

AIRPLANE FLIGHT MANUAL

***Xtreme
Prototypes***

20 Series

***ADD-ON BUSINESS JETS
FOR MICROSOFT® FLIGHT SIMULATOR X***



For ADD-ON Models 24, 25 and 28.

*Contains full product description
and specifications, installation instructions,
normal procedures and check list.*



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All images appearing in this document are actual screenshots of the Xtreme Prototypes 20 Series virtual aircraft and panels captured in Microsoft® Flight Simulator X, except where otherwise noted. The Xtreme Prototypes 20 Series virtual aircraft models are artistic interpretations inspired from the classic Gates Learjet 20 Series and are in no way intended to represent or simulate the real-world business jets. This entertainment software is a game and shall not be used for real-world flight training. For historical accuracy and educational purposes, portions of this manual are inspired from the original "Gates Learjet (24, 25 and 28) Airplane Flight Manual" published during the 1970s by Gates Learjet Corporation. Xtreme Prototypes is not affiliated with Gates Learjet Corporation (today, Gates Corporation), Bombardier Aerospace or any other company, entity or organization related to the development of the Gates Learjet 20 Series from 1960-1980. Software platform logo (TM and ©) IEMA 2007.

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FOREWORD

CLEARED FOR TAKEOFF!

We thank you for purchasing your copy of the Xtreme Prototype 20 Series add-on business jet package for Microsoft Flight Simulator X.

This document contains the necessary information for the installation and operation of the 20 Series virtual aircraft, 3D virtual cockpit and instrument panels.

Our development team is again extremely proud to bring to your desktop another aviation milestone with this legendary business jet. This version of the 20 Series is a genuine FSX add-on aircraft, especially designed and optimized to benefit from the advanced features of the latest version of Microsoft Flight Simulator. The add-on package contains six variations of Models 24, 25 and 28, with a fully functional virtual cockpit and many other exciting features.



Spot plane view of the Xtreme Prototypes Model 25 for Flight Simulator X (FSX screenshot).

The Gates Learjet 20 Series aircraft, from which your new add-on package is inspired, redefined business aviation during the 1970's, flying high above the weather at transonic speeds. This package strives to bring you the actual feeling of flying such a high-performance aircraft in the civilian world. Although contemporary airliners offered similar speeds (but less cruise altitude and climb performance), it must be remembered that these aircraft belonged to general aviation and were originally intended (although this was not to be) for single-pilot operation.

For the general aviation pilot, being able to hop between small regional airports while passing airliners along the way is quite a thrill. But for the serious IFR enthusiast, we are confident this package will provide years of flying pleasure. It is now possible to relive this fascinating period in the history of aviation!

The included virtual cockpit allows for complete IFR flight and features all the instruments, annunciators, displays, switches and knobs necessary to do so. Even if there are some differences between this add-on and the real aircraft on which it is based, most switches and knobs are clickable in order to simulate complete procedures, from cold and dark to shutdown. A carefully planned FSX IFR flight is sure to be a rewarding (if challenging) experience for the virtual pilot, which is why we strongly recommend a thorough reading of this manual.

We invite you to visit our web site to get more information about this product and other exciting add-on products, available patches and upgrades, and technical support: <http://www.xtremeprototypes.com>

You can also be made aware of updates and other product news by subscribing to our RSS feeds.

We hope you will enjoy the 20 Series for Flight Simulator X experience as much as we enjoyed developing this exciting product.

The Development Team at Xtreme Prototypes

INTRODUCTION AND PRODUCT DESCRIPTION

SECTION 1



THE GATES LEARJET 20 SERIES

Up until the 1960's, executives flew around in piston-powered propeller aircraft. These machines were usually conversions from WWII light bombers and transporters. Although many of them were faster, hot-rodded versions of the originals, as airlines adopted turbine power many executives were now considering commercial travel to save time and gain the comfort of flying above the weather in a pressurized cabin.

Bill Lear recognized this as a market opportunity and became focused on providing the American businessman with personal jet-propelled transportation. As an inventive entrepreneur, Lear was already providing converted WWII machines to the market he coveted so he understood what his customers needed. Nothing other than a high-performance jet would do.

Lear's son who was working in Switzerland at the time came across a jet fighter aircraft design which he thought would serve as a base for the new jet's design. The Swiss P-16, as it was then known, had an aerodynamic configuration that served the purpose well and so the Swiss American Aircraft Corporation (SAAC) was founded. The new executive aircraft would be called the SAAC-23.

After the initial honeymoon, the working culture of the Americans and the Swiss seemed irreconcilable so Lear swiftly decided to move the entire operation to Wichita, Kansas. After months of 24/7 shifts, the small company saw its efforts rewarded on September 15th 1963 when

the first Model 23 was rolled out and on October 7th 1963, when N801L, the world's first civilian private jet, took off for a successful first flight.

Although the new aircraft promised to take the executive market by storm, cash flow difficulties threatened the project. Lear's response was to sell Lear Jet Corporation stock to the public. The company became public in November 1964.

During the next couple of years, a few accidents earned the small jet the reputation of a difficult aircraft to fly. These accidents were later blamed on insufficient pilot training and insufficient systems redundancy. Lear Jet Corporation responded with the Model 24 which although similar to the 23 now had airline-style systems with the appropriate redundancy to remain safe in all weather conditions. Pilot training programs were also put in place to ease the transition for private pilots moving up from propeller airplanes.



In 1966, Lear also responded to the market's desire for more passenger capacity by rolling out the Model 25, essentially a stretched version of the 24 with an extra seat row. Model 25 would prove even more successful and is still recognized today by enthusiasts around the world as one of the most elegant civilian aircraft to ever grace the skies. 1966 was also the year when a Model 23 broke the around-the-world record by completing the trip in 50 hours and 20 minutes.

Such aeronautical successes unfortunately were not enough to counter persistent financial problems within the corporation and in 1967, the Gates Rubber Company became the controlling shareholder of Lear Jet Corporation. With the backing of such solid ownership, Lear Jet could now concentrate of its development.



Under Gates ownership, the company changed its name to the Gates Learjet Corporation. The 20 Series continued to be developed into state-of-the-art precision flying machines becoming better, more luxurious and easier to fly. Your new add-on package is inspired from the 20 Series of the Gates era.

Gates ownership also saw the transition from straight-turbojet to more efficient turbofan power. The 20 Series aircraft were all powered by the ubiquitous General Electric CJ-610 turbojet engine, a simple, lightweight and powerful single-spool turbojet derived from the military General Electric J-85 engine. The CJ-610 engine gave the 20 Series an astonishing climb performance and high-altitude cruise. It was however noisy and fuel-thirsty so it was no surprise that in the wake of the 1973 fuel crisis, a new engine, the Garrett TFE-731 turbofan, was chosen. Although slightly less spirited than the CJ-610 it replaces, the TFE-731 offers far better range, less noise and less air pollution.

The Garrett-powered Learjets became known as the 30 Series and warranted yet another fuselage stretch. Models 35 and 36 were presented to the public in mid-1973.

During the 1970s, the 20 Series continued to be developed and sold, as many operators preferred their simplicity and performance. In August 1977, a new aircraft was flown. It had a new wing that replaced the traditional tip tanks with upswept winglets which provided a dramatic reduction of induced drag, therefore stretching range and

enhancing climb performance. It was known as the Model 28, and along with its longer-range sister ship the Model 29, represented the epitome of the straight-turbojet executive aircraft.

The end of the 1970's saw the turbofan take over the market and the 20 Series was gradually abandoned. At the end of the 1980's, many airports around the world had banned the 20 Series aircraft due to noise restrictions. Today, a few remain in marginal use, some as cargo aircraft and some in service in countries where altitude considerations predominate.

During the 1980's, development continued with the Model 55, essentially a Learjet with a larger fuselage with stand-up cabin and later transcontinental range. By the end of the decade, ownership of the company had changed hands a few times only to be acquired by Montreal-based Bombardier Inc. by mid-1990's. Learjet was integrated into Bombardier's operations which made the Canadian company the world's third largest aircraft manufacturer.

Under Bombardier ownership, the 40 Series came to life with the Model 45, a technologically advanced, roomy and efficient aircraft for the new millennium, entirely designed with computers. The longevity of this aircraft family and the commitment of its current owners is a testimony to Bill Lear's original vision and the way it forever changed business travel.



XTREME PROTOTYPES 20 SERIES FOR FLIGHT SIMULATOR X

The Xtreme Prototypes 20 Series for Flight Simulator X is inspired from a series of aircraft known in the mid-1970s as the Gates Learjet 24, 25 and 28.

The package strives to re-create the general look and feel of the original aircraft for the virtual pilot's enjoyment

but does not pretend to be a 100% accurate simulation of any one model in particular.

This product contains:

- ❑ **Two variations of Model 24:**
 - XP-241 (short fuselage, tip tanks)
 - XP-242 (short fuselage, tip tanks)
- ❑ **Two variations of Model 25:**
 - XP-251 (long fuselage, tip tanks)
 - XP-252 (long fuselage, tip tanks)
- ❑ **Two variations of Model 28:**
 - XP-281 (long fuselage, winglets)
 - XP-282 (long fuselage, winglets)



the performance of a high-powered civilian jet aircraft.

The add-on package includes custom visual effects and sounds, multiple camera views and a detailed flight manual (PDF format, in English and French).

The Xtreme Prototypes 20 Series for Flight Simulator X is compatible with FSX SP2, FSX Acceleration Expansion Pack and FSX Gold. See section 2 for compatibility issues.



Each highly-detailed 3D model is inspired from the real-world aircraft and features many movable parts and reflective high resolution textures. The fully functional 3D virtual cockpit contains over 800 parts and more than 200 back and front-lit 3D gauges, lights, switches and flight instruments.

The custom flight model has been designed to simulate

SOFTWARE INSTALLATION

SECTION 2



The Xtreme Prototypes 20 Series for Flight Simulator X is an **add-on** software package which requires **Microsoft® Flight Simulator X with Service Pack 2 (or FSX Acceleration Pack or FSX Gold)** to be installed on your computer in order to function. Make sure Flight Simulator X has properly been installed according to the instructions provided by the manufacturer before you proceed.

COMPATIBILITY

The Xtreme Prototypes 20 Series for Flight Simulator X add-on aircraft package is designed and optimized for Microsoft® Flight Simulator X SP2, FSX Acceleration Expansion Pack and FSX Gold.

The current version of the software is not compatible with Microsoft® Flight Simulator 2004 or earlier versions. If the 20 Series package is installed in FSX only (no Acceleration Expansion Pack/FSX Gold), make sure Service Pack 2 has been installed. The 20 Series package will not work/display properly if SP2 is not installed.

The software is compatible with Windows® Vista™ and DirectX® 10.

As a rule of thumb, if Microsoft® Flight Simulator X SP2 runs properly on your computer, you should be able to fly the 20 Series aircraft for Flight Simulator X without problems.

The 3D virtual cockpit advanced features, special visual effects and/or multiple window views might reduce your frame rate on slower processors and video cards. Adjust your Flight Simulator display parameters to correct this problem if necessary. Reducing the traffic and weather settings in Flight Simulator before flying the 20 Series might also improve the overall system performance.

Consult the documentation included with Microsoft® Flight Simulator X (or FSX Acceleration Expansion Pack/ FSX Gold) for information about minimum system requirements and how to optimize your display settings.

Check our web site regularly for frequently asked questions, fixes, patches and upgrades. See appendix 3 for more information about technical support and known issues.

If you need additional support, please visit our web site: www.xtremeprototypes.com

MINIMUM SYSTEM REQUIREMENTS

Flight Simulator: Microsoft® Flight Simulator X with Service Pack 2 (Service Pack 2 required, FSX Acceleration Expansion Pack or FSX Gold optional)

Operating System: Windows® XP SP2 (256 MB RAM), Windows® Vista™ (512 MB RAM)

Processor: 1.0 GHz

Hard Drive: 15 GB (space required to install Flight Simulator X SP2)

Available Disk Space: 250 MB (space required to install the 20 Series add-on software and documentation)

Video Card: 64 MB (128 MB or more recommended), DirectX® 9.0 or later

Other: Sound card and speakers, joystick, wheelmouse, Adobe® Reader® 8.0 or later

NOTE: Xtreme Prototypes addons are complex and require more processing power and RAM than other more conventional add-on aircraft packages. Increased performance will be noticed on more powerful systems. FSX SP2 minimum system requirements strongly recommended.

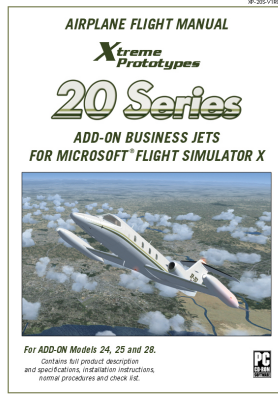
AIRPLANE FLIGHT MANUAL

This package contains the 20 Series virtual pilot's Airplane Flight Manual, available in a printable PDF format (Adobe® Reader® 8.0 or later required).

To download Adobe® Reader®, visit: www.adobe.com/products/acrobat/

The 85-page manual contains the necessary information for the installation and operation of the 20 Series add-on aircraft, 3D virtual cockpits and associated instrument panels in FSX.

The end-user is authorized to print copies of the manual for his/her own use, in conjunction with the enclosed add-on simulation software. The best way to keep the manual handy for easy reference during flight is to organize it in a durable presentation binder.



INSTALLATION INSTRUCTIONS

The Xtreme Prototypes 20 Series for Flight Simulator X is installed like any other add-on aircraft package in your default “Microsoft Flight Simulator X” folder.

DOWNLOAD

If you have downloaded the software, simply run the Setup program (XP_20_Series_v1r0_setup.exe) and follow the instructions that appear on screen. Enter your product registration key when asked. You must accept the end-user license agreement and enter a valid registration key before you can install and use this product. The installation program will copy the necessary files into their default locations in the “Microsoft Flight Simulator X” folder(s) on your computer.

CD-ROM

If you have purchased the CD-ROM package, insert the enclosed disc into your CD-ROM drive and follow the instructions that appear on screen. Enter your product registration key when asked. You must ac-

cept the end-user software license agreement and enter a valid registration key before you can install and use this product. The installation program will copy the necessary files into their default locations in the “Microsoft Flight Simulator X” folder(s) on your computer.

(If your computer does not support automatic installation, click Start on the Windows® taskbar and select **Control Panel**. Double-click the **Add/Remove Programs** icon and click **Add New Programs**. Follow the instructions that appear on screen.)

Once the six 20 Series add-on aircraft are installed, they will be available on the **Select Aircraft page** in Flight Simulator X.

Note that the 20 Series manual is copied by default in the “C:\Program Files\Xtreme Prototypes\20 Series Documentation” folder for your convenience and future reference. It is available in the “**Start\Programs\Xtreme Prototypes**” section of the Windows® taskbar.

Refer to section 7 for normal operating procedures. Refer to section 8 for abnormal/emergency procedures.



AIRCRAFT DESCRIPTION AND SPECIFICATIONS

SECTION 3



AIRPLANE

The 20 Series are twin turbojet-powered light civilian aircraft.

The low wing has a very slight (15 degrees) sweep and the T-tail is also swept. The wing is equipped with hydraulically-powered, single-slotted Fowler flaps. The wing is also equipped with hydraulically-powered spoilers.

Roll control is achieved through cable-actuated ailerons. The right aileron is equipped with a balance tab while the left aileron also has a trim tab.

The moveable stabilizer is the primary pitch trim. The cable-controlled elevator is the primary pitch control.

The rudder is also cable-actuated and has a trim tab.

Your new add-on package consists of two variations of each of the 20 Series Model 24, Model 25 and Model 28. Although there are more differences between these models, here are the essential variations:

- ❑ **Model 24** (5 seats + 2) is the basic model, with a short fuselage and short wings with tip tanks.
- ❑ **Model 25** (7 seats +2) also has short wings with tip tanks but has a stretched fuselage allowing more passengers and loading options.
- ❑ **Model 28** (7 seats +2) has a stretched fuselage and

long wings with winglets, which make it aerodynamically more efficient at the expense of the tip tank fuel capacity.

POWER PLANT

Your 20 Series add-on is equipped with the reliable General Electric CJ-610 single-spool turbojet engine. Rated at 2,950 lbs static thrust per side at sea-level, the CJ-610 provides the aircraft with fighter-like performance.

The single-spool turbojet engine will provide more thrust at altitude than a like-rated modern turbofan engine. This makes the 20 Series aircraft well-suited for high-altitude flight. The downside is that fuel consumption and noise are far greater.

AIRPLANE DIMENSIONS

The over-all dimensions of the 20 Series aircraft were:

Model 24:

- ❑ **Length:** 43.25 feet
- ❑ **Wingspan:** 35.5 feet
- ❑ **Height (top of vertical fin to ground):** 12.1 feet
- ❑ **Wing area:** 231 sq. feet
- ❑ **Wheel base:** 19.2 feet
- ❑ **Tread:** 8.25 feet

Model 25:

- ❑ **Length:** 47.6 feet
- ❑ **Wingspan:** 35.5 feet
- ❑ **Height (top of vertical fin to ground):** 12.1 feet
- ❑ **Wing area:** 231 sq. feet
- ❑ **Wheel base:** 19.2 feet
- ❑ **Tread:** 8.25 feet

Model 28:

- ❑ **Length:** 47.6 feet
- ❑ **Wingspan:** 43.8 feet
- ❑ **Height (top of vertical fin to ground):** 12.1 feet
- ❑ **Wing area:** 265 sq. feet

- ❑ **Wheel base:** 19.2 feet
- ❑ **Tread:** 8.25 feet

WEIGHTS

Model 24:

- ❑ **Gross weight:** 13,500 pounds
- ❑ **Empty weight:** 7,064 pounds

Model 25:

- ❑ **Gross weight:** 15,000 pounds
- ❑ **Empty weight:** 8,121 pounds

Model 28:

- ❑ **Gross weight:** 15,000 pounds
- ❑ **Empty weight:** 8,568 pounds

LIMITATIONS

- ❑ **Maximum speed:** Mach 0.82 above 24,000 feet
- ❑ **Ceiling:** 51,000 feet

See appendix 1 (or the reference tab of the kneeboard) for full aircraft reference information.

TAIL NUMBERS

The fictitious tail numbers for the Xtreme Prototypes 20 Series business jets are:

- ❑ **Model 24:** XP-241 and XP-242
- ❑ **Model 25:** XP-251 and XP-252
- ❑ **Model 28:** XP-281 and XP-282



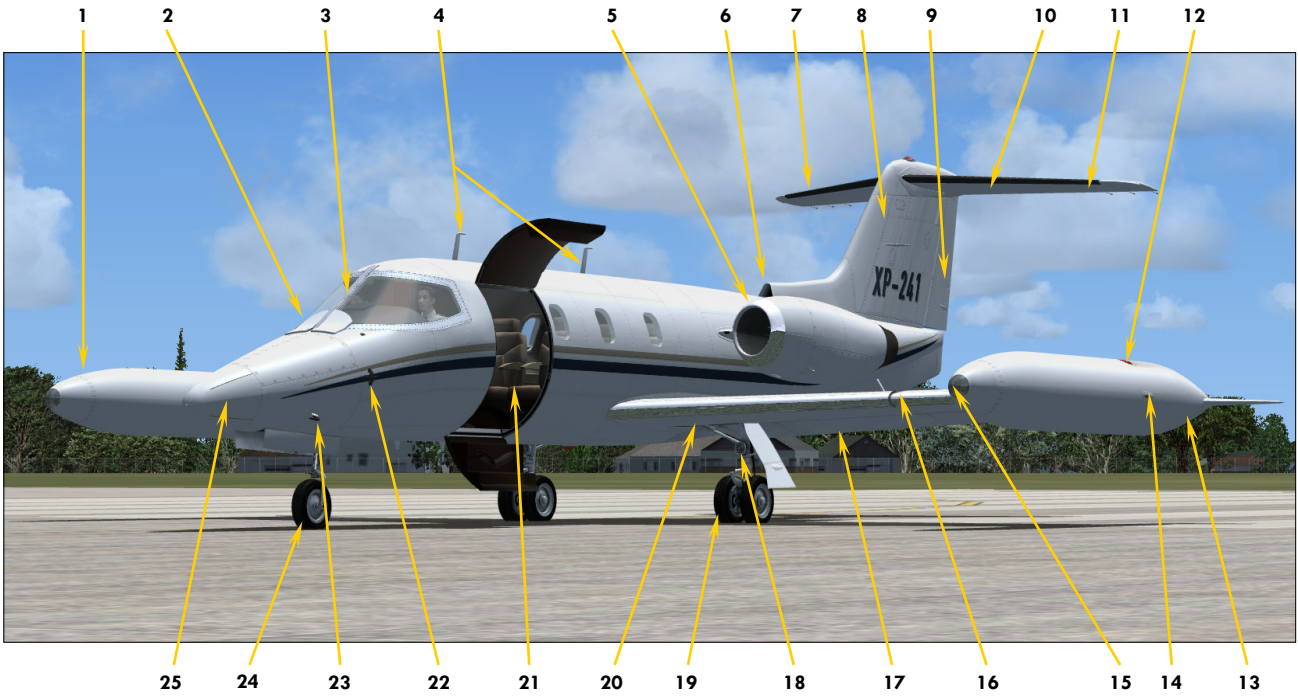


Figure 3-1

- | | |
|-------------------------------|------------------------------|
| 1. RIGHT TIP TANK | 14. NAVIGATION LIGHT |
| 2. WINDSHIELD DEICE NOZZLES | 15. RECOGNITION LIGHT |
| 3. WINDSHIELD | 16. WING HEATED LEADING EDGE |
| 4. RADIO ANTENNAE | 17. WING FLAP |
| 5. ENGINE NACELLE DEICING LIP | 18. LANDING/TAXI LIGHT |
| 6. CABIN AIR INTAKE | 19. LEFT MAIN GEAR |
| 7. STABILIZER HEATED EDGE | 20. WING |
| 8. VERTICAL FIN | 21. MAIN DOOR |
| 9. RUDDER | 22. STALL WARNING VANE |
| 10. STABILIZER | 23. PITOT PROBE |
| 11. ELEVATOR | 24. NOSE GEAR |
| 12. FUEL FILLER CAP | 25. RADOME |
| 13. LEFT TIP TANK | |

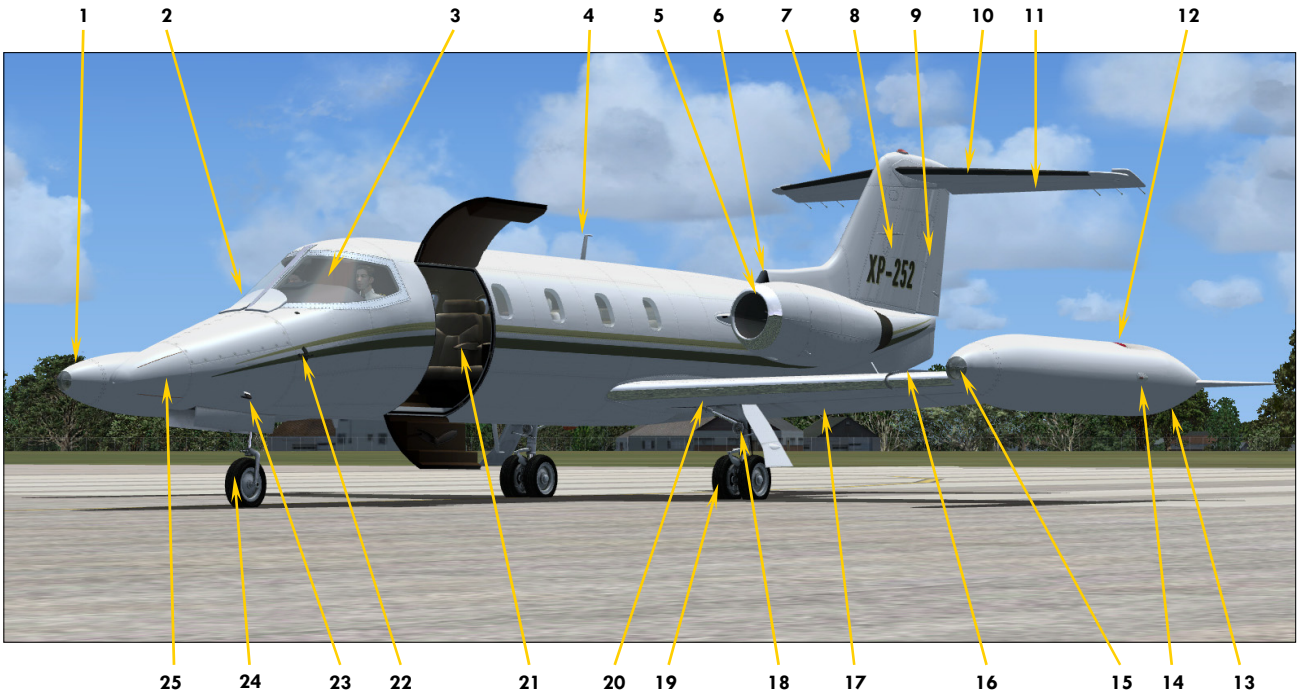


Figure 3-2

- | | |
|-------------------------------|------------------------------|
| 1. RIGHT TIP TANK | 14. NAVIGATION LIGHT |
| 2. WINDSHIELD DEICE NOZZLES | 15. RECOGNITION LIGHT |
| 3. WINDSHIELD | 16. WING HEATED LEADING EDGE |
| 4. RADIO ANTENNA | 17. WING FLAP |
| 5. ENGINE NACELLE DEICING LIP | 18. LANDING/TAXI LIGHT |
| 6. CABIN AIR INTAKE | 19. MAIN GEAR |
| 7. STABILIZER HEATED EDGE | 20. WING |
| 8. VERTICAL FIN | 21. MAIN DOOR |
| 9. RUDDER | 22. STALL WARNING VANE |
| 10. STABILIZER | 23. PITOT PROBE |
| 11. ELEVATOR | 24. NOSE GEAR |
| 12. FUEL FILLER CAP | 25. RADOME |
| 13. LEFT TIP TANK | |

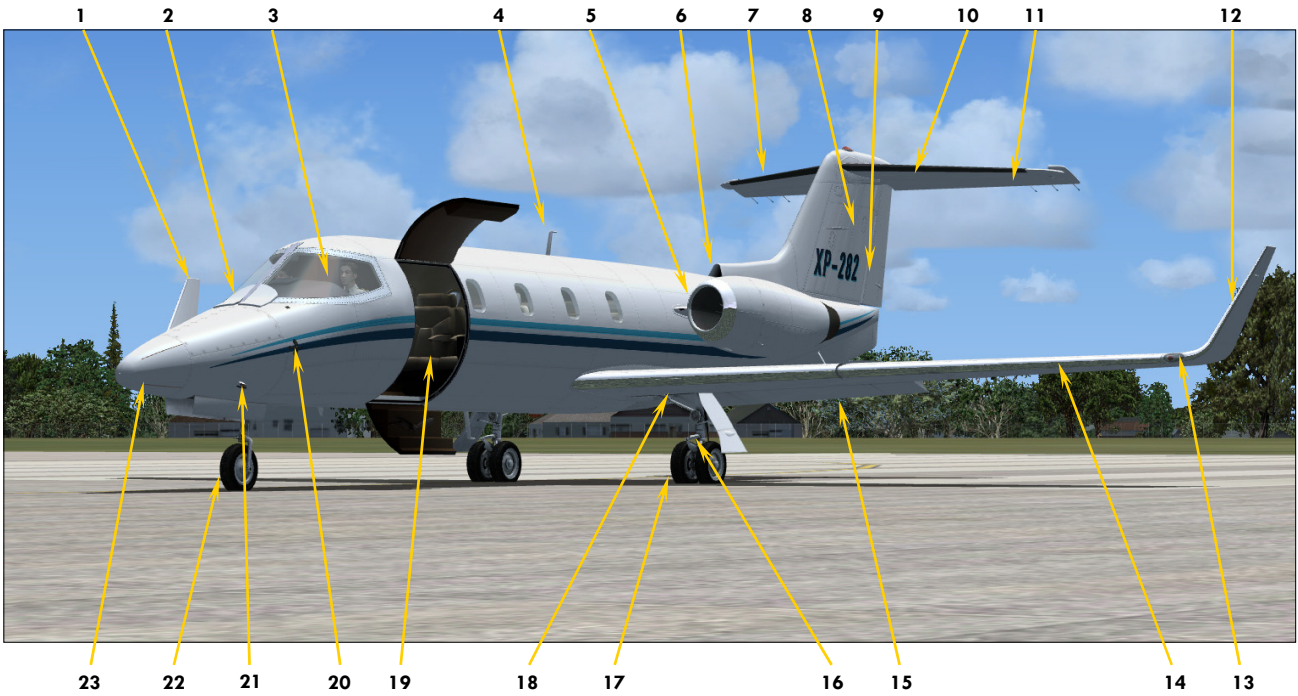


Figure 3-3

- | | |
|-------------------------------|------------------------------|
| 1. RIGHT WINGLET | 13. NAVIGATION LIGHT |
| 2. WINDSHIELD DEICE NOZZLES | 14. WING HEATED LEADING EDGE |
| 3. WINDSHIELD | 15. WING FLAP |
| 4. RADIO ANTENNA | 16. LANDING/TAXI LIGHT |
| 5. ENGINE NACELLE DEICING LIP | 17. MAIN GEAR |
| 6. CABIN AIR INTAKE | 18. WING |
| 7. STABILIZER HEATED EDGE | 19. MAIN DOOR |
| 8. VERTICAL FIN | 20. STALL WARNING VANE |
| 9. RUDDER | 21. PITOT PROBE |
| 10. STABILIZER | 22. NOSE GEAR |
| 11. ELEVATOR | 23. RADOME |
| 12. LEFT WINGLET | |

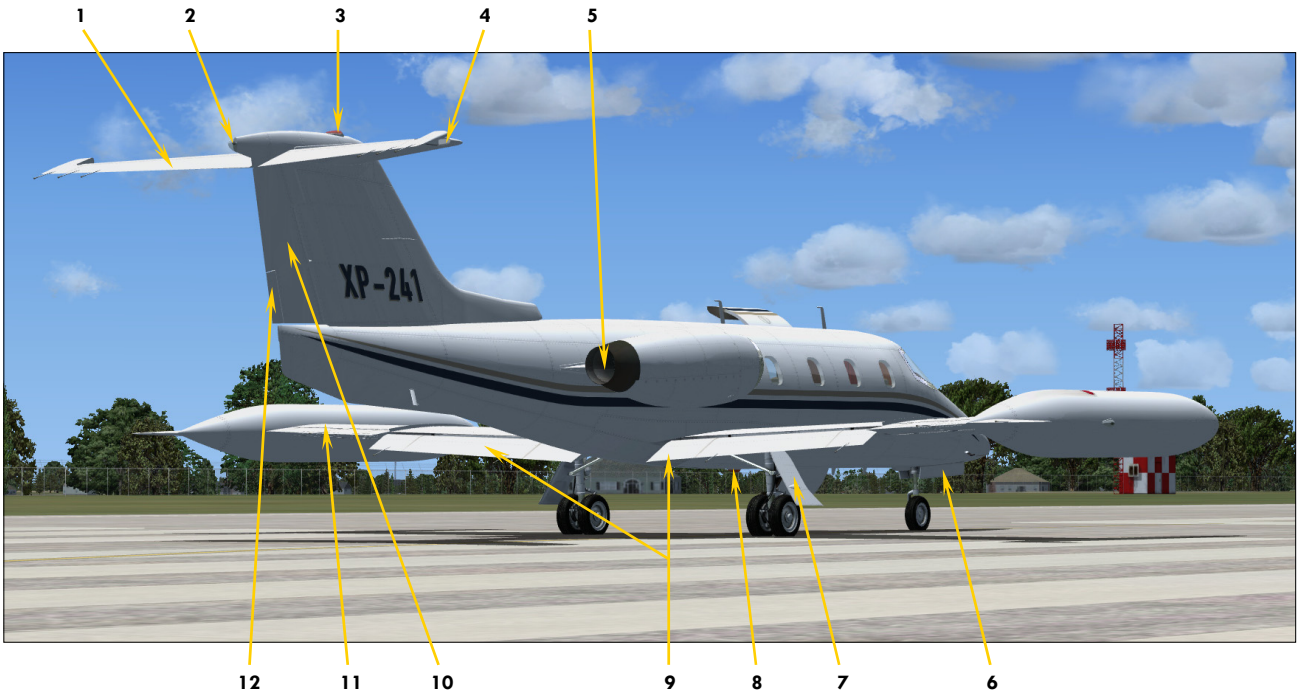


Figure 3-4

- | | |
|--------------------------|--------------------------|
| 1. ELEVATOR | 7. MAIN GEAR DOOR |
| 2. TAIL NAVIGATION LIGHT | 8. VENTRAL BEACON LIGHT |
| 3. TAIL BEACON LIGHT | 9. FLAPS |
| 4. MOVABLE STABILIZER | 10. RUDDER |
| 5. ENGINE EXHAUST NOZZLE | 11. AILERON AND TRIM TAB |
| 6. FRONT GEAR DOOR | 12. RUDDER TRIM TAB |



AIRCRAFT SYSTEMS

This section contains information about the aircraft systems included with the Xtreme Prototypes 20 Series add-on business jets for Flight Simulator X.

Important notice: Although your Xtreme Prototypes 20 Series virtual business jets are inspired from the Gates Learjet 20 Series family aircraft, there are a few differences in systems when compared to their real-world counterparts. These differences are due in part to limitations in Flight Simulator and our desire to keep aircraft operations enjoyable for an average-skilled single virtual pilot. This manual should obviously not be used for real flight.

Except where otherwise noted, the following aircraft systems are simulated to conform as closely as possible to the operation of the real aircraft, within the present limitations and capabilities of the simulator:

- Flight Controls
- Electrical System

- Hydraulic System
- Landing Gear
- Fuel System
- Power Plant
- Fire Detection and Suppression System
- Pneumatic and Environment Control System
- Automatic Flight Control System

FLIGHT CONTROLS

Your 20 Series add-on aircraft are equipped with manually-powered primary flight control systems. These consist of the elevator, ailerons and rudder. Secondary systems are either electric (stabilizer and other trims) or hydraulic (flaps and spoilers). The controls are balanced to provide reasonable effort and feel for the pilot.

Your add-on aircraft should be controlled with only constant and light movements of the joystick. The controls should never be pushed hard and should be properly trimmed at all times.

Note: Remember, trims are there to help you but they are not primary flight controls. As a qualified pilot, you should hold the desired attitude with the controls and trim until the effort is gone. Do not let go of the controls and use trim to get the required attitude. This is sloppy flying and can lead to loss of control.

(See fig. 3-1 to 3-4 for the location of the different flight control surfaces on the 20 Series aircraft.)



ELECTRICAL SYSTEM

Your add-on's electrical system consists of a single 24-volt DC battery (instead of dual batteries as in the real aircraft), a main DC bus, an avionics AC bus, two 28-volt DC 400-ampere engine-driven starter-generators and associated switches and gauges. Please refer to section 7 for system operation details.

During normal operation, the generators supply DC power to the main DC electrical bus. Two AC inverters (primary and secondary) provide 110 volts AC power to the avionics electrical bus, which powers the majority of flight instruments. An auxiliary inverter is also installed for safety purposes, since critical instruments depend on AC power to tell up from down.

The instrument panel is also equipped with standby gyro horizon, powered by its own battery, but recharged by the generators. This means that in case of a loss of all generators failure, the pilot will have attitude indication for as long as the battery lasts (typically enough for a precautionary landing).

HYDRAULIC SYSTEM

Your add-on's hydraulic system consists of two engine-driven hydraulic pumps and a fluid reservoir. The hy-

draulic system powers the landing gear and brakes, the flaps and the spoilers.



LANDING GEAR

Your add-on's landing gear is of the tricycle, retractable type. The main gear has dual-wheels while the nose gear has a single wheel. The main gear is equipped with multi-disc hydraulic brakes controlled by an anti-skid computer, sensors and modulator valves. Please refer to section 7 for details on system operation.



FUEL SYSTEM

Your add-on's fuel system consists of two wingtip tanks (except on model 28), two main wing tanks and a central fuselage tank. The real-world aircraft is equipped with ejector-type jet pumps to assist in emptying the wingtip tanks into the main wing tanks. The real-world fuselage tank has a transfer pump to help transfer its contents into the main wing tanks as well. Although your add-on uses gravity instead of pumps, all the switches and annunciators have been provided to enhance procedures realism. The fuel system is divided into left and right

tankage, each feeding the corresponding engine. A cross-feed valve is provided to manage fuel imbalance in case of single-engine operation. Two boost pumps are also provided.



POWER PLANT

Your add-on is equipped with the reliable General Electric CJ-610 single-spool turbojet engine. Rated at 2,950 lbs static thrust per side at sea-level, the CJ-610 provides the aircraft (especially at low weights) with fighter-like performance. It is said that a lightly-loaded model 24 will easily outperform the legendary Lockheed T-33! The single-spool turbojet engine will make higher thrust at altitude than a like-rated modern turbofan engine. This makes the 20 Series aircraft well-suited for high-altitude flight. The downside is that fuel consumption and noise are far greater. Your 20 Series add-on is no exception, so plan adequate fuel for your trip!

FIRE DETECTION AND SUPPRESSION SYSTEM

Each engine nacelle is equipped with a fire detection system. Two fire extinguisher bottles in the fuselage may discharge to either engine as needed. Each engine has its own fire control panel on the glareshield. Please refer to sections 5 and 8 (abnormal/emergency procedures) for system operation and indication details.

PNEUMATIC (HIGH PRESSURE) AND ENVIRONMENTAL CONTROL SYSTEMS

Your add-on aircraft is meant to operate at high altitudes, where the air is thin and very cold. It is therefore equipped with a high-performance pressurization system. The pressurization system bleeds high-pressure air from the engine compressors and directs it into the cabin to

maintain pressurization. The pressure is regulated through an outflow valve slaved to the pressurization controller (see fig. 5-4A). After takeoff, the pilot sets the target altitude of the flight and the pressurization controller will take care of the rest. Manual control of the cabin climb/descent rate is available via a control knob on the pressurization panel. In your add-on aircraft, the cherry picker controls the cabin rate when in manual mode.

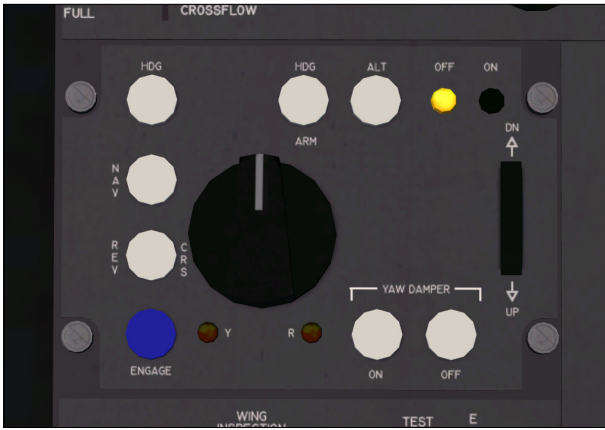
Bleed air is quite hot as it leaves the engine. This heat is used to control cabin temperature as well. By mixing hot bleed air with bleed air cooled in a heat exchanger, a comfortable cabin temperature can be obtained. The mixing of these two airflows takes place in the so-called "H-valve". As cabin temperature is set, make sure the H-valve temperature gauge stays in the green zone.



AUTOMATIC FLIGHT CONTROL SYSTEM

Your add-on's automatic flight control system (AFCS) consists of a flight computer, flight director and autopilot. The system's main control panel is on the center pedestal (see fig. 5-6B), but a series of annunciators, control buttons and an altitude pre-selector on the main instrument panel (see fig. 5-2D, 5-3D and 5-3J) allow for complete control of the system without shifting your point of view. This makes flying easier from the virtual cockpit.

The flight director is operational full-time and requires the pilot to select an operating mode. The vertical mode is altitude hold. The vertical speed indicator is equipped with a vertical speed selector bug. The altitude hold mode will hold the selected altitude on the altitude pre-selector (see fig. 5-3J). Climb or descent to this altitude will be performed at the selected vertical speed. By varying the selected vertical speed, pitch control is obtained. As the 20 Series has amazing climb perform-



ance, power management during climb is also important.

Available horizontal modes are heading hold, nav/loc hold and back course hold. Heading hold mode will maintain the heading selected on the HSI (see fig. 5-2F). Nav/loc hold mode will maintain the NAV1 course selected on the HSI, or the localizer path if a valid localizer signal is present on the NAV1 receiver. Localizer back course will hold a localizer path on the opposite side of the runway. Remember to always identify your NAV stations with the audio panel (see fig. 5-2A).



The AFCS also provides a coupled approach mode. When a valid ILS signal is present on the NAV1 receiver, the system will intercept and capture the localizer path and the glideslope. It is recommended that the interception be initiated on heading hold mode until a shallow interception angle is established. The glideslope should be intercepted from below at the recommended approach speed and published or cleared altitude.

The aircraft should be maneuvered to satisfy the flight director command bars (see fig. 5-2E). However, the flight director may sometimes command a momentary large correction to an important deviation from the calculated attitude. The pilot should not follow these large variations implicitly but rather interpret them as advisory. **Remember:** You are still hand-flying the aircraft so common-sense still applies and exaggerated attitudes should be avoided.

The autopilot will follow the same modes as the flight director. A single-button ENGAGE/DISENGAGE control is provided (see fig. 5-2D).

INSTRUMENT PANELS (3D VIRTUAL COCKPIT)

SECTION 5



What makes the Xtreme Prototypes 20 Series for Flight Simulator X especially exciting are the **fully functional** 3D instrument panels and systems that have been recreated for the desktop pilot to simulate almost every step and procedure required before, during and after a flight.

Over 200 systems, gauges, flight instruments, light indicators, switches and levers have been developed for the different variations of the Xtreme Prototypes 20 Series for Flight Simulator X. Virtually all of them are functional and behave like the original analog devices installed in the real-world aircraft during the 1970s.

To help the desktop pilot familiarize him/herself with the many aircraft panels, “tooltips” have been integrated within most switches and levers. Simply move the cursor over a clickable cockpit item with the mouse and its name will be displayed.

3D VIRTUAL COCKPIT

The virtual cockpit allows for total 3D immersion into the 20 Series flying environment. The VC contains over 800 parts and has been meticulously created to conform as closely as possible to the cabin of the real aircraft.

The VC comes with a number of switches, control sticks, handles and levers. All the switches in the VC are clickable and most of them perform real simulator functions.

The virtual cockpit is available in FSX from the “Views” menu in the main Flight Simulator menu bar at the top.

Multiple VC camera views are provided to help the pilot access switches and other items in areas of the cockpit that are difficult to reach when in the default VC view. Users can cycle through the different views using the “S” key and the different camera views using the “A” key.

IMPORTANT
PLEASE READ CAREFULLY!

There are no more 2D panels included with the Xtreme Prototypes add-on aircraft, following an industry trend since the launch of Flight Simulator X.



HOW TO ACTIVATE THE SWITCHES, BUTTONS AND KNOBS IN THE VC

All **toggle switches** can be alternately turned “on” and “off” by a simple left click with the mouse. Turning the mouse wheel up will turn the switch to “on”, turning the mouse wheel down will turn the switch to “off”.

Note: When the mouse cursor becomes a hand over an object and the tooltip is displayed, the 3D part can usually be activated by left clicking with the mouse.

3-position switches can be turned to their “up” position from their “middle” (or neutral) position by turning the mouse wheel up. Turning the mouse wheel down will move the switch lever down one position at a time (“up”, “mid”, “down”). Turning the mouse wheel up will move the switch lever up again one position at a time (“down”, “mid”, “up”).

Push-button switches are animated and can be activated with a single left click.

Most **levers** can be activated with left mouse clicks or

with the mouse wheel. Simply move the cursor over the lever handle with the mouse and turn the mouse wheel up or down (or click) to activate the lever.

Some handles and levers can also be dragged with the mouse. Simply click on the handle with the left mouse button, drag the handle to the desired position, and release the mouse button.

The **control yokes** cannot be moved with the mouse but are synchronized with the movements of your joystick (pitch and roll). To hide a control yoke, click on the opposite yoke. Click again to unhide.

The **rudder pedals** are synchronized with the rotation movement of your joystick or your flight simulator pedals (yaw).

Most **knobs** can be rotated by turning the mouse wheel left or right. Some knobs may also respond to mouse clicks.

Refer to the following fig. 5-1 to 5-8 for the location of the different instruments, gauges, light indicators, switches and levers.







Figure 5-1

- | | |
|---|---|
| 1. CENTER PEDESTAL | 11. MAIN INSTRUMENT PANEL (CENTER SECTION) |
| 2. LEFT BREAKER PANEL (NOT SIMULATED) | 12. MAIN INSTRUMENT PANEL (CO-PILOT'S SIDE) |
| 3. OXYGEN VALVES (NOT SIMULATED) | 13. POWER QUADRANT |
| 4. CAPTAIN'S COCKPIT LIGHTING SWITCHES | 14. CO-PILOT'S CONTROL YOKE |
| 5. COCKPIT READING LIGHT (BOTH SIDES) | 15. SUN SHADE (BOTH SIDES) |
| 6. CAPTAIN'S CONTROL YOKE | 16. RUDDER PEDALS AND BRAKE (BOTH SIDES) |
| 7. GLARESHIELD | 17. CO-PILOT'S COCKPIT LIGHTING SWITCHES |
| 8. MAIN INSTRUMENT PANEL (CAPTAIN'S SIDE) | 18. RIGHT BREAKER PANEL |
| 9. ANNUNCIATOR PANEL | 19. SEAT (BOTH SIDES) |
| 10. MAGNETIC COMPASS | |

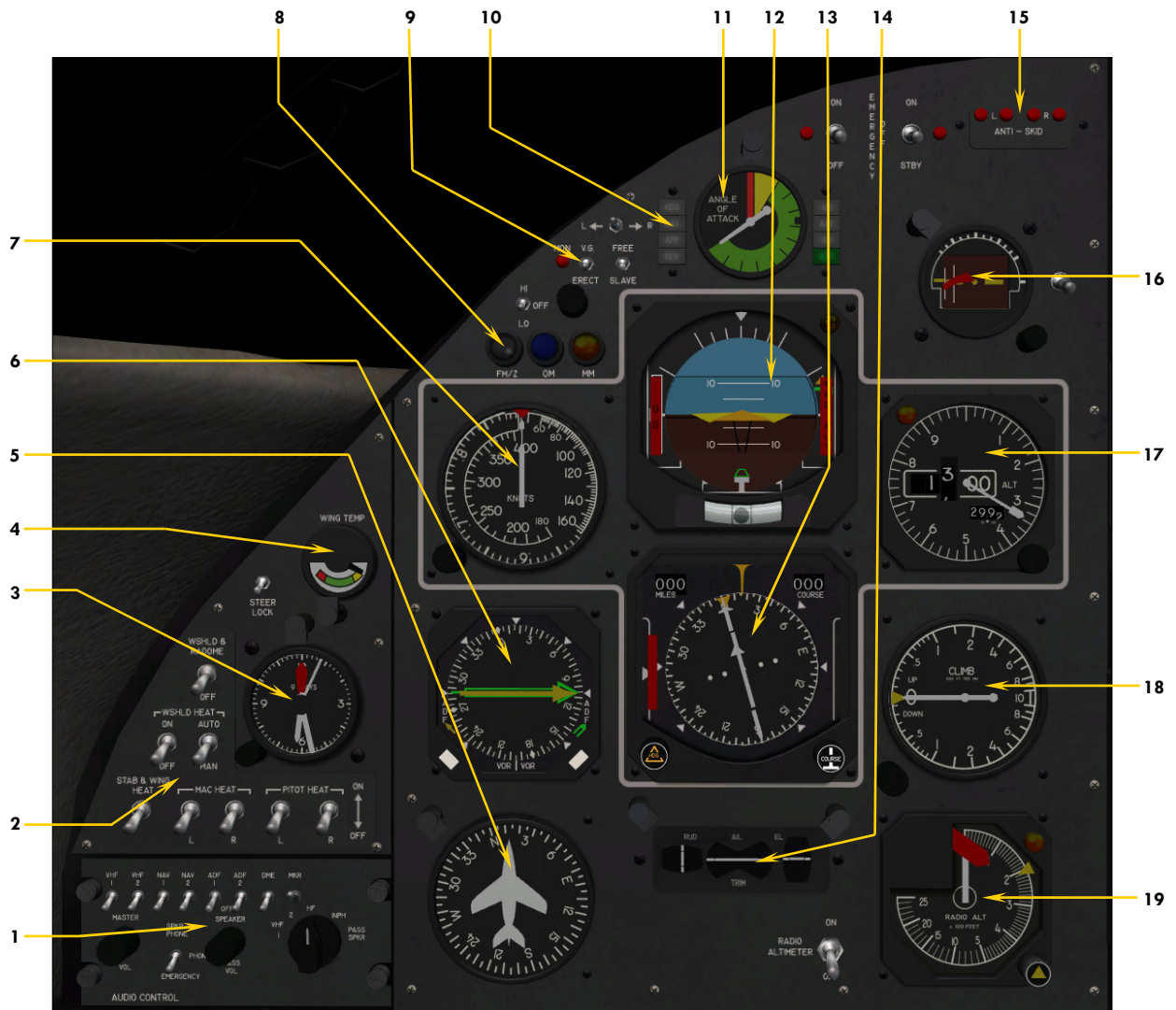


Figure 5-2

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. CAPTAIN'S AUDIO PANEL 2. ICE PROTECTION SWITCHES 3. CLOCK 4. WING TEMPERATURE GAUGE 5. DIRECTIONAL GYRO 6. REMOTE MAGNETIC INDICATOR (RMI) 7. AIRSPEED/MACH INDICATOR (ASI) 8. MARKER BEACON LIGHTS 9. GYRO SLAVE SWITCHES 10. AUTOPILOT/FLIGHT DIRECTOR MODE ANNUNCIATORS | <ol style="list-style-type: none"> 11. ANGLE-OF-ATTACK GAUGE 12. ATTITUDE DIRECTOR INDICATOR (ADI) 13. HORIZONTAL SITUATION INDICATOR (HSI) 14. TRIM INDICATOR 15. ANTI-SKID SWITCHES AND LIGHTS 16. STANDBY HORIZON 17. ALTIMETER 18. VERTICAL SPEED INDICATOR (VSI) 19. RADIO ALTIMETER |
|--|--|

MAIN PANEL (CAPTAIN)

AUDIO PANEL

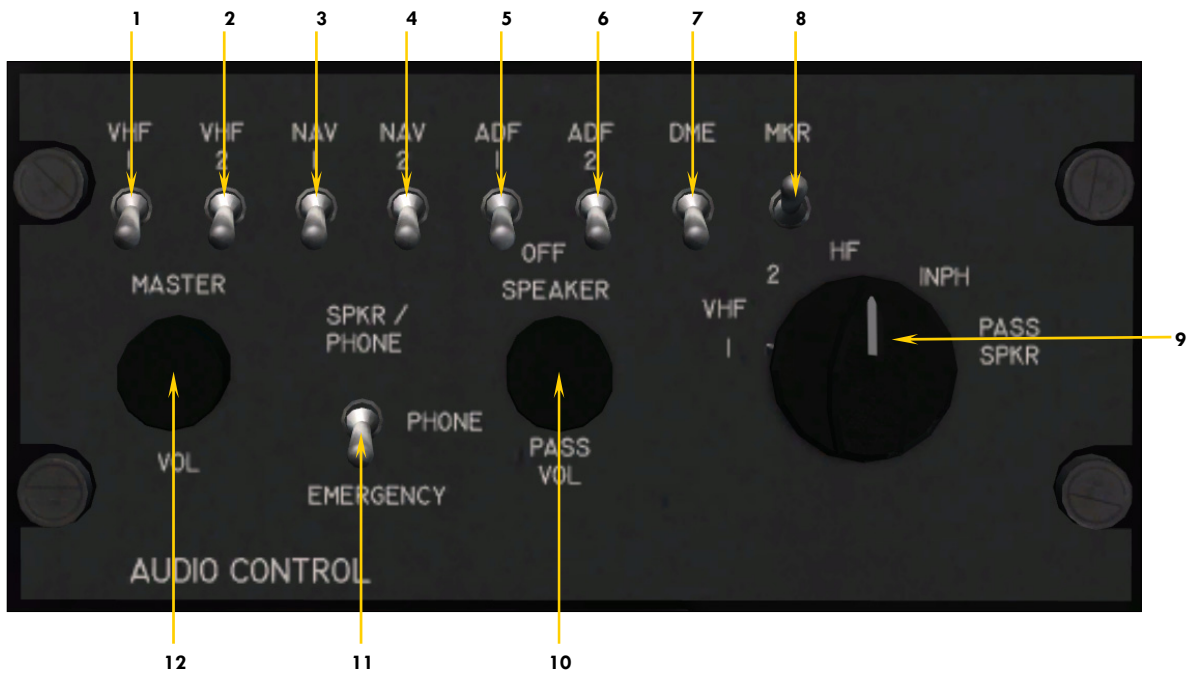


Figure 5-2A

1. COM1 AUDIO MONITOR SWITCH
2. COM2 AUDIO MONITOR SWITCH
3. NAV1 AUDIO MONITOR SWITCH
4. NAV2 AUDIO MONITOR SWITCH
5. ADF1 AUDIO MONITOR SWITCH
6. ADF2 AUDIO MONITOR SWITCH
7. DME AUDIO MONITOR SWITCH (NOT SIMULATED)
8. MARKER BEACON AUDIO MONITOR SWITCH
9. TRANSMIT SELECT KNOB (NOT SIMULATED)
10. PASSENGER P.A. VOLUME KNOB (NOT SIMULATED)
11. EMERGENCY MONITOR SWITCH (NOT SIMULATED)
12. VOLUME CONTROL KNOB (NOT SIMULATED)



Figure 5-2B

1. PITOT HEAT SWITCHES
2. ENGINE NACELLE HEAT SWITCHES
3. WING & STABILIZER HEAT SWITCH
4. WINDSHIELD HEAT SWITCHES
5. WINDSHIELD & RADOME ALCOHOL SWITCHES
6. CLOCK BUG KNOB
7. STEER LOCK SWITCH
8. CAPTAIN'S CLOCK
9. CLOCK BUG
10. WING TEMPERATURE GAUGE



Figure 5-2C

1. MIDDLE MARKER LIGHT
2. FAN MARKER LIGHT
3. OUTER MARKER LIGHT
4. VERTICAL GYRO ERECT SWITCH
5. LEFT RIGHT GYRO DRIFT COMPENSATION SWITCH
6. GYRO FREE/SLAVE SELECTOR SWITCH

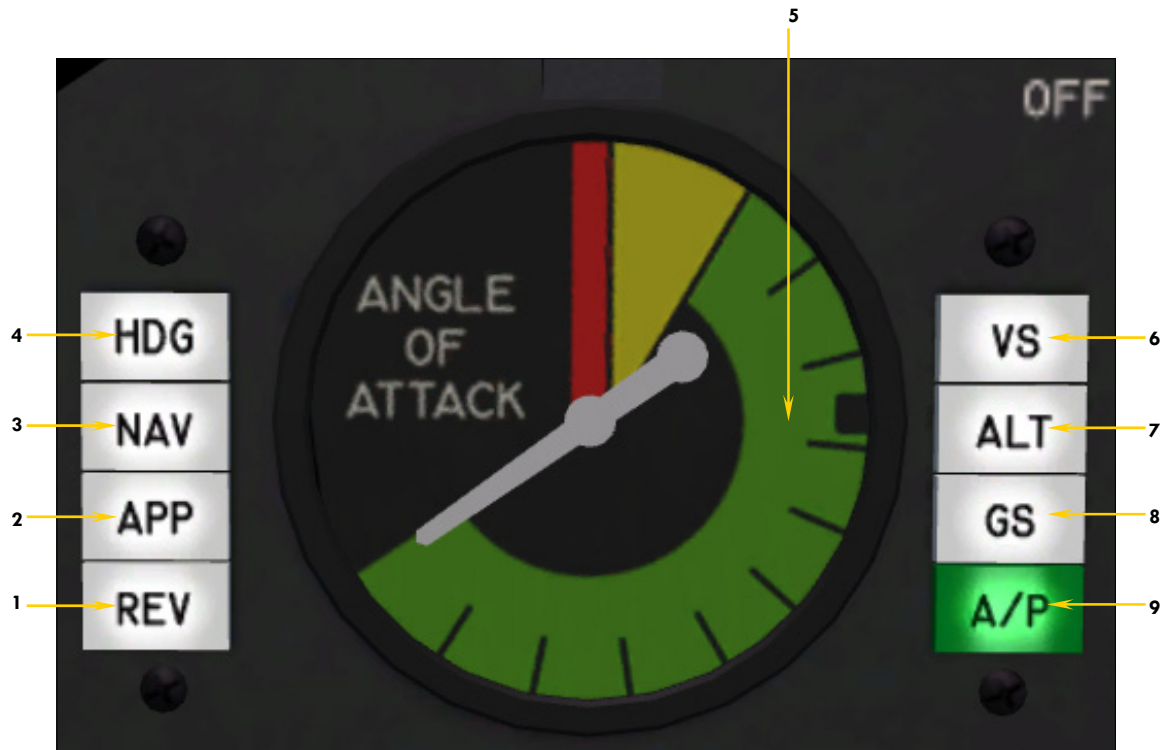


Figure 5-2D

1. LOCALIZER BACKCOURSE MODE ANNUNCIATOR
2. APPROACH MODE ANNUNCIATOR
3. NAV/LOC MODE ANNUNCIATOR
4. HEADING MODE ANNUNCIATOR
5. ANGLE-OF-ATTACK GAUGE
 - Alive above 80 KIAS
 - Green arc: Safe maneuvering range
 - Yellow arc: Caution range, impending stick shaker condition
 - Red line: Stall, stick pusher condition
6. VERTICAL SPEED MODE ANNUNCIATOR
7. ALTITUDE HOLD MODE ANNUNCIATOR
8. GLIDESLOPE CAPTURED ANNUNCIATOR
9. AUTOPILOT ENGAGED ANNUNCIATOR

MAIN PANEL (BOTH SIDES)

ATTITUDE DIRECTOR INDICATOR (ADI)

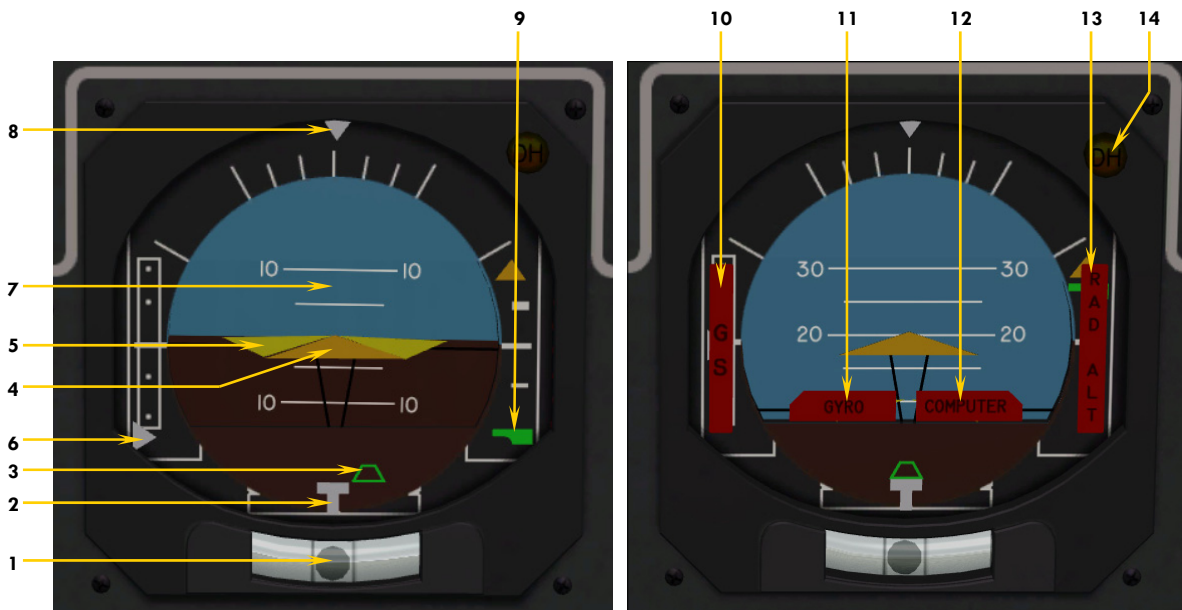


Figure 5-2E

NOTE: All NAV indications coupled to NAV1 receiver signals.

1. **INCLINOMETER BALL INDICATOR**
Indicates SLIP/SKID condition.
2. **TURN INDICATOR SYMBOL**
Indicates RATE OF HEADING CHANGE.
3. **LOCALIZER DEVIATION RUNWAY SYMBOL**
Repeats CDI indication when valid localizer signal is present.
4. **FIXED AIRPLANE SYMBOL**
5. **FLIGHT DIRECTOR COMMAND BARS**
Maneuvering guidance - Advisory.
6. **GLIDESLOPE DEVIATION INDICATOR**
Repeats HSI glideslope deviation indication.
7. **PITCH SCALE**
8. **BANK INDICATOR**
Indicates present bank angle.
9. **RADIO ALTIMETER BELOW 200 FT. INDICATOR**
Indicates the last 200 feet above ground.
10. **GLIDESLOPE WARNING FLAG**
Indicates unreliable or non-existent glideslope signal.
11. **GYRO WARNING FLAG**
Indicates inoperative vertical gyroscope.
12. **COMPUTER WARNING FLAG**
Indicates inoperative AFCS computer.
13. **RADIO ALTIMETER WARNING FLAG**
Indicates unreliable or non-existent radio altimeter signal.
14. **DECISION HEIGHT ANNUNCIATOR**
Indicates a/c at or below selected decision height.

MAIN PANEL (BOTH SIDES)

HORIZONTAL SITUATION INDICATOR (HSI)

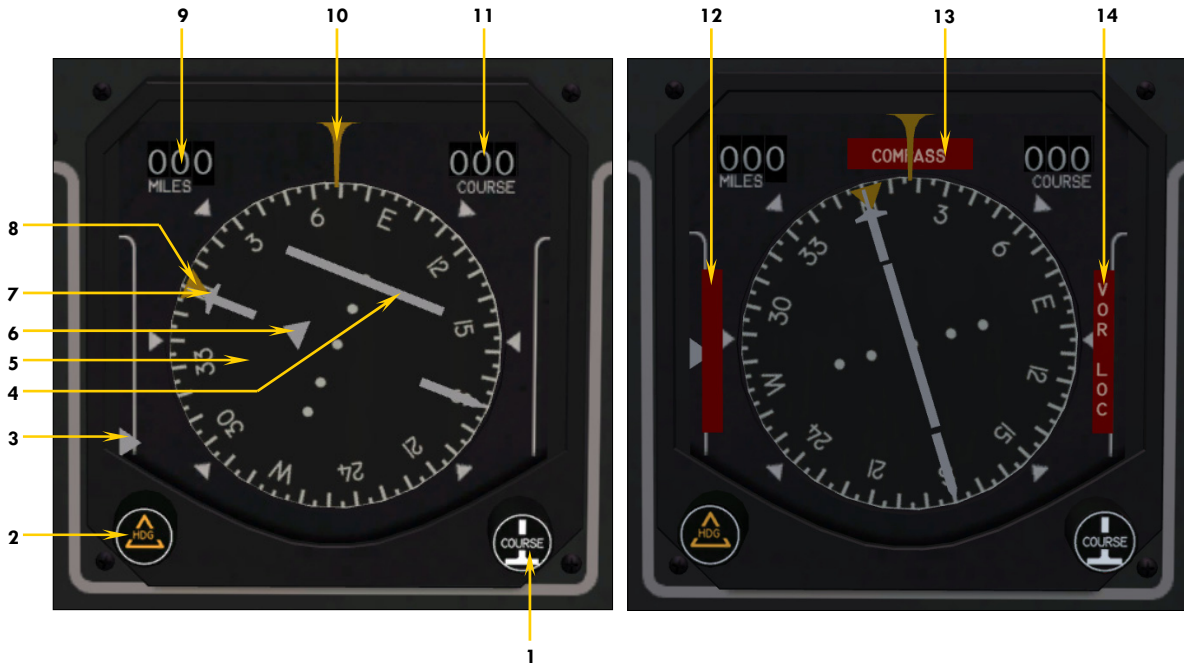


Figure 5-2F

Note: All NAV indications coupled to NAV1 receiver signals.

1. **NAV1 COURSE SELECTOR KNOB**
2. **HEADING SELECT KNOB**
3. **GLIDESLOPE DEVIATION INDICATOR**
4. **COURSE DEVIATION INDICATOR (CDI)**
5. **HEADING CARD (GYRO SLAVED)**
6. **TO/FROM INDICATOR**
7. **NAV1 COURSE NEEDLE**
8. **HEADING BUG**
Used with AFCS Heading mode.
9. **NAV1 DME READOUT**
10. **LUBBER LINE**
11. **NAV1 COURSE READOUT**
12. **GLIDESLOPE WARNING FLAG**
Indicates unreliable or non-existent glideslope signal.
13. **COMPASS WARNING FLAG**
Indicates unreliable or non-existent magnetic heading signal.
14. **VOR/LOC WARNING FLAG**
Indicates unreliable or non-existent NAV1 signal.



Figure 5-2G

1. AIRSPEED BUG KNOB
2. MACH SCALE
3. AIRSPEED SCALE (KNOTS)
4. INDICATED AIRSPEED NEEDLE
5. AIRSPEED BUG

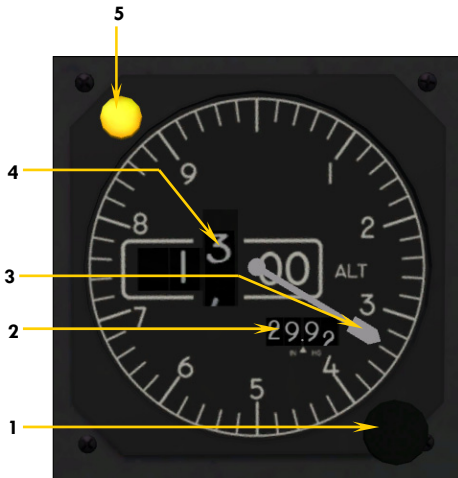


Figure 5-2H

1. NAV1/ADF1 SELECTOR BUTTON
2. NAV1/ADF1 POINTER
3. NAV1/ADF1 NEEDLE
4. WARNING FLAG
5. NAV2/ADF2 NEEDLE
6. NAV2/ADF2 POINTER
7. NAV2/ADF2 SELECTOR BUTTON

MAIN PANEL (CAPTAIN)

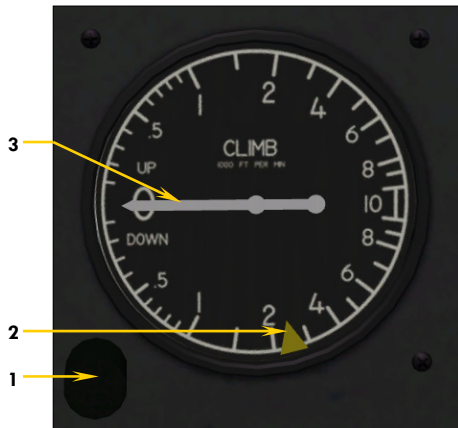
MISCELLANEOUS INSTRUMENTS



ALTIMETER

Figure 5-2I

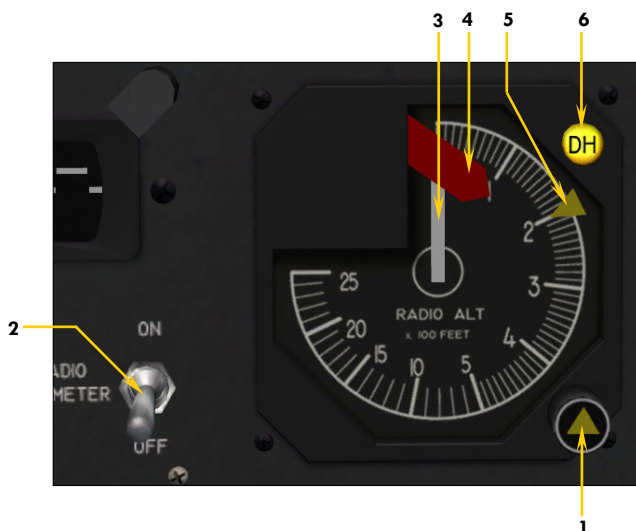
1. **BAROMETRIC SETTING KNOB**
2. **BAROMETRIC SETTING READOUT**
3. **ALTITUDE NEEDLE**
4. **ALTITUDE READOUT**
5. **ALTITUDE ALERTER ANUNCIATOR**
Illuminated with aural warning if within 100 to 300 feet of selected altitude.



VERTICAL SPEED INDICATOR (VSI)

Figure 5-2J

1. **VERTICAL SPEED SELECTOR KNOB**
2. **VERTICAL SPEED SELECTOR BUG**
This is the vertical speed command for the AFCS.
3. **VERTICAL SPEED INDICATOR NEEDLE**



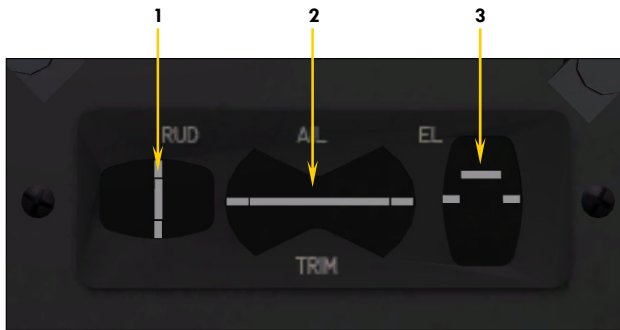
RADIO ALTIMETER

Figure 5-2K

1. **RADIO ALTIMETER DECISION HEIGHT KNOB**
2. **RADIO ALTIMETER POWER SWITCH**
3. **RADIO ALTIMETER NEEDLE**
4. **WARNING FLAG**
Indicates inoperative instrument.
5. **RADIO ALTIMETER DECISION HEIGHT BUG**
Indicates the height above ground that triggers the Decision Height annunciators.
6. **RADIO ALTIMETER DECISION HEIGHT ANUNCIATOR**

MAIN PANEL (CAPTAIN)

MISCELLANEOUS PANELS



TRIM INDICATORS

Figure 5-2L

1. **RUDDER TRIM INDICATOR**
2. **AILERON TRIM INDICATOR**
3. **STABILIZER (PITCH) TRIM INDICATOR**

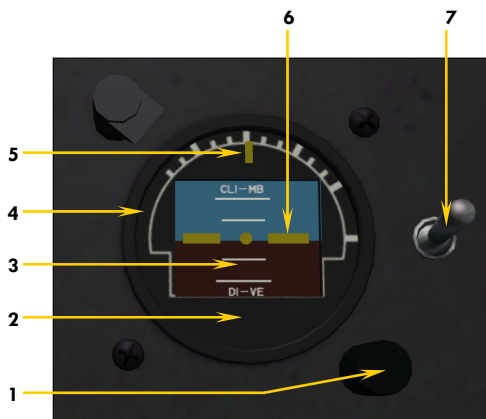
Takeoff trim is typically one needle thickness below neutral.



ANTI-SKID CONTROLS

Figure 5-2M

1. **ANTI-SKID EMERGENCY SWITCH**
Engages Anti-Skid system when Anti-Skid power switch is ON.
2. **ANTI-SKID ENGAGE SWITCH**
Engages Anti-Skid system when Anti-Skid power switch is ON.
3. **ANTI-SKID WHEEL GENERATOR ACTIVITY MONITOR LIGHTS**
Indicate brake modulation activity for each main gear wheel.



STANDBY GYRO

Figure 5-2N

1. **FIXED AIRPLANE HEIGHT ADJUSTMENT KNOB**
2. **STANDBY GYRO**
Self-powered, independent from main electrical bus.
3. **PITCH SCALE**
4. **WARNING FLAG (NOT SHOWN)**
Indicates inoperative instrument.
5. **BANK INDICATOR**
6. **FIXED AIRPLANE SYMBOL**
7. **STANDBY GYRO SWITCH**

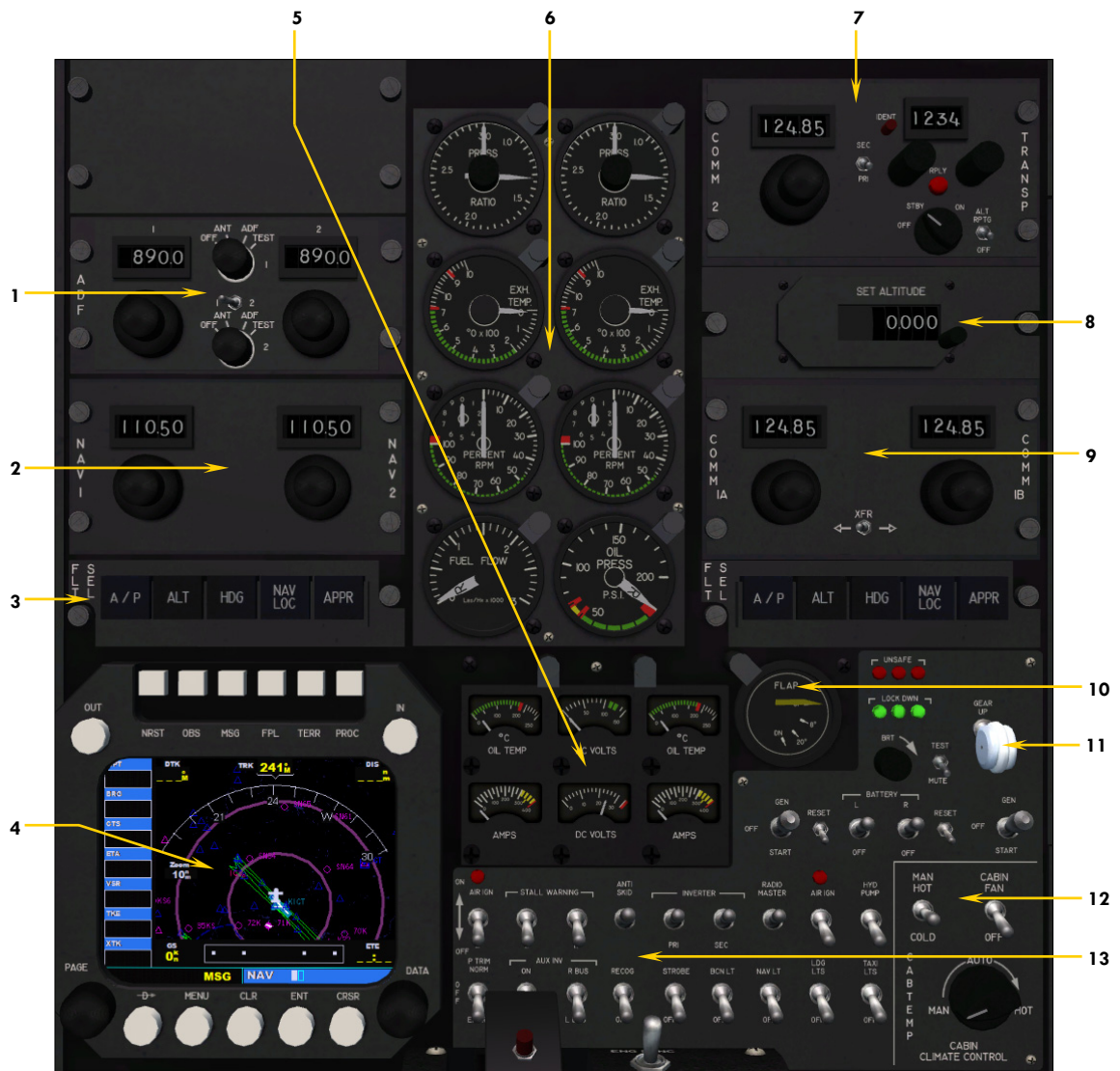


Figure 5-3

1. ADF RADIO
2. NAV RADIO
3. AUTOPILOT/FLIGHT DIRECTOR MODE SWITCHES
4. GPS
5. ELECTRICAL GAUGE CLUSTER
6. ENGINE GAUGE CLUSTER
7. COM2 RADIO/TRANSPONDER
8. ALTITUDE PRESELECTOR
9. COM1 RADIO
10. FLAPS POSITION INDICATOR
11. GEAR LEVER & INDICATORS
12. CABIN TEMPERATURE CONTROL PANEL
13. ELECTRICAL SWITCH PANEL

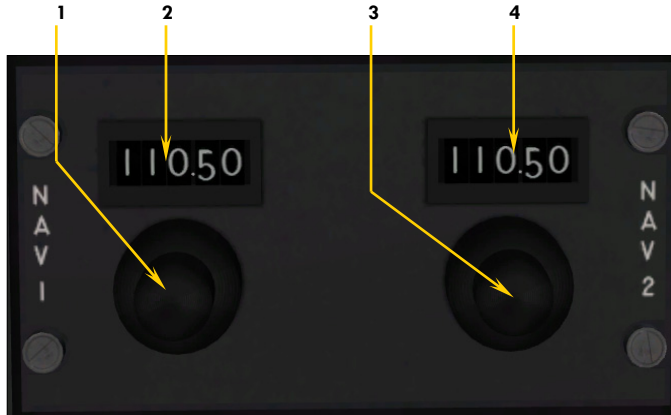
MAIN PANEL (CENTER)

RADIO PANELS 1



ADF RADIO
Figure 5-3A

1. ADF1 FREQUENCY SELECTOR KNOBS
2. ADF1 FREQUENCY READOUT
3. ADF2 FREQUENCY SELECTOR KNOBS
4. ADF2 FREQUENCY READOUT



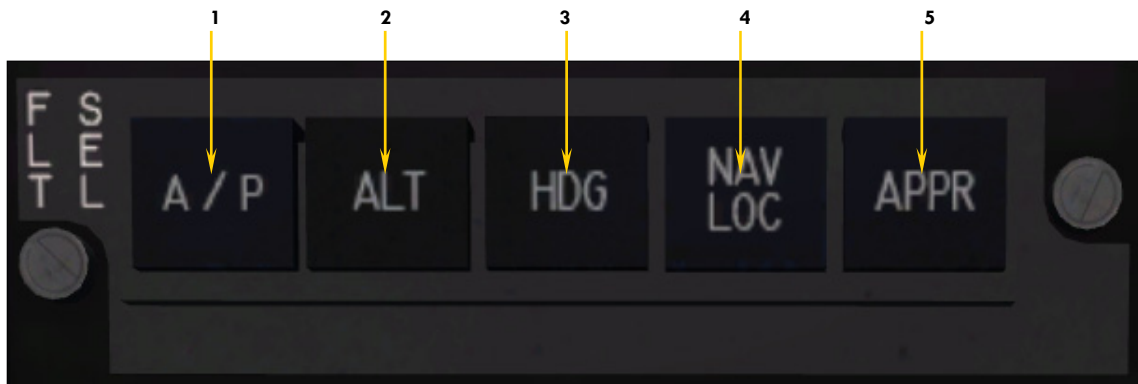
NAV RADIO
Figure 5-3B

1. NAV1 FREQUENCY SELECTOR KNOBS
2. NAV1 FREQUENCY READOUT
3. NAV2 FREQUENCY SELECTOR KNOBS
4. NAV2 FREQUENCY READOUT



DME HEAD
Figure 5-3C

1. NAV1/NAV2 SOURCE SELECTOR KNOB
2. DISTANCE READOUT
3. GROUNDSPED/ESTIMATED TIME TO ARRIVAL READOUT
Groundspeed is the closing speed to station, not the actual A/C groundspeed. ETA is valid only when flying TO the station.
4. GS/ETA SELECTOR KNOB



(Refer to the “Autopilot/Flight Director” mode annunciators section.)

Figure 5-3D

- 1. AUTOPILOT SERVO ENGAGE BUTTON**
Autopilot assumes AIRCRAFT control. Flight Director is ON at all times.
- 2. ALTITUDE HOLD MODE BUTTON**
Engages the Altitude Hold mode of the AFCS. If selected altitude differs from current altitude, the AFCS will calculate a path to the selected altitude at the selected vertical speed. The pilot is responsible for managing airspeed.
- 3. HEADING MODE BUTTON**
Engages the Heading Hold mode of the AFCS.
- 4. NAV / LOC MODE BUTTON**
Engages the NAV/LOC (lateral navigation) mode of the AFCS. NAV1 receiver signals will be followed.
- 5. COUPLED APPROACH MODE BUTTON**
Engages the Approach mode of the AFCS when a valid ILS signal is present on the NAV1 receiver. It is recommended to engage the Approach mode only after initial localizer interception with intercept angles shallower than 45 deg. The coupled glideslope signal is best intercepted from below, once the localizer course is established and the recommended approach speed stabilized.

MAIN PANEL (CENTER)

GPS NAVIGATOR UNIT



(Refer to the “Using the GPS” section of the Flight Simulator Learning Center.)

Figure 5-3E

- | | |
|---------------------|------------------------|
| 1. RANGE OUT BUTTON | 9. GPS DISPLAY |
| 2. NRST BUTTON | 10. DATA INPUT KNOB |
| 3. OBS BUTTON | 11. CRSR BUTTON |
| 4. MSG BUTTON | 12. ENT BUTTON |
| 5. FPL BUTTON | 13. CLR BUTTON |
| 6. TERR BUTTON | 14. MENU BUTTON |
| 7. PROC BUTTON | 15. DESTINATION BUTTON |
| 8. RANGE IN BUTTON | 16. PAGE SELECTOR KNOB |

MAIN PANEL (CENTER)

ENGINE GAUGE CLUSTER



Figure 5-3F

1. **TARGET EPR BUG**
2. **TARGET EPR SELECTOR KNOB**
3. **ENGINE PRESSURE RATIO (EPR) NEEDLE**
4. **EXHAUST GAS TEMPERATURE (EGT) NEEDLE**
5. **ENGINE RPM VERNIER NEEDLE**
Used for fine power settings.
6. **ENGINE RPM NEEDLE**
Used for coarse power settings.
7. **OIL PRESSURE LEFT & RIGHT NEEDLES**
8. **FUEL FLOW LEFT & RIGHT NEEDLES**

MAIN PANEL (CENTER)

ELECTRICAL GAUGE CLUSTER

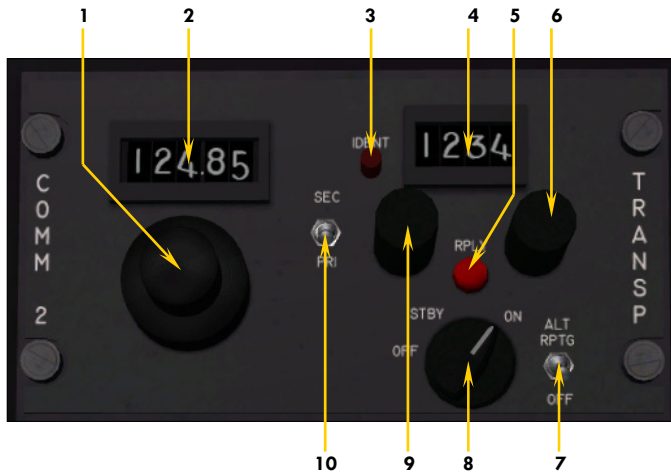


Figure 5-3G

1. **RIGHT OIL TEMPERATURE NEEDLE**
2. **AC VOLTMETER NEEDLE**
Indicates available AC voltage from either the primary, secondary or auxiliary inverters.
3. **LEFT OIL TEMPERATURE NEEDLE**
4. **RIGHT DC AMMETER NEEDLE**
Indicates load on right generator.
5. **DC VOLTMETER NEEDLE**
Indicates available voltage on the Main DC Bus.
6. **LEFT DC AMMETER NEEDLE**
Indicates load on left generator.

MAIN PANEL (CENTER)

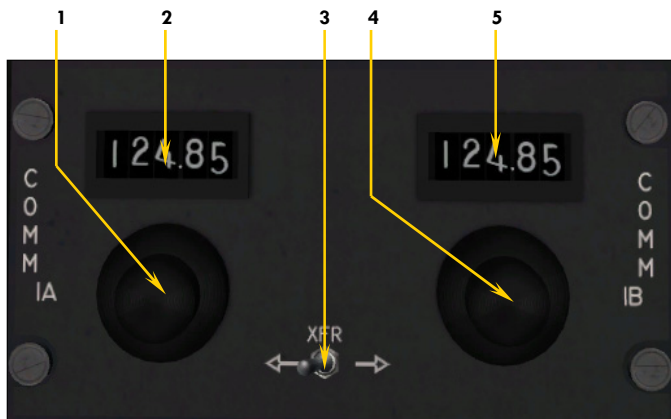
RADIO PANELS 2



COM2/TRANSPONDER

Figure 5-3H

1. COM2 FREQUENCY SELECTOR KNOBS
2. COM2 FREQUENCY READOUT
3. TRANSPONDER ATC IDENT BUTTON
TOGGLES ATC WINDOW
4. TRANSPONDER CODE READOUT
Transponder code must be selected by rolling mouse wheel on the individual digits.
5. TRANSPONDER GROUND INTERROGATION LIGHT
Indicates simulated Interrogation/Reply activity.
6. TRANSPONDER CODE SELECTOR KNOB
(NOT SIMULATED)
7. TRANSPONDER MODE SWITCH (NOT SIMULATED)
8. TRANSPONDER CONTROL KNOB
9. TRANSPONDER CODE SELECTOR KNOB
(NOT SIMULATED)
10. PRIMARY/SECONDARY TRANSPONDER SELECTOR SWITCH (NOT SIMULATED)



COM1 RADIO

Figure 5-3I

1. COM1A FREQUENCY SELECTOR KNOBS
2. COM1A FREQUENCY READOUT
3. ACTIVE FREQUENCY TRANSFER SWITCH
4. COM1B FREQUENCY SELECTOR KNOBS
5. COM1B FREQUENCY READOUT



ALTITUDE PRESELECTOR

Figure 5-3J

1. WARNING FLAG (NOT SHOWN)
Indicates AC power is unavailable
2. PRESELECTED ALTITUDE READOUT
3. ALTITUDE PRESELECTOR KNOB
Selects desired altitude for the AFCS. Use your mouse wheel anywhere on the bezel.

MAIN PANEL (CENTER)

ELECTRICAL SWITCHES



Figure 5-3K

1. LEFT ENGINE MANUAL IGNITION SWITCH
2. LEFT ENGINE MANUAL IGNITION ANNUNCIATOR
3. EMERGENCY PITCH TRIM SWITCH
4. LEFT STALL WARNING SWITCH
5. AUXILIARY INVERTER POWER SWITCH
6. RIGHT STALL WARNING SWITCH
7. AUXILIARY INVERTER BUS SELECTOR SWITCH
8. ANTI-SKID MASTER SWITCH
9. RECOGNITION LIGHT SWITCH
10. PRIMARY AC INVERTER SWITCH
11. STROBE LIGHTS SWITCH
12. SECONDARY AC INVERTER SWITCH
13. ROTATING BEACON LIGHTS SWITCH
14. AVIONICS MASTER SWITCH
Requires AC power.
15. NAVIGATION LIGHTS SWITCH
16. RIGHT ENGINE MANUAL IGNITION SWITCH
17. RIGHT ENGINE MANUAL IGNITION ANNUNCIATOR
18. LANDING LIGHTS SWITCH
19. HYDRAULIC PUMP SWITCH
20. TAXI LIGHTS SWITCH

MAIN PANEL (CENTER)

STARTING PANEL



Figure 5-3L

1. LEFT STARTER-GENERATOR SWITCH
2. LEFT BATTERY SWITCH
3. RIGHT BATTERY SWITCH
4. RIGHT STARTER-GENERATOR SWITCH

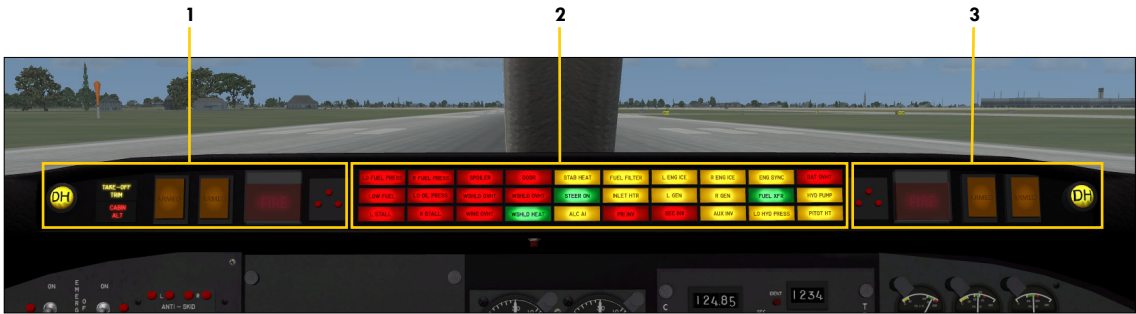


Figure 5-4

- 1. CAPTAIN'S FIRE PANEL
- 2. MAIN ANNUNCIATOR PANEL
- 3. COPILOT'S FIRE PANEL

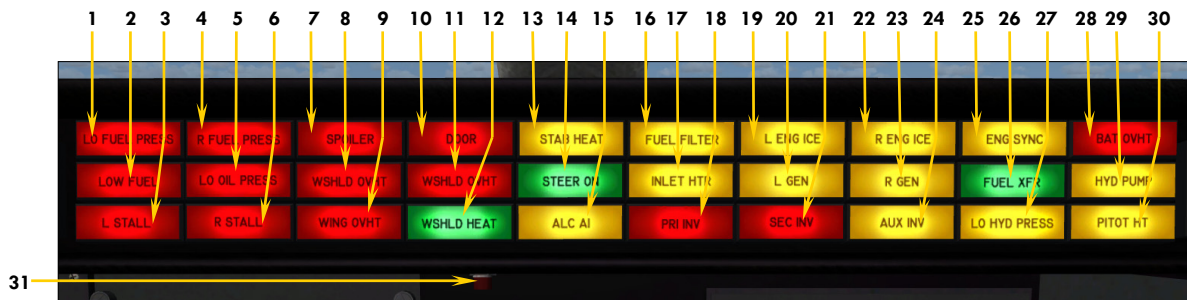


Figure 5-4A

1. **LEFT FUEL PRESSURE**
Indicates left engine fuel pressure below 10 psi.
2. **LOW FUEL REMAINING**
Indicates total fuel quantity below 1,000 pounds.
3. **LEFT STALL**
Indicates wing stall.
4. **RIGHT FUEL PRESSURE**
Indicates right engine fuel pressure below 10 psi.
5. **LOW OIL PRESSURE**
Indicates oil pressure below 35 psi on one or both engines.
6. **RIGHT STALL**
Indicates wing stall.
7. **SPOILERS DEPLOYED**
Indicates wing spoilers out of retracted position.
8. **LEFT WINDSHIELD OVERHEAT**
Indicates windshield overheat. Usually occurs when A/C is not moving and warm conditions exist.
9. **WING OVERHEAT**
Indicates wing anti-ice overheat. Usually occurs when A/C is not moving and warm conditions exist.
10. **DOOR UNSECURED**
Indicates main entry door not closed and locked.
11. **RIGHT WINDSHIELD OVERHEAT**
Indicates windshield overheat. Usually occurs when A/C is not moving and warm conditions exist.
12. **WINDSHIELD HEAT APPLIED**
Indicates windshield heat ON - requires engine bleed air.
13. **STABILIZER HEAT APPLIED**
Indicates stabilizer/wing heat ON.
14. **NOSEWHEEL STEERING ON (NOT SIMULATED)**
Indicates electrical nosewheel steering ON.
15. **ALCOHOL ANTI-ICE ON (NOT SIMULATED)**
Indicates windshield and radome alcohol pump ON.
16. **FUEL FILTER CLOGGED (NOT SIMULATED)**
Indicates an abnormal pressure drop across either engine fuel filter.
17. **ENGINE INLET HEAT APPLIED**
Indicates engine nacelle heat ON - requires engine bleed air.
18. **PRIMARY INVERTER INOP**
Indicates low AC voltage from primary inverter.
19. **LEFT ENGINE ICE DETECTED**
Indicates ice presence in left engine intake.
20. **LEFT GENERATOR INOP**
Indicates low DC voltage from left engine generator.
21. **SECONDARY INVERTER INOP**
Indicates low AC voltage from secondary inverter.
22. **RIGHT ENGINE ICE DETECTED**
Indicates ice presence in right engine intake.
23. **RIGHT GENERATOR INOP**
Indicates low DC voltage from right engine generator.
24. **AUXILIARY INVERTER ON**
Indicates auxiliary inverter has been switched ON.
25. **ENGINE SYNC ON**
Indicates engine sync switch is ON.
26. **FUEL TRANSFER PUMP ON (NOT SIMULATED)**
Indicates fuel transfer pump is pumping fuel from fuselage tank into wings.
27. **LOW HYDRAULIC PRESSURE**
Indicates hydraulic pressure below 1,500 psi.
28. **BATTERY OVERHEAT (NOT SIMULATED)**
Indicates overheating battery.
29. **AUXILIARY HYDRAULIC PUMP (NOT SIMULATED)**
Indicates auxiliary hydraulic pump switch ON..
30. **PITOT HEAT INOP**
Indicates Pitot probe heaters are OFF.
31. **ANNUNCIATOR TEST BUTTON**
Press to test all annunciator lights.



Figure 5-4B

1. **DECISION HEIGHT ANNUNCIATOR**
Illuminates when A/C is at or below selected Decision Height.
2. **TAKE-OFF TRIM ALERT ANNUNCIATOR**
Illuminates when pitch trim is out of takeoff range.
3. **CABIN ALTITUDE ANNUNCIATOR**
Illuminates when cabin altitude is above 12,000 ft.
4. **FIRST FIRE EXTINGUISHER ARMED ANNUNCIATOR**
Illuminates when left engine extinguisher arming/firewall shutoff button has been pressed. Indicates that first fire extinguisher bottle is ready for use.
5. **FIRST FIRE EXTINGUISHER DISCHARGE BUTTON**
Press to discharge first fire extinguisher bottle into left engine nacelle.
6. **SECOND FIRE EXTINGUISHER ARMED ANNUNCIATOR**
Illuminates when left engine extinguisher arming/firewall shutoff button has been pressed. Indicates that second fire extinguisher bottle is ready for use.
7. **SECOND FIRE EXTINGUISHER DISCHARGE BUTTON**
Press to discharge second fire extinguisher bottle into left engine nacelle.
8. **LEFT ENGINE FIRE ALARM ANNUNCIATOR**
Indicates a fire in the left engine nacelle.
9. **LEFT ENGINE EXTINGUISHER ARMING/FIREWALL SHUTOFF BUTTON**
Press to close left engine nacelle firewall shutoff valves and arm both fire extinguisher bottles.
10. **FIRST FIRE EXTINGUISHER DISCHARGED PINLIGHT**
Indicates that the first fire extinguisher bottle has been discharged.
11. **LEFT ENGINE FIREWALL SHUTOFF PINLIGHT**
Indicates that left engine nacelle firewall shutoff valves are closed.
12. **SECOND FIRE EXTINGUISHER DISCHARGED PINLIGHT**
Indicates that the second fire extinguisher bottle has been discharged.

GLARESHIELD (CO-PILOT)

RIGHT FIRE PANEL



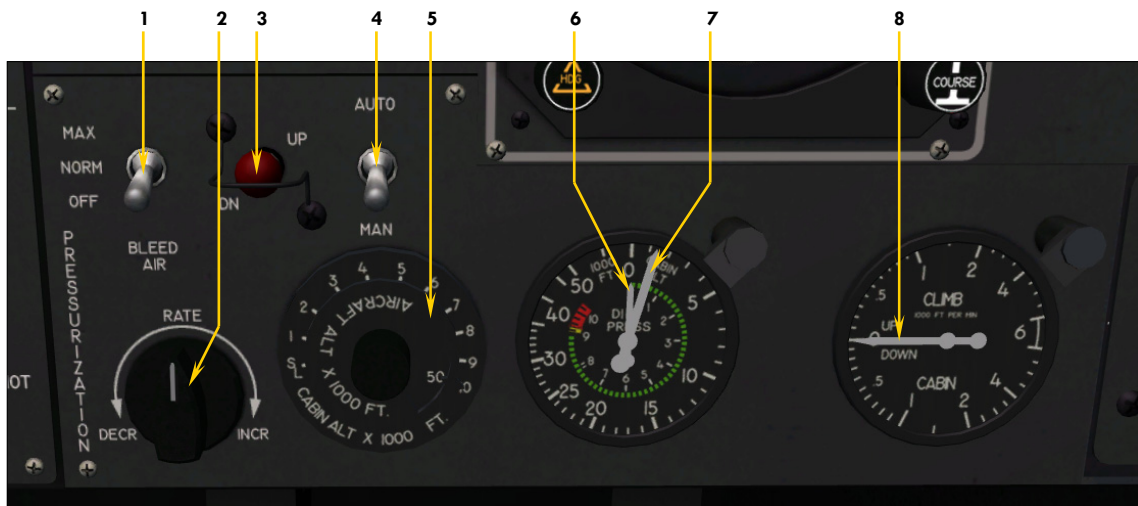
Figure 5-4C

1. **FIRST FIRE EXTINGUISHER DISCHARGED PINLIGHT**
Indicates that the first fire extinguisher bottle has been discharged.
2. **RIGHT ENGINE FIREWALL SHUTOFF PINLIGHT**
Indicates that right engine nacelle firewall shutoff valves are closed.
3. **SECOND FIRE EXTINGUISHER DISCHARGED PINLIGHT**
Indicates that the second fire extinguisher bottle has been discharged.
4. **RIGHT ENGINE FIRE ALARM ANUNCIATOR**
Indicates a fire in the right engine nacelle.
5. **RIGHT ENGINE EXTINGUISHER ARMING/FIREWALL SHUTOFF BUTTON**
Press to close right engine nacelle firewall shutoff valves and arm both fire extinguisher bottles.
6. **FIRST FIRE EXTINGUISHER ARMED ANUNCIATOR**
Illuminates when right engine extinguisher arming/firewall shutoff button has been pressed. Indicates that first fire extinguisher bottle is ready for use.
7. **FIRST FIRE EXTINGUISHER DISCHARGE BUTTON**
Press to discharge first fire extinguisher bottle into right engine nacelle.
8. **SECOND FIRE EXTINGUISHER ARMED ANUNCIATOR**
Illuminates when right engine extinguisher arming/firewall shutoff button has been pressed. Indicates that second fire extinguisher bottle is ready for use.
9. **SECOND FIRE EXTINGUISHER DISCHARGE BUTTON**
Press to discharge second fire extinguisher bottle into right engine nacelle.
10. **DECISION HEIGHT ANUNCIATOR**
Illuminates when A/C is at or below selected Decision Height.



Figure 5-5

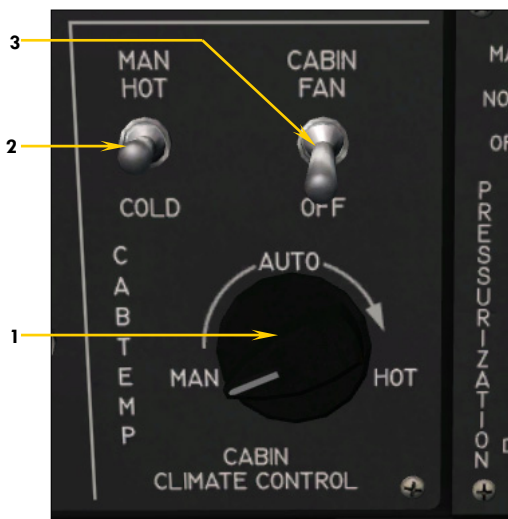
- | | |
|--|--|
| <ol style="list-style-type: none"> 1. PRESSURIZATION PANEL 2. REMOTE MAGNETIC INDICATOR (RMI) 3. AIRSPEED/MACH INDICATOR (ADI) 4. DME HEAD 5. MINI-GAUGES CLUSTER (OXYGEN PRESSURE, HYDRAULIC PRESSURE, EMERGENCY AIR PRESSURE) 6. ANGLE-OF-ATTACK GAUGE 7. AUTOPILOT/FLIGHT DIRECTOR MODE ANNUNCIATOR 8. ATTITUDE DIRECTOR INDICATOR (ADI) 9. HORIZONTAL SITUATION INDICATOR (HSI) | <ol style="list-style-type: none"> 10. GYRO SLAVE SWITCHES 11. MARKER BEACON LIGHTS 12. ALTIMETER 13. VERTICAL SPEED INDICATOR (VSI) 14. BATTERY TEMPERATURE GAUGES 15. COPILOT'S CLOCK 16. RAM AIR TEMPERATURE GAUGE 17. H-VALVE TEMPERATURE GAUGE 18. COPILOT'S AUDIO PANEL |
|--|--|



PRESSURIZATION PANEL

Figure 5-5A

1. **ENGINE BLEED AIR VALVE SWITCH**
Bleed air is necessary for pressurization, wing/stabilizer heat, windshield heat and cabin temperature control.
2. **CABIN RATE SELECTOR KNOB**
Adjusts cabin rate when in auto mode.
3. **MANUAL CABIN PRESSURE CONTROL**
Cherry Picker - Adjusts cabin rate when in manual mode.
4. **PRESSURIZATION MODE SWITCH**
5. **TARGET ALTITUDE SELECTOR KNOB**
Set for flight plan cruise altitude before takeoff and destination field elevation before descent.
6. **CABIN DIFFERENTIAL PRESSURE NEEDLE**
Indicates actual internal pressure in PSI on the fuselage skin.
7. **CABIN ALTITUDE NEEDLE**
8. **CABIN RATE NEEDLE**



CABIN TEMPERATURE CONTROL PANEL

Figure 5-5B

1. **AUTOMATIC MODE TEMPERATURE CONTROL KNOB**
Turning the knob fully counter-clockwise will result in manual temperature control.
2. **MANUAL MODE TEMPERATURE CONTROL SWITCH**
Holding switch up or down will change cabin temperature if Temperature Control mode Knob is in Manual (leftmost) position. Make sure to keep H-Valve temperatures in the green!
3. **COOLING FAN SWITCH**

NOTE: Cabin temperature selection will affect H-Valve temperature (see fig. 5-5, item 17).

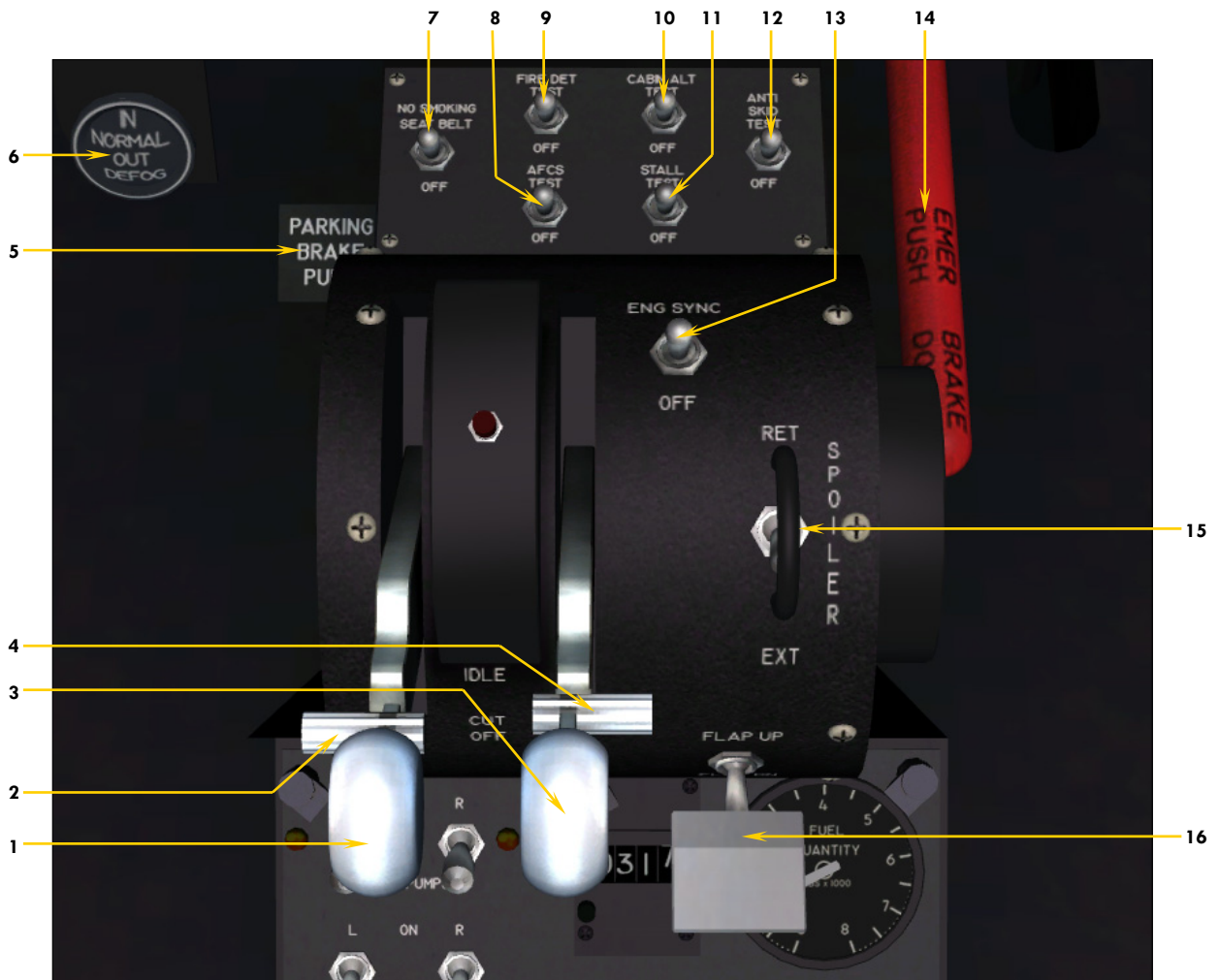


Figure 5-6

1. LEFT THROTTLE LEVER
2. LEFT FUEL VALVE LEVER
3. RIGHT THROTTLE LEVER
4. RIGHT FUEL VALVE LEVER
5. PARKING BRAKE LEVER
6. WINDSHIELD DEFOG KNOB
7. NO SMOKING/SEAT BELT SWITCH
8. AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS) TEST SWITCH
9. FIRE DETECTION TEST SWITCH
10. CABIN ALTITUDE WARNING TEST SWITCH
11. STALL WARNING TEST SWITCH
12. ANTI SKID TEST SWITCH
13. ENGINE SYNC SWITCH
14. EMERGENCY BRAKE LEVER
15. SPOILERS SWITCH
16. FLAPS SWITCH

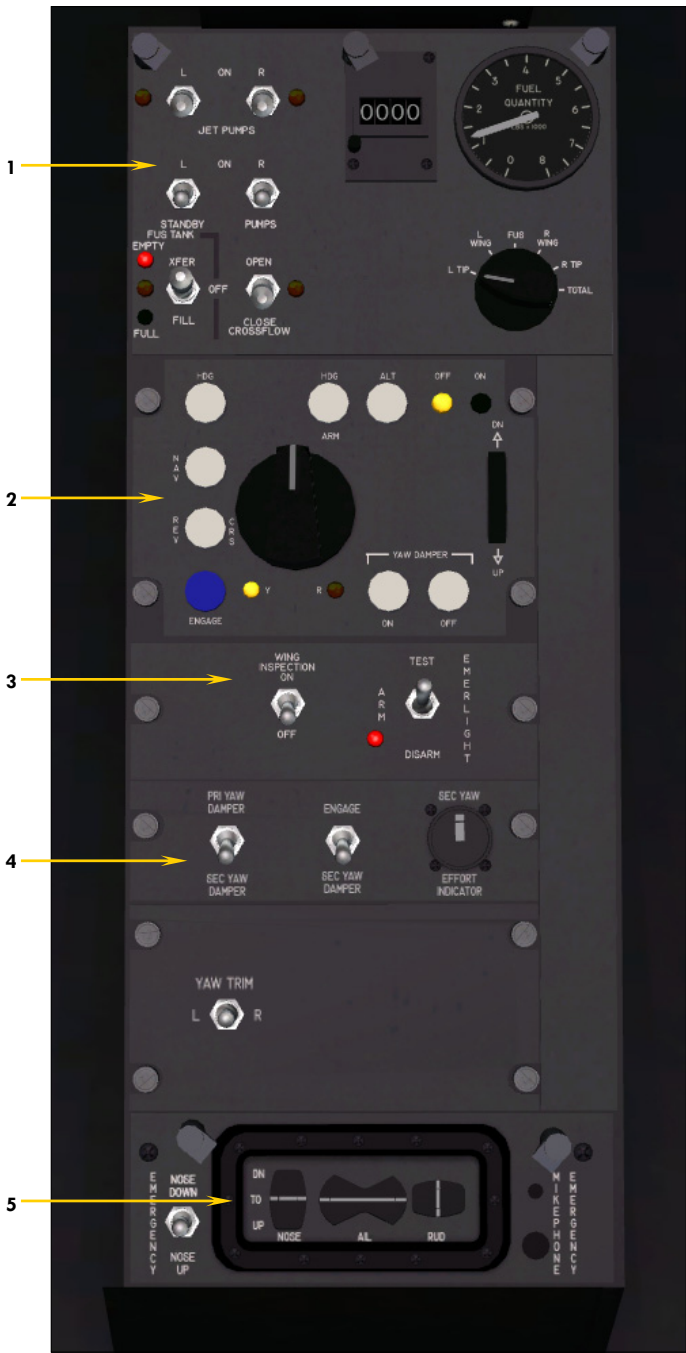


Figure 5-7

- 1. FUEL PANEL
- 2. AUTOPILOT PANEL
- 3. EMERGENCY LIGHTS PANEL
- 4. YAW DAMPER PANEL
- 5. CONTROL SURFACES INDICATOR PANEL

CENTER PEDESTAL

FUEL PANEL



Figure 5-7A

1. **CROSSFEED VALVE ANNUNCIATOR**
2. **CROSSFEED VALVE SWITCH**
3. **CENTRAL (FUSELAGE) TANK LEVEL ANUNCIATOR (FULL)**
4. **CENTRAL (FUSELAGE) TANK LEVEL ANUNCIATOR (NORMAL)**
5. **CENTRAL (FUSELAGE) TANK PUMP SWITCH (NOT SIMULATED)**
6. **CENTRAL (FUSELAGE) TANK LEVEL ANUNCIATOR (EMPTY)**
7. **RIGHT BOOSTER PUMP SWITCH**
8. **LEFT BOOSTER PUMP SWITCH**
9. **LEFT TIP TANK JET PUMP ANNUNCIATOR**
10. **LEFT TIP TANK JET PUMP SWITCH**
Should be ON for the duration of the flight.
11. **RIGHT TIP TANK JET PUMP SWITCH**
Should be ON for the duration of the flight.
12. **RIGHT TIP TANK JET PUMP ANNUNCIATOR**
13. **FUEL BURN TOTALIZER**
Indicates fuel burn since last engine start.
14. **FUEL QUANTITY GAUGE SELECTOR KNOB**
15. **FUEL QUANTITY GAUGE**
Indicates fuel quantity for selected tank.

CENTER PEDESTAL

AUTOPILOT PANEL

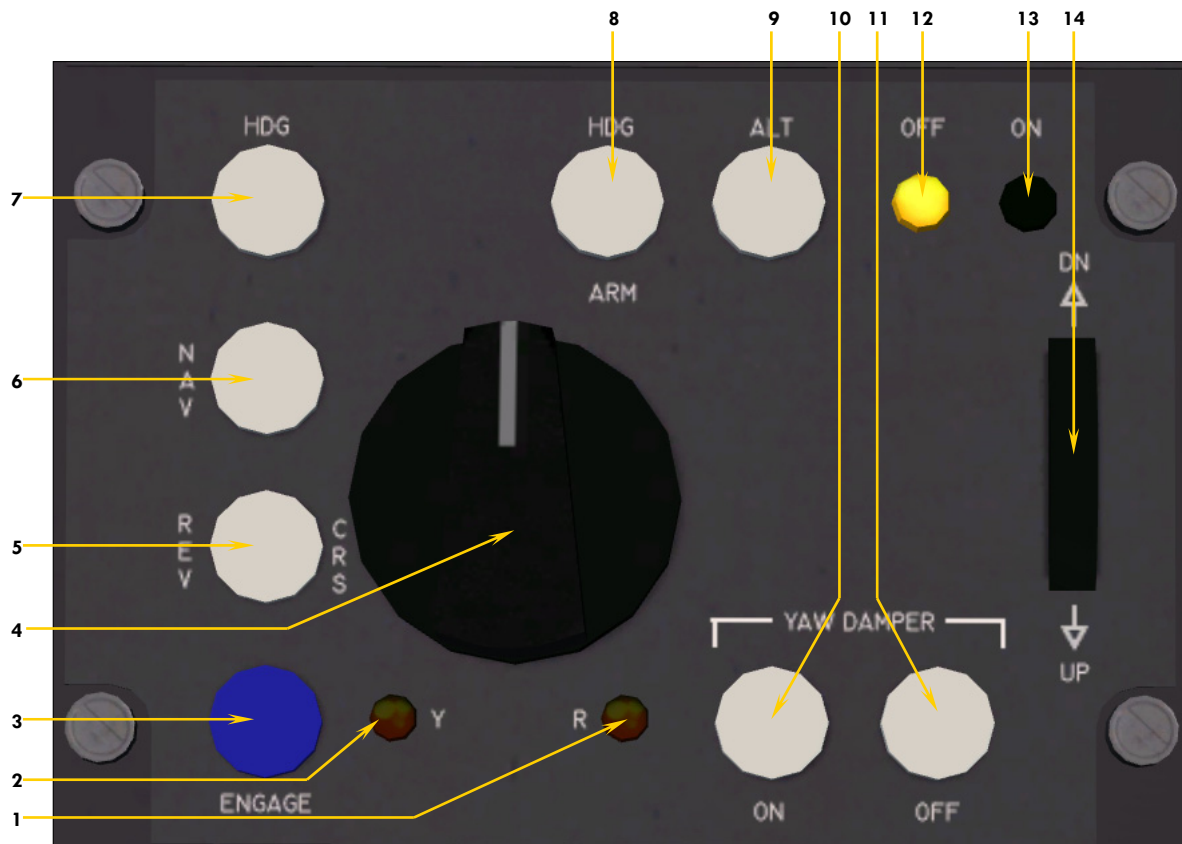


Figure 5-7B

1. YAW DAMPER OFF ANNUNCIATOR
2. YAW DAMPER ENGAGED ANUNCIATOR
3. AUTOPILOT SERVO ENGAGE BUTTON
4. AUTOPILOT TURN KNOB (NOT SIMULATED)
5. LOCALIZER BACK COURSE MODE BUTTON
6. NAV MODE BUTTON
7. HEADING MODE BUTTON
8. COUPLED APPROACH MODE BUTTON
9. ALTITUDE HOLD MODE BUTTON
10. YAW DAMPER ON BUTTON
11. YAW DAMPER OFF BUTTON
12. AUTOPILOT OFF ANNUNCIATOR
13. AUTOPILOT ON ANNUNCIATOR
14. AUTOPILOT PITCH WHEEL (NOT SIMULATED)

CENTER PEDESTAL

MISCELANEOUS PANELS

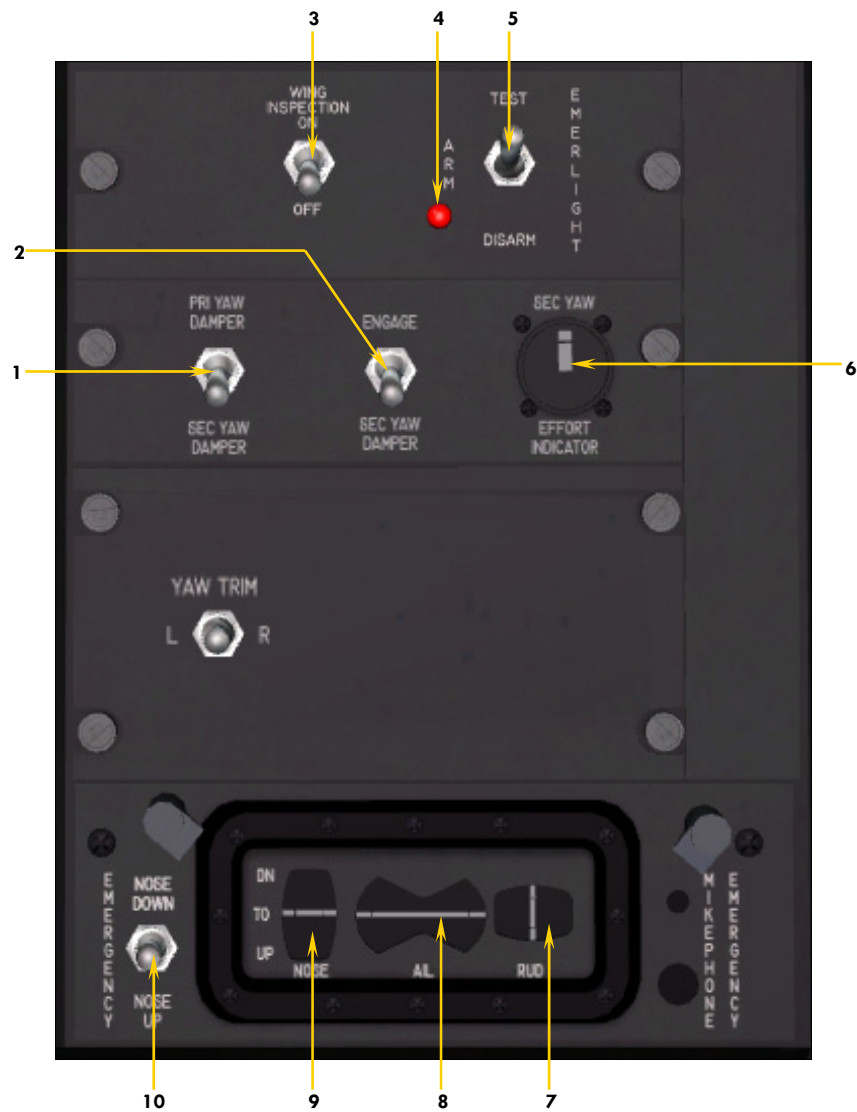


Figure 5-7C

1. PRIMARY/SECONDARY YAW DAMPER SELECTOR SWITCH (NOT SIMULATED)
2. SECONDARY YAW DAMPER ENGAGE SWITCH
3. WING INSPECTION LIGHT SWITCH
4. EMERGENCY CABIN LIGHTS ANNUNCIATOR
5. EMERGENCY CABIN LIGHTS SWITCH
6. RUDDER ACTIVITY INDICATOR
7. RUDDER POSITION INDICATOR
8. AILERON POSITION INDICATOR
9. ELEVATOR POSITION INDICATOR
10. EMERGENCY PICH TRIM CONTROL SWITCH

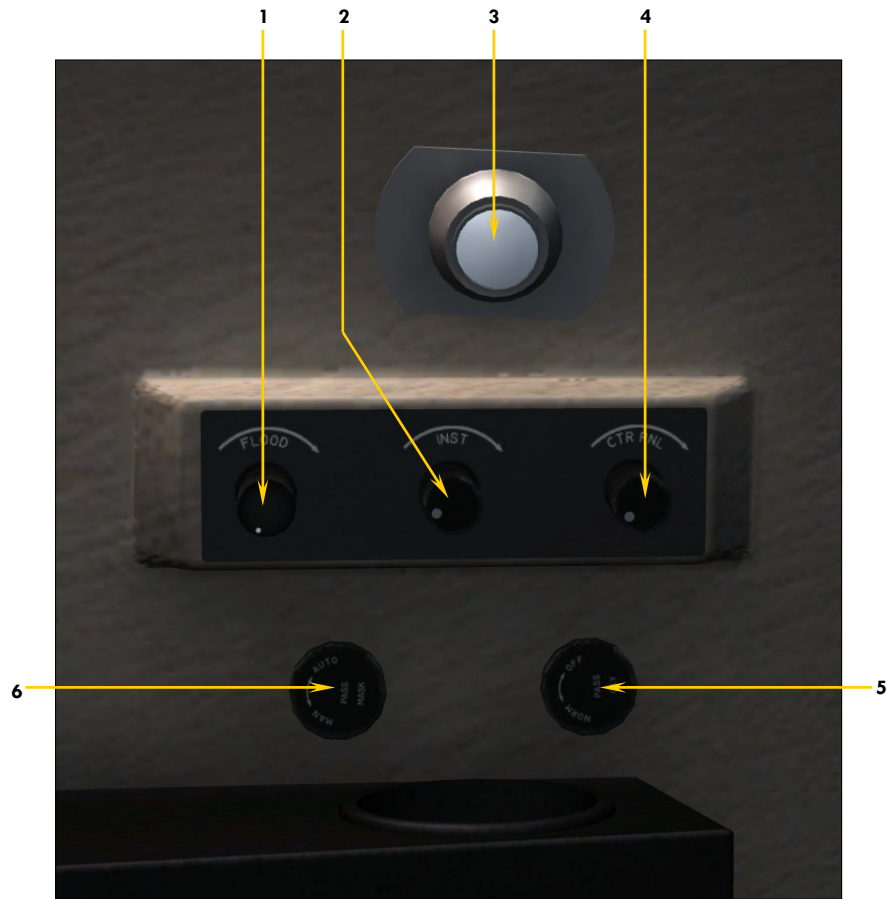


Figure 5-8

NOTE: Co-pilot's sidewall panel identical except for oxygen knobs.

1. CABIN FLOODLIGHT KNOB
2. INSTRUMENT PANEL LIGHTING KNOB
3. CABIN READING/FLOOD LIGHT
4. INSTRUMENT PANEL LIGHTING KNOB
5. PASSENGER MASK CONTROL KNOB (NOT SIMULATED)
6. PASSENGER OXYGEN VALVE KNOB (NOT SIMULATED)

FLIGHT PLANNING

SECTION 6



This section presents a set of simplified criteria for planning your 20 Series flights in FSX.

In real world operations, you would use many different charts and tables in order to determine all the performance criteria required for a jet flight. We have purposely omitted this complexity from your add-on aircraft because we feel that virtual pilots should be flying and having fun, instead of worrying about numbers.

Nonetheless, there are a few steps that are required which are:

1. **Determine the fuel required and the gross weight**

The gross weight of the aircraft is total weight of the aircraft including fuel and payload. This number is crucial to the aircraft's performance.

2. **Determine takeoff data**

Take-off data includes V1 decision speed, Vr rotation speed, and V2 take-off safety speed. Runway length requirements are also important, especially in hot-and-high conditions with a heavy aircraft.

3. **Determine approach and landing data**

Approach and landing data includes Vref landing reference speed and runway length requirements, again quite important in hot-and-high conditions with a heavy aircraft.

DETERMINE THE FUEL REQUIRED AND THE GROSS WEIGHT

- Assume a cruise at FL450 at Mach 0.78.
- On a standard day, our TAS will be around 460 knots.
- Assume 100 NM for climb.
- Assume 100 NM for descent.
- Estimate around 1,000 lbs of fuel for take-off and climb (100% RPM for takeoff; 90% RPM for climb).
- Estimate around 1,300 lbs of fuel for the first hour of cruise.
- Estimate around 1,200 lbs of fuel for the second hour of cruise.
- Estimate around 1,100 lbs of fuel for the third hour of cruise
- Add 1,000 lbs of fuel for reserve

Example (see table 6-1 below):

Flight plan distance = 950 NM.

- Allow 100 NM for climb. Fuel burn = 1,000 lbs.
- Allow 100 NM for descent. Fuel burn = 350 lbs.
- Remaining distance = 950-100-100 = 750 NM.

<i>Table 6-1</i> ESTIMATED FUEL REQUIREMENTS (see above assumptions)	
	APPROX FUEL BURN, LBS.
Takeoff + climb	1,000
First hour cruise	1,300
Second hour cruise	1,200
Third hour cruise	1,100
Descent + landing	350

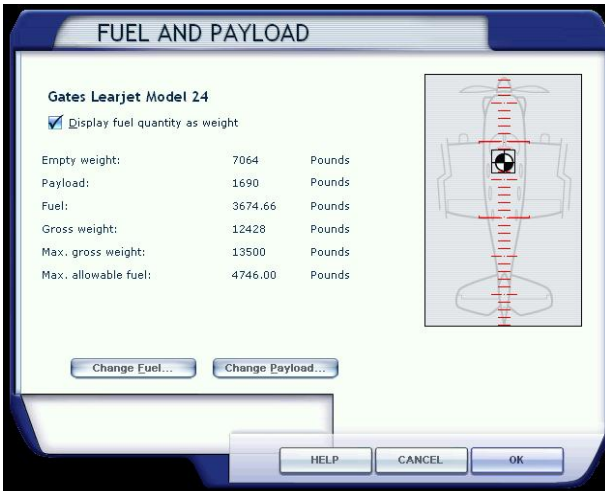


Fig. 6-2
"Fuel and Payload" page in FSX.

Table 6-3
V1 TAKEOFF DECISION SPEED (KIAS)
Flaps 8°

GROSS WT	OUTSIDE AIR TEMPERATURE °C					
	20	24	28	32	36	38
16,000	135	135	136	136	138	140
15,000	130	130	132	134	134	136
14,000	127	127	129	129	130	132
13,000	122	124	126	126	128	128
12,000	118	118	119	120	120	121
11,000	112	113	114	114	115	116
10,000	106	106	106	110	110	112
9,000	105	105	106	108	109	110

Table 6-4
Vr ROTATION SPEED / V2 TAKEOFF SAFETY SPEED (KIAS)
Flaps 8°

	GROSS WEIGHT, LBS.							
	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000
VR	120	124	124	128	132	134	136	140
V2	124	128	130	132	136	138	140	144

- ❑ At 460 KTAS, 750 NM = 98 Min = 1h + 38 min.
- ❑ First hour fuel burn: 1,300 lbs.
- ❑ Remaining 38 minutes: $38 / 60 \times 1200 = 760$ lbs.
- ❑ Reserves: 1,000 lbs.
- ❑ Total fuel required: $1,000 + 1,300 + 760 + 350 + 1,000 = 4,410$ lbs.

In Flight Simulator's "Fuel and Payload" menu (see fig. 6-2), add the necessary fuel for your flight and load the required passengers. Read the total gross weight and use it to determine the take-off data in the next section.

DETERMINE TAKEOFF DATA

Take-off data in this case refers to three critical speeds (V1, Vr and V2) you will need during take-off. Please refer to the "Normal Procedures" and "Abnormal/Emergency Procedures" sections (7-8) for more details. Your aircraft is equipped with two speed bugs. It is suggested to set the captain's bug on V1 and the co-pilot's bug on Vr (or reverse if the co-pilot is performing the take-off). The pilot flying (PF) decides to abort at V1 or to continue, and the pilot not flying (PNF) calls for rotation.

To determine the take-off data, you will also need the outside air temperature (OAT), which you can get either from Flight Simulator's weather menu, from ATC if an ATIS service is available at your departure airport or better still, from your aircraft's ram air temperature (RAT) gauge.

It is assumed that 100 % RPM will be used for takeoff power and the flaps will be extended 8 degrees for take-off.

First, from table 6-3 (left), determine your V1 takeoff decision speed. This speed will be used to decide if you abort or continue the take-off, should an engine failure occur. Please refer to the "Abnormal/Emergency Proce-

Table 6-5 DENSITY ALTITUDE, FT.					
	DEPARTURE FIELD ELEVATION, FT.				
OAT °C	S.L.	2,500	5,000	7,500	10,000
-30	-5,000	-2,000	1,200	4,500	7,500
-20	-4,000	-500	2,500	5,500	8,500
-10	-3,000	2,000	3,500	6,500	9,500
0	-2,000	2,000	5,000	7,500	11,000
10	-500	3,500	6,000	9,000	12,500
20	500	4,000	7,000	10,000	13,000
30	1,500	5,000	8,000	11,000	14,000
40	3,500	6,500	9,500	13,500	15,500

dures” section (7-8) of this manual.

Next, from table 6-4 (previous page), determine the rotation speed (V_r) and takeoff safety speed (V_2). During the takeoff roll, the pilot should raise the nose at V_r . Once airborne, accelerating to V_2 will ensure single-engine climb performance.

Finally, you need to determine if you have enough runway to perform the takeoff. In order to do this, you first need to know the density altitude of the departure field. This depends on the outside air temperature (OAT) and the field elevation and can be extrapolated from table 6-5 (above).

Once you know the density altitude of the field, you can determine the runway distance necessary for the takeoff from table 6-6 (below).

DETERMINE APPROACH AND LANDING DATA



The same way you determined takeoff data, you will need to determine the landing reference speed (V_{ref}) at which you will cross the runway threshold. For this, you need to know the landing weight of the aircraft which differs from the takeoff weight by the amount of fuel used for the flight.

You may pre-compute this weight and cross-check it during approach using the fuel totalizer on the fuel management panel (see fig. 5-7A). During the pre-landing checks, the airspeed bugs may be set to V_{ref} .

Table 6-6 TAKEOFF DISTANCE REQUIREMENTS, FT.								
	GROSS WEIGHT, LBS.							
DENSITY ALTITUDE	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000
-5,000	2,000	2,200	2,400	2,600	2,900	3,200	3,500	4,000
-2,500	2,500	2,700	2,900	3,100	3,400	3,700	4,000	4,500
0	2,500	2,700	2,900	3,300	3,700	4,100	4,500	5,500
2,500	3,000	3,300	3,600	4,000	4,500	5,000	5,500	6,500
5,000	3,500	3,800	4,200	4,700	5,200	5,800	6,500	7,000
7,500	4,000	4,400	4,800	5,400	6,000	6,500	7,000	9,500
10,000	4,500	5,000	6,600	7,200	8,000	8,800	9,500	11,000
12,500	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,500
15,000	5,500	6,500	7,700	8,800	9,900	11,000	12,500	14,000

Table 6-7 Vref LANDING REFERENCE SPEED (KIAS)				
GROSS WT	FLAPS POSITION			
	40°	20°	8°	UP
16,000	136	142	161	166
15,000	134	140	157	164
14,000	130	139	152	160
13,000	126	137	148	156
12,000	122	135	144	152
11,000	118	132	140	148
10,000	114	128	136	144
9,000	112	124	134	142
8,000	110	120	130	140

It is assumed that flaps will be fully deployed at 40 degrees for landing, however other speeds are available from table 6-7 (above left) for partial flaps. No-flaps landing should only be attempted in an emergency.

You may now determine the landing distance required. Again, you will require the density altitude from table 6-8 (above right), but this time of the destination field. You need an approximation of the outside air temperature (OAT) on the ground which means you cannot use the aircraft's ram air temperature (RAT) gauge while in

Table 6-8 DENSITY ALTITUDE, FT.					
OAT °C	DESTINATION FIELD ELEVATION, FT.				
	S.L.	2,500	5,000	7,500	10,000
-30	-5,000	-2,000	1,200	4,500	7,500
-20	-4,000	-500	2,500	5,500	8,500
-10	-3,000	2,000	3,500	6,500	9,500
0	-2,000	2,000	5,000	7,500	11,000
10	-500	3,500	6,000	9,000	12,500
20	500	4,000	7,000	10,000	13,000
30	1,500	5,000	8,000	11,000	14,000
40	3,500	6,500	9,500	13,500	15,500

flight. Determine the landing distance required from table 6-9 (below).

The data below assumes a full flaps landing, spoilers deployed on touchdown and normal braking effort with anti-skid engaged.

Check that the chosen airfields have enough runway for the conditions of your flight. If not, you may need to ei-

Table 6-9 LANDING DISTANCE REQUIREMENTS, FT.							
DENSITY ALTITUDE	LANDING WEIGHT, LBS.						
	9,000	10,000	11,000	12,000	13,000	14,000	15,000
-5,000	4,500	4,600	4,700	4,800	4,900	5,000	5,200
-2,500	4,500	4,600	4,800	4,900	5,000	5,100	5,200
0	4,500	4,600	4,700	4,900	5,000	5,300	5,500
2,500	5,000	5,100	5,200	5,300	5,400	5,500	5,500
5,000	5,000	5,100	5,300	5,500	5,700	5,900	6,000
7,500	5,500	5,600	5,700	5,800	5,800	5,900	6,000
10,000	5,500	5,700	5,800	5,900	6,000	6,300	6,500
12,500	6,000	6,100	6,200	6,300	6,400	6,500	6,500
15,000	6,000	6,200	6,400	6,700	6,900	7,200	7,500

ther unload the aircraft, choose another airfield or wait for colder weather.

Jot down your reference speeds so you have them available during flight and you should be ready for a successful flight.



NORMAL PROCEDURES AND CHECK LIST

SECTION 7



This section contains the complete normal procedures and check list for the operation of the Xtreme Prototypes 20 Series add-on business jets for Flight Simulator X. A condensed version of these procedures is provided in the checklist tab of the kneeboard and in the documentation folder.

Aircraft reference information is provided in appendix 1. The same information is also available in the reference information tab of the kneeboard and in the documentation folder.

INTRODUCTION

For historical and technical accuracy, many of the following procedures are inspired from the original Gates Learjet (24, 25 and 28) flight manual. Following each step presented here will make your overall experience more realistic and enjoyable.

The operation of the add-on aircraft is similar to the operation of the real-world aircraft. Reading this section before your first flight is highly recommended and will help you in understanding the operation of this remarkable airplane.

CREATING A FLIGHT IN FSX

Refer to the documentation provided with your version of Flight Simulator X for complete instructions on how to create a new flight. Make sure to select one of the Xtreme prototypes 20 Series aircraft provided in your add-on package and start a new flight by clicking the **FLY NOW** button on the “Free Flight” page in FSX.



IMMEDIATE TAKEOFF OR “COLD START”

At this time, it is assumed that the 20 Series aircraft has been serviced automatically by the simulator when first loaded and that the engines are running. You can either take off immediately or shut down the engines and go through the entire **NORMAL PROCEDURES** to simulate a true “cold start” (all engines, lights and systems turned off).

To shut down the engines and turn off electrical power, do the following procedures:

1. Simultaneously press the **CTRL-SHIFT-F1** keys on your keyboard (this will shut down the engines).
2. Simultaneously press the **SHIFT-M** keys on your keyboard (this will turn off electrical power).

Tip: After the engines have been shut down and the power turned off, you can save your current flight and use it as a template for subsequent flights.

EXTERIOR INSPECTION

An exterior description of the 20 Series business jets for Flight Simulator X is available in section 3 (fig. 3-1 to 3-4). It is recommended to familiarize yourself with the general external arrangement of the aircraft before proceeding.

1. Select the **SPOT PLANE** view.

This will permit you to inspect the exterior of the aircraft. You can use the appropriate button on your joystick (or the arrow keys on your numeric keypad) to move around the aircraft. Use the “+/=” or “_-/” keys on your keyboard to zoom in and out.

To open or close the main cabin door, simultaneously press the **SHIFT-E** keys on your keyboard.

It is possible to observe the movement of the control surfaces, including the spoilers, at this time.

1. Use your joystick (and/or pedals) to control and observe the movement of the vertical stabilizer (rudder), of the elevator and of the ailerons.
2. To extend or retract the flaps, press the **F6/F7** keys



on your keyboard or the corresponding button on your joystick.

3. To deploy or retract the spoilers, press the “ / ” key on your keyboard.

Make sure the main cabin door is closed (**SHIFT-E** on your keyboard) and return to the **VIRTUAL COCKPIT** view.

NORMAL PROCEDURES



COCKPIT PREPARATION (FROM COLD AND DARK COCKPIT)

1. Parking brake **SET**.
2. All switches **OFF**.
3. Check all circuit breakers **CLOSED**.
4. Check flight controls **FREE**.
5. Battery switches **ON**.
6. Check oxygen quantity gauge **IN GREEN**.
7. Check emergency air pressure gauge **IN GREEN**.
8. Check landing gear lever **DOWN + 3 GREEN**.
9. Both primary and secondary inverter switches **ON**.
10. Radio (avionics) master switch **ON**.
11. Annunciator panel test:
 - a. Annunciator panel test button **ON**.
 - b. Check all annunciators **ON**.
 - c. Check marker beacon lights **ON**.
 - d. Check decision height lights **ON**.
 - e. Check altitude alert lights **ON**.
 - f. Annunciator panel pest button **OFF**.

12. Stall warning test:
 - a. Stall warning test switch **ON**.
 - b. Check both stall warning annunciators **ON**.
 - c. Stall warning switch **OFF**.
13. Fire detection system test:
 - a. Fire detection system test switch **ON**.
 - b. Check both captain and co-pilot fire annunciators **ON** or **FLASHING**.
 - c. Fire detection system test switch **OFF**.
14. Anti-skid system test:
 - a. Anti-skid system test switch **ON**.
 - b. Check anti-skid generator activity lights **FLASHING**.
 - c. Anti-skid system test switch **OFF**.
15. Cabin altitude warning test:
 - a. Cabin altitude warning test switch **ON**.
 - b. Check cabin altitude annunciator **ON**.
 - c. Cabin altitude warning test switch **OFF**.
16. AFCS test:
 - a. AFCS test switch **ON**.
 - b. Check all AFCS mode annunciators **ON**.
 - c. AFCS test switch **OFF**.
17. Takeoff trim:
 - a. Check that pitch trim indicator is at least **one needle thickness below center**.
 - b. Forward center of gravity requires more trim.
 - c. Check takeoff trim annunciator **OFF**.
18. Fuel quantity:
 - a. Check **sufficient quantity** for flight.
 - b. Check for **imbalance** between tanks.
19. Standby gyro:
 - a. Standby gyro power switch **ON**.
 - b. Check gyro operational.
20. Fuel Counter:
 - a. Check zero (fuel counter indicates fuel consumed since last engine start).



BEFORE STARTING ENGINES

1. Main cabin door **CLOSED & SECURE**.
2. Both battery switches **ON**.
3. Check door annunciator **OFF**.
4. Rotating beacon **ON**.
5. Navigation lights **ON**.
6. Check throttle fuel valves **OFF**.
7. Jet pumps:
 - a. Jet pumps switches **ON**.
 - b. Check jet pump annunciators **ON**.
8. Boost pumps:
 - a. Boost pumps switches **ON**.
 - b. Check fuel pressure annunciators **OFF**.



ENGINE START

1. Set starter-generator switch (engine 1) to **START**.
2. Check **20% RPM**.
3. Engine 1 fuel valve **ON**.
4. Confirm **ENGINE 1 LIGHT-OFF**.
5. Monitor EGT gauge and make sure **WITHIN GREEN ARC**.
6. Set starter-generator switch (engine 1) to **GEN** when engine is stable at **IDLE**.
7. Check engine 1 generator annunciator **OFF**.
8. Check engine 1 ammeter **CHARGING**.
9. Check fuel pressure annunciator **OFF**.
10. Check oil temperature and pressure **IN GREEN**.
11. Check hydraulic pressure gauge **IN GREEN**.

Repeat for engine 2



BEFORE TAXI

1. ATC clearance **OBTAINED** from appropriate authority.
2. Bleed air:
 - a. Bleed air switch **ON**.
3. Stall warnings:
 - a. Both stall warning switches (electrical panel) **ON**.
4. Anti-skid power:
 - a. Anti-skid power switch (electrical panel) **ON**.
5. Primary & secondary inverters:
 - a. Primary & secondary inverter switches **ON**.
6. Avionics:
 - a. Radio master switch **ON**.
7. Set pitch trim switch to **NORM**.
8. Auxiliary inverter:
 - a. Auxiliary inverter switch **OFF**.
9. Windshield defog:
 - a. Windshield defog knob **ON**.
10. Avionics:
 - a. Check ADI GYRO flag **OUT OF VIEW**.
 - b. Check ADI COMPUTER flag **OUT OF VIEW**.
 - c. Check HSI COMPASS flag **OUT OF VIEW**.
 - d. Set radios and transponder **according to flight plan and ATC clearance** (remember ATC cannot auto-tune COM1 radios on this A/C).
11. Flight instruments:
 - a. Set altimeter baro.
 - b. Set airspeed bugs **as needed** (please refer to "Flight Planning", in section 6).
 - c. Set initial heading on HSI.
 - d. Set initial course on HSI.
 - e. Set RMI **as needed**.
 - f. Set DME head **as needed**.
12. Altitude pre-selector:
 - a. Set initial ATC clearance altitude.
13. Cabin pressurization:
 - a. Pressurization controller knob set to **planned cruise altitude**.
14. Cabin temperature:
 - a. Set cabin temperature controller knob to **desired temperature**.
15. H-valve:
 - a. Check H-valve gauge **IN GREEN**.
 - b. Lower cabin temperature controller knob **if necessary**.
16. Taxi lights:
 - a. Taxi light switch **AS REQUIRED**.
17. Nose wheel steering:
 - a. Steering lock switch **ON**.
 - b. Check steer annunciator **ON**.
18. Anti-skid:
 - a. Anti-skid engage switch (main instrument panel) **ON**.
19. A/C rolling above 5 KTS:
 - a. Toe brakes **APPLY**.
 - b. Verify anti-skid generator lights **FLASHING**.
 - c. Verify A/C deceleration.
 - d. Toe brakes **RELEASE**.
20. Flight controls:
 - a. Check **FREE**.
 - b. Hide control yoke **if necessary** (either control yoke can be hidden by clicking on the opposite one)
21. Spoilers:
 - a. Spoilers switch **ON**.
 - b. Check spoiler annunciator **ON**.

- c. Spoilers switch **OFF**.
- 22. Flaps:
 - a. Flaps switch as **necessary**.
 - b. Check flaps position indicator for correct **take-off position** (please refer to “Flight Planning”, in section 6).
- 23. Pitch trim:
 - a. Check **set for take-off**.
- 24. Gyro slave:
 - a. Check gyro slave switch on **SLAVE** position.
 - b. Gyro drift switch as needed to sync directional gyros with magnetic compass.
- 25. Flight instruments:
 - a. Check all directional indicators as A/C turns while taxiing.
- 26. Radio altimeter:
 - a. Radio altimeter power switch **ON**.
 - b. Check radio ALT flags **OUT OF VIEW**.

- 7. Engine ignitions:
 - a. Engine ignition switches **ON if wet or turbulent conditions**.
- 8. Pitot probes:
 - a. Pitot heat switches both **ON**.
- 9. Engine bleed air:
 - a. Check bleed air switch **ON**.
- 10. Anti-ice:
 - a. Stabilizer/wing heat switches **AS REQD**.
 - b. Windshield heat switches **AS REQD**.
 - c. Nacelle heat switches **AS REQD**.
- 11. Annunciator panel:
 - a. Check no warnings or abnormal indications.
- 12. Brakes:
 - a. Brakes **APPLY**.
- 13. Throttles:
 - a. **ADVANCE** throttles slowly to **take-off power (100% RPM)**.
- 14. Brakes:
 - a. Brakes **RELEASE**.



BEFORE TAKEOFF

- 1. No smoking/seat belts sign:
 - a. No smoking switch **ON**.
- 2. Ammeters:
 - a. Check both **charging**.
- 3. Engine instruments:
 - a. Check all **IN GREEN**.
- 4. Trim & flaps:
 - a. Check **SET**.
- 5. Transponder:
 - a. Transponder mode knob **ON**.
- 6. Strobe lights:
 - a. Strobe light switch **ON**.

TAKEOFF SEQUENCE

Note 1: In case of engine failure, refer to “Abnormal/Emergency Procedures” in section 8.

Note 2: The 20 Series is a very high performance civilian airplane. The takeoff sequence happens quite fast and requires an efficient drill in order to observe and maintain altitude and speed clearances. Remember, practice makes perfect!

- 1. Accelerate to V1:
 - a. If engine fails before V1, **ABORT** takeoff (please refer to “Abnormal/Emergency Proce-



- dures” in section 8).
- b. If engine fails after V1, **CONTINUE** takeoff (please refer to “Abnormal/Emergency Procedures” in section 8).
- 2. Vr attained:
 - a. **ROTATE** to **15°** pitch.
- 3. Angle of attack:
 - a. Angle of attack gauge maintain **IN GREEN**.
- 4. Positive rate of climb:
 - a. Landing gear lever **UP**.
 - b. Check landing gear indicator lights **OFF**.
 - c. Accelerate to **V2 + 15**.
- 5. Flaps:
 - a. Retract on schedule (please refer to “Maximum Flap Placard Speeds” in appendix 1).
- 6. Throttles:
 - a. Set **climb power (90% RPM)**.
- 7. Yaw damper:
 - a. Yaw damper button (autopilot panel on center pedestal) **ON**.
 - b. Check yaw damper light **ON**.

- 8. Accelerate to climb speed:
 - a. **MAX 250 KIAS** if ATC-RESTRICTED.
- 9. No smoking/seat belts sign:
 - a. No smoking switch **OFF**.

10,000 FT. AND CLIMBING

- 1. Engine ignition:
 - a. Engine ignition switches **OFF**.
- 2. Anti-skid:
 - a. Anti-skid engage switch **OFF**.
- 3. Nose wheel steering:
 - a. Steering lock switch **OFF**.
 - b. Check steer annunciator **OFF**.
- 4. Engine sync:
 - a. Engine sync switch **ON**.
- 5. Altimeters:
 - a. Set baro knob to **29.92**.
- 6. Airspeed:
 - a. Autopilot **ENGAGE**.
 - b. Accelerate to **0.7 Mach**.



18,000 FT. AND CLIMBING

Pressurization:

- a. Monitor cabin altitude, rate and differential pressure.
2. Fuel status:
 - a. Ensure fuel burn is consistent with flight plan.
 3. Engine instruments:
 - a. Check all within limits.



BEFORE DESCENT

1. Pressurization:
 - a. Set destination field elevation.
2. Pitot heat:
 - a. Pitot heat switches both **ON**.
3. Anti-ice:
 - a. Stabilizer/wing heat switches **AS REQD**.
 - b. Windshield heat switches **AS REQD**.
 - c. Nacelle heat switches **AS REQD**.
4. Windshield defog:
 - a. Check windshield defog knob **ON**.
5. Bleed air:
 - a. During descent maintain **75% RPM** minimum until 12,000 ft.
6. Use spoilers as **required**.
7. Radio altimeter:
 - a. Radio altimeter power switch **ON**.
8. Altimeters:
 - a. Passing FL180 set baro knob to **local setting**.

BEFORE LANDING

1. No smoking/seat belts sign:
 - a. No smoking switch **ON**.
2. Flaps:
 - a. Set **AS REQD** (please refer to “Flight Planning” in section 6).
3. Landing gear:
 - a. Landing gear lever **DOWN**.
 - b. Check landing gear indicator lights **GREEN**.
4. Spoilers:
 - a. Spoilers switch **OFF**.
 - b. Check spoiler annunciator **OFF**.
5. Anti-skid:
 - a. Anti-skid engage switch **ON**.
 - b. Check anti-skid light **ON**.
6. Lights:
 - a. Landing lights switch **AS REQD**.
7. Engine sync:
 - a. Engine sync switch **OFF**.
8. Engine ignitions:
 - a. Engine ignition switches **ON if wet or turbulent conditions**.





AFTER CLEARING RUNWAY

1. Stall warnings:
 - a. Stall warning switches **OFF**.
2. Flaps:
 - a. Flaps switch **RETRACT**.
 - b. Confirm flaps position indicator **UP**.
3. Spoilers:
 - a. Spoilers switch **OFF**.
 - b. Confirm spoiler annunciator **OFF**.
4. Anti-ice:
 - a. Wing and stabilizer heat switches **OFF**.
 - b. Nacelle heat switches **OFF**.
 - c. Windshield heat switches **OFF**.

- d. Confirm **ALL** anti-ice annunciator **OFF**.
- e. Windshield defog knob **AS REQD**.

5. Transponder:
 - a. Transponder mode knob **OFF**.
6. External lights:
 - a. Strobe light switch **OFF**.
 - b. Landing light switch **OFF**.
 - c. Taxi light switch **AS REQD**.

SHUTDOWN

1. Parking brakes:
 - a. Parking brake lever **ON**.
2. Engines:
 - a. Throttle levers **IDLE**.
 - b. Bleed air switch **OFF**.
 - c. Fuel valves **OFF**.
 - d. Jet pumps **OFF**.
 - e. Boost pumps **OFF**.
3. Electrical:
 - a. Radio master switch **OFF**.
 - b. All electrical switches **OFF**.



ABNORMAL / EMERGENCY PROCEDURES

SECTION 8



This section contains the complete abnormal/emergency procedures for the operation of the Xtreme Prototypes 20 Series add-on business jets for Flight Simulator X.

ENGINE FAILURE

ENGINE FAILURE ON TAKEOFF

If below V_1 , **ABORT TAKEOFF** (may require spoilers and maximum braking energy).

If above V_1 :

1. Maintain directional control.
2. Perform single-engine takeoff.
3. Accelerate to $V_2 + 10$.
4. Trim rudder as needed.
5. Inform ATC and request amended clearance if possible.
6. Return for landing if cleared by ATC.

ENGINE FAILURE IN CRUISE

1. Maintain directional control.
2. Trim rudder as needed.
3. Attempt in-flight engine restart.

If engine won't restart:

1. Affected engine **SECURED** (thrust lever **IDLE**, fuel valve **OFF**, manual ignition **OFF**).
2. Inform ATC.
3. Evaluate fuel status.
4. Fuel cross-feed switch as required.
5. Complete flight at lower altitude if possible or perform precautionary landing if needed.

ENGINE FAILURE ON APPROACH

1. Maintain directional control.
2. Trim rudder as needed.
3. Inform ATC.
4. Perform normal approach at slightly higher speed if field length allows (may preclude full flaps).





ENGINE FIRE

1. Fire warning light: Identify engine (left or right).
2. Throttle back engine and monitor fire warning annunciator.
3. If fire persists after 10 seconds, press firewall shut-off button.



4. Firewall shutoff: Confirm (pinlight ON & visible engine cutoff).
5. Affected engine **SECURED** (thrust lever **IDLE**, fuel valve **OFF**, manual ignition **OFF**).
6. Extinguishers armed: Confirm (both **ON**).
7. If fire persists after 10 seconds, push **first extinguisher** to discharge.
8. If fire persists after 10 seconds, push **second extinguisher** to discharge,
9. If fire persists after 10 seconds, **declare emergency to ATC and land as soon as possible**.



APPENDICES

<i>Appendix 1:</i>	<i>FS AIRCRAFT REFERENCE INFORMATION</i>	<i>A-1</i>
<i>Appendix 2:</i>	<i>PRODUCT SPECIFICATIONS</i>	<i>A-2</i>
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Appendix 1: FS AIRCRAFT REFERENCE INFORMATION

XTREME PROTOTYPES 20 SERIES BUSINESS JET FOR FSX REFERENCE INFORMATION

For detailed instructions on how to fly this virtual aircraft, please refer to your **XP 20 Series Flight Manual**.

For standard procedures, see the **Checklists tab**.

Maximum Gross Weight - Model 24	13,500 lbs
Maximum Gross Weight - Model 25	15,000 lbs
Maximum Gross Weight - Model 28	15,000 lbs

NOTE: To adjust fuel load, on the **Aircraft** menu, click **Fuel and Payload**.

V _{MO} - Maximum Operating Speed	306 KIAS
M _{MO} - Maximum Operating Mach	.82 Mach
V _A - Maneuvering Speed 10,000 lbs (sea level)	160 KIAS
V _A - Maneuvering Speed 10,000 lbs (20,000 ft)	165 KIAS
V _A - Maneuvering Speed 10,000 lbs (45,000 ft)	170 KIAS
V _A - Maneuvering Speed 15,000 lbs (sea level)	200 KIAS
V _A - Maneuvering Speed 15,000 lbs (20,000 ft)	205 KIAS
V _A - Maneuvering Speed 15,000 lbs (45,000 ft)	220 KIAS
V _{LO} - Maximum Gear Operating Speed	200 KIAS
V _{LE} - Maximum Landing Gear Extension Speed	265 KIAS

Maximum Flap Placard Speeds

Flaps degrees	KIAS
8	202
20	200
40	153

NOTE: For complete **V-speed** tables covering various loading and atmospheric conditions, please refer to your **XP 20 Series Flight Manual**. For explanations of speeds used on this tab, see "V-speeds" in the **Learning Center Glossary**.

V₁ - Takeoff Decision Speed

(dry runway, standard temperature, flaps 8)

9,000 lbs.	105 KIAS
15,000 lbs.	135 KIAS

V_R - Rotation Speed

(dry runway, standard temperature, flaps 8)

9,000 lbs	120 KIAS
15,000 lbs	136 KIAS

V₂ - Minimum Climb Speed

(dry runway, standard temperature, flaps 8)

9,000 lbs	124 KIAS
15,000 lbs	140 KIAS

V_{REF} - Landing Reference Speed

(flaps 40, standard temperature, sea level pressure altitude)

8,000 lbs	110 KIAS
15,000 lbs	134 KIAS

NOTE: This aircraft's real-world reference information has been modified for use with Flight Simulator X.

Xtreme Prototypes 20 Series for Flight Simulator X

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Appendix 2: PRODUCT SPECIFICATIONS



MINIMUM SYSTEM REQUIREMENTS

Flight Simulator: Microsoft® Flight Simulator X with Service Pack 2 (Service Pack 2 required, FSX Acceleration Expansion Pack or FSX Gold optional)

Operating System: Windows® XP SP2 (256 MB RAM), Windows® Vista™ (512 MB RAM)

Processor: 1.0 GHz

Hard Drive: 15 GB (space required to install Flight Simulator X SP2)

Available Disk Space: 250 MB (space required to install the 20 Series add-on software and documentation)

Video Card: 64 MB (128 MB or more recommended), DirectX® 9.0 or later

Other: Sound card and speakers, joystick, wheelmouse, Adobe® Reader® 8.0 or later

NOTE: Xtreme Prototypes addons are complex and require more processing power and RAM than other more conventional add-on aircraft packages. Increased performance will be noticed on more powerful systems. FSX SP2 minimum system requirements recommended.

GENERAL FEATURES

Contains six variations of the Xtreme Prototypes 20 Series business jets for Flight Simulator X:

- ❑ Two variations of Model 24 (fictitious tail numbers XP-241 and XP-242)
- ❑ Two variations of Model 25 (fictitious tail numbers XP-251 and XP-252)
- ❑ Two variations of Model 28 (fictitious tail numbers XP-281 and XP-282)

FLIGHT MODEL FEATURES:

- ❑ Two General Electric CJ-610, 2,950-pound static thrust, single-spool turbojet engines
- ❑ Maximum altitude: 45,000 feet (51,000 feet for Model 28)
- ❑ Maximum speed: Mach 0.82
- ❑ Compatible with FSX SP2 and FSX Acceleration Expansion Pack (or FSX Gold)

CUSTOM AIRCRAFT SYSTEMS

The following aircraft systems are simulated to conform as closely as possible to the operation of the real aircraft, within the present limitations and capabilities of the simulator:

- ❑ Flight Controls
- ❑ Electrical System
- ❑ Hydraulic System
- ❑ Landing Gear
- ❑ Fuel System
- ❑ Power Plant
- ❑ Fire Detection and Suppression System
- ❑ Pneumatic and Environmental Control System
- ❑ Automatic Flight Control System

3D MODEL FEATURES

- ❑ Genuine FSX models, compatible with Windows Vista and DirectX® 10
- ❑ Highly detailed exterior models based on archive material, with more than 500 parts and 40 animations
- ❑ Reflective high-resolution textures with bump maps
- ❑ Emissive (night) textures
- ❑ Unique markings and liveries on each aircraft
- ❑ Movable aerodynamic control surfaces:
 - Movable stabilizer
 - Elevator
 - Ailerons with trim tab
 - Flaps
 - Vertical stabilizer/rudder with trim tab
 - Spoilers
- ❑ Highly detailed steerable front gear
- ❑ Highly detailed main landing gear with landing and taxi lights

- ❑ Fully animated engine turbine and compressor disks
- ❑ Movable main cabin door
- ❑ Cockpit details including cabin and cockpit, seats, and pilots

3D VIRTUAL COCKPITS

- ❑ One highly detailed 3D virtual cockpit with over 800 parts and 200 3D animated gauges, switches, levers, light indicators and flight instruments with “tooltips”
- ❑ Advanced fully functional back/front-lit instrument panels with custom aircraft systems
 - Captain’s panel
 - Center panel
 - Electrical and radio panels
 - Co-pilot’s panel
 - Annunciator panel
 - Center pedestal
- ❑ Cockpit lighting

SPECIAL VISUAL EFFECTS

- ❑ Engine smoke and contrail effects
- ❑ Aircraft lights, some extendable or animated (landing, taxi, recognition, navigation, rotating beacons)
- ❑ VC/cabin lights
- ❑ Wing vortices and vapor trails

MISCELANEOUS

- ❑ 20 Series custom sound package
- ❑ Multiple camera views (external and internal)
- ❑ 20 Series aircraft kneeboard reference tab and check list (from within Flight Simulator)
- ❑ A comprehensive 85-page user flight manual with complete instructions, flight planning, procedures and check lists, in a printable PDF format (English and French versions)

***NOTE:** Specifications are subject to change without notice. Check our web site for available patches and upgrades.*

Appendix 3: TECHNICAL SUPPORT

FREQUENTLY ASKED QUESTIONS AND TECHNICAL SUPPORT

We invite you to visit our FAQ section on our website to find answers to most questions you might have and solutions to most issues you may encounter while flying the Xtreme Prototypes 20 Series in Flight Simulator X:

www.xtremeprototypes.com

If you need additional technical support, please visit our customer service section. **We try our best to answer most queries within one business day.**

Our products are designed to evolve with time, according to the feedback we receive from our users or from anyone interested in our products or in flight simulation or avia-

tion in general. Please let us know your comments, ideas and suggestions.

KNOWN ISSUES

The 20 Series aircraft has no 2D panel — There are no more 2D panels included with the Xtreme Prototypes add-on aircraft, following an industry trend since the launch of Flight Simulator X. Users must switch to the virtual cockpit mode to access the instrument panels.

The six 20 Series aircraft variations are not available in FSX, only three aircraft seem to be installed — Make sure the “Show all variations” option is selected in the “Select aircraft” page in FSX.



Appendix 4: OTHER PRODUCTS by Xtreme Prototypes

www.xtremeprototypes.com

X-1 SECOND GENERATION

EXTREME FLIGHT SIMULATION

GLJ 20 Series

ARROW Add-on High-altitude Interceptor for Microsoft Flight Simulator

EXTREME FLIGHT SIMULATION

X-15 Add-on Rocket Aircraft for Microsoft Flight Simulator

Xtreme Prototypes www.xtremeprototypes.com

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The 20 Series illuminated instrument panel (FSX screenshot).



Model 25, cruising in style (FSX screenshot).



www.xtremeprototypes.com

Model 25, over the Great Lakes (FSX screenshot).



Beautiful night departure (FSX screenshot)



Model 28, displaying climb capabilities (FSX screenshot).



Model 24 is an ideal IFR platform (FSX screenshot).



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All images appearing in this document are actual screenshots of the Xtreme Prototypes 20 Series virtual aircraft and panels captured in Microsoft® Flight Simulator X, except where otherwise noted.

The Xtreme Prototypes 20 Series virtual aircraft models are artistic interpretations inspired from the classic Gates Learjet 20 Series and are in no way intended to represent or simulate the real-world business jets. This entertainment software is a game and shall not be used for real-world flight training. For historical accuracy and educational purposes, portions of this manual are inspired from the original “Gates Learjet (24, 25 and 28) Airplane Flight Manual” published during the 1970s by Gates Learjet Corporation. Xtreme Prototypes is not affiliated with Gates Learjet Corporation (today, Gates Corporation), Bombardier Aerospace or any other company, entity or organization related to the development of the Gates Learjet 20 Series from 1960-1980. Software platform logo (TM and ©) IEMA 2007.

Produced with the financial participation of



Administrator of
The Canada New Media Fund
funded by the
Department of Canadian Heritage





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