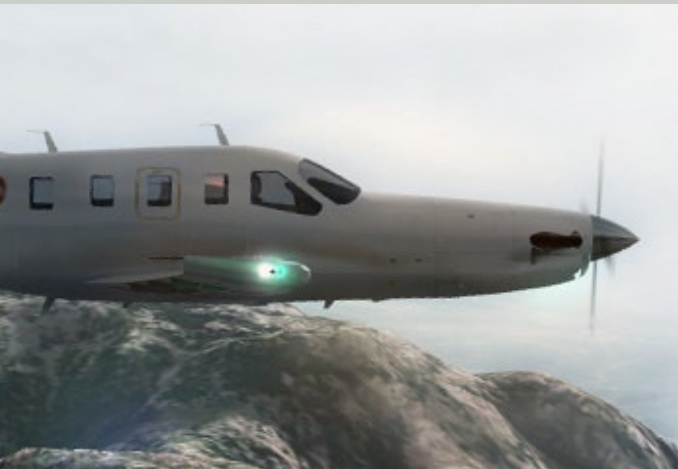

Pilot's Manual

TBM 700



crédits Equipe TBM 700





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About EADS Socata



EADS SOCATA is a wholly-owned subsidiary of EADS, the second largest aerospace and defense company in the world. EADS is a global leader in aerospace, defence and related services. In 2003, EADS generated revenues of € 30.1 billion and employed a workforce of about 109,000. The EADS Group includes the aircraft manufacturer Airbus, the world's largest helicopter supplier Eurocopter and the joint venture MBDA, the second largest missile producer in the global market.

EADS is the major partner in the Eurofighter consortium, is the prime contractor for the Ariane launcher, develops the A400M military transport aircraft and is the largest industrial partner for the European satellite navigation system Galileo. — **EADS**

TBM 700, an original concept. With the end of the 80, engineers of SOCATA had the mission of creating an original concept in the world of light aviation. The idea was to combine an economic and handy single-engined aircraft with the power and the reliability of a turbopropeller. Plane multi-missions, 6-7 places, pressurized, SOCATA TBM 700 reached the performances of many apparatuses of higher categories. — **EADS**



TBM700 Special Mission. Following its predecessor Morane-Saulnier, EADS Socata enjoyed a long-time relationship with Armed Forces and Government, as a supplier of training, liaison aircraft and multirole aircraft, with hundred of aircraft in service such as the TB 30 Epsilon and Rallye « Warrior ». Thanks to this expertise EADS Socata developed specific services for its government operators. Since January 2002 the SIMMAD, a department of the French Military procurement agency in charge of maintenance selected EADS Socata to maintain the whole fleet of military TBM 700 under a « Power by the Hour » maintenance contract. This contract applies for all the scheduled and unscheduled maintenance operations involving more than one hour of labor. Since then aircraft enjoyed an average dispatch reliability rate of 78%, significantly higher than the previous system.

The TBM 700 has a platform adapted to Airborne Demonstrator Systems and Mission Aircraft applications. — EADS



Its Missions :

- Low cost Advanced & Recurrent training
- Aerial photography accommodations
- Medical Evacuation
- Freightier, Overnight Parcels Service
- Discreet VIP Liaison
- Homeland security (ACTD, TBM 700 Easy Program)
- Funds or Precious Goods Conveyor
- Coast Supervision
- Calibration
- Civilian & military markets, French & Foreign



Specifications

TBM 700

Power Plant

Manufacturer	Pratt & Whitney, Canada
Type	Turbine libre, Flux inversé
Model	PT6A-64 Turboprop
Thermodynamic power	1583.00 HP
Nominal power	700 HP
Air intake power	De-iced, inertial separator

Propeller

Manufacturer	Hartzell
Model	HC-E4N-3/E9083S (K)
Diameter	2,31 m
Type	All metal, 4 blades, constant speed automatic full feathering, reverse control
Governor	Woodward 8210.007

Fuel

Approved fuel types	Jet A, A1, B (ASTM-D1655), JP4, JP5, JP8 (MIL-T-83133A)
Total tank capacity	1100 L
Usable fuel capacity	1066 L
Average fuel consumption	189 L/h

Oil

Type	MIL-L-23699C (viscosity 5 cSt)
Total oil capacity	12 L
Max. consumption	0,9 L /h

Loading

Basic empty weight	1837 kg
Maximum zero fuel weight	2722 kg
Maximum ramp weight	3000 kg
Maximum take off weight (MTOW)	2984 kg
Maximum payload	885 kg
Maximum payload with max. fuel	371 kg
Max. luggage capacity in storage	100 + 50 kg
Max. landing weight	2835 kg

Performances

Time to climb to 26,000 ft	24 min
Time to climb to 30,000 ft	27 min 30
Maximum cruise speed at 26,000 ft	555 km/h 300 KTAS
Economy cruise speed at 30,000 ft	472 km/h 255 KTAS
Certified ceiling	30000 ft

Dimensions (for a TBM 700c)

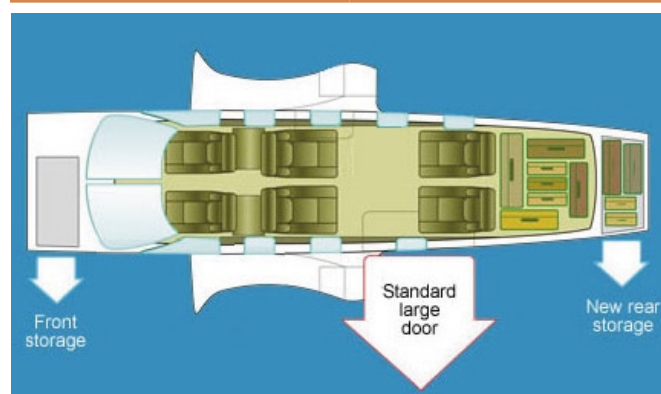
Overall length	10,645 m
Wingspan	12,680 m
Height	4,355 m
Horizontal tail span	4,988 m
Wing area	18,00 m ²
Wing aspect ratio	8,216
Wheelbase	3,874 m
Turn diameter, wing tip	20,50 m
Internal dimensions	
Cabin length	4,050 m
Cabin Span	1,210 m
Cabin height	1,220 m
Fret sector length	3,05 m
Maximum volume	3,5 m ³
Ground surface with cargo configuration	3,15 m ²
Dimension of rear acces door	1,19 x 1,08 m
Rear luggage compartment	0,410 x 0,320 x 0,137 m
Dimension of rear luggage door	0,385 x 0,250 m

Distance (ISA - 50 ft)

Take-off	865 m
Landing without reverse	741 m

Range (ISA - 45 min reserve)

With full fuel economical cruise	2898 km 1565 Nm
With full fuel maximum cruise	2435 km 1315 Nm
With max. passengers economical cruise	1989 km 1074 Nm
With max. passengers maximum cruise	1698 km 917 Nm



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For more information on EADS SOCATA or on the TBM 700, see official website of EADS SOCATA <http://www.socata.eads.net/>
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Installation of TBM 700

crédits Equipe TBM 700



"First thank you for choosing the TBM 700 for Flight Simulator 2004.

We hope that you will enjoy to flight with the TBM 700 and that you will share your experience with all the flight simmers of the world.

We have paid much attention to the details of the 3D model, panel gauges and flight dynamic behavior and sounds, in order to give you a TBM 700 model as close as possible to the real aircraft." — TBM 700 team

Required system

To run under optimal conditions the TBM 700 on your system, you must have the following basic configuration:

- Pentium 1,5 Ghz or AMD 1600
- 256 Mo of RAM
- 70 Mo hard disk free space
- Video card 3D with 64 Mo RAM, with up to date pilot
- Microsoft Flight Simulator 2004

Installation in Flight Simulator 2004

Place the folder entitled TBM 700 in the Aircraft folder of FS2004. The gauges are already located in the panel folder, just place the fx_vclight_TBM file in the Effects folder of FS2004.

Select the TBM 700 under Socata manufacturer. Two paint scheme are provided to you:

- a version of Armée de l'Air of «Verdun» squadron based in Metz,
- a version of Escadrille Avions de l'Armée de Terre based in Rennes.

Uninstallation from Flight Simulation 2004

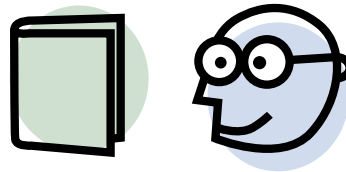
Simply remove TBM 700 folder of your Aircraft repertory and the fx_vclight_TBM file being in the Effects repertory.



Socata TBM 700 with paint scheme of Air Force and Army (ALAT).

About the Pilot's manual

"The Pilot's Manual is intended to give you the most from an unique aircraft model. In this package we have tried to stay as close as possible to the instrument panel and the dynamic behavior of the real Socata TBM 700." — **TBM 700 team**



The pilot's manual is provided free in public domain and no copyright is claimed. It's intended only for Flight simulation purpose and must not be used for any other real aviation applications. The authors take no responsibility for potential errors and omission, You must be aware that it's impossible to fully reproduce the reality with Flight Simulator 2004. For theses reasons the performances of the TBM 700 model may differ from the real aircraft. Moreover the TBM 700 team have no link with the EADS Socata and the TBM 700 model may not be representative of the real aircraft.

The TBM 700 model include a complete 2D panel and a complete Virtual cockpit. The 2D panel include several sub-panels for better reading and convenient use. The manual give you a description of all the instruments and the clicking zones to access the sub-panels. It's imperative to use icon in order to properly activate all the functions. The sub-panel can be close by clicking on the corresponding icon or by clicking on the X button in the right upper corner of the sub-panel.

Panel & sub-panels

The panel included several sub-panels described bellow. Take note that some of the virtual cockpit gauges are clickable. So it is possible to pilot the TBM 700 lonely from the virtual cockpit.

1	Pilot panel
2	Co-pilot panel
3	Radio stack
4	Pedestral panel
5	Autopilot command panel
6	Overhead



crédits Equipe TBM 700

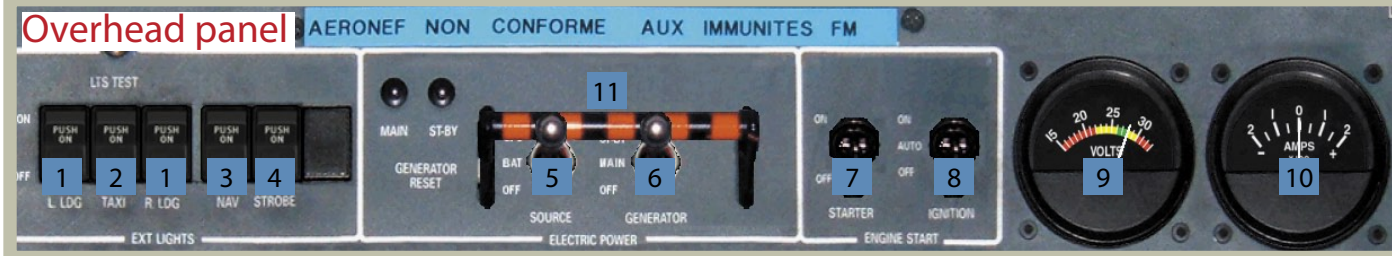


IFR Panel



- | | |
|--|---|
| 1 : ADI | 24 : Audio selector command panel |
| 2 : HSI | 25 : VHF 1 / VHF 2 |
| 3 : NAV / GPS Selector | 26 : DME |
| 4 : Altimeter | 27 : NAV 1 / NAV 2 / ADF |
| 5 : Vertical speed | 28 : Transponder |
| 6 : Clock / Chronometer | 29 : Red & amber alarm indicators |
| 7 : Landing gear command & position indication | 30 : AP command panel |
| 8 : Torque | 31 : «AP / TRIMS MASTER» switch |
| 9 : RPM Propeller | 32 : Altitude / vertical speed preselection indicator |
| 10 : ITT | 33 : AP mode selection repeater |
| 11 : Ng | 34 : Fuel quantity indicator |
| 12 : Oil pressure & temperature | 35 : Fuel pressure indicator |
| 13 : Fuel Flow | 36 : Cockpit lights switches and dimer |
| 14 : Airspeed | 37 : Radio Master switch |
| 15 : Markers | 38 : Parking brakes |
| 16 : VOR / ILS 2 | 39 : NAV 1 / NAV 2 selector for RMI |
| 17 : RMI | 40 : AUX BP switch |
| 18 : De-ice command and control switches | 41 : Meteo Radar (fictional picture only) |
| 19 : Outside temperature | 42 : Cockpit Pressurization command panel |
| 20 : Turn coordinator | |
| 21 : Suction | |
| 22 : Flight Simulator icons | |
| 23 : Advisory Panel | |

Overhead panel



- 1 : Landing lights switch
- 2 : Parking light switch
- 3 : Navigation light switch
- 4 : Strobe light switch
- 5 : Battery master switch
- 6 : Aux. battery switch

- 7 : Starter switch
- 8 : Ignition switch
- 9 : Bus voltage indicator
- 10 : Amp meter
- 11 : Crash bar

Pedestal panel



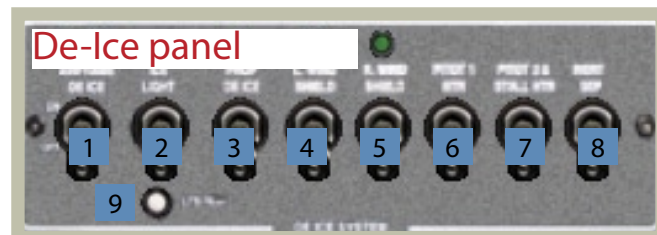
- 1 : Trims position indicators
- 2 : Flaps position indicator
- 3 : Idle & Cut off lever
- 4 : Propeller lever
- 5 : Flaps lever
- 6 : Throttle
- 7 : Roll trim command
- 8 : Pitch trim command
- 9 : Emergency fuel command

FS2004 icons



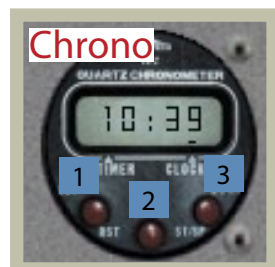
- 1 : Kneeboard
- 2 : ATC
- 3 : Map
- 4 : Switching IFR to VFR and switching back to IFR
- 5 : Pedestal panel
- 6 : GPS
- 7 : Compass

De-Ice panel



- 1 : structure de-ice switch
- 2 : De-ice light switch (left wing)
- 3 : Propeller de-ice switch
- 4 : Left wing de-ice switch
- 5 : Right wing de-ice switch
- 6 : Pitot 1 de-ice switch
- 7 : Pitot 2 de-ice switch
- 8 : Inertial separator switch
- 9 : Test button de-ice warning lights

Chrono



- 1 : Reset button (active only in chronometer mode)
- 2 : Mode button (reverse chrono / clock functions)
- 3 : On / Off button (start chrono)

Attention! It show minutes and second during the first hour of operation then it show hours and minutes. It have night lightning.



Cabin Pressure

The cabin pressure command is located in the lower right side of the IFR panel. It is outlined by a rectangle and include several elements. Some of these elements are active, others are only drawn.

In the upper left corner of the rectangle one can find the cabin altitude control dial. The dial is incremented by 1000 ft step. On the cabin pressure meter one can read the cabin altitude with one needle and the actual cruise altitude on the other needle. The pressure difference internal / external should not exceed 6.2 psi.

On the right side of the pressure meter, you can find 3 switches. Only the first is an active ON / OFF switch.



- 1 : Pressure cruise altitude dial
- 2 : Pressure meter
- 3 : ON / OFF switch

Attention! The pressure control is only operating from IFR panel.



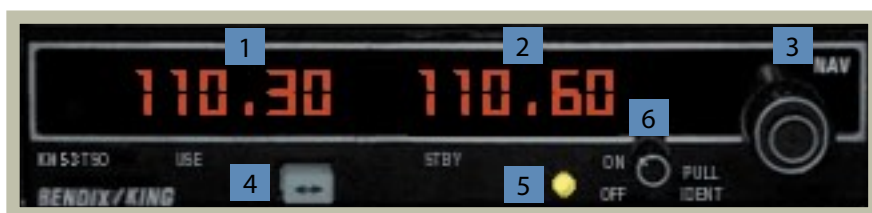
Bendix/King KN-53 NAV Receiver

The Bendix/King KN-53 NAV receiver display 2 frequencies, one active (1) and one standby (2). First, to operate the receiver, you must put the main switch on ON.

To turn off the receiver put the main switch on OFF. To listen the identification morse code of VOR/ILS station, click on IDENT. You can only modify the standby frequency (2).

To modify the active frequency, put it in the standby by clicking on the frequency swap tab (4). You can increase the numbers of the frequency, left or right of the decimal point, by clicking on the upper part of the number. You can decrease the number by clicking on the lower part of the number.

You can also use the knob (3). Left upper part of the knob increase the number left to decimal point. Right upper part of the knob increase the number right to decimal point. The left & right lower parts of the knob (3) decrease the numbers left or right of the decimal point.



- 1 : Active frequency
- 2 : Standby frequency
- 3 : Frequency Selector Knob
- 4 : Swap button
- 5 : ON / OFF Light
- 6 : ON / OFF switch

Alarm and warnings panel

The whole of the panel of alarms is located in top of the radios stack. It gathers all alarms of the TBM 700 and the majority of them are completely functional (limitation of Flight Simulator). You can increase the panel by clicking in his center. The switch in the right corner allows testing of alarm lights (Test 1/ 2).



MASTER WARNING	General warning when a red light is coming ON
MASTER CAUTION	General warning when a amber light is coming ON
ITT	Inter Turbine Temp ≥ 800 deg. C
OIL PRESS	Low Oil pressure ≤ 60 psi
STARTER	Generator-starter ON (blinking)
IGNITION	Ignition is ON
PARK BRAKE	Park brake ON
FIRE	Engine Fire
BLEED TEMP	Air Conditioned Temp. Compressor bleed air ≥ 232 deg C
BLEED OFF	Pressure regulator valve CLOSED
CAB PRESS(*)	cabin pressure $\geq 6,2$ psi
DOOR	Passenger door NOT CLOSED, NOT LOOKED
FLAPS(*)	Asymetric L and R flaps positions
OXYGEN(*)	One of the oxygen generator have bee punched
PITOT 1	Pitot no. 1 non de-iced
PITOT 2	Pitot no. 2 non de-iced
STALL HTR	Stall warning horn non de-iced
INERT SEP	«INERT SEP» switch is ON
VACCUM LO	Vaccum generator depression $\leq 3,75$ in.Hg
BAT OVHT(*)	Abnormal battery Temperature
BAT OFF	Non connected battery, outside electrical alimentation source
MAIN GEN	Generator-starter non connected
LO VOLT	Battery Volt ≤ 26 volts
G P U(*)	Exterior electrical plug door non closed
FUEL OFF	Fuel tank selector is OFF
FUEL PRESS	Fuel pressure ≤ 10 psi
AUX BP ON	Fuel elctrical pump is ON
FUEL L LO	Low fuel level in L tank Quantity $\leq 9,1$ us gal.
FUEL R LO	Low fuel level in D tank Quantity $\leq 9,1$ us gal.
AUTO SEL	Fuel selector is OFF or broken
BRIGHT(*)	Light intensity selector in day position
DIM(*)	Light intensity selector in night position

The alarm with an (*) are not active on FS2004.

Attention! Unactivate the Master Warning and the Master Caution on the IFR panel by clicking on them.



Autopilot

The TBM 700 autopilot has 4 elements :

- 1 Autopilot Modes selection command panel located above radios stack
- 2 Modes annunciator located above the gyro horizon display the modes selection to the pilot
- 3 Altitude preselector is located just right to the modes annunciator
- 4 General power switch of these three elements is located at the bottom and left of the radios stack



AP - This button activate the AP, the pitch holding mode and the yaw damper (YD) mode. If you click again on the button, it will disengage the AP but not the yaw damper. The pitch holding mode is disactivated by choosing another mode. The pitch holding mode can be reactivated if no other mode are active.

YD - This button activate yaw damper independently of AP

TEST - This button activate the pre-flight test of the AP and activate the annunciator lights

FD - This button activate the Flight Director which display command bars on the ADI. This mode is automatically activated when an AP mode is activated.

HDG - This button activate the heading holding mode. The heading is selected via the bug of the HSI. The selection of HDG mode disactivate NAV, APR or BC mode.

NAV - This button activate the Navigation mode which allow the interception of a VOR radial bearing and the holding of this radial. If HDG is already activated and you select the NAV mode, the aircraft will initially follow the heading until the intercept of the radial. When the AP intercept the radial, the HDG mode will be disactivated automatically and will follow the VOR radial.

APR - This button activate the Approach mode which allow the intercept of LOC signal from an ILS and then the Glide Slope signal (GS) of the ILS. If the HDG is active and you select the APR mode, the aircraft will first follow the heading until the intercept of the radial. At this time HDG will be automatically disactivated and the aircraft will follow the VOR/LOC signal until the capture of GS signal.

BC - This button activate the Back Course mode which work in the same way as APR mode except that the response to the signal are reversed on the display of command bars on the ADI but the alignment of the GS is not functioning.

ALT - This button activate the Altitude holding mode. The altitude maintained is the altitude of the aircraft just before selecting the ALT mode whatever during climbing, descent or in level. The AP do not take into account the altitude setting in the preselection window. The LOC and GS function are automatically disactivated if APR mode was active. The current altitude holding is disactivated when you select one of the modes in the altitude preselection window, however the ALT mode remain active.

IAS - This button activate the Airspeed holding mode but this mode is inoperative with FS2004

HALF-BANK - Bank angle limitation mode - This mode is inoperative with FS2004

SOFT RIDE - Turbulence damping mode - This mode is inoperative with FS2004



This window is located above the gyro horizon. The AP or FD mode repeater display which AP modes have been selected. These modes when selected will open the corresponding lights.

AP - Light on when AP is activated

YD - Light on when Yaw damper is activated

TRIM - Light on when pre-flight test is activated

FD - Light on when Flight director is activated

HDG - Light on when heading holding mode is activated

NAV - Light on when the navigation mode is activated

APR - Light on when the Approach mode is activated

GS - Light on when the descent alignment is activated

BC - Light on when the Back Course mode is activated

ALT - Light on when the altitude holding mode is activated

Attention! Certains modes of the autopilot requiered Nav1 radio to be activated and the appropriate frequency of the radio beacon be selected.



This window makes it possible to set and engage modes of altitude complementary to the maintenance of current altitude: rate of rise or descent, altitude to be reached.

It include two push buttons for selecting modes of altitude (on the left), a display of the altitude or vertical speed information (in the center) and a knob for setting the choosen values (on the right).

The setting knob - Located on the right side, permit by clicking on it center, to display the vertical speed or altitude you would like to select. Ththese vakues are chosen by clicking above or under the display number. One left click increase or decrease by 100, a right click increase or decrease by 1000 ft for the altitude value and by 500 ft/min for the vertical speed.

ENG - The push button for selecting the vertical speed value

ALT - The push button for selecting the altitude value. Before pushing the button you must select a non zero altitude value. When pushing this button the current altitude setting is disactivated automatically but the ALT mode is still active on the repeater. Only the altitude value is modified. The ARM is light on until the aircraft reach the selected altitude. At this time the ARM is light off and the CART is light on.

ALERT - This signal is light on when the altitude is between 1000 ft and 300 ft from the selected altitude value. This signal light off temporally when the altitude is reached. After the signal light on again if the security band of 300 ft is overpassed.



The general power switch of these three elements is located at the bottom and left of the radios stack. It has two positions: OFF in down position and ON in up position. It must be put on in order to be able to operate the AP. When the switch is put in On position the switch powers also the radios (the reverse is not true) and starts the auto test procedure. During this procedure the red light TRIM on the annunciator mode window stays light on.

Starting engine sequence

The described procedure below is slightly simplified for Flight Simulator. However, it's as real as possible. You always have the possibility of starting the TBM 700 with Control + E keyboard command.

1	Raise the crash bar if it's down
2	Battery switch in ON position
3	Auxiliary battery switch in ON position
4	AP general power switch in ON position
5	Open radios
6	Test Alarms
7	Re-arm the Warning and Alarm light push buttons
8	Bus voltage > 25 V
9	Condition lever in HIGHT position
10	Throttle in IDLE position
11	BP pump switch in ON position
12	Verify that AUX BP ON signal is light on
13	Verify that the FUEL PRES signal is OFF
14	Verify that the fuel pressure reading is in the green scale. (20 PSI)
15	IGNITION put in AUTO (or ON) position
16	Verify that the IGNITION signal is light on
17	STARTER switch put in ON position
18	Verify that STARTER signal is blinking
19	Continuously push on the STARTER switch until Ng > 13% and the engine has started
20	Stop pushing on STARTER switch
21	Verify that STARTER signal is OFF
22	Verify that the IGNITION signal is OFF for Ng > 50%
23	Verify that AUX BP ON signal is OFF, Ng > 50% and the IGNITION switch is in AUTO position
24	Put the Pitot de-ice switches in ON position
25	Continue the check as described in the kneeboard's checklist

Animations

Several animations have been added to the TBM 700 model. For example you can see the protection covers, the wheel blocks and the pitot protection flags when the engine is at rest. The engine doors and the park power plug door can be open (folding wing command). The sun glare panel can be lowered or raised (C208 water rudder command).



crédits Equipe TBM 700

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