



CLASSIC GLJ MODEL 25 SPECIAL EDITION FLIGHT MANUAL

Add-on Aircraft for Lockheed Martin® Prepar3D® and Microsoft® Flight Simulator X

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FOREWORD



Thank you for your interest in our new GLJ Model 25 Special Edition addon for Lockheed Martin® Prepar3D® and Microsoft® Flight Simulator X.

The Xtreme Prototypes GLJ Model 25 SE is a next generation addon optimized for the latest versions of our favorite simulation platforms and designed to take advantage of the new and more powerful personal computers that are available today. It includes entirely new high-resolution models and textures, new liveries, a fully redesigned cabin and virtual cockpit with full-3D gauges, additional systems and functionalities, new animations, new aircraft and cockpit sounds and an updated 150-page flight manual, among many other new features.

Nicknamed "fighters in civilian clothing" because of their sleek design and amazing performance, the classic Learjet 20 Series aircraft were the first true executive jets and redefined business aviation during the 1970's, flying high above the weather at transonic speeds. Their capabilities earned them a place among the extreme aircraft, setting record after record. With the longer-range Gates Learjet Model 25D, from which your new addon is inspired, came a longer cabin, increased seating capacity, more flexible loading options, greater fuel capacity and a rather sleek-looking stretched fuselage. This package strives to bring you the actual feeling of flying such a high performance aircraft in the civilian world and relive this fascinating period in the history of aviation.

The new virtual cockpit has been retrofitted to allow for both GPS and VOR navigation in autopilot mode. It provides all the instruments and features necessary for complete IFR flight. A carefully planned 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. For the general aviation virtual 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.

Even if there are some differences between this addon and the real aircraft, mainly due to the current limitations of the available simulation platforms, most systems, instruments, switches and knobs are fully functional in order to simulate complete procedures, from cold and dark to shutdown.

We hope you will enjoy flying our new GLJ Model 25 Special Edition as much as we enjoyed developing this exciting addon.

INTRODUCTION AND PRODUCT DESCRIPTION

SECTION 1



ABOUT THE REAL 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, Bill Jr., who was working in Switzer-

land 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.

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 GLJ Model 25 SE add-on is inspired from the 20 Series aircraft of the Gates era.

In the late 1960's, as Learjet's customer's needs evolved and grew, so did the aircraft they came to love. With the Model 25, and later the longer-range model 25D with greater fuel capacity, came a longer cabin, increased seating capacity and more flexible loading options, not to mention a rather sleek-looking stretched fuselage.

The Model 25's shape became synonymous with flying coolness and would remain so to this day, were it not for the aging GE CJ-610 turbojet engines. Nonetheless, improved versions of the power plant gave the 20 Series yet another increase in performance.

Gates ownership saw the transition from straight-turbojet to more efficient turbofan power. Up to then, 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 very 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, among others, 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 Aerospace in 1990. Model 60, an improved version of the Model 55, was rolled out the same year.

By mid-1990's, Learjet was totally 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. Then came models 70, 75 and 85.

The development of the Model 85 was unfortunately cancelled in October 2015 for financial reasons, so the company could concentrate on its new C Series and Global 7000/8000 instead. Nevertheless, the longevity of this aircraft family is a testimony to Bill Lear's original vision and the way it forever changed business travel.

WHAT'S NEW IN VERSION 2.0?



New high-resolution 3D exterior model — High-resolution 3D exterior model, optimized for the latest versions of Lockheed Martin® Prepar3D® and Microsoft® Flight Simulator X, with more than 800 parts and 80 animations.

New high-resolution textures — Ten (10) new high-resolution (4096 x 4096) texture variations with unique liveries and paint schemes for each aircraft.

New high-resolution fully functional 3D virtual cockpit — Fully functional high-resolution virtual cockpit with over 1500 parts and 250 full-3D animated gauges, switches, levers, light indicators, flight instruments and systems with integrated tooltips.

New switches, knobs and levers — New switches, control sticks, handles and levers to conform better to the real GLJ Model 25 aircraft. Almost all the switches and knobs in the virtual cockpit are clickable and functional.

New thrust reversers — The new GLJ Model



25 add-on is equipped with fully animated thrust reversers on both engines, including new subthrottles and a control panel in the virtual cockpit.

New sound effects — New 20 Series aircraft sounds and over 30 new additional cockpit sound effects. Contains Bill Leaming's FBGS sound system to play these sounds.

New optional panels for installing third-party gauges — The center panel that contains the GPS and the radar can be replaced by two optional panels for installing third-party gauges such as a new GPS, radar or glass

cockpit. Instructions are provided for the user to modify the “panel.cfg” file to add those systems to the add-on’s virtual cockpit. Users can cycle between two different optional panels and the default GPS/radar panel.

New cockpit lighting — The cockpit panel lights are now separate from the cabin and flood lights and can be controlled independently. New reading and exit lights were added in the cockpit and in the cabin.

An updated, 150-page flight manual (printable PDF version) — The present document.

Other new features include:

- Fully redesigned landing gear and landing gear wells, complete with flexible hoses, landing and taxi lights, anti-skid system, animated snubbers, and more
- Fully redesigned main entry door
- Fully redesigned cabin and seats
- Fully redesigned windows
- New rotating beacon lights
- Animated stall vanes on the nose
- Animated engine inlet guide vanes
- Optional nose test probe with vanes
- Fully redesigned cockpit and instrument panels with entirely new gauges, switches and levers
- Modified radios for use in the simulator (VHF COM1/COM1 Standby, COM2, ADF1, ADF2, NAV1, NAV2, transponder). Now fully compatible with ATC.
- Independent flight director
- NAV or GPS navigation modes. The autopilot is retrofitted to be fully functional in GPS mode.
- New DME head
- New digital clock and stopwatch
- Functional “Jetstar 8” 8-track tape player (a tribute to the inventive genius of Bill Lear) on the center pedestal that can play user’s music
- Rearranged side control knobs
- New pilot seats with adjustable armrests (P3Dv3)
- New animated and slidable sun visors (P3Dv3)
- Optional control columns and yokes
- Optional throttle quadrant

- Optional iPad® tablet on the copilot side
- New camera views (5 exterior, 9 interior)
- A comprehensive paintkit (Adobe® Photoshop® CS5 file format) to allow users to create their own liveries

ADDON DESCRIPTION



The classic Learjet 20 Series aircraft, nicknamed “fighters in civilian clothing” because of their sleek design and amazing performance, were the first true executive jets. Their capabilities earned them a place among the extreme aircraft, setting record after record while allowing shirt-sleeve comfort in their plush cabins.

With the longer-range Gates Learjet Model 25D, from which this addon is inspired, came a longer cabin, increased seating capacity, more flexible loading options, greater fuel capacity and a rather sleek-looking stretched fuselage.

The Xtreme Prototypes GLJ Model 25 SE addon contains ten variations of the legendary business jet, based on actual and fictitious paint schemes. Each model is fully detailed and has been carefully designed based on available drawings, flight manuals, photographs, films and other archive material.

The 3D exterior model features over 800 parts and 80 animations. The fully functional virtual cockpit contains over 1500 parts and more than 250 back and front-lit 3D gauges, lights, switches, knobs, levers and flight instruments.

A custom flight model has been designed to simulate the performance of a high-powered civilian jet aircraft in the simulator. The package also includes custom visual effects and sounds, multiple camera views and an updated 150-page flight manual, among many other features.

The new virtual cockpit has been retrofitted to allow for both GPS and VOR navigation in auto-pilot mode and provides all the instruments and features necessary for complete IFR flight. A carefully planned IFR flight is sure to be a rewarding, if not challenging experience for the virtual pilot. However, anyone who masters the default jets in the simulator can fly the Xtreme Prototypes GLJ Model 25 SE addon.

General Features

Ten (10) variations of the Gates Learjet Model 25D business jet, inspired from actual liveries:

- American private “Red Belly” version, inspired from actual liveries (fictitious tail number N864XP)
- U.K. private “Blue Bird” version, inspired from actual liveries (fictitious tail number G-KEXP)
- Mexican private version, inspired from actual liveries (fictitious tail number XA-XPS)
- French private version, inspired from actual liveries (fictitious tail number F-GLXP)
- German private version, inspired from actual liveries (fictitious tail number D-XPSE)
- U.S. Air Force V.I.P transport version, inspired from actual liveries (fictitious tail number 60214XP)
- U.S. Special Ops Area 51 version, inspired from actual liveries (fictitious tail number N4251XP)
- Canadian government “Black” version, inspired from actual liveries (fictitious tail number 150018XP)
- Canadian private “Xtreme Red Bird” version (fictitious tail number C-GAXP)

- Rollout “unpainted” test version, inspired from actual test aircraft (fictitious tail number N486XP)

Flight Model Features

Custom 20 Series flight model to simulate the performance of a high-powered civilian jet aircraft in the simulator:

- Two General Electric CJ-610, 2,950-pound static thrust, single-spool turbojet engines
- Service ceiling: 45,000 ft.
- Absolute ceiling: 51,000 ft.
- Maximum speed: Mach 0.82 (at 24,000 ft.)

20 Series Aircraft Systems

The following 20 Series 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
- CJ-610 Power plant
- Fire detection and suppression system
- Pneumatic (high pressure) and environmental control system
- Air conditioning and pressurization system
- Bleed air system
- Automatic flight control system (autopilot)
- Caution and warning system
- Avionics, radio and navigation system, fully compatible with ATC (VHF COM1/COM1)

Standby, COM2, ADF1, ADF2, NAV1, NAV2, transponder)

- GPS (compatible with the autopilot)
- Main entry door (fully animated)
- Cockpit lighting system

Aircraft Model Features

- High-resolution 3D exterior model, optimized for the latest versions of Lockheed Martin Prepar3D® (native P3Dv3) and Microsoft® Flight Simulator X
- Highly detailed model based on archive material, with more than 800 parts and 80 animations
- 4096 x 4096 high-resolution textures
- Unique markings and liveries for each aircraft variation
- Movable aerodynamic control surfaces:
 - Movable stabilizer
 - Elevator
 - Ailerons with trim and balance tabs
 - Flaps
 - Vertical stabilizer/rudder with trim tab
 - Spoilers
- Fully animated landing gear, complete with flexible hoses, landing and taxi lights, anti-skid system, snubbers, and more
- Fully animated main entry door (lower and upper sections)
- Detailed GE CJ-610 power plant with animated (compressor and turbine) blades and inlet guide vanes
- Fully animated thrust reverser on both engines
- Rotating beacon lights

- Animated stall vanes on the nose
- Optional nose test probe with vanes

Virtual Cockpit Features

- High-resolution virtual cockpits with over 1500 parts and 250 full-3D animated gauges, switches, knobs, levers, light indicators and flight instruments with tooltips
- Advanced instrument panels:
 - Captain's panel
 - Center panel
 - Electrical and radio panels
 - Copilot's panel
 - Annunciator panel
 - Thrust reverser control panel
 - Center pedestal
- Animated control columns and yokes (optional, user-selectable)
- Animated rudder pedals with differential brakes
- Modified radios for use in the simulator (VHF COM1/COM1 Standby, COM2, ADF1, ADF2, NAV1, NAV2, transponder). Fully compatible with ATC.
- Independent flight director
- GPS
- NAV or GPS navigation modes. The autopilot is retrofitted to be fully functional in GPS mode.
- Two optional configurable center panels to install third-party 2D gauges (user-selectable)
- DME head
- Analog and digital clocks with stopwatch
- Functional "Jetstar 8" 8-track tape player on

the center pedestal that can play user's music

- Side control knobs
- New pilot seats with adjustable armrests (P3Dv3)
- New animated and slidable sun visors (P3Dv3)
- Optional throttle quadrant
- Thrust reverser subthrottles
- Optional iPad® tablet on the copilot side
- Cockpit lighting (instruments, cabin, flood)

Visual Effects

- Engine smoke and contrail effects
- Wing vortices and vapor trails
- Aircraft lights, some animated (landing, taxi, recognition, navigation, strobes, beacon)
- Cockpit/cabin lights

Sound Effects

- New 20 Series aircraft sound package
- Over 30 additional cockpit sound effects (switches, knobs and levers, pneumatic valves, blower fan, alerts, etc.)

Miscellaneous

- Contains Bill Leaming's FBGS sound system for playing cockpit sounds and music
- 5 external camera views
- 9 internal camera views
- A 150-page printable PDF manual
- A comprehensive paintkit (Adobe® Photoshop® CS5 file format) to allow users to create their own liveries



SCOPE

Your new Model 25 SE addon is inspired from a series of aircraft known in the mid-1970s as the Gates Learjet 20 Series (models 23 to 28). The package strives to recreate the general look and feel of the original aircraft for the virtual pilot's enjoyment. While we regard this addon more as a mini aircraft simulator rather than a game, we cannot pretend that it is one hundred percent historically or technically accurate or that it truly reproduces all the flight characteristics of the real Model 25 aircraft.

This manual contains the necessary information for the installation and operation of the GLJ Model 25 SE addon on your simulation platform. Nearly all 20 Series systems that can be reproduced in Lockheed Martin® Prepar3D® or Microsoft® Flight Simulator X are simulated, unless otherwise noted.

For technical and historical accuracy and in an effort to recreate what it was like to operate the real Model 25, portions of the documentation are inspired or adapted from the original Gates Learjet Model 25D flight manual.

GIVE THE MANUAL A CHANCE!

The operation of the GLJ Model 25 addon is very similar to the operation of the real aircraft. For proper operation and enhanced realism, it is suggested that users read the flight manual and follow the procedures carefully.

While this addon allows comprehensive procedural IFR flight, anyone who masters the simulator's default jets can fly the GLJ Model 25 SE.

It's up to the user to decide which level of complexity he/she wants to achieve.

If you're feeling overwhelmed by the cockpit of the Model 25, we suggest giving the manual a chance, as it was written with non-experienced pilots in mind. The aircraft is quite rewarding once mastered, but as most things in life, practice makes perfect!

A WORD ABOUT PIRACY

Piracy is not a victimless crime.

Developing high quality professional addons for the latest simulation platforms is becoming more and more complex and challenging. It requires the contribution of a dedicated and passionate team of artists, technicians and engineers. These products cost money to develop and take many months of research and hard work, and are aimed at a relatively limited market of serious flight simulation enthusiasts.

Xtreme Prototypes is a small addon developer and we depend largely on your feedback and support to create better products. Contributions from our users, in the form of software license purchases, allow us to pursue our mission.

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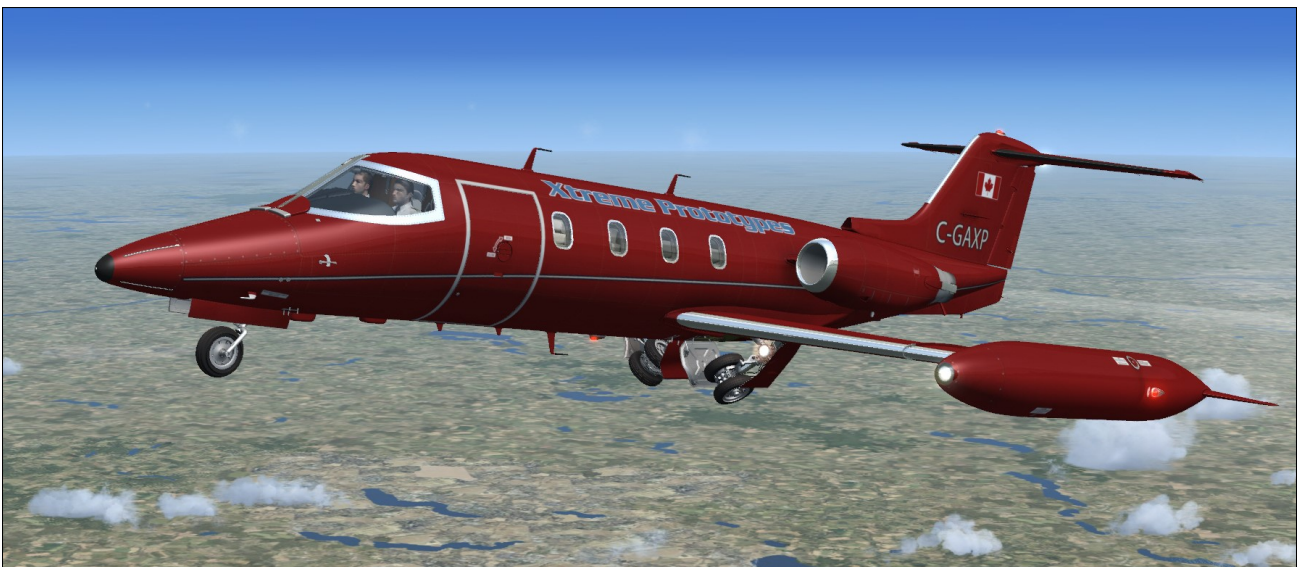
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Xtreme Prototypes, Inc.
P.O. Box 64, Station Place du Parc
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The Xtreme Prototypes GLJ Model 25 Special Edition is an add-on software package which requires:

- Lockheed Martin® Prepar3D® v3.x

or

- Microsoft® Flight Simulator X SP2 with Acceleration Expansion Pack (or Flight Simulator Gold fully installed)

or

- Flight Simulator X: Steam® Edition

to be installed on your computer.

The software is not a stand-alone product and cannot be used without the underlying simulation platform. Make sure that your simulation platform has been properly installed according to the instructions provided by the manufacturer before installing this addon.

Important

- Xtreme Prototypes next generation addons are designed to take advantage of the new and more powerful personal computer systems that are available today. They require better video cards and more processing power and RAM than other more conventional addons. Before installing this product, make sure you have the minimum system requirements or better. Increased per-

formance will be noticed on more powerful systems.

- Windows® 10/8.1/8/7 or later is required to install and fly this addon. We are sorry we cannot provide support for this addon if installed under Windows® Vista™ or Windows® XP®.

Note to FSX: Steam® Edition Users

- The GLJ Model 25 SE addon is fully compatible with Flight Simulator X: Steam® Edition. A special installer is available from our "Downloads" section on our website (free for registered users).

Note to Prepar3D® v2.x or v1.x users

- The GLJ Model 25 SE addon for FSX is compatible with Prepar3D® v2.x and v1.x. However, you will need to edit the path to your simulation platform when installing the software so the files are copied to the correct folders on your system. At this time, we only supply installers for Prepar3D® v3.x and FSX/FSX Steam®. Please note that the Prepar3D® version of this addon is a native version that is only compatible with Prepar3D® v3.x. To install this addon in Prepar3D® v2.x or v1.x, please use the FSX installer and change the installation path.

MINIMUM SYSTEM REQUIREMENTS

Flight Simulation Platform (depending on the addon version installed): Lockheed Martin® Prepar3D® v3.x, v2.x or v1.x, Microsoft® Flight Simulator X: Steam® Edition or Flight Simulator X SP2 with Acceleration Expansion Pack (or FSX Gold fully installed). This product is not compatible with earlier versions of Microsoft® Flight Simulator.

Operating System: Windows® 10/8.1/8/7 (or later) 32-bit (64-bit recommended)*.

Computer Memory (RAM): 8 GB (16 GB or more recommended)*

Processor: Dual Core 3.0 GHz (Quad Core 3.0 GHz or better recommended)*

Hard Drive Space: 45 GB (space required to install the simulator and the addon; downloaded file size approx. 1.2 GB, each addon version size approx. 3 GB when installed)*

Video Card: 1 GB (a high-end video card with 2 GB GDDR5 or better is highly recommended)

. Installing this addon in Prepar3D® v3.x or v2.x requires a DirectX® 11-compatible video card. Make sure you have the latest video driver for your operating system.

Graphics: DirectX® 11, 10 or 9 (depending on your simulator's requirements)*

Other: Wheel mouse, joystick (yoke and pedals optional), sound card and speakers, Adobe® Acrobat Reader®, Adobe® Photoshop® CS5 or later (optional, required for using the paintkit)

*: Please refer to your simulator's documentation for more information.

COMPATIBILITY, PERFORMANCE AND SETTINGS

The GLJ Model 25 SE addon is optimized for the latest versions of Lockheed Martin® Prepar3D® version 3.x, 2.x or v1.x., Microsoft® Flight Simulator X SP2 with Acceleration Expansion Pack (or Flight Simulator X Gold fully installed) and Flight Simulator X: Steam® Edition.

Make sure that you install the correct addon version for your simulation platform. The currently available versions are for Prepar3D® v3.x (P3Dv3), Flight Simulator X (FSX) and Flight Simulator X: Steam® Edition (FSX Steam).

Important

- This addon is not compatible with Flight Simulator X with Service Pack 2 alone. You will need to install the Acceleration Expansion Pack in addition to FSX SP2.
- This addon is not compatible with Microsoft® Flight Simulator 2004.



- This addon is not compatible with Laminar Research® X-Plane®.
- The addon version for Flight Simulator X is compatible with Prepar3D® v3.x. However, we recommend installing the correct addon version for your simulation platform to benefit from extra features in Prepar3D® v3.x.
- The version for Prepar3D® v3.x is a native version which is not compatible with Prepar3D® v1.x, v2.x and Flight Simulator X. Make sure that you install the correct addon version for your simulation platform.
- The addon version for FSX is compatible with Prepar3D® v1.x and v2.x. However, you will need to edit the path to your simulation platform when installing the software so the files are copied to the correct folders on your system. At this time, we only supply installers for Prepar3D® v3.x and FSX/FSX Steam®. To install this addon in Prepar3D® v2.x or v1.x, please use the FSX installer and change the installation path.
- Windows® 10/8.1/8/7 (or later) is required for using this addon. We are sorry we cannot provide support for this addon if installed under Windows® Vista™ or Windows® XP®.

Settings

Because there are as many computer systems as there are users, it is impossible to recommend unique settings that would fit all systems. However, as a rule of thumb, if your simulation platform is running properly on your computer, and assuming that your computer meets the minimum system requirements, you should be able to install and fly the GLJ Model 25 SE addon without major issues.

Performance

The GLJ Model 25 SE addon was designed with its overall visual quality, complex systems and most accurate simulation features in mind. Increased performance will be noticed on

more powerful computers.

The custom aircraft systems that were designed for this addon are responsible for thousands of calculations at each computer cycle. These systems, combined with the new high-resolution models and textures, hundreds of cockpit animations and some of the special visual and sound effects, may affect your frame rate on slower processors and video cards, depending on your simulation platform's settings.

Adjust your simulation platform's display, weather and traffic settings to correct this problem if necessary or upgrade your computer system with more processing power and a better video card.

Under normal conditions, assuming that your computer meets or exceeds the minimum system requirements, you should expect acceptable frame rates of between 30 to 60 frames per second, depending on your hardware and settings. Average frame rate should be between 20 to 45 fps. Frame rates below 20 fps are not normal.

We recommend limiting your frame rate to 24 fps (standard motion picture fps) or 30 fps on all platforms. This will free computer resources for other tasks and will improve performance.

Most of our tests were performed under Windows 8.1 in a 1920 x 1200 simulation window, with a screen resolution of 5760 x 1200 on all simulation platforms:

- Dell XPS 8500
- Intel (Quad Core) i7-3770 CPU @ 3,40 GHz, 64 bit
- 16 GB RAM
- AMD Radeon HD 7700 Series video card (2 GB GDDR5)

Refer to the documentation included with your simulation platform for more information about minimum system requirements and how to optimize your settings for the best overall performance.

Important

- Make sure you have the latest video card driver for your operating system.
- Make sure your antivirus program is not scanning your system while you are flying in the simulator. This could greatly affect performance.

Known Issues in Flight Simulator X

- If you experience "blue texture" flashes in FSX when the addon textures are loading, especially when in the virtual cockpit, we recommend disabling the DirectX® 10 Preview option in your "Display" settings ("Graphics" tab). FSX seems to perform better under DirectX® 9.
- If the special visual effects (aircraft lights, contrails, wing vortices, etc.) don't look like the images in this manual or simply disappear when viewed at certain angles, uncheck the Preview DirectX® 10 option box. Third-party free DirectX® 10 shader fixers are also available in Flight Simulation forums.
- We noticed that when the mouse cursor is moved inside the main window when in the virtual cockpit mode, the frame rate could drop significantly. When the mouse is moved out of the window, the frame rate will resume to normal. We believe this is a simulator issue and not an addon issue. Of course, it will be more apparent with more complex addons such as the GLJ Model 25 SE, especially on slower systems and graphic cards. We recommend moving the mouse cursor out of the main simulation window when not needed.
- If some textures are missing either on the exterior model or in the virtual cockpit after switching aircraft several times, simply load a default (stock) aircraft that comes with your simulation platform and reload the GLJ Model 25 SE. If this doesn't solve the issue, exit and restart the simulator. At this time, we don't know what might be causing this issue which is more frequent with models with high resolution textures such as the GLJ Model 25 SE.

- It's been reported during the beta tests that some third-party addons or FS utilities may interfere with the correct installation of the GLJ Model 25 SE addon. These programs may also alter the appearance of your add-on aircraft by modifying the textures and the materials in the model files. If the GLJ Model 25 SE aircraft variations are correctly displayed in the "Select Aircraft" page but you are unable to select any one of them, or worse if selecting them causes FSX to crash, suspect such third-party programs. For unknown reasons, these programs may prevent the addon's system DLLs from being "trusted" by FSX and the addon will not work properly. Remove these programs to solve the issue.

Optional Settings in Flight Simulator X

These settings require that you modify the "fsx.CFG" file located in "C:\Users*your name*\AppData\Roaming\Microsoft\FSX". It is not Xtreme Prototypes' policy to modify the user's "fsx.CFG" file during the installation process. So this needs to be done manually by the user.

Note (FSX: Steam® Edition): The "fsx.CFG" file (or "fsx_se.CFG") may be located in "C:\Users*your name*\AppData\Roaming\Microsoft\FSX-SE", depending on the version.

Should you decide to change these settings, please make sure that you've made a backup copy of your original "fsx.CFG" (or "fsx_se.CFG") file and saved it in a safe place before proceeding:

To prevent the dynamic head movement in the virtual cockpit under strong acceleration conditions, you can make the following changes:

```
[DynamicHeadMovement]
LonAccelOnHeadLon=0.000000
LonAccelOnHeadPitch=0.000000
RollAccelOnHeadLat=0.000000
YawAccelOnHeadLat=0.000000
RollAccelOnHeadRoll=0.000000
MaxHeadAngle=0.000000
MaxHeadOffset=0.000000
HeadMoveTimeConstant=0.000000
```

If you have a widescreen monitor and feel you are too close to the main panel in the virtual

cockpit even after zooming out or moving the seat aft, you can make the following change:

```
[Display]
WideViewAspect=True
```

Note: Changing the aspect ratio may affect the way the special visual effects (aircraft lights, contrails, wing vortices, etc.) are displayed, depending on your hardware and simulation platform.

If you own a powerful computer equipped with a high-end video card, you can make the following changes to optimize the graphics (the GLJ Model 25 SE addon uses 4096 x 4096 high-resolution textures):

```
[Display]
TEXTURE_BANDWIDTH_MULT=80
```

```
[Graphics]
TEXTURE_MAX_LOAD=4096
```

Note: If you still experience performance issues after optimizing your simulation platform, you may need to upgrade your computer system. Refer to "Minimum System Requirements".

Known Issues in Prepar3D® v1.x

- No issues were reported in Prepar3D® v1.x.

Optional Settings in Prepar3D® v1.x

These optional settings require that you modify the "Prepar3D.cfg" file located in "C:\Users\your name\AppData\Roaming\Lockheed Martin\Prepar3D". It is not Xtreme Prototypes' policy to modify the user's "Prepar3D.cfg" file during the installation process. So this needs to be done manually by the user.

Should you decide to change these settings, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding:

To prevent the dynamic head movement in the virtual cockpit under strong acceleration conditions, you can make the following changes:

```
[DynamicHeadMovement]
LonAccelOnHeadLon=0.000000
LonAccelOnHeadPitch=0.000000
RollAccelOnHeadLat=0.000000
YawAccelOnHeadLat=0.000000
RollAccelOnHeadRoll=0.000000
MaxHeadAngle=0.000000
MaxHeadOffset=0.000000
HeadMoveTimeConstant=0.000000
```

If you own a powerful computer equipped with a high-end video card, you can make the following changes to optimize the graphics (the GLJ Model 25 SE addon uses high-resolution 4096 x 4096 textures):

```
[Display]
TEXTURE_BANDWIDTH_MULT=80
```

```
[Graphics]
TEXTURE_MAX_LOAD=4096
```

Note: If you experience performance issues after optimizing your simulation platform, you may need to upgrade your computer system. Refer to "Minimum System Requirements".

Known Issues in Prepar3D® v2.x

Lockheed Martin® Prepar3D® v2.x is a professional simulation platform that requires a powerful computer and video card to run. We do not recommend flying the GLJ Model 25 SE addon in Prepar3D® v2.x if you don't have the required computing power and high-end video hardware.

Note: Prepar3D® v2.x requires DirectX® 11 and a DirectX® 11-compatible video card. Refer to your simulator's documentation for more details.

Advanced lighting options in Prepar3D® v2.x, such as shadows and HDR lighting, may dramatically affect performance and reduce frame rate. We recommend moderation when setting these options, especially on slower systems.

(Note that the GLJ Model 25 SE addon uses 4096 x 4096 high-resolution textures.)

- The special effect engine was changed from CPU to GPU with the release of Prepar3D® v2. This has the advantage of freeing computer resources and improving performance on high-end graphics hardware. The GLJ Model 25 SE special visual

effects were upgraded to conform to the Prepar3D® v2 specifications. While the new P3Dv2 particle effects are visually identical to the FSX/P3Dv1 effects, there may still be a simulator issue affecting extrusion effects that still needs to be resolved, depending on your simulator's version. Until then, extrusion effects such as engine contrails, wing vortices and vaportrails, may appear sawtoothed, wrongly oriented, faded, delayed, with repeating arrow patterns. This is normal until a fix is made available.

- No special effect issue related to the view aspect ratio was reported in Prepar3D® v2.x.

Optional Settings in Prepar3D® v2.x

For optimal graphics quality, make sure the texture resolution is set to "Ultra - 4096x4096" in your graphics settings (under "Image and Texture Quality").

Other optional settings require that you manually modify the "Prepar3D.cfg" file located in "C:\Users\yourname\AppData\Roaming\Lockheed Martin\Prepar3D v2". It is not Xtreme Prototypes' policy to modify the user's "Prepar3D.cfg" file during the installation process. So this needs to be done manually by the user.

Should you decide to change these settings, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding.

To prevent the dynamic head movement in the virtual cockpit under strong acceleration conditions, you can make the following changes:

```
[DynamicHeadMovement]
LonAccelOnHeadLon=0.000000
LonAccelOnHeadPitch=0.000000
RollAccelOnHeadLat=0.000000
YawAccelOnHeadLat=0.000000
RollAccelOnHeadRoll=0.000000
MaxHeadAngle=0.000000
MaxHeadOffset=0.000000
HeadMoveTimeConstant=0.000000
```

Note: If you experience performance issues after optimizing your simulation platform, you may need to upgrade your computer system. Refer to "Minimum System Requirements".

Known Issues in Prepar3D® v3.x

Lockheed Martin® Prepar3D® v3.x is a professional simulation platform that requires a powerful computer and video card to run. We do not recommend flying the GLJ Model 25 SE addon in Prepar3D® v3.x if you don't have the required computing power and high-end video hardware.

Note: Prepar3D® v3.x requires DirectX® 11 and a DirectX® 11-compatible video card. Refer to your simulator's documentation for more details.

Advanced lighting options in Prepar3D® v3.x, such as shadows and HDR lighting, may dramatically affect performance and reduce frame rate. We recommend moderation when setting these options, especially on slower systems.

(Note that the GLJ Model 25 SE addon uses high-resolution 4096 x 4096 textures.)

- No extrusion effect issues were reported in Prepar3D® v3.x.
- No special effect issue related to the view aspect ratio was reported in Prepar3D® v3.x.

Geometry Issue in Prepar3D® v3.x

There is a known issue in Lockheed Martin® Prepar3D® v3.x that affects geometry when a certain number of animations is exceeded in a model. Lockheed Martin® acknowledges that there is almost certainly a bug in the model optimization routine and that they would certainly like to fix it in a future release.

Until this fix becomes available, you will need to modify one line in the "Prepar3D.cfg" file in order for your GLJ Model 25 SE addon for P3Dv3 to display properly in the sim. Please note that this change is only required if you install the native version for P3Dv3. The change is not required if you install the FSX/FSX Steam® version in P3Dv3.

Please note that the native version for P3Dv3 is fully animated and has more features than the version for FSX. In order to bring this to you, we needed to exceed the number of animated objects that is currently supported by

the sim before the bug starts creating problems. Under these conditions, it is normal for the interior model to display many geometry issues such as missing parts, distorted objects, flying geometric figures, etc.

To solve this until a fix is available, you will need to modify the "Prepar3D.cfg" file located in "C:\Users*your name*\AppData\Roaming\Lockheed Martin\Prepar3D v3". It is not Xtreme Prototypes' policy to modify the user's "Prepar3D.cfg" file during the installation process. So this needs to be done manually by the user.

```
[SIM]
SYSCLOCK=0
OPTIMIZE_PARTS=0
```

Should you decide to make this change, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding.

Important

- The native version for P3Dv3 will not display properly in the sim without this modification to the "Prepar3D.cfg" file.

Optional Settings in Prepar3D® v3.x

For optimal graphics quality, make sure the texture resolution is set to "Ultra - 4096x4096" in your graphics settings (under "Image and Texture Quality").

Other optional settings require that you manually modify the "Prepar3D.cfg" (see previous topic). Should you decide to change these settings, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding.

To prevent the dynamic head movement in the virtual cockpit under strong acceleration conditions, you can make the following changes:

```
[DynamicHeadMovement]
LonAccelOnHeadLon=0.000000
LonAccelOnHeadPitch=0.000000
RollAccelOnHeadLat=0.000000
YawAccelOnHeadLat=0.000000
RollAccelOnHeadRoll=0.000000
```

```
MaxHeadAngle=0.000000
MaxHeadOffset=0.000000
HeadMoveTimeConstant=0.000000
```

Note: If you experience performance issues after optimizing your simulation platform, you may need to upgrade your computer system. Refer to "Minimum System Requirements".

DOWNLOADING YOUR ADDON

Our products are available for download only. At this time, you should have downloaded the ZIP file that contains two installation programs (one for Prepar3D® v3.x and the other for FSX) from our website and received your personal activation key by email.

The installers for the GLJ Model 25 SE addon are contained in a single ZIP file to prevent them from being blocked by antivirus programs while the addon is being downloaded from our website (some anti-virus software won't allow the download of ".exe" files).

Make sure you are authorized to download ZIP files on your system (check your antivirus software) or you may not be able to download your addon.

Note: Please contact us if you did not receive your activation key or were unable to download your addon after your order was processed.

The ZIP file ("XP_GLJL25_v2r0.zip") weighs approximately 1.2 GB and normally takes about 5 to 15 minutes to download on a high speed Internet connection.

Known Download Issues

- If you don't have a high speed Internet connection, or experience intermittent connection issues, you may be timed out or disconnected while transferring the file. If you are not able to download your addon after several attempts, we recommend using another and better connection either at work (if allowed) or at a parent's or friend's. If you don't have access to another connection, and still cannot solve the issue, please contact us for other options.

- We recommend using your Internet browser (Internet Explorer, Chrome, etc.) to download your addon. Do not use a third-party download manager or you may experience problems that were reported by a number of users.
- Some antivirus programs may also prevent you from downloading your addon. Make sure your antivirus does not interfere with your downloads. Also, some antivirus won't allow you to download "zip" (or ".exe") files. You can disable your antivirus program temporarily (while downloading your addon) to solve this issue. Don't forget to reactivate your antivirus after the file is downloaded.

Once downloaded, save the ZIP file on your computer desktop.

You can download your addon again at any time by logging in to our website. Once you are logged in, on the "Your Account" page, select "Review or re-download previous order (s)", click on your order number, and click the link to download your addon. You may download the file a limited number of times. After that, you will need to contact us if you need the file again.

Please note that the replacement of lost downloaded files is not guaranteed. We recommend making an extra copy for your own use and to save it in a safe place along with your personal activation key. Refer to the end-user software agreement for more details.

Note to FSX: Steam® Edition Users

- The GLJ Model 25 SE addon is fully compatible with Flight Simulator X: Steam® Edition. A special installer, contained in a ZIP file ("**XP_GLJ25_v2r0_FSX_Steam.zip**"), is available from our "Downloads" section on our website (free for registered users).

PACKAGE DESCRIPTION

The two installers for the GLJ Model 25 SE addon (one for FSX and the other for Prepar3D® v3.x) are contained in a single ZIP file: "**XP_GLJ25_SE_v2r0.zip**".

Extracting the Installers from the ZIP File

To extract the installers from the ZIP file, right click the ZIP file and select "EXTRACT ALL...". Follow the instructions to extract and save the installers on your desktop.

The two installers are:

- "**XP_GLJ25_v2r0_P3Dv3_setup.exe**", a native version for Prepar3D® v3.x
- "**XP_GLJ25_v2r0_FSX_setup.exe**" for Flight Simulator X (can be used with Prepar3D® v2.x and v1.x)

These installers contain the addon and all its components to be installed on your computer.

NOTE: Because of differences between the different simulation platforms, the installers are not interchangeable.

Note to Prepar3D® v1.x or v2.x users

- The GLJ Model 25 SE addon for FSX is compatible with Prepar3D® v1.x and v2.x. However, you will need to edit the path to your simulation platform when installing the software so the files are copied to the correct folders on your system. At this time, we only supply installers for Prepar3D® v3.x and FSX. Please note that the Prepar3D® v3.x version is a native version that is only compatible with Prepar3D® v3.x. To install this addon in Prepar3D® v2.x or v1.x, please use the FSX installer and change the installation path.

Note to FSX: Steam® Edition Users

- A special installer for Flight Simulator X: Steam® Edition is available from our "Downloads" section on our website (free for registered users). The new installer ("**XP_GLJ25_v2r0_FSX_Steam_setup.exe**") is contained in a ZIP file ("**XP_GLJ25_SE_v2r0_FSX_Steam.zip**").

You may install the three available versions of the GLJ Model 25 SE addon concurrently on

your computer if the three simulation platforms are present. However, we recommend installing only the version(s) you intend to use. Each add-on will occupy about 3 GB of disk space on your computer when installed.

Note: The installer will not erase nor replace our previous 20 Series add-ons (version 1.x), if installed on your computer. The new version will be installed in different folders. You may choose to delete or keep the previous version before installing the new version. Please note that the old version is now a legacy product for which we can no longer offer support.

You will need a valid activation key to install your add-on. Please contact us if you did not receive your activation key by email moments after your order was processed.

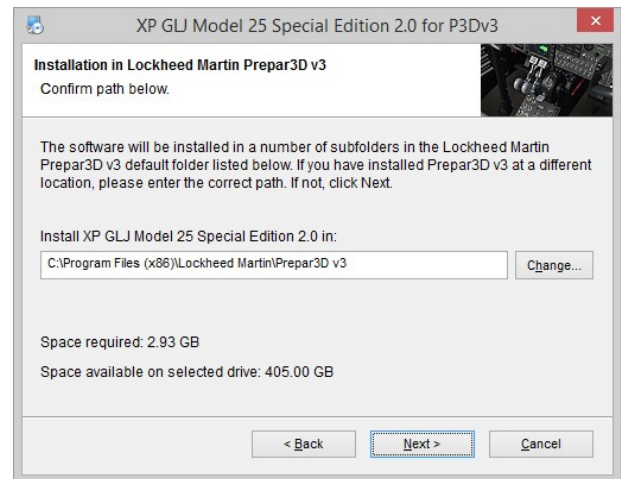
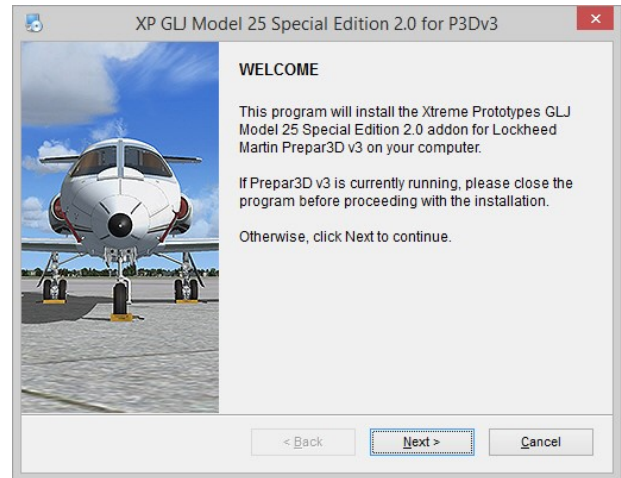
SOFTWARE INSTALLATION

Installation in one simulation platform at a time:

1. Make sure that the required simulation platform has been properly installed according to the instructions provided by the manufacturer before you install your new GLJ Model 25 SE add-on. If your simulation platform is currently running, please close the program before proceeding with the installation. **Make sure you are using the proper installer for your simulation platform (refer to “Package Description” on the previous page).**
2. **Double-click the installer file and follow the instructions that appear on screen.** Enter your name and personal activation key when asked. You must accept the end-user license agreement and enter a valid activation key before you can install and use your add-on. The installer will copy the required files to their proper location on your computer.

Important

- The installer cannot detect the path to your simulation platform's root folder (directory) automatically. If you are in-



stalling for Prepar3D® v1.x or v2.x, you will need to specify the path to your simulation platform during the installation process. You have nothing to do if you are installing for Prepar3D® v3.x or FSX. Make sure you are using the proper installer for each simulation platform.

- The installer cannot detect the path to your simulation platform's root folder (directory) automatically. If you installed Flight Simulator X or Prepar3D® in a custom folder at a different location on your computer, you will need to specify the correct path/folder during the installation process.

If you have more than one simulation platform installed on your computer, **repeat the previous steps for each add-on version you want to install.**

Note to FSX: Steam® Edition Users

- Please note that FSX: Steam® Edition is installed in a different way to the boxed version and occupies a different location on your computer. With the standard installer for FSX, you would need to specify a different path/root folder during the installation process to deploy the addon into FSX: Steam® Edition (by default: "C:\Program Files (x86)\Steam\steamapps\common\FSX").
- Also, FSX: Steam® Edition uses a different folder to store your saved flights, if any.
- For these reasons, we recommend using the special installer for FSX: Steam® Edition that is available from our "Downloads" section on our website.
- Please note that the installer for FSX: Steam® Edition cannot detect the path to your simulation platform's root folder (directory) automatically. If you installed Flight Simulator X: Steam® Edition in a custom folder at a different location on your computer, you will need to specify the correct path/folder during the installation process. You have nothing to do if your simulation platform is installed in its default folder/location.

Security Warnings (FSX)

Note: This section applies only to Flight Simulator X and Flight Simulator X: Steam® Edition. Security warnings are not an issue in Prepar3D®.

In addition to many other files, important software components need to be installed, trusted and run on your computer for the GLJ Model 25 SE addon to function properly. These are contained in separate DLLs (software libraries).

These DLLs are copied to the addon's panel folder during the installation process. You must trust these modules and allow them to run on your computer or the addon will not work properly.

Standard Windows® security warning dialogs will pop up the first time the GLJ Model 25 SE addon is loaded in the simulator, asking if you

allow the DLLs to run on your computer. Click the "Run" button to accept. This needs to be done only once.

Another dialog will pop up in your simulator's main window the first time the Model 25 SE addon is loaded. This time it asks if you trust the DLLs. Click the "Yes" button to designate the DLL as "trusted" software. This needs to be done only once.

Checking the Installation

Once the addon is installed, the different aircraft variations will be available on the "Select Aircraft" (or "Select Vehicle") page on your simulation platform.

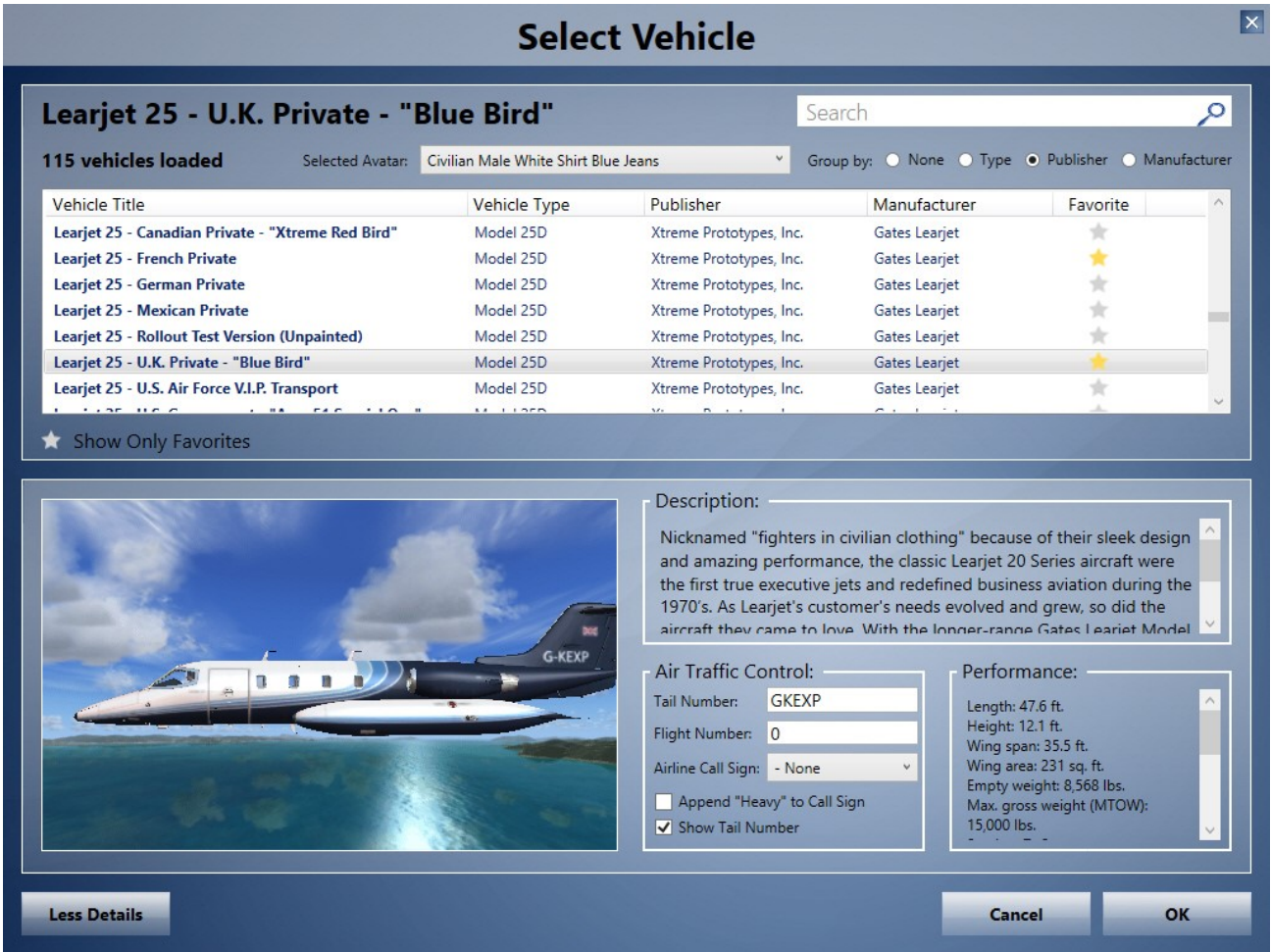
The GLJ Model 25 SE addon consists of ten (10) variations of the Gates Learjet Model 25D business jet. If some aircraft variations are not visible, make sure the "Show all variations" option is selected on the "Select Aircraft/Vehicle" page (FSX).



Note: The "Select Aircraft/Vehicle" page may be different from the ones shown above, depending on your simulation platform.

Known Issue (FSX)

- It's been reported during the beta tests that some third-party addons or FS utilities may interfere with the correct installation of the GLJ Model 25 SE addon. These programs may also alter the appearance of your add-on aircraft by modifying the textures and the materials in the model files.



If the different GLJ Model 25 SE aircraft variations are correctly displayed in the "Select Aircraft" page but you are unable to select any one of them, or worse if selecting them causes FSX to crash, suspect such third-party programs. For unknown reasons, these programs may prevent the addon's system DLLs from being "trusted" by FSX and the addon will not work. Remove these programs to solve the issue.

Known Issues (All platforms)

- Some antivirus programs may interfere with or prevent the installation of certain software components, including the important DLLs. The GLJ Model 25 SE addon will not work properly without these DLLs. If you experience this issue, disable your antivirus program temporarily while reinstalling your addon. Don't forget to reactivate your antivirus after the addon is in-

stalled and working properly.

- If there is no sound from the cockpit (when clicking a switch) or some aircraft parts are missing on both the exterior model and the virtual cockpit, try resetting the flight. If this does not solve the issue, it may be because some important software components are missing or were not installed properly during the installation process. If so, you'll need to reinstall the addon to solve this issue. Make sure your antivirus program does not interfere with the installation.

File Structure

The GLJ Model 25 SE aircraft models, textures, panels, sounds, systems and configuration files are installed under different names in different folders in your "... simulator name\SimObjects\Airplanes" folder.



The special visual effects are installed in your "... *simulator name*\Effects" folder.

Removing the GLJ Model 25 SE addon from your computer

The addon can be removed from the Windows Control Panel (Program/Uninstall a Program), like any other program.

Do not use the uninstallation program (uninstall.exe) directly. The uninstallation program is located in the application folder that was created during the installation process and is used by the Windows Control Panel.

You are now ready to go!

AIRCRAFT DESCRIPTION AND SPECIFICATIONS

SECTION 3



The Gates Learjet Model 25 is a twin turbojet-powered light civilian aircraft. It was first tested in the summer of 1966 and introduced in the fall of 1967. An estimated 370 aircraft were built.

Its 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. Both ailerons are 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.

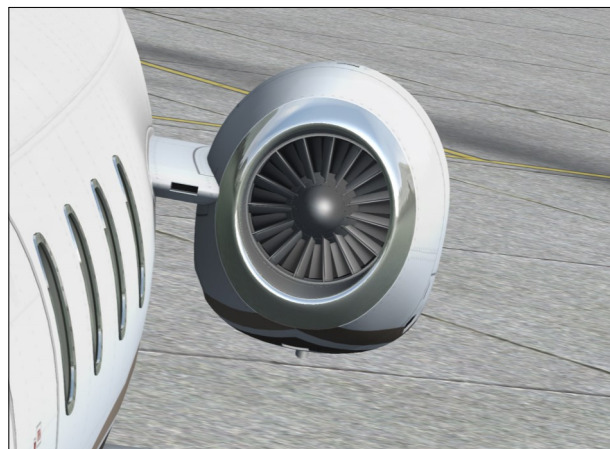
Your new addon consists of ten variations of the Gates Learjet Model 25D aircraft, a longer-range, improved version with greater fuel capacity, introduced in the mid 1970's. It has a short wing with tip tanks and a stretched fuselage compared to previous 20 Series models, allowing more passengers (7 seats +2) and loading options.

AIRCRAFT SPECIFICATIONS

Power Plant

Your GLJ Model 25 SE addon 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.



Your GLJ Model 25 SE addon is now equipped with thrust reversers which may be used any-time the airplane is on the ground to produce shorter stopping distances. Each engine is equipped with a target thrust reverser system which consists of upper and lower clamshell doors, pivoted near the engine centerline. The reverser doors are hydraulically actuated and electrically controlled.

Airplane Dimensions

The overall dimensions of the Gates Learjet Model 25D aircraft are:

- **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

Airplane Gross Weight

The approximate launch gross weight of the airplane (including fuel and full internal load) is approximately 15,000 pounds.

The empty weight is about 8,568 pounds.

Limitations

- **Maximum speed:** Mach 0.82 above 24,000 feet
- **Service ceiling:** 45,000 feet
- **Absolute ceiling:** 51,000 feet

Refer to Appendix 1 at the end of this manual for full virtual aircraft reference information.

Airplane Tail Numbers

The tail numbers used for the ten variations of your GLJ Model 25 SE addon are fictitious.

While the tail numbers are painted on the different texture sets and cannot be changed in the “aircraft.cfg” file, a comprehensive paintkit (in the Adobe® Photoshop® CS5 file format) is provided for users to create their own liveries with tail numbers of their choice. The paintkit is available to registered users from the “Downloads” section on our website.



The tail number on the white plaque on the main panel of the virtual cockpit can be changed in the “aircraft.cfg” file located in the main aircraft folder:

```
[fltsim.0]
atc_id=N864XP
```

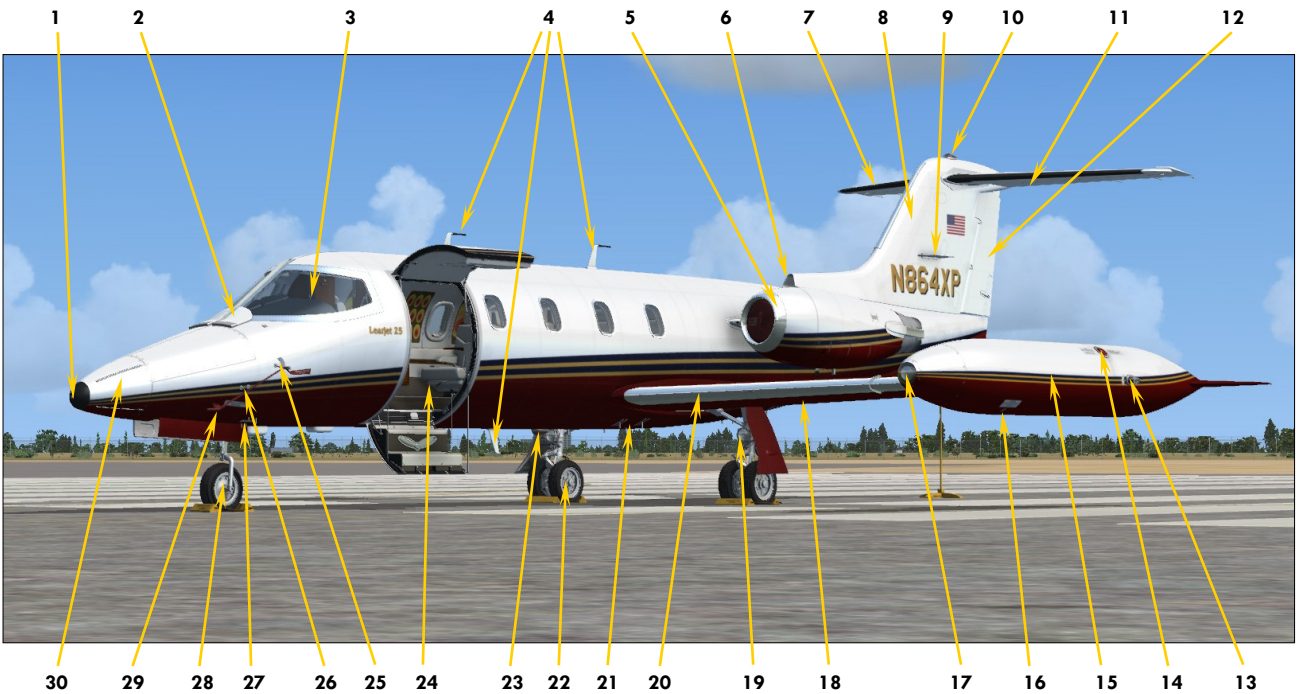



Figure 3-1

- | | |
|----------------------------------|-------------------------------|
| 1. Radome Alcohol Outlet | 16. Tip Tank Sump Drain Valve |
| 2. Windshield De-icing Nozzles | 17. Recognition Light |
| 3. Windshield | 18. Wing |
| 4. Radio/NAV Antennas | 19. Landing/Taxi Light |
| 5. Engine Nacelle De-icing Lip | 20. Wing Heated Leading Edge |
| 6. Cabin Air Intake | 21. Drains and Valves |
| 7. Stabilizer Heated Edge | 22. Main Landing Gear |
| 8. Vertical Fin | 23. Beacon Light |
| 9. VOR/Localizer Antenna | 24. Main Entry Door |
| 10. Beacon Light | 25. Stall Warning Vane |
| 11. Movable Stabilizer | 26. Static Ports |
| 12. Rudder | 27. Drains and Valves |
| 13. Navigation and Strobe Lights | 28. Nose Gear |
| 14. Fuel Filler Cap | 29. Pitot Head |
| 15. Tip Tank | 30. Radome |

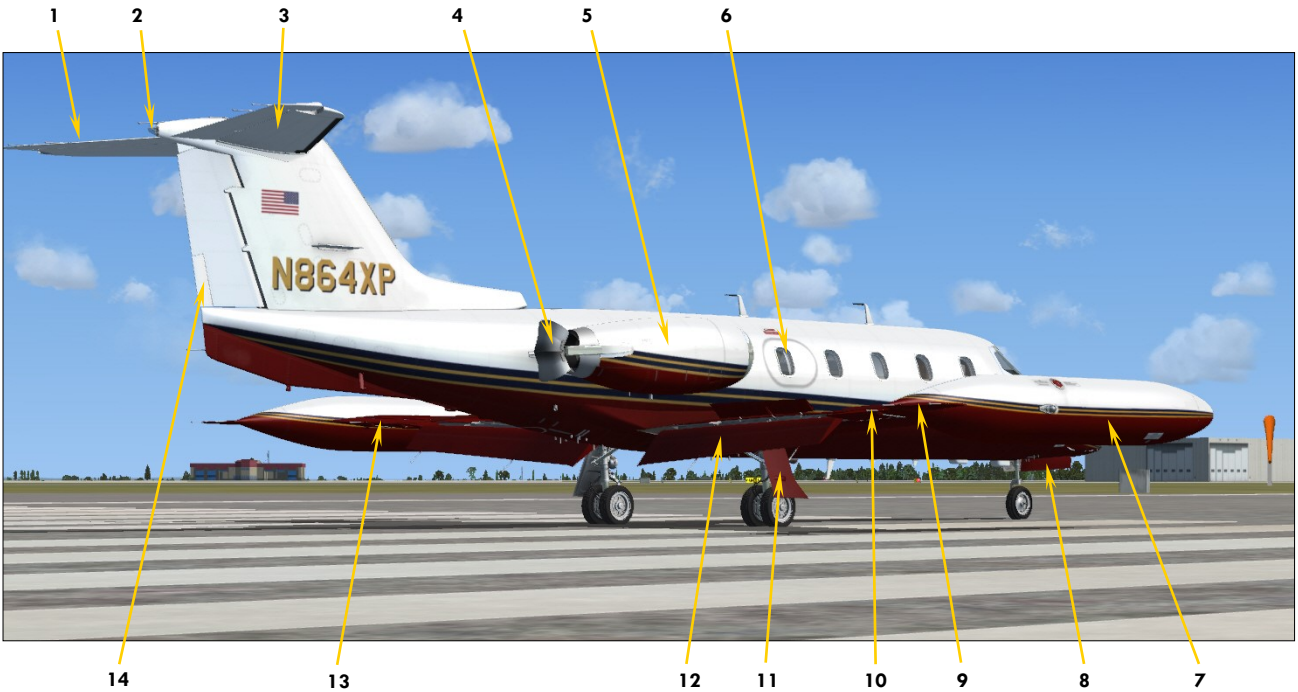
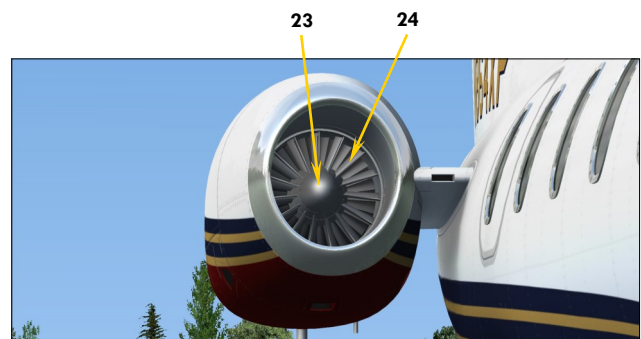
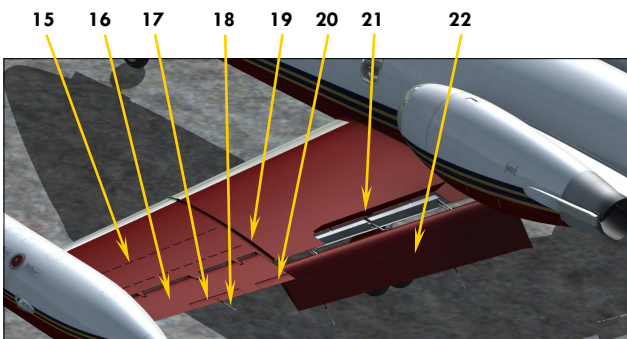


Figure 3-2

- | | |
|---------------------------------|---------------------------------------|
| 1. Elevator | 13. Aileron, Balance Tab and Trim Tab |
| 2. Navigation and Strobe Lights | 14. Rudder Trim Tab |
| 3. Movable Stabilizer | 15. Boundary Layer Energizers |
| 4. Thrust Reverser | 16. Aileron |
| 5. Engine Nacelle | 17. Aileron Balance Tab |
| 6. Emergency Exit Door | 18. Static Discharger (Wick) |
| 7. Tip Tank | 19. Wing Fence |
| 8. Nose Gear Door | 20. Aileron Trim Tab |
| 9. Tip Tank Fin | 21. Spoiler |
| 10. Aileron and Balance Tab | 22. Flap |
| 11. Main Gear Door | 23. GE CJ-610 Engine |
| 12. Flap | 24. Engine Inlet Guide Vanes |



INSTRUMENT PANELS (FULL 3D VIRTUAL COCKPIT)

SECTION 4



FULL-3D VIRTUAL COCKPITS

Most virtual cockpits found in other addons include flat 2D gauges that are "projected" on the main panel and other panels in the cockpit. When viewed from an angle, these gauges appear flat even though they might contain buttons, knobs and other movable parts that should not be flat. 2D gauges are generally created with layers of drawings (bitmaps) that are animated, while some may also include vector text and graphics.

The stock FS9/FSX Garmin 500 GPS unit is a good example of a "flat" 2D gauge that contains both bitmaps and vector graphics. Viewed from the side, the knobs and buttons look flat. Also, many 2D gauges use low-resolution graphics and are limited in size.

Xtreme Prototypes' full-3D virtual cockpits don't use low-resolution flat 2D gauges found in so many virtual cockpits, except for LCD screens which are flat by nature, such as in the GPS. They contain fully modeled high-resolution gauges with real 3D moving components.

Please note that Xtreme Prototypes next generation addons no longer include 2D panels found in older products. You must be in the virtual cockpit view to operate this addon. The virtual cockpit allows for a total 3D immersion into the GLJ Model 25 flying environment.

If your addon appears to have no virtual cockpit, make sure you have selected the **VIRTUAL COCKPIT** view in the simulator, not the (2D) main panel view. The virtual cockpit is availa-



ble from the "Views" menu item on your simulation platform's top menu bar or by pressing the "F9" key. You can cycle forward or backward the different views with the "S" key. You can also select the virtual cockpit as the default cockpit view when configuring your simulation platform.

Multiple cameras are provided when in the virtual cockpit view for entering the passenger cabin and to help the pilot access switches and other items in areas of the cockpit that are difficult to reach. You can cycle through the different camera views when in the virtual cockpit by pressing the "A" key.

The new virtual cockpit included with the GLJ Model 25 SE addon contains over 1500 parts and 250 custom systems, animated gauges, switches, knobs, levers, light indicators and flight instruments with integrated tooltips (small yellow rectangles with text that appear under the mouse pointer which contain the description of the underlying device).

The virtual cockpit and passenger cabin were meticulously modeled to conform as closely as possible to those in a typical Gates Learjet Model 25D of the 1970's. Unless otherwise

noted, nearly all levers, knobs and switches are clickable and can be used to simulate almost every step and procedure required before, during and after a flight. Features may vary between the Prepar3D® v3.x version and the FSX/FSX Steam® version. The Prepar3D® v3.x version is fully animated.

The virtual cockpit contains:

- The captain's panel
- The center panel
- The electrical and radio panels
- The copilot's panel
- The annunciator panel
- The thrust reverser control panel
- The center pedestal
- The pilot's seats, control columns and yokes, pedals, side consoles, circuit breakers, and other items

Other virtual cockpit features include:

- Animated control columns and yokes that are user-selectable and can be made invisible by clicking the boot
- Animated rudder pedals with differential brakes
- Modified radios for use in the simulator (VHF COM1/COM1 Standby, COM2, ADF1, ADF2, NAV1, NAV2, transponder). Fully compatible with ATC.
- Independent flight director function
- A new DME head
- GPS
- NAV or GPS navigation modes. The autopilot is retrofitted to be fully functional in GPS mode.
- Two optional configurable center panels to install third-party 2D gauges, a new GPS, radar or glass cockpit systems. Users can cycle between two different optional panels and the default GPS/radar panel at the touch of an icon.
- Analog and digital clocks with stopwatch
- Functional “Jetstar 8” 8-track tape player on the center pedestal that can play user’s music
- Side control knobs
- New pilot seats with adjustable armrests (P3Dv3)
- New animated and slidable sun visors (P3Dv3)
- Configurable power quadrant (the throttles and subthrottles can be made invisible)
- Thrust reverser subthrottles
- Optional iPad® tablet on the copilot side
- Cockpit lighting (instruments, cabin, flood)

Geometry Issue in Prepar3D® v3.x

There is a known issue in Lockheed Martin® Prepar3D® v3.x that affects geometry when a certain number of animations is exceeded in a model. Lockheed Martin® acknowledges that there is almost certainly a bug in the model optimization routine and that they would certainly like to fix it in a future release.

Until this fix becomes available, you will need to modify one line in the “Prepar3D.cfg” file in order for your GLJ Model 25 SE addon for P3Dv3 to display properly in the sim. Please note that this change is only required if you install the native version for P3Dv3. The change is not required if you install the FSX/FSX Steam® version in P3Dv3.

Please note that the native version for P3Dv3 is fully animated and has more features than the version for FSX. In order to bring this to you, we needed to exceed the number of animated objects that is currently supported by the sim before the bug starts creating problems. Under these conditions, it is normal for the interior model to display many geometry issues such as missing parts, distorted objects, flying geometric figures, etc.

To solve this until a fix is available, you will



need to modify the "Prepar3D.cfg" file located in "C:\Users\yourname\AppData\Roaming\Lockheed Martin\Prepar3D v3". It is not Xtreme Prototypes' policy to modify the user's "Prepar3D.cfg" file during the installation process. So this needs to be done manually by the user.

```
[SIM]
SYSCLOCK=0
OPTIMIZE_PARTS=0
```

Should you decide to make this change, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding.

Important

- The native version for P3Dv3 will not display properly in the sim without this modification to the "Prepar3D.cfg" file.

HOW TO ACTIVATE SWITCHES, BUTTONS AND KNOBS IN THE VC



- Most **2-position switches** can be turned **ON** or **OFF** with a simple left click with the mouse cursor positioned over the switch actuator. In addition, turning the mouse wheel up will turn the switch to **ON**, turning the mouse wheel down will turn the switch to **OFF**. *If a switch or button does not respond to clicks, it is probably a 3-position switch (see below). Try the mouse wheel instead!*
- **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 actuator down one position at a time (**UP, MID, DOWN**). Turning the mouse wheel up will move the switch actuator up again one position at a time (**DOWN, MID, UP**). *Single-clicking with the left mouse button has no effect on 3-position switches. Make sure you have a wheel mouse!*

- **Switch guards** can be opened or closed with a simple left click with the mouse cursor positioned over the guard. In addition, turning the mouse wheel up will open the guard, turning the mouse wheel down will close the guard.
- **Push-button switches** can be activated with a single left click on the center button/plunger.
- Most **levers and handles** can be dragged with the mouse to the desired position. Simply click on the handle with the left mouse button, drag the handle to the desired position, and release the mouse button.
- **Control columns and yokes** cannot be dragged with the mouse because they are synchronized with the movements of your joystick or with the keyboard arrow keys (pitch and roll).
- The **rudder pedals** are synchronized with the rotation movement of your joystick or your flight sim pedals. Note that the **toe brakes** are synchronized with your brake buttons on your joystick/yoke or the toe brakes on your flight sim pedals. *Your GLJ Model 25 SE addon uses differential brakes!*
- **Knobs** can be rotated with the mouse wheel. Turning the mouse wheel up will turn the knob to the right, turning the mouse wheel down will turn the knob to the left. Continuous rotation is possible on some knobs by left or right clicking with the mouse and leaving the mouse button depressed until the knob is set to the desired position. Some knobs have dual functions. Turning the mouse wheel will actuate the first function while left and right clicking will actuate the second function.



- Tooltips** (small yellow rectangles with text that appear under the mouse pointer which contain the description and reading of the underlying device) are integrated to every clickable parts in the cockpit. When the mouse cursor becomes a hand and the tooltip is displayed, the device can usually be activated with the mouse. If the mouse cursor does not change but the tooltip appears, it means that the device cannot be clicked. However, the tooltip may still contain useful information.

The tooltip always displays the correct reading of the underlying instrument even if power is not supplied to the instrument and the pointers are indicating zero. This is an indication of electrical power not being supplied to the instrument, or that the breaker affecting the instrument is pulled out, or that the instrument is defective or failed.

Note: If you can't see the tooltips in the virtual cockpit, make sure the "Show cockpit tooltips" option is selected in your simulator's display settings.

Important

- A wheel mouse is required to actuate 3-position switches and some knobs. Refer to "Minimum System Requirements" in section 2.
- It sometimes occurs that the pilot's viewpoint is adjusted too far back and lays inside the pilot seat's backrest, rendering the switches unclickable. When this happens, simply move your viewpoint forward.

HOW TO MOVE THE PILOT'S VIEWPOINT IN THE VIRTUAL COCKPIT

While visibility is excellent looking forward in the GLJ Model 25 SE cockpit, it may be helpful from time to time, and especially during take-off and landing, to move the pilot's viewpoint in the virtual cockpit.



Use the keyboard to move the pilot's viewpoint in the virtual cockpit:

- "CTRL-Backspace" = Move Forward
- "CTRL-Enter" = Move Aft
- "SHIFT-Enter" = Move Up
- "SHIFT-Backspace" = Move Down
- "SHIFT-(left)CTRL-Backspace" = Move Left
- "SHIFT-(left)CTRL-Enter" = Move Right
- "+/-" = Zoom in and Zoom out
- "SHIFT+ or SHIFT--" = Fine Zoom in or Zoom out
- "CTRL+ or CTRL--" = Telephoto/Wide Angle Lens adjustment (field of view) — this works only in exterior camera views, but it's good to know
- "Backspace" = Reset Zoom

Caution

- Do not move the pilot's viewpoint too far aft because you may not be able to click the switches if the viewpoint is behind the seat or other obstacles. When this hap-

pens, move your viewpoint forward a little.

Tips

- We recommend using a wide screen aspect ratio in the virtual cockpit if you have a widescreen monitor. Refer to section 2 for more details on how to change the screen aspect ratio on your simulation platform.
- Adjusting both the zoom and the field of view when in external camera views (spot plane, locked spot plane, etc.) will help you make great screenshots.

HOW TO CONFIGURE THE VC

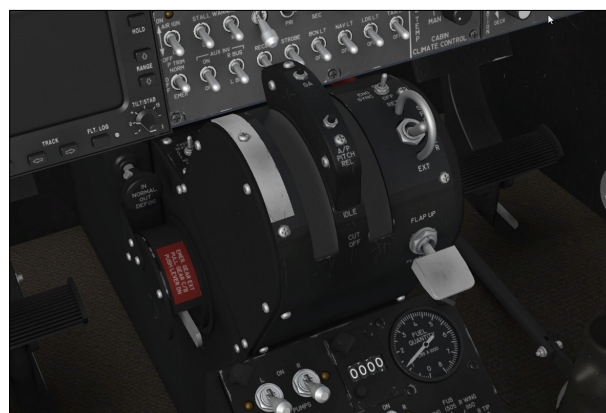
The virtual cockpit offers several options that can be set according to the user's preferences. These options include making the yokes or the throttles and other items visible or invisible, among other features.

Hiding the Control Columns and Yokes



The control columns can be made invisible by clicking the boot. This gives the pilot a better view of the main panel, making the switches and controls more accessible and the instruments more readable. Click the boot again to show the column. Each column/yoke is independent.

Hiding the Throttles



The throttles, subthrottles and parking brake lever can be made invisible by clicking the white strip on the throttle quadrant. This gives the pilot a better view of the switches on the electrical panel and center pedestal. Click the white strip again to show the throttles and parking brake lever.

Cycling the Optional Instrument Panels

Two optional, user-selectable and configurable instrument panels can replace the default GPS/radar panel on the main instrument panel in the virtual cockpit. Users can install their own 2D gauges, GPS, radar or glass cockpit



systems acquired from third-party vendors in the virtual cockpit on these two optional panels. This is done by modifying a few lines in the addon's "panel.cfg" file (see instructions below). Users can cycle between two different optional panels and the default GPS/radar panel by clicking the icon marked "OPT PANEL" above the upper right corner of the GPS.

The GLJ Model 25 SE addon is a standard P3D/FSX aircraft. If you were able to add your own third-party gauges to the VCs of default (stock) aircraft or other addons on your simulation platform, you shouldn't normally have any problem adding them to the VC in the GLJ Model 25 SE addon.



For example, by default we've installed the stock FSX Lear 45 PFD on the first optional panel and the FSX Lear 45 EICAS on the second optional panel (see image on next page). These two gauges are standard XML gauges contained in a cabinet file included with FSX. By clicking the icon marked "OPT PANEL" located right above the default GPS unit, you can cycle between the default GPS/radar panel and the two other optional panels (PFD and EICAS).

Installing Third-party 2D Gauges

We cannot guarantee support for third-party gauges and we didn't try them all. However, as a rule of thumb, as long as these systems are contained in standard 2D gauges (XML or DLL) that are compatible with P3D and/or FSX, you can add them to the optional panels in the VC.

You are only limited by the space available on these two panels. For example, you probably won't be able to have both your third-party GPS and radar units on the same panel, unless they fit perfectly or you adjust their size. Space is rather limited on the Model 25 main panel which was not originally designed for modern instruments with large LCD screens. In this case, you would probably install your GPS on one panel and your radar on the second panel.

Most third-party gauges are installed like standard P3D/FSX gauges by modifying a few lines in the addon's "panel.cfg" file. However, some may be installed differently and may

have their own installers, so please make sure that they are standard P3D/FSX gauges fully compatible with your simulation platform.

Always backup the addon's "panel.cfg" file before attempting to install third-party gauges in your new GLJ Model 25 SE addon.

Of course, these gauges can also be added as "popup" gauges available from the simulator's top menu. You can use them for a better view in detached windows on a separate monitor as the display in the virtual cockpit will generally be too small. In all cases, you will need to modify the "panel.cfg" file accordingly.

Refer to the instructions provided with your third-party gauges for details about special installation and to your simulation platform's SDK for more information about how to modify the addon's "panel.cfg" file (like for adding a popup gauge to the menu bar).

To install a new GPS, a glass cockpit, radar or other third-party 2D gauges on the provided optional panels, edit the addon's "panel.cfg" file (contained in the addon's "panel" folder)

with your favorite text editor.

The two virtual cockpit optional panels are configured in the following sections of the "panel.cfg" file. The stock FSX Learjet 45 PFD and EICAS gauges are installed by default and can be replaced by the user:

```
// First optional panel -----

[Vcockpit03]
Background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
no_luminous=1
texture=$GLJ25_02_G_C
gauge00=Lear_45_XML!PFD,248,119,536,800

// Second optional panel -----

[Vcockpit04]
Background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
no_luminous=1
texture=$GLJ25_03_G_C
gauge00=Lear_45_XML!EICAS,248,119,536,800
```



Depending on their individual size, more than one gauge can be installed on a single optional panel and should be named accordingly:

```
// First optional panel -----
```

```
[Vcockpit03]
Background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
no_luminous=1
texture=$GLJ25_02_G_C
gauge00=My_Gauge_Cab!My_Gauge_No1
250,120,50,50
gauge00=My_Gauge_Cab!My_Gauge_No2
300,120,50,50
gauge00=My_Gauge_Cab!My_Gauge_No3
350,120,50,50
```

Refer to your simulation platform's SDK for more information about how to modify the addon's "panel.cfg" file. Again, make sure you have a backup copy of the addon's original "panel.cfg" file before you edit its content.

Please note that a little experimentation may be needed to fit your new gauges on the optional panels (ideal size and position).

While retrofitting the main panel with modern instruments can be fun, it must be remembered that the GLJ Model 25 is a 1970's aircraft equipped with the original analog instruments from that period. We've spent a lot of time and effort recreating the original cockpit, carefully modelling each mechanical device with all the necessary moving parts in full 3D. All this in order to bring you the spirit and the actual feeling of flying this type of aircraft at a time when LCD screens didn't exist.

This is why we wanted to keep the look and feel of the original instrument panel while at the same time giving users the possibility to add their own gauges acquired from third-party vendors, even though space was rather limited. This is how most Model 25 aircraft that are still flying today have been retrofitted.

It was not our intent to create a full glass cockpit for this historical addon.



Replacing the Display in the Default GPS and Radar Units with Third-party Gauges

It is possible to replace what appears on the screen of the default GPS and radar units with your own gauges by editing the following sections in the addon's "panel.cfg" file.

```
// Default FSX Garmin 500 GPS display ----
```

```
[Vcockpit00]
Background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
no_luminous=1
texture=$GLJ25_01_G_C
gauge00=fs9gps!gps_500,211,248,670,586
```

```
// Dummy radar display -----
```

```
[Vcockpit01]
Background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
no_luminous=1
texture=$GLJ25_05_G_C
gauge00=XPGLJ25v2!
dummy_radar_screen,212,270,602,445
```

Refer to your simulation platform's SDK for more information about how to modify the addon's "panel.cfg" file. Again, make sure you have a backup copy of the addon's original "panel.cfg" file before you edit its content.

Please note that replacing the display (what appears on the screen) will have no effect on

the buttons which are at this time hard-coded in the 3D model. For full button functionality, you will need to install the full 2D gauge, including screen and buttons, on one of the supplied optional instrument panels (see previous topic).

Playing Music in the Cockpit



As a tribute to the inventive genius of Bill Lear, your GLJ Model 25 SE addon contains a functional “Jetstar 8” 8-track tape player installed on the center pedestal that can play up to four different tracks of stereo music, like the original player.

By default, we’ve programmed the FSX stock opening music but the tracks can be changed to any piece of music of your choice.

To play your own music, simply convert four of your favorite music pieces to .wav files and renamed them:

[SND31.wav](#)
[SND32.wav](#)
[SND33.wav](#)
[SND34.wav](#)

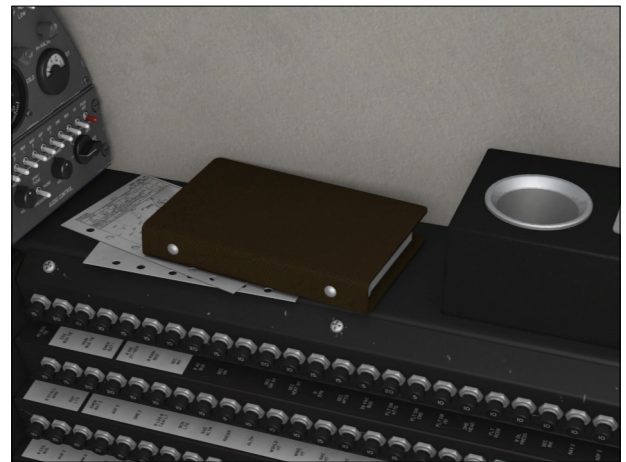
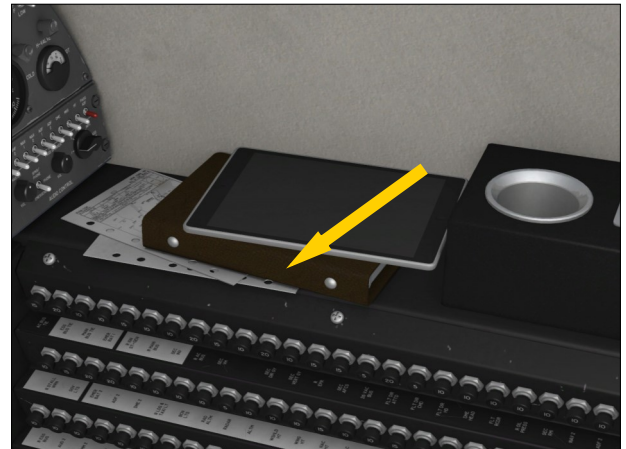
Copy these files to the “extra” folder that is contained in the “sound” folder of the addon’s main folder. The “extra” folder contains the sound effects that are played in the cockpit, including the music from the 8-track tape player.

Left-clicking the 8-track tape cartridge will

play the music, starting with track number 1. Right-clicking will stop playing. Clicking the “Select” button will switch between tracks.

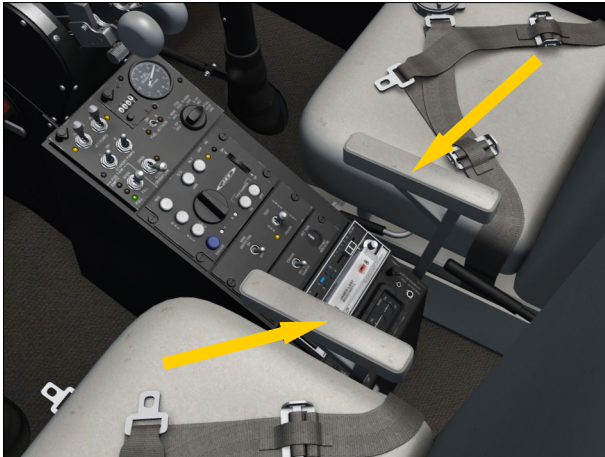
Bill Lear introduced the world’s first 8-track player for automobiles back in the spring of 1965 through the Lear Jet Stereo division, an extension of Lear Jet Corporation. We thought it would be fun to add a Jetstar 8 player in the cockpit of our new GLJ Model 25 SE addon, along with a James Last 8-track cartridge, another adult icon of the 1970’s.

Hiding the iPad® Tablet in the Cockpit



The iPad® tablet seen on the right console can be made invisible (tablets didn’t exist in the 1970’s after all). To show or hide the iPad®, simply click the brown binder under it.

Releasing the Armrests (P3Dv3)



Simply click the armrests to release them. Click again to raise them (P3Dv3 only).

Using the Sun Visors



Click the green plastic section to lower or to raise the sun visor.

Click and drag the hinge to slide the sun visor along the track (P3Dv3 only).

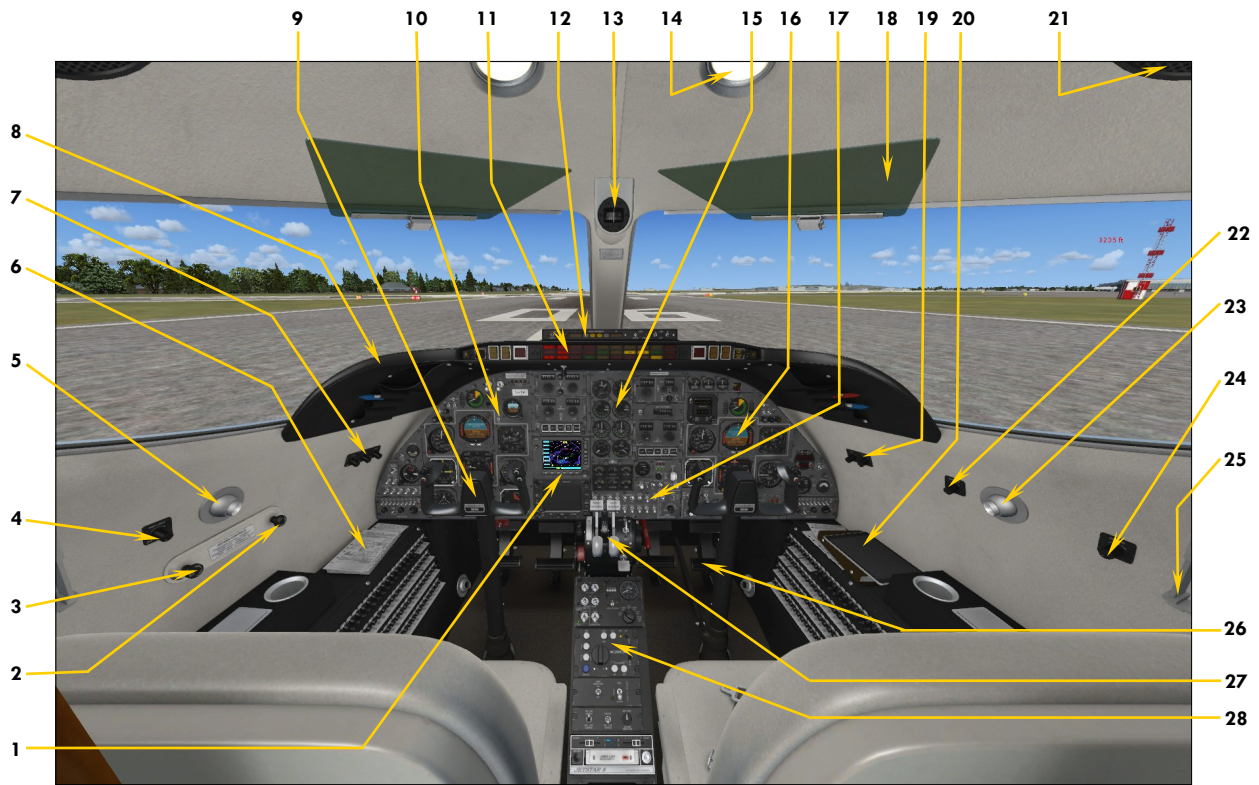


Figure 4-1

- | | |
|--|---|
| 1. Default GPS/Radar Panel
<i>Can be replaced by two user-selectable optional panels to install third-party gauges.</i> | 14. Cockpit Light |
| 2. Passenger Oxygen Valve (n/s) | 15. Center Instrument Panel |
| 3. Passenger Mask Valve (n/s) | 16. Copilot's Instrument Panel |
| 4. Captain's Map Light Control | 17. Electrical Panel |
| 5. Captain's Map Light | 18. Sun Visor |
| 6. Maps
<i>Click to open flight map.</i> | 19. Cockpit Lighting Controls |
| 7. Cockpit Lighting Controls | 20. Optional iPad® Tablet (n/s)
<i>Click to open flight map.</i> |
| 8. Glareshield | 21. Ceiling Speaker |
| 9. Control Column and Yoke | 22. Copilot's Map Light Control |
| 10. Captain's Instrument Panel | 23. Copilot's Map Light |
| 11. Fire and Main Annunciator Panel | 24. Cockpit Cooling Fan Control |
| 12. Thrust Reverser Control Panel | 25. Oxygen Mask (n/s) |
| 13. Magnetic ("Whiskey") Compass | 26. Rudder and Brake Pedals |
| | 27. Power (Throttle) Quadrant |
| | 28. Center Pedestal |

Note: (n/s) = not simulated. Device may be animated and may also have limited functionality and a tooltip. Refer to the following pages for details. (P3Dv3) = feature is available in Prepar3D® v3.x only.

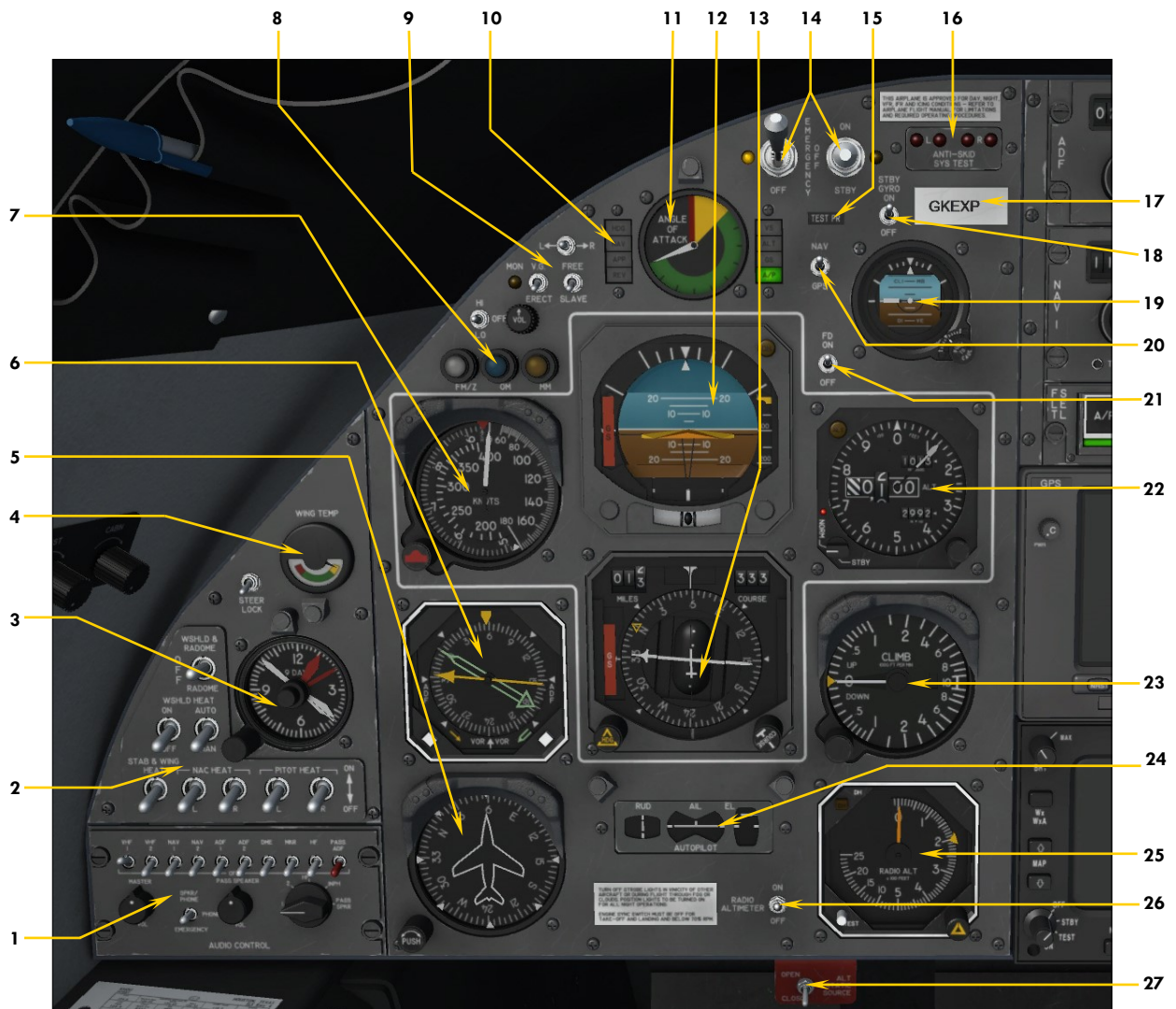


Figure 4-2

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Captain's Audio Panel 2. Ice Protection Switches 3. Analog Clock 4. Wing Temperature Gauge 5. Directional Gyro 6. Radio Magnetic Indicator (RMI) 7. Airspeed/Mach Indicator (ASI) 8. Marker Beacon Lights 9. Gyro Slave Switches 10. Autopilot Mode Annunciators 11. Angle-of-attack Indicator 12. Attitude Director Indicator (ADI) 13. Horizontal Situation Indicator (HSI) 14. Anti-skid System Switches | <ol style="list-style-type: none"> 15. Optional Nose Probe Icon
<i>Click to show/hide (boom) nose test probe.</i> 16. Anti-skid Lights 17. Tail Number Plaque
<i>Click to show/hide ATC window.</i> 18. Standby Gyro Power Switch 19. Standby (Horizon) Gyro 20. Autopilot GPS/NAV Switch 21. Flight Director Switch 22. Altimeter 23. Vertical Speed Indicator (VSI) 24. Trim Indicators 25. Radio Altimeter 26. Radio Altimeter Power Switch 27. Alternate Static Source Switch (n/s) |
|---|--|



Figure 4-3

- | | |
|---|--|
| <p>1. COM1 Monitor Switch
<i>You can set both COM1/COM2 monitor switches to ON to receive on both radios.</i></p> <p>2. COM2 Monitor Switch
<i>You can set both COM1/COM2 monitor switches to ON to receive on both radios.</i></p> <p>3. NAV1 Monitor Switch
<i>Allows the pilot to listen to navigation code identifiers.</i></p> <p>4. NAV2 Monitor Switch
<i>Allows the pilot to listen to navigation code identifiers.</i></p> <p>5. ADF1 Monitor Switch
<i>Allows the pilot to listen to navigation code identifiers.</i></p> <p>6. ADF2 Monitor Switch
<i>Allows the pilot to listen to navigation code identifiers.</i></p> <p>7. DME Monitor Switch
<i>Allows the pilot to listen to navigation code identifiers.</i></p> | <p>8. Marker Beacon Monitor Switch
<i>Allows the pilot to listen to navigation code identifiers.</i></p> <p>9. HF Monitor Switch (n/s)
<i>This aircraft is not equipped with a short wave (HF) transceiver.</i></p> <p>10. ADF to Passengers Switch (n/s)</p> <p>11. Audio Transmit Selector Knob
<i>Select VHF COM1 or COM2 for radio transmit. Will turn COM1/COM2 monitor switches ON/OFF accordingly for radio reception on selected unit. HF radio, interphone and passenger speakers positions are not simulated.</i></p> <p>12. Passenger Speakers Volume Control Knob (n/s)</p> <p>13. Audio Output Selector Switch (n/s)</p> <p>14. Master Volume Control Knob (n/s)</p> |
|---|--|



Figure 4-4

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Pitot Heat Switches
<i>Due to limitations in the simulator, these switches are linked.</i> 2. Engine Nacelle Heat Switches 3. Wing and Stabilizer Heat Switch 4. Windshield Heat Switches (n/s) 5. Windshield and Radome Alcohol Switch (n/s) 6. Time Setting Knob
<i>Use the mouse wheel to set minutes. Use the mouse buttons to set hours.</i> 7. Nose Gear Steer Lock Switch
<i>When this switch is OFF (down position), electrical nose gear steering is engaged and a green light is</i> | <ol style="list-style-type: none"> <i>lit on the main annunciator panel (used mainly for taxiing). When the switch is turned ON (up position), the nose gear steering is locked and the green light on the annunciator panel will come OFF.</i> 8. Analog Clock 9. Wing Temperature Gauge 10. Clock Red Hands (Bugs) 11. Clock Red Hands Setting Knobs
<i>Outer for hours, inner for minutes. Red hands are used as markers (bugs) on this clock model. Stopwatch functions are available on the copilot's digital clock. See fig. 4-38.</i> |
|---|---|

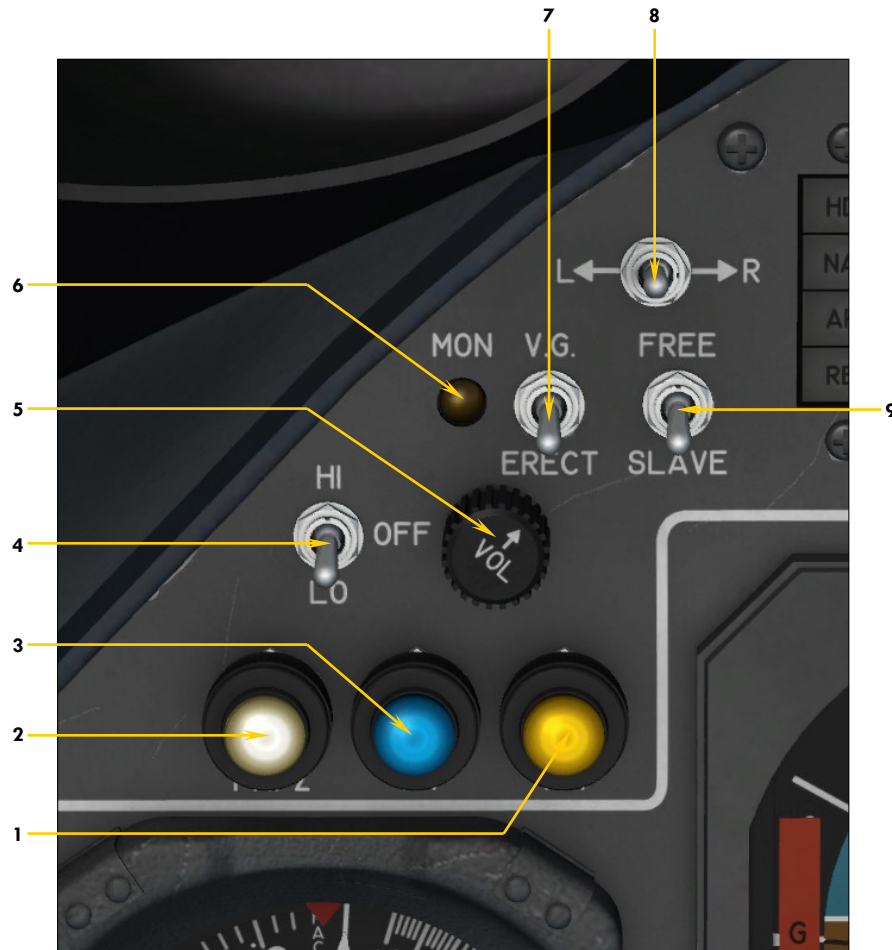


Figure 4-5

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Middle Marker Light 2. Fan (Inner) Marker Light
<i>The old airway or fan/z marker light is replaced by the inner marker light in the simulator.</i> 3. Outer Marker Light 4. Headphone Impedance/Volume Switch (n/s) 5. Headphone Volume Control Knob (n/s) | <ol style="list-style-type: none"> 6. Marker Beacon Monitor Light
<i>ON if marker beacon monitor switch on the audio panel is ON.</i> 7. Vertical Gyro Erect Switch 8. Gyro Drift Compensation Switch
<i>Use the directional gyro drift compensation knob on the captain's instrument panel for a more precise adjustment.</i> 9. Gyro Free/Slave Selector Switch |
|--|---|



Figure 4-6

- | | | | |
|----|--|----|---------------------------------|
| 1. | Localizer Backcourse Mode Annunciator | 6. | Vertical Speed Mode Annunciator |
| 2. | Approach Mode Annunciator | 7. | Altitude Hold Mode Annunciator |
| 3. | NAV/LOC Mode Annunciator | 8. | Glideslope Mode Annunciator |
| 4. | Heading Mode Annunciator | 9. | Autopilot Engaged Annunciator |
| 5. | Angle-of-attack Indicator <ul style="list-style-type: none"> ■ Alive above 80 KIAS ■ Green arc: Safe maneuvering range ■ Yellow arc: Caution range, impending stick shaker condition ■ Red line: Stall, stick pusher condition | | |

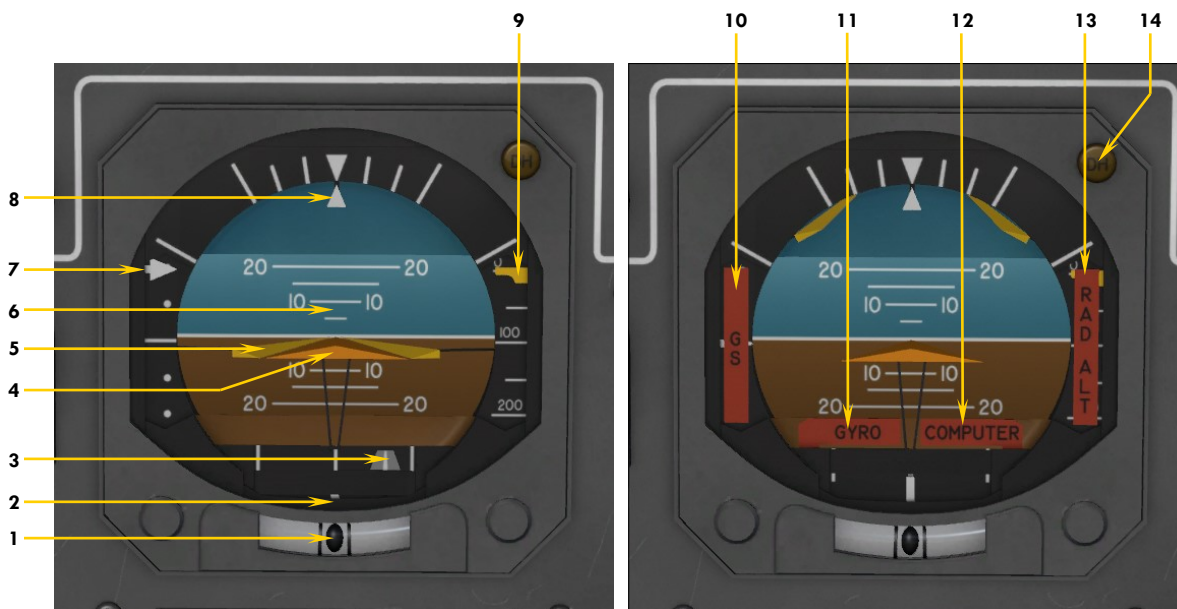


Figure 4-7

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Inclinometer Ball Indicator
<i>Indicates slip/skid condition.</i> 2. Turn Indicator Symbol
<i>Indicates rate of heading change.</i> 3. Localizer Deviation Runway Symbol
<i>Repeats (HSI) CDI indication when a valid localizer signal is present.</i> 4. Fixed Airplane Symbol 5. Flight Director Command Bars
<i>Maneuvering guidance - Advisory. Turn ON the flight director switch (see fig. 4-16) to activate the command bars. The bars are parked and inactive when the flight director switch is OFF.</i> 6. Pitch Scale 7. Glideslope Deviation Indicator
<i>Repeats HSI glideslope deviation indication.</i> | <ol style="list-style-type: none"> 8. Bank Indicator
<i>Indicates present bank angle.</i> 9. Radio Altimeter Below 200 ft. Indicator
<i>Indicates the last 200 feet above ground.</i> 10. Glideslope Warning Flag
<i>Indicates unreliable or non-existent glideslope signal.</i> 11. Gyro Warning Flag
<i>Indicates inoperative vertical gyroscope.</i> 12. Computer Warning Flag
<i>Indicates inoperative AFCS computer.</i> 13. Radio Altimeter Warning Flag
<i>Indicates unreliable or non-existent radio altimeter signal.</i> 14. Decision Height Annunciator
<i>Indicates aircraft at or below selected decision height. See "Radio Altimeter", fig. 4-13.</i> |
|---|---|

Note: All NAV indications coupled to NAV1 receiver signals.

Main Panel (both sides)

HORIZONTAL SITUATION INDICATOR (HSI)

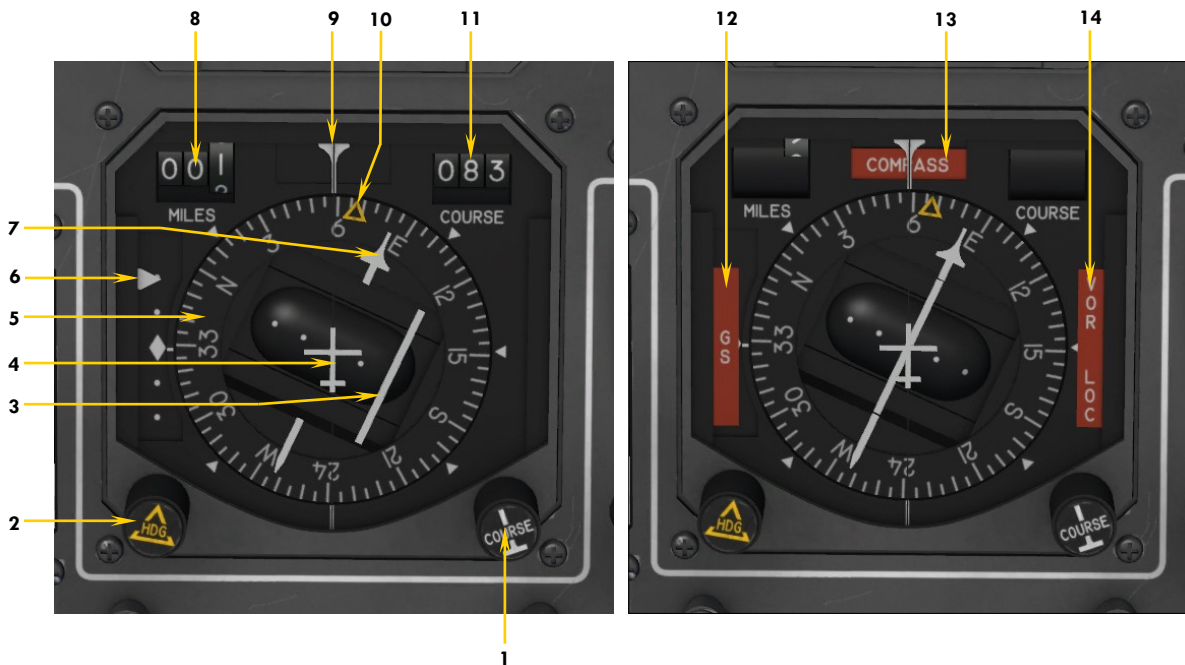


Figure 4-8

1. NAV1 Course Selector Knob
2. Heading Selector Knob
3. Course Deviation Indicator (CDI)
4. Fixed Airplane Symbol
5. Heading Card (Gyro Slaved)
6. Glideslope Deviation Indicator
7. NAV1 Course Needle
Used with AFCS NAV/LOC hold mode.
8. NAV1 DME Readout
In nautical miles.
9. Lubber Line
10. Heading Bug
Used with AFCS heading hold mode.
11. Course Readout
In degrees.
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.

Note: All NAV indications coupled to NAV1 receiver signals or GPS depending on position of the GPS/NAV switch. Heading bug/knob can be used with autopilot GPS navigation when the GPS/NAV switch is set to GPS.

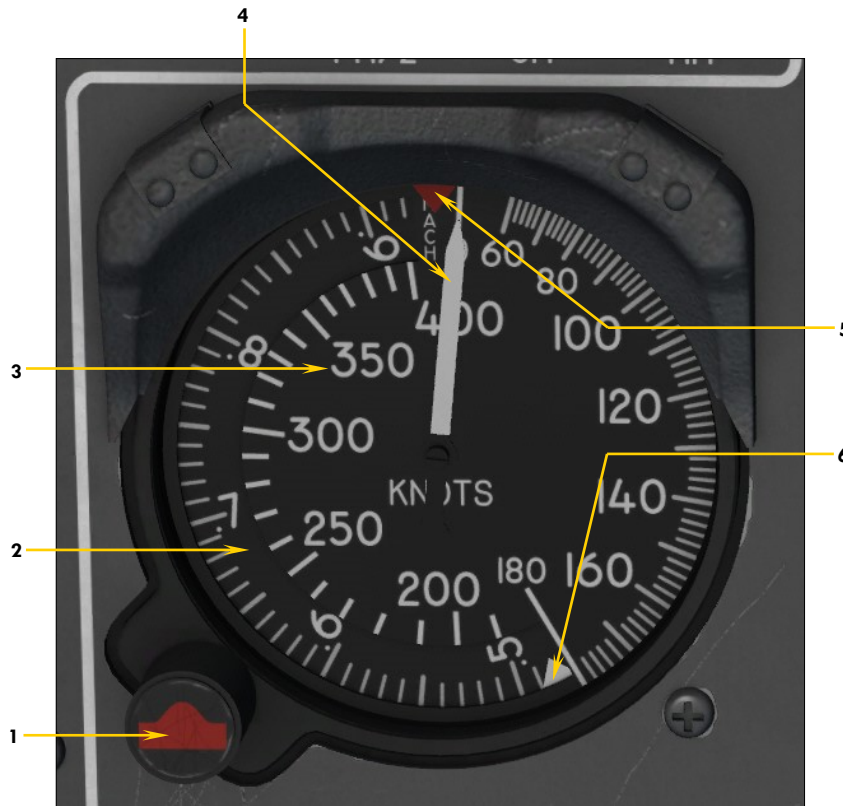


Figure 4-9

1. **Airspeed Reference Bug Knob**
Use the mouse wheel to rotate the red airspeed bug (knots). Use the mouse buttons to rotate the white Mach bug.
2. **Mach Scale**
3. **Airspeed Scale (Knots)**
4. **Indicated Air Speed Needle**
Also indicates the value on the Mach scale.
5. **Airspeed Bug (red)**
6. **Mach Bug (white)**

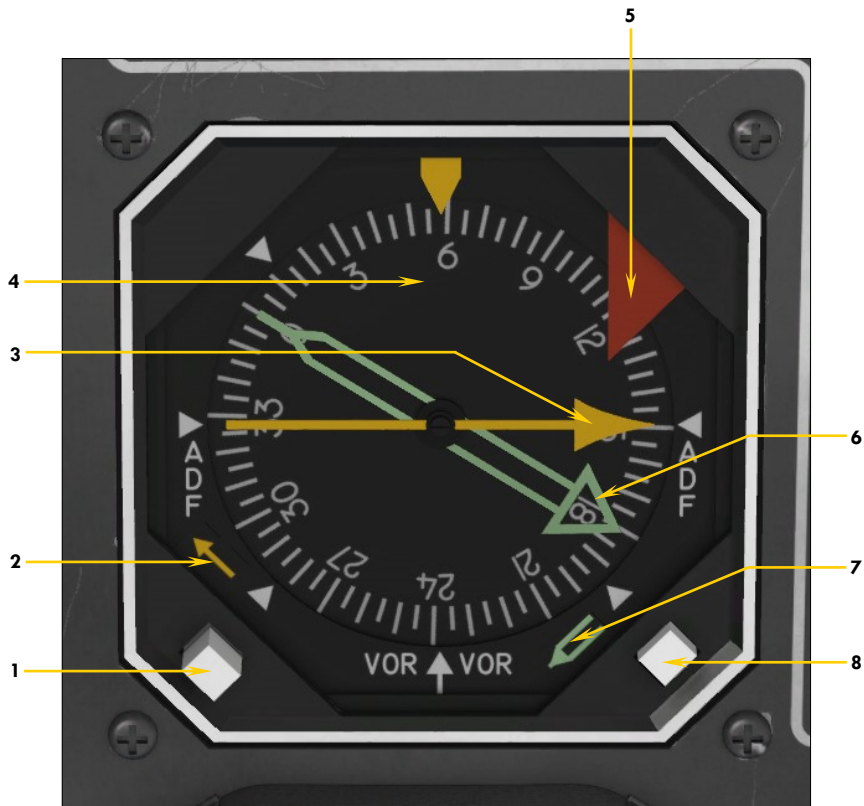
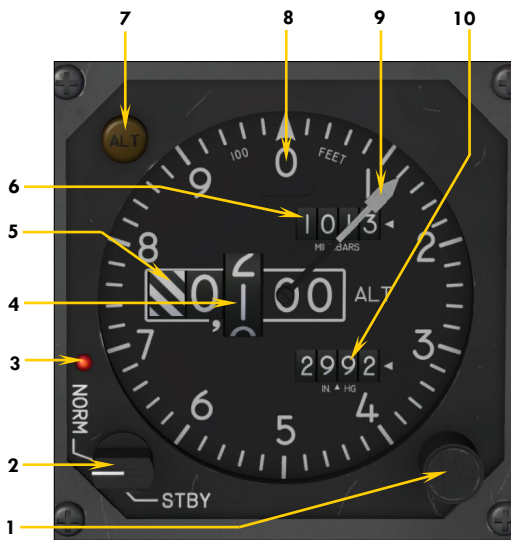


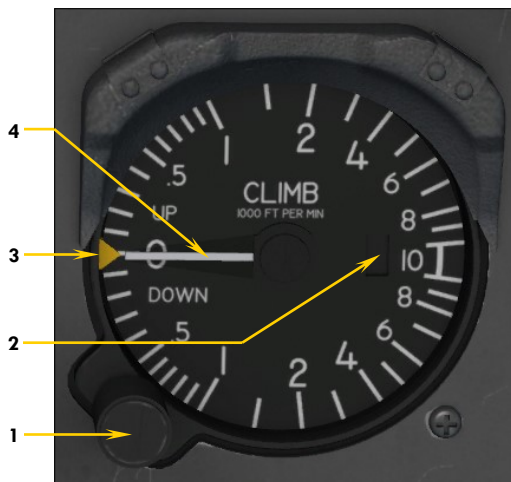
Figure 4-10

- | | |
|--|---|
| <p>1. Yellow Needle Signal Selector Button
<i>This button is used to select the navigation signal that is sent to the yellow (single) needle, either ADF1 or NAV1.</i></p> <p>2. Yellow Needle ADF1/NAV1 Selection Flag
<i>Indicates which navigation signal is sent to the yellow (single) needle, either ADF1 or NAV1.</i></p> <p>3. Yellow Needle (ADF1 or NAV1)</p> <p>4. Compass Card</p> | <p>5. Heading Warning Flag</p> <p>6. Green Needle (ADF2 or NAV2)</p> <p>7. Green Needle ADF2/NAV2 Selection Flag
<i>Indicates which navigation signal is sent to the green (double) needle, either ADF2 or NAV2.</i></p> <p>8. Green Needle Signal Selector Button
<i>This button is used to select the navigation signal that is sent to the green (double) needle, either ADF2 or NAV2.</i></p> |
|--|---|



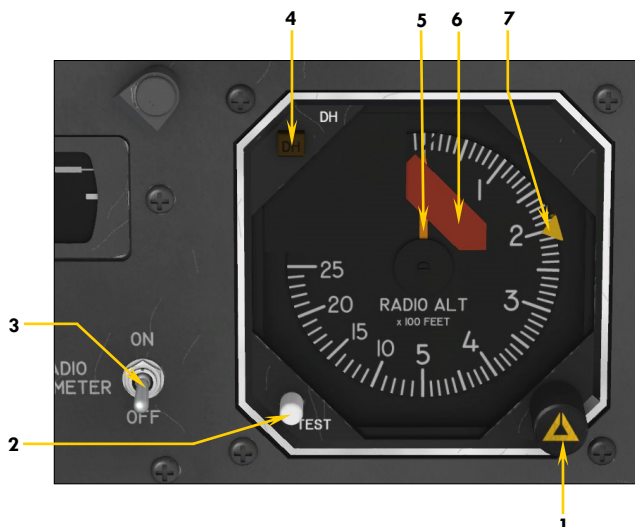
ALTIMETER (BOTH SIDES)
Figure 4-11

1. Barometric Setting Knob
2. Mode Selector Switch (n/s)
3. Normal Mode Indicator Light (n/s)
4. Attitude Readout
5. Warning Strips
Indicates altitude is below 10,000 feet.
6. Barometric Setting Readout (millibars)
7. Altitude Alerter Annunciator
Illuminated with aural warning if within 100 to 300 feet of selected altitude. See "Altitude Preselector", fig. 4-23.
8. Failure Warning Flag (not shown)
9. Altitude Needle
10. Barometric Setting Readout (inHg)



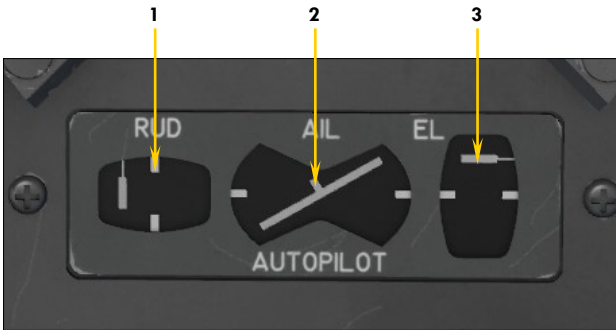
VERTICAL SPEED INDICATOR (VSI)
Figure 4-12

1. (Autopilot) Vertical Speed Selector Knob
This is the vertical speed setting knob for the AFCS.
2. Failure Warning Flag (not shown)
3. (Autopilot) Vertical Speed Selector Bug
This is the vertical speed command for the AFCS.
4. Vertical Speed Needle



RADIO ALTIMETER
Figure 4-13

1. Radio Altimeter Decision Height Selector Knob
2. Radio Altimeter Test Button (P3Dv3)
3. Radio Altimeter Power Switch
4. Radio Altimeter Decision Height Annunciator
5. Radio Altimeter Needle
6. Failure Warning Flag
7. Radio Altimeter Decision Height Bug
Indicates the height above ground that triggers the decision height annunciators.



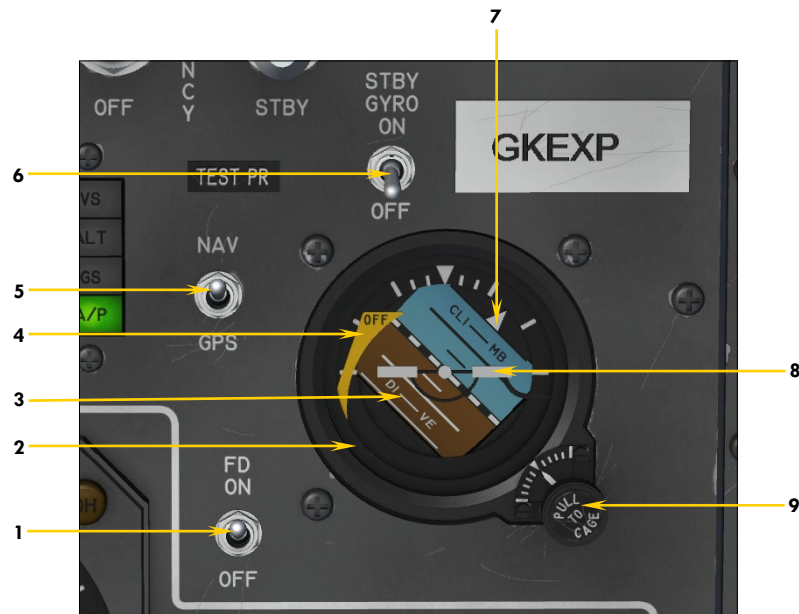
TRIM INDICATORS
Figure 4-14

1. Rudder Trim Indicator
2. Aileron Trim Indicator
3. Elevator Trim Indicator
Takeoff trim is typically one needle thickness below neutral.



ANTI-SKID CONTROL PANEL
Figure 4-15

1. Optional Nose Probe Icon
Click this icon to show/hide the optional (boom) nose test probe. Normally used with the rollout (unpainted) test variation.
2. Anti-skid Engage Switch and Light
Engages anti-skid system when anti-skid power switch (on the electrical panel) is ON.
3. Anti-skid Emergency Switch and Light (n/s)
Engages anti-skid emergency system when anti-skid power switch (on the electrical panel) is ON.
4. Anti-skid Wheel Generator Activity Monitor Lights
Flashing red lights indicate brake modulation activity for each main gear wheel at ground velocity of above 5 knots. Steady red lights indicate system being tested or failed. No light indicates anti-skid system is OFF or there is no brake activity.
5. Aircraft ATC Call (Tail) Number Plaque
Click to show/hide ATC window. The tail number can be changed in the "aircraft.cfg" file (see section 3, page2).
6. Standby Gyro Power Switch
See fig. 4-16.



STANDBY (HORIZON) GYRO & MISC. SWITCHES
Figure 4-16

1. **Flight Director Switch**
Toggles the flight director ON/OFF. Requires avionics power. In the sim, will be turned ON automatically when certain autopilot functions are engaged.
2. **Standby (Horizon) Gyro**
Self-powered (internal battery), independent from main electrical bus. Needs to be turned ON/OFF by clicking the power switch (see below).
3. **Pitch Scale**
4. **Failure Warning Flag**
5. **Autopilot GPS/NAV Selector Switch**
Selects autopilot mode of navigation (GPS or NAV).
6. **Standby Gyro Power Switch**
Toggles unit ON/OFF to preserve internal battery life.
7. **Bank Indicator**
8. **Fixed Airplane Symbol**
9. **Pitch Scale Adjustment Knob**
Use the mouse wheel to rotate this knob and adjust the pitch scale depending on your viewing angle. Cage function not simulated.

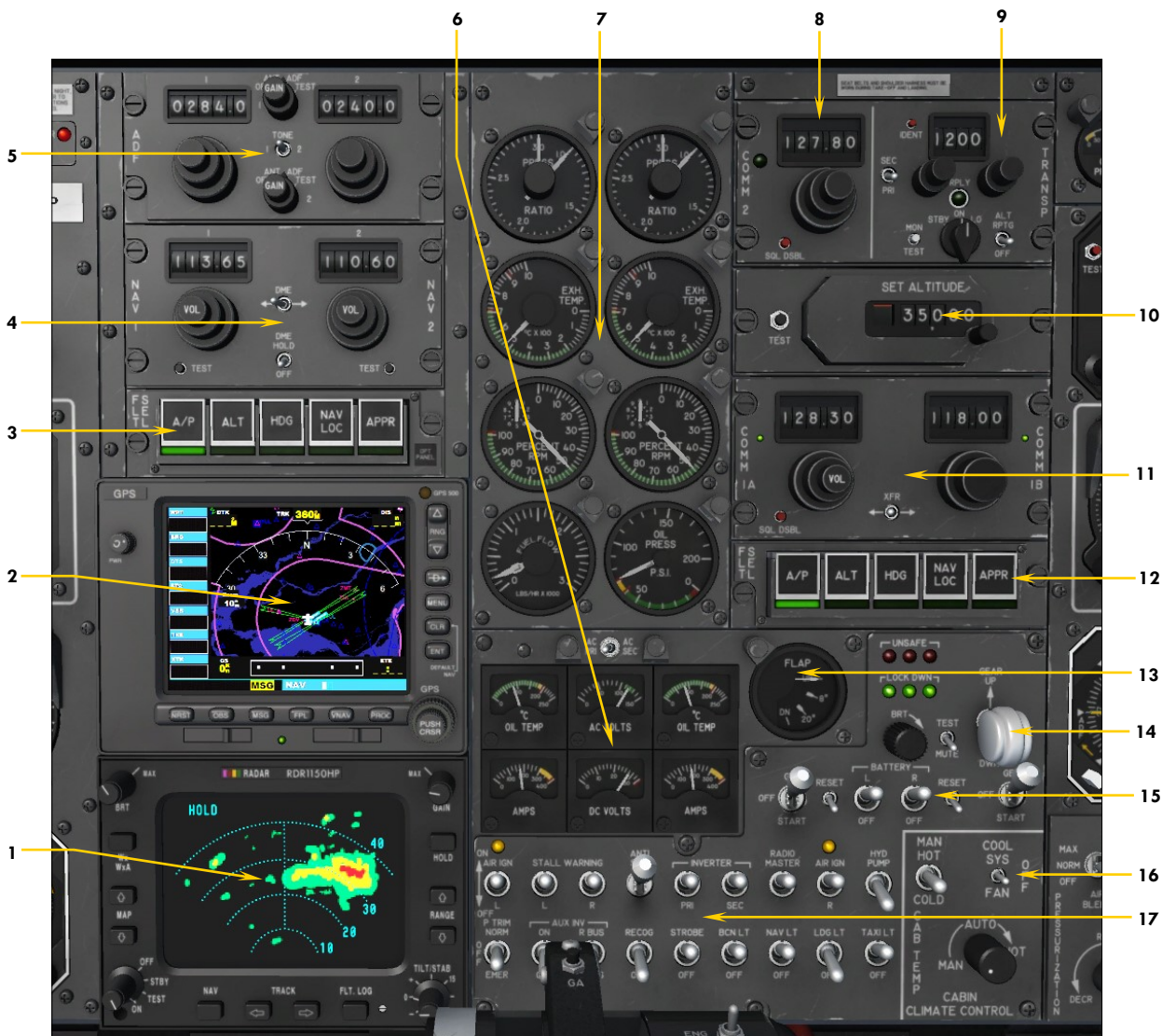
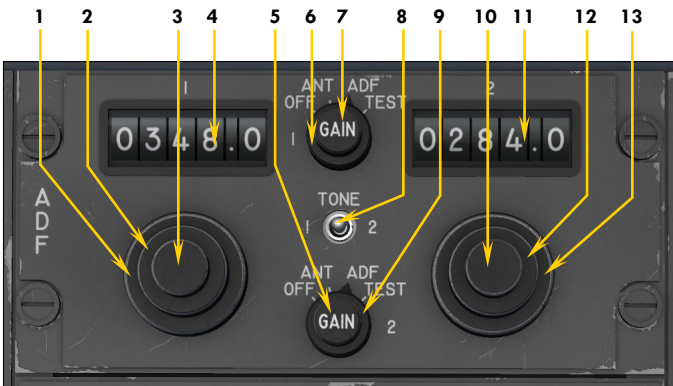


Figure 4-17

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Radar (mockup only, n/s)
<i>Rotate the power knob (bottom left) to the ON position to light up display. Requires avionics power. Display is a simple place holder that can be replaced by third-party gauges (see section 4, page 9).</i> 2. GPS (default unit, fully functional)
<i>Can be replaced by third-party gauges (see section 4, page 9).</i> 3. Captain's AFCS (Autopilot)/Flight Director Mode Switches 4. NAV1/NAV2 Radios 5. ADF1/ADF2 Radios 6. Electrical Gauge Cluster | <ol style="list-style-type: none"> 7. Engine Gauge Cluster 8. COM2 Radio 9. Transponder 10. AFCS (Autopilot) Altitude Preselector 11. COM1 Radio 12. Copilot's AFCS (Autopilot)/Flight Director Mode Switches 13. Flaps Position Indicator 14. Gear Lever and Indicators 15. Starting Panel 16. Cabin Temperature Control Panel 17. Electrical Panel |
|---|---|

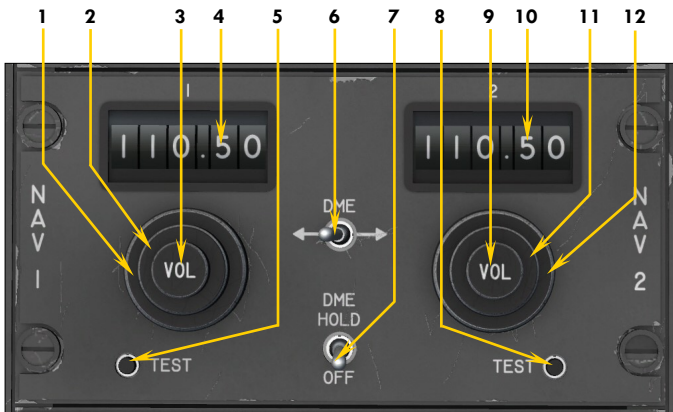
Center Instrument Panel

RADIO PANELS



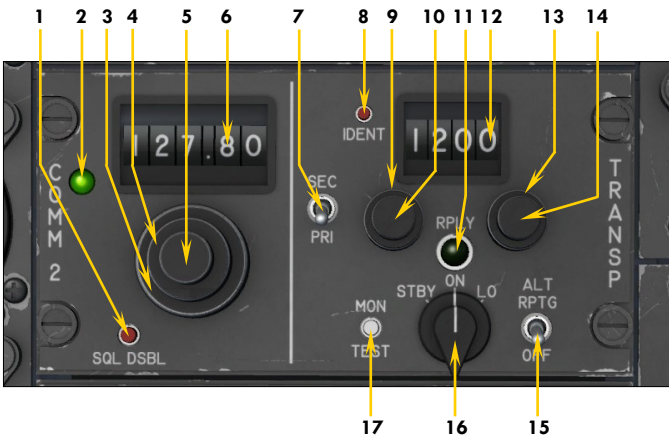
ADF RADIOS
Figure 4-18

1. ADF1 Frequency Selector Knob (Whole)
2. ADF1 Frequency Selector Knob (Fraction)
3. ADF1 Volume Control Knob (n/s)
4. ADF1 Frequency Readout
5. ADF2 Antenna Gain Control Knob (n/s)
6. ADF1 Function Selector Knob (n/s)
7. ADF1 Antenna Gain Control Knob (n/s)
8. Test Tone Switch (P3Dv3)
9. ADF2 Function Selector Knob (n/s)
10. ADF2 Volume Control Knob (n/s)
11. ADF2 Frequency Readout
12. ADF2 Frequency Selector Knob (Fraction)
13. ADF2 Frequency Selector Knob (Whole)



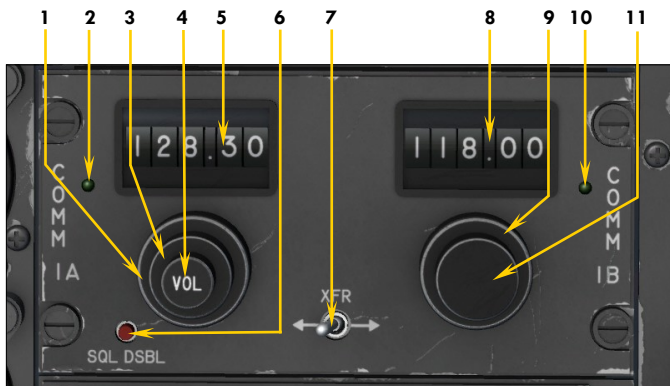
NAV RADIOS
Figure 4-19

1. NAV1 Frequency Selector Knob (Whole)
2. NAV1 Frequency Selector Knob (Fraction)
3. NAV1 Volume Control Knob (n/s)
4. NAV1 Frequency Readout
5. NAV1 Test Button (P3Dv3)
6. DME Selector Switch
7. DME Hold Switch (n/s)
8. NAV2 Test Button (P3Dv3)
9. NAV2 Volume Control Knob (N/S)
10. NAV2 Frequency Readout
11. NAV2 Frequency Selector Knob (Fraction)
12. NAV2 Frequency Selector Knob (Whole)



COM2 RADIO / TRANSPONDER
Figure 4-20

1. COM2 Squelch Disabling Button (P3Dv3)
2. COM2 Transmit Select Light
ON when VHF COM2 is selected for transmit on the audio panel.
3. COM2 Frequency Selector Knob (Whole)
4. COM2 Frequency Selector Knob (Fraction)
5. COM2 Volume Control Knob (n/s)
6. COM2 Frequency Readout
7. Transponder Radio Selector Switch (n/s)
8. Transponder ATC Ident Button (n/s)
Toggles ATC window.
9. Transponder First Digit Selector Knob
10. Transponder Second Digit Selector Knob
11. Transponder Activity Light
Simulates transponder activity.
12. Transponder Code Readout
13. Transponder Third Digit Selector Knob
14. Transponder Fourth Digit Selector Knob
15. Transponder A+C Mode Switch (n/s)
Enables transponder to respond to both Mode A and Mode C (altitude reporting) interrogations.
16. Transponder Function Selector Knob (n/s)
Transponder is always ON when avionics is ON.
17. Transponder Monitor Test Button (P3Dv3)

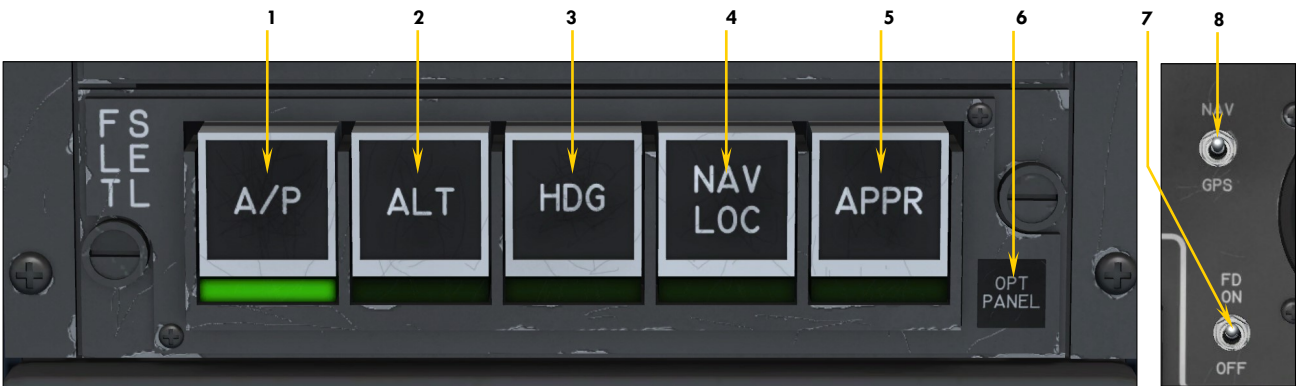


COM1 RADIO
Figure 4-21

1. COM1 Frequency Selector Knob (Whole)
2. COM1 Transmit Select Light
ON when VHF COM1 is selected for transmit on the audio panel.
3. COM1 Frequency Selector Knob (Fraction)
4. COM1 Volume Control Knob (n/s)
5. COM1 Frequency Readout
6. COM1 Squelch Disabling Button (P3Dv3)
7. COM1 Frequency Swap Switch
Swaps COM1 active frequency with standby frequency and vice versa.
8. COM1 Standby Frequency Readout
9. COM1 Standby Frequency Selector Knob (Whole)
10. COM1 Transmit Select Light
Same as 2 above.
11. COM1 Standby Frequency Selector Knob (Fraction)

Main Panel (both sides)

MISCELLANEOUS PANELS



AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS) MODE SELECTION SWITCHES
Figure 4-22

1. **Autopilot Servo Engage Switch and Annunciator**
Engages the autopilot. Autopilot assumes aircraft control. Due to limitations in the simulator, the flight director switch (see below) is independent and must be turned ON before the autopilot is engaged.
2. **Altitude Hold Mode Switch and Annunciator**
*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 Hold Mode Switch and Annunciator**
Engages the "heading hold" mode of the AFCS.
4. **NAV/LOC Hold Mode Switch and Annunciator**
Engages the "NAV/LOC" (lateral navigation) mode of the AFCS. NAV1 receiver signals will be followed unless the GPS/NAV switch is set to GPS (see below).
5. **Coupled Approach/Glideslope Mode Switch and Annunciator**
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 degrees. The coupled glideslope signal is best intercepted from below, once the localizer course is established and the recommended approach speed is stabilized.
6. **Optional Panels Icon**
Toggles between the default GPS/radar panel and two optional, user-configurable, optional panels. See section 4, pages 6-9 for details.
7. **Flight Director Switch**
Toggles the flight director ON/OFF. Requires avionics power. Located near the ADI, on the captain's instrument panel. In the sim, will be turned ON automatically when certain autopilot functions are engaged.
8. **Autopilot GPS/NAV Selector Switch**
Toggles between GPS and NAV1 driving NAV1 and autopilot. Located near the ADI, on the captain's instrument panel. Used for GPS navigation.



AFCS ALTITUDE PRESELECTOR
Figure 4-23

1. **Altitude Preselector Test Button**
2. **Failure Warning Flag (not shown)**
Indicates AC power is unavailable.
3. **Preselected Altitude Readout**
4. **Altitude Preselector Knob**
Selects desired altitude for the AFCS.

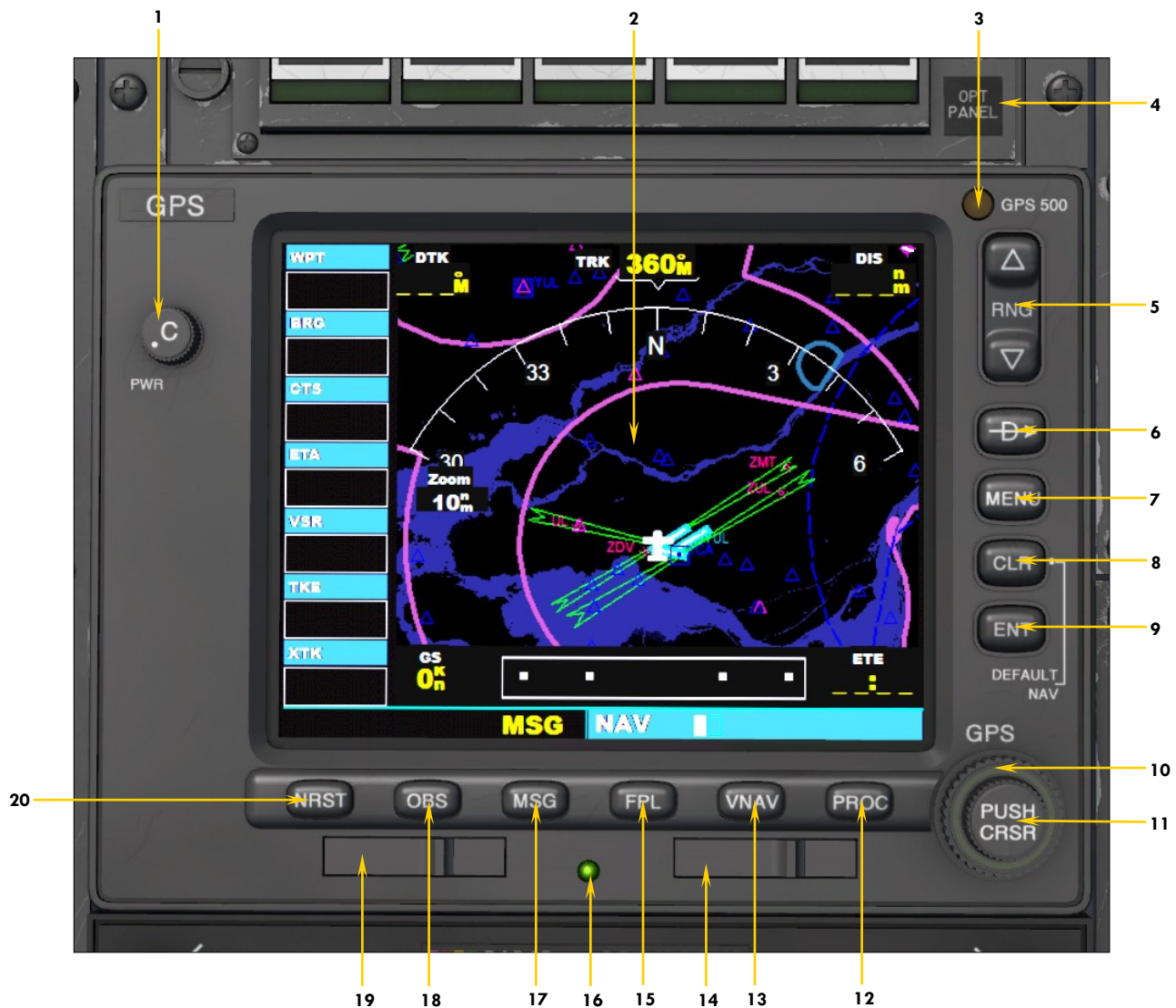


Figure 4-24

Note: Refer to the "Using the GPS" section of the Learning Center of your simulation platform for more details.

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Power Switch
<i>Requires avionics power.</i> 2. GPS Display 3. Photocell 4. Optional Panels Icon
<i>Toggles between the default GPS/radar panel and two optional, user-configurable, optional panels. See section 4, pages 6-9 for details.</i> 5. Map Range Button (Zoom)
<i>Wheel up to zoom out, wheel down to zoom in.</i> 6. Direct-to Button 7. Menu Button 8. Clear Button | <ol style="list-style-type: none"> 9. Enter Button 10. Large Ring (Group Select) Knob 11. Small Ring (Page Select) Knob and Button 12. Procedure Button 13. Vertical Navigation (Terrain) Button 14. Terrain Data Card 15. Flight Plan Button 16. Power LED (cards inserted) 17. Message Button 18. OBS Mode Button 19. NavData® Card 20. Nearest Airports Button |
|---|---|

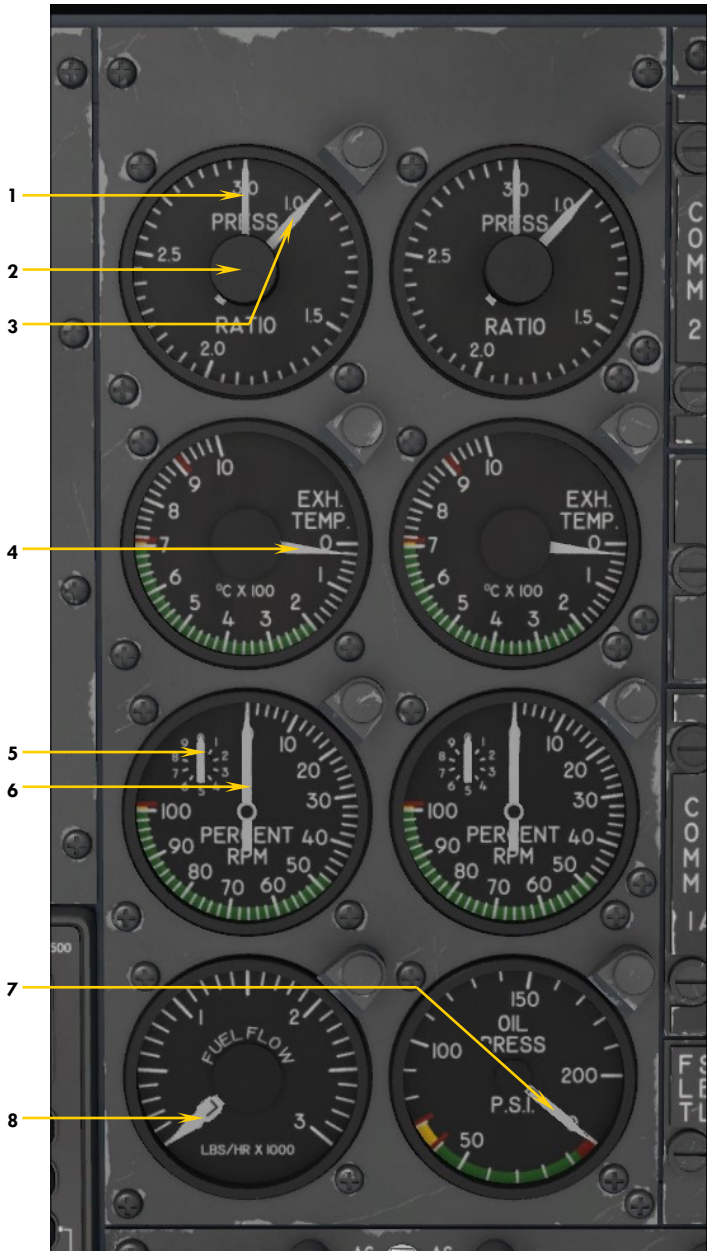


Figure 4-25

- 1. Left Engine Target EPR Bug
Same for right engine.
- 2. Left Engine Target EPR Selector Knob
Same for right engine.
- 3. Left Engine Pressure Ratio (EPR) Needle
Same for right engine.
- 4. Left Engine Exhaust Gas Temperature (EGT) Needle
Same for right engine.
- 5. Engine Revolutions per Minute (RPM) Vernier Needle
Used for fine power settings. Same for right engine.
- 6. Engine Revolutions per Minute (RPM) Needle
Used for coarse power settings. Same for right engine.
- 7. Left & Right Engine Oil Pressure Needles
- 8. Left & Right Engine Fuel Flow Needles



Figure 4-26

1. Primary/Secondary Bus Selector Switch
Selects which AC bus voltage is sent to the AC voltmeter.
2. Right Engine Oil Temperature Needle
3. AC Voltmeter Needle
Indicates available AC voltage from either the primary, secondary or auxiliary inverters.
4. Left Engine Oil Temperature Needle
5. Right DC ammeter needle
Indicates load on the right generator.
6. DC Voltmeter Needle
Indicates available voltage on the main DC bus.
7. Left DC ammeter needle
Indicates load on the left generator.

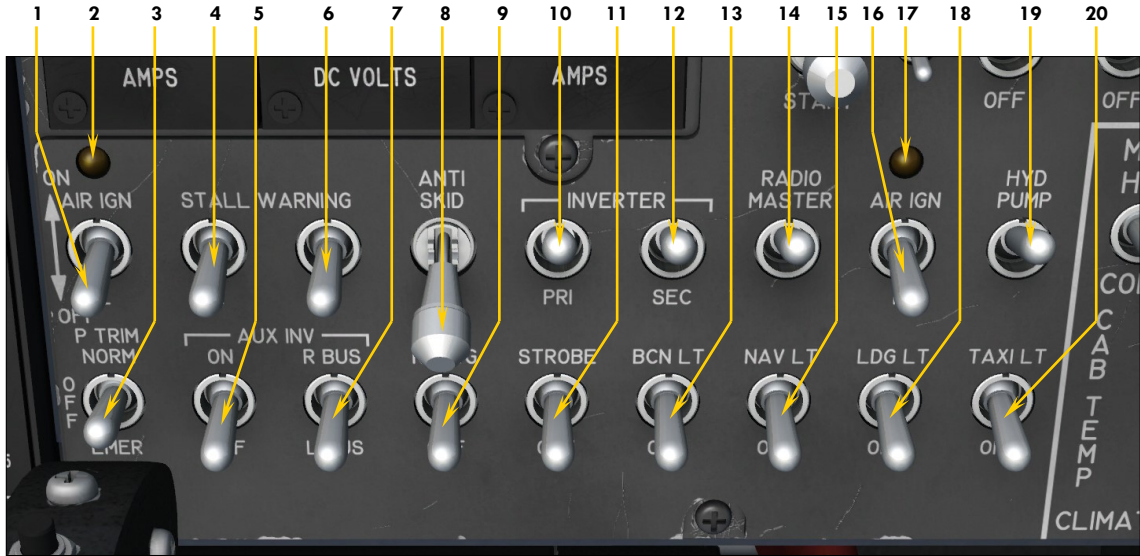


Figure 4-27

- 1. Left Engine Air Ignition Switch (n/s)
- 2. Left Engine Air Ignition Annunciator
- 3. Emergency Pitch Trim Switch (n/s)
- 4. Left Stall Warning Switch
- 5. Auxiliary Inverter Switch
Requires battery or generator power.
- 6. Right Stall Warning Switch
- 7. Auxiliary Inverter Bus Selector Switch
- 8. Anti-skid Power Switch
- 9. Recognition Lights Switch
- 10. Primary Inverter Switch
Requires battery or generator power.
- 11. Strobe Lights Switch
- 12. Secondary Inverter Switch
Requires battery or generator power.
- 13. Beacon Lights Switch
- 14. Radio Master Switch (Avionics)
Requires AC power from inverters!
- 15. Navigation Lights Switch
- 16. Right Engine Air Ignition Switch (n/s)
- 17. Right Engine Air Ignition Annunciator
- 18. Landing Lights Switch
- 19. Auxiliary Hydraulic Pump Switch (n/s)
- 20. Taxi Lights Switch



Figure 4-28

1. Flaps Position Indicator
Full up, 8 degrees, 20 degrees, 40 degrees full down.
2. Landing Gear Indicators Brightness Control Knob (n/s)
3. Landing Gear Indicators (left, center, right)
*Red: The indicated gear is unsafe or in transit and/or door is not closed.
Green: The indicated landing gear is down and locked.
No light: The indicated gear is up and locked, door is closed.*
4. Landing Gear Alert Test Switch (P3Dv3)
5. Landing Gear Lever
6. Right Engine Starter/Generator Switch
Move switch down for engine start. After engine is started, move switch up to engage generator.
7. Right Engine Generator Reset Switch (n/s)
8. Right Battery Switch
Due to limitations in the simulator, both battery switches are linked.
9. Left Battery Switch
Due to limitations in the simulator, both battery switches are linked.
10. Left Engine Generator Reset Switch (n/s)
11. Left Engine Starter/Generator Switch
Move switch down for engine start. After engine is started, move switch up to engage generator.

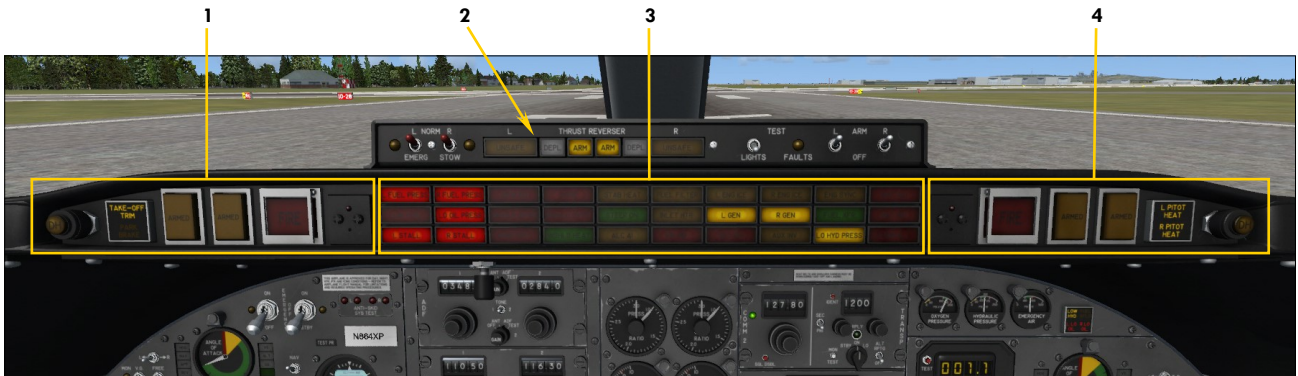


Figure 4-29

1. Captain's Fire Panel
2. Thrust Reversers Control Panel
3. Main Annunciator Panel
4. Copilot's Fire Panel

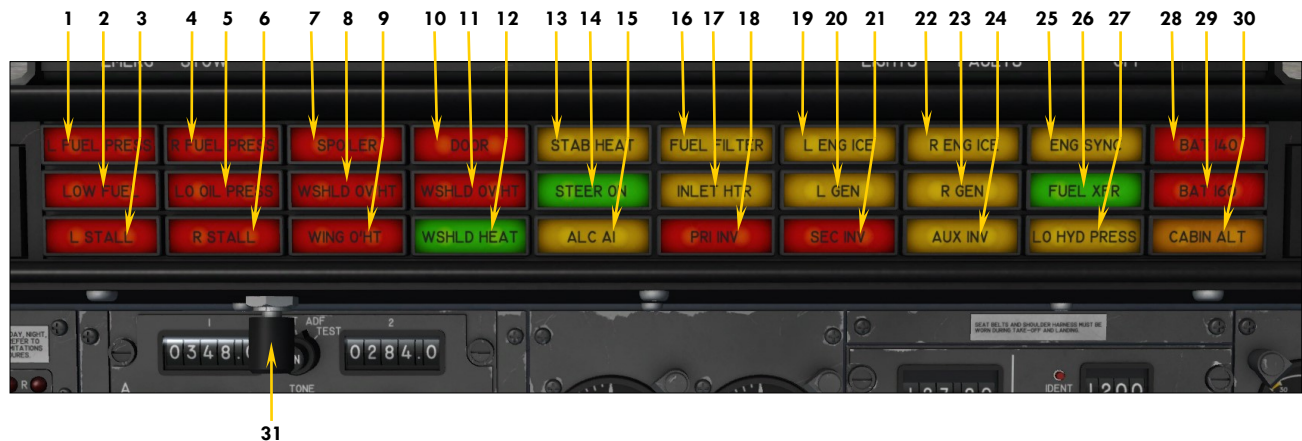


Figure 4-30

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**
Flashing with audible alert: Indicates left wing stall. Steady: System is being tested or has failed or system switch (on the electrical panel) is OFF.
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**
Flashing with audible alert: Indicates right wing stall. Steady: System is being tested or has failed or system switch (on the electrical panel) is OFF.
7. **Spoilers Deployed**
Indicates wing spoilers out of retracted position.
8. **Left Windshield Overheat**
Indicates windshield overheat. Usually occurs when aircraft is not moving and warm conditions exist.
9. **Wing Overheat**
Indicates wing anti-ice overheat. Usually occurs when aircraft 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 aircraft 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. **Nose Wheel Steering Engaged**
When ON, indicates electrical nose wheel steering is engaged (used for taxiing). When OFF, indicates nose wheel steering is locked.
15. **Alcohol Anti-Ice ON (n/s)**
Indicates windshield and radome alcohol pump energized.
16. **Fuel Filter Clogged (n/s)**
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 Inoperative**
Indicates low AC voltage from primary inverter.
19. **Left Engine Ice Detected**
Indicates ice presence in left engine intake.
20. **Left Generator Inoperative**
Indicates low DC voltage from left engine generator.
21. **Secondary Inverter Inoperative**
Indicates low AC voltage from secondary inverter.
22. **Right Engine Ice Detected**
Indicates ice presence in right engine intake.
23. **Right Generator Inoperative**
Indicates low DC voltage from right engine generator.
24. **Auxiliary Inverter ON**
Indicates auxiliary inverter has been switched ON.
25. **Engine Sync ON (n/s)**
Indicates engine sync switch is ON.
26. **Fuel Transfer Pump ON (n/s)**
Indicates fuselage tank pump switch is ON.
27. **Low Hydraulic Pressure**
Indicates hydraulic pressure below 1,200 psi.
28. **Battery Overheat (n/s)**
Indicates overheating battery, over 140° C.
29. **Battery Overheat (n/s)**
Indicates overheating battery, over 160° C.
30. **Cabin Altitude Annunciator**
Indicates cabin altitude is above 9,000 ft. (flashing, with audible alert).
31. **Annunciator Test Button**
Press to test all annunciator lights.

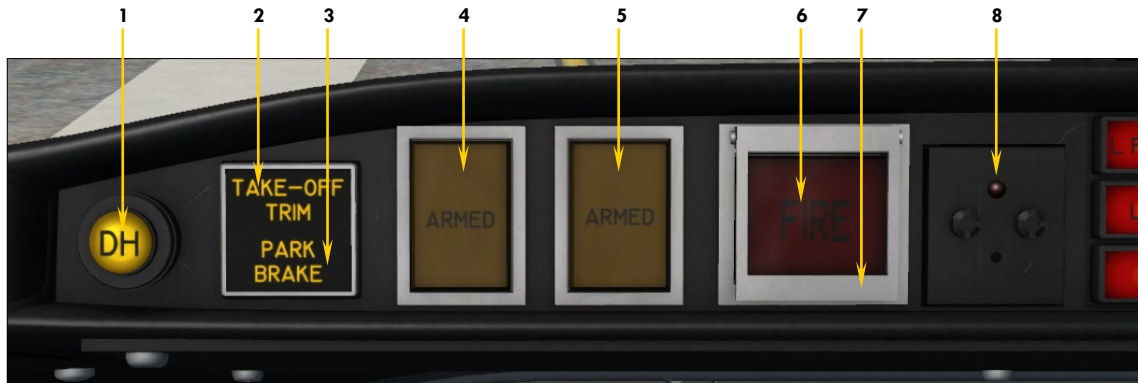
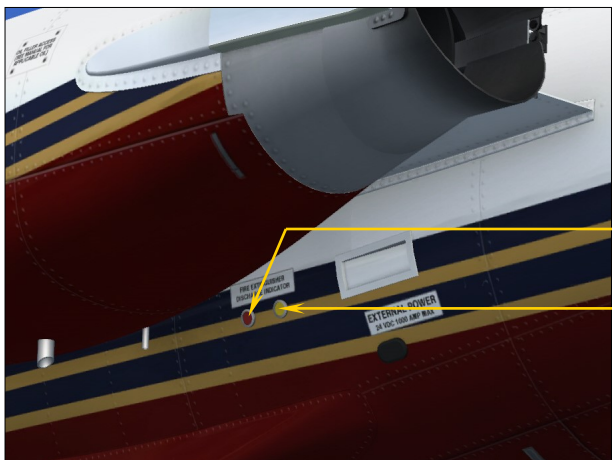


Figure 4-31

1. **Decision Height Annunciator**
Illuminates when aircraft is at or below selected decision height.
2. **Takeoff Trim Alert Annunciator**
Illuminates when pitch trim is out of takeoff range.
3. **Parking Brake Annunciator**
Indicates parking brake is ON.
4. **First Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when left engine extinguisher arming/firewall shutoff button has been pressed. Indicates that first fire extinguisher bottle is ready for use. Press to discharge first fire extinguisher bottle into left engine nacelle.
5. **Second Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when left engine extinguisher arming/firewall shutoff button has been pressed. Indicates that second fire extinguisher bottle is ready for use. Press to discharge second fire extinguisher bottle into left engine nacelle.
6. **Left Engine Fire Alarm Annunciator and Extinguisher Arming/Firewall Shutoff Button**
Indicates a fire in the left engine nacelle. Press to close left engine nacelle firewall shutoff valves and arm both fire extinguisher bottles.
7. **Left Engine Extinguisher Arming/Firewall Shutoff Button Guard**
Click to open guard.
8. **Left Engine Firewall Shutoff Pinlight**
The fire switch is in the closed position. Indicates that left engine nacelle firewall shutoff valves are closed if the battery switches are ON.



EXTERIOR EXTINGUISHER DISCHARGE INDICATORS
Figure 4-32

1. **Thermal Discharge Indicator (Red Disc, n/s)**
Disc is ruptured if one or both thermal relief valves have released bottle pressure.
2. **Extinguisher Bottle Discharge Indicator (Yellow Disc)**
Disc is ruptured if either extinguisher bottle is discharged.

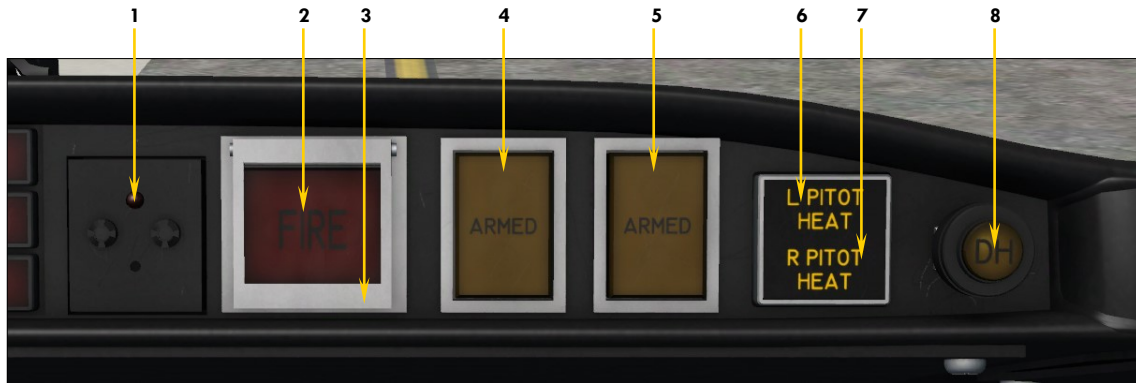


Figure 4-33

1. **Right Engine Firewall Shutoff Pinlight**
The fire switch is in the closed position. Indicates that right engine nacelle firewall shutoff valves are closed if the battery switches are ON.
2. **Right Engine Fire Alarm Annunciator and Extinguisher Arming/Firewall Shutoff Button**
Indicates a fire in the right engine nacelle. Press to close left engine nacelle firewall shutoff valves and arm both fire extinguisher bottles.
3. **Right Engine Extinguisher Arming/Firewall Shutoff Button Guard**
Click to open guard.
4. **First Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when right engine extinguisher arming/firewall shutoff button has been pressed. Indicates that first fire extinguisher bottle is ready for use. Press to discharge first fire extinguisher bottle into right engine nacelle.
5. **Second Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when right engine extinguisher arming/firewall shutoff button has been pressed. Indicates that second fire extinguisher bottle is ready for use. Press to discharge second fire extinguisher bottle into right engine nacelle.
6. **Left Pitot Heat Inop Annunciator**
Indicates Pitot probe heaters are OFF.
7. **Right Pitot Heat Inop Annunciator**
Indicates Pitot probe heaters are OFF.
8. **Decision Height Annunciator**
Illuminates when aircraft is at or below selected decision height.



Figure 4-34

Note: Because of limitations in the current simulation platforms, thrust reverser controls have limited functionalities. Thrust reversers can be deployed by pressing the F2 key when the throttles are set to idle. When deployed, thrust can be reduced by pressing the F3 key. Pressing the F1 key (or using the emergency stow switches, see below) will return both throttles and thrust reverser subthrottles to idle.

1. Left Thrust Reverser Emergency Stow Annunciator
2. Left Thrust Reverser Emergency Stow Switch (P3Dv3)
By default, this switch is set to the NORMAL position. Setting the switch to EMER STOW will stow the left thrust reverser and set the left engine throttle to idle. Return switch to NORMAL after thrust reverser is stowed.
3. Right Thrust Reverser Emergency Stow Switch (P3Dv3)
By default, this switch is set to the NORMAL position. Setting the switch to EMER STOW will stow the right thrust reverser and set the right engine throttle to idle. Return switch to NORMAL after thrust reverser is stowed.
4. Left Thrust Reverser Emergency Stow Annunciator
5. Left Thrust Reverser Unsafe Annunciator
Indicates left thrust reverser not fully deployed or stowed.
6. Left Thrust Reverser Deployed Annunciator
Indicates left thrust reverser fully deployed.
7. Left Thrust Reverser Armed Annunciator
Indicates left thrust reverser is armed.
8. Right Thrust Reverser Armed Annunciator
Indicates right thrust reverser is armed.
9. Right Thrust Reverser Deployed Annunciator
Indicates right thrust reverser fully deployed.
10. Right Thrust Reverser Unsafe Annunciator
Indicates right thrust reverser not fully deployed or stowed.
11. Thrust Reverser Annunciators Test Switch
Click to test the thrust reverser annunciator lights.
12. Annunciator System Faults Annunciator (n/s)
13. Left Thrust Reverser Arm Switch (n/s)
Thrust reversers are armed by default. Setting this switch to OFF has no effect (P3Dv3).
14. Right Thrust Reverser Arm Switch (n/s)
Thrust reversers are armed by default. Setting this switch to OFF has no effect (P3Dv3).



Figure 4-35

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Pressurization Panel 2. Radio Magnetic Indicator (RMI) 3. Airspeed/Mach indicator (ASI) 4. DME Head 5. Mini Gauge Cluster & Miscellaneous Annunciators 6. Autopilot Mode Annunciators 7. Angle-of-attack Indicator 8. Attitude Director Indicator (ADI) 9. Horizontal Situation Indicator (HSI) 10. Gyro Slave Switches | <ol style="list-style-type: none"> 11. Marker Beacon Lights 12. Altimeter 13. Vertical Speed Indicator (VSI) 14. Battery Temperature Indicators 15. Digital Clock 16. Auxiliary Heat Switch (n/s) 17. Ram Air Temperature Warning Annunciator 18. Ram Air Temperature Gauge 19. H-Valve Position Indicator 20. Copilot's Audio Panel |
|---|--|



DME HEAD
Figure 4-36

1. DME Head Test Button (N/S)
2. NAV1/NAV2 Selector Knob
Hold function not simulated.
3. Distance Readout
Indicates distance to DME station in nautical miles.
4. Ground Speed or Estimated Time to Arrival Readout
Ground speed is the closing speed to station, not the actual aircraft ground speed. ETA is valid only when flying to the station.
5. Ground Speed/Estimated Time to Arrival Selector Knob



MINI GAUGE CLUSTER
Figure 4-37

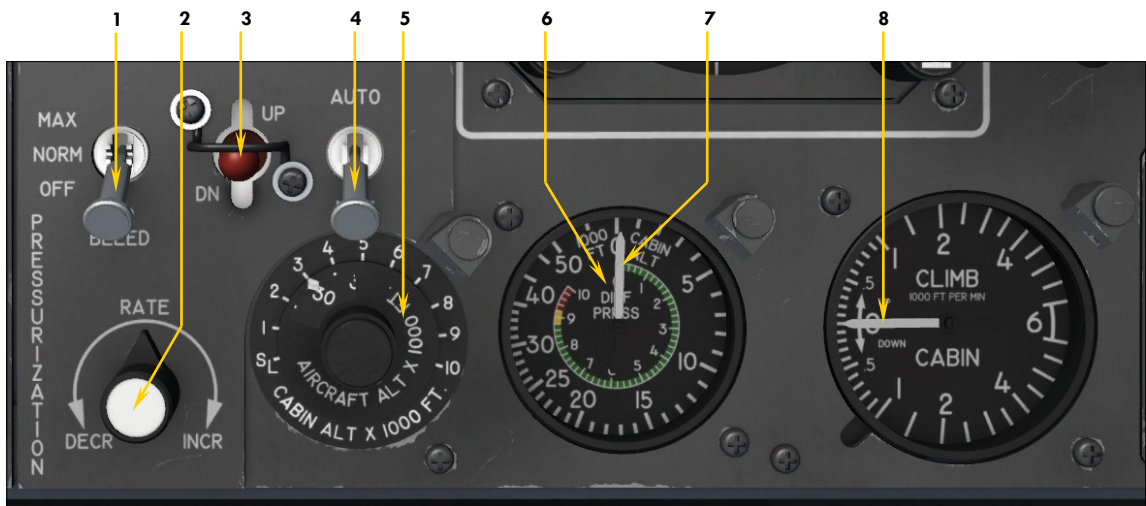
1. Oxygen Pressure Gauge
2. Hydraulic Pressure Gauge
3. Emergency Air Pressure Gauge
4. Left Engine Low Oil Pressure Annunciator
5. Low Hydraulic Pressure Annunciator
6. Fuselage Tank Pump Energized Annunciator (n/s)
7. Right Engine Low Oil Pressure Annunciator



Figure 4-38

Note: No aircraft voltage is necessary for the clock to operate. The clock has its own internal battery. Aircraft power is required to light the LED display only.

1. Tens of Seconds Readout
2. Time Switch
 - Position 1 (TIME) selects real time in hours, minutes and seconds.
 - Position 2 (F.T.) selects flight time, in hours, minutes and seconds of actual flight time. The flight time recorder will start as soon as the aircraft leaves the ground. It will stop when the aircraft lands and touches the ground. The flight time can be zeroed only by having aircraft power off and moving the stopwatch switch to the zero position. The pilot can have total flight time on a trip with a number of stops if he avoids returning the flight time recorder to zero.
 - Position 3 (E.T.) selects elapsed time in hours, minutes and seconds. This is the stopwatch mode of operation. The recorder can be started, stopped and reset to zero with the stopwatch switch. It will continue to operate even if the aircraft power is off.
3. Hours Readout
4. Tens of Hours Readout
5. Set Switch
 - Position 1 (UP) is a momentary position to increment the clock one minute forward.
 - Position 2 (SET) is the normal position.
 - Position 3 (D) is a momentary position to reset seconds to zero.
6. Dim Switch
 - Position 1 (B) is the bright position of the display for daytime use (not simulated).
 - Position 2 (DIM) is the dim position of the display for night time use (not simulated).
 - Position 3 (1hr up) is a momentary position to increment the clock one hour ahead.
7. Tens of Minutes Readout
8. Minutes Readout
9. Stopwatch Switch
 - Position 1 (ZERO) is a momentary position to set the elapsed time recorder to zero. Use this position to reset the flight time recorder to zero when aircraft power is off.
 - Position 2 (STOP) will stop the elapsed time recorder.
 - Position 3 (RUN) will start the elapsed time recorder.
10. Seconds Readout



PRESSURIZATION PANEL

Figure 4-39

1. **Engine Bleed Air Valve Switch**
Bleed air is necessary for pressurization, wing/stabilizer heat, windshield heat and cabin temperature control. Switch should be set to NORM or MAX for the duration of the flight.
2. **Auto Cabin Rate Selector Knob**
Adjusts cabin rate when in auto mode.
3. **Manual Cabin Rate Cherry Picker Switch**
Adjusts cabin rate when in manual mode.
4. **Pressurization Mode Switch**
5. **Target Altitude Selector Knob (Controller)**
Set for flight plan cruise altitude before takeoff and destination field elevation before descent.
6. **Cabin Differential Pressure Needle (not shown)**
Indicates cabin differential pressure in PSI (external pressure supplied by nose static ports). Design cabin pressure: 10 psi. Max. pressure differential: 8.9 psi.
7. **Cabin Altitude Needle**
8. **Cabin Rate Needle**



CABIN TEMPERATURE CONTROL PANEL

Figure 4-40

1. **Automatic Mode Cabin Temperature Control Knob**
Turning the knob fully counter-clockwise will result in manual temperature control. Use this knob to adjust temperature when in auto mode. Make sure to keep the H-Valve position between 1/2 and 3/4!
2. **Manual Mode Cabin Temperature Control Switch**
Holding switch up or down will change cabin temperature if temperature control mode knob is in MAN (leftmost) position. Make sure to keep the H-Valve position between 1/2 and 3/4!
3. **Cooling Fan Switch (n/s)**
Selects either the fan or the Freon-type air conditioner.

Note: Cabin temperature selection will affect the H-Valve [19, fig. 4-35] position.

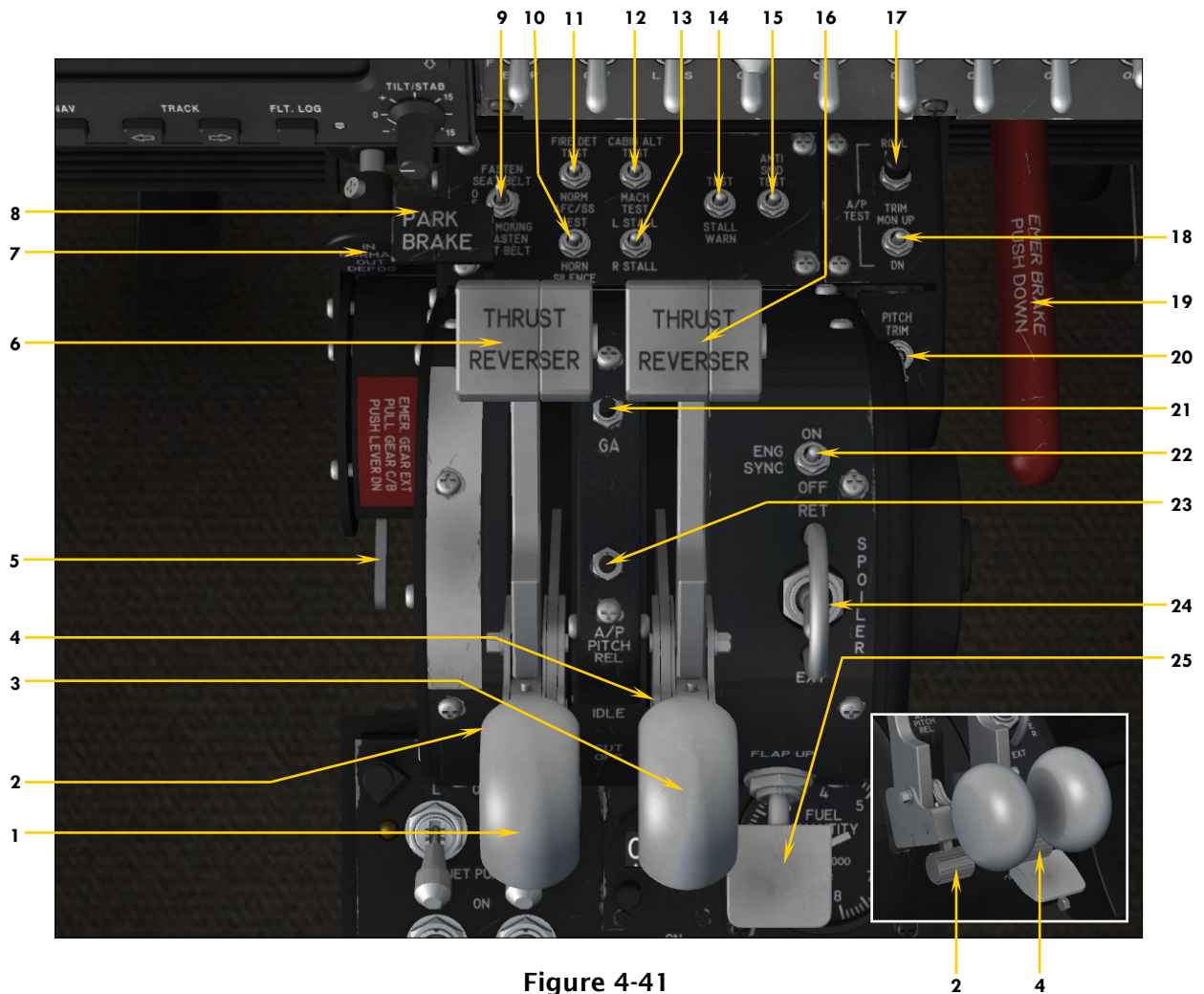


Figure 4-41

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Left Throttle Lever 2. Left Fuel Valve Lever
<i>Fuel valve lever must be released before throttle can be moved, as in the real aircraft.</i> 3. Right Throttle Lever 4. Right Fuel Valve Lever
<i>Fuel valve lever must be released before throttle can be moved, as in the real aircraft.</i> 5. Emergency Gear Pump Lever (P3Dv3) 6. Left Thrust Reverser Subthrottle
<i>Left throttle must be in the idle position (F1) before the thrust reverser subthrottle can be moved (F2/F3).</i> 7. Windshield Defog Knob (n/s) 8. Parking Brake Lever 9. No Smoking/Seat Belt Switch 10. AFCS/Horn Silence Test Switch 11. Fire Detection Test Switch 12. Cabin Alt Warning/Mach Test Switch 13. Stall Warning Test Vane Selector Switch | <ol style="list-style-type: none"> 14. Stall Warning Test Switch 15. Anti-skid Test Switch 16. Right Thrust Reverser Subthrottle
<i>Right throttle must be in the idle position (F1) before the thrust reverser subthrottle can be moved (F2/F3).</i> 17. Autopilot Roll Test Button (n/s) 18. Autopilot Aileron Trim Test Switch (n/s) 19. Emergency Brake Lever (n/s)
<i>Will set the parking brake as no emergency brake is provided in the simulator (P3Dv3).</i> 20. Autopilot Elevator Trim Test Switch (n/s) 21. Autopilot Go-around Button (P3Dv3)
<i>Will turn ON the autopilot wing leveler and set the vertical speed to 4500 fpm.</i> 22. Engine Sync Switch (n/s) 23. Autopilot Pitch Release Switch (P3Dv3)
<i>Will turn OFF the autopilot ALT hold mode.</i> 24. Spoilers Switch 25. Flaps Switch |
|---|--|

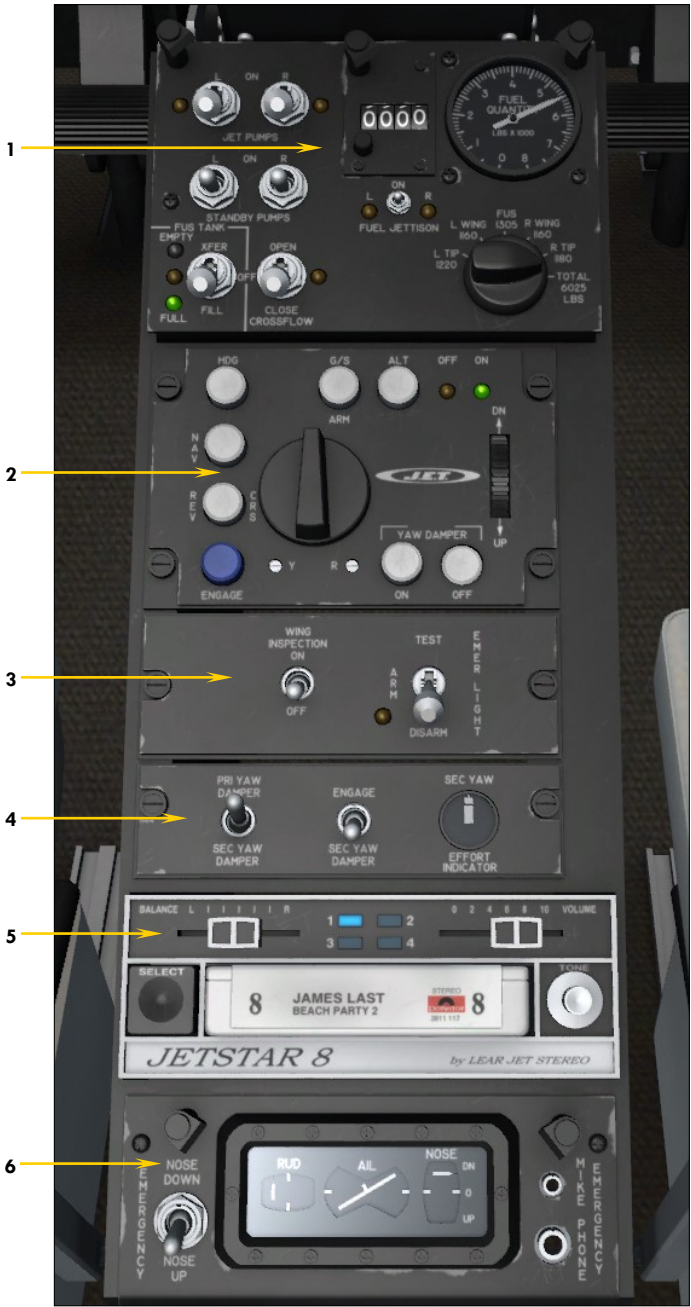


Figure 4-42

1. Fuel Control Panel
2. AFCS (Autopilot) Panel
3. Emergency Lights Panel
4. Aux Yaw Damper System Panel (n/s)
5. "Jetstar 8" 8-Track Tape Player
6. Trim Indicators Panel

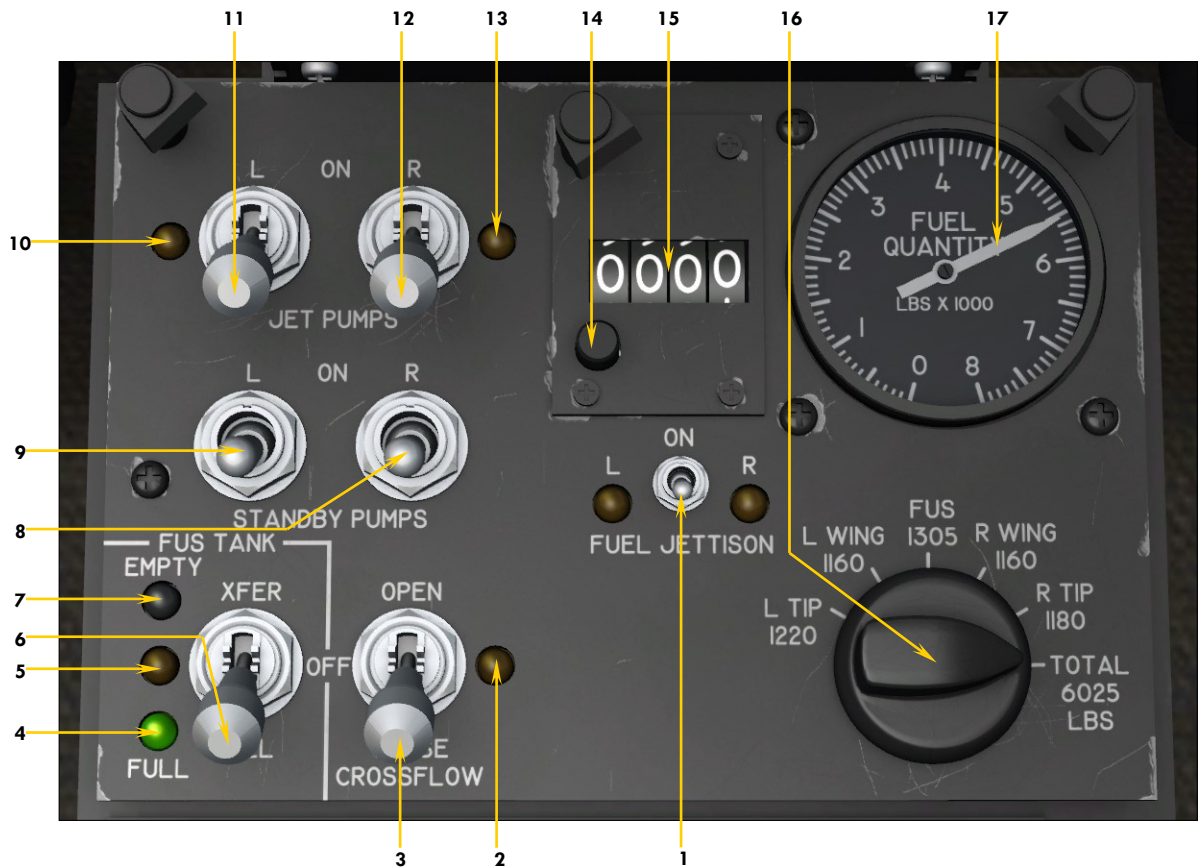


Figure 4-43

- | | |
|---|--|
| <p>1. Fuel Jettison Switch and Annunciators (n/s)
<i>The wing tip tanks on this aircraft are not equipped with a fuel jettison system.</i></p> <p>2. Cross-feed Valve Open Annunciator</p> <p>3. Cross-feed Valve Switch (n/s)
<i>This switch is used to balance wing fuel while the standby pumps are energized.</i></p> <p>4. Fuselage Tank Full Annunciator</p> <p>5. Fuselage Tank Normal (Level) Annunciator</p> <p>6. Fuselage Tank Pump Switch (n/s)
<i>During fuel transfer, the pump transfers fuel from the fuselage tank into both wing tanks. The FILL position is used during refueling to transfer fuel from the wing tanks into the fuselage tank.</i></p> <p>7. Fuselage Tank Empty Annunciator</p> <p>8. Right Standby Pump Switch
<i>Used for cross-feeding or in case of jet pump failure. Normally OFF.</i></p> | <p>9. Left Standby Pump Switch
<i>Used for cross-feeding or in case of jet pump failure. Normally OFF.</i></p> <p>10. Left Tip Tank Jet Pump Annunciator</p> <p>11. Left Tip Tank Jet Pump Switch
<i>Should be ON for the duration of the flight. Allows motive flow to the tip/wing tanks pumps.</i></p> <p>12. Right Tip Tank Jet Pump Switch
<i>Should be ON for the duration of the flight. Allows motive flow to the tip/wing tanks pumps.</i></p> <p>13. Right Tip Tank Jet Pump Annunciator</p> <p>14. Totalizer Reset Button (n/s)
<i>Handled automatically by the simulator when the engines start.</i></p> <p>15. Fuel Burn Totalizer
<i>Indicates total fuel burned since last engine start.</i></p> <p>16. Fuel Tank Selector Knob
<i>Fuel quantity can be read on the fuel quantity gauge.</i></p> <p>17. Fuel Quantity Gauge
<i>Indicates fuel quantity for selected tank.</i></p> |
|---|--|



Figure 4-44

1. Autopilot Servo Engage Button
2. Autopilot Roll Turn Knob (n/s)
In the simulator, controls aileron trim.
3. Localizer Back Course Mode Button
4. NAV/LOC Hold Mode Button
5. Heading Hold Mode Button
6. Coupled Approach/Glideslope Mode Button
7. Autopilot Altitude Hold Mode Button
8. Autopilot OFF Annunciator
9. Autopilot ON Annunciator
10. Autopilot Pitch Command Wheel (n/s)
In the simulator, controls pitch (elevator) trim.
11. Primary Yaw Damper OFF Button
12. Primary Yaw Damper ON Button

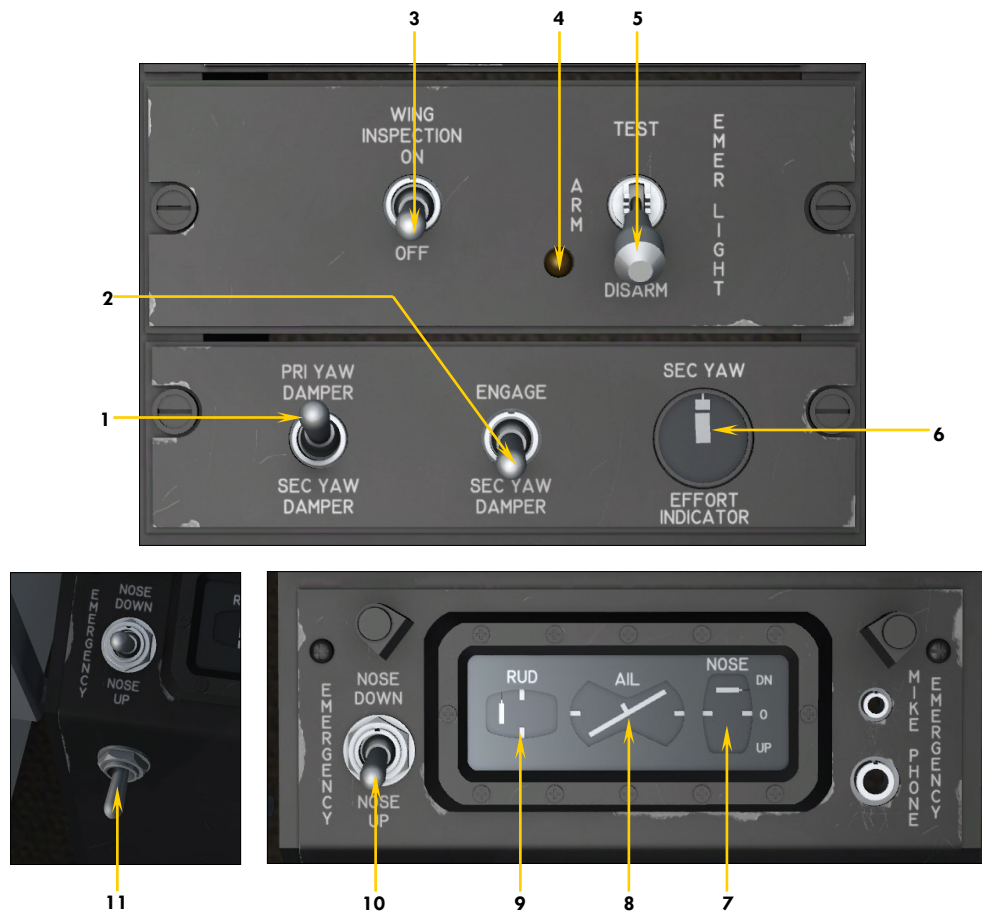
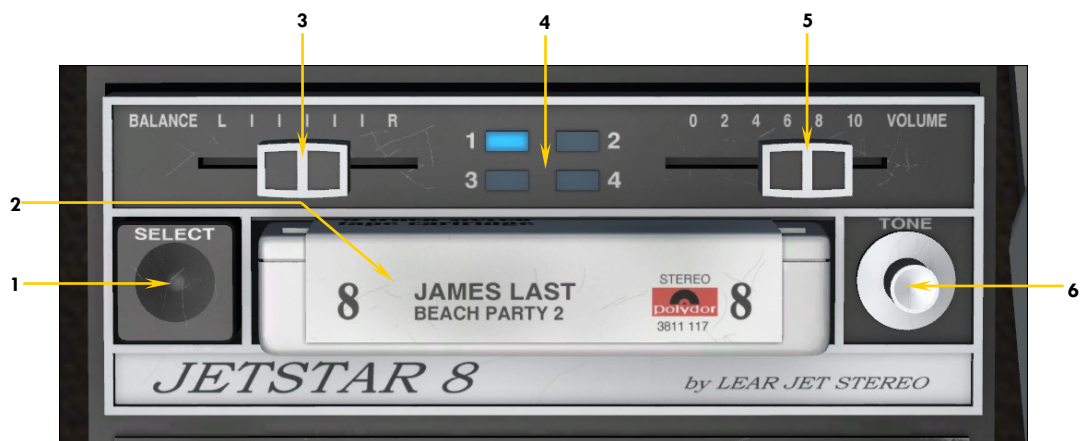


Figure 4-45

1. Primary/Secondary Yaw Damper Selector Switch (n/s)
2. Secondary Yaw Damper Engage Switch (n/s)
3. Wing Inspection Light Switch (n/s)
This aircraft has no wing inspection light. Toggles belly lighting effect (from landing and taxi lights), if desired.
4. Emergency Cabin Lights Annunciator
5. Emergency Cabin Lights Switch (P3Dv3)
Will turn on the cabin lights if in the TEST position.
6. Rudder Activity Indicator
7. Rudder Trim Indicator
8. Aileron Trim Indicator
9. Elevator Trim Indicator
Takeoff trim is typically one needle thickness below neutral.
10. Emergency Pitch Trim Control Switch
11. Rudder Trim Control Switch



JETSTAR-8 STEREO 8-TRACK TAPE PLAYER

A tribute to the inventive genius of Bill Lear.

Figure 4-46

1. Track Selector Button
2. Stereo 8-Track Tape Cartridge
Left-click to play music. Right-click to stop music.
3. Balance Control Cursor (n/s)
4. Track LED Indicators
Indicates which stereo track is playing.
5. Volume Control Cursor (n/s)
6. Tone Control Knob (n/s)

Note: Unit is powered when aircraft battery switches are ON. Refer to section 4, page 9, for instructions about how to play your own music.

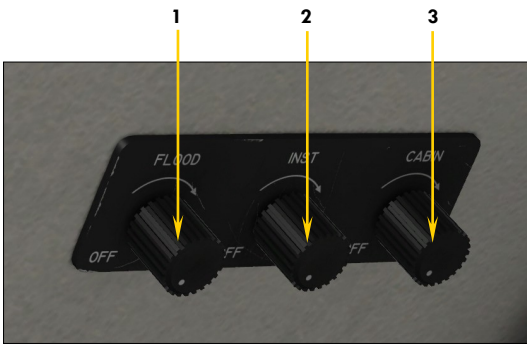
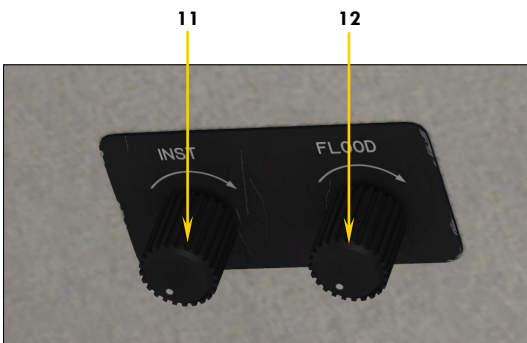
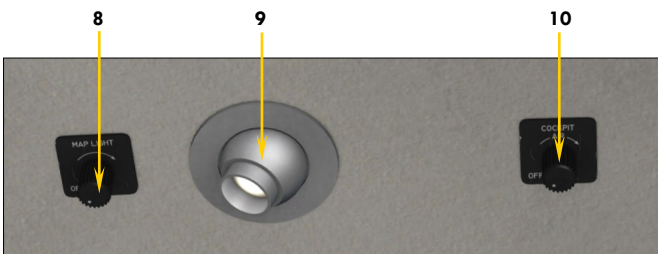
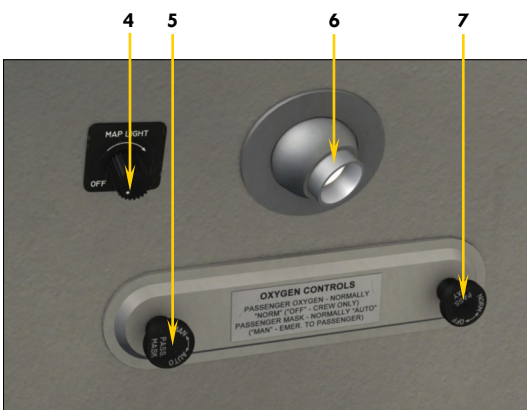


Figure 4-47



1. Captain's Panel Flood Lights Control
2. Captain's Instrument Lights Control
This control knob toggles the instrument back-lights, the panel lights and eyelids, the main door entry lights and the passenger's reading lights in the cabin.
3. Captain's Cabin Lights Control
This control knob toggles the cockpit ceiling lights and the cabin ceiling lights.
4. Captain's Map Light Control
Toggles the captain's map light.
5. Passenger Oxygen Mask Valve (n/s)
6. Captain's Map Light
7. Passenger Oxygen Flow Valve (n/s)
8. Copilot's Map Light Control
Toggles the copilot's map light.
9. Copilot's Map Light
10. Cockpit Fan Control Knob
11. Copilot's Instrument Lights Control
Same as the one on the captain's side.
12. Copilot's Panel Flood Lights Control
Same as the one on the captain's side.



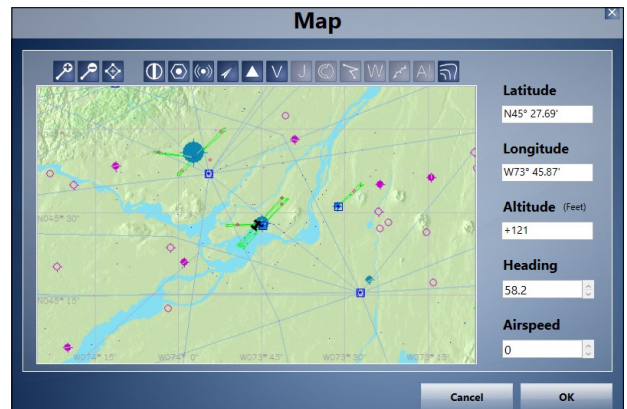
SUN VISORS
Figure 4-48

1. Sun Visor
Click the green plastic section to lower or to raise the sun visor.
2. Sun Visor Hinge (P3Dv3)
Click and drag the hinge to slide the sun visor along the track.



FLIGHT MAP
Figure 4-49

1. Flight Maps
Click the flight maps on the captain's side to open the sim's flight map.
2. Copilot's iPad® Tablet
Click the tablet to open the sim's flight map. Click the brown binder under the tablet to show/hide the tablet.





20 SERIES AIRCRAFT SYSTEMS

The following section contains important information about the aircraft systems included with your new Xtreme Prototypes GLJ Model 25 SE add-on.

Although the GLJ Model 25 SE add-on is inspired from the classic Gates Learjet 20 Series family aircraft, there are a few differences in systems when compared to its real-world counterparts. These differences are due in part to limitations in the simulation platforms 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.

Unless otherwise noted, the following systems are simulated to conform as closely as possible to the operation of the real aircraft, within the present limitations and capabilities of the currently available simulation platforms:

- Flight controls
- Electrical system
- Hydraulic system
- Landing gear
- Fuel system
- CJ-610 Power plant
- Fire detection and suppression system
- Pneumatic (high pressure) and environmental control system
- Air conditioning and pressurization system
- Bleed air system
- Automatic flight control system (AFCS, autopilot)

- Caution and warning system
- Avionics, radio and navigation system, fully compatible with ATC (VHF COM1/COM1 Standby, COM2, ADF1, ADF2, NAV1, NAV2, transponder)
- GPS (compatible with the autopilot)
- Main entry door (fully animated)
- Cockpit lighting system

Most systems, gauges, switches, light indicators and instruments are fully functional and behave like their original counterparts found in the real aircraft unless otherwise noted. Tooltips are very useful for cockpit familiarization and can be used for locating the different instruments and switches and memorizing the different panel configurations.

Flight Controls



Your GLJ Model 25 SE addon is 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 addon should be controlled with only constant and light movements of the joystick/yoke. The controls should never be pushed hard and should be properly trimmed at all times.

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.

Refer to fig. 3-1 and 3-2 in section 3 for the location of the different flight control surfaces on the GLJ Model 25 aircraft.

Electrical System



Your addon's electrical system consists of a single 24-volt battery (instead of dual batteries as in the real aircraft), a main DC bus, two inverters, one auxiliary inverter, an avionics AC bus, two 28-volt DC 400-ampere engine-driven starter-generators and associated switches and gauges.

During normal operation, the generators sup-

ply DC power to the main DC electrical bus. Two inverters (devices that convert DC current to AC current) provide 110 volts AC power to the avionics electrical bus, which powers the majority of flight instruments, including the GPS and radios. These are called the primary and secondary inverters. An auxiliary inverter is also installed for safety purposes, since critical instruments depend on AC power to tell up from down.

Important: All the avionics, the GPS and the radios will not work if the inverters are not turned on.

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

Refer to section 7 for detailed operating procedures.

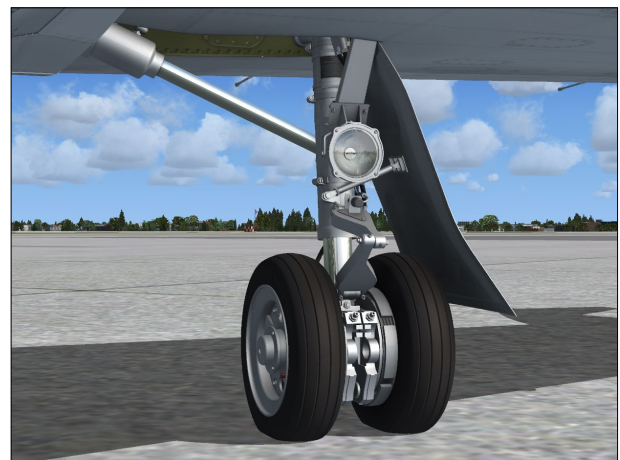
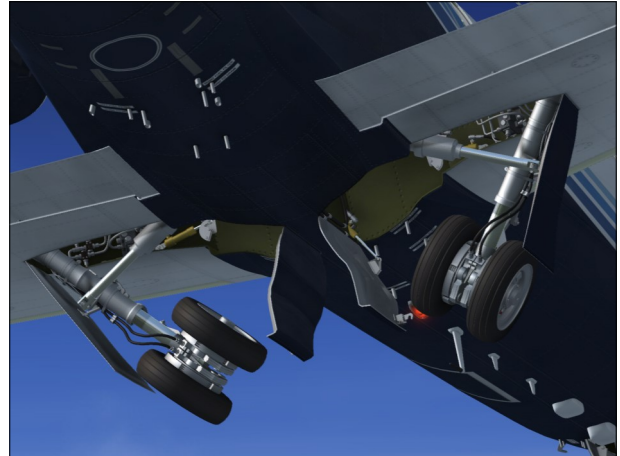
Hydraulic System



Your addon's hydraulic system consists of two engine-driven hydraulic pumps and a backup fluid reservoir. The hydraulic system powers the landing gear and brakes, the flaps and the spoilers. The real aircraft was also equipped with an auxiliary hydraulic pump in case of emergency (not simulated).

Refer to section 7 for detailed operating procedures.

Landing Gear



Your addon'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.

Refer to section 7 for detailed operating procedures.

Fuel System

Your addon's fuel system consists of two wingtip tanks, two main wing tanks and a central fuselage tank. The real-world aircraft was equipped with ejector-type jet pumps to assist in emptying the wingtip tanks into the main wing tanks. The real-world fuselage tank had a transfer pump to help transfer its



contents into the main wing tanks as well. Although your addon uses gravity instead of pumps, all the switches and annunciators have been provided to simulate procedures and enhance 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 for cross-feeding purposes.

Refer to section 7 for detailed operating procedures.

Power Plant



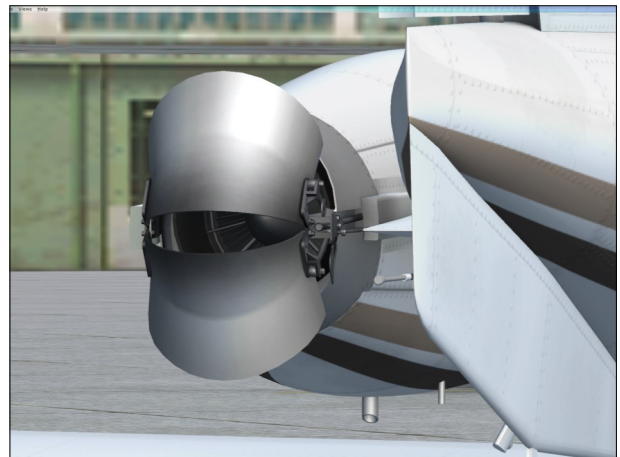
Your addon is equipped with the reliable General Electric CJ-610 single-spool turbojet engine. Rated at 2,950 lbs. static thrust per

side at sea-level, the CJ-610 provides the aircraft (especially at low weights) with fighter-like performance. It was said that a lightly-loaded Model 25 could 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 GLJ Model 25 SE addon is no exception, so plan adequate fuel for your trip!

This new edition of our classic Model 25 addon is equipped with fully modeled target thrust reversers consisting of upper and lower clamshell doors, pivoted near the engine centerline. The reverser doors are hydraulically actuated and electrically controlled.

The thrust reversers are an additional deceleration system which may be used anytime the airplane is on the ground to produce



shorter stopping distances.

Refer to section 7 for detailed operating procedures.

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.

Refer to section 8 (abnormal/emergency procedures) for system operation and indication details.

Pneumatic (High Pressure) and Environmental Control Systems

The GLJ Model 25 is meant to operate at high altitudes, where the air is thin and very cold.



Your add-on 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. 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, the “cherry picker” switch 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 the cabin temperature is set, make sure to monitor the H-valve position indicator accordingly.

Refer to section 7 for detailed operating procedures.

Automatic Flight Control System (Autopilot)

Your GLJ Model 25 add-on is equipped with an automatic flight control system (AFCS) that consists of a flight computer, a flight director and an autopilot.

The system’s main control panel is on the center pedestal, but a series of annunciators, switches and an altitude preselector on the main instrument panel allow for complete control of the system without shifting your point of view. This makes flying easier from the virtual cockpit.



To conform to the specifications of the simulation platforms, a flight director switch was added to the main instrument panel. This switch toggles the flight director on and off, which makes it fully independent from the autopilot (on the real aircraft, the flight director was always available when the AFCS was engaged).

The flight director 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 preselector. 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 performance, 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. “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.

Your GLJ Model 25 add-on now has a GPS/NAV switch which selects the autopilot mode of navigation (GPS or NAV). You can now navigate with the GPS while in the autopilot mode.



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 on the ADI. 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 on the center pedestal unit and on the main panel switch clusters. Refer to section 7 for detailed operating procedures.



This section presents a set of simplified criteria for planning your GLJ Model 25 flights on your simulation platform.

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 new add-on's procedures 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 definitely required which are:

1. **Determine the fuel required and the gross weight** — The gross weight is the total weight of the aircraft including fuel and payload. This number is crucial to the aircraft's performance.
2. **Determine takeoff data** — Takeoff data

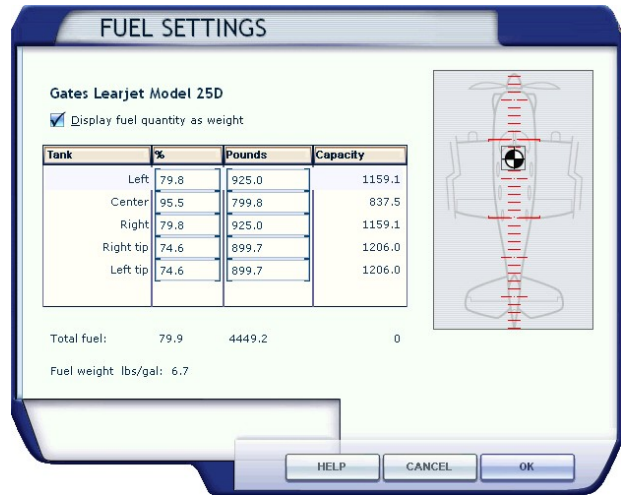
includes V_1 decision speed, V_r rotation speed, and V_2 takeoff safety speed. Runway length requirements are also important, especially in hot-and-high conditions with a heavy aircraft.

3. **Determine approach and landing data** — Approach and landing data includes V_{ref} 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 takeoff 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.



See table 6-1 below:

<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

In the “Fuel and Payload” page (see above, may vary depending on your simulation platform), add the necessary fuel for your flight and load the required passengers. Read the total gross weight and use it to determine the takeoff data in the next section.

DETERMINE TAKEOFF DATA



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.
- At 460 KTAS, $750 \text{ NM} = 98 \text{ Min} = 1 \text{ h} + 38 \text{ min}$.
- 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.

Takeoff data in this case refers to three critical speeds (V_1 , V_r and V_2) that you will need during takeoff. Refer to “Normal Procedures” and “Abnormal/Emergency Procedures” in sections 7-8 for more details.

Your add-on’s airspeed indicators [fig. 4-9] are equipped with independent speed bugs. It is suggested to set the captain’s bug on V_1 and the copilot’s bug on V_r (or the reverse if the copilot is performing the takeoff). The pilot flying (PF) decides to abort at V_1 or to contin-

ue, and the pilot not flying (PNF) calls for rotation.

To determine the takeoff data, you will also need the outside air temperature (OAT), which you can get either from the weather menu, from ATC if an ATIS service is available at your departure airport or better still, from your add-on's ram air temperature (RAT) gauge [18, fig. 4-35].

It is assumed that 100 % RPM will be used for takeoff power and the flaps will be extended 8 degrees [1, fig. 4-28]. First, from table 6-2 (right), determine your V_1 takeoff decision speed. This speed will be used to decide if you abort or continue the takeoff, should an engine failure occur. Refer to "Abnormal/Emergency Procedures" in section 8 of the manual for details.

Next, from table 6-4 (below), determine the rotation speed (V_r) and the 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 6-3 (right).

Once you know the density altitude of the field, you can determine the runway distance necessary for the takeoff from table 6-5 (next page).

Table 6-2 V_1 TAKEOFF DECISION SPEED (KIAS) Flaps 8°						
	OUTSIDE AIR TEMPERATURE °C					
GROSS WT	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 6-3 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

Table 6-4 V_r ROTATION SPEED / V_2 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
V_r	120	124	124	128	132	134	136	140
V_2	124	128	130	132	136	138	140	144

Table 6-5 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

DETERMINE APPROACH & 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 [fig. 4-43]. During the pre-landing checks, the airspeed bugs may be set to V_{ref} .

It is assumed that flaps will be fully deployed at 40 degrees for landing, however other speeds are available from table 6-6 (right) for

Table 6-6 V_{ref} LANDING REFERENCE SPEED (KIAS)				
	FLAPS POSITION			
GROSS WT	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

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 6-7 (next page), 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 add-on's ram air temperature (RAT) gauge while in flight. Determine the landing distance required from table

6-8 (below).

The data below assumes a full flaps landing, spoilers and thrust reversers 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 either 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 in your new GLJ Model 25 SE add-on.

Proceed to the next section, "Normal Procedures and Check List".

<i>Table 6-7</i> DENSITY ALTITUDE, FT.					
	DESTINATION 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

<i>Table 6-8</i> LANDING DISTANCE REQUIREMENTS, FT.							
	LANDING WEIGHT, LBS.						
DENSITY ALTITUDE	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

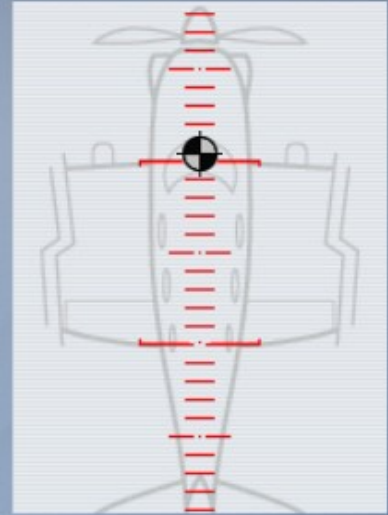
Fuel and Payload



Gates Learjet Model 25D

Display fuel quantity as weight

Empty Weight:	8,121	Pounds
Payload:	2,030	Pounds
Fuel:	4,449.20	Pounds
Gross Weight:	14,600	Pounds
Max. gross weight:	15,000	Pounds
Max. allowable fuel:	4,849.00	Pounds



Change Fuel

Tank	%	Pounds	Capacity
Center	<input type="text" value="95.5"/>	<input type="text" value="799.8"/>	837.5
Left	<input type="text" value="79.8"/>	<input type="text" value="925"/>	1159.1
Left Tip	<input type="text" value="74.6"/>	<input type="text" value="899.7"/>	1206
Right	<input type="text" value="79.8"/>	<input type="text" value="925"/>	1159.1
Right Tip	<input type="text" value="74.6"/>	<input type="text" value="899.7"/>	1206

Change Payload

Station	Pounds
Baggage	<input type="text" value="500"/>
Rear Seat 1	<input type="text" value="170"/>
Rear Seat 2	<input type="text" value="170"/>
Club Seat 1	<input type="text" value="170"/>
Club Seat 2	<input type="text" value="170"/>

Cancel

OK

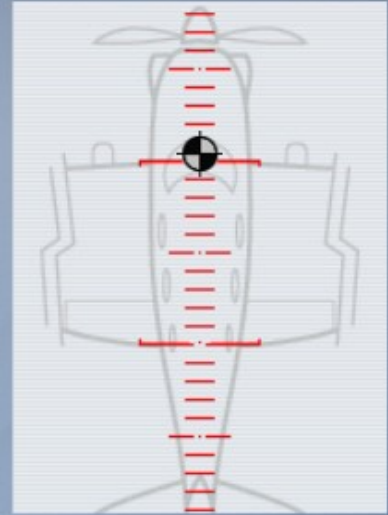
Fuel and Payload



Gates Learjet Model 25D

Display fuel quantity as weight

Empty Weight:	8,121	Pounds
Payload:	2,030	Pounds
Fuel:	664.06	Gallons
Gross Weight:	14,600	Pounds
Max. gross weight:	15,000	Pounds
Max. allowable fuel:	831.00	Gallons



Change Fuel

Tank	%	Gallons	Capacity
Center	<input type="text" value="95.5"/>	<input type="text" value="119.38"/>	125
Left	<input type="text" value="79.8"/>	<input type="text" value="138.05"/>	173
Left Tip	<input type="text" value="74.6"/>	<input type="text" value="134.28"/>	180
Right	<input type="text" value="79.8"/>	<input type="text" value="138.05"/>	173
Right Tip	<input type="text" value="74.6"/>	<input type="text" value="134.28"/>	180

Change Payload

Station	Pounds
Baggage	<input type="text" value="500"/>
Rear Seat 1	<input type="text" value="170"/>
Rear Seat 2	<input type="text" value="170"/>
Club Seat 1	<input type="text" value="170"/>
Club Seat 2	<input type="text" value="170"/>

Cancel

OK

NORMAL PROCEDURES AND CHECK LIST

SECTION 7



This section contains detailed procedures and check list for the operation of the Xtreme Prototypes GLJ Model 25 Special Edition add-on on your simulation platform. Following each step presented in this section will teach you how to prepare and fly your new Model 25 add-on and make your overall experience much more realistic and enjoyable.

A condensed version of these procedures is provided in section 9. You may refer to the condensed procedures if you are familiar with both your simulation platform and the Model 25's systems and instruments described in sections 4 and 5.

Note that no information is contained in the add-on's pilot kneeboard. Please refer to Appendix 1 for aircraft reference information and to section 9 for a complete check list. Refer to section 8 for abnormal and emergency procedures and to section 6, for flight planning.

The operation of the GLJ Model 25 add-on is very similar to the operation of the real aircraft. The following procedures are inspired or adapted from the original Gates Learjet 20 Series flight manuals.

GETTING STARTED

The Xtreme Prototypes GLJ Model 25 Special Edition is an add-on software package which requires your simulation platform (Lockheed Martin® Prepar3D® or Microsoft® Flight Simulator X) to be installed on your computer.

Refer to "Minimum System Requirements" in section 2 for more information.

Starting your Flight Simulation Platform

1. Make sure that your simulation platform and the GLJ Model 25 SE add-on are

properly installed on your computer before you proceed.

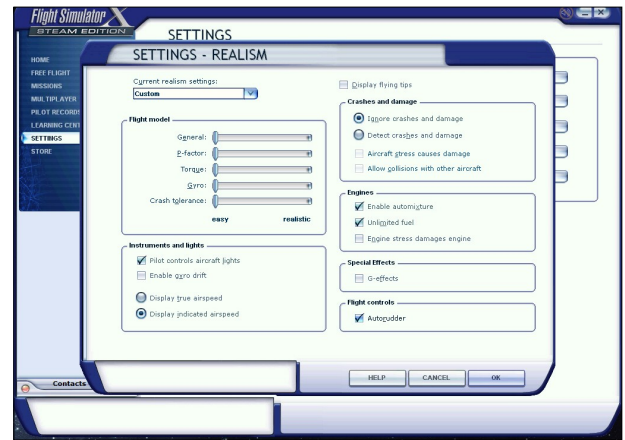
2. Make sure your joystick/yoke and pedals are properly connected to your computer and have been previously tested with your simulation platform. A joystick/yoke is essential to fly the GLJ Model 25 SE add-on. Rudder pedals are optional but recommended.
3. Make sure your mouse has a center wheel. A wheel mouse is essential to actuate some controls in the virtual cockpit, such as 3-position switches and knobs.
4. Start your simulation platform.

Note: The user interface may vary between Prepar3D® and Flight Simulator X. However the commands and settings are essentially the same.

Recommended Settings for Beginners

These settings will make your first flights in the GLJ Model 25 SE add-on more enjoyable. You can reset them to their default state when you have more experience as a virtual pilot:

1. Under "Aircraft" (or "Vehicle") in the simulator's top menu bar, select **REALISM SETTINGS**.
2. On the "Settings - Realism" page, set the followings:
 - a. All "Flight model" settings - **EASY** (all cursors to the left).
 - b. Pilot controls aircraft lights - **SELECTED**.
 - c. Enable gyro drift - **UNSELECTED**.
 - d. Display indicated airspeed - **SELECTED**.
 - e. Display flying tips - **UNSELECTED**.
 - f. Ignore crashes and damages - **SELECTED**.
 - g. Enable automixture - **SELECTED**.
 - h. Unlimited fuel - **SELECTED**.
 - i. G-effects - **UNSELECTED**.

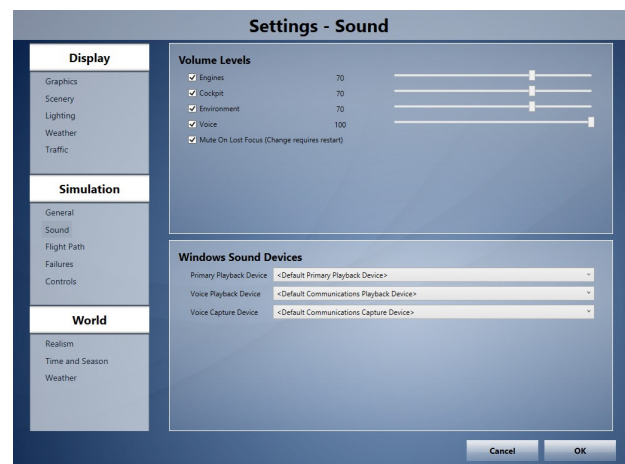


j. Autorudder - **UNSELECTED**.

3. Click **OK** to close the "Settings - Realism" page.

For more details, refer to the recommended settings for your simulation platform in section 2.

Adjusting the Sound Volume



Depending on your sound system and settings, you may want to adjust the volume levels in the "Settings - Sound" page on your simulation platform:

1. Under "Options" in the simulator's top menu bar, select **SETTINGS/SOUNDS...**
2. On the "Settings - Sound" page, under "Volume levels", adjust the volume levels for the engine and other sounds. Make

sure all sounds are selected.

3. Click **OK** to close the "Settings - Sound" page.

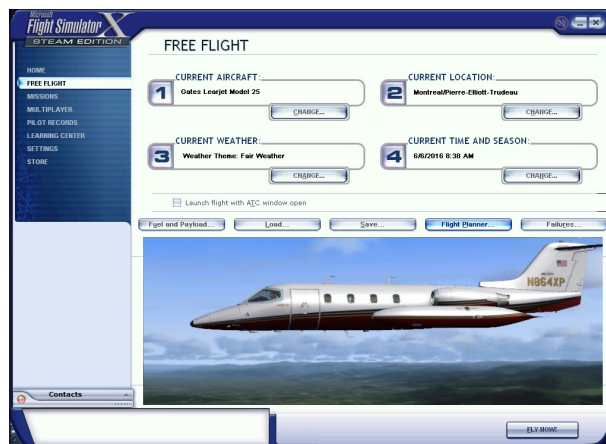
To reduce the volume of the engine, try a setting of between 50% to 75%. If you like more rumble, noise and vibrations, try anything from 75% to 100%. A setting of about 70% seems acceptable for most computer sound systems and will produce the level of noise, whine and rumble one would expect from the noisy CJ-610 engines. A little experimentation may be necessary in order to find the optimal settings, depending on your own sound system configuration and personal preferences.

Feel free to adjust your sound system's volume and bass depending on your preferences. Please note that the CJ-610 engines will produce a high level of noise, especially when in the outside views.

Known Issues

- In addition to the standard aircraft sound sets that are controlled by the simulator's own sound engine, the GLJ Model 25 SE addon features more than 30 new sound effects, mainly cockpit sounds, that are managed by the addon's special systems and played by a third-party sound module. Due to software limitations, some cockpit sounds can still be heard from the external views or when the simulator is paused. Volume adjustment in the simulator has no effect on these sounds. While this has no impact on the overall simulation, it is a known issue that is currently being addressed.
- While we took great care to adjust the custom sound effects individually so they fit well in the overall sound mix, there is no control to adjust the volume of the cockpit sounds in this software version. Sound can be balanced by adjusting the aircraft sounds that are controlled by the simulator's sound engine and the master volume on your computer sound system. While this has no impact on the simulation, we take good note of the requested feature for future software versions.

CREATING A FLIGHT



Refer to the documentation provided with your simulation platform for complete instructions on how to create a new flight. Make sure to select one of the Xtreme Prototypes GLJ Model 25 SE aircraft variations included in your addon package and start a new flight. If some aircraft variations are not visible, make sure the **"Show all variations"** option is selected on the **"Select Aircraft/Vehicle"** page (FSX).

Note: The "Select Aircraft/Vehicle" page may be different from the one shown above, depending on your simulation platform.

Important

- You must be in the virtual cockpit view to operate this addon. The GLJ Model 25 SE addon has no 2D panels. If your addon appears to have no virtual cockpit, make sure you have selected the **VIRTUAL COCKPIT** view or press **"F9"**.



IMMEDIATE TAKEOFF OR “COLD START”

At this time, it is assumed that the GLJ Model 25 has been serviced automatically by the simulator when first loaded and that the engines are running. You can either take off immediately or move the aircraft to a gate/parking with the map, shut down the engines and follow the normal procedures to simulate a true “cold start” (all engines, lights and systems turned off).

After the aircraft is parked, proceed as follows:

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 GLJ Model 25 addon is available in section 3 of the manual [fig. 3-1 and 3-2]. It is recommended to familiarize yourself with the general external arrangement of the aircraft before proceeding.

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

This will allow 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 entry door, simultaneously press the “**SHIFT-E**” keys on your keyboard.

On some simulation platforms, it is possible to observe the movement of all control surfaces, including the flaps and spoilers, at this time. Other platforms would require electrical and/or hydraulic power in order to move some control surfaces. This could also be achieved after the aircraft has been powered up and the engines have started.



1. Use your joystick (and/or pedals) to control and observe the movement of the rudder, elevator and ailerons. Observe the movement of the balance tabs on the ailerons, as well as the trim tabs on the left aileron and the rudder.
2. To extend or retract the flaps, press the “F6/F7” keys on your keyboard or the corresponding button on your joystick. You can also use the flaps switch [25, fig. 4-41] on the power quadrant in the cockpit.
3. To deploy or retract the spoilers, press the “ / ” key on your keyboard. You can also use the spoilers switch [24, fig. 4-41] on the power quadrant in the cockpit.

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

CHECK LIST AND PROCEDURES

Cockpit Preparation from Cold and Dark Cockpit

1. Parking brake [8, fig. 4-41] – **SET**.
2. All switches – **OFF**.
3. Check flight controls – **FREE**.
4. Seat – **Adjust armrests** (see section 4, page 10).
5. **Hide** control columns and yokes [9, fig. 4-1] if necessary. *Control columns can be hidden by clicking on their respective boot. Refer to section 4, page 5 for details.*
6. Passenger Oxygen Mask Valve [5, fig. 4-

47] – **AUTO**.

7. Passenger Oxygen Valve [7, fig. 4-47] – **NORM**.
8. Battery switches [8-9, fig. 4-28] – **ON**.
9. Check oxygen quantity gauge [1, fig. 4-37] – **IN GREEN**.
10. Check emergency air pressure gauge [3, fig. 4-37] – **IN GREEN**.
11. Check landing gear lever and lights [3, 5, fig. 4-28] – **DOWN + 3 GREEN**.
12. Both primary and secondary inverter switches [10,12, fig. 4-27] – **ON**.
13. Radio (avionics) master switch [14, fig. 4-27] – **ON**.
14. GPS and radar power switches [1, fig. 4-24 and 1, fig. 4-17] – **ON**, if needed.
15. Annunciator panel test:
 - a. Annunciator panel test button [31, fig. 4-30] – **ON**.
 - b. Check all annunciators – **ON**.
 - c. Check marker beacon lights [1-3, fig. 4-5] – **ON**.
 - d. Check decision height lights – **ON**.
 - e. Check altitude alert lights – **ON**.
 - f. Annunciator panel test button [31, fig. 4-30] – **OFF**.
16. Stall warning test:
 - a. Both stall warning switches [4, 6, fig. 4-27] – **ON**. Check annunciators **OFF**.
 - b. Stall warning test switch [14, fig. 4-41] – **ON**.
 - c. Vane selector switch [13, fig. 4-41] – **LEFT** or **RIGHT**.
 - d. Check angle-of-attack indicators [5, fig. 4-6] – in **RED**.
 - e. Check stall warning annunciators – **ON** (with audible alert).
 - f. Stall warning test switch [14, fig. 4-41] – **OFF**.
17. Fire detection system test:
 - a. Fire detection system test switch [11, fig. 4-41] – **ON**.
 - b. Check both captain and copilot fire

- annunciators [6, fig. 4-31 and 2, fig. 4-33] – **ON** or **FLASHING**.
- c. Fire detection system test switch [11, fig. 4-41] – **OFF**.
18. Anti-skid system test:
- a. Anti-skid system test switch [15, fig. 4-41] – **ON**.
- b. Check anti-skid generator activity lights [5, fig. 4-15] – **ALL ON**.
- c. Anti-skid system test switch [15, fig. 4-41] – **OFF**.
19. Cabin altitude warning test:
- a. Cabin altitude warning test switch [12, fig. 4-41] – **ON**.
- b. Check cabin altitude annunciator – **FLASHING** (with audible alert).
- c. Cabin altitude warning test switch [12, fig. 4-41] – **OFF**.
20. AFCS test:
- a. AFCS test switch [10, fig. 4-41] – **ON**.
- b. Check all AFCS mode annunciators – **ON**.
- c. AFCS test switch [10, fig. 4-41] – **OFF**.
21. Takeoff trim:
- a. Check that pitch trim indicator [3, fig. 4-14] is at least **one needle thickness below center**.
- b. Forward center of gravity requires more trim.
- c. Check takeoff trim annunciator [2, fig. 4-31] – **OFF**.
22. Fuel quantity [17, fig. 4-43]:
- a. Check **sufficient quantity** for flight. Refer to “Flight Planning”, in section 6 for details.
- b. Check for **imbalance** between tanks.
23. Standby gyro:
- a. Standby gyro power switch [6, fig. 4-16] – **ON**.
- b. Check standby gyro [fig. 4-16] operational. Adjust pitch scale [9, fig. 4-16] if necessary.
24. Fuel totalizer [15, fig. 4-43]:
- a. Check **zero**. *Fuel counter indicates fuel consumed since last engine start.*
25. Thrust reversers:
- a. Thrust reverser annunciators test switch [11, fig. 4-34] – **ON**, check all



thrust reverser annunciators **ON**.

- b. Thrust reverser annunciators test switch [11, fig. 4-34] - **OFF**.
- c. Thrust reverser subthrottles [6,16, fig. 4-41] - **pushed FORWARD (F1)**.
- d. Thrust reverser ARM arm switches [13 -14, fig. 4-34] - **ARM**.
- e. Thrust reverser ARM annunciators [7, 8, fig. 4-34] - **ON**.
- f. Thrust reverser emergency stow switches [2-3, fig. 4-34] - **NORM**.
- g. Thrust reverser UNSAFE annunciators [5, 10, fig. 4-34] - **OFF**.
- h. Thrust reverser DEPLOYED annunciators [6, 9, fig. 4-34] - **OFF**.

Before Starting Engines



1. Main cabin door [24, fig. 3-1] - **CLOSED & SECURE**.
2. Check door annunciator - **OFF**.
3. Both battery switches [8-9, fig. 4-1] - **CHECK ON**.
4. Rotating beacon switch [13, fig. 4-27] - **ON**.
5. Strobe lights switch [11, fig. 4-27] - **ON**.
6. Navigation lights switch [15, fig. 4-27] - **ON**.
7. Check throttle fuel valves [2, 4, fig. 4-1] - **CLOSED**.
8. Jet pumps:

- a. Jet pumps switches [11-12, fig. 4-43] - **ON**.
- b. Check jet pump annunciators [10, 13, fig. 4-43] - **ON**.

9. Standby pumps:

- a. Standby pumps switches [8-9, fig. 4-43] - **OFF**.

Engine Start

1. Left engine fuel valve lever [2, fig. 4-41] - **RELEASED**.
2. Left engine throttle [1, fig. 4-41] - **IDLE position (F1)**. *Throttles cannot be moved*

unless fuel valve levers are released!

3. Thrust reverser subthrottle [6, fig. 4-41] – **pushed FORWARD to IDLE (F1)**.
4. Left engine starter-generator switch [11, fig. 4-28] – **down to START**.
5. Check **20% RPM** [6, fig. 4-25].
6. Monitor EGT gauge and make sure **WITHIN GREEN ARC** [4, fig. 4-25].
7. Set left engine starter-generator switch [11, fig. 4-28] to **GEN** when engine is stable at **IDLE**.
8. Check left engine generator annunciator – **OFF**.
9. Check left engine ammeter [7, fig. 4-26] – **CHARGING**.
10. Check left engine fuel pressure annunciator [3, fig. 4-25] – **OFF**.
11. Check left engine oil temperature and pressure [7, fig. 4-25 and 4, fig. 4-26] – **IN GREEN**.
12. Check hydraulic pressure [2, fig. 4-37] – **IN GREEN**.

Repeat above procedures for right engine.

Before Taxi

1. ATC clearance – **OBTAINED** from appropriate authority. Set radios accordingly.
2. Bleed air:
 - a. Bleed air switch [1, fig. 4-39] – **NORMAL**.
3. Stall warnings:
 - a. Both stall warning switches [4, 6, fig. 4-27] – Check **ON**. Check annunciators **OFF**.
4. Anti-skid power:
 - a. Anti-skid power switch [8, fig. 4-27] – **ON**.
5. Primary & secondary inverters:
 - a. Primary & secondary inverter switches [10, 12, fig. 4-27] – **CHECK ON**.
6. Avionics:
 - a. Radio master switch [14, fig. 4-27] – **CHECK ON**.

7. Set pitch trim switch [3, fig. 4-27] to **NORM**.
8. Auxiliary inverter:
 - a. Auxiliary inverter switch [5, fig. 4-27] – **CHECK OFF**.
9. Windshield defog:
 - a. Windshield defog knob [7, fig. 4-41] – **PULLED**.
10. Avionics:
 - a. Flight director switch [1, fig. 4-16] – **ON**, check FD arms [5, fig. 4-7] **in range** on ADI.
 - b. Check ADI GYRO flag [11, fig. 4-7] – **OUT OF VIEW**.
 - c. Check ADI COMPUTER flag [12, fig. 4-7] – **OUT OF VIEW**.
 - d. Check HSI COMPASS flag [13, fig. 4-8] – **OUT OF VIEW**.
 - e. Set radios and transponder **according to flight plan and ATC clearance**.
 - f. GPS and radar – **ON and SET** (if needed).
11. Flight instruments:
 - a. Set altimeter [1, fig. 4-11] baro.
 - b. Set airspeed bugs [1, fig. 4-9] **as needed** (refer to “Flight Planning”, in section 6).
 - c. Set **initial heading** on HSI [2, fig. 4-8].
 - d. Set **initial course** on HSI [1, fig. 4-8].
 - e. Set RMI [fig. 4-10] **as needed**.
 - f. Set DME head [fig. 4-36] **as needed**.
12. Altitude preselector [4, fig. 4-23]:
 - a. Set initial **ATC clearance altitude**.
13. Cabin pressurization:
 - a. Pressurization controller knob [5, fig. 4-39] set to **planned cruise altitude**.
14. Cabin temperature:
 - a. Bleed air switch [1, fig. 4-39] – **CHECK NORMAL**.
 - b. Set cabin temperature controller knob/switch [1 or 2, fig. 4-40] to **desired temperature**.

15. H-valve:
 - a. Check H-valve gauge [19, fig. 4-35] – **about 1/2.**
 - b. Lower cabin temperature with controller knob/switch [1 or 2, fig. 4-40] **if necessary.**
16. Taxi lights:
 - a. Taxi light switch [20, fig. 4-40] – **AS REQUIRED.**
17. Nose wheel steering:
 - a. Steering lock switch [7, fig. 4-4] – **OFF.** Electrical steering energized.
 - b. Check steer annunciator – **ON.**
18. Anti-skid:
 - a. Anti-skid engage switch (on main panel) [2, fig. 4-15] – **ON.**
19. Aircraft rolling above 5 knots:
 - a. Toe brakes – **APPLY.**
 - b. Verify anti-skid generator lights [5, fig. 4-15] – **FLASHING.**
 - c. Verify aircraft deceleration.
 - d. Toe brakes – **RELEASE.**
20. Flight controls:
 - a. Check – **FREE.**
 - b. Hide control column and yoke [9, fig. 4-1] **if necessary.** *Control columns can be hidden by clicking on their respective boot, refer to section 2 for details.*
21. Spoilers:
 - a. Spoilers switch [24, fig. 4-41] – **ON.**
 - b. Check spoiler annunciator – **ON.**
 - c. Spoilers switch [24, fig. 4-41] – **OFF.**
22. Flaps:
 - a. Flaps switch [25, fig. 4-11] – **as necessary.**
 - b. Check flaps position indicator [1, fig. 4-28] for correct **take-off position.** *Refer to “Flight Planning”, in section 6.*
23. Pitch trim:
 - a. Check [3, fig. 4-14] – **Set for takeoff.**

24. Gyro slave:
 - a. Check gyro slave switch [9, fig. 4-5] on **SLAVE** position.
 - b. Gyro drift switch [8, fig. 4-5] as needed to sync directional gyros with magnetic compass (use the directional gyro drift knob [5, fig. 4-2] for a more precise adjustment).
25. Flight instruments:
 - a. Check all directional indicators as aircraft turns while taxiing.
26. Radio altimeter:
 - a. Radio altimeter power switch [3, fig. 4-13] – **ON.**
 - b. Check all radio ALT flags [13, fig. 4-7] [6, fig. 4-13] – **OUT OF VIEW.**

Before Takeoff



1. No smoking/seat belts sign:
 - a. No smoking switch [9, fig. 4-41] – **NO SMOKING & SEATBELTS** position.
2. Ammeters:
 - a. Check both [5, 7, fig. 4-26] – **Charging.**
3. Engine instruments:
 - a. Check all [fig. 4-25] – **IN GREEN.**
4. Trim & flaps:
 - a. Check [fig. 4-14] [1, fig. 4-28] – **SET.**
5. Transponder:
 - a. Transponder mode knob – **CHECK ON.** *Transponder is always on when avionics is on.*



6. Strobe lights:
 - a. Strobe light switch [11, fig. 4-27] – **ON**.
7. Engine air ignition:
 - a. Engine air ignition switches [1, 16, fig. 4-27] – **ON** if wet or turbulent conditions.
8. Pitot probes:
 - a. Pitot heat switches [1, fig. 4-4] – **both ON**.
9. Engine bleed air:
 - a. Bleed air switch [1, fig. 4-39] – **CHECK NORMAL**.
10. Anti-ice:
 - a. Stabilizer/wing heat switch [3, fig. 4-4] – **AS REQD**.
 - b. Windshield heat switches [4, fig. 4-4] – **AS REQD**.
 - c. Nacelle heat switches [2, fig. 4-4] – **AS REQD**.
11. Annunciator panel:
 - a. Check **no warnings or abnormal indications**.
12. Brakes:
 - a. Brakes – **APPLY**.
13. Nose wheel steering:
 - a. Steering lock switch [7, fig. 4-4] – **ON**. Electrical steering is de-energized and nose wheel is locked.
 - b. Check steer annunciator – **OFF**.

14. Throttles:
 - a. **ADVANCE** throttles [1,3, fig. 4-41] slowly to **take-off power (100% RPM)**.
15. Brakes:
 - a. Brakes – **RELEASE**.

Takeoff Sequence

Notes

- In case of an engine failure, refer to “Abnormal/Emergency Procedures” in section 8 of the manual.
- The GLJ Model 25 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.

1. Accelerate to V_1 :
 - a. If engine fails before V_1 , **ABORT** takeoff. Refer to “Abnormal/Emergency Procedures” in section 8.
 - b. If engine fails after V_1 , **CONTINUE** takeoff. Refer to “Abnormal/Emergency Procedures” in section 8.
2. V_r attained:
 - a. **ROTATE** to **15° pitch**.
3. Angle-of-attack:
 - a. Angle-of-attack indicator [5, fig. 4-6] – **maintain IN GREEN**.
4. Positive rate of climb:
 - a. Landing gear lever [5, fig. 4-28] – **UP**.
 - b. Check landing gear lights [3, fig. 4-



- 28] – **OFF**.
- c. Accelerate to **V₂ + 15**.
- 5. Flaps:
 - a. **Retract** [25, fig. 4-41] on schedule. Refer to “*Maximum Flap Placard Speeds*” in Appendix 1.
- 6. Throttles [1, 3, fig. 4-41]:
 - a. Set **climb power (90% RPM)**.
- 7. Yaw damper:
 - a. Yaw damper button [12, fig. 4-44] – **ON**.
- 8. Accelerate to climb speed:
 - a. **MAX 250 KIAS** if ATC-restricted.
- 9. No smoking/seat belts sign:
 - a. No smoking switch [9, fig. 4-41] – **OFF**.

10,000 Ft. and Climbing



- 1. Engine ignition:
 - a. Engine air ignition switches [1, 16, fig. 4-27] – **OFF**.
- 2. Anti-skid:
 - a. Anti-skid engage switch [3, fig. 4-15] – **OFF**.
- 3. Engine sync:
 - a. Engine sync switch [22, fig. 4-41] – **ON**.
- 4. Altimeters:
 - a. Set baro knob [1, fig. 4-11] to **29.92**.

- 5. Airspeed:
 - a. Autopilot [1, fig. 4-44] or [1, fig. 4-22] – **ENGAGE**.
 - b. Accelerate to **0.7 Mach**.

18,000 Ft. and Climbing to Cruise Altitude

- 1. Pressurization:
 - a. Monitor cabin altitude, rate and differential pressure [6, 7, fig. 4-39].
- 2. Fuel status:
 - a. Ensure fuel burn [15, fig. 4-43] is consistent with flight plan. Refer to “*Flight Planning*”, in section 6.
- 3. Engine instruments:
 - a. Check all within limits.

Before Descent

- 1. Pressurization:
 - a. Set destination field elevation [5, fig. 4-39]. Refer to “*Flight Planning*” in section 6.
- 2. Pitot heat:
 - a. Pitot heat switches [1, fig. 4-4] – **CHECK ON**.
- 3. Anti-ice:
 - a. Stabilizer/wing heat switch [3, fig. 4-4] – **AS REQD**.
 - b. Windshield heat switches [4, fig. 4-4] – **AS REQD**.
 - c. Nacelle heat switches [2, fig. 4-4] – **AS**



REQD.

4. Windshield defog:
 - a. Check windshield defog knob [7, fig. 4-41] – **PULLED**.
 5. Throttles:
 - a. During descent maintain **75% RPM** minimum until 12,000 ft.
 6. Use spoilers [24, fig. 4-41] **as required**.
 7. Radio altimeter:
 - a. Radio altimeter power switch [3, fig. 4-13] – **CHECK ON**.
 8. Altimeters:
 - a. Passing FL180, set baro knob [1, fig. 4-11] to **local setting**.
- a. Spoilers switch [24, fig. 4-41] – **Check OFF**.
 - b. Check spoiler annunciator – **Check OFF**.
5. Anti-skid:
 - a. Anti-skid engage switch [3, fig. 4-15] – **ON**.
 - b. Check anti-skid light [4, fig. 4-15] – **ON**.
 6. Lights:
 - a. Landing lights switch [18, fig. 4-27] – **AS REQD**.
 7. Engine sync:
 - a. Engine sync switch [22, fig. 4-41] – **OFF**.
 8. Engine air ignition:
 - a. Engine air ignition switches [3,4, fig. 4-1] – **ON** if wet or turbulent conditions.

Before Landing



1. No smoking/seat belts sign:
 - a. No smoking switch [9, fig. 4-41] – **NO SMOKING & SEATBELTS position**.
2. Flaps:
 - a. Set **AS REQD** [25, fig. 4-41]. Refer to *“Flight Planning”* in section 6.
3. Landing gear:
 - a. Landing gear lever [5, fig. 4-28] – **DOWN**.
 - b. Check landing gear lights [3, fig. 4-28] – **GREEN**.
4. Spoilers:
 1. Spoilers:
 - a. Spoilers switch [24, fig. 4-41] – **ON**.
 - b. Confirm spoiler annunciator – **ON**.
 2. Thrust reversers (if needed):
 - a. Thrust reverser subthrottles [6, 16, fig. 4-41] – **pulled AFT (F2)**.
 - b. Confirm thrust reverser deployed annunciators [6, 9, fig. 4-34] – **ON**.
 3. Spoilers (after deceleration):
 - a. Spoilers switch [24, fig. 4-41] – **OFF**.
 - b. Confirm spoiler annunciator – **OFF**.
 4. Thrust reversers (if used, after deceleration):
 - a. Thrust reverser subthrottles [6, 16, fig. 4-41] – **pushed FORWARD (F1)**.
 - b. Confirm thrust reverser deployed annunciators [6, 9, fig. 4-34] – **OFF**.

Landing (after Touchdown)

Before Clearing the Runway



1. Nose wheel steering:
 - a. Steering lock switch [7, fig. 4-4] – **OFF**. Electrical steering energized.
 - b. Check steer annunciator – **ON**.

After Clearing the Runway



1. Stall warnings:
 - a. Stall warning switches [1, 16, fig. 4-27] – **OFF**.
2. Flaps:
 - a. Flaps switch [25, fig. 4-41] – **RETRACT**.
 - b. Confirm flaps position indicator [1, fig. 4-28] **UP**.
4. Anti-ice:

- a. Wing and stabilizer heat switch [3, fig. 4-4] – **OFF**.
 - b. Nacelle heat switches [2, fig. 4-4] – **OFF**.
 - c. Windshield heat switches [4, fig. 4-4] – **OFF**.
 - d. Confirm ALL anti-ice annunciator – **OFF**.
 - e. Windshield defog knob [7, fig. 4-41] – **AS REQD**.
5. External lights:
 - a. Strobe light switch [11, fig. 4-27] – **OFF**.
 - b. Landing light switch [18, fig. 4-27] – **OFF**.
 - c. Taxi light switch [20, fig. 4-27] – **AS REQD**.

Shutdown

Once aircraft is parked:

1. Parking brakes:
 - a. Parking brake lever [8, fig. 4-41] – **ON**.
2. Engines:
 - a. Throttles [1, 2, fig. 4-41] – **IDLE (F1)**.
 - b. Thrust reverser subthrottles [6, 16, fig. 4-41] – **pushed FORWARD (F1)**.
 - c. Bleed air switch [1, fig. 4-39] – **OFF**.
 - d. Fuel valve levers [2, 4, fig. 4-41] – **CLOSED**.
 - e. Jet pump switches [11-12, fig. 4-43] – **OFF**.
 - f. Standby pump switches [8-9, fig. 4-43] – **OFF**.
3. Electrical:
 - a. Radio (avionics) master switch [14, fig. 4-27] – **OFF**.
 - b. All electrical switches [fig. 4-27] [fig. 4-28] – **OFF**.

Welcome to your destination!

ABNORMAL / EMERGENCY PROCEDURES

SECTION 8



This section contains the procedures in case of abnormal operation or emergency.

ENGINE FAILURE

Engine Failure on Takeoff

If below V_1 , ABORT TAKEOFF – may require spoilers/thrust reversers 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**:
 - a. Throttle and subthrottle [1, 3, 6, 16, fig. 4-41] – **to IDLE (F1)**.
 - b. Fuel valve lever [2, 4, fig. 4-41] – **CLOSED**.
 - c. Air and manual ignition [6, 11, fig. 4-28] [1, 16, fig. 4-27] – **OFF**.
2. Inform ATC.
3. Evaluate fuel status.

4. Fuel cross-feed switch [3, fig. 4-43] – **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 – **ON**: Identify engine on fire: left [6, fig. 4-31] or right [2, fig. 4-33].
2. Throttle back engine and monitor fire warning annunciator.
3. If fire persists after 10 seconds, press firewall shutoff button [6, fig. 4-31] or [2, fig. 4-33] . Open but-



ton guard first.

4. Confirm firewall shutoff: Pinlight [8, fig. 4-31] or [1, fig. 4-33] – **ON & engine cutoff.**
5. Affected engine – **SECURED**:
 - a. Throttle and subthrottle [1, 3, 6, 16, fig. 4-41] – **to IDLE (F1).**
 - b. Fuel valve lever [2, 4, fig. 4-41] – **CLOSED.**
 - c. Air and manual ignition [6, 11, fig. 4-28] [1, 16, fig. 4-27] – **OFF.**
6. Extinguishers armed: Confirm [4-5, fig. 4-31] or [4-5, fig. 4-33] – **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.





The following check list can be used to prepare and fly the Xtreme Prototypes GLJ Model 25 SE addon without going through the detailed procedures presented in section 7. We recommend that you use this check list only if you are familiar with both your simulation platform and the Model 25's systems and instruments described in sections 4 and 5.

We assume that you have already started your simulation platform, created a flight and configured the simulator with the optimal settings for your system. We also assume that the engines are shut down, power is off and that you are in the virtual cockpit mode.

CHECK LIST AND PROCEDURES

Cockpit Preparation from Cold and Dark Cockpit

1. Parking brake – **SET**.

2. All switches – **OFF**.
3. Check flight controls – **FREE**.
4. Seat – **Adjust armrests**.
5. **Hide** control columns and yoke if necessary.
6. Passenger Oxygen Mask Valve – **AUTO**.
7. Passenger Oxygen Valve – **NORM**.
8. Battery switches – **ON**.
9. Check oxygen quantity gauge – **IN GREEN**.
10. Check emergency air pressure gauge – **IN GREEN**.
11. Check landing gear lever and lights – **DOWN + 3 GREEN**.
12. Both primary and secondary inverter switches – **ON**.
13. Radio (avionics) master switch – **ON**.
14. GPS and radar power switches – **ON**, if

- needed.
15. 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 test button – **OFF**.
 16. Stall warning test:
 - a. Both stall warning switches – **ON**.
Check annunciators **OFF**.
 - b. Stall warning test switch – **ON**.
 - c. Wing selector switch – **LEFT** or **RIGHT**.
 - d. Check angle-of-attack indicators – in **RED**.
 - e. Check stall warning annunciators – **ON** (with audible alert).
 - f. Stall warning test switch – **OFF**.
 17. Fire detection system test:
 - a. Fire detection system test switch – **ON**.
 - b. Check both captain and copilot fire annunciators – **ON** or **FLASHING**.
 - c. Fire detection system test switch – **OFF**.
 18. Anti-skid system test:
 - a. Anti-skid system test switch – **ON**.
 - b. Check anti-skid generator activity lights – **ALL ON**.
 - c. Anti-skid system test switch – **OFF**.
 19. Cabin altitude warning test:
 - a. Cabin altitude warning test switch – **ON**.
 - b. Check cabin altitude annunciator – **FLASHING** (with audible alert).
 - c. Cabin altitude warning test switch – **OFF**.
 20. AFCS test:
 - a. AFCS test switch – **ON**.
 - b. Check all AFCS mode annunciators – **ON**.
 - c. AFCS test switch – **OFF**.
 21. 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**.
 22. Fuel quantity:
 - a. Check **sufficient quantity** for flight.
 - b. Check for **imbalance** between tanks.
 23. Standby gyro:
 - a. Standby gyro power switch – **ON**.
 - b. Check standby gyro operational. Adjust pitch scale if necessary.
 24. Fuel totalizer:
 - a. Check **zero**.
 25. Thrust reversers:
 - a. Thrust reverser annunciators test switch – **ON**, check all thrust reverser annunciators **ON**.
 - b. Thrust reverser annunciators test switch – **OFF**.
 - c. Thrust reverser subthrottles – **pushed FORWARD (F1)**.
 - d. Thrust reverser ARM arm switches – **ARM**.
 - e. Thrust reverser ARM annunciators – **ON**.
 - f. Thrust reverser emergency stow switches – **NORM**.
 - g. Thrust reverser UNSAFE annunciators – **OFF**.
 - h. Thrust reverser DEPLOYED annunciators – **OFF**.

Before Starting Engines

1. Main cabin door – **CLOSED & SECURE**.
2. Check door annunciator – **OFF**.
3. Both battery switches – **CHECK ON**.

4. Rotating beacon switch – **ON**.
5. Strobe lights switch – **ON**.
6. Navigation lights switch – **ON**.
7. Check throttle fuel valves – **CLOSED**.
8. Jet pumps:
 - a. Jet pumps switches – **ON**.
 - b. Check jet pump annunciators – **ON**.
9. Standby pumps:
 - a. Standby pumps switches – **OFF**.

Engine Start

1. Left engine fuel valve lever – **RELEASED**.
2. Left engine throttle – **IDLE position (F1)**.
3. Thrust reverser subthrottle – **pushed FORWARD to IDLE (F1)**.
4. Left engine starter-generator switch – **down to START**.
5. Check **20% RPM**.
6. Monitor EGT gauge and make sure **WITHIN GREEN ARC**.
7. Set left engine starter-generator switch to **GEN** when engine is stable at **IDLE**.
8. Check left engine generator annunciator – **OFF**.
9. Check left engine ammeter – **CHARGING**.
10. Check left engine fuel pressure annunciator – **OFF**.
11. Check left engine oil temperature and pressure – **IN GREEN**.
12. Check hydraulic pressure – **IN GREEN**.

Repeat above procedures for right engine.

Before Taxi

1. ATC clearance – **OBTAINED** from appropriate authority. Set radios accordingly.
2. Bleed air:
 - a. Bleed air switch – **NORMAL**.
3. Stall warnings:
 - a. Both stall warning switches – Check

ON. Check annunciators **OFF**.

4. Anti-skid power:
 - a. Anti-skid power switch – **ON**.
5. Primary & secondary inverters:
 - a. Primary & secondary inverter switches – **CHECK ON**.
6. Avionics:
 - a. Radio master switch – **CHECK ON**.
7. Set pitch trim switch to **NORM**.
8. Auxiliary inverter:
 - a. Auxiliary inverter switch – **CHECK OFF**.
9. Windshield defog:
 - a. Windshield defog knob – **PULLED**.
10. Avionics:
 - a. Flight director switch – **ON**, check FD arms **in range** on ADI.
 - b. Check ADI GYRO flag – **OUT OF VIEW**.
 - c. Check ADI COMPUTER flag – **OUT OF VIEW**.
 - d. Check HSI COMPASS flag – **OUT OF VIEW**.
 - e. Set radios and transponder **according to flight plan and ATC clearance**.
 - f. GPS and radar – **ON and SET** (if needed).
11. Flight instruments:
 - a. Set altimeter baro.
 - b. Set airspeed bugs **as needed**.
 - 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 preselector:
 - a. Set initial **ATC clearance altitude**.
13. Cabin pressurization:
 - a. Pressurization controller knob set to **planned cruise altitude**.
14. Cabin temperature:
 - a. Bleed air switch – **CHECK NORMAL**.

- b. Set cabin temperature controller knob/switch to **desired temperature**.
15. H-valve:
 - a. Check H-valve gauge - **about 1/2**.
 - b. Lower cabin temperature with controller knob/switch **if necessary**.
 16. Taxi lights:
 - a. Taxi light switch - **AS REQUIRED**.
 17. Nose wheel steering:
 - a. Steering lock switch - **OFF**. Electrical steering energized.
 - b. Check steer annunciator - **ON**.
 18. Anti-skid:
 - a. Anti-skid engage switch (on main panel) - **ON**.
 19. Aircraft rolling above 5 knots:
 - a. Toe brakes - **APPLY**.
 - b. Verify anti-skid generator lights - **FLASHING**.
 - c. Verify aircraft deceleration.
 - d. Toe brakes - **RELEASE**.
 20. Flight controls:
 - a. Check - **FREE**.
 - b. Hide control column and yoke **if necessary**.
 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**.
 23. Pitch trim:
 - a. Check - **Set for takeoff**.
 24. Gyro slave:
 - a. Check gyro slave switch on **SLAVE** position.
 - b. Gyro drift switch as needed to sync directional gyros with magnetic compass (use the directional gyro drift

- knob for a more precise adjustment).
25. Flight instruments:
 - a. Check all directional indicators as aircraft turns while taxiing.
 26. Radio altimeter:
 - a. Radio altimeter power switch - **ON**.
 - b. Check all radio ALT flags - **OUT OF VIEW**.

Before Takeoff

1. No smoking/seat belts sign:
 - a. No smoking switch - **NO SMOKING & SEATBELTS position**.
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 - **CHECK ON**.
6. Strobe lights:
 - a. Strobe light switch - **ON**.
7. Engine air ignition:
 - a. Engine air ignition switches - **ON** if wet or turbulent conditions.
8. Pitot probes:
 - a. Pitot heat switches - **both ON**.
9. Engine bleed air:
 - a. Bleed air switch - **CHECK NORMAL**.
10. Anti-ice:
 - a. Stabilizer/wing heat switch - **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. Nose wheel steering:
 - a. Steering lock switch – **ON**. Electrical steering is de-energized and nose wheel is locked.
 - b. Check steer annunciator – **OFF**.
14. Throttles:
 - a. **ADVANCE** throttles slowly to **take-off power (100% RPM)**.

- a. Set **climb power (90% RPM)**.
7. Yaw damper:
 - a. Yaw damper button – **ON**.
8. Accelerate to climb speed:
 - a. **MAX 250 KIAS** if ATC-restricted.
9. No smoking/seat belts sign:
 - a. No smoking switch – **OFF**.

15. Brakes:
 - a. Brakes – **RELEASE**.

10,000 Ft. and Climbing

Takeoff Sequence

Notes

- In case of an engine failure, refer to “Abnormal/Emergency Procedures” in section 8 of the manual.
- The GLJ Model 25 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.

1. Engine air ignition:
 - a. Engine air ignition switches – **OFF**.
2. Anti-skid:
 - a. Anti-skid engage switch – **OFF**.
3. Engine sync:
 - a. Engine sync switch – **ON**.
4. Altimeters:
 - a. Set baro knob to **29.92**.
5. Airspeed:
 - a. Autopilot – **ENGAGE**.
 - b. Accelerate to **0.7 Mach**.

1. Accelerate to V_1 :
 - a. If engine fails before V_1 , **ABORT** take-off.
 - b. If engine fails after V_1 , **CONTINUE** takeoff.
2. V_r attained:
 - a. **ROTATE** to **15° pitch**.
3. Angle-of-attack:
 - a. Angle-of-attack indicator – **maintain IN GREEN**.
4. Positive rate of climb:
 - a. Landing gear lever – **UP**.
 - b. Check landing gear lights – **OFF**.
 - c. Accelerate to **$V_2 + 15$** .
5. Flaps:
 - a. **Retract** on schedule.
6. Throttles:

18,000 Ft. and Climbing to Cruise Altitude

1. 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 – **CHECK ON**.
3. Anti-ice:

- a. Stabilizer/wing heat switch – **AS REQD.**
 - b. Windshield heat switches – **AS REQD.**
 - c. Nacelle heat switches – **AS REQD.**
4. Windshield defog:
 - a. Check windshield defog knob – **PULLED.**
 5. Throttles:
 - a. During descent maintain **75% RPM** minimum until 12,000 ft.
 6. Use spoilers **as required.**
 7. Radio altimeter:
 - a. Radio altimeter power switch – **CHECK ON.**
 8. Altimeters:
 - a. Passing FL180, set baro knob to **local setting.**

Before Landing

1. No smoking/seat belts sign:
 - a. No smoking switch – **NO SMOKING & SEATBELTS position.**
2. Flaps:
 - a. Set **AS REQD.**
3. Landing gear:
 - a. Landing gear lever – **DOWN.**
 - b. Check landing gear lights – **GREEN.**
4. Spoilers:
 - a. Spoilers switch – **Check OFF.**
 - b. Check spoiler annunciator – **Check 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 air ignition:

- a. Engine air ignition switches – **ON if wet or turbulent conditions.**

Landing (after Touchdown)

1. Spoilers:
 - a. Spoilers switch – **ON.**
 - b. Confirm spoiler annunciator – **ON.**
2. Thrust reversers (if needed):
 - a. Thrust reverser subthrottles – **pulled AFT (F2).**
 - b. Confirm thrust reverser deployed annunciators – **ON.**
3. Spoilers (after deceleration):
 - a. Spoilers switch – **OFF.**
 - b. Confirm spoiler annunciator – **OFF.**
4. Thrust reversers (if used, after deceleration):
 - a. Thrust reverser subthrottles – **pushed FORWARD (F1).**
 - b. Confirm thrust reverser deployed annunciators – **OFF.**

Before Clearing the Runway

1. Nose wheel steering:
 - a. Steering lock switch – **OFF.** Electrical steering energized.
 - b. Check steer annunciator – **ON.**

After Clearing the Runway

1. Stall warnings:
 - a. Stall warning switches – **OFF.**
2. Flaps:
 - a. Flaps switch – **RETRACT.**
 - b. Confirm flaps position indicator **UP.**
4. Anti-ice:
 - a. Wing and stabilizer heat switch – **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. External lights:
- a. Strobe light switch – **OFF**.
 - b. Landing light switch – **OFF**.
 - c. Taxi light switch – **AS REQD**.

Shutdown (Aircraft Parked)

Once aircraft is parked:

1. Parking brakes:
 - a. Parking brake lever – **ON**.
2. Engines:
 - a. Throttles – **IDLE (F1)**.
 - b. Thrust reverser subthrottles – **pushed FORWARD (F1)**.
 - c. Bleed air switch – **OFF**.
 - d. Fuel valve levers – **CLOSED**.
 - e. Jet pump switches – **OFF**.
 - f. Standby pump switches – **OFF**.
3. Electrical:
 - a. Radio (avionics) master switch – **OFF**.
 - b. All electrical switches – **OFF**.

APPENDICES

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XTREME PROTOTYPES GLJ MODEL 25 SPECIAL EDITION VIRTUAL AIRCRAFT REFERENCE INFORMATION

For detailed instructions on how install and fly this addon on your simulation platform, refer to the GLJ Model 25 SE Flight Manual.

Maximum Gross Weight - GLJ Model 25D	15,000 lbs.
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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, refer to the GLJ Model 25 SE Flight Manual. For explanations of speeds used on this tab, see "V-speeds" in your simulator's Learning Center.

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



These books, manuals and films provided us with invaluable information during the development of the GLJ Model 25 Special Edition addon and we highly recommend them to all Learjet fans. Most are out of print but still available online or at local public libraries.

Books

Learjets: The World's Executive Aircraft

Donald J. Porter
Publisher: Tab Books (1990)
Paperback: 120 pages
ISBN: 0-8306-2440-6

Learjets

Geza Szurovy
Publisher: Motorbooks International (1996)
Paperback: 96 pages
ISBN: 0-7603-0049-6

Flying the Classic Learjet (about Models 35/36)

Peter D. Condon
Publisher: Peter D. Condon (2007)
Paperback: 210 pages.
ISBN: 978-0-646-48135-7

Manuals

Learjet 20 Series Pilot Training Manual Volume 1 — Maneuvers and Procedures

Publisher: Flight Safety (1998)
Paperback: 65 pages

Learjet 20 Series Pilot Training Manual Volume 2 — Aircraft Systems (Second Edition)

Publisher: Flight Safety (2005)
Paperback: 373 pages

Learjet 24/25

Cockpit Reference Handbook
Publisher: CAE SimuFlite (2010)
Paperback: 592 pages

Gates Learjet 25B/C/D/F Manuals

Publisher: Gates Learjet Corporation (1969 and 1977)
Paperback: 1500 pages (approx.)

DVDs (Video)

Ameristar Learjet 24/Falcon 20 DVD

Studio: WorldAirRoutes
DVD Release Year: 2005
Run Time: 185 minutes



Answers to most technical questions can be found in the present manual. We've added a "Frequently Asked Questions" section at the end of the manual to help you find answers to most questions and issues you may encounter while installing or flying the GLJ Model 25 SE addon on your simulation platform.

Known issues are discussed in the "Known Issues" section.

If you don't find what you are looking for in the present manual and need some assistance, please contact us. We'll try our best to answer you within one or two business days.

HOW TO CONTACT US

The best way to reach us is via the contact forms on our website.

For sales support or general inquiries – If you need customer support or simply want to send us a message, please use our general contact form:

<https://xtremeprototypes.com/en/shopcustcontact.asp>

For technical support – If you need technical support for your addon, please fill out our technical support request form:

<https://xtremeprototypes.com/en/shopcustcontactsupport.asp>

Make sure all the fields in the form are filled and provide us with as much information as possible about your technical issue.

PATCHES AND UPDATES

Please visit our "Downloads" section on our website for the latest patches and updates for your addon:

<http://xtremeprototypes.com/en/downloads.asp>

WE NEED YOUR FEEDBACK

Our products are designed to evolve with time, according to the feedback we receive from our most valued users and from anyone interested in our products, flight simulation or aviation in general. Please let us know your comments, ideas and suggestions. We thank you for helping us developing great addons.

If you were involved in the development of the real Gates Learjet Model 25 during the 1960's/70's and would like to help us in improving this addon, it would be an honor to hear from you.

FREQUENTLY ASKED QUESTIONS

APPENDIX 4



Answers to most questions can be found in the present manual. Answers to other questions may be found in this section.

The FAQ section on our website is updated regularly, so we encourage you to visit frequently.

GENERAL

What do I get with my GLJ Model 25 SE addon?

Your software license gives you:

- Ten variations of the GLJ Model 25 SE addon, for the three supported simulation platforms (FSX, FSX: Steam® Edition and Prepar3D® v3.x). The version for Prepar3D® v3.x is a native version. The addon is also fully compatible with Prepar3D® v1.x and v2.x.
- A 150-page printable PDF manual (the present document).
- Free patches and updates.
- Free personalized customer and technical support via email, in English or French.

For the list of features included with the GLJ Model 25 SE addon, refer to "Addon Description", in section 1 of the manual.

Is the GLJ Model 25 Special Edition addon (version 2.0) an update to your previous 20 Series addons (version 1.0)?

No. The new GLJ Model 25 Special Edition is a completely redesigned product that features new high-resolution models and textures, an entirely new virtual cockpit with full 3D gauges, additional systems and functionalities, new animations, new cockpit sounds and an updated 150-page flight manual, among many other features. Version 1.0 is now a legacy product.

Is the manual available in print form or PDF?

Yes. A printable PDF manual (the present document) is available for this addon. Registered users can print copies of the manual for their own use.

You can use the table of contents on the left to browse the different chapters and sections.

Is there an online manual available for this addon?

Not at this time. Although we believe online manuals are more convenient and have a number of advantages over PDF manuals, like being always up-to-date, most of our X-15A-2 SE addon users didn't like the idea and urged us to produce a printable PDF manual for their favorite rocket plane addon. Unless there is a significant demand for an online manual for the GLJ Model 25 SE addon, only the PDF version will be available.

Are all the Learjet 25 systems simulated?

Nearly all systems that can be reproduced in Microsoft® Flight Simulator X or Lockheed Martin® Prepar3D® are simulated, except where otherwise noted in the documentation.

Due to limitations in the currently available simulation platforms, some systems are not totally functional. We have however strived to provide you with working switches and knobs even though the underlying systems are not or partially simulated. This allows you to fully follow the procedures outlined in the manual for a more realistic experience.

The virtual cockpit allows for complete IFR flight, and features all the instruments, annunciators, displays, switches and knobs necessary to do so.

How realistic is the GLJ Model 25 SE add-on?

The operation of the add-on is very similar to the operation of the real aircraft. Nearly all systems, gauges, switches, light indicators and instruments are functional and behave like their original counterparts. However, while we regard this add-on more as a mini aircraft simulator rather than a game, we cannot pretend that it is one hundred percent historically or technically accurate or that it truly reproduces all the flight characteristics of the real 20 Series aircraft, which would be practically impossible to achieve on the currently available simulation platforms. Nevertheless, we tried our best to develop a unique and sophisticated product that looks and behaves as realistically as possible, within the limitations of the simulator.

The Gates Learjet 20 Series aircraft redefined business aviation during the 1970's, flying high above the weather at transonic speeds. The 20 Series add-ons strive to bring you the actual feeling of flying a high-performance aircraft in the civilian world.

The full 3D gauges have been carefully designed and programmed based on the original analog instruments found in the real business jets. Aircraft engines and most systems pre-

sent in the real aircraft are also simulated, except where otherwise noted.

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.

The 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.

I am Learjet fan but a beginner desktop pilot. Is the GLJ Model 25 SE add-on too complex for me?

While this add-on allows for comprehensive procedural IFR flight, we at Xtreme Prototypes recognize that not everyone has the time, patience or inclination to read, understand and learn a complete manual, which is why the our GLJ Model 25 SE add-on remains simple to operate. Anyone who masters the simulator's default jets can fly the Model 25 add-on. It's up to the user to decide which level of complexity he/she wants to achieve.

If you are a true Learjet fan and already have some knowledge about the aircraft and a desire to learn more, this add-on is for you. This is your chance to go beyond books and films and jump in the cockpit of this extraordinary aircraft in a true simulation environment.

All the necessary information to fly the GLJ Model 25 SE add-on is in the manual. There are two sets of instructions: a detailed set, which contains the entire procedures involved in a real 20 Series flight and a condensed set called "quick-start procedures", for those who want a shorter check list.

The add-on reproduces most of the functionalities of the real Model 25 business jet so, like the real Learjet pilots, the virtual pilot needs some time to become familiar with the complex operation of the aircraft and be able to

perform all the required procedures described in the manual.

If you're feeling overwhelmed by the cockpit of the GLJ Model 25 SE addon, we suggest giving the manual a chance, as it was written with non-experienced pilots in mind. The aircraft is quite rewarding once mastered, but as most things in life, practice makes perfect!

Does my GLJ Model 25 SE addon come with a virtual cockpit?

Yes. The GLJ Model 25 SE addon contains a completely redesigned, fully functional 3D virtual cockpit. Virtual cockpits allow for a total 3D immersion into the Model 25 flying environment. You must be in the virtual cockpit view to operate this addon.

Xtreme Prototypes' full-3D virtual cockpits don't have projected low-resolution (flat) 2D gauges found in many virtual cockpits, except for LCD screens which are flat by nature, such as in the GPS. They contain fully modeled high-resolution gauges with real 3D moving components.

What is a full-3D virtual cockpit?

Most virtual cockpits found in other addons include flat 2D gauges that are "projected" on the main panel and other panels in the cockpit. When viewed from an angle, these gauges appear flat even though they might contain buttons, knobs and other movable parts that should not be flat. 2D gauges are generally created with layers of drawings (bitmaps) that are animated, while some may also include vector text and graphics. The stock FSX Garmin 500 GPS unit is a good example of a "flat" 2D gauge that contains both bitmaps and vector graphics. Viewed from the side, the knobs and buttons look flat. Also, many 2D gauges use low-resolution graphics and are limited in size.

Xtreme Prototypes' full-3D virtual cockpits don't have projected low-resolution (flat) 2D gauges found in many virtual cockpits, except for LCD screens which are flat by nature, such as in the GPS. They contain fully modeled high-resolution gauges with real 3D moving components.

Does my GLJ Model 25 SE addon come with 2D panels?

No. Xtreme Prototypes next generation addons no longer include 2D panels found in older products. They are replaced by full-3D virtual cockpits. You must be in the virtual cockpit view to operate this addon.

Is a paintkit available so I can repaint the aircraft?

Yes. A comprehensive paintkit (Adobe® Photoshop® CS5 file format) is available for registered users. Please visit our "Downloads" section:

<http://xtremeprototypes.com/en/downloads.asp>

What is the maximum speed of my GLJ Model 25 SE addon?

Your GLJ Model 25 SE addon can cruise at Mach 0.82 at altitude.

What is the maximum altitude than can be reached with my GLJ Model 25 SE addon?

Your GLJ Model 25 SE addon can reach FL510 at lighter weights or after fuel has been spent (51,000 feet is the absolute ceiling).

45,000 feet is the service ceiling.

Is there a GPS/NAV toggle switch provided with this addon?

Yes. A GPS/NAV toggle switch is provided on the main panel to allow for full GPS/Autopilot navigation.

Although the GLJ Model 25 is a 1970's aircraft intended for classical VOR/ADF navigation, we've retrofitted the cockpit so the virtual pilot can chose between NAV or GPS navigation when in autopilot mode.

Also, please note that there is no FMS, CAT III Auto-Land, Tacan or head-up display.

Is the radar unit on the main panel functional?

No. However, users can replace the radar panel with a functional third-party radar unit. See next topic.

Developing a fully-functional radar unit for this addon was beyond the scope of this project.

Can I replace the default GPS unit with a third-party GPS or glass cockpit?

Yes. Two optional, user-selectable and configurable instrument panels can replace the default GPS/radar panel on the main instrument panel in the virtual cockpit. Users can install their own 2D gauges, GPS, radar or glass cockpit systems acquired from third-party vendors in the virtual cockpit on these two optional panels. This is done by modifying a few lines in the addon's "panel.cfg" file. Users can cycle between two different optional panels and the default GPS/radar panel by clicking the icon marked "OPT PANEL" above the upper right corner of the GPS.

We cannot guarantee support for third-party gauges and we didn't try them all. However, as a rule of thumb, as long as these systems are contained in standard 2D gauges (XML or DLL) that are compatible with P3D and/or FSX, you can add them to the optional panels in the VC. The GLJ Model 25 SE addon is a standard P3D/FSX aircraft. If you were able to add these systems to the VCs of default (stock) aircraft or other addons on your simulation platform, you shouldn't normally have any problem adding them to the GLJ Model 25 SE addon.

For example, by default we've installed the stock FSX Lear 45 PFD on the first optional panel and the FSX Lear 45 EICAS on the second optional panel. These two gauges are standard XML gauges contained in a cabinet file included with FSX. By clicking the icon marked "OPT PANEL" located right above the default GPS unit, you can cycle between the default GPS/radar panel and the two other optional panels (PFD and EICAS). You are only limited by the space available on these two panels, so you probably won't be able to have both your third-party GPS and radar units on

the same panel, unless you change their size. Space is limited on the Model 25 main panel which was not originally designed for modern instruments with large LCD screens. In this case, you would install your GPS on one panel and your radar on the second panel. Please note that a little experimentation may be required to fit your third-party gauges in the optional panels (ideal size and position).

Most third-party gauges are installed like standard P3D/FSX gauges in the virtual cockpit. Instructions are provided in section 4 of the manual to show you how to modify the addon's "panel.cfg" file to install third-party gauges and systems. Third-party gauges may be installed differently and may have their own installers, so please make sure that they are standard P3D/FSX gauges fully compatible with your simulation platform. Always backup the "panel.cfg" file before attempting to install third-party gauges in your new GLJ Model 25 SE addon.

Of course, these gauges can also be added as "popup" gauges available from the simulator's top menu. For example, you can use them for a better view in detached windows on a separate monitor as the display in the virtual cockpit will generally be too small. In all cases, you will need to modify the "panel.cfg" file accordingly.

Refer to the instructions provided with your third-party gauges for details about installation and to your simulation platform's SDK for more information about how to modify the addon's "panel.cfg" file.

While retrofitting the main panel with modern instruments can be fun, it must be remembered that the GLJ Model 25 is a 1970's aircraft equipped with the original analog instruments from this era. We've spent a lot of time and effort recreating the original cockpit, carefully modelling each mechanical device with all the necessary moving parts in full 3D. These are not drawings found in projected (flat) 2D gauges like in most virtual cockpits but real 3D moving components. All this in order to bring you the actual spirit and feeling of flying this type of aircraft at a time when LCD screens didn't exist. This is why we wanted to keep the look and feel of the original instrument panel while at the same time giving users the possibility to add their own gauges

acquired from third-party vendors, even though space was rather limited. This is how most Model 25 aircraft that are still flying today have been retrofitted. It was not our intent to create a full glass cockpit for this historical addon.

Refer to section 4 in the manual for more details.

Can I replace the display (screen) in both the default GPS and radar units with displays from my own third-party gauges?

Yes. This would require some modifications in the addon's "panel.cfg" file. Refer to section 4 of the manual for more details. Please note that replacing the display (what appears on the screen) will have no effect on the buttons which are at this time hard-coded in the 3D model. For full button functionality, you will need to install the full 2D gauge, including screen and buttons, on one of the supplied optional instrument panels - see previous topic.

Are there passengers in the cabin?

No. We model airplanes, not people. Over the years, we found out that whoever characters we've put in the cabin, some users didn't like it. Some even didn't like the pilots we've put in the cockpit. So we've decided to install the pilots only in the exterior model and no passenger in the cabin. We preferred to keep those precious polygons for other, more important aircraft features. Note that the pilots are not present in the cockpit when the aircraft is sitting on the ground and power is off.

Where's the parabrake?

Although a parabrake was installed on some 20 Series aircraft, your GLJ Model 25 SE addon doesn't have one. Thrust reversers on both engines are now available in this new version. Use the thrust reversers and the spoilers instead of the parabrake for deceleration.

SOFTWARE INSTALLATION AND SETUP

I have trouble downloading my addon. The file transfer keeps getting interrupted. What can I do?

The two installers for the GLJ Model 25 addon (one for each supported simulation platform) are contained in a 1.5 GB "zip" file. Normally, it should take no more than about 10 to 15 minutes to download the file on a high speed Internet connection.

If you don't have a high speed Internet connection, or experience intermittent connection issues, you may be timed out or disconnected while transferring the file. If you are not able to download your addon after several attempts, we recommend using another and better connection either at work (if allowed) or at a parent's or friend's. If you don't have access to another connection, and still cannot solve the issue, please contact us for other options.

We recommend using your Internet browser (Internet Explorer, Chrome, etc.) to download your addon. Do not use a third-party download manager or you may experience problems that were reported by a number of users.

Some antivirus programs may also prevent you from downloading your addon. Make sure your antivirus does not interfere with your downloads. Also, some antivirus won't allow you to download "zip" (or ".exe") files. You can disable your antivirus program temporarily (while downloading your addon) to solve this issue. Don't forget to reactivate your antivirus after the file is downloaded.

What are the minimum system requirements for installing the GLJ Model 25 SE addon?

The GLJ Model 25 SE is an add-on software package which requires Microsoft® Flight Simulator X with Acceleration Expansion Pack (or Flight Simulator Gold fully installed), Microsoft® Flight Simulator X: Steam® Edition or Lockheed Martin® Prepar3D® v3.x, v2.x or v1.x to be installed on your computer. The software is not a stand-alone product and cannot be used without the underlying simulation

platform. Make sure that your simulation platform has been properly installed according to the instructions provided by the manufacturer.

Xtreme Prototypes addons are designed to take advantage of the new and more powerful personal computer systems that are available today. They require better video cards and more processing power and RAM than other more conventional addons. Increased performance will be noticed on more powerful systems.

Refer to "Minimum System Requirements" in section 2 of the manual for more details.

How do I install the addon I've purchased?

Refer to "Software Installation" in section 2 of the manual.

The installer asks for my product activation key. Where do I find it?

Your activation key was issued when you purchased your addon online and was sent to you by email. Please contact us if you did not receive your activation key or were unable to download your addon after your order was processed.

Can I re-download my addon if I lose the original file?

Yes. You can download your addon again at any time by logging in to our website. Once you are logged in, on the "Your Account" page, select "Review previous orders", click on your order number, and click the link to download your addon. You may download the file a limited number of times. After that, you will need to contact us if you need the file again.

Please note that the replacement of lost downloaded files is not guaranteed. You must make backup copies for your own personal use in the future. Please refer to the end-user software agreement for more details.

I've lost my personal activation key, can

I contact you to obtain another one?

Yes. You will be reissued the same activation key that is linked to your original purchase. Please use our general contact form:

<https://xtremeprototypes.com/en/shopcustcontact.asp>

Make sure you are using the same email address as the one that appears on your account page on our website. You will also need your original order number (the one you received by email or that appears on your account page).

I've installed my simulation platform in a custom folder, will the installer detect it?

No, but you can specify the correct path/folder during the installation process. Refer to "Installing your Addon" in section 2 of the manual.

Is the GLJ Model 25 SE addon compatible with Microsoft® Flight Simulator X?

Yes. The GLJ Model 25 SE addon is optimized for the latest versions of Microsoft® Flight Simulator X with Acceleration Expansion Pack (or Flight Simulator X Gold fully installed). It is not compatible with FSX with Service Pack 2 alone. You will need to install the Acceleration Expansion Pack in addition to FSX SP2. Make sure that you install the correct addon version for your simulation platform. Refer to "Compatibility, Performance and Settings" in section 2 of the manual for more information.

Is the GLJ Model 25 SE addon compatible with Microsoft® Flight Simulator X: Steam® Edition?

Yes. The GLJ Model 25 SE addon is fully compatible with Microsoft® Flight Simulator X: Steam® Edition. A special installer is available in our "Downloads" section (free for registered users).

Please note that FSX: Steam® Edition is installed in a different way to the boxed version

and occupies a different location on your computer. For this reason, we recommend using the special installer for FSX: Steam® Edition. Refer to section 2 of the manual for more details.

Is the GLJ Model 25 SE addon compatible with Microsoft® Flight Simulator 2004?

No. Refer to "Compatibility, Performance and Settings" in section 2 of the manual for more information.

Is the GLJ Model 25 SE addon compatible with Lockheed Martin® Prepar3D®?

Yes. The GLJ Model 25 SE addon is optimized for the latest versions of Lockheed Martin® Prepar3D® v3.x, v2.x and v1.x. The version for Prepar3D® v3.x is a native version. Make sure that you install the correct addon version for your simulation platform. Refer to "Compatibility, Performance and Settings" in section 2 of the manual for more information.

Is the native version for Prepar3D® v3.x compatible with Prepar3D® v2.x, v1.x and Flight Simulator X?

No. The version for Lockheed Martin® Prepar3D® v3.x is a native version and it is not compatible with previous versions of Prepar3D® or Microsoft® Flight Simulator X. Make sure that you install the correct addon version for your simulation platform. Refer to "Compatibility, Performance and Settings" in section 2 of the manual for more information.

Is the addon version for Flight Simulator X compatible with Prepar3D® v3.x, v2.x and v1.x?

Yes. However, we recommend installing the correct version for your simulation platform to avoid special effect issues and to benefit from the new features in Prepar3D® v3.x. The version for FSX can be used for installation in Prepar3D® v2.x and 1.x.

Refer to "Compatibility, Performance and Set-

tings" in section 2 of the manual for more information.

Is the GLJ Model 25 SE addon compatible with Laminar Research® X-Plane®?

Not at this time.

Is this addon compatible with the latest version of Windows®?

Yes. Windows® 10/8.1/8/7 or later is required to install and fly this addon. However, because of issues related to installation and performance, we cannot provide support for this addon if installed under Windows® Vista™ or Windows® XP®. As a rule of thumb, if your simulation platform is running properly on your computer, and assuming that your computer meets the minimum system requirements, you should be able to install and fly the GLJ Model 25 SE addon without major issues.

Depending on security settings and permissions in Windows® Vista™, you may not be able to install critical software components (DLLs) and the addon will not work properly. There is no fix or workaround at this time.

Is this addon compatible with Windows® Vista™, XP®?

Windows 10/8.1/8/7 or later is required in order to install and operate this addon (see "Minimum System Requirements" in section 2 of the manual). We are sorry we cannot support this addon if installed under Windows® Vista™ or Windows® XP®.

Is this addon compatible with the latest version of DirectX®?

Yes. Refer to your simulation platform's manual for more information about the recommended version of DirectX®. However, we found that Flight Simulator X performs better under DirectX® 9. This is not an issue with Prepar3D®. Please note that Prepar3D® v3.x and v2.x require DirectX® 11 (and a DirectX® 11-compatible video card) . Refer to

"Compatibility, Performance and Settings" in section 2 of the manual for details.

My GLJ Model 25 SE addon has no cockpit. How can this be possible?

If you cannot see the virtual cockpit, make sure you are in the virtual cockpit view ("F9" on your keyboard). The GLJ Model 25 SE addon has no 2D cockpit. Refer to "Full-3D Virtual Cockpits" in section 4 of the manual for details.

I've installed my new GLJ Model 25 SE addon but I only see one aircraft variation in the "Select Aircraft" page. Where are the other variations?

If some GLJ Model 25 SE aircraft variations are missing and only one airplane seems to be installed, make sure the "Show all variations" option is selected in the "Select Aircraft" (or "Select Vehicle") page. Refer to "Installing your Addon" in section 2 of the manual for more information.

I hear no cockpit sounds. How can I solve this issue?

Make sure your speakers are turned on and that the sound volume is properly adjusted on your computer sound system. If you can hear the basic aircraft sounds such as the engines, the flaps of the landing gear sounds, and you still cannot hear the custom cockpit sounds such as when a switch is clicked, it may be because the sound DLL was not installed properly during the installation process. You'll need to reinstall the addon to solve this issue.

If you are using FSX, make sure that you accept installing the sound DLL on your system when asked (you should click "YES" or "RUN" when the dialogs appear in the lower right corner of your Windows® desktop and when starting your simulation platform for the first time after installing the addon). This needs to be done only once. Refer to "Installing your Addon" and "Adjusting the Sound Volume" for more information.

Some aircraft parts and textures are missing on both the exterior model and the virtual cockpit and the addon is not working properly. What's wrong?

Try resetting the flight or restarting the simulator. If this does not solve the issue, it may be because some important software components are missing or were not installed properly during the installation process. You may need to reinstall the addon to solve this issue.

If you are using FSX, make sure that you accept installing the addon's system DLL when asked (you should click "YES" or "RUN" when the dialogs appear in the lower right corner of your Windows® desktop and when starting your simulation platform for the first time after installing the addon). This needs to be done only once. Refer to "Installing your Addon" in section 2 of the manual for more information.

How do I remove the GLJ Model 25 SE addon from my computer?

The addon can be removed from the Windows Control Panel (Program/Uninstall a Program), like any other program.

Do not use the uninstallation program (uninstall.exe) directly. The uninstallation program is located in the application folder that was created during the installation process and is used by the Windows Control Panel.

The aircraft cannot be selected in the "Select Aircraft" page. Why? (FSX)

It's been reported during the beta tests that some third-party addons or FS utilities may interfere with the correct installation of the GLJ Model 25 SE addon. These programs may also alter the appearance of your add-on aircraft by modifying the textures and the materials in the model files. If the different GLJ Model 25 aircraft variations are correctly displayed in the "Select Aircraft" page but you are unable to select any one of them, or worse if selecting them causes FSX to crash, suspect such third-party programs. For unknown reasons, these programs may prevent the addon's system DLLs from being "trusted" by FSX and

the addon will not work. Remove these programs to solve the issue.

Also, depending on security settings and permissions in Windows® Vista™, you may not be able to install critical software components (DLLs) and the addon will not work. We are sorry we cannot support this addon if installed under Windows® Vista™ or Windows® XP®. Windows 10/8.1/8/7 is required in order to install and operate this addon (see "Minimum System Requirements" in section 2 of the manual for details).

Some parts are missing in the virtual cockpit, others appear distorted and geometric figures are flying apart (Prepar3D® v3.x)

There is a known issue in Lockheed Martin® Prepar3D® v3.x that affects geometry when a certain number of animations is exceeded in a model. Lockheed Martin® acknowledges that there is almost certainly a bug in the model optimization routine and that they would certainly like to fix it in a future release.

Until this fix becomes available, you will need to modify one line in the "Prepar3D.cfg" file in order for your GLJ Model 25 SE addon for P3Dv3 to display properly in the sim. Please note that this change is only required if you install the native version for P3Dv3. The change is not required if you install the FSX/FSX Steam® version in P3Dv3.

Please note that the native version for P3Dv3 is fully animated and has more features than the version for FSX. In order to bring this to you, we needed to exceed the number of animated objects that is currently supported by the sim before the bug starts creating problems. Under these conditions, it is normal for the interior model to display many geometry issues such as missing parts, distorted objects, flying geometric figures, etc.

To solve this until a fix is available, you will need to modify the "Prepar3D.cfg" file located in `C:\Users\your name\AppData\Roaming\Lockheed Martin\Prepar3D v3`. It is not Xtreme Prototypes' policy to modify the user's "Prepar3D.cfg" file during the installation process. So this needs

to be done manually by the user.

```
[SIM]
SYSCLOCK=0
OPTIMIZE_PARTS=0
```

Should you decide to make this change, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding.

AIRCRAFT OPERATION AND PROCEDURES

How do I take off and fly my GLJ Model 25 SE addon?

All the necessary information to fly the GLJ Model 25 SE addon is in the manual. There are two sets of instructions: a detailed set, which contains the entire procedures involved in a real 20 Series flight and a condensed set called "quick-start procedures", for those who want a shorter check list.

What's the easiest way to start the engines without going through the entire check list and procedures?

Going through the procedures makes for a much more enjoyable and realistic experience. That being said, **CTRL-E** will start the engines, but you may have to activate certain custom systems manually, depending on the previous flight's saved state. Most important, the inverters switches must be turned **ON** for the avionics (radios, GPS, etc.) to function. Make sure the radio master switch (avionics) is also turned **ON** or the radios will not operate. Refer to "Normal Procedures and Check List" in section 7 of the manual for more details.

Can I use "CTRL+E" to start the engine?

Yes. But going through the procedures makes for a much more enjoyable and realistic experience. That being said, **CTRL-E** will start the engines, but you may have to activate certain custom systems manually, depending on the previous flight's saved state. Most important, the inverters switches must be turned **ON** for the avionics (radios, GPS, etc.) to function.

Make sure the radio master switch (avionics) is also turned **ON** or the radios will not operate. Refer to "Normal Procedures and Check List" in section 7 of the manual for more details.

Why are some of the aircraft systems reset when a new GLJ Model 25 SE aircraft is loaded?

Only some systems are reset, but not all. This is because the GLJ Model 25 SE addon uses its own proprietary internal variables in addition the simulator's variables. Unfortunately, due to software limitations, these custom variables are not memorized by the simulator between flights.

You may have to activate certain custom systems manually after loading a flight, depending on the flight's saved state. Most important, the inverters switches must be turned **ON** for the avionics (radios, GPS, etc.) to function. Make sure the radio master switch (avionics) is also turned **ON** or the radios will not operate. Refer to "Normal Procedures and Check List" in section 7 of the manual for more details.

The instrument panels appear "frozen" after a new aircraft was loaded while in flight. What do I do?

This is not likely to happen in this software version, however if it does, simply end the current flight and start a new flight with a new GLJ Model 25 SE aircraft. Restarting the simulator may also be necessary.

Why can't I reach the maximum altitude?

If you are using Flight Simulator X, make sure you have the latest version and that the Acceleration Expansion Pack is installed. Refer to "Minimum System Requirements" in section 2 of the manual for details.

Maximum cruise altitude can only be reached with lighter weights. As your aircraft burns fuel during cruise, you may step-climb from FL410 up to FL510.

I've just installed my GLJ Model 25 SE addon and loaded my first flight but I cannot see the cockpit. What's the problem?

If you cannot see the virtual cockpit, make sure you are in the virtual cockpit view ("F9" on your keyboard). The X-15A-2 SE has no 2D cockpit. Try cycling the different views by pressing the "S" and "A" keys on your keyboard until you get the virtual cockpit view. Refer to "Full-3D Virtual Cockpits" in section 4 of the manual for details.

The landing gear won't retract. What do I do?

We suspect your landing gear was damaged during takeoff because of the strong acceleration (the GLJ Model 25 is equipped with powerful engines). The landing gear must be retracted as soon as the aircraft is airborne to avoid it being damaged by excessive speed. Resetting the flight should correct the problem or simply select the "Ignore crashes and damage" option in the simulator's "Settings - Realism" page. Refer to "Compatibility, Performance and Settings" in section 2 of the manual and to "Simulation Platform Initial Settings" in section 7 for more information.

Some special effects like the aircraft lights are slightly askew; they're all positioned slightly to the left or right of their normal position. Is this normal?

No. The aircraft lights and other special visual effects are properly positioned. This is a simulator issue. We've noticed the same thing depending on the view and the zoom level. Fortunately, it's not always noticeable.

The special visual effects (engine contrails, vortices, etc.) don't look like the ones on your website. What's wrong?

The special visual effects (engine contrails, wing vortices, aircraft lights, etc.) included with your GLJ Model 25 SE addon should look like the ones shown on the product page and in the manual.

For reasons that are sometimes hard to define, special effects appearance may vary from system to system, depending on many factors including your simulation platform, your version of DirectX®, your view aspect ratio and your graphics hardware and settings. This is a simulator issue, not an addon issue.

The special effect engine was changed from CPU to GPU with the release of Prepar3D version 2. This has the advantage of freeing computer resources and improving performance on high-end graphics hardware. The GLJ Model 25 SE special visual effects were upgraded to conform to the Prepar3D v2 specifications. While the new P3Dv2 particle effects are visually identical to the FSX/P3Dv1 effects, there is a simulator issue affecting extrusion effects that still needs to be resolved. Until then, extrusion effects such as engine contrails, wing vortices and vaportrails may appear sawtoothed, wrongly oriented, faded, with repeating arrow patterns. This is normal until a fix is made available.

For other reasons, we noticed a similar issue in FSX: Steam® Edition, to a lesser degree. This is normal until a fix is made available.

Some switches in the virtual cockpit don't work when clicked on. Is this an issue?

No. It sometimes occurs that the viewpoint has been adjusted too far back and lays inside the pilot seat's backrest, rendering the switches unclickable. When this happens, simply move your viewpoint forward a little.

Also, 3-position switches and knobs require the use of a wheelmouse. Refer to "How to Activate the Switches, Buttons, Knobs and Levers" in section 4 of the manual for more information.

Some features don't work! The radios, the autopilot and the GPS do not work, the AP altitude preselector cannot be changed, IFF is not working and not tunable. Please help!

Please ensure that the avionics are powered up. You need to have both inverters **ON**, radio

master **ON** and the batteries **ON** or the engines running and the generators **ON**. Refer to sections 4 and 7 of the manual for more details.

The throttles cannot be moved. How come?

The throttles and subthrottles cannot be moved unless their underlying fuel valve levers are released, like on the real aircraft. Refer to sections 4 and 7 of the manual for more details.

I understand that the fuel tanks all fed by gravity rather than like in the real world mode, but I cannot get my airplane to feed properly. Please help.

We always take for granted that all tanks are full before flight. Although quite rare, it happens from time to time that the last saved flight or the default flight is flown with a single-engine aircraft (such as the default Cessna in FSX). In this case, it has been known to happen that the sim does not recognize more than one fuel selector (and thus all the extra tankage). The workaround is to save a flight with a default twin-engine aircraft (Baron or Lear 45 in the case of FSX), to restart the sim and then fly your GLJ Model 25 addon. This should solve the issue.

Spoilers and other aerodynamic control surfaces should be inoperable without the engine running due to low hydraulic pressure. Why can I still move them? (FSX, Prepar3D® v1.x)

We know. This is a software limitation in both FSX and Prepar3D® v1.x. It is no longer an issue in Prepar3D v3.x and v2.x.

Due to some limitations on all platforms, electrically powered trim tabs can be activated even when the aircraft is not powered up.

I experience extremely low frame rate while flying the GLJ Model 25 SE addon. Is this normal?

No. Refer to "Compatibility, Performance and Settings" in section 2 of the manual.

We noticed that when the mouse cursor is moved inside the main window when in the virtual cockpit mode, the frame rate would drop significantly. When the mouse is moved out of the window, the frame rate will resume to normal. We believe this is a simulator issue and not an add-on issue. Of course, it will be more apparent with more complex add-ons such as the GLJ Model 25 SE, especially on slower systems and graphic cards. We recommend moving the mouse cursor out of the main simulation window when not needed.

I can't see the tooltips in the virtual cockpit. What's wrong?

If you can't see the tooltips in the virtual cockpit, make sure the "Show cockpit tooltips" option is selected in your simulator's display settings. Refer to "Compatibility, Performance and Settings" in section 2 of the manual for details.

I've installed my new GLJ Model 25 SE add-on and nothing works! The switches don't work, the radios don't work, I cannot get the engines start by all means and I cannot move the throttles. Please help!

This situation will not happen with the GLJ Model 25 SE add-on unless the simulator freezes! In this case, restarting the simulator and starting a new flight is the only solution.

Also, it sometimes occurs that the viewpoint has been adjusted too far back and lays inside the pilot seat's backrest, rendering the switches unclickable. When this happens, simply move your viewpoint forward a little.

Please ensure that the avionics are powered up. You need to have both inverters **ON**, radio master **ON** and the batteries **ON** or the engines running and the generators **ON**.

Finally, the throttles and subthrottles cannot be moved unless their underlying fuel valve levers are released, like on the real aircraft.

Refer to sections 4 and 7 of the manual for more details.

TROUBLESHOOTING

I have a number of installation, display and performance issues with my new GLJ Model 25 SE add-on. Could you help me troubleshooting my problems?

If you're experiencing many issues with your new GLJ Model 25 SE add-on, please read carefully the information provided in the "Getting Started" section (section 2 of the manual).

If you still cannot solve your issue(s) by reading the manual and the present FAQ section, please consider the followings:

- 1. Is your simulation platform running smoothly on your system?** If not, this might be a simulator issue. Please review your installation instructions carefully and reinstall your simulator if necessary.
- 2. Did you install the latest service packs for your simulator?** The GLJ Model 25 SE add-on is compatible with Microsoft® Flight Simulator X SP2 with Acceleration Expansion Pack (or Flight Simulator X Gold fully installed), Flight Simulator X: Steam® Edition, and Lockheed Martin® Prepar3D® v3.x, v2.x and v1.x only. Make sure the latest service packs, if any, are installed.
- 3. Is the GLJ Model 25 SE add-on the only add-on aircraft installed on your computer that is experiencing or causing the issue(s)?** If not, the add-on is not causing the issue(s).
- 4. Do you have the latest version of the GLJ Model 25 SE add-on?** Please visit our "Downloads" page to check for new patches or updates for your add-on.
- 5. Did you install the correct version of the GLJ Model 25 SE add-on for your simulation platform?** Make sure that you install the correct add-on version for your simulation platform. Because of differences between the simulation platforms, the installers are not interchangeable. Refer to "Package Description" in section 2 of the

manual.

6. **If you are using FSX SP2, did you install the Acceleration Expansion Pack?** Please install the AEP.
7. **Is your version of DirectX® compatible with your simulation platform and video card?** If you are using FSX, uncheck the "DirectX® 10 preview" option box in the FSX "Settings - Display" page. FSX seems to perform better under DirectX® 9. Prepar3D® v2.x and v3.x require DirectX® 11 (and a DirectX® 11-compatible video card).
8. **If you are using FSX, is the "Light bloom" option selected in the FSX display settings page?** While this should not cause an issue in the current software version, try unchecking the "Light bloom" option box in the FSX display settings page. This may also improve your frame rate. Refer to "Recommended Settings for Flight Simulator X" in section 2 of the manual.
9. **Can you actually see at least one GLJ Model 25 SE aircraft in the "Select Aircraft" (or "Select Vehicle") page?** If not, the addon is not installed properly or there is a display or compatibility issue. Refer to "Compatibility, Performance and Settings" in section 2 of the manual. Make sure you have the correct settings for your simulation platform.
10. **Can you select/load the GLJ Model 25 SE aircraft in the simulator (at the start of a new flight)?** If not, the addon is not properly installed or there is a display or compatibility issue. Refer to "Compatibility, Performance and Settings" in section 2 of the manual. Also some third-party addons or FS utilities may interfere with the correct installation of the GLJ Model 25 SE addon. These programs may also alter the appearance of your add-on aircraft by modifying the textures and the materials in the model files. If the different GLJ Model 25 SE aircraft variations are correctly displayed in the "Select Aircraft" page but you are unable to select any one of them, or worse if selecting them causes FSX to crash, suspect such third-party programs. Remove these programs to solve the issue.
11. **Do you see the GLJ Model 25 SE aircraft in the spot plane view?** If the addon is properly installed and loaded and you don't see the aircraft in the spot plane view, there is a display or compatibility issue. Refer to "Compatibility, Performance and Settings" in section 2 of the manual. Make sure you have the correct settings for your simulation platform.
12. **Do you see the GLJ Model 25 SE virtual cockpit?** If the addon is properly installed and loaded and you don't see the aircraft in the spot plane view and there is no virtual cockpit, there is a display or compatibility issue. Refer to "Compatibility, Performance and Settings" in section 2 of the manual. Make sure you have the correct settings for your simulation platform. If you see the aircraft in the spot plane view and there is no virtual cockpit, make sure you are in the virtual cockpit view ("F9" on your keyboard).
13. **Did you try resetting the flight or re-loading the GLJ Model 25 SE aircraft?** Sometimes, it works.
14. **Did you install the latest service packs for your Windows® operating system?** Make sure your Windows® operating system is up to date. Windows® 10/8.1/8/7 or later is required to install and fly this addon. We are sorry we cannot provide support for this addon if installed under Windows® Vista™ or Windows® XP®.
15. **Did you install the latest driver for your video card (for your operating system)?** Sometimes, it solves display issues.
16. **Did you try tweaking your parameters in the simulator, especially your display settings?** If you experience reduced frame rate, lower your display parameters. Reducing the traffic and weather settings may also improve the overall system performance. Refer to "Compatibility, Performance and Settings" in section 2 of the manual.
17. **Do you suspect the GLJ Model 25 SE installer file you downloaded from our website to be corrupted?** You can try downloading the latest version of the software from our website and reinstalling the

addon. You will need to login to your user account.

18. **Do you have the minimum system requirements?** You may need a new computer or video card (especially with Prepar3D®). Refer to "Minimum System Requirements" in section 2 of the manual.

Note to FSX: Steam® Edition Users

- The GLJ Model 25 SE addon is fully compatible with Microsoft® Flight Simulator X: Steam® Edition. A special installer is available in our "Downloads" section (free for registered users).
- Please note that FSX: Steam® Edition is installed in a different way to the boxed version and occupies a different location on your computer. For this reason, we recommend using the special installer for FSX: Steam® Edition.

If you are still not able to solve your issue(s) please contact us for technical support.

TECHNICAL SUPPORT AND CONTACT INFORMATION

I have another question about my X-15A-2 SE addon, can I contact you?

Yes. We'll try our best to answer you within one or two business days.

For sales support or general inquiries – If you need customer support or simply want to send us a message, please use our general contact form:

<https://xtremeprototypes.com/en/shopcustcontact.asp>

For technical support – If you need technical support for your addon, please fill out our technical support request form:

<https://xtremeprototypes.com/en/shopcustcontactsupport.asp>

Make sure all the fields in the form are filled and provide us with as much information as

possible about your technical issue.

How do I get product patches and upgrades?

Please login to your account on our website. Then visit our "Downloads" section and follow the instructions.

<http://xtremeprototypes.com/en/downloads.asp>

I have some ideas about improving the GLJ Model 25 SE addon, or future exciting addons. Can I contact you?

Yes. We'll be most happy to hear from you. Please use our general contact form.

<https://xtremeprototypes.com/en/shopcustcontact.asp>

I was involved in the development of the real Gates Learjet Model 25 during the 1960s/70's and I would be interested in helping you improving this addon. Can I contact you?

Yes. It will be an honor to hear from you. Please use our general contact form.

<https://xtremeprototypes.com/en/shopcustcontact.asp>



As it is always the case with computer software, and especially with addons to existing third-party platforms on which there is limited control, there are some known issues with the current addon version, depending on which simulation platform you are using. Some of these issues are related to the simulator, in which case there is little that can be done from our side, except going around them and expect a fix in the near future. Other issues are related to the addon itself, in which case we are working hard to get them resolved.

We appreciate constructive input from our users, so please don't hesitate to report any issue or bug you might have experienced when flying the GLJ Model 25 SE addon.

To report issues, please fill out our technical support request form:

<https://xtremeprototypes.com/en/shopcustcontactsupport.asp>

Make sure all the fields in the form are filled and provide us with as much information as possible about your technical issue.

Because there are as many computer systems as there are users, you may or may not experience the following issues depending on:

- Your computer and graphics hardware (and settings)

- Your operating system (and settings)
- Your version of DirectX®
- Your simulation platform (and settings)
- Your GLJ Model 25 SE addon version (including patches and updates, if any)

Windows® security warning dialogs while installing the software or starting the simulation platform (FSX)

In addition to many other files, important software components (DLLs) need to be installed on your system for the GLJ Model 25 SE addon to function properly. These DLLs are copied to the addon's panel folder during the installation process. You must answer YES (or RUN) when asked by Windows® or your simulation platform if you trust these modules and allow them to be installed and to run on your computer.

Standard Windows® security warning dialogs will appear on your desktop and in your simulator's main window the first time you run your simulation platform after installing the GLJ Model 25 SE addon. Click the "YES" button (or the "RUN" button) when these dialogs appear. The dialogs will appear only once.

Important: The GLJ Model 25 SE addon will not work properly without these modules. You must allow them to be installed.

Refer to "Installing your Addon" in section 2 of the manual for more details.

Some cockpit sounds can be heard from the external views or when the simulation is paused

In addition to the standard aircraft sound sets that are controlled by the simulator's own sound engine, the GLJ Model 25 SE addon features more than 30 new sound effects, mainly cockpit sounds, that are managed by the ad-

don's special systems and played by a third-party sound module. Due to software limitations, some cockpit sounds can still be heard from the external views or when the simulator is paused. This is because the GLJ Model 25 SE addon uses a separate sound module than the one included with the simulator to play these special sounds that could not be played directly by the simulator. Volume adjustment in the simulator has no effect on these sounds (see next topic). While this has no impact on the simulation, we take good note of the requested modification for future software versions.

No volume control to adjust cockpit sounds

While we took great care to adjust the 30 custom sound effects individually so they fit well in the overall sound mix, there is no control to adjust the volume of the cockpit sounds in this software version. Sound can be balanced by adjusting the aircraft sounds that are controlled by the simulator's sound engine and the master volume on your computer sound system. While this has no impact on the simulation, we take good note of the requested feature for future software versions.

Frame rate drop when the mouse cursor enters the visual cockpit

We noticed that when the mouse cursor is moved inside the main window when in the virtual cockpit mode, the frame rate would drop significantly. When the mouse is moved out of the window, the frame rate will resume to normal. We believe this is a simulator issue and not an addon issue. Of course, it will be more apparent with more complex addons such as the GLJ Model 25 SE, especially on slower systems and graphic cards. We recommend moving the mouse cursor out of the main simulation window when not needed.

"Blue texture flashes" on exterior and interior models, before the addon textures are loaded (FSX)

This is a simulator issue. If you experience "blue texture flashes" in FSX while the addon textures are loading, especially when in the

virtual cockpit, we recommend disabling the DirectX® 10 Preview option in your Display settings (Graphics tab). FSX seems to perform better under DirectX® 9. Third-party free DirectX® 10 shader fixers are also available in FSX forums. Note that a small delay (especially on slower computer systems) before the addon textures are loaded is normal on the current simulation platforms, especially when loading 4096 x 4096 high-resolution textures. For more information, refer to section 2 of the manual.

Some textures are missing on the exterior model and in the virtual cockpit after several variations of the addons were loaded in the simulator (black parts)

We don't know what might be causing this issue which we observed after switching aircraft several times. We believe this is a simulator issue and not an addon issue. When this happens, simply reset the flight or restart the simulator.

In some views, some special effects like the aircraft lights are slightly askew; they're all positioned slightly to the left or right of their normal position

The aircraft lights and other special visual effects are properly positioned. This is a simulator issue. We've noticed the same thing depending on the view and the zoom level. Fortunately, it is not always noticeable.

Some special visual effects (engine contrails, vortices, etc.) look different from those in the manual

This is a simulator issue that is purely cosmetic and has no impact on the overall simulation.

The special visual effects (engine contrails, wing vortices, aircraft lights, etc.) included with your GLJ Model 25 SE addon should look like the ones shown on the product page and in the manual. For reasons that are sometimes hard to define, special effects appearance may vary from system to system, depending on many factors including your simulation plat-

form, your version of DirectX®, your view aspect ratio and your graphics hardware and settings.

The special effect engine was changed from CPU to GPU with the release of Prepar3D version 2. This has the advantage of freeing computer resources and improving performance on high-end graphics hardware. The GLJ Model 25 SE special visual effects were upgraded to conform to the Prepar3D v2 specifications. While the new P3Dv2 particle effects are visually identical to the FSX/P3Dv1 effects, there is a simulator issue affecting extrusion effects that still needs to be resolved. Until then, extrusion effects such as engine contrails, wing vortices and vaportrails may appear sawtoothed, wrongly oriented, faded, with repeating arrow patterns. This is normal until a fix is made available.

For other reasons, we noticed a similar issue in FSX: Steam® Edition, to a lesser degree. This is normal until a fix is made available.

The aircraft systems are reset when a new GLJ Model 25 SE aircraft is loaded

This is a simulator issue. Some systems are reset, but not all. This is because the GLJ Mode 25 addon uses its own proprietary internal variables in addition the simulator's variables. Unfortunately, due to software limitations, these custom variables are not memorized by the simulator between flights.

Fire extinguishing can be performed only once during a flight

This is how the simulator works. The flight needs to be reset or a new flight initiated for the simulator's extinguishers (bottles) to recharge.

Spoilers and other aerodynamic control surfaces are operable with low hydraulic pressure (FSX and Prepar3D® v1.x)

This is a simulator issue in both FSX and Prepar3D® v1.x. It is no longer an issue in Prepar3D® v3.x and v2.x.

Due to some limitations on all platforms, electrically powered trim tabs can be activated even when the aircraft is not powered up.

Setting the local time with the clock produces unexpected results, including freezing the screen (FSX)

Setting the local time with the aircraft clock sometimes produces unexpected results in FSX, including freezing the screen while the simulator is updating the environment and traffic. If you experience such an issue on your simulation platform, we recommend changing the local time on the "SELECT TIME AND SEASON" page in the simulator (available from the "World" menu item in the top menu bar) instead. This seems to be a minor simulator issue and we don't know of any fix at this time. We did not encounter this issue in Prepar3D®.

The aircraft cannot be selected in the "Select Aircraft" page, FSX crashes (FSX)

It's been reported during the beta tests that some third-party addons or FS utilities may interfere with the correct installation of the X-GLJ Model 25 SE add-on. These programs may also alter the appearance of your add-on aircraft by modifying the textures and the materials in the model files. If the different GLJ Model 25 SE aircraft variations are correctly displayed in the "Select Aircraft" page but you are unable to select any one of them, or worse if selecting them causes FSX to crash, suspect such third-party programs. For unknown reasons, these programs may prevent the add-on's system DLLs from being "trusted" by FSX and the add-on will not work. Remove these programs to solve the issue.

Also, depending on security settings and permissions in Windows® Vista™, you may not be able to install critical software components (DLLs) and the add-on will not work. We are sorry we cannot support this add-on if installed under Windows® Vista™ or Windows® XP®. Windows 10/8.1/8/7 is required in order to install and operate this add-on (see "Minimum System Requirements" in section 2 of the manual).

The addon cannot be installed in Flight Simulator X: Steam® Edition (FSX Steam)

The GLJ Model 25 SE addon is fully compatible with Microsoft® Flight Simulator X: Steam® Edition but requires a special installer available in our "Downloads" section (free for registered users). Do not use the standard installer for FSX.

Please note that FSX: Steam® Edition is installed in a different way to the boxed version and occupies a different location on your computer. With the standard installer for FSX, you will need to specify a different path/root folder during the installation process to deploy the addon into FSX: Steam® Edition (by default: "C:\Program Files (x86)\Steam\steamapps\common\FSX").

Also, with the standard installer, you will need to copy your saved flights (if any) from the "C:\Users\your name\Documents\Flight Simulator X Files" folder to your "C:\Users\your name\Documents\Flight Simulator X - Steam Edition Files" folder. This is because FSX: Steam® Edition uses a different folder to store your saved flights.

For the above reasons, we recommend using the special installer for FSX: Steam® Edition.

Refer to "Installing your Addon" in section 2 of the manual for more information.

Some of the cockpit lights seem to interfere with each other

In addition to the lighting effects that are built into the textures (light maps), the GLJ Model 25 SE addon uses several so-called "virtual cockpit lights" to light up the cockpit, the instrument panel (flood lights), and the cabin.

We noticed that under certain conditions, these lights seem to interfere with each other, sometimes depending on the order in which they were turned on. For example, turning on the flood lights while the cabin lights are on, may dim the overall lighting in the cockpit instead of making it brighter. On other occasions, some of these lights may start flashing for an unknown reason. In all cases, we believe this is a simulator issue involving the "VC

light"-type of special effect.

When this happens, simply turn off one of the lights then turn it back on again. You might have to do this several times, with different lights in different orders in order to solve the issue. If you cannot get rid of the problem, simply turn off one of the lights (for example, do not turn on the panel flood lights when the cabin lights are on).

VC lights do not interfere with the light map effects that are built into the different textures. Those maps are responsible for the light coming from the instrument post lights, the instrument eyebrows and bezels, the backlit panels, the annunciators and panel lights, the cabin signs, the entry lights, the reading lights and the ceiling lights. Therefore, turning off the instrument lights in the cockpit would have no effect on solving possible VC light conflicts. Turn off the cabin or flood light instead.

Some of the exterior lights are projected into the cabin or cockpit

This is a well known simulator issue. It happens that some of the exterior lights, under certain angles of view, can pass through walls, floor and ceiling (or any other 3D obstacle in the model) and appear in the cockpit and cabin. This is especially true for the landing/taxi lights, the rotating beacon lights and the strobe lights.

Unfortunately, we don't know of any fix at this time since we are using standard FSX/P3D light effects that should normally be blocked by opaque surfaces. It is not normal to see landing or taxi lights through the floor carpet in the cabin, for example. If this becomes too apparent and annoying, especially in the cockpit, simply turn off the light(s) in question.

The addon also uses optional external special effects to project the light coming from the landing/taxi lights under the aircraft. These "belly lighting" effects may reflect too much in the cabin or worse, in the cockpit. These effects are controlled by the wing inspection light switch [3, fig. 4-45] on the center pedestal and can be switched on and off.

The throttles are shaking

We know. They all do. This seems to be a simulator issue that has no impact on the simulation.

Fuel is not fed properly, the sim does not recognize more than one fuel tank

We always take for granted that all tanks are full before flight. Although quite rare, it happens from time to time that the last saved flight or the default flight is flown with a single-engine aircraft (such as the default Cessna in FSX). In this case, it has been known to happen that the sim does not recognize more than one fuel selector (and thus all the extra tankage). The workaround is to save a flight with a default twin-engine aircraft (Baron or Lear 45 in the case of FSX), to restart the sim and then fly your GLJ Model 25 add-on. This should solve the issue.

Some parts are missing in the virtual cockpit, others appear distorted and geometric figures are flying apart (Prepar3D® v3.x)

There is a known issue in Lockheed Martin® Prepar3D® v3.x that affects geometry when a certain number of animations is exceeded in a model. Lockheed Martin® acknowledges that there is almost certainly a bug in the model optimization routine and that they would certainly like to fix it in a future release.

Until this fix becomes available, you will need to modify one line in the "Prepar3D.cfg" file in order for your GLJ Model 25 SE add-on for P3Dv3 to display properly in the sim. Please note that this change is only required if you install the native version for P3Dv3. The change is not required if you install the FSX/FSX Steam® version in P3Dv3.

Please note that the native version for P3Dv3 is fully animated and has more features than the version for FSX. In order to bring this to you, we needed to exceed the number of animated objects that is currently supported by the sim before the bug starts creating problems. Under these conditions, it is normal for the interior model to display many geometry

issues such as missing parts, distorted objects, flying geometric figures, etc.

To solve this until a fix is available, you will need to modify the "Prepar3D.cfg" file located in "C:\Users*your name*\AppData\Roaming\Lockheed Martin\Prepar3D v3". It is not Xtreme Prototypes' policy to modify the user's "Prepar3D.cfg" file during the installation process. So this needs to be done manually by the user.

```
[SIM]
SYSCLOCK=0
OPTIMIZE_PARTS=0
```

Should you decide to make this change, please make sure that you've made a backup copy of your original "Prepar3D.cfg" file and saved it in a safe place before proceeding.

Important

- The native version for P3Dv3 will not display properly in the sim without this modification to the "Prepar3D.cfg" file.



Cabin interior (day).



www.xtremeprototypes.com

Main landing gear.



Virtual cockpit (dusk).



www.xtremeprototypes.com

Fictitious "Special Ops Area 51" variation.



www.xtremeprototypes.com

Fictitious U.S. Air Force V.I.P. transport variation.



www.xtremeprototypes.com

Fictitious Canadian government V.I.P. transport variation.



Cabin interior (dusk).



Fictitious U.K. private "Blue Bird" variation.



Virtual cockpit (day).



www.xtremeprototypes.com

Fictitious U.S. private "Red Belly" variation.



www.xtreme prototypes.com

Unpainted rollout "test" variation (bare aluminum).



www.xtremeprototypes.com

Top view. Fictitious U.S. private "Red Belly" variation.

USER'S NOTES

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