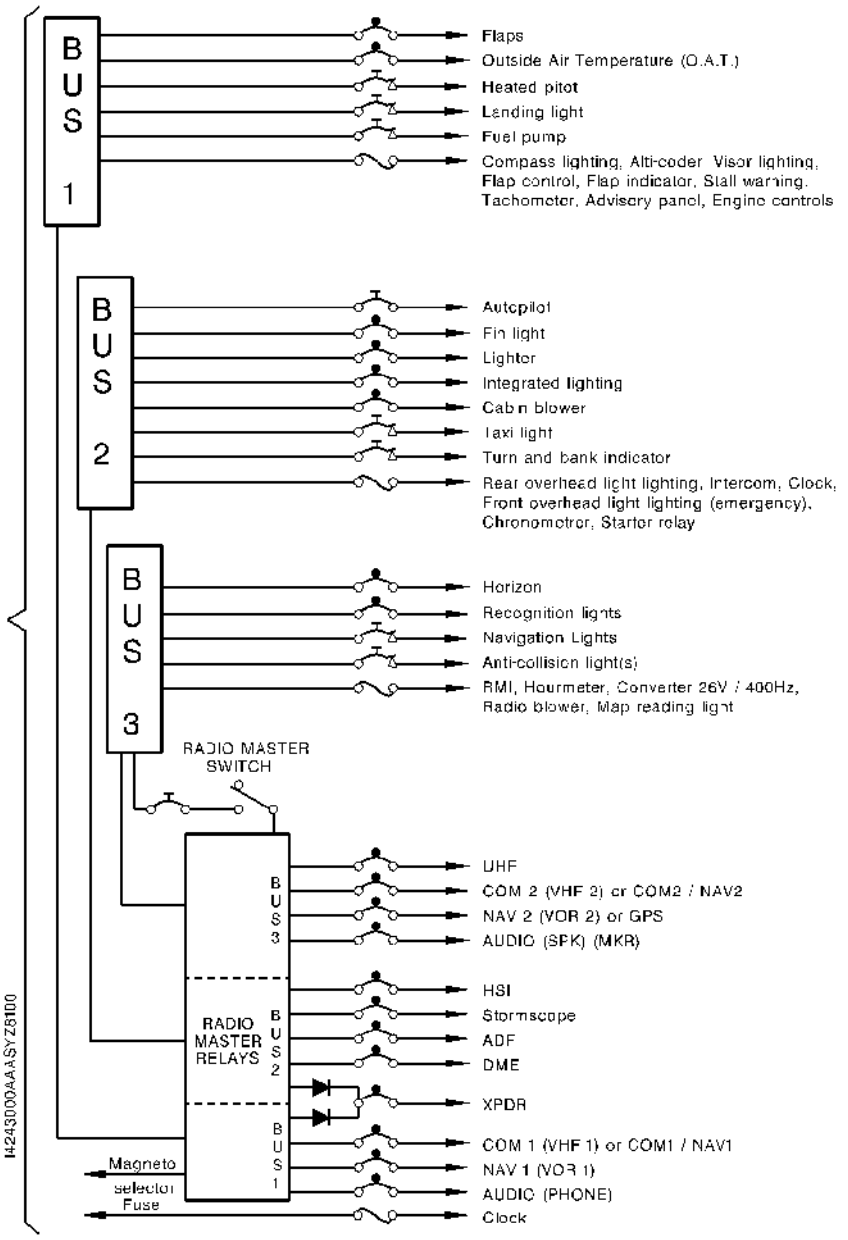

Figure 7.16A - TYPICAL ELECTRICAL SYSTEM

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ALTERNATOR CONTROL

Located on the R.H. side of the main switch, the alternator switch-breaker labelled "ALT^{r} FLD" controls the operation of the alternator through the regulator.

In the event of an alternator disconnection, should the flight be continued, only the necessary electrical equipment will be used.

The tripping of "MAIN SWITCH" and "ALTr FLD" switch-breakers in flight cuts off simultaneously all electrical power supplies.

AVIONICS POWER SWITCH (if installed)

A switch labelled "RADIO MASTER" is installed on R.H. side of the L.H. strip to control power supply to avionics and enables automatic disconnection of avionics systems when the engine starts, or manual disconnection during abnormal conditions.

When the switch is in OFF position, no electrical power will be applied to the avionics equipment. The avionics power switch "RADIO MASTER" should be placed in the OFF position prior to turning main switch ON or OFF, or applying an external power source and may be utilized in place of the individual avionics equipment switches.

Opening of the "R.M. SWITCH" circuit breaker enables to inhibit the "RADIO MASTER" switch operation, and so to recover the power supply of the radio set in case of faulty operation of the "RADIO MASTER" switch.

"RADIO MASTER" function does not concern some optional equipment such as electric trim, autopilot, HF transceiver...

VOLTMETER

A voltmeter is incorporated to the engine control instruments module, located on the upper part of the console, to monitor electric generation system efficiency.

With the alternator operating, the indication must stabilize in the green sector.

With the alternator off, indication may go down to the yellow sector.

If indication is within lower red sector, remove and charge the battery.

If indication is within the upper red sector with the alternator operating, the regulator has to be adjusted.

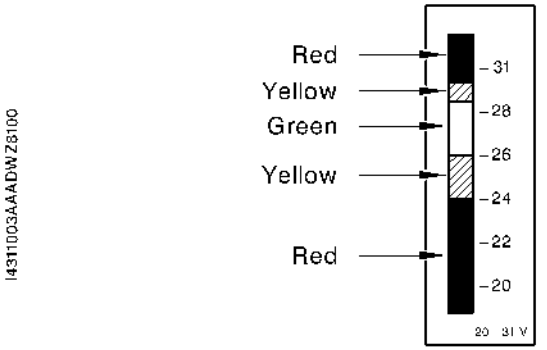

Figure 7.17 - VOLTMETER MARKING

AMMETER (if installed - standard equipment for "BRAZIL")

The ammeter indicates current flow, in amperes, from the alternator to the battery, or from the battery to the electrical systems.

VOLTMETER AND AMMETER

A digital indicator displaying the voltmeter or ammeter data is incorporated to the engine monitoring cluster, located on the upper part of the console. A switch, located on L.H. side of this indicator, enables to select either the voltmeter function (V) or the ammeter function (A).

Voltmeter

The main function of the voltmeter is to monitor electric generation system efficiency.

With the alternator operating, the indicated value must stabilize between 26 and 29 Volts. With the alternator off, the indicated value may decrease below 24 Volts.

Red LED (VDC), located on the indicator R.H. side, illuminates for a voltage greater than 30.4 Volts or lower than 24 Volts :

- Illuminated LED with displayed voltage lower than 24 Volts :
  - engine stopped : voltage lower than 22 Volts, remove and charge the battery,
  - engine running : check alternator regulator system.
- Illuminated LED with displayed voltage greater than 30.4 Volts :
  - check alternator regulator system.

Ammeter

The ammeter indicates current flow in amperes from the alternator to the battery or from the battery to electrical systems.

Yellow LED (AMP), located on indicator R.H side, illuminates when battery is discharging.

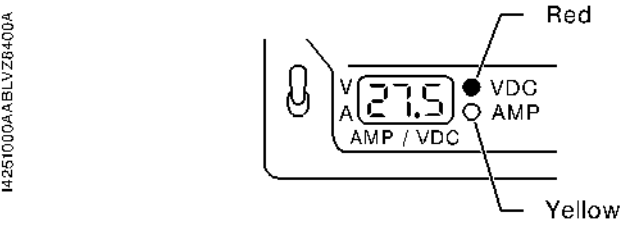

Figure 7.17A - VOLTMETER OR AMMETER MARKING

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CIRCUIT BREAKERS AND FUSES

Most of electrical circuits are protected by circuit breakers installed on the L.H. side panel, adjacent to the pilot. Should an overload occur on a circuit, the circuit breaker trips and will switch off the circuit. Allow it to cool for three minutes approximately, then the circuit breaker may be closed again (pressed down).

Avionics equipment are protected by circuit breakers grouped in the lower part of the L.H. side circuit breakers panel.

In addition to protection of the alternator supply with a 60-amp pull-off type circuit breaker labelled "ALTr", the following pull-off type circuit breakers have been installed :

- 70 A labelled "BAT" between battery and network
- 30 A labelled "BUS 1" on bus bar 1 supply
- 30 A labelled "BUS 2" on bus bar 2 supply
- 30 A labelled "BUS 3" on bus bar 3 supply

These five pull-off type circuit breakers are manually-operated and can isolate the various sources or bus bars.

Fuses located on L.H. firewall door protect following circuits (from left to right) :

Upper row : advisory panel, spare, advisory panel, compass lighting, rear cabin light, starter relay, electric tachometer, emergency lighting,

and if installed : spare, RMI, converter 26 V/400 Hz, radio fan, spare.

Lower row : engine monitoring cluster, engine monitoring cluster, spare, flap indicator, flap control, stall warning, visor lighting,

and if installed : chronometer, intercom, clock, alti-coder, maps light, spare, hourmeter, fuel flowmeter.

"ALTr" WARNING LIGHT (LOW VOLTAGE)

Anytime electrical system voltage falls below approximately 26 volts, as directly sensed by the distribution systems, an amber (red on UK airplanes) warning light labelled "ALTr" illuminates on advisory panel to warn the pilot.

GROUND POWER RECEPTACLE (if installed)

A ground power receptacle permits the use of an external power source for cold weather starting and during maintenance work on the airplane electrical system. Details of the ground power receptacle are presented in Section 9 "Supplements".

IFR AND NIGHT VFR ELECTRICAL SYSTEMS (if installed)

See Section 9 "Supplements".

LIGHTING SYSTEMS

EXTERIOR LIGHTING

Pre-MOD.151

Basic exterior lighting consists of conventional navigation lights located on the wing tips and tail cone, a landing light and a taxi light mounted on the L.H. wing leading edge.

The airplane may be equipped with an anticollision assembly, including a light on each wing tip and, as a replacement for the navigation light at the tail cone end, if required, with a double-function light (navigation light/strobe light).

Post-MOD.151

Basic exterior lighting consists of :

- a unit located on each wing tip including side and rear navigation lights, as well as an anticollision light,
- a landing light and a taxi light installed in the L.H. wing leading edge.

The airplane may be equipped, on each wing tip, with a recognition light.

All

In addition to the navigation lights, the exterior lighting may include a strobe light installed on the vertical stabilizer and/or under the fuselage.

Lighting controls :

The switch-breakers, located on the central pedestal front part (see Figure 7.5B), control the lighting of the landing and taxi lights, the navigation lights and anticollision lights.

NOTE :
The amperage of the wing tip anticollision light switch-breaker is increased when the airplane is equipped with the tail cone strobe light.

A switch, located on the circuit breaker panel (see Figure 7.6 or 7.6A), controls the strobe light illumination. This circuit is protected by a circuit breaker located on the left of the switch.

Anticollision lights and strobe lights should not be used when flying through clouds or overcast, the flashing light reflected from water droplets or particles in the atmosphere, particularly at night, can produce vertigo and loss of orientation.

INTERIOR LIGHTING

Instrument panel and control panels lighting is provided by integral, flood, post lights and electroluminescent lighting. Three lighting control knobs are grouped together on the L.H. part of the L.H. instrument panel.

These three controls vary the intensity of all instrument panel and L.H. sidewall circuit breakers panel lightings, except for the rear overhead light. The following paragraphs describe the function of these controls.

Lighting controls :

They allow the operating from down to up of :

- "Normal" control which controls and modulates L.H. and R.H. instrument panels visors lighting.
- "Emergency" control Pre-MOD.151 :

  which modulates lighting of overhead lights controlled by rotating them.
- "Emergency" control Post-MOD.151 :

  which controls and modulates lighting of front overhead lights.
- "Radio and instruments" control which controls and modulates console visor lighting, instruments and equipment on instrument panel, emergency landing gear control and circuit breakers panel.

NOTE :

- *Both "normal" and "radio and instruments" controls and, Post-MOD.151, the emergency control operate and modulate lighting ; from high position "OFF", turn clockwise for "FULL INTENSITY OPERATION" then still clockwise, modulate towards "MINIMUM INTENSITY", turn back to "OFF" position turning counterclockwise.*
- *"Emergency" control, Pre-MOD.151, modulates lighting ; from high position "FULL INTENSITY" turn clockwise to modulate towards "MINIMUM INTENSITY" ; turn back to high position "FULL INTENSITY" turning counterclockwise .*

A courtesy light is installed in the cabin headliner, in front of the air outlets, to facilitate boarding or deplaning the airplane during night operations. The light circuit requires power to be applied to the main electrical system bus bars for operation (Main switch may remain OFF) .

This light is controlled by a toggle switch integrated to the light.

A maps reading light may be installed on the bottom of the control's wheel. This light illuminates the lower portion of the cabin in front of the pilot and is used for reading maps and other flight data during night operation. It is controlled by a switch located on the right horn of the pilot's control wheel.

DEMISTING, AIR REGULATION, VENTILATION, FIRE CUT-OFF

The temperature and air flow to the cabin are regulated by the cabin air regulation system and the air outlets (see Figure 7.18).

DEMISTING

The air intake located on the L.H. side of the propeller cone provides air supply to the exchanger located around the exhaust duct, the heated air supplies a box located on the upper portion of the aft face of the firewall. This box may be shut off by a fire cut-off shutter and allows hot air distribution on both sides of the windshield.

Hot airflow is regulated from the control panel located on R.H. side of instrument panel strip.

AIR REGULATION

Hot air

Comes from the exchanger (located around exhaust duct).

This heated air supplies a cabin air mixer located aft of the firewall (in front of front passenger's feet).

The hot airflow supplying this mixer is regulated by a fire cut-off shutter from the control panel located on R.H. portion of the instrument panel strip.

Cool air

Comes from R.H. NACA air intake. This cool air supplies cabin air mixer.

Hot/cool air mixing in cabin air mixer

Hot and cool airflows in cabin air mixer are actuated through a single control. Regulation is obtained by moving the control ; rightwards air becomes warmer, leftwards air becomes cooler, fully moved to the left in fire cut-off position for the cabin air mixer.

Distribution of regulated air

The mixed airflow in the cabin air mixer is regulated by a shutter before being distributed in the cabin towards pilot's feet, front and rear passengers' feet and in upper part of rear seat back-rest.

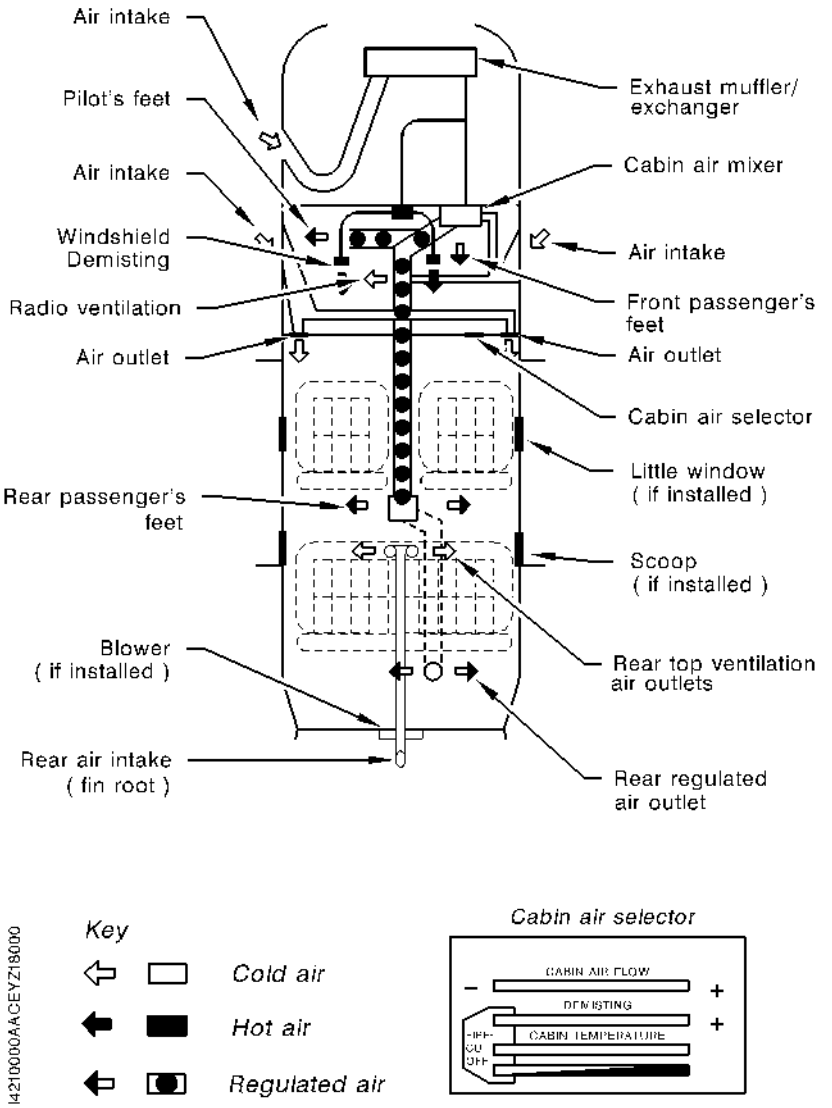


Figure 7.18 - DEMISTING, AIR REGULATION, VENTILATION, CUT-OFF SYSTEM

VENTILATION

Low ventilation

See "Cold air" and "Distribution of regulated air" of the previous "Air regulation" paragraph.

High ventilation

- Pilot + front passenger

  Air (at outside temperature) coming from NACA L.H. air intake supplies two swivelling air outlets which airflow may be regulated, located on both parts of the instrument panel strip.

  A little window may be installed on the access doors to facilitate high ventilation for pilot and front passenger.

- Rear passengers

  An air intake (at outside temperature), located at the bottom part of the fin, supplies two air outlets (swivelling and with adjustable airflow) installed on the upper duct.

  A swivelling scoop may be installed on rear windows to facilitate high ventilation for rear passengers.

A blower (if installed) attached on aft face of the baggage compartment (former 6) and picking up outside air in aft fuselage permits to accelerate the cold airflow at rear seats. The blower switch is located on the upper duct, in front of air outlets (see Figure 7.4).

FIRE CUT-OFF

CAUTION

TO PROVIDE THE CUT-OFF OPERATION, BOTH "DEMISTING" AND "CABIN TEMPERATURE" CONTROLS MUST BE POSITIONED FULLY TO THE LEFT

AIRSPEED INDICATING SYSTEM AND INSTRUMENTS

The airspeed indicating system (see Figure 7.19 or 7.19A) supplies pitot air pressure (dynamic system) to the airspeed indicator or to the true airspeed indicator and a static air pressure (static system) to the airspeed indicator or to the true airspeed indicator, the vertical speed indicator and the altimeter.

The system consists of a pitot, which can be heated, located on the lower surface of the L.H. wing, two static ports located on L.H. and R.H. side of aft fuselage, a static system drain located on the wings splicing.

The pitot heating system (if installed) is controlled by a switch-breaker located on the central pedestal.

The alternate static source (if installed) is controlled by a knob located on the L.H. strip, this knob controls a valve which supplies static pressure from inside the cabin.

Refer to Sections 3 "Emergency procedures" and 5 "Performance" of this manual for the pressure variations influence on instruments indication.

When stopped, protect the static ports and pitot with covers.

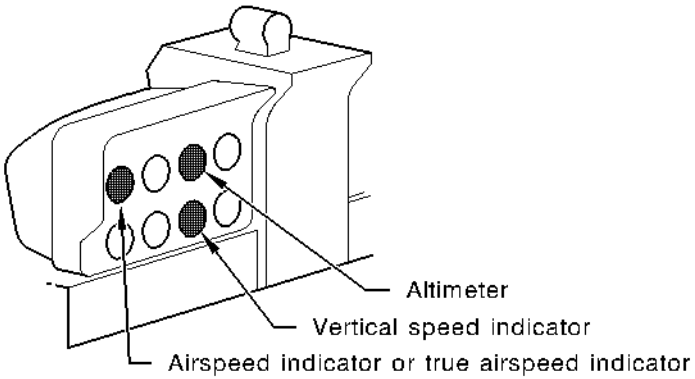
TRUE AIRSPEED INDICATOR (if installed)

The true airspeed indicator is fitted with a rotable ring which works in conjunction with its dial in a manner similar to a flight computer.

To set the indicator, first rotate the ring until pressure altitude is aligned with outside air temperature.

To obtain pressure altitude, set the barometric scale of the altimeter to 29.92 in.Hg (1013.2 hPa) and read pressure altitude. Pressure altitude should not be confused with QNH altitude.

Having set the ring to correct for altitude and temperature, read the true airspeed shown on the rotable ring by the indicator pointer.



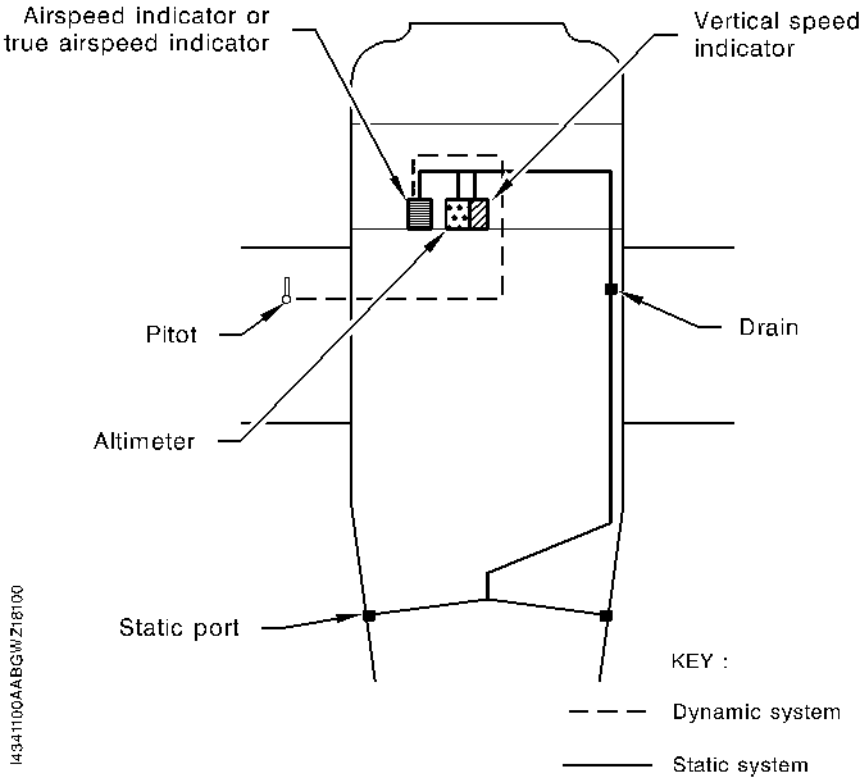


Figure 7.19 - AIRSPEED INDICATING STANDARD SYSTEM

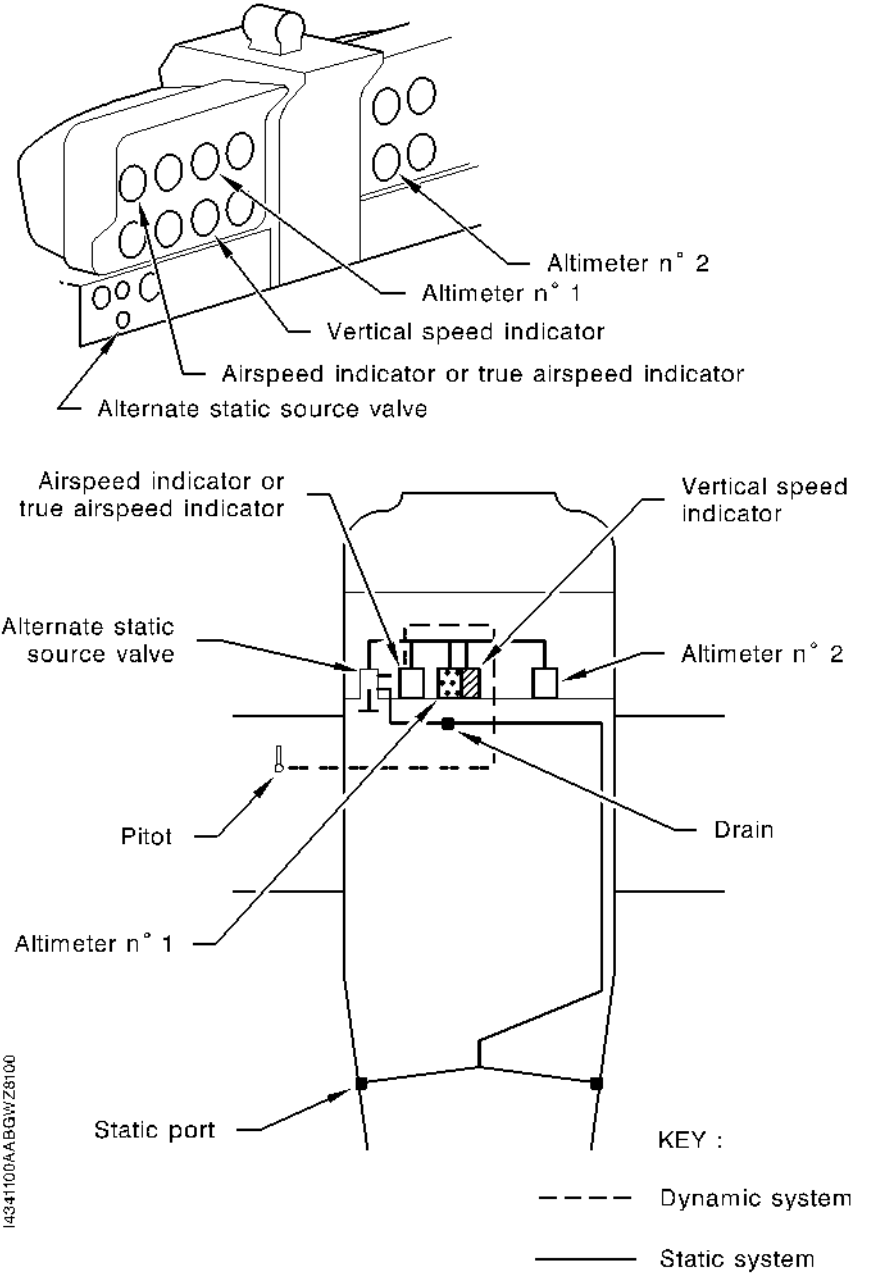


Figure 7.19A – AIRSPEED INDICATING SYSTEM WITH ALTERNATE STATIC SOURCE

VERTICAL SPEED INDICATOR

The vertical speed indicator depicts airplane rate of climb or descent in feet per minute. The pointer is actuated by atmospheric pressure changes resulting from changes of altitude as supplied by the static source.

ALTIMETER

Airplane altitude is depicted by a barometric type altimeter. A knob near the lower left portion of the indicator provides adjustment of the instrument barometric scale to the current altimeter setting.

ALTERNATE STATIC SOURCE (if installed)

A two position selector allows the normal static source system of the airplane to be isolated in case of clogging or icing of static ports.

The ON position ("PULL") of the alternate static source valve admits cabin static pressure to the static system (see Figure 7.19A).

VACUUM SYSTEM AND INSTRUMENTS

The airplane may be fitted with a vacuum system (see Figures 7.20 and 7.20A) providing the suction necessary to operate an attitude gyro indicator and heading indicator.

The system consists of an engine-driven vacuum system, a vacuum relief valve and an air filter installed between the firewall and instrument panel, vacuum-operated instruments installed on L.H. instrument panel and a vacuum gage installed on L.H. panel strip, near the pilot's control wheel.

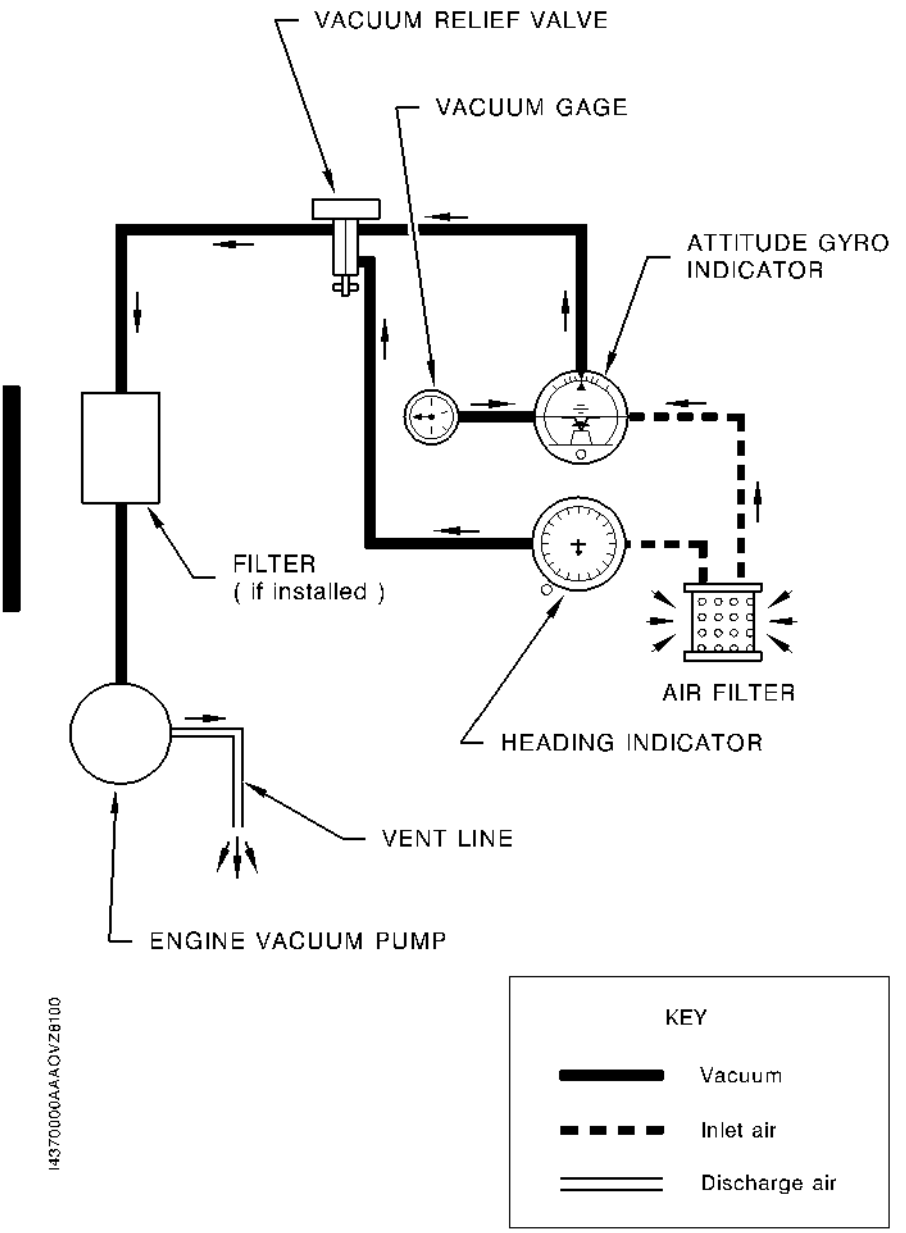


Figure 7.20 - VACUUM SYSTEM (With heading indicator)

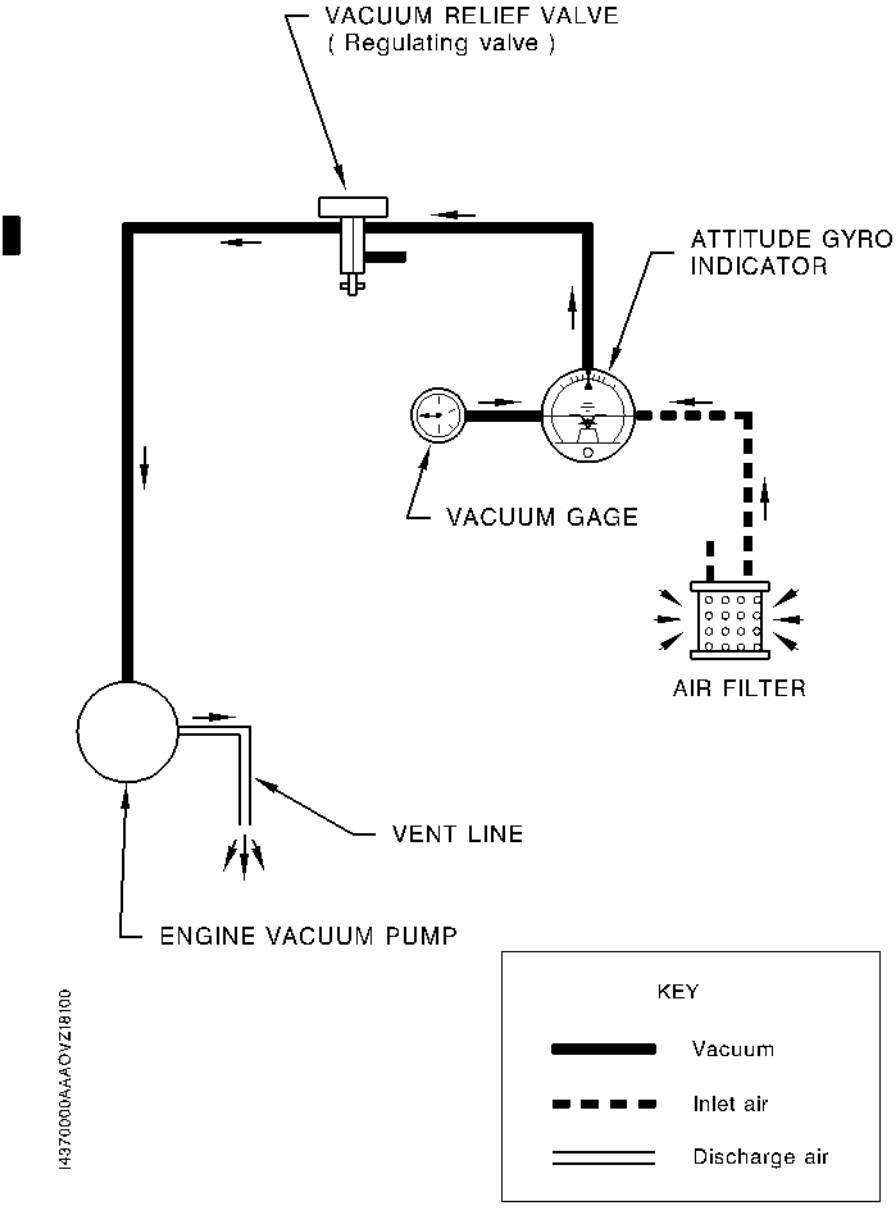


Figure 7.20A - VACUUM SYSTEM (Without heading indicator)

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The system may be provided with an alarm, red warning light labelled "GYRO SUCT" on the advisory panel ; this warning light indicating an insufficient suction illuminates between 3 and 3.5 in.Hg.

ATTITUDE GYRO INDICATOR (if installed)

The attitude gyro indicator gives a visual indication of flight attitude. Bank attitude is presented by an index at the top of the indicator relative to the bank scale which has index marks at 10°, 20°, 30°, 60° and 90° either side of the center mark.

Pitch and roll attitudes are presented by a miniature airplane superimposed over a symbolic horizon area divided into two sections by a white horizon bar. The upper "sky blue" area and the lower "ground" area have arbitrary pitch reference lines useful for pitch attitude control.

A knob at the bottom of the instrument is provided for inflight adjustment of the miniature airplane to the horizon bar for a more accurate flight attitude indication.

HEADING INDICATOR (if installed)

The heading indicator displays airplane heading on a compass card in relation to a fixed simulated airplane image and index. The directional indicator will precess slightly over a period of time. Therefore, the compass card should be set in accordance with the magnetic compass just prior to take-off and regularly re-adjusted on extended flights. A knob on the lower left edge of the instrument is used to adjust the compass card to correct for any precession.

VACUUM GAGE (if installed)

The vacuum gage is calibrated in inches of mercury and indicates the suction available for operation of the attitude and heading indicators. The desired suction range is 4.4 to 5.2 in.Hg.

A suction reading out of this range may indicate a system malfunction or improper adjustment, and in this case, the indicators should not be considered reliable.

AUXILIARY DRY AIR PUMP (if installed)

Refer to Section 9 "Supplements".

AUTOPILOTS

Refer to Section 9 "Supplements".

STALL WARNING SYSTEM

The airplane is equipped with a vane-type stall warning unit in the leading edge of the left wing. The unit is electrically connected to an aural warning. The vane in the wing senses the change in airflow over the wing and operates the warning unit, which produces a discontinuous tone on the buzzer located on the upper duct. This warning tone begins between 5 and 10 knots above the stall in all configurations.

The stall warning system should be checked during the preflight inspection by momentarily turning on the battery switch and actuating the vane in the wing. The system is operational if a discontinuous bell of the buzzer is heard.

STATIC DISCHARGERS (if installed)

As an aid in IFR flights, wick-type static dischargers are installed to improve radio communications during flight through dust or various forms of precipitation (rain, snow or ice crystals).

Under these conditions, the build-up and discharge of static electricity from the trailing edges of the wings (flaps and ailerons), rudder, stabilator, propeller tips and radio antennas can result in loss of usable radio signals on all communications and navigation radio equipment. Usually, the ADF is first to be affected and VHF communication equipment is the last to be affected.

Installation of static dischargers reduces interference from precipitation static, but it is possible to encounter severe precipitation static conditions which might cause the loss of radio signals, even with static dischargers installed. Whenever possible, avoid known severe precipitation areas to prevent loss of dependable radio signals. If avoidance is impractical, minimize airspeed and anticipate temporary loss of radio signals while in these areas.

RADIO EQUIPMENT

Refer to Section 9 "Supplements".

TURN-AND-BANK INDICATOR (if installed)

The bank indicator located under the airspeed indicator or the true airspeed indicator may be replaced by a turn and bank indicator ; it is controlled by a switch-breaker located in front of the pedestal and labeled "TURN COORD.".

CLEAR-VISION WINDOW (if installed)

In case a lot of mist appears on the windshield, turn both clear-vision window attachment knobs upwards and tilt window downwards.

NOTE :
Close the clear-vision window and lock it with both knobs prior to opening "gull-wing" access door.

SUN VISOR (if installed)

An adjusting knurled knob located under the attachment pin stiffens sun visor arm rotation without removing the pin.

To remove sun visor, firmly pull downwards the foamed attachment pin.

To reinstall sun visor, hit it firmly upwards, at the base of the foamed attachment pin.

FIRE EXTINGUISHER (if installed)

The fire extinguisher is located under L.H. front seat. It is accessible by moving the seat full backwards. It is attached on the floor by means of a quick-disconnect clamp. A pressure gage allows checking the fire extinguisher condition, follow the recommendations indicated on the extinguisher.

EMERGENCY LOCATOR TRANSMITTER (if installed)

The airplane may be equipped with an emergency locator transmitter, which enables to locate it in case of distress. It is located in the baggage compartment.

The emergency locator transmitter assembly is constituted of a transmitter supplied by a battery, of a retractable antenna integrated in the locator transmitter and allowing use of the latter outside the airplane and of a remote control located on the instrument panel.

Operation of the emergency locator transmitter is obtained as follows :

- from the instrument panel by setting "ELT" remote control switch to ON or MAN position (locator transmitter "MANU-OFF-AUTO" or "MAN/RESET-OFF-AUTO" control switch in stand-by on AUTO position),
- from the locator transmitter by setting its "MANU-OFF-AUTO" or "MAN/RESET-OFF-AUTO" control switch to MANU or MAN/RESET position,
- automatically in case of shock, when both switches are set to AUTO.

When locator transmitter "MANU-OFF-AUTO" or "MAN/RESET-OFF-AUTO" switch is set to OFF, transmission is impossible.

"XMIT ALERT" indicator light (if installed) located above "ELT" remote control switch indicates to the pilot the emergency locator transmitter is transmitting.

Reset after an inadvertent activation

ELT 90 (EUROCAE) - ELT 91 (TSO)

1) Set ELT switch to "MAN/RESET" or remote control switch to "MAN".	a) The ELT keeps on transmitting emergency signal. b) On remote control, the "XMIT ALERT" red warning light remains on. c) On ELT, the red warning light remains on.
2) Set again ELT switch or remote control switch to "AUTO".	a) The ELT does not transmit emergency signal any longer. b) On remote control, the "XMIT ALERT" red warning light goes off. c) On ELT, the red warning light goes off.

ELT 96 (EUROCAE) - ELT 97 (TSO)

1) Set ELT switch to "MAN/RESET", then to "AUTO" or press push button "AUTO TEST/RESET" on the remote control.	a) The ELT does not transmit emergency signal any longer. b) On remote control and on ELT switch, the "XMIT ALERT" red warning light illuminates during 2 seconds, then goes off.

JE2, ELT 10 AND POINTER 3000

On ELT, press on button "RESET".

INTENTIONALLY LEFT BLANK

SECTION 8

AIRPLANE HANDLING, SERVICING AND MAINTENANCE

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(Continued)

GENERAL

This section contains the procedures recommended by SOCATA for the proper ground handling and routine care and servicing of your SOCATA Model TB 200 airplane. Also included in this section are the inspection and maintenance requirements which must be followed if your airplane is to retain its performance and dependability.

It is recommended that a planned schedule of lubrication and preventive maintenance be followed, and that this schedule be tailored to the climatic or flying conditions to which the airplane is subjected.

For this, see Manufacturer's Maintenance Manual.

IDENTIFICATION PLATE

All correspondence regarding your airplane should include its serial number. This number together with the model number, type certificate number and production certificate number are stamped on the identification plate attached to the rear part of the fuselage beneath the horizontal stabilizer.

PUBLICATIONS

When the airplane is delivered from the factory, it is supplied with a Pilot's Operating Handbook and supplemental data covering optional equipment installed in the airplane.

In addition, the owner may purchase the following :

- Maintenance Manual
- Illustrated Parts Catalog
- Price Catalog
- Labor Allowance Guide

CAUTION

PILOT'S OPERATING HANDBOOK MUST ALWAYS BE IN THE AIRPLANE

INSPECTION PERIODS

Refer to regulations in force in the certification country for information concerning preventive maintenance which is to be carried out by pilots.

A maintenance Manual should be obtained prior to performing any preventive maintenance to ensure that proper procedures are followed. Maintenance must be accomplished by licensed personnel.

ALTERATIONS OR REPAIRS

It is essential that the Airworthiness authorities be contacted prior to any alterations or repairs on the airplane to ensure that airworthiness of the airplane is not violated. Alterations or repairs must be accomplished by licensed personnel.

GROUND HANDLING

TOWING

CAUTION

USING THE PROPELLER FOR GROUND HANDLING COULD RESULT IN SERIOUS DAMAGE, ESPECIALLY IF PRESSURE OR PULL IS EXERTED ON BLADE TIPS

The airplane should be moved on the ground with the aid of nose gear strut fork tow bar which is stowed in the baggage compartment or with a vehicle which will not damage the nose gear steering device or exert excessive loads on the latter.

CAUTION

DO NOT TOW THE AIRPLANE WHEN CONTROLS ARE LOCKED

WHEN TOWING WITH A VEHICLE, DO NOT EXCEED THE NOSE GEAR TURNING ANGLE, OR DAMAGE TO THE GEAR AND STEERING DEVICE WILL RESULT

(see Figure 8.2)

PARKING

When parking the airplane, head into the wind. Do not set the parking brake when brakes are overheated or during cold weather when accumulated moisture may freeze the brakes. Care should be taken when using the parking brake for an extended period of time during which an air temperature rise or drop could cause difficulty in releasing the parking brake or damage the brake system.

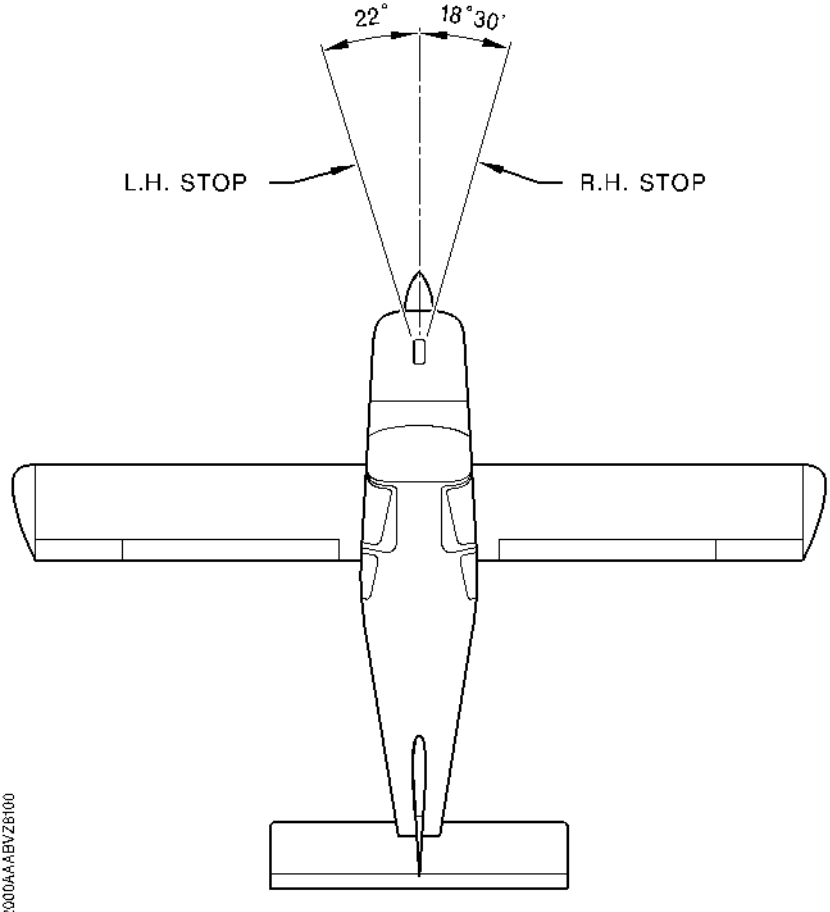

Figure 8.2 - TURNING ANGLE LIMITS

For long term parking, blanking covers (static ports, pitot), cockpit cover, tie-downs, wheel chocks and control wheel lock are recommended. In severe weather and high wind conditions, tie the airplane down as outlined in the following paragraph.

TIE-DOWN

Proper tie-down procedure is the best protection against damage to the parked airplane by gusty or strong winds. To tie-down the airplane securely, proceed as follows :

- Install control wheel lock.
- Chock all wheels.
- Tie sufficiently strong ropes or chains to hold airplane back ; insert a rope in each tie-down hole located on flaps hinge arms and in rear tie-down fitting, located under horizontal stabilizer ; secure each rope to a ramp tie-down.
- Check that doors are closed and locked.

JACKING

When it is necessary to jack the airplane off the ground or when jacking points are used, refer to Maintenance Manual for specific procedures and equipment required.

LEVELING

Level the airplane as described in Maintenance Manual.

FLYABLE STORAGE

Airplanes placed in storage for a maximum of 30 days or those which receive only intermittent use for the first 25 hours are considered in flyable storage.

Every seventh day during these periods, the propeller should be rotated by hand through several revolutions. This action "limbers" the oil and prevents any accumulation of corrosion on engine cylinder walls.

CAUTION

CHECK THAT THE MAGNETO SELECTOR IS OFF, THE THROTTLE IS CLOSED, THE MIXTURE CONTROL IS IN THE IDLE CUT-OFF POSITION, AND THE AIRPLANE IS SECURED BEFORE ROTATING THE PROPELLER BY HAND. DO NOT STAND WITHIN THE ARC OF THE PROPELLER BLADES WHILE TURNING THE PROPELLER

After 30 days in storage, the airplane should be flown for at least 30 minutes, or a ground runup should be made just long enough to produce an oil temperature within the lower green arc range. Avoid prolonged runups.

Engine runup helps to eliminate excessive accumulations of water in the fuel system and other air spaces in the engine. Keep fuel tanks full to minimize condensation in the tanks. Keep the battery fully charged to prevent the electrolyte from freezing in cold weather.

LONG TERM STORAGE WITHOUT FLYING POSSIBILITY

Refer to Maintenance Manual for the procedures to follow.

SERVICING

MAINTENANCE

In addition to the preflight inspection in Section 4, servicing, inspection, and test requirements for your airplane are detailed in the Maintenance Manual.

Maintenance Manual outlines all items which require attention at 50, 100, 400, 500 and 1000 hours intervals plus those items which require servicing, inspection or testing at special intervals, first 25 flight hours, yearly inspection, major inspection.

ENGINE OIL

CAUTION

DO NOT MIX DIFFERENT BRANDS OR TYPES OF OIL

Grade and Viscosity for temperature range (Reference : TEXTRON LYCOMING Service Bulletin No. 480 at last revision) :

Outside Air Temperatures	MIL-L-6082 Spec. Mineral Grades 50 first hours	MIL-L-22851 Spec. Dispersant Grades after 50 hours
All temperatures	.....	SAE 15W50 or SAE 20W50
Above 80°F (27°C)	SAE 60	SAE 60
Above 60°F (15°C)	SAE 50	SAE 40 or SAE 50
30°F (-1°C) to 90°F (32°C)	SAE 40	SAE 40
0°F (-18°C) to 70°F (21°C)	SAE 30	SAE 30, SAE 40 or SAE 20W40
Below 10°F (-12°C)	SAE 20	SAE 30 or SAE 20W30

NOTE :
This airplane was delivered from the factory with a corrosion-preventive aircraft engine oil. If oil must be added during the first 50 hours, use only aviation grade straight mineral oil conforming to specification MIL-L-6082.

Capacity of engine sump : 8 U.S. qt (7.6 litres)

Do not operate on less than 4 U.S. qt (3.8 litres). To minimize loss of oil through breather, fill to 6 U.S. qt (5.7 litres) for normal flights of less than 3 hours. For extended flights, fill to 8 U.S. qt (7.6 litres). These quantities refer to oil dipstick level readings. During oil and filter changes 0.45 additional U.S. qt (0.4 litres) is required for the filter.

Oil and oil filter change :

In addition to the preflight inspection in Section 4, servicing, inspection, and test requirements for your airplane are detailed in the Maintenance Manual.

Engine oil is changed with the filter. Drain the engine oil sump and replace the filter at least every 4 months even though less than the recommended hours have accumulated. Reduce intervals for prolonged operation in dusty areas, cold climates, or even when short flights and long idle periods result in sludging conditions.

FUEL

Approved fuel grades (and colors)

100 LL Grade Aviation Fuel (Blue)
100 Grade Aviation Fuel (Formerly 100 / 130) (Green).

CAUTION

NEVER FLY THE AIRPLANE WITH CONTAMINATED (WATER, SAND, RUST, DUST...) OR UNAPPROVED FUEL

NOTE :
Isopropyl alcohol or ethylene glycol monomethyl ether may be added to the fuel supply in quantities not to exceed 1 % or 0.15 % by volume, respectively, of the total. Refer to "Fuel Additives" paragraph hereafter for additional information.

Capacity each tank : 27.7 U.S Gal (105 l)

NOTE :
Service the fuel system after each flight and keep fuel tanks full to minimize condensation in the tanks, respecting weight and balance limits.

WARNING

DO NOT OPERATE ANY AVIONICS OR ELECTRICAL EQUIPMENT ON THE AIRPLANE DURING FUELING. DO NOT ALLOW OPEN FLAME OR SMOKING IN THE VICINITY OF THE AIRPLANE WHILE FUELING

DURING ALL FUELING OPERATIONS, FIRE FIGHTING EQUIPMENT MUST BE AVAILABLE ; ATTACH GROUNDING WIRE TO ANGLE (IF INSTALLED) ON UPPER SURFACE OF WING NEAR THE CAP ; IN CASE THERE IS NO ANGLE, ATTACH CABLE TO A METALLIC PART OF THE AIRPLANE WHICH IS NOT PAINTED

Fuel additives

Strict adherence to recommended preflight draining instructions as called for in Section 4 will eliminate any free water accumulations from the tank sumps. While small amounts of water may still remain in solution in the gasoline, it will normally be consumed and go unnoticed in the operation of the engine.

One exception to this can be encountered when operating under the combined effect of use of certain fuels, with high humidity conditions on the ground followed by flight at high altitude and low temperature. Under these unusual conditions, small amounts of water in solution can precipitate from the fuel stream and freeze in sufficient quantities to induce partial icing of the engine fuel system.

While these conditions are quite rare and will not normally pose a problem to owners and operators, they do exist in certain areas of the world and consequently must be dealt with, when encountered.

Therefore, to alleviate the possibility of fuel icing occurring under these unusual conditions, it is permissible to add ispropyl alcohol or ethylene glycol monomethyl ether (EGME) compound to the fuel supply.

The introduction of alcohol or EGME compound into the fuel provides two distinct effects :

- it absorbs the dissolved water from the fuel
- alcohol has a freezing temperature lowering effect.

Alcohol, if used, is to be mixed with the fuel in a concentration of 1 % by volume. Concentrations greater than 1 % are not recommended since they can be detrimental to fuel tank materials.

The manner in which the alcohol is added to the fuel is significant because alcohol is most effective when it is completely dissolved in the fuel.

To ensure proper mixing, the following is recommended :

- For best results, the alcohol should be added during the fueling operation by pouring the alcohol directly on the fuel stream issuing from the fueling nozzle.
- An alternate method that may be used is to premix the complete alcohol dosage with some fuel in a separate clean container (approximately 2 to 3 U.S Gal - 7 to 11 litres) and then transferring this mixture to the tank prior to the fueling operation.

Any high quality isopropyl alcohol may be used, such as anti-icing fluid or isopropyl alcohol (Federal Specification TT-I-735a). Figure 8.3 provides alcohol - fuel mixing ratio information.

Ethylene glycol monomethyl ether (EGME) compounds, in compliance with MIL-I-27686, if used, must be carefully mixed with the fuel in concentration not to exceed 0.15 % by volume. Figure 8.3 provides EGME - fuel mixing ratio information.

CAUTION

MIXING OF THE EGME COMPOUND WITH THE FUEL IS EXTREMELY IMPORTANT. A CONCENTRATION IN EXCESS OF THAT RECOMMENDED (0.15 % BY VOLUME MAXIMUM) WILL RESULT IN DETRIMENTAL EFFECTS TO THE FUEL TANKS (DETERIORATION OF PROTECTIVE PRIMER AND SEALANTS) TO FUEL SYSTEM AND ENGINE COMPONENTS (DAMAGE TO SEALS). USE ONLY BLENDING EQUIPMENT RECOMMENDED BY THE MANUFACTURER TO OBTAIN PROPER PROPORTIONING

DO NOT ALLOW CONCENTRATED EGME COMPOUND TO COME IN CONTACT WITH THE AIRPLANE FINISH AS DAMAGE CAN RESULT

Prolonged storage of the airplane will result in a water buildup in the fuel which "leeches out" the additive. An indication of this is when an excessive amount of water accumulates in the fuel tank sumps. The concentration can be checked using a differential refractometer. It is imperative that the technical manual for the differential refractometer be followed explicitely when checking the additive concentration.

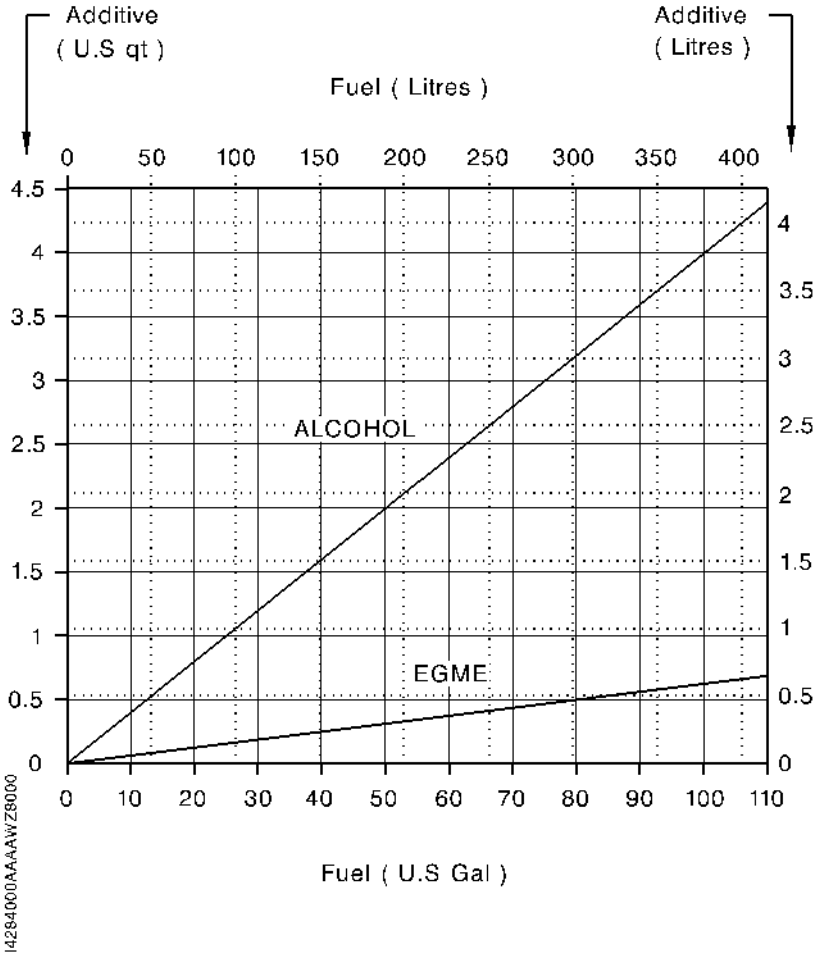

Figure 8.3 - ADDITIVE MIXING RATIO

LANDING GEAR

Nose gear tire :

5.00-5 6 PRTT - Inflating pressure : 44.9 psi (3.1 bars)

Main gear tires :

Aircraft not equipped with modification MOD. 118 or MOD. 120 :

Standard : 6.00-6 6 PRTT - Inflating pressure : 33.3 psi (2.3 bars)

Aircraft equipped with modification MOD. 118 or MOD. 120 :

6.00-6 6 PRTT - Inflating pressure : 40.6 psi (2.8 bars)

Nose gear shock absorber :

Filling with hydraulic fluid MIL-H-5606 ; inflate with pressurized dry air or nitrogen to 98.6 psi (± 4) that is 6.8 bars (± 0.3).

Main gears shock absorbers :

Aircraft not equipped with modification MOD. 118 or MOD. 120 :

Filling with hydraulic fluid MIL-H-5606 ; inflate with pressurized dry air or nitrogen to 130.5 psi (± 4) that is 9 bars (± 0.3).

Aircraft equipped with modification MOD. 118 or MOD. 120 :

Filling with hydraulic fluid MIL-H-5606 ; inflate with pressurized dry air or nitrogen to 479 psi (+ 15 ; - 0) that is 33 bars (+ 1 ; - 0).

Brakes :

Service as required with MIL-H-5606 hydraulic fluid.

AIRPLANE CLEANING AND CARE

WINDOWS AND WINDSHIELD

The plastic windshield and windows should be cleaned with an airplane windshield cleaner. Apply the cleaner sparingly with soft cloths and rub with moderate pressure until all dirt, oil scum and bug stains are removed. Allow the cleaner to dry, then wipe it off with soft flannel cloths.

CAUTION

NEVER USE GASOLINE, BENZINE ALCOHOL, ACETONE, FIRE EXTINGUISHER OR ANTI-ICE FLUID, LACQUER THINNER OR GLASS CLEANER TO CLEAN THE PLASTIC. THESE MATERIALS WILL ATTACK THE PLASTIC AND MAY CAUSE IT TO CRAZE

Follow by carefully washing with a mild detergent and plenty of water. Rinse thoroughly, then dry with a clean moist chamois. Do not rub the plastic with a dry cloth since this builds up an electrostatic charge which attracts dust. Waxing with a good commercial wax will finish the cleaning job. A thin, even coat of wax polished out by hand with clean soft flannel cloths will fill in minor scratches and help prevent further scratching.

Do not use a canvas cover on the windshield unless freezing rain or sleet is anticipated since the cover may scratch the plastic surface.

PAINTED SURFACES

Refer to Maintenance Manual for the procedures to follow.

PROPELLER CARE

Preflight inspection of propeller blades for nicks and wiping them occasionally with an oily cloth to clean off grass and bug stains will assure long blade life. Small nicks on the propeller, particularly near the tips and on the leading edges, should be dressed out as soon as possible since these nicks produce stress concentrations, and if ignored, may result in cracks. Never use an alkaline cleaner on the blades ; remove grease and dirt.

ENGINE CARE

Refer to Maintenance Manual for the procedures to follow.

INTERIOR CARE

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

For additional information, refer to Maintenance Manual.

FRONT ASH-TRAY

To empty front ash-tray, remove it while holding it on its edges (if necessary, lift it up with a screwdriver wrapped up in a cloth.

REAR ASH-TRAYS

To empty a rear ash-tray, open it tilting its movable part to its stop, then push moderately on central part to disengage the ash-box.

To install again the ash-box, insert upper part then push on lower part.

SECTION 9

SUPPLEMENTS

This section consists of a series of supplements, each covering a single system which may be installed in the Model TB 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 No. - Date
A -	General	
	TB 9 / 10 / 200 / 20 / 21 - From S / N 1	0 - 31.01.93
1 -	Day and night IFR equipment	
	TB 9 / 10 - From S / N 1 to 947	1 - 31.01.88
	TB 9 / 10 / 200 - From S / N 948	2 - 30.09.89
1A -	Day and night IFR equipment	
	TB 20 - From S / N 1 to 947, except S / N 823 to 849+888	1 - 31.01.88
	TB 20 - From S / N 948, and S / N 823 to 849+888	2 - 30.06.88
1B -	Day and night IFR equipment	
	TB 21 - From S / N 1 to 947	1 - 31.01.88
	TB 21 - From S / N 948	2 - 31.05.89
2 -	Night VFR equipment	
	TB 9 - From S / N 1 to 878, except S / N 765	1 - 31.01.88
	TB 10 - From S / N 1 to 947	1 - 31.01.88
2A -	Night VFR equipment	
	TB 20 - From S / N 1 to 947, except S / N 823 to 849+888	1 - 31.01.88
	TB 20 - From S / N 948, and S / N 823 to 849+888	2 - 30.06.88
2B -	Night VFR equipment	
	TB 21 - From S / N 1 to 947	1 - 31.01.88
	TB 21 - From S / N 948	2 - 31.05.89
2C -	Night VFR equipment	
	TB 9 - From S / N 879 to 947, plus S / N 765	0 - 30.09.88
	TB 9 - From S / N 948	1 - 30.09.89
2D -	Night VFR equipment	
	TB 10 / 200 - From S / N 948	0 - 30.09.89

3 - Electric pitch trim
TB 20 / 21 - From S / N 1 ..... 1 - 31.01.88

4 - Fuel flow totalizer FT 101 "HOSKINS"
TB 20 / 21
From S / N 1 to 947, except S / N 823 to 849 + 888 1 - 31.01.88

5 - Propeller de-icing "T.K.S."
TB 20 / 21 - From S / N 1 ..... 1 - 31.01.88

6 - "HARTZELL" constant speed propeller
TB 9 - From S / N 1 to 878, except S / N 765 ..... 1 - 31.01.88

7 - "KING" autopilot type KAP 100
TB 10 / 200 / 20 / 21 - From S / N 275 ..... 1 - 31.01.88

8 - "KING" autopilot type KFC 150 and KAP 150
TB 10 / 200 / 20 / 21 - From S / N 275 ..... 1 - 31.01.88

9 - Stormscope "3M" WX-10 A
TB 9 / 10 / 20 / 21
From S / N 1 to 947, except S / N 823 to 849 + 888 1 - 31.01.88

10 - Oxygen equipment "PURITAN-BENNETT"
(Front seats pressure-demand type masks)
TB 20 / 21 - From S / N 1 ..... 1 - 31.01.88

10A - Oxygen equipment "PURITAN-BENNETT"
(Front seats constant-flow type masks)
TB 20 / 21 - From S / N 1 ..... 1 - 30.04.97

11 - "MITCHELL" autopilot type CENTURY 21
TB 9 / 10 / 20 - From S / N 1 ..... 1 - 31.01.88

12 - "MITCHELL" autopilot type CENTURY 31
TB 20 - From S / N 1 ..... 1 - 31.01.88

13 - Ground power receptacle
TB 9 / 10 / 20 / 21
From S / N 1 to 947, except S / N 823 to 849 + 888 1 - 31.01.88
TB 9 / 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849 + 888 ..... 2 - 30.06.88

14 - Auxiliary dry air pump
TB 10 / 200 / 20 / 21 - From S / N 1 ..... 1 - 31.01.88

15 - "TKS" ice protection systems
TB 20 / 21 - From S / N 1 ..... 0 - 29.02.88

16 - "MITCHELL" autopilot type CENTURY I
TB 9 / 10 - From S / N 1 ..... 1 - 31.01.88

17 - "MITCHELL" autopilot type CENTURY II B
TB 9 / 10 - From S / N 1 ..... 1 - 31.01.88

18 - Oxygen equipment "EROS"
TB 20 / 21 - From S / N 1 ..... 1 - 31.01.88

19 - Intentionally left blank

20 - Fuel flow totalizer FC / FT 10 "ARNAV"
TB 20 / 21 - From S / N 731 ..... 0 - 31.01.91

21 - Fuel flow totalizer FT 101 A "HOSKINS"
TB 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.01.91

22 - "BFG" WX-1000 / 1000+ or WX-900 or WX-500 stormscope
TB 9 / 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.01.91

23 - Air conditioning system
TB 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.01.91

24 - "KEITH" air conditioning system
TB 20
From S / N 948 and S / N 823 to 849+888
TB 21
From S / N 2081 ..... 0 - 30.09.94

25 - "GARMIN" 100 AVD GPS navigation system interfaced with HSI KI 206
TB 20 (Valid for aircraft under FAA regulations)
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.09.94

26 - "BENDIX / KING" KLN90A GPS navigation system interfaced with HSI KI 525A
TB 9 / 10 / 200 / 20 / 21 - From S / N 1 ..... 0 - 15.01.95

27 - Low noise exhaust
TB 9 - From S / N 1 ..... 0 - 31.10.95

28 - Low noise exhaust
TB 10 - From S / N 1 ..... 0 - 31.10.95

29 - Low noise exhaust
TB 20 - From S / N 1 ..... 0 - 31.10.95

30 - "BENDIX / KING" vertical speed and altitude selector type KAS 297B
TB 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.12.95

31 - "BENDIX / KING" EHI 40
TB 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.04.96

32 - "BENDIX / KING" KLN90A GPS navigation system interfaced with EHI 40 EHSI
TB 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.04.96

33 - "BENDIX / KING" KLN90B GPS navigation system interfaced with the HSI KI 525A
TB 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.04.96

34 - EDM 700
TB 20
From S / N 948 and S / N 823 to 849+888 ..... 0 - 15.11.96

35 - "SHADIN" digital fuel management system
TB 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 15.11.96

36 - Intentionally left free

37 - "BENDIX / KING" KLN89B GPS navigation system - "Stand Alone"
TB 9 / 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.06.97

38 - "BENDIX / KING" KLN90B GPS navigation system interfaced with EHI 40 EHSI
TB 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.06.97

39 - "GARMIN" 150 GPS navigation system -"Stand Alone"
TB 9 / 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.08.97

40 - "BENDIX / KING" KLN89B GPS navigation system interfaced with the HSI KI 525A
TB 9 / 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 30.09.97

41 - "TKS" system
TB 20 / TB 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 15.11.98

42 - Intentionally left free

43 - "GARMIN" GNS 430 GPS navigation system interfaced with GI 106A CDI
TB 9 / 10 / 200 / 20 / 21
From S / N 2000, plus S / N 1633 + 1900 ..... 0 - 31.08.00

44 - "KEITH" air conditioning system
TB 200
From S / N 2013 ..... 0 - 31.08.00

45 - Three-blade propeller
TB 20 / TB 21
From S / N 1 ..... 0 - 28.10.00

46 - Intentionally left free

47 - "HONEYWELL" KFC 225 automatic flight control system
TB 20 / TB 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.01.01

48 - "HONEYWELL" KLN 94 GPS (B-RNAV) navigation system interfaced with electromechanical instruments
TB 9 / 10 / 200 / 20 / 21
From S / N 2000, plus S / N 1633 and 1900 ..... 0 - 31.01.01

49 - "HONEYWELL" KMD 550 Multi-function display
TB 9 / 10 / 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 31.01.01

50 - "SHADIN" MICROFLO-L™ digital fuel management system
TB 200 / 20 / 21
From S / N 948 and S / N 823 to 849+888 ..... 0 - 15.05.01

51 - "GARMIN" GNS 430 GPS (B-RNAV) navigation system interfaced with electromechanical instruments
(GPS # 1 : B-RNAV / GPS # 2 : IFR)
TB 9 / 10 / 200 / 20 / 21
From S / N 2000, plus S / N 1633 + 1900..... 0 - 15.05.01

52 - "HONEYWELL" KLN 94 GPS navigation system -"Stand Alone"
TB 9 / 10 / 200 / 20 / 21
From S / N 2000, plus S / N 1633 and 1900 ..... 0 - 30.05.01

53 - "GARMIN" GNS 530 GPS (B-RNAV) navigation system interfaced with electromechanical instruments
(GPS # 1 : B-RNAV)
TB 9 / 10 / 200 / 20 / 21
From S / N 2000, plus S / N 1633 + 1900..... 0 - 15.01.02

D.G.A.C.Approval

DGAC/SFACT/N.AG
Chargé de Certification
Grégory POMMERA

30 MAI 2002

Date : .....

SUPPLEMENT

DAY AND NIGHT IFR EQUIPMENT

TABLE OF CONTENTS

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SECTION 1

GENERAL

EQUIPMENT REQUIRED FOR IFR OPERATION

The airplane is approved for day & night IFR operations when the appropriate equipment is installed and operating correctly.

The type certification requires following equipment in addition to the basic flight instruments. These equipment must be installed and operate perfectly according to the indicated type of use.

CAUTION

IT IS THE PILOT'S RESPONSIBILITY TO CHECK THAT THE FOLLOWING EQUIPMENT LIST IS IN ACCORDANCE WITH THE SPECIFIC NATIONAL OPERATING RULES OF THE AIRPLANE REGISTRATION COUNTRY DEPENDING ON THE TYPE OF OPERATION

NOTE :
Systems and equipment mentioned hereafter do not include specific flight and radio-navigation instruments required by decree concerning the civil airplanes operating general conditions or other foreign regulations (for example FAR PART 91 and 135).

EQUIPMENT	Day IFR	Night IFR
Vertical speed indicator	yes	yes
Attitude gyro indicator	yes	yes
Turn-and-bank indicator	yes	yes
Heading indicator	yes	yes
Vacuum gage	yes	yes
Vacuum warning light	**	**
Heated pitot	yes	yes
Carburetor temperature indicator	yes	yes
OAT indicator	yes	yes
Stop watch	yes	yes
Alternate static source	yes	yes
Anticollision light	yes	yes
Landing and taxi lights	no	yes
Navigation lights	no	yes
Adjustable interior lighting	no	yes
Adjustable emergency lighting	no	yes
1 microphone and headset assy	yes	yes
1 hand microphone and cabin loud-speaker	yes	yes
For reference :		
Flashlight with flashing device	no	yes
Day and Night IFR placard	yes	yes

** Optional equipment ; mandatory for BRAZIL

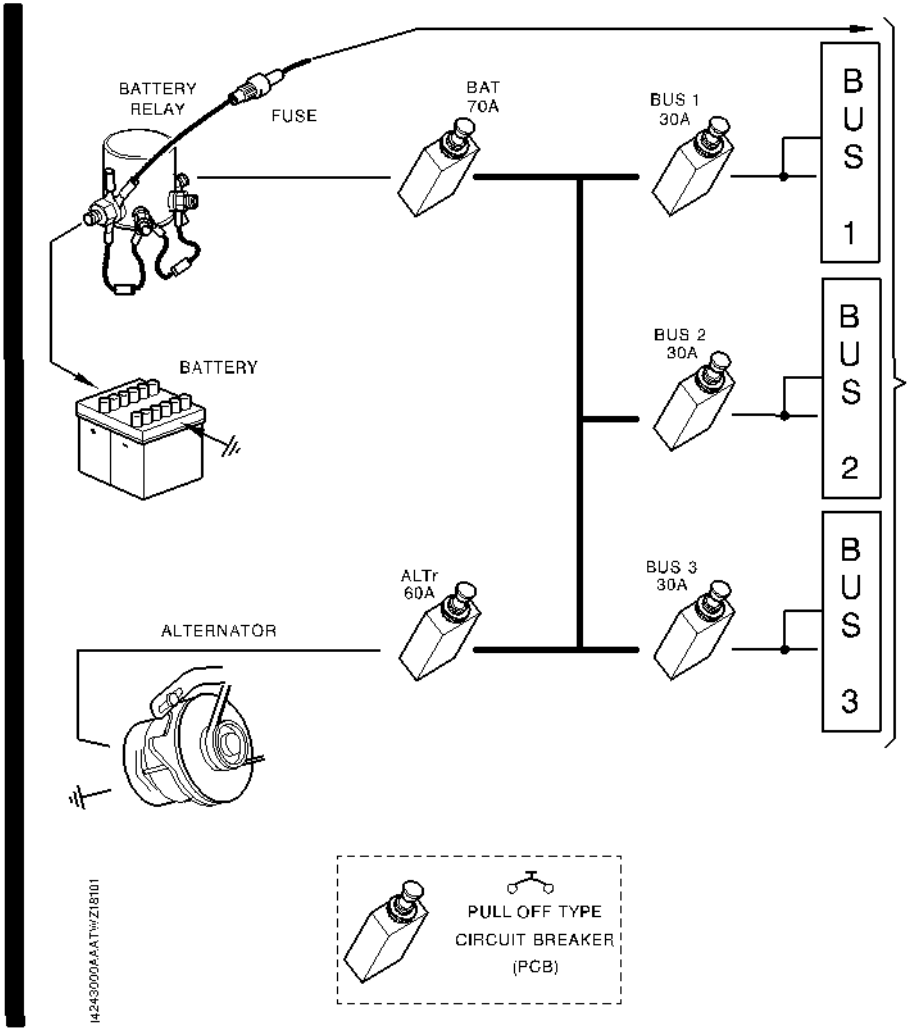

Figure 9.1.1 - BUS BARS POWER SUPPLY

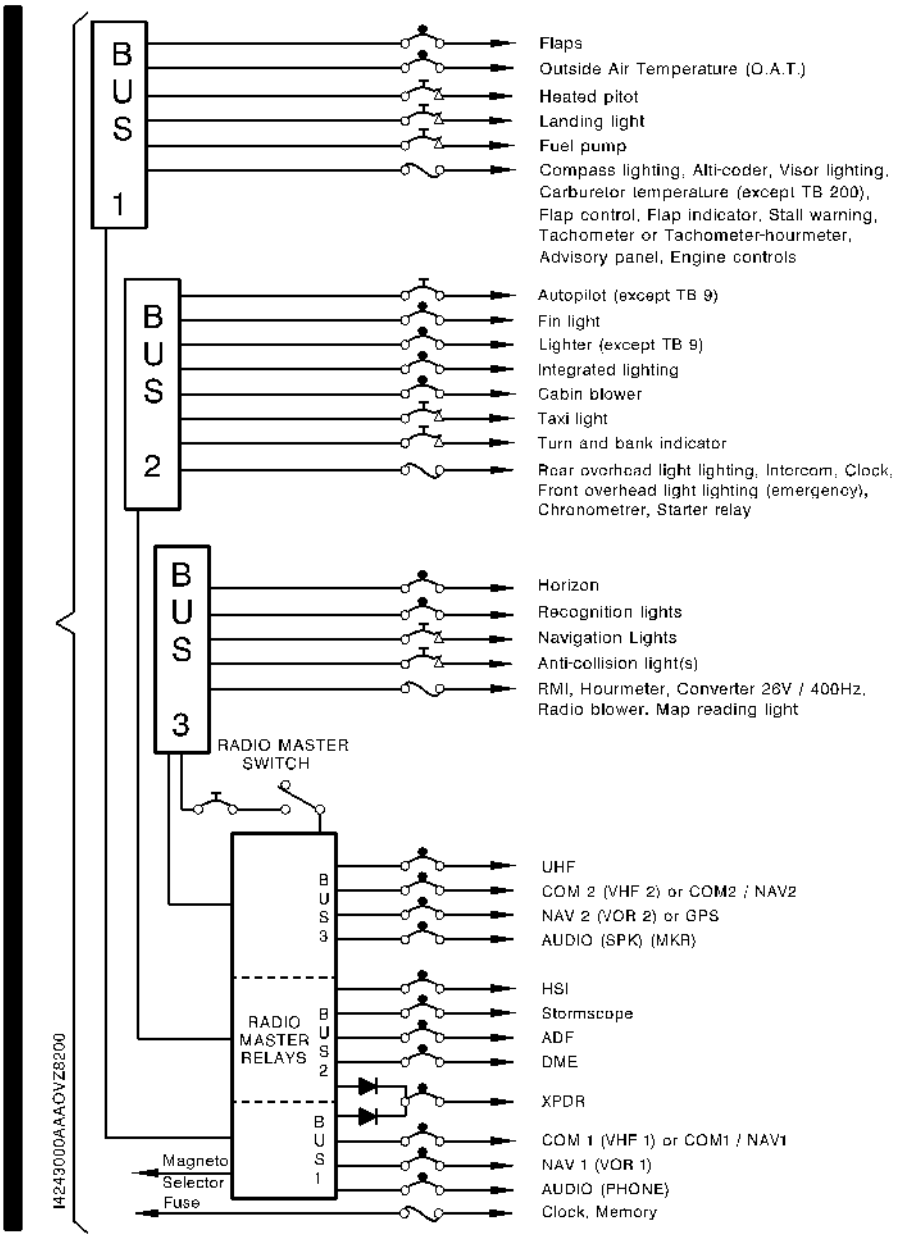

Figure 9.1.2 - POWER DISTRIBUTION IN IFR

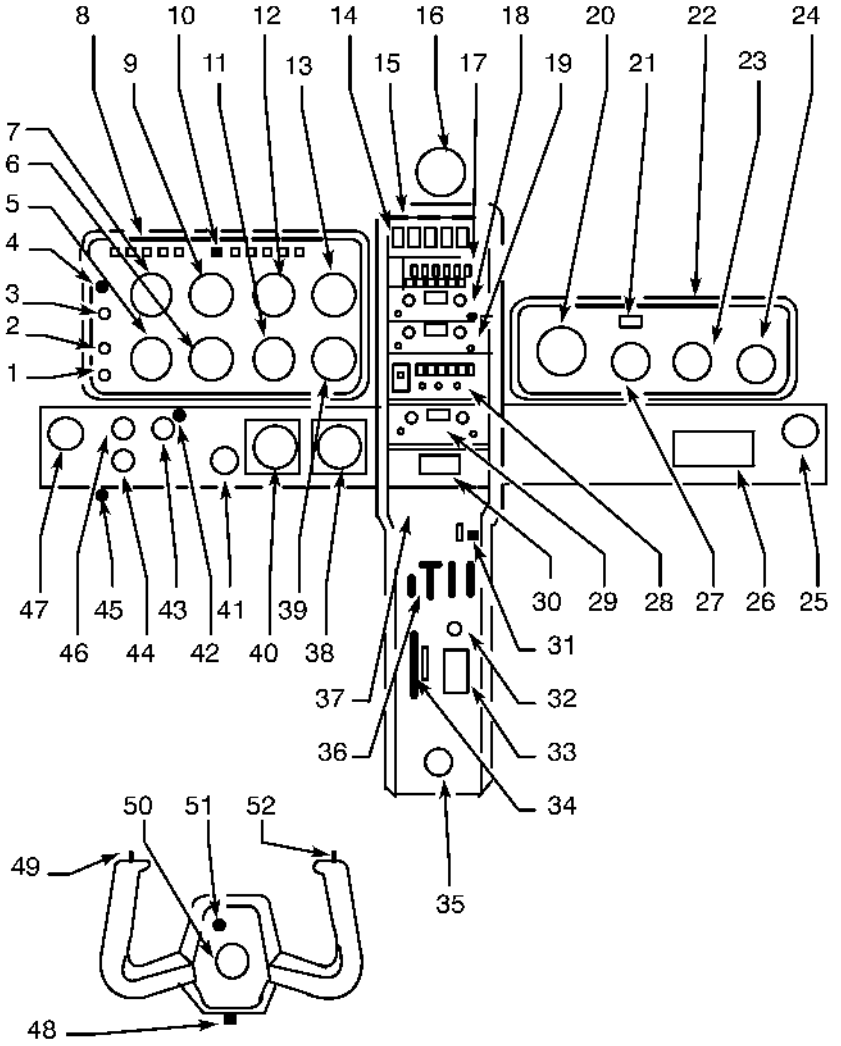

Figure 9.1.3 - EXAMPLE OF NARCO VERSION INSTRUMENT PANEL " IFR "

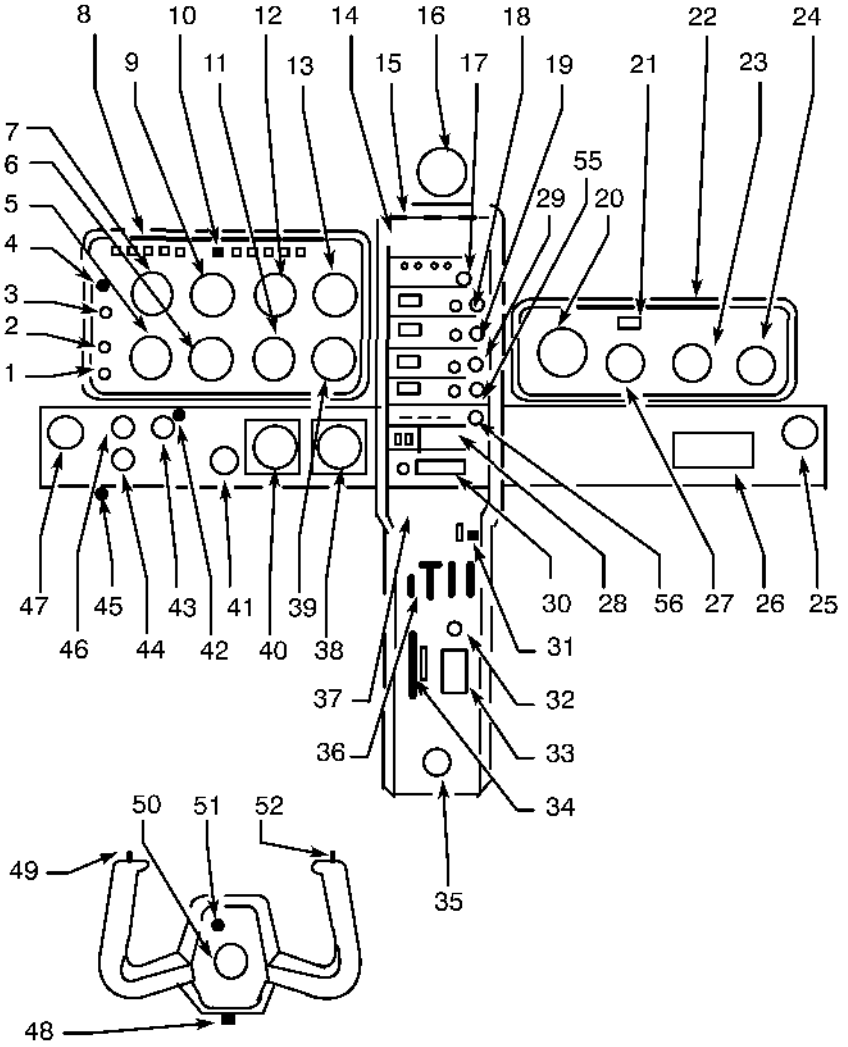

Figure 9.1.3A - EXAMPLE OF KING VERSION INSTRUMENT PANEL " IFR "

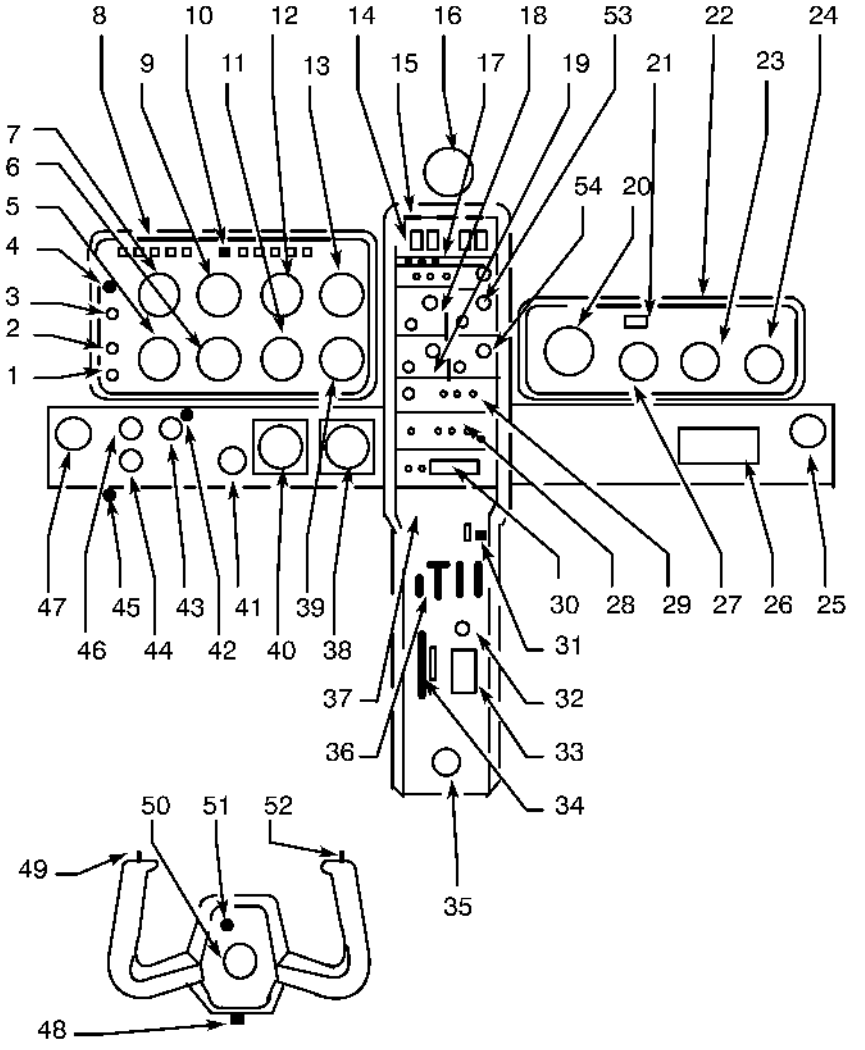

Figure 9.1.3B - EXAMPLE OF COLLINS VERSION
INSTRUMENT PANEL « IFR »

INSTRUMENT PANEL EXAMPLE (NARCO, COLLINS OR KING)

1 - Normal lighting control (Std)
2 - Emergency lighting control (Std)
3 - Instruments and radio lighting control (Std)
4 - Emergency locator transmitter switch (if installed)
5 - Illuminated turn-and-bank indicator
6 - Illuminated heading indicator
7 - Illuminated true airspeed indicator (Std)
8 - L.H. instrument panel visor lighting
9 - Illuminated attitude gyro indicator
10 - Pitot heat indicator light
11 - Illuminated vertical speed indicator (Std)
12 - Illuminated altimeter (Std)
13 - VOR 1 receiver-indicator (NARCO)
13 - VOR 1 indicator (COLLINS - KING)
14 - Engine monitoring cluster (Std)
15 - Radio support visor lighting
16 - Illuminated compass (Std)
17 - Audio control panel
18 - VHF 1
19 - VHF 2
20 - Manifold pressure gage (TB 9 - TB 10)
20 - Manifold pressure - fuel flow / pressure dual indicator (TB 200)
21 - Carburetor temperature indicator (TB 9 - TB 10)
22 - R.H. instrument panel visor lighting
23 - Illuminated CHT / EGT combination
24 - Illuminated OAT indicator
25 - R.H. air outlet (Std)
26 - Cabin air selector (Std)
27 - Illuminated tachometer (Std) or, Post-MOD.151 (All) and MOD.139 (TB 9), illuminated tachometer-hourmeter (Std)
28 - Transponder
29 - Radio compass
30 - DME indicator
31 - Wing flaps control and illuminated indicator (Std)
32 - Lighter (Std) (TB 10 - TB 200)
33 - Ash-tray (Std) (TB 10 - TB 200)
34 - Pitch trim control wheel and illuminated indicator (Std)
35 - Fuel selector (Std)

INSTRUMENT PANEL EXAMPLE (Cont.)

36 - Engine controls (Std)
37 - Switch-breakers for turn-and-bank indicator, anti-collision light(s), navigation lights, heated pitot and landing lights
38 - Illuminated altimeter Nr 2
39 - VOR 2 receiver-indicator (NARCO)
39 - VOR 2 indicator (COLLINS - KING)
40 - Illuminated ADF indicator
41 - Parking brake knob (Std)
42 - L.H. subpanel post light (Std)
43 - Vacuum gage
44 - Alternate static source valve
45 - Circuit breakers panel post light
46 - Magneto / start selector (Std)
47 - L.H. air outlet (Std)
48 - Maps reading light (if installed)
49 - Push-to-talk switch
50 - Clock / stop watch
51 - Clock / stop watch post light (if installed)
52 - Maps reading light switch
53 - NAV 1 receiver (COLLINS)
54 - NAV 2 receiver (COLLINS)
55 - VOR / ILS receiver (KING)
56 - VOR / LOC receiver (KING)

LIGHTING DEVICES

INSTRUMENT PANELS LIGHTING

- See Figure 9.1.3.
- Controlled and regulated by "Normal" and "Radio" controls.

EMERGENCY LIGHTING

Pre-MOD.151

- Front overhead lights controlled by turning post lights and regulated by the "Emergency" control. See Figure 9.1.3.

Post-MOD.151 (All) and MOD.139 (TB 9)

- Front overhead lights controlled and regulated by the "Emergency" control. See Figure 9.1.3.

CABIN LIGHTING

Pre-MOD.151

- Front overhead lights controlled by turning post lights and regulated by the "Emergency" control. See Figure 9.1.3.

Post-MOD.151 (All) and MOD.139 (TB 9)

- Front overhead lights controlled and regulated by the "Emergency" control. See Figure 9.1.3.

All

- Rear overhead light (manual).

INSTRUMENT PANEL ADDITIONAL EQUIPMENT

ADDITIONAL SENSITIVE ALTIMETER (if installed)

The second sensitive altimeter is connected to the airplane static pressure. It may be switched over to cabin static pressure by means of the alternate static source valve.

When the alternate static source valve is pulled, altitude compensation should be performed as per Section 5 "Performance".

CLOCK / STOP WATCH

The clock / stop watch and its post light are installed in the center of the pilot's control wheel.

OAT INDICATOR

The indicator is connected to the transmitter which is installed under L.H. wing. The instrument is provided with integral lighting.

A red warning light is provided on the dial. This warning light, permanently lit, becomes visible by the pointer rotation when the outside atmosphere is close to 32° F.

ALTERNATE STATIC SOURCE

A two position selector allows the normal static source system of the airplane to be isolated in case of clogging or icing of static ports.

The ON position ("PULL") of the alternate static source valve admits cabin static pressure to the static system.

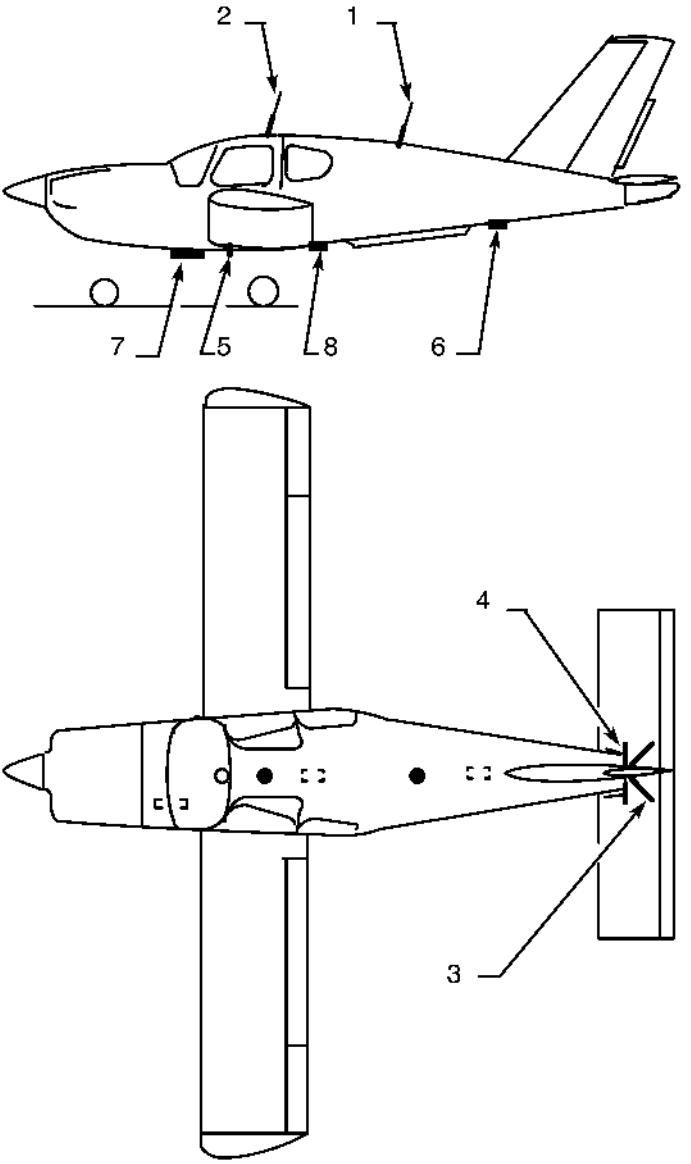

Figure 9.1.4 – ANTENNAS

ANTENNAS

1 - VHF 1 antenna

2 - VHF 2 antenna

3 - VOR antenna

4 - Glide ILS antenna

5 - ATC transponder antenna

6 - Radio compass - loop and sense antenna

7 - Marker antenna

8 - DME antenna

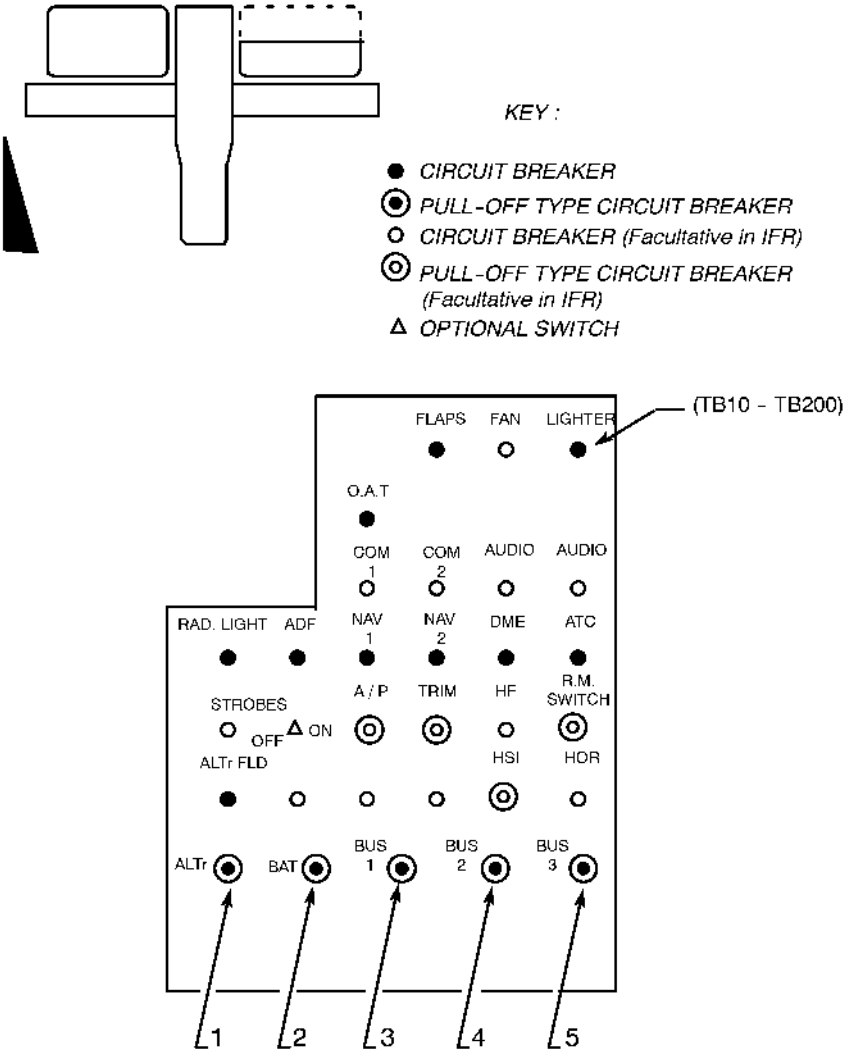

Figure 9.1.5 - CIRCUIT BREAKERS ASSEMBLY
(Typical arrangement)

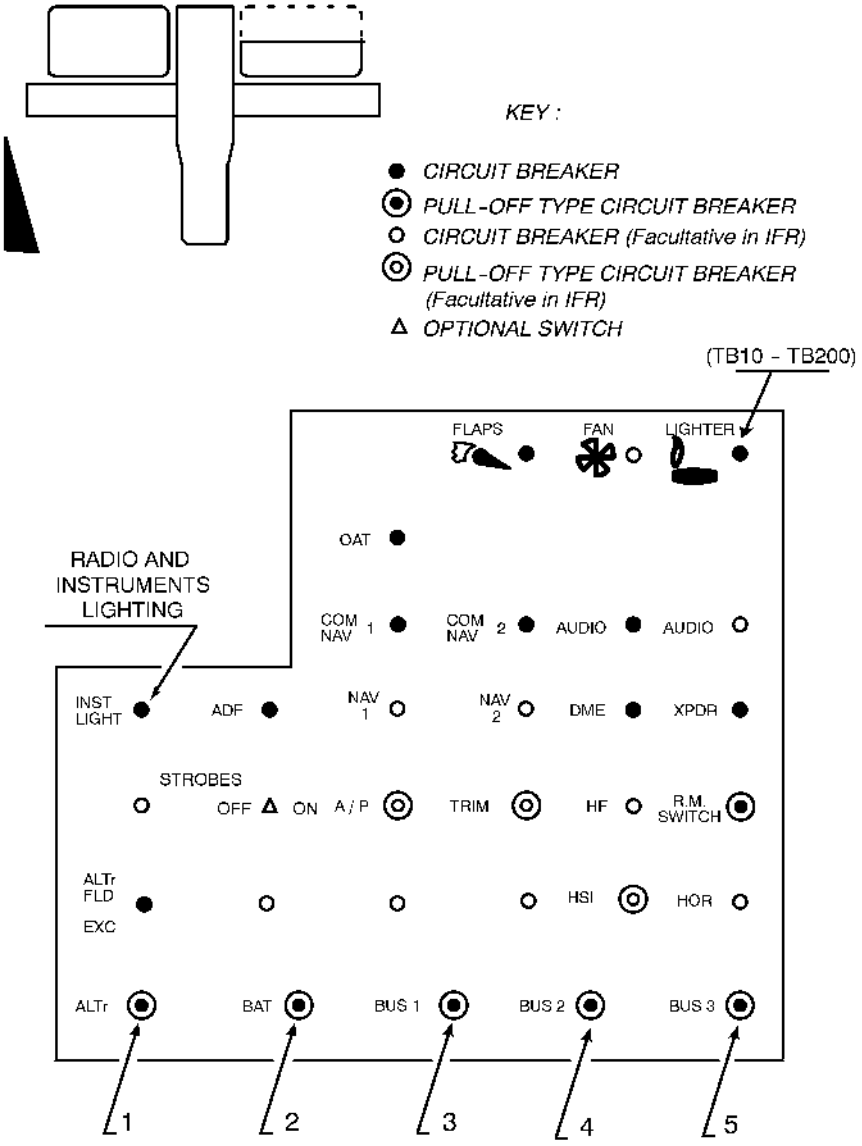

Figure 9.1.5A - CIRCUIT BREAKERS ASSEMBLY
(Typical arrangement)

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CIRCUIT BREAKERS ASSEMBLY

1 - Alternator "pull-off' type circuit breaker (60 A)

2 - Battery "pull-off" type circuit breaker (70 A)

3 - BUS bar 1 "pull-off" type circuit breaker (30 A)

4 - BUS bar 2 "pull-off" type circuit breaker (30 A)

5 - BUS bar 3 "pull-off" type circuit breaker (30 A)

SECTION 2
LIMITATIONS

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

PLACARDS

This placard is located near the instruction plate :

FLIGHT CONDITIONS : DAY AND NIGHT IFR AND VFR
ICING CONDITIONS NOT ALLOWED

This placard is located on L.H. instrument panel :

CAUTION : DURING ILS APPROACH
AVOID ENGINE RPM HIGHER THAN 2600

SECTION 3

EMERGENCY PROCEDURES

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

AIRSPEED INDICATING SYSTEM FAILURE

- Check the operation of the heated pitot, green indicator light "ON". If the switch-breaker is "ON" and the indicator light "OFF", check that BUS 1 "pull-off" type circuit breaker is "ON".
- Erroneous indications of true airspeed indicator and altimeters :

  Alternate static source "PULL"

Open air outlets and / or actuate cabin air regulation flow lever to open position. Then, airspeed indicator and altimeter errors are slight.

If the failure persists, perform a precautionary approach, maintaining an adequate airspeed margin above the stall warning activation speed using the pre-setting (see Figure 9.1.6).

NORMAL LIGHTING FAILURE

- Switch on emergency lighting system (front overhead lights)
- Check that radio and instruments lighting circuit breaker is "ON".

LANDING LIGHT FAILURE

The left light has a wide beam and is considered as a taxi light, and the right one has a narrow beam and is considered as a landing light, but either or both can be used as desired.

When landing without lights, it is suggested to use the same pitch attitude as that required to maintain the ILS Glide Slope.

FIRE OR SMOKE OF ELECTRIC ORIGIN

- Disengage "pull-off" type circuit breakers of BUS bars 1, 2, 3.
- After a few moments reset "pull-off" type circuit breakers in the numerical order with a delay between each operation for observation. Disengage the faulty BUS bar and disconnect all the equipment supplied by the latter. See Figure 9.1.2.
- Reset "pull-off" type circuit breaker and reconnect one after the other all the disconnected equipment to isolate the failed item. Let the "pull-off" type circuit breaker tripped for this item.

VACUUM SYSTEM FAILURE

If the vacuum gage is below green arc or shows zero :

- the pneumatically operated attitude gyro indicator and / or heading indicator / HSI are inoperative.
- electric turn-and-bank indicator and magnetic compass continue to function normally.

Leave IMC conditions, fly airplane carefully in partial panel mode, and proceed with landing as soon as possible.

SECTION 4
NORMAL PROCEDURES

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

4.1 - PROCEDURES FOR IFR FLIGHT OR NIGHT FLIGHT

PRELIMINARY STEPS

Study the meteorology in order to avoid flying in hazardous conditions (minima, icing...).

Check that fuel level is sufficient to comply with regulations.

BEFORE FLIGHT (may be undertaken or continued at night)

Check the operation :

. of anti-collision light(s)
. of navigation lights
. of cabin and instrument panel lighting
. of landing lights
. of day / night selector switch.

A flashlight must be provided on board the airplane.

TAXIING

Check the operation of gyroscopic instruments by performing alternate turns :

- Attitude gyro indicator - set miniature airplane as required
- Heading indicator - correct rotation
- Turn-and-bank indicator - proper direction.

At night, preferably use only the taxi light (left landing light).

BEFORE TAKE-OFF

- Heated pitot
- Check vacuum gage in green arc
- Check installed radio-navigation equipment
- Set transponder to "stand-by"
- At night or in damp weather, set the cabin air selector to maximum demisting.

LINED UP ON RUNWAY

Check heading indicator and attitude gyro indicator bar.

At night, turn on landing lights as required.

TAKE-OFF

See Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

Always maintain a positive rate of climb.

At night, switch off the landing lights when safely airborne.

CLIMB, CRUISE AND DESCENT

See Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

Beware of the risk of eye-sight problems above 8000 feet (without oxygen).

ILS APPROACH (pre-setting)

These values are given for a weight of 2535 lbs (1150 kg - TB 10 - TB 200) - 2337 lbs (1060 kg - TB 9).

In order to facilitate air traffic, it is advisable to proceed with final approach at VIAS = 86 / 92 KIAS - 99 / 106 MPH IAS with flaps retracted.

In short final run, fully extend the flaps, VIAS will then drop to 70 / 76 KIAS - 81 / 87 MPH IAS. It is not necessary to modify the power to maintain the angle of descent.

	Wing flaps	KIAS	MPH IAS	MP in.Hg (TB10-TB200)	Propeller RPM	Vert. Speed indic. ft/min
Holding	0°	86 / 92	99 / 106	20.7	2500 (TB10-TB200) 2350 (TB 9)	0
ILS Approach	0°	86 / 92	99 / 106	14.8	2500 (TB10-TB200) 2000 (TB 9)	- 450
Final	25°30'	70 / 76	81 / 87	*	Full low pitch (TB10-TB200) (TB 9) *	- 450

(*) As required

Figure 9.1.6 - PRE-SETTINGS, ILS APPROACH

ILS approach with KING ILS

"Erratic deviations have been observed with airplane flown down an ILS path with KING RADIO-NAV installations. Analysis of the phenomenon indicates that the fluctuations are due to an interference between propeller rotation frequency and one of LOC frequencies. The more sensitive conditions are met when the localizer beacon is right ahead and the engine speed is adjusted toward 2650 RPM.

The localizer use is not significantly impaired by the phenomenon when :

- engine speed is reduced to lower than 2600 RPM
- localizer beacon lies right or left by more than 30 degrees from airplane heading.

Autopilot APR mode operation should be discontinued whenever high engine power settings are anticipated. This can be done by switching to HDG mode or CWS mode or by switching off the autopilot. Of course from above one understands that REV mode or BCK COURSE mode are not concerned by this limitation after take-off (loc. beacon lies 180° from airplane heading in this case)."

LANDING

At night, preferably use the R.H. landing light (long range) or both lights simultaneously.

4.2 - USE OF AVIONICS

AUDIO CONTROL PANEL

These knobs permit the selection of transmission and reception of VHF 1 or VHF 2, double VHF reception, reception of VOR 1, VOR 2, ADF, Marker and DME.

TRANSMISSION

Transmission may be made either through the hand microphone, or through the headset boom microphone with its push-to-talk-switches located on the control wheels. Headsets that will not be used should be unplugged.

RECEPTION

Select the loud-speaker or headset reception by means of the corresponding button on audio control panel (SPKR or PHONE).

In I.M.C. or at night, it is recommended to use the headset.

VOR, ADF, MKR AND DME (if installed)

They operate independently of VHF comm transceivers, but at least one VHF comm transceiver must be turned on to provide an audio amplifier for loud-speaker operation, unless the audio control panel contains an integral amplifier. Headphone operation is normal regardless of VHF operation on loud-speakers.

LIGHTING

Three controls are located on the left side of the L.H. instrument panel. See Figure 9.1.3 :

- Lower control (normal)

  Controls and regulates lighting of L.H. and R.H. instrument panels' visors.

- Central control (emergency) Pre-MOD.151

  Regulates lighting of both forward overhead lights. Rotating the overhead lights turns them on and off.

- Central control (emergency) Post-MOD.151 (All) and MOD.139 (TB 9)

  Controls and regulates lighting of both forward overhead lights.

- Upper control (radio-equipment) operates and regulates :
  - Radio equipment lighting
  - Instruments and indicators lighting on instrument panel
  - Circuit breakers panel lighting

NOTE :
Both "normal" and "radio-equipment" controls and, Post-MOD.151 (All) and MOD.139 (TB 9), the "emergency" position control operate and regulate lighting ; from high position "OFF" turn clockwise for "FULL INTENSITY OPERATION", then, still clockwise, rotate towards "MINIMUM INTENSITY" ; turn back to "OFF" turning counterclockwise.
The "Emergency" position control, Pre-MOD.151, regulates lighting ; from high position "FULL INTENSITY" turn clockwise to regulate to "MINIMUM INTENSITY" ; turn back to high position "FULL INTENSITY" turning counterclockwise.

LANDING LIGHTS

The lights are controlled by two switch-breakers. See Figure 7.5B of the basic Pilot's Operating Handbook.

The L.H. light has a wide beam which facilitates taxiing.

The R.H. light has a long range beam and should be used for take-off and landing.

Simultaneous operation is possible.

DAY / NIGHT DIMMER

A day / night switch allows the indicator lights for the fuel pump, pitot heater and landing lights to be dimmed during night operations.

SECTION 5

PERFORMANCE

The installation and the operation of the day and night IFR equipment do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.
However, the installation of the externally mounted antennas will result in a minor reduction in cruise performance. See Section 5 "Performance" of the basic Pilot's Operating Handbook.

SUPPLEMENT

NIGHT VFR EQUIPMENT

TABLE OF CONTENTS

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SECTION 1
GENERAL

LIST OF APPROVED AND MANDATORY EQUIPMENT
FOR NIGHT FLIGHT
(in addition to the basic flight instruments)

EQUIPMENT
- RADIO-NAVIGATION VHF - Category 2 VOR / LOC - Category 2 (NAV) or Radio compass - Category 2 (ADF) - NAVIGATION EQUIPMENT Attitude gyro indicator Turn and bank indicator Heading indicator Gyro "ON" indicator Vertical speed indicator Anti-collision light Navigation lights Landing and taxi lights Interior panel lighting Flashlight (Personal equipment) Night VFR placard

NOTE :
Refer to the prevailing regulation, which can change anytime.

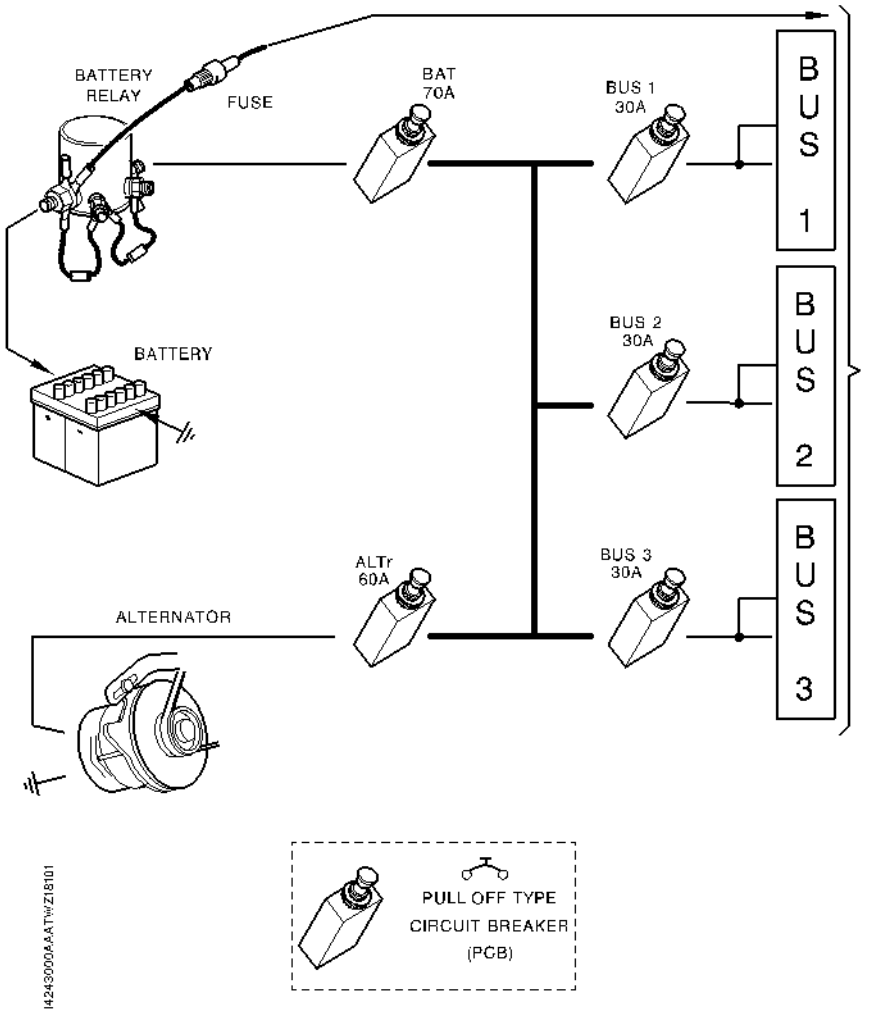

Figure 9.2.1 - BUS BAR POWER SUPPLY

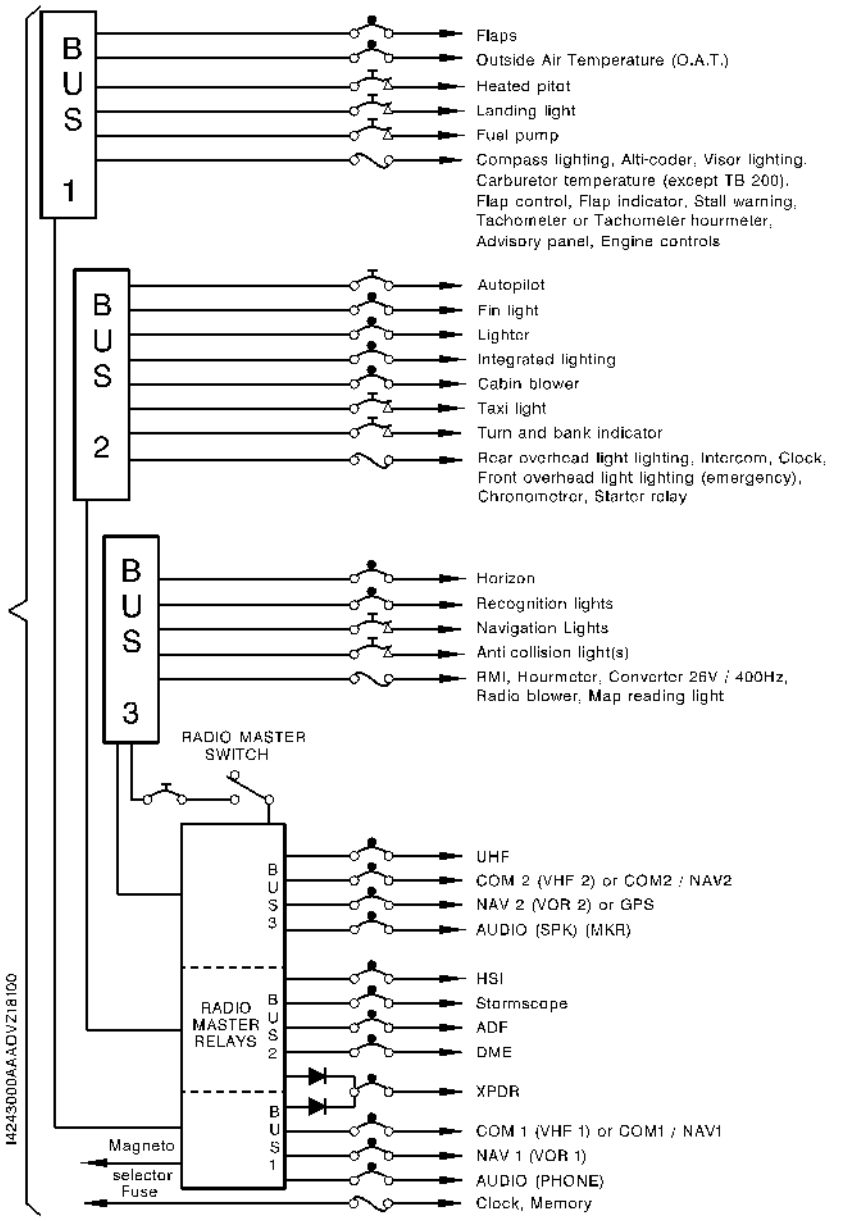

Figure 9.2.2 - POWER DISTRIBUTION IN VFR

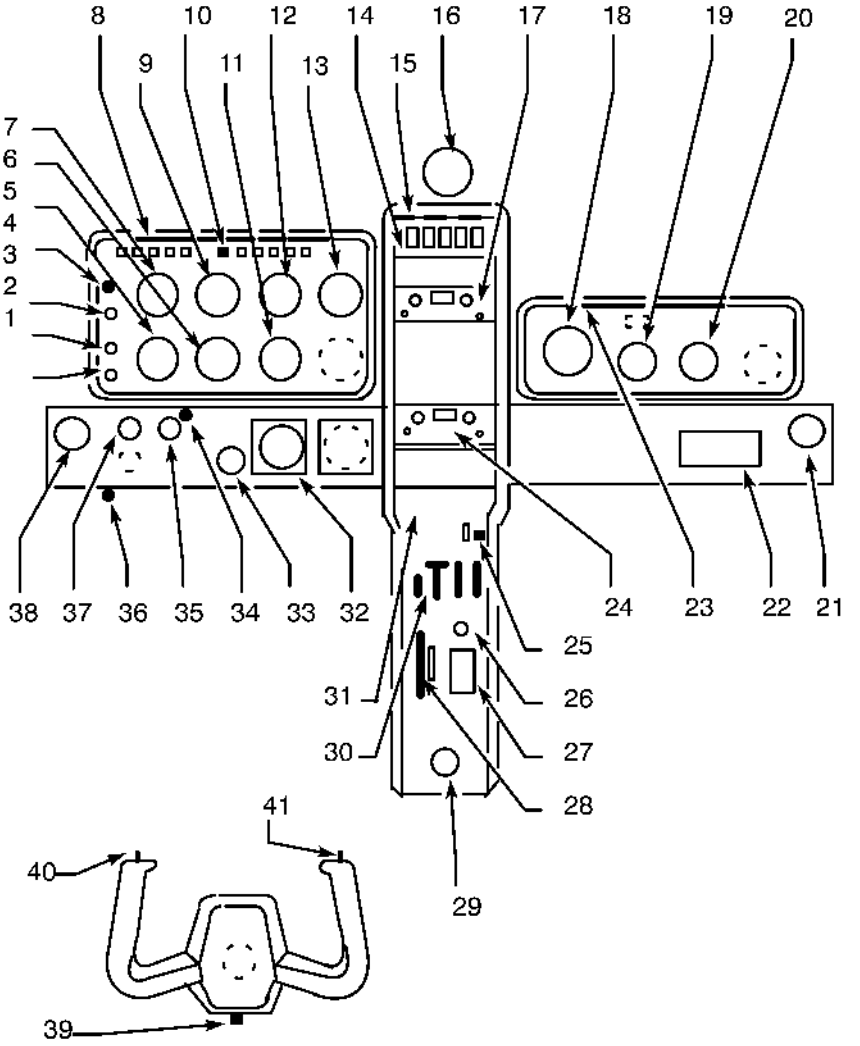

Figure 9.2.3 - EXAMPLE OF NARCO VERSION INSTRUMENT PANEL " VFR "

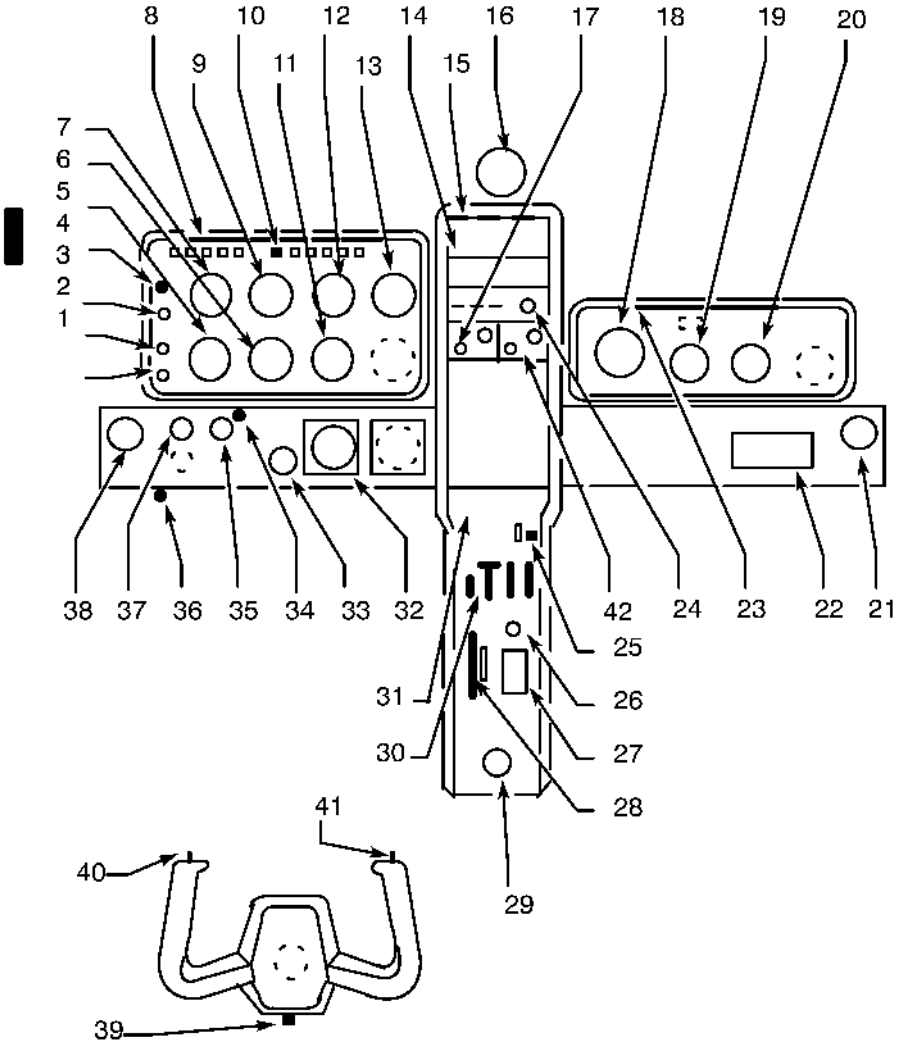

Figure 9.2.3A - EXAMPLE OF KING VERSION INSTRUMENT PANEL « VFR »

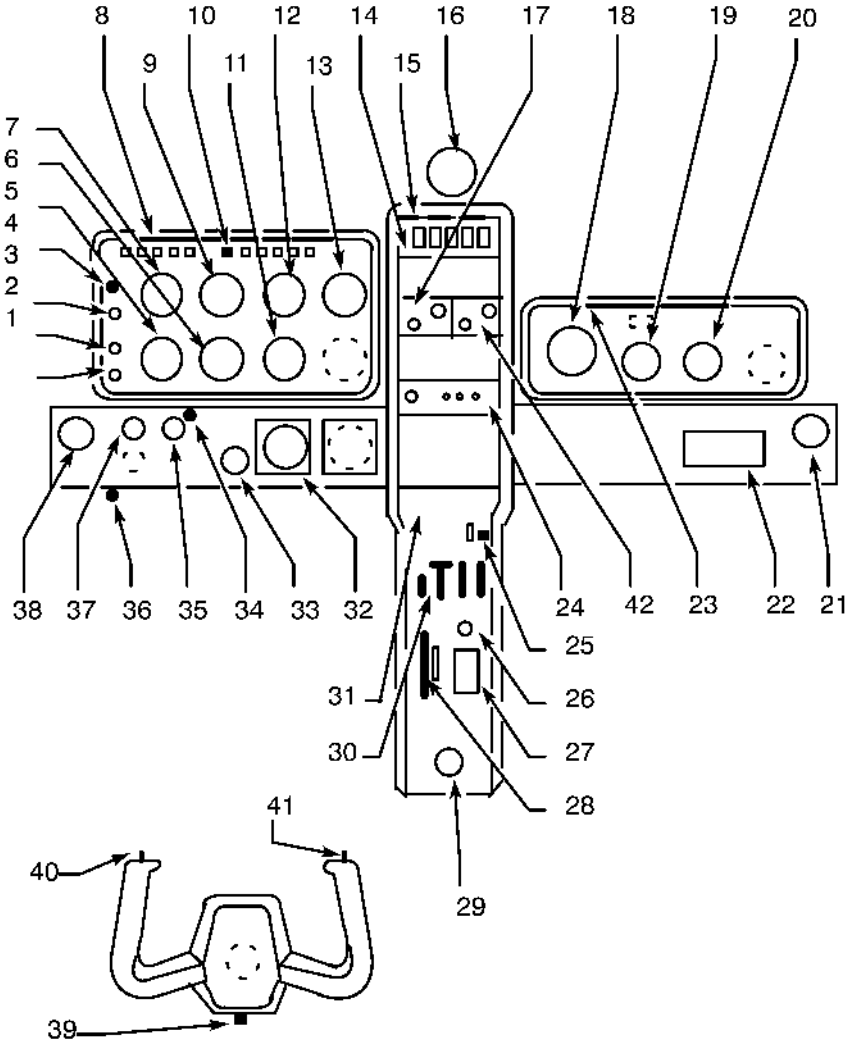

Figure 9.2.3B - EXAMPLE OF COLLINS VERSION INSTRUMENT PANEL " VFR "

INSTRUMENT PANEL EXAMPLE (NARCO, COLLINS OR KING)

1 - Normal lighting control (Std)
2 - Emergency lighting control (Std)
3 - Instruments and radio lighting control (Std)
4 - Emergency locator transmitter switch (if installed)
5 - Illuminated turn-and-bank indicator
6 - Illuminated heading indicator
7 - Illuminated true airspeed indicator (Std)
8 - L.H. instrument panel visor lighting
9 - Illuminated attitude gyro indicator
10 - Pitot heat indicator light
11 - Illuminated vertical speed indicator (Std)
12 - Illuminated altimeter (Std)
13 - VOR indicator (COLLINS - KING)
13 - VOR receiver-indicator (NARCO)
14 - Engine monitoring cluster (Std)
15 - Radio support visor lighting
16 - Illuminated compass (Std)
17 - VHF 1
18 - Manifold pressure gage (TB 10)
18 - Manifold pressure - fuel flow / pressure dual indicator (TB 200)
19 - Illuminated tachometer (Std) or, Post-MOD.151, illuminated tachometer-hourmeter (Std)
20 - Illuminated CHT / EGT combination
21 - R.H. air outlet (Std)
22 - Cabin air selector (Std)
23 - R.H. instrument panel visor lighting
24 - Radio compass
25 - Wing flaps control and indicator (Std)
26 - Lighter (Std)
27 - Ash-tray (Std)
28 - Pitch trim illuminated control wheel and indicator (Std)
29 - Fuel selector (Std)
30 - Engine controls (Std)
31 - Switch-breakers for turn-and-bank indicator, anti-collision light(s), navigation lights, heated pitot and landing lights
32 - Illuminated ADF indicator
33 - Parking brake knob (Std)
34 - L.H. subpanel post light

INSTRUMENT PANEL EXAMPLE (Cont.)

35 - Vacuum gage
36 - Circuit breakers panel post light
37 - Magneto / start selector (Std)
38 - L.H. air outlet (Std)
39 - Maps reading light (if installed)
40 - Push-to-talk switch
41 - Maps reading light switch
42 - VOR / LOC receiver (KING - COLLINS)

LIGHTING DEVICES

INSTRUMENT PANELS LIGHTING

- See Figure 9.2.3.
- Controlled and regulated by "Normal" and "Radio" controls.

EMERGENCY LIGHTING

Pre-MOD.151

- Front overhead lights controlled by turning post lights and regulated by the "Emergency" control. See Figure 9.2.3.

Post-MOD.151

- Front overhead lights controlled and regulated by the "Emergency" control. See Figure 9.2.3.

CABIN LIGHTING

Pre-MOD.151

- Front overhead lights controlled by turning post lights and regulated by the "Emergency" control. See Figure 9.2.3.

Post-MOD.151

- Front overhead lights controlled and regulated by the "Emergency" control. See Figure 9.2.3.

All

- Rear overhead light (Manual).

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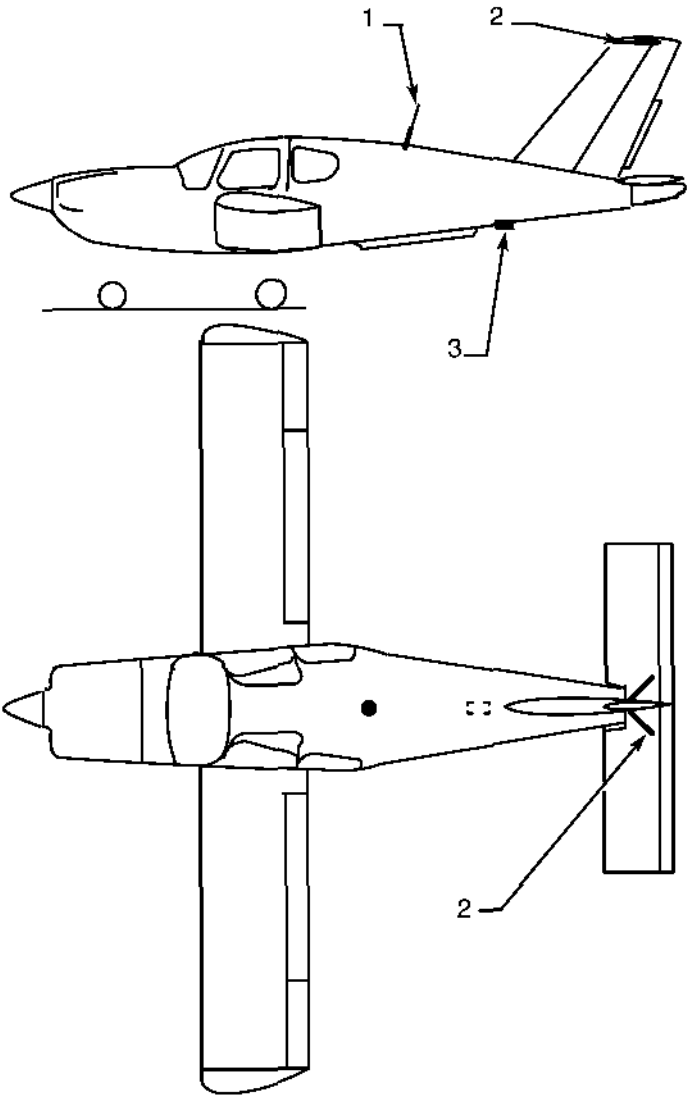

Figure 9.2.4 – ANTENNAS

ANTENNAS

1 - VHF antenna

2 - VOR antenna

3 - Radio compass - loop and sense antenna.

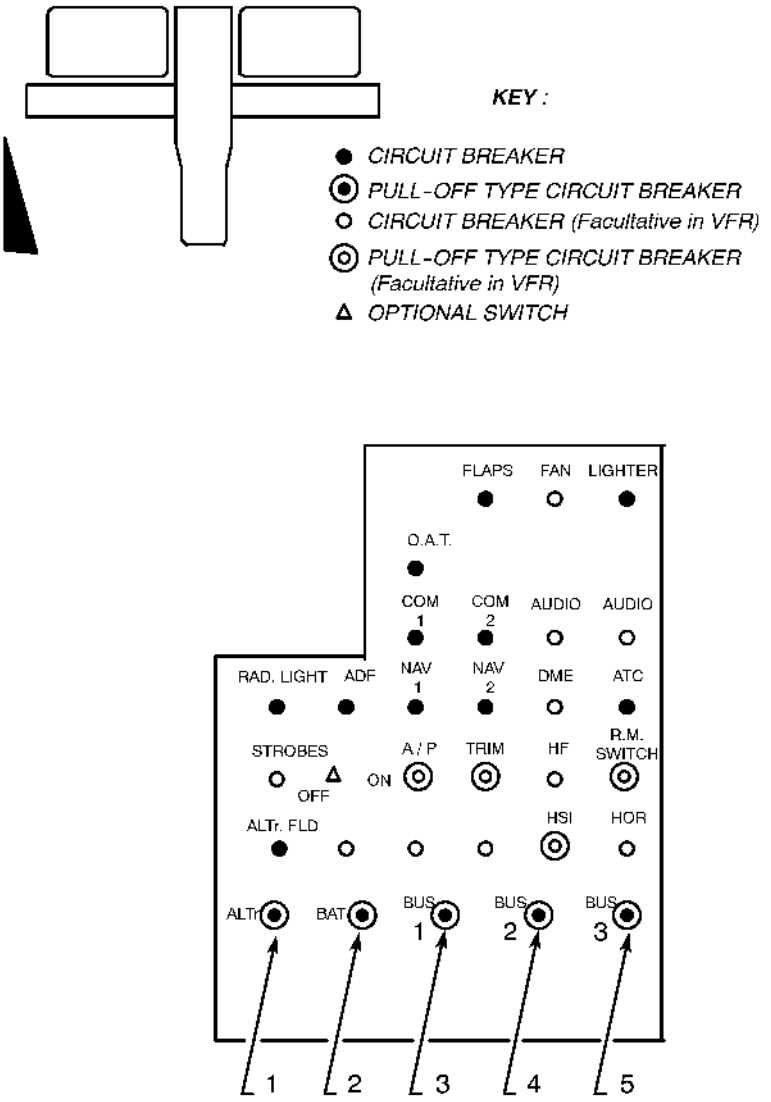

Figure 9.2.5 - CIRCUIT BREAKERS ASSEMBLY
(Typical arrangement)

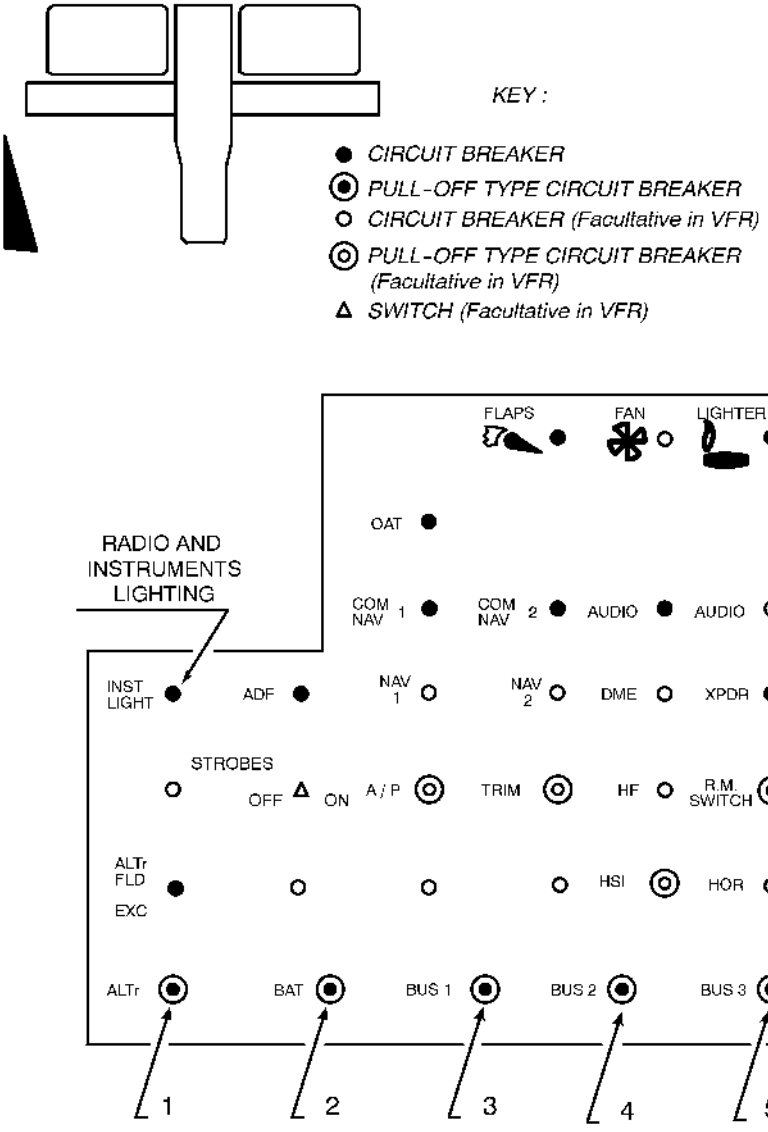

Figure 9.2.5A - CIRCUIT BREAKERS ASSEMBLY
(Typical arrangement)

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CIRCUIT BREAKERS ASSEMBLY

1 - Alternator "Pull-off" type circuit breaker (60 A)
2 - Battery "Pull-off" type circuit breaker (70 A)
3 - BUS bar 1 "Pull-off" type circuit breaker (30 A)
4 - BUS bar 2 "Pull-off" type circuit breaker (30 A)
5 - BUS bar 3 "Pull-off" type circuit breaker (30 A)

SECTION 2
LIMITATIONS

The limitations hereafter supplement or replace those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

PLACARDS

This placard is located near the instruction plate :

FLIGHT CONDITIONS : DAY AND NIGHT VFR
ICING CONDITIONS NOT ALLOWED

This placard is located on L.H. instrument panel :

CAUTION : DURING ILS APPROACH
AVOID ENGINE RPM HIGHER THAN 2600

SECTION 3
EMERGENCY PROCEDURES

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

NORMAL LIGHTING FAILURE

- Switch on emergency lighting system (FWD overhead lights).
- Check that radio and instruments lighting circuit breaker is "ON".

LANDING LIGHT FAILURE

The left light has a wide beam and is considered as a taxi light, and the right one has a narrow beam and is considered as a landing light, but either or both can be used as desired.

When landing without lights, it is suggested to use the same pitch attitude as that required to maintain the ILS Glide Slope.

FIRE OR SMOKE OF ELECTRIC ORIGIN

- Disengage "pull-off" type circuit breaker of BUS bars 1, 2, 3.
- After a few moments reset "pull-off" type circuit breakers in the numerical order with a delay between each operation for observation. Disengage the faulty BUS bar and disconnect all the equipment supplied by the latter. See Figure 9.2.2.
- Reset "pull-off" type circuit breaker and reconnect one after the other all the disconnected equipment until the faulty equipment is found and isolated. Let the "pull-off" type circuit breaker tripped for this item.

VACUUM SYSTEM FAILURE

If the vacuum gage is below green arc or shows zero :

- The pneumatically operated attitude gyro indicator and / or heading indicator / HSI are inoperative.
- Electric turn-and-bank indicator and magnetic compass continue to function normally.

Fly the airplane carefully in partial panel mode, and proceed with landing as soon as possible.

SECTION 4
NORMAL PROCEDURES

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

4.1 - PROCEDURES FOR VFR NIGHT FLIGHT

FIRST STEPS

Study the meteorology in order to avoid flying in hazardous conditions (minima, icing...).

Check that fuel level is sufficient to comply with regulations.

BEFORE FLIGHT (may be undertaken or continued at night)

Check the operation :

. of anti-collision light(s)
. of navigation lights
. of cabin and instrument panel lighting
. of landing lights
. of day / night selector switch.

A flashlight must be provided on board the airplane.

TAXIING

Check the operation of gyroscopic instruments by performing alternate turns :

- Attitude gyro indicator - set miniature airplane as required
- Heading indicator - correct rotation
- Turn and bank indicator - proper direction.

At night, preferably use only the taxi light (left landing light).

BEFORE TAKE-OFF

- Check vacuum gage in green arc
- Check VHF

  VOR or radiocompass

- At night or in damp weather, set the cabin air selector to maximum demisting.

LINED UP ON RUNWAY

Check heading indicator and attitude gyro indicator bar.

At night, turn on landing lights as required.

TAKE-OFF

See Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

Always maintain a positive rate of climb.

At night, switch off the landing lights when safely airborne.

CLIMB, CRUISE AND DESCENT

See Section 4 "Normal procedures" of the basic Pilot's Operating Handbook.

Beware of the risk of eye-sight problems above 8000 feet (without oxygen).

ILS APPROACH (pre-setting)

These values are given for a weight of 2535 lbs (1150 kg).

In order to facilitate air traffic, it is advisable to proceed with final approach at VIAS = 86 / 92 KIAS - 99 / 106 MPH IAS with flaps retracted.

In short final run, fully extend the flaps, VIAS will then drop to 70 / 76 KIAS - 81 / 87 MPH IAS. It is not necessary to modify the power to maintain the angle of descent.

	Wing flaps	KIAS	MPH IAS	MP in.Hg	Propeller RPM	Vert. Sp. indicator ft/min
Holding	0°	86 / 92	99 / 106	20.7	2500	0
ILS Approach	0°	86 / 92	99 / 106	14.8	2500	- 450
Final	25°30'	70 / 76	81 / 87	*	Full low pitch	- 450

(*) As required

Figure 9.2.6 - PRE-SETTINGS, ILS APPROACH

ILS approach with KING ILS

"Erratic deviations have been observed with airplane flown down an ILS path with KING RADIO-NAV installations. Analysis of the phenomenon indicates that the fluctuations are due to an interference between propeller rotation frequency and one of LOC frequencies. The more sensitive conditions are met when the localizer beacon is right ahead and the engine speed is adjusted toward 2650 RPM.

The localizer use is not significantly impaired by the phenomenon when :

- engine speed is reduced to lower than 2600 RPM
- localizer beacon lies right or left by more than 30 degrees from airplane heading.

Autopilot APR mode operation should be discontinued whenever high engine power settings are anticipated. This can be done by switching to HDG mode or CWS mode or by switching off the autopilot. Of course from above one understands that REV mode or BCK COURSE mode are not concerned by this limitation after take-off (loc. beacon lies 180° from airplane heading in this case)."

LANDING

At night, preferably use the R.H. landing light (long range) or both lights simultaneously.

4.2 - USE OF AVIONICS

TRANSMISSION

Transmission may be made either through the hand microphone, or through the headset boom microphone with its push-to-talk-switches located on the control wheels. Headsets that will not be used should be unplugged.

RECEPTION

The loud-speaker is the main equipment, the headset being considered as stand-by equipment.

A selector switch selects reception on the loud-speaker or headset.

On headset operation, all receptions are simultaneous.

LIGHTING

Three controls are located on the left side of the L.H. instrument panel. See Figure 9.2.3 :

- Lower control (normal)

  Controls and regulates lighting of L.H. and R.H. instrument panels'visors.

- Central control (emergency) Pre-MOD.151

  Regulates lighting of both forward overhead lights. Rotating the overhead lights turns them on and off.

- Central control (emergency) Post-MOD.151

  Controls and regulates lighting of both forward overhead lights.

- Upper control (radio-equipment) operates and regulates :
  - Radio equipment lighting
  - Instruments and indicators lighting on instrument panel
  - Circuit breakers panel lighting

NOTE :

Both "normal" and "radio-equipment" controls and, Post-MOD.151, the emergency control operate and regulate lighting ; from high position "OFF" turn clockwise for "FULL INTENSITY OPERATION", then, still clockwise, rotate towards "MINIMUM INTENSITY" ; turn back to "OFF" turning counterclockwise.

The "emergency" position control, Pre-MOD.151, regulates lighting ; from high position "FULL INTENSITY" turn clockwise to regulate to "MINIMUM INTENSITY" ; turn back to high position "FULL INTENSITY" turning counterclockwise.

LANDING LIGHTS

The lights are controlled by two switch-breakers. See Figure 7.5B of the basic Pilot's Operating Handbook.

The L.H. light has a wide beam which facilitates taxiing.

The R.H. light has a long range beam and should be used for take-off and landing.

Simultaneous operation is possible.

DAY / NIGHT DIMMER

A day / night switch allows the indicator lights for the fuel pump, pitot heater and landing lights to be dimmed during night operations.

SECTION 5

PERFORMANCE

The installation and the operation of the night VFR equipment do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.
However, the installation of the externally mounted antennas will result in a minor reduction in cruise performance. See Section 5 "Performance" of the basic Pilot's Operating Handbook.

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SUPPLEMENT

"KING" AUTOPILOT TYPE KAP 100

"OPTIONAL EQUIPMENT N° 668"

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Figure 9.7.1 - KC 190 AUTOPILOT COMPUTER

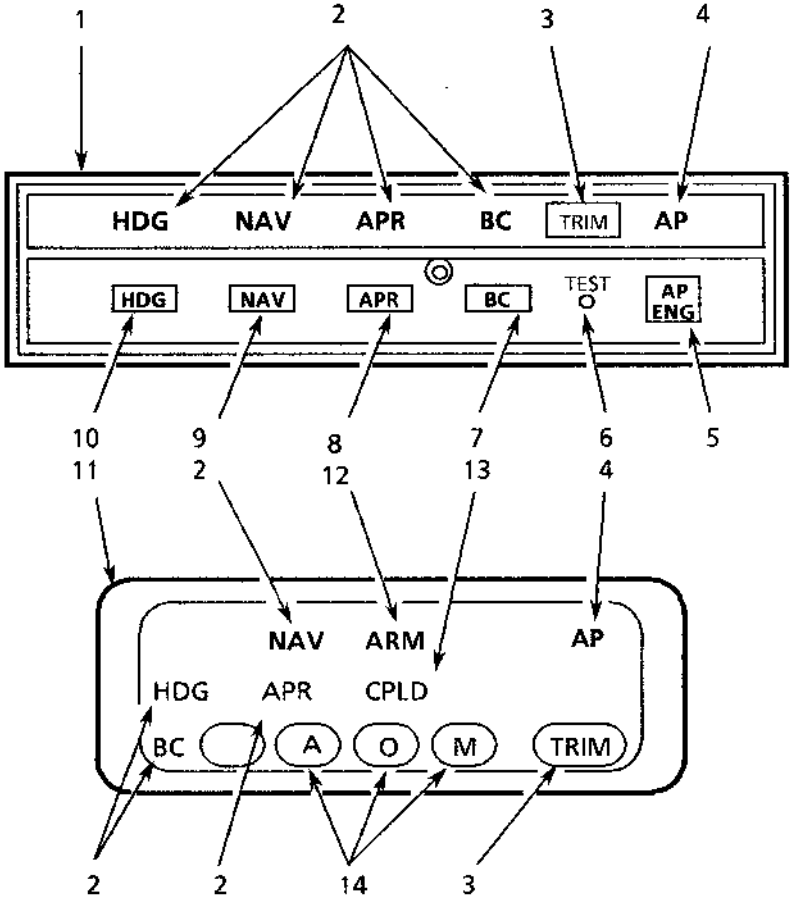

Figure 9.7.2 - KA 185 REMOTE MODE ANNUNCIATOR
(Option)

SECTION 1
GENERAL

This supplement is provided to acquaint the pilot with the limitations as well as normal and emergency operating procedures of the King KAP 100 Automatic Flight Control System. The limitations presented are pertinent to the operation of the KAP 100 System as installed in the SOCATA Models TB 10, TB 200, TB 20 and TB 21 airplanes ; the Flight Control System must be operated within the limitations herein specified.

The KAP 100 Autopilot is certified in this airplane with roll axis control. The various instruments and the controls for the operation of the KAP 100 Autopilot are described in the figures of this supplement.

The KAP 100 Autopilot has an optional electric pitch trim system. The trim system is designed to withstand any single inflight malfunction. A trim fault is visually and aurally annunciated.

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

The following conditions will cause the Autopilot to automatically disengage :

A - Power failure

B - Internal Flight Control System failure

C - With the KCS 55A Compass System, a loss of compass valid (displaying HDG flag) disengages the Autopilot when a mode using heading information is engaged.
With the HDG flag present only the autopilot wings level mode can be selected.

D - (TB 21 only) Roll rates in excess of 14° per second will cause the Autopilot to disengage except when the CWS switch is held depressed.

Item 1 - KAP 100 KC 190 AUTOPILOT COMPUTER - Complete Autopilot Computer. Includes system mode annunciators and system controls.

Item 2 - MODE ANNUNCIATORS - Illuminate when a mode is selected by the corresponding mode selector button (PUSH ON - PUSH OFF).

Item 3 - TRIM WARNING LIGHT (TRIM) - Illuminates continuously whenever trim power is not on or the system has not been preflight tested. The TRIM warning light will illuminate and be accompanied by an audible warning whenever a manual pitch trim malfunction occurs (trim running without being commanded to run).

Item 4 - AUTOPILOT (AP) ANNUNCIATOR - Illuminates continuously whenever the autopilot is engaged. Flashes approximately 12 times whenever the autopilot is disengaged (an aural alert will also sound for 2 seconds).

Item 5 - AUTOPILOT ENGAGE (AP ENG) BUTTON - When pushed, engages autopilot if all logic conditions are met. When pushed again, disengages autopilot.

Item 6 - PREFLIGHT TEST (TEST) BUTTON - When momentarily pushed, initiates preflight test sequence which automatically turns on all annunciator lights, tests the roll rate monitor, checks the manual trim drive voltage, checks the manual electric trim monitor and tests all autopilot valid and dump logic. If the preflight is successfully passed, the AP annunciator light will flash for approximately 6 seconds (an aural tone will also sound simultaneously with the annunciator flashes).The autopilot can not be engaged until the autopilot preflight tests are successfully passed. When the autopilot is engaged, the test button should not be operated in flight.

Item 7 - BACK COURSE APPROACH (BC) MODE SELECTOR BUTTON - When pushed will select the Back Course Approach Mode. This mode functions indentically to the approach mode except that response to LOC signals is reversed.

Item 8 - APPROACH (APR) MODE SELECTOR BUTTON - When pushed, will select the Approach mode. This mode provides all angle intercept (with HSI) or a fixed angle intercept of 45° (with DG), automatic beam capture and tracking of VOR, RNAV or LOC signals. The tracking gain of the APR mode is greater than the gain in the NAV mode. The APR annunciator will flash until the automatic capture sequence is initiated. On the KA 185 remote mode annunciator, APR ARM will annunciate until the automatic capture sequence is initiated. At beam capture, APR CPLD will annunciate.

Item 9 - NAVIGATION (NAV) MODE SELECTOR BUTTON - When pushed will select the Navigation mode. The mode provides all angle intercept (with HSI) or a fixed angle intercept of 45° (with DG), automatic beam capture and tracking of VOR, RNAV or LOC signals.
The NAV annunciator will flash until the automatic capture sequence is initiated. On the KA 185 remote mode annunciator, NAV ARM will annunciate until the automatic capture sequence is initiated. At beam capture, NAV CPLD will annunciate.

Item 10 - HEADING (HDG) MODE SELECTOR 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 DG or HSI.
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 18°. Selecting HDG mode will cancel NAV, APR or BC track modes.

Item 11 - KA 185 REMOTE MODE ANNUNCIATOR (OPTIONAL) - Provides mode annunciation in the pilot's primary scan area as well as three Marker Beacon lights.

Item 12 - ARMED (ARM) ANNUNCIATOR - Illuminates continuously along with NAV or APR when either the NAV or APR mode selector button is depressed. The ARM annunciator will continue to illuminate until the automatic capture sequence is initiated at which time ARM will extinguish and CPLD will annunciate.

Item 13 - COUPLED (CPLD) ANNUNCIATOR - Illuminates continuoulsy along with NAV or APR at the initiation of automatic beam capture sequence in either the NAV or APR modes. Normally the CPLD condition follows an ARM condition but may be entered into directly if the beam capture criteria is met when NAV or APR is selected.

Item 14 - REMOTE MARKER BEACON LIGHTS - Remote Airway, Outer and Middle Marker Beacon lights driven by the Marker Beacon receiver.

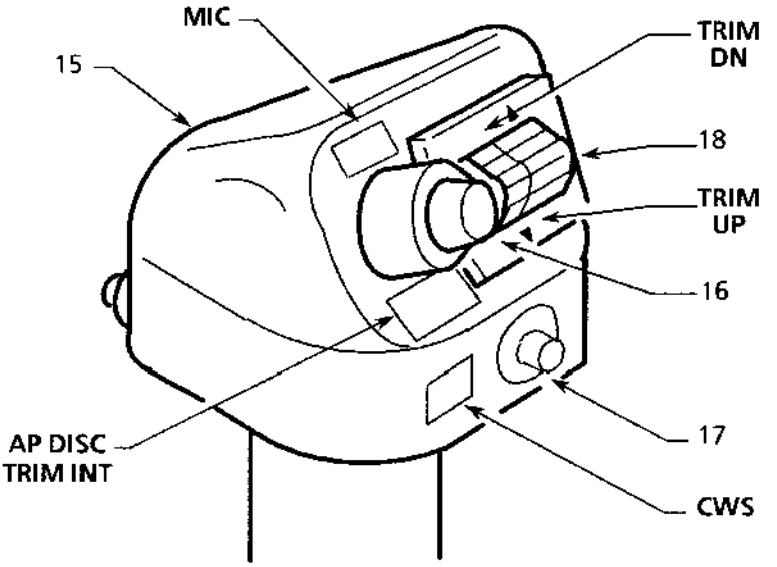

Figure 9.7.3 - AUTOPILOT CONTROL WHEEL SWITCH CAP

Item 15 - AUTOPILOT CONTROL WHEEL SWITCH CAP (installed with optional manual electric trim) (TB 20 - TB 21)
(installed on TB 10 and TB 200 airplanes without optional manual electric trim)
Molded plastic unit mounted on the left horn of the pilot's control wheel which provides mounting for the switch units associated with the autopilot and manual electric trim systems.

Item 16 - AUTOPILOT DISCONNECT / TRIM INTERRUPT (AP DISC TRM INT) SWITCH (installed with optional manual electric trim) (TB 20 - TB 21)
(installed on TB 10 and TB 200 airplanes without optional manual electric trim)
When depressed and released will disengage the autopilot and cancel all operating autopilot modes. When depressed and held will interrupt all electric trim power (stop trim motion), disengage the autopilot, and cancel all operating autopilot modes.

Item 17 - CONTROL WHEEL STEERING (CWS) BUTTON (installed with optional manual electric trim) - When depressed, allows pilot to manually control the airplane (disengages the servo) without cancellation of any of the selected modes.

Item 18 - MANUAL ELECTRIC TRIM CONTROL SWITCHES (installed with optional manual electric trim) - 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 trim to operate in the desired direction.

Item 19 - KG 258 VERTICAL GYRO - Displays airplane attitude as a conventional attitude gyro. The gyro is air driven.

Item 20 - ROLL ATTITUDE INDEX - Displays airplane roll attitude with respect to the roll attitude scale.

Item 21 - ROLL ATTITUDE SCALE - Scale marked at 0, ± 10, 20, 30, 60 and 90 degrees.

Item 22 - PITCH ATTITUDE SCALE - Moves with respect to the symbolic airplane to present pitch attitude.
Scale graduated at 0, ± 5, 10, 15, 20 and 25 degrees.

Item 23 - SYMBOLIC AIRPLANE - Serves as a stationary symbol of the airplane. Airplane pitch and roll attitudes are displayed by the relationship between the fixed symbolic airplane and the movable background.

Item 24 - SYMBOLIC AIRPLANE ALIGNMENT KNOB - Provides manual positioning of the symbolic airplane for level flight under various load conditions.

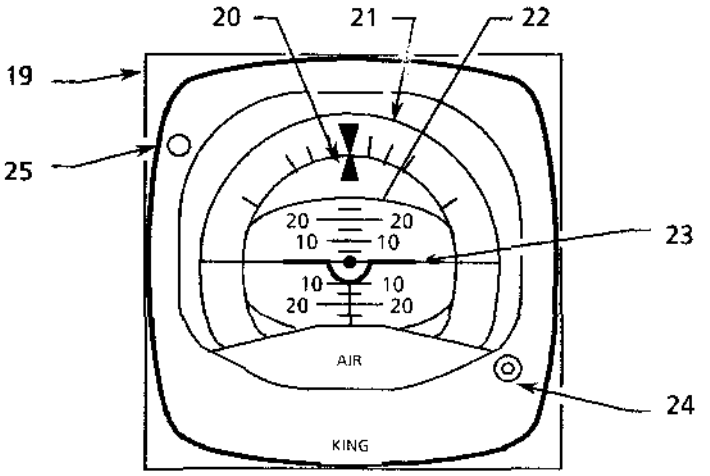

Figure 9.7.4 - KG 258 VERTICAL GYRO

Item 25 - DECISION HEIGHT (DH) ANNUNCIATOR LIGHT - Optional light for use with the airplane optional radar altimeter.

Item 26 - KI 525 A HORIZONTAL SITUATION INDICATOR (HSI) - Provides a pictorial presentation of airplane deviation relative to VOR radials or localizer beams. It also displays Glide Slope deviations and gives heading reference with respect to magnetic north.

Item 27 - NAV FLAG - Flag is in view when the NAV receiver signal is inadequate. When a NAV flag is present in the navigation indicator (CDI or KI 525 A) the autopilot operation is not affected. The pilot must monitor the navigation indicators for NAV flags to insure that the Autopilot is tracking valid navigation information.

Item 28 - LUBBER LINE - Indicates airplane magnetic heading on compass card (Item 35).

Item 29 - HEADING WARNING FLAG (HDG) - When flag is in view the heading display is invalid. If a HDG flag appears and a lateral mode (HDG, NAV, APR or APR BC) is selected, the Autopilot will be disengaged. The Autopilot may be re-engaged in the basic wings level mode. The CWS switch would be used to manually maneuver the airplane laterally.

Item 30 - COURSE BEARING POINTER - Indicates selected VOR course or localizer course on compass card (Item 35). The selected VOR radial or localizer heading remains set on the compass card when the compass card (Item 35) rotates.

Item 31 - TO / FROM INDICATOR FLAG - Indicates direction of VOR station relative to selected course.

Item 32 - DUAL GLIDE SLOPE POINTERS - Indicate on Glide Slope scale (Item 33) airplane displacement from Glide Slope beam center. Glide Slope pointers in view indicate a usable Glide Slope signal is being received.

Item 33 - GLIDE SLOPE SCALES - Indicate displacement from Glide Slope beam center. A Glide Slope deviation bar displacement of 2 dots, represents full scale (0.7°) deviation above or below Glide Slope beam centerline.

Item 34 - HEADING SELECTOR KNOB (⊏⊐) - Positions heading Bug (Item 39) on compass card (Item 35) by rotating the heading selector knob. The Bug rotates with the compass card.

Item 35 - COMPASS CARD - Rotates to display heading of airplane with reference to lubber line (Item 28) on HSI or DG.

Item 36 - COURSE SELECTOR KNOB - Positions course bearing pointer (Item 30) on the compass card (Item 35) by rotating the course selector knob.

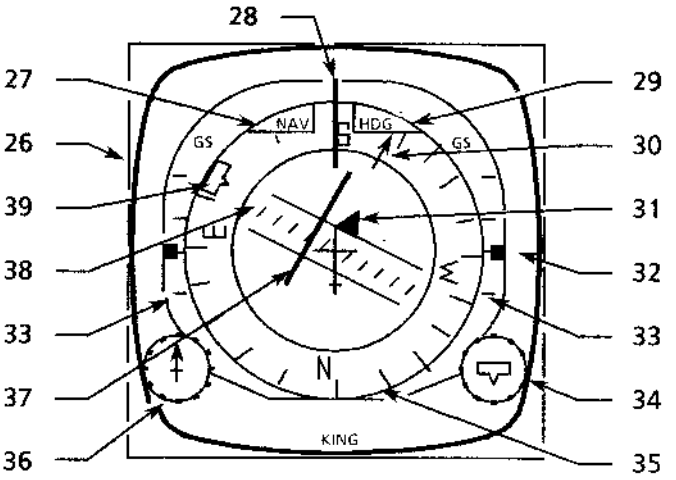

Figure 9.7.5 - KI 525 HSI

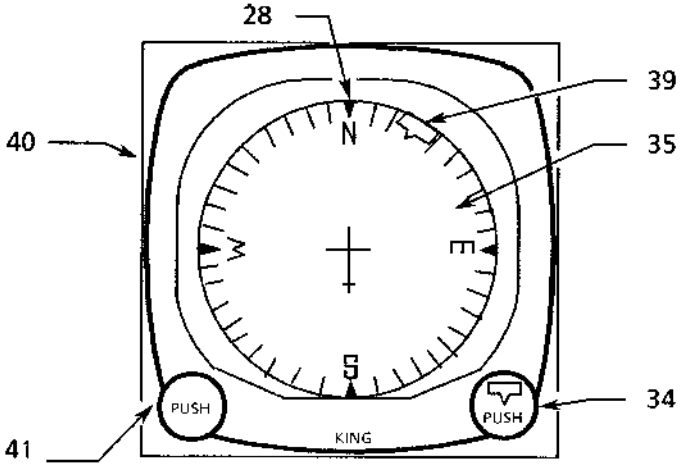

Figure 9.7.6 - KG 107 DG

Item 37 - COURSE DEVIATION BAR (D-BAR) - The center portion of omni bearing pointer moves laterally to pictorially indicate the relationship of airplane to selected course. It indicates in degrees of angular displacement from VOR radials and localizer beams or displacement in nautical miles from RNAV courses.

Item 38 - COURSE DEVIATION SCALE - A course deviation bar displacement of 5 dots represents full scale (VOR = ± 10° ; LOC = ± 2.5° ; RNAV = 5 NM ; RNAV APR = 1.25 NM) deviation from beam centerline.

Item 39 - HEADING BUG - Moved by ⊏▽⊐ knob (Item 34) to select desired heading.

Item 40 - KG 107 NON-SLAVED DIRECTIONAL GYRO (DG) - Provides a stable visual indication of airplane heading to the pilot. The gyro is air driven.

Item 41 - GYRO ADJUSTMENT KNOB (PUSH) - When pushed in, allows the pilot to manually rotate the gyro compass card (Item 35) to correspond with the magnetic heading indicated by the magnetic compass.
The unslaved compass card must be manually reset periodically to compensate for precessional errors in the gyro.

Item 42 - VOR / LOC / GLIDE SLOPE INDICATOR - Provides rectilinear display of VOR / LOC and Glide Slope deviation.

Item 43 - COURSE INDEX - Indicates selected VOR course.

Item 44 - COURSE CARD - Indicates selected VOR course under course index.

Item 45 - GLIDE SLOPE DEVIATION NEEDLE - Indicates deviation from ILS Glide Slope.

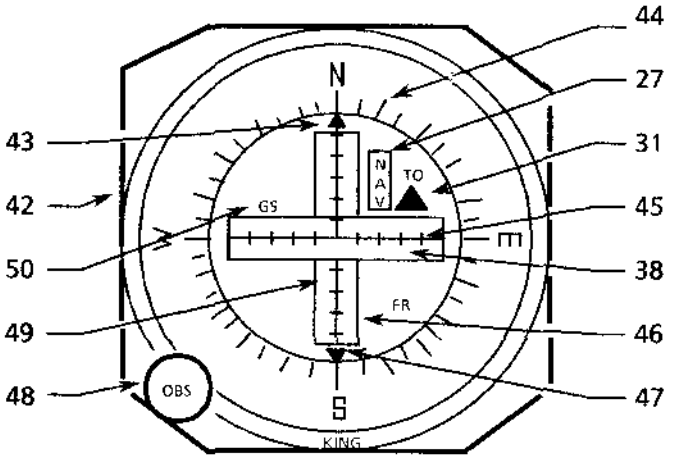

Figure 9.7.7 - Ki 204 / 206 VOR / LOC / GS INDICATOR

Item 46 - GLIDE SLOPE SCALE - Indicates displacement from Glide Slope beam center. A Glide Slope deviation needle displacement of 5 dots represents full scale (0.7°) deviation above or below Glide Slope beam centerline.

Item 47 - RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.

Item 48 - OMNI BEARING SELECTOR (OBS) KNOB - Rotates course card to selected course.

Item 49 - COURSE DEVIATION NEEDLE - Indicates course deviation from selected omni course or localizer centerline.

Item 50 - GLIDE SLOPE (GS) FLAG - Flag is in view when the GS receiver signal is inadequate.

The airplane MAIN SWITCH function is unchanged and can be used in an emergency to shut off electrical power to all flight control systems while the problem is isolated.

The AUTOPILOT MASTER switch supplies power to the AUTOPILOT (A / P) circuit-breaker.

The following circuit-breakers are used to protect the following elements of the KING KAP 100 Autopilot :

LABEL	FUNCTION
A / P	Supplies power to the KC 190, the autopilot roll servo, and the TRIM circuit-breaker.
TRIM	Supplies power to the optional manual electric pitch trim system.
HSI	Supplies power to the optional KCS 55A Compass System.

SECTION 2
LIMITATIONS

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

A - The autopilot must be OFF during take-off and landing and during approach under 200 ft height.

A' - Engagement height in climb and cruise 1000 ft

B - It is forbidden to operate TEST button in flight.

C - Maximum fuel imbalance :

20 U.S Gal (TB 20 - TB 21)	6 U.S Gal (TB 10 - TB 200)
75 litres	23 litres

D - Autopilot maximum airspeed limitation :

175 KIAS (TB 20 - TB 21)	150 KIAS (TB 10 - TB 200)
322 km/h	278 km/h

Placards :

CAUTION : DURING ILS APPROACH
AVOID ENGINE RPM HIGHER THAN 2600

SECTION 3
EMERGENCY PROCEDURES

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

A - System with Autopilot only

- In case of Autopilot malfunction : (accomplish the two following items simultaneously)

  . Airplane control wheel - GRASP FIRMLY and regain airplane control.

  . AP ENG button (AP DISC button on TB 10 and TB 200 airplanes) - PRESS to disengage autopilot.

B - Systems with Autopilot and optional manual electric trim

- In case of Autopilot malfunction : (accomplish the two following items simultaneously)

  . Airplane control wheel - GRASP FIRMLY and regain airplane control.

  . AP DISC TRM INT Switch - PRESS.

- In case of manual electric trim malfunction :

  . AP DISC TRM INT switch - PRESS and HOLD.

  . TRIM circuit-breaker - PULL.

  . Airplane - RETRIM manually.

CAUTION

MAXIMUM BANKS DUE TO AUTOPILOT MALFUNCTION :

Configuration	Maximum banks	
Cruise, climb, descent	60°	
Maneuvers	45° (TB 20 - TB 21)	40° (TB 10 - TB 200)
Approach	30° (TB 20 - TB 21)	20° (TB 10 - TB 200)

SECTION 4
NORMAL PROCEDURES

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

A - Preflight (Perform prior to each flight)

- GYROS - Allow 3-4 minutes for gyros to come up to speed.
- AUTOPILOT MASTER Switch - ON.
- PREFLIGHT TEST BUTTON - PRESS momentarily and NOTE :

a) All annunciator lights on (TRIM annunciator flashing).

b) After approximately 5 seconds, all annunciator lights off except AP which will flash approximately 12 times and then remain off.

NOTE :

If trim warning light stays on then the manual electric trim did not pass preflight test. The trim circuit-breaker should be pulled. The autopilot can still be used.

- MANUAL ELECTRIC TRIM (if installed) - TEST as follows :

a) Actuate the left side of the split switch 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 overpower capability.

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

c) Press the AP DISC TRM INT switch down and hold. Manual Electric Trim should not operate either nose up or nose down.

- AP ENG button - Press to engage autopilot.
- Control wheel - MOVE left or right to verify that the autopilot can be overpowered.

- Autopilot - DISENGAGE by pressing AP ENG button or optional AP DISC TRM INT switch. Verify that the autopilot disconnects and all modes are cancelled.

- TRIM - SET to take-off position.

B - AUTOPILOT OPERATION

NOTE (Valid only for TB 10 and TB 200 airplanes) :

The minimum recommended airspeed for autopilot operation is 80 KIAS.

- Before take-off

Autopilot - DISENGAGE by pressing AP ENG button or optional AP DISC TRM INT switch.

- Inflight autopilot engagement

AP ENG button - PRESS. Note AP annunciator on. If no other modes are selected the autopilot will operate in the wings level mode.

- Heading changes

a) Manual heading changes (with optional CWS button only)

. CWS Button - PRESS and MANEUVER airplane to the desired heading.

. CWS Button - RELEASE. 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.

b) Heading hold

. Heading selector Knob - SET BUG to desired heading.

. HDG mode selector Button - PRESS. Note HDG mode annunciator ON. Autopilot will automatically turn the airplane to the selected heading.

c) Command Turns (Heading Hold mode ON)

. HEADING Selector Knob - MOVE BUG to the desired heading. Autopilot will automatically turn the airplane to the new selected heading.

- NAV Coupling

a) When equipped with HSI

. Course Bearing Pointer - SET to desired course.

NOTE :

When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS 2 to the desired course.

. HEADING SELECTOR KNOB - SET BUG to provide desired intercept angle.

. 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 annunciator flashing ; when the computed capture point is reached the HDG will disengage, the NAV annunciator will illuminate steady 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 steady and the capture / track sequence will automatically begin.

b) When equipped with DG

. OBS Knob - SELECT desired course.

. NAV Mode Selector Button - PRESS.

. Heading Selector Knob - ROTATE BUG to agree with OBS course.

NOTE :

When NAV is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-BAR is greater than 2 to 3 dots : the autopilot will annunciate HDG mode (unless HDG not selected) and NAV flashing ; when the computed capture point is reached the HDG annunciator will go out, the NAV annunciator will illuminate steady 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 steady and the capture / track sequence will automatically begin.

- Approach (APR) Coupling

"Erratic deviations have been observed with airplane flown down an ILS path with KING RADIO-NAV installations. Analysis of the phenomenon indicates that the fluctuations are due to an interference between propeller rotation frequency and one of LOC frequencies. The more sensitive conditions are met when the localizer beacon is right ahead and the engine speed is adjusted toward 2650 RPM.

The localizer use is not significantly impaired by the phenomenon when :

- engine speed is reduced to lower than 2600 RPM
- localizer beacon lies right or left by more than 30 degrees from airplane heading.

Autopilot APR mode operation should be discontinued whenever high engine power settings are anticipated. This can be done by switching to HDG mode or CWS mode or by switching off the autopilot.

a) When equipped with HSI

. Course Bearing Pointer - SET to desired course.

NOTE :

When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS 2 to the desired course.

HEADING Selector Knob - SET BUG to provide desired intercept angle.

. 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 annunciator flashing ; when the computed capture point is reached, the HDG will disengage, the APR annunciator will illuminate steady 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.

b) When equipped with DG

. OBS Knob - SELECT desired approach course.

. APR Mode Selector Button - PRESS.

. Heading Selector Knob - ROTATE Bug to agree with OBS course.

NOTE :

When APR is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-BAR is greater than 2 to 3 dots : the autopilot will annunciate HDG mode (unless HDG not selected) and APR flashing ; when the computed capture point is reached the HDG annunciator will go out, the APR annunciator will illuminate steady 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 Coupling

a) When equipped with HSI

. Course Bearing Pointer - SET to the ILS front course inbound heading.

NOTE :

When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS to the ILS front course inbound heading.

. HEADING Selector Knob - SET BUG to provide desired intercept angle.

. 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 BC annunciator steady and APR annunciator flashing ; when the computed capture point is reached the HDG will disengage, the BC and APR annunciators will illuminate steady 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 BC annunciator will illuminate steady and the capture / track sequence will automatically begin.

b) When equipped with DG

. OBS Knob - SELECT the ILS front course inbound heading.

. BC Mode Selector Button - PRESS

. Heading Selector Knob - ROTATE Bug to the ILS front course inbound heading.

NOTE :

When BC is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-BAR is greater than 2 to 3 dots : the autopilot will annunciate HDG (unless HDG not selected) and BC modes with APR flashing ; when the computed capture point is reached the HDG annunciator will go out, the BC and APR annunciators will illuminate steady 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 BC and APR annunciators will illuminate steady and the capture / track sequence will automatically begin.

- Missed Approach

a) Autopilot - DISENGAGE by pressing AP ENG switch (AP DISC TRM INT switch on TB 10 and TB 200 airplanes), or optional AP DISC TRM INT switch.

b) MISSED APPROACH - EXECUTE.

c) AP ENG Button - PRESS (if AP operation is desired)
Note AP annunciator ON.

- Before landing

a) Autopilot - DISENGAGE by pressing AP ENG switch (AP DISC TRM INT switch on TB 10 and TB 200 airplanes), or optional AP DISC TRM INT switch.

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.

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SUPPLEMENT

"KING" AUTOPILOT TYPE KFC 150 AND KAP 150

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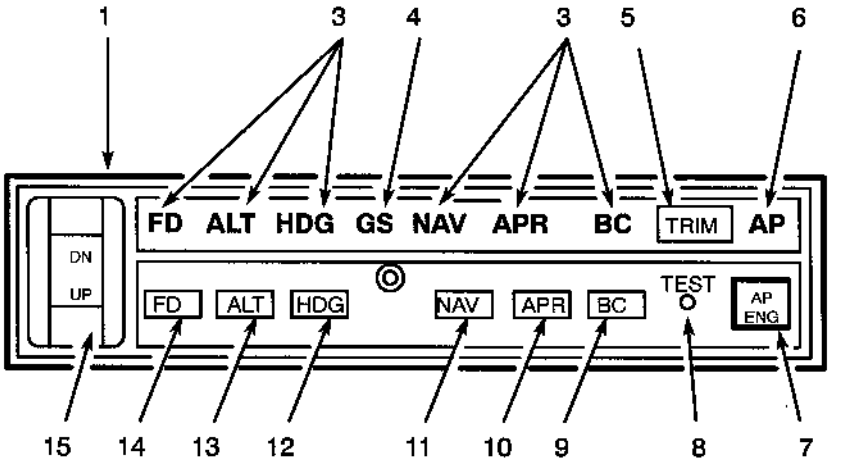

Figure 9.8.1 - KC 192 AUTOPILOT & FLIGHT DIRECTOR COMPUTER FOR KFC 150

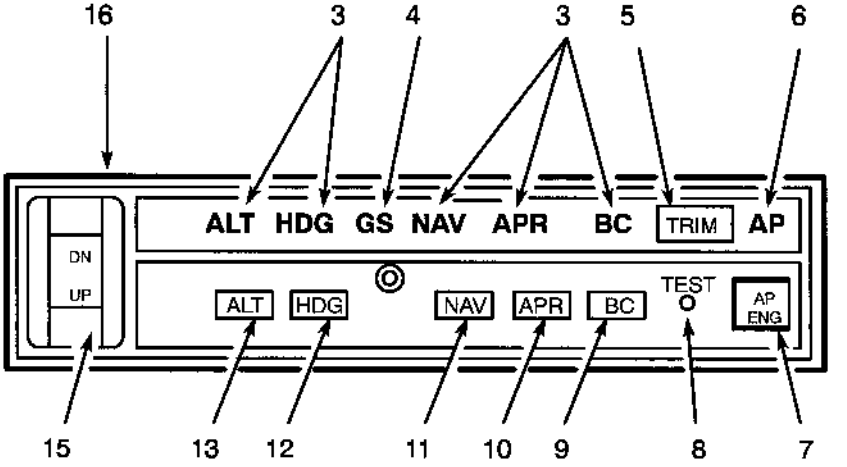

Figure 9.8.2 - KC 91 AUTOPILOT COMPUTER FOR KAP 150

SECTION 1
GENERAL

This supplement is provided to acquaint the pilot with the limitations as well as normal and emergency operating procedures of the King 150 AFCS (Automatic Flight Control Systems) Type KFC 150 and Type KAP 150. The limitations presented are pertinent to the operation of the King 150 System as installed in the SOCATA Models TB 10, TB 200, TB 20 and TB 21 airplanes ; the Flight Control Systems must be operated within the limitations herein specified.

The King 150 Series AFCS is certified in this airplane with 2 axis autopilot control, pitch and roll. The various instruments and the controls for the operation are described in the figures of this supplement.

The King 150 Series AFCS has an electric pitch trim system which provides autotrim during autopilot operation and manual electric trim for the pilot. The trim system is designed to withstand any single inflight malfunction.
Trim faults are visually and aurally annunciated.

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

The following conditions will cause the Autopilot to automatically disengage :

A - Power failure

B - Internal Flight Control System failure

C - With the KCS 55A Compass System, a loss of compass valid (displaying HDG flag) disengages the Autopilot when a mode using heading information is engaged.
With the HDG flag present, the Autopilot may be re-engaged in the basic wings level mode along with any vertical mode.

D - Pitch rates in excess of 5° (TB 20) 6° (TB 21) per second, and roll rates in excess of 14° per second (TB 21), will cause the autopilot to disengage except when the CWS switch is held depressed.

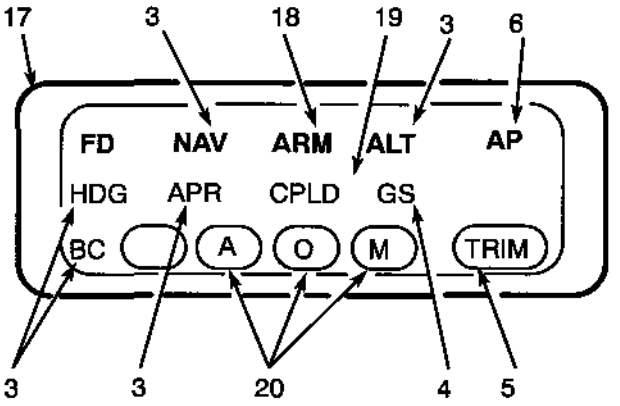

Figure 9.8.3 - KA 185 REMOTE MODE ANNUNCIATOR (OPTIONAL)

Item 1 - KFC 150 System KC 192 AUTOPILOT COMPUTER - Complete Flight Director and Autopilot computer, including system mode annunciators and system controls.

Item 2 - Not used.

Item 3 - MODE ANNUNCIATORS - Illuminate when a mode is selected by the corresponding mode selector button (PUSH ON - PUSH OFF).

Item 4 - GLIDE SLOPE (GS) ANNUNCIATOR - Illuminates continuously whenever the autopilot is coupled to the Glide Slope signal. The GS annunciator will flash if the Glide Slope signal is lost (GS flag in CDI or absence of Glide Slope pointers in KI 525A). The autopilot reverts to pitch attitude hold operation. If a valid Glide Slope signal returns within six seconds, the autopilot will automatically recouple in the GS mode. If the valid signal does not return within six seconds, the autopilot will remain in pitch attitude hold mode until such time that a valid Glide Slope returns and the airplane passes thru the Glide Slope. At that point, GS couple will re-occur.

Item 5 - TRIM WARNING LIGHT (TRIM) - Illuminates continuously whenever trim power is not on or the system has not been preflight tested. The TRIM 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 TRIM warning light will illuminate and be accompanied by an audible warning 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 6 - AUTOPILOT (AP) ANNUNCIATOR - Illuminates continuously whenever the autopilot is engaged. Flashes approximately 12 times whenever the autopilot is disengaged (an aural alert will also sound for 2 seconds).

Item 7 - AUTOPILOT ENGAGE (AP ENG) BUTTON - When pushed, engages autopilot if all logic conditions are met. When pushed again, disengages autopilot.

Item 8 - PREFLIGHT TEST (TEST) 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 dump logic. If the preflight is successfully passed, the AP annunciator light will flash for approximately six seconds (an aural tone will also sound simultaneously with the annunciator flashes).
The autopilot can't be engaged until the autopilot preflight tests are successfully passed.
When the autopilot is engaged, the test button should not be operated in flight.

Item 9 - BACK COURSE APPROACH (BC) MODE SELECTOR 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. Glide Slope coupling is inhibited in the Back Course Approach mode.

Item 10 - APPROACH (APR) MODE SELECTOR BUTTON - When pushed, will select the Approach mode. This mode provides all angle intercept (with HSI) or a fixed angle intercept of 45° (with DG), automatic beam capture and tracking of VOR, RNAV or LOC signals plus Glide Slope 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 annunciator on the Autopilot Computer will flash until the automatic capture sequence is initiated. On the KA 185 Remote Mode annunciator, APR ARM will annunciate until the automatic capture sequence is initiated. At beam capture, APR CPLD will annunciate.

Item 11 - NAVIGATION (NAV) MODE SELECTOR BUTTON - When pushed will select the Navigation mode. The mode provides all angle intercept (with HSI) or a fixed angle intercept of 45° (with DG), automatic beam capture and tracking of VOR, RNAV or LOC signals.

The NAV annunciator on the Autopilot Computer will flash until the automatic capture sequence is initiated.

On the KA 185 Remote Mode Annunciator, NAV ARM will annunciate until the automatic capture sequence is initiated. At beam capture, NAV CPLD will annunciate.

Item 12 - HEADING (HDG) MODE SELECTOR 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 DG or HSI. 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 18°.

Selecting HDG mode will cancel NAV, APR or BC track modes.

Item 13 - ALTITUDE HOLD (ALT) MODE SELECTOR 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 Glide Slope is captured.

Item 14 - FLIGHT DIRECTOR (FD) MODE SELECTOR BUTTON - When pushed will select the Flight Director mode (with KC 192 Autopilot Computer only), bringing the Command Bar in view on the KI 256 and will command wings level and pitch attitude hold. The FD mode must be selected prior to Autopilot engagement.

Item 15 - VERTICAL TRIM CONTROL - A rocker switch (fitted with a return to neutral position through a spring) allows nose-down and nose-up maneuvers :

- adjusts, in ALT, altitude at a rate of about 500 ft / min.
- adjusts, when not in ALT, pitch attitude at a rate of 0.7 deg / sec.
- cancels GS couple.
- the airplane must pass thru the Glide Slope again to allow GS recouple

Item 16 - KAP 150 SYSTEM KC 191 AUTOPILOT COMPUTER - Complete Autopilot computer, including system mode annunciators and system controls.

Item 17 - KA 185 REMOTE MODE ANNUNCIATOR (OPTIONAL) - Provides mode annunciation in the pilot's primary scan area as well as three Marker Beacon lights.

Item 18 - ARMED (ARM) ANNUNCIATOR - Illuminates continuously along with NAV or APR when either the NAV or APR mode selector button is depressed.
The ARM annunciator will continue to illuminate until the automatic capture sequence is initiated at which time ARM will extinguish and CPLD will annunciate.

Item 19 - COUPLED (CPLD) ANNUNCIATOR - Illuminates continuously along with NAV or APR at the initiation of automatic beam capture sequence in either the NAV or APR modes. Normally the CPLD condition follows an ARM condition but may be entered into directly if the beam capture criteria is met when NAV or APR is selected.

Item 20 - REMOTE MARKER BEACON LIGHTS - Remote Airway, Outer and Middle Marker Beacon lights driven by the Marker Beacon receiver.

Item 21 - Not used.

Item 22 - AUTOPILOT CONTROL WHEEL SWITCH ASSEMBLY - Switch assembly mounted on the pilot's control wheel associated with the autopilot and manual electric trim systems.

Item 23 - AUTOPILOT DISCONNECT / TRIM INTERRUPT (AP DISC TRM INT) Switch - When depressed will disengage the autopilot and cancel all operating Flight Director modes. When depressed and held will interrupt all electric trim power (stop trim motion), disengage the autopilot and cancel all operating Flight Director modes.

Item 24 - CONTROL WHEEL STEERING (CWS) BUTTON - When depressed, allows pilot to manually control the airplane (disengages the pitch and roll 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, or to the present pressure altitude when operating in the ALT hold mode. Will cancel GS couple.

The airplane must pass through the Glide Slope again to allow GS recouple.

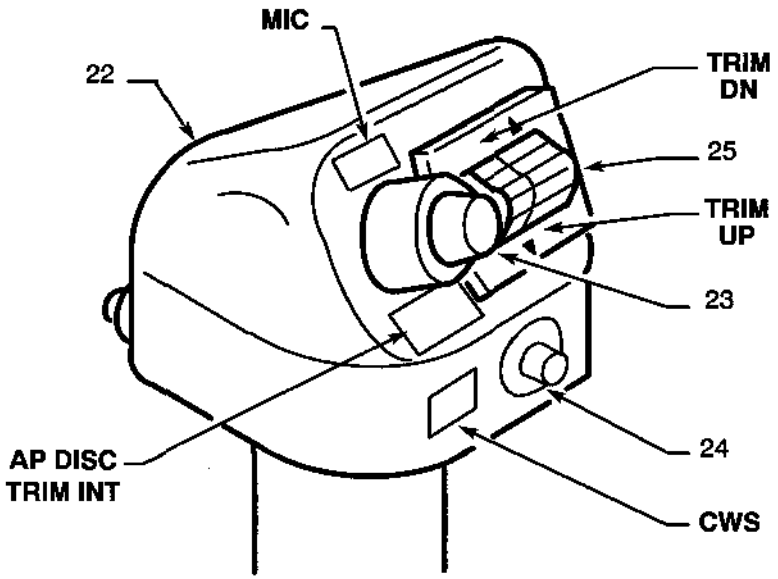

Figure 9.8.4 - AUTOPILOT CONTROL WHEEL SWITCH CAP

Item 25 - MANUAL ELECTRIC 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 trim to operate in the desired direction. When the autopilot is engaged, operation of the manual electric trim will automatically disconnect the autopilot.

Item 26 - KI 256 FLIGHT COMMAND INDICATOR (FCI) - Displays airplane attitude as a conventional attitude gyro and displays commands for flight director operation. The gyro is air driven.

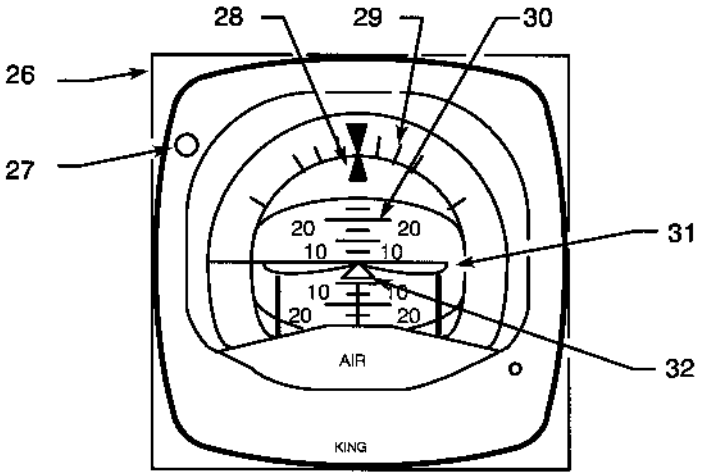

Figure 9.8.5 - KI 256 FLIGHT COMMAND INDICATOR FOR KFC 150

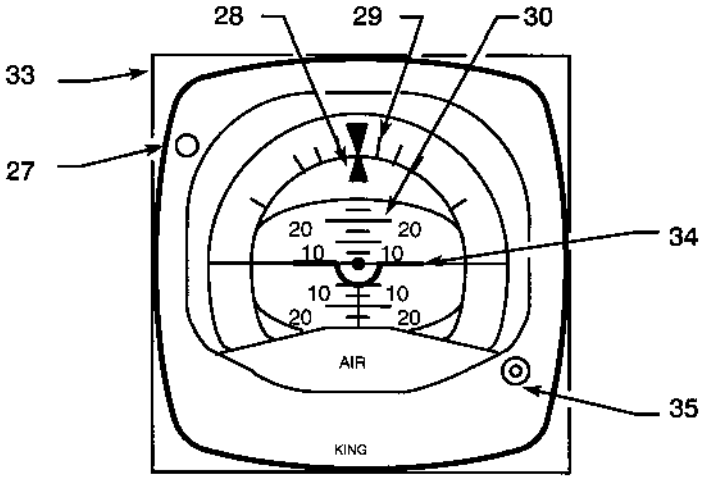

Figure 9.8.6 - KG 258 VERTICAL GYRO FOR KAP 150

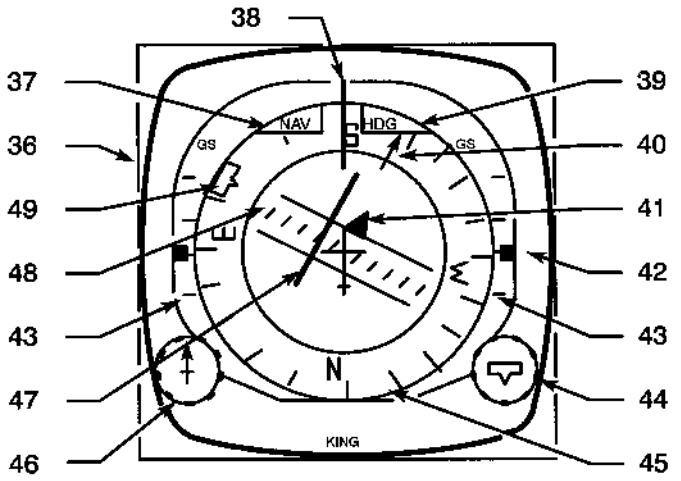

Figure 9.8.7 - KI 525A HSI FOR KFC 150

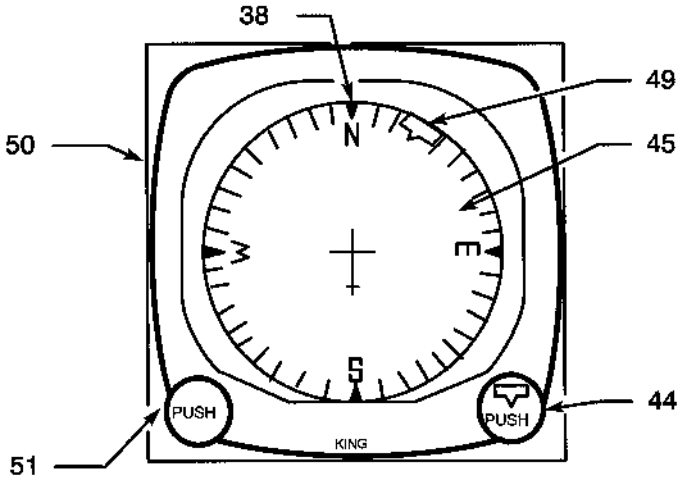

Figure 9.8.8 - KG 107 DG FOR KAP 150

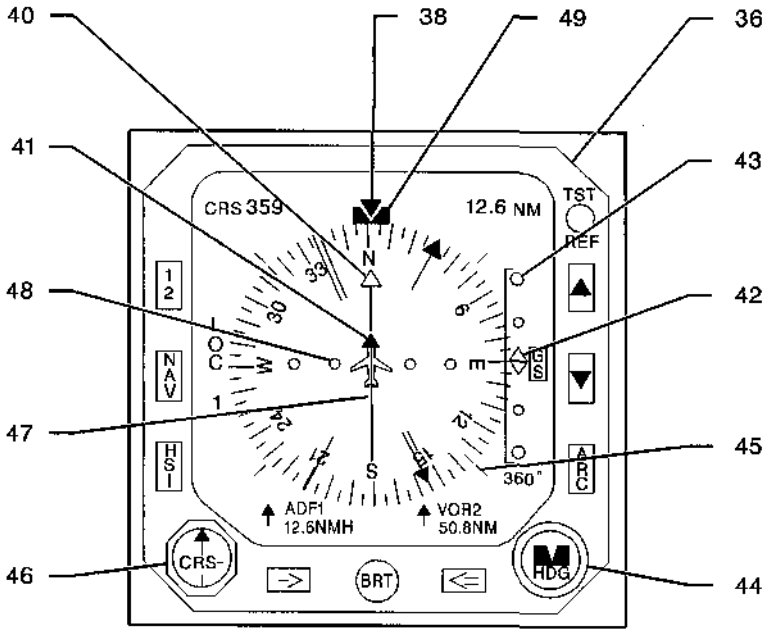

Figure 9.8.8A - EHSI

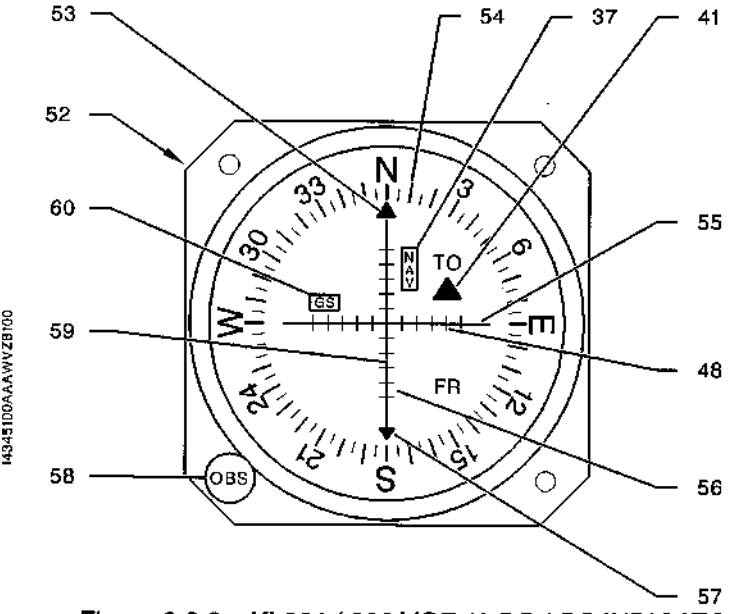

Figure 9.8.9 - KI 204 / 206 VOR / LOC / GS INDICATOR

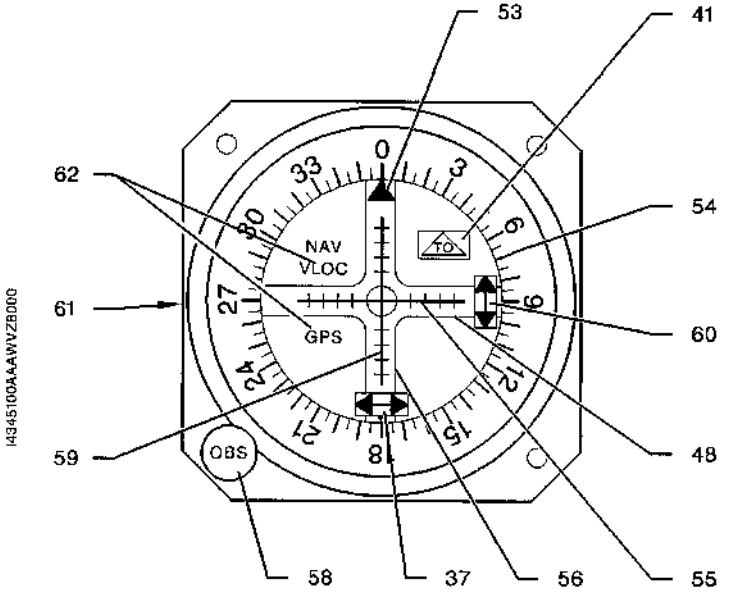

Figure 9.8.9A - GI 106A CDI

Item 27 - DECISION HEIGHT (DH) ANNUNCIATOR LIGHT - Optional light for use with the airplane optional radar altimeter.

Item 28 - ROLL ATTITUDE INDEX - Displays airplane roll attitude with respect to the roll attitude scale.

Item 29 - ROLL ATTITUDE SCALE - Scale marked at 0, ± 10, 20, 30, 60 and 90 degrees.

Item 30 - PITCH ATTITUDE SCALE - Moves with respect to the symbolic airplane to present pitch attitude.
Scale graduated at 0, ± 5, 10, 15, 20 and 25 degrees.

Item 31 - COMMAND BAR - Displays computed steering commands referenced to the symbolic airplane. The command bar is visible only when FD mode is selected. The command bar will be biased out of view whenever the system is invalid or a Flight Director mode is not engaged.

Item 32 - FCI SYMBOLIC AIRPLANE - Airplane pitch and roll attitude is displayed by the relationship between the fixed symbolic airplane and the movable background.
During flight director operation, the symbolic airplane is flown to align it with the command bar to satisfy the flight director commands.

Item 33 - KG 258 VERTICAL GYRO - Displays airplane attitude as a conventional attitude gyro. The gyro is air driven.

Item 34 - SYMBOLIC AIRPLANE - Serves as a stationary symbol of the airplane. Airplane pitch and roll attitudes are displayed by the relationship between the fixed symbolic airplane and the movable background.

Item 35 - SYMBOLIC AIRPLANE ALIGNMENT KNOB - Provides manual positioning of the symbolic airplane for level flight under various load conditions.

Item 36 - KI 525A HORIZONTAL SITUATION INDICATOR (HSI or EHSI) - Provides a pictorial presentation of airplane deviation relative to VOR radials or localizer beams.
It also displays Glide Slope deviations and gives heading reference with respect to magnetic north.

Item 37 - NAV FLAG - Flag is in view when the NAV receiver signal is inadequate. When a NAV flag is present in the navigation indicator (CDI or KI 525A or EHSI or KI 204/206) the autopilot operation is not affected.
The pilot must monitor the navigation indicators for NAV flags to insure that the Autopilot and / or Flight Director are tracking valid navigation information.

Item 38 - LUBBER LINE - Indicates airplane magnetic heading on compass card (Item 45).

Item 39 - HEADING WARNING FLAG (HDG) - When flag is in view, the heading display is invalid.
If a HGD flag appears and a lateral mode (HDG, NAV, APR or APR BC) is selected, the Autopilot will be disengaged.
The autopilot may be re-engaged in the basic wings level mode along with any vertical mode.
The CWS switch would be used to manually maneuver the airplane laterally.

Item 40 - COURSE BEARING POINTER - Indicates selected VOR course or localizer course on compass card (Item 45).
The selected VOR radial or localizer heading remains set on the compass card when the compass card (Item 45) rotates.

Item 41 - TO / FROM INDCATOR FLAG - Indicates direction of VOR station relative to selected course.

Item 42 - DUAL GLIDE SLOPE POINTERS - Indicate on Glide Slope scale (Item 43) airplane displacement from Glide Slope beam center. Glide Slope pointers in view indicate a usuable Glide Slope signal is being received.

Item 43 - GLIDE SLOPE SCALES - Indicate displacement from Glide Slope beam center. A Glide Slope deviation bar displacement of 2 dots, represents full scale (0.7°) deviation above or below Glide Slope beam centerline.

Item 44 - HEADING SELECTOR KNOB (⇨ or ■) - Positions heading bug (Item 49) on compass card (Item 45) by rotating the heading selector knob. The bug rotates with the compass card.

Item 45 - COMPASS CARD - Rotates to display heading of airplane with reference to lubber line (Item 38) on HSI or DG.

Item 46 - COURSE SELECTOR KNOB - Positions course bearing pointer (Item 40) on the compass card (Item 45) by rotating the course selector knob.

Item 47 - COURSE DEVIATION BAR (D-BAR) - The center portion of omni bearing pointer moves laterally to pictorially indicate the relationship of airplane to the selected course. It indicates degrees of angular displacement from VOR radials and localizer beams, or displacement in nautical miles from RNAV courses.

Item 48 - COURSE DEVIATION SCALE - A course deviation bar dis-placement of 5 dots represents full scale (VOR = ± 10°, LOC = ± 2.5°, RNAV = 5 NM, RNAV APR = 1.25 NM) deviation from beam centerline.

Item 49 - HEADING BUG - Moved by ▭ or ■ knob (Item 44) to select desired heading.

Item 50 - KG 107 NON-SLAVED DIRECTIONAL GYRO (DG) - Provides a stable visual indication of airplane heading to the pilot. The gyro is air driven.

Item 51 - GYRO ADJUSTMENT KNOB (PUSH) - When pushed in, allows the pilot to manually rotate the gyro compass card (Item 45) to correspond with the magnetic heading indicated by the magnetic compass. The unslaved compass card must be manually reset periodically to compensate for precessional errors in the gyro.

Item 52 - KI 204 / 206 VOR / LOC / GLIDE SLOPE INDICATOR - Provides rectilinear display of VOR / LOC and Glide Slope deviation.

Item 53 - COURSE INDEX - Indicates selected VOR course.

Item 54 - COURSE CARD - Indicates selected VOR course under course index.

Item 55 - GLIDE SLOPE DEVIATION NEEDLE - Indicates deviation from ILS Glide Slope.

Item 56 - GLIDE SLOPE SCALE - Indicates displacement from Glide Slope beam center. A Glide Slope deviation needle displacement of 5 dots, represents full scale (0.7°) deviation above or below Glide Slope beam centerline.

Item 57 - RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.

Item 58 - OMNI BEARING SELECTOR (OBS) KNOB - Rotates course card to selected course.

Item 59 - COURSE DEVIATION NEEDLE - Indicates course deviation from selected omni course or localizer centerline.

Item 60 - GLIDE SLOPE (GS) FLAG - Flag is in view when the GS receiver signal is inadequate.

Item 61 - GI 106A CDI - Provides rectilinear display of VOR / LOC, Glide Slope and GPS deviation.

Item 62 - NAVIGATION SOURCE - Indicates if the CDI navigation source is the GPS (green GPS) or a VOR/LOC (white VLOC).

The airplane MAIN SWITCH function is unchanged and can be used in an emergency to shut off electrical power to all flight control systems while the problem is isolated.

The AUTOPILOT MASTER switch supplies power to the AUTOPILOT or A/P circuit breaker.

The following circuit breakers are used to protect the following elements of the King 150 Series Autopilot :

LABEL	FUNCTION
A/P	Supplies power to the KC 192 or the KC 191 computer, the autopilot pitch and roll servos, the optional KA 185 Annunciator and the Trim Circuit breaker.
TRIM	Supplies power to the autotrim and manual electric pitch trim systems.
HSI	Supplies power to the optional KCS 55A Compass System.

SECTION 2
LIMITATIONS

These limitations complete 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 must be OFF during take-off and landing and during approach under 200 ft height.

C - Engagement height in climb and cruise 1000 ft.

D - The system is approved for Category I operation only (Approach mode selected).

E - It is forbidden to operate TEST button in flight.

F - Autopilot maximum airspeed limitation :

175 KIAS (TB 20 - TB 21)	150 KIAS (TB 10 - TB 200)
322 km/h	278 km/h

G - Maximum fuel imbalance :

20 U.S Gal (TB 20 - TB 21)	6 U.S Gal (TB 10 - TB 200)
75 litres	23 litres

NOTE :
In accordance with FAA recommendation, use of "ALTITUDE HOLD" mode is not recommended during operation in severe turbulence.

Placards (TB10 - TB200) :

CAUTION : DURING ILS APPROACH
AVOID ENGINE RPM HIGHER THAN 2600

SECTION 3

EMERGENCY PROCEDURES

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

A - In case of Autopilot malfunction : (accomplish the two first following operations simultaneously).

- Airplane control wheel - GRASP FIRMLY and regain airplane control.
- AP DISC TRM INT switch - PRESS and HOLD.
- AP DISC TRM INT switch - RELEASE while observing pitch trim wheel. If pitch trim wheel is in motion, follow the B - procedure given hereafter.

B - In case of manual electric trim malfunction :

- AP DISC TRM INT switch - PRESS and HOLD throughout recovery.
- TRIM circuit-breaker - OFF.
- Airplane - RETRIM manually.

CAUTION

WHEN DISCONNECTING THE AUTOPILOT AFTER A TRIM MALFUNCTION, HOLD THE CONTROL WHEEL FIRMLY ; UP TO 45 POUNDS OF FORCE ON THE CONTROL WHEEL MAY BE NECESSARY TO HOLD THE AIRPLANE LEVEL.

Maximum altitude losses and maximum banks due to autopilot malfunction :

Configuration	Alt Loss	Bank
Cruise, climb, Descent	500' * 450' **	60°
Maneuvering	300' * 50' **	40° * 45° **
Approach	100' * 50' **	20° * 30° **

* TB 10 - TB 200 - ** TB 20 - TB 21

SECTION 4

NORMAL PROCEDURES

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

A - PREFLIGHT (Perform prior to each flight)

- GYROS - Allow 3-4 minutes for gyros to come up to speed.
- AUTOPILOT MASTER switch - ON.
- PREFLIGHT TEST BUTTON - PRESS momentarily and NOTE :

(a) All annunciator lights ON (TRIM annunciator flashing)

(b) After approximately 5 seconds, all annunciator lights off except AP which will flash approximately 12 times and then remain off.

NOTE :
If trim warning light stays on then the autotrim did not pass preflight test. The autopilot circuit-breaker should be pulled (Manual electric trim and autopilot will be inoperative).

- MANUAL ELECTRIC TRIM - TEST as follows :

(a) 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.

(b) 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.

(c) Press the AP DISC TRM INT switch down and hold. Manual electric trim should not operate either nose up or nose down.

- FLIGHT DIRECTOR (KFC 150 ONLY) - ENGAGE by pressing FD or CWS button.
- AP ENG button - Press to engage autopilot.
- FLIGHT CONTROLS - MOVE fore, aft, left and right to verify that the autopilot can be overpowered.
- AP DISC TRM INT Switch - PRESS. Verify that the autopilot disconnects and all flight director modes are canceled.
- TRIM - SET to take-off position.

B - AUTOPILOT OPERATION

NOTE (Valid only for TB 10 and TB 200 airplanes) :
The minimum recommended airspeed for autopilot operation is 80 KIAS.

- Before take-off

  AP DISC TRM INT Switch - PRESS.

- Inflight Autopilot engagement.

  (a) FD Mode Selector Button (KFC 150 Only) - PRESS.

  (b) AP ENG Button - PRESS. Note AP annunciator on. If no other modes are selected the autopilot will operate in wings level and pitch attitude hold.

CAUTION

DO NOT HELP THE AUTOPILOT AS THE AUTOPILOT WILL RUN THE PITCH TRIM TO OPPOSE YOUR HELP.

- Climb or descent

  (a) Using CWS

  . CWS Button - PRESS and MOVE airplane nose to the desired attitude.

  . CWS Button - RELEASE. Autopilot will maintain airplane pitch attitude up to the pitch limits of + 15° or - 10°.

b) Using vertical Trim

. 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°.

. VERTICAL TRIM Control - RELEASE when desired airplane attitude is reached. The autopilot will maintain the desired pitch attitude.

- Altitude Hold

(a) ALT Mode Selector Button - PRESS. Note ALT mode annunciator ON. Autopilot will maintain the selected pressure attitude.

(b) Change selected altitude

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

CWS Button - PRESS and reach desired pressure altitude.

CWS Button - RELEASE when desired pressure altitude is reached. The autopilot will maintain the desired pressure altitude.

. 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.

- Heading changes

(a) Manual Heading Changes

. CWS Button - PRESS and MANEUVER airplane to the desired heading.

. CWS Button - RELEASE. 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.

(b) Heading Hold

. Heading Selector Knob - SET BUG to desired heading.

. HDG Mode Selector Button - PRESS. Note HDG mode annunciator ON. Autopilot will automatically turn the airplane to the selected heading.

(c) Command Turns (Heading Hold mode ON)

. HEADING Selector Knob - MOVE BUG to the desired heading. Autopilot will automatically turn the airplane to the new heading selected.

- NAV Coupling

(a) When equipped with HSI or EHSI

. Course Bearing Pointer - SET to desired course.

NOTE :
When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS 2 to the desired course.

. HEADING Selector Knob - SET BUG to provide desired intercept angle.

. 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 annunciator flashing ; when the computed capture point is reached the HDG will disengage, the NAV annunciator will illuminate steady 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 steady and the capture / track sequence will automatically begin.

(b) When equipped with DG

. OBS Knob - SELECT desired course.

. NAV Mode Selector Button - PRESS.

. Heading Selector Knob - ROTATE BUG to agree with OBS course.

NOTE :
When NAV is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-Bar is greater than 2 to 3 dots : the autopilot will annunciate HDG mode (unless HDG not selected) and NAV flashing ; when the computed capture point is reached, the HDG annunciator will go out, the NAV annunciator will illuminate steady 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 steady and the capture / track sequence will automatically begin.

- Approach (APR) Coupling (TB10 - TB200)

"Erratic deviations have been observed with airplane flown down an ILS path with KING RADIO-NAV installations. Analysis of the phenomenon indicates that the fluctuations are due to an interference between propeller rotation frequency and one of LOC frequencies. The more sensitive conditions are met when the localizer beacon is right ahead and the engine speed is adjusted toward 2650 RPM.

The localizer use is not significantly impaired by the phenomenon when :

- engine speed is reduced to lower than 2600 RPM
- localizer beacon lies right or left by more than 30 degrees from airplane heading.

Autopilot APR mode operation should be discontinued whenever high engine power settings are anticipated. This can be done by switching to HDG mode or CWS mode or by switching off the autopilot.

(a) When equipped with HSI or EHSI

. Course Bearing Pointer - SET to desired course.

NOTE :
When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS 2 to the desired course.

. HEADING Selector Knob - SET BUG to provide desired intercept angle.

. 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 annunciator flashing ; when the computed capture point is reached the HDG mode will disengage, the APR annunciator will illuminate steady 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.

(b) When equipped with DG

- OBS Knob - SELECT desired approach course.
- APR Mode Selector Button - PRESS.
- Heading Selector Knob - ROTATE Bug to agree with OBS course.

NOTE :
When APR is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-Bar is greater than 2 to 3 dots : the autopilot will annunciate HDG mode (unless HDG not selected) and APR flashing ; when the computed capture point is reached the HDG annunciator will go out, the APR annunciator will illuminate steady 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 Coupling

(a) When equipped with HSI or EHSI

- Course Bearing Pointer - SET to the ILS front course inbound heading.

NOTE :
When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS to the ILS front course inbound heading.

- HEADING Selector Knob - SET BUG to provide desired intercept angle.
- 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 BC annunciated steady and APR annunciator flashing ; when the computed capture point is reached the HDG will disengage, and the BC and APR annunciators will illuminate steady 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 BC annunciator will illuminate steady and the capture / track sequence will automatically begin.

(b) When equipped with DG

- OBS Knob -SELECT the ILS front course inbound heading.
- BC mode Selector Button - PRESS.
- Heading Selector Knob - ROTATE Bug to the ILS front course inbound heading.

NOTE :
When BC is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-Bar is greater than 2 to 3 dots : the autopilot will annunciate HDG (unless HDG not selected) and BC modes with APR flashing ; when the computed capture point is reached the HDG annunciator will go out, the BC and APR annunciators will illuminate steady 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 BC and APR annunciators will illuminate steady and the capture / track sequence will automatically begin.

- Glide Slope coupling

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

(a) APR Mode - ENGAGED.

(b) At Glide Slope centering - NOTE GS annunciator ON.

NOTE :
Autopilot can capture Glide Slope from above or below the beam while operating in either pitch attitude hold or alt hold modes.

- Missed Approach

(a) AP DISC TRM INT Switch - PRESS to disengage A / P.

(b) MISSED APPROACH - EXECUTE.

(c) CWS Button - PRESS (KFC 150 only) as desired to activate FD mode during go-around maneuver.

(d) AP ENG BUTTON - PRESS (If A / P operation is desired). Note AP annunciator ON.

NOTE :
If it is desired to track the ILS course outbound as part of the missed approach procedure, use the NAV mode to prevent inadvertent GS coupling.

- Before Landing

AP DISC TRM INT Switch - PRESS to disengage A / P.

C - FLIGHT DIRECTOR OPERATION (KFC 150 System Only)

NOTE :
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.

SUPPLEMENT

GROUND POWER RECEPTACLE

TABLE OF CONTENTS

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SECTION 1
GENERAL

The ground power receptacle permits the use of an external power source for cold weather starting and during lenghty maintenance work on the electrical and avionics equipment. The receptacle is located under the baggage compartment access door, near the anti-twist edge.

NOTE :
If no avionics equipment is to be used or worked on, the avionics power switches should be turned off or the circuit breakers should be released or, if installed, set "Radio Master" switch to OFF.
If maintenance is required on the avionics equipment, it is advisable to utilize a battery cart external power source to prevent damage to the avionics equipment by transient voltage.

NOTE :
The auxiliary power source relay disconnects battery automatically, when the ground power receptacle is powered. Therefore it is impossible to service battery without having removed it from the airplane.

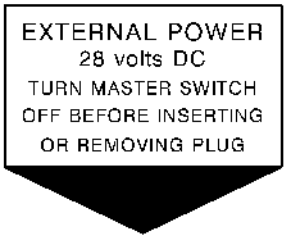
SECTION 2
LIMITATIONS

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

PLACARDS

The following placards are located above the ground power receptacle access door :

I411200DAAAIWZ8101



Valid for English speaking countries

Valid for Brazil

SECTION 3

EMERGENCY PROCEDURES

The installation and the operation of the ground power receptacle 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

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

Engine starting using auxiliary power does not change the basic procedures, however :

WARNING

IF THE BATTERY HAS BEEN REMOVED, BEFORE CONNECTING THE AUXILIARY POWER SOURCE, ISOLATE ELECTRICAL HARNESS TERMINAL LUGS USING RUBBER OR PLASTIC OR CHECK THEIR ISOLATION

CAUTION

IT IS RECOMMENDED TO LET THE ENGINE RUN WITH THE AUXILIARY POWER ONLY IF THE "RADIO MASTER" IS OFF.

Airplanes not equipped with the "Radio Master" switch

The avionics power switches should be turned off.

Airplanes equipped with the "Radio Master" switch

Electrical power supply of radio communication and radio navigation systems is automatically cut off during engine starting sequence.

All

WARNING

WHEN TURNING ON THE MAIN SWITCH, USING AN EXTERNAL POWER SOURCE, OR PULLING THE PROPELLER THROUGH BY HAND, TREAT THE PROPELLER AS IF THE MAGNETO SWITCHES WERE ON : DO NOT STAND, NOR ALLOW ANYONE ELSE TO STAND, WITHIN THE ARC OF THE PROPELLER, SINCE A LOOSE OR BROKEN WIRE, OR A COMPONENT MALFUNCTION, COULD CAUSE THE ENGINE TO START

The ground power receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground power receptacle is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the electrical system, thereby preventing any damage to electrical equipment.

The following check should be made after starting engine and removing the external power source, if there is any question as to the condition of the battery.

(1) Main switch - OFF.

(2) Taxi and landing lights switch-breakers - ON.

(3) Engine RPM - REDUCE to idle.

(4) Main switch - ON (with taxi and landing lights ON).

(5) ALTr FLD switch-breaker - ON.

(6) Engine RPM - INCREASE to approximately 1500 RPM.

(7) Voltmeter - CHECK.
If the voltmeter is in red sector or, Post-MOD.182, if V < 24 Volts (VDC lamp illuminated) : remove the battery for servicing.

(8) Lights switch-breakers - OFF.

SECTION 5
PERFORMANCE

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

SUPPLEMENT

AUXILIARY DRY AIR PUMP

"OPTIONAL EQUIPMENT Nr 632"

TABLE OF CONTENTS

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SECTION 1
GENERAL

The auxiliary dry air pump system, electrically driven, provides an independent backup source of pneumatic power to operate the gyro flight instruments in the event the engine driven air pump fails. This "Pump-Electric motor" assembly is located on the L.H. side under cabin floor.

The auxiliary pump operates through the switch on L.H. instrument panel strip.

The auxiliary system electrical protection is provided by 2 circuit-breakers labeled "AUX SUCT" and located on L.H. side instrument panel, on the pilot's left hand :

- a 2 amp. circuit-breaker for the control circuit
- a 10 amp. circuit-breaker for the power circuit

At the head of the L.H. instrument panel, 2 lights incorporating a press-to-test feature, located on the alarms panel, enable to check for condition the vacuum system. Two vacuum switches illuminate these lights :

- the L.H. red light labeled "GYRO SUCT", when illuminated, indicates the drop of "normal" or "auxiliary" suction,
- the R.H. green light labeled "AUX SUCT", when illuminated, indicates that "auxiliary" pump is activated and operates correctly.

CAUTION

THE AUXILIARY PUMP USE, WHEN SUCTION IS NORMAL (main pump operating correctly), AFFECTS NEITHER THE GENERAL OPERATION OF VACUUM SYSTEM, NOR THE GYRO FLIGHTS INSTRUMENTS.

THE AUXILIARY PUMP OPERATION MAY LEAD TO AN ELECTRICAL OVERLOAD AND, THEREFORE, IS NOT RECOMMENDED DURING NORMAL OPERATION.

SECTION 2
LIMITATIONS

These limitations complete those of standard airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook. These limits must be on a placard located at level with control switch of the auxiliary pump, on L.H. instrument panel strip :

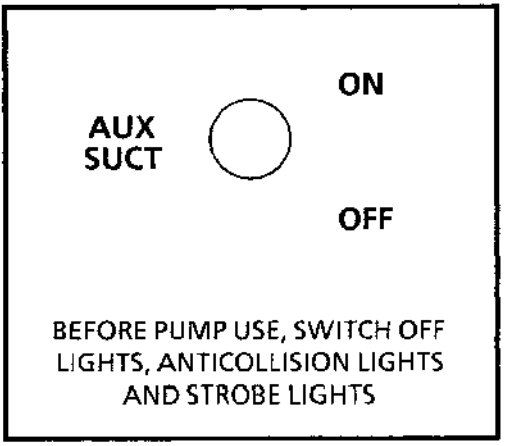

Figure 9.14.1 - AUXILIARY DRY AIR PUMP SWITCH PLACARD

SECTION 3
EMERGENCY PROCEDURES

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

MAIN VACUUM PUMP FAILURE

"GYRO SUCT" red light	ILLUMINATED
Suction gage	OUT OF GREEN SECTOR
Landing and taxiing lights	OFF
Anticollision light (if installed)	OFF
Strobe lights (if installed)	OFF
"AUX SUCT" switch	ON
"AUX SUCT" green light	ILLUMINATED
"GYRO SUCT" red light	OFF
Suction gage	GREEN SECTOR

SECTION 4
NORMAL PROCEDURES

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

BEFORE STARTING ENGINE

Main switch	ON
"AUX SUCT" switch	ON
"AUX SUCT" green light	ILLUMINATED
"GYRO SUCT" red light	OFF
Suction gage	GREEN SECTOR
Gyro flight instruments	ON
"AUX SUCT" switch	OFF
"GYRO SUCT" red light	ILLUMINATED
"AUX SUCT" green light	OFF
Main switch	OFF

DURING FLIGHT

The auxiliary pump operation may lead to an electrical overload and therefore must only be used in the event main vacuum pump fails. See Section 3 "Emergency procedures" of this supplement.

SECTION 5
PERFORMANCE

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

SUPPLEMENT

FUEL FLOW TOTALIZER FT 101 A "HOSKINS"

"OPTIONAL EQUIPMENT N° D838"

TABLE OF CONTENTS

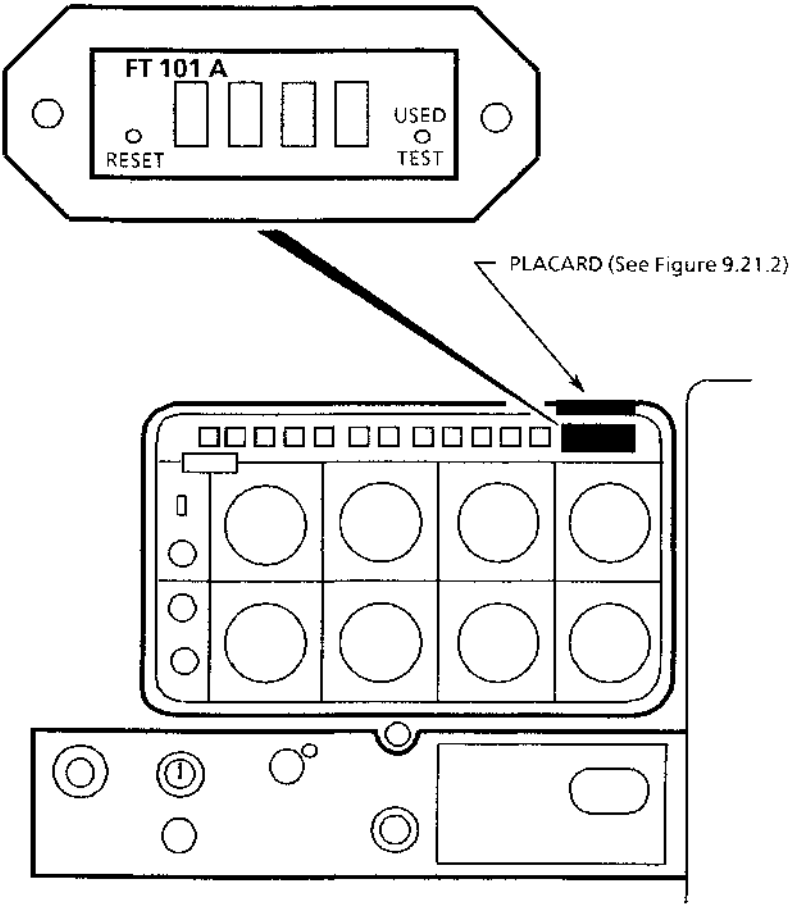

Figure 9.21.1 - FUEL FLOW TOTALIZER FT 101 A "HOSKINS"

SECTION 1

GENERAL

The fuel flow totalizer FT 101 A "HOSKINS" located on top right side of the L.H. instrument panel (see Figure 9.21.1) can be used as single flight totalizer (one single flight) or as long term flight totalizer (many flights).

SECTION 2

LIMITATIONS

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

The fuel flow totalizer FT 101A "HOSKINS" shall not be used as a substitute to either the fuel gages or the analog fuel flow meter.

THE "DIGITAL" FUEL FLOW TOTALIZER SHALL SERVE AS SUBSTITUTE TO NEITHER THE FUEL GAUGES NOR THE ANALOG FUEL FLOW METER THE LATTER INSTRUMENTS SHALL ALWAYS BE CONSULTED IN PRIORITY FOR FLIGHT OPERATION.

SECTION 3

EMERGENCY PROCEDURES

The installation and the operation of the fuel flow totalizer 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

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

CAUTION

THE FUEL QUANTITY INDICATOR IS THE PRIMARY READING OF FUEL ON BOARD. IT IS ESSENTIAL THAT THE FUEL QUANTITY READING OF THE FUEL TOTALIZER IS PROGRAMMED TO READ THE SAME AS THE FUEL QUANTITY INDICATOR PRIOR TO FLIGHT.

GENERAL OPERATIONS PROCEDURES

- Switch on the airplane main switch.
- On activating the airplane electrical system, the indicator display will flash zeros (000.0). This flashing is a reminder for the pilot to reset or check the fuel used number by pressing either the RESET or USED / TEST button.

  Once the RESET or USED / TEST button is depressed, the display will stop flashing and read fuel flow.
- After starting the airplane engine, the indicator will continuously display fuel flow. Total fuel used may be displayed by pressing and holding the USED / TEST button on the right of the instrument. Total fuel used will be displayed as long as the USED / TEST button is depressed (or for 2 seconds), whichever comes first. This number may be reset to zero (0.0) by depressing and holding the RESET button for at least 1 second.

SINGLE FLIGHT TOTALIZER (ONE SINGLE FLIGHT)

- The airplane should be topped with fuel before each flight so the total usable fuel will be known.
- Switch on the airplane main switch.
- On activating the airplane electrical system, the FT 101 A will begin its power-on sequence. At the completion of this sequence, press the RESET button to zero the total fuel used.

- On starting the engine, the indicator will begin displaying fuel flow. Total fuel used may be checked by depressing the USED / TEST button.

LONG TERM TOTALIZER (MANY FLIGHTS)

- Switch on the airplane main switch.
- On activating the airplane electrical system, the FT 101 A will perform its power-on sequence.
- The indicator will display the total fuel used from previous flights. DO NOT push the RESET button !
- On starting the engine, the FT 101 will display fuel flow and continue counting fuel used up to 999.9 gallons, 9999 pounds, or 9999 litres depending on the model. Once this value is reached, the next display will be that of a RESET function and the fuel used value will automatically begin at zero.

TEST FUNCTION

A test function is provided in the flow totalizer, so the pilot may verify that all digits are functioning prior to each flight. To use the test function, depress and hold the USED / TEST button two times within one second and the indicator will display all eights (888.8).

CAUTION

REFER TO SPECIAL INSTRUCTIONS GIVEN ON THE PLACARD LOCATED ABOVE "HOSKINS" INDICATOR.

THE "DIGITAL" FUEL FLOW TOTALIZER SHALL SERVE AS SUBSTITUTE TO NEITHER THE FUEL GAUGES NOR THE ANALOG FUEL FLOW METER THE LATTER INSTRUMENTS SHALL ALWAYS BE CONSULTED IN PRIORITY FOR FLIGHT OPERATION.

SECTION 5

PERFORMANCE

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

SUPPLEMENT

"BFG" WX-1000 / 1000+ OR WX-900 OR WX-500 STORMSCOPE

TABLE OF CONTENTS

"BFG" WX-1000 / WX-1000+ OR WX-900 OR WX-500
STORMSCOPE

SECTION 1

GENERAL

This supplement supplies information to the pilot about limitations, normal and emergency procedures when the optional "BFG" WX-1000/1000+ or WX-900 or WX-500 stormscope is installed on the SOCATA TB airplanes. 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" WX-1000/1000+ or WX-900 or WX-500 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 selector 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.

The "BFG" WX-1000/1000+ stormscope systems check-list functions are for reference only.

CAUTION

THE STORMSCOPE MUST NOT BE USED FOR THUNDERSTORM PENETRATION

- The "BFG" Stormscope Pilot's Handbook, Range II, No. 75-0299-7690-1 (WX-1000/1000+)

or

- The WX-900 Pilot's guide, No. 78-8060-6027-9

or

- The WX-500 Pilot's guide, No. 009-11501-001 with :
  - . the KMD 550/850 Multi-function Display Pilot's Guide No. 006-18222-0000

  or

  - . 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" WX-1000/1000+ or WX-900 or WX-500 stormscope systems 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 are outlined in the "BFG" WX-1000/1000+ stormscope Pilot's Handbook, Range II, No. 75-0299-7690-1 at last revision.

Normal operating procedures are outlined in the "BFG" WX-900 stormscope Pilot's Guide, Range II, No. 78-8060-6027-9 at last revision.

Normal operating procedures are outlined in the "BFG" WX-500 stormscope Pilot's Guide, Range II, No. 009-11501-001 at last revision.

SECTION 5

PERFORMANCE

Installation and operation of "BFG" WX-1000/1000+ or WX-900 or WX-500 stormscope systems 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

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)
	34 - NAVIGATION				
A	Stormscope (on panel strip) (J820 00M)	WX-1000	BFG	15.432 (7.000)	83.07 (2.11)
A	Stormscope (on R.H. instrument panel) (J820 10M)	WX-1000	BFG	15.432 (7.000)	83.07 (2.11)
A	Stormscope (J828 00M)	WX-1000+	BFG	15.432 (7.000)	83.07 (2.11)
A	Stormscope (with converter assy) (J828 10M)	WX-1000+	BFG	15.432 (7.000)	83.07 (2.11)
A	Stormscope (J918 00M)	WX-900	BFG	4.806 (2.180)	85.43 (2.17)
A	Stormscope (OPT10 34502A)	WX-500	BFG	4.960 (2.250)	117.32 (2.98)

SECTION 7

DESCRIPTION

The "BFG" (Series II) WX-1000/1000+ or WX-900 or WX-500 stormscope weather mapping systems provide 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. Stormscope information (dots or strike points according to stormscope type) will be displayed on the screen to indicate the electrical discharge areas.

Stormscope information may be displayed on two selectable views : 360° view of surrounding airspace and 120° view of forward airspace only (WX-1000/1000+ or WX-500).

The display scope provides full scale selectable ranges of :

- 200, 100, 50 and 25 nautical miles (WX-1000/1000+ or WX-500)
- 100, 50 and 25 nautical miles (WX-900).

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SUPPLEMENT

"GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A

"OPTIONAL EQUIPMENT No. J870 00 - J870 30 - J870 40"

TABLE OF CONTENTS

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SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the aircraft is equipped with the option "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A.

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB 20 aircraft is equipped with the option "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A.

Using information provided by satellites ("GARMIN" 100 AVD is able to track up to 8 satellites at a time), GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means. It also uses data recorded in a data base (two different data bases are available : North American base or international base). The data base has to be updated every 28 days.

Each data base contains information about airports, communication frequencies, VORs, NDBs, intersections, flight service stations ...

There is also room for up to 100 user defined waypoints and 10 different flight plans.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the aircraft is equipped with the option "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A.

GPS "GARMIN" 100 AVD is installed in accordance with FAA notice 8110.47 dated 23 April 93.

This equipment is approved for use as a VFR navigation system for en route and terminal area only. Therefore, GPS navigation must be crosschecked with usual means.

Data base updating must be verified before each flight.

GPS "GARMIN" 100 AVD is not approved for navigation as a primary source.

Figure 9.25.1 - GPS limitation placard

"GARMIN" 100 AVD Owner's Manual at its latest revision shall be readily available to the pilot whenever the operation of the GPS navigation system is predicted.

SECTION 3
EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard aircraft described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the aircraft is equipped with the option "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A.

If "GARMIN" 100 AVD GPS information is flagged (Flag "NAV" on HSI), revert to remaining operational navigation equipment. Press the 

button-switch to select the NAV 1 navigation source.

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 aircraft is equipped with the option "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A.

Normal operating procedures of the "GARMIN" 100 AVD GPS are outlined in the "GARMIN" 100 AVD Owner's Manual at the latest revision.

However, it is essential to precise the following points :

SET UP CONDITIONS

- Verify if the data base is current.
- Check that CDI settings are as follows :
  . CDI scale > ± 5.00 (Section II.3 of the Owner's Manual).
  . STEER TO > D - BAR (Section II.3 of the Owner's Manual).
- Check tone setting : MSG and key or MSG only (Section II.5 of the Owner's Manual).
- Check that MAP DATUM is WGS 84 or as indicated on the navigation charts used (Section II.7 of the Owner's Manual).
- Check that OUTPUT parameter is set to AVIATION (Section II.7 of the Owner's Manual).

SYSTEM ANNUNCIATOR

The system annunciator is located above the ADI.

MESSAGE (MSG) - Will flash to alert the pilot of a situation that requires attention. It also generates an audible tone to alert the pilot of the message. Messages that require immediate attention such as an arrival alarm or a loss of GPS data generate a quick tone that will not stop until MSG key is pressed. All other messages generate a slow tone that will cease after 15 seconds.

SYSTEM SWITCHES

NAV 1
GPS - This button-switch is used for selecting data to be presented on the pilot's HSI, either NAV data from the number one navigation receiver or GPS data from the "GARMIN" 100 AVD GPS.

The NAV 1 GPS button-switch is located above the ADI.

PILOT'S DISPLAY

Left / right steering information is provided via the course deviation indicator on the pilot's HSI as a function of the source selected with the NAV 1 / GPS button-switch position.

GPS navigation parameters are presented on the HSI as :

- desired track (DTK) information,
- cross track error (XTK).

About one minute prior to reaching a waypoint, MSG alarm lights on, audio warning is on for 15 seconds. The message "Approaching waypoint" can be displayed.

As HSI is not slaved to DTK GPS output, it is necessary to adjust manually the selected course of the HSI to the present DTK of the navigation leg. This has to be made when crossing a waypoint.

FLIGHT DIRECTOR / AUTOPILOT COUPLED OPERATION

Whether the NAV 1 / GPS button-switch is selected on GPS data or NAV data engaging the NAV mode on the autopilot mode controller will make the FD appear, using selected course and left / right steering information presented on the HSI.

The autopilot is coupled to the HSI when AP is engaged on the mode controller.

WARNING

WHEN CROSSING A WAYPOINT, WITH THE AUTOPILOT ENGAGED ON NAV MODE AND USING GPS DATA, IF THE COURSE POINTER IS NOT ADJUSTED AT THE VALUE OF THE NEW DESIRED TRACK AND IF THE COURSE CHANGE IS MORE THAN 5°, THE FLIGHT DIRECTOR AND AUTOPILOT WILL STEER A DIVERGENT ROUTE AFTER THE WAYPOINT.

NOTE :
When the HSI is selected on GPS navigation source, the RMI remains selected on NAV 1 or NAV 2 source.

CAUTION

"GARMIN" 100 TURN OFF

THE "GARMIN" 100 AVD GPS HAS AN INTEGRATED BATTERY PACK. WHEN SELECTING RADIO MASTER SWITCH OFF AT ENGINE SHUT DOWN, GPS STAYS ON, USING THE BATTERY PACK.
PRESS AND HOLD THE OFF / DIM SIDE OF THE ON / OFF KEY FOR 3 SECONDS UNTIL THE DISPLAY IS BLANK.

SECTION 5
PERFORMANCE

Installation and operation of the "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A do not change the performance of the aircraft described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

SECTION 6
WEIGHT AND BALANCE

Weight and balance corresponding to the "GARMIN" 100 AVD GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A are given in the optional equipment list attached to Section 6 "Weight and balance" of the basic Pilot's Operating Handbook.

SECTION 7
DESCRIPTION

Normal operating procedures are described in the "GARMIN" 100 AVD Owner's Manual at the latest revision.

CONTROLS - see Figure 9.25.2

The front panel consists of a 3-line, 22-character LCD display and 21 keys. Information displayed on the LCD is commonly referred to as a page.

Access to the pages is made by the keys on the left and bottom of the LCD. Alphanumeric keys on the right of the LCD are used to enter data.

The rocker key (← →) activates a cursor that can be moved on the page to locations called fields. This function is visible by an area of inverse video on the screen.

The CLR key erases information in the cursor field or toggles through several available options on a cyclic field.

ENT key completes the process of data entry and indicates approval.

ANNUNCIATORS - see Figure 9.25.3

The annunciators include :

- 1 amber warning light marked "MSG",
- 1 button-switch composed of :
  - . a green indicator light marked "NAV 1",
  - . a blue indicator light marked "GPS".

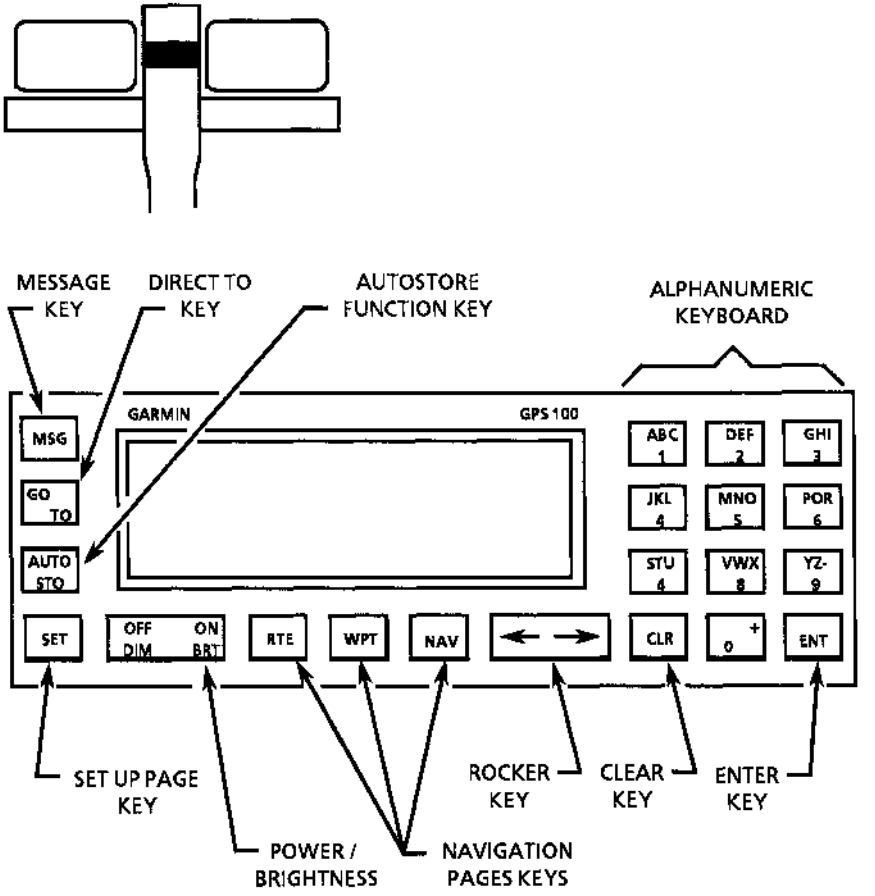
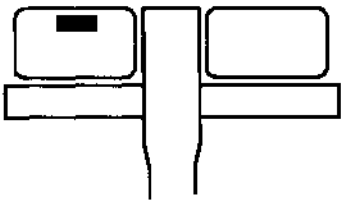


Figure 9.25.2 - Controls



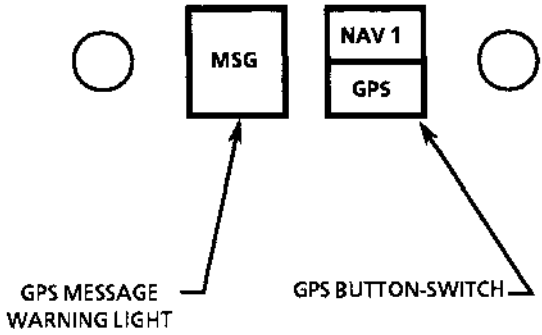


Figure 9.25.3 - GPS annunciators

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SUPPLEMENT

"BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A

"OPTIONAL EQUIPMENT No. K860 10M - K860 30M - K860 40M"

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SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the aircraft is equipped with the option ""BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the aircraft is equipped with the option ""BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A".

Using information provided by satellites ("BENDIX / KING" KLN90A is able to track up to 8 satellites at a time), GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means. It also uses data recorded in a data base (two different data bases are available : North American one or International one). The data base is housed in a cartridge plugged into the back of the KLN90A and is updated every 28 days by means of diskettes and a computer (a jack located on left lower panel provides a means of interfacing the KLN90A with the computer via an interface cable).

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

There is also room for up to 250 user defined waypoints and 26 different flight plans.

The KLN90A0 receives altitude code from the encoding altimeter.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the aircraft is equipped with the option ""BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A".

Data base updating must be verified before each flight.

NOTE :
The KLN90A genuine data base is referenced to WGS 84 geodetic datum.

If the data base or chart are not referenced to WGS 84 or to NAD 83 geodetic datum, in the absence of agreed operating procedure, the GPS navigation must be disabled for terminal area.

GPS "BENDIX / KING" KLN90A is not approved for navigation as a primary source.

Figure 9.26.1 - GPS limitation placard

The navigation must be performed with the primary navigation means. In any case, GPS use is limited to "en route" and terminal areas.

"BENDIX / KING" KLN90A Pilot's Guide at its latest revision shall be readily available to the pilot whenever the operation of the GPS navigation system is predicted.

D.G.A.C. Approved

SECTION 3
EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard aircraft described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the aircraft is equipped with the option ""BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A".

If KLN90A GPS information is flagged (Flag "NAV" on HSI) or GPS integrity (RAIM) capability is lost, revert to remaining operational navigation equipment. Press the NAV 1 / GPS button-switch to select the NAV 1 navigation source.

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 aircraft is equipped with the option ""BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A".

Normal operating procedures of the KLN90A GPS are outlined in the "BENDIX / KING" KLN90A Pilot's Guide at the latest revision.

However, it is important to precise the following points :

SET UP CONDITIONS

- Verify if the data base is current.

- Verify the baro setting.

- Set turn anticipation mode (SET / 6) to :
  . ENABLE (turn anticipation ENABLED) : recommended mode,
  . DISABLE (turn anticipation DISABLED) : not recommended mode.

- Check that the proper criteria are used for nearest airport selection.

COURSE DEVIATION INDICATOR

In any mode, the course deviation indicator sensitivity is plus or minus 5 Nm full scale.

NOTE :
Transmission on VHF 1 or 2 communication frequencies 121.15, 121.175, 121.20, 131.25, 131.275 and 131.30 MHz may adversely affect reception of the GPS signal. Transmissions in excess of 10 seconds may result in loss of GPS signal reception and WRN annunciator activation. Navigation will be restored within 5 seconds after the completion of the transmission. If UHF communication system is installed, the same behaviour can be observed on the first harmonic of the VHF frequencies, 242.30, 242.35, 242.40, 262.50, 262.55 and 262.60 MHz.

D.G.A.C. Approved

SYSTEM ANNUNCIATORS

The system annunciators are located above the main horizon :

1) WAYPOINT (WPT) - Prior to reaching a waypoint in the active flight plan, the KLN90A GPS will provide navigation along a curved path segment to ensure a smooth transition between two adjacent legs in the flight plan. This feature is called turn anticipation. Approximately 20 seconds prior to the beginning of turn anticipation the WPT annunciator will flash, going solid upon initialization of the turn, and extinguishing upon turn completion.

WARNING

TURN ANTICIPATION IS AUTOMATICALLY DISABLED FOR WAYPOINTS USED EXCLUSIVELY IN SID / STARS WHERE OVERFLIGHT IS REQUIRED. FOR WAYPOINTS SHARED BETWEEN SID / STARS AND PUBLISHED EN ROUTE SEGMENTS (REQUIRING OVERFLIGHT IN THE SID / STARS) PROPER SELECTION ON THE PRESENTED WAYPOINT PAGE IS NECESSARY TO PROVIDE ADEQUATE ROUTE PROTECTION ON THE SID / STARS.

2) MESSAGE (MSG) - Will flash to alert the pilot of a situation that requires attention. Press the MSG button on the KLN90A GPS to view the message (Appendix B of the KLN90A Pilot's Guide contains a list of all of the message page messages and their meanings).

3) WARN (WRN) - Annunciates that GPS integrity (RAIM) capability is lost.

NOTE :
The warning annunciator may be tested by pressing on "TEST" knob of the alarm panel.

SYSTEM SWITCHES

NAV 1
GPS - This button-switch is used for selecting data to be presented on the pilot's HSI, either NAV data from the number one navigation receiver or GPS data from the KLN90A GPS.

The NAV 1 GPS button-switch is located below the HSI.

D.G.A.C. Approved

PILOT'S DISPLAY

Left / right steering information is provided via the course deviation indicator on the pilot's HSI as a function of the source selected with the NAV 1 / GPS button-switch position.

EN ROUTE-LEG mode

When using the en route-leg mode, it is necessary to adjust manually the course indicator at the value of the desired track between two waypoints.

When the KLN90A is used with the TURN ANTICIPATION ENABLED, at the beginning of turn anticipation, WPT alert annunciator goes on steady, MSG annunciator begins flashing. At this time, the KLN90A will notify the pilot with a message on the Message Page of the new desired track to select on the HSI. This message will not be given if the course change is less than 5°.

CAUTION

IT IS RECOMMENDED TO USE KLN90A WITH TURN ANTICIPATION ENABLED

WHEN TURN ANTICIPATION IS DISABLED, waypoint alerting occurs approximately 35 seconds prior to actually reaching the waypoint. MSG annunciator remains OFF. There is no course change message displayed by the KLN90A.

When the KLN90A is used WITH TURN ANTICIPATION DISABLED, the "Super NAV 5" page allows a rapid visualisation of the aircraft position in horizontal navigation with regards to the route and the waypoints. It is strongly recommended to use this page.

EN ROUTE-OBS mode

When using the en route-OBS mode, it is also necessary to adjust manually the course indicator at the value of the OBS selected on the KLN90A. The desired track selection is made only from the KLN90A control box.

FLIGHT DIRECTOR / AUTOPILOT COUPLED OPERATION

The HSI can be coupled to KAP 100, KAP 150 or KFC 150 autopilots.

The NAV mode engagement on the autopilot mode controller arms the autopilot in navigation mode, using selected course and left / right steering information presented on the HSI. It makes the FD appear in the case of the KFC 150 autopilot.

When AP is engaged on the mode controller, the autopilot is coupled to the HSI.

WARNING

WHEN CROSSING A WAYPOINT, WITH THE AUTOPILOT ENGAGED ON NAV MODE AND USING GPS DATA, IF THE COURSE POINTER IS NOT ADJUSTED AT THE VALUE OF THE NEW DESIRED TRACK AND IF THE COURSE CHANGE IS MORE THAN 5°, THE FLIGHT DIRECTOR AND AUTOPILOT WILL STEER A DIVERGENT ROUTE AFTER THE WAYPOINT (EN ROUTE-LEG MODE SELECTED ON THE KLN90A).

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

SECTION 5
PERFORMANCE

Installation and operation of the "BENDIX / KING" KLN90A GPS NAVIGATION SYSTEM INTERFACED WITH HSI KI 525A do not change the performance of the aircraft 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	ITEM No.	OPTIONAL EQUIPMENT	WEIGHT lb	ARM in.
A	K860 10M	GPS KLN 90A "KING" interfaced with HSI and A/P, with RMI	9.17	21.65
A	K860 30M	GPS KLN 90A "KING" interfaced with HSI, with RMI	9.17	21.65
A	K860 40M	GPS KLN 90A "KING" interfaced with HSI and A/P, without RMI (For export only)	9.17	21.65

SECTION 7
DESCRIPTION

Normal operating procedures are described in the "BENDIX / KING" KLN90A Pilot's Guide at the latest revision.

CONTROLS - see Figure 9.26.2

Controlled by two sets of concentric knobs and two cursor buttons, the KLN90A can present a variety of information in a number of different page formats.

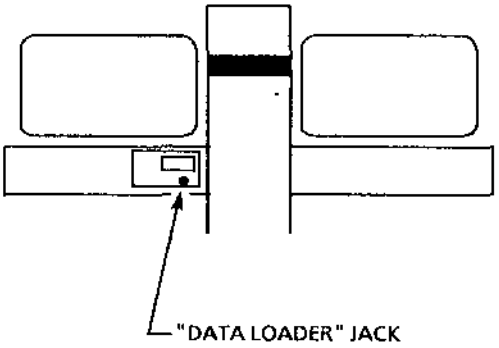
The various display types can be considered as chapters in a book, each chapter having as many as 26 numbered pages at once. With a few exceptions, each of these pages can be changed independently.

Generally the 2 concentric knobs and the cursor button to the left of the screen are used to select data on L.H. page, just as the right knobs and cursor on the right control the R.H. page.

The large outer knobs control the chapters and the small inner knobs turn the pages.

To change data in a page use the cursor function. This function is an area of inverse video on the screen brought up by depressing the cursor buttons.

Then rotate the outer knob to position the cursor and the inner knob to select the desired characters. Repeat this operation as many times as necessary and valid (ENT button).



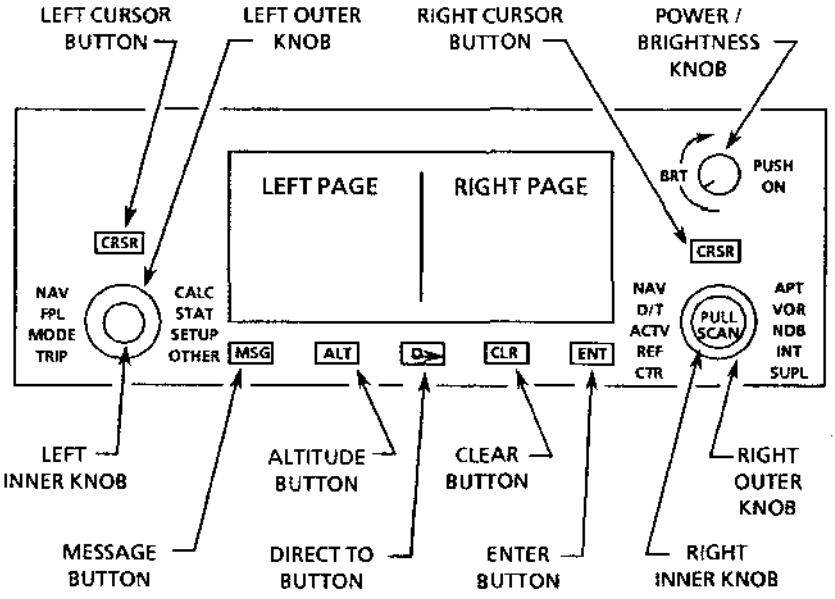
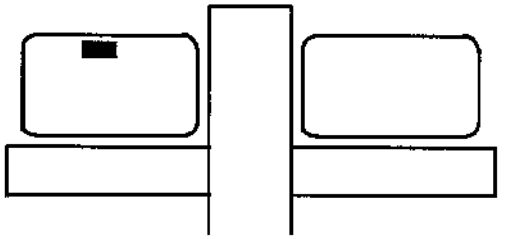


Figure 9.26.2 - Controls



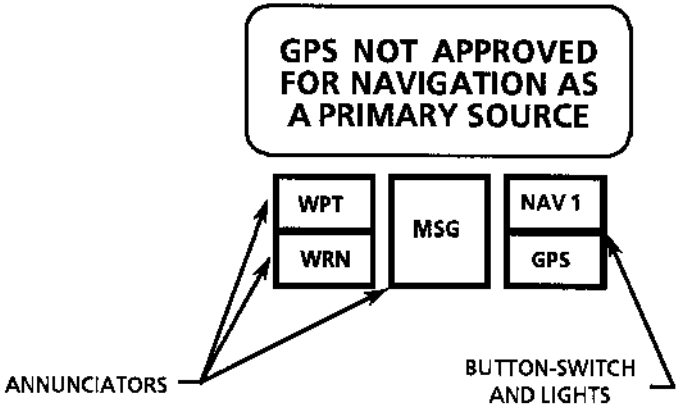


Figure 9.26.3 - GPS placard and annunciators

SUPPLEMENT

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

"OPTIONAL EQUIPMENT N° D675"

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 297B Vertical Speed and Altitude Selector when added to a KFC 150 or KAP 150 Flight Control System.

The KAS 297B 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 aircraft is equipped with the KAS 297B, in addition to the autopilot, limitations are identical to those of the standard aircraft 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 aircraft 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 aircraft described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook and of the Autopilot Supplement.

BEFORE TAXIING

TEST OF THE VERTICAL SPEED AND ALTITUDE SELECTOR

1 - AP "TEST" knob ..... **PRESS**

2 - Check :

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

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.

VERTICAL SPEED MODES (Cont'd)

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 the Vertical Trim Control is pressed.

- 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 AIRCRAFT 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 on the middle knob, then ROTATE, to display the desired altitude : the larger (outer) knob for a 1000 foot increment, the small (inner) knob for a 100 foot increment**

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

3 - Display an aircraft 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 aircraft described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

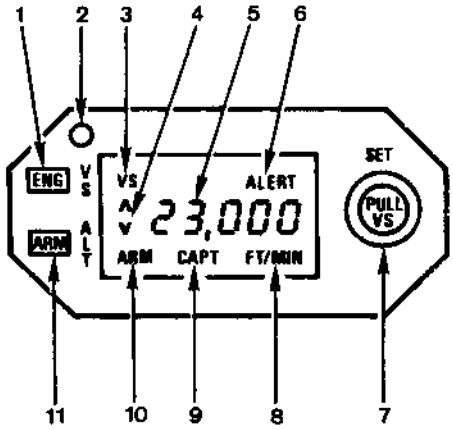
SECTION 6

WEIGHT AND BALANCE

Weight and balance corresponding to the BENDIX / KING KAS 297B 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 297B CONTROLS AND DISPLAYS



5-4-700-22-0003

Figure 9.30.1 - KAS 297B 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 aircraft.

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 - 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 297B 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 297B. 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 aircraft. 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 - KC 191 AND KC 192 CONTROL BOXES

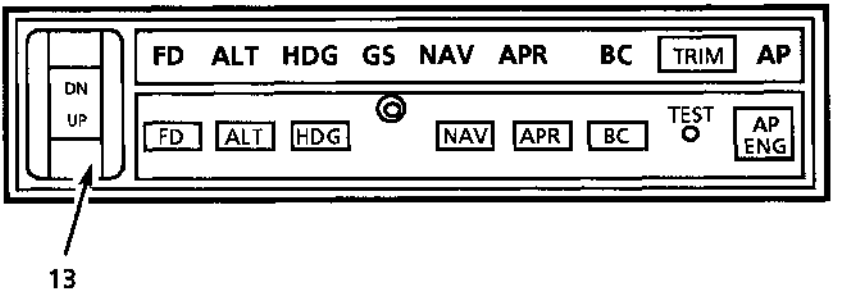


Figure 9.30.2 - KC 192 CONTROL BOX (KFC 150)

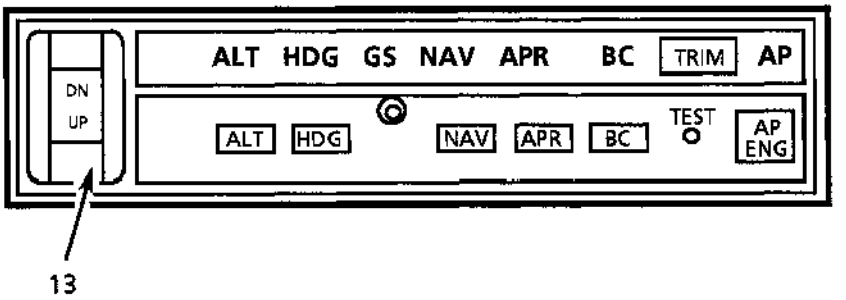


Figure 9.30.3 - KC 191 CONTROL BOX (KAP 150)

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 297B.
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.

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SUPPLEMENT

"BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A

"OPTIONAL EQUIPMENT No. K899 00M - K899 10M - K899 20M - K899 30M - K927 00M"

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SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB aircraft is equipped with the option ""BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

Using information provided by satellites ("BENDIX / KING" KLN90B is able to track up to 8 satellites at a time), GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means. It also uses data recorded in a data base (two different data bases are available : North American one or International one). The data base is housed in a cartridge plugged into the back of the KLN90B and is updated every 28 days by means of diskettes and a computer (a jack located on right lower panel PL25 provides a means of interfacing the KLN90B with the computer via an interface cable).

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 250 user defined waypoints and 26 different flight plans.

CAUTION

IT IS STRONGLY ADVISED NOT TO LOAD USER WAYPOINTS IN DATA BASE IN TERMINAL AREA NAVIGATION DUE TO THE INCREASE OF WORK LOAD FOR THE PILOT

The KLN90B receives altitude code from the encoding altimeter.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

Data base updating must be verified before each flight.

NOTE :
The original KLN90B data base is in accordance with the WGS84 geodetic model.

If the data base or the cartridge are not in accordance with WGS84 or NAD 83 geodetic model, and as there is no means of operation published, GPS navigation system must be disengaged in terminal area.

GPS "BENDIX / KING" KLN90B is not approved for navigation as a primary source.

GPS NOT APPROVED FOR NAV AS PRIMARY SOURCE

Figure 9.33.1 - GPS limitation placard
Valid for options No. K899 00M - K899 10M - K899 20M - K899 30M

Navigation must be conducted with primary sources. In any case, GPS use is limited to the En route or terminal area of the flight.

"BENDIX / KING" KLN90B Pilot's Guide at its latest revision shall be readily available to the pilot.

The use of GPS approach mode is prohibited.

USE OF GPS APPROACH MODE IS PROHIBITED

Figure 9.33.2 - GPS limitation placard

IFR navigation is restricted as follows :

- The system must utilize ORS level 20 or later.
- IFR en route and terminal area navigation is prohibited unless the pilot verifies the currency of the data base and verifies each selected waypoint for accuracy by reference to current approved data.

CAUTION

USE OF GPS APPROACH MODE IS PROHIBITED

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 TB aircraft is equipped with the option ""BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

NAV FLAG

If the NAV flag appears on the HSI when it is interfaced with GPS KLN90B, this means that the GPS signal integrity has been lost.

1 - "NAV 1 / GPS" inverter ..... **PRESS**

Return to the NAV1 navigation source and to remaining operational navigation equipment.

"MSG" ANNUNCIATOR ILLUMINATION

1 - "MSG" push-knob of KLN90B ..... **PRESS**

Check the message.

If the message mentions the loss of GPS system integrity (RAIM NOT AVAILABLE) or detects a too important position error (RAIM POSITION ERROR) :

2 - "NAV 1 / GPS" inverter ..... **PRESS**

Return to the NAV1 navigation source and to remaining operational navigation equipment.

When the system integrity is restored, the return to GPS mode must be accompanied by the validation of the followed and desired track concordance by using primary sources of navigation.

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 TB aircraft is equipped with the option ""BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

Normal operating procedures of the KLN90B GPS recommended by "BENDIX / KING" manufacturer are outlined in the "BENDIX / KING" KLN90B Pilot's Guide at the latest revision and KLN90B Memory Jogger at the latest revision.

However, it is important to precise the following points for the use of KLN90B on TB :

SET UP CONDITIONS

- The system must utilize ORS level 20 or later in compliance with the Pilot's Guide.
- Verify if the data base is current. Verify data on the self test page.
- Verify that altitude data is valid for the KLN90B prior to flight.
- Set turn anticipation mode (SET / 6) to :
  - . ENABLE (turn anticipation ENABLED) : recommended mode,
  - . DISABLE (turn anticipation DISABLED) : not recommended mode.
- Check that the proper criteria are used for nearest airport selection (SET / 3).

COURSE DEVIATION INDICATOR

The course deviation indicator sensitivity is adjustable with a maximum value which is the default value selected by the KLN90B. It is recommended not to change the default value which is ± 5 NM full scale.

NOTE :
Transmission on VHF 1 or 2 communication frequencies 121.15, 121.175, 121.20, 131.25, 131.275 and 131.30 MHz may adversely affect reception of the GPS signal. Transmissions in excess of 10 seconds may result in loss of GPS signal reception and WRN annunciator activation. Navigation will be restored within 5 seconds after the completion of the transmission. If UHF communication system is installed, the same behaviour can be observed on the first harmonic of the VHF frequencies, 242.30, 242.35, 242.40, 262.50, 262.55 and 262.60 MHz.

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"NAV 1/GPS" inverter

It may be used to select data for presentation on the pilot's HSI (L.H. instrument panel) ; either NAV data from NAV 1 navigation receiver or GPS data from the KLN90B GPS. The presentation on the HSI is also required for the autopilot connection.

"MSG" message annunciator

CAUTION

"MSG" ANNUNCIATOR MAY BE PERMANENTLY ILLUMINATED IF THERE EXISTS A PERMANENT MESSAGE. WHEN A NEW MESSAGE APPEARS, "MSG" ANNUNCIATOR ONLY FLASHES. IN THIS CASE, RETURN TO NAVIGATION PRIMARY MEANS BY PRESSING ON "NAV 1/GPS" INVERTER

It will flash to alert the pilot of a situation that requires his attention. Press the "MSG" button on the KLN90B GPS to view the message. (Appendix B of the KLN90B Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings). **"MSG"** annunciator is amber.

"WPT" Waypoint annunciator

WARNING

TURN ANTICIPATION IS AUTOMATICALLY DISABLED FOR WAYPOINTS USED IN "SID / STARS" WHERE OVERFLIGHT IS MANDATORY. FOR WAYPOINTS SHARED BETWEEN "SID / STARS" AND PUBLISHED ENROUTE SEGMENTS (REQUIRING OVERFLIGHT IN THE "SID / STARS"), PROPER SELECTION ON THE PRESENTED "WAYPOINT" PAGE IS NECESSARY TO PROVIDE ADEQUATE ROUTE PROTECTION ON THE "SID / STARS".

Prior to reaching a waypoint in the active flight plan, the KLN90B GPS will provide navigation along a curved path segment to ensure a smooth transition between two adjacent legs in the flight plan. This feature is called turn anticipation. Approximately 20 seconds prior to the beginning of the turn anticipation, the "WPT" annunciator will flash, going solid upon initiation of the turn, and extinguishing upon turn completion.
"**WPT**" annunciator is amber.

GPS approach "GPS APR ARM / GPS APR ACTV" switch / annunciator

CAUTION

THE USE OF GPS KLN90B APPROACH MODE IS PROHIBITED

This switch / annunciator is used to select or deselect approach mode of the KLN90B. This operation mode is not certified.

GPS course "GPS CRS OBS / GPS CRS LEG" switch / annunciator

This switch / annunciator is used to select the basic operation modes of the KLN90B, either a single waypoint with omnibearing course (OBS) selection through the waypoint (like a VOR) or automatic leg sequencing (LEG) between waypoints.
"**GPS CRS OBS**" annunciator is amber. "**GPS CRS LEG**" annunciator is green.

NOTE :
Either "GPS CRS LEG" or "GPS CRS OBS" will illuminate during system self-test depending on switch position.

EN ROUTE-LEG mode

When using the "EN ROUTE-LEG" mode, it is necessary to adjust manually the course indicator at the value of the desired track between two waypoints.

When the KLN90B is used with the TURN ANTICIPATION ENABLED, at the beginning of turn anticipation, WPT alert annunciator goes on steady, MSG annunciator begins flashing. At this time, the KLN90B will notify the pilot with a message on the Message Page of the new desired track to select on the HSI. This message will not be given if the course change is less than 5°.

CAUTION

IT IS RECOMMENDED TO USE KLN90B WITH TURN ANTICIPATION ENABLED

WHEN TURN ANTICIPATION IS DISABLED, WAYPOINT ALERTING OCCURS APPROXIMATELY 35 SECONDS PRIOR TO ACTUALLY REACHING THE WAYPOINT. MSG ANNUNCIATOR REMAINS OFF. THERE IS NO COURSE CHANGE MESSAGE DISPLAYED BY THE KLN90B.

When the KLN90B is used WITH TURN ANTICIPATION DISABLED, the "Super NAV 5" page allows a rapid visualisation of the airplane position in horizontal navigation with regards to the route and the waypoints. It is strongly recommended to use this page.

EN ROUTE-OBS mode

The "OBS" mode has to be selected as follows :

- press the "OBS / LEG" inverter to select the "OBS" mode,
- adjust the course indicator at the value of the desired track. When selecting the "OBS" mode, the active "WPT" of the "LEG" mode is chosen as reference "WPT" for the "OBS" mode,
- check the desired track from **MOD 2** page of the KLN90B control box.

FLIGHT DIRECTOR / AUTOPILOT COUPLED OPERATION

The HSI may be coupled with KAP 150 or KFC 150 autopilot.

Engaging the "NAV" mode on the autopilot mode controller engages the autopilot in navigation mode by using the selected course and left / right steering information presented on the HSI. It makes FD appear.

When AP is engaged on the mode controller, the autopilot is coupled to the HSI.

WARNING

WHEN CROSSING A WAYPOINT, WITH THE AUTOPILOT ENGAGED ON NAV MODE AND USING GPS DATA, IF THE COURSE POINTER IS NOT ADJUSTED TO THE VALUE OF THE NEW DESIRED TRACK AND IF THE COURSE CHANGE IS MORE THAN 5°, THE FLIGHT DIRECTOR AND AUTOPILOT WILL STEER A DIVERGENT ROUTE AFTER THE WAYPOINT (EN ROUTE-LEG MODE SELECTED).

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

"SID" PROCEDURE

NOTE :
"SID" procedure can only be loaded in the Active Flight Plan (FPL 0).

Prior to take-off - Select an appropriate "SID" from the **ACT 7** page. If necessary, select runway and transition point.

NOTE 1 :
*Using right hand outer knob, select the **ACT** (Active Flight Plan waypoints) pages. Pull right hand inner knob out and scroll to the departure airport then push the inner knob in and select the **ACT 7** page.*
*To delete or replace a "SID", select **FPL 0** page. Place the cursor over the name of the procedure, press **ENT** to change it, or **CLR** then **ENT** to delete it.*

NOTE 2 :
After "SID" loading in the Active Flight Plan, using right hand outer knob, select the ***ACT*** *(Active Flight Plan waypoints) pages. To check position of the "SID" waypoints, pull this knob and scroll each waypoint of the departure procedure.*

"STAR" PROCEDURE

NOTE :
"STAR" procedure can only be loaded in the Active Flight Plan (FPL 0).

Prior to arrival - Select an appropriate "STAR" from the **ACT 7** page.

NOTE 1 :
Using right hand outer knob, select the ***ACT*** *(Active Flight Plan waypoints) pages. Pull right hand inner knob out and scroll to the destination airport, then push the inner knob in and select the* ***ACT 7*** *page.*
To delete or replace a STAR, select ***FPL 0*** *page. Place the cursor over the name of the procedure, press* ***ENT*** *to change it, or* ***CLR*** *then* ***ENT*** *to delete it.*

NOTE 2 :
After "STAR" loading in the Active Flight Plan, using right hand outer knob, select the ***ACT*** *(Active Flight Plan waypoints) page. To check position of the "STAR" waypoints, pull this knob and scroll each waypoint of the arrival procedure.*

SECTION 5

PERFORMANCE

Installation and operation of the "BENDIX / KING" KLN90B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A" do not change the performance of the aircraft 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	ITEM No.	OPTIONAL EQUIPMENT	WEIGHT lb	ARM in.
A	K899 00M	GPS KLN 90B "KING" interfaced with HSI and A/P, without RMI (KA91 antenna) (For export only)	9.94	21.26
A	K899 10M	GPS KLN 90B "KING" interfaced with HSI and A/P, without RMI (KA92 antenna) (For export only)	9.94	21.26
A	K899 20M	GPS KLN 90B "KING" interfaced with HSI and A/P, with RMI (KA92 antenna) (French-speaking countries)	9.94	21.26
A	K899 30M	GPS KLN 90B "KING" interfaced with HSI and A/P, with RMI (KA92 antenna) (English-speaking countries)	9.94	21.26
A	K927 00M	GPS KLN 90B "KING" interfaced with HSI and A/P, without RMI (KA92 antenna)	9.94	21.26

SECTION 7
DESCRIPTION

Normal operating procedures of the "BENDIX / KING" KLN90B GPS navigation system interfaced with the HSI KI525A are described in the "BENDIX / KING" KLN90B Pilot's Guide at the latest revision.

CONTROLS - see Figure 9.33.3

Controlled by two sets of concentric knobs and two cursor buttons, the KLN90B can present a variety of information in a number of different page formats.

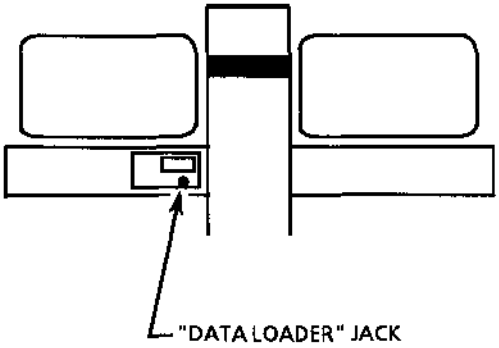
The various display types can be considered as chapters in a book, each chapter having 26 pages. With a few exceptions, each of these pages can be changed independently.

Generally the 2 concentric knobs and the cursor button to the left of the screen are used to select data on L.H. page, the knobs and cursor on the right control the R.H. page.

The large outer knobs control the chapters and the small inner knobs turn the pages.

To change data in a page use the cursor function. This function is an area of inverse video on the screen brought up by depressing the cursor button.

Then rotate the outer knob to position the cursor and the inner knob to select the desired characters. Repeat this operation as many times as necessary and valid (ENT button).



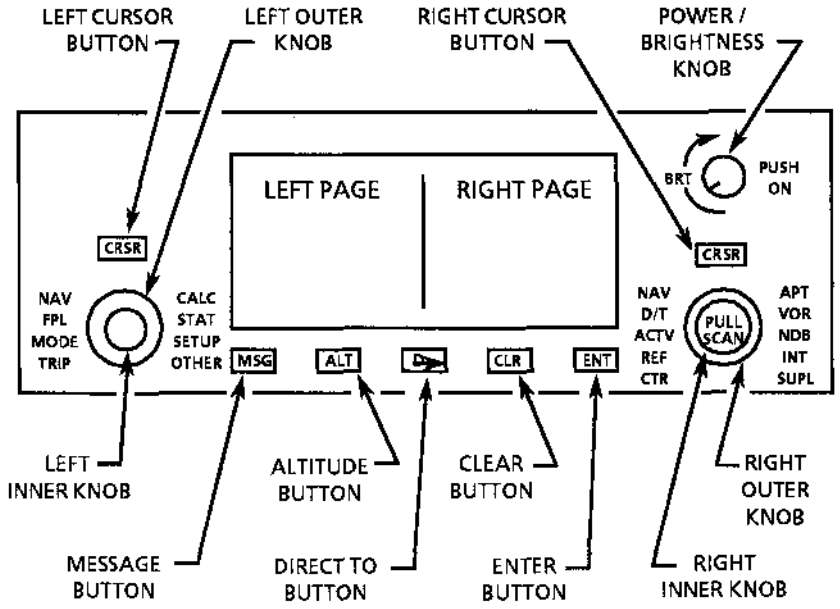
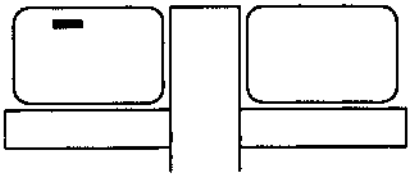


Figure 9.33.3 - Controls



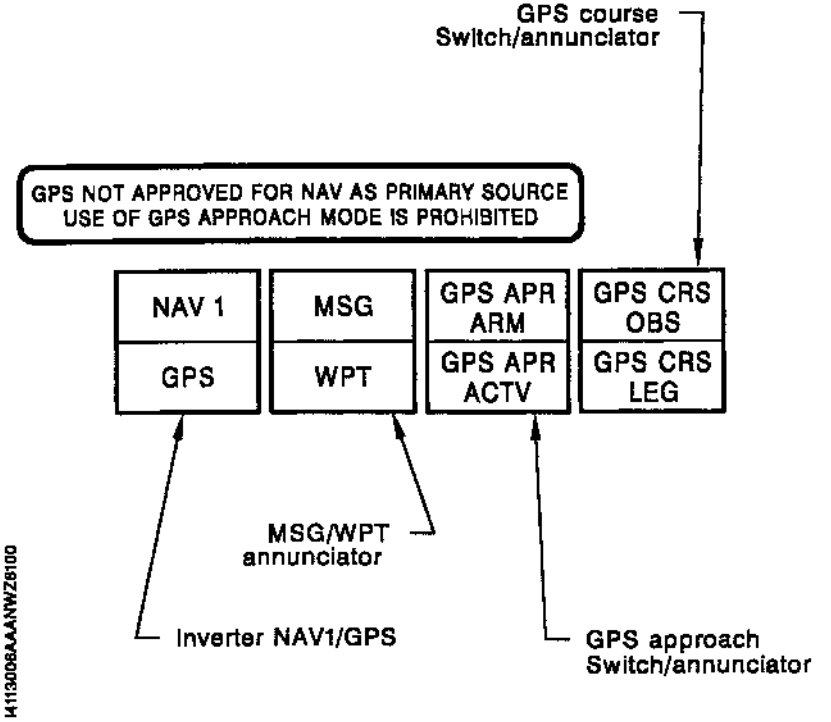
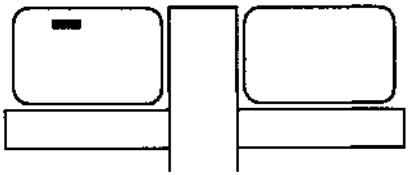


Figure 9.33.4 - GPS placard and annunciators
Valid for options No. K899 00M - K899 10M - K899 20M - K899 30M



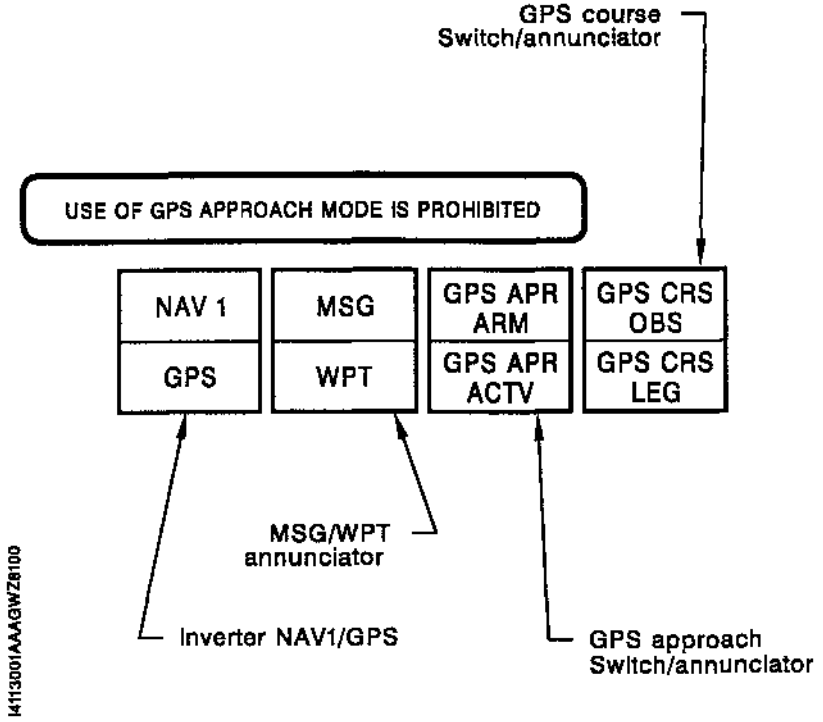


Figure 9.33.4A - GPS placard and annunciators
Valid for option No. K927 00M

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SUPPLEMENT

"BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"

OPTIONAL EQUIPMENT No. K920 00M

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SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"".

Using information provided by satellites ("BENDIX / KING" KLN89B is able to track up to 8 satellites at a time), GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means. It also uses data recorded in a data base (three different data bases are available : Americas, Atlantic, Pacific). The data base is housed in a cartridge plugged into the front face of the KLN89B and is updated every 28 days by means of diskettes.

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

There is also room for 500 user defined waypoints and 26 different flight plans.

CAUTION

IT IS STRONGLY ADVISED NOT TO LOAD USER WAYPOINTS IN DATA BASE IN TERMINAL AREA NAVIGATION DUE TO THE INCREASE OF WORK LOAD FOR THE PILOT

The KLN89B can receive altitude code from the encoding altimeter.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"".

Data base updating must be verified before each flight.

NOTE :
The original KLN89B data base is in accordance with the WGS84 geodetic model.

If the data base or the cartridge are not in accordance with WGS84 or NAD 83 geodetic model, and as there is no means of operation published, GPS navigation system must be disengaged in terminal area.

GPS "BENDIX / KING" KLN89B can only be used as a supplemental source for navigation in VFR (the instruments required for navigation in VFR must be available onboard).

GPS USED FOR NAVIGATION IN VFR ONLY

Figure 9.37.1 - GPS limitation placard

"BENDIX / KING" KLN89B Pilot's Guide at its latest revision shall be readily available to the pilot.

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 TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"".

"MSG" ANNUNCIATOR ILLUMINATION

1 - "MSG" push-knob of KLN89B ..... **PRESS**

Check the message.

If the message mentions the loss of GPS system integrity (RAIM NOT AVAILABLE) :

2 - Continue the VFR flight with the primary sources of navigation (VOR, ADF...) if they exist.

When the system integrity is restored, the return to GPS mode must be accompanied by the validation of the followed and desired track concordance by using the other sources of navigation, if they exist.

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 TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"".

Normal operating procedures of the KLN89B GPS recommended by "BENDIX / KING" manufacturer are outlined in the "BENDIX / KING" KLN89B Pilot's Guide at the latest revision and KLN89B Memory Jogger at the latest revision.

However, it is important to precise the following points for the use of KLN89B on TB :

SET UP CONDITIONS

- The system must utilize ORS level 20 or later in compliance with the Pilot's Guide.
- Verify if the data base is current. Verify data on the self test page.
- Verify that altitude data is valid for the KLN89B prior to flight.
- Set turn anticipation mode (SET / 4) to :
  - . ENABLE (turn anticipation ENABLED) : recommended mode,
  - . DISABLE (turn anticipation DISABLED) : not recommended mode.
- Check that the proper criteria are used for nearest airport selection (SET / 6).

COURSE DEVIATION INDICATOR

The course deviation indicator sensitivity is adjustable with a maximum value which is the default value selected by the KLN89B. It is recommended not to change the default value which is ± 5 NM full scale.

NOTE :
Transmission on VHF 1 or 2 communication frequencies 121.15, 121.175, 121.20, 131.25, 131.275 and 131.30 MHz may adversely affect reception of the GPS signal. Transmissions in excess of 10 seconds may result in loss of GPS signal reception. Navigation will be restored within 5 seconds after the completion of the transmission. If UHF communication system is installed, the same behaviour can be observed on the first harmonic of the VHF frequencies, 242.30, 242.35, 242.40, 262.50, 262.55 and 262.60 MHz.

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"MSG" message annunciator

CAUTION

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

It will flash to alert the pilot of a situation that requires his attention. Press the "MSG" button on the KLN 90B GPS to view the message. (Appendix B of the KLN89B Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).
"MSG" annunciator is amber.

"WPT" Waypoint annunciator

Prior to reaching a waypoint in the active flight plan, the KLN89B GPS will provide navigation along a curved path segment to ensure a smooth transition between two adjacent legs in the flight plan. This feature is called turn anticipation. Approximately 20 seconds prior to the beginning of the turn anticipation, the "WPT" annunciator will flash, going solid upon initiation of the turn, and extinguishing upon turn completion.
"WPT" annunciator is amber.

"LEG" mode

The use of "LEG" mode is selected by the "OBS" button.

When the KLN89B is used with the TURN ANTICIPATION ENABLED, at the beginning of turn anticipation, WPT alert annunciator goes on steady, MSG annunciator begins flashing. At this time, the KLN89B will notify the pilot with a message on the Message Page of the new desired track . This message will not be given if the course change is less than 5°.

CAUTION

IT IS RECOMMENDED TO USE KLN89B WITH TURN ANTICIPATION ENABLED

WHEN TURN ANTICIPATION IS DISABLED, WAYPOINT ALERTING OCCURS APPROXIMATELY 35 SECONDS PRIOR TO ACTUALLY REACHING THE WAYPOINT. MSG ANNUNCIATOR REMAINS OFF. THERE IS NO COURSE CHANGE MESSAGE DISPLAYED BY THE KLN89B.

When the KLN89B is used WITH TURN ANTICIPATION DISABLED, the "Super NAV 5" page allows a rapid visualisation of the airplane position in horizontal navigation with regards to the route and the waypoints. It is strongly recommended to use this page.

"OBS" mode (selected by the "OBS" button)

The "OBS" mode has to be selected as follow :

- press the "OBS" button to select the "LEG" mode, then the "OBS" mode,
- when selecting the "OBS" mode, the active "WPT" of the "LEG" mode is chosen as reference "WPT" for the "OBS" mode.

SECTION 5
PERFORMANCE

Installation and operation of the ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"" do not change the performance of the aircraft 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	ITEM No.	OPTIONAL EQUIPMENT	WEIGHT lb	ARM in.
A	K920 00M	"BENDIX / KING" KLN89B GPS navigation system - "Stand Alone"	4.519	25.20

SECTION 7
DESCRIPTION

Normal operating procedures of the ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM - "STAND ALONE"" are described in the "BENDIX / KING" KLN89B Pilot's Guide at the latest revision.

CONTROLS - see Figure 9.37.2

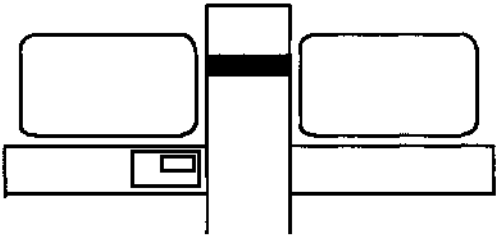
Controlled by one set including concentric knobs and one cursor button, the KLN89B can present a variety of information in a number of different page formats.

The various display types can be considered as chapters in a book, each chapter having some number of pages. With a few exceptions, each of these pages can be changed independently.

The large outer knob controls the chapters and the small inner knob turns the pages.

To change data in a page, use the cursor function. This function is an area that flashes on the screen brought up by depressing the cursor button.

Then rotate the outer knob to position the cursor and the inner knob to select the desired characters. Repeat this operation as many times as necessary and valid (ENT button).



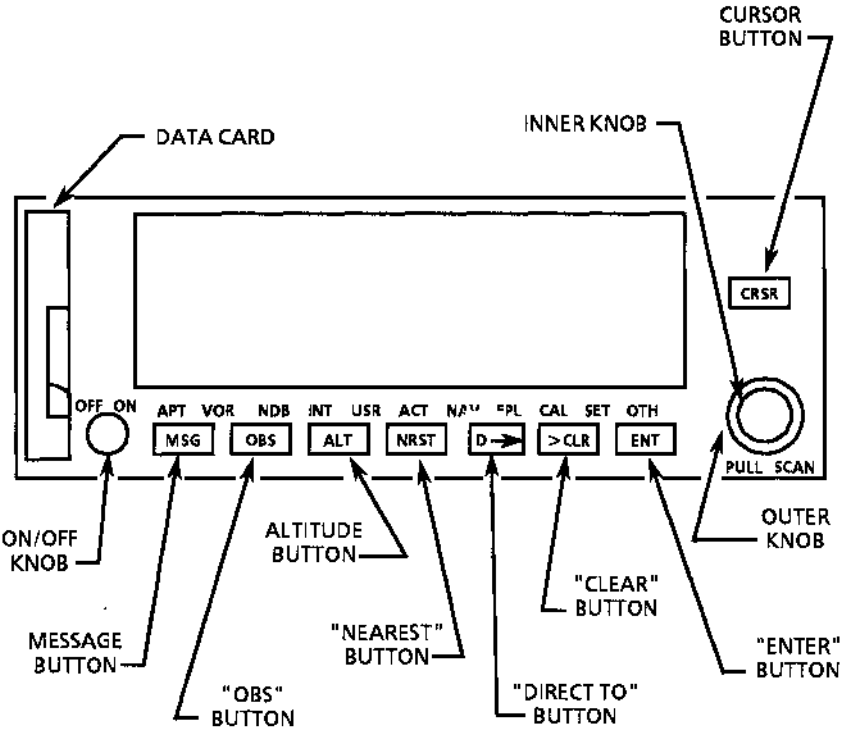
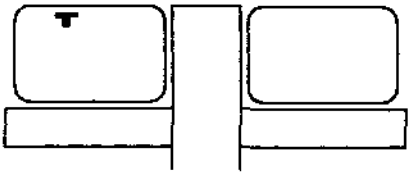
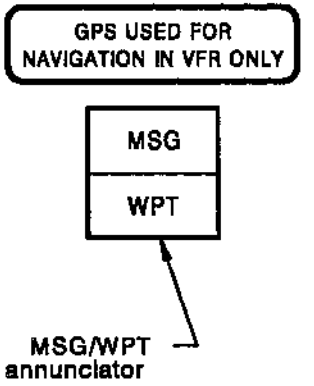


Figure 9.37.2 - Controls





H1113006AAAPW2B100

Figure 9.37.3 - GPS placard and annunciators

SUPPLEMENT

"GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"

OPTIONAL EQUIPMENT No. J925 00M

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SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB aircraft is equipped with the option ""GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"".

Using information provided by satellites ("GARMIN" 150 GPS is able to track up to 8 satellites at a time), GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means. It also uses data recorded in a data base (three different data bases are available : Americas, International and Worldwide). The data base is contained in a NavData card plugged into the front face of the "GARMIN" 150 GPS and is updated every 28 days by means of new cards.

Each data base contains information about airports, communication frequencies, VORs, NDBs, Intersections ...

There is also room for 1000 user defined waypoints and 20 reversible flight plans.

The "GARMIN" 150 GPS can be connected to a "SHADIN" or "ARNAV" fuel flowmeter.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"".

Data base updating must be verified before each flight.

"GARMIN" 150 GPS can only be used as a navigation source in day VFR in sight of ground or water (the instruments required for navigation in VFR must be available onboard).

GPS USED ONLY FOR NAVIGATION IN DAY VFR IN SIGHT OF GROUND OR WATER

Figure 9.39.1 - GPS limitation placard

The GPS integrity is not ensured.

It is therefore the responsibility of the pilot to verify that its position is correct using the other available navigation sources.

"GARMIN" 150 GPS Pilot's Guide at its latest revision shall be readily available to the pilot.

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 TB aircraft is equipped with the option ""GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"".

"MSG" ANNUNCIATOR ILLUMINATION

1 - "STAT" button ..... **PRESS**

Check the message.

If the message mentions the loss of GPS system or part of the system :

2 - Continue the VFR flight with the primary sources of navigation (VOR, ADF...) if they exist.

When the system is restored, the return to GPS mode must be accompanied by the validation of the followed and desired track concordance by using the other sources of navigation, if they exist.

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 TB aircraft is equipped with the option ""GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"".

Normal operating procedures of the "GARMIN" 150 GPS are outlined in the "GARMIN" 150 GPS Pilot's Guide at the latest revision.

However, it is important to precise the following points for the use of "GARMIN" 150 GPS on TB :

SET UP CONDITIONS

- Verify if the data base is current.
- Check that the proper criteria are used for nearest airport selection.
- Check that the CDI sensitivity scale is set to ± 5 NM.
- Check that MAP DATUM is set to WGS 84 or as indicated on the used navigation charts.

COURSE DEVIATION INDICATOR

The course deviation indicator sensitivity is adjustable with a maximum value which is the default value selected by the "GARMIN" 150 GPS. It is recommended not to change the default value which is ± 5 NM full scale.

NOTE :
Transmission on VHF 1 or 2 communication frequencies 121.15, 121.175, 121.20, 131.25, 131.275 and 131.30 MHz may adversely affect reception of the GPS signal. Transmissions in excess of 10 seconds may result in loss of GPS signal reception. Navigation will be restored within 5 seconds after the completion of the transmission. If UHF communication system is installed, the same behaviour can be observed on the first harmonic of the VHF frequencies, 242.30, 242.35, 242.40, 262.50, 262.55 and 262.60 MHz.

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"MSG" message annunciator

CAUTION

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

It will flash to alert the pilot of a situation that requires his attention. Press the "STAT" button on the "GARMIN" 150 GPS to view the message. (Appendix C of the "GARMIN" 150 GPS Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).
"MSG" annunciator is amber.

"WPT" Waypoint annunciator

About 1 minute before reaching a waypoint, **"MSG"** and **"WPT"** warning lights come on and audio warning is ON for 15 seconds. The message "Approaching waypoint" can be displayed by pressing the "STAT" button.
"WPT" and **"MSG"** annunciators are amber.

SECTION 5
PERFORMANCE

Installation and operation of the ""GARMIN" 150 GPS NAVIGATION SYSTEM - "STAND ALONE"" do not change the performance of the aircraft 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	ITEM No.	OPTIONAL EQUIPMENT	WEIGHT lb	ARM in.
A	J925 00M	"GARMIN" 150 GPS - "Stand Alone"	4.696	25.59

SECTION 7
DESCRIPTION

Normal operating procedures are described in the "GARMIN" 150 GPS Pilot's Guide at the latest revision.

CONTROLS - see Figure 9.39.2

The front panel consists of 3-line, 20-character LCD display and 10 keys. Information displayed on the LCD is commonly referred to as a page.

Access to the pages is made by the keys on the right and bottom of the LCD.

Item 1 - POWER / BRIGHTNESS KNOB - This knob controls unit power and screen brightness.

Item 2 - "DIRECT TO" KEY - The direct-to key performs an instant direct-to, allows to enter a waypoint and sets a direct course to the destination.

Item 3 - "NRST" KEY - The nearest key is used to obtain information on the 9 nearest airports, VORs, NDBs, intersections, user waypoints and 2 nearest FSSs. This key also accesses any active SUA information.

Item 4 - "SET" KEY - The set key allows to customize the settings on the "GARMIN" 150 GPS to pilot's preference.

Item 5 - "RTE" KEY - The route key enables to create, edit, activate and invert routes. Search-and-rescue, parallel offset and closest point of approach are also performed using the route key.

Item 6 - "WPT" KEY - The waypoint key is used to view information such as runways, frequencies, position and comments on airports, VORs, NDBs, intersections and user waypoints.

Item 7 - "NAV" KEY - The navigation key is used to view navigation and position information. Planning operations are also performed using the "NAV" key.

Item 8 - DOUBLE CONCENTRIC KNOB (INNER / OUTER) - The **outer** knob is used to advance through pages, advance the cursor or move through data fields. The **inner** knob is used to change data or scroll through information that cannot fit on the screen all at once.

Item 9 - "ENT" KEY - The enter key is used to approve an operation or complete data entry. It is also used to confirm information, such as during power on.

Item 10 - "STAT" KEY - The status key is used to view receiver and satellite status, as well as system messages.

Item 11 - "CRSR" KEY - The cursor key is used to activate / deactivate the cursor. An active cursor is indicated by flashing characters on the screen. It is used to highlight fields for data entry, changing information or cycling through available options.

Item 12 - "CLR" KEY - The clear key is used to erase information or cancel an entry.

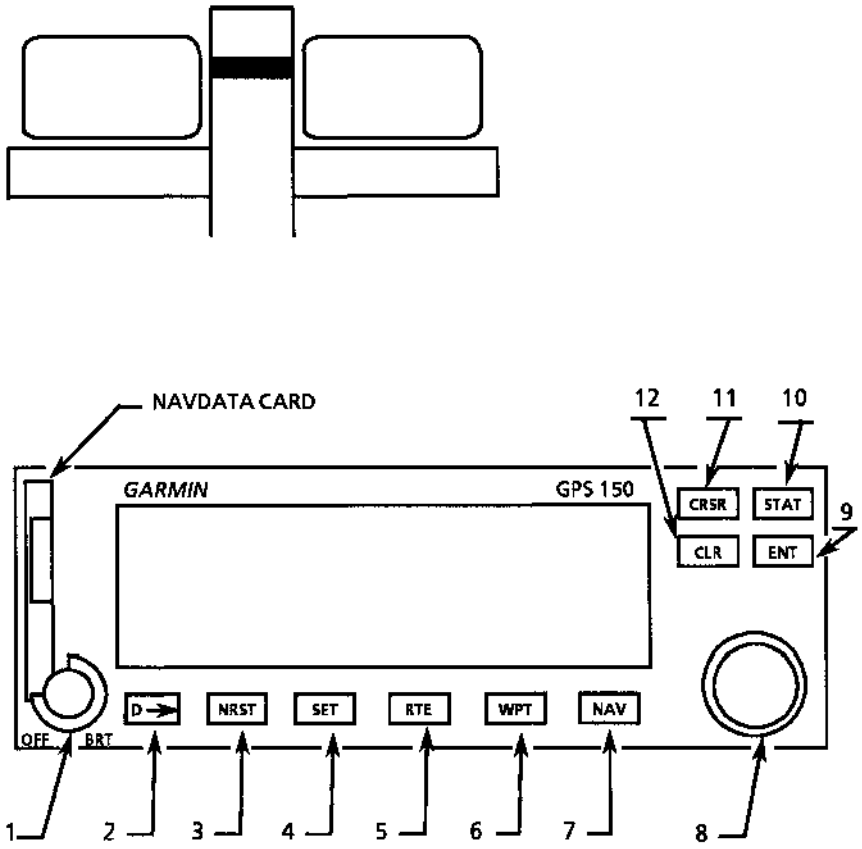

Figure 9.39.2 - Controls

ANNUNCIATORS - See Figure 9.39.3

The annunciators include 2 amber warning lights marked "MSG" and "WPT".

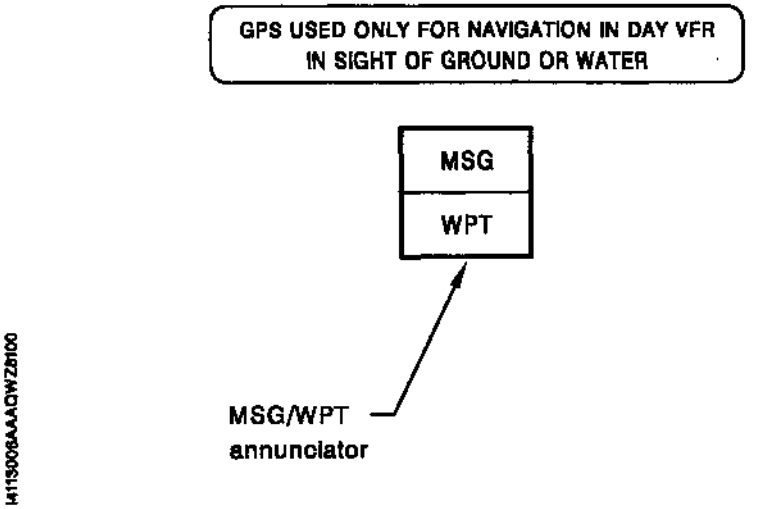

Figure 9.39.3 - GPS placard and annunciators

SUPPLEMENT

"BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A

OPTIONAL EQUIPMENT No. K926 00M

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SECTION 1
GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

Using information provided by satellites ("BENDIX / KING" KLN89B is able to track up to 8 satellites at a time), GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means. It also uses data recorded in a data base (three different data bases are available : Americas, Atlantic, Pacific). The data base is housed in a card plugged into the front face of the KLN89B and is updated every 28 days by means of diskettes or 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 500 user defined waypoints and 25 different flight plans.

CAUTION

IT IS STRONGLY ADVISED NOT TO LOAD USER WAYPOINTS IN DATA BASE IN TERMINAL AREA NAVIGATION DUE TO THE INCREASE OF WORK LOAD FOR THE PILOT

The KLN89B can receive altitude code from the encoding altimeter and be interfaced with a fuel flowmeter.

SECTION 2
LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

Data base updating must be verified before each flight.

NOTE :
The original KLN89B data base is in accordance with the WGS84 geodetic model.

If the data base or the card are not in accordance with WGS84 or NAD 83 geodetic model, and as there is no means of operation published, GPS navigation system must be disengaged in terminal area.

Navigation must be controlled using primary sources. In any case, GPS use is limited to the En route or terminal area of the flight.

"BENDIX / KING" KLN89B Pilot's Guide at its latest revision shall be readily available to the pilot.

The use of GPS KLN89B approach mode is prohibited.

USE OF GPS APPROACH MODE IS PROHIBITED

Figure 9.40.1 - GPS limitation placard

IFR navigation is restricted as follows :

- IFR en route and terminal area navigation is prohibited unless the pilot verifies the currency of the data base and verifies each selected waypoint for accuracy by reference to the aeronautical documentation.

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 TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

NAV FLAG

If the NAV flag appears on the HSI when it is interfaced with GPS KLN89B, this means that the GPS signal integrity has been lost.

1 - "NAV 1 / GPS" inverter ..... **PRESS**

Return to the NAV1 navigation source and to remaining operational navigation equipment.

"MSG" ANNUNCIATOR ILLUMINATION

1 - "MSG" push-knob of KLN89B ..... **PRESS**

Check the message.

If the message mentions the loss of GPS system integrity (RAIM NOT AVAILABLE) or detects a too important position error (RAIM POSITION ERROR) :

2 - "NAV 1 / GPS" inverter ..... **PRESS**

Return to the NAV1 navigation source and to remaining operational navigation equipment.

When the system integrity is restored, the return to GPS mode must be accompanied by the validation of the followed and desired track concordance by using primary sources of navigation.

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 TB aircraft is equipped with the option ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A".

Normal operating procedures of the KLN89B GPS recommended by "BENDIX / KING" manufacturer are outlined in the "BENDIX / KING" KLN89B Pilot's Guide at the latest revision and KLN89B Memory Jogger at the latest revision.

However, it is important to precise the following points for the use of KLN89B on TB :

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 KLN89B prior to flight.
- Set turn anticipation mode (SET / 4) to :
  - . ENABLE (turn anticipation ENABLED) : recommended mode,
  - . DISABLE (turn anticipation DISABLED) : not recommended mode.
- Check that the proper criteria are used for nearest airport selection (SET / 6).

COURSE DEVIATION INDICATOR

The course deviation indicator sensitivity is adjustable with a maximum value which is the default value selected by the KLN89B. It is recommended not to change the default value which is ± 5 NM full scale.

NOTE :
Transmission on VHF 1 or 2 communication frequencies 121.15, 121.175, 121.20, 131.25, 131.275 and 131.30 MHz may adversely affect reception of the GPS signal. Transmissions in excess of 10 seconds may result in loss of GPS signal reception and WRN annunciator activation. Navigation will be restored within 5 seconds after the completion of the transmission. If UHF communication system is installed, the same behaviour can be observed on the first harmonic of the VHF frequencies, 242.30, 242.35, 242.40, 262.50, 262.55 and 262.60 MHz.

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"NAV 1/GPS" inverter

It may be used to select data for presentation on the pilot's HSI (L.H. instrument panel) ; either NAV data from NAV 1 navigation receiver or GPS data from the KLN89B GPS. The presentation on the HSI is also required for the autopilot connection.

"MSG" message annunciator

CAUTION

"MSG" ANNUNCIATOR MAY BE PERMANENTLY ILLUMINATED IF THERE EXISTS A PERMANENT MESSAGE. WHEN A NEW MESSAGE APPEARS, "MSG" ANNUNCIATOR ONLY FLASHES. IN THIS CASE, RETURN TO NAVIGATION PRIMARY MEANS BY PRESSING ON "NAV 1/GPS" INVERTER

It will flash to alert the pilot of a situation that requires his attention. Press the "MSG" button on the KLN89B GPS to view the message. (Appendix B of the KLN89B Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings). **"MSG"** annunciator is amber.

"WPT" Waypoint annunciator

WARNING

TURN ANTICIPATION IS AUTOMATICALLY DISABLED FOR WAYPOINTS WHERE OVERFLIGHT IS MANDATORY ("SID/STARS" FOR EXAMPLE). FOR WAYPOINTS SHARED BETWEEN "SID/STARS" AND PUBLISHED ENROUTE SEGMENTS (REQUIRING OVERFLIGHT IN THE "SID/STARS"), PROPER SELECTION ON THE PRESENTED "WAYPOINT" PAGE IS NECESSARY TO PROVIDE ADEQUATE ROUTE PROTECTION ON THE "SID/STARS".

Prior to reaching a waypoint in the active flight plan, the KLN89B GPS will provide navigation along a curved path segment to ensure a smooth transition between two adjacent legs in the flight plan. This feature is called turn anticipation. Approximately 20 seconds prior to the beginning of the turn anticipation, the "WPT" annunciator will flash, going solid upon initiation of the turn, and extinguishing upon turn completion.
"WPT" annunciator is amber.

GPS approach "GPS APR ARM / GPS APR ACTV" switch / annunciator

CAUTION

THE USE OF GPS KLN89B APPROACH MODE IS PROHIBITED

This switch / annunciator is used to select or deselect approach mode of the KLN89B. This operation mode is not certified and is, furthermore, inhibited by programming the maintenance pages.

"LEG" mode

The use of "LEG" mode is selected by the "OBS" button.

When the KLN89B is used with the TURN ANTICIPATION ENABLED, at the beginning of turn anticipation, WPT alert annunciator goes on steady, MSG annunciator begins flashing. At this time, the KLN89B will notify the pilot with a message on the Message Page of the new desired track . This message will not be given if the course change is less than 5°.

CAUTION

WHEN TURN ANTICIPATION IS DISABLED, WAYPOINT ALERTING OCCURS APPROXIMATELY 35 SECONDS PRIOR TO ACTUALLY REACHING THE WAYPOINT. "MSG" ANNUNCIATOR REMAINS OFF. THERE IS NO COURSE CHANGE MESSAGE DISPLAYED BY THE KLN89B

IT IS RECOMMENDED TO USE KLN89B WITH TURN ANTICIPATION ENABLED

When the KLN89B is used WITH TURN ANTICIPATION DISABLED, the "Super NAV 5" page allows a rapid visualisation of the airplane position in horizontal navigation with regards to the route and the waypoints. It is strongly recommended to use this page.

"OBS" mode (selected by the "OBS" button)

The "OBS" mode has to be selected as follows :

- press the "OBS" button to select the "LEG" mode, then the "OBS" mode,
- when selecting the "OBS" mode, the active "WPT" of the "LEG" mode is chosen as reference "WPT" for the "OBS" mode.

FLIGHT DIRECTOR / AUTOPILOT COUPLED OPERATION

The HSI may be coupled with KAP 150 or KFC 150 autopilot.

Engaging the "NAV" mode on the autopilot mode controller engages the autopilot in navigation mode by using the selected course and left / right steering information presented on the HSI. It makes FD appear.

When AP is engaged on the mode controller, the autopilot is coupled to the HSI.

WARNING

WHEN CROSSING A WAYPOINT :

- **IF THE AUTOPILOT IS ENGAGED ON NAV MODE USING GPS DATA, THE COURSE POINTER MUST BE ADJUSTED TO THE VALUE OF THE NEW DESIRED TRACK (FOR A COURSE CHANGE UPPER THAN 5°).**
- **IF NOT, THE FLIGHT DIRECTOR AND AUTOPILOT WILL STEER A DIVERGENT ROUTE AFTER THE WAYPOINT CROSSING (EN ROUTE-LEG MODE SELECTED).**

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

"SID" PROCEDURE

NOTE :
"SID" procedure can only be loaded in the Active Flight Plan (FPL 0).

Prior to take-off - Select an appropriate "SID" from the **ACT 7** page. If necessary, select runway and transition point.

NOTE 1 :
*Using right hand outer knob, select the **ACT** (Active Flight Plan waypoints) pages. Pull right hand inner knob out and scroll to the departure airport then push the inner knob in and select the **ACT 7** page.*
*To delete or replace a "SID", select **FPL 0** page. Place the cursor over the name of the procedure, press **ENT** to change it, or **CLR** then **ENT** to delete it.*

NOTE 2 :
*After "SID" loading in the Active Flight Plan, using right hand outer knob, select the **ACT** (Active Flight Plan waypoints) pages. To check position of the "SID" waypoints, pull this knob and scroll each waypoint of the departure procedure.*

"STAR" PROCEDURE

NOTE :
"STAR" procedure can only be loaded in the Active Flight Plan (FPL 0).

Prior to arrival - Select an appropriate "STAR" from the **ACT 7** page.

NOTE 1 :
*Using right hand outer knob, select the **ACT** (Active Flight Plan waypoints) pages. Pull right hand inner knob out and scroll to the destination airport, then push the inner knob in and select the **ACT 7** page.*
*To delete or replace a STAR, select **FPL 0** page. Place the cursor over the name of the procedure, press **ENT** to change it, or **CLR** then **ENT** to delete it.*

NOTE 2 :
*After "STAR" loading in the Active Flight Plan, using right hand outer knob, select the **ACT** (Active Flight Plan waypoints) page. To check position of the "STAR" waypoints, pull this knob and scroll each waypoint of the arrival procedure.*

SECTION 5
PERFORMANCE

Installation and operation of the ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A" do not change the performance of the aircraft 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	ITEM No.	OPTIONAL EQUIPMENT	WEIGHT lb	ARM in.
A	K926 00M	"BENDIX / KING" KLN89B GPS interfaced with the HSI KI525A	5.578	22.83

SECTION 7
DESCRIPTION

Normal operating procedures of the ""BENDIX / KING" KLN89B GPS NAVIGATION SYSTEM INTERFACED WITH THE HSI KI525A" are described in the "BENDIX / KING" KLN89B Pilot's Guide at the latest revision.

CONTROLS - see Figure 9.40.2

Controlled by one set including concentric knobs and one cursor button, the KLN89B can present a variety of information in a number of different page formats.

The various display types can be considered as chapters in a book, each chapter having some number of pages. With a few exceptions, each of these pages can be changed independently.

The large outer knob controls the chapters and the small inner knob turns the pages.

To change data in a page, use the cursor function. This function is an area that flashes on the screen brought up by depressing the cursor button.

Then rotate the outer knob to position the cursor and the inner knob to select the desired characters. Repeat this operation as many times as necessary and valid (ENT button).

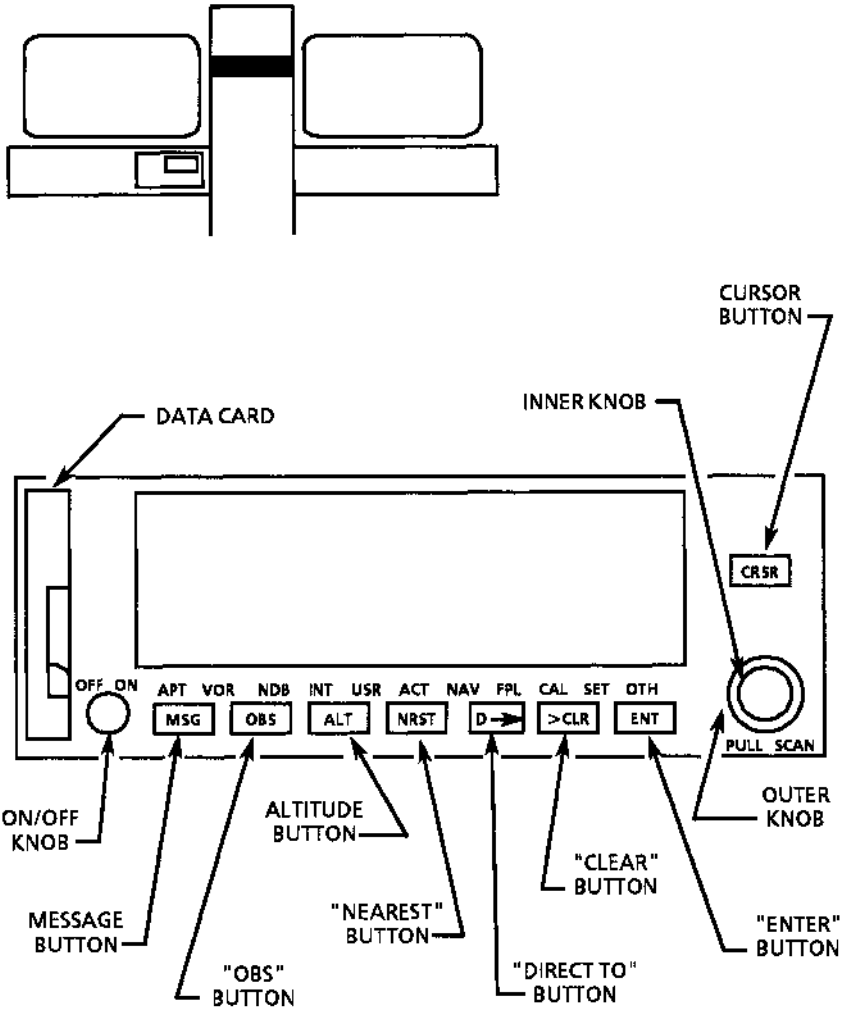
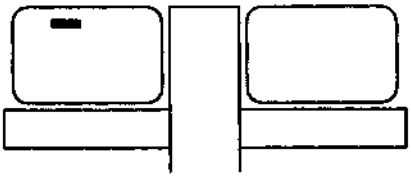


Figure 9.40.2 - Controls



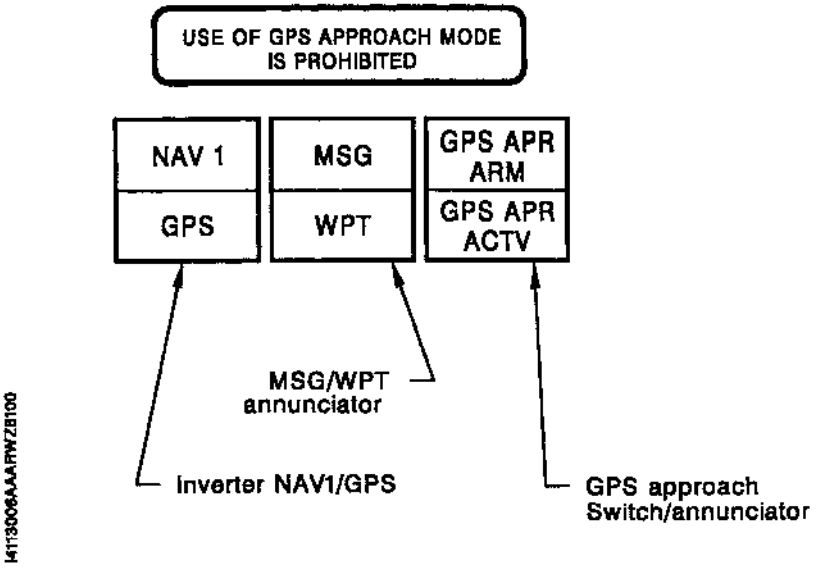


Figure 9.40.3 - GPS placard and annunciators

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SUPPLEMENT

"GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI

TABLE OF CONTENTS

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SECTION 1

GENERAL

Approved utilization type :

- Day/Night VFR

Certification rule :

- AC 20-138

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB aircraft is equipped with the option ""GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI" for a day/night VFR operation.

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI".

The GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means using information provided by satellites ("GARMIN" GNS 430 is able to track up to 12 satellites at a time). It also uses data recorded in a data base (two different data bases are available : North American one or International one). The data base is housed in a Nav data card plugged into the GNS 430 front face and is updated every 28 days by replacing the card.

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

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

The GNS 430 GPS receives altitude code from the encoding altimeter.

The GI 106A CDI may be coupled with the KAP 150 autopilot (if installed).

SECTION 2

LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI".

Data base updating must be verified before each flight.

NOTE :
The GNS 430 genuine data base is referenced to WGS 84 geodetic datum.

GPS USED FOR NAVIGATION IN VFR ONLY

Figure 9.43.1 - GPS limitation placard

"GARMIN" GNS 430 Pilot's Guide, P/N 190-00140-00 Revision A or any applicable following edition, shall be readily available to the pilot whenever the operation of the GPS navigation system is predicted.

The GNS 430 GPS may replace the VOR or the ADF.

2.1 - CDI not coupled with KAP 150 autopilot

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

Subsystem	Software
MAIN	2.16
GPS	2.03
COM	3.00
VOR/LOC	2.05
G/S	2.02

2.2 - CDI coupled with KAP 150 autopilot

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

Subsystem	Software
MAIN	2.22
GPS	2.10
COM	4.01
VOR/LOC	3.01
G/S	2.03

SECTION 3

EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard aircraft described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI".

CDI NAV FLAG OR "INTEG" WARNING

Return to the VOR ou ADF navigation source and to remaining operational navigation equipment.

"CDI" push-button ..... **VLOC**

"MSG" ANNUNCIATOR ILLUMINATION

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

Check the message.

"RAIM is not available", "Poor GPS Coverage", "Searching the sky" or "RAIM position warning" :

Return to VOR or ADF navigation source and to remaining operational navigation equipment.

2 - "CDI" push-button ..... **VLOC**

"MSG" ANNUNCIATOR ILLUMINATION (Cont'd)

If the message mentions an error of course deviation :

- OBS set to DTK value
  Return to VOR or ADF navigation source and to remaining operational navigation equipment.
  "CDI" push-button ..... **VLOC**
- OBS not set to DTK value
  Set the CDI to the value of DTK.
  . CDI coupled with autopilot : Check the correct interception of the segment, if the AP interface is used.

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 ""GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI".

Normal operating procedures of the GPS recommended by the manufacturer are outlined in the "GARMIN" GNS 430 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 TB :

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.

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"CDI" push-button

This push-button may be used to select data to be displayed on the CDI ; the NAV data come either from NAV 1 navigation receiver or from the GPS.

When pressed once, the push-button illuminates **"VLOC"** (white), pressed one more time illuminates **"GPS"** (green).

"MSG" message annunciator (amber)

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 10 of "GARMIN" GNS 430 Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).

"WPT" Waypoint annunciator (amber)

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

"APR" annunciator is not used.

"GPS" mode

When using the "GPS" mode, GPS navigation data (course deviation, TO/FROM) are presented on the CDI.

When crossing a waypoint, the track resetting on the following navigation leg must be hand-performed on the CDI.

Autopilot (if installed) coupled operation

The CDI may be coupled with KAP 150 autopilot.

The autopilot "NAV" mode uses left/right course deviation information and the CDI heading.

This information is related to the navigation source (VLOC or GPS) selected by the "CDI" push-button of the GPS.

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

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.

SECTION 5

PERFORMANCE

Installation and operation of the "GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI do not change the performance of the TB aircraft 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)
	23 - COMMUNICATIONS			
A	COM-NAV-GPS#1 GNS 430 interfaced with GI 106A CDI (OPT10 23003A)	GARMIN	9.700 (4.400)	24.80 (0.630)

SECTION 7

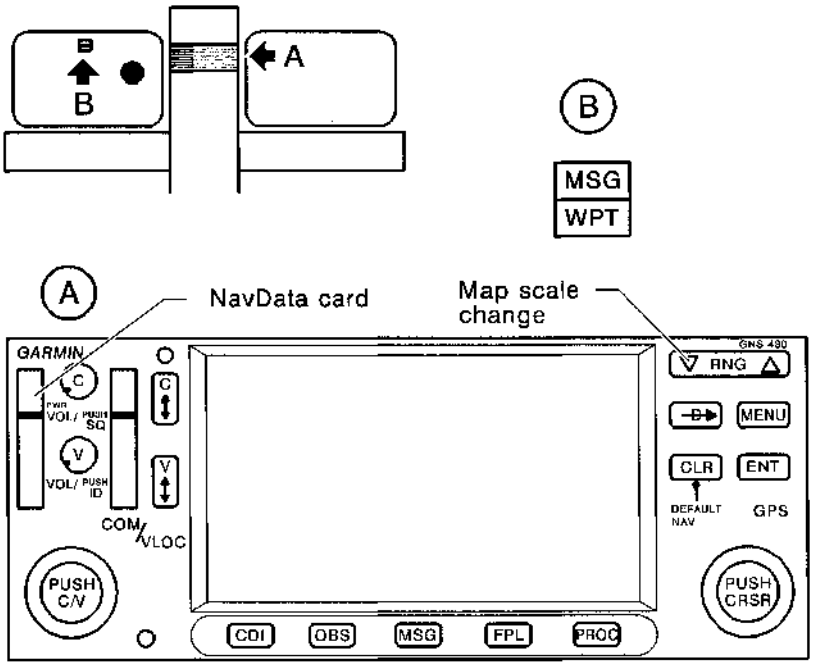
DESCRIPTION

Normal operating procedures of the "GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH GI 106A CDI are described in the "GARMIN" GNS 430 Pilot's Guide at the latest revision.

The option includes :

- one GNS 430 GPS installed in radio rack - see Figure 9.43.2,
- one GI 106A CDI on pilot's instrument panel,
- one "MSG/WPT" repeater on advisory panel.

"GARMIN" GNS 430 GPS NAVIGATION SYSTEM INTERFACED WITH *GI 106A CDI*



I4345100AAATTY8100

- 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
- PROC Procedures :
  - Arrival
  - Departure
  - Approach
- D→ "Direct TO"

Figure 9.43.2 - "GARMIN" GNS 430 GPS SYSTEM

SUPPLEMENT

"KEITH" AIR CONDITIONING SYSTEM

"OPTION No. OPT10 21–001A"

TABLE OF CONTENTS

SECTION 1
GENERAL

The air conditioning installation consists of a "KEITH" vapor cycle air conditioning system.

SECTION 2
LIMITATIONS

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

- The air conditioning system must be "OFF" during engine starting.
- The air conditioning system must be "OFF" when alternator is inoperative.

SECTION 3
EMERGENCY PROCEDURES

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

Turn "OFF" air conditioner whenever any of emergencies occurs and also those listed in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook.

SECTION 4
NORMAL PROCEDURES

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

CHECK–LIST

ENGINE PRE–STARTING

Air conditioning switch	"OFF"
Circuit breakers	CLOSED
"WEMAC" air outlets (upper duct)	OPEN

AFTER ENGINE STARTING

Day operation :

Air conditioning switch	"AIR COND" if air conditioning required

Night operation :

Air conditioning switch	"OFF"

BEFORE TAKE–OFF

Air conditioning switch	"OFF"

TAKE–OFF AND CLIMB

When flaps are retracted :

Air conditioning switch	"AIR COND" if air conditioning required

NOTE :
If oil temperature reaches 244°F (118°C) (red arc), increase airspeed or decrease power.

APPROACH – LANDING

Short final :

Air conditioning switch	"OFF"

AFTER LANDING

Day operation :

Air conditioning switch	"AIR COND" if air conditioning required

Night operation :

Air conditioning switch	"OFF"

SHUTDOWN/SECURING AIRPLANE

Air conditioning switch	"OFF"

AMPLIFIED PROCEDURES

The air conditioning system has an auto load shedding system. If the switch is left on "AIR COND", the shedding will turn off the air conditioning system as full power is selected and flaps are not in clean configuration.

In this case, the warning light located next to the air conditioning control switch, goes OFF.

– To reset the air conditioning system, turn the control switch to "OFF".

– To reengage the air conditioning system, turn the control switch to "AIR COND".

During night operation, the electrical capacity of the alternator with the engine running at 1200 RPM is inadequate to permit selection of the air conditioning system with all lights and electrical systems ON. It is requested to taxi and land with air conditioning OFF.

Air conditioning can be used normally after landing by day, if required.

SECTION 5
PERFORMANCE

These performance supplement those of standard airplane described in Section 5 "Performance" of the basic Pilot's Operating Handbook.

The power of the compressor and the blowers, when they operate, leads to a loss of performance about :

– 60 ft/min during climb (maximum values)

– 2.5 kt during cruise (maximum values)

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)
	21 – AIR CONDITIONING			
A	Air conditioning (OPT10 21001A)	KEITH	66.998 (30.390)	72.874 (1.851)

SECTION 7
DESCRIPTION

The "KEITH" air conditioning system improves the passengers and crew comfort in warm and/or humid atmospheric conditions. The refrigerant used is called R134A.

The installation (Figures 9.44.1 and 9.44.2) comprises :

- a compressor,
- a condenser heat exchanger,
- a condenser blower,
- an evaporator heat exchanger,
- an evaporator blower,
- a receiver/drier,
- a thermostatic expansion valve with remote bulb,
- a freeze switch,
- an overpressure relief valve,
- a binary pressure switch,
- a sight glass,
- two service valves,
- a control panel,
- pipe system,
- distribution ducts.

The system is electrically supplied by the alternator.

The compressor compresses the low pressure refrigerant into high pressure.

The compressor features an integral electromagnetic clutch controlled by the "AIR CONDITIONING" switch set to "AIR COND".

The compressor is driven through a belt by a pulley integrated in the starter ring gear. This ring gear, specific to this installation, features two grooves, one for the alternator and one for the compressor.

When the "AIR CONDITIONING" switch is set to "AIR COND", the magnetic clutch engages the compressor and rotates the wobble plate and pistons to compress the refrigerant.

The compressor is mounted on a bracket to the L.H. front side of the engine.

The condenser heat exchanger cools and liquefies or condenses the refrigerant discharged by the compressor.

It is installed in an airtight housing in the baggage compartment between the R.H. side fuselage skin, the bulkhead C6 and the compartment floor.

The housing air inlet, protected by a screen, is located on the R.H. side fuselage skin, between the bulkhead C6 and the frame C5.

The air outlet is located on the bulkhead C6.

The condenser blower provides cooling airflow across the condenser heat exchanger.

The condenser blower is controlled by the "AIR CONDITIONING" switch set to "AIR COND".

It is installed on the rear side of the bulkhead C6 and sucks ambient air through the condenser.

The blower outlet is connected by a flexible duct to a screened air outlet located under the fuselage aft of the frame C7.

The evaporator heat exchanger removes the heat and humidity from cabin air.

The evaporator is installed in the upper section of the condenser housing on top of the condenser compartment.

The inlet communicates with the baggage compartment through a foam filter and the outlet is connected to the bulkhead C6 with a flexible duct.

The evaporator blower provides airflow across the evaporator heat exchanger and delivers the air to the cabin through the cabin overhead distribution duct.

The blower is attached to the rear fuselage top skin between bulkhead C6 and frame C7.

It is controlled by the "AIR CONDITIONING" switches set to "AIR COND" or "FAN" and "HI–FAN" or "LO–FAN".

The receiver/drier removes moisture and retains solids from being carried by the refrigerant into the system.

It features a sight glass to control the system charge. The presence of bubbles indicates a system malfunction or a loss of refrigerant.

An overpressure relief valve providing additional safety in the event of the binary pressure switch malfunction is installed in the head.

The receiver/drier is installed in the rear fuselage between the bulkhead C6 and the frame C7.

The thermostatic expansion valve meters the proper amount of liquid refrigerant into the evaporator, activated by a remote bulb sensing the evaporator outlet temperature.

The thermostatic expansion valve is screwed on the evaporator inlet.

The system low side and high side service values are installed on a cross or a tee fitting in the piping system.

They are located in the rear fuselage behind the bulkhead C6, adjacent to the receiver/drier.

On the compressor discharge side, a binary pressure switch set to open at low pressure of 40 psi (2.7 bars) or high pressure of 325 psi (22.4 bars) protects the system by opening when system pressures are below or above limits causing the compressor electromagnetic clutch to disengage.

The controls and indicating devices are located on the instrument panel below the L.H. control wheel in the area identified "AIR CONDITIONING".

A three–position switch :

"OFF" : No air conditioning or cabin fan functions operate.

"FAN" : Evaporator blower operates to provide recirculating cabin airflow.

"AIR COND" : Compressor, condenser blower and evaporator blower operate to provide conditioned airflow.

A two–position switch controls the speed of the evaporator blower in either "FAN" or "AIR COND" operating positions.

A blue light illuminates to indicate that the air conditioning system operates.

When the "AIR CONDITIONING" switch is set to "AIR COND", the compressor sucks the low pressure vapor refrigerant and discharges it as a high pressure, high heat vapor through the binary pressure switch toward the condenser.

The high pressure, high temperature gaseous refrigerant flows in the condenser where it gives up heat to ambient air drawn through the condenser by the blower and expells overboard.

The refrigerant liquefies or condenses and leaves the condenser as a high pressure liquid.

From the condenser, the refrigerant, cooled by the condenser blower, continues through the receiver / drier which removes moisture and retains impurities particules and reaches the thermostatic expansion valve at the evaporator inlet.

The remote bulb senses the evaporator outlet temperature and throttles the thermostatic valve to modulate and control the refrigerant flow through the evaporator.

The evaporator blower draws the humid and warm cabin air through the evaporator and blows it cool and dry in the cabin distribution duct equipped with "WEMAC" air outlets.

The low pressure liquid vaporises as it picks up heat and returns to the compressor as low pressure vapor.

The dried cabin air condenses on the evaporator fins and water droplets are collected and drained overboard.

The freeze switch installed on the evaporator prevents from a too important icing by disengaging the compressor, which is engaged again as soon as temperature has reached the freeze switch energization threshold.

The process is repeated as long as the system is ON.

The air conditioning installation includes an automatic load shedding feature at max power/flaps not in clean configuration.

That shedding cuts off the electrical supply to the condenser blower and to the compressor electromagnetic clutch. It is automatically achieved by two microswitches : one located on the throttle and the other one on the flap extension operating mechanism.

To reengage the system, set "AIR CONDITIONING" switch to "OFF" and back to "AIR COND".

The electric protection of the air conditioning system is ensured by :

– 3 pull–off type circuit breakers located on the circuit breaker panel and marked "EVAP FAN", "AIR COND" and "A/C CTL",

– 1 pull–off type circuit breaker marked "A/C CLUTCH", located on the evaporator heat exchanger, in the baggage compartment.

1 – Compressor
2 – "WEMAC" air outlets
3 – Evaporator heat exchanger
4 – Evaporator blower
5 – Condenser blower
6 – Receiver/drier
7 – Condenser heat exchanger
8 – Condenser airtight housing
9 – Service valves
10 – Overhead distribution duct

Figure 9.44.1 (1/3) – "KEITH" AIR CONDITIONING SYSTEM

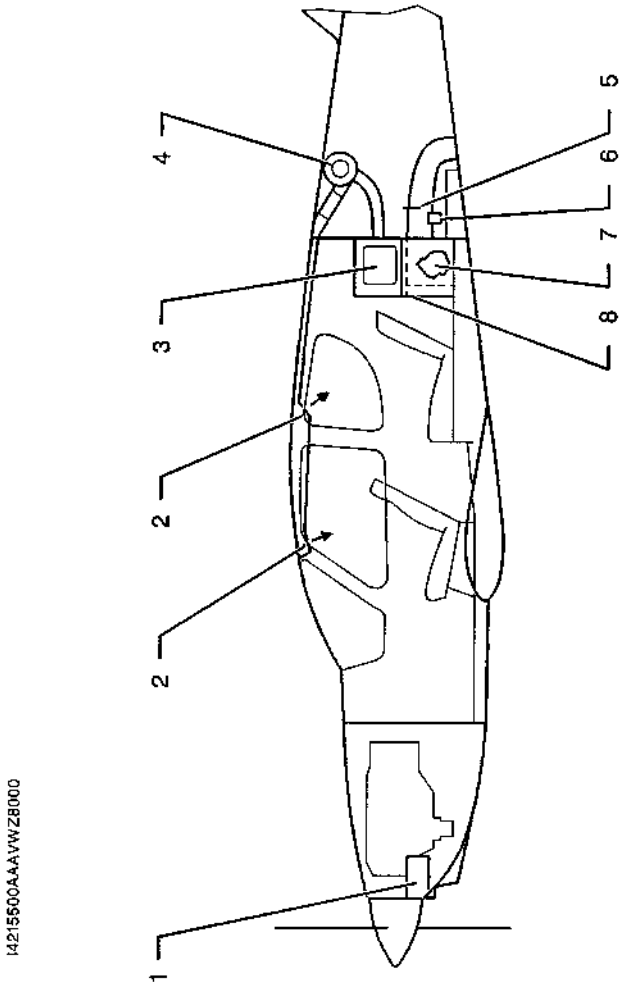


Figure 9.44.1 (2/3) – "KEITH" AIR CONDITIONING SYSTEM

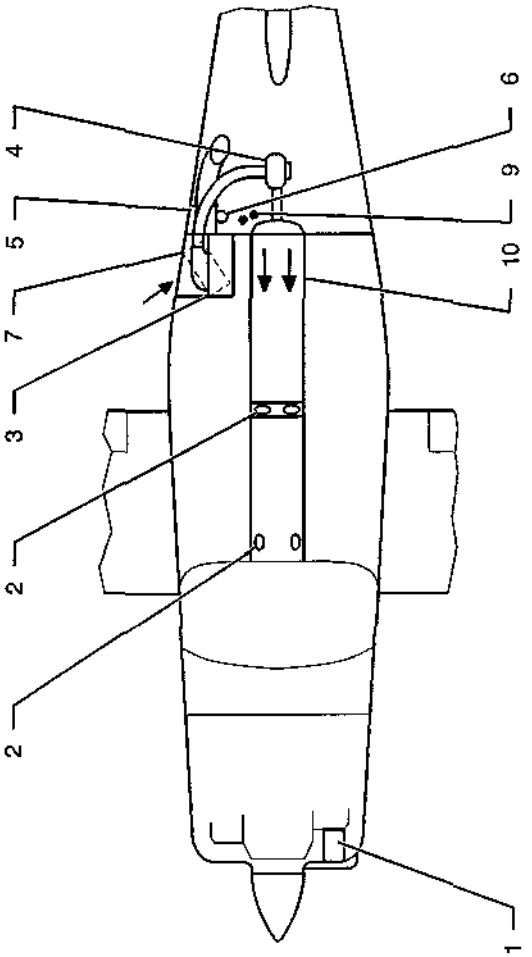
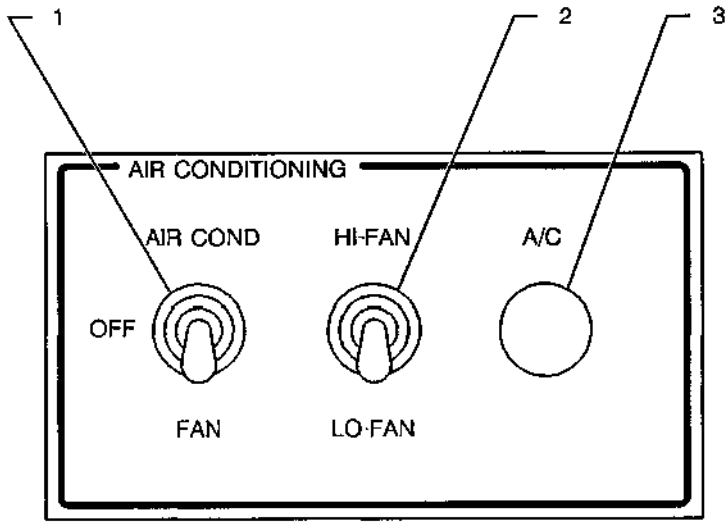


Figure 9.44.1 (3/3) – "KEITH" AIR CONDITIONING SYSTEM

1 – Operation control switch
2 – Speed control switch
3 – Light



I4215500AAAVWZ8200

Figure 9.44.2 – CONTROL PANEL

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SUPPLEMENT

"HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS

TABLE OF CONTENTS

"HONEYWELL" KLN 94 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SECTION 1

GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB airplane is equipped with the option ""HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS".

Approved utilization types :

- IFR in continental and Terminal Enroute areas as additional source,
- B-RNAV.

Certification rules :

- AMJ 20X2 Section 4,
- 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 TB airplane is equipped with the option ""HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS".

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 KLN 94 system is able to track up to 8 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 500 user defined waypoints and 25 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 TB airplane is equipped with the option ""HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS".

"HONEYWELL" KLN 94 Pilot's Guide, P/N 006-18207-000 Revision 0 dated 09/00 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 ORS 01 software version or a more recent one.

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.

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 **PROHIBITED.**

The use of user waypoints on SID/STAR is **PROHIBITED.**

2.3 - Instrument approach (Non precision approach)

Use of the GPS is **PROHIBITED.**

GPS 1
APPROVED FOR B-RNAV
SID/STAR AND APPROACH MODE PROHIBITED

Figure 9.48.1 - GPS limitation placard

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 TB airplane is equipped with the option ""HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS".

HSI NAV FLAG

Return to remaining operational navigation equipment.

"NAV1/GPS1" push-button **NAV1**

"MSG" ANNUNCIATOR ILLUMINATION

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

Check the message.

"Bad Satellite Geometry", Nav Super Flag Failure", "RAIM position error", "RAIM not available", "Searching the sky" or "No GPS Receiver Data" :

Return to VOR or ADF navigation source and to remaining operational navigation equipment.

"NAV1/GPS1" push-button **NAV1**

"MSG" ANNUNCIATOR ILLUMINATION (Cont'd)

*If the message mentions an error of course deviation (**"Adj Nav CRS to XXX"** or **"GPS course is xxx°"**) :*

- OBS set to DTK value
  Return to VOR or ADF navigation source and to remaining operational navigation equipment.
  "NAV1/GPS1" push-button **NAV1**
- OBS not set to DTK value
  Set the OBS to the value of DTK. Check the correct interception of the segment, if the AP interface is used.

WHEN IN B-RNAV VERIFY THE IFR PROCEDURE APPLICABLE TO EACH ONE OF THESE NEW SITUATIONS WITH THE AIR TRAFFIC CONTROL :

- **OUT OF B-RNAV AREA : IT IS PROHIBITED TO ENTER THE B-RNAV AREA.**
- **IN B-RNAV AREA : INFORM THE AIR TRAFFIC CONTROL TO INDICATE THE LOSS OF B-RNAV CAPABILITY.**

When the system integrity is restored, the return to GPS mode must be accompanied by the validation of the followed and desired track concordance by using primary sources of navigation.

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 TB airplane is equipped with the option ""HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS".

Normal operating procedures of the GPS recommended by the manufacturer are outlined in the "HONEYWELL" KLN 94 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 TB :

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.

  With 23 or more satellites available, the predicted availability of RAIM is valid for 7 days.

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

"HONEYWELL" KLN 94 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"NAV1/GPS1" push-button

This push-button may be used to select data to be displayed on the pilot's HSI ; the NAV data come either from NAV1 navigation receiver or from the GPS1.

When pressed once, the push-button illuminates **"NAV1"** (green), pressed one more time illuminates **"GPS1"** (blue).

"MSG" message annunciator (amber)

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 (Appendix B of "HONEYWELL" KLN 94 Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).

"WPT" Waypoint annunciator (amber)

This annunciator flashes approximately 20 seconds before warning "NEXT DTK".

"APR" annunciator is not used.

"TERM" annunciator is not used.

"GPS" mode

When using the "GPS" mode, GPS navigation data (course deviation, TO/FROM) are presented on the HSI.

When crossing a waypoint, the track resetting on the following navigation leg must be hand-performed on the HSI.

Autopilot coupled operation

The GPS may be coupled with the autopilot via the HSI, which receives the information relative to the navigation source (VOR1 or GPS) selected by the "NAV1/GPS1" push-button.

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

Autopilot with flight director

Engaging the "NAV" mode on the autopilot mode controller will activate the FD on the ADI. The FD uses selected course and left/right steering information displayed on the HSI.

GPS use in Terminal area

The CDI full scale must be set by hand to ± 1 Nm.

"HONEYWELL" KLN 94 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SECTION 5

PERFORMANCE

The installation and the operation of the "HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS 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	GPS (B-RNAV) KLN 94 interfaced with electromechanical instruments (OPT10 34301A)	HONEYWELL	5.952 (2.700)	25.98 (0.66)

"HONEYWELL" KLN 94 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SECTION 7

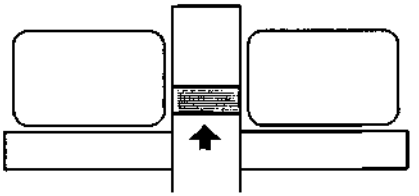
DESCRIPTION

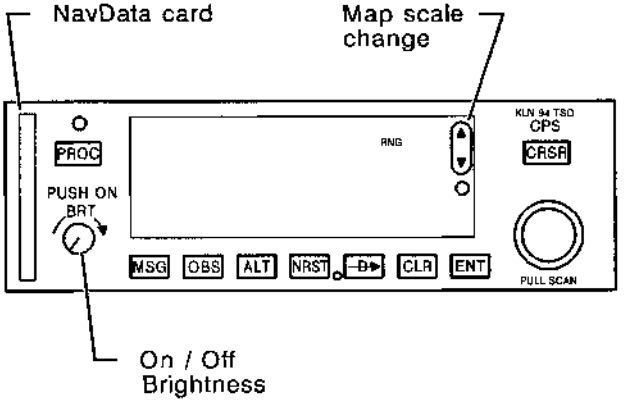
Normal operating procedures of the "HONEYWELL" KLN 94 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS are described in the "HONEYWELL" KLN 94 Pilot's Guide at the latest revision.

GPS system consists of :

- one KLN 94 GPS - see Figure 9.48.2 :
  This GPS may be a navigation source for the autopilot. Course deviation information is then displayed on the HSI.
- one repeater/control unit integrated to the advisory panel - see Figure 9.48.3 :
  This instrument allows to select the navigation source for the autopilot (NAV1 or GPS1). It is used also to duplicate the MSG, WPT warnings and to recopy GPS TERM and APR data.

"HONEYWELL" KLN 94 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS





MSG - Message viewing

OBS - OBS/Leg mode selection

ALT - Altitude functions

NRST - Nearest VOR, NDB, Airports, interceptions, User defined waypoints

"Direct TO"

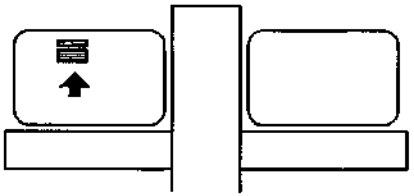
PROC - Procedure

CLR - Clear

ENT - Enter

I4345100AAAUTY8200

Figure 9.48.2 - "HONEYWELL" KLN 94 GPS SYSTEM



GPS 1
APPROVED FOR B-RNAV
SID/STAR AND APPROACH MODE PROHIBITED

NAV1	MSG	TERM
GPS1	WPT	APR

NAV1
GPS1

- NAV1/GPS1 push-button

Annunciators :

- NAV1 : NAV1 navigation source
- GPS1 : GPS1 navigation source
- MSG, WPT : Repeater of GPS, MSG, WPT warnings
- TERM, APR : Repeater of TERM, APR data (not used)

I4345100AAAUTY8001

Figure 9.48.3 - Repeater/control unit and GPS placard

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SUPPLEMENT

"HONEYWELL" KMD 550 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 TB aircraft is equipped with the option ""HONEYWELL" KMD 550 MULTI-FUNCTION DISPLAY".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""HONEYWELL" KMD 550 MULTI-FUNCTION DISPLAY".

The KMD 550 is a multi-function display screen which allows to display topographical type information (rivers, roads, ...), aeronautical type information (VOR, Airport, NDB, ...), as well as information issued from a WX 500 stormscope and/or 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 aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""HONEYWELL" KMD 550 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 550 may be used only as an aid to navigation, if :

- navigation is based on other approved instruments,
- the KMD 550 data base is current and compatible with the flight,
- KMD 550 and associated GPS data bases cover the same geographical areas.

CAUTION

KMD 550 TOPOGRAPHICAL DATA MUST NOT BE USED FOR TERRAIN AND/OR OBSTACLES AVOIDANCE

SECTION 3

EMERGENCY PROCEDURES

Installation and operation of the "HONEYWELL" KMD 550 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 550 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.

CAUTION

DISPLAY ON STORMSCOPE PAGE IS ALWAYS SET IN "TRACK UP".

DISPLAY ON "MAP" PAGE IS SET EITHER IN "NORTH UP" OR IN "TRACK UP".

WHEN DISPLAY ON "MAP" PAGE IS SET IN "NORTH UP", THE PILOT MUST BEWARE OF THE INTERPRETATION OF DISPLAYED DATA DURING THE SWITCHING FROM A "MAP" DISPLAY TO A "WX" DISPLAY

SECTION 5

PERFORMANCE

Installation and operation of the "HONEYWELL" KMD 550 multi-function display do not change the performance of the TB aircraft 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)
	34 - NAVIGATION			
A	Multi-function display KMD 550 (OPT10 34304A)	HONEYWELL	6.614 (3.00)	21.65 (0.55)

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

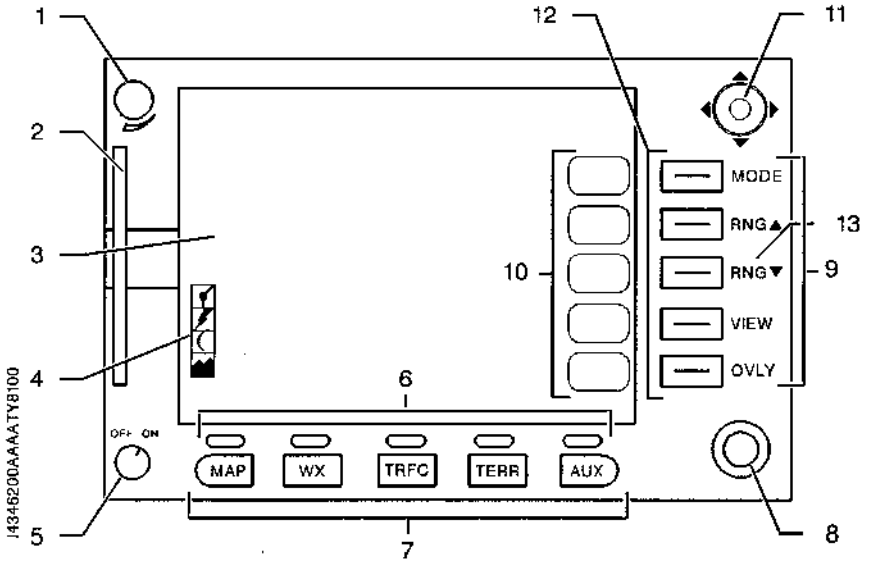

Figure 9.49.1 - KMD 550 Multi-function display (front view)

SUPPLEMENT

"SHADIN" MICROFLO-L™ DIGITAL FUEL MANAGEMENT SYSTEM

TABLE OF CONTENTS

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SECTION 1

GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation of the TB airplane equipped with the option ""SHADIN" MICROFLO-L™ DIGITAL FUEL MANAGEMENT SYSTEM".

The Digital Fuel Management System displays fuel flow, fuel on board, fuel used, endurance and fuel necessary to reach a navigation point.

The system can be connected to GPS receivers (KLN 94, GNS 430, ...) to transmit the fuel management data.

SECTION 2

LIMITATIONS

Installation and operation of the ""SHADIN" MICROFLO-L™ DIGITAL FUEL MANAGEMENT SYSTEM" do not change the limitations of the TB airplane described in Section 2 "Limitations" of the basic Pilot's Operating Handbook.

The Digital Fuel Management System shall not be used as a substitute to either the fuel gages or the analog fuel flowmeter.

THE DIGITAL FUEL FLOW TOTALIZER SHALL SERVE AS SUBSTITUTE TO NEITHER THE FUEL GAGES, NOR THE ANALOG FUEL FLOWMETER. THE LATTER INSTRUMENTS SHALL ALWAYS BE CONSULTED IN PRIORITY FOR FLIGHT OPERATION.

Figure 9.50.1 - Fuel management system placard

SECTION 3

EMERGENCY PROCEDURES

Installation and operation of the ""SHADIN" MICROFLO-L™ DIGITAL FUEL MANAGEMENT SYSTEM" do not change the emergency procedures of the TB airplane 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 airplane described in Section 4 "Normal procedures" of the basic Pilot's Operating Handbook, when the TB airplane is equipped with the option ""SHADIN" MICROFLO-L™ DIGITAL FUEL MANAGEMENT SYSTEM".

Normal operating procedures of the "SHADIN" MICROFLO-L™ digital fuel management system recommended by the manufacturer are outlined in the "MICROFLO-L™ digital Fuel Management System Operating Manual", P/N OP 91204-38B, at the latest revision or any applicable following edition.

BEFORE STARTING ENGINE

Fuel flowmeter/totalizer ONBD fuel recorded

SECTION 5

PERFORMANCE

Installation and operation of the "SHADIN" MICROFLO-L™ DIGITAL FUEL MANAGEMENT SYSTEM do not change the performance of the TB 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 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)
	73 - FUEL SYSTEM AND CONTROLS			
A	Digital fuel management system MICROFLO-L™ (OPT10 73001A) (TB 20)	SHADIN	1.157 (0.525)	33.46 (0.850)
A	Digital fuel management system MICROFLO-L™ (OPT10 73001B) (TB 21)	SHADIN	1.157 (0.525)	33.46 (0.850)
A	Digital fuel management system MICROFLO-L™ (OPT10 73001C) (TB 200)	SHADIN	1.157 (0.525)	33.46 (0.850)

SECTION 7

DESCRIPTION

The digital fuel management system indicator is installed at the lower part of the R.H. instrument panel. It helps the pilot to manage fuel during the flight.

The fuel flow is continuously displayed on L.H. side of the screen.

All data selected by the pilot ("Fuel to dest.", "Endurance", "Nm Gal", "F. at dest.", etc...) are displayed on R.H. side of the screen.

7.1 - Fuel tanks full

Move the "ADD/FULL" toggle switch to the FULL position and hold.

Press the "ENTER/TEST" button.

Release the "ADD/FULL" toggle switch so it returns to the center position.

To verify, move the "USED/REM" toggle switch to the REM position. Total usable fuel will be displayed.

7.2 - Partial fuel added

Add the amount of fuel from the refueling meter to the amount of fuel remaining. Enter the total using the following steps :

1 - Move "USED/REM" toggle switch to REM position and hold.

2 - Press and hold "ENTER/TEST" button to increment fuel remaining until figure to be entered is reached ; then release button.

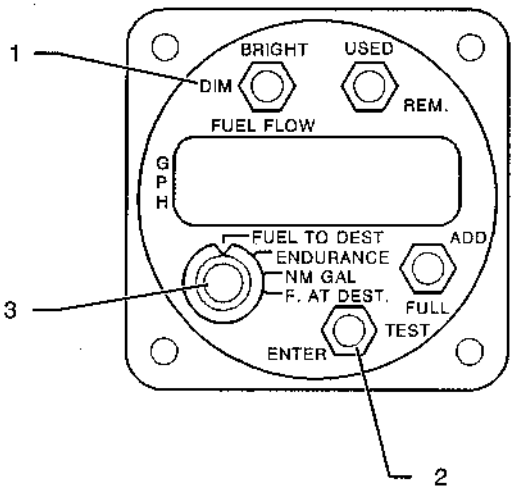
3 - Release the "USED/REM" toggle switch. The displayed figure is entered into memory as fuel remaining on the board.

4 - If the required figure is exceeded, follow the procedure in this Supplement, chapter 7.3 "Correcting fuel on board entry error".

7.3 - Correcting fuel on board entry error

In case an error has been made by exceeding the correct amount in entering the number of total usable fuel, move the "USED/REM" toggle switch to the USED position and simultaneously press and hold "ENTER/TEST" button. Fuel used will be reset and the fuel remaining figure will appear and pause in the display window for four (4) seconds. The figure will decrement (the longer you press, the faster the decrementing). When the correct figure is reached, release both the "USED/REM" toggle switch and the "ENTER/TEST" button. To avoid repeating the four-second pause before decrementing, hold the "USED/REM" toggle switch in the USED position and use the "ENTER/TEST" button to control the decrementing.

1) Brightness control
2) Auto-test
3) Selection of data to be displayed on R.H. side of the screen



I4773000AACFWZ8000

Figure 9.50.2 - MICROFLO-L™ digital fuel management system

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SUPPLEMENT

"GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR)

TABLE OF CONTENTS

"GARMIN" GNS 430 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SECTION 1

GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB airplane is equipped with the option ""GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR)".

Approved utilization types :

(a) GPS # 1, interfaced with HSI (Option OPT10 23-006A)

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

(b) GPS # 2, interfaced with CDI (Option OPT10 23-004A) (if installed)

- IFR in continental and Terminal Enroute areas as additional source.

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 TB airplane is equipped with the option ""GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR)".

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 430 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 TB airplane is equipped with the option ""GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR)".

"GARMIN" GNS 430 Pilot's Guide, P/N 190-00140-00 Revision A dated 12/98 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	2.22
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 430 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 430 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)

2.3.1 - GPS # 1

CAUTION

KAP 150 AUTOPILOT (if installed) COUPLED OPERATION IS PROHIBITED

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.

2.3.2 - GPS # 2

Use of the GPS approach mode is **PROHIBITED**.

GPS 2
APPROACH MODE PROHIBITED

Figure 9.51.1 - GPS # 2 (if installed) limitation placard

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 TB airplane is equipped with the option ""GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR)".

3.1 - GPS # 1, interfaced with HSI (Option OPT10 23-006A)

HSI NAV FLAG OR "INTEG" WARNING
Return to VOR or ADF navigation source and to remaining operational navigation equipment. "NAV1/GPS1" push-button **NAV1**

"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.*

"MSG" ANNUNCIATOR ILLUMINATION (Cont'd)

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.

3.2 - GPS # 2, interfaced with CDI (Option OPT1023-004A) (if installed)

CDI NAV FLAG OR "INTEG" WARNING

Return to VOR or ADF navigation source and to remaining operational navigation equipment.

"CDI" push-button ..... **VLOC**

"MSG" ANNUNCIATOR ILLUMINATION

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

Check the message.

"RAIM is not available", "Poor GPS Coverage", "Searching the sky" or "RAIM position warning" :

Return to VOR or ADF navigation source and to remaining operational navigation equipment.

"CDI" push-button ..... **VLOC**

If the message mentions an error of course deviation :

- OBS set to DTK value
  Return to VOR or ADF navigation source and to remaining operational navigation equipment.
  "CDI" push-button ..... **VLOC**
- OBS not set to DTK value
  Set the OBS to the value of DTK.

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 TB airplane is equipped with the option ""GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR)".

Normal operating procedures of the GPS recommended by the manufacturer are outlined in the "GARMIN" GNS 430 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 TB :

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.

"GARMIN" GNS 430 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SYSTEM ANNUNCIATORS / SWITCHES / CONTROLS

"NAV1/GPS1" push-button

This push-button may be used to select data to be displayed on the pilot's HSI ; the NAV data come either from NAV1 navigation receiver or from the GPS # 1.

When pressed once, the push-button illuminates **NAV1** (white or green), pressed one more time illuminates **GPS1** (green or blue).

"GPS CRS OBS/GPS CRS LEG" push-button

This push-button may be used to select GPS # 1 navigation mode (LEG or OBS mode).

When pressed once, the push-button illuminates **GPS CRS OBS** (amber), pressed one more time illuminates **GPS CRS LEG** (green).

"MSG" message annunciator (amber)

CAUTION

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

This annunciator is associated with the **GPS # 1**.

"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 # 1 to view the message (Chapter 10 of "GARMIN" GNS 430 Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).

"WPT" Waypoint annunciator (amber)

This annunciator is associated with the **GPS # 1**.

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

"APR" annunciator is a duplicate of the GPS # 1 "APR" information.

"TERM" annunciator is a duplicate of the GPS # 1 "TERM" information.

"GPS" mode of the GPS # 1

When using the "GPS" mode, GPS # 1 navigation data (course deviation, TO/FROM) are presented on the HSI.

"CDI" push-button of GPS # 2 (if installed)

This push-button may be used to select data to be displayed on the CDI ; the NAV data come either from NAV2 navigation receiver or from the GPS # 2.

When pressed once, the push-button illuminates **"VLOC"** (white) on the CDI, pressed one more time illuminates **"GPS"** (green) on the CDI.

"GPS" mode of the GPS # 2 (if installed)

When using the "GPS" mode, GPS # 2 navigation data (course deviation, TO/FROM) are presented on the CDI.

When crossing a waypoint, the track resetting on the following navigation leg must be hand-performed on the CDI.

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.

Coupled operation with KFC 225 autopilot (option OPT10 22-001) (if installed)

GPS # 1 may be coupled with the autopilot via the HSI, which receives the information relative to the navigation source (VOR1 or GPS # 1) selected by the "NAV1/GPS1" push-button.

When crossing a waypoint, the airplane turns automatically, while a "TURN TO" warning appears. This warning disappears during the turn. The pilot must then manually adjust the course indicator on the HSI. Approximately 1 minute later, after the warning disappearing, if the pilot has not adjusted manually the course indicator to the correct heading, a warning remenbers him that.

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

Engaging the "NAV" mode on the autopilot mode controller will activate the FD on the ADI. The FD uses selected course and left/right steering information displayed on the HSI.

Coupling with autopilot during a non precision approach 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

When the GPS suspends the linked navigation (GPS "SUSP" annunciator), the autopilot continues using heading and "GPS CRS OBS" annunciator (amber) illuminates.

NOTE :
The KFC 225 autopilot has a "Lateral clearance" function : refer to Section 4 "Normal procedures" of the Supplement "HONEYWELL KFC 225 automatic flight control system" located in Section 9 "Supplements" of this Manual.

Coupled operation with KAP 150 autopilot (option OPT10 G669) (if installed)

CAUTION

KAP 150 AUTOPILOT COUPLED OPERATION IN APPROACH MODE IS PROHIBITED

Only GPS # 1 may be coupled with the autopilot via the HSI, which receives the information relative to the navigation source (VOR1 or GPS # 1) selected by the "NAV1/GPS1" push-button.

When crossing a waypoint, the track resetting on the following navigation leg must be hand-performed on the HSI.

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

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.

"GARMIN" GNS 430 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

SECTION 5

PERFORMANCE

The installation and the operation of the "GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR) do not change the basic performance of the TB 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 430 (B-RNAV) interfaced with electromechanical instruments (OPT10 23006A)	GARMIN	8.157 (3.700)	25.59 (0.65)
A	COM-NAV-GPS # 2 GNS 430 interfaced with electromechanical instruments (OPT10 23004A)	GARMIN	9.700 (4.400)	25.20 (0.64)

SECTION 7

DESCRIPTION

Normal operating procedures of the "GARMIN" GNS 430 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV / GPS # 2 : IFR) are described in the "GARMIN" GNS 430 Pilot's Guide at the latest revision.

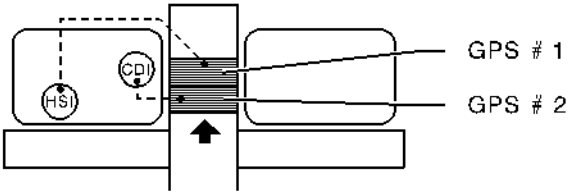
GPS # 1 system consists of :

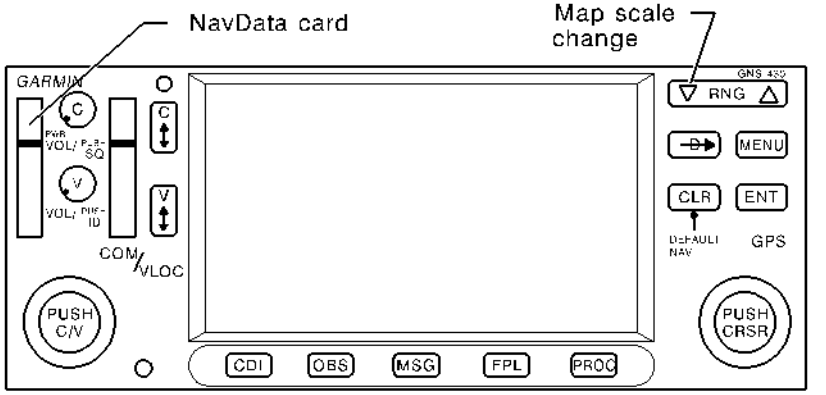
- one "GNS 430" GPS - see Figure 9.51.2 :
  This GPS may be a navigation source for the autopilot. Course deviation information is then displayed on the HSI.
- one repeater/control unit - see Figure 9.51.3 :
  This instrument allows to select the navigation source for the autopilot (NAV1 or GPS1). It is also used to duplicate the MSG, WPT warnings and to recopy GPS TERM, APR information.

GPS # 2 system (if installed) consists of :

- one "GNS 430" GPS - see Figure 9.51.2 :
  This GPS may be a navigation source for the GI 106A CDI.
- one GI 106A CDI.

"GARMIN" GNS 430 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED WITH
ELECTROMECHANICAL INSTRUMENTS

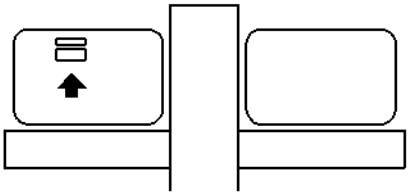


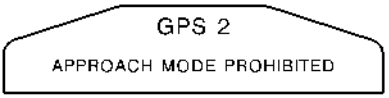


I4345100AAATTY18300

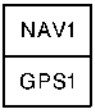
- C - COM volume
- V - VOR volume
- PUSH C/V - Selection of VOR/VHF frequencies
- PUSH CRSR - Selection of group pages
  Group selection :
  - NAV
    WPT
    AUX
  - NRST
- CDI - Navigation source (VLOC/GPS) selection
- OBS - OBS/Leg mode selection
- MSG - Message viewing
- FPL - Create
  - Edit
    Activate
- PROC - Procedures :
  Arrival
  Departure
  - Approach
- D▶ - "Direct TO"

Figure 9.51.2 - "GARMIN" GNS 430 GPS SYSTEM

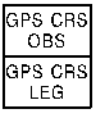




NAV1	MSG	TERM	GPS CRS OBS
GPS1	WPT	APR	GPS CRS LEG



- NAV1/GPS1 push-button



- GPS CRS OBS/GPS CRS LEG push-button

Annunciators :

- NAV1 : NAV1 navigation source
- GPS1 : GPS1 navigation source

  MSG, WPT : Repeater of GPS, MSG, WPT warnings

- TERM, APR : Repeater of TERM, APR data

I4345100AAAVVZ8100

Figure 9.51.3 - Repeater/control unit and GPS placard

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SUPPLEMENT

"HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE

TABLE OF CONTENTS

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SECTION 1

GENERAL

Approved utilization type :

- Day VFR in sight of ground or water

Certification rule :

- AC 20-138

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB aircraft is equipped with the option ""HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE".

The generalities hereafter supplement those of the standard aircraft described in Section 1 "General" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE".

The GPS is an automatic tridimensional (latitude, longitude, altitude) location and navigation means using information provided by satellites (the KLN 94 system is able to track up to 8 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, flight service stations ...

There is also room for up to 500 user defined waypoints and 25 different flight plans.

The KLN 94 GPS receives altitude code from the encoding altimeter.

SECTION 2

LIMITATIONS

The limitations hereafter supplement those of the standard aircraft described in Section 2 "Limitations" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE".

Data base updating must be verified before each flight.

NOTE :
The KLN 94 genuine data base is referenced to WGS 84 geodetic datum.

GPS USED ONLY FOR NAVIGATION IN DAY VFR IN SIGHT OF GROUND OR WATER

Figure 9.52.1 - GPS limitation placard

"HONEYWELL" KLN 94 Pilot's Guide, P/N 006-18207-000 Revision 0 dated 09/00 or any applicable following edition, shall be readily available to the pilot whenever the operation of the GPS navigation system is predicted.

The system must utilize the ORS 02 software version or a more recent one.

SECTION 3

EMERGENCY PROCEDURES

The emergency procedures hereafter supplement those of the standard aircraft described in Section 3 "Emergency procedures" of the basic Pilot's Operating Handbook, when the TB aircraft is equipped with the option ""HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE".

"MSG" ANNUNCIATOR ILLUMINATION

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

Check the message.

"Bad Satellite Geometry", Nav Super Flag Failure", "RAIM position error", "RAIM not available", "Searching the sky" or "No GPS Receiver Data" :

Return to VOR or ADF navigation source and to remaining operational navigation equipment.

When the system integrity is restored, the return to GPS mode must be accompanied by the validation of the followed and desired track concordance by using primary sources of navigation.

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" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE".

Normal operating procedures of the GPS recommended by the manufacturer are outlined in the "HONEYWELL" KLN 94 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 TB :

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.

SYSTEM ANNUNCIATORS

"MSG" message annunciator (amber)

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 (Appendix B of "HONEYWELL" KLN 94 Pilot's Guide contains a list of all the messages likely to appear on the "Message" page and their meanings).

"WPT" Waypoint annunciator (amber)

This annunciator flashes approximately 20 seconds before warning "NEXT DTK".

SECTION 5

PERFORMANCE

Installation and operation of the "HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE do not change the performance of the TB aircraft 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)
	34 - NAVIGATION			
A	GPS KLN 94 Stand alone (OPT10 34306A)	HONEYWELL	4.850 (2.200)	28.74 (0.73)

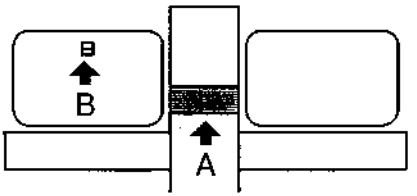
SECTION 7

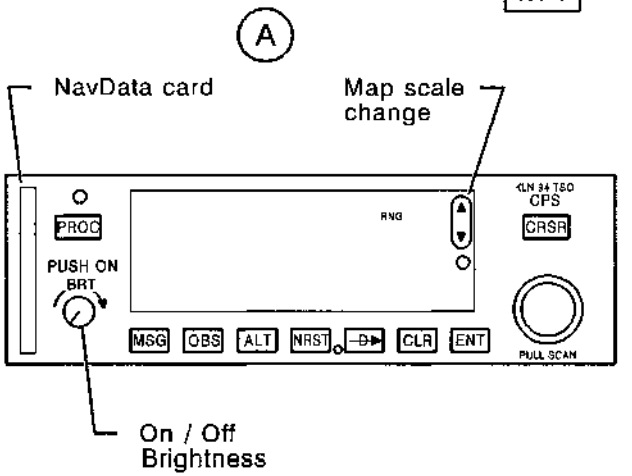
DESCRIPTION

Normal operating procedures of the "HONEYWELL" KLN 94 GPS NAVIGATION SYSTEM - STAND ALONE are described in the "HONEYWELL" KLN 94 Pilot's Guide at the latest revision.

The option includes :

- one KLN 94 GPS installed in radio rack - see Figure 9.52.2,
- one "MSG/WPT" repeater on advisory panel.





MSG - Message viewing

OBS - OBS/Leg mode selection

ALT - Altitude functions

NRST - Nearest VOR, NDB, Airports, interceptions, User defined waypoints

"Direct TO"

PROC - Procedure

CLR - Clear

ENT - Enter

I4345100AAAUTY8300

Figure 9.52.2 - "HONEYWELL" KLN 94 GPS SYSTEM

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SUPPLEMENT

"GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL INSTRUMENTS (GPS # 1 : B-RNAV)

TABLE OF CONTENTS

"GARMIN" GNS 530 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED
WITH ***ELECTROMECHANICAL HSI***

SECTION 1

GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the TB airplane is equipped with the option ""GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV)".

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 TB airplane is equipped with the option ""GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV)".

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 TB airplane is equipped with the option ""GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV)".

"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	2.08
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.

"GARMIN" GNS 530 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED
WITH ***ELECTROMECHANICAL HSI***

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)

CAUTION

KAP 150 AUTOPILOT (if installed) COUPLED OPERATION IS PROHIBITED

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 TB airplane is equipped with the option ""GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV)".

HSI NAV FLAG OR "INTEG" WARNING

Return to VOR or ADF navigation source and to remaining operational navigation equipment.

"NAV1/GPS1" push-button **NAV1**

"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.

"MSG" ANNUNCIATOR ILLUMINATION (Cont'd)

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 TB airplane is equipped with the option ""GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV)".

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 TB :

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

"NAV1/GPS1" push-button

This push-button may be used to select data to be displayed on the pilot's HSI ; the NAV data come either from NAV1 navigation receiver or from the GPS # 1.

When pressed once, the push-button illuminates **NAV1** (white), pressed one more time illuminates **GPS1** (green).

"GPS CRS OBS/GPS CRS LEG" push-button

This push-button may be used to select GPS navigation mode (LEG or OBS mode).

When pressed once, the push-button illuminates **GPS CRS OBS** (amber), pressed one more time illuminates **GPS CRS LEG** (green).

"MSG" message annunciator (amber)

CAUTION

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

This annunciator is associated with the **GPS # 1**.

"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 # 1 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).

"WPT" Waypoint annunciator (amber)

This annunciator is associated with the **GPS # 1**.

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

"APR" annunciator is a duplicate of the GPS # 1 "APR" information.

"TERM" annunciator is a duplicate of the GPS # 1 "TERM" information.

"GPS" mode of the GPS # 1

When using the "GPS" mode, GPS # 1 navigation data (course deviation, TO/FROM) are presented on the HSI.

"GARMIN" GNS 530 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED
WITH ***ELECTROMECHANICAL HSI***

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.

KFC 225 autopilot (if installed) coupled operation (option OPT10 22-001)

GPS # 1 may be coupled with the autopilot via the HSI, which receives the information relative to the navigation source (VOR1 or GPS # 1) selected by the "NAV1/GPS1" push-button.

When crossing a waypoint, the airplane turns automatically, while a "TURN TO" warning appears. This warning disappears during the turn. The pilot must then manually adjust the course indicator on the HSI. Approximately 1 minute later, after the warning disappearing, if the pilot has not adjusted manually the course indicator to the correct heading, a warning remenbers him that.

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

Engaging the "NAV" mode on the autopilot mode controller will activate the FD on the ADI. The FD uses selected course and left/right steering information displayed on the HSI.

Coupling with autopilot during a non precision approach 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

When the GPS suspends the linked navigation (GPS "SUSP" annunciator), the autopilot continues using heading and "GPS CRS OBS" annunciator (amber) illuminates.

NOTE :
The KFC 225 autopilot has a "Lateral clearance" function : refer to Section 4 "Normal procedures" of the Supplement "HONEYWELL KFC 225 automatic flight control system" located in Section 9 "Supplements" of this Manual.

"GARMIN" GNS 530 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED
WITH ***ELECTROMECHANICAL HSI***

Coupled operation with KAP 150 autopilot (option OPT10 G669) (if installed)

CAUTION

KAP 150 AUTOPILOT COUPLED OPERATION IN APPROACH MODE IS PROHIBITED

Only GPS # 1 may be coupled with the autopilot via the HSI, which receives the information relative to the navigation source (VOR1 or GPS # 1) selected by the "NAV1/GPS1" push-button.

When crossing a waypoint, the track resetting on the following navigation leg must be hand-performed on the HSI.

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

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.

SECTION 5

PERFORMANCE

The installation and the operation of the "GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV) do not change the basic performance of the TB 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 electromechanical HSI (OPT10 23007A)	GARMIN	10.141 (4.600)	23.23 (0.59)

SECTION 7

DESCRIPTION

Normal operating procedures of the "GARMIN" GNS 530 GPS (B-RNAV) NAVIGATION SYSTEM INTERFACED WITH ELECTROMECHANICAL HSI (GPS # 1 : B-RNAV) are described in the "GARMIN" GNS 530 Pilot's Guide at the latest revision.

GPS # 1 system consists of :

- one "GNS 530" GPS - see Figure 9.53.1 :
  This GPS may be a navigation source for the autopilot. Course deviation information is then displayed on the HSI.
- one repeater/control unit - see Figure 9.53.2 :
  This instrument allows to select the navigation source for the autopilot (NAV1 or GPS1) and GPS navigation mode (OBS or LEG). It is also used to duplicate the MSG, WPT warnings and to recopy GPS TERM, APR information.

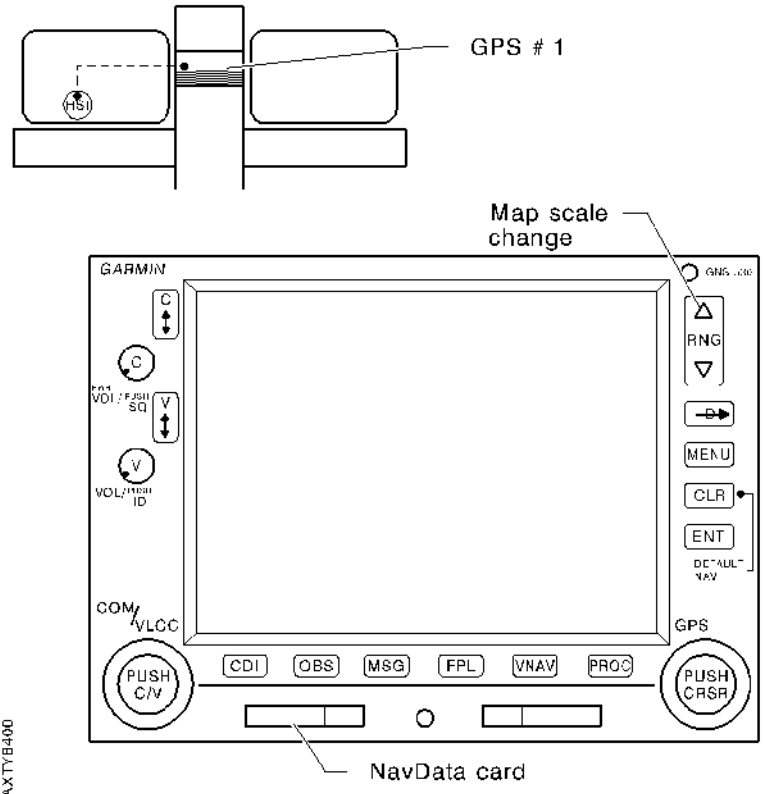
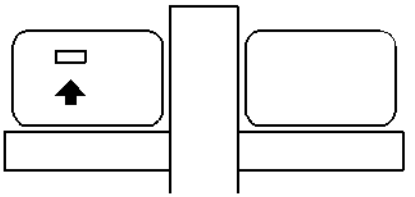


Figure 9.53.1 - "GARMIN" GNS 530 GPS SYSTEM

"GARMIN" GNS 530 GPS (B-RNAV)
NAVIGATION SYSTEM INTERFACED
WITH ***ELECTROMECHANICAL HSI***



NAV1	MSG	TERM	GPS CRS OBS
GPS1	WPT	APR	GPS CRS LEG

NAV1
GPS1

NAV1/GPS1 push button

GPS CRS OBS
GPS CRS LEG

GPS CRS OBS/GPS CRS LEG push button

Annunciators :

- NAV1 : NAV1 navigation source
- GPS1 : GPS1 navigation source
- MSG, WPT : Repeater of GPS, MSG, WPT warnings
  TERM, APR : Repeater of TERM, APR data

I4345100AAAXTY18200

Figure 9.53.2 - Repeater/control unit and GPS placard

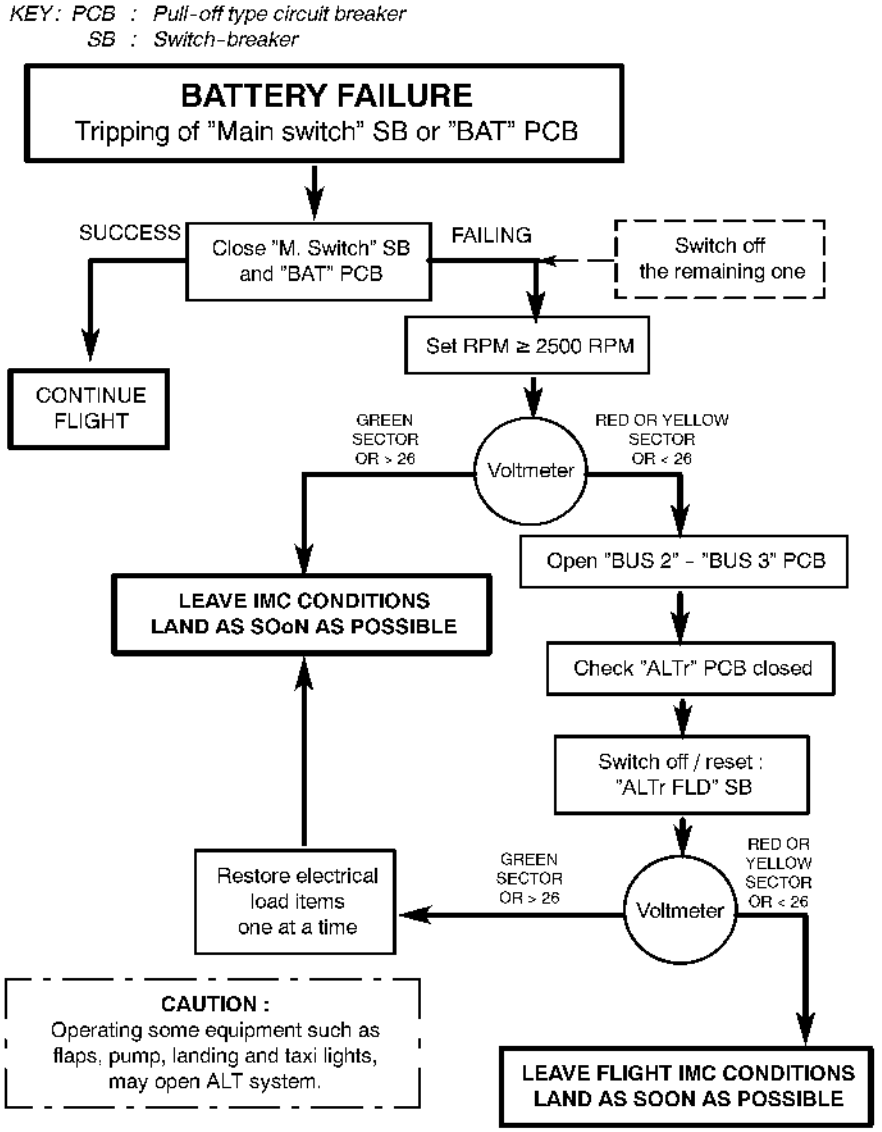


Figure 3.2 - BATTERY FAILURE DIAGRAM

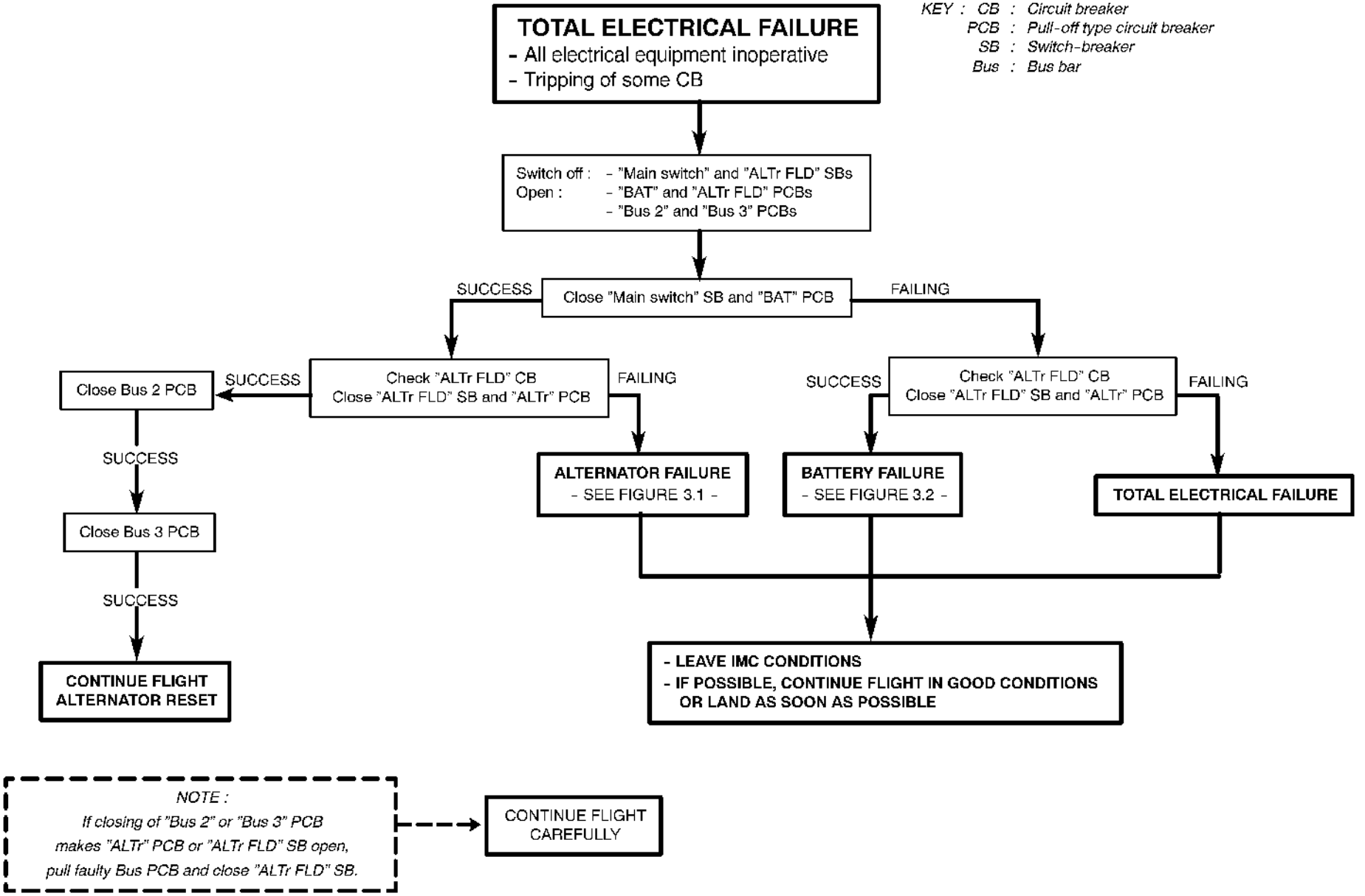


Figure 3.3 - TOTAL ELECTRICAL FAILURE DIAGRAM

SAMPLE WEIGHT AND BALANCE RECORD

CONTINUOUS HISTORY OF CHANGES IN STRUCTURE OR EQUIPMENT AFFECTING WEIGHT AND BALANCE

AIRPLANE MODEL :	SERIAL NUMBER :	PAGE NUMBER :

DATE	ITEM No		DESCRIPTION OF EQUIPEMENT OR MODIFICATION	WEIGHT CHANGE						RUNNING BASIC EMPTYWEIGHT	
				ADDED (+)			REMOVED (-)				
	IN	OUT		WEIGHT lb	ARM in.	MOMENT lb.in/1000	WEIGHT lb	ARM in.	MOMENT lb.in/1000	WEIGHT lb	MOMENT lb.in/1000
			As delivered								

Figure 6.2 - SAMPLE WEIGHT AND BALANCE RECORD

	SAMPLE AIRPLANE			YOUR AIRPLANE			Ref. on chart Figure 6.6
	Weight lb	Lever arm in.	Moment lb.in / 1000	Weight lb	Lever arm in.	Moment lb.in / 1000	
Empty weight	1587		60.39				A(1)
Pilot (without Opt. 0800)	170	45.38	7.71				A(2)
Pilot (with Opt. 0800)	/	47.44	/				
Front passenger (without Opt. 0800)	170	45.38	7.71				A(3)
Front passenger (with Opt. 0800)	/	47.44	/				
Rear seat passengers	309	82.48	25.49				B(1)
Fuel (66 U.S Gal.)	249	42.32	10.54				B(2)
Baggage	33	97.05	3.20				
TOTAL WEIGHT AND MOMENT	2518		115.04				M

Figure 6.3 - SAMPLE LOADING