



***XP GATES LEARJET MODEL 25
SPECIAL EDITION v3.0
FLIGHT MANUAL***

ADD-ON BUSINESS JET
for Lockheed Martin Prepar3D and Microsoft Flight Simulator X

xtremeprototypes.com

Xtreme Prototypes, Inc.
Montreal, Québec, CANADA

RELEASE NOTES

What's New in Version 3.0

Please refer to section 2.

Upgrading to Version 3.0

The installer will not erase nor replace previous versions of the addon if installed on your computer. Version 3.0 will be installed in different folders. We recommend removing previous versions from your computer before installing version 3.0 to avoid confusion between aircraft models with similar names. Previous versions 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. Please refer to section 2 for more details.

Manual

The present flight manual is not included in the ZIP file that you downloaded from our website. The flight manual is free and available from the GLJ Model 25 SE product page on our website (printable PDF format).

https://xtremeprototypes.com/xp-manuals-en/XP_GLJ25SE_v3r0_MANUAL_En_01.pdf

Guide des procédures en français (French Documentation)

Les sections 7 et 8 de ce manuel sont toujours disponibles en français. Nous avons également inclus les onglets « Liste de vérifications » et « Référence » de la tablette du pilote en français. Ces documents ainsi que les instructions d'installation se trouvent dans le sous-dossier « français » contenu dans le dossier principal de l'addon.

Bien que le manuel complet de ce nouveau produit ne soit pour l'instant disponible qu'en anglais, nous offrons à nos utilisateurs francophones enregistrés une assistance technique en ligne personnalisée en français pour l'ensemble de nos produits.

Compatibility

The GLJ Model 25 SE addon is optimized for Lockheed Martin Prepar3D v4.5 (Hotfix 2) or later, Microsoft Flight Simulator X: Steam Edition and Microsoft Flight Simulator X SP2 with Acceleration Expansion Pack (or Flight Simulator X Gold fully installed). Make sure that you install the correct addon version for your simulation platform.

Please note that some features available in the native Prepar3D version may not be available in the FSX versions. Due to some limitations in the FSX simulation platform, the FSX versions contain less animations and features than the Prepar3D version. However, systems and procedures are the same on all platforms and this has no impact on the simulation.

Please refer to section 2 for more details.

Installing in FSX Steam

Please note that FSX Steam is installed in a different way to the boxed version and occupies a different location on your computer. For this reason, you must use the special installer for FSX Steam that you can download from our website. Please refer to section 2 for more details.

Important Notice for FSX/FSX Steam Users

Please remember that Microsoft Flight Simulator X was released in 2006 and that the latest Service Pack is more than ten years old. While the GLJ Model 25 SE addon was tested in the original FSX, some known issues were still noticed due to aged software components installed in newer versions of Windows (see Appendix 6).

This is why we highly recommend [Microsoft Flight Simulator X: Steam Edition](#) instead of the boxed version. The development team at Dovetail Games did a fantastic job at recompiling and upgrading the platform, adding more features and improving stability and

RELEASE NOTES *(cont'd)*

performance.

You may also consider upgrading to the more advanced 64-bit [Lockheed Martin Prepar3D](#) simulation platform.

Some features available in the native Prepar3D version of the GLJ Model 25 SE v3.0 add-on may not be available in the FSX versions. The FSX versions contain less animations and features than the Prepar3D version due to limitations in the FSX platform. However, systems and procedures are the same on all platforms and this has no impact on the simulation.

Cockpit Animations in FSX/FSX Steam

The GLJ Model 25 SE v3.0 add-on is a complex simulation with full 3D virtual cockpits with hundreds of animated parts. Unfortunately, there is a limit to the number of animations that are allowed in FSX/FSX Steam (this was also the case in Prepar3D, prior to version 4.1).

The native version for Prepar3D v4.5 is fully animated. However, we had to reduce the number of animated parts in the virtual cockpits of the FSX/FSX Steam version to avoid serious geometry issues.

Please note that the buttons, switches and knobs that are not animated due to limitations in FSX are still fully functional, and we tried our best to remove the animation from objects that are not essential for the simulation or where it is less apparent. For example, the rotation of a black knob is barely noticeable.

If you are looking for a fully animated cockpit, please consider upgrading to the more advanced 64-bit Prepar3D simulation platform.

Note: *The GLJ Model 25 SE v3.0 add-on contains a large number of virtual cockpit animations because of its limited use of flat 2D*

gauges. Flight instruments are fully modeled in 3D and some contain dozens of animated mechanical parts, like in their real-world counterparts. Add-ons that use a large number of 2D gauges instead of fully modeled 3D instruments in their virtual cockpits have fewer animated parts.

About Dynamic Lights

Dynamic lights, some with projected light beams, are a new feature of the latest versions of Prepar3D. They are not supported in FSX/FSX Steam. Standard FSX light effects are used in the FSX version instead.

Cockpit Lights

All cockpit lights except the cabin lights and entry lights (Prepar3D) are now connected to the main DC bus, like in the real aircraft. They require the battery switches to be turned **ON**. The cabin lights and entry lights are still connected to the hot battery bus. This is to make them compatible with the Learjet emergency lighting system that has its own independent emergency battery. It is also more convenient for users to be able to turn on the cabin and entry lights before the aircraft is powered up.

Crew (Exterior Model)

The captain and the copilot now appear by default in the cockpit of the exterior model when the aircraft model is loaded in the simulator. You can click the steps on the lower section of the main door to bring the crew on board or to make it leave the cockpit after the aircraft is parked. You can select between three male pilots and one female pilot. Switching pilots is done by clicking the Learjet logo at the center of each yoke in the virtual cockpit or by clicking each pilot's shirt on the exterior model (Prepar3D). You can also make your pilots wear sunglasses by clicking the windshield defog outlets on the exterior model (Prepar3D) or the whiskey compass housing in the virtual cockpit.

RELEASE NOTES *(cont'd)*

“Remove Before Flight” Items

The “Remove Before Flight” items (ribbons and Pitot covers, wheel chocks, engine inlet covers, tail stand) need to be installed manually after the aircraft is parked. Click the white label above the Anti-Skid Lights in the virtual cockpit to install/remove the “Remove Before Flight” items. The items can also be removed by clicking the nose gear doors of the exterior model when the aircraft is parked (Prepar3D). The “Remove Before Flight” items cannot be installed if the aircraft is not parked, not on the ground or if the starters/engines are running. Please note that the tail stand is installed only when the aircraft is full of fuel (85% or more, CoG near aft limit).

Changes to the Gyro Drift Compensation Switch, the Directional Gyro Compensation Knob and the Directional Gyro Free/Slave Switch

By default, the direction indicators (HSI, RMI, directional gyro, etc.) in the cockpit of the GLJ Model 25 SE are configured to be slaved to an electro-magnetic slaved compass. This mode of operation normally requires no gyro drift correction on the part of the pilot and is used in areas where magnetic references are reliable. When this mode of operation is selected in the current simulation platforms, it is not possible to make manual corrections by using the Gyro Drift Compensation Switch or the Directional Gyro Compensation Knob, even when the Directional Gyro Free/Slave Switch is set to FREE.

In the real aircraft: The directional gyroscope in the real aircraft can operate in two modes: the SLAVE mode and the FREE mode. When the Directional Gyro Free/Slave Switch is set to SLAVE, the directional gyro is slaved to the magnetic flux valve for correcting the apparent gyro drift. When the switch is set to FREE, the pilot is free to make manual corrections with the Gyro Drift Compensation Switch (or the Directional Gyro Compensation

Knob). The SLAVE position is the normal mode of operation in areas where magnetic references are reliable.

Unfortunately, the current simulation platforms do not provide means to switch from the SLAVE mode to the FREE mode and vice versa after the aircraft model is loaded. Add-on aircraft developers and users must decide in advance if they want the direction indicators in the cockpit to be slaved to an electric gyroscope (FREE mode) or to an electro-magnetic slaved compass (SLAVE mode). This is set in the `[direction_indicators]` section of the “aircraft.cfg” (the aircraft configuration file located in the addon’s main folder):

```
[direction_indicators]
direction_indicator.0 = 3
```

The first number (“0”) is the reference for the direction indicator, the second number (“3”) is the type of device to which the direction indicator is slaved. In the current simulation platforms, the types are:

0. None
1. Vacuum gyro
2. Electric gyro
3. **Electro-mag slaved compass**
4. Slaved to another indicator

By default, the direction indicators in the GLJ Model 25 SE addon are set to operate in **mode “3” (electro-mag slaved compass)** and **do not require manual adjustments**. This is how the direction indicators in most of the stock aircraft included with your simulation platform, including the Learjet 45 in FSX, are configured.

However, if you prefer to have full control over the instrument, for example if you fly in areas where magnetic references are not reliable, you can switch to mode “2” (electric gyro) by changing the value in the “aircraft.cfg”. Please make a backup copy of the file before making any change. Also, consider that in mode “2”, you will need to make manual gyro drift corrections periodically. If you don’t want to make manual gyro drift corrections,

RELEASE NOTES *(cont'd)*

you can disable gyro drift in your simulator's options (under "Realism").

Please note that in the current software version, the Directional Gyro Free/Slave Switch does not work like in the real aircraft for the reasons mentioned above and has no special function except to disengage the autopilot when clicked.

Changes to the AP/FD Modes

The GLJ Model 25 SE addon uses the autopilot and the flight director that are already integrated to your simulation platform. While we have modified some of the logic that governs the interrelations between the different AP/FD modes of operation to make these systems similar to the ones installed in the real aircraft, there are still some differences that persist. This is due for the most part to how the autopilot works in the simulator.

Please note that because of software limitations in the current simulation platforms, the new logic only applies to the AP/FD switches, buttons and knobs in the virtual cockpit. The new logic won't apply to the simulator's keyboard shortcuts that have their own built-in logic. If you prefer a mode of operation that is closer to the one of the real aircraft, please use the controls in the virtual cockpit and not the keyboard shortcuts. If you prefer the default AP/FD logic from the simulator, you can use the keyboard shortcuts.

Refer to section 5, pages 15 to 32, for more information about the autopilot and the flight director installed in the GLJ Model 25 SE v3.0 addon.

Installing Third-Party Addons, Systems and Gauges

The GLJ Model 25 SE v3.0 addon comes with preconfigured instrument panels for the following systems:

- The basic GPS 500 included with your simulation platform - or - the GNS/GTN sys-

tems from [Reality XP](#) and [Flight1](#) (not included, sold separately);

- A dummy radar screen - or - the Rex/Milviz WX Advantage radar from [Rex Simulations](#) (not included, sold separately).

You must select which navigation system and radar you intend to use at the time of installation (see section 2, page 4). The installer will preconfigure the instrument panels and program the 3D buttons and knobs in the virtual cockpits for your selected software.

Third-party software must be installed and working properly on your simulation platform prior to installing the GLJ Model 25 SE v3.0 addon. We do not recommend using third-party setup utilities or configuration panels to add your third-party navigation systems or radars to the virtual cockpits of the GLJ Model 25 SE addon. Please refer to section 4, page 13, for more information.

Appendix 2 contains detailed instructions for adding third-party addons, systems or gauges to the virtual cockpit of the GLJ Model 25 SE addon and how to program the buttons and knobs for your own devices. Please follow these instructions very carefully if you want to add your own navigation system, radar or transponder.

Please note that Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE v3.0 add-on aircraft may require some research and experimentation on the part of the user.

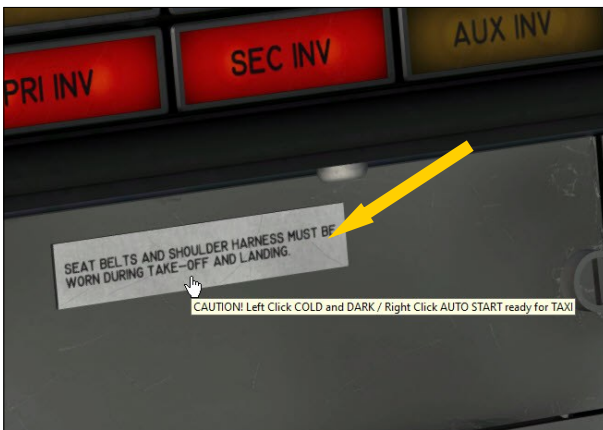
Compatibility with Future Versions of Prepar3D and Flight Simulator

While we never promise anything regarding future software versions, updates, release dates or prices, we always do our best to make our products compatible with the latest versions of our favorite flight simulators. As the simulation platforms evolve, so will your favorite addons from Xtreme Prototypes.

RELEASE NOTES *(cont'd)*

“Cold and Dark” Reset and “Auto Start” Sequence

The white seatbelt label located in the upper center section of the main instrument panel [18, fig. 4-17a/b; 17, fig. 4-17c; 15, fig. 4-17d] is now a hot spot for initiating a “Cold and Dark” reset cycle or an “Auto Start” sequence.



Left-clicking the label will shut down the engines and turn off all lights and aircraft systems in less than 10 seconds. The cockpit will be reset to its “Cold and Dark” state and the airplane will be parked.

Right-clicking the label will launch the “Auto Start” sequence. The automatic sequencer will start the engines and set up all aircraft systems ready for taxi. The pilot has nothing to do, but to wait and watch the sequencer perform the required preflight procedures automatically. Buttons, switches and lights will be animated with sound during the entire sequence. It takes about 80 seconds for the sequencer to perform the necessary preflight procedures. The “Auto Start” sequencer goes beyond the simulator’s standard CTRL+E command by actuating every Learjet 25 custom system needed for taxi (and pre-takeoff). We recommend using this feature instead of CTRL+E.

The two battery indicators (BAT140 and BAT160) in the upper right corner of the an-



nunciator panel [28-29, fig. 4-30] warn the pilot that the “Cold and Dark” reset cycle or the “Auto Start” sequence is in progress. An audio alert will be triggered at the beginning and at the end of both cycles.

It is not possible to initiate both cycles simultaneously for obvious reasons, and although the cycles cannot be stopped when initiated, they can be paused.

DO NOT INITIATE a “Cold and Dark” reset cycle or an “Auto Start” sequence while the aircraft is airborne!

Below are the procedures performed automatically during a “Cold and Dark” reset cycle and an “Auto Start” sequence.

“Cold and Dark” Reset Cycle:

(0 second) Beginning of cycle

(1 sec.) Flaps **UP**, Spoilers **RETRACTED**

(2 sec.) Throttles **IDLE**, Simulator’s “Engine Auto Shutdown” **INITIATED**

(3 sec.) Fuel Valves **CLOSED**, throttles **LOCKED**, mixture **LEAN**

(4 sec.) Starter Generator Switches **OFF**, Air Ignition Switches **OFF**

(5 sec.) All Lights and Aircraft Systems **OFF**

RELEASE NOTES *(cont'd)*

(7 sec.) Electrical Systems **OFF**

(8 sec.) Parking Brake **SET**, Crew **ABSENT**, Main Door **CLOSED**, RBF Items **INSTALLED**, GPU **DISCONNECTED** and **REMOVED**

(10 sec.) End of cycle

“Auto Start” Sequence:

Note: Although the “Auto Start” sequence can be launched at any time, we recommend initiating a “Cold and Dark” reset cycle before starting the “Auto Start” sequence.

(0 second) Beginning of sequence

(1 sec.) GPU **DISCONNECTED** and **REMOVED**, RBF Items **REMOVED**, Crew **ON BOARD**, Main Door **CLOSED**

(2 sec.) Parking Brake **SET**

(3 sec.) Throttles **IDLE**

(4 sec.) Left Fuel Valve **CLOSED**, Left Throttle **LOCKED**

(5 sec.) Right Fuel Valve **CLOSED**, Right Throttle **LOCKED**

(6 sec.) Main Batteries **ON**

(7 sec.) Rotating Beacon Lights **ON**

(8 sec.) Left Mixture **RICH**, Left Starter Generator Switch **START**, Simulator’s “Engine Auto Start” **INITIATED**

(33 sec.) Left Starter Generator Switch **GEN**, Right Mixture **RICH**, Right Starter Generator Switch **START**

(58 sec.) Right Starter Generator Switch **GEN**

(59 sec.) Fuel Tank Selector Knob **TOTAL**, Left Jet Pump Switch **ON**

(60 sec.) Right Jet Pump Switch **ON**

(61 sec.) Primary Inverter **ON**

(62 sec.) Secondary Inverter **ON**

(63 sec.) Navigation Lights **ON**

(64 sec.) Strobe Lights **ON**

(65 sec.) Left Taxi Light **ON**

(66 sec.) Right Taxi Light **ON**

(67 sec.) Anti-Skid Power Switch **ON**

(68 sec.) Bleed Air Switch **NORM**

(69 sec.) Pressurization Mode Switch **AUTO**

(70 sec.) Cabin Altitude Controller **SET FOR APPROX. 32,000 FT A/C ALT**

(71 sec.) Left Stall Warning Switch **ON**

(72 sec.) Right Stall Warning Switch **ON**

(73 sec.) Left Thrust Reverser Arm Switch **ARM**

(74 sec.) Right Thrust Reverser Arm Switch **ARM**

(75 sec.) Autopilot **OFF**

(76 sec.) Elevator Trim **SET FOR TAKEOFF**

(77 sec.) Spoilers **RETRACTED**

(78 sec.) Flaps **4 DEGREES DOWN FOR TAKE-OFF**

(79 sec.) Nose Wheel Steer Lock Switch **ELECTRIC STEERING ENGAGED**

(80 sec.) Throttles **IDLE**

(81 sec.) Parking Brake **RELEASED**

(83 sec.) End of sequence

Note: “Cold and Dark” reset and “Auto Start” features are not available in the real aircraft.

RELEASE NOTES *(cont'd)*

Unit of Measure

Please make sure that your simulation platform's "Unit of Measure" is set to **U.S. System (feet, inches)**, or you may encounter issues with some flight instruments. Remember that the Learjet 25 is an American airplane from the 1970/80's.

Fuel Mixture

In version 3.0, releasing the throttles with the Throttle Release Levers [2, 4, fig. 4-41] opens the fuel valves, like in the real aircraft. During the engine startup cycle (see section 7, page 11), when the fuel valves open, the engines should start. However, if the fuel mixture is not rich enough, the engines won't start. In the real world, jet engines don't require fuel mixture adjustments like piston engines. However, the current simulation platforms seem to make no distinction and mixture control is available, even for jet engines. Make sure the fuel mixture is set to "rich" before starting the engines (CTRL+SHIFT+F4 on your keyboard, or using the mixture lever on your physical throttle quadrant or game controller).

The "Auto Start" sequence, if initiated, will set the fuel mixture to "rich". The "Cold and Dark" reset cycle will set the mixture to "lean" (see Release Notes, pages 6-7).

Note: *In version 2.x, the Throttle Release Levers controlled the fuel mixture instead of the fuel valves, which was not conform to how the real aircraft functions but was a nice workaround for solving the fuel mixture issue.*

THANK YOU FOR PURCHASING YOUR SOFTWARE LICENSE!

Xtreme Prototypes is a modest independent add-on 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. By doing so, you are contributing to the making of unique high quality add-ons for serious desktop pilots. In addition, your license gives you access to free personalized online technical support, patches and rebates on upgrades.

This manual is to be used in conjunction with the Xtreme Prototypes GLJ Model 25 Special Edition add-on only. It is part of a software package and it is subject to the terms of use specified in the end-user software license agreement.

You are authorized to print copies of this manual for your own use, in conjunction with the Xtreme Prototypes GLJ Model 25 Special Edition simulation software.

**Xtreme Prototypes GLJ Model 25 Special Edition, Version 3.0
Copyright © 2009-2020 by Xtreme Prototypes, Inc. All rights reserved.**

FBGs sound system, special sound effects and some 3D components used under license from their respective rightsholders.

The unauthorized reproduction, distribution, repackaging, sale, purchase, lease, loan, upload or download of this software product and documentation, including this manual, in whole or in part and by any mean, is prohibited.

The Xtreme Prototypes GLJ Model 25 Special Edition add-on is neither freeware nor shareware and is subject to the terms of use specified in the end-user software license agreement. The software and the manual are protected by international copyright laws. Please do not make illegal copies of the software and/or its related components and documentation.

Your activation key is unique, personal, non-transferable and traceable. Please keep it in a safe place.

The unauthorized reproduction and/or distribution of protected material constitutes an infringement to the exclusive right of its holder. This behavior could expose the offender to legal action and to a judgment to pay damages. Piracy kills quality add-ons. Posting or downloading illegal copies of this add-on over the Internet is a crime.

All images are unaltered, actual screenshots captured in Lockheed Martin Prepar3D or Microsoft Flight Simulator X simulation platforms, except where otherwise noted.

Xtreme Prototypes virtual aircraft models are artistic interpretations inspired from real-world models and prototypes. They are in no way intended to represent real aircraft or to be used as training tools for real pilots. There are significant differences between the models and the real aircraft.

For historical accuracy and educational purposes, portions of this manual are inspired from the original "Gates Learjet Model 25D Airplane Flight Manual" published during the 1970s by Gates Learjet Corporation, and from other sources. Xtreme Prototypes is not affiliated with Bombardier Learjet, Bombardier Aerospace, Gates Corporation or any other company, entity or organization related to the development of the Gates Learjet 20 Series from 1960-1980.

Lockheed Martin and Prepar3D are either registered trademarks or trademarks of Lockheed Martin Corporation. Microsoft, Microsoft Flight Simulator, FSX, Windows, Windows Vista, Windows XP and DirectX are either registered trademarks or trademarks of Microsoft Corporation. Steam is either a registered trademark or a trademark of Valve Corporation. Other company or product names mentioned in the documentation may be trademarks or registered trademarks of their respective owners.

Xtreme Prototypes add-ons and manuals for the general public are considered edutainment software and shall not be used for real-world pilot training.

Software features, online content, prices and release dates are subject to change without notice.

WELCOME ON BOARD!



Welcome to version 3.0 of our GLJ Model 25 Special Edition addon, our most advanced, study-level business jet simulator for Lockheed Martin Prepar3D and Microsoft Flight Simulator X!

This new release contains so many new features and improvements that we believe you will be thrilled by your new addon as much as we are!

Worth mentioning are four (4) new virtual cockpit configurations with retrofitted instrument panels, full 3D integration of the GNS 530 and GTN 650/750 from [Reality XP](#) and [Flight 1](#), full 3D integration of the Rex/Milviz WX Advantage weather radar from [Rex Simulations](#), customizable gauges to display and control third-party GPS, radars and transponders, 13 new liveries in addition to the ones from version 2.1 (23 liveries in total), interior and exterior dynamic lights compatible with the latest versions of Prepar3D, new interior/exterior textures, a fully-functional GPU (Prepar3D), new pilots and an updated 335-page flight manual, among others.

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 1960’s and 70’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 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.

Compared to flying other business jets, the Lear 25 gives you a thrill similar to racing a performance sports car and leaving all other competitors way behind. It is fast, slim, sexy, comfortable and capable of maneuvers you would never attempt with another civilian aircraft. According to some real-world pilots, its performance as a general aviation business jet is simply unequalled, even by today’s standards!

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 gaming computers and graphics cards that are available today. It is a complex aircraft simulator that features high resolution models and textures, hundreds of animations, over 60 sound effects, dynamic light effects, custom aircraft systems and full-3D VR-ready virtual cockpits

that make this addon an ideal candidate for new virtual reality devices and applications.

Nothing was spared in our efforts to reproduce the different instrument panels, carefully modeling and animating each mechanical device with all the necessary moving parts. Except for the LCD screens and the new radio's VFD displays, no flat 2D gauges are used in this model. Everything you see on your computer screen is in full 3D!

The result is a unique addon that strives to bring you not only the actual feeling of flying a high performance aircraft now equipped with modern avionics but also the spirit of maneuvering such a vehicle at a time when LCD screens and powerful computers didn't exist and pilots needed to know how to fly and navigate with minimal resources and rely on their own experience, abilities and judgment.

For the general aviation desktop 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, nearly all systems, instruments, switches and knobs are fully functional in order to simulate complete procedures, from cold and dark to shutdown.

At Xtreme Prototypes, we truly consider our addons as mini aircraft simulators. Our products take months if not years to develop and test by a dedicated and passionate team of artists, technicians and pilots. We pay attention to every detail and we do our best to make sure that we provide our users with the best flight simulation experience they can get within the limitations of the current simulation platforms. Instead of releasing many models with limited features and quality, we concentrate on only a few that we improve from version to version, motivated by the encouragement we receive from our faithful community of serious flight simmers.

Becoming one of our users makes you an important member of our development team. Version 3.0 of our GLJ Model 25 SE addon is the product of the many ideas, comments and suggestions we received from dozens of serious computer pilots like you from around the world since version 1.0 of our 20 Series business jet addon was released back in 2009. When you speak, we listen!

We wish to express our gratitude to all our users, followers, reviewers, test pilots, ex-Learjet employees, partners and friends for their contribution to the making and the success of this extreme aircraft simulator.

Thank you for your sustained interest and continuous support!

The development team at Xtreme Prototypes

TABLE OF CONTENTS

RELEASE NOTES	2
WELCOME ON BOARD!	10
INTRODUCTION AND PRODUCT DESCRIPTION	1-1
About the Real 20 Series	1-1
What's New in Version 3.0?	1-4
What's New in Version 2.1?	1-10
What's New in Version 2.0?	1-13
V3.0 Addon Description	1-15
Project Scope	1-23
End-User Software License Agreement	1-26
GETTING STARTED	2-1
Minimum System Requirements.....	2-1
Downloading your Addon	2-2
Extracting the Installers.....	2-3
Software Installation.....	2-4
Performance.....	2-8
Recommended Settings in Prepar3D.....	2-10
Recommended Settings in Flight Simulator X.....	2-12
AIRCRAFT DESCRIPTION AND SPECIFICATIONS	3-1
Aircraft Description	3-1
Aircraft Specifications.....	3-2
General Arrangement	3-4
Exterior Clickable Hot Spots (Prepar3D).....	3-6
INSTRUMENT PANELS (3D VIRTUAL COCKPITS)	4-1
Four New Virtual Cockpits	4-1
Full-3D Gauges.....	4-3
Interior 3D Model Features	4-5

How to Actuate Switches, Buttons and Knobs	4-7
Configuring the Virtual Cockpit	4-9
Moving the Pilot's Viewpoint	4-9
Hiding the Control Columns and Yokes	4-10
Hiding the Throttles	4-11
Playing Music in the Cockpit.....	4-11
Releasing the Armrests, Hiding the Tablet, Using the Sun Visors	4-12
Adding Third-Party Addons, Systems and Gauges	4-13
[fig. 4-1] Virtual Cockpit Configuration	4-14
[fig. 4-2] Captain's Instrument Panel.....	4-15
[fig. 4-3] Audio Panel.....	4-16
[fig. 4-4] Ice Protection Panel.....	4-17
[fig. 4-5] Marker Beacon, Gyro Panel	4-18
[fig. 4-6] Flight Director Annunciators, Angle-of-Attack Indicator	4-19
[fig. 4-7] Attitude Director Indicator (ADI)	4-20
[fig. 4-8] Horizontal Situation Indicator (HSI).....	4-21
[fig. 4-9] Airspeed/Mach Indicator (ASI)	4-22
[fig. 4-10] Radio Magnetic Indicator (RMI)	4-23
[fig. 4-11a] Altimeter	4-24
[fig. 4-12] Vertical Speed Indicator (VSI).....	4-24
[fig. 4-13] Radio Altimeter	4-24
[fig. 4-11b] Air Data Display Unit (ADDU).....	4-25
[fig. 4-11c] Air Data Panel.....	4-25
[fig. 4-14] Trim Indicators	4-26
[fig. 4-15] Emergency Battery Switches (APU), Anti-Skid Lights	4-26
[fig. 4-16] Standby Gyro, NAV1/GPS Switch, Flight Director Switch	4-27
[fig. 4-17a] Center Instrument Panel (Classic Cockpit Config.).....	4-28
[fig. 4-17b] Center Instrument Panel (Retrofitted Cockpit Config.).....	4-29
[fig. 4-17c] Center Instrument Panel (GTN 650/750 Cockpit Config.)	4-30
[fig. 4-17d] Center Instrument Panel (Dual FTN 750 Cockpit Config.).....	4-31
[fig. 4-18a] ADF Radios (Classic)	4-32
[fig. 4-19a] NAV Radios (Classic).....	4-32
[fig. 4-18b] ADF Radios (Retrofitted).....	4-33
[fig. 4-19b] NAV Radios (Retrofitted).....	4-34
[fig. 4-20a] COM2 Radio, Transponder (Classic).....	4-35
[fig. 4-20b] Transponder (Retrofitted).....	4-36
[fig. 4-21a] COM1 Radio (Classic)	4-37

[fig. 4-21b] COM Radios (Retrofitted)	4-38
[fig. 4-22a] AFCS Mode Selector Panel (Captain’s Side, Classic)	4-39
[fig. 4-22b] AFCS Mode Selector Panel (Copilot’s Side, Classic).....	4-40
[fig. 4-23] Autopilot Altitude Preselector (Classic)	4-40
[fig. 4-22c] AFCS Mode Selector Panel (1 of 2, Retrofitted)	4-41
[fig. 4-22d] AFCS Mode Selector Panel (2 of 2, Retrofitted).....	4-42
[fig. 4-24a] GNS/GPS	4-43
[fig. 4-24b] GTN 650/750.....	4-44
[fig. 4-24c] GPWS, Engine Sync Indicator	4-45
[fig. 4-24d] Radar	4-46
[fig. 4-25] Engine Gauge Cluster (EPR, EGT, RPM, Fuel Flow, Oil Press.)	4-47
[fig. 4-26] Electrical Gauge Cluster (Oil Temp., AC/DC Volts, Amps).....	4-48
[fig. 4-27] Electrical Switches	4-49
[fig. 4-28] Flaps, Gear, Engine Starter Panel	4-50
[fig. 4-29] Glareshield.....	4-51
[fig. 4-30] Main Annunciator Panel.....	4-52
[fig. 4-31] Captain’s Fire Panel.....	4-54
[fig. 4-32] Exterior Extinguisher Discharge Indicators	4-54
[fig. 4-33] Copilot’s Fire Panel	4-55
[fig. 4-34] Thrust Reversers Control Panel.....	4-56
[fig. 4-35] Copilot’s Instrument Panel	4-57
[fig. 4-36] DME Head	4-58
[fig. 4-37] Mini Gauge Cluster (O2, Hydraulic and Emer. Air Press.).....	4-58
[fig. 4-38] Digital Clock	4-59
[fig. 4-39] Pressurization Panel	4-60
[fig. 4-40] Cabin Temperature Control Panel.....	4-61
[fig. 4-41] Power Quadrant (Throttles, Flaps & Spoilers Switches, Test Panel)	4-62
[fig. 4-42] Center Pedestal	4-64
[fig. 4-43] Fuel Control Panel	4-65
[fig. 4-44] Flight Controller (Autopilot).....	4-66
[fig. 4-45] Emergency Lights Panel, Yaw Damper Panel, Trim Indicators	4-67
[fig. 4-46] Jetstar 8 Stereo 8-Track Tape Player	4-68
[fig. 4-47] Side Wall Knobs, Lighting Switches, Oxygen Valves, Map Lights.....	4-69
[fig. 4-48] Sun Visors	4-70
[fig. 4-49] Flight Map.....	4-70
[fig. 4-50] Control Yoke Buttons	4-71
[fig. 4-51] Cabin Configuration (Door, Lights, Curtain, etc.)	4-72

[fig. 4-52] Cabin Configuration (Door, Lights, Curtain, etc.)	4-73
SYSTEMS DESCRIPTIONS	5-1
20 Series Aircraft Systems	5-1
Flight Controls	5-2
Electrical System	5-3
Hydraulic System, Landing Gear	5-4
Power Plant, Thrust Reversers	5-4
Fire Detection and Suppression System	5-5
Environmental Control System	5-5
20 Series Fuel System	5-6
Fuel Pumps	5-6
Refueling, Wingtip Tanks, Wing Tanks	5-7
Center Fuselage (Storage) Tank	5-7
Crossfeeding, Fuel Jettison	5-8
Fuel System Controls, Lights and Annunciators	5-9
Fuel System Procedures	5-13
Automatic Flight Control System (AFCS)	5-15
Autopilot	5-16
Autopilot Test Switches	5-17
Flight Director	5-17
Attitude Direction Indicator (ADI)	5-18
Horizontal Situation Indicator (HSI)	5-18
Autopilot/Flight Director Buttons, Switches, Knobs and Lights	5-19
Stick Nudger/Puller	5-23
Control Yoke Buttons	5-24
AP/FD Mode Selector Panels	5-25
Flight Director Annunciators	5-28
AP/FD Operation Compared to the Real Aircraft	5-29
AP/FD Comparison Table	5-29
FLIGHT PLANNING	6-1
Fuel Required and Gross Weight	6-1
Takeoff Data	6-3
Climb and Cruise Data	6-5
Approach and Landing Data	6-9

NORMAL PROCEDURES AND CHECK LISTS 7-1

Getting Started 7-1

Starting your Simulation Platform 7-1

Recommended Settings for Beginners 7-2

Adjusting the Sound Volume 7-2

Creating a Flight 7-3

Immediate Takeoff or “Cold and Dark” Startup 7-4

Exterior Inspection 7-5

Check Lists 7-6

Cockpit Preparation (Power OFF) 7-6

External Power Source (GPU, APU) 7-7

Cockpit Preparation (Power ON) 7-8

Warning Systems Tests 7-8

Before Starting Engines 7-9

Engine Start 7-11

Before Taxi 7-12

Taxi 7-13

Before Takeoff 7-13

Takeoff 7-15

Takeoff Sequence 7-16

Climb 7-17

Cruise 7-18

Descent 7-18

Approach 7-19

Before Landing 7-20

Landing (after Touchdown) 7-20

Before Clearing the Runway 7-21

After Clearing the Runway 7-21

Shutdown 7-22

ABNORMAL / EMERGENCY PROCEDURES 8-1

Engine Failure on Takeoff 8-1

Engine Failure in Cruise 8-1

Engine Failure on Approach 8-2

Engine Fire 8-2

Electrical and/or Hydraulic Systems Failure 8-3

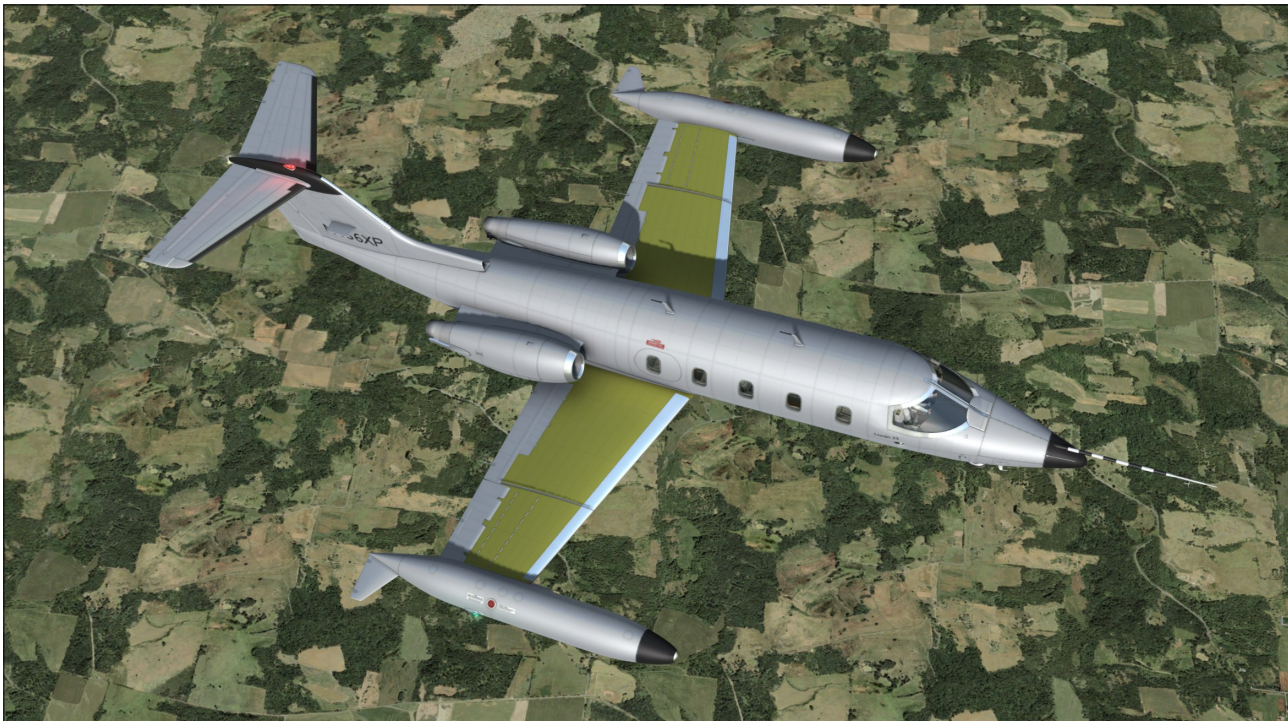
Landing Gear Failure	8-5
QUICK START PROCEDURES (CHECK LISTS)	9-1
APPENDICES	A0-1
Virtual Aircraft Reference Information	A1-1
Adding Third-Party Addons, Systems and Gauges (User Guide)	A2-1
About Third-Party Addons	A2-1
Adding Third-Party Addons During Installation	A2-2
Adding Third-Party Addons by Copying Files	A2-3
Adding Other Third-Party Addons	A2-4
Configuration by Default	A2-5
Backing Up your Panel Configuration File.....	A2-6
Installing a GPS 500 or a GNS 530	A2-8
Installing a GTN 650/750 Combination	A2-12
Installing a Pair of GTN 750.....	A2-17
Installing a Weather Radar	A2-22
Installing a Special Transponder	A2-26
Programming Buttons and Knobs	A2-30
The Control Gauges	A2-33
Programming the Control Gauges to Suit your Needs	A2-35
Some Examples	A2-37
Selected Bibliography	A3-1
Help and Support	A4-1
Frequently Asked Questions	A5-1
Known Issues	A6-1
Making Of	A7-1

SCREENSHOTS

USER'S NOTES

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 vehicles were usually conversions from World War II 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 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 Learjet 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 Xtreme Prototypes 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 replaced, the TFE-731 offered 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 Learjet 20 Series aircraft continued to be developed and sold, as many operators preferred their simplicity and performance.

In August 1977, a new aircraft emerged from its hangar. 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 turboprop taking over the market and the 20 Series was gradually abandoned. At the end of the 1980's, many airports around the world had banned the 20 Series aircraft due to noise restrictions. Today, a few remain in marginal use, some as cargo aircraft and some in service in countries where altitude considerations predominate.

During the 1980's, development continued with the Model 55 (among others), essentially a Learjet with a larger fuselage and a stand-up cabin and later, transcontinental range.

By the end of the decade, ownership of the

company had changed hands a few times, eventually being 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 Bombardier Learjet 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 canceled in October 2015 for financial reasons, and so the company could concentrate on its C Series (now developed by Airbus and known as the A220) and Global 7000/8000 instead.

At the time of this writing, nothing has yet been divulged by the company regarding the future of its Learjet subsidiary and the new Model 85. 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 3.0?

New Features

Four (4) virtual cockpits with different panel configurations*:

- **Classic Configuration** - Features a classic analog instrument panel from the 1970's, similar to the original Learjet 25 panel. A GNS 530 and a weather radar are also installed.
- **Retrofitted Configuration** - New radios with yellow VFD displays have been installed in the main instrument panel to replace the original sets with analog displays from the 1970's. A GNS 530 and a weather radar are also installed.
- **GTN 650/750 Configuration** - Features modern avionics including GTN 650/750 GPS/NAV/COM/ATC multifunction display systems, a weather radar and new radios with yellow VFD displays. This is how some

Learjet 25 still in service today have been retrofitted in recent years.

- **Dual GTN 750 Configuration** - Features modern avionics including two GTN 750 GPS/NAV/COM/ATC multifunction display systems, a weather radar and a new ADF radio with a yellow VFD display. This is how some Learjet 25 still in service today have been retrofitted in recent years.

**: GNS, GTN, radar and special transponder addons are not included and must be purchased separately from third-party vendors/developers (see below).*

Full 3D integration of the GPS/GNS/GTN, radar and transponder, configurable to meet most user needs. Screens, buttons and knobs can be programmed by the user to integrate almost any third-party addon. Experimentation may be required:

- Fully animated 3D model of the GNS 530, compatible with the simulator's GPS 500 and the Reality XP GNS 530 addon (not in-

cluded, available from [Reality XP](#))

- Fully animated 3D model of the GTN 650 and 750, compatible with the Reality XP GTN 650/750 addon (not included, available from [Reality XP](#)), also compatible with the Flight1 GTN 650/750 addon (not included, available from [Flight1](#))
- Fully animated 3D model of a weather radar, compatible with the Rex/Milviz WX Advantage weather radar (not included, available from [Rex Simulations](#))
- Fully animated 3D model of a transponder with a front VFD display, compatible with most special third-party transponder add-ons supporting C mode of operation and other features (not included, available from third-party vendors/developers)

23 aircraft variations, inspired from actual and fictitious models and liveries:

- XP GLJ25SE v3 Test Airplane (fictitious tail number N486XP)
- XP GLJ25SE v3 Rollout Version (fictitious tail number C-XPAV)
- Canadian Blue Jay Private (fictitious tail

number C-DBXP)

- U.K. Blue Bird Private, inspired from actual liveries (fictitious tail number G-KEXP)
- American Red Belly Private, inspired from actual liveries (fictitious tail number N864XP)
- American Golden Bird Private (fictitious tail number N6XP7)
- Australian Private (fictitious tail number VH-XPA)
- Australian Xtreme Pro Commercial (fictitious tail number VH-DXP)
- French Private, inspired from actual liveries (fictitious tail number F-GLXP)
- German Private, inspired from actual liveries (fictitious tail number D-XPSE)
- Spanish Private (fictitious tail number EC-DXP)
- Italian Private (fictitious tail number I-XPAO)
- European Humanitarian Aid Transport (fictitious tail number F-OZXP)





- Mexican Private, inspired from actual liveries (fictitious tail number XA-XPS)
- Brazilian Private (fictitious tail number PR-ZXP)
- Canadian Federation Red Bird (fictitious tail number C-GAXP)
- Canadian Marine Mammal Research Center (fictitious tail number C-FXPZ)
- Canadian Federal Police (fictitious tail number CGMXP)
- Canadian Government Black V.I.P. Transport, inspired from actual liveries (fictitious tail number 150018XP)
- U.S. Army V.I.P. Transport (fictitious tail number 68052X)
- U.S. Army Night Camouflage Transport (fictitious tail number 68052X)
- U.S. Government Area 51 Special Ops, inspired from actual liveries (fictitious tail number N4251XP)
- U.S. Air Force V.I.P. Transport, inspired from actual liveries (fictitious tail number

60214XP)

**: All liveries are imaginary, though some may be inspired from actual airplane liveries. Any match with actual tail numbers is a pure coincidence.*

Enhanced materials and textures:

- All exterior and interior 3D model materials and textures have been revised and improved
- Two (2) interior color sets: the classic and retrofitted models have a beige interior; the two GTN models have a black interior
- Mipmaps have been removed from the interior textures of the Prepar3D models to fix VR issues and to improve image quality
- Interior textures have new emissive maps for the backlit instruments
- Gauge glass reflection improved (day reflection, lamp post reflection when lit from the front)
- Fresnel ramps are used in all model materials for more realistic angles of reflection/specularity



Exterior dynamic lights (Prepar3D):

- Separate (left and right) two-intensity taxi/landing lights
- Rotating beacon lights (tail and belly)
- Right wing inspection light
- Entry door lights

Interior dynamic lights (Prepar3D):

- Captain map light
- Copilot map light
- 2-intensity glareshield flood lights
- Cockpit and cabin ceiling lights
- Entry door lights
- Passenger reading lights (can be switched individually)

Ground power unit (Prepar3D):

- Fully modeled and functional external GPU supplying 28 VDC to the aircraft during maintenance, training or preflight procedures (with animation, lights and sound)

Clickable hotspots with tooltips on the exterior model (Prepar3D):

- GPU visible/invisible (left wingtip tank aileron)
- Crew present/absent (steps on the lower section of the main door)
- Pilot selection (pilot's shirts)
- Pilot's sunglasses (windshield defroster)
- Cabin and entry lights (wall switches)
- Main exit door open/close (door handles)
- Remove before flight items installed/removed (nose gear door)
- Left recognition light installed/removed (left wingtip tank nose cone)

Enhanced autopilot/flight director:

- Logic between different AP modes improved, to better conform to the AFCS and FD on the real aircraft
- When engaged, the AP also engages the FD and the ATT Hold and Wing Leveler modes simultaneously, like in the real aircraft

- ATT Hold mode captures the current pitch angle automatically when engaged (no need to reset the AP or to re-synchronize the pitch angle)
- AP pitch wheel modified to conform to the mode of operation of the simulator's autopilot; works in tandem with the autopilot ATT Hold mode



- New AP/FD Korry switches in the main panel of the retrofitted models
- “SPD Hold by Pitch” controller used for flight level change (beta version)
- ATT Hold mode no longer triggers the Wing Leveler automatically

Other new features:

- New “Cold and Dark” cockpit reset cycle and “Auto Start” sequence
- Native Prepar3D v4.5 (Hotfix 2) version, in addition to the FSX and FSX Steam versions
- One or two recognition lights (user selectable)
- New pilots on the exterior model (three male, one female, user-selectable), complete with headsets and sunglasses (optional)
- New aircraft sound mix, GPU sound effect added
- Engine sync feature added with synchro rotating disc (spinner) in retrofitted panels
- RVSM system added to the retrofitted pan-

els, complete with digital altimeters/altitude preselectors (ADDUs) with blue VFD display, standby altimeter and control panel

- Revised electrical system
- GPWS installed in retrofitted panels
- New radios with yellow VFD displays installed in the retrofitted panels (COM1, COM2, NAV1, NAV2, ADF1/2, ATC/transponder)
- Cabin curtains behind the cockpit (open or close, switchable)
- New paintkit for users to create their own liveries (requires Adobe Photoshop CS5 or later)
- An updated 335-page flight manual:
 - Images and text revised and updated, with new content and bookmarks (printable PDF format, requires Adobe Reader)
 - New section about installing third-party addons (GPS, GNS, GTN, radar and transponder)
 - Procédures normales et d’urgence en français (normal and emergency procedures in French)

Modifications, Improvements and fixes

Modifications and improvements:

- Improved flight model for better performance during takeoff and climb
- Rudder blocked when electric nose gear steering is engaged
- To-From needles added to both HSIs
- Interior shadow added to the ADIs
- The captain and the copilot now appear by default onboard the aircraft (exterior model only) when the addon is loaded in the simulator
- 8-track player optional in the dual GTN 750 cockpit configuration because of changes to the center pedestal

- The thrust reversers control box lights illumination was modified to conform to the real aircraft
- Alternate frequency on COM1 radio can be incremented in steps of 5 KHz instead of 25 KHz (analog radio in the classic panel configuration only)
- Fire extinguisher arm buttons are now white instead of yellow, like in the real aircraft
- COM/NAV/ATC radios and GPS/GNS/GTN now need DC/Avionics power only to operate, like in the real aircraft
- Radar needs AC - inverters **ON** - to operate, like in the real aircraft
- Cockpit lights and instruments backlights are no longer connected to the hot battery bus, they need a battery switch to be set to **ON** to function, like in the real aircraft
- Wingtip tanks now have a 2-degree (nose down) inclination like on later Learjet Model 25 aircraft
- RMI needles point to 90 degrees (E) if set to **ADF** and ADF radio is set to **OFF** or **ANT**

Fixes:

- Landing and taxi lights not properly oriented by default in FSX and too dimmed - **fixed**, *lights are now properly oriented by default*
- Landing lights illuminating the cockpit in Prepar3D - **fixed** *(the Prepar3D version now uses dynamic spotlights that are oriented properly by default)*
- Alternate frequency on COM1 jumps to invalid frequencies - **fixed** *(classic panel configuration only)*
- Instrument backlighting and lamp posts too bright - **fixed**
- Aircraft drops nose when the AP is engaged for the first time - **fixed** *(correct pitch angle is captured automatically when the autopilot is engaged)*
- Engines shut down when the fuselage tank switch is set to **FILL** - **fixed**
- Directional gyro drifts, S/F switch inverted - **fixed** *(the addon now uses a type 3, electro-magnetic slaved compass gyro by default)*
- HSI turning in the wrong direction for a brief moment at the beginning of a turn - **fixed**
- FD bars and airplane symbol colors in the ADI blend with the background color under certain lighting conditions - **fixed**
- Flaps indicator moves when there is no hydraulic power - **fixed**
- Yaw damper **CTRL+D** keyboard shortcut does not work due to the custom dual yaw damping system of this aircraft - **fixed**
- Flashing textures when panel (instrument) lights are turned on and off with no DC power - **fixed**
- Analog altimeter not showing the correct altitude when approaching a new FL due to a rounding error with numbers in the simulator - **fixed**
- Analog altimeter baro knob tooltip with trailing zeros - **fixed**
- Beacon lights rotation too fast on fast CPUs - **fixed**
- Illuminated sections of third-party gauges too dim during the day, dawn and dusk - **fixed** *(additive lighting mode is now used for the illuminated section, can be dimmed on most third-party addons such as GTN and radars)*
- Gear alarm goes off while the aircraft is first loaded under certain conditions - **fixed**
- Digital clock DIM switch issue - **fixed**
- FD bars and inclinometer ball weird behavior under extreme attitude conditions - **fixed**
- External light effects not showing at certain angles - **fixed**
- Engine EPR bugs not working - **fixed**

Fixes, modifications, improvements and new features are subject to change without notice. Please refer to the release notes (page 2) for

more details. Some functionalities may differ from those in the real aircraft due to limitations in the simulation platforms.

Some features available in the native Prepar3D version may not be available in the FSX versions. The FSX versions contain less animations and features than the native Prepar3D version due to limitations in the FSX platform. However, systems and procedures are the same on all platforms and this has no impact on the simulation.

GNS, GTN, radar and special transponder addons are not included and must be purchased separately. Available from third-party vendors/developers.

WHAT'S NEW IN VERSION 2.1?

New Features

Completely redesigned fuel system to imitate as closely as possible the fuel system of the real aircraft, within the current limitations of the simulator:

- New fuel balance (wingtip tanks with recognition light and fuel jettison system installed, wing tanks and fuselage tank)
- Fuselage tank used as “storage” like in the real aircraft
- Jet pumps functional
- Standby pumps functional
- Crossfeeding (one tank supplies fuel to the opposite engine or to both engines) available to balance wing tanks or for single engine operation
- Fuel jettison (wingtip tanks only, like in the real aircraft)
- All switches and lights in the fuel panel functional to conform to the real aircraft
- Fuel counter reset button functional

Enhanced autopilot/flight director:

- New AP/FD modes added: Speed Hold, Mach Hold, Wing Leveler, Attitude Hold, Localizer Only Hold, Glideslope Only Hold



- AP logic between the different modes improved, to conform to the AFCS and FD in the real aircraft
- New flight director annunciators (each side of the AoA indicators)
- Buttons on the flight controller panel are now illuminated when AP modes are engaged
- AP turn knob functional and controls bank, disables lateral-directional modes
- AP pitch wheel functional and controls pitch modes
- Autopilot test switches all functional
- Autopilot Speed Hold mode automatically switches to Mach Hold mode above FL290 when engaged and vice versa, like in the real aircraft
- Steer lock and AP release buttons animated and functional on both yokes
- Primary and secondary yaw damper systems functional
- AP automatic stick pusher/puller animated and fully functional to prevent aerodynamic stall or overspeed (optional)
- Stick shaker animation and sound when entering the yellow zone of the AoA indicator

New sounds from the real aircraft:

- New 3D mix for the external aircraft sounds
- New engine sounds

- New starter sounds
- New autopilot/yaw damper disengage alert
- New cabin altitude alert
- New overspeed horn alert
- Pitch trim clicker (stabilizer in motion)
- Stick shaker sound
- Brake sounds (“birds in the cockpit”)

Updated 225-page manual:

- New comprehensive 20 Series fuel system section
- New comprehensive AFCS (autopilot/flight director) section
- New climb and cruise tables in the planning section
- Images and text revised and updated, with new content
- Les procédures normales et d’urgence sont maintenant rédigées en français (normal and emergency procedures sections are now available in French)

Other new features:

- New native Prepar3D v4 version, in addition to the native Prepar3D v3, FSX and FSX Steam versions
- New Checklist and Reference tabs for the pilot’s kneeboard (in English or French)
- Low altitude overspeed horn - to prevent bird strikes (over 306 knots under 14,000 feet)
- Electric auxiliary hydraulic pump now functional (with sound)
- Crew and passenger oxygen system (rechargeable)
- Emergency batteries (“APU”) now simulated in case of a general power failure
- Emergency lighting system
- Generator reset switches now simulated

- Standby gyro caging button (animated and functional)
- More reflection in windshield glass, dirt in windows
- ASI bugs preset, Mach bug now linked to Mach card (no longer needs constant adjustment)
- Aircraft nose and windshield defog outlets added to the virtual cockpit
- Fuel jettison tubes added to the rear of the wingtip tanks (exterior model)
- Fuel jettison visual effect

Modifications, Improvements and Fixes

Modifications and improvements:

- Revised flight model for better performance during takeoff and climb, more stability in cruise at high altitude, and to eliminate unwanted roll/yaw oscillations at altitude
- New weight and balance to conform better to the real Gates Learjet Model 25D
- New flight director annunciators, to conform to the real aircraft
- Antiskid lights illuminate like in the real aircraft (only when antiskid inop or during test or malfunction)
- Steer lock switch is now spring loaded to conform to the real aircraft. Release button added on yoke. Green annunciator goes on when electric steering is engaged.
- Nose pitches down when spoilers are extended, like with the real aircraft
- New cabin altitude alert and horn (annunciator flashes above 9,000 ft., horn blows above 10,100 ft.)
- Low fuel annunciator modified to conform to the new fuel system
- Enhanced emergency gear extension system with air bottle (rechargeable)
- Enhanced stall warning system with functional test switches

- CPCS rate knob now a rotary-type design, no longer spring loaded
 - Engines up to 85% RPM in reverse (thrust reversers deployed), like in the real aircraft
 - New calibrated cabin altitude controller (no more pressurization issues above FL400)
 - Emergency battery switches no longer linked to the antiskid system (emergency batteries are now simulated)
 - No more standby gyro power switch, instrument now powered by main bus or by emergency batteries
 - Wing and horizontal stabilizer anti-ice system fully simulated, new wing temperature gauge
 - DME hold mode now temporarily holds the last reading on the DME head display
 - Thrust reversers cannot be armed if the aircraft is not on the ground or if the throttles are not at idle, to prevent accidental extension of the thrust reversers while in flight
 - Minor modifications on both ADIs and HSIs
 - Several minor system improvements
 - Several modifications on textures
 - “Remove Before Flight” items are no longer installed by default when power is turned off (user controlled)
 - Crew’s presence in the cockpit is now user controlled
 - Sound volume and balance can now be adjusted by moving cursors on the 8-track tape player (volume only in the FSX versions)
 - Engine oil pressure gauge now needs AC power to function
 - Default autopilot vertical speed (when engaged) is now set to 1,000 ft./min.
 - Red and white speed/Mach bugs on the ASI now allow for better fine tuning of the selected airspeed
 - The tail stand is installed only when the aircraft is full of fuel (85% or more, CoG near aft limit)
- Fixes:**
- Fuel tank selector issue when the addon is loaded after a flight with a single engine aircraft with different tankage - **fixed**
 - Unwanted roll and yaw oscillations at high altitude - **fixed**
 - Rotating beacon lights flashing in cabin and cockpit - **fixed**
 - Copilot RMI card not rotating - **fixed**
 - Copilot HSI glideslope needle not working - **fixed**
 - Windshield glass filters out landing and taxi light beams on runway in FSX - **fixed**
 - Cabin does not depressurize when main door is opened at high altitude - **fixed**
 - Aircraft has issues when used with third-party EZDOK/EZCA software - **fixed**
 - Fuel quantities indicated on the fuel panel differ from the tanks installed - **fixed**
 - Mouse wheel rotation reversed on the DME NAV1/NAV2 selector knob - **fixed**
 - Landing gear struts not enough compressed on the ground when the aircraft is fully loaded - **fixed**
 - Main gear wheels sink below runway when landing under certain conditions - **fixed**
 - Inverted rudder trim tab on exterior model - **fixed**
 - Pitch trim switch on center pedestal inverted - **fixed**
 - Manual cabin temperature switch not working - **fixed**
 - Horn silence switch not always working - **fixed**

WHAT'S NEW IN VERSION 2.0

New Features

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, VR-ready, fully functional 3D virtual cockpit - Fully functional high resolution virtual cockpit with over 1,500 parts and 250 full-3D animated gauges, switches, levers, light indicators, flight instruments and systems with tooltips.

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

New thrust reversers - The new GLJ Model 25 SE addon 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 the 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.

Note: No longer available in version 3.0. Replaced by fully animated 3D models of the GNS 530, the GTN 650/750, and of a generic radar and transponder.

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 to the cockpit and to the cabin.

Other new features:

- 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 animated 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 new 3D animated gauges, switches and levers
- Modified radios (COM1 with alternate frequency, COM2, NAV1, NAV2, ADF1, ADF2, transponder). Now fully compatible with ATC.
- Independent flight director
- NAV or GPS navigation modes.
- New DME head
- New digital clock and stopwatch
- Functional Lear Jet Stereo “Jetstar 8” 8-track tape player on the center pedestal that can play the user’s music (a tribute to the inventive genius of Bill Lear)
- Rearranged side control knobs
- New pilot seats with adjustable armrests
- New animated and slidable sun visors
- Hideable control columns and yokes
- Hideable throttle quadrant
- Hideable tablet on the copilot side
- New camera views (5 exterior, 9 interior)
- An updated, 160-page flight manual (printable PDF version)
- A comprehensive paintkit (Adobe Photoshop CS5 file format) to allow users to create their own liveries



V3.0 ADDON DESCRIPTION

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 1960’s and 1970’s, flying high above the weather at transonic speeds.

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.

General Features

23 aircraft variations, inspired from actual and fictitious models and liveries:

- XP GLJ25SE v3 Test Airplane (fictitious tail number N486XP)
- XP GLJ25SE v3 Rollout Version (fictitious tail number C-XPAV)
- Canadian Blue Jay Private (fictitious tail number C-DBXP)
- U.K. Blue Bird Private, inspired from actual liveries (fictitious tail number G-KEXP)
- American Red Belly Private, inspired from actual liveries (fictitious tail number N864XP)
- American Golden Bird Private (fictitious tail number N6XP7)
- Australian Private (fictitious tail number VH-XPA)
- Australian Xtreme Pro Commercial

- (fictitious tail number VH-DXP)
- French Private, inspired from actual liveries (fictitious tail number F-GLXP)
 - German Private, inspired from actual liveries (fictitious tail number D-XPSE)
 - Spanish Private (fictitious tail number EC-DXP)
 - Italian Private (fictitious tail number I-XPAO)
 - European Humanitarian Aid Transport (fictitious tail number F-OZXP)
 - Mexican Private, inspired from actual liveries (fictitious tail number XA-XPS)
 - Brazilian Private (fictitious tail number PR-ZXP)
 - Canadian Federation Red Bird (fictitious tail number C-GAXP)
 - Canadian Marine Mammal Research Center (fictitious tail number C-FXPZ)
 - Canadian Federal Police (fictitious tail number CGMXP)
 - Canadian Government Black V.I.P. Transport, inspired from actual liveries (fictitious tail number 150018XP)
 - U.S. Army V.I.P. Transport (fictitious tail number 68052X)
 - U.S. Army Night Camouflage Transport (fictitious tail number 68052X)
 - U.S. Government Area 51 Special Ops, inspired from actual liveries (fictitious tail number N4251XP)
 - U.S. Air Force V.I.P. Transport, inspired from actual liveries (fictitious tail number 60214XP)

Note: All liveries are imaginary, though some may be inspired from actual airplane liveries. Any match with actual tail numbers is a pure coincidence.

Flight Model Features

Optimized, pilot-tested, 20 Series flight dynamics to simulate the performance of a high-powered civilian jet aircraft on your simulation platform:





- 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: 359 KIAS
- Maximum Mach: Mach 0.82 (at 24,000 ft.)
- Landing gear, anti-skid system, differential brakes
- Fuel system (including cross-feeding and wingtip tanks fuel jettison system)
- CJ-610 power plant
- Fire detection and suppression system
- Pneumatic (high pressure), bleed air, pressurization and environmental control systems

20 Series Aircraft Systems

The following 20 Series aircraft systems are simulated to conform as closely as possible to the operation of the real airplane, within the present limitations and capabilities of the available simulation platforms:

- Flight controls
- Stall/overspeed warning systems with stick nudger/puller and stick shaker
- Electrical system
- Emergency batteries (APU)
- Ground power unit (Prepar3D GPU)
- Hydraulic system (including functional electric auxiliary hydraulic pump)
- Air conditioning and cabin temperature (H-valve) system
- Anti-ice system
- Automatic flight control system (AFCS) with autopilot, flight director, yaw damper and speed/Mach hold systems
- RVSM system, complete with digital altimeters/altitude preselectors (ADDUs) with blue VFD display, analog standby altimeter and control panel (retrofitted panels)
- Caution and warning system
- Avionics, radio and navigation systems (COM1, COM2, NAV1, NAV2, ADF1, ADF2, transponder, DME)

- GPS (default Prepar3D or FSX)
- GNS, GTN, weather radar, transponder (3D bezels, screens and programmable knobs included *(software not included and must be acquired from third-party vendors/developers)*)
- GPWS (retrofitted panels)
- Emergency gear extension system
- Crew and passenger oxygen system
- Main entry door (fully animated)
- Cockpit and cabin lighting systems, including emergency lighting (see details below)
- 4096 x 4096 high resolution textures with reflection and specular maps (Fresnel ramps are used in all model materials for more realistic angles of reflection/specularity)
- Unique markings and liveries for each aircraft variation
- Movable aerodynamic control surfaces:
 - Movable horizontal stabilizer
 - Elevator
 - Ailerons with trim and balance tabs
 - Flaps
 - Vertical stabilizer/rudder with trim tab
 - Spoilers

Aircraft Exterior 3D Model Features

- High resolution 3D exterior model, optimized for the latest versions of Lockheed Martin Prepar3D and Microsoft Flight Simulator X
- Highly detailed model inspired from the real aircraft, with more than 2,200 objects and 80 animations
- Fully animated landing gear, complete with flexible hoses, landing and taxi lights, anti-skid system, snubbers, and more
- Fully animated main 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
- Dynamic lights with projected light beams (Prepar3D) and/or conventional external light effects (FSX):
 - Separate L/R 2-intensity landing and taxi lights
 - Animated rotating beacon lights (belly, tail)
 - Right wing inspection light
 - Recognition lights (optional on the left wingtip tank)
 - Navigation lights (wingtip tanks, tail)
 - Strobe lights (wingtip tanks, tail)
- Animated stall vanes on the nose
- Optional nose test probe with vanes
- Four user-selectable pilots (three male, one female, with headset and optional sunglasses)
- Fully modeled and functional ground power unit (GPU) supplying 28 VDC to the aircraft during maintenance, training or pre-flight procedures (with animation, lights and sound - Prepar3D)
- Clickable hotspots on the exterior model (Prepar3D):
 - GPU visible/invisible (left wingtip tank aileron)
 - Crew present/absent (steps on the lower portion of the main door)
 - Pilot selection (pilot's shirts)
 - Pilot's sunglasses (windshield defog outlets)
 - Cabin and entry lights (cabin wall switches)
 - Main exit door open/close (door handles)
 - Remove before flight items installed/removed (nose gear door)
 - Left recognition light installed/removed (wingtip tank nose cone)

Aircraft Interior 3D Model Features

- Four (4) high resolution, VR-ready 3D virtual cockpits with different panel configurations, over 2,600 objects and more than



250 full-3D animated gauges, switches, knobs, levers, light indicators and flight instruments with tooltips:

- **Classic Configuration** - Features a classic analog instrument panel from the 1970's, similar to the original Learjet 25 panel. A GNS 530 and a weather radar are also installed.
- **Retrofitted Configuration** - New radios with yellow VFD displays have been installed in the main instrument panel to replace the original sets with analog displays from the 1970's. A GNS 530 and a weather radar are also installed.
- **GTN 650/750 Configuration** - Features modern avionics including GTN 650/750 GPS/NAV/COM/ATC multi-function display systems, a weather radar and new radios with yellow VFD displays. This is how some Learjet 25 still in service today have been retrofitted in recent years.
- **Dual GTN 750 Configuration** - Features modern avionics including two GTN 750 GPS/NAV/COM/ATC multi-function display systems, a weather

radar and a new ADF radio with a yellow VFD display. This is how some Learjet 25 still in service today have been retrofitted in recent years.

Note: GNS, GTN, radar and special transponder addons are not included and must be purchased separately. Available from third-party vendors/developers.

- Full 3D integration of the GNS/GTN, radar and transponder, configurable to meet most user needs. Screens, buttons and knobs can be programmed by the user to integrate almost any third-party add-on. Experimentation may be required:
 - Fully animated 3D model of the GNS 530, compatible with the simulator's GPS 500 and the Reality XP GNS 530 add-on (not included, available from [Reality XP](#))
 - Fully animated 3D model of the GTN 650 and 750, compatible with the Reality XP GTN 650/750 add-on (not included, available from [Reality XP](#)), also compatible with the Flight1 GTN 650/750 add-on (not included, available from [Flight1](#))

- Fully animated 3D model of a weather radar, compatible with the Rex/Milviz WX Advantage weather radar (not included, available from [Rex Simulations](#))
- Fully animated 3D model of a transponder with a front VFD display, compatible with most special third-party transponder addons supporting C mode of operation and other features (not included, available from third-party vendors/developers)
- Advanced instrument panels:
 - Captain's panel
 - Center panel
 - Electrical and radio panels
 - Copilot's panel
 - Annunciator panel
 - Thrust reverser control panel
 - Center pedestal
- Two (2) interior colors: the classic and retrofitted models have a beige interior; the two GTN models have a black interior
- 4096 x 4096 high resolution textures with reflection, specular and new emissive maps (no mipmaps are used for the interior textures of the Prepar3D models to fix VR issues and to improve overall image quality, Fresnel ramps are used in all model materials for more realistic angles of reflection/specularity)
- Animated control columns and yokes (hideable, user-selectable), with stick nudger/puller and stick shaker animation, and functional autopilot buttons
- Animated rudder pedals with differential brakes
- The classic panel configuration features modified radios with mechanical analog displays, like in the original aircraft from the 1970's (COM1 with alternate frequency, COM2, NAV1, NAV2, ADF1, ADF2, transponder)
- Retrofitted panel configurations feature new radios with yellow digital VFD displays and standby frequencies (COM1, COM2, NAV1, NAV2, ADF1/2, ATC/transponder)
- RVSM system, complete with digital altimeters/altitude preselectors (ADDUs) with blue VFD display, analog standby altimeter and control panel (retrofitted panels)
- Independent flight director
- NAV1 or GPS/GNS/GTN navigation modes. The Learjet autopilot is retrofitted to be fully functional in GPS mode.
- DME head
- Ground proximity warning system (GPWS, retrofitted panels)
- Engine sync spinner (retrofitted panels)
- Analog and digital clocks with stopwatch



- Functional Lear Jet Stereo "Jetstar 8" 8-track tape player on the center pedestal that can play the user's music - a tribute to the inventive genius of Bill Lear (optional in the dual GTN 750 retrofitted panel configuration)
- Side control knobs (light switches, cockpit fan switch, map light switches)
- Oxygen valves
- Pilot seats with adjustable armrests
- Animated and slidable sun visors



- Hideable throttle quadrant
- Thrust reverser subthrottles
- Hideable (dummy) tablet on the copilot side
- Cabin curtains behind the cockpit (open or close, switchable)
- Cockpit lighting system, including ceiling lights, emergency lighting, 2-intensity glareshield flood lights, map lights, instrument lights (Prepar3D)
- Cabin lighting system, including ceiling lights, emergency lighting, signs, door entry lights and passenger reading lights (can be controlled individually, Prepar3D)

Note: Xtreme Prototypes next generation addons no longer include 2D panels found in legacy products. They are replaced by full 3D virtual cockpits. Except for the LCD screens and the new radio's VFD displays, no flat 2D gauges are used in this model.

Visual Effects

- Engine smoke and contrail effects

- GPU starter smoke (Prepar3D)
- Wing vortices and vapor trails



- Dynamic lights with projected beams (Prepar3D)
- Aircraft lights, some animated (landing, taxi, recognition, navigation, strobes, rotating beacon, wing inspection)
- Cockpit/cabin lights (panel flood lights, ceiling lights, map lights, passenger reading lights, entry lights - Prepar3D)

Sound Effects

- 20 Series 3D sound set, including starter and engine sounds recorded from the real aircraft and positioned in the 3D space
- Over 50 additional cockpit stereo sound effects, many from the real aircraft: switches, knobs and levers, pneumatic valves, blower fan, alerts and horns, brake (“birds in the cockpit”) sounds, GPU, etc.

Miscellaneous

- “Cold and Dark” cockpit reset cycle and “Auto Start” sequence
- FBGS sound system for playing cockpit sounds and music (used under license)
- 5 external camera views
- 10 internal camera views
- A 335-page printable PDF manual (requires Adobe Reader)
- A comprehensive paintkit to allow users to create their own liveries (requires Adobe Photoshop CS5 or later)

Note: *Software features are subject to change without notice. Some functionalities may differ from those in the real aircraft due*

to limitations in the simulation platforms.

Some features available in the native Prepar3D version may not be available in the FSX versions. Due to some limitations in the FSX simulation platform, the FSX versions contain less animations and features than the native Prepar3D version. However, systems and procedures are the same on all platforms and this has no impact on the simulation.

Third-party GNS/GTN, radar and special transponder units are not included and are sold separately. Available from third-party vendors/developers.

PROJECT SCOPE

The Xtreme Prototypes GLJ Model 25 SE add-on is inspired from a series of real-world aircraft known in the 1970's as the Gates Learjet 20 Series (models 23 to 29). The package strives to recreate the general look and feel of the original aircraft for the virtual pilot's enjoyment.

While we regard this add-on as a real mini aircraft simulator rather than a game, we do not pretend that it is one hundred percent historically or technically accurate or that it faithfully reproduces all the systems and flight characteristics of the real Gates Learjet Model



25D. Nevertheless, we always pay attention to details and we do our best to make sure we provide our users with the best flight simulation experience they can get within the limitations of the currently available simulation platforms.

***Note:** Significantly modifying the simulator's built-in systems goes beyond the scope of this project aimed at producing a reasonably priced complex addon for the general public and the average user. As the simulation platforms evolve, so will the systems in future versions of this addon.*

There are differences between the model and the real aircraft. Xtreme Prototypes addons and manuals for the general public are considered edutainment software and shall not be used for real-world training.

This manual contains the necessary information for the installation and operation of the Xtreme Prototypes GLJ Model 25 SE 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.

GIVE THE MANUAL A CHANCE...

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

This addon strives to bring you not only the actual feeling of flying a high performance aircraft now equipped with modern avionics but also the spirit of maneuvering such a vehicle at a time when LCD screens and powerful computers didn't exist and pilots needed to know how to fly and navigate with minimal resources and rely on their own experience, abilities and judgment.

While this addon allows for comprehensive procedural IFR flight, anyone who has some experience with the simulator's default jets can fly the GLJ Model 25 SE addon. It is up to you to decide which level of complexity you want to achieve.





If you're feeling overwhelmed by the cockpit of your new business jet addon, we suggest giving the manual a chance as it was written with non-experienced pilots in mind. The addon 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, programmers, technicians, engineers and pilots. These products are costly to develop and require many months of research and hard work. They are aimed at a relatively limited market of serious flight simulation enthusiasts.

Xtreme Prototypes is a modest independent 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.

This addon may employ digital rights man-

agement (DRM) and/or copy protection technology, including the use of unique activation keys, to prevent the unauthorized use and/or copying of the software. Your activation key is unique, personal, non-transferable and traceable. It is illegal to make an activation key public or to circumvent any DRM and/or copy protection technology employed in this software product.

As a user, you are responsible for the protection and good use of this software product for which you obtained a license. Xtreme Prototypes reserves its right to withdraw an end user his/her rights and privileges to use the software if the license agreement is not respected, especially in the case of copyright infringement related to unauthorized reproduction and/or distribution over the Internet and/or by any other means.

The unauthorized reproduction and/or distribution of protected material constitutes an infringement to the exclusive right of its holder. This behavior could expose the offender to legal action and to a judgment to pay damages.

Piracy kills quality addons. Posting or downloading illegal copies of this addon over the Internet is a crime.

END-USER SOFTWARE LICENSE AGREEMENT FOR XTREME PROTOTYPES GLJ MODEL 25 SPECIAL EDITION ADDON

This End-User Software License Agreement (“EULA”) is a legal agreement between you (either an individual or a single entity) and Xtreme Prototypes, Inc. (“Xtreme Prototypes”) for the software product identified above, which includes computer software and may also include associated media and printed material, and may include online or electronic documentation (“SOFTWARE PRODUCT”). The SOFTWARE PRODUCT also includes any updates and supplements to the original SOFTWARE PRODUCT provided to you by Xtreme Prototypes.

By installing, copying, downloading, using, accessing or otherwise using the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, do not install or use the SOFTWARE PRODUCT.

SOFTWARE PRODUCT LICENSE

The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties.

The SOFTWARE PRODUCT is licensed, not sold.

The SOFTWARE PRODUCT is neither freeware nor shareware and is subject to the terms of use specified in this EULA.

PERSONAL ACTIVATION KEY

At the time of purchase of your license, you were issued a personal activation key to install the SOFTWARE PRODUCT on your computer. Your activation key is unique, personal, non-transferable and traceable.

GRANT OF LICENSE

This EULA grants you the following rights:

Software - You may install and use one copy of the SOFTWARE PRODUCT on a single computer at a time and only by one user at a time, for personal, noncommercial use. The primary user of the computer on which the SOFTWARE PRODUCT is installed may make a second copy for his or her exclusive and personal noncommercial use on a second computer.

Concurrent Use - A license for the SOFTWARE PRODUCT may not be used concurrently on different computers.

Storage/Network Use - If not prevented by copy protection technology, you may also store or install a copy of the SOFTWARE PRODUCT on a storage device, such as a network server, used only to run the SOFTWARE PRODUCT on your other COMPUTERS over an internal network; however, you must acquire and dedicate a license for each separate computer on which the SOFTWARE PRODUCT is RUN from the storage device. A license for the SOFTWARE PRODUCT may not be shared or used concurrently on different COMPUTERS.

Reservation of Rights - All rights not expressly granted are reserved by Xtreme Prototypes. All other uses that fall outside the scope of the EULA must receive the prior written permission of Xtreme Prototypes.

DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS

Entertainment or Educational Use Only - This SOFTWARE PRODUCT is for edutainment purposes only and shall not be used for formal training.

Limitations on Reverse Engineering, Decompilation and Disassembly - You may not reverse engineer, decompile, or disassemble the SOFTWARE PRODUCT.

Separation of Components - The SOFTWARE PRODUCT is licensed as a single product. Its component parts may not be separated for use on more than one computer or with other products or applications.

Rental and Lending - You may not lend, rent or lease the SOFTWARE PRODUCT.

Distribution and Sale - Unauthorized sale and/or distribution of the SOFTWARE PRODUCT by any mean, including but not limited to the Internet and/or physical media, is prohibited.

File Sharing - File sharing of the SOFTWARE PRODUCT by any mean is prohibited. You may not upload or download illegal copies of the SOFTWARE PRODUCT.

Software Transfer - You may not transfer your rights under this EULA to another user. Your activation key is unique, personal, non-transferable and traceable.

Modification of Configuration Files - You may modify the configuration files located in the SOFTWARE PRODUCT’s “airplanes”, “panel”, “model” and “sound” folders for your own private experimentation and use as long as the modified files are kept on your computer. You may not sell or otherwise distribute or transfer the modified configuration files or make them part of another product or application.

Modification of Aircraft Textures (Repaints) - You may modify or repaint the aircraft textures included with the SOFTWARE PRODUCT with a paint program. You may not sell the modified textures or make them part of another product or application. However, you may post your own repaints on the Internet for the benefit of other registered users, provided that your name, the original SOFTWARE PRODUCT name and the nature of the modification (a short description) are mentioned.

Modifications to Gauges and Special Effects - You may modify the XML code and the bitmaps included with the SOFTWARE PRODUCT’s gauges and special effects for your own private experimentation and use as long as the modified gauges and effects are kept on your computer. You may not sell or otherwise distribute or transfer the modified gauges and/or effects or make them part of another product or application. However, you may post images of the aircraft with the modified gauges and/or special effects on the Internet or elsewhere, provided that the original SOFTWARE PRODUCT name and the nature and author of the modifications are mentioned.

Sound Module and Sound Effects - The SOFTWARE PRODUCT includes a sound module and a number of sound

effects that are used under license from third parties. They are considered integral part of the SOFTWARE PRODUCT and may not be separated for use with other products or applications.

Dual Media Software - You may receive the SOFTWARE PRODUCT in more than one medium, including but not limited to files downloaded from the Internet. Regardless of the type or size of medium you receive, you may use only one medium that is appropriate for your single COMPUTER. You may not RUN the other medium on another COMPUTER. You may not sell, loan, rent, lease, or otherwise transfer the other medium to another user.

Digital Rights Management and Copy Protection - The SOFTWARE PRODUCT may employ digital rights management (DRM) and/or copy protection technology, including the use of unique and traceable activation keys, to prevent the unauthorized use and/or copying of the SOFTWARE PRODUCT. It is illegal to make unauthorized copies of the SOFTWARE PRODUCT, to make an activation key public or to circumvent any DRM and/or copy protection technology employed in the SOFTWARE PRODUCT.

Upgrades and Patches - If the SOFTWARE PRODUCT is an upgrade or patch, you must be properly licensed to use the original SOFTWARE PRODUCT in order to install and use the SOFTWARE PRODUCT upgrade or patch. A SOFTWARE PRODUCT labeled as an upgrade or patch replaces and/or supplements the product that formed the basis for your eligibility for the upgrade. You may use the resulting upgraded product only in accordance with the terms of this EULA. If the SOFTWARE PRODUCT is an upgrade or patch of a component of a software package sold as a single product, the SOFTWARE PRODUCT may be used and transferred only as part of that single product package and may not be separated for use on more than one computer or with other products or applications.

Electronic Documentation - The electronic documentation included with the SOFTWARE PRODUCT is to be used only in conjunction with the SOFTWARE PRODUCT. The SOFTWARE PRODUCT and the documentation are licensed as a single product and may not be separated. No part of the documentation may be reproduced or distributed in any form or by any means without the written permission of Xtreme Prototypes. However, as a registered user, you can print copies of the PDF manual for your own personal use, in conjunction with the SOFTWARE PRODUCT.

Online Help System (Online Manual) - The SOFTWARE PRODUCT may be provided with an online help system on Xtreme Prototypes' website ("online manual"). The online manual for the SOFTWARE PRODUCT is to be used in conjunction with the SOFTWARE PRODUCT only. The SOFTWARE PRODUCT and the online manual are licensed as a single product and may not be separated. No part of the online manual may be reproduced or distributed in any form or by any means without the written permission of Xtreme Prototypes.

Software Protection, Good Use and Termination - As an end user, you are responsible for the protection and good use of the SOFTWARE PRODUCT for which you obtained a license under this EULA. Without prejudice to any other rights, Xtreme Prototypes may decide to withdraw your rights and privileges to use the SOFTWARE PRODUCT, close your user account and terminate this EULA if you fail to comply with the terms and conditions of this EULA, especially in the case of copyright infringement related to unauthorized reproduction and/or distribution of the SOFTWARE PRODUCT over the

Internet and/or by any other means. In such event, you must destroy all copies of the SOFTWARE PRODUCT and all of its component parts.

Minimum System Requirements - You understand that the SOFTWARE PRODUCT is an add-on to a third-party simulation platform that is required for the SOFTWARE PRODUCT to be installed and used. The SOFTWARE PRODUCT is not a stand-alone product and cannot be used without the underlying simulation platform. Xtreme Prototypes is not responsible for changes in third-party simulation platforms that would prevent the SOFTWARE PRODUCT from performing or being used, including the discontinuation of such required third-party simulation platform. You acknowledge that your computer system has the minimum system requirements specified in the SOFTWARE PRODUCT's online documentation for installing and using the SOFTWARE PRODUCT. Xtreme Prototypes is not responsible for the lack of computer system requirements or features that would prevent you from using the SOFTWARE PRODUCT or causing the SOFTWARE PRODUCT to underperform.

Software Download Sales are Final - You understand that the SOFTWARE PRODUCT is available via download only and that for obvious reasons, software download sales are final and not refundable.

Software Replacement and Loss of Activation Key - The replacement of lost downloaded files is not guaranteed. You must make backup copies for your own personal use in the future. Xtreme Prototypes cannot be responsible for the loss of activation keys or downloaded files and does not guarantee that they will always be available for download.

COPYRIGHT

All title and copyrights in and to the SOFTWARE PRODUCT (including but not limited to any images, graphics, photographs, animations, video, audio, music, text, 3D models, computer programs, code, and other components incorporated into the SOFTWARE PRODUCT), the accompanying printed, electronic and/or online material, and any copies of the SOFTWARE PRODUCT, are owned by Xtreme Prototypes, except where otherwise noted in the SOFTWARE PRODUCT. All title and intellectual property rights in and to the content which may be accessed through use of the SOFTWARE PRODUCT is the property of the respective content owner and may be protected by applicable copyright or other intellectual property laws and treaties. This EULA grants you no rights to use such content.

The SOFTWARE PRODUCT is protected by copyright laws and international treaty provisions. Therefore, you must treat the SOFTWARE PRODUCT like any other copyrighted material except that you may (a) make personal copies of the SOFTWARE PRODUCT solely for backup or archival purposes, and/or (b) install the SOFTWARE PRODUCT on a maximum of two computers, as mentioned above.

No part of the documentation may be reproduced or distributed in any form or by any means without the written permission of Xtreme Prototypes.

No part of the online manual may be reproduced or distributed in any form or by any means without the written permission of Xtreme Prototypes.

The unauthorized reproduction and/or distribution of protected material constitute an infringement to the exclusive right of its holder. This behavior could expose the offender to legal action

and to a judgment to pay damages.

INJUNCTIVE RELIEF

The parties agree that if you download, install, distribute or utilize the SOFTWARE PRODUCT or any of its components, including the online manual, in an unauthorized manner, or breach the terms and conditions of this EULA, that such use or breach would have a devastating and serious impact on Xtreme Prototypes' continuing ability to compete profitably and would, therefore, result in immediate and irreparable injury, loss or damage to Xtreme Prototypes. The parties agree that in such event, in addition to Xtreme Prototypes' right to withdraw your rights and privileges to use the SOFTWARE PRODUCT, to terminate this EULA and to recover damages for a breach of this EULA, Xtreme Prototypes would be entitled to obtain a temporary restraining order or a preliminary injunction from a court of competent jurisdiction to prevent you from engaging in any further use of the SOFTWARE PRODUCT or the continued breach of the terms and conditions of this EULA.

JURISDICTION

This EULA is governed by the laws in force in the Province of Québec, Canada and, in respect of any dispute which may arise hereunder, you consent to the jurisdiction of the federal and provincial courts sitting in Montreal, Québec, Canada.

Should you have questions concerning this EULA, or if you wish to contact Xtreme Prototypes for any other reason, please visit our website:

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

LIMITED WARRANTY

Xtreme Prototypes warrants that the SOFTWARE PRODUCT will perform substantially in accordance with the accompanying documentation for a period of ninety (90) days from the date of receipt. To the extent allowed by applicable law, implied warranties on the SOFTWARE PRODUCT, if any, are limited to ninety (90) days.

No other warranty - To the maximum extent permitted by applicable laws, Xtreme Prototypes provides the SOFTWARE PRODUCT as is and with all faults, and hereby disclaims all other warranties and conditions, either express, implied or statutory, including, but not limited to, any (if any) implied warranties or conditions of merchantability, of fitness for a particular purpose, of lack of viruses, of accuracy or completeness of responses, of results, and of lack of negligence or lack of workmanlike effort, all with regard to the SOFTWARE PRODUCT, and the provision of or failure to provide support services. ALSO, THERE IS NO WARRANTY OR CONDITION OF TITLE, PEACEFUL ENJOYMENT, PEACEFUL POSSESSION, CORRESPONDENCE TO DESCRIPTION OR NON-INFRINGEMENT, WITH REGARD TO THE SOFTWARE PRODUCT. THE ENTIRE RISK AS TO THE QUALITY OF OR ARISING OUT OF USE OR PERFORMANCE OF THE SOFTWARE PRODUCT AND SUPPORT SERVICES, IF ANY, REMAINS EXCLUSIVELY WITH YOU.

This limited warranty gives you specific legal rights.

LIMITATION OF LIABILITY

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL XTREME PROTOTYPES BE LIABLE FOR ANY SPECIAL, INCIDENTAL,

INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFITS OR CONFIDENTIAL OR OTHER INFORMATION, FOR BUSINESS INTERRUPTION, FOR PERSONAL INJURY, FOR LOSS OF PRIVACY, FOR FAILURE TO MEET ANY DUTY INCLUDING OF GOOD FAITH OR OF REASONABLE CARE, FOR NEGLIGENCE, AND FOR ANY OTHER PECUNIARY OR OTHER LOSS WHATSOEVER) ARISING OUT OF OR IN ANY WAY RELATED TO THE USE OF OR INABILITY TO USE THE SOFTWARE PRODUCT, THE PROVISION OF OR FAILURE TO PROVIDE SUPPORT SERVICES, OR OTHERWISE UNDER OR IN CONNECTION WITH ANY PROVISION OF THIS EULA, EVEN IN THE EVENT OF THE FAULT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, BREACH OF CONTRACT OR BREACH OF WARRANTY OF XTREME PROTOTYPES, AND EVEN IF XTREME PROTOTYPES HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

CUSTOMER REMEDIES

Notwithstanding any damages that you might incur for any reason whatsoever (including, without limitation, all damages referenced above and all direct or general damages), the entire liability of Xtreme Prototypes under any provision of this EULA and your exclusive remedy for all of the foregoing shall be limited to the greater of the amount actually paid by you for the SOFTWARE PRODUCT or U.S. \$1.00. The foregoing limitations, exclusions and disclaimers shall apply to the maximum extent permitted by applicable law, even if any remedy fails its essential purpose.



The Xtreme Prototypes GLJ Model 25 Special Edition v3.0 is an add-on software package that requires:

- [Lockheed Martin Prepar3D v4.5 \(Hotfix 2\)](#) or later

or

- [Microsoft Flight Simulator X: Steam Edition](#)

or

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

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 developer before installing this addon.

Important

- Xtreme Prototypes next generation addons are designed to take advantage of the new and more powerful gaming computers that are available today. They require better graphics 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 performance 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. Please note that Microsoft no longer provides security updates or support for PCs with Windows 7. We recommend upgrading to Windows 10.

Minimum System Requirements

- **Flight Simulation Platform (depending on the addon version installed):** Lockheed Martin Prepar3D v4.5 (Hotfix 2) or later, Microsoft Flight Simulator X: Steam Edition or Microsoft Flight Simulator X SP2 with Acceleration Expansion Pack (or FSX Gold fully installed)**
- **Operating System:** Windows 10/8.1/8/7 (64-bit version required for Prepar3D)*.
- **Computer Memory (RAM):** 16 GB or better recommended*
- **Processor:** Quad Core 3.0 GHz or better recommended*
- **Hard Drive Space:** Downloaded ZIP file size approx. 1.5 GB, each addon version size approx. 6 GB when installed*
- **Graphics Card:** A high-end graphics card with at least 8 GB GDDR5 or better is highly recommended*. Installing this addon in Prepar3D requires a DirectX 11-compatible graphics card*. Make sure you have the latest driver for your operating system.
- **Graphics:** DirectX 12, 11, 10 or 9 (depending on your simulator's requirements)*
- **Other:** Wheel mouse, controller (joystick or yoke), pedals (optional), sound card and speakers, Adobe Acrobat Reader, Adobe Photoshop CS5 or later (optional, required for using the paintkit). A wheel mouse is required to actuate 3-position switches and some knobs.

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

** : Please note that some software features available in the native Prepar3D version may not be available in the FSX versions due to software limitations in FSX.

Important Notice for FSX Users

Please remember that Microsoft Flight Simulator X was released in 2006 and that the latest Service Pack is more than ten years old. While the GLJ Model 25 SE addon was tested in the original FSX, some known issues were still noticed due to aged software components installed in newer versions of Windows. This is why we highly recommend [Microsoft Flight Simulator X: Steam Edition](#) instead of the boxed version. The development team at Dovetail Games did a fantastic job at recompiling and upgrading the platform, adding more features and improving stability and performance. You may also consider upgrading to the more advanced 64-bit [Lockheed Martin Prepar3D](#) simulation platform.

Downloading your Addon

Our products are available for download only. At this time, you should have downloaded the ZIP file that contains the installation program for your simulation platform from [our website](#) and received your personal activation key by email.

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

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

Each ZIP file weights approximately 3 GB and takes about 5 to 20 minutes to download on a high speed Internet connection.

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

You can download your addon again at any time by logging in to your account page on our website.



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 and order number. Refer to the end-user software license agreement in section 1 for details.

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

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 downloading your addon. If you are not able to download your addon after several attempts, we recommend using another and better Internet 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 download your addon, please contact us for other options.
- We recommend using your Internet browser (Chrome, Edge, Explorer, Firefox, 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. Some antivirus won't allow you to download ".zip" and ".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.

Extracting the Installers

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

Depending on your simulation platform, the available installers are:

- "**XP_GLJ25_v3r0_P3Dv4_setup.exe**", a native version for Prepar3D v4.5 (Hotfix 2) or

later

- "**XP_GLJ25_v3r0_FSX_Steam_setup.exe**", for Flight Simulator X: Steam Edition
- "**XP_GLJ25_v3r0_FSX_setup.exe**" for Flight Simulator X SP2 with AEP

Each installer contains the addon and all of its components to be installed on your computer. Because of the differences between the different simulation platforms, the installers are not interchangeable.

Please make sure that you install the correct addon version for your simulation platform.

You may install the three available versions of the addon concurrently on your computer if the three simulation platforms are present. However, we recommend installing only the version(s) you intend to use.

Important

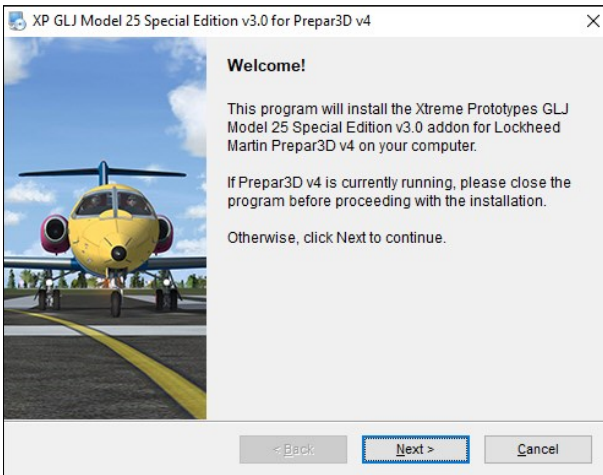
- The version for Prepar3D v4.5 with Hotfix 2 is a native version that is not compatible with earlier versions of Prepar3D and with Flight Simulator X. Make sure that you install the correct addon version for your simulation platform.
- This addon version for FSX is not compatible with Microsoft Flight Simulator X with Service Pack 2 alone. You will need to install the Acceleration Expansion Pack in addition to FSX SP2 (FSX Gold fully installed).
- This addon is not compatible with Microsoft Flight Simulator 2004.
- This addon is not compatible with Laminar Research X-Plane (all versions).
- The addon version for Flight Simulator X (or FSX Steam) is compatible with Prepar3D. However, we recommend installing the correct addon version for your simulation platform. Please be aware that some features available in the Prepar3D version may not be available in the FSX versions.
- While not recommended, if you have installed one of the FSX versions in Prepar3D instead of the recommended native Prepar3D version, you will need to copy the 64-bit sound DLL to the addon's "panel" folder. The DLL is available in the "64-bit

sound” subfolder located in the main addon folder (FSX versions only). Please follow the instructions carefully. Without the 64-bit sound DLL, you will not be able to hear the cockpit sound effects. Please be aware that some features available in the Prepar3D version may not be available in the FSX versions.

SOFTWARE INSTALLATION

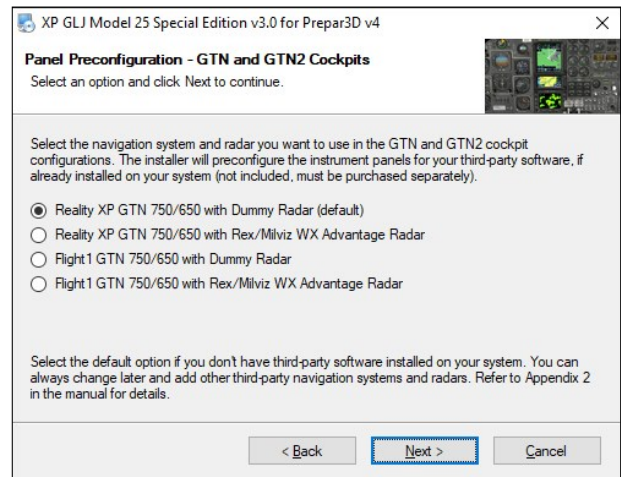
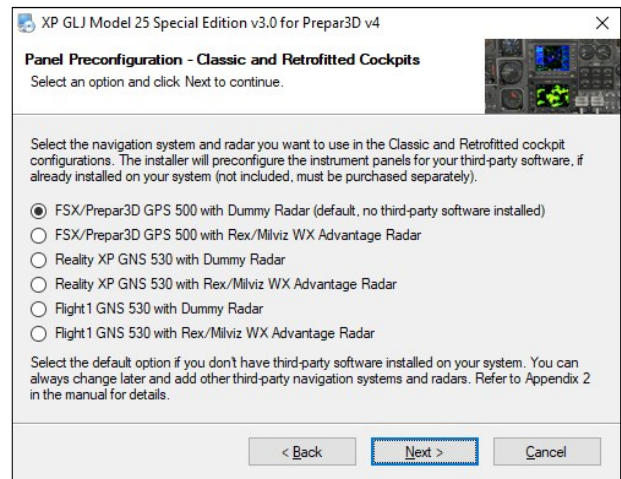
Installation on One Simulation Platform at a Time

1. Make sure that your simulation platform has been properly installed according to the instructions provided by the developer before installing your new GLJ Model 25 SE addon. If your simulation platform is currently running, please **close the program** before proceeding with the installation.
2. We recommend **removing the previous versions (2.0 or 2.1)** from your computer before installing version 3.0. This is to avoid confusion between aircraft bearing similar names. Previous versions 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.
3. Make sure you are using the **proper installer** for your simulation platform.
4. **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-



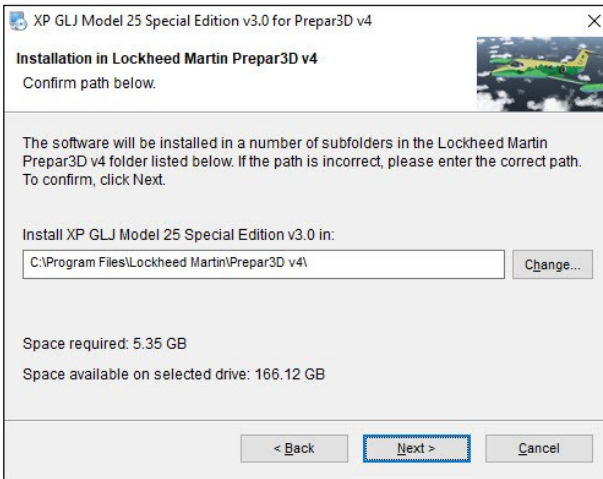
user license agreement and enter a valid activation key before you can install and use your addon.

5. You will be asked to **select the navigation systems and radar** you intend to use. The installer will preconfigure the instrument panels and program the buttons and knobs in the 3D models for your own third-party GNS/GTN and/or radar. If you don't have third-party software installed on your computer, select the default options. You can always change later. Please refer to section 4, page 13, and Appendix 2, for more information.



6. The installer should detect the path to your simulation platform's root folder automatically. If not, you still have the option to change the path manually. Please make sure that you have the correct path to your simulation platform. The installer will copy

the GLJ Model 25 SE add-on aircraft and related files to the appropriate folders on your computer.



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

Important

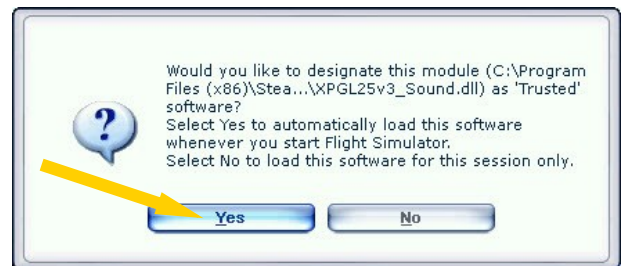
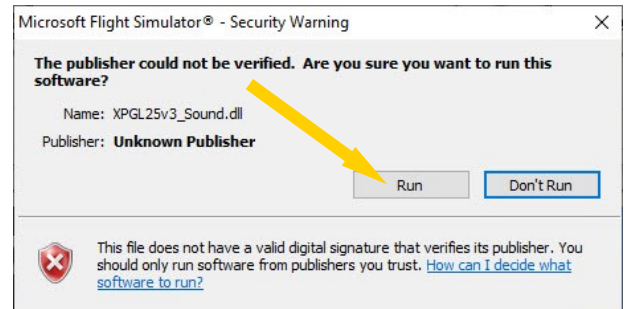
- If you are installing the FSX addon version in Prepar3D (not recommended), you will need to specify the path to Prepar3D during the installation process.
- If you are installing in FSX: Steam Edition, we recommend using the special installer for FSX Steam. Please note that FSX Steam is installed in a different way to the boxed version and occupies a different location on your computer. If you are using the standard installer for FSX (not recommended), you will need to specify a different path/root folder during the installation process (by default: "C:\Program Files (x86)\Steam\steamapps\common\FSX").
- You have nothing to do if you are installing the correct addon version for your simulation platform.

Security Warnings (FSX/FSX Steam)

Important software components need to be installed, trusted and executed 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. In FSX, 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.



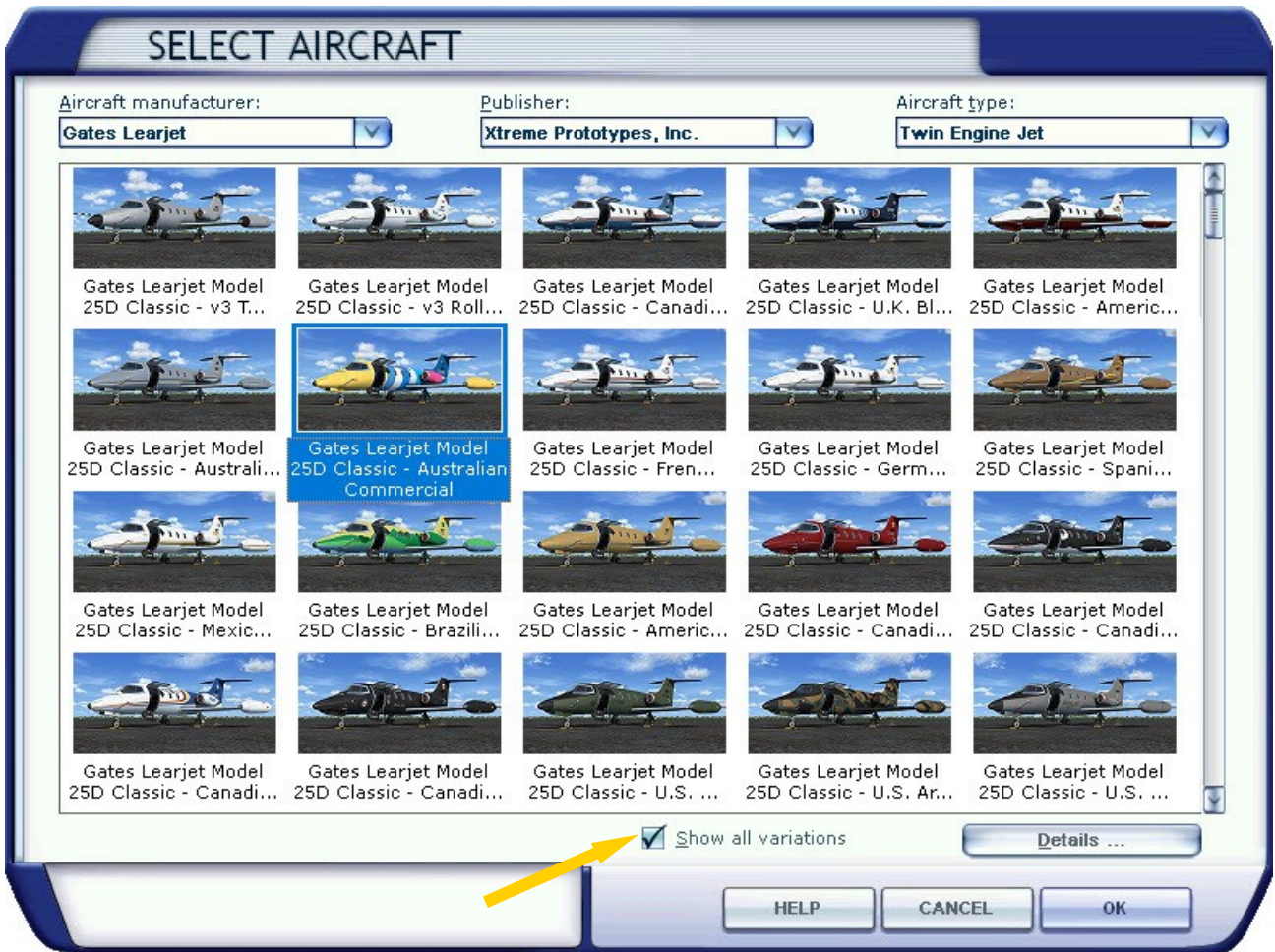
Another dialog will pop up in your simulator's main window the first time the GLJ Model 25 SE addon is loaded. This time it will ask you if you trust the DLLs. Click the "Yes" button to designate the DLL as "trusted" software. This needs to be done only once.

Checking the Installation

The GLJ Model 25 SE v3.0 addon consists of 23 variations of the Gates Learjet Model 25D business jet for each of the four virtual cockpit configurations.

Once the addon is installed on your computer, the different aircraft variations will be available on the "Select Vehicle" page (Prepar3D) or on the "Select Aircraft" page (FSX).

Note (Prepar3D): The "Show Only Favorites" option on the "Select Vehicle" page may prevent some aircraft variations from being dis-



played. You may need to uncheck this option. You may also select only the aircraft variations that you want to fly as your favorites. This will speed up loading time when selecting a vehicle.

Note (FSX): If some aircraft variations are not visible, make sure that the “Show all variations” option is selected on the “Select Aircraft” page.

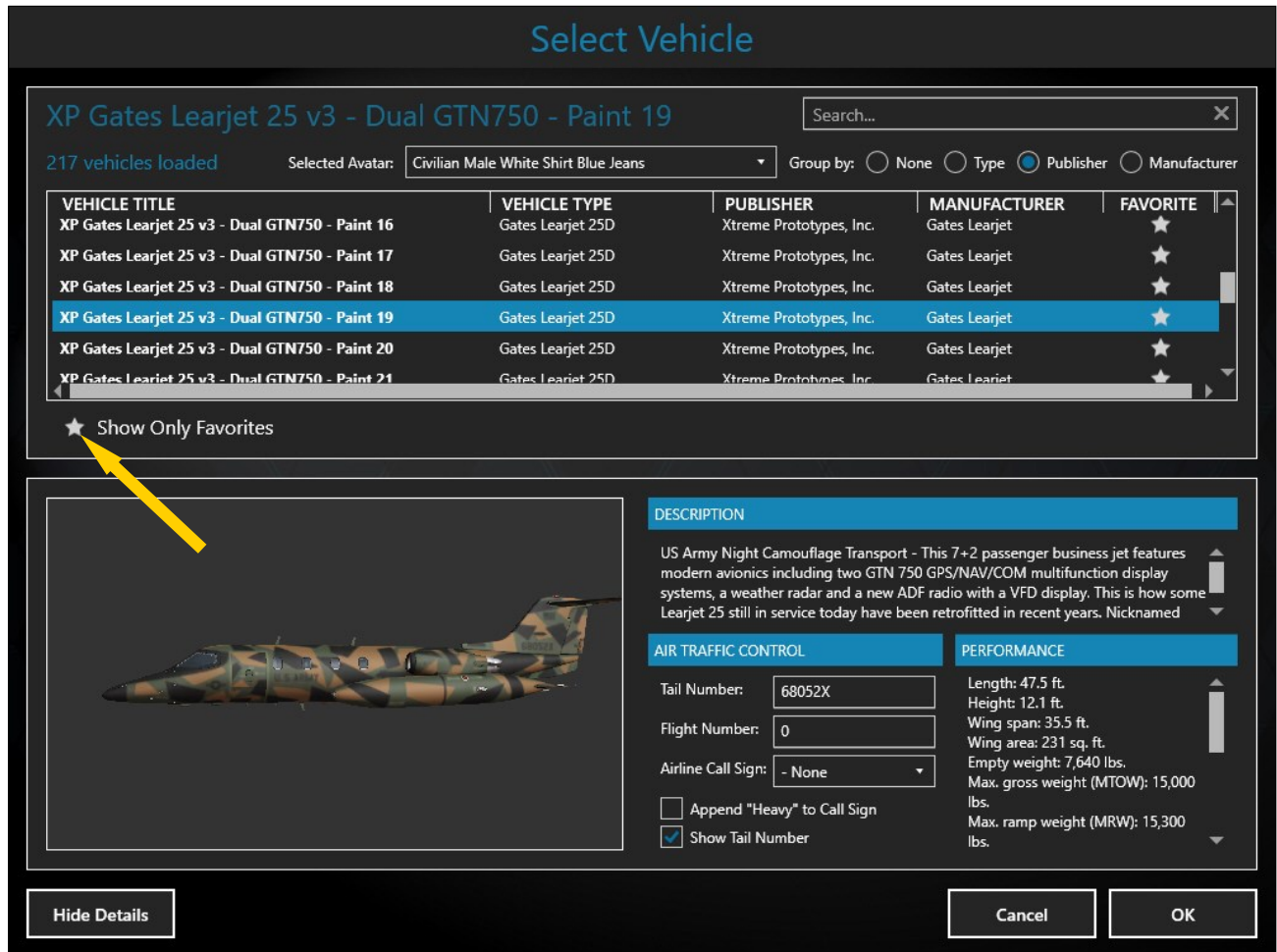
Known Issue (FSX)

- It has been reported 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 of them, or worse if loading them causes FSX to crash, suspect

such third-party programs. For unknown reasons, these programs may also prevent the addon’s system DLLs from being “trusted” and the addon will not work. Remove these programs, if installed, and reinstall the GLJ Model 25 SE addon to solve the issue.

Known Issues (all platforms)

- Some antivirus programs may interfere with or prevent the installation of certain software components, including important DLLs and system gauges. The GLJ Model 25 SE addon will not work properly without these files. If you experience a number of issues with your new addon an suspect a faulty installation, disable your antivirus program temporarily and reinstall your addon. Don’t forget to reactivate your antivirus after the addon is installed and working properly.
- If there is no sound from the cockpit (for



example, when clicking a switch) or some aircraft parts are missing, try resetting the flight. If this does not solve the issue, it may be because some important software components are missing or were not copied properly during the installation process. If so, you will need to reinstall the addon. Make sure your antivirus program does not interfere with the installation.

- Some third-party addons/utilities aimed at enhancing the simulation experience in FSX or Prepar3D may interfere with the proper operation of the GLJ Model 25 SE addon. If you experience such an issue, simply disable the third-party addon/utility for this aircraft.

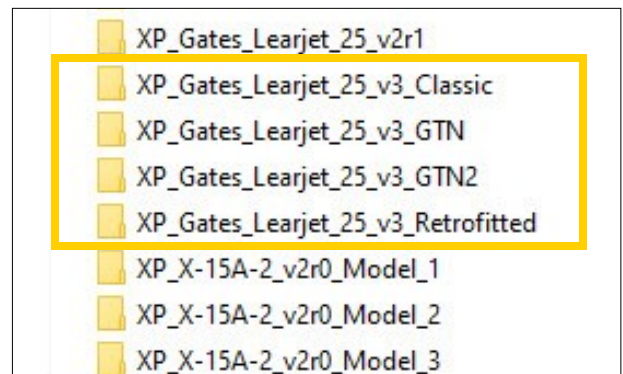
File Structure

The GLJ Model 25 SE aircraft models, textures, panels, sounds, systems and configuration files are installed under different names in dif-

ferent folders, under your "... simulator name\SimObjects\Airplanes" folder.

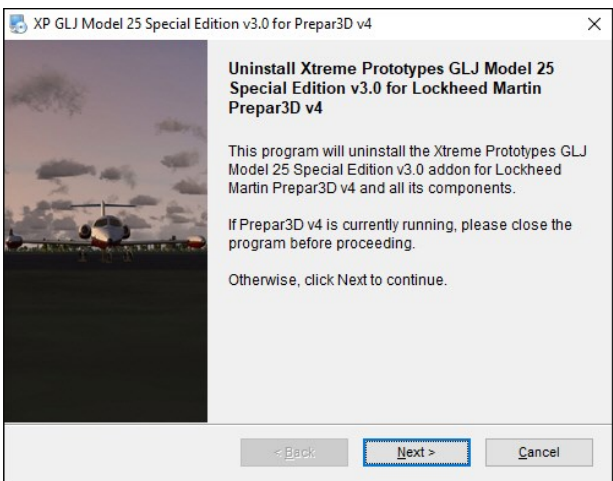
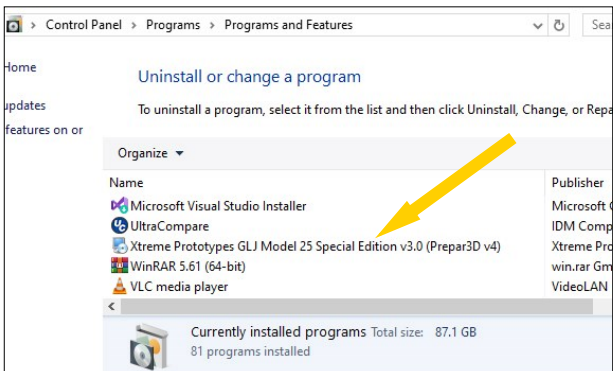
The special visual effects are installed in your "... simulator name\Effects" folder.

Note: This addon is installed using the standard (conventional) FSX method to avoid issues with third-party software components in both Prepar3D and FSX Steam. The addon will not work properly if installed otherwise.



Removing the GLJ Model 25 SE Addon From Your Computer

The GLJ Model 25 SE 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 program folder that was created during the installation process and is used by the Windows Control Panel.



PERFORMANCE

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 or better, you should be able to install and fly the GLJ Model 25 SE addon without major issues.

The GLJ Model 25 SE v3.0 addon is a complex aircraft simulator that requires a good computer (ideally, a gaming computer) and a high-end graphics card to run properly. It was designed with its overall visual quality, complex systems and most accurate simulation features in mind.

The custom aircraft systems that were developed 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, third-party software and some of the visual and sound effects, may affect your frame rate on slower processors and graphics cards, depending on your simulation platform’s configuration and settings.

Adjust your simulation platform’s display, weather, world and traffic options to fix this problem if necessary or upgrade your computer system with a better CPU, more memory and a high-end graphics 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 100 frames per second, depending on your hardware and software settings. Frame rates below 20 fps

are not normal.

We recommend limiting your frame rate to 30 fps on all platforms which is enough for flight simulation. This is not a first-person shooter, so it won't affect your skills and personal records as a virtual pilot. Limiting your frame rate will free computer resources for other tasks and will improve overall performance.

Most of our tests were performed under Windows 10 in a 1920 x 1200 simulation window, with a ultra-wide screen resolution of 3840 x 1600 on all simulation platforms:

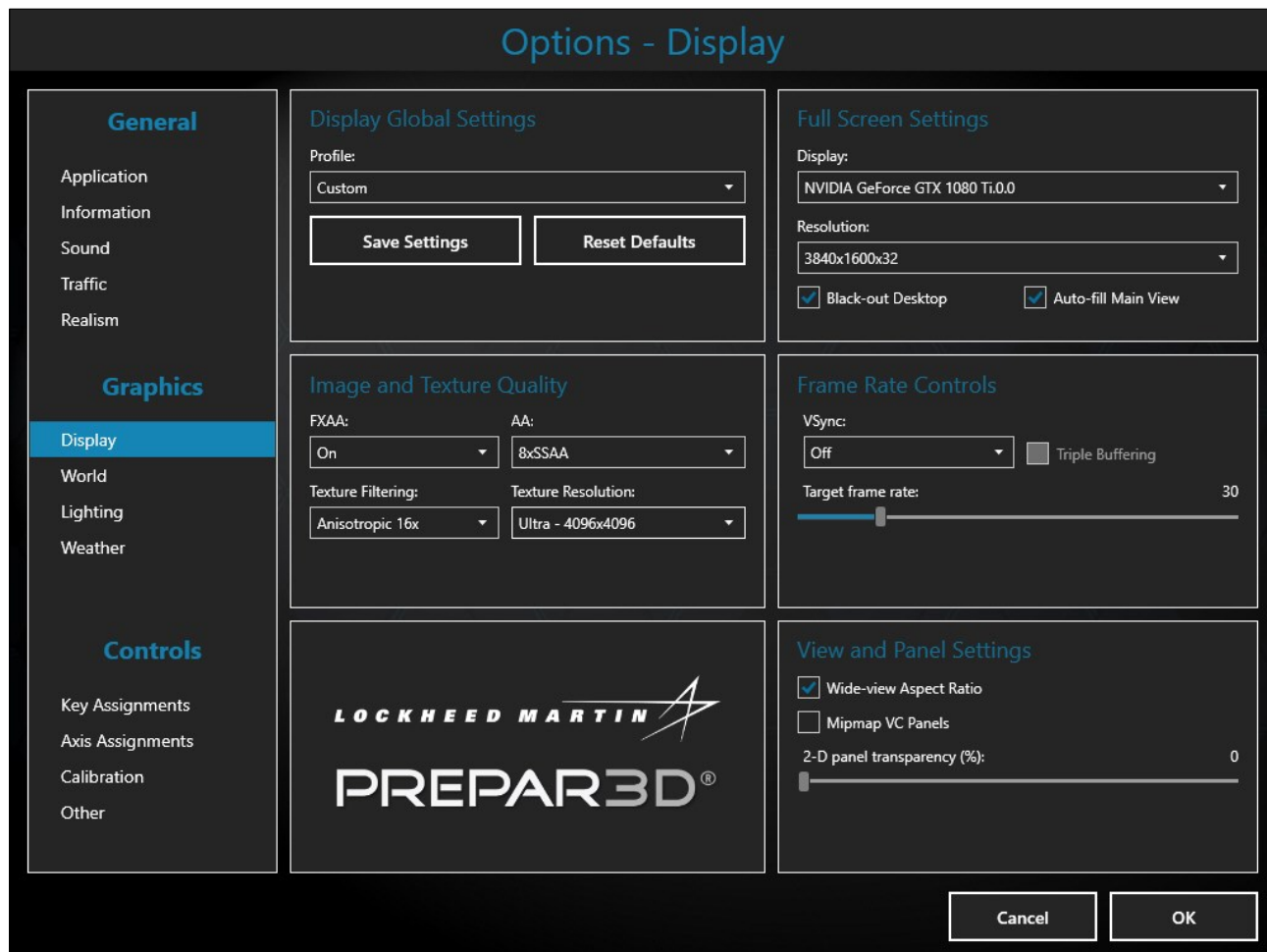
- Dell XPS 8500
- Intel (Quad Core) i7-3770 CPU @ 3,40 GHz, 64 bit
- 32 GB RAM
- NVIDIA GeForce GTX 1080 Ti (11 GB GDDR5X)

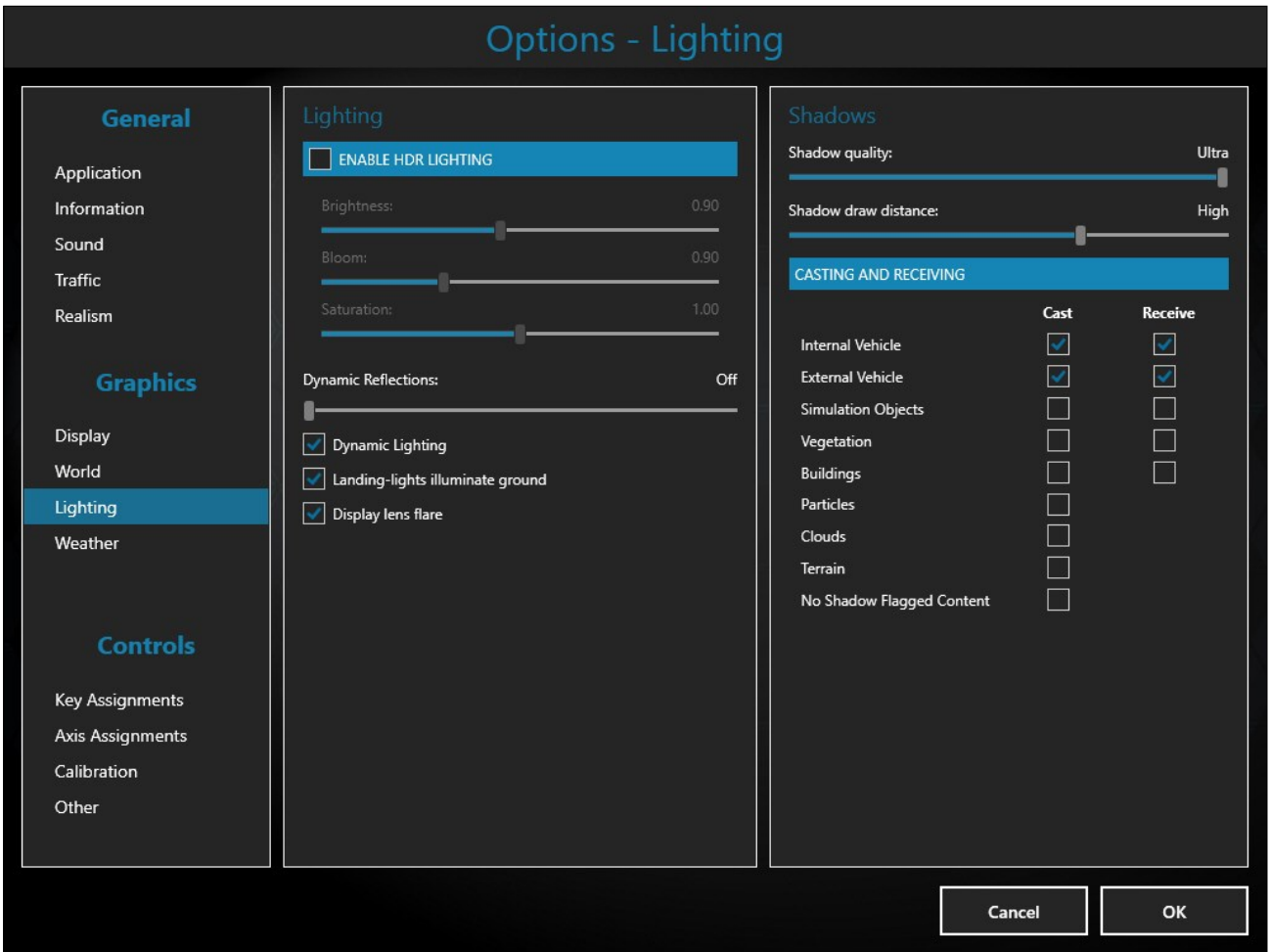
Refer to the documentation included with your simulation platform for more information about minimum system requirements and how to optimize your settings for the best overall performance.

Remember that third-party addons such as complex gauges, systems and sceneries may also affect performance and frame rate. Please use moderation when adding components to your simulation platform and refer to the documentation included with your addons for optimal installation and settings depending on your computer's capabilities and limitations. See also Appendix 5, page 14.

Important

- Make sure you have the latest graphics card driver for your operating system.
- Make sure your simulation platform is the only graphic-intensive program running on your computer when flying your addon.





This could greatly affect performance.

- Make sure your antivirus program is not scanning your system while flying your add-on. This could greatly affect performance.

RECOMMENDED SETTINGS IN PREPAR3D

Lockheed Martin Prepar3D is a professional simulation platform for education and training that requires a powerful computer and a high-end graphics card to run. We do not recommend flying the GLJ Model 25 SE addon in Prepar3D if you don't have the minimum system requirements.

Practical Considerations

- Prepar3D requires DirectX 11 and a DirectX 11-compatible graphics card.
- Advanced lighting options in Prepar3D,

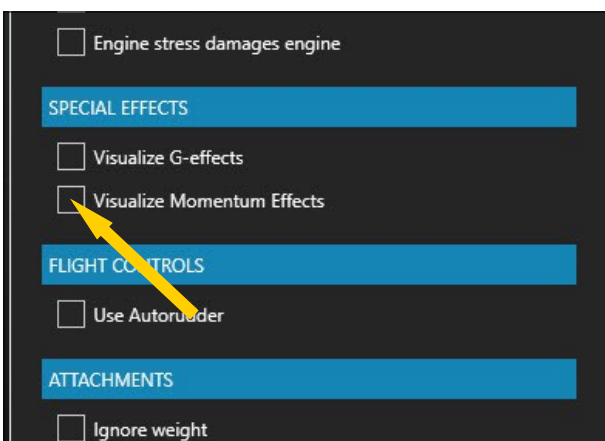
such as Shadows and HDR Lighting, may dramatically affect performance and reduce frame rate. We recommend moderation when setting these options, especially on slower systems.

- Dynamic Reflections should be turned **OFF** (or unchecked). The GLJ Model 25 SE addon uses its own static cubic environment map. Turning on the Dynamic Reflections has no effect on the model and might decrease performance on your system. The Dynamic Reflections feature in Prepar3D did not meet our expectations during development and we have decided not to implement it in this software version.
- Dynamic Lighting can be turned **ON** (or checked). The GLJ Model 25 SE v3.0 addon for Prepar3D features exterior/interior dynamic lights with projected light beams, fully compatible with the latest versions of Prepar3D.

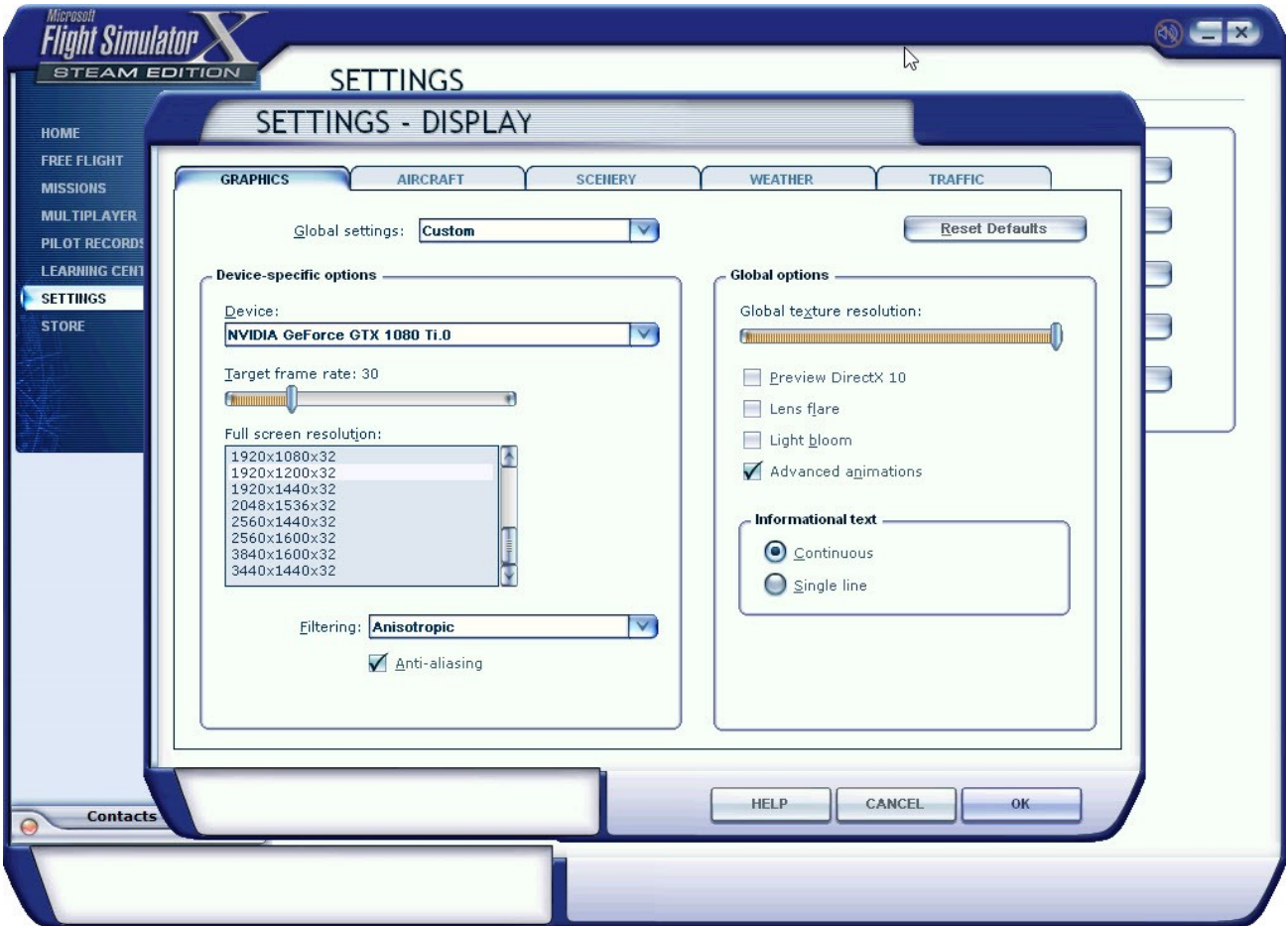
- The GLJ Model 25 SE addon uses ultra crisp 4096 x 4096 high resolution textures. For optimal graphics quality, make sure the Texture Resolution is set to “**Ultra - 4096x4096**” (under “Graphics/Options-Display/Image and Texture Quality”).
- The textures on the exterior model use mipmaps (optimized sequences of images with progressively lower resolution to increase rendering speed and reduce artifacts when the model is viewed at a distance). We recommend the **Anisotropic 16x** Texture Filtering option (under “Graphics/Options-Display/Image and Texture Quality”).
- 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 set the aspect ratio to “**Wide-view Aspect Ratio**” (under “Graphics/Options-Display/View and Panel Settings”).
- Adjust the traffic, world and weather options for optimal performance depending on your computer’s capabilities and limitations.
- To prevent dynamic head movement in the virtual cockpit under strong acceleration conditions, you can uncheck the “Visualize Momentum Effects” option (under “General/Options-Realism/Special Effects”).

Known Issue

- When the mouse cursor is moved inside the main window when in the virtual cockpit view, the frame rate may drop significantly. This depends mainly on your computer system and graphics hardware but is more apparent in FSX/FSX Steam than in Prepar3D. When the mouse is moved out of the window, the frame rate goes back 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 computer systems. We recommend moving the mouse cursor out of the main simulation window when not needed. Increased performance will be noticed on more powerful systems.



Note: If you still experience performance issues after optimizing your simulation platform, you may need to upgrade your computer. See Appendix 5, page 14.



RECOMMENDED SETTINGS IN FLIGHT SIMULATOR X

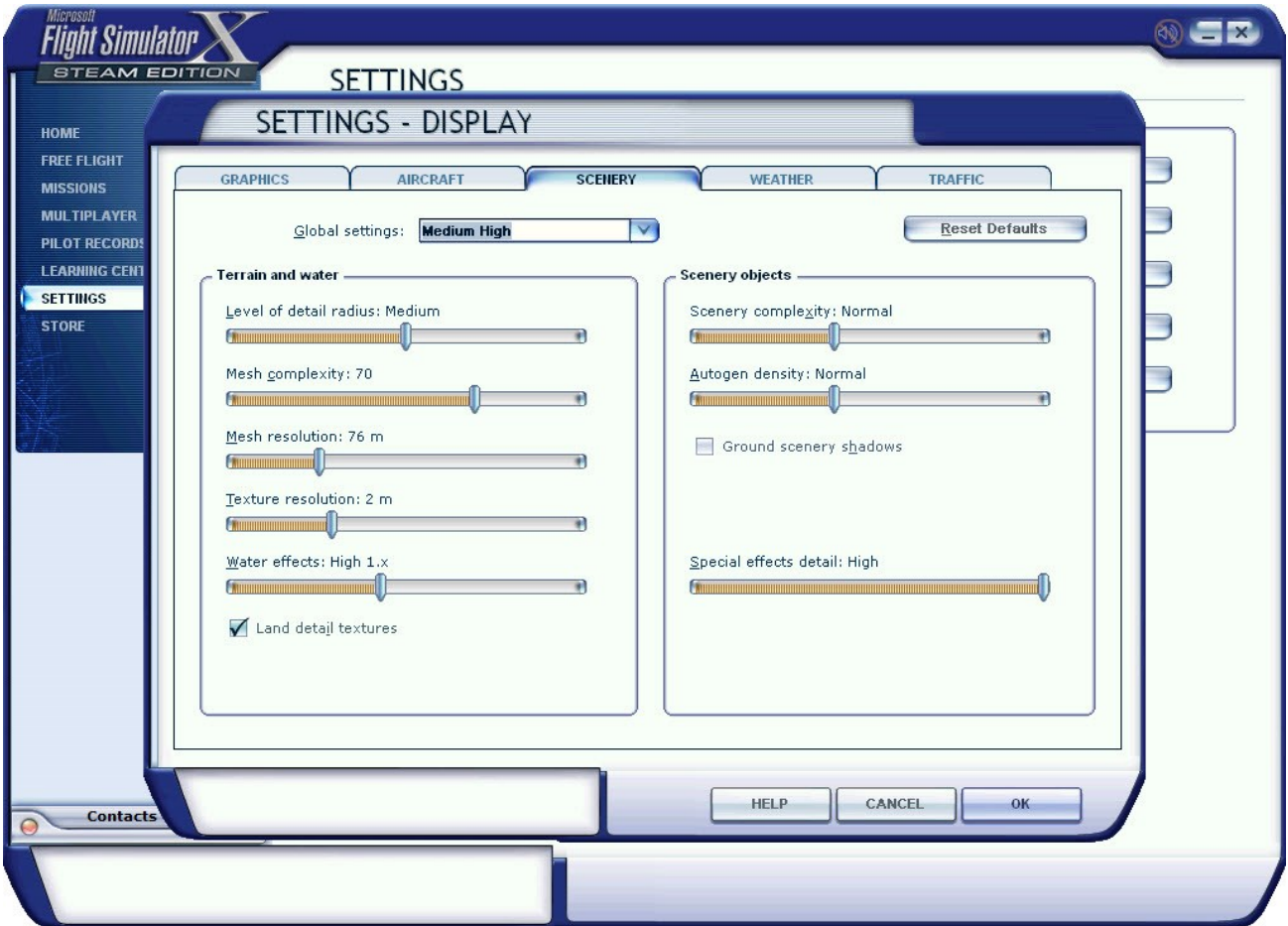
Please remember that Microsoft Flight Simulator X was released in 2006 and that the latest Service Pack is more than ten years old. While the GLJ Model 25 SE addon was tested in the original FSX, some known issues were still noticed due aged software components installed in newer versions of Windows. This is why we highly recommend [Microsoft Flight Simulator X: Steam Edition](#) instead of the boxed version. The development team at Dovetail Games did a fantastic job at recompiling and upgrading the platform, adding more features and improving stability and performance. You may also consider upgrading to the more advanced 64-bit [Lockheed Martin Prepar3D](#) simulation platform.

Practical Considerations

- The addon's textures use mipmaps

(optimized sequences of images with progressively lower resolution to increase rendering speed and reduce artifacts when the model is viewed at a distance). We recommend the **Anisotropic** texture filtering option (under "Settings-Display/Graphics/Device-specific options", see above).

- Adjust the traffic, scenery and weather options for optimal performance depending on your computer's capabilities and limitations.
- The GLJ Model 25 SE addon uses 4096 x 4096 high resolution textures. By default, FSX limits the texture resolution to 2048 x 2048. We recommend setting the texture resolution to 4096 x 4096. If not, the simulator will "downsize" the high resolution textures and it does it badly. The result is poor texture quality on both the exterior and interior models. Make sure that the "Global texture resolution" slider on the Graphics tab (see above) is **fully moved to the right**.



Modifying the maximum texture resolution in FSX may also require changing a few lines in the "fsx.CFG" file (see right).

Note: If you still experience performance issues after optimizing your simulation platform, you may need to upgrade your computer. See Appendix 5, page 14.

Optional Settings

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

Should you decide to change these settings,

please make sure that you have made a back-up copy of your original "fsx.CFG" file and saved it in a safe place before proceeding:

To make sure the addon's 4096 x 4096 high resolution textures are displayed properly on both the exterior and interior models, we recommend the following changes:

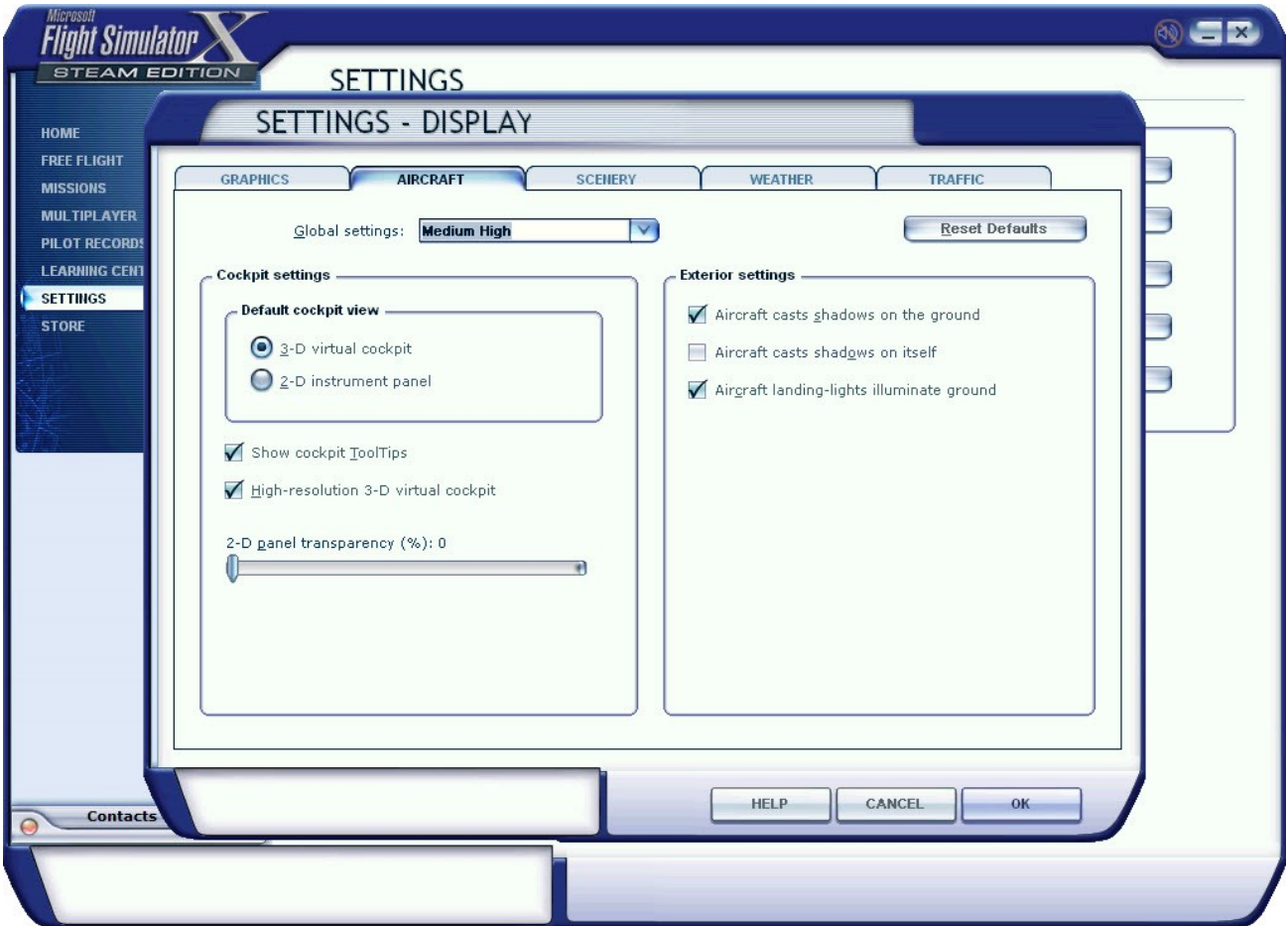
```
[Display]
TEXTURE_BANDWIDTH_MULT=80
```

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

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 in FSX may affect the way the special visual effects (aircraft lights, contrails, wing vortices, etc.)



are displayed, depending on your graphics hardware.

To prevent 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
```

Known Issues (FSX/FSX Steam)

- If you experience blue or white “texture flashes” when the addon textures are loading, especially when in the virtual cockpit view, we recommend to uncheck the Preview DirectX 10 option (under “Settings-Display/Graphics/Global options”). FSX seems to perform better with 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 (under “Settings-Display/Graphics/Global options”). Third-party free DirectX 10 shader fixers are also available in Flight Simulation forums.
- When the mouse cursor is moved inside the main window when in the virtual cockpit view, the frame rate may drop significantly. This depends mainly on your computer system and graphics hardware but is more apparent in FSX/FSX Steam than in Prepar3D. When the mouse is moved out of the window, the frame rate goes back 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 computer systems. We recommend moving the mouse cursor out of the main simulation window when not needed. Increased

performance will be noticed on more powerful systems.

- 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 aircraft. If this doesn't solve the issue, exit and restart the simulator. This issue seems to be more frequent with complex models with high resolution textures such as the GLJ Model 25 SE.
- It has been reported 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 also prevent the addon's system DLLs from being "trusted" by FSX and the addon will not work properly. Remove these programs, if installed, and reinstall the GLJ Model 25 SE addon to solve the issue .
- If you experience out of memory (OOM) crashes in FSX/FSX Steam, first make sure that you have enough memory installed in your computer to run Windows 10, plus FSX/FSX Steam, plus all your third-party addons and sceneries, and plus the GLJ Model 25 SE addon.

The more addons you have, the more complex your third-party sceneries are and the more aggressive your simulation platform's settings are, the more you increase the chance of OOM crashes. Microsoft recommends at least 16 GB of RAM for Windows 10. We recommend 32 GB. Remember that both FSX and FSX Steam are still 32-bit platforms with their own limitations as far as memory usage is concerned, even on powerful systems. The 64-bit Prepar3D is a major improvement but you will still need a good computer to make the switch.

The GLJ Model 25 SE is a study-level, complex addon with high-resolution models and (4096x4096) textures, hundreds of animations and many custom systems, gauges and effects, all working together. It requires a powerful computer system (CPU, memory and graphics) to perform, depending on your simulation platform and settings (sceneries, traffic, weather, graphics) and your third-party addons.

One short-term solution may be to limit the texture size to 2048 x 2048 or lower. This can be done by editing one line in the "FSX.cfg", or by moving the "Global texture resolution" slider on the "Graphics" tab of the "Settings - Display" panel fully to the right (see page 12, in this section). Unfortunately, this will decrease the quality of the addon's textures.

Limiting the frame rate in the sim may also help, as it will allow more resources to other tasks. We recommend limiting your frame rate to 30 fps.

Ultimately, you may need a new computer. See also Appendix 5, page 14.

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 368 aircraft were built over a period of almost 15 years.

Your new addon is inspired from the Gates Learjet Model 25D, a longer-range, improved version of the Model 25 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.

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.

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. stat-



ic 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 equipped with thrust reversers that may be used anytime the airplane is on the ground to produce shorter stopping distances. Each engine is equipped with a Howard 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.

Dimensions

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

- **Length:** 47.5 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

Weight

- The **launch gross weight** of the airplane (including fuel and internal load) is approximately 15,000 pounds.
- **Ramp weight** is about 15,300 pounds.
- The **empty weight** is about 7,640 pounds.

Limitations

- **Maximum Mach:** Mach 0.82 (at 24,000 feet)
- **Maximum speed:** 359 KIAS (306 KIAS under 14,000 feet for protection against bird strikes)
- **Service ceiling:** 45,000 feet
- **Absolute ceiling:** 51,000 feet

Refer to Appendix 1 for more aircraft reference information.



Tail Numbers

The tail numbers painted on the 23 variations of your GLJ Model 25 SE v3.0 addon are fictitious. Any match with actual tail numbers is a pure coincidence.

Even though the tail numbers are painted on the different texture sheets that are mapped on the model and cannot be changed, a comprehensive paintkit is provided for users who wish 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. Adobe Photoshop CS5 or later is required to modify the textures (available from [Adobe](#)).

The tail number on the white label [6, fig. 4-15] located under the Anti-Skid Generator Lights in the captain’s instrument panel can be changed in the “aircraft.cfg” (the aircraft configuration file), located in the addon’s main folder, for each virtual cockpit configuration:

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

Please make a copy of the original “aircraft.cfg” file before making any change.



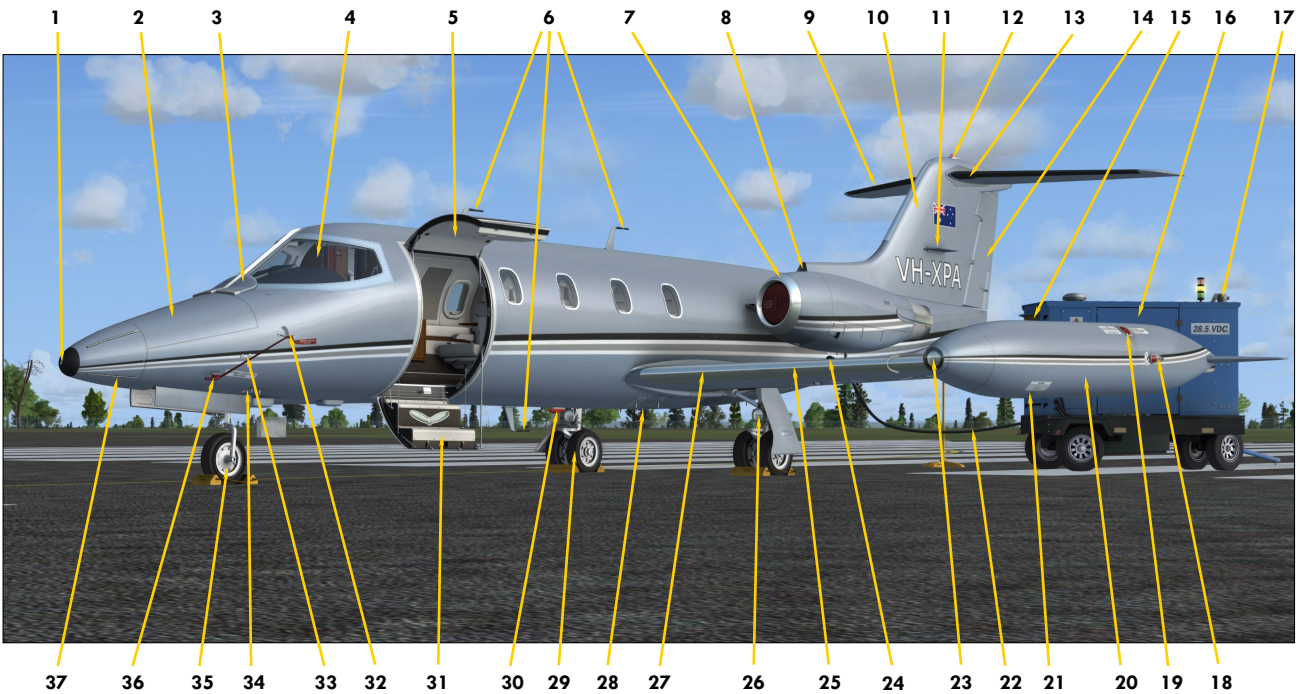


Figure 3-1

- | | |
|--|--|
| 1. Radome Alcohol Outlet | 19. Fuel Filler Cap |
| 2. Nose Compartment | 20. Wingtip Tank |
| 3. Windshield De-Icing Nozzles and Defog Outlets | 21. Wingtip Tank Sump Drain Valve |
| 4. Windshield | 22. GPU Power Cable |
| 5. Main Door Upper Section | 23. Recognition Light (optional) |
| 6. Radio Antennas | 24. External Power Receptacle |
| 7. Engine Nacelle De-Icing Lip | 25. Wing |
| 8. Cabin Air Intake | 26. Landing/Taxi Light (2 intensities) |
| 9. Stabilizer Heated Edge | 27. Wing Heated Leading Edge |
| 10. Vertical Fin | 28. Drains and Valves |
| 11. VOR/Localizer Antenna | 29. Main Landing Gear |
| 12. Rotating Beacon Light | 30. Rotating Beacon Light |
| 13. Movable Stabilizer | 31. Main Door Lower Section (Steps) |
| 14. Rudder | 32. Stall Warning Vane |
| 15. GPU Control Panel Cover | 33. Static Ports |
| 16. Ground Power Unit (GPU) | 34. Drains and Valves |
| 17. GPU Exhaust Pipe and Rain Cap | 35. Nose Gear |
| 18. Navigation and Strobe Lights | 36. Pitot Head |
| | 37. Radome with Static Dischargers |

Note: GPU available in Prepar3D only.

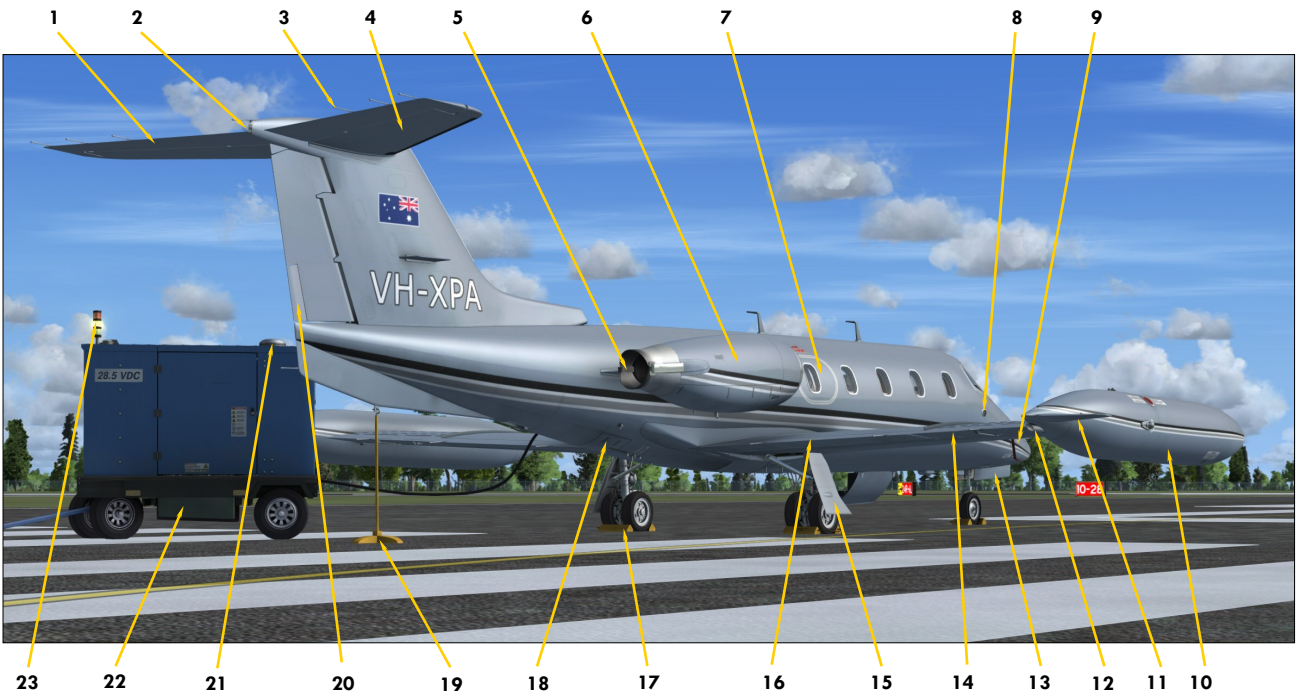
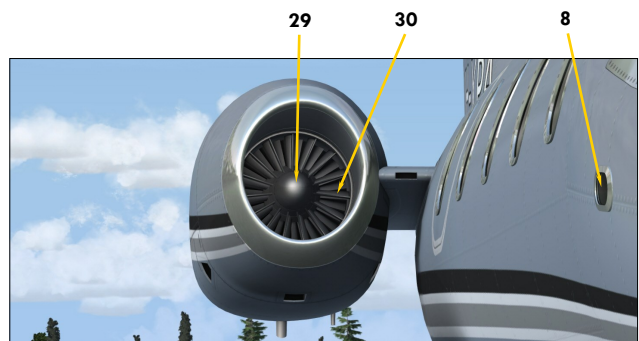
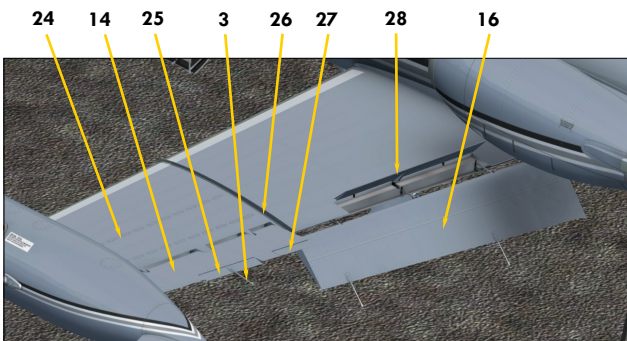


Figure 3-2

- | | |
|-------------------------------------|-------------------------------|
| 1. Elevator | 16. Flap |
| 2. Navigation and Strobe Lights | 17. Wheel Chock |
| 3. Static Discharger (Wick) | 18. Tail Cone Entry Door |
| 4. Movable Stabilizer | 19. Tail Stand |
| 5. Thrust Reverser | 20. Rudder Trim Tab |
| 6. Engine Nacelle | 21. GPU Air Cleaner Rain Cap |
| 7. Emergency Exit Door | 22. GPU Fuel Tank |
| 8. Right Wing Inspection Light | 23. GPU Status Lights |
| 9. Oxygen Tank Valve Access Door | 24. Boundary Layer Energizers |
| 10. Wingtip Tank | 25. Aileron Balance Tab |
| 11. Wingtip Tank Fin | 26. Wing Fence |
| 12. Wingtip Tank Fuel Jettison Tube | 27. Aileron Trim Tab |
| 13. Nose Gear Door | 28. Spoiler |
| 14. Aileron | 29. GE CJ-610 Engine |
| 15. Main Gear Door | 30. Engine Inlet Guide Vanes |



Note: GPU available in Prepar3D only.

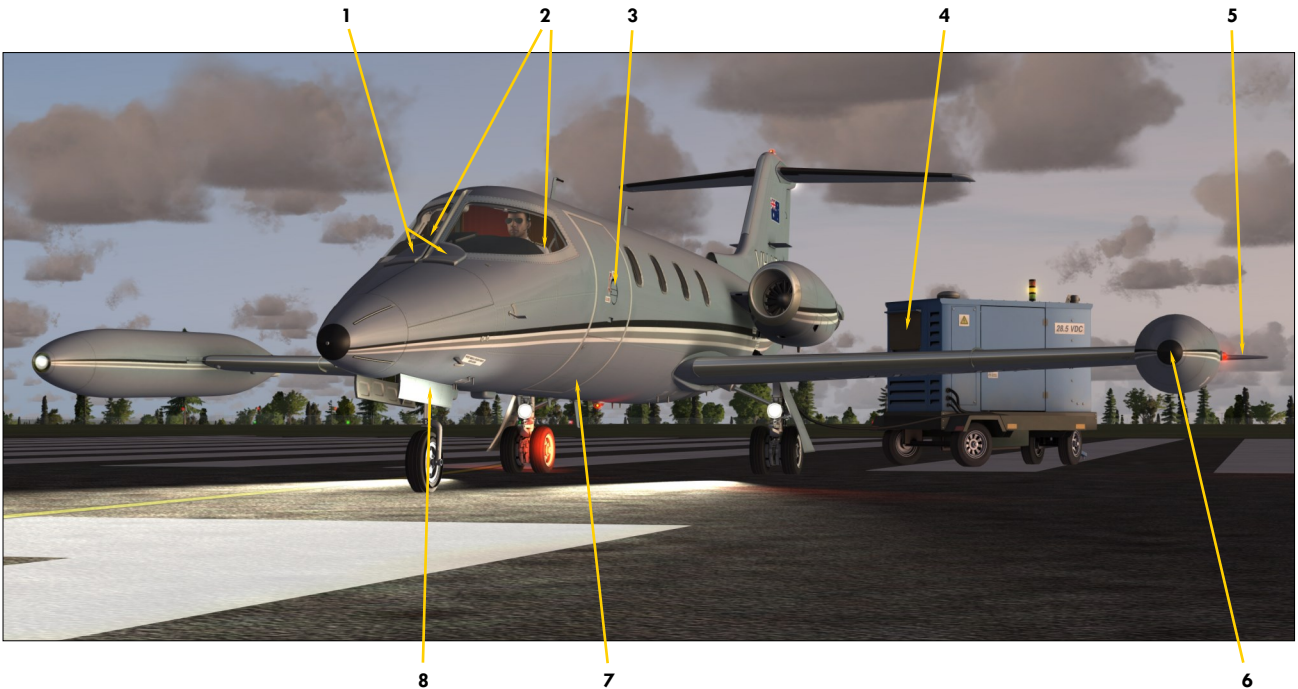


Figure 3-3

1. Pilot's Sunglasses
Windshield Defog Outlets
2. Pilot Selection
Either Pilot's Shirt
3. Open/Close Main Door
Main Door Handles (Interior/Exterior)
4. GPU Start/Shutoff
GPU Control Panel Cover
5. GPU Visible/Invisible
Left Wingtip Tank Aileron
6. Left Recognition Light Installed/Removed
Left Wingtip Tank Nose Cone/Light
7. Crew Present/Absent
Lower Section of the Main Door/Steps
8. "Remove Before Flight Items" Installed/
Removed
*Nose Gear Door (aircraft must be on the ground
and parked)*
9. Cabin Ceiling Lights On/Off
Bottom Wall Switch
10. Entry Lights On/Off
Top Wall Switch
11. Passenger Reading Light On/Off
Reading Light Switch (all independent)

Note: GPU and exterior clickable hot spots available in Prepar3D only.



INSTRUMENT PANELS (3D VIRTUAL COCKPITS)

SECTION 4



FOUR NEW VIRTUAL COCKPITS

Retrofitting the cockpit of our GLJ Model 25 SE addon with modern avionics was fun and made it more appealing to many desktop pilots considering how airplanes are flown in the 21st century. However, it must be remembered that the Gates Learjet Model 25 is a 1970's aircraft originally equipped with analog instrument panels from that period.

In our efforts to modernize the cockpit for this software version, we absolutely wanted to keep the look and feel of the original instrument panels. At the same time, we also wanted to give users the possibility to add their own contemporary navigation/communication systems and gauges acquired from third-party developers. With the new full-3D integration of

the GNS/GTN and radar and the rearrangement of the retrofitted panels, which was quite a challenge considering the rather limited space for a large number of devices, we believe we have achieved these goals.

Because of significant differences between the different panel configurations, aircraft systems and third-party addons, it was not possible to create a "one-size-fits-all" cockpit. Instruments and sub-panels had to be moved around or replaced to make room for modern avionics and new devices. Systems had to be re-programmed and panels reconfigured.

To avoid confusion for the user when installing third-party addons, to improve performance and to allow for the best panel rearrangement and design, we've decided to create **four new separate 3D virtual cockpits**



with different panel configurations, each with their own arrangement, instruments and systems. They represent the interior of a typical Gates Learjet Model 25D at different time periods: 1970's, 1980's and up until today with the addition of modern avionics.

By using this approach, you can select the configuration that best suits your needs. As your learning experience progresses and your flying methods evolve you may eventually select another configuration and add more complex third-party navigation/communication systems and radars to your favorite aircraft.

The four virtual cockpit configurations are available when selecting an aircraft on the "Select Vehicle" page (Prepar3D) or on the "Select Aircraft" page (FSX). Each configuration is available in 23 different variations (liveries on the exterior model).

Note (Prepar3D): The "Show Only Favorites" option on the "Select Vehicle" page may prevent some aircraft variations from being displayed. You may need to uncheck this option. You may also select only the aircraft variations with the cockpit configuration that you want to fly as your favorites. This will speed

up loading time when selecting a vehicle.

Note (FSX): If some aircraft variations are not visible, make sure the "Show all variations" option is selected on the "Select Aircraft" page.

The **Classic Configuration** features a classic analog instrument panel from the 1970's, similar to the original Learjet 25 panel, and strives to bring you the spirit and the actual feeling of flying a high performance business jet at a time when LCD screens, GPS and powerful computers didn't exist and pilots needed to know how to fly and navigate with minimal resources and to rely on their own experience, abilities and judgment.

New radios with yellow VFD displays have been installed in the **Retrofitted Configuration** to replace the original sets with analog displays from the 1970's. This is a typical retrofitted panel from the 1980's.

A GNS 530 navigation system with built-in COM and NAV radios (compatible with the Garmin GPS 500 that comes with your simulation platform) and a generic weather radar are also installed in both the Classic and Retrofitted configurations.



The **GTN 650/750** and **Dual GTN 750 Configurations** feature modern avionics including GTN 650/750 GPS/NAV/COM/ATC multifunction display systems, a generic weather radar and new radios with yellow VFD displays. This is how some Learjet 25 still in service today have been retrofitted in recent years.

Note: The GNS, GTN, radar and special transponder addons are not included and must be purchased separately from third-party vendors/developers.

Full-3D Gauges

Most virtual cockpits found in other addons or in the stock aircraft that come with your simulation platform use conventional Prepar3D/FSX 2D gauges that are “projected” onto the various instrument panels. When viewed from an angle, these gauges appear flat even though they might contain needles, 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. Most of these gauges use low-

resolution graphics and are limited in size. The stock Garmin 500 GPS that comes with your simulation platform is a good example of a “flat” 2D gauge that contains both bitmaps and vector graphics. Viewed from the side, the knobs and buttons on the bezel look flat.

Xtreme Prototypes full-3D virtual cockpits do not integrate 2D gauges, except for the CRT/LCD screens and for some LED/VFD displays that are flat by nature, such as in the GPS/GNS/GTN, radar and radios. Our cockpits contain fully modeled 3D instruments and gauges with real moving parts.

This, along with the highly detailed aircraft interior, makes this addon an ideal candidate for new virtual reality devices and applications such as [FlyInside](#). Equipped with the necessary software and VR goggles, the desktop pilot really feels he/she is inside the real aircraft, in front of a real instrument panel instead of a 2D drawing. The full-3D virtual cockpit allows for a total immersion into the Gates Learjet Model 25 cabin and cockpit.

Each virtual cockpit contains about 2,200 objects and over 250 custom systems, animated gauges, switches, knobs, levers, light indica-



cy products. You must be in the virtual cockpit view to fly this add-on.

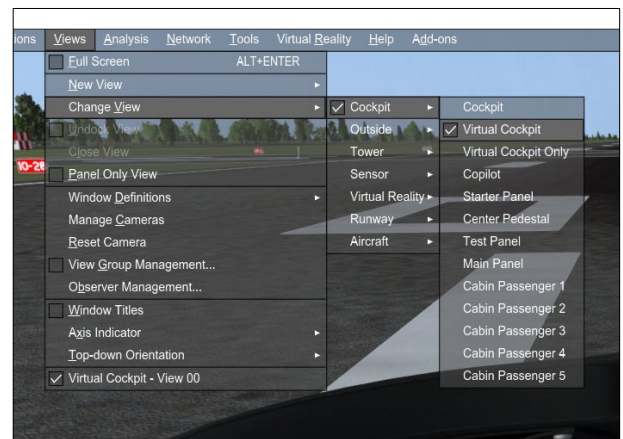
- If your GLJ Model 25 SE add-on aircraft appears to have no virtual cockpit, make sure you have selected the **VIRTUAL COCKPIT** view in the simulator, not the 2D cockpit (main panel) view. The virtual cockpit is available from the “Views” menu item on your simulation platform’s top menu bar or by pressing 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.

tors and flight instruments with integrated tooltips (small rectangles with text that appear under the mouse pointer with useful information).

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.

Important

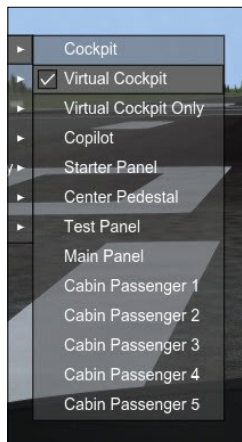
- Xtreme Prototypes next generation addons no longer include 2D panels found in lega-





- All aircraft systems are programmed into the virtual cockpit. For this reason, it is very important to select the **VIRTUAL COCKPIT** view after loading the aircraft into the simulator to make sure that all systems are initialized. For example, if you are in one of the exterior view after loading the aircraft and some exterior features are not displayed or working properly, simply switch to the virtual cockpit and go back to the exterior view.

- Multiple camera views are provided when in the virtual cockpit for entering the passenger cabin and to help the pilot with some switches and other cockpit items in areas that are difficult to reach. You can cycle through the different camera views when in the virtual cockpit by pressing the “A” key.



INTERIOR 3D MODEL FEATURES

- Four (4) high resolution, VR-ready 3D virtual cockpits with different panel configurations, over 2,600 objects and more than 250 full-3D animated gauges, switches, knobs, levers, light indicators and flight instruments with tooltips:
 - **Classic Configuration** - Features a classic analog instrument panel from the 1970's, similar to the original Learjet 25 panel. A GNS 530 and a weather radar are also installed.
 - **Retrofitted Configuration** - New radios with yellow VFD displays have been installed in the main instrument panel to replace the original sets with analog displays from the 1970's. A GNS 530 and a weather radar are also installed.
 - **GTN 650/750 Configuration** - Features modern avionics including GTN 650/750 GPS/NAV/COM/ATC multifunction display systems, a weather radar and new radios with yellow VFD displays.
 - **Dual GTN 750 Configuration** - Features modern avionics including two GTN 750

GPS/NAV/COM/ATC multifunction display systems, a weather radar and a new ADF radio with a yellow VFD display.

- Full 3D integration of the GNS/GTN, radar and transponder, configurable to meet most user needs. Screens, buttons and knobs can be programmed by the user to integrate almost any third-party addon. Experimentation may be required:
 - Fully animated 3D model of the GNS 530, compatible with the simulator's GPS 500 and the Reality XP GNS 530 addon (not included, available from [Reality XP](#))
 - Fully animated 3D model of the GTN 650 and 750, compatible with the Reality XP GTN 650/750 addon (not included, available from [Reality XP](#)), also compatible with the Flight1 GTN 650/750 addon (not included, available from [Flight1](#))
 - Fully animated 3D model of a weather radar, compatible with the Rex/Milviz WX Advantage weather radar (not included, available from [Rex Simulations](#))
 - Fully animated 3D model of a transponder with a front VFD display, compatible with most special third-party transponder addons supporting C mode of operation and other features (not included, available from third-party vendors/developers)
- Advanced instrument panels:
 - Captain's panel
 - Center panel
 - Electrical and radio panels
 - Copilot's panel
 - Annunciator panel
 - Thrust reverser control panel
 - Center pedestal
- Two (2) interior colors: the classic and retrofitted models have a beige interior; the two GTN models have a black interior
- 4096 x 4096 high resolution textures with reflection, specular and new emissive maps (no mipmaps are used for the interior textures of the Prepar3D models to fix VR issues and to improve overall image quality, Fresnel ramps are used in all model materials for more realistic angles of reflection/specularity)
 - Animated control columns and yokes (hideable, user-selectable), with stick nudger/puller and stick shaker animation, and functional autopilot buttons
 - Animated rudder pedals with differential brakes
 - The classic panel configuration features modified radios with mechanical analog displays, like in the original aircraft from the 1970's (COM1 with alternate frequency, COM2, NAV1, NAV2, ADF1, ADF2, transponder)
 - Retrofitted panel configurations feature new radios with yellow digital VFD displays and standby frequencies (COM1, COM2, NAV1, NAV2, ADF1/2, ATC/transponder)
 - RVSM system, complete with digital altimeters/altitude preselectors (ADDUs) with blue VFD display, analog standby altimeter and control panel (retrofitted panels)
 - Independent flight director
 - NAV1 or GPS/GNS/GTN navigation modes. The Learjet autopilot is retrofitted to be fully functional in GPS mode.
 - DME head
 - Ground proximity warning system (GPWS, retrofitted panels)
 - Engine sync spinner (retrofitted panels)
 - Analog and digital clocks with stopwatch
 - Functional Lear Jet Stereo "Jetstar 8" 8-track tape player on the center pedestal that can play the user's music - a tribute to the inventive genius of Bill Lear (optional in the dual GTN 750 retrofitted panel configuration)
 - Side control knobs (light switches, cockpit fan switch, map light switches)



- Oxygen valves
- Pilot seats with adjustable armrests
- Animated and slidable sun visors
- Hideable throttle quadrant
- Thrust reverser subthrottles
- Hideable (dummy) tablet on the copilot side
- Cabin curtains behind the cockpit (open or close, switchable)
- Cockpit lighting system, including ceiling lights, emergency lighting, 2-intensity glareshield flood lights, map lights, instrument lights
- Cabin lighting system, including ceiling lights, emergency lighting, signs, door entry lights and passenger reading lights (can be controlled individually)

Some functionalities may differ from those in the real aircraft due to limitations in the simulation platforms. Some features available in the native Prepar3D version may not be avail-

able in the FSX/FSX Steam versions. The FSX/FSX Steam versions contain less animations than the Prepar3D version. However, systems and procedures are the same on all platforms.

HOW TO ACTUATE SWITCHES, BUTTONS AND KNOBS

- **Most 2-position switches** can be turned **ON** or **OFF** with a simple left click with the mouse pointer 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!*
- **Most 3-position switches** can be turned to their **UP** position from their **MIDDLE** (or center) 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 most 3-position switches. Make sure you have a wheel mouse!*

- **Some 3-position switches** use a combination of mouse clicks and wheel turns (for example, the Gyro Drift Compensation Switch [8, fig. 4-5], the Manual Mode Cabin Temperature Control Switch [2, fig. 4-4-] or the Manual Cabin Rate Cherry Picker Switch [3, fig. 4-39]). Turning the mouse wheel will move the switch to either direction while left-clicking will return the switch to its middle (center) position. Other switches, such as the Flaps Switch [25, fig. 4-41] will respond to both the mouse wheel and mouse clicks.
- **Switch guards** can be opened or closed with a simple left click with the mouse pointer 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 (and momentary switches)** can be activated with a single left

click on the center button/plunger/lever.

- **Some 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 controller 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 clockwise (or up), turning the mouse wheel down will turn the knob counterclockwise (or down). Continuous rotation



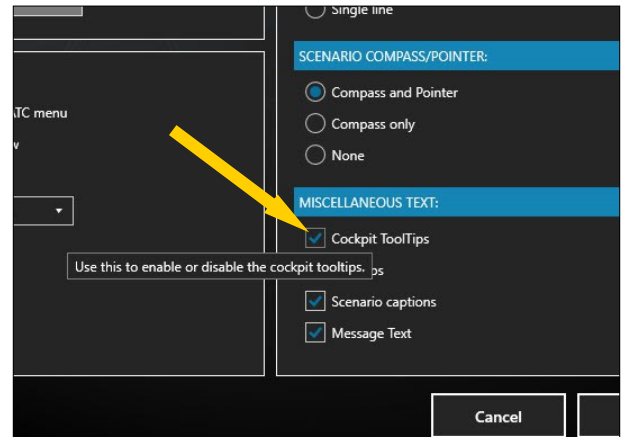


is possible with some knobs by left or right clicking with the mouse and leaving the mouse button depressed until the knob is set to the desired position. Some knobs have dual functions. Turning the mouse wheel will actuate the first function while left and right clicking will actuate the second function. On some knobs, like the Autopilot Roll Turn Knob [2, fig. 4-44] or the Autopilot Pitch Command Wheel [10, fig. 4-44], left clicking the knob will return it to its center position.



- Tooltips** are small yellow rectangles with text that appear under the mouse pointer with useful information about the underlying device. They are integrated to every clickable parts in the virtual cockpit. When the mouse pointer becomes a hand and the tooltip is displayed, the device can usually be actuated with the mouse. If the mouse pointer 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 pointer doesn't move. 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 failed.



Note: If you cannot see the tooltips in the virtual cockpit, make sure the “Cockpit Tooltips” (or “Show cockpit tooltips”) option is selected in your simulator’s settings. See also Appendix 5, page 13.

Important

- A wheelmouse is absolutely required to actuate 3-position switches and some knobs! Refer to “Minimum System Requirements” in section 2, page 1.
- 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 (see below). **Note:** It is now possible to click objects through other objects in Prepar3D.

CONFIGURING THE VIRTUAL COCKPIT

Moving the Pilot’s Viewpoint

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



- “Backspace” = Reset Zoom

Important

- Do not move the pilot’s viewpoint too far aft because you may no longer be able to click some of the switches if the viewpoint is behind the seat or other obstacles. When this happens, move your viewpoint forward. **Note:** *It is now possible to click objects through other objects in Prepar3D.*

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.

Hiding the Control Columns and Yokes

The control columns can be made invisible by clicking the boot at the base. 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

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 one works only in exterior camera views, but is good to know*



again to show the column. Each column/yoke is independent and user-selectable.

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.

Playing Music in the Cockpit

As a tribute to the inventive genius of Bill Lear, your GLJ Model 25 SE add-on contains a functional "Jetstar 8" 8-track tape player installed in the center pedestal or under the copilot's instrument panel that can play up to four different tracks of stereo music, like the original player.

By default, we've programmed the FSX opening music that comes with the simulator but the tracks can be changed to any musical



piece 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 add-on's main folder. The "extra" folder contains the cockpit sound effects, including the music from the 8-track tape player.

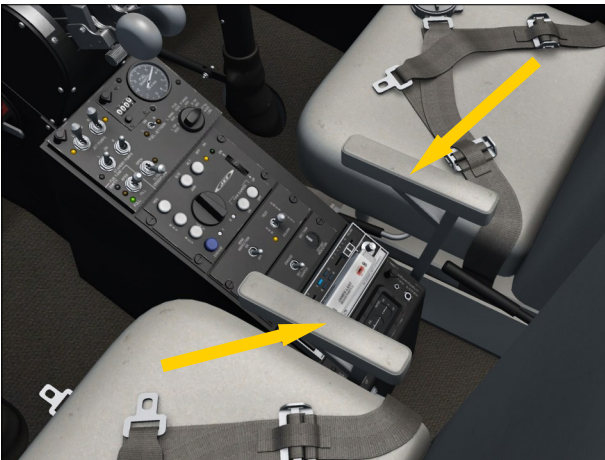
Left-clicking the 8-track tape cartridge [2, fig. 4-46] will play the music, starting with track number 1. Right-clicking will stop playing the music. Clicking the Select Button [1, fig. 4-46] will switch between tracks.



In the Dual GTN panel configuration, the 8-track tape player can be made invisible by clicking the breaker marked "STEREO" in the captain's breaker panel.

Note: Bill Lear introduced the world's first Lear Jet Stereo 8-track player for automobiles back in the spring of 1965 through the Lear Jet Stereo division, an extension of Lear Jet Corporation. The format was largely adopted by the music industry and major electronics and car manufacturers from the mid-1960's to the late 1970's.

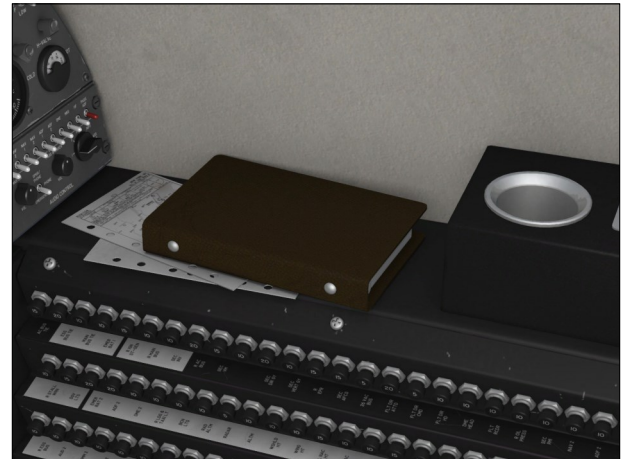
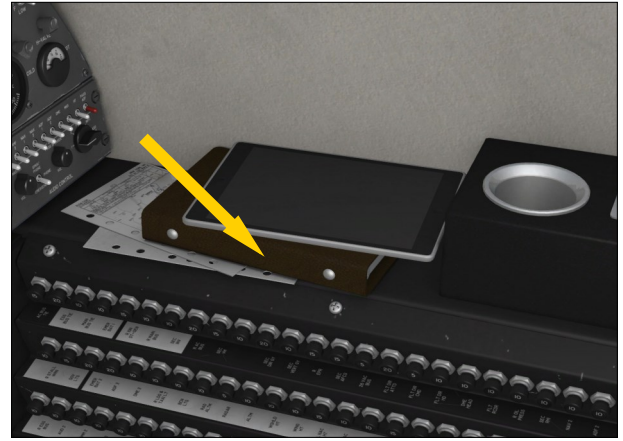
Releasing the Armrests



Simply click the armrests to release them. Click again to raise them.

Hiding the Tablet in the Cockpit

To show or hide the tablet on the copilot's



right console, simply click the brown binder under it. Clicking the tablet will show/hide the simulator's map.

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.

ADDING THIRD-PARTY ADDONS, SYSTEMS AND GAUGES



The GLJ Model 25 SE v3.0 addon comes with preconfigured instrument panels for the following systems:

- The basic GPS 500 included with your simulation platform - or - the GNS/GTN systems from [Reality XP](#) and [Flight 1](#) (not included, sold separately);
- A dummy radar screen - or - the Rex/Milviz WX Advantage radar from [Rex Simulations](#) (not included, sold separately).

You must select which navigation system and radar you intend to use at the time of installation (see section 2, page 4). The installer will preconfigure the instrument panels and program the 3D buttons and knobs in the virtual cockpits for your selected software.

Third-party software must be installed and working properly on your simulation platform prior to installing the GLJ Model 25 SE v3.0 addon. We do not recommend using third-party setup utilities or configuration panels to add your third-party navigation systems or radars to the virtual cockpits of the GLJ Model 25 SE addon. Please refer to Appendix 2 for complete instructions and more information.

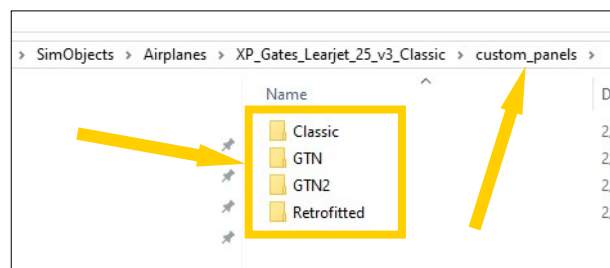
Basic Configurations

The Classic and Retrofitted virtual cockpits are configured by default for the basic GPS 500 that comes with your simulation platform, and for a dummy radar screen included with the GLJ Model 25 SE v3.0 addon. This is the option you must select if you don't have third-party software installed on your platform. You can always change later and add other third-party navigation systems and radars.

The GTN and Dual GTN (GTN2) virtual cockpits are preconfigured by default for the Reality XP GTN 750/650 (sold separately), and for a

dummy radar screen included with the GLJ Model 25 SE v3.0 addon. We do not recommend flying with the GTN or Dual GTN (GTN2) cockpits without a GTN system installed, because you won't have any GPS and COM/NAV radio. You can switch configurations at any time by reinstalling the GLJ Model 25 SE v3.0 addon and selecting new navigation systems and a new radar. We always recommend uninstalling the addon before reinstalling it.

If you are familiar with your simulation platform and know how to manually install airplanes, you can switch configurations at any time by copying the necessary "panel.cfg" and control gauges to the GLJ Model 25 SE panel and gauge folders. For your convenience, the preconfigured "panel.cfg" and control gauges for the different cockpits are provided in the "...\custom_panels" folder contained in the addon's Classic airplane folder. Refer to Appendix 2 for complete instructions.



Adding Other Third-Party Addons

Adding other third-party addons, systems or gauges is possible by modifying a few lines in the "panel.cfg" and in the special control gauges that are provided with the GLJ Model 25 SE addon. This only requires a text editor like Notepad that comes with Windows.

Appendix 2 contains important information and detailed instructions for adding third-party addons, systems or gauges to the virtual cockpits of the GLJ Model 25 SE v3.0 addon and how to program the 3D buttons and knobs for your own devices.

Please note that Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE v3.0 add-on aircraft may require some research and experimentation on the part of the user.

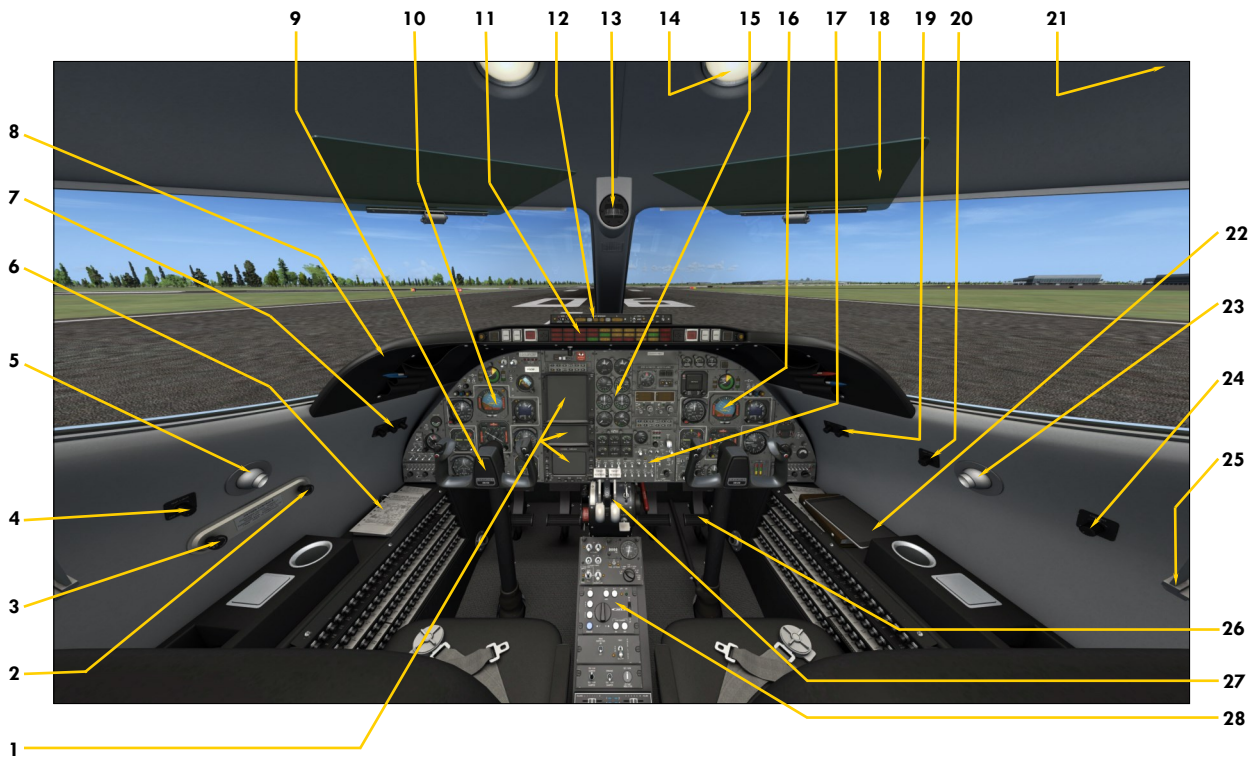


Figure 4-1

- | | |
|---|--|
| 1. Third-Party Addons
<i>Refer to Appendix 2 for details.</i> | 14. Cockpit Ceiling Light |
| 2. Passenger Oxygen Valve | 15. Center Instrument Panel |
| 3. Passenger Mask Valve | 16. Copilot's Instrument Panel |
| 4. Captain's Map Light Control | 17. Electrical Panel |
| 5. Captain's Map Light | 18. Sun Visor |
| 6. Flight Maps
<i>Click to open the simulator's flight map.</i> | 19. Cockpit Lighting Controls |
| 7. Cockpit Lighting Controls | 20. Copilot's Map Light Control |
| 8. Glareshield | 21. Ceiling Speaker |
| 9. Hideable Control Column and Yoke | 22. Hideable Tablet (n/s)*
<i>Click to open the simulator's flight map.</i> |
| 10. Captain's Instrument Panel | 23. Copilot's Map Light |
| 11. Fire and Main Annunciator Panels | 24. Cooling Fan Control |
| 12. Thrust Reversers Control Panel | 25. Oxygen Mask (n/s)* |
| 13. Magnetic ("Whiskey") Compass
<i>Click the housing to make your pilots wear sunglasses.</i> | 26. Rudder and Brake Pedals |
| | 27. Hideable 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. Some features may not be available in FSX/FSX Steam.



Figure 4-2

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Audio Panel 2. Ice Protection Switches 3. Analog Clock 4. Wing Temperature Gauge 5. Directional Gyro and Gyro Drift Compensation Knob 6. Radio Magnetic Indicator (RMI) 7. Airspeed/Mach Indicator (ASI) 8. Marker Beacon Lights 9. Gyro Switches (partially simulated) 10. Flight Director Annunciators 11. Left Angle-of-Attack Indicator 12. Attitude Director Indicator (ADI) 13. Horizontal Situation Indicator (HSI) 14. Emergency Batteries Switches 15. Optional Test Probe Icon
<i>Click to install/remove the (boom) nose test probe.</i> | <ol style="list-style-type: none"> 16. Label
<i>Click to install/remove the "Remove Before Flight" items.</i> 17. Anti-Skid Generator Lights 18. Tail Number Plaque
<i>Click to show/hide the ATC window.</i> 19. Standby (Horizon) Gyro 20. Standby Gyro Caging/Adjustment Knob 21. Autopilot NAV1/GPS Switch 22. Flight Director Switch
<i>Classic cockpit configuration only.</i> 23. Altimeter/ADDU 24. Vertical Speed Indicator (VSI) 25. Trim Indicators 26. Radio Altimeter 27. Radio Altimeter Power Switch 28. Label
<i>Click to install/remove the left recognition light.</i> 29. Alternate Static Source Switch (n/s) |
|--|---|



Figure 4-3

- | | |
|---|---|
| <p>1. COM1 Monitor Switch
Set both COM1/COM2 Monitor Switches to ON to receive on both radios.</p> <p>2. COM2 Monitor Switch
Set both COM1/COM2 Monitor Switches to ON to receive on both radios.</p> <p>3. NAV1 Monitor Switch
Allows the pilot to listen to navigation code identifiers.</p> <p>4. NAV2 Monitor Switch
Allows the pilot to listen to navigation code identifiers.</p> <p>5. ADF1 Monitor Switch
Allows the pilot to listen to navigation code identifiers.</p> <p>6. ADF2 Monitor Switch
Allows the pilot to listen to navigation code identifiers.</p> <p>7. DME Monitor Switch
Allows the pilot to listen to navigation code identifiers.</p> | <p>8. Marker Beacon Monitor Switch
Allows the pilot to listen to navigation code identifiers.</p> <p>9. HF Monitor Switch (n/s)
This aircraft is not equipped with a short wave (HF) transceiver.</p> <p>10. ADF to Passengers Switch (n/s)
Allows selected ADF (radio) station to be broadcast in the cabin. Not simulated.</p> <p>11. Audio Transmit Selector Knob
Select 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.</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> |
|---|---|

Note: COM1 and COM2 refer to the VHF voice communication transceivers [fig. 4-20a and 4-21a/b]. NAV1 and NAV2 refer to the navigation receivers [fig. 4-19a/b]. ADF1 and ADF2 refer to the low-frequency NDB (ADF) receivers [fig. 4-18a/b]. DME refers to the distance measuring equipment installed in this aircraft (see "DME Head", fig. 4-36). Marker Beacon refers to the old VHF radio beacons used in conjunction with ILS (see fig. 4-5). Navigation code identifiers are broadcast in Morse in the simulator. The GLJ Model 25 SE add-on is not equipped with a short wave (HF) transceiver because it is not supported in the simulator. P.A. system and intercom are not simulated.



Figure 4-4

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Pitot Heat Switches
<i>These switches turn on heating elements in the pitot tubes and stall vanes. Due to limitations in the simulator, these two switches are linked.</i> 2. Engine Nacelle Heat Switches
<i>These switches turn on heating elements and energize control valves that allow bleed air from the engine to circulate and prevent ice formation on the engine inlet components.</i> 3. Wing and Stabilizer Heat Switch
<i>This switch energizes the control valve that allows bleed air to circulate and prevent ice formation on the wing leading edges. It also turns on heating elements on the stabilizer leading edges, if the aircraft is in flight. Requires the Bleed Air Switch [1, fig. 4-39] to be set to NORM or MAX.</i> 4. Windshield Heat Switches (n/s)
<i>These switches control the valve that allows bleed air from the engine to enter the footwarmer and defrost system and to heat the windshield if the Windshield Defog Knob [7, fig. 4-41] is pulled out. Requires the Bleed Air Switch [1, fig. 4-39] to be set to NORM or MAX.</i> 5. Anti-Ice Alcohol Switch (n/s)
<i>This switch activates the pump that supplies me-</i> | <ol style="list-style-type: none"> <i>thyl alcohol to the windshield or radome to prevent ice formation.</i> 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>Click this momentary switch to engage electrical nose gear steering. A green annunciator [14, fig. 4-30] will illuminate on the main annunciator panel. Click the switch again to disengage electrical nose wheel steering (the annunciator will go off). This switch is spring loaded. Nose wheel steering is engaged automatically in the simulator at certain speeds. See also "Wheel Master Button" [2, fig. 4-50].</i> 8. Analog Clock 9. Wing Temperature Gauge
<i>Blue arc: temperature below 35°F. Green arc: above 35°F and below 215°F. Red arc: above 215°F (reduce RPM). Make sure the needle is in the green.</i> 10. Clock Red Hands (Bugs) 11. Clock Red Hands Setting Knobs
<i>Outer (large) for hours, inner (small) 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> |
|--|---|

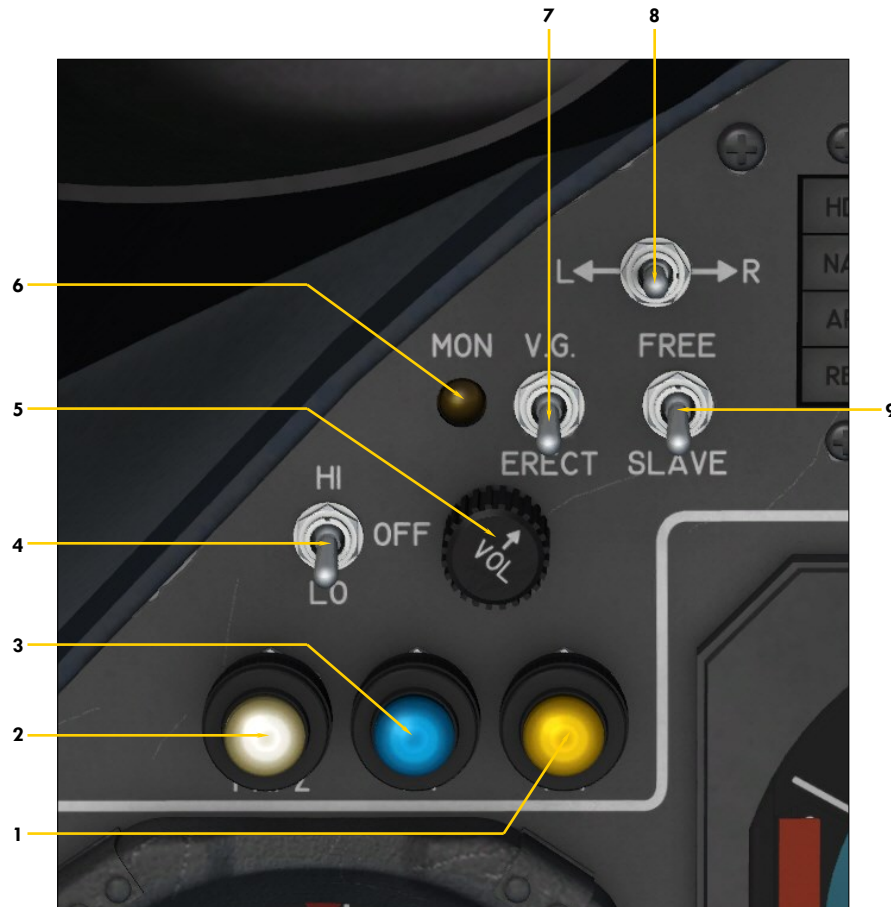


Figure 4-5

1. Middle Marker* Light (yellow)
2. Inner Marker* Light (white)
The old airway or fan/z marker light is replaced by the Inner Marker Light in the simulator.
3. Outer Marker* Light (blue)
4. Captain's Auxiliary Heat Switch (n/s)
5. Marker Beacon* Sound Volume Knob (n/s)
6. Marker Beacon* Monitor Light
Illuminated if Marker Beacon Monitor Switch [8, fig. 4-3] on the audio panel is ON.
7. Vertical Gyro Erect Switch
This switch is used to re-erect the gyroscope if the ADI tumbles and becomes temporarily unusable after experiencing strong unusual attitudes. Use this switch to cage (lock in place) the gimbals in the ADI to prevent damage to the gyroscope. Actuating this switch will disengage the autopilot.
8. Gyro Drift Compensation Switch
When the gyro type is preset to "2" in the "aircraft.cfg" and operates in free mode, use the mouse wheel to manually compensate gyro drift (refer to Appendix 6, page 7, or the Release Notes, page 4, for more information). Actuating this switch will disengage the autopilot. Click to reset the switch to its middle position. Refer to your simulation platform's documentation for a complete discussion about gyro drift. You can also use the Directional Gyro's Gyro Drift Compensation Knob [5, fig. 4-2] to compensate gyro drift.
9. Directional Gyro Free/Slave Switch (n/s)
Unsupported in the current simulation platforms. Gyro type (free or slaved) is preset in the "aircraft.cfg" (refer to Appendix 6, page 7, or the Release Notes, page 4, for more information). Moving this switch will disengage the autopilot. It has no other function.

*: Marker beacons are legacy VHF radio beacons normally used in conjunction with ILS to provide indications of an aircraft's position along a route. They are becoming more and more obsolete.



Figure 4-6

1. REV (Reverse Course Mode Engaged) Annunciator
2. NAV CAPT (Course Captured) Annunciator
3. NAV ARM (Navigation Hold Mode Engaged) Annunciator
4. HDG (Heading Hold Mode Engaged) Annunciator
5. Angle-of-Attack Indicator
 - Alive above 80 KIAS
 - **Green arc:** Safe maneuvering range
 - **Yellow arc:** Caution range, impending stick shaker condition
 - **Red line:** Stall, stick nuderger condition (or system being tested)
6. GS ARM (Glideslope Approach Mode Engaged) Annunciator
7. GS CAPT (Glideslope Captured) Annunciator
8. EXT (Course and Glideslope Captured) Annunciator
9. GA (Takeoff/Go-Around Mode Engaged) Annunciator

Note: Refer to section 5, page 15, for a complete discussion about the flight director annunciators. The angle-of-attack needle will move into the red zone when testing the stall warning system (see 13-14, fig. 4-41). The Left Angle-of-Attack Indicator is independent from the Right Angle-of-Attack Indicator.

Main Panel (both sides)

ATTITUDE DIRECTOR INDICATOR (ADI)

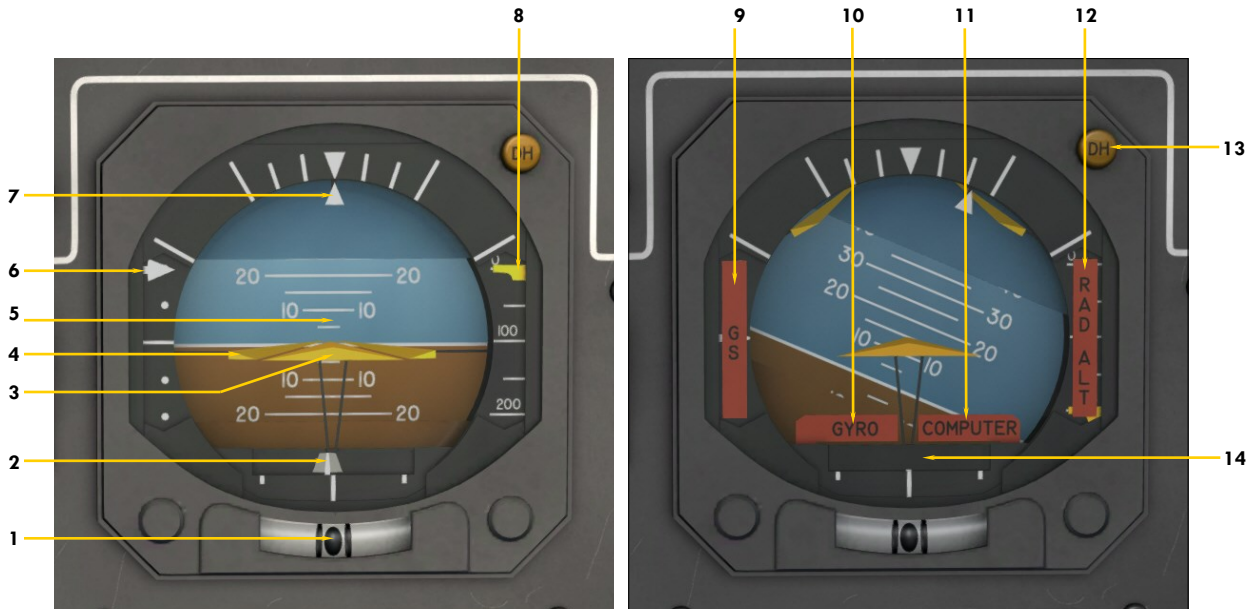


Figure 4-7

1. **Inclinometer Ball Indicator**
Indicates slip/skid condition (if the turn is coordinated, the ball is centered).
2. **Localizer Deviation Runway Symbol**
Repeats HSI CDI indication when a valid localizer signal is present. If the runway symbol is aligned with the middle reference bar, the aircraft is on course and aligned with the runway.
3. **Fixed Airplane Symbol**
A stationary reference symbol that represents the aircraft.
4. **Flight Director Command Bars**
*Maneuvering guidance - **Advisory**. Turn **ON** the Flight Director Switch to activate the command bars. The bars are parked and inactive when the Flight Director Switch is **OFF**. Refer to section 5, page 17, for a complete discussion about the flight director and the command bars.*
5. **Attitude Tape**
Rotates for roll, moves up and down for pitch.
6. **Glideslope Deviation Indicator**
Repeats HSI glideslope deviation indication [6, fig. 4-8]. The arrow represents the glideslope. When the arrow is above the middle reference line, you are too low. When the arrow is below the middle reference line, you are too high. When the arrow is aligned with the middle reference line, you are on the glideslope.
7. **Bank Indicator**
Indicates present bank angle.
8. **Radio Altimeter Below 200 ft. Indicator**
Indicates the last 200 feet above ground. See "Radio Altimeter", fig. 4-13.
9. **Glideslope Warning Flag**
Indicates unreliable or non-existent glideslope signal.
10. **Gyro Warning Flag**
Indicates inoperative gyroscope. Gyroscope requires DC power.
11. **Computer Warning Flag**
Indicates inoperative AFCS computer.
12. **Radio Altimeter Warning Flag**
Indicates unreliable or non-existent radio altimeter signal.
13. **Decision Height Annunciator**
Indicates aircraft at or below selected decision height. See "Radio Altimeter", fig. 4-13.
14. **Runway Symbol Shutter**
Indicates unreliable or non-existent localizer signal.

Note: All NAV indications coupled to NAV1 radio or GPS, depending on position of the NAV1/GPS Switch [5, fig. 5-16].

Main Panel (both sides)

HORIZONTAL SITUATION INDICATOR (HSI)

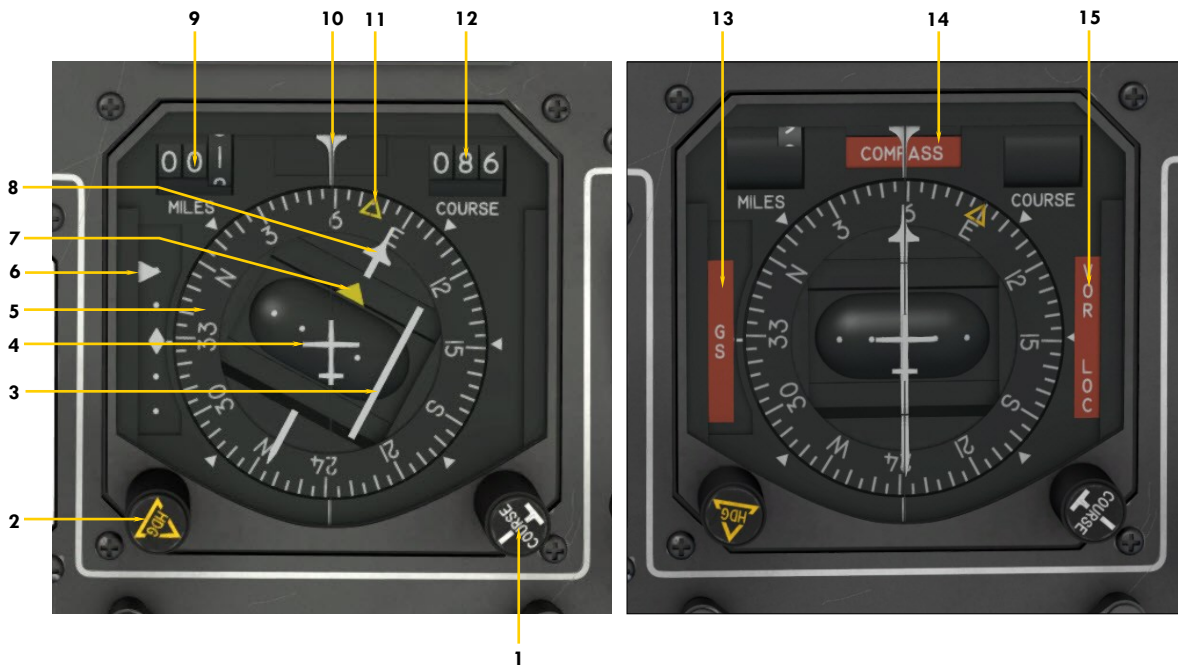


Figure 4-8

- 1. NAVI Course Selector Knob**
Rotating this knob rotates the NAVI Course Needle to the desired course.
- 2. Heading Selector Knob**
Rotating this knob rotates the yellow Heading Bug to the desired heading.
- 3. Course Deviation Indicator (CDI)**
This line indicates the lateral deviation from a captured VOR/LOC course. When the bar is aligned with the NAVI Course Needle, the aircraft is on course. If the line deflects to the left (one or two dots), you are too far right and must steer left to bring the aircraft back on course. If the line deflects to the right (one or two dots), you are too far left and must steer right to bring the aircraft back on course.
- 4. Fixed Airplane Symbol**
A stationary reference symbol that represents the aircraft.
- 5. Heading (Compass) Card**
Aircraft heading is indicated on this rotating card, under the Lubber Line.
- 6. Glideslope Deviation Indicator**
When the arrow is above the middle reference line, you are too low. When the arrow is below the middle reference line, you are too high. When the arrow is aligned with the middle reference line, you are on the glideslope.
- 7. To/From (Yellow) Needle**
Indicates whether you are flying towards or away from the VOR.
- 8. NAVI Course Needle**
This needle points to the VOR/LOC selected course. It is good practice to align the NAVI Course Needle with the actual heading at the beginning of a flight and before engaging the autopilot. The NAVI Course Needle should be aligned with the Course Deviation Indicator when following a captured and valid VOR/LOC course. Used with all AP/FD NAV hold modes.
- 9. NAVI DME Readout**
Displays the distance to/from the selected DME station in nautical miles. Shuttered when distance information is unreliable or non-existent.
- 10. Lubber Line**
- 11. Heading Bug**
This yellow bug indicates the selected heading and can be rotated to any heading with the Heading Selector Knob. It is good practice to align the bug with the actual aircraft heading at the beginning of a flight and before engaging the autopilot. Used with the AP/FD HDG hold mode.
- 12. Course Readout**
Displays the VOR/LOC selected course in degrees. Shuttered when the instrument is turned off.
- 13. Glideslope Warning Flag**
Indicates unreliable or non-existent glideslope signal.
- 14. Compass Warning Flag**
Indicates unreliable or non-existent magnetic heading signal.
- 15. VOR/LOC Warning Flag**
Indicates unreliable or non-existent NAVI signal.

Note: All NAV indications coupled to NAVI radio or GPS, depending on position of the NAVI/GPS Switch [5, fig. 5-16].

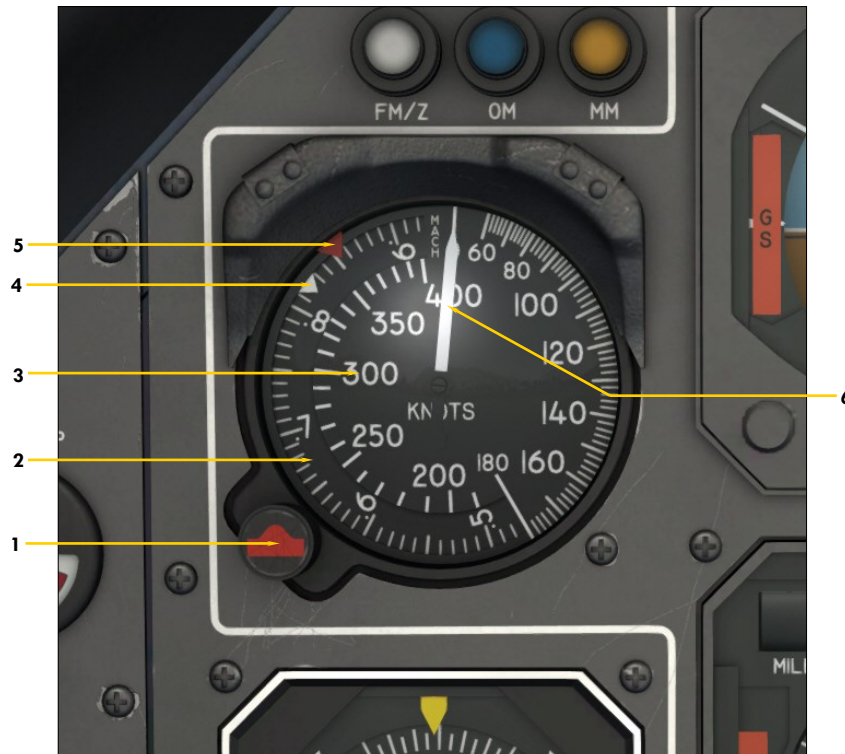


Figure 4-9

- | | |
|---|--|
| <p>1. Reference Bug Knob
Use the mouse wheel to rotate the red airspeed bug (knots IAS). Use the left/right mouse buttons to rotate the white Mach bug.</p> <p>2. Mach Scale</p> <p>3. Airspeed Scale (Knots IAS)</p> <p>4. Mach Bug (white)
This bug is linked to the Mach scale and can be rotated with the Reference Bug Knob. The bug is preset to Mach 0.82.</p> | <p>5. Airspeed Bug (red)
This bug can be rotated with the Reference Bug Knob. The bug is preset to 350 knots (IAS).</p> <p>6. Indicated Air Speed Needle
Also indicates the Mach number on the Mach scale.</p> |
|---|--|

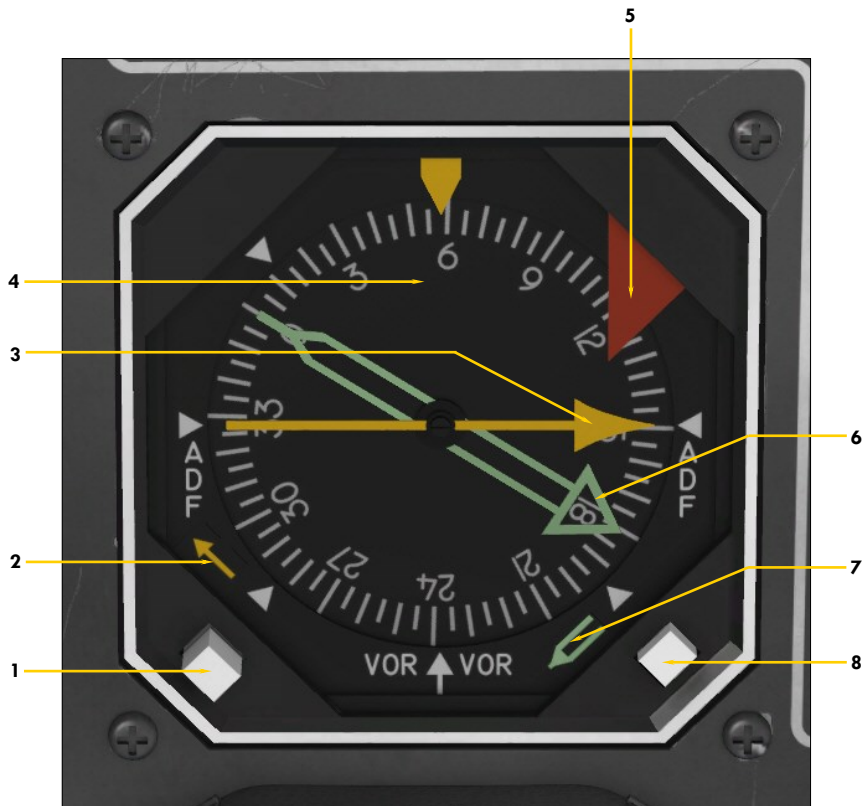


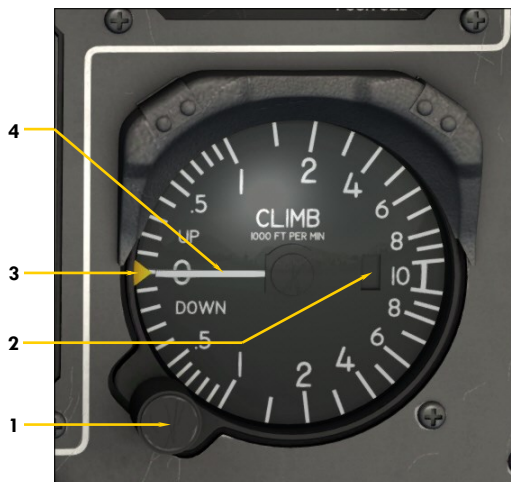
Figure 4-10

1. **Yellow Needle Signal Selector Button**
This button is used to select the navigation signal that is sent to the yellow needle, either ADF1 or NAV1.
2. **Yellow Needle Selection Flag**
Indicates which navigation signal is sent to the yellow needle, either ADF1 or NAV1/VOR1.
3. **Yellow Needle (ADF1 or NAV1/VOR1)**
This single needle points to the selected VOR1 or ADF1 (NDB) station. The VOR1 station is tuned on the NAV1 radio [fig. 4-19a/b] and the ADF1 station is tuned on the ADF1 radio [fig. 4-18a/b]. The pointer on the needle indicates the magnetic heading to the station and the tail indicates the magnetic heading away from the station. If no signal is present, the needle will point to the east (90 degrees).
4. **Compass Card**
Aircraft heading is indicated on this rotating card, below the yellow pointer.
5. **Heading Warning Flag**
Indicates unreliable or non-existent magnetic heading signal.
6. **Green Needle (ADF2 or NAV2/VOR2)**
This double needle points to the selected VOR2 or ADF2 (NDB) station. The VOR2 station is tuned on the NAV2 radio [fig. 4-19a/b] and the ADF2 station is tuned on the ADF2 radio [fig. 4-18a/b]. The pointer on the needle indicates the magnetic heading to the station and the tail indicates the magnetic heading away from the station. If no signal is present, the needle points to the east (90 degrees).
7. **Green Needle Selection Flag**
Indicates which navigation signal is sent to the green needle, either ADF2 or NAV2.
8. **Green Needle Signal Selector Button**
This button is used to select the navigation signal that is sent to the green needle, either ADF2 or NAV2.



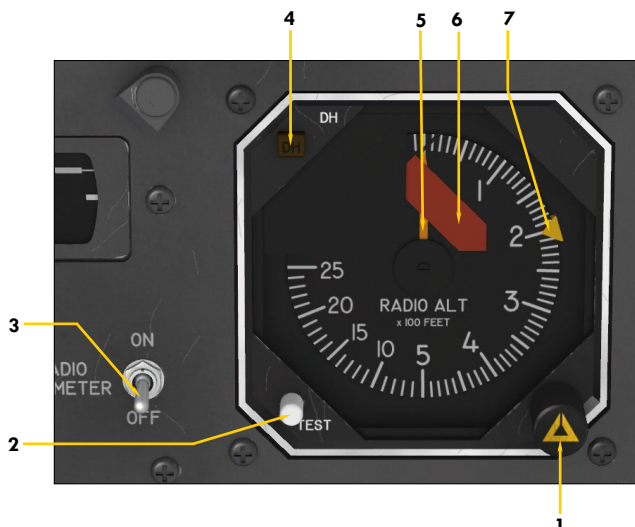
ALTIMETER (BOTH SIDES)
Figure 4-11a

1. Barometric Setting Knob
2. Mode Selector Switch (n/s)
3. Normal Mode Indicator Light (n/s)
4. Altitude 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 1000/300 feet of selected altitude. See "Altitude Preselector", fig. 4-11b and fig. 4-23.
8. Failure Warning Flag
9. Altitude Needle
10. Barometric Setting Readout (inHg)



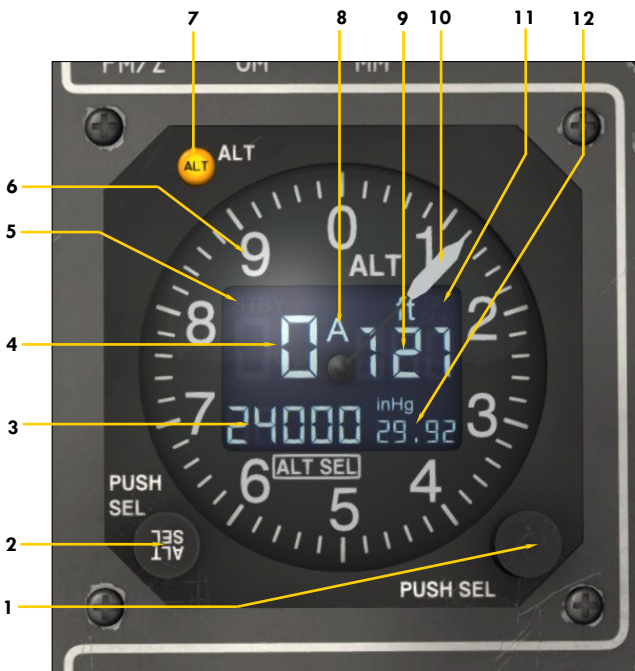
VERTICAL SPEED INDICATOR (VSI)
Figure 4-12

1. (Autopilot) Vertical Speed Selector Knob
This is the vertical speed setting knob for the autopilot and the flight director. Refer to section 5, page 23 for more details.
2. Failure Warning Flag (not shown)
3. (Autopilot) Vertical Speed Bug
This is the vertical speed command bug for the autopilot and the flight director. Refer to section 5, page 23 for more details.
4. Vertical Speed Needle



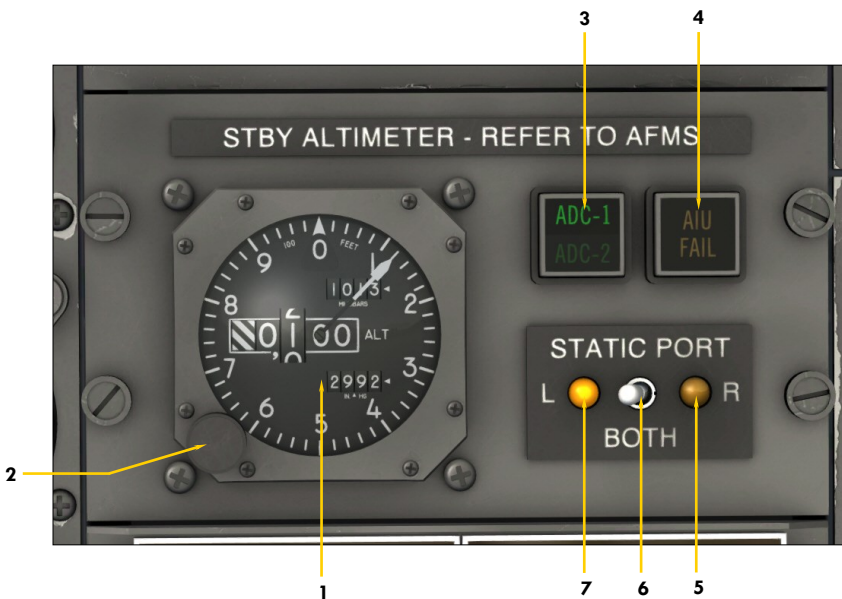
RADIO ALTIMETER
Figure 4-13

1. Radio Altimeter Decision Height Selector Knob
2. Radio Altimeter Test Button
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.



**AIR DATA DISPLAY UNIT (ADDU)
(BOTH SIDES)
Figure 4-11b**

1. Barometric Setting Knob
Click to toggle between inHg or Millibars.
2. Autopilot Altitude Preselector Knob
Selects the desired altitude for the AFCS.
3. Preselected Altitude Readout
4. Altitude Readout (Thousands Ft.)
5. Standby Annunciator (n/s)
6. Altitude Scale (Hundreds Ft.)
7. Altitude Alerter Annunciator
Illuminated with aural warning if within 1000/300 feet of selected altitude.
8. Active Annunciator (n/s)
9. Altitude Readout (Hundreds Ft.)
10. Altitude Needle
11. Failure Indicators (n/s)
12. Barometric Setting Readout (inHg or MB)

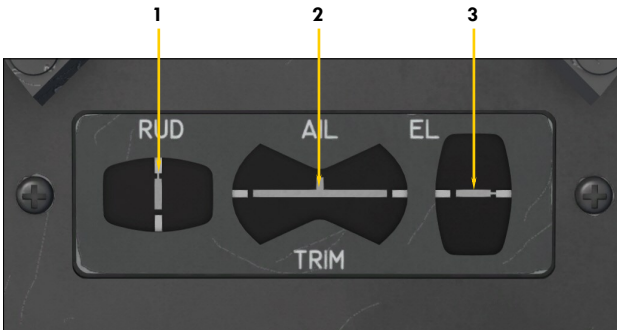


**AIR DATA PANEL
Figure 4-11c**

1. Standby Altimeter
Refer to fig. 4-11a.
2. Barometric Setting Knob
3. Air Data Source Switch and Annunciator
Selects (and displays in green) the air data source - ADDU 1 or 2 - for altitude preselect, altitude alerting, altitude reporting and the air data inputs to the AIU.
4. AIU Fail Annunciator
Indicates that the Analog Interface Unit that converts digital data from the ADDUs to analog signals for the autopilot is not working properly.
5. Right Static Port Annunciator
Indicates that the right static port is selected. OFF when both ports are cross coupled.
6. Static Port Selector Switch
Selects the active static port (left, right or both). Normally centered (BOTH).
7. Left Static Port Annunciator
Indicates that the left static port is selected. OFF when both ports are cross coupled.

Captain's Instrument Panel

MISCELLANEOUS INSTRUMENTS (cont'd)



TRIM INDICATORS
Figure 4-14

1. Rudder Trim Indicator
2. Aileron Trim Indicator
3. Elevator Trim Indicator

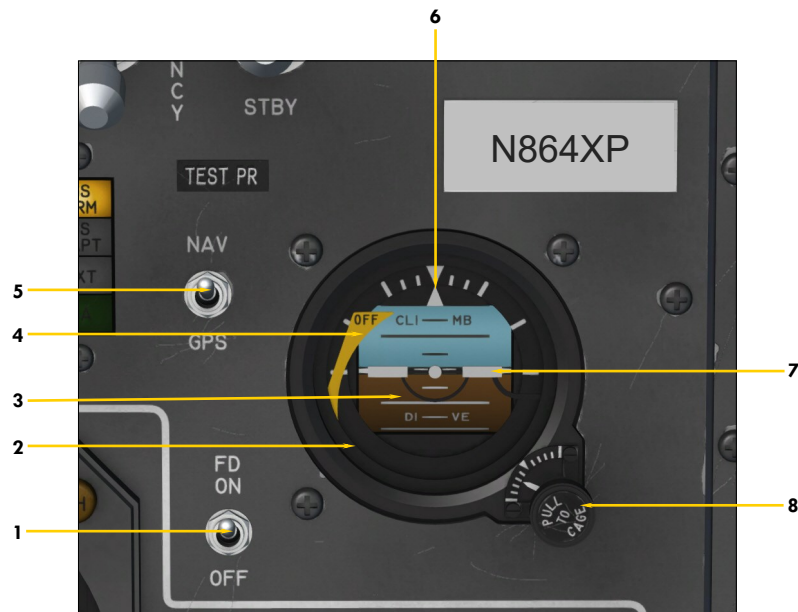
Takeoff trim is typically one needle thickness below neutral.

Note: Autopilot effort indicators, like in the real aircraft, are not available in the simulator. In the simulator, this panel is essentially a repeater of the Trim Indicator Panel installed on the center pedestal [7-9, fig. 4-45].



EMERGENCY BATTERY SWITCHES (APU) AND ANTI-SKID LIGHTS
Figure 4-15

1. **Optional Test Probe Icon**
Click this icon to show/hide the optional (boom) nose test probe on the exterior model. This probe is normally installed on the unpainted variation during flight tests.
2. **Emergency Battery Switch and Light**
Emergency batteries are not available in the current simulation platforms. However, this switch, when set to **ON**, will start the available APU to simulate emergency battery backup in case of a power failure. Like in the real aircraft, the switch indicator light illuminates only when the emergency battery is powering the aircraft. A 3-second delay is normal before the relays are energized and the aircraft is powered again. In the real aircraft, this switch provides power to the standby gyro [fig. 4-16], to its associated avionics and to its indicator light. An emergency power pack, consisting of two batteries, an inverter and associated circuitry, provides DC and AC power. There is no APU in the real aircraft.
3. **Standby Emergency Battery Switch and Light**
This switch, when set to **ON** or **STBY**, will start the simulator's APU to simulate emergency battery backup in case of a power failure. In the real aircraft, this switch provides power to its indicator light and to its associated circuits, normally the gear, flaps and spoilers. The **STBY** position is used to conserve battery power by removing power to the gear, flaps, and spoilers.
4. **Label**
Click this label to install/remove the "Remove Before Flight" items on the exterior model.
5. **Anti-Skid Generator Lights**
These four red lights should go off when the Anti-Skid Power Switch [8, fig. 4-27] is set to **ON** and AC power is available. Illumination of these lights indicates anti-skid system malfunction or under test. The Anti-Skid Test Switch is located on the test switch panel [15, fig. 4-41]. Outboard lights represent outboard wheels and inboard lights represent inboard wheels (on the main landing gear). The Anti-Skid Test Switch is spring loaded to its middle position to allow for separate testing of outboard and inboard systems when moved forward or aft.
6. **Aircraft ATC Call (Tail) Number Plaque**
Click this plaque to show/hide the simulator's ATC window. The tail number can be changed in the "aircraft.cfg" file (see section 3, page 3).



STANDBY GYRO & MISC. SWITCHES
Figure 4-16

1. **Flight Director Switch**
Toggles the flight director ON/OFF. Requires AC plus avionics power (Battery Switches [8-9, fig. 4-28] ON, Inverter Switches [10, 12, fig 4-27] ON). Refer to section 5, page 17, for a complete discussion about the flight director.
2. **Standby Gyro (Emergency Attitude Indicator)**
Powered by the emergency batteries in case of a general power failure. The Emergency Battery Switch [2, fig. 4-15] or the Standby Emergency Battery Switch [3, fig. 4-15] must be set to ON or STBY in case of a power failure to provide AC power to the instrument. During normal operation, the Standby Gyro is powered by the main AC bus.
3. **Attitude Tape**
Rotates for roll, moves up and down for pitch.
4. **Failure Warning Flag**
Indicates instrument inoperative or gyro caged.
5. **Autopilot NAV1/GPS Switch**
Selects autopilot mode of navigation (NAV1 or GPS). Refer to section 5, page 20, for more details.
6. **Bank Indicator**
Indicates present bank angle.
7. **Fixed Airplane Symbol**
A stationary reference symbol that represents the aircraft.
8. **Standby Gyro Caging/Adjustment Knob**
Use the mouse wheel to rotate this knob and adjust the pitch scale depending on your viewing angle. If the indicator tumbles and becomes temporarily unusable after experiencing strong unusual attitudes, click this knob to cage (lock in place) the gimbals to prevent damage to the gyroscope. Click again to uncage.

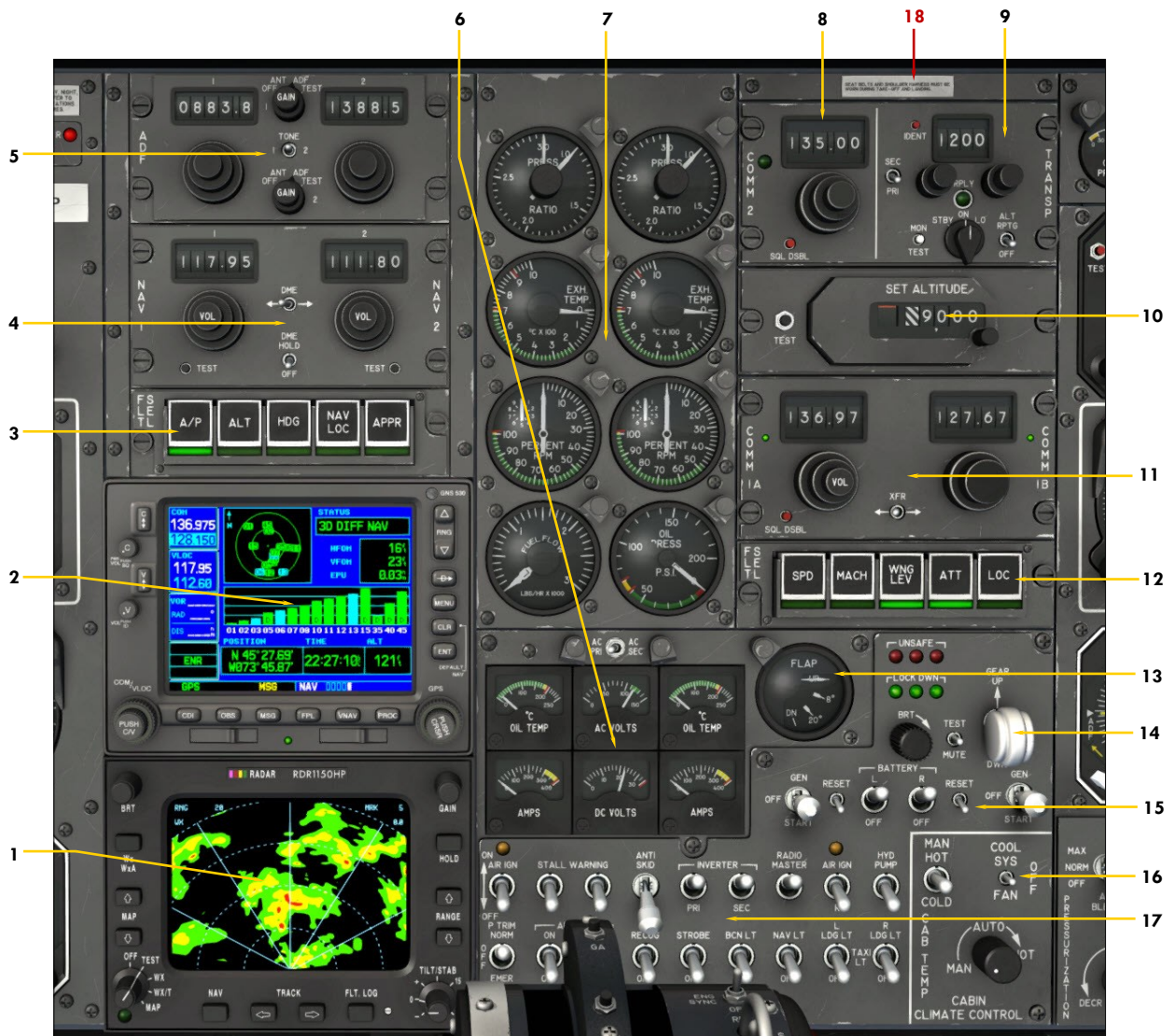


Figure 4-17a

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Radar
<i>Rotate the Mode Selector Knob (bottom left) to light up the screen. The default dummy radar display can be replaced by your own functional third-party radar. See Appendix 2. Requires DC and AC power.</i> 2. GNS 530 GPS/COM/NAV
<i>Rotate the Power Knob (top left) to light up the screen. The GPS 500 can be replaced by your own third-party navigation system. See Appendix 2. Requires Avionics power.</i> 3. Captain's Autopilot/Flight Director Mode Selector Panel 4. NAV1/NAV2 Radios 5. ADF1/ADF2 Radios 6. Electrical Gauge Cluster 7. Engine Gauge Cluster | <ol style="list-style-type: none"> 8. COM2 Radio 9. Transponder 10. Autopilot Altitude Preselector 11. COM1 Radio 12. Copilot's Autopilot/Flight Director Mode Selector Panel 13. Flaps Position Indicator 14. Gear Controls and Lights 15. Engine Starting Panel 16. Cabin Temperature Control Panel 17. Electrical Panel 18. Cockpit "Cold and Dark" Reset or "Auto Start" Icon
<i>Left-click for "Cold and Dark", right-click for "Auto Start"</i> |
|---|--|

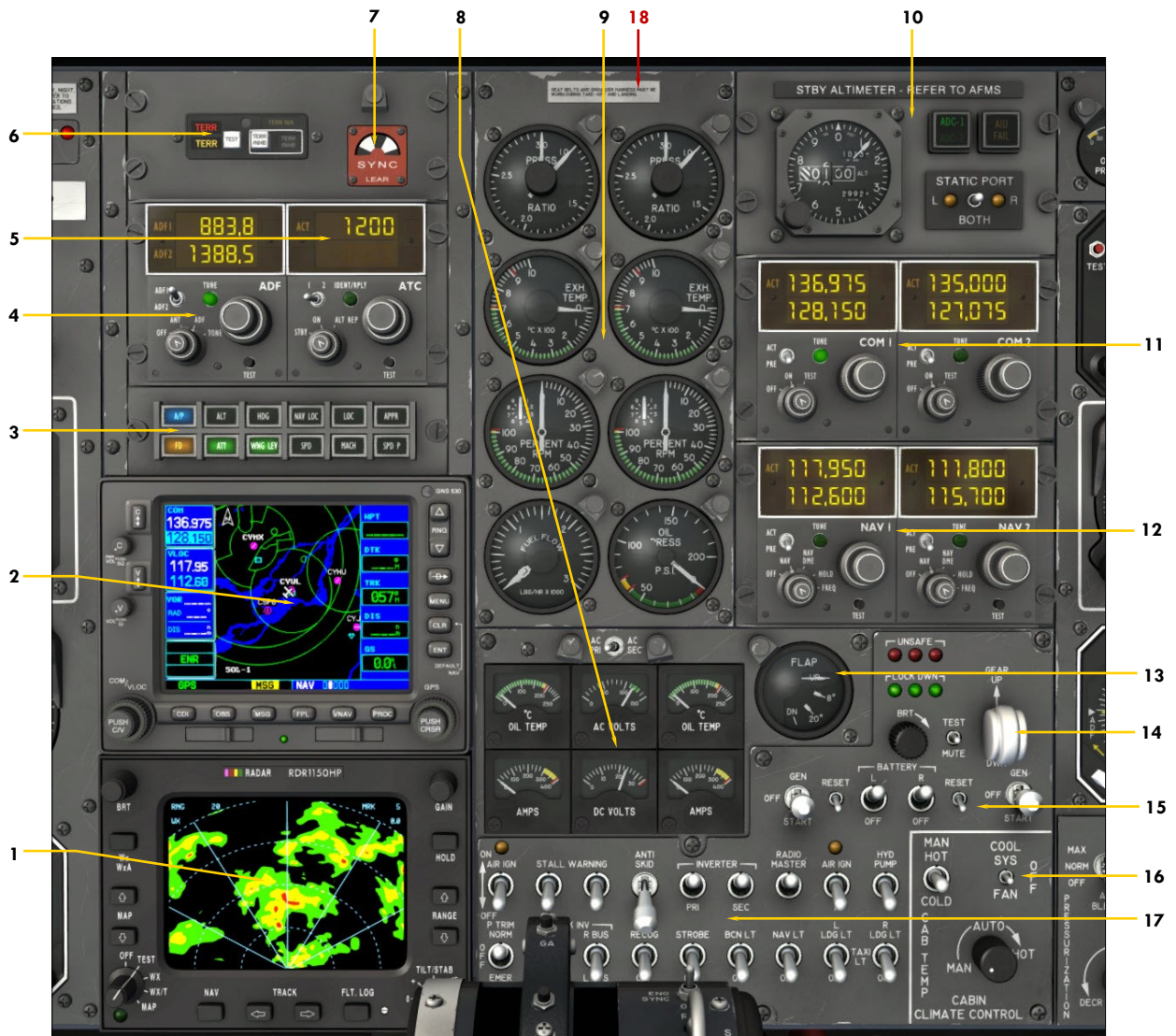


Figure 4-17b

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Radar
<i>Rotate the Mode Selector Knob (bottom left) to light up the screen. The default dummy radar display can be replaced by your own functional third-party radar. See Appendix 2. Requires DC and AC power.</i> 2. GNS 530 GPS/COM/NAV
<i>Rotate the Power Knob (top left) to light up the screen. The GPS 500 can be replaced by your own third-party navigation system. See Appendix 2. Requires Avionics power.</i> 3. Captain's Autopilot/Flight Director Mode Selector Panel 4. ADF1/ADF2 Radios 5. Transponder 6. Ground Proximity Warning System | <ol style="list-style-type: none"> 7. Engine Sync Spinner Indicator 8. Electrical Gauge Cluster 9. Engine Gauge Cluster 10. RVSM Air Data Panel 11. COM1/COM2 Radios 12. NAV1/NAV2 Radios 13. Flaps Position Indicator 14. Gear Controls and Lights 15. Engine Starting Panel 16. Cabin Temperature Control Panel 17. Electrical Panel 18. Cockpit "Cold and Dark" Reset or "Auto Start" Icon
<i>Left-click for "Cold and Dark", right-click for "Auto Start"</i> |
|--|---|



Figure 4-17c

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Radar
<i>Rotate the Mode Selector Knob (bottom left) to light up the screen. The default dummy radar display can be replaced by your own functional third-party radar. See Appendix 2. Requires DC and AC power.</i> 2. GTN 650 GPS/COM/NAV/ATC
<i>Compatible with your own third-party navigation system. See Appendix 2. Requires Avionics power.</i> 3. GTN 750 GPS/COM/NAV/ATC
<i>Compatible with your own third-party navigation system. See Appendix 2. Requires Avionics power.</i> 4. Captain's Autopilot/Flight Director Mode Selector Panel 5. Ground Proximity Warning System 6. Engine Sync Spinner Indicator | <ol style="list-style-type: none"> 7. Electrical Gauge Cluster 8. Engine Gauge Cluster 9. RVSM Air Data Panel 10. ADF1/ADF2 Radios 11. Transponder 12. Flaps Position Indicator 13. Gear Controls and Lights 14. Engine Starting Panel 15. Cabin Temperature Control Panel 16. Electrical Panel 17. Cockpit "Cold and Dark" Reset or "Auto Start" Icon
<i>Left-click for "Cold and Dark", right-click for "Auto Start"</i> |
|---|---|

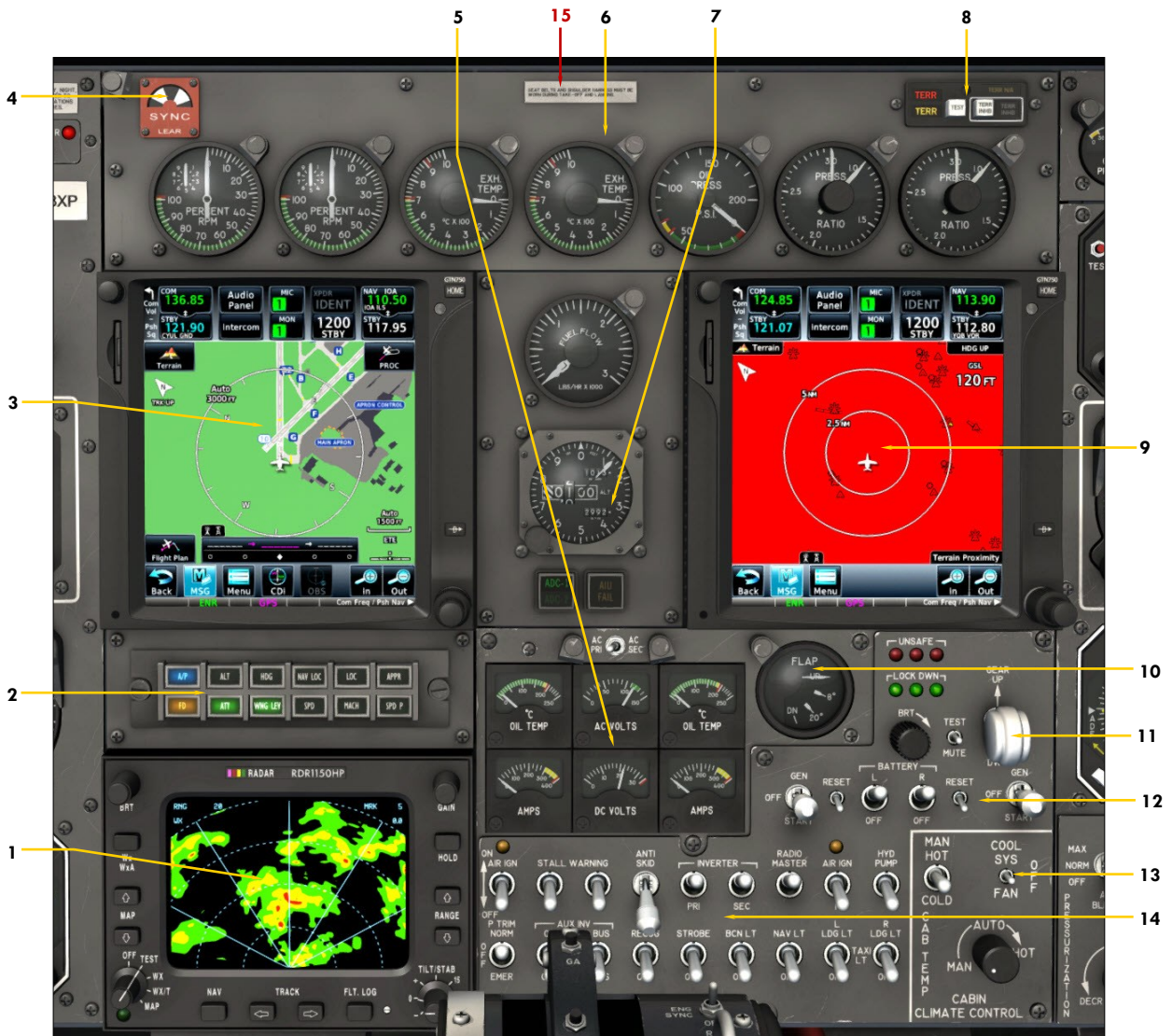
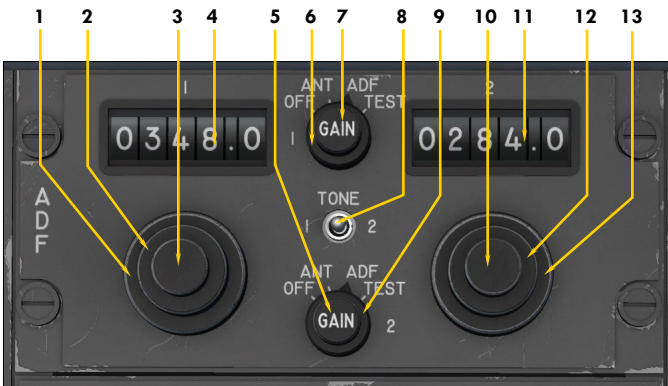


Figure 4-17d

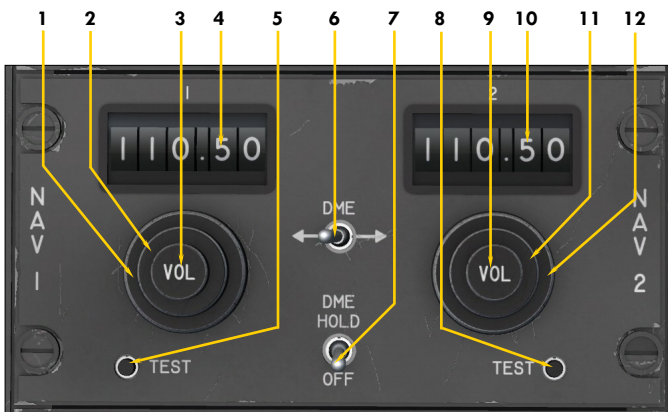
- | | |
|--|---|
| <p>1. Radar
 <i>Rotate the Mode Selector Knob (bottom left) to light up the screen. The default dummy radar display can be replaced by your own functional third-party radar. See Appendix 2. Requires DC and AC power.</i></p> <p>2. Autopilot/Flight Director Mode Selector Panel</p> <p>3. GTN 750 GPS/COM/NAV/ATC (1)
 <i>Compatible with your own third-party navigation system. See Appendix 2. Requires Avionics power.</i></p> <p>4. Engine Sync Spinner Indicator</p> <p>5. Electrical Gauge Cluster</p> <p>6. Engine Gauge Cluster</p> <p>7. RVSM Air Data Panel</p> | <p>8. Ground Proximity Warning System</p> <p>9. GTN 750 GPS/COM/NAV/ATC (2)
 <i>Compatible with your own third-party navigation system. See Appendix 2. Requires Avionics power.</i></p> <p>10. Flaps Position Indicator</p> <p>11. Gear Controls and Lights</p> <p>12. Engine Starting Panel</p> <p>13. Cabin Temperature Control Panel</p> <p>14. Electrical Panel</p> <p>15. Cockpit “Cold and Dark” Reset or “Auto Start” Icon
 <i>Left-click for “Cold and Dark”, right-click for “Auto Start”</i></p> |
|--|---|



ADF RADIOS
Figure 4-18a

1. ADF1 Frequency Selector Knob (Whole)
2. ADF1 Frequency Selector Knob (Fraction)
3. ADF1 Volume Control Knob (n/s)
4. ADF1 Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
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
ADF radio must be selected in the audio panel [5-6, fig. 4-3]
9. ADF2 Function Selector Knob (n/s)
10. ADF2 Volume Control Knob (n/s)
11. ADF2 Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
12. ADF2 Frequency Selector Knob (Fraction)
13. ADF2 Frequency Selector Knob (Whole)

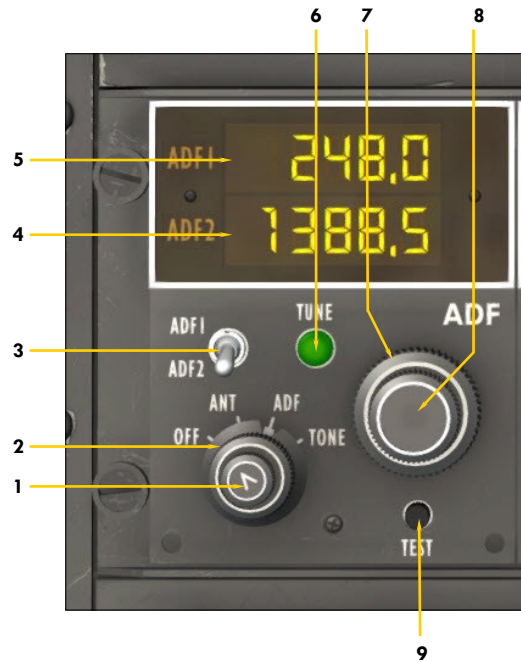
Note: ADF radios require avionics power (Battery Switches [8-9, fig. 4-28] ON, Radio Master Switch [14, fig 4-27] ON).



NAV RADIOS
Figure 4-19a

1. NAV1 Frequency Selector Knob (Whole)
2. NAV1 Frequency Selector Knob (Fraction)
3. NAV1 Volume Control Knob (n/s)
4. NAV1 Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
5. NAV1 Test Button (n/s)
6. DME Selector Switch
7. DME Hold Switch
8. NAV2 Test Button (n/s)
9. NAV2 Volume Control Knob (n/s)
10. NAV2 Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
11. NAV2 Frequency Selector Knob (Fraction)
12. NAV2 Frequency Selector Knob (Whole)

Note: NAV radios require avionics power (Battery Switches [8-9, fig. 4-28] ON, Radio Master Switch [14, fig 4-27] ON).



ADF RADIOS
Figure 4-18b

1. Volume Control Knob (n/s)
2. Function Selector Knob
OFF - Turns off VFD readout only
ANT - Switches from the loop antenna to the sense antenna for monitoring station, RMI ADF needle will point to the east (90 degrees). Not supported in the simulator.
ADF - Normal operation.
3. ADF Radio Selector Switch
TONE - Test tone. *ADF1* or *ADF2* radio must be selected in the audio panel [5-6, fig. 4-3]
Selects the ADF radio to be tuned (*ADF1* or *ADF2*).
4. ADF2 Frequency Readout
With the ADF Radio Selector Switch set to *ADF2*, mousedown the whole or fraction and use the mouse wheel to tune in to the desired frequency for *ADF2*.
5. ADF1 Frequency Readout
With the ADF Radio Selector Switch set to *ADF1*, mousedown the whole or fraction and use the mouse wheel to tune in to the desired frequency for *ADF1*.
6. Tune Light
Illuminated when the ADF radios are active.
7. Standby Frequency Selector Knob (Whole)
With the ADF Radio Selector Switch is set to *ADF1*, use the mouse wheel to tune in to the desired frequency for *ADF1*. With the ADF Radio Selector Switch is set to *ADF2*, use the mouse wheel to tune in to the desired frequency for *ADF2*.
8. Standby Frequency Selector Knob (Fraction)
With the ADF Radio Selector Switch is set to *ADF1*, use the mouse wheel to tune in to the desired frequency for *ADF1*. With the ADF Radio Selector Switch is set to *ADF2*, use the mouse wheel to tune in to the desired frequency for *ADF2*.
9. Test Button
Push to test unit. RMI ADF needle will point to the east (90 degrees).

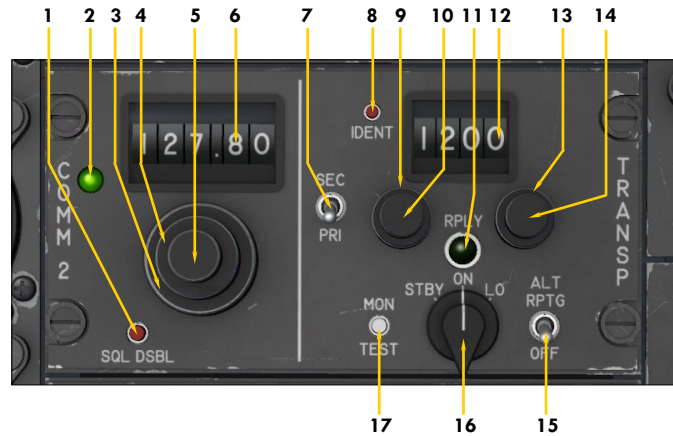
Note: ADF radios require avionics power (Battery Switches [8-9, fig. 4-28] **ON**, Radio Master Switch [14, fig 4-27] **ON**).



NAV1/NAV2 RADIOS
Figure 4-19b

1. Volume Control Knob (n/s)
2. Function Selector Knob
OFF - Turns off VFD readout only
NAV - Normal operation
NAV DME - n/s
HOLD - n/s
FREQ - Test tone. *NAV1* or *NAV2* radio must be selected in the audio panel [3-4, fig. 4-3]
3. Frequency Swap Switch
Swaps the active frequency (ACT) with the standby frequency (PRE) and vice versa. Return the switch to *PRE* before tuning in to the standby frequency. Active frequency cannot be tuned, only swapped with the standby frequency.
4. Standby (PRE) Frequency Readout
Mouseover the whole or fraction and use the mouse wheel to tune in to the desired standby frequency.
5. Active (ACT) Frequency Readout
The active frequency cannot be changed directly. Return the Frequency Swap Switch to *PRE* and tune in to the desired standby frequency. Move the switch to *ACT* to swap the active frequency with the selected standby frequency. Return the switch to *PRE* before selecting another standby frequency.
6. Tune Light
Illuminated when a navigation signal is detected or captured.
7. Standby Frequency Selector Knob (Whole)
Use the mouse wheel to tune in to the desired frequency.
8. Standby Frequency Selector Knob (Fraction)
Use the mouse wheel to tune in to the desired frequency.
9. Test Button
Push to test unit.

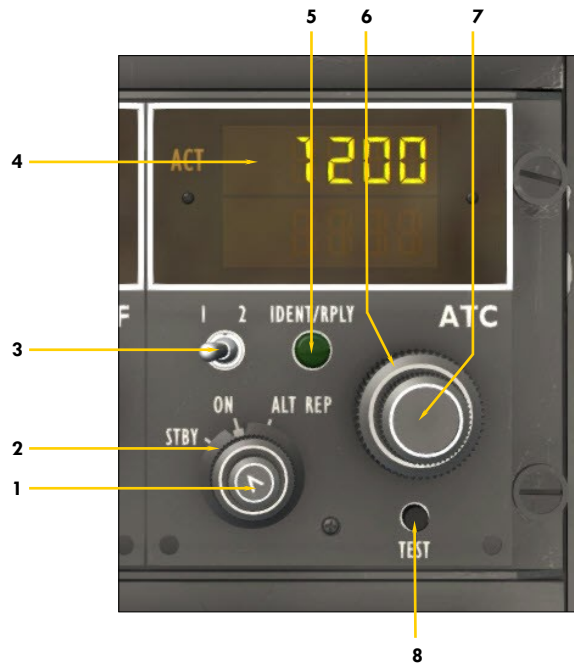
Note: NAV radios require avionics power (Battery Switches [8-9, fig. 4-28] **ON**, Radio Master Switch [14, fig 4-27] **ON**).



COM2 RADIO / TRANSPONDER
Figure 4-20a

1. COM2 Squelch Disabling Button
COM2 radio must be selected in the audio panel [2, fig. 4-3].
2. COM2 Transmit Select Light
Illuminated when VHF COM2 is selected for transmit on the audio panel [2, fig. 4-3].
3. COM2 Frequency Selector Knob (Whole)
4. COM2 Frequency Selector Knob (Fraction)
5. COM2 Volume Control Knob (n/s)
6. COM2 Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
7. Transponder Radio Selector Switch (n/s)
8. Transponder ATC Ident Button (n/s)
Show/hide the simulator's 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. Altitude Reporting Mode Switch (n/s)
Enables the transponder to respond to both Mode A (4-digit code) and Mode C (altitude reporting) interrogations. Not supported with the basic transponder that comes with your simulation platform. May be available with third-party transponders in the retrofitted panel configurations. See fig. 4-20b and Appendix 2 for more details.
16. Transponder Function Selector Knob (n/s)
Transponder is always ON when avionics is ON.
17. Transponder Monitor Test Button (n/s)

Note: COM2 radio and transponder require avionics power (Battery Switches [8-9, fig. 4-28] ON, Radio Master Switch [14, fig 4-27] ON).

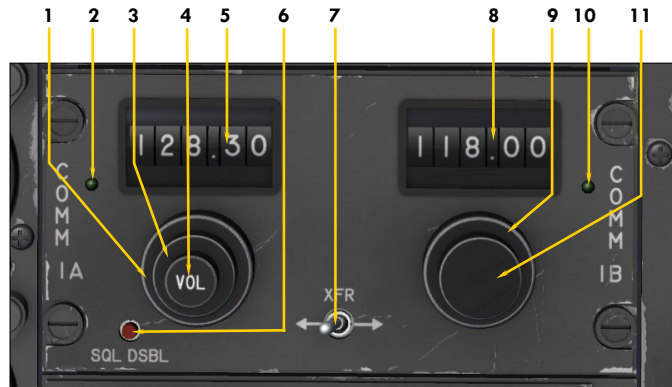


TRANSPONDER (ATC)
Figure 4-20b

1. Volume Control Knob (n/s)
2. Function Selector Knob
STBY - Turns off VFD readout only
ON - Normal operation
ALT REP - Altitude Reporting mode of operation (A+C Mode) - not available with the basic transponder that comes with your simulation platform. May be available with third-party transponders. Refer to Appendix 2, page 26, for instructions about configuring the add-on's transponder for your own third-party device.
3. Transponder Radio Selector Switch (n/s)
4. Transponder Code Readout
Mouseover each digit and use the mouse wheel to select the desired transponder code.
5. Transponder Activity Light
Simulates transponder activity.
6. Transponder Selector Knob (First Digit)
Use the mouse wheel to select the first digit of the desired transponder code.
7. Transponder Selector Knob (Last Three Digit)
Use the mouse wheel to select the last three digits of the desired transponder code.
8. Test Button
Push to test unit.

Note (1): The transponder requires avionics power (Battery Switches [8-9, fig. 4-28] **ON**, Radio Master Switch [14, fig 4-27] **ON**).

Note (2): The generic transponder model installed in the three retrofitted cockpit configurations is preconfigured for the basic Prepar3D/FSX transponder that comes with your simulation platform. It can also be configured by the user for special third-party transponders supporting C mode of operation and other features (not included, available from third-party developers). Please refer to Appendix 2, page 26, for more details.



COM1 RADIO
Figure 4-21a

1. COM1 Frequency Selector Knob (Whole)
2. COM1 Transmit Select Light
Illuminated when VHF COM1 is selected for transmit on the audio panel [1, fig. 4-3].
3. COM1 Frequency Selector Knob (Fraction)
4. COM1 Volume Control Knob (n/s)
5. COM1 Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
6. COM1 Squelch Disabling Button
COM1 radio must be selected in the audio panel [1, fig. 4-3].
7. COM1 Frequency Swap Switch
Swaps COM1 active frequency with alternate frequency and vice versa.
8. COM1 Alternate Frequency Readout
Use the mouse buttons to select the whole. Use the mouse wheel to select the fraction.
9. COM1 Alternate Frequency Selector Knob (Whole)
10. COM1 Transmit Select Light
Same as 2 above.
11. COM1 Alternate Frequency Selector Knob (Fraction)

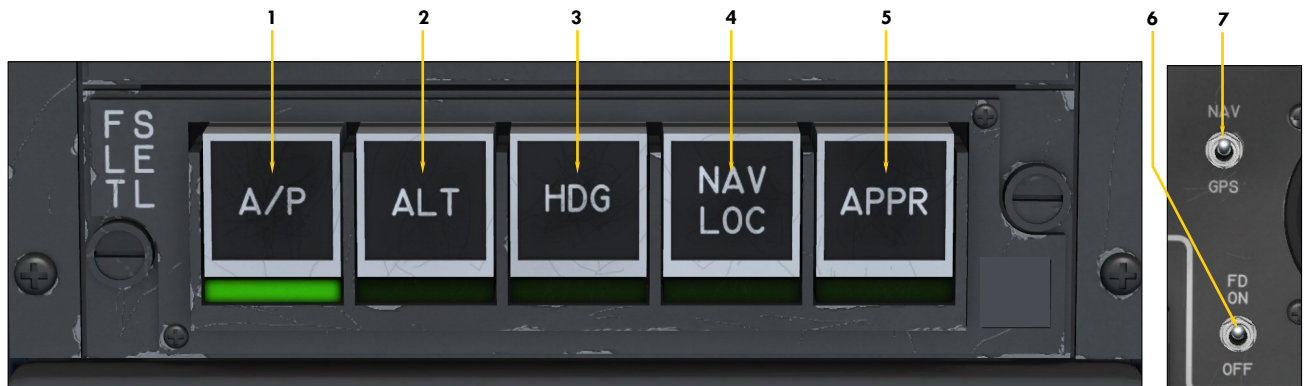
Note: COM1 radio requires avionics power (Battery Switches [8-9, fig. 4-28] ON, Radio Master Switch [14, fig 4-27] ON).



COM1/COM2 RADIOS
Figure 4-21b

1. Volume Control Knob (n/s)
2. Function Selector Knob
OFF - Turns off VFD readout only
ON - Normal operation
TEST - Squelch disabling test, *COM1* or *COM2* radio must be selected in the audio panel [1-2, fig. 4-3]
3. Frequency Swap Switch
Swaps the active frequency (*ACT*) with the standby frequency (*PRE*) and vice versa. Return the switch to *PRE* before tuning in to the standby frequency. Active frequency cannot be tuned, only swapped with the standby frequency.
4. Standby (*PRE*) Frequency Readout
Mouseover the whole or fraction and use the mouse wheel to tune in to the desired standby frequency.
5. Active (*ACT*) Frequency Readout
The active frequency cannot be changed directly. Return the Frequency Swap Switch to *PRE* and tune in to the desired standby frequency. Move the switch to *ACT* to swap the active frequency with the selected standby frequency. Return the switch to *PRE* before selecting another standby frequency.
6. Transmit Select Light
Illuminated when the *COM1* or *COM2* radio is selected for transmit on the audio panel [1-2, fig. 4-3].
7. Standby Frequency Selector Knob (Whole)
Use the mouse wheel to tune in to the desired frequency.
8. Standby Frequency Selector Knob (Fraction)
Use the mouse wheel to tune in to the desired frequency.

Note: *COM1/COM2* radios require avionics power (Battery Switches [8-9, fig. 4-28] *ON*, Radio Master Switch [14, fig 4-27] *ON*).

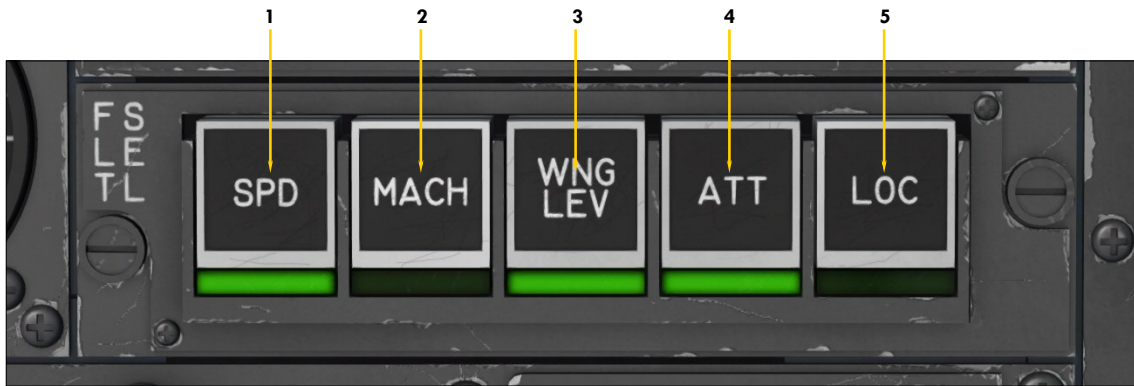


**AUTOMATIC FLIGHT CONTROL SYSTEM / AUTOPILOT / FLIGHT DIRECTOR
MODE SELECTOR PANEL - CAPTAIN'S SIDE**
Figure 4-22a

- | | |
|---|--|
| <p>1. A/P (Autopilot Engage) Switch and Light
<i>Engages the autopilot, captures and maintains the aircraft's pitch attitude and levels the wing. The autopilot assumes aircraft control.</i></p> <p>2. ALT (Altitude Hold Mode) Switch and Light
<i>Engages the Altitude Hold mode. If the selected altitude [3-4, fig. 4-23] differs from the current altitude, the AFCS will calculate a path to the selected altitude at the selected vertical speed [1, 3, fig. 4-12]. The pilot is responsible for managing airspeed (unless the SPD/MACH Hold mode is engaged, see 1-2, fig 4-22b).</i></p> <p>3. HDG (Heading Hold Mode) Switch and Light
<i>Engages the Heading Hold mode. The autopilot will turn the airplane as necessary and fly a heading selected by the position of the Heading Bug on the HSI [2, 11, fig. 4-8].</i></p> <p>4. NAV/LOC (Navigation/Localizer Hold Mode) Switch and Light
<i>Engages the Navigation Hold mode, the autopilot automatic tracking of a VOR course, GPS course, or localizer for navigation. The NAV1 radio signal will be tracked unless the NAV1/GPS Switch (see 7, right) is set to GPS.</i></p> | <p>5. APPR (Coupled Approach Mode) Switch and Light
<i>Engages the Coupled Approach mode (localizer plus glideslope) when a valid ILS signal is present on the NAV1 radio. It is recommended to engage the APPR 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. In the simulator, the APPR light will be illuminated when the LOC (only) approach mode is engaged.</i></p> <p>6. Flight Director Switch
<i>Toggles the flight director on/off. In the simulator, the flight director will be turned on automatically when some autopilot modes are engaged.</i></p> <p>7. Autopilot NAV1/GPS Switch
<i>Toggles between NAV1 and GPS driving NAV1 and autopilot. Set to GPS for GPS navigation.</i></p> |
|---|--|

Continued on next page...

Note: The AFCS (autopilot and flight director) requires AC and avionics power (Battery Switches [8-9, fig. 4-28] **ON**, Inverter Switches [10, 12, fig 4-27] **ON**, Radio Master Switch [14, fig 4-27] **ON**). Refer to section 5, page 15, for a complete discussion about the AFCS, the autopilot and the flight director. Interrelations between the different modes are summarized in section 5, page 29.



**AUTOMATIC FLIGHT CONTROL SYSTEM / AUTOPILOT / FLIGHT DIRECTOR
 MODE SELECTOR PANEL - COPILOT'S SIDE**

Figure 4-22b

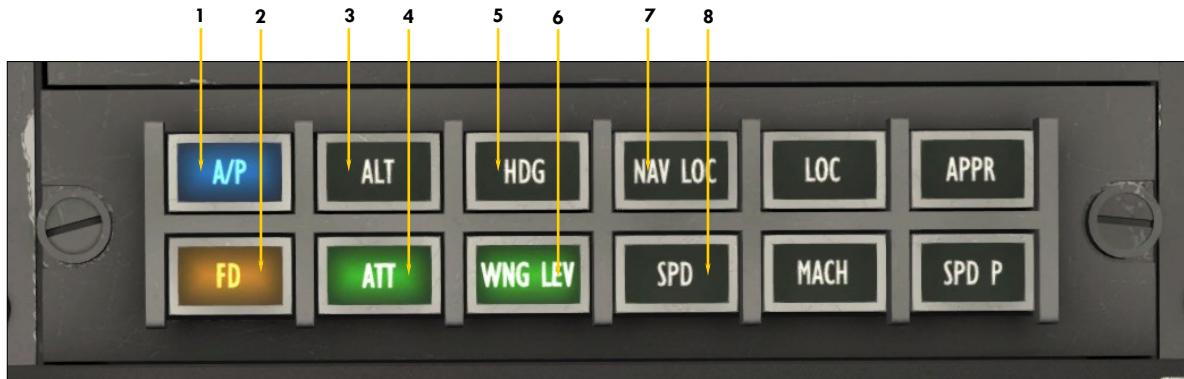
- | | |
|---|---|
| <p>1. SPD (Airspeed Hold Mode) Switch and Light
 <i>This switch engages the autopilot Airspeed Hold mode. This mode maintains the aircraft at the indicated airspeed that existed when the switch was depressed. The SPD Hold Switch must be used at altitudes below 29,000 feet. Like in the real aircraft, above 29,000 feet, the autopilot will automatically switch to the MACH Hold mode. In the simulator, this is assumed by the autothrottle.</i></p> <p>2. MACH (Mach Hold Mode) Switch and Light
 <i>This switch engages the autopilot MACH Hold mode. This mode maintains the aircraft at the Mach number that existed when the switch was depressed. The MACH Hold Switch must be used at altitudes above 29,000 feet. Like in the real aircraft, below 29,000 feet, the autopilot will automatically switch to the SPD Hold mode. In the simulator, this is assumed by the autothrottle.</i></p> | <p>3. WING LEV (Wing Leveler) Switch and Light
 <i>This switch engages the Wing Leveler that keeps the aircraft's wing level. The WING LEV mode is engaged by default when the autopilot is engaged.</i></p> <p>4. ATT (Attitude Hold Mode) Switch and Light
 <i>This switch engages the Attitude Hold mode that keeps the aircraft's pitch at the state that existed when the switch was depressed. In the simulator, the Attitude Hold mode does not keep the aircraft's roll or heading.</i></p> <p>5. LOC ("Localizer Only" Approach Mode) Switch and Light
 <i>This switch engages the autopilot's "Localizer Only" approach mode, enabling automatic tracking of a localizer for instrument approaches. Localizer capture is identical with the NAV/LOC Hold mode or the APPR mode. In the simulator, the APPR light will be illuminated when this mode is selected.</i></p> |
|---|---|

Note: Refer to section 5, page 15, for a complete discussion about the AFCS, the autopilot and the flight director. Interrelations between the different modes are summarized in section 5, page 29.



AUTOPILOT 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.



**AUTOMATIC FLIGHT CONTROL SYSTEM / AUTOPILOT / FLIGHT DIRECTOR
MODE SELECTOR PANEL**
Figure 4-22c

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. A/P (Autopilot Engage) Switch and Light
<i>Engages the autopilot, captures and maintains the aircraft's pitch attitude and levels the wing. The autopilot assumes aircraft control.</i> 2. Flight Director Switch
<i>Toggles the flight director on/off. The flight director will be turned on automatically when some autopilot modes are engaged.</i> 3. ALT (Altitude Hold Mode) Switch and Light
<i>Engages the Altitude Hold mode. If the selected altitude [2-3, fig. 4-11b] differs from the current altitude, the AFCS will calculate a path to the selected altitude at the selected vertical speed [1, 3, fig. 4-12]. The pilot is responsible for managing airspeed (unless the SPD/MACH Hold mode is engaged, see 8, right, and 10, fig. 4-22d).</i> 4. ATT (Attitude Hold Mode) Switch and Light
<i>This switch engages the Attitude Hold mode that keeps the aircraft's pitch at the state that existed when the switch was depressed. In the simulator, the Attitude Hold mode does not keep the aircraft's roll or heading.</i> 5. HDG (Heading Hold Mode) Switch and Light
<i>Engages the Heading Hold mode. The autopilot will turn the airplane as necessary and fly a heading selected by the position of the Heading Bug on the HSI [2, 11, fig. 4-8].</i> | <ol style="list-style-type: none"> 6. WING LEV (Wing Leveler) Switch and Light
<i>This switch engages the Wing Leveler that keeps the aircraft's wing level. The WING LEV mode is engaged by default when the autopilot is engaged.</i> 7. NAV/LOC (Navigation/Localizer Hold Mode) Switch and Light
<i>Engages the Navigation Hold mode, the autopilot automatic tracking of a VOR course, GPS course, or localizer for navigation. The NAV1 radio signal will be tracked unless the NAV1/GPS Switch (see 7, below) is set to GPS.</i> 8. SPD (Airspeed Hold Mode) Switch and Light
<i>This switch engages the autopilot Airspeed Hold mode. This mode maintains the aircraft at the indicated airspeed that existed when the switch was depressed. The SPD Hold Switch must be used at altitudes below 29,000 feet. Like in the real aircraft, above 29,000 feet, the autopilot will automatically switch to the MACH Hold mode. In the simulator, this is assumed by the autothrottle.</i> |
|---|---|

Continued on next page...

Note: The AFCS (autopilot and flight director) requires AC and avionics power (Battery Switches [8-9, fig. 4-28] ON, Inverter Switches [10, 12, fig 4-27] ON, Radio Master Switch [14, fig 4-27] ON). Refer to section 5, page 15, for a complete discussion about the AFCS, the autopilot and the flight director. Interrelations between the different modes are summarized in section 5, page 29.



**AUTOMATIC FLIGHT CONTROL SYSTEM / AUTOPILOT / FLIGHT DIRECTOR
MODE SELECTOR PANEL**
Figure 4-22d

9. LOC (“Localizer Only” Approach Mode) Switch and Light

This switch engages the autopilot’s “Localizer Only” approach mode, enabling automatic tracking of a localizer for instrument approaches. Localizer capture is identical with the NAV/LOC Hold mode or the APPR mode. In the simulator, the APPR light will be illuminated when this mode is selected.

10. MACH (Mach Hold Mode) Switch and Light

This switch engages the autopilot MACH Hold mode. This mode maintains the aircraft at the Mach number that existed when the switch was depressed. The MACH Hold Switch must be used at altitudes above 29,000 feet. Like in the real aircraft, below 29,000 feet, the autopilot will automatically switch to the SPD Hold mode. In the simulator, this is assumed by the autothrottle.

11. APPR (Coupled Approach Mode) Switch and Light

Engages the Coupled Approach mode (navigation plus glideslope) when a valid ILS signal is present on the NAV1 radio. It is recommended to engage the APPR 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. In the simulator, the APPR light will be illuminated when the LOC (only) approach mode is engaged.

12. SPD P (“Speed Hold by Pitch” Mode) Switch and Light

This switch engages the “Speed Hold by Pitch” mode. This mode maintains the aircraft at the indicated airspeed that existed when the switch was depressed by varying the aircraft’s pitch. This is a legacy autopilot mode that is not recommended for level flight and cannot be used with any AP/ FD vertical mode. It is used essentially during climb and descent. See section 5, page 27.

13. Autopilot NAV1/GPS Switch

Toggles between NAV1 and GPS driving NAV1 and Autopilot. Set to GPS for GPS navigation.



Note: The AFCS (autopilot and flight director) requires AC and avionics power (Battery Switches [8-9, fig. 4-28] ON, Inverter Switches [10, 12, fig 4-27] ON, Radio Master Switch [14, fig 4-27] ON). Refer to section 5, page 15, for a complete discussion about the AFCS, the autopilot and the flight director. Interrelations between the different modes are summarized in section 5, page 29.

Center Instrument Panel

GNS / GPS



Figure 4-24a

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Left Inner Knob and Button
<i>No special function with the GPS 500.</i> 2. Left Outer Knob
<i>No special function with the GPS 500.</i> 3. VLOC Volume Knob and Button
<i>Volume function disabled with the GPS 500.</i> 4. VLOC1 Flip-Flop (Swap) Button
<i>Swaps NAV1 active frequency with standby frequency and vice versa if GNS unit is ON.</i> 5. PWR/COM1 Volume Knob and Button
<i>Rotate button clockwise to power up GNS unit. Volume function disabled with the GPS 500.</i> 6. COM1 Flip-Flop (Swap) Button
<i>Swaps COM1 active frequency with standby frequency and vice versa if GNS unit is ON.</i> 7. LCD Screen 8. Photocell
<i>Click to show gauge in popup window.</i> 9. Map Range Button (Zoom)
<i>Left click to zoom in, right click to zoom out,</i> | <ol style="list-style-type: none"> 10. Direct-To Button 11. Menu Button 12. Clear Button 13. Enter Button 14. Right Outer Knob (Group Select) 15. Right Inner Knob (Page Select) and Button 16. Procedure Button 17. Vertical Navigation (Terrain) Button 18. Terrain Data Card
<i>Special function with some third-party addons.</i> 19. Flight Plan Button 20. Power LED (cards inserted) 21. Message Button 22. OBS (Omni Bearing Selector) Button 23. NavData Card
<i>Click to show gauge in popup window.</i> 24. Course Deviation Indicator Button |
|--|---|

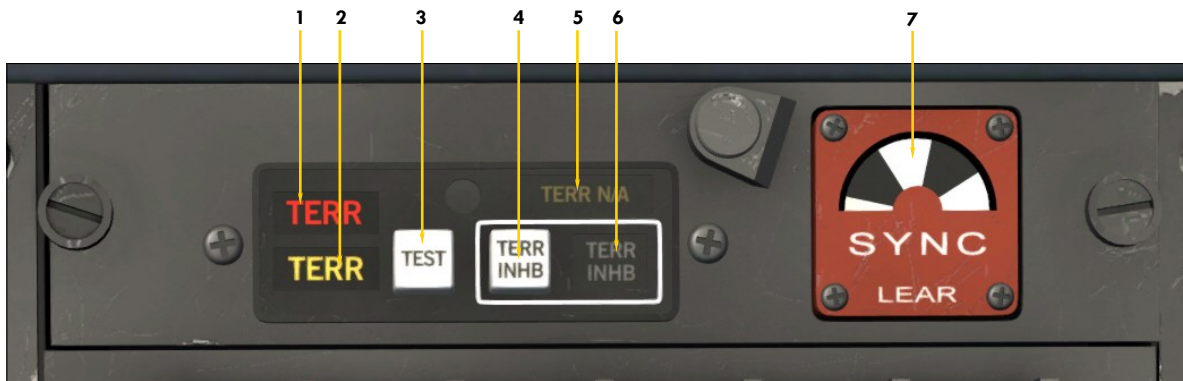
Note: The GNS/GPS unit requires avionics power (Battery Switches [8-9, fig. 4-28] ON, Radio Master Switch [14, fig 4-27] ON). The unit is preconfigured for the basic GPS 500 that comes with your simulation platform or the Reality XP GNS 530 that accepts standard GPS commands from the simulator. Refer to your GNS/GPS documentation for complete instructions. Refer to Appendix 2, page 8, if you want to modify the default configuration and add your own third-party GNS/GPS addon.



Figure 4-24b

- | | |
|---|--|
| 1. GTN 650 Unit
<i>Click here to show gauge in popup window.</i> | 9. Photocell
<i>Click to show gauge in popup window.</i> |
| 2. Data Card
<i>Special function with some third-party addons.</i> | 10. Direct-To Button |
| 3. Volume Knob and Button | 11. Large Outer Knob |
| 4. GTN 750 Unit
<i>Click here to show gauge in popup window.</i> | 12. Small Inner Knob and Button |
| 5. Data Card
<i>Special function with some third-party addons.</i> | 13. Home Button |
| 6. Volume Knob and Button | 14. Photocell
<i>Click to show gauge in popup window.</i> |
| 7. LCD Screen | 15. Direct-To Button |
| 8. Home Button | 16. LCD Screen |
| | 17. Large Outer Knob |
| | 18. Small Inner Knob and Button |

Note: GTN units require avionics power (Battery Switches [8-9, fig. 4-28] ON, Radio Master Switch [14, fig 4-27] ON). The unit is preconfigured for the Reality XP GTN 650/750 addon that accepts standard GPS commands from the simulator (also compatible with the Flight1 GTN 650/750 addon). Refer to your GTN documentation for complete instructions. Refer to Appendix 2, pages 12 and 17, if you want to modify the default configuration and add your own third-party GTN addon.



**GROUND PROXIMITY WARNING SYSTEM (GPWS)
ENGINE SYNCHRONIZATION INDICATOR**
Figure 4-24c

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. TERR (Red) Annunciator
<i>Terrain is very near.</i> This annunciator will illuminate if the airplane is at or less than 200 feet from the ground. 2. TERR (Amber) Annunciator
<i>Terrain is near.</i> This annunciator will illuminate if the airplane is at or less than 1,000 feet from the ground. 3. GPWS Test Button
Activates the GPWS computer self-test. 4. TERR INHB Button
Push this button to place the GPWS in standby mode. 5. TERR NA (Amber) Annunciator
<i>Terrain information not available.</i> This annunciator will illuminate above 2,500 feet. | <ol style="list-style-type: none"> 6. TERR INHB (White) Annunciator
<i>GPWS is in standby mode.</i> This annunciator will illuminate if the GPWS is in standby - or off - mode. 7. ENGINE SYNCHRONIZATION DISC
This rotating disc, often called a "spinner", indicates if the engines are synchronized (running together perfectly). The disc rotates clockwise when the right engine runs faster than the left engine and counterclockwise when the left engine runs faster than the right engine. The disc stops spinning when both engine RPMs are matched. |
|--|--|

Note (1): The GPWS requires AC and avionics power (Battery Switches [8-9, fig. 4-28] **ON**, Inverter Switches [10, 12, fig 4-27] **ON**, Radio Master Switch [14, fig 4-27] **ON**).

Note (2): The current simulation platforms do not provide front detection that would allow for a complete TAWS or enhanced GPWS. Such systems may be available in third-party addons such as special gauges, GTN and radars. Only ground proximity is detected in this software version. The annunciators illumination is based on radio height.

Note (3): The GPWS parameters can be changed in the "aircraft.cfg" file (under [GPWS]) located in the add-on aircraft's main folder and in the "misc_systems_XXX.xml" gauge (under <Element id="GPWS">) located in the subfolder "...\panel\XPGLJ25v3". We do not recommend editing these files unless you know what you are doing. Please make backup copies of the files before making any change.

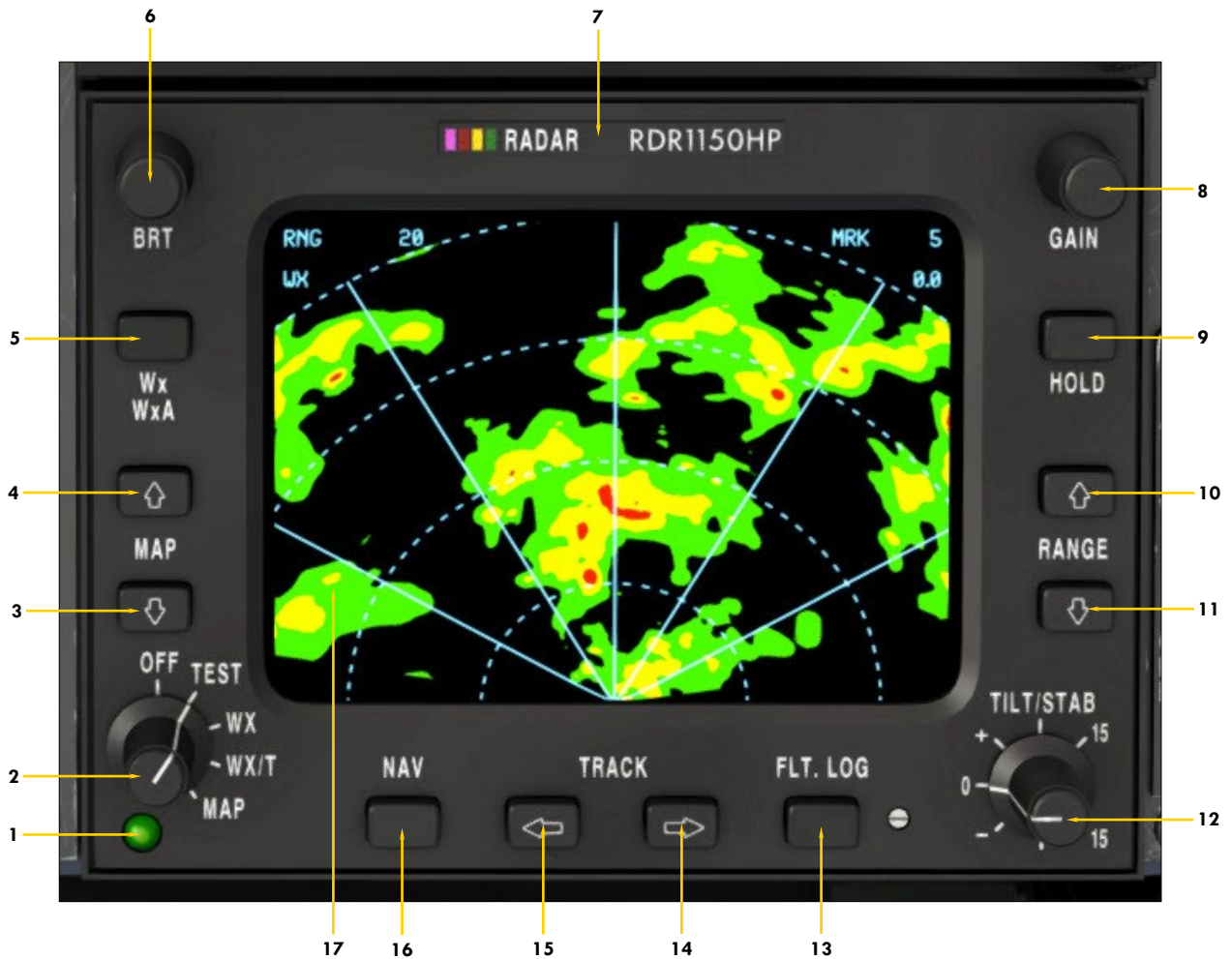


Figure 4-24d

- | | |
|--|--|
| 1. Power LED | 9. Hold Button
<i>No special function with the WX Advantage radar.</i> |
| 2. Mode Selector Knob
<i>OFF, TEST, WX (precipitation), WX/T (precipitation and turbulence, MAP (ground terrain detection))</i> | 10. Range Up Button
<i>Adjusts displayed distance (zoom out).</i> |
| 3. Map Down Button
<i>No special function with the WX Advantage radar.</i> | 11. Range Down Button
<i>Adjusts displayed distance (zoom in).</i> |
| 4. Map Up Button
<i>No special function with the WX Advantage radar.</i> | 12. Tilt Control Knob
<i>Adjusts the angle of the radar beam.</i> |
| 5. Wx/WxA Toggle Button
<i>No special function with the WX Advantage radar. Use Mode Selector Knob instead.</i> | 13. Flight Log Button
<i>No special function with the WX Advantage radar.</i> |
| 6. Brightness Control Knob
<i>Controls brightness of the radar screen.</i> | 14. Track Up Button
<i>No special function with the WX Advantage radar.</i> |
| 7. Radar Logo
<i>Click to show gauge in a popup window.</i> | 15. Track Down Button
<i>No special function with the WX Advantage radar.</i> |
| 8. Gain Control Knob
<i>Controls the sensitivity of the radar receiver.</i> | 16. Nav Button
<i>No special function with the Wx Advantage radar.</i> |
| | 17. Radar Screen |

Note: The radar requires AC and avionics power (Battery Switches [8-9, fig. 4-28] ON, Inverter Switches [10, 12, fig 4-27] ON, Radio Master Switch [14, fig 4-27] ON). The buttons and knobs are preconfigured for the Rex-Milviz WX Advantage radar available from Rex Simulations. By default, the unit will show a dummy radar screen for users who don't have a third-party radar installed. Controls have no effect on the dummy radar screen. All buttons and knobs are programmable. Refer to your radar documentation for complete instructions. Refer to Appendix 2, page 22, if you want to modify the default configurations and add your own third-party radar.

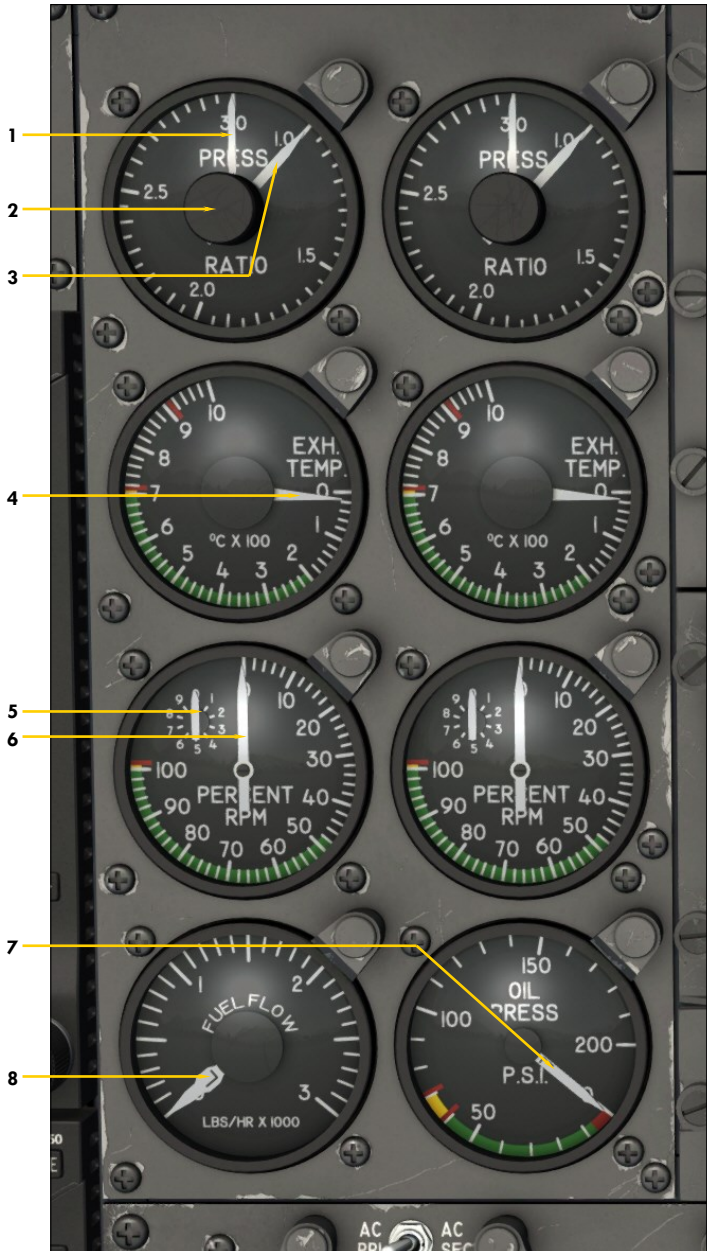


Figure 4-25

- 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
Requires AC power from the inverters.
- 8. Left & Right Engine Fuel Flow Needles



Figure 4-26

1. Primary/Secondary AC Bus Selector Switch
This switch selects which AC bus voltage is sent to the AC voltmeter. To read the voltage from the primary AC bus, set the switch to AC PRI. To read the voltage from the secondary AC bus, set the switch to AC SEC.
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.

Note: Refer to section 5, page 3, for more information about the electrical system.

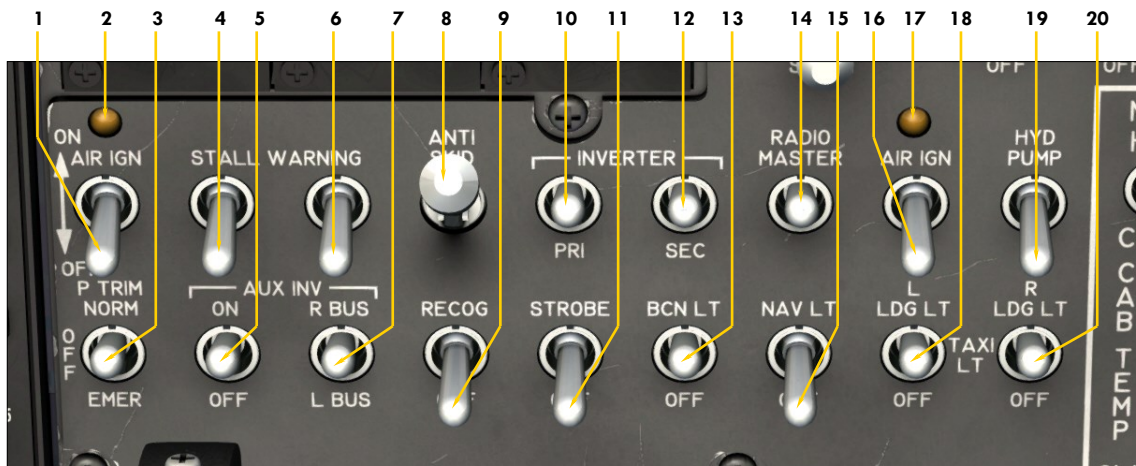


Figure 4-27

1. **Left Engine Air Ignition Switch**
This switch, when set to **AIR IGN**, provides for continuous operation of the ignition system for the left engine. The switch should be set to **OFF** unless ambient conditions require ignition to stay on.
2. **Left Engine Ignition Light**
This amber light illuminates when left air ignition is operating or system is in start cycle.
3. **Emergency Pitch Trim Switch**
This switch is normally set to **NORM**, unless emergency trim is required. The Emergency Trim Switch is on the center pedestal [10, fig. 4-45].
4. **Left Stall Warning Switch**
This switch is normally set to **ON** and the red L STALL annunciator [3, fig. 4-30] should go off. The switch energizes the left stall warning system and the stick shaker. In the real aircraft, this switch also energizes the stick nudger/puller. In the add-on, a separate switch is provided for the stick nudger/puller on the center pedestal [20, fig. 4-41].
5. **Auxiliary Inverter Switch**
The auxiliary inverter can be used in case of a failure of the main inverters. Inverters provide AC power to a number of aircraft systems. Inverters require battery or generator power (including emergency power in case of a general power failure).
6. **Right Stall Warning Switch**
This switch is normally set to **ON** and the red R STALL annunciator [6, fig. 4-30] should go off. The switch energizes the right stall warning system.
7. **Auxiliary Inverter Bus Selector Switch**
This switch can be used to select which AC bus is powered by the auxiliary inverter in case of a malfunction of one of the main inverters.
8. **Anti-Skid Power Switch**
When AC power is available, set this switch to **ON** to energize the anti-skid system installed on the main landing gear. The four Anti-Skid Generator Lights [4, fig. 4-15] should go off when this switch is set to **ON** and AC power is available.
9. **Recognition Lights Switch**
10. **Primary Inverter Switch**
Inverters provide AC power to a number of aircraft systems. Inverters require battery or generator power (including emergency power in case of a general power failure). This switch energizes the primary inverter that provides power to the primary AC bus.
11. **Strobe Lights Switch**
12. **Secondary Inverter Switch**
This switch energizes the secondary inverter that provides power to the secondary AC bus.
13. **Rotating Beacon Lights Switch**
14. **Radio Master Switch (Avionics)**
The avionics bus provides DC power to the radios, the navigation systems, the AFCS and other instruments, systems and devices.
15. **Navigation Lights Switch**
16. **Right Engine Air Ignition Switch**
Same as 1 above, but for the right engine.
17. **Right Engine Ignition Light**
Same as 2 above, but for the right engine.
18. **Left Taxi/Landing Light Switch**
This 3-position switch controls the intensity of the landing light installed on the left landing gear. Down position - **OFF**, Middle position - **Taxi Light**, Up position - **Landing Light (full intensity)**.
19. **Electric Auxiliary Hydraulic Pump Switch**
This switch, when set to **HYD PUMP**, energizes the auxiliary hydraulic pump. This pump may be used in case of a main hydraulic system failure or for operating subsystems with no engine running.
20. **Right Taxi/Landing Light Switch**
Same as 18 above, but for the light installed on the right landing gear.

Note: Refer to section 5 for more information about the electrical system (page 3) and the stick nudger/puller (page 23).



Figure 4-28

1. **Flaps Position Indicator**
Indicates the position of the flaps: Full up, 8 degrees, 20 degrees, 40 degrees full down. An audible alert will sound if the flaps are extended beyond 25 degrees and the landing gear is not down and locked. Requires DC power. Flaps require hydraulic power.
2. **Brightness Control Knob (n/s)**
3. **Landing Gear Position Lights (left, center, right)**
Lights require DC power.
 - **Red:** The indicated gear is unsafe or in transit, and/or the gear door is not closed, and/or either engine RPM is below 70%, and/or the flaps are extended beyond 25 degrees, and the gear is not down and locked.
 - **Green:** The indicated gear is down and locked
 - **No light:** The indicated gear is up and locked and the gear door is closed, or there is an electrical system failure.
 - **All lights on:** The system is being tested.
4. **Landing Gear Warning System Test Switch**
A warning horn will sound and the three red Position Lights [3, above] will illuminate if the flaps are extended beyond 25 degrees, and/or either engine RPM is below 70%, and the landing gear is not down and locked. Set this 3-position switch to **TEST** to test the gear warning system. The horn will blow and the six red and green Position Lights will illuminate. Reset the switch to **OFF** (middle position) when the test is finished. Setting the switch to **MUTE** will silence the warning horn in all conditions. Default position is **OFF**.
5. **Landing Gear Selector Switch**
Move this switch to the **GEAR UP** position to retract the landing gear. Move the switch to the **DWN** position to extend the landing gear. Requires DC power. Gear requires hydraulic power.
6. **Right Engine Starter/Generator Switch**
Move this switch down to **START** for engine start. After the engine is started, move the switch up to **GEN** to engage the generator. Refer to section 7, page 11, for complete starting procedures.
7. **Right Engine Generator Reset Switch**
This momentary switch will restart the generator.
8. **Right Battery Switch**
Due to limitations in the simulation platforms, both battery switches are linked. Only one battery is provided in the simulator.
9. **Left Battery Switch**
Same as 8, above.
10. **Left Engine Generator Reset Switch**
This momentary switch will restart the generator.
11. **Left Engine Starter/Generator Switch**
Move this switch down to **START** for engine start. After the engine is started, move the switch up to **GEN** to engage the generator. Refer to section 7, page 11, for complete starting procedures.

Note: Refer to section 5, page 3, for more information about the electrical system.

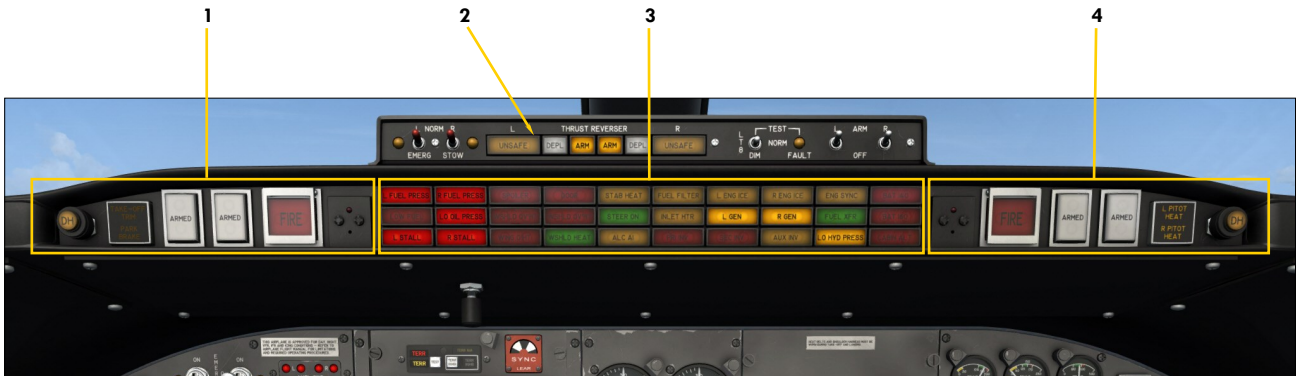


Figure 4-29

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

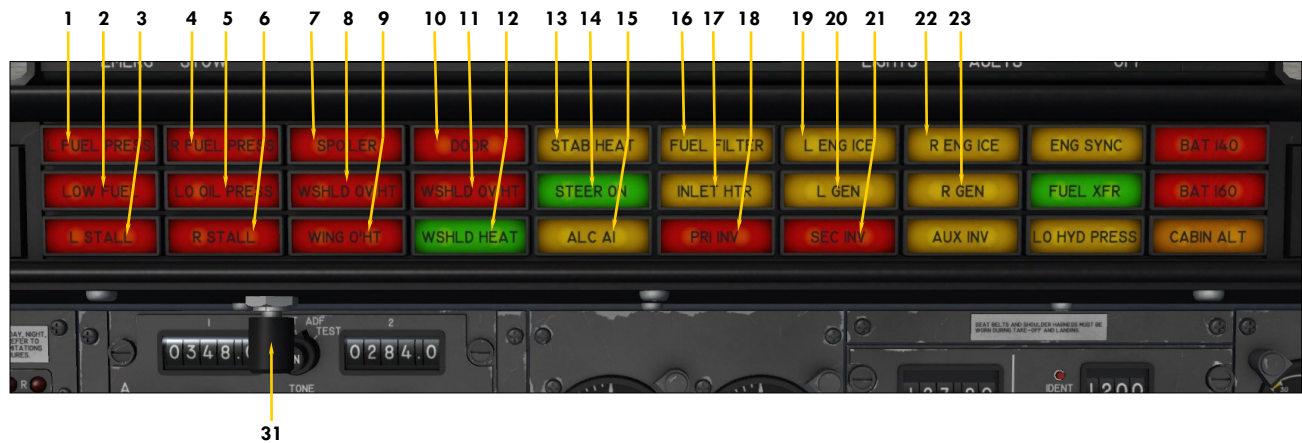


Figure 4-30

1. **Left Engine Low Fuel Pressure**
Indicates left engine fuel pressure below 10 psi. The light should extinguish when the left jet pump and/or the left standby pump are operating (refer to "20 Series Fuel System", section 5, page 6).
2. **Low Fuel Remaining**
This annunciator will illuminate when there is less than 50 gallons (approx. 335 pounds) of fuel in either wing tank or, if the Fuselage Tank Switch [6, fig. 4-43] is set to XFER, in the center fuselage tank (refer to "20 Series Fuel System", section 5, page 6).
3. **Left Stall**
Flashing with audible alert and stick shaker: Indicates left wing stall or left system is being tested. Steady: System has failed or Left Stall Warning Switch [4, fig. 4-27] is OFF.
4. **Right Engine Low Fuel Pressure**
Indicates right engine fuel pressure below 10 psi. The light should extinguish when the right jet pump and/or the right standby pump are operating (refer to "20 Series Fuel System", section 5, page 6).
5. **Low Oil Pressure**
Indicates oil pressure below 5 psi in one or both engines.
6. **Right Stall**
Flashing with audible alert and with or without stick shaker: Indicates right wing stall or right system is being tested. Steady: System has failed or Right Stall Warning Switch [6, fig. 4-27] is OFF.
7. **Spoilers Extended**
Indicates wing spoilers out of retracted position.
8. **Left Windshield Overheat**
Indicates left windshield overheat. Usually occurs if the Windshield Heat Switch [4, fig. 4-4] is ON when the aircraft is not moving and warm conditions exist.
9. **Wing Overheat**
Indicates wing anti-ice overheat (above 215°F). Usually occurs if the Wing and Stabilizer Heat Switch [3, fig. 4-4] is ON when the aircraft is not moving and warm conditions exist.
10. **Main Door Unsecured**
Indicates main door not closed and locked.
11. **Right Windshield Overheat**
Indicates right windshield overheat. Usually occurs if the Windshield Heat Switch [4, fig. 4-4] is ON when the aircraft is not moving and warm conditions exist.
12. **Windshield Heat Applied**
Indicates windshield heat ON (see 4, fig. 4-4).
13. **Stabilizer Heat Applied**
Indicates stabilizer/wing heat ON (see 3, fig. 4-4).
14. **Nose Wheel Steering Engaged**
When illuminated, indicates electrical nose wheel steering is engaged (used for taxiing). When off, indicates nose wheel steering is disengaged. Nose wheel steering is initiated automatically in the simulator at certain speeds (see 7, fig. 4-4 and 2, fig. 4-50, and Appendix 6, page 7).
15. **Alcohol Anti-Ice On (n/s)**
Indicates windshield and radome alcohol pump energized (see 5, fig. 4-4).
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 (see 2, fig. 4-4).
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.

Continued on next page...



Figure 4-30

24. **Auxiliary Inverter On**
Indicates auxiliary inverter has been switched on (see 5, fig. 4-27). In the real aircraft, this annunciator indicates failure or low AC voltage from the auxiliary inverter if turned ON.
25. **Engine Sync On (n/s)**
Indicates Engine Sync Switch [22, fig. 4-41] is ON (see 7, fig. 4-24c and 22, fig. 4-41).
26. **Fuel Transfer Pump On**
Indicates that the fuselage tank transfer pump is operating. In the simulator, this indicates that the Fuselage Tank Switch [6, fig. 4-43] is set to XFER and that engines are fed from the center fuselage tank (refer to "20 Series Fuel System", section 5, page 6).
27. **Low Hydraulic Pressure**
Indicates hydraulic pressure below 1,200 psi.
28. **Battery Overheat (n/s)**
Indicates overheating battery, over 140° C. This indicator is also illuminated when a "Cold and Dark" reset cycle or an "Auto Start" sequence is in progress.
29. **Battery Overheat (n/s)**
Indicates overheating battery, over 160° C. This indicator is also illuminated when a "Cold and Dark" reset cycle or an "Auto Start" sequence is in progress.
30. **Cabin Altitude Annunciator**
Flashing: indicates cabin altitude is above 9,000 feet. Flashing, with audible alert: indicates cabin altitude is above 10,100 feet. Audible alert can be muted with the Horn Silence Switch [10, fig. 4-41] on the test switch panel.
31. **Annunciator Test Button**
Press to test the bulbs in all annunciators and lights, except for the autopilot and the flight director that have a separate test switch [10, fig. 4-41] on the test switch panel.

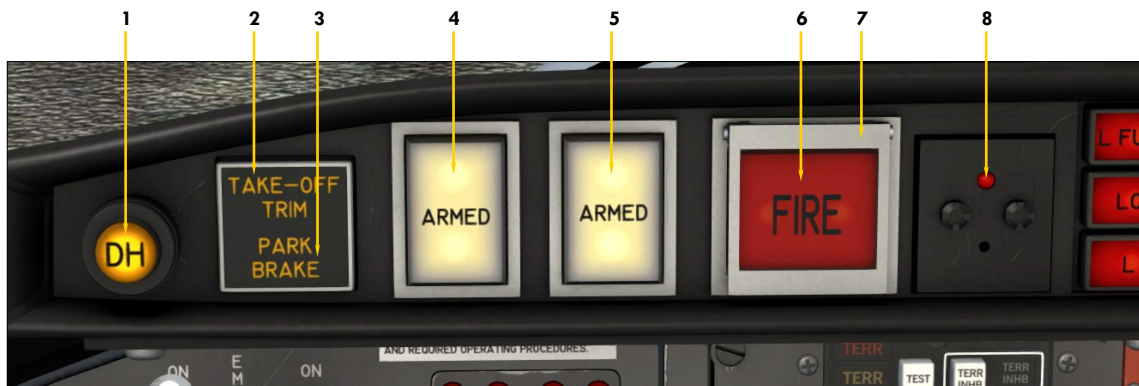
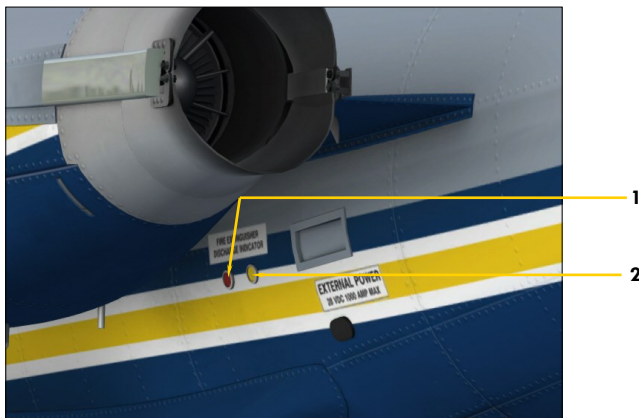


Figure 4-31

1. **Decision Height Light**
Illuminates when the aircraft is at or below the selected decision height. Refer to "Radio Altimeter", fig. 4-13.
2. **Takeoff Trim Alert Annunciator**
Illuminates when pitch trim is out of takeoff range. Takeoff trim is typically one needle thickness below neutral. The annunciator is disabled in flight. Refer to "Trim Indicators", fig. 4-14 or fig. 4-45.
3. **Parking Brake Annunciator**
Indicates that the parking brake is set. Parking brake is set by pulling a handle located on the left side of the throttle quadrant [8, fig. 4-41].
4. **First Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when the Left Engine Extinguisher Arming/Firewall Shutoff Button [6, right] has been pressed. Indicates that the first fire extinguisher bottle is ready for use. Press to discharge the first fire extinguisher bottle into the left engine nacelle.
5. **Second Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when the Left Engine Extinguisher Arming/Firewall Shutoff Button [6, right] has been pressed. Indicates that the second fire extinguisher bottle is ready for use. Press to discharge the second fire extinguisher bottle into the 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. Discharged bottles cannot be armed and the Fire Extinguisher Armed Annunciator [4-5, left] for the discharged bottle(s) will remain off.
7. **Left Engine Extinguisher Arming/Firewall Shutoff Button Guard**
Click to open guard.
8. **Left Engine Firewall Shutoff Valve Pinlight**
Indicates that left engine nacelle firewall shutoff valves are closed if DC power is available.

Note: In the current simulation platforms, the two-bottle fire-extinguishing system is common to both engines. Either of two bottles of extinguishing agent can be discharged to either engine, or both bottles can be discharged to the same engine. Refer to section 8 for more details about emergency procedures in case of an engine fire.



EXTERIOR EXTINGUISHER DISCHARGE INDICATORS
Figure 4-32

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



Figure 4-33

1. **Right Engine Firewall Shutoff Valve Pin-light**
Indicates that right engine nacelle firewall shutoff valves are closed if DC power is available.
2. **Right Engine Fire Alarm Annunciator and Extinguisher Arming/Firewall Shutoff Button**
Indicates a fire in the right engine nacelle. Press to close right engine nacelle firewall shutoff valves and arm both fire extinguisher bottles. Discharged bottles cannot be armed and the Fire Extinguisher Armed Annunciator [4-5, below and right] for the discharged bottle(s) will remain off.
3. **Right Engine Extinguisher Arming/Firewall Shutoff Button Guard**
Click to open guard.
4. **First Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when the Right Engine Extinguisher Arming/Firewall Shutoff Button [2, above] has been pressed. Indicates that the first fire extinguisher bottle is ready for use. Press to discharge the first fire extinguisher bottle into the right engine nacelle.
5. **Second Fire Extinguisher Armed Annunciator and Discharge Button**
Illuminates when the Right Engine Extinguisher Arming/Firewall Shutoff Button [2, left] has been pressed. Indicates that the second fire extinguisher bottle is ready for use. Press to discharge the second fire extinguisher bottle into the right engine nacelle.
6. **Left Pitot Heat Inop Annunciator**
Indicates pitot probe heaters are OFF [1, fig. 4-4].
7. **Right Pitot Heat Inop Annunciator**
Indicates pitot probe heaters are OFF [1, fig. 4-4].
8. **Decision Height Light**
Illuminates when the aircraft is at or below the selected decision height. Refer to "Radio Altimeter", fig. 4-13.

Note: In the current simulation platforms, the two-bottle fire-extinguishing system is common to both engines. Either of two bottles of extinguishing agent can be discharged to either engine, or both bottles can be discharged to the same engine. Refer to section 8 for more details about emergency procedures in case of an engine fire.



Figure 4-34

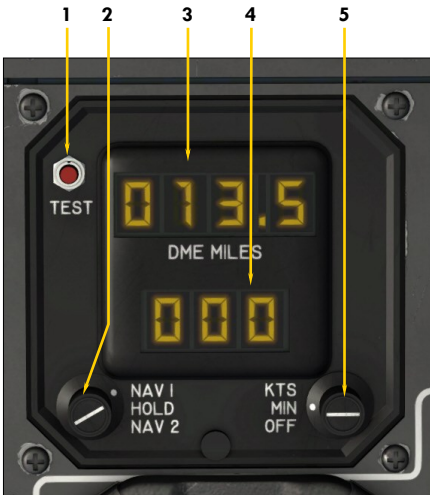
1. **Left Thrust Reverser Emergency Stow Light**
Illuminates during emergency stowing of the left thrust reverser, under certain conditions.
2. **Left Thrust Reverser Emergency Stow Switch**
*By default, this switch is set to the **NORMAL** position. Setting the switch to **EMER STOW** will electrically stow the left thrust reverser if the aircraft is on the ground, if the left throttle is at **IDLE** and if the Left Thrust Reverser Arm Switch [13, right] is set to **OFF**. This is used in case of a hydraulic system failure. Return the switch to **NORMAL** after the thrust reverser is stowed.*
3. **Right Thrust Reverser Emergency Stow Switch**
Same as 2, above, but for the right engine.
4. **Right Thrust Reverser Emergency Stow Light**
Illuminates during emergency stowing of the right thrust reverser, under certain conditions.
5. **Left Thrust Reverser Unsafe Annunciator**
Indicates that the left thrust reverser is in transit (not fully deployed or stowed, or in an incorrect position). Will flash for a few seconds at the first movement of the thrust reverser subthrottle.
6. **Left Thrust Reverser Deployed Annunciator**
Indicates that the left thrust reverser is deployed (not stowed).
7. **Left Thrust Reverser Armed Annunciator**
Indicates that the left thrust reverser is armed. The left thrust reverser can be armed
*only if the aircraft is on the ground, if the left throttle is at **IDLE** and if the Left Thrust Reverser Emergency Stow Switch [2, left] is set to **NORMAL**.*
8. **Right Thrust Reverser Armed Annunciator**
Same as 7, left, but for the right engine.
9. **Right Thrust Reverser Deployed Annunciator**
Indicates that the right thrust reverser is deployed (not stowed).
10. **Right Thrust Reverser Unsafe Annunciator**
Indicates that the right thrust reverser is in transit (not fully deployed or stowed, or in an incorrect position). Will flash for a few seconds at the first movement of the thrust reverser subthrottle.
11. **Thrust Reversers Control Panel Lights Test Switch**
*Set this switch to **TEST** to test the bulbs in the thrust reversers control panel lights and annunciators.*
12. **Annunciator System Fault Light (n/s)**
Indicates a fault in the thrust reversers system.
13. **Left Thrust Reverser Arm Switch**
*This switch arms the left thrust reverser if the aircraft is on the ground, if the left throttle is at **IDLE** and if the Left Thrust Reverser Emergency Stow Switch [2, left] is set to **NORMAL**. In the simulator, thrust reversers are armed by default. Setting this switch to **OFF** has no effect in the simulator.*
14. **Right Thrust Reverser Arm Switch**
Same as 13, but for the right engine.

Note: Because of limitations in the current simulation platforms, thrust reverser controls have very limited functionalities in this software version. In the simulator, thrust reversers can be deployed by pressing the "F2" key when the throttles are set to **IDLE** and the aircraft is on the ground. When deployed, thrust can be reduced by pressing the "F3" key. Pressing the "F1" key will return both throttles and thrust reverser subthrottles to **IDLE**, under certain conditions. In the simulator, thrust reversers are armed at all time when the aircraft is on the ground. In the GLJ Model 25 SE addon, reverse thrust is limited to 85% RPM, like in the real aircraft.



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. Flight Director Annunciators 7. Right Angle-of-Attack Indicator 8. Attitude Director Indicator (ADI) 9. Horizontal Situation Indicator (HSI) 10. Gyro Switches (partially simulated) 11. Marker Beacon Lights | <ol style="list-style-type: none"> 12. Altimeter/ADDU 13. Vertical Speed Indicator (VSI) 14. Battery Temperature Indicators 15. Digital Clock 16. Auxiliary Heat Switch (n/s) 17. Ram Air Temperature Warning Annunciator
<i>Illuminates if total air temperature is below -20° C or above 20° C.</i> 18. Ram Air Temperature Gauge 19. H-Valve Position Indicator 20. Audio Panel |
|--|---|



DME HEAD
Figure 4-36

1. DME Head Test Button
2. NAV1/NAV2 Selector Knob
*Use this knob to select which DME signal to track (NAV1 or NAV2). The **HOLD** position will keep the last readouts as reference only, even if other stations are tuned in on the navigation radios. This is a convenience feature only and it differs from the real instrument that has extra circuitry for holding the last frequency.*
3. Distance Readout
Indicates the distance to/from the selected DME station in nautical miles. NAV1 readout is repeated on the HSI (see 9, fig. 4-8).
4. Ground Speed or Estimated Time to Arrival Readout
Ground speed (in knots) 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
*Rotate this knob to **KTS** to select ground speed (in knots) or to **MIN** to select the estimated time of arrival (in minutes). The **OFF** position turns off the DME head.*



MINI GAUGE CLUSTER
Figure 4-37

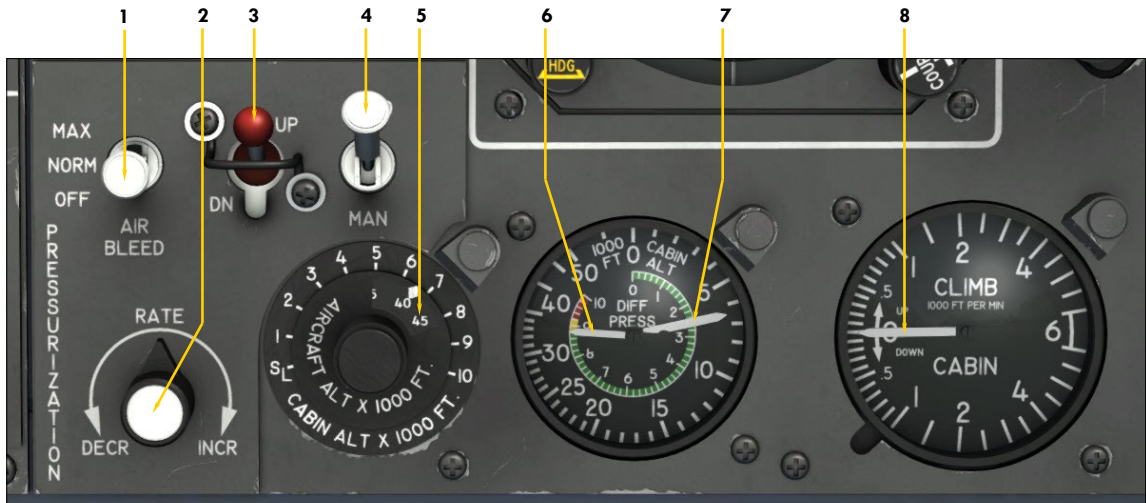
1. Oxygen Pressure Gauge
*Provides a direct reading of the pressure in the green oxygen cylinder located in the right nose section of the aircraft (in the dorsal fin on later models). This cylinder provides oxygen to the passengers and crew through a network of valves and regulators. **Click the gauge to refill.** See also "Oxygen Valves" [5,7, fig 4-47].*
2. Hydraulic Pressure Gauge
Provides a direct reading of the pressure in the hydraulic system. Refer to "Hydraulic System", section 5, page 3.
3. Emergency Air Pressure Gauge
*Provides a direct reading of the pressure in the emergency air bottle. The bottle is located in the nose compartment and supplies compressed air to the emergency gear extension system. **Click the gauge to refill.** See also "Emergency Gear Extension Lever" [5, fig. 4-41].*
4. Left Engine Low Oil Pressure Annunciator
Indicates oil pressure below 5 psi in the left engine.
5. Low Hydraulic Pressure Annunciator
Indicates hydraulic pressure below 1,200 psi.
6. Crossflow (Crossfeed) Valve Open Annunciator
In the simulator, this light indicates that the crossfeed valves are positioned for crossfeeding fuel from one wing tank to one or both engines (refer to "Crossfeed", section 5, page 8).
7. Right Engine Low Oil Pressure Annunciator
Indicates oil pressure below 5 psi in the right engine.



Figure 4-38

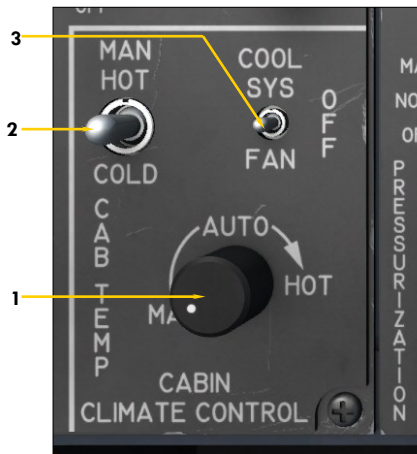
1. Tens of Seconds Readout
2. Time Switch
 - Position 1 (**TIME**) selects real time in hours, minutes and seconds.
 - Position 2 (**F.T.**) selects flight time, in hours, minutes and seconds of actual flight time. The flight time recorder will start as soon as the aircraft leaves the ground. It will 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 [9, below] 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

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



PRESSURIZATION PANEL
Figure 4-39

1. **Bleed Air Switch**
*Bleed air from the engine compressor section is necessary for cabin pressurization, wing/stabilizer heat, windshield heat, cabin temperature control and hydraulic reservoir pressurization. This switch should be set to **NORM** or **MAX** for the duration of the flight, but to **OFF** during ground operations.*
2. **Auto Rate Control Knob**
Use this knob to control the rate at which the cabin climbs or descends when in auto mode. In auto mode, the cabin controller maintains the desired rate of climb or descent until the selected cabin altitude is attained. Use the mouse wheel to decrease or increase rate. Click to reset knob to center position.
3. **Manual Rate "Cherry Picker" Control Switch**
Use this switch to control the rate at which the cabin climbs or descends when in manual mode. Manual mode can be used in case of a cabin controller malfunction. The switch can be used to increase or decrease cabin altitude in either the automatic or manual mode. Please note that the manual mode is not available in the simulator. The cabin controller always maintains the desired rate of climb or descent until the selected cabin altitude is attained. Use the mouse wheel to decrease or increase rate. Click to reset switch to center position.
4. **Pressurization Mode Switch**
*Use this switch to select auto or manual mode of pressurization. The switch is normally set to **AUTO** (manual mode is not available in the simulator). In auto mode, the cabin controller automatically regulates cabin pressure and maintains the desired rate of climb or descent until the selected cabin altitude is attained.*
5. **Target Altitude Selector Knob (Cabin Altitude Controller)**
*Rotating this knob aligns an index between two scales. The outer scale represents cabin altitude and the inner scale (seen through a window) represents the target aircraft altitude. Simply set the knob for flight plan altitudes on the inner scale before takeoff and during flight, and for the destination field elevation before descent. When in **AUTO** mode, the cabin controller regulates cabin pressure in relation to the altitude that is set on the altitude selector knob. Please note that the manual mode of operation is not available in the simulator. The cabin controller always maintains the desired rate of climb or descent until the selected cabin altitude is attained.*
6. **Cabin Differential Pressure Needle**
Indicates cabin differential pressure (between the cabin and outside air) in PSI. Design cabin pressure: 10 psi. Max. differential pressure: 8.9 psi.
7. **Cabin Altitude Needle**
Pressure inside the cabin is normally referred to as "cabin pressure altitude".
8. **Cabin Rate Needle (VSI)**
Indicates cabin climb or descent rates, between 0 and 6,000 feet per minute.



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. H-Valve movement is observed on the H-Valve position indicator [19, fig. 4-35].
2. **Manual Mode Cabin Temperature Control Switch**
Use the mouse wheel to increase or decrease the cabin temperature if the Automatic Mode Cabin Temperature Control Knob [1, above] is set to **MAN** (leftmost position). Click to reset switch to center position. Make sure to keep the H-Valve position between 1/2 and 3/4. H-Valve movement is observed on the H-Valve position indicator [19, fig. 4-35].
3. **Cooling System Selector Switch (n/s)**
Selects either the fan or the Freon-type air conditioner for the cooling system.

Note: Cabin temperature selection will affect the H-Valve [19, fig. 4-35] position. In the real aircraft, cabin temperature control is assumed by conditioning the engine bleed air used for pressurization. The H-Valve controls the amount of engine bleed air that passes through the heat exchanger. The cabin heating system can be controlled manually or automatically. Cabin heating systems are not supported in the current simulation platforms. However all the controls and indicators are provided and functional for simulating normal procedures.

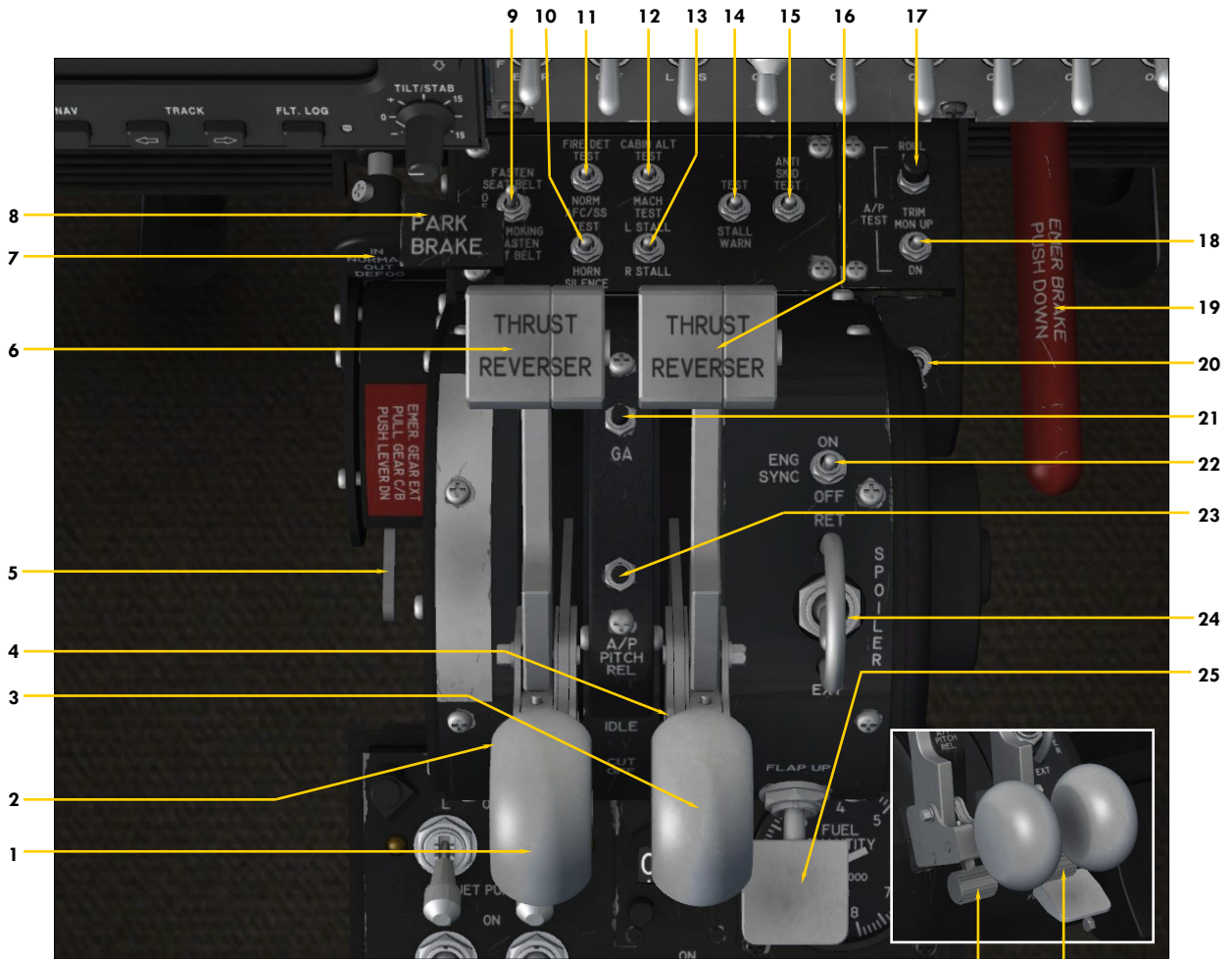


Figure 4-41

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Left Throttle (Control) Lever
<i>Actuate this lever beyond the IDLE (“F1”) mark to control thrust (left engine RPM). The Left Throttle Lever will not move if the Left Throttle Release Lever [2, below] is not raised, like in the real aircraft. Once released, the throttle can be dragged or moved with “F2/F3”.</i> 2. Left Throttle Release Lever
<i>This lever must be raised (clicked in the simulator) to open the fuel valve and move the Left Throttle Lever from the CUT OFF position to the IDLE position and vice versa. During the engine starting sequence, this is normally done around 20% RPM in the simulator (10% in the real aircraft) for the selected engine. Clicking this lever when the engine is started will move the Left Throttle Lever back to CUT OFF and will shut off the engine (fuel valve closed).</i> 3. Right Throttle (Control) Lever
<i>Same as 1, but for the right engine.</i> 4. Right Throttle Release Lever
<i>Same as 2, but for the right engine.</i> | <ol style="list-style-type: none"> 5. Emergency Gear Extension Lever
<i>This lever is used to extend the landing gear in case of a hydraulic system failure. The Landing Gear Selector Switch [5, fig. 4-28] should be placed in the DWN position prior to using the lever. The emergency air tank supplies compressed air or nitrogen to operate the emergency gear extension system. Tank pressure is shown on the direct-reading Emergency Air Indicator [3, fig. 4-37]. Refer to “Abnormal/ Emergency Procedures” in section 8 for details.</i> 6. Left Thrust Reverser Subthrottle
<i>Use this lever to deploy or stow the thrust reversers and to control engine RPM in reverse. The aircraft must be on the ground, the thrust reversers armed [see 7-8, 13-14, fig. 4-34] and the throttle must be at IDLE (“F1”) before the Thrust Reverser Subthrottle can be moved (“F2/F3”).</i> 7. Windshield Defog Knob (n/s)
<i>External windshield defogging is accomplished by pulling out the Windshield Defog Knob. This will allow hot bleed air from the engine to enter the external defog outlets and to heat the windshield if</i> |
|--|--|

Continued on next page...

- the Windshield Heat Switches [4, fig. 4-4] are properly set. When the knob is pushed in, hot bleed air will be directed to the crew footwarmers (normal position). Requires the Bleed Air Switch [1, fig. 4-39] to be set to **NORM** or **MAX**.
8. **Parking Brake Lever**
Parking brake is set by pulling this lever that traps hydraulic pressure in the brake assemblies.
 9. **No Smoking/Seat Belt Switch**
 10. **AFCSS/Horn Silence Test Switch**
In the simulator, setting this 3-position switch to **AFC/SS** will test all the bulbs in the autopilot and flight director lights and annunciators. In the real aircraft, this position is used to test the autopilot stability system (not available in the simulator). Setting this switch to **HORN SILENCE** will silence most audible alerts. Default position is **OFF** (middle position).
 11. **Fire Detection Test Switch**
Set this switch to **FIRE DET TEST** to test the continuity of the sensing elements and control units of the fire detection system. This will cause the fire panel lights to illuminate or to flash. Return the switch to **NORM** to end the test.
 12. **Cabin Alt Warning/Mach Test Switch**
When set to **CABIN ALT**, this 3-position switch is used to test the cabin altitude alert. When set to **MACH TEST**, this switch is used to test the overspeed warning system and alert, and the stick puller. The Stick Nudger/Puller Switch [20, below] must be set to **ON** prior to testing the stick puller. Default position is **OFF** (middle position).
 13. **Stall Warning Test Vane Selector Switch**
This switch is used for selecting which stall warning system to test with the Stall Warning System Test Switch (below).
 14. **Stall Warning System Test Switch**
This switch is used in conjunction with the Vane Selector Switch [13, above] to test the stall warning system, the stick shaker and the stick nudger. The Stall Warning Switches [4, 6, fig. 4-27] must be set to **ON** and AC power must be available. The Stick Nudger/Puller Switch [20, below] must be set to **ON** prior to testing the stick pusher.
 15. **Anti-Skid Test Switch**
With the Anti-Skid Power Switch [8, fig. 4-27] set to **ON**, this 3-position switch is used to test the anti-skid system installed on each inboard or outboard wheel of the main landing gear, depending on the switch position. Under normal conditions, the four Anti-Skid Generator Lights [4, fig. 4-15] should be off. Testing the anti-skid systems will cause some of the lights to illuminate, each light representing one wheel. Reset the switch to its middle (**OFF**) position after performing the tests.
 16. **Right Thrust Reverser Subthrottle**
Same as 6, but for the right engine.
 17. **Autopilot Roll Monitor Test Button**
This button is used to test the autopilot disengage function when an improper signal is introduced to the roll function. The button has two position: hold to **TEST** and a spring-loaded **OFF** position. Pushing this button to **TEST** will disengage the autopilot.
 18. **Autopilot Pitch Trim Monitor Switch**
This 3-position switch is used to test the autopilot disengage function when an improper signal is introduced to the pitch function. The switch is spring-loaded to the **OFF** position. Setting this switch to **UP** or **DN** will disengage the autopilot.
 19. **Emergency Brake Lever (n/s)**
This lever will set the parking brake (no emergency brake is provided in the simulator).
 20. **Stick Nudger/Puller Switch**
In the simulator, this switch is used to activate or deactivate the stick nudger/puller (see section 5, page 23). When the switch is set to **ON** and the autopilot is engaged, the stick nudger will be activated if a stall condition is detected, and the stick puller will be activated if an overspeed condition is detected. The switch is set to **ON** by default.
 21. **Autopilot Go-Around Button**
Depressing this button disengages the autopilot pitch and roll hold modes (if the autopilot is engaged) and engages the Takeoff/Go-around mode. Throttles automatically advance to takeoff power, wings level, vertical speed is set to 4,500 fpm, and the flight director indicates takeoff pitch. TO/GA mode can be used for takeoff, or for a go-around on landing. Releasing the button disengages the TO/GA mode and engages the ATT Hold mode if the autopilot is engaged.
 22. **Engine Sync Switch**
This switch is used to synchronize the left engine RPM with the right engine RPM. The switch must be set to **OFF** for takeoff, landing, descent, single engine operation, and below 70% RPM. Engine synchronization for jet engines is not available in the current simulation platforms. However, we've programmed the throttles so that the right lever will stick to and follow the left lever if both throttle levers are close to one another when the switch is set to **ON**. This will synchronize both engine RPMs.
 23. **Autopilot Pitch Release Button**
When depressed, this button disengages the autopilot pitch hold modes and the SPD/MACH Hold mode. Releasing the switch engages the ATT Hold mode, maintaining the airplane's pitch attitude.
 24. **Spoilers Switch**
When this switch is set to **EXT**, the spoilers extend and the SPOILER annunciator [7, fig. 4-30] illuminates on the main annunciator panel. Full extension is about 40°. Returning the switch to **RET** causes the spoilers to fully retract and the annunciator to go off. Like in the real Learjet 25, spoiler deployment is programmed to cause nosedown pitching which should be anticipated. Spoilers are electrically controlled and hydraulically actuated.
 25. **Flap Selector Switch**
Click or use the mouse wheel to extend or retract the flaps. In the simulator, four flap positions are provided: **Full Up**, **8° down**, **20° down** and **full down (40°)**. An audible alert will sound if the flaps are extended beyond 25° and the landing gear is not down and locked. Flaps are electrically controlled and hydraulically actuated.

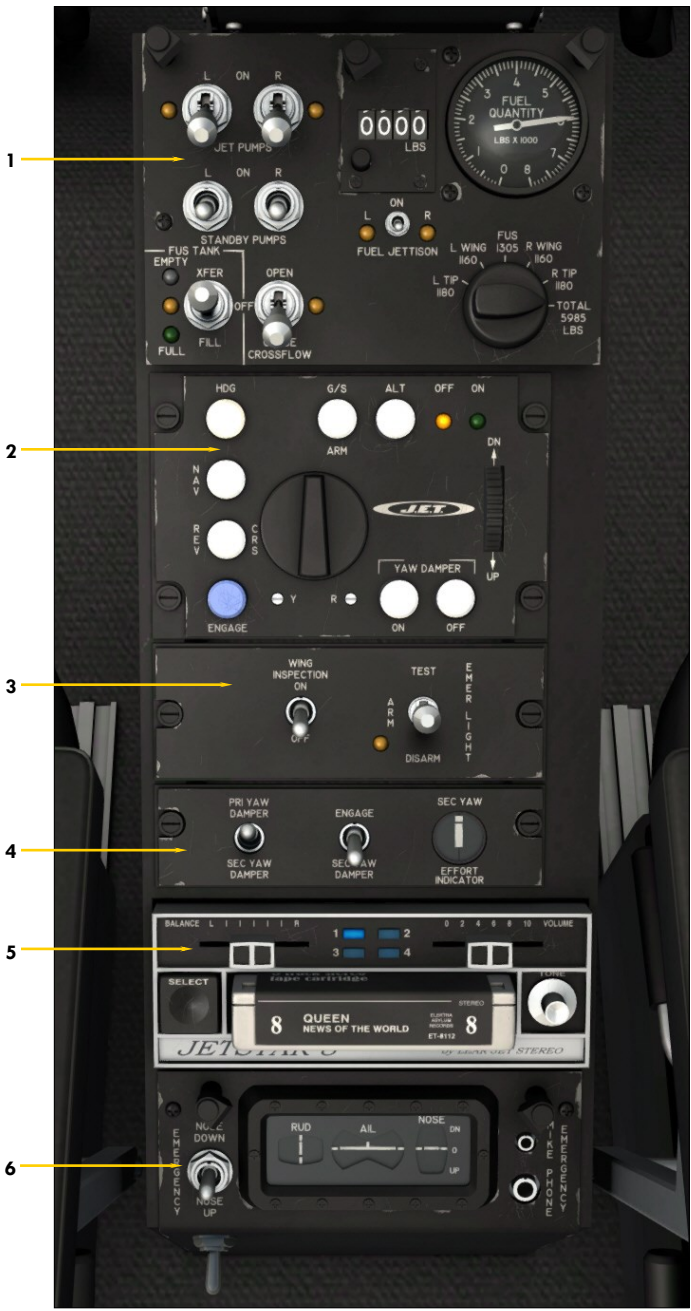


Figure 4-42

- 1. Fuel Control Panel
- 2. Flight Controller (Autopilot)
- 3. Emergency Lights Panel
- 4. Yaw Damper System Panel
- 5. 8-Track Tape Player
- 6. Trim Indicators Panel

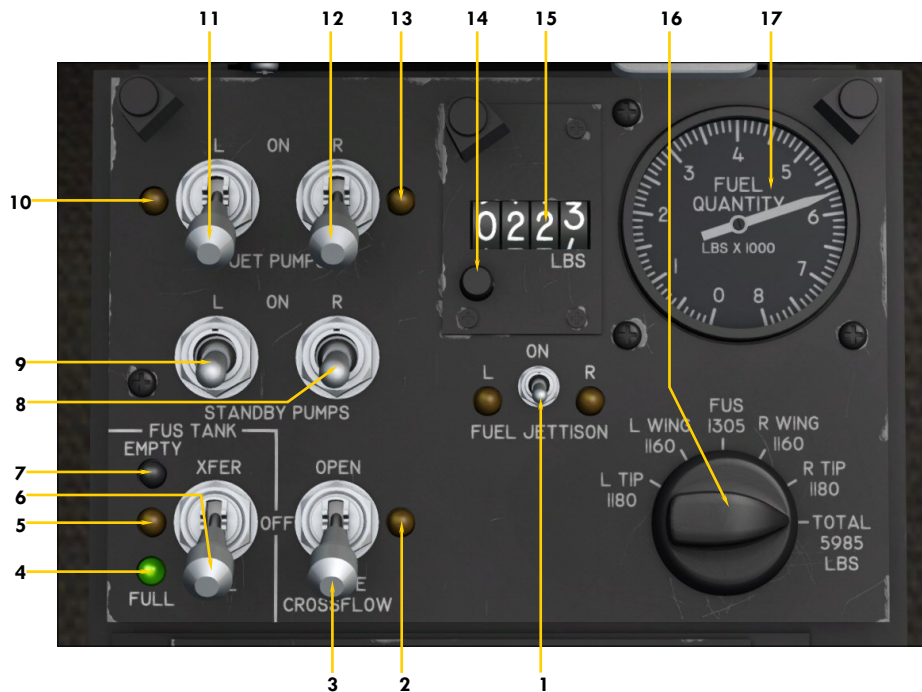


Figure 4-43

1. **Fuel Jettison Switch and Lights**
This switch is used to jettison fuel from the wing tip tanks. The lights are illuminated when the fuel jettison valves are open.
2. **Crossflow (Crossfeed) Valve Light**
In the simulator, this light indicates that the crossfeed valves are in transit.
3. **Crossflow (Crossfeed) Switch**
In the simulator, this switch controls the crossfeed valves that allow fuel from one wing tank to feed the opposite or both engines by "isolating" the other wing tank. Used in conjunction with the Standby Pump Switches [8-9, below and right].
4. **Fuselage Tank Full Light**
When the Fuselage Tank Switch [6, below] is set to FILL, this green light will come on if the fuselage tank is full.
5. **Fuselage Tank Valves Light**
This light indicates that the fuselage tank valves are in transit.
6. **Fuselage Tank Switch**
In the simulator, this switch, when set to XFER, is used to feed the engines from the fuselage tank when fuel in the main wing tanks is critically low. Normally set to OFF.
7. **Fuselage Tank Empty Light**
When the fuselage tank switch is set to XFER, this white light will come on if the fuselage tank is empty.
8. **Right Standby Pump Switch**
Controls the right boost pump. Used for crossfeeding fuel or in case of a jet pump failure. Normally OFF.
9. **Left Standby Pump Switch**
Controls the left boost pump. Used for crossfeeding fuel or in case of a jet pump failure. Normally OFF.
10. **Left Motive Flow Valve Light**
If the position of the valve does not correspond to the position of the switch, the light will come on.
11. **Left Jet Pump Switch (Fuel Pump)**
Should be ON for the duration of the flight. Allows motive flow to the wingtip/wing tank jet pumps.
12. **Right Jet Pump Switch (Fuel Pump)**
Should be ON for the duration of the flight. Allows motive flow to the wingtip/wing tank jet pumps.
13. **Right Motive Flow Valve Light**
If the position of the valve does not correspond to the position of the switch, the light will come on.
14. **Fuel Counter Reset Button**
This button, when depressed, resets the Fuel Counter [15, below] to zero.
15. **Fuel Counter**
This counter indicates the total amount of fuel burned (in pounds) since the last engine start or reset. Often called a "fuel totalizer".
16. **Fuel Tank Selector Knob**
This selector knob enables the pilot to read the remaining fuel quantity in each of the five tanks as well as the total system quantity, on the Fuel Quantity Gauge [17, below].
17. **Fuel Quantity Gauge**
This gauge indicates the remaining fuel quantity (as weight) for the selected tank or for the total system.

Note: Refer to "20 Series Fuel System" in section 5, page 6, for a complete discussion about the fuel system.



Figure 4-44

1. **A/P (Autopilot Engage) Button and Light**
Engages the autopilot, captures and maintains the aircraft's pitch attitude and levels the wing. The autopilot assumes aircraft control.
2. **Turn Command Knob**
With the autopilot engaged, this knob will command bank angles, but will disengage any horizontal mode. Use the mouse wheel to control the bank. Click the knob to center both the knob and the ailerons, and to level the wing.
3. **REV CRS (Reverse Course Approach Mode) Button and Light**
The REV CRS button engages the autopilot's Back Course Approach mode, enabling automatic tracking of a localizer (or GPS) back course for instrument approaches. When engaged, the function is similar to the APPR mode, except the glideslope is disabled and the autopilot's response to a localizer signal is reversed.
4. **NAV (Navigation Hold Mode) Button and Light**
Engages the Navigation Hold mode, the autopilot automatic tracking of a VOR course, GPS course, or localizer for navigation.
5. **HDG (Heading Hold Mode) Button and Light**
Engages the Heading Hold mode. The autopilot will turn the airplane as necessary and fly a heading selected by the position of the Heading Bug on the HSI [2, 11, fig. 4-8].
6. **G/S ARM (Glideslope Tracking Mode) Button and Light**
When the G/S ARM button is depressed, the autopilot will capture and track the ILS glideslope signal.
7. **ALT (Altitude Hold Mode) Button and Light**
Engages the Altitude Hold mode. The aircraft climbs/descends to the altitude set on the Altitude Preselector [3-4, fig. 4-23; 2-3, fig. 4-11b] at the rate set on the Vertical Speed Selector [1, 3, fig. 4-12].
8. **Autopilot OFF Light**
The amber Autopilot OFF Light is illuminated any-time the AFCS has power available but the autopilot is not engaged.
9. **Autopilot ON Light**
The green Autopilot ON Light is illuminated when the autopilot is engaged with any pitch and/or roll mode engaged.
10. **Pitch Command Wheel**
With the autopilot engaged, rotating the Pitch Command Wheel will change the airplane's pitch attitude up or down. Click the knob to reset, maintain the pitch and level the wing.
11. **Primary Yaw Damper OFF Button**
Depressing the YAW DAMPER OFF Button will disengage the primary yaw damper system.
12. **Primary Yaw Damper ON Button**
The YAW DAMPER ON Button engages the primary yaw damper system which helps eliminate unwanted aircraft yaw and keeps turns coordinated.

Note: Refer to section 5, page 15, for a complete discussion about the AFCS, the autopilot and the flight director.

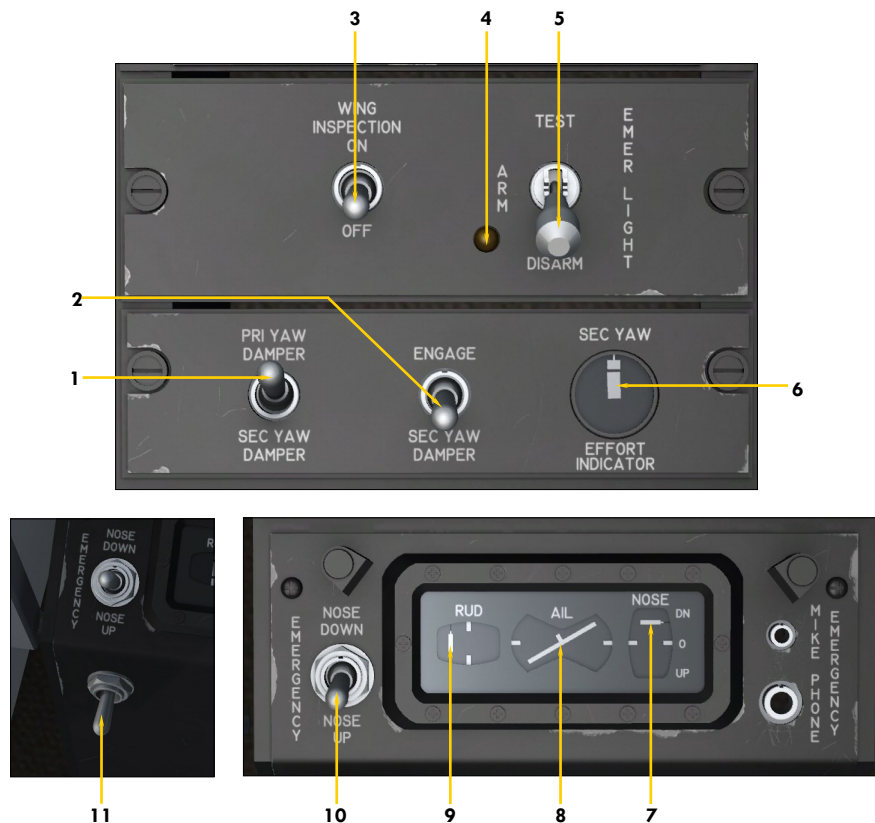
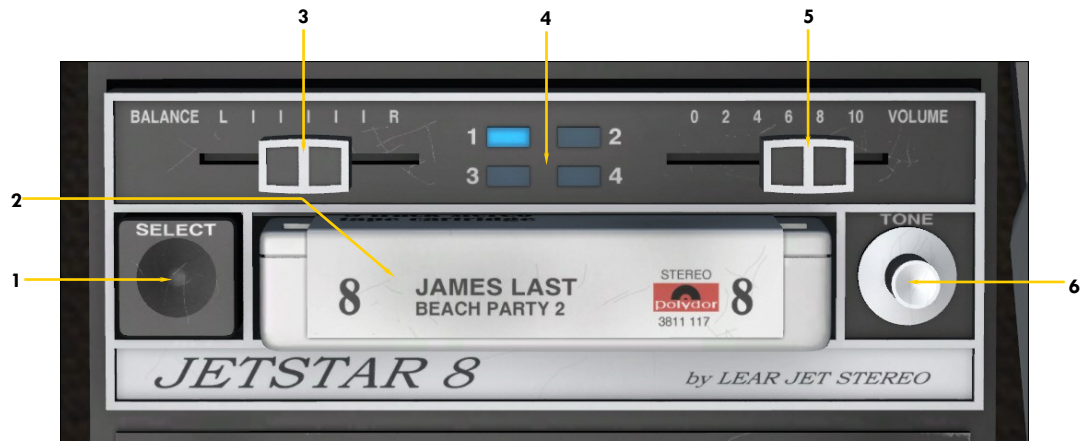


Figure 4-45

1. **Yaw Damper Selector Switch**
*This switch selects the primary yaw damper system when set to **PRI YAW DAMPER** and the secondary yaw damper system when set to **SEC YAW DAMPER**. The GLJ Model 25 SE addon is equipped with dual (primary and secondary) yaw damper systems, like in the real aircraft. Each system is completely independent and only one yaw damper system can be engaged at a time.*
2. **Secondary (Emergency) Yaw Damper Switch**
*This switch engages or disengages the secondary yaw damper system in case of an emergency. To engage the secondary yaw damper system, the Selector Switch [1, above] must be set to **SEC YAW DAMPER**. Selecting the primary yaw damper system will disengage the secondary yaw damper system.*
3. **Wing Inspection Light Switch**
The GLJ Model 25 SE addon is now equipped with a right wing inspection light.
4. **Emergency Lighting System OFF Warning Light**
*This amber light indicates that the emergency lighting system is not armed. The Emergency Lights Switch [5, right] should be set to **ARM** prior to takeoff.*
5. **Emergency Lights Switch**
*This switch, when set to **ARM**, arms the self-powered emergency cabin lighting system that illuminates the cockpit and the cabin in case of a DC power failure. In the simulator, the system will turn on the cabin ceiling lights in case of a power failure. Set the switch to **TEST** to test the system.*
6. **Rudder Activity Indicator**
In the simulator, this indicator shows rudder activity. A yaw damper effort indicator is not available in the current simulation platforms.
7. **Elevator Trim Indicator**
Takeoff trim is typically one needle thickness below neutral.
8. **Aileron Trim Indicator**
9. **Rudder Trim Indicator**
10. **Emergency Pitch Trim Control Switch**
*This switch is used in case of a failure of the primary trim system. The Emergency Pitch Trim Switch [3, fig. 4-27] should be set to **EMER** for the emergency pitch trim system to energize.*
11. **Rudder Trim Control Switch**
This switch is used for trimming the rudder.



**LEAR JET STEREO
JETSTAR 8 STEREO 8-TRACK TAPE PLAYER**

A tribute to the inventive genius of Bill Lear.

Figure 4-46

1. **Track Selector Button**
Click to switch tracks. A Lear Jet Stereo 8-track cartridge (a format largely adopted by the music industry and major electronics and car manufacturers from the mid-1960's to the late 1970's) has four stereo tracks. On some real players, tracks can be played continuously - in a loop - or they can switch automatically to the next track when finished playing. When the last track is finished playing, the music can stop or the player can switch to and start playing the first track again, depending on the user's preferences. One of the main purposes of the 8-track player is to play music in a loop, continuously, without the need to rewind the tape or switch side. In the simulator, each track is played in a loop and the pilot needs to switch tracks manually by clicking this button.
2. **Stereo 8-Track Tape Cartridge**
Left-click to play the music. Right-click to stop the music. On a real player, the music normally starts playing as soon as the cartridge is inserted.
3. **Balance Control Cursor**
Move this cursor to balance the sound volume between the left and right audio channels (Prepar3D only).
4. **Track LED Indicators**
Indicates which stereo track is playing (1-4).
5. **Volume Control Cursor**
Move this cursor to adjust the sound volume.
6. **Tone Control Knob (n/s)**
On a real player, this cursor will adjust the "tonal quality" (bass and treble combined) of the audio output. This is not available in the simulator at this time. Use your sound system or computer audio controls instead.

Note: The 8-track player requires DC power. Refer to section 4, page 11, for instructions on how to play your own music when flying your GLJ Model 25 SE addon in the simulator.

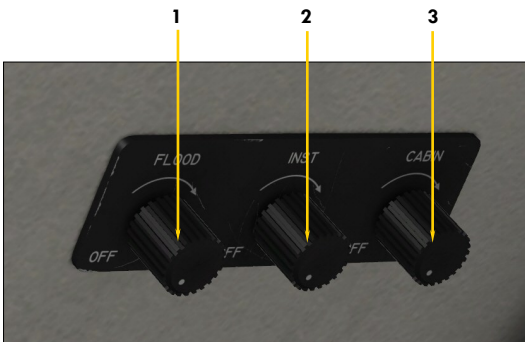
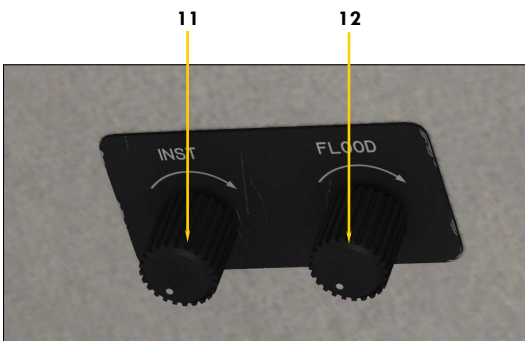
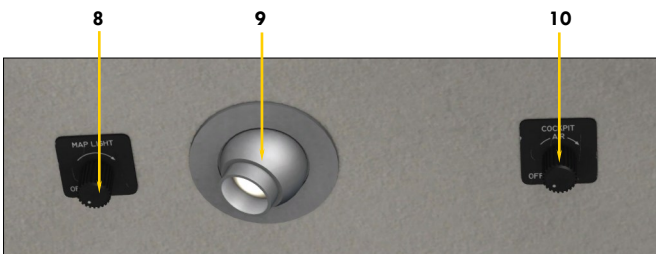
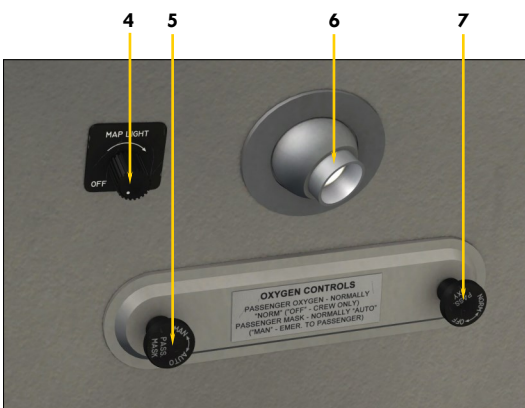
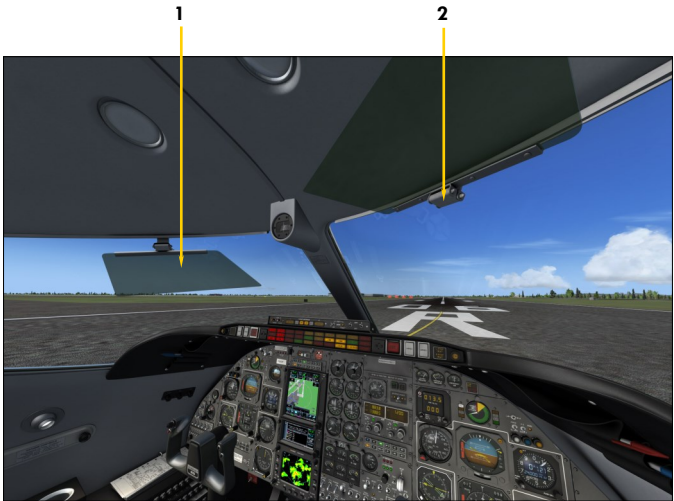


Figure 4-47

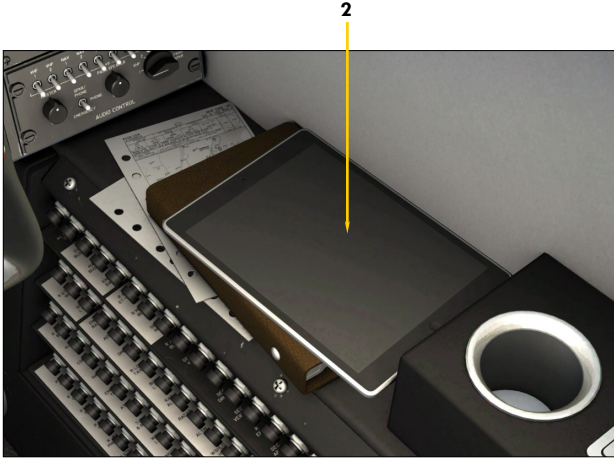


1. **Captain's Panel Flood Lights Control**
In the simulator, this control knob toggles the 2-intensity panel flood lights that are located under the glareshield. Use the mouse wheel to choose the desired intensity.
2. **Captain's Instrument Lights Control**
In the simulator, this control knob toggles the instrument backlights, the panel post lights and the instrument eyebrows.
3. **Captain's Cabin Lights Control**
In the simulator, 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**
*This valve is normally set to **AUTO**. Rotating this valve to **MAN** with the Passenger Oxygen Flow Valve [7, below] set to **NORM**, oxygen will be provided to the passenger masks at any altitude, if required.*
6. **Captain's Map Light**
7. **Passenger Oxygen Flow Valve**
*This valve, when normally set to **NORM** (open), will automatically deliver oxygen to the passengers through an aneroid-controlled solenoid valve if the cabin altitude reaches 14,000 feet and DC power is available. In the real aircraft, the passenger masks will be deployed and the cabin lights will illuminate. If the valve is set to **OFF** (closed), oxygen will not be available to the passengers in any case. Oxygen is provided to the crew at all times. The crew distribution system consists of the pilot's and copilot's oxygen masks stowed on the pilot's and copilot's sidewalls. In the simulator, with only the crew being provided with oxygen, and the oxygen tank [1, fig. 4-37] filled to 1,500 psi, oxygen will last for about 120 minutes. With the crew and seven passengers being provided with oxygen, oxygen will last for about 30 minutes. Click the Oxygen Pressure Gauge [1, fig. 4-37] to fill the oxygen tank to 1,500 psi, if needed.*
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 (see 2, above).
12. **Copilot's Panel Flood Lights Control**
Same as the one on the captain's side (see 1, above).



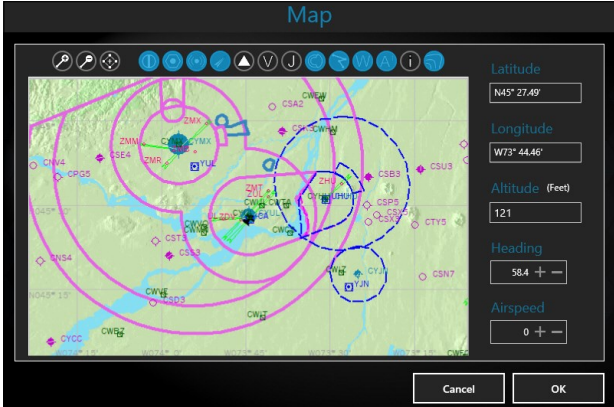
SUN VISORS
Figure 4-48

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



FLIGHT MAP
Figure 4-49

1. Flight Maps
Click the charts on the captain's side to open the simulator's flight map.
2. Copilot's (Hideable) Tablet
Click the tablet to open the simulator's flight map. Click the brown binder under the tablet to show/hide the tablet.



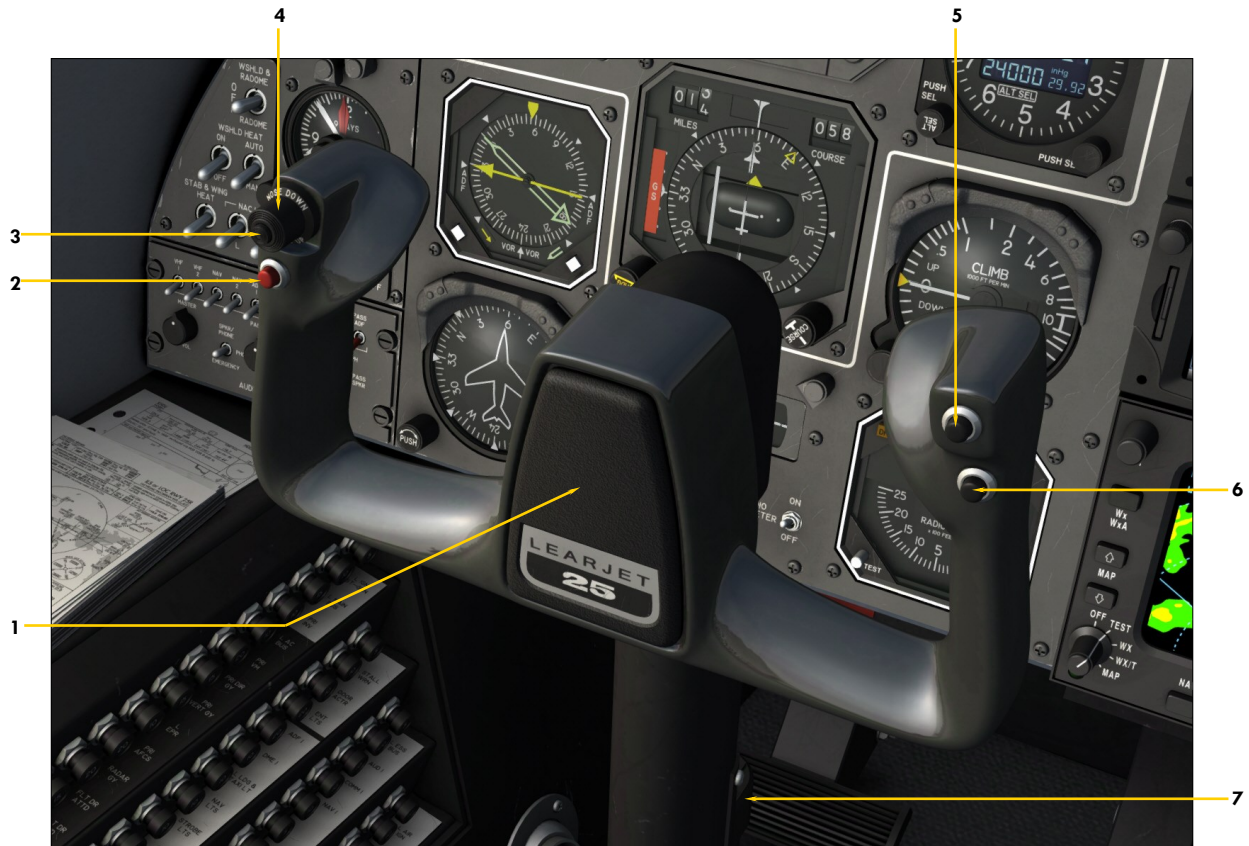


Figure 4-50

1. **Control Yoke**
Click the Learjet 25 logo at the center of the yoke on the captain's side to select the captain that appears in the cockpit of the exterior model. Click the Learjet 25 logo on the copilot's side to select the copilot. You can choose between three male pilots and one female pilot. Crew must be onboard the aircraft.
2. **Wheel Master Button**
Click this momentary push button to engage electrical nose gear steering (up to 10° in either direction below 45 knots). A green annunciator [14, fig. 4-30] will illuminate on the main annunciator panel. Click the switch again to disengage electrical nose wheel steering (the green annunciator will go off). In the real aircraft, this switch, when held depressed, will engage the wheel master mode (steering of 40° to 50° in either direction, for taxi up to 10 knots). Nose wheel steering is initiated automatically in the simulator at certain speeds. See also "Nose Gear Steer Lock Switch" [7, fig. 4-4].
3. **Four-Way Trim Switch Arming Button**
When the center button on the four-way trim switch is momentarily depressed, the AP pitch and roll modes are disengaged. Releasing the button maintains the pitch and levels the wing.
4. **Four-Way Trim Switch (n/s)**
In the real aircraft, when the autopilot is engaged and with the center arming button depressed, this four position switch is used to trim the control surfaces in both pitch and roll.
5. **Maneuver Control Button**
Depressing this button momentarily disconnects the AP pitch, roll and speed hold modes. Releasing the button maintains the pitch and levels the wing.
6. **Pitch Sync Button**
When depressed, this button disengages the autopilot pitch and speed hold modes. Releasing the button maintains the pitch and levels the wing.
7. **Stick Shaker Motor-Vibrator**
Actuation of the stick shaker causes low-frequency, high-amplitude vibration in the control column. This is used in conjunction with the stall warning system and the stick nudger.

Note: Refer to section 5, pages 24 and 29, for more information about the (autopilot) control yoke buttons.

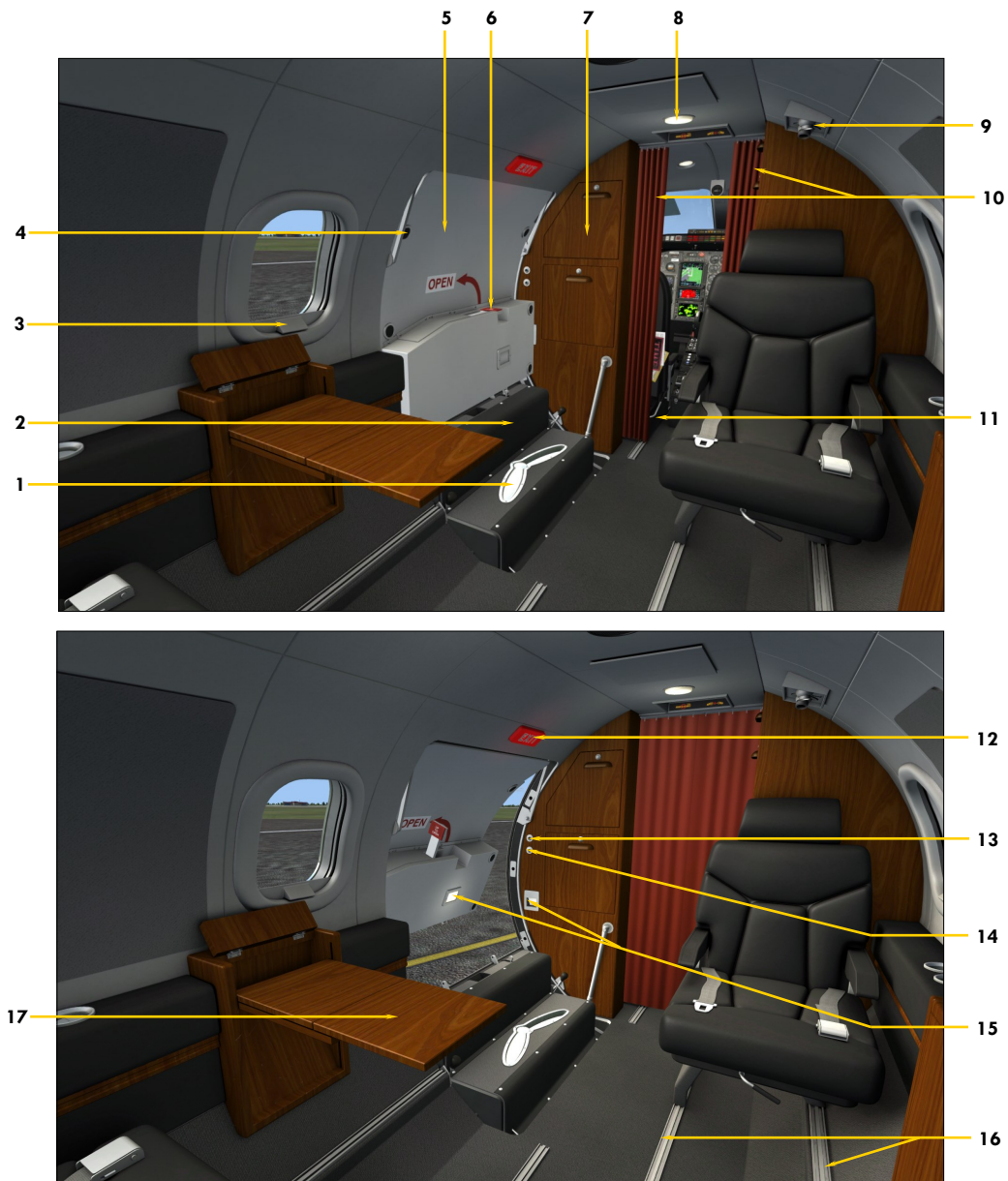


Figure 4-51

- | | |
|---|--|
| 1. Lower Door Locking Handle | 10. Cabin Curtains
<i>Click to open/close.</i> |
| 2. Lower Door (Step Half)
<i>Click to toggle flight crew onboard or absent.</i> | 11. Emergency Lighting Power Supply |
| 3. Window Shade | 12. Exit Sign |
| 4. Latch Pin Inspection Window | 13. Entry Lights Switch
<i>Click to toggle entry lights on/off (Prepar3D). Toggles entry lights, reading lights and instrument lights on/off (FSX).</i> |
| 5. Upper Door | 14. Cabin (Ceiling) Lights Switch
<i>Toggles cabin lights on/off.</i> |
| 6. Upper Door Handle
<i>Click to open/close door (or press "SHIFT+E").</i> | 15. Entry Lights |
| 7. Utility Wood Cabinet | 16. Seat Rails |
| 8. Cabin Ceiling Light | 17. Passenger Working Table |
| 9. Passenger Reading Light & Air Vent
<i>Click button to toggle light on/off (Prepar3D).</i> | |

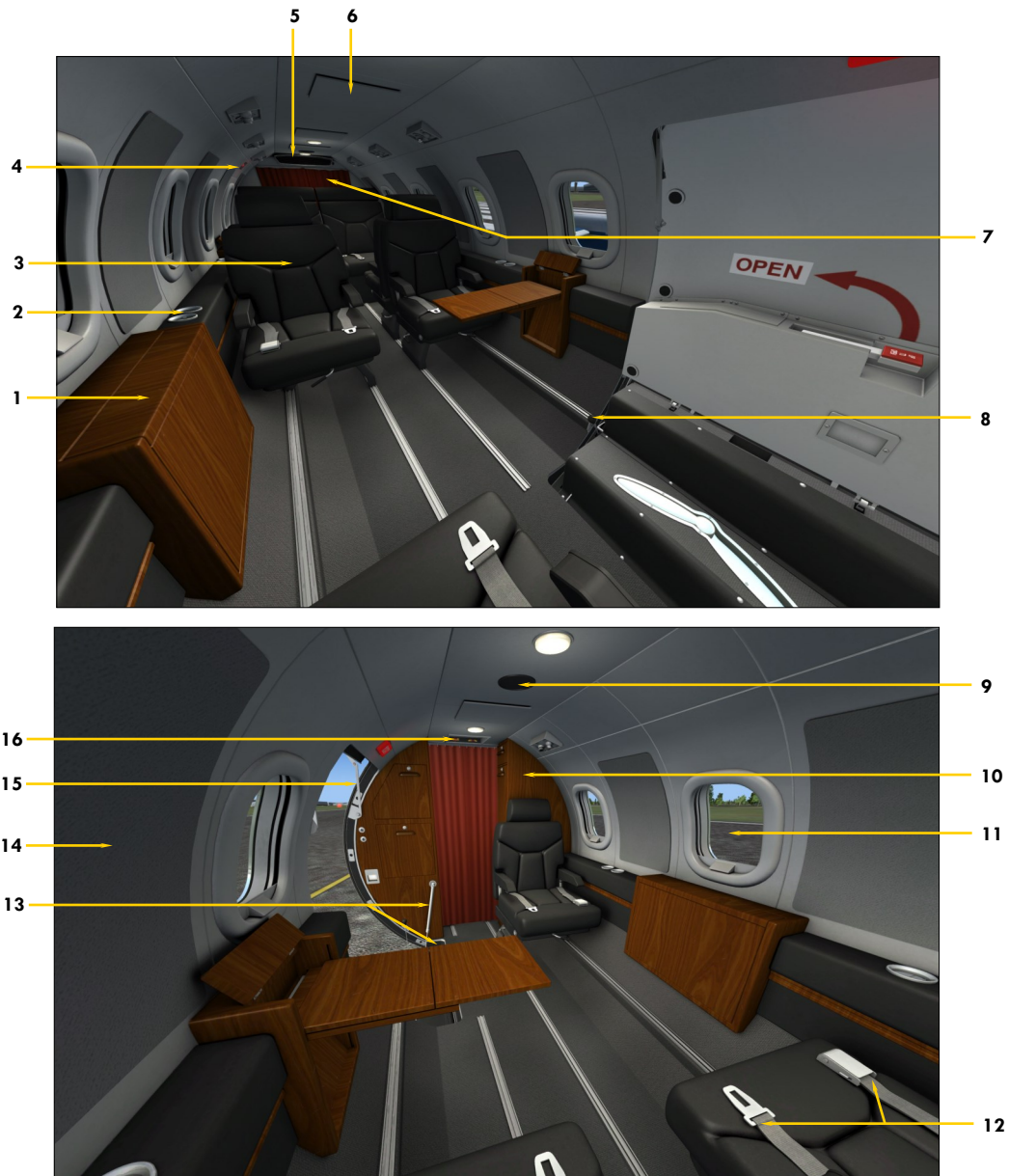


Figure 4-52

- | | | | |
|----|----------------------------------|-----|-----------------------------------|
| 1. | Table Wood Cabinet (Closed) | 9. | Speaker |
| 2. | Cup Holder/Ashtray | 10. | Utility Wood Cabinet |
| 3. | Passenger Seat | 11. | Window |
| 4. | Emergency Door Handle | 12. | Passenger Seatbelts |
| 5. | A/C Blower Duct (with diverters) | 13. | Lower Door Damper and Torsion Bar |
| 6. | Oxygen Mask Compartment | 14. | Wall Decor |
| 7. | Baggage Compartment | 15. | Upper Door Torsion Bar |
| 8. | Lower Door Support Cable Handle | 16. | No Smoking/Seatbelts Sign |



20 SERIES AIRCRAFT SYSTEMS

The following section contains important information about the aircraft systems that are included with your new Xtreme Prototypes GLJ Model 25 SE v3.0 add-on.

Although the GLJ Model 25 SE add-on is inspired from the classic Gates Learjet 20 Series aircraft family, there are some differences in systems when compared to the real aircraft. These differences are due mainly to software limitations in the current simulation platforms but also to our desire to keep the aircraft operation simple and enjoyable for an average-skilled virtual pilot.

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

- Flight controls
- Stall/overspeed warning systems with stick nudger/puller and stick shaker
- Electrical system
- Emergency batteries (“APU”)
- Ground power unit (GPU)
Prepar3D only
- Hydraulic system (including functional electric auxiliary hydraulic pump)
- Landing gear, anti-skid system, differential brakes
- Fuel system (including cross-feeding and wingtip tanks fuel jettison system)
- CJ-610 Power plant
- Fire detection and suppression system

- Pneumatic (high pressure), bleed air, pressurization and environmental control systems
- Air conditioning and cabin temperature (H-valve) system
- Anti-ice system
- Automatic flight control system (AFCS) with autopilot, flight director, yaw damper and speed/Mach hold systems
- RVSM system, complete with digital altimeters/altitude preselectors (ADDUs) with blue VFD display, analog standby altimeter and control panel (retrofitted panels)
- Caution and warning system
- Avionics, radio and navigation systems (COM1, COM2, NAV1, NAV2, ADF1, ADF2, transponder, DME)
- GPS (default Prepar3D or FSX)
- GNS, GTN, weather radar, transponder (3D bezels, screens and programmable knobs included; software not included and must be acquired from third-party vendors/developers)
- GPWS (retrofitted panels)
- Emergency gear extension system
- Crew and passenger oxygen system
- Main entry door
- Cockpit and cabin lighting systems, including emergency lighting

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 provided for each device in the virtual cockpit and can be used for cockpit familiarization (identifying the instruments, gauges and switches and memorizing their location in the different panels).

Below is a summary description of the most important systems followed by complete discussions about the fuel system and the automatic flight control system (AFCS - autopilot/

flight director) installed in this software version.

Additional information about controls, gauges, lights and annunciators can be found in section 4.

Refer to section 7 for detailed operating procedures.

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 fig. 3-2 in section 3 for the location of the different flight control surfaces on the GLJ Model 25 SE add-on aircraft.

Electrical System



Your add-on's electrical system consists mainly of a single 24-volt battery (instead of dual batteries like in the real aircraft), a main battery bus, a battery charging bus, two 28-volt DC/400-amperes engine-driven starter-generators, two main DC buses, two essential DC buses, two 115-volt AC/1,000 VA inverters, one auxiliary inverter, two AC buses and associated transformers, switches and gauges.

During normal operation, the generators supply DC power to the left and right DC buses where most components are connected and to the avionics bus, which powers most flight instruments, including the GPS and the communication and navigation radios. The generators also charge the battery.

Two inverters (devices that convert DC current to AC current) provide 115 VAC (or 26 VAC through transformers) to different aircraft systems, including the radar. 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.

Note: The radar will not work if at least one Inverter Switch [5, 10, 12, fig. 4-27] is not turned ON. The radar needs AC power to work. The avionics (radios, transponder, navigation systems) only requires DC power and the Radio Master (avionics) Switch [14, fig. 4-27] to be turned ON, like in the real aircraft.

Electrical control switches and meters are located in the center section of the main instrument panels [fig. 4-26 to fig. 4-28].

The instrument panel is also equipped with a standby gyro horizon [fig. 4-16], powered by two emergency batteries when DC power is not available from the main DC buses. This means that in case of a loss of battery and generators, the pilot will have attitude indication for as long as the emergency batteries last (typically enough for a precautionary landing).



The dual emergency battery system is controlled with two power switches in the main instrument panel [14, fig. 4-2].

Note: Emergency batteries are not available in the simulator and have been replaced by the APU. The APU, when engaged, will supply power to all aircraft systems.

The GLJ Model 25 SE v3.0 add-on comes with a ground power unit (GPU) that supplies 28 VDC to the aircraft during maintenance,



training or preflight procedures. The GPU is available when the aircraft is on the ground and is not moving.

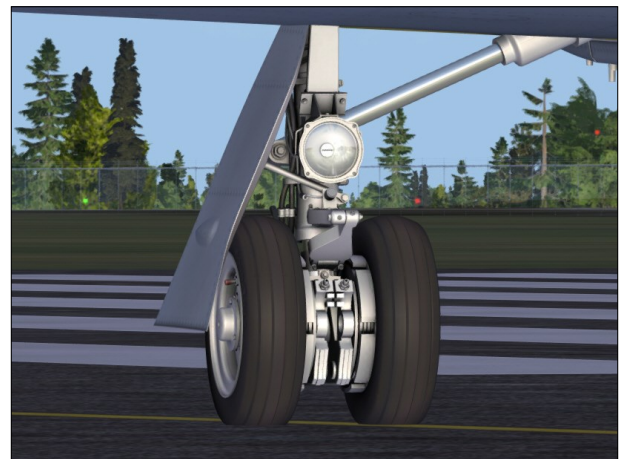
Note: The GPU is available in Prepar3D only.

Hydraulic System

Your add-on'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. Like the real aircraft, the add-on is also equipped with an electric auxiliary hydraulic pump for operations on the ground or in case of emergency.

Landing Gear

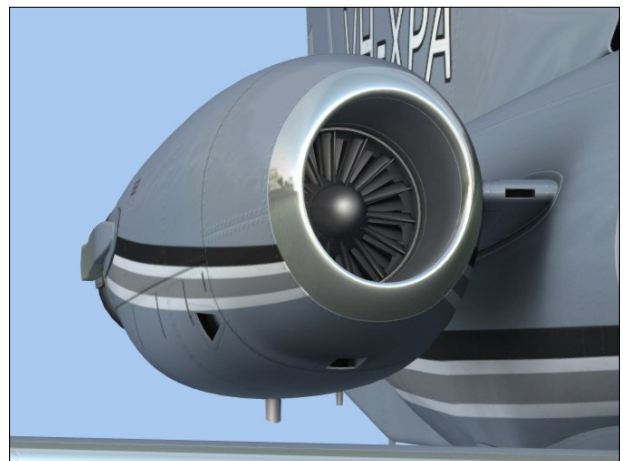
Your add-on's landing gear is of the tricycle, retractable type. The main gear has dual-wheels while the nose gear has a single, steerable wheel. The main gear is equipped with multi-disc hydraulic brakes controlled by



an anti-skid computer, sensors and modulator valves.

The rudder is inoperative when electric nose gear steering is engaged and the aircraft is on the ground.

Power Plant and Thrust Reversers

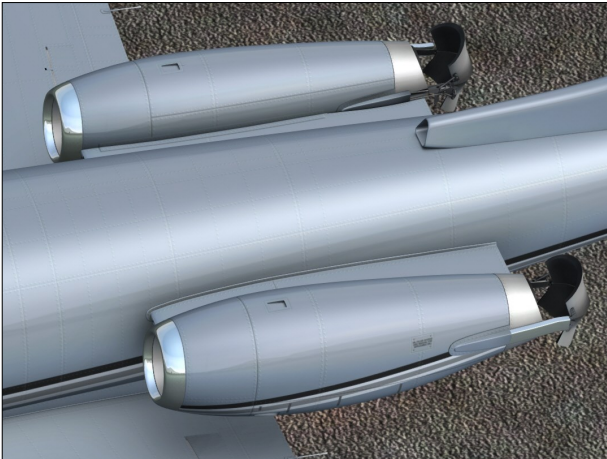


Your add-on is equipped with the reliable General Electric CJ-610 single-spool turbojet engine. Rated at 2,950 lbs. static thrust per side at sea level, the CJ-610 provides the aircraft with fighter-like performance (especially at low weights). It was said that a lightly-loaded Model 25 could outperform the legendary Lockheed T-33!

The single-spool turbojet engine will produce higher thrust at altitude than a modern turbofan engine with similar ratings. This makes the 20 Series aircraft well-suited for high altitude flight. The downside is that fuel con-

sumption and noise are far greater. Your GLJ Model 25 SE add-on is no exception, so plan adequate fuel for your trip (see “Flight Planning”, in section 6)!

The special edition of the GLJ Model 25 add-on is equipped with fully modeled Dee Howard 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.

Fire Detection/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 installed in the glareshield [fig. 4-31 to fig. 4-33].

Refer to “Abnormal/Emergency Procedures”, in section 8, for more details.

Environmental Control System



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 the dorsal RAM air inlet and directs it into the cabin to maintain pressurization. The pressure is regulated through an outflow valve slaved to the pressurization controller [5, fig. 4-39].

Before takeoff and during flight, the pilot sets the target altitude of the flight and the pressurization controller will take care of the rest. Manual adjustment of the automatic cabin climb/descent rate is available via a control knob [2, fig. 4-39] on the pressurization panel. The “cherry picker” switch [3, fig. 4-39] 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” [19, fig. 4-35]. As the cabin temperature is set on the temperature control panel [fig. 4-40], make sure to monitor the H-valve position indicator accordingly.

Other Systems

For more details about these and other systems, please refer to figures 4-1 to 4-52, in section 4.

20 SERIES FUEL SYSTEM



Because of software limitations in the current simulation platforms, the fuel system in the GLJ Model 25 SE add-on is very similar but not totally identical to the rather peculiar fuel system installed in the real aircraft. However, all the switches, gauges and annunciators are provided to emulate the real system as closely as possible and to simulate every procedure you would normally perform with the real aircraft. The differences between the add-on and the real aircraft are fully explained in the following pages.

Note: Significantly modifying the simulator’s built-in fuel system goes beyond the scope of this project aimed at producing a reasonably priced complex add-on for the general public and the average user. As the simulation platforms evolve, so will the systems in future versions of this add-on.

Like in the real Gates Learjet 25D, your add-on’s fuel system is divided into left and right tankage, each feeding the corresponding engine. It consists of two wingtip tanks, two main wing tanks and a center (storage) fuselage tank.

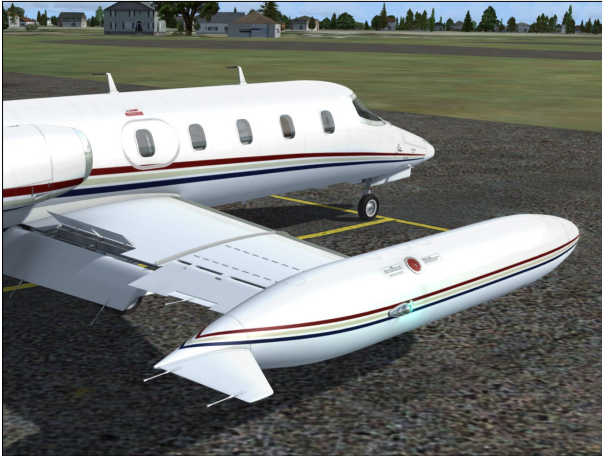
TANK	%	POUNDS	CAPACITY
Center	100	1305	1305
Left	100	1160	1160
Left Tip	87.09	1075.5	1235
Right	100	1160	1160
Right Tip	90	1075.5	1195

Fuel Pumps

While the real aircraft uses pumps to assist in emptying the wingtip tanks and the center tank into the main wing tanks, the add-on uses mainly gravity. However, the add-on is equipped with two fuel pumps to assist transferring fuel from the tanks to the power plants. Two switches [11-12, fig. 4-43] are provided in the add-on’s fuel panel to energize the fuel pumps, one for each engine.

In the real aircraft: The top half-part of each wingtip tank will gravity flow into the wing tank automatically. An ejector-type jet pump in each wingtip tank is used to transfer the remaining wingtip tank fuel into the respective wing tank. A ventury-type jet pump and an electrically operated centrifugal-type multi-function low pressure standby (boost) pump are installed at the most inboard and lower portion of each wing tank. This assures that the pumps are submerged in fuel until the tanks are almost empty.

Refueling



In both the addon and the real aircraft, refueling is performed through a filler cap on top of each wingtip tank. In the simulator, refueling is achieved through the “Fuel and Payload” panel or by requesting a fuel truck (“SHIFT+F”) in certain parking areas. Refer to your simulation platform’s documentation for more details.

See also “Flight Planning”, in section 6.

Wingtip Tanks

Like the real aircraft, the addon is equipped with two wingtip tanks. Both tanks have a fuel jettison system at the rear. The right wingtip tank has a recognition light installed in the nose and a capacity of 1,195 pounds of fuel. The left wingtip tank may or may not have a recognition light installed in the nose (user-selectable) and has a capacity of 1,195 or 1,235 pounds of fuel.

TANK	%	POUNDS	CAPACITY
Center	100	1305	1305
Left	100	1160	1160
Left Tip	96.76	1195	1235
Right	100	1160	1160
Right Tip	100	1195	1195

TANK	%	POUNDS	CAPACITY
Center	100	1305	1305
Left	100	1160	1160
Left Tip	100	1235	1235
Right	100	1160	1160
Right Tip	100	1195	1195

Note: The tank capacity is preset to 1,235 pounds of fuel in the left wingtip tank by default. For more realism, the user needs to reduce the quantity of fuel in the left wingtip tank if a recognition light is installed in the nose.

Fuel is automatically transferred from each wingtip tank to its respective wing tank. All wingtip tank fuel can be jettisoned through a valve in the tank tailcone (see “Fuel Jettison”, next page).

Wing Tanks

The wing is divided by a center bulkhead into two separate compartments which serve as sealed, full span, integral fuel tanks. Fuel is not stored in the landing gear wheel well and in the wing leading edge area. By default, the left engine uses fuel from the left wing tank and the right engine uses fuel from the right wing tank.

Each wing tank has a capacity of 1,160 pounds of fuel.

Center Fuselage (Storage) Tank

The center fuselage tank is used as a storage tank in both the addon and the real aircraft. The fuselage tank has a capacity of 1,305 pounds of fuel.

A Fuselage Tank Switch [6, fig. 4-43] is provided in the addon’s fuel panel to feed both engines with fuel contained in the fuselage tank when fuel in the wing tanks is critically low.

The addon’s Fuselage Tank Switch cannot be used to pump fuel from the center fuselage

tank into the wing tanks, like in the real aircraft. The Fuselage Tank Switch is used to directly connect both engines to the center fuselage tank instead. Like a real Learjet pilot, the desktop pilot must constantly monitor fuel in the wing tanks to prevent engine starvation.

The Fuselage Tank Switch must be set to **XFER** when the fuel in the main wing tanks is critically low. Switching from the main wing tanks to the center fuselage tank is not done automatically and must be performed manually, which is similar to the fuel transfer procedure in the real aircraft. The “Low Fuel Remaining” annunciator [2, fig. 4-30] will illuminate when there is less than 50 gallons (approx. 335 pounds) of fuel in either wing tank - or in the center fuselage tank, if the Fuselage Tank Switch is set to **XFER**.

In the real aircraft: The fuselage tank consists of four bladder-type cells. Like in the addon, the fuselage tank is only a storage tank and fuel must be pumped into the wing tanks for use by the engines. This is done by setting the Fuselage Tank Switch to XFER.

Crossfeed

A Crossfeed Valve Switch (labeled “Crossflow”) [3, fig. 4-43] and two Standby Pump Switches [8-9, fig. 4-43] are provided in the addon’s fuel panel for crossfeeding fuel from one wing tank to the opposite engine or to both engines. In this case, the unused tank is “isolated” from its power plant. This may be used to balance fuel between the two wing tanks or during single engine operation.



The Crossfeed Valve Switch cannot be used to transfer fuel from one wing tank to the other, like in the real aircraft.

In the real aircraft: A crossflow valve is provided to balance fuel between the two wing tanks, especially in case of single engine operation. The crossflow valve is used in conjunction with the two standby (boost) pumps. During cross-flowing, the Crossflow Switch is set to OPEN while the Standby Pump Switch for the heavy wing is turned ON and the standby pump switch for the light wing is turned OFF.

Fuel Jettison



The GLJ Model 25 SE addon is equipped with a fuel jettison system. The fuel jettison system will jettison fuel from the wingtip tanks only, like in the real aircraft. It takes a few minutes to empty both wingtip tanks, depending on the remaining fuel. Fuel jettisoning can be interrupted at any time and will stop automatically when both wingtip tanks are empty. Fuel cannot be jettisoned from the wing tanks or from the center fuselage tank.

Due to some limitations in the simulation platforms, fuel will first be jettisoned from the left wingtip tank, then from the right wingtip tank. The pilot will need to compensate for the fuel imbalance until both tanks are emptied.

In the real aircraft: The fuel jettison system is applicable to the wingtip tanks only. Both wingtip tanks are emptied simultaneously. It takes about five minutes to empty both wing-

tip tanks. Very few Learjet 25D are equipped with a fuel jettison system because fuel is burned so quickly on this type of aircraft that fuel jettisoning is almost never required.

Fuel System Limitations (GLJ 25D)

- **Maximum ramp weight:** 15,300 lbs.
- **Maximum takeoff weight:** 15,000 lbs.
- **Maximum landing weight:** 13,300 lbs.
- **Zero fuel weight:** 11,400 lbs. including everything except fuel.
- **Maximum altitude with no jet or standby pumps:** 25,000 ft.
- **If fuel temperature is -30° or below:** Do not take off
- **Maximum wingtip tank landing weight:** 800 lbs. for each tank
- Do not crossfeed with Jet Pumps inoperative
- With Low Fuel Remaining Annunciator [2, fig. 4-30] ON, limit nose up attitude to a maximum of 25 degrees

Fuel System Controls, Lights and Annunciators

Left and Right Jet Pump Switches (electric fuel pump switches in the simulator) [11-12, fig. 4-43]

The two Jet Pump Switches control the motive flow valves and allow motive flow to their respective wingtip tank and wing tank jet pumps. They should always be in the **ON** position. These two switches control the electric fuel pumps in the simulator. There is one fuel pump for each engine. The fuel pressure annunciators [1, 4, fig. 4-30] should go out when the fuel pumps are operating.

Left and Right Motive Flow Valve Lights [10, 13, fig. 4-43]

These two amber lights next to the Jet Pump Switches monitor the position of their respective motive flow valve. If the position of the valve does not correspond to the position of

the switch, the light will come on. It is normal for the light to come on for about one second when the Jet Pump Switch is set, indicating that the motion flow valve is in transit.



Left and Right Standby (Boost) Pump Switches

[8-9, fig. 4-43]

The two Standby Pump Switches control the boost pumps. They are normally set to **OFF** except during crossfeeding or in the case of a jet pump failure. Regardless of the position of the switches, the boost pumps will be automatically energized when the fuselage tank switch is set to **FILL** or when the starter engaged (the boost pumps supply fuel during engine starts) and de-energized when the fuselage tank switch is set to **XFER**.

To feed both engines with fuel from the left wing tank only, set the Crossflow Switch [3, fig. 4-43] to **OPEN** (see below). Then set the Left Standby Pump Switch to **ON** and the Right Standby Pump Switch to **OFF**. This will isolate the right wing tank and both engines will be fed by the left wing tank.

To feed both engines with fuel from the right wing tank only, set the Crossflow Switch [3, fig. 4-43] to **OPEN** (see below). Then set the Left Standby Pump Switch to **OFF** and the Right Standby Pump switch to **ON**. This will isolate the left wing tank and both engines will be fed by the right wing tank.



Low Fuel Pressure Annunciators [1, 4, fig. 4-30]

These two red annunciators, marked L FUEL PRESS and R FUEL PRESS indicate low engine fuel pressure below 10 psi. (one for each engine). They should go OFF when the jet pumps or the standby (boost) pumps are operating, or after the engines have started.

Low Fuel Remaining Annunciator [2, fig. 4-30]

This red annunciator, marked LOW FUEL will illuminate when there is less than 50 gallons (approx. 335 pounds) of fuel in either wing tank - or in the center fuselage tank, if the Fuselage Tank Switch [6, fig. 4-43] is set to XFER. When there is less than 300 pounds of fuel in either wing tank and the annunciator is illuminated, it is time to switch to the center fuselage tank by turning the Fuselage Tank Switch to XFER.

Crossflow Switch (Crossfeed Switch in the simulator) [3, fig. 4-43]

In the real aircraft, this switch marked CROSSFLOW controls the crossflow valve allowing fuel to flow between the wing tanks. In the add-on, this switch controls the crossfeed valves which allow fuel from one wing tank to feed the opposite engine or both engines by "isolating" the other wing tank. In the simulator, the Crossflow (crossfeed) Switch cannot be used to transfer fuel from one wing tank to the other like in the real aircraft.

The Crossflow Switch must be used in conjunction with the two Standby Pump Switches [8-9, fig. 4-43] (see above).

To crossfeed fuel from the left wing tank to both engines, the Crossflow Switch must be set to **OPEN** and the Left Standby Pump Switch must be set to **ON** while the Right Standby Pump Switch is set to **OFF** (this will isolate the right tank and feed both engines from the left wing tank).

To crossfeed fuel from the right wing tank to both engines, the Crossflow Switch must be set to **OPEN** and the Left Standby Pump Switch must be set to **OFF** while the Right Standby Pump Switch is set to **ON** (this will isolate the left tank and feed both engines from the right wing tank).



This technique can be used to balance fuel between the two wingtip/wing tanks by feeding both engines from the heavy side until balance is achieved. It can also be used for single-engine operation (crossfeeding fuel to one engine only, if only one engine is running).

To stop crossfeeding fuel, the Crossflow Switch and the two Standby Pump Switches must be returned to **OFF**.

Crossfeed will not occur if both Standby Pump Switches are set to **ON** to prevent isolating both wing tanks which would cause engine starvation. Do not crossfeed fuel if the Jet Pumps are inoperative as engine starvation may also occur.

Crossfeed will not occur either if the Fuselage Tank Switch [6, fig. 4-43] (see below) is not in the **OFF** (middle) position.

Crossflow Valve Light (crossfeed valves light in the simulator)

[2, fig. 4-43]

In the simulator, this amber light indicates that the crossfeed valves are in transit. It is normal for this light to come on for about one second when the Crossflow (crossfeed) Switch is moved.

Crossflow Valve OPEN Annunciator (crossfeed annunciator in the simulator)

[6, fig. 4-37]



In the simulator, this annunciator, located on the copilot's instrument panel and marked FUEL XFLO, indicates that the crossfeed valves are positioned for cross-feeding fuel from one wing tank to one or to both engines.

Fuselage Tank Switch

[6, fig. 4-43]



In both the addon and the real aircraft, the fuselage tank is used as a storage tank only. In the real aircraft, fuel from the center fuselage tank must be pumped into the wing tanks to be used by the engines. In the simulator, due to software limitations, fuel must be *transferred* from the fuselage tank to the

engines directly, without passing through the wing tanks.

By default, the left engine uses fuel from the left wing tank and the right engine uses fuel from the right wing tank (fuel is automatically transferred from each wingtip tank to its respective wing tank). In the addon, the Fuselage Tank Switch is used to feed the engines from the center fuselage tank when fuel in the main wing tanks is critically low.

When the Fuselage Tank Switch is set to **XFER**, both engines are fed from the center fuselage tank. The addon's Fuselage Tank Switch cannot be used to transfer fuel from the center fuselage tank to the wing tanks, like in the real aircraft. The Fuselage Tank Switch is used to connect the engines to the center fuselage tank directly.

In the real aircraft, the switch is also used during filling of the center fuselage tank. The standby (boost) pumps automatically fill the fuselage tank when the Fuselage Tank Switch is set to **FILL**. This is normally done on the ground with both engines shut off during servicing and rarely in flight for CG considerations. When the tank is full, the pumps stop automatically and fuel is no longer transferred. In the addon, setting this switch to **FILL** has no special function except for monitoring if the center fuselage tank is full. Both engines will still be connected to their respective wing tank when the Fuselage Tank Switch is set to **FILL**.

In both the addon and the real aircraft, refueling is accomplished through a filler cap on top of each wingtip tank. In the simulator, refueling is achieved through the "Fuel and Payload" panel or by requesting a fuel truck ("**SHIFT+F**") in certain parking areas. Refer to your simulation platform's documentation for more details.

In the addon, engines are fed from their respective wing tank when the Fuselage Tank Switch is set to **OFF**, that is the left engine is fed from the left wing tank and the right engine is fed from the right wing tank. The Fuselage Tank Switch is set to **OFF** by default at the beginning of each flight and should remain in the **OFF** position until the fuel level in the wing tanks is critically low (below 300 pounds typically). Then the Fuselage Tank

Switch must be positioned to **XFER** for the engines to be fed from the center fuselage tank. Switching from the main wing tanks to the center fuselage tank is not done automatically and must be performed manually by the desktop pilot, a procedure similar to transferring fuel from the fuselage tank to the wing tanks in the real aircraft.

Known Issue: *The addon's fuel panel uses its own custom variables which to this date are not kept by the simulator when a flight is saved due to software limitations. For example, if the engines were both fed by the center fuselage tank when the flight was saved (Fuselage Tank Switch set to **XFER**), settings will return to their default state when the flight is reloaded, that is the Fuselage Tank Switch will return to its **OFF** position and the engines will be fed by their respective wing tank until the switch is returned to **XFER** again. Therefore, it is important to leave some fuel in the wing tanks before switching to the center fuselage tank to avoid engine starvation. This should be done as a standard procedure.*

Note: *By default, the Fuselage Tank Switch is set to **OFF** at the beginning of each flight, allowing both wing tanks to be selected and to feed their respective engine. This solves the old simulator issue where settings from a previous flight with another aircraft with a different tankage or engine configuration are kept at the beginning of a new flight and prevent the engines from starting or to be fed properly during a flight.*

Fuselage Tank Full Light [4, fig. 4-43]

When the Fuselage Tank Switch is set to **FILL**, this green light will come on if the center fuselage tank is full. This light is off when the Fuselage Tank Switch is set to **OFF** or to **XFER**.

Fuselage Tank Empty Light [7, fig. 4-43]

When the Fuselage Tank Switch is set to **XFER**, this white light will come on if the center fuselage tank is empty. This light is off when the Fuselage Tank Switch is set to **OFF** or to **FILL**.

Fuselage Tank Valves (unmarked) Light [5, fig. 4-43]

This amber light indicates that the fuselage tank valves are in transit. It is normal for this light to come on for about one second when the Fuselage Tank Switch is moved.

Fuselage Tank Transfer Pump ON Annunciator [26, fig. 4-30]

This annunciator, located in the main annunciator panel and marked **FUEL XFR**, indicates that the fuselage tank transfer pump is operating. In the simulator, this indicates that the engines are fed from the center fuselage tank.



Fuel Counter and Reset Button [14-15, fig. 4-43]

This counter, often called a “fuel totalizer”, indicates the total amount of fuel burned (in pounds) since the last engine start or reset. The reset button, when depressed, resets the counter to zero. The counter should be reset to zero before starting the first engine. The counter is powered by the main DC bus.

Fuel Tank Selector Knob [16, fig. 4-43]

This selector knob enables the pilot to read the remaining fuel quantity in each of the five tanks as well as the total system quantity, on the Fuel Quantity Gauge [17, fig. 4-43].



Note: This knob is not a fuel tank selector switch to assign fuel tanks to engines. It is used only in conjunction with the Fuel Quantity Gauge to select the tank for which the remaining fuel quantity can be read on the gauge.

Fuel Quantity Gauge

[17, fig. 4-43]

This gauge indicates the remaining fuel quantity (as weight) for the selected tank or for the total system in increments of 100 pounds and should be constantly monitored. Tank selection is made by rotating the Fuel Tank Selector Knob [16, fig. 4-43]. The gauge is powered by the main DC bus.

Fuel Jettison Switch

[1, fig. 4-43]



When set to **ON**, this switch is used to jettison fuel from the wingtip tanks only. It takes a few minutes to empty both wingtip tanks, depending on the remaining fuel. Fuel jettisoning can be interrupted at any time and will stop automatically when both wingtip tanks are empty. Fuel cannot be jettisoned from the wing tanks or from the center fuselage tank.

Note: Due to software limitations in the simulation platforms, fuel will first be jettisoned from the left wingtip tank, then from the right wing tip tank. The pilot will need to compensate for the fuel imbalance during fuel jettison, until both tanks are emptied.

Fuel Jettison Lights [both sides of the Fuel Jettison Switch]

[1, fig. 4-43]

These amber lights adjacent to the Fuel Jettison Switch indicates that the fuel jettison valves are energized.

FUEL SYSTEM PROCEDURES



Refueling

1. Battery switches [8-9, fig. 4-28] - **ON**.
2. All circuit breakers - Check **DEPRESSED**.
3. Fuselage Tank Switch [6, fig. 4-43] - **FILL**.

Note: In both the add-on and the real aircraft, refueling is accomplished through a filler cap on top of each wingtip tank. In the sim, refueling is achieved through the "Fuel and Payload" panel or by requesting a fuel truck ("**SHIFT+F**") in certain parking areas. Refer to your simulation platform's documentation for more details.

4. After fuselage tank is full as desired - the green Fuselage Tank Full Light [4, fig. 4-43] will come on when the fuselage tank is full -, set the Fuselage Tank Switch [6, fig. 4-43] to **OFF**. The green Fuselage Tank Full Light will come off.

In the real aircraft: During fuselage fill, the crossflow valve will open, both standby (boost) pumps will turn on and the fuselage transfer valve will open. When the fuselage tank is full, the crossflow valve will close, both standby pumps will turn off and the fu-

selage transfer valve will be closed automatically. The green Fuselage Tank Full Light will come on until the Fuselage Tank Switch is set to OFF.

Preflight

1. Left Jet Pump Switch [11, fig. 4-43] - **ON** and watch for the amber Motive Flow Valve Light [10, fig. 4-43] beside the left Jet Pump Switch to come on and then off while the motive flow control valve is in transit. Check that the left Low Fuel Pressure Annunciator [1, fig. 4-30] goes out.
2. Left Jet Pump Switch [11, fig. 4-43] - **OFF** and watch for the amber Motive Flow Valve Light [10, fig. 4-43] beside the left Jet Pump switch to come on and then off while the motive flow control valve is in transit.
3. Right Jet Pump Switch [12, fig. 4-43] - **ON** and watch for the amber Motive Flow Valve Light beside the right Jet Pump Switch to come on and then off while the motive flow control valve is in transit. Check that the right Low Fuel Pressure Annunciator [2, fig. 4-30] goes out.
4. Right Jet Pump Switch [12, fig. 4-43] - **OFF** and watch for the amber Motive Flow Valve Light beside the right Jet Pump Switch to come on and then off while the motive flow control valve is in transit.
5. Left Standby Pump Switch [9, fig. 4-43] - **ON**, check that the left Low Fuel Pressure Annunciator [1, fig. 4-30] goes out.
6. Left Standby Pump Switch [9, fig. 4-43] - **OFF**.
7. Right Standby Pump Switch [8, fig. 4-43] - **ON**, check that the right Low Fuel Pressure Annunciator [2, fig. 4-30] goes out.
8. Right Standby Pump Switch [8, fig. 4-43] - **OFF**.
9. Left Jet Pump Switch [11, fig. 4-43] - **ON**.
10. Right Jet Pump Switch [12, fig. 4-43] - **ON**.
11. Crossflow (crossfeed) Valve Switch [3,

fig. 4-43] - **OPEN** and check for the amber in-transit light beside the crossflow valve switch [2, fig. 4-43] to come on and then off while the crossflow valve is in transit.

12. Crossflow Valve Switch (crossfeed in the sim) [3, fig. 4-43] - **CLOSE**.
13. If the fuselage tank is full, set the Fuselage Tank Switch [6, fig. 4-43] to **FILL** and check for the green Fuselage Full Light [4, fig. 4-43] to come on. Then turn the switch to **OFF** and the green light will come off.

Engine Start (same for both engines)

1. When the Starter Generator Switch [6, 11, fig. 4.28] is set to **START**, the motive flow control valve closes, the standby pump is energized and the ignition is armed. When the throttle [1, 3, fig. 4-41] is released and set to **IDLE**, ignition comes on and fuel flow is obtained. When the Starter Generator Switch is set to **GEN**, the motive flow control valve opens, the standby pump is de-energized, ignition goes off, the generator comes on and the Low Fuel Pressure Annunciator [1,2, fig. 4-30] remains out.

Takeoff

1. Both Jet Pump Switches [11-12, fig. 4-43] - Check **ON**.
2. Both Standby Pump Switches [9-9, fig. 4-43] - Check **OFF**.
3. Crossflow (crossfeed) Valve Switch [3, fig. 4-43] - Check **CLOSE**.
4. Fuselage Tank Switch [6, fig. 4-43] - Check **OFF**.
5. Both Air Ignition Switches [1, 16, fig. 4-27] - **OFF**, except if required (see section 7).

Cruise

To switch from the wing tanks to the center fuselage tank when the remaining fuel quan-

tity in either wing tank is below 300 pounds and the Low Fuel Remaining Annunciator [2, fig. 4-30] is illuminated, proceed as follows:

1. Fuselage Tank Switch [6, fig. 4-43] - **XFER**. If there is more than 50 gallons of fuel (about 335 pounds) remaining in the center fuselage tank, the red Low Fuel Remaining Annunciator will go out. The green Fuselage Tank Transfer Pump ON Annunciator [26, fig. 4-30] will illuminate, indicating that the fuselage tank transfer pump is operating and that both engines are fed from the center fuselage tank.

Note: This procedure is similar to transferring fuel from the fuselage tank to the wing tanks in the real aircraft.

Crossfeed

To balance fuel between wing tanks, proceed as follows:

1. Fuselage Switch [6, fig. 4-43] - **OFF**.
2. Crossflow Valve Switch [3, fig. 4-43] - **OPEN**.
3. To crossfeed fuel from the left wing tank (heavy side) to both engines:
 - a. Left Standby Pump Switch [9, fig. 4-43] - **ON**.
 - b. Right Standby Pump Switch [8, fig. 4-43] - **OFF**.
4. To crossfeed fuel from the right wing tank (heavy side) to both engines:
 - a. Left Standby Pump Switch [9, fig. 4-43] - **OFF**.
 - b. Right Standby Pump Switch [8, fig. 4-43] - **ON**.
5. Monitor fuel balance as it takes little time for fuel to balance unless out of balance by large amounts.
6. When wing tanks are balanced, set both Standby Pump Switches [8-9, fig. 4-43] to **OFF**.
7. Crossflow Valve Switch [3, fig. 4-43] -

CLOSE.

Note: In the simulator, the Crossflow (crossfeed) Switch cannot be used to transfer fuel from one wing tank to the other, like in the real aircraft.

Single Engine Operation

To crossfeed fuel to operating engine, proceed as follows:

1. Fuselage Tank Pump Switch [6, fig. 4-43] - **OFF**.
2. Crossflow Valve Switch [3, fig. 4-43] - **OPEN**.
3. Standby Pump Switch [8 or 9, fig. 4-43] of operative engine - **OFF**.
4. Standby Pump Switch [8 or 9, fig. 4-43] of inoperative engine - **ON**.

AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)



The GLJ Model 25 SE addon is equipped with a modified J.E.T. FC-110 autopilot and a modified Collins FD 108 flight director. Both units have been modified from the ones installed in the real aircraft because of software limitations in the current simulation platforms, but also for the virtual pilot to benefit from additional AP/FD modes that are available in the simulator but not available in the real aircraft (refer to the comparison table on page 29, in this section, for more details).

Note: *Significantly modifying the simulator's built-in autopilot goes beyond the scope of this project aimed at producing a reasonably priced complex addon for the general public and the average user. As the simulation platforms evolve, so will the systems in future versions of this addon.*

Autopilot

The autopilot (AP) reduces the pilot's workload by flying the airplane to and maintaining desired altitudes, attitudes and headings. It can also capture and track VOR/ILS radio signals, among other functions.

The modified J.E.T. FC-110 autopilot installed in the GLJ Model 25 SE addon can:

- Level the wing so that the airplane does not turn
- Maintain a selected altitude
- Maintain a selected rate of climb or descent
- Maintain the aircraft's current pitch attitude
- Maintain a selected heading
- Follow a VOR radial
- Track a localizer or localizer back course
- Track the localizer and glide slope of an instrument landing system (ILS)
- Track a GPS course (and waypoints)
- Assist the pilot during takeoff and go-around
- Maintain a selected airspeed or Mach number
- Remove unwanted yaw (yaw damping)
- React in case of an overspeed or stall condition by automatically pulling or pushing the stick

The flight controller (FC-110 control panel) [2, fig. 4-42] is mounted in the center pedestal, below the fuel panel. The system requires AC, DC and avionics power: Battery [8-9, fig. 4-28] and/or Generator Switches [6, 11, fig. 4-

-28] **ON**, Inverter Switches [10, 12, fig. 4-27] **ON**, and Master Radio (avionics) Switch [14, fig. 4-27] **ON**.

The flight controller contains several mode buttons, the Autopilot Engage Button, the ON/OFF lights, the Turn Command Knob and the Pitch Command Wheel. Yaw damper ON/OFF buttons are also included. The dual yaw damper system is independent from the autopilot and additional controls are available in the yaw damper panel in the center pedestal, below the flight controller [4, fig. 4-42].



Autopilot effort indicators, normally installed in the main instrument panel in front of the pilot, are not available in the simulator and have been replaced by surface trim indicators [25, fig. 4-2].

In the real aircraft, the autopilot controls are separate from the flight director controls. In the GLJ Model 25 SE addon, the autopilot modes are interrelated with the flight director modes to comply with the way the autopilot and the flight director work together in the simulator. As a benefit for the virtual pilot, additional AP/FD modes are available by depressing Korry switches located in the main instrument panel.



A NAV1/GPS Switch [5, fig. 4-16] is provided in the main instrument panel for selecting which navigation signal - either from the NAV1 radio or from the installed navigation system (GPS/GNS/GTN) - is sent to the AFCS.

Autopilot Test Switches



Switches are provided in the center pedestal, between the main instrument panel and the throttle quadrant, to test the autopilot. These switches are functional and can be used to simulate standard procedures.

AFC/SS (Autopilot/Stability System) Test Switch

[10, fig. 4-41]

In the simulator, this 3-position switch, when set to the AFC/SS position, is used to test the bulbs in all the AFCS and flight director lights and annunciators. In the real aircraft, it also tests the AFCS stability system.

Autopilot Roll Monitor Test Button

[17, fig. 4-41]

This button, marked ROLL MON is used to test the autopilot disengage function when an improper electrical signal is introduced to the roll function. The button has two position: hold to TEST and a spring-loaded OFF position. In the simulator, pushing this button to TEST will disengage the autopilot.

Autopilot Pitch Trim Monitor Switch

[18, fig. 4-41]

This 3-position switch, marked TRIM MON

UP/DN, is used to test the autopilot disengage function when an improper electrical signal is introduced to the pitch function. The switch is spring-loaded to the middle, OFF position. In the simulator, setting this switch to UP or DN will disengage the autopilot.

Flight Director



The flight director (FD) helps the pilot do manually what the autopilot would do if it were engaged. It provides visual commands to the pilot to manually maintain a desired attitude, capture and maintain a desired heading, capture and maintain a desired VOR course, and capture and maintain an ILS course and glide path.

The flight director requires the pilot to select an operating mode. With the flight director turned ON and autopilot modes selected - but the autopilot not engaged - the flight director shows what the autopilot would do were it engaged. When both the flight director and the autopilot are **engaged**, the flight director shows what the autopilot is doing.

The modified Collins FD 108 flight director installed in the GLJ Model 25 SE add-on includes:

- A flight director power switch [6, fig. 4-22a; 2, fig. 4-22c]
- An attitude director indicator (ADI) [fig. 4-7]
- A horizontal situation indicator (HSI) [fig. 4-8]

- Course [1, fig. 4-8] and heading [2, fig. 4-8] selector knobs located on the HSI
- Mode selector panels with Korry switches [fig. 4-22a/b/c/d]
- Two annunciator panels [fig. 4-6]
- A pitch sync and other buttons located on the control yokes [fig. 4-50]

The flight director provides indication of airplane heading on the HSI and roll and pitch attitude and sideslip on the ADI.

Two yellow flight director command bars on the ADI [5, fig. 4-7] - sometimes called chevron or V-bars - indicate deviation from the suggested heading and pitch attitude. The idea is to move the yoke to keep the orange chevron [4, fig. 4-7] (that represents the aircraft) nestled just under the yellow command bars. In other words, to follow the command bars or to keep them centered.

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 command bars are biased out of view when the flight director is not engaged. The basic attitude reference mode is energized when AC and DC power is applied to the airplane but with no modes selected on the mode selector panels and on the flight controller.

The Flight Director Power Switch, marked FD



or FD ON/OFF, [6, fig. 4-22a; 2, fig. 4-22c] toggles the flight director ON and OFF.

Known issue: *On some occasions, it might be necessary to reset the flight director if the V-bars are not responding properly (sometimes after the autopilot has been toggled on and off). If you suspect that the flight director is not giving you correct indications, simply turn the Flight Director Power Switch to OFF, then back to ON again. This seems to be a simulator issue.*

Attitude Direction Indicator (ADI)



The attitude director indicator (ADI) [fig. 4-7] provides a presentation of the airplane attitude, localizer and glideslope deviation, bank angle, and airplane slip or skid.

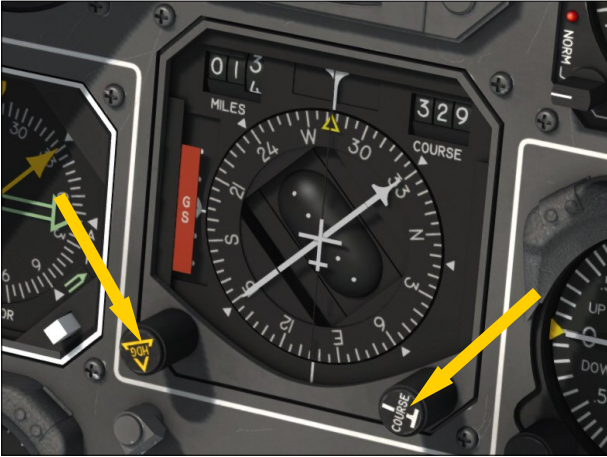
When the flight director is engaged, command bars on the ADI appear in view to provide the computed roll and pitch commands. These bars move up or down to command pitch, and clockwise or counterclockwise to command bank. The pilot must maneuver the airplane so that the airplane symbol (the orange chevron) is “flown into” the command bars and the two are aligned to satisfy the commands (see “Flight Director”, previous page).

Horizontal Situation Indicator (HSI)

The horizontal situation indicator (HSI) [fig. 4-8] displays airplane position and heading with respect to magnetic north, selected heading, slant range DME distance from a

selected station, lateral deviation from a selected VOR or localizer course, and vertical deviation from the center of a glideslope beam.

Two controls are located on the HSI:



Heading Selector Knob

[2, fig. 4-8]

Rotating the HDG selector knob sets the yellow heading marker (bug) to the desired heading as read on the azimuth card.

NAV1 Course Knob

[1, fig. 4-8]

The COURSE selector knob rotates the course arrow to a magnetic heading and/or selects a VOR or localizer course tuned on the NAV1 radio.

Autopilot/Flight Director Buttons, Switches, Knobs and Lights

While all the mode buttons in the real aircraft are solenoid engaged and stay depressed until canceled by other operations, the buttons in the GLJ Model 25 SE add-on are of the momentary type. When the ENGAGE button or any mode button in the flight controller is depressed, a light inside the button will illuminate and extinguish when the mode is disengaged, like in the real aircraft.

A/P (Autopilot Engage) Button and Light

[1, fig. 4-44]

When depressed, this (blue) button engages

the autopilot, captures and maintains the aircraft's pitch attitude and levels the wing, like in the real aircraft.

This is a very convenient feature, especially after takeoff. With a nose up pitch of about 15 to 20 degrees and speed stabilized, you can engage the autopilot and it will capture and keep the aircraft's attitude and level the wing. You can also engage the ATT Hold mode, if desired.



You can use the Autopilot Pitch Command Wheel [10, fig. 4-44] to control the pitch. You can also initiate a turn with the Autopilot Turn Command Knob [2, fig. 4-44] (this will disengage the wing leveler). Click either knob to reset, capture and maintain the aircraft's pitch attitude and level the wing.

Please remember that when the autopilot is engaged, the pilot cannot control the aircraft. Either the autopilot is controlling the aircraft, or the pilot is. When the autopilot is engaged, it controls both pitch and roll, and the flight director displays both pitch and roll commands.

Important: With this type of aircraft, the autopilot **should never be used for takeoff or landing**. If the autopilot was tested or engaged prior to takeoff, always remember to turn it off and check the elevator trim indicator [3, fig. 4-14] for the correct takeoff position (about one needle thickness below center). When engaged while the aircraft was on the ground, the autopilot might have tried to compensate by running the trim all the way nose up or nose down. If unnoticed, you may

lose control of the aircraft during takeoff. For the same reason, do not attempt to manually control the aircraft with the joystick while the autopilot is engaged. The autopilot will compensate by running the trim and could even disengage itself after hitting the trim limits. This may lead to very unpleasant situations.

Note: It is good practice to verify that the heading bug, altitude select, and course select are properly set before engaging the autopilot.

Known issue: Repositioning the add-on at altitude with the map while the autopilot is engaged may lead to unpredictable aircraft behavior. To avoid this issue, disengage the autopilot before repositioning the add-on with the map. This seems to be a simulator issue.

NAV1/GPS Switch

[5, fig. 4-16]

This switch, located in the main instrument panel, is used for selecting which navigation signal - either from the NAV1 radio or from the installed navigation system (GPS/GNS/GTN) - is sent to the AFCS.

If the NAV1/GPS Switch is set to **NAV**, the autopilot intercepts, captures and tracks the VOR course or localizer tuned on the NAV1 radio [fig. 4-19a/b] and set on the course needle on the HSI [8, fig. 4-8].



If the NAV1/GPS Switch is set to **GPS**, the autopilot will follow the programmed GPS course (from the installed navigation system) to each lateral waypoint in sequence. However, the GPS does not provide vertical guidance to the autopilot.

Note: Like in the real aircraft, the autopilot/flight director cannot track signals coming from the NAV2 radio.

Turn Command Knob

[2, fig. 4-44]

With the autopilot engaged, this knob will command bank angles, but it will disengage any horizontal mode that was engaged before (HDG, NAV, REV CRS, LOC, APPR). It will also disengage the Wing Leveler. Use the

mouse wheel to control the bank. Click the knob to center both the knob and the ailerons, to capture and maintain the aircraft's pitch and to level the wing.

REV CRS (Reverse Course Approach Mode) Button and Light

[3, fig. 4-44]

The REV CRS Button engages the autopilot Reverse Course Approach mode, enabling automatic tracking of a localizer (or GPS) back course for instrument approaches. The navigation radio must be tuned to a localizer frequency and when engaged, the function is similar to the APPR mode, except the glide slope is disabled and the autopilot's response to a localizer signal is **reversed**.

In the current simulation platforms, the APPR Switch [5, fig. 4-22a; 11, fig. 4-22d] will be illuminated when the REV CRS mode is engaged. This is because the simulator recognizes the REV CRS mode as an approach mode.

Depressing the REV CRS button will disengage the NAV and G/S modes, will turn on the flight director and will engage the WING LEV if the autopilot is disengaged.

NAV (Navigation Hold Mode) Button and Light

[4, fig. 4-44]

The NAV Button is pressed to engage the autopilot Navigation Hold mode, the autopilot automatic tracking of a VOR course, GPS course, or localizer for navigation. If the NAV1/GPS Switch [5, fig. 4-16] is set to **NAV**, the autopilot intercepts, captures and tracks the VOR course or localizer tuned on the NAV1 radio [fig. 4-19a/b] and set on the course needle on the HSI [8, fig. 4-8]. If the NAV1/GPS Switch is set to **GPS**, the aircraft captures and tracks the course to the next GPS waypoint.

Engaging the NAV Hold mode will disengage the LOC, APPR and REV CRS modes. It will also turn on the flight director and engage the WING LEV if the autopilot is disengaged.

HDG (Heading Hold Mode) Button and Light

[5, fig. 4-44]

The HDG Button is pressed to activate the Heading Hold mode of the autopilot. This mode commands the autopilot to turn the airplane as necessary and fly a heading selected by the position of the heading bug on the HSI [11, fig. 4-8]. In the simulator, this mode has priority over other horizontal modes including the NAV mode. It will also disengage the WING LEV, ATT and REV CRS modes, and will engage the flight director if the autopilot is disengaged.



G/S ARM (Glideslope Tracking Mode) Button and Light

[6, fig. 4-44]

When the G/S ARM Button is pressed, the autopilot will capture and track the ILS glideslope signal. For the G/S mode to function, the NAV1 radio [fig. 4-19a/b] must be tuned to a localizer frequency and an active glideslope signal must be present. In order for the autopilot to capture a glideslope, you must intercept it from below. Although it is possible to capture a glideslope from above, standard operating procedure is to intercept and capture glideslopes from below.



When the G/S mode is engaged, the NAV, REV CRS, LOC and SPD P modes are disengaged. The APPR mode will also be disengaged if the coupled approach mode is disengaged (G/S mode only). The flight director will be turned on and the WING LEV will engage if the autopilot is disengaged.

ALT (Altitude Hold Mode) Button

[7, fig. 4-44]

The ALT Button engages the autopilot Altitude Hold mode. When engaged, the aircraft climbs/descends to the altitude set on the Altitude Preselector [fig. 4-23] or on the AD-DU [fig. 4-11 b] at the rate set with the Vertical Speed Selector Knob [1, fig. 4-12]. By varying the selected vertical speed, pitch control is obtained. Because the Learjet 25 has an amazing climb performance, power management during climb is very important. When the ALT Hold mode is engaged, the ATT and SPD P modes are disengaged. The flight director will be turned on and the WING LEV will engage if the autopilot is disengaged.

Autopilot OFF Light

[8 fig. 4-44]

The amber Autopilot OFF Light is illuminated anytime the AFCS is powered up but the autopilot is not engaged.

Autopilot ON Light

[9, fig. 4-44]

The green Autopilot ON Light is illuminated when the autopilot is engaged with any pitch and/or roll mode engaged.

Pitch Command Wheel

[10, fig. 4-44]

When the autopilot is engaged and the Pitch Command Wheel is rotated, the autopilot will change the aircraft's pitch attitude in response to the pitch command rotation and will follow the flight director pitch angle. The ALT mode will disengage. Click the knob to reset, capture and maintain the pitch attitude, and level the wing.



Yaw Damper Selector Switch

[1, fig. 4-45]

The Yaw Damper Selector Switch in the yaw damper panel selects the primary yaw damper system when set to **PRI YAW DAMPER** and the secondary yaw damper system when set to **SEC YAW DAMPER**. Only one yaw damper system can be engaged at a time.

Secondary (Emergency) Yaw Damper Switch

[2, fig. 4-45]

The SEC YAW DAMPER ENGAGE Switch in the yaw damper panel engages or disengages the secondary yaw damper system in case of an emergency. To engage the secondary yaw damper, the Selector Switch in the yaw damper panel [1, fig. 4-45] must be set to **SEC YAW DAMPER**. Selecting the primary yaw damper will disengage the secondary yaw damper.



Autopilot Effort Indicators (surface trim indicators in the simulator)

[24, fig 4-2 and fig. 4-14]

In the real aircraft, an autopilot effort monitor senses the autopilot output signals (forces being applied to the autopilot servo-actuators). Autopilot effort indicators, normally installed in the main instrument panel in front of the captain, are not available in the current simulation platforms and have been replaced by surface trim indicators [25, fig. 4-2 and fig. 4-14]. We believe that installing surface trim indicators in front of the

Primary Yaw Damper Buttons

[11-12, fig. 4-44]

The **YAW DAMPER ON** Button engages the primary yaw damper system which helps eliminate unwanted aircraft yaw and keeps turns coordinated. Depressing the **YAW DAMPER OFF** Button will disengage the primary yaw damper system.

The GLJ Model 25 SE add-on is equipped with dual (primary and secondary) yaw damper systems, like in the real aircraft. Each system is completely independent and only one yaw damper system can be engaged at a time. To engage the primary yaw damper system, the Selector Switch on the yaw damper panel [1, fig. 4-45] must be set to **PRI YAW DAMPER**. Selecting the secondary yaw damper system will disengage the primary yaw damper system.



captain's seat is much more convenient than at the bottom of the center pedestal, like in the real aircraft.

Note: This panel is essentially a repeater of the Trim Indicator Panel installed in the center pedestal [7-9, fig. 4-45].

Important: If the autopilot is tested or engaged before flight, the autopilot will move the horizontal stabilizer (elevator trim) out of range for takeoff. Prior to takeoff, disengage the autopilot and set the elevator trim correctly for takeoff - normally about one needle thickness below center. The autopilot should never be used for takeoff.

Autopilot Vertical Speed Selector Knob [1,3, fig. 4-12]



The Vertical Speed Selector Knob (and bug) on the Vertical Speed Indicator (VSI) enables the selection of a climb/descent rate for the autopilot to use when climbing or descending to the altitude set on the Altitude Preselector [3-4, fig. 4-23; 2-3, fig. 4-11b] when the ALT Hold mode is engaged (by default, 1,000 ft./min.). By varying the selected vertical speed with the Vertical Speed Selector Knob [1, fig. 4-12], pitch control is obtained. Because the Learjet 25 has an amazing climb performance, power management during climb is very important.

GA (Takeoff/Go-Around) Button [21, fig. 4-41]

In the simulator, depressing the GA Button, located in the throttle quadrant, disengages



all autopilot pitch, roll and speed modes, turns on the flight director and engages the autothrottle Takeoff/Go-Around mode. Throttles automatically advance to takeoff power, the WING LEV is engaged, vertical speed is set to 4,500 fpm, and the flight director indicates takeoff pitch. The pilot still has manual control of the pitch until the autopilot is engaged. The autopilot can be engaged after the aircraft has taken off and will follow the flight director takeoff pitch.

Releasing the button disengages the TO/GA mode, engages the autopilot (if not already engaged), levels the wing, and captures and maintains the aircraft's pitch attitude. The TO/GA mode can be used for takeoff, or for a go-around on landing.

Important: The autopilot should never be engaged before depressing the GA button for takeoff. The elevator trim should always be checked and set correctly before takeoff.

Note: The autothrottle is not available in the real aircraft.

A/P PITCH REL (Autopilot Pitch Release) Button [23, fig. 4-41]

When depressed, this button, located on the throttle quadrant, disengages the autopilot pitch and speed modes (ATT, ALT, C/APPR, G/S, SPD/MACH, SPD P). Releasing the button engages the autopilot (if not already engaged), captures and maintains the aircraft's pitch attitude and engages the WING LEV.



case of an overspeed condition. When the aircraft recovers from an overspeed or stall condition, the stick nuder/puller releases and the autopilot maintains the pitch attitude and levels the wing. The pilot may compensate with the Autopilot Pitch Command Wheel [10, fig. 4-44], if needed. By default, this switch is set to ON.

Control Yoke Buttons



While it may not be easy to click buttons on a moving yoke [fig. 4-50] during a simulated flight, you may program the switches and buttons on your controller (joystick/yoke) to trigger some of the actions described below, such as temporarily disconnecting the autopilot or some individual modes. Refer to the documentation included with your simulation platform and with your controller for instructions on how to assign simulator commands to buttons and switches on your controller.

Stick Nudger/Puller

Autopilot Stick Nudger/Puller Switch [20, fig. 4-41]

This switch, marked STICK N/P, is used to toggle on/off the autopilot stick nudger (pusher)/puller. If this switch is set to ON, the autopilot will automatically push the stick in case of a stall condition or pull the stick in

Four-Way Trim Switch [4, fig. 4-50]

In the real aircraft, with the autopilot engaged and the center arming button [3, fig. 4-50] depressed, this four position switch (similar to a directional pad on a video game controller) is used to change the attitude of the aircraft - in pitch and roll - when the autopilot pitch, roll and speed modes are temporarily disengaged. This switch is disabled in the simulator. However, buttons may be programmed on your controller for pitch and roll trim. Refer to the documentation included with your simulation platform and with your controller for instructions.

Trim Switch Arming Button

[3, fig. 4-50]

When this button at the center of the four-way trim switch is momentarily depressed, the autopilot and all pitch, roll and speed modes are disengaged. Releasing the button reengages the autopilot, levels the wing and maintains the aircraft's pitch attitude.

Maneuver Control Button

[5, fig. 4-50]

Depressing this button in the simulator momentarily disconnects the autopilot pitch, roll and speed modes. Releasing the button reengages the autopilot (if not already engaged), levels the wing and maintains the aircraft's pitch attitude.

Pitch Sync Button

[6, fig. 4-50]

When depressed, this button disengages the autopilot pitch and speed modes. Releasing the button reengages the autopilot (if not already engaged), levels the wing and maintains the aircraft's pitch attitude.

Mode Selector Panels



Additional autopilot/flight director modes are available by depressing Korry switches in the mode selector panels located in the main instrument panel [fig. 4-22a/b/c/d].

The light indicates that the mode is engaged.

A/P (Autopilot Engage) Switch and Light

[1, fig. 4-22a; 1, fig. 4-22c]

Same as the A/P ENGAGE Button in the flight controller (see page 19, in this section).

ALT (Altitude Hold Mode) Switch and Light

[2, fig. 4-22a; 3, fig. 4-22c]

Same as the ALT Hold Mode Button in the flight controller (see page 21, in this section).

HDG (Heading Hold Mode) Switch and Light

[3, fig. 4-22a; 5, fig. 4-22c]

Same as the HDG Hold Mode Button in the flight controller (see page 21, in this section).

NAV LOC (Navigation/Localizer Hold Mode) Switch and Light

[4, fig. 4-22a; 7, fig. 4-22c]

Same as the NAV Hold Mode Button in the flight controller (see page 20, in this section).

LOC ("Localizer Only" Approach Mode) Switch and Light

[5, fig. 4-22b; 9, fig. 4-22d]

The LOC Switch disengages the autopilot NAV and G/S modes and engages the "Localizer Only" approach mode, enabling automatic tracking of a VOR course, GPS course or localizer for instrument approaches. Localizer capture is identical with the NAV Hold mode.

If the NAV1/GPS Switch on the main instrument panel [5, fig. 4-16] is set to **NAV**, the autopilot intercepts, captures and tracks the VOR course, localizer and glideslope tuned on the NAV1 radio and set on the course needle on the HSI [8, fig. 4-8]. If the NAV1/GPS Switch is set to **GPS**, the autopilot will follow the programmed GPS course to each lateral waypoint in sequence.

When the LOC mode is engaged, the flight director is turned on and the WING LEV is engaged if the autopilot is disengaged.

In the current simulation platforms, the APPR Switch [5, fig. 4-22a; 11, fig. 4-22d] will be illuminated when the LOC mode is engaged. This is because the simulator recognizes the

LOC mode as an approach mode.

APPR (Coupled Approach Mode) Switch and Light

[5, fig. 4-22a; 11, fig. 4-22d]

The APPR Switch disengages the NAV mode and engages the autopilot Coupled (navigation plus glideslope) Approach mode or C/APPR, enabling automatic tracking of a VOR course, GPS course, localizer and glideslope for instrument approaches. Localizer capture in the C/APPR mode is identical with the NAV or LOC modes. In addition, the C/APPR mode provides for glideslope arm and capture.

If the NAV1/GPS Switch on the main instrument panel [5, fig. 4-16] is set to **NAV**, the autopilot intercepts, captures and tracks the VOR course, localizer and glideslope tuned on the NAV1 radio and set on the course needle on the HSI [8, fig. 4-8]. If the NAV1/GPS Switch is set to **GPS**, the autopilot will follow the programmed GPS course to each lateral waypoint in sequence. However, the GPS does not provide vertical (G/S) guidance to the autopilot.

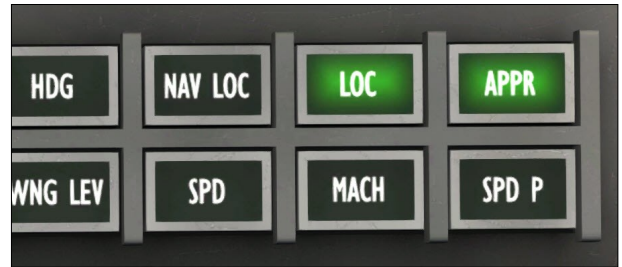
Engaging the C/APPR mode in the simulator will disengage the NAV and SPD P modes, and will turn on the flight director and engage the wing leveler if the autopilot is disengaged.

For G/S ARM mode to function, the NAV1 radio must be tuned to a localizer frequency and an active glideslope signal must be present. 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 sometimes recommended that the interception be initiated on HDG Hold mode until a shallow interception angle is established.

In order for the autopilot to capture a glideslope, you must intercept it from below. Although it is possible to capture a glideslope from above, standard operating procedure is to intercept and capture glideslopes from below.

In the current simulation platforms, the APPR Switch will be illuminated when the LOC mode is engaged but not when the G/S (only) mode is engaged. This is because the simula-



tor recognizes the LOC mode as an approach mode. Following the same logic, the simulator does not recognize the G/S mode as a true approach mode.

When the LOC “Localizer Only” approach mode is engaged, the G/S mode is disengaged and the G/S Arm Button [6, fig. 4-44] will be off. Both the LOC and APPR switches will still be illuminated.

When the APPR Switch is depressed, both the LOC approach mode and the G/S mode are engaged in a **coupled approach** mode (C/APPR). Both the LOC and APPR switches will still be illuminated.

This may be a bit confusing at first, but the logic makes sense.

When the APPR mode is engaged, the flight director is turned on and the WING LEV is engaged if the autopilot is disengaged. When the APPR mode is disengaged, both the LOC and G/S modes are disengaged.

The flight director NAV ARM (or NAV CAPT) and GS ARM (or GS CAPT) annunciators [fig. 4-6] will both be illuminated when the C/APPR (Coupled Approach) mode is engaged. If the LOC mode is engaged, only the NAV ARM (or NAV CAPT) annunciators will be illuminated.

SPD (Airspeed Hold Mode) Switch and Light

[1, fig. 4-22b; 8, fig. 4-22c]

This switch, when depressed, will engage the autopilot Airspeed Hold mode. The SPD Hold mode maintains the aircraft at the indicated airspeed that existed when the switch was depressed. The SPD Switch must be used at altitudes below 29,000 feet. Like in the real aircraft, above 29,000 feet, the autopilot will automatically switch to the Mach Hold mode.

In the simulator, the SPD Hold function is assumed by the autothrottle.

Note: The real Gates Learjet Model 25 is not equipped with an autothrottle for SPD/MACH Hold, even though we give our users the option to use the autothrottle that is readily available in the current simulation platforms. We know purists may find this feature unrealistic in the case of the Learjet 25 (the autopilot in the real aircraft maintains speed/Mach by varying the aircraft's pitch) but the vast majority of our users still appreciate the convenience of an autothrottle, especially when learning to fly the aircraft when there is so much to do. However, if you prefer not to use the autothrottle to better conform to the mode of operation of the real aircraft, we now give you the option to use the new "Speed Hold by Pitch" mode with its own limitations (see right).

MACH (Mach Hold Mode) Switch and Light [2, fig. 4-22b; 10, fig. 4-22d]

This switch, when depressed, will engage the autopilot MACH Hold mode. The MACH Hold mode maintains the aircraft at the Mach number that existed when the switch was depressed. The MACH Hold Switch must be used at altitudes above 29,000 feet. Like in the real aircraft, below 29,000 feet, the autopilot will automatically switch to the SPD Hold mode.

In the simulator, Mach hold is assumed by the autothrottle.

See *note, above*.

WING LEV (Wing Leveler) Switch and Light [3, fig. 4-22b; 6, fig. 4-22c]

The WING LEV Switch disengages the HDG, and REV CRS modes and engages the Wing Leveler which keeps the aircraft's wing level. The Wing Leveler is engaged automatically when the autopilot and/or some AP/FD modes are engaged. In v3.0 of the GLJ Model 25 SE add-on, the WING LEV mode is no longer engaged automatically when the ATT Hold mode (right) is engaged. The flight director is turned on when the WING LEV is engaged and the autopilot is disengaged.

ATT (Attitude Hold Mode) Switch and Light [4, fig. 4-22b; 4, fig. 4-22c]

In the simulator, the ATT Hold Switch disengages the HDG and REV CRS modes and en-

gages the Attitude Hold mode which keeps the aircraft's pitch at the state that existed when the switch was depressed. By turning the Pitch Command Wheel [10, fig. 4-44] you can control the pitch when the ATT Hold mode is engaged.

Depressing the ATT Switch will also turn on the flight director if the autopilot is disengaged. In v3.0 of the GLJ Model 25 SE add-on, the WING LEV mode is no longer engaged automatically when the ATT Hold mode is engaged.

Note: In the current simulation platforms, the ATT Hold mode only captures and maintains the pitch, not the pitch and the roll.

SPD P ("Speed Hold by Pitch" Mode) Switch and Light [12, fig. 4-22d]

This switch, when depressed, disengages all autopilot vertical modes and engages the "Speed Hold by Pitch" (SPD P) mode.

Note: Not available in the Classic cockpit configuration.

The "Speed Hold by Pitch" mode is a legacy autopilot mode, arguably a precursor to what eventually became the "Flight Level Change" mode, which maintains the airspeed by varying the aircraft's pitch in climb or descent. However, it must not be confused with the latter. The SPD P mode in the Gates Learjet Model 25 is not a "Flight Level Change" mode, nor a Vertical Speed (VS) mode.

Because the aircraft will pitch up and down to maintain speed, thus creating unavoidable oscillations, this mode is not recommended for level flight and cannot be used concurrently with the autopilot SPD/Mach, ALT, ATT, G/S and C/APPR modes, for obvious reasons.

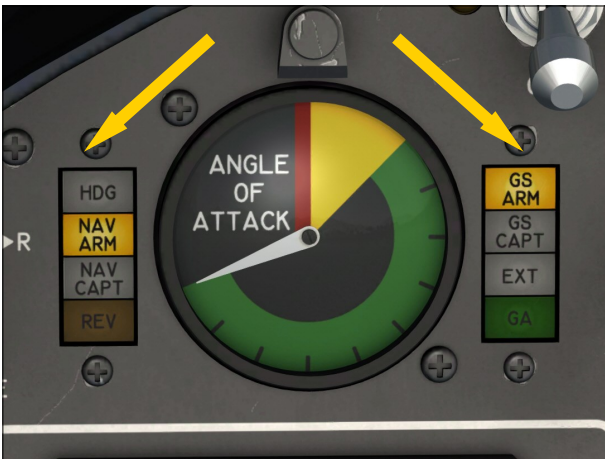
Please remember that the SPD P mode is not an autothrottle, nor a "magic" autopilot mode. The pilot is still in control of the aircraft, maintaining attitude and vertical speed with stick and throttle, while the PID controller of the SPD P mode will try its best to maintain airspeed by varying the aircraft's pitch. The only inputs that are used by the controller are the airspeed (at any given time for calculating the acceleration) and the aircraft's pitch.

Rapid acceleration or deceleration, caused by excessive movements of the stick or throttles, will be compensated heavily by the PID controller, causing large oscillations that may lead to stall, (VS) overspeed or loss of control. Be gentle with the controls when the SPD P mode is engaged.

Needless to say, the “Speed Hold by Pitch” mode is tricky to fly with, and you must be extremely careful when it is engaged. Nevertheless, this mode may be very helpful when ATC requests you to maintain a specified airspeed in a climb or descent. It was the only speed hold mode that was available in selected models of Learjet 20 Series aircraft.

Note: You also have the option to use the simulator’s autothrottle for maintaining speed/Mach with less limitations, although this may not be realistic in the case of the Learjet 25.

Flight Director Annunciators



The flight director annunciators are located each side of the angle-of-attack indicators [5, fig. 4-6] (in both the captain’s and the copilot’s instrument panels).

HDG (Heading Hold Mode) Annunciator [4, fig. 4-6]

This white annunciator, when illuminated, indicates that the HDG Hold mode is engaged.

NAV ARM (Navigation Arm) Annunciator [3, fig. 4-6]

In the simulator, this amber annunciator, when illuminated, indicates that one of the NAV/LOC/APPR/REV CRS modes is engaged but that a course signal has not yet been captured. When course capture is achieved, the NAV ARM Annunciator will go off and the NAV CAPT Annunciator (below) will illuminate.

NAV CAPT (Course Capture) Annunciator [2, fig. 4-6]

This white annunciator, when illuminated, indicates that course capture is achieved.

REV (Reverse Course Mode) Annunciator [1, fig. 4-6]

This amber annunciator, when illuminated, indicates that the REV CRS mode is engaged.

GS ARM (Glideslope Arm) Annunciator [6, fig. 4-6]

In the simulator, this amber annunciator, when illuminated, indicates that either the (coupled) APPR mode or the G/S mode is engaged but that a glideslope has not yet been captured. When the glideslope is captured, the GS ARM Annunciator will go off and the GS CAPT Annunciator (below) will illuminate. Glideslope capture is independent of localizer capture. Glideslope capture is possible when the aircraft is approaching the glideslope from below or from above the actual glideslope.

GS CAPT (Glideslope Capture) Annunciator [7, fig. 4-6]

This white annunciator, when illuminated, indicates that glideslope capture is achieved.

EXT (Course and Glideslope Capture) Annunciator [8, fig. 4-6]

This white annunciator, when illuminated, indicates that both navigation course and glideslope are captured.

GA (Takeoff/Go-Around Mode) Annunciator [9, fig. 4-6]

This green annunciator, when illuminated, indicates that the Takeoff/Go-Around mode is engaged.

AP/FD OPERATION COMPARED TO THE REAL AIRCRAFT

The GLJ Model 25 SE addon uses the autopilot and the flight director that are already integrated to your simulation platform. While we have modified some of the logic that governs the interrelations between the different AP/FD modes of operation to make these systems similar to the ones installed in the real aircraft, there are still some differences that persist. This is for the most part due to how the autopilot works in the simulator. Please note that because of software limitations in the current simulation platforms, the new

logic only applies to the AP/FD switches, buttons and knobs in the virtual cockpit. The new logic won't apply to the simulator's keyboard shortcuts that have their own built-in logic. If you prefer a mode of operation that is closer to the one with the real aircraft, please use the controls in the virtual cockpit and not the keyboard shortcuts. If you prefer the default AP/FD logic from the simulator, you can use the keyboard shortcuts.

Below is a detailed comparison between the autopilot and the flight director in the GLJ Model 25 SE addon and the same systems installed in the real aircraft.

Autopilot/Flight Director Comparison

AP/FD Mode or Function	Real Gates Learjet 25 Aircraft J.E.T FC-110 Autopilot/Collins FD 108 Flight Director		GLJ Model 25 SE Addon Modified Prepar3D or FSX Autopilot/Flight Director	
	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset
ENGAGE AP	<ul style="list-style-type: none"> ■ Illuminated when the AP is engaged ■ Engages the AP ■ FD already on ■ Engages pitch and roll axes, maintains heading and levels wing 	<ul style="list-style-type: none"> ■ Off when the AP is disengaged ■ Disengages the AP ■ Disengages pitch and roll axes 	<ul style="list-style-type: none"> ■ Illuminated when the AP is engaged ■ Engages the AP ■ Captures and maintains the aircraft's pitch attitude ■ Engages the WING LEV if the flight director is off ■ Disengages ALT (can be reengaged later) 	<ul style="list-style-type: none"> ■ Off when the AP is disengaged ■ Disengages the AP ■ Disengages all modes (except speed modes) if the FD is off
FD	<ul style="list-style-type: none"> ■ The FD becomes active when the AFCS is powered up ■ Basic attitude reference provided when energized 	<ul style="list-style-type: none"> ■ The FD is off when the AFCS is off 	<ul style="list-style-type: none"> ■ Illuminated when the FD is on ■ Turns on the FD ■ Engages the WING LEV if the autopilot is disengaged 	<ul style="list-style-type: none"> ■ Off when the FD is off ■ Turns off the FD and all modes (except speed modes) if the AP is disengaged
REV CRS	<ul style="list-style-type: none"> ■ Illuminated when REV CRS is engaged ■ Engages REV CRS ■ Disengages HDG 	<ul style="list-style-type: none"> ■ Off when REV CRS is disengaged ■ Disengages RV CRS 	<ul style="list-style-type: none"> ■ Illuminated when REV CRS is engaged ■ Engages REV CRS ■ Turns on the FD and engages the WING LEV if the AP is disengaged ■ Engages LOC, APPR ■ Disengages NAV, G/S 	<ul style="list-style-type: none"> ■ Off when REV CRS is disengaged ■ Disengages REV CRS
NAV or NAV LOC	<ul style="list-style-type: none"> ■ Illuminated when NAV LOC is engaged ■ Engages NAV LOC ■ Disengages HDG ■ NAV and LOC modes are combined 	<ul style="list-style-type: none"> ■ OFF when NAV LOC is disengaged ■ Disengages NAV LOC 	<ul style="list-style-type: none"> ■ Illuminated when NAV is engaged ■ Engages NAV ■ Turns on the FD and engages the WING LEV if the AP is disengaged ■ Disengages LOC, C/APPR, REV CRS 	<ul style="list-style-type: none"> ■ Off when NAV is disengaged ■ Disengages NAV

Continued on next page...

AP or FD Mode or Function	Real Gates Learjet 25 Aircraft J.E.T FC-110 Autopilot/Collins FD 108 Flight Director		GLJ Model 25 SE Addon Modified Prepar3D or FSX Autopilot/Flight Director	
	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset
LOC-only Approach	<ul style="list-style-type: none"> Not available NAV LOC mode used instead 	<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Illuminated when LOC is engaged Engages LOC (localizer only) approach mode Turns on the FD and engages the WING LEV if the AP is disengaged Engages APPR Disengages G/S, NAV 	<ul style="list-style-type: none"> Off when LOC is disengaged Disengages LOC, APPR, REV CRS
APPR Or C/APPR	<ul style="list-style-type: none"> Illuminated when C/APPR is engaged Engages C/APPR (NAV+G/S) Disengages SPD P 	<ul style="list-style-type: none"> Off when C/APPR is disengaged Disengages C/APPR (NAV+G/S) 	<ul style="list-style-type: none"> Illuminated when APPR or C/APPR (coupled approach) are engaged Engages C/APPR (LOC+G/S) Turns on the FD and engages the WING LEV if the AP is disengaged Disengages NAV, SPD P (when in C/APPR mode) 	<ul style="list-style-type: none"> Off when APPR or C/APPR (coupled approach) are disengaged Disengages APPR, C/APPR Disengages LOC, G/S, REV CRS
HDG	<ul style="list-style-type: none"> Illuminated when HDG is engaged Engages HDG Disengages NAV, REV CRS 	<ul style="list-style-type: none"> Off when HDG is disengaged Disengages HDG 	<ul style="list-style-type: none"> Illuminated when HDG is engaged Engages HDG (with priority) Turns on the FD if the AP is disengaged Disengages REV CRS (can be reengaged later), ATT, WING LEV 	<ul style="list-style-type: none"> Off when HDG is disengaged Disengages HDG
G/S ARM	<ul style="list-style-type: none"> Illuminated when G/S is engaged Engages G/S capture and tracking 	<ul style="list-style-type: none"> Off when G/S is disengaged Disengages G/S capture and tracking 	<ul style="list-style-type: none"> Illuminated when G/S is engaged Engages G/S capture and tracking Turns on the FD and engages the WING LEV if the AP is disengaged Disengages SPD P, REV CRS, NAV (can be reengaged later), LOC, APPR (but G/S is engaged when C/APPR is engaged) 	<ul style="list-style-type: none"> Off when G/S is disengaged Disengages G/S, NAV Disengages C/APPR
ALT	<ul style="list-style-type: none"> Illuminated when ALT is engaged Engages ALT Disengages SPD P 	<ul style="list-style-type: none"> Off when ALT is disengaged Disengages ALT 	<ul style="list-style-type: none"> Illuminated when ALT is engaged Engages ALT Turns on the FD and engages the WING LEV if the AP is disengaged Disengages ATT, SPD P 	<ul style="list-style-type: none"> Off when ALT is disengaged Disengages ALT
ATT	<ul style="list-style-type: none"> Not available Pitch axis engaged when the AP is engaged, maintaining pitch attitude 	<ul style="list-style-type: none"> Not available Pitch axis disengaged when the AP is disengaged 	<ul style="list-style-type: none"> Illuminated when ATT is engaged Captures and maintains the airplane's pitch attitude Engages ATT Turns on the FD if the AP is disengaged Disengages ALT, HDG, REV CRS (can be reengaged later), SPD P 	<ul style="list-style-type: none"> Off when ATT is disengaged Disengages ATT

Continued on next page...

AP or FD Mode or Function	Real Gates Learjet 25 Aircraft J.E.T FC-110 Autopilot/Collins FD 108 Flight Director		GLJ Model 25 SE Addon Prepar3D or FSX Autopilot/Flight Director	
	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset
WING LEV	<ul style="list-style-type: none"> Not available Roll axis engaged when the AP is engaged, leveling the wing 	<ul style="list-style-type: none"> Not available Roll axis disengaged when the AP is disengaged 	<ul style="list-style-type: none"> Illuminated when the WING LEV is engaged Engages the WING LEV Turns on the FD if the AP is disengaged Levels the wing Disengages HDG, REV CRS (can be reengaged later) 	<ul style="list-style-type: none"> Off when the WING LEV is disengaged Disengages the WING LEV
OFF Light	<ul style="list-style-type: none"> Illuminated when the AP has DC/AC power but is not engaged 	<ul style="list-style-type: none"> Off when the AP is not powered up or is engaged 	<ul style="list-style-type: none"> Illuminated when the AP has DC/AC power but is not engaged 	<ul style="list-style-type: none"> Off when the AP is not powered up or is engaged
ON Light	<ul style="list-style-type: none"> Illuminated when the AP has DC/AC power with any autopilot pitch and/or roll axis engaged 	<ul style="list-style-type: none"> Off when the AP is not powered up or none of the pitch and/or roll axes are engaged 	<ul style="list-style-type: none"> Illuminated when the AP is engaged with any autopilot pitch and/or roll mode engaged 	<ul style="list-style-type: none"> Off when the AP is not engaged or none of the pitch and/or roll modes are engaged
Turn Command Knob	<ul style="list-style-type: none"> Commands bank angles up to 30 degrees Disengages all horizontal modes if the AP is engaged 	<ul style="list-style-type: none"> Knob must be in detent mode (centered) for the AP to engage horizontal modes 	<ul style="list-style-type: none"> Commands bank angles, AP must be engaged Disengages all horizontal modes if AP is engaged: HDG, NAV, REV CRS, WING LEV, LOC, APPR 	<ul style="list-style-type: none"> Centers the knob and reset the ailerons when clicked Engages the AP Captures and maintains the aircraft's pitch attitude Engages the WING LEV
Pitch Command Wheel	<ul style="list-style-type: none"> Changes the aircraft's pitch attitude when the AP is engaged Disengages SPD P, ALT, C/APPR, G/S 		<ul style="list-style-type: none"> Changes the aircraft's pitch attitude if the AP and/or FD are engaged/on Changes the FD pitch angle (up or down) Disengages ALT 	<ul style="list-style-type: none"> Centers the wheel when clicked Engages the AP (if not engaged) Captures and maintains the aircraft's pitch attitude Engages the WING LEV
SPD/MACH	<ul style="list-style-type: none"> Autothrottle not available 	<ul style="list-style-type: none"> Autothrottle not available 	<ul style="list-style-type: none"> Illuminated when SPD/MACH is engaged Engages SPD/MACH (autothrottle) Maintains airspeed or Mach Disengages SPD P Independent from AP/FD 	<ul style="list-style-type: none"> Off when SPD/MACH is disengaged Disengages SPD/MACH
SPD P	<ul style="list-style-type: none"> Engages SPD P Maintains speed (or Mach above 29,000 ft.) during climb or descent by varying the aircraft's pitch 	<ul style="list-style-type: none"> Off when SPD P is disengaged Disengages SPD P 	<ul style="list-style-type: none"> Illuminated when SPD P is engaged Engages SPD P Maintains airspeed or Mach during climb or descent by varying the aircraft's pitch Disengages autothrottle and all vertical modes: SPD/MACH, ATT, ALT, C/APPR, G/S Independent from AP/FD 	<ul style="list-style-type: none"> Off when SPD P is disengaged Disengages SPD P
Throttle Quadrant Pitch Release Button	<ul style="list-style-type: none"> Disengages all pitch and speed modes Allows the aircraft's pitch attitude to be changed manually 	<ul style="list-style-type: none"> Maintains the pitch attitude and levels the wing 	<ul style="list-style-type: none"> Disengages all pitch and speed modes: ALT, ATT, C/APPR, G/S, SPD/MACH, SPD P Allows the aircraft's pitch attitude to be changed manually 	<ul style="list-style-type: none"> Engages the AP (if not engaged) Captures and maintains the aircraft's pitch attitude Engages the WING LEV

Continued on next page...

AP or FD Mode or Function	Real Gates Learjet 25 Aircraft J.E.T FC-110 Autopilot/Collins FD 108 Flight Director		GLJ Model 25 SE Addon Prepar3D or FSX Autopilot/Flight Director	
	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset	Engaged, ON, Depressed or Moved	Disengaged, OFF, Released or Reset
Throttle Quadrant TA/GA Button	<ul style="list-style-type: none"> Disengages all pitch, roll and speed modes Engages the pitch axis The AP follows the FD takeoff pitch Pilot controls power (no autothrottle) and speed 	<ul style="list-style-type: none"> Maintains the pitch attitude and levels the wing 	<ul style="list-style-type: none"> Disengages all pitch, roll and speed modes: ALT, ATT, WING LEV, LOC, APPR, G/S, NAV, HDG, REV CRS, SPD/MACH, SPD P Engages the TA/GA mode Throttles advance to takeoff power (autothrottle mode) Vertical speed is set to 4,500 fpm Engages the WING LEV The AP follows the FD take-off pitch when engaged (after takeoff) 	<ul style="list-style-type: none"> Disengages TA/GA Engages the AP (if not engaged) Captures and maintains the aircraft's pitch attitude Engages the WING LEV
Yoke Maneuver Control Button	<ul style="list-style-type: none"> Disengages all pitch, roll and speed modes Allows the aircraft to be flown manually 	<ul style="list-style-type: none"> Maintains the pitch attitude and levels the wing 	<ul style="list-style-type: none"> Disengages all pitch, roll and speed modes: ALT, ATT, WING LEV, LOC, APPR, G/S, NAV, HDG, REV CRS, SPD/MACH, SPD P Allows the aircraft to be flown manually 	<ul style="list-style-type: none"> Engages the AP (if not engaged) Captures and maintains the aircraft's pitch attitude Engages the WING LEV
Yoke Pitch Sync Button	<ul style="list-style-type: none"> Disengages all pitch and speed modes: ALT, C/APPR, G/S, SPD P Allows the aircraft's pitch attitude to be changed manually 	<ul style="list-style-type: none"> Maintains the pitch attitude and levels the wing 	<ul style="list-style-type: none"> Disengages all pitch and speed modes: ATT, ALT, C/APPR, G/S, SPD/MACH, SPD P Allows the aircraft's pitch attitude to be changed manually 	<ul style="list-style-type: none"> Engages the AP (if not engaged) Captures and maintains the aircraft's pitch attitude Engages the WING LEV
Yoke Trim Switch Arming Button	<ul style="list-style-type: none"> Disengages the AP and all pitch, roll and speed modes Allows for the Four-Way Trim Switch to be actuated to change the attitude of the aircraft manually (pitch and roll) 	<ul style="list-style-type: none"> Reengages the AP, maintains the pitch attitude and levels the wing 	<ul style="list-style-type: none"> Disengages the AP and all pitch, roll and speed modes: ALT, ATT, WING LEV, LOC, APPR, G/S, NAV, HDG, REV CRS, SPD/MACH, SPD P Allows for the Four-Way Trim Switch (not simulated) to be actuated to change the attitude of the aircraft manually (pitch and roll) 	<ul style="list-style-type: none"> Engages the AP Captures and maintains the aircraft's pitch attitude Engages the WING LEV
Yoke Four-Way Trim Switch	<ul style="list-style-type: none"> When armed, used to change the attitude of the aircraft manually (pitch and roll) 		<ul style="list-style-type: none"> Not simulated 	<ul style="list-style-type: none"> Not simulated
Test Switch Panel AP Pitch Trim Monitor Switch	<ul style="list-style-type: none"> Disengages the AP Used for testing the AP pitch trim monitor system 	<ul style="list-style-type: none"> Sets system to normal mode of operation 	<ul style="list-style-type: none"> Disengages the AP 	<ul style="list-style-type: none"> Sets system to normal mode of operation
Test Switch Panel AP Roll Monitor Test Button	<ul style="list-style-type: none"> Disengages the AP Used for testing the AP roll monitor system 	<ul style="list-style-type: none"> Sets system to normal mode of operation 	<ul style="list-style-type: none"> Disengages the AP 	<ul style="list-style-type: none"> Sets system to normal mode of operation
Stick Nudger/Puller	<ul style="list-style-type: none"> Disengages all pitch and speed modes: ALT, C/APPR, G/S, SPD P Pushes the stick in case of a stall condition Pulls the stick in case of an overspeed condition 	<ul style="list-style-type: none"> Maintains the pitch attitude and levels the wing 	<ul style="list-style-type: none"> Disengages all pitch and speed modes: ALT, C/APPR, G/S, SPD/MACH, SPD P Pushes the stick in case of a stall condition Pull the stick in case of an overspeed condition 	<ul style="list-style-type: none"> Engages the AP (if not engaged) Captures and maintains the aircraft's pitch attitude (engages ATT mode) Engages the WING LEV



This section presents a set of simplified criteria for planning your GLJ Model 25 flights on your simulation platform. In the real world, you would normally use many complicated charts and tables to determine the exact performance criteria required for a 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:

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. **Plan climb and cruise** - Calculate fuel requirements based on time, distance, altitude and temperature.
4. **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, your true air speed (TAS) will be around 460 knots.
- Assume 100 nautical miles for climb.

- Assume 100 nautical miles for descent.
- Estimate around 1,000 lbs. of fuel for take-off and climb (100% RPM for takeoff; 90% RPM for climb).
- Estimate around 1,300 lbs. of fuel for the first hour of cruise.
- Estimate around 1,200 lbs. of fuel for the second hour of cruise.
- Estimate around 1,100 lbs. of fuel for the third hour of cruise
- Add 1,000 lbs. of fuel for reserve.

Table 6-1 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

See table 6-1.

Flight plan distance = 950 nautical miles

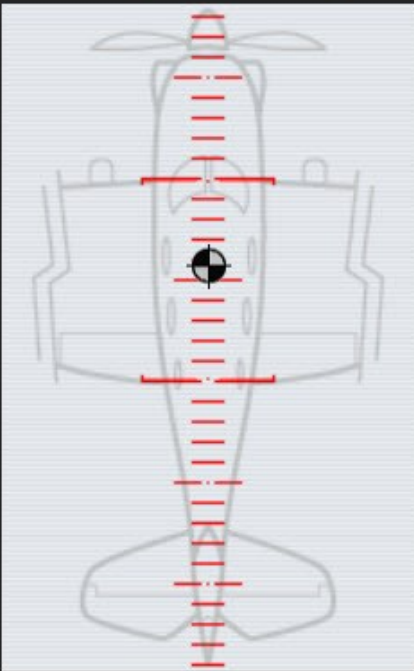
- Allow 100 nautical miles for climb. Fuel burn = 1,000 lbs.
- Allow 100 nautical miles for descent. Fuel burn = 350 lbs.
- Remaining distance = $950 - 100 - 100 = 750$ nautical miles.

- At 460 KTAS, 750 NM = 98 minutes = 1 hour + 38 minutes
- 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.



Fuel and Payload

Gates Learjet Gates Learjet 25D



Display fuel quantity as weight

Empty Weight:	7,640	Pounds
Payload:	1,100	Pounds
Fuel:	4,410.00	Pounds
Gross Weight:	13,150	Pounds
Max. gross weight:	15,000	Pounds
Max. allowable fuel:	5,330.00	Pounds

Change Fuel

TANK	%	POUNDS	CAPACITY
Center	76.63	1000	1305
Left	81.03	940	1160
Left Tip	61.94	765	1235
Right	81.03	940	1160
Right Tip	64.02	765	1195

Change Payload

STATION	POUNDS
Co-Pilot	170
Passenger 1	170
Passenger 2	170
Passenger 3	170
Passenger 4	0
Passenger 5	0
Passenger 6	0
Passenger 7	0
Baggage	250

Cancel

OK

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

Determine Takeoff Data

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 Appendix 1 and to sections 7-8 for more details.

Your addon’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 decides to abort at V_1 or to continue, and the pilot not flying 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 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, 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 for more details.



Next, from table 6-4, 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.

Once you know the density altitude of the field, you can determine the runway distance necessary for 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 (FEET)					
	DEPARTURE FIELD ELEVATION (FEET)				
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 (FEET)								
	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

Climb and Cruise Data



This section contains simplified tables for planning your climb and cruise. The numbers are for reference only as many factors can affect fuel consumption in the simulator which sometimes differs from the real world.

You should monitor your fuel counter [15, fig. 4-43] and your fuel quantity gauge [17, fig. 4-43] at all time during flight and follow the standard procedures for switching from the wing tanks to the fuselage tank when fuel in the wing tanks reaches critical level. Refer to "20 Series Fuel System", section 5, page 6, for more details.

After a few flights, you will be able to plot your own charts and tables, based on your own flying habits. Advanced users may find

Table 6-6 CLIMB TIME (MIN) / FUEL (LBS) / DISTANCE (NM)							
ALT X 1,000 FT		INITIAL CLIMB WEIGHT X 1,000 LBS					
		15	14	13	12	11	10
45	TIME	-	-	32.9	22.0	17.3	14.2
	FUEL	-	-	1,136	845	700	596
	DIST	-	-	218	145	114	94
41	TIME	24.5	19.7	16.5	14.2	12.3	10.6
	FUEL	1,050	881	761	665	58.3	512
	DIST	162	130	104	93	80	70
35	TIME	13.8	12.3	10.9	9.8	8.7	7.7
	FUEL	742	666	598	536	479	425
	DIST	90	80	71	63	56	50
25	TIME	7.7	7.0	6.4	5.8	5.2	4.7
	FUEL	498	454	414	375	338	303
	DIST	49	44	40	36	33	29
11	TIME	2.4	2.2	2.1	1.9	1.7	1.5
	FUEL	191	175	161	147	133	120
	DIST	14	12	11	10	9	9
300 KIAS up to 25,000 ft.							
Inlet Mach 0.70 up to 45,000 ft.							

more complete charts and tables about climb/cruise planning on the Internet.

Table 6-7 FUEL REQUIREMENTS - CRUISE FL250								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR	1,985	2,032	2,072	2,123	2,166	2,211	2,264
	KTAS	438	438	438	438	438	438	438
0	LBS./HR	2,069	2,118	2,159	2,213	2,258	2,304	2,359
	KTAS	447	447	447	447	447	447	447
10	LBS./HR	2,160	2,211	2,255	2,310	2,357	2,405	2,462
	KTAS	457	457	457	457	457	457	457
20	LBS./HR	2,247	2,300	2,344	2,402	2,451	2,501	2,560
	KTAS	466	466	466	466	466	466	466

Table 6-8 FUEL REQUIREMENTS - CRUISE FL350								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR	1,351	1,387	1,442	1,499	1,558	1,629	1,703
	KTAS	425	425	425	4425	425	425	425
0	LBS./HR	1,415	1,452	1,510	1,570	1,632	1,706	1,783
	KTAS	435	435	435	435	435	435	435
10	LBS./HR	1,481	1,520	1,580	1,643	1,708	1,785	1,866
	KTAS	445	445	445	445	445	445	445
20	LBS./HR	1,547	1,588	1,651	1,716	1,784	1,855	1,949
	KTAS	455	455	455	455	455	455	455

Table 6-9 FUEL REQUIREMENTS - CRUISE FL410								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR	1,145	1,210	1,275	1,358	1,444	1,541	1,653
	KTAS	428	428	428	428	428	428	428
0	LBS./HR	1,197	1,265	1,332	1,419	1,509	1,610	1,727
	KTAS	437	437	437	437	437	437	437
10	LBS./HR	1,256	1,327	1,397	1,488	1,583	-	-
	KTAS	448	448	448	448	448	-	-
20	LBS./HR	1,309	1,383	-	-	-	-	-
	KTAS	457	457	-	-	-	-	-

Table 6-10 FUEL REQUIREMENTS - CRUISE FL450								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR	1,077	1,151	1,246	1,345	1,468	-	-
	KTAS	431	431	431	431	431	-	-
0	LBS./HR	1,128	1,205	1,305	1,409	-	-	-
	KTAS	441	441	441	441	-	-	-
10	LBS./HR	1,180	1,261	-	-	-	-	-
	KTAS	451	451	-	-	-	-	-
20	LBS./HR	1,233	-	-	-	-	-	-
	KTAS	461	-	-	-	-	-	-

My Own Table FUEL REQUIREMENTS - CRUISE FL _____								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR							
	KTAS							
0	LBS./HR							
	KTAS							
10	LBS./HR							
	KTAS							
20	LBS./HR							
	KTAS							

My Own Table FUEL REQUIREMENTS - CRUISE FL _____								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR							
	KTAS							
0	LBS./HR							
	KTAS							
10	LBS./HR							
	KTAS							
20	LBS./HR							
	KTAS							

My Own Table FUEL REQUIREMENTS - CRUISE FL _____								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR							
	KTAS							
0	LBS./HR							
	KTAS							
10	LBS./HR							
	KTAS							
20	LBS./HR							
	KTAS							

My Own Table FUEL REQUIREMENTS - CRUISE FL _____								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR							
	KTAS							
0	LBS./HR							
	KTAS							
10	LBS./HR							
	KTAS							
20	LBS./HR							
	KTAS							

My Own Table FUEL REQUIREMENTS - CRUISE FL _____								
OAT °C	MACH 0.77	GROSS WEIGHT (LBS.)						
		9,000	10,000	11,000	12,000	13,000	14,000	15,000
-10	LBS./HR							
	KTAS							
0	LBS./HR							
	KTAS							
10	LBS./HR							
	KTAS							
20	LBS./HR							
	KTAS							



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 (see Appendix 1). 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 Counter (totalizer) [15, 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 extended at 40 degrees for landing, however other speeds are available from table 6-11 for partial flaps. No-flaps landing should only be attempted in an emergency.

You may now determine the landing distance required. Again, you will require the density altitude from table 6-13 (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 Gauge [18, fig. 4-35] while in flight. Determine the landing distance required from table 6-12.

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

Check that the chosen airfield has enough runway for the conditions of your flight. If not, you may need to either unload the air-

Table 6-11
 V_{ref} LANDING REFERENCE SPEED (KIAS)

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

Table 6-12
DENSITY ALTITUDE (FEET)

OAT °C	DESTINATION FIELD ELEVATION (FEET)				
	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

craft, 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!

Table 6-13
LANDING DISTANCE REQUIREMENTS (FEET)

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



NORMAL PROCEDURES AND CHECK LISTS

SECTION 7



This section contains detailed procedures and check lists for the operation of the Xtreme Prototypes GLJ Model 25 Special Edition v3.0 add-on aircraft on your simulation platform.

Following each step presented in the following pages will make your overall experience more realistic and enjoyable. We will teach you how to operate your new business jet add-on, both on the ground and in the air.

A condensed version of these procedures is provided in section 9. You may refer to the Quick Start Procedures when you are more familiar with both your simulation platform and your new GLJ Model 25 SE add-on.

Refer to section 8 for Abnormal and Emergency Procedures and to section 6, for Flight Planning. Aircraft Reference Information is contained in Appendix 1.

The operation of the GLJ Model 25 SE add-on is very similar to the operation of the real air-

craft. For proper operation and enhanced realism, it is suggested that users follow the procedures presented in this section carefully.

The following procedures are inspired or adapted from the original Gates Learjet 20 Series flight manuals and from other sources.

GETTING STARTED

The Xtreme Prototypes GLJ Model 25 Special Edition v3.0 is an add-on software package that 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

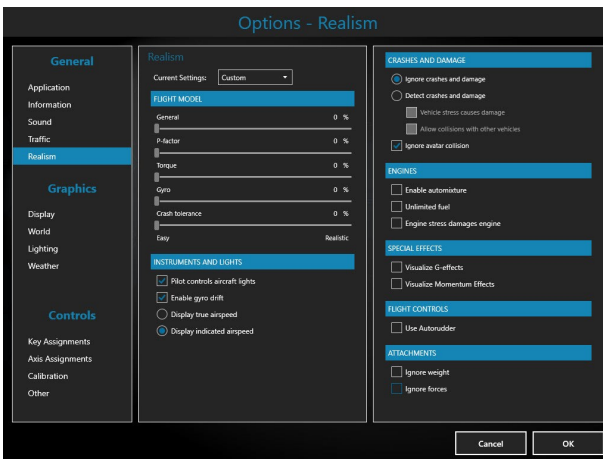
1. Please make sure that your simulation

platform and the GLJ Model 25 SE addon are properly installed on your computer before proceeding.

2. Make sure your controller (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 addon. Rudder pedals are optional but recommended.
3. Make sure your mouse has a center wheel. A wheelmouse 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 optional settings will make your first flights in the GLJ Model 25 SE addon more enjoyable. You can reset them to their default state when you have more experience as a virtual pilot:

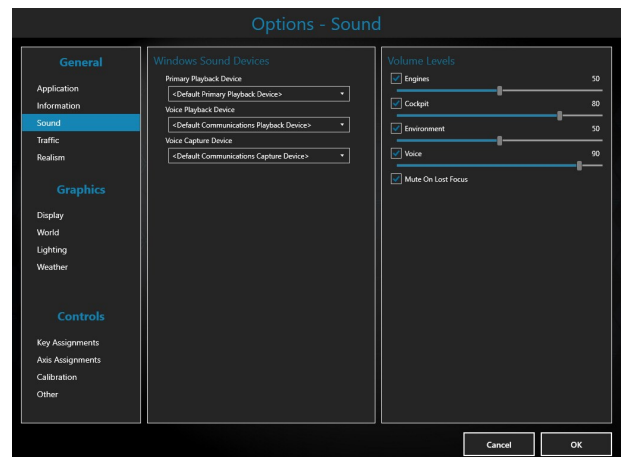
1. On the “Options - Realism” page, set the followings:
 - a. All “Flight Model” settings - **EASY** (all cursors to the left).

- b. Pilot controls aircraft lights - **SELECTED**.
- c. Enable gyro drift - **SELECTED**.
- d. Display indicated airspeed - **SELECTED**.
- e. Ignore crashes and damages - **SELECTED**.
- f. Ignore avatar collision - **SELECTED**.
- g. Enable automixture - **UNSELECTED**.
- h. Unlimited fuel - **UNSELECTED**.
- i. Engine stress damages engine - **UNSELECTED**.
- j. Visualize G-effects - **UNSELECTED**.
- k. Visualize Momentum Effects - **UNSELECTED**.
- l. Use Autorudder - **UNSELECTED**.
- m. Ignore weight - **UNSELECTED**.
- n. Ignore forces - **UNSELECTED**.

2. Click OK to close the “Options - Realism” page.

For more setting options, refer to section 2.

Adjusting the Sound Volume



Depending on your sound system and settings, you may want to adjust the volume levels in the “Option - Sound” page for your simulation platform:

1. On the “Options - Sound” page, under “Volume Levels”, adjust the volume levels for the engine and other sounds. Make sure all sounds are selected.
2. Click **OK** to close the “Options - Sound” page.

To reduce the volume of the engines, try a setting of between 30% to 50%. If you like more rumble, noise and vibrations, try anything from 50% to 80%. A setting of about 50% 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 engine. A little experimentation may be necessary in order to find the optimal settings, depending on your own sound system configuration and personal preferences.

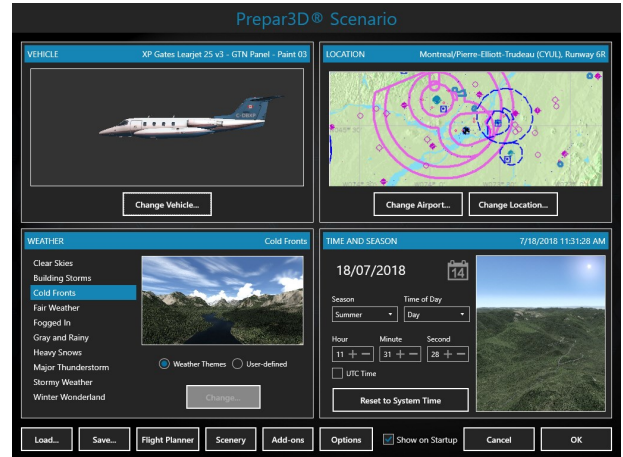
Feel free to adjust your sound system’s volume and bass levels depending on your preferences. Please note that the CJ-610 engines will produce a high level of noise, especially when in the outside views.

Known Issues

- In addition to the basic aircraft sounds that are controlled by the simulator’s own sound engine, the GLJ Model 25 SE addon features more than 50 extra sound effects, mainly cockpit sounds, that are managed by the addon’s special systems but 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 on pause. Volume adjustment in the simulator has no effect on these sounds.
- While we took great care to adjust the extra cockpit sound effects individually so they fit well in the overall sound mix, there are no separate controls to adjust the volume of the extra cockpit sounds in this software version. This is mainly due to limitations in the current simulation platforms. However, it is possible to balance the extra cockpit sounds with the basic aircraft sounds that are controlled by the simulator by using the master volume control of your computer sound system. First, adjust the master volume on your computer so that the cockpit sounds are at a correct level. Cockpit sounds can be heard by clicking some of the switches, levers and knobs in the virtual

cockpit. Then adjust the basic aircraft sounds in the “Options - Sound” page, under “Volume Levels” for the proper balance. This needs to be done only once.

Creating a Flight



Refer to the documentation included with your simulation platform for complete instructions on how to create and save a new flight (scenario). Make sure to select one of the Xtreme Prototypes GLJ Model 25 SE aircraft variations included with your add-on package and start a new flight.

The GLJ Model 25 SE v3.0 addon consists of 23 variations of the Gates Learjet Model 25D business jet for each of the four virtual cockpit configurations.

Note: If some aircraft variations are not visible, make sure the “Show all variations” option is selected on the “Select Aircraft” page (FSX). The “Show Only Favorites” option on the “Select Vehicle” page (Prepar3D) may prevent some



aircraft variations to be displayed. You may need to uncheck this option.

Important

- Xtreme Prototypes next generation addons no longer include 2D panels found in legacy products. You must be in the virtual cockpit view to fly this addon.
- If your GLJ Model 25 SE add-on aircraft appears to have no virtual cockpit, make sure you have selected the **VIRTUAL COCKPIT** view in the simulator, not the 2D cockpit (main panel) view. The virtual cockpit is available 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.
- All aircraft systems are programmed into the virtual cockpit. For this reason, it is very important to select the **VIRTUAL COCKPIT** view after loading the aircraft into the simulator to make sure that all systems are initialized. For example, if you are in one of the exterior view after loading the aircraft

and some exterior features are not displayed or working properly, simply switch to the virtual cockpit and go back to the exterior view.

- Multiple camera views are provided when in the virtual cockpit for entering the passenger cabin and to help the pilot with some switches and other cockpit items in areas that are difficult to reach. You can cycle through the different camera views when in the virtual cockpit by pressing the “A” key.

Immediate Takeoff or “Cold and Dark” Startup

At this time, it is assumed that the GLJ Model 25 SE aircraft has been serviced 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, shut off the engines and follow the normal procedures to simulate a true “cold and dark” startup (all engines, lights and systems off).

After the aircraft is parked, proceed as follows:

1. Make sure you are in the virtual cockpit view by pressing “F9”.

2. Simultaneously press the “**CTRL+SHIFT+F1**” keys on your keyboard (this will shut off the engines, if running).
3. Simultaneously press the “**SHIFT+M**” keys on your keyboard (this will turn off electric power, if already on).

Tip

- With the engines and all switches and lights turned off, and the aircraft parked, **you can save your current flight and use it as a template** for subsequent flights, from a “cold and dark” cockpit.

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



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

This will allow you to inspect the exterior of the aircraft. You can use the “top hat” button on your controller (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 door, simultaneously press the “**SHIFT+E**” keys on your keyboard. In Prepar3D, you can click the **door handle** to open/close the door.

In FSX, it may be possible to observe the movement of most control surfaces at this time, including the flaps and spoilers. In

Prepar3D, this would require electrical and/or hydraulic power for some of the control surfaces, which is more realistic.

1. Use your controller (joystick/yoke) and/or pedals to control and observe movements of the rudder, elevator and ailerons. These surfaces are cable actuated and can be controlled manually at all time. While moving the ailerons, you can also observe the movement of their balance tabs.
2. In FSX, you may observe the movements of the horizontal stabilizer and of the trim tabs on the left aileron and on the rudder even if the aircraft is not powered up. However, please remember that the trim tabs are electrically actuated and controlled.
3. In FSX, you may observe the movements of the spoilers even without power. To extend or retract the spoilers, press the “/” key on your keyboard. However, please remember that the spoilers are electrically actuated and hydraulically controlled.
4. The flaps require electrical and hydraulic power on all platforms. To extend or retract the flaps, press the “**F6/F7**” keys on your keyboard or the corresponding button on your controller. Flaps are electrically actuated and hydraulically controlled.
5. In Prepar3D, you can click the **aileron on the left wingtip tank** [5, fig. 3-3] to call for a ground power unit. The GPU supplies 28 VDC to the aircraft during ground procedures or maintenance. Click the **GPU control panel cover** [4, fig. 3-3] to start/shut off the GPU.
6. In Prepar3D, you can click the **lower section of the main entry door** [7, fig 3-3] to show/hide the flight crew. This can also be performed from inside the cabin in both Prepar3D and FSX [2, fig. 4-51].
7. In Prepar3D, you can click the **nose gear door** [8, fig. 3-3] to install/remove the “Remove Before Flight” items (ribbons and Pitot covers, wheel chocks, engine inlet covers, tail stand). This can also be performed from the virtual cockpit in both Prepar3D and FSX [16, fig. 4-2]. The “Remove Before Flight” items cannot be

installed if the aircraft is not parked, not on the ground or if the starters/engines are running. Please note that the tail stand is installed only when the aircraft is full of fuel (85% or more, CoG near aft limit).

8. In Prepar3D, you can click the **nose of the left wingtip tank** [6, fig. 3-3] to install/remove the recognition light at the front. This can also be performed from the virtual cockpit in both Prepar3D and FSX [28, fig. 4-2]. Having one or two recognition lights installed is a matter of personal choice.

Note: Other clickable “hot spots” are available on the exterior model of the Prepar3D version of the addon. Please refer to figure 3-3 for details.

Return to the **VIRTUAL COCKPIT (“F9”)**.

CHECKLIST

Cockpit Preparation (Power OFF)

1. “Remove Before Flight” Items - **REMOVED**. Click the **white label** above the Anti-Skid Generator Lights [16, fig. 4-2] to remove the items. Switch to the exterior view (“S”) to check that the items have been re-



moved. To go back to the virtual cockpit, press “F9”.

2. Flight Crew - **ON BOARD**. Switch to the exterior view (“S”) to check if the captain and the copilot are present in the cockpit. To go back to the virtual cockpit, press “F9”. To show/hide the flight crew, you can click the lower **section of the main door** on the exterior model [7, fig. 3-3] (Prepar3D) or inside the cabin [2, fig. 4-51] (Prepar3D and FSX). To switch to one of the cabin views when in the virtual cockpit, press “A” several times. To go back to the virtual cockpit, press “F9”.
3. Captain - **SELECT PILOT**. Click the **Learjet**



- 25 logo* at the center of the captain's yoke to select the pilot of your choice. In Prepar3D, you can also click on the **captain's shirt** [2, fig. 3-3] on the exterior model.
4. Copilot - **SELECT PILOT**. Click the **Learjet 25 logo** at the center of the copilot's yoke to select the pilot of your choice. In Prepar3D, you can also click on the **copilot's shirt** [2, fig. 3-3] on the exterior model.
 5. Sunglasses - **OPTIONAL**. If you want your pilots to wear sunglasses, click the **whiskey compass housing** [13, fig. 4-1] to show/hide the sunglasses. This can also be performed in Prepar3D by clicking the **windshield defog outlets** [1, fig. 3-3] on the exterior model.
 6. Pilots - **CHECK** on the exterior model. Switch to the exterior view ("S") to check the pilots. To go back to the virtual cockpit, press "F9".
 7. Seats - **ADJUST ARMRESTS** (see "Configuring the Virtual Cockpit", section 4, page 12).
 8. Flight controls - **FREE**. Hide control columns and yokes [9, fig. 4-1] if desired. Control columns can be hidden by clicking their **respective boot** (see "Configuring the Virtual Cockpit", section 4, page 10).
 9. Parking brake [8, fig. 4-41] - **SET**.
 10. All switches - **OFF**.
 11. All circuit breakers - Check **IN (CLOSED)**.
 12. Oxygen Pressure Gauge [1, fig. 4-37] - **IN GREEN**.
 13. Emergency Air Pressure Gauge [3, fig. 4-37] - **IN GREEN**.
 14. Passenger Oxygen Flow Valve [7, fig. 4-47] - **NORM**, if passengers present.
 15. Passenger Oxygen Mask Valve [5, fig. 4-47] - **AUTO**, if passengers present.
 16. Landing Gear Selector Switch [5, fig. 4-28] - Check **DOWN**.
 17. Bleed Air Switch [1, fig. 4-39] - Check **OFF**.
 18. Pressurization Mode Switch [4, fig. 4-39] - **AUTO**.
 19. Auto Rate Control Knob [2, fig. 4-39] - Check **CENTERED**.
 20. Windshield Defog Knob [7, fig. 4-41] - **IN (NORMAL)**.

External Power Source (Optional)

In order to preserve battery power during ground procedures up until the engines have started, you can use an external power source to power up the aircraft.

- In Prepar3D, click the **aileron on the left wingtip tank** [5, fig. 3-3] on the exterior model to call for a ground power unit. The GPU will supply 28 VDC to the aircraft while



you go through your checklist. **START** the GPU by clicking the **GPU control panel cover** [4, fig. 3-3]. Don't forget to **TURN OFF** and **DISCONNECT** the GPU after the engines have started.

- In FSX, you can switch to the Emergency Batteries to simulate an external power source. In reality, this is like using a fictitious APU that does not exist in the real aircraft but is available in the simulation platforms. Since the simulator does not provide emergency batteries, we are using the available APU as an emergency power source. Turn the Emergency Battery Switch [2, fig. 4-15] to **ON** to simulate an external power source. Don't forget to turn the switch to **OFF** after the engines have started.



Cockpit Preparation (Power ON)

1. Battery Switches [8-9, fig. 4-28] - **ON**.
2. Emergency Battery Switch [2, fig. 4-15] - **ON**.
3. Battery Switches [8-9, fig. 4-28] - **OFF**. Check amber light next to the Emergency Battery Switch [2, fig. 4-15] **ON**.
4. Standby Gyro [fig. 4-16] - Check **OPERATIONAL**. Uncage and adjust pitch scale [8, fig. 4-16] if necessary.
5. Battery Switches [8-9, fig. 4-28] - **ON**.
6. Emergency Battery Switch [2, fig. 4-15] - **OFF**.

7. Landing Gear Selector Switch and Lights [5, 3, fig. 4-28] - Check **DOWN + 3 GREEN**.
8. Both Primary and Secondary Inverter Switches [10,12, fig. 4-27] - **ON**.
9. Radio Master Switch (Avionics) [14, fig. 4-27] - **ON**.
10. Instrument Warning Flags - **OUT OF VIEW**.
11. Annunciators:
 - a. Annunciator Panel Test Button [31, fig. 4-30] - **DEPRESS (ON)**.
 - b. All annunciators - **ON**.
 - c. Marker beacon lights [1-3, fig. 4-5] - **ON**.
 - d. Decision height lights - **ON**.
 - e. Altitude alert lights - **ON**.
 - f. Annunciator Panel Test Button [31, fig. 4-30] - **RELEASE (OFF)**.
12. Electric Auxiliary Hydraulic Pump Switch [19, fig. 4-27] - **ON**.
13. Hydraulic Pressure Gauge [2, fig. 4-37] - **IN GREEN**.
14. Electric Auxiliary Hydraulic Pump Switch [19, fig. 4-27] - **OFF**.

Warning Systems Tests

1. Landing Gear Warning System Test Switch [4, fig. 4-28] - **TEST**. Check all six Landing Gear Position Lights [3, fig. 4-28] **ON** with aural warning.
2. Landing Gear Warning System Test Switch [4, fig. 4-28] - **CENTER (OFF)**.
3. No Smoking/Seat Belt Switch [9, fig. 4-41] - **TEST (BOTH POSITIONS)**. Return switch to **OFF** after test.
4. Electric Auxiliary Hydraulic Pump Switch [19, fig. 4-27] - **ON**.
5. Stall warning system test:
 - a. Both Stall Warning Switches [4, 6, fig. 4



- 27] - **ON**. Check annunciators [3, 6, fig. 4-30] **OFF**.
 - b. Stall Warning Test Vane Selector Switch [13, fig. 4-41] - **RIGHT**.
 - c. Stall Warning System Test Switch [14, fig. 4-41] - **ON**.
 - d. Right Angle-of-Attack Indicator [7, fig. 4-35] - **IN RED**. Check for aural alert, stick shaker, stick nudger (pusher) and Right Stall Warning Annunciator [6, fig. 4-30] **FLASHING**.
 - e. Stall Warning Test Vane Selector Switch [13, fig. 4-41] - **LEFT**.
 - f. Left Angle-of-Attack Indicator [11, fig. 4-2] - **IN RED**. Check for aural alert, stick shaker, stick nudger (pusher) and Left Stall Warning Annunciator [3, fig. 4-30] **FLASHING**.
 - g. Stall Warning System Test Switch [14, fig. 4-41] - **OFF**.
 - h. Both Stall Warning Switches [4, 6, fig. 4-27] - **OFF**. Check annunciators [3, 6, fig. 4-30] **ON**.
6. Anti-skid system test:
- a. Anti-Skid Power Switch [8, fig. 4-27] - **ON**. Check Anti-Skid Generator Lights [4, fig. 4-15] **OFF**.
 - b. Anti-Skid System Test Switch [15, fig. 4-41] - **FORWARD (OUTBOARD)**. Check Anti-Skid Generator Lights [4, fig. 4-15] **OUTBOARD ON**.
 - c. Anti-Skid System Test Switch [15, fig. 4-41] - **AFT (INBOARD)**. Check Anti-Skid Generator Lights [4, fig. 4-15] **INBOARD ON**.
 - d. Anti-Skid System Test Switch [15, fig. 4-41] - **CENTER (OFF)**.
 - e. Anti-Skid Power Switch [8, fig. 4-27] - **OFF**. Check Anti-Skid Generator Lights [4, fig. 4-15] **ON**.
7. Overspeed warning test:
- a. Cabin Altitude Warning/Mach Test Switch [12, fig. 4-41] - **AFT (MACH TEST)**. Check for aural alert and stick puller.
 - b. Cabin Altitude Warning/Mach Test Switch [12, fig. 4-41] - **CENTER (OFF)**.
8. Electric Auxiliary Hydraulic Pump Switch [19, fig. 4-27] - **OFF**.
9. Fire detection system test:
- a. Fire Detection System Test Switch [11, fig. 4-41] - **ON**. Check both captain and copilot fire annunciators [fig. 4-31; fig. 4-33] **ON** or **FLASHING**.
 - b. Fire Detection System Test Switch [11, fig. 4-41] - **OFF**. Check both captain and copilot fire annunciators [fig. 4-31; fig. 4-33] **OFF**.
10. Cabin altitude warning test:
- a. Cabin Altitude Warning/Mach Test Switch [12, fig. 4-41] - **FORWARD (CABIN ALT TEST)**. Check Cabin Altitude Annunciator [30, fig. 4-30] **FLASHING** (with aural alert).
 - b. Cabin Altitude Warning/Mach Test Switch [12, fig. 4-41] - **CENTER (OFF)**. Check Cabin Altitude Annunciator [30, fig. 4-30] **OFF**.

Before Starting Engines

1. Thrust reversers:
- a. Thrust Reverser Lights Test Switch [11, fig. 4-34] - **TEST**. Check all thrust reverser annunciators and lights **ON**.

- b. Thrust Reverser Lights Test Switch [11, fig. 4-34] - **NORM**. Check all thrust reverser annunciators and lights **OFF**.
 - c. Engine Throttles [1, 3, fig. 4-41] - **IDLE** ("F1" or **FULL AFT** on your controller) if released, or **CUTOFF** if locked. *Throttles cannot be moved if locked.*
 - d. Thrust Reverser Subthrottles [6,16, fig. 4-41] - **PUSHED FORWARD** or **IDLE** ("F1").
 - e. Thrust Reverser Arm Switches [13-14, fig. 4-34] - **ARM**. Check Thrust Reverser Armed Annunciators [7, 8, fig. 4-34] **ON**.
 - f. Thrust Reverser Arm Switches [13-14, fig. 4-34] - **OFF**. Check Thrust Reverser Armed Annunciators [7, 8, fig. 4-34] **OFF**.
 - g. Thrust Reverser Emergency Stow Switches [2-3, fig. 4-34] - **NORM (UP)**. Check Thrust Reverser Emergency Stow Lights [1-4, fig. 4-34] **OFF**.
 - h. Thrust Reverser Unsafe Annunciators [5, 10, fig. 4-34] - **OFF**.
 - i. Thrust Reverser Deployed Annunciators [6, 9, fig. 4-34] - **OFF**.
2. Autopilot check:
- a. AFC/SS Test Switch [10, fig. 4-41] - **FORWARD (AFCS TEST)**. Check all AFCS (autopilot/flight director) mode annunciators and lights **ON**.
 - b. AFC/SS Test Switch [10, fig. 4-41] - **CENTER (OFF)**.
 - c. Autopilot Engage Button [1, fig. 4-44] - **PRESS ON** to engage, then **PRESS OFF** to disengage. Check for aural alert when autopilot is disengaged.
 - d. Autopilot Engage Button [1, fig. 4-44] - **PRESS ON**.
 - e. Autopilot Roll Monitor Test Button [17, fig. 4-41] - **DEPRESS TO TEST**. Autopilot will disengage. Release to **OFF**.
 - f. Autopilot Engage Button [1, fig. 4-44] - **PRESS ON**.
 - g. Autopilot Pitch Trim Monitor Switch [17, fig. 4-41] - **TEST UP AND DOWN**. Autopilot will disengage. Reset to **CENTER (OFF)**.
 - h. Autopilot Engage Button [1, fig. 4-44] - **PRESS ON**.
 - i. Turn Command Knob [2, fig. 4-44] - **TEST (ROTATE) LEFT/RIGHT**, then reset to **CENTER**. Click to center.
 - j. Pitch Command Wheel [10, fig. 4-44] - **TEST (ROTATE) UP/DOWN**, then reset to **CENTER**. Click to center.
 - k. Autopilot Engage Button [1, fig. 4-44] - **PRESS OFF**.
 - l. Yaw Damper Selector Switch [1, fig. 4-45] - **PRI YAW DAMPER**.
 - m. Primary Yaw Damper ON Button [12, fig. 4-44] - **PRESS ON** to engage.
 - n. Primary Yaw Damper OFF Button [11, fig. 4-44] - **PRESS OFF** to disengage. Check for aural alert when primary yaw damper is disengaged.
 - o. Yaw Damper Selector Switch [1, fig. 4-45] - **SEC YAW DAMPER**.
 - p. Secondary Yaw Damper Switch [2, fig. 4-45] - **ENGAGE**.
 - q. Secondary Yaw Damper Switch [2, fig. 4-45] - **OFF**. Check for aural alert when secondary yaw damper is disengaged.
 - r. Yaw Damper Selector Switch [1, fig. 4-45] - Back to **PRI YAW DAMPER**.
3. Emergency Pitch Trim Switch [3, fig. 4-27] - **NORM**.
4. Trim:
- a. Elevator trim (on your controller) - Check that Pitch Trim Indicator [3, fig. 4-14] is about **one needle thickness below center**. Listen for trim in motion clicker (autopilot must be disengaged).
 - b. Takeoff Trim Alert Annunciator [2, fig. 4-31] - **OFF**.
 - c. Aileron trim (on your controller) - **CHECKED**.

- d. Rudder trim [11, fig. 4-45] - **CHECKED**.
5. 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 L/R tanks. Refer to "Flight Planning", in section 6 for details.
6. Fuel counter [15, fig. 4-43] - **RESET TO ZERO**. Fuel counter indicates fuel consumed since last engine start (after reset). Must be reset manually.
7. Crosflow (Crossfeed) Switch [2, fig. 4-43] - **CLOSE**. Refer to "20 Series Fuel System", section 5, pages 8, 10-11, for more information about crossfeeding fuel.
8. Fuselage Tank Switch [6, fig. 4-43] - **OFF (CENTER)**.
9. Fuel Jettison Switch [1, fig. 4-43] - **OFF**. Refer to "20 Series Fuel System", section 5, pages 8-9, 13, for more information about the fuel jettison system.
10. Jet pumps:
 - a. Jet Pumps Switches [11-12, fig. 4-43] - **ON**.
 - b. Motive Flow Valve Lights [10, 13, fig. 4-43] - **ON** for one second (valve in transit), then **OFF**.
 - c. Engine Low Fuel Pressure Annunciators [1,4, fig. 4-25] - **OFF**.
11. Standby Pumps Switches [8-9, fig. 4-43] - **OFF**.
12. Main Cabin Door [24, fig. 3-1] - **CLOSED AND SECURE (SHIFT+E)**.
13. Door Unsecured Annunciator [10, fig. 4-30] - **OFF**.

Engine Start

IMPORTANT: Make sure that your fuel mixture is set to "rich" (**CTRL+SHIFT+F4**) before proceeding, or the engines won't start. See Release Notes, page 8.



1. Right Engine Throttle [3, fig. 4-41] - **IDLE** ("F1" or **FULL AFT** on your controller) if released, or **CUTOFF** if locked. Throttle cannot be moved if locked (see 3, right).
2. Right Thrust Reverser Subthrottle [16, fig. 4-41] - **FULL FORWARD (IDLE or "F1")**.
3. Right Throttle Release Lever [4, fig. 4-41] - Click to **LOCK** or "**CTRL+SHIFT+F1**" (release lever down, throttle set to cutoff, fuel valve closed).
4. Right Engine Throttle [3, fig. 4-41] - Check **CUTOFF** (locked, down position).
5. Rotating Beacon Lights [13, fig. 4-27] - **ON**.
6. Right Engine Starter/Generator Switch [6, fig. 4-28] - **START**. Check for Right Ignition Light [17, fig. 4-27] **ON**.
7. Right RPM [6, fig. 4-25] - Check about **10 to 20%**.
8. Right Throttle Release Lever [4, fig. 4-41] - Click to **RELEASE** (release lever up, throttle set to idle, fuel valve open).
9. Right Engine Throttle [3, fig. 4-41] - Check **IDLE** ("F1" or **FULL AFT** on your controller).
10. Right EGT [4, fig. 4-25] - Monitor and make sure **WITHIN GREEN ARC**.
11. Right RPM [6, fig. 4-25] - Check about



- 50%.
12. Right Starter/Generator Switch [6, fig. 4-28] - Set to **OFF**, then to **GEN** when engine is stable at **IDLE**.
 13. Right Engine Ignition Light [17, fig. 4-27] - **OFF**.
 14. Right Generator Inoperative Annunciator [23, fig. 4-30] - **OFF**.
 15. Right DC Ammeter [5, fig. 4-26] - **CHARGING**.
 16. Engine Low Fuel Pressure Annunciator [4, fig. 4-25] - **OFF**.
 17. Right engine oil pressure and temperature [7, fig. 4-25; 2, fig. 4-26] - Check **BOTH IN GREEN**.
 18. Fuel flow [8, fig. 4-25] - **NORMAL**.
 19. Hydraulic pressure [2, fig. 4-37] - **IN GREEN**.
- Repeat above procedures for left engine.**
- Before Taxi**
1. Primary & Secondary Inverter Switches [10, 12, fig. 4-27] - Check **ON**.
 2. Auxiliary Inverter Switch [5, fig. 4-27] - Check **OFF**.
 3. Radio Master Switch [14, fig. 4-27] - Check **ON**.
 4. Engine instruments [fig. 4-25] - **CHECKED**.
 5. Navigation Lights [15, fig. 4-27] - **ON**.
 6. Strobe Lights [11, fig. 4-27] - **ON**.
 7. Recognition Lights [9, fig. 4-27] - **ON (if required)**.
 8. Taxi Lights [18, 20, fig. 4-27] - **ON**.
 9. Emergency Lights Switch [5, fig. 4-45] - **ARM**. Check Emergency Lighting System OFF Warning Light [4, fig. 4-45] **OFF**.
 10. Spoilers:
 - a. Spoilers Switch [24, fig. 4-41] - Check **RET**.
 - b. Spoilers Extended Annunciator [7, fig. 4-30] - Check **OFF**.
 11. Bleed Air Switch [1, fig. 4-39] - **NORMAL**.
 12. Anti-ice:
 - a. Wing and Stabilizer Heat Switch [3, fig. 4-4] - **AS REQUIRED**.
 - b. Windshield Heat Switches [4, fig. 4-4] - **AS REQUIRED**.
 - c. Nacelle Heat Switches [2, fig. 4-4] - **AS REQUIRED**.

13. Parking brake [8, fig. 4-41] - **RELEASED**.
14. Anti-Skid Power Switch [8, fig. 4-27] - **ON**.
15. Anti-Skid Generator Lights [4, fig. 4-15] - **ALL OFF**.

Taxi



1. Radios [fig. 4-18a to fig. 4-21b] - Check **ON** and **SET**.
2. ATC clearance - **OBTAINED** from appropriate authority. **SET** radios accordingly.
3. GPS/GNS/GTN [fig. 4-24a/b] - **ON** and **SET** according to flight plan and ATC clearance (if available/needed).
4. Flight controls - **CHECKED**.
5. Thrust reversers controls [fig. 4-34] - **CHECKED**.
6. Nose wheel steering:
 - a. Nose Gear Steer Lock Switch [7, fig. 4-4] - **DEPRESS MOMENTARILY** to **ENGAGE** electric nose wheel steering.
 - b. Nose Wheel Steering Engaged Annunciator [14, fig. 4-30] - **ON**.
7. Engine Throttles [2-3, fig. 4-41] - **AS NEEDED** for taxiing.
8. Aircraft rolling above 5 knots:
 - a. Toe brakes - **APPLIED**. Listen for “birds in the cockpit” sounds.
 - b. Verify aircraft deceleration.
 - c. Toe brakes - **RELEASED**.

Before Takeoff

1. Cabin pressurization:
 - a. Bleed Air Switch [1, fig. 4-39] - Check **NORMAL**.
 - b. Cabin Altitude Controller Knob [5, fig. 4-39] - **SET** to **initial planned cruise altitude**.
2. Cabin temperature:
 - a. Bleed Air Switch [1, fig. 4-39] - Check **NORMAL**.
 - b. Cabin Temperature Control Knob/Switch [1 or 2, fig. 4-40] - **SET** to **desired temperature**.
 - c. H-Valve Position Indicator [19, fig. 4-35] - Check, **about 1/2**.
 - d. Lower cabin temperature **if necessary**.
3. No Smoking/Seat Belt Switch [9, fig. 4-41] - **NO SMOKING AND SEAT BELTS (ON)**.
4. Anti-ice:
 - a. Bleed Air Switch [1, fig. 4-39] - Check **NORMAL**.
 - b. Wing and Stabilizer Heat Switch [3, fig. 4-4] - **OFF** or **AS REQUIRED**.
 - c. Windshield Heat Switches [4, fig. 4-4] - **OFF** or **AS REQUIRED**.
 - d. Nacelle Heat Switches [2, fig. 4-4] - **OFF** or **AS REQUIRED**.
5. All external lights, except landing lights [fig. 4-27] - **ON**.
6. Avionics:
 - a. ADI Gyro and Computer Warning Flags [10-11, fig. 4-7] - **OUT OF VIEW**.
 - b. HSI Compass Warning Flag [13, fig. 4-8] - **OUT OF VIEW**.
 - c. Radios and transponder [fig. 4-18a to fig. 4-21b] - Check **ON** and **SET** according to flight plan and ATC clearance.



- d. GPS/GNS/GTN [fig. 4-24a/b] - **ON** and **SET** according to flight plan and ATC clearance (if available/needed).
 - e. Radar [fig. 4-24d] - **ON** and **SET** (if available/needed).
7. Gyro:
- a. Directional Gyro Free/Slave Switch [9, fig. 4-5] - Check **SLAVE**.
 - b. Gyro Drift Compensation Switch [8, fig. 4-5] - If Directional Gyro Free/Slave Switch [9, fig. 4-5] is set to **FREE** (magnetic references unreliable), **use as needed** to synchronize directional gyros with ground indications (the Directional Gyro Drift Knob [5, fig. 4-2] can also be used). *Requires a type "2" gyro in the "aircraft.cfg". See Release Notes, page 4.*
8. Flight instruments:
- a. Barometric pressure on altimeters [1, fig. 4-11a/b/c] - **SET**, according to nearest weather station.
 - b. Airspeed bugs [1, fig. 4-9] - **SET** to V_1 and V_R **as needed**. Refer to "Flight Planning", in section 6.
 - c. Initial course on HSI [1, fig. 4-8] - **SET**.
 - d. Initial heading on HSI [2, fig. 4-8] - **SET**.
 - e. RMI [fig. 4-10] - **SET, as needed**.
 - f. DME head [fig. 4-36] - **SET, as needed**.
 - g. All directional indicators as aircraft turns while taxiing - **CHECKED**.
9. Autopilot Altitude Preselector [4, fig. 4-23; 2, fig. 4-11b] - **SET to initial ATC clearance altitude**.
10. Flight Director Switch [1, fig. 4-16] - **OFF, then ON (reset)**. Check Flight Director Command Bars [4, fig. 4-7] **IN RANGE** on ADI.
11. Radio altimeter:
- a. Radio Altimeter Power Switch [3, fig. 4-13] - **ON** (to test).
 - b. Radio altimeter flags [12, fig. 4-7; 6, fig. 4-13] - Check **OUT OF VIEW**.
 - c. Radio Altimeter Power Switch [3, fig. 4-13] - **OFF**.
12. Spoilers:
- a. Spoilers Switch [24, fig. 4-41] - Check **RET**.
 - b. Spoilers Extended Annunciator [7, fig. 4-30] - Check **OFF**.
13. Flaps:
- a. Flaps Switch [25, fig. 4-41] - **PUSH DOWN AS NEEDED**.
 - b. Flaps Position Indicator [1, fig. 4-28] -



Check for correct **TAKEOFF POSITION (8° or AS NEEDED)**. Refer to “Flight Planning”, in section 6.

14. Emergency Pitch Trim Switch [3, fig. 4-27] - Check **NORM**.

15. Trim:

a. Elevator trim (on your controller) - **SET FOR TAKEOFF**. Check that Pitch Trim Indicator [3, fig. 4-14] is about **one needle thickness below center**. Forward center of gravity requires more trim. No clicker sound with flaps extended more than 3°.

b. Takeoff Trim Alert Annunciator [2, fig. 4-31] - Check **OFF**.

c. Aileron trim (on your controller) - **CHECKED**.

d. Rudder trim [11, fig. 4-45] - **CHECKED**.

16. Fuel quantity [17, fig. 4-43] - Check for **imbalance** between L/R wing tanks. Refer to “20 Series Fuel System” in section 5, pages 6, 8, 10-11 for more details.

Takeoff

1. Flight controls:

a. Check - **FREE**.

b. **HIDE** control columns and yokes [9, fig. 4-1] **if desired**. Control columns can be hidden by clicking on their respective boot (see “Configuring the Virtual Cockpit”, section 4, page 10).

2. Nose wheel steering:

a. Nose Gear Steer Lock Switch [7, fig. 4-4] - **DEPRESS MOMENTARILY** to **DIS-ENGAGE** electric nose wheel steering.

b. Nose Wheel Steering Engaged Annunciator [14, fig. 4-30] - **OFF**.

3. Anti-Skid Power Switch [8, fig. 4-27] - Check **ON**.

4. Anti-Skid Generator Lights [4, fig. 4-15] - Check **OFF**.

5. Engine Air Ignition Switches [1, 16, fig. 4-27] - Normally **OFF** (can be turned **ON** if wet or turbulent conditions).

6. Stall Warning Switches [4, 6, fig. 4-27] - Both **ON**. Check annunciators [3,6, fig. 4-30] **OFF**.

7. Pitot Heat Switches [1, fig. 4-4] - Both **ON**.

8. Thrust Reverser Arm Switches [13-14, fig. 4-34] - **ARM**.

9. Thrust Reverser Armed Annunciators [7, 8, fig. 4-34] - **ON**.

10. Annunciator panel:

a. **CHECKED**, no warnings or abnormal indications.

11. ATC clearance - **OBTAINED** from appropriate authority.

12. Landing and Taxi Lights [18, 20, fig. 4-27] and all external lights - **ON**.

13. Toe Brakes:

a. Brakes - **APPLIED**.

Takeoff Sequence

Important

- In case of an engine failure, refer to “Abnormal/Emergency Procedures” in section 8.
 - The GLJ Model 25 is a very high performance jet aircraft. The takeoff sequence happens quite fast and requires an efficient drill in order to observe and maintain altitude and speed clearances.
1. Throttles [1,3, fig. 4-41]:
 - a. **ADVANCE** slowly to **takeoff power (100% RPM)**.
 2. Toe Brakes:
 - a. Brakes - **RELEASED**.
 3. **ACCELERATE** to **V₁**:
 - a. If engine fails before **V₁**, **ABORT** takeoff. Refer to “Abnormal/Emergency Procedures” in section 8.
 - b. If engine fails after **V₁**, **CONTINUE** takeoff. Refer to “Abnormal/Emergency Procedures” in section 8.
 4. **V_r** attained:
 - a. **ROTATE** to **15° pitch**.
 - b. Airspeed bugs [1, fig. 4-9] - **SET to V₂ as needed**. Refer to “Flight Planning”, in section 6.
 5. Angle-of-Attack:
 - a. Angle-of-Attack Indicator [5, fig. 4-6] - **MAINTAIN IN GREEN**.
 6. Positive rate of climb:
 - a. Landing Gear Selector Switch [5, fig. 4-28] - **UP**.
 - b. Landing Gear Position Lights [3, fig. 4-28] - Check **RED ON** in transit, then all **OFF**.
 - c. **ACCELERATE** to **V₂ + 15**.
 7. Flaps [25, fig. 4-41]:
 - a. **RETRACT** on schedule. Refer to “Maximum Flap Placard Speeds” in Appendix 1.
 8. Landing and Taxi Lights [18, 20, fig. 4-27] - **OFF**. Landing and taxi lights will turn off



automatically when the landing gear is retracted.

9. Engine Air Ignition Switches [1, 16, fig. 4-27] - **OFF** (can be turned **ON** if wet or turbulent conditions).
10. Anti-Skid Power Switch [8, fig. 4-27] - **OFF**.
11. Anti-Skid Generator Lights [4, fig. 4-15] - Check **ON**.
12. Thrust Reverser Arm Switches [13-14, fig. 4-34] - **OFF**.
13. **ACCELERATE to climb speed** - (MAX 250 KIAS if ATC-restricted, MAX 306 KIAS under FL140). *An aural alert will sound if airspeed is above 306 KIAS under 14,000 feet (bird strike protection).*
14. Cabin pressure [6-7, fig. 4-39] - **CHECKED**.
15. No Smoking/Seat Belt Switch [9, fig. 4-41] - **OFF**.



Climb

1. Throttles [1, 3, fig. 4-41]:
 - a. **SET to climb power (90% RPM).**
2. Autopilot Engage Button [1, fig. 4-44] - **PRESS ON (if desired)** to engage the autopilot. *The autopilot will capture and maintain the pitch and level the wing (Wing Leveler engaged).*



3. Anti-ice:
 - a. Bleed Air Switch [1, fig. 4-39] - Check **NORMAL**.
 - b. Wing and Stabilizer Heat Switch [3, fig. 4-4] - **AS REQUIRED**.
 - c. Windshield Heat Switches [4, fig. 4-4] - **AS REQUIRED**.
 - d. Nacelle Heat Switches [2, fig. 4-4] - **AS REQUIRED**.
4. Cabin pressure [6-7, fig. 4-39] - **MONITORED**.
5. Transition level (18,000 feet maximum):
 - a. Barometric pressure on altimeters [1, fig. 4-11a/b/c] - **SET to 29.92**.
6. Airspeed:
 - a. **ACCELERATE to 0.7 Mach**.
- b. **ENSURE** fuel burn [15, fig. 4-43] is **consistent with flight plan**. Refer to "Flight Planning", in section 6.
- c. **SWITCH TO THE FUSELAGE TANK** if fuel level in the wing tanks **becomes critically low** [6, fig. 4-43]. Refer to "20 Series Fuel System", section 5, page 13, for full procedures, including cross-feed and fuel jettison.
9. Autopilot Engage Button [1, fig. 4-44] - **PRESS ON (if desired)**, to engage the autopilot. *The autopilot will capture and maintain the pitch and level the wing (ATT Hold mode and Wing Leveler engaged).*
10. Autopilot Speed/Mach Hold Mode Switch [1 or 2, fig. 4-22b; 8, fig. 4-22c or 10, fig. 4-22d] - **PRESS ON (if desired)** to engage.
11. Other autopilot modes [fig. 4-22a/b/c/d; fig. 4-44] - **PRESS ON (if desired)** to engage.

Cruise

1. Windshield Defog Knob [7, fig. 4-41] - **PULLED**, if needed.
2. Engine instruments [fig. 4-25] - Check **WITHIN LIMITS**.
3. Cabin pressure [6-7, fig. 4-39] - **MONITORED**.
4. Engine Sync Switch [22, fig. 4-41] - **ON, if needed**. *Check Engine Synchronization Disc (Spinner) [7, fig. 4-24c] (retrofitted cockpit configurations only). Throttles need to be close to one another.*
5. Engine Sync ON Annunciator [25, fig. 4-30] - Check **ON (if the Engine Sync Switch [22, fig. 4-41] is set to ON)**.
6. Yaw Damper Selector Switch [1, fig. 4-45] - Check **PRI YAW DAMPER**.
7. Primary Yaw Damper ON Button [12, fig. 4-44] - **PRESS ON (primary yaw damper engaged)**.
8. Fuel status:
 - a. **MONITOR fuel at all time** [17, fig. 4-43; 2, fig. 4-30].

Descent



1. ATC clearance - **OBTAINED**. Set radios accordingly.
2. Windshield Defog Knob [7, fig. 4-41] - **PULLED, if needed**.
3. Pressurization:
 - a. Set **destination field elevation** [5, fig. 4-39]. Refer to "Flight Planning" in section 6.
4. Anti-ice:
 - a. Bleed Air Switch [1, fig. 4-39] - Check

NORMAL.

- b. Wing and Stabilizer Heat Switch [3, fig. 4-4] - **AS REQUIRED.**
- c. Windshield Heat Switches [4, fig. 4-4] - **AS REQUIRED.**
- d. Nacelle Heat Switches [2, fig. 4-4] - **AS REQUIRED.**
- 5. Pitot heat:
 - a. Pitot Heat Switches [1, fig. 4-4] - Check both **ON.**
- 6. Fuel quantity [17, fig. 4-43] - **MONITORED.**
- 7. Hydraulic Pressure Gauge [2, fig. 4-37] - **IN GREEN.**
- 8. Throttles:
 - a. During descent, **MAINTAIN 75% RPM** minimum until 12,000 ft. *The CJ-610 axial-flow turbojet engine does not provide enough bleed air to maintain pressurization and de-icing at low RPMs, due to their rather primitive 8-stage compressor design.*

- 9. Spoilers [24, fig. 4-41] - **AS REQUIRED.**
- 10. Transition level (18,000 feet maximum):
 - a. Barometric pressure on altimeters [1, fig. 4-11 a/b/c] - **SET to local setting.**

Approach

- 1. ATC clearance - **OBTAINED.** Set radios accordingly.
- 2. Fuel balance between L/R wing tanks [17, fig. 4-43] - **CHECKED.**
- 3. Thrust Reverser Arm Switches [13-14, fig. 4-34] - **ON.** Thrust Reverser Armed Annunciators [7, 8, fig. 4-34] will remain **OFF** until the aircraft touches down. *Thrust reversers cannot be armed with the engine throttles in forward thrust above idle.*
- 4. Hydraulic Pressure [2, fig. 4-37] - **IN GREEN.**
- 5. Emergency Air Pressure [3, fig. 4-37] - **IN GREEN.**
- 6. No smoking/seat belts sign:



- a. No smoking switch [9, fig. 4-41] - **NO SMOKING and SEATBELTS ON.**
- 7. Cabin pressure [6-7, fig. 4-39] - **CHECKED.**
- 8. Engine Sync Switch [22, fig. 4-41] - **OFF.**
- 9. Engine Sync ON Annunciator [25, fig. 4-30] - Check **OFF.**
- 10. Spoilers:
 - a. Spoilers Switch [24, fig. 4-41] - Check **RET.**
 - b. Spoilers Extended Annunciator [7, fig. 4-30] - Check **OFF.**
- 11. Radio altimeter:
 - a. Radio altimeter power switch [3, fig. 4-13] - **ON.**

Before Landing

1. Landing gear:
 - a. Landing Gear Selector Switch [5, fig. 4-28] - **DOWN.**
 - b. Check Landing Gear Position Lights [3, fig. 4-28] - **RED ON** in transit, then all **GREEN.**
2. Landing and Taxi Lights [18, 20, fig. 4-27] - Both **ON.**
3. Parking brake [8, fig. 4-41] - Check **RELEASED.**
4. Anti-Skid Power Switch [8, fig. 4-27] - **ON.**
5. Anti-Skid Generator Lights [4, fig. 4-15] - Check **OFF.**
6. Flaps:
 - a. **DOWN AS REQUIRED** [25, fig. 4-41; 1, fig. 4-28]. *Refer to "Flight Planning" in section 6.*
7. Engine Air Ignition Switches [1, 16, fig. 4-27] - Normally **OFF**, or **ON** if wet or turbulent conditions.
8. Primary Yaw Damper OFF Button [11, fig. 4-44] - **PRESS OFF (primary yaw damper**

disengaged).

9. Secondary Yaw Damper Switch [2, fig. 4-45] - **OFF (secondary yaw damper disengaged).**

Landing (after Touchdown)



1. Spoilers:
 - a. Spoilers Switch [24, fig. 4-41] - **EXT. (spoilers extended as needed).**
 - b. Spoilers Extended Annunciator [7, fig. 4-30] - **ON.**
2. Thrust reversers (if needed):
 - a. Thrust Reverser Subthrottles [6, 16, fig. 4-41] - **PULLED AFT ("F2" AS NEEDED) to deploy thrust reversers. Up to 85% RPM in reverse.**
 - b. Thrust Reverser Deployed Annunciators [6, 9, fig. 4-34] - **ON.**
3. Thrust reversers (if needed, after deceleration):
 - a. Thrust Reverser Subthrottles [6, 16, fig. 4-41] - **PUSHED FORWARD ("F1" to IDLE).**
 - b. Thrust Reverser Deployed Annunciators [6, 9, fig. 4-34] - **OFF.**
4. Thrust Reverser Arm Switches [13-14, fig. 4-34] - **OFF.**
5. Thrust Reverser Armed Annunciators [7, 8, fig. 4-34] - **OFF.**
6. Spoilers (after deceleration):

- a. Spoilers Switch [24, fig. 4-41] - **RET. (spoilers retracted).**
- b. Spoilers Extended Annunciator [7, fig. 4-30] - **OFF.**

Before Clearing the Runway

1. Anti-Skid Power Switch [8, fig. 4-27] - **OFF.**
2. Anti-Skid Generator Lights [4, fig. 4-15] - Check **ON.**
3. Flaps:
 - a. Flaps Switch [25, fig. 4-41] - **UP (AS NECESSARY).**
 - b. Confirm flaps position [1, fig. 4-28] - **FULL UP.**
4. Nose wheel steering:
 - a. Nose Gear Steer Lock Switch [7, fig. 4-4] - **DEPRESS MOMENTARILY to ENGAGE** electric nose wheel steering.
 - b. Nose Wheel Steering Engaged Annunciator [14, fig. 4-30] - **ON.**

After Clearing the Runway

1. Engine Air Ignition Switches [1, 16, fig. 4-27] - **OFF.** Check Engine Air Ignition Lights [2, 17, fig. 4-27] **OFF.**
2. Landing Lights [18, 20, fig. 4-27] - **OFF.**
3. Taxi Lights [18, 20, fig. 4-27] - Check **ON.**
4. Strobe Lights [11, fig. 4-27] - **OFF.**
5. Recognition Lights [9, fig. 4-27] - **OFF.**
6. Both Stall Warning Switches [4, 6, fig. 4-27] - **OFF.**
7. Anti-ice:
 - a. Bleed Air Switch [1, fig. 4-39] - Check **NORMAL.**
 - b. Wing and Stabilizer Heat Switch [3, fig. 4-4] - **OFF or AS REQUIRED.**
 - c. Windshield Heat Switches [4, fig. 4-4] - **OFF or AS REQUIRED.**
 - d. Nacelle Heat Switches [2, fig. 4-4] - **OFF or AS REQUIRED.**

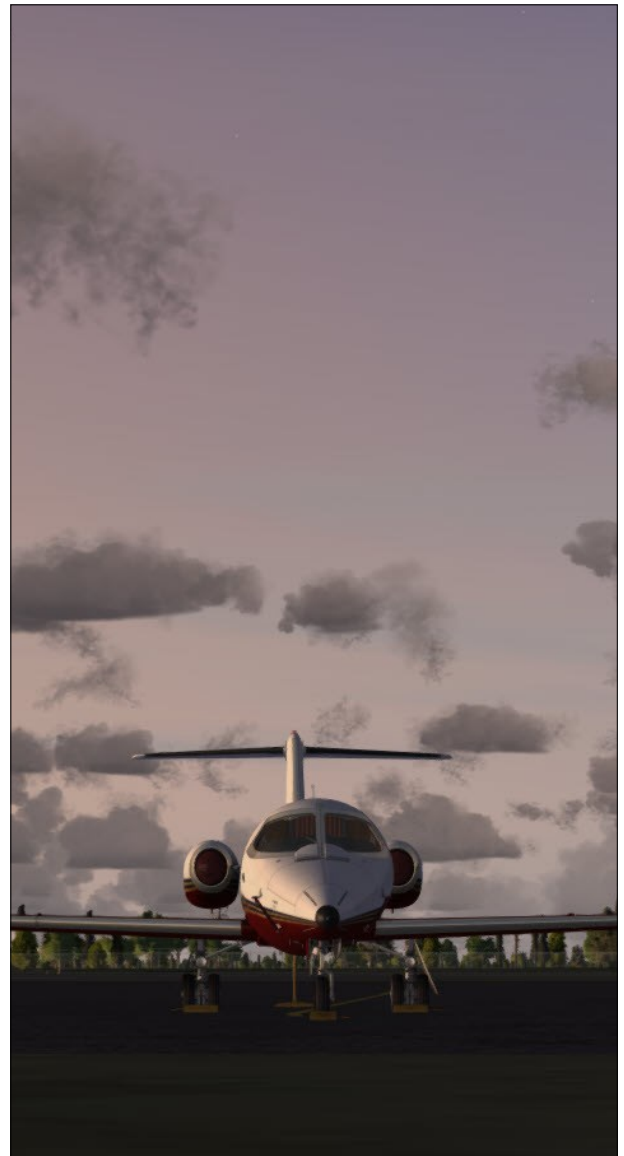


8. Pitot Heat Switches [1, fig. 4-4] - **OFF** or **AS REQUIRED**.
 9. Bleed Air Switch [1, fig. 4-39] - **OFF**, if not needed for anti-ice or cabin temperature control.
 10. Unnecessary avionics - **OFF**.
 11. Emergency Lights Switch [5, fig. 4-45] - **DISARM**.
- ## Shutdown
- Once the aircraft is parked:**
1. Parking brake:
 - a. Parking Brake Lever [8, fig. 4-41] - **SET**.
 2. Anti-ice:
 - a. Wing and Stabilizer Heat Switch [3, fig. 4-4] - **OFF**.
 - b. Windshield Heat Switches [4, fig. 4-4] - **OFF**.
 - c. Nacelle Heat Switches [2, fig. 4-4] - **OFF**.
 3. Pitot Heat Switches [1, fig. 4-4] - **OFF**.
 4. Bleed Air Switch [1, fig. 4-39] - **OFF**.
 5. Engine Starter/Generator Switches [6, 11, fig. 4-28] - **OFF**.
 6. Engine shutoff:
 - a. Thrust Reverser Subthrottles [6, 16, fig. 4-41] - **FULL FORWARD TO IDLE ("F1")**.
 - b. Throttles [1, 2, fig. 4-41] - **FULL AFT TO IDLE ("F1" or FULL AFT on your controller)**.
 - c. Throttle Release Levers [2, 4, fig. 4-41] - Click to **LOCK** or **"CTRL+SHIFT+F1"** (release levers down, throttles set to cutoff, fuel valves closed). *Engines will shut off.*
 - d. Jet Pump Switches [11-12, fig. 4-43] - **OFF**.
 - e. Standby Pump Switches [8-9, fig. 4-43] - Check **OFF**.
 7. Rotating Beacon Lights [13, fig. 4-27] - **OFF**.
 8. All remaining exterior lights [fig. 4-27] - **OFF**.





9. Emergency Battery Switches [2-3, fig. 4-15] - Check **OFF**.
10. Standby Gyro [fig. 4-16] - **CAGED**.
11. Radio Master Switch (Avionics) [14, fig. 4-27] - **OFF**.
12. Primary, Secondary and Auxiliary Inverter Switches [10,12, 5, fig. 4-27] - **OFF**.
13. All remaining panel switches - **OFF**.
14. Battery Switches [8-9, fig. 4-28] - **OFF**.
15. Controls - **LOCKED**.
16. Main Door [6, fig. 4-51] - **OPEN** (“SHIFT+E”).
17. Flight Crew [2, fig. 4-51] - **ABSENT**. *Click the steps on the lower section of the main door for the crew to leave the aircraft.*
18. “Remove Before Flight” Items [16, fig. 4-2] - **INSTALLED**. *Click the white label above the Anti-Skid Generator Lights in the captain’s instrument panel to install the “Remove Before Flight” items (visible on the exterior model). In Prepar3D, you can also click the nose gear door [8, fig. 3-3] when in the exterior view.*
19. Main Door [24, fig. 3-1] - **CLOSED AND LOCKED** (“SHIFT+E”). *In Prepar3D, you can close the door by clicking the handles when in the exterior view.*



ABNORMAL / EMERGENCY PROCEDURES

SECTION 8



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

ENGINE FAILURE

Engine Failure upon 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 or 3, 6 or 16, fig. 4-41] - to **IDLE (“F1”)**.
 - b. Throttle Release Lever [2 or 4, fig. 4-41] - **LOCKED (fuel valve closed)**. *This will set throttle to CUTOFF. Engine will shut off.*
 - c. Manual and air ignition [6 or 11, fig. 4-28; 1 or 16, fig. 4-27] - **OFF**.
2. **INFORM ATC**.
3. **EVALUATE** fuel status [16-17, fig. 4-43].
4. Fuel Crossfeed Switch [3, fig. 4-43] and Standby Pump Switches [8-9, fig. 4-43] - **AS REQUIRED**. Refer to “20 Series Fuel System”, section 5, page 15, for complete crossfeed procedures.
5. **COMPLETE** flight at lower altitude if possible or **PERFORM** precautionary landing if needed.

Engine Failure on Approach

1. Same as above. Engine restart and cross-feeding optional.
2. **MAINTAIN** directional control and **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

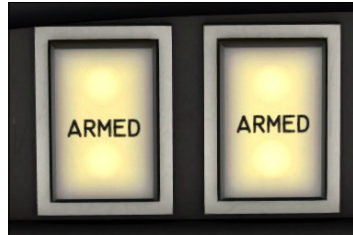


1. Fire Alarm Annunciator [6, fig. 4-31 or 2, fig. 4-33] - **ON**. Identify engine on fire.
2. **THROTTLE BACK** engine and **MONITOR** Fire Alarm Annunciator.
3. If fire persists after 10 seconds, **PRESS** Firewall Shutoff Button [6, fig. 4-31 or 2, fig. 4-33]. **OPEN** button guard first. *This will arm the fire extinguisher.*
4. Confirm firewall shutoff:
 - a. Pinlight [8, fig. 4-31 or 1, fig. 4-33] - **ON** with engine shutoff.
5. Affected engine - **SECURED**:
 - a. Throttle and Subthrottle [1 or 3, 6 or 16, fig. 4-41] - to **IDLE (“F1”)**.
 - b. Throttle Release Lever [2 or 4, fig. 4-41] - **LOCKED (fuel valve closed)**. *This will set throttle to CUTOFF. Engine will*



shut off.

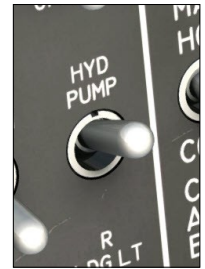
- c. Manual and air ignition [6 or 11, fig. 4-28; 1 or 16, fig. 4-27] - **OFF**.
6. Confirm extinguishers **ARMED** [4-5, fig. 4-31 or 4-5, fig. 4-33] - **ON**.
7. If fire persists after 10 seconds, **PUSH** First Fire Extinguisher Discharge Button [4, fig. 4-31 or 4, fig. 5-33].
8. If fire persists after 10 seconds, **PUSH** Second Fire Extinguisher Discharge Button [5, fig. 4-31 or 5, fig. 5-33].
9. If fire persists after 10 seconds, **DECLARE EMERGENCY** to ATC and **LAND** as soon as possible.



ELECTRICAL AND/OR HYDRAULIC SYSTEMS FAILURE

Simplified Procedures in Case of Total Engine/Generator Failure

1. Engine Starter/Generator Switches (if generators failed) [6, 11, fig. 4-28] - **OFF**.
2. Auxiliary Inverter Switch (if needed, main inverters failed) [5, fig. 4-27] - **ON**.
3. Primary and Secondary Inverter Switches [10,12, fig. 4-27] (if failed) - **OFF**.
4. **REDUCE** electrical load by turning **OFF** all unnecessary equipment.
5. Electric Auxiliary Hydraulic Pump Switch [19, fig. 4-27] - **ON** to test, then **OFF** and **ON** again when hydraulic power is need-



- ed (flaps, spoilers, landing gear, brakes).
- 6. Hydraulic Pressure Gauge [2, fig. 4-37] - **IN GREEN** when electric auxiliary hydraulic pump is **ON**.
- 7. Frequently **CHECK** airspeed/Mach, altitude, attitude and angle-of attack.
- 8. **DECLARE EMERGENCY** to ATC and **LAND** as soon as practical.

After main batteries are depleted:

- 1. Emergency Battery Switch [2, fig. 4-15] - **ON**. The amber light next to the switch will come **ON** after about 1 to 3 seconds, indicating that power is supplied to the aircraft by the emergency batteries.



- 2. Standby Emergency Battery Switch [2, fig. 4-15] - **ON**. The amber light next to the switch will come **ON**.
- 3. Standby Gyro [fig. 4-16] - **UNCAGED** and **CHECKED**.
- 4. Battery Switches [8-9, fig. 4-28] - **OFF**.

Note: Emergency batteries are not available in the current simulation platforms. However, setting either Emergency Battery Switch [2 or 3, fig. 4-15] to **ON**, will start the available APU to simulate emergency battery backup in case of a power failure. There is no APU in the real aircraft. Refer to fig. 4-15 for more details.

On approach:

- 1. Electric Auxiliary Hydraulic Pump Switch [19, fig. 4-27] - **ON**.

- 2. Hydraulic Pressure Gauge [2, fig. 4-37] - **IN GREEN**.
- 3. Spoilers:
 - a. Spoilers Switch [24, fig. 4-41] - Check **RET**.
 - b. Spoilers Extended Annunciator [7, fig. 4-30] - Check **OFF**.
- 4. Flaps:
 - a. **DOWN AS REQUIRED** [25, fig. 4-41]. Refer to "Flight Planning" in section 6.
 - b. Confirm flaps position [1, fig. 4-28] - **DOWN**.
- 5. Landing gear:
 - a. Landing Gear Selector Switch [5, fig. 4-28] - **DOWN**.
 - b. Check Landing Gear Position Lights [3, fig. 4-28] - **RED ON** in transit, then all **GREEN**.



If electric auxiliary hydraulic pump fails, on approach:

- 1. Check Emergency Air Pressure Gauge [3, fig. 4-37] - **IN GREEN**.
- 2. Spoilers:
 - a. Spoilers Switch [24, fig. 4-41] - Check **RET**.
 - b. Spoilers Extended Annunciator [7, fig. 4-30] - Check **OFF**.

3. Flaps:
 - a. **DOWN AS REQUIRED** [25, fig. 4-41].
Refer to "Flight Planning" in section 6.
 - b. Confirm flaps position [1, fig. 4-28] - **DOWN**.
4. Landing gear:
 - a. Landing Gear Selector Switch [5, fig. 4-28] - **DOWN**.
 - b. Check Landing Gear Position Lights [3, fig. 4-28] - **RED ON** in transit, then all **GREEN**.

If landing gear won't extend:

1. Check Emergency Air Pressure Gauge [3, fig. 4-37] - **IN GREEN**.
2. Landing Gear Selector Switch [5, fig. 4-28] - **DOWN**.
3. Emergency Gear Extension Lever [5, fig. 4-

41] - **DOWN**. *Click several times if needed until landing gear is fully extended.*

4. Frequently **CHECK** airspeed/Mach, altitude, attitude and angle-of attack.
5. **LAND** as soon as possible.





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

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

Note: An even more condensed version of these procedures is included in the pilot's kneeboard ("Checklist" tab).

CHECKLIST

Cockpit Preparation (Power OFF)

1. "Remove Before Flight" Items - **REMOVED.**
2. Flight Crew - **ON BOARD.**
3. Captain - **SELECT PILOT.**
4. Copilot - **SELECT PILOT.**
5. Sunglasses - **OPTIONAL.**
6. Pilots - **CHECK.**
7. Seats - **ADJUST ARMRESTS.**
8. Flight controls - **FREE.**
9. Parking brake - **SET.**
10. All switches - **OFF.**
11. All circuit breakers - **IN (CLOSED).**
12. Oxygen Pressure Gauge - **IN GREEN.**
13. Emergency Air Pressure Gauge - **IN**

GREEN.

14. Passenger Oxygen Flow Valve - **NORM**, if passengers present.
15. Passenger Oxygen Mask Valve - **AUTO**, if passengers present.
16. Landing Gear Selector Switch - Check **DOWN**.
17. Bleed Air Switch - Check **OFF**.
18. Pressurization Mode Switch - **AUTO**.
19. Auto Rate Control Knob - Check **CENTERED**.
20. Windshield Defog Knob - **IN (NORMAL)**.

External Power Source (Optional)

1. GPU/Emergency Batteries (APU) - **ON**, if needed.

Cockpit Preparation (Power ON)

1. Battery Switches - **ON**.
2. Emergency Battery Switch - **ON**.
3. Battery Switches - **OFF**. Check amber light next to the Emergency Battery Switch **ON**.
4. Standby Gyro - Check **OPERATIONAL**. Uncage and adjust pitch scale if necessary.
5. Battery Switches - **ON**.
6. Emergency Battery Switch - **OFF**.
7. Landing Gear Selector Switch and Lights - Check **DOWN + 3 GREEN**.
8. Both Primary and Secondary Inverter Switches - **ON**.
9. Radio Master Switch (Avionics) - **ON**.
10. Instrument Warning Flags - **OUT OF VIEW**.
11. Annunciators:
 - a. Annunciator Panel Test Button - **DEPRESS (ON)**.
 - b. All annunciators - **ON**.

- c. Marker beacon lights - **ON**.
- d. Decision height lights - **ON**.
- e. Altitude alert lights - **ON**.
- f. Annunciator Panel Test Button - **RELEASE (OFF)**.

12. Electric Auxiliary Hydraulic Pump Switch - **ON**.
13. Hydraulic Pressure Gauge - **IN GREEN**.
14. Electric Auxiliary Hydraulic Pump Switch - **OFF**.

Warning Systems Tests

1. Landing Gear Warning System Test Switch - **TEST**. Check all six Landing Gear Position Lights **ON** with aural warning.
2. Landing Gear Warning System Test Switch - **CENTER (OFF)**.
3. No Smoking/Seat Belt Switch - **TEST (BOTH POSITIONS)**. Return switch to **OFF** after test.
4. Electric Auxiliary Hydraulic Pump Switch - **ON**.
5. Stall warning system test:
 - a. Both Stall Warning Switches - **ON**. Check annunciators **OFF**.
 - b. Stall Warning Test Vane Selector Switch - **RIGHT**.
 - c. Stall Warning System Test Switch - **ON**.
 - d. Right Angle-of-Attack Indicator - **IN RED**. Check for aural alert, stick shaker, stick nudger (pusher) and Right Stall Warning Annunciator **FLASHING**.
 - e. Stall Warning Test Vane Selector Switch - **LEFT**.
 - f. Left Angle-of-Attack Indicator - **IN RED**. Check for aural alert, stick shaker, stick nudger (pusher) and Left Stall Warning Annunciator **FLASHING**.
 - g. Stall Warning System Test Switch - **OFF**.

- h. Both Stall Warning Switches - **OFF**. Check annunciators **ON**.
6. Anti-skid system test:
 - a. Anti-Skid Power Switch - **ON**. Check Anti-Skid Generator Lights **OFF**.
 - b. Anti-Skid System Test Switch - **FORWARD (OUTBOARD)**. Check Anti-Skid Generator Lights **OUTBOARD ON**.
 - c. Anti-Skid System Test Switch - **AFT (INBOARD)**. Check Anti-Skid Generator Lights **INBOARD ON**.
 - d. Anti-Skid System Test Switch - **CENTER (OFF)**.
 - e. Anti-Skid Power Switch - **OFF**. Check Anti-Skid Generator Lights **ON**.
 7. Overspeed warning test:
 - a. Cabin Altitude Warning/Mach Test Switch - **AFT (MACH TEST)**. Check for aural alert and stick puller.
 - b. Cabin Altitude Warning/Mach Test Switch - **CENTER (OFF)**.
 8. Electric Auxiliary Hydraulic Pump Switch - **OFF**.
 9. Fire detection system test:
 - a. Fire Detection System Test Switch - **ON**. Check both captain and copilot fire annunciators **ON** or **FLASHING**.
 - b. Fire Detection System Test Switch - **OFF**. Check both captain and copilot fire annunciators **OFF**.
 10. Cabin altitude warning test:
 - a. Cabin Altitude Warning/Mach Test Switch - **FORWARD (CABIN ALT TEST)**. Check Cabin Altitude Annunciator **FLASHING** (with aural alert).
 - b. Cabin Altitude Warning/Mach Test Switch - **CENTER (OFF)**. Check Cabin Altitude Annunciator **OFF**.
1. Thrust reversers:
 - a. Thrust Reverser Lights Test Switch - **TEST**. Check all thrust reverser annunciators and lights **ON**.
 - b. Thrust Reverser Lights Test Switch - **NORM**. Check all thrust reverser annunciators and lights **OFF**.
 - c. Engine Throttles - **IDLE ("F1" or FULL AFT)** on your controller) if released, or **CUTOFF** if locked. Throttles cannot be moved if locked.
 - d. Thrust Reverser Subthrottles - **PUSHED FORWARD** or **IDLE ("F1")**.
 - e. Thrust Reverser Arm Switches - **ARM**. Check Thrust Reverser Armed Annunciators **ON**.
 - f. Thrust Reverser Arm Switches - **OFF**. Check Thrust Reverser Armed Annunciators **OFF**.
 - g. Thrust Reverser Emergency Stow Switches - **NORM (UP)**. Check Thrust Reverser Emergency Stow Lights **OFF**.
 - h. Thrust Reverser Unsafe Annunciators - **OFF**.
 - i. Thrust Reverser Deployed Annunciators - **OFF**.
 2. Autopilot check:
 - a. AFC/SS Test Switch - **FORWARD (AFCS TEST)**. Check all AFCS (autopilot/flight director) mode annunciators and lights **ON**.
 - b. AFC/SS Test Switch - **CENTER (OFF)**.
 - c. Autopilot Engage Button - **PRESS ON** to engage, then **PRESS OFF** to disengage. Check for aural alert when autopilot is disengaged.
 - d. Autopilot Engage Button - **PRESS ON**.
 - e. Autopilot Roll Monitor Test Button - **DEPRESS TO TEST**. Autopilot will disengage. Release to **OFF**.
 - f. Autopilot Engage Button - **PRESS ON**.
 - g. Autopilot Pitch Trim Monitor Switch - **TEST UP AND DOWN**. Autopilot will

Before Starting Engines

1. Thrust reversers:

- disengage. Reset to **CENTER (OFF)**.
 - h. Autopilot Engage Button - **PRESS ON**.
 - i. Turn Command Knob - **TEST (ROTATE) LEFT/RIGHT**, then reset to **CENTER**. Click to center.
 - j. Pitch Command Wheel - **TEST (ROTATE) UP/DOWN**, then reset to **CENTER**. Click to center.
 - k. Autopilot Engage Button - **PRESS OFF**.
 - l. Yaw Damper Selector Switch - **PRI YAW DAMPER**.
 - m. Primary Yaw Damper ON Button - **PRESS ON** to engage.
 - n. Primary Yaw Damper OFF Button - **PRESS OFF** to disengage. Check for aural alert when primary yaw damper is disengaged.
 - o. Yaw Damper Selector Switch - **SEC YAW DAMPER**.
 - p. Secondary Yaw Damper Switch - **ENGAGE**.
 - q. Secondary Yaw Damper Switch - **OFF**. Check for aural alert when secondary yaw damper is disengaged.
 - r. Yaw Damper Selector Switch - Back to **PRI YAW DAMPER**.
3. Emergency Pitch Trim Switch - **NORM**.
 4. Trim:
 - a. Elevator trim (on your controller) - Check that Pitch Trim Indicator is about **one needle thickness below center**. Listen for trim in motion clicker (autopilot must be disengaged).
 - b. Takeoff Trim Alert Annunciator - **OFF**.
 - c. Aileron trim (on your controller) - **CHECKED**.
 - d. Rudder trim - **CHECKED**.
 5. Fuel quantity:
 - a. Check **sufficient quantity** for flight.
 - b. Check for **imbalance** between L/R tanks.
 6. Fuel counter - **RESET TO ZERO**.
 7. Crosflow (Crossfeed) Switch - **CLOSE**.
 8. Fuselage Tank Switch - **OFF (CENTER)**.
 9. Fuel Jettison Switch - **OFF**.
 10. Jet pumps:
 - a. Jet Pumps Switches - **ON**.
 - b. Motive Flow Valve Lights - **ON** for one second (valve in transit), then **OFF**.
 - c. Engine Low Fuel Pressure Annunciators - **OFF**.
 11. Standby Pumps Switches - **OFF**.
 12. Main Cabin Door - **CLOSED AND SECURE (SHIFT+E)**.
 13. Door Unsecured Annunciator - **OFF**.

Engine Start

1. Right Engine Throttle - **IDLE ("F1" or FULL AFT** on your controller) if released, or **CUTOFF** if locked.
2. Right Thrust Reverser Subthrottle - **FULL FORWARD (IDLE or "F1")**.
3. Right Throttle Release Lever - Click to **LOCK** or **"CTRL+SHIFT+F1"** (release lever down, throttle set to cutoff, fuel valve closed).
4. Right Engine Throttle - Check **CUTOFF** (locked, down position).
5. Rotating Beacon Lights - **ON**.
6. Right Engine Starter/Generator Switch - **START**. Check for Right Ignition Light **ON**.
7. Right RPM - Check **10%**.
8. Right Throttle Release Lever - Click to **RELEASE** (release lever up, throttle set to idle, fuel valve open).
9. Right Engine Throttle - Check **IDLE ("F1" or FULL AFT** on your controller).

10. Right EGT - Monitor and make sure **WITH-
IN GREEN ARC**.
11. Right RPM - Check about **50%**.
12. Right Starter/Generator Switch - Set to **OFF**, then to **GEN** when engine is stable at **IDLE**.
13. Right Engine Ignition Light - **OFF**.
14. Right Generator Inoperative Annunciator - **OFF**.
15. Right DC Ammeter - **CHARGING**.
16. Engine Low Fuel Pressure Annunciator - **OFF**.
17. Right engine oil pressure and temperature - Check **BOTH IN GREEN**.
18. Fuel flow - **NORMAL**.
19. Hydraulic pressure - **IN GREEN**.

Repeat above procedures for left engine.

Before Taxi

1. Primary & Secondary Inverter Switches - Check **ON**.
2. Auxiliary Inverter Switch - Check **OFF**.
3. Radio Master Switch - Check **ON**.
4. Engine instruments - **CHECKED**.
5. Navigation Lights - **ON**.
6. Strobe Lights - **ON**.
7. Recognition Lights - **ON (if required)**.
8. Taxi Lights - **ON**.
9. Emergency Lights Switch - **ARM**. Check Emergency Lighting System OFF Warning Light **OFF**.
10. Spoilers:
 - a. Spoilers Switch - Check **RET**.
 - b. Spoilers Extended Annunciator - Check **OFF**.
11. Bleed Air Switch - **NORMAL**.

12. Anti-ice:
 - a. Wing and Stabilizer Heat Switch - **AS REQUIRED**.
 - b. Windshield Heat Switches - **AS REQUIRED**.
 - c. Nacelle Heat Switches - **AS REQUIRED**.
13. Parking brake - **RELEASED**.
14. Anti-Skid Power Switch - **ON**.
15. Anti-Skid Generator Lights - **ALL OFF**.

Taxi

1. Radios - Check **ON** and **SET**.
2. ATC clearance - **OBTAINED** from appropriate authority. **SET** radios accordingly.
3. GPS/GNS/GTN - **ON** and **SET** according to flight plan and ATC clearance (if available/needed).
4. Flight controls - **CHECKED**.
5. Thrust reversers controls - **CHECKED**.
6. Nose wheel steering:
 - a. Nose Gear Steer Lock Switch - **DEPRESS MOMENTARILY** to **ENGAGE** electric nose wheel steering.
 - b. Nose Wheel Steering Engaged Annunciator - **ON**.
7. Engine Throttles - **AS NEEDED** for taxiing
8. Aircraft rolling above 5 knots:
 - a. Toe brakes - **APPLIED**. Listen for "birds in the cockpit" sounds.
 - b. Verify aircraft deceleration.
 - c. Toe brakes - **RELEASED**.

Before Takeoff

1. Cabin pressurization:
 - a. Bleed Air Switch - Check **NORMAL**.
 - b. Cabin Altitude Controller Knob - **SET** to

- initial planned cruise altitude.**
2. Cabin temperature:
 - a. Bleed Air Switch - Check **NORMAL**.
 - b. Cabin Temperature Control Knob/Switch - **SET to desired temperature**.
 - c. H-Valve Position Indicator - Check, **about 1/2**.
 - d. Lower cabin temperature **if necessary**.
 3. No Smoking/Seat Belt Switch - **NO SMOKING AND SEAT BELTS (ON)**.
 4. Anti-ice:
 - a. Bleed Air Switch - Check **NORMAL**.
 - b. Wing and Stabilizer Heat Switch - **OFF** or **AS REQUIRED**.
 - c. Windshield Heat Switches - **OFF** or **AS REQUIRED**.
 - d. Nacelle Heat Switches - **OFF** or **AS REQUIRED**.
 5. All external lights, except landing lights - **ON**.
 6. Avionics:
 - a. ADI Gyro and Computer Warning Flags - **OUT OF VIEW**.
 - b. HSI Compass Warning Flag - **OUT OF VIEW**.
 - c. Radios and transponder - Check **ON** and **SET** according to flight plan and ATC clearance.
 - d. GPS/GNS/GTN - **ON** and **SET** according to flight plan and ATC clearance (if available/needed).
 - e. Radar - **ON** and **SET** (if available/needed).
 7. Gyro:
 - a. Directional Gyro Free/Slave Switch - Check **SLAVE**.
 - b. Gyro Drift Compensation Switch - If Directional Gyro Free/Slave Switch is set to **FREE** (magnetic references unreliable), **use as needed** to synchronize directional gyros with ground indications (the Directional Gyro drift knob can also be used).
 8. Flight instruments:
 - a. Barometric pressure on altimeters - **SET**, according to nearest weather station.
 - b. Airspeed bugs - **SET** to V_1 and V_R **as needed**.
 - c. Initial course on HSI - **SET**.
 - d. Initial heading on HSI - **SET**.
 - e. RMI - **SET, as needed**.
 - f. DME head - **SET, as needed**.
 - g. All directional indicators as aircraft turns while taxiing - **CHECKED**.
 9. Autopilot Altitude Preselector - **SET to initial ATC clearance altitude**.
 10. Flight Director Switch - **OFF, then ON (reset)**. Check Flight Director Command Bars **IN RANGE** on ADI.
 11. Radio altimeter:
 - a. Radio Altimeter Power Switch - **ON** (to test).
 - b. Radio altimeter flags - Check **OUT OF VIEW**.
 - c. Radio Altimeter Power Switch - **OFF**.
 12. Spoilers:
 - a. Spoilers Switch - Check **RET**.
 - b. Spoilers Extended Annunciator - Check **OFF**.
 13. Flaps:
 - a. Flaps Switch - **PUSH DOWN AS NEEDED**.
 - b. Flaps Position Indicator - Check for correct **TAKEOFF POSITION (8' or AS NEEDED)**.

14. Emergency Pitch Trim Switch - Check **NORM.**
15. Trim:
 - a. Elevator trim (on your controller) - **SET FOR TAKEOFF.** Check that Pitch Trim Indicator is about **one needle thickness below center.**
 - b. Takeoff Trim Alert Annunciator - Check **OFF.**
 - c. Aileron trim (on your controller) - **CHECKED.**
 - d. Rudder trim - **CHECKED.**
16. Fuel quantity - Check for **imbalance** between L/R wing tanks.

Takeoff

1. Flight controls:
 - a. Check - **FREE.**
 - b. **HIDE** control columns and yokes **if desired.**
2. Nose wheel steering:
 - a. Nose Gear Steer Lock Switch - **DEPRESS MOMENTARILY** to **DISENGAGE** electric nose wheel steering.
 - b. Nose Wheel Steering Engaged Annunciator - **OFF.**
3. Anti-Skid Power Switch - Check **ON.**
4. Anti-Skid Generator Lights - Check **OFF.**
5. Engine Air Ignition Switches - Normally **OFF** (can be turned **ON** if wet or turbulent conditions).
6. Stall Warning Switches - Both **ON.** Check annunciators **OFF.**
7. Pitot Heat Switches - Both **ON.**
8. Thrust Reverser Arm Switches - **ARM.**
9. Thrust Reverser Armed Annunciators - **ON.**
10. Annunciator panel:
 - a. **CHECKED,** no warnings or abnormal indications.
11. ATC clearance - **OBTAINED** from appropriate authority.
12. Landing and Taxi Lights and all external lights - **ON.**
13. Toe Brakes:
 - a. Brakes - **APPLIED.**

Takeoff Sequence

Important

- In case of an engine failure, refer to “Abnormal/Emergency Procedures” in section 8.
- The GLJ Model 25 is a very high performance jet aircraft. The takeoff sequence happens quite fast and requires an efficient drill in order to observe and maintain altitude and speed clearances.

1. Throttles:
 - a. **ADVANCE** slowly to **takeoff power (100% RPM).**
2. Toe Brakes:
 - a. Brakes - **RELEASED.**
3. **ACCELERATE** to **V₁**:
 - a. If engine fails before **V₁**, **ABORT** takeoff.
 - b. If engine fails after **V₁**, **CONTINUE** takeoff.
4. **V_r** attained:
 - a. **ROTATE** to **15° pitch.**
 - b. Airspeed bugs - **SET** to **V₂** as needed.
5. Angle-of-Attack:
 - a. Angle-of-Attack Indicator - **MAINTAIN IN GREEN.**
6. Positive rate of climb:
 - a. Landing Gear Selector Switch - **UP.**

- b. Landing Gear Position Lights - Check **RED ON** in transit, then all **OFF**.
 - c. **ACCELERATE** to **V₂ + 15**.
7. Flaps:
 - a. **RETRACT** on schedule.
 8. Landing and Taxi Lights - **OFF**.
 9. Engine Air Ignition Switches - **OFF** (can be turned **ON** if wet or turbulent conditions).
 10. Anti-Skid Power Switch - **OFF**.
 11. Anti-Skid Generator Lights - Check **ON**.
 12. Thrust Reverser Arm Switches - **OFF**.
 13. **ACCELERATE** to **climb speed** - (**MAX 250 KIAS** if ATC-restricted, **MAX 306 KIAS** under FL140).
 14. Cabin pressure - **CHECKED**.
 15. No Smoking/Seat Belt Switch - **OFF**.

Climb

1. Throttles:
 - a. **SET** to **climb power (90% RPM)**.
2. Autopilot Engage Button - **PRESS ON (if desired)** to engage the autopilot.
3. Anti-ice:
 - a. Bleed Air Switch - Check **NORMAL**.
 - b. Wing and Stabilizer Heat Switch - **AS REQUIRED**.
 - c. Windshield Heat Switches - **AS REQUIRED**.
 - d. Nacelle Heat Switches - **AS REQUIRED**.
4. Cabin pressure - **MONITORED**.
5. Transition level (18,000 feet maximum):
 - a. Barometric pressure on altimeters - **SET** to **29.92**.
6. Airspeed:
 - a. **ACCELERATE** to **0.7 Mach**.

Cruise

1. Windshield Defog Knob - **PULLED**, if needed.
2. Engine instruments - Check **WITHIN LIMITS**.
3. Cabin pressure - **MONITORED**.
4. Engine Sync Switch - **ON, if needed**.
5. Engine Sync ON Annunciator - Check **ON (if the Engine Sync Switch is set to ON)**.
6. Yaw Damper Selector Switch - Check **PRI YAW DAMPER**.
7. Primary Yaw Damper ON Button - **PRESS ON**.
8. Fuel status:
 - a. **MONITOR** fuel at all time.
 - b. **ENSURE** fuel burn is **consistent with flight plan**.
 - c. **SWITCH TO THE FUSELAGE TANK** if fuel level in the wing tanks **becomes critically low**.
9. Autopilot Engage Button - **PRESS ON (if desired)**, to engage the autopilot.
10. Autopilot Speed/Mach Hold Mode Switch - **PRESS ON (if desired)** to engage.
11. Other autopilot modes - **PRESS ON (if desired)** to engage.

Descent

1. ATC clearance - **OBTAINED**. Set radios accordingly.
2. Windshield Defog Knob - **PULLED, if needed**.
3. Pressurization:
 - a. Set **destination field elevation**.
4. Anti-ice:
 - a. Bleed Air Switch - Check **NORMAL**.
 - b. Wing and Stabilizer Heat Switch - **AS**

REQUIRED.

- c. Windshield Heat Switches - **AS REQUIRED.**
- d. Nacelle Heat Switches - **AS REQUIRED.**
- 5. Pitot heat:
 - a. Pitot Heat Switches - Check both **ON.**
- 6. Fuel quantity - **MONITORED.**
- 7. Hydraulic Pressure Gauge - **IN GREEN.**
- 8. Throttles:
 - a. During descent, **MAINTAIN 75% RPM** minimum until 12,000 ft.
- 9. Spoilers - **AS REQUIRED.**
- 10. Transition level (18,000 feet maximum):
 - a. Barometric pressure on altimeters - **SET to local setting.**

Approach

1. ATC clearance - **OBTAINED.** Set radios accordingly.
2. Fuel balance between L/R wing tanks - **CHECKED.**
3. Thrust Reverser Arm Switches - **ON.** Thrust Reverser Armed Annunciators will remain **OFF** until the aircraft touches down.
4. Hydraulic Pressure - **IN GREEN.**
5. Emergency Air Pressure - **IN GREEN.**
6. No smoking/seat belts sign:
 - a. No smoking switch - **NO SMOKING and SEATBELTS ON.**
7. Cabin pressure - **CHECKED.**
8. Engine Sync Switch - **OFF.**
9. Engine Sync ON Annunciator - Check **OFF.**
10. Spoilers:
 - a. Spoilers Switch - Check **RET.**

- b. Spoilers Extended Annunciator - Check **OFF.**

11. Radio altimeter:

- a. Radio altimeter power switch - **ON.**

Before Landing

1. Landing gear:
 - a. Landing Gear Selector Switch - **DOWN.**
 - b. Check Landing Gear Position Lights - **RED ON** in transit, then all **GREEN.**
2. Landing and Taxi Lights - Both **ON.**
3. Parking brake - Check **RELEASED.**
4. Anti-Skid Power Switch - **ON.**
5. Anti-Skid Generator Lights - Check **OFF.**
6. Flaps:
 - a. **DOWN AS REQUIRED.**
7. Engine Air Ignition Switches - Normally **OFF**, or **ON** if wet or turbulent conditions.
8. Primary Yaw Damper OFF Button - **PRESS OFF (primary yaw damper disengaged).**
9. Secondary Yaw Damper Switch - **OFF (secondary yaw damper disengaged).**

Landing (after Touchdown)

1. Spoilers:
 - a. Spoilers Switch - **EXT. (spoilers extended as needed).**
 - b. Spoilers Extended Annunciator - **ON.**
2. Thrust reversers (if needed):
 - a. Thrust Reverser Subthrottles - **PULLED AFT ("F2" AS NEEDED) to deploy thrust reversers.**
 - b. Thrust Reverser Deployed Annunciators - **ON.**
3. Thrust reversers (if needed, after deceleration):

- a. Thrust Reverser Subthrottles - **PUSHED FORWARD (“F1” to IDLE).**
- b. Thrust Reverser Deployed Annunciators - **OFF.**
- 4. Thrust Reverser Arm Switches - **OFF.**
- 5. Thrust Reverser Armed Annunciators - **OFF.**
- 6. Spoilers (after deceleration):
 - a. Spoilers Switch - **RET. (spoilers retracted).**
 - b. Spoilers Extended Annunciator - **OFF.**
- b. Wing and Stabilizer Heat Switch - **OFF or AS REQUIRED.**
- c. Windshield Heat Switches - **OFF or AS REQUIRED.**
- d. Nacelle Heat Switches - **OFF or AS REQUIRED.**
- 8. Pitot Heat Switches - **OFF or AS REQUIRED.**
- 9. Bleed Air Switch - **OFF**, if not needed for anti-ice or cabin temperature control.
- 10. Unnecessary avionics - **OFF.**
- 11. Emergency Lights Switch - **DISARM.**

Before Clearing the Runway

- 1. Anti-Skid Power Switch - **OFF.**
- 2. Anti-Skid Generator Lights - Check **ON.**
- 3. Flaps:
 - a. Flaps Switch - **UP (AS NECESSARY).**
 - b. Confirm flaps position - **FULL UP.**
- 4. Nose wheel steering:
 - a. Nose Gear Steer Lock Switch - **DEPRESS MOMENTARILY to ENGAGE** electric nose wheel steering.
 - b. Nose Wheel Steering Engaged Annunciator - **ON.**

After Clearing the Runway

- 1. Engine Air Ignition Switches - **OFF.** Check Engine Air Ignition Lights **OFF.**
- 2. Landing Lights - **OFF.**
- 3. Taxi Lights - Check **ON.**
- 4. Strobe Lights - **OFF.**
- 5. Recognition Lights - **OFF.**
- 6. Both Stall Warning Switches - **OFF.**
- 7. Anti-ice:
 - a. Bleed Air Switch - Check **NORMAL.**

Shutdown

Once the aircraft is parked:

- 1. Parking brake:
 - a. Parking Brake Lever - **SET.**
- 2. Anti-ice:
 - a. Wing and Stabilizer Heat Switch - **OFF.**
 - b. Windshield Heat Switches - **OFF.**
 - c. Nacelle Heat Switches - **OFF.**
- 3. Pitot Heat Switches - **OFF.**
- 4. Bleed Air Switch - **OFF.**
- 5. Engine Starter/Generator Switches - **OFF.**
- 6. Engine shutoff:
 - a. Thrust Reverser Subthrottles - **FULL FORWARD TO IDLE (“F1”).**
 - b. Throttles - **FULL AFT TO IDLE (“F1” or FULL AFT on your controller) .**
 - c. Throttle Release Levers - Click to **LOCK** or **“CTRL+SHIFT+F1”** (release levers down, throttles set to cutoff, fuel valves closed).
 - d. Jet Pump Switches - **OFF.**
 - e. Standby Pump Switches - Check **OFF.**
- 7. Rotating Beacon Lights - **OFF.**

8. All remaining exterior lights - **OFF**.
9. Emergency Battery Switches - Check **OFF**.
10. Standby Gyro - **CAGED**.
11. Radio Master Switch (Avionics) - **OFF**.
12. Primary, Secondary and Auxiliary Inverter Switches - **OFF**.
13. All remaining panel switches - **OFF**.
14. Battery Switches - **OFF**.
15. Controls - **LOCKED**.
16. Main Door - **OPEN (“SHIFT+E”)**.
17. Flight Crew - **ABSENT**.
18. “Remove Before Flight” Items [16, fig. 4-2] - **INSTALLED**.
19. Main Cabin Door - **CLOSED AND LOCKED (“SHIFT+E”)**.

APPENDICES

Aircraft Reference Information	A1
Adding Third-Party Addons, Systems and Gauges	A2
Selected Bibliography	A3
Help and Support	A4
Frequently Asked Questions	A5
Known Issues	A6
Making Of	A7



XTREME PROTOTYPES GLJ MODEL 25 SE FOR PREPAR3D AND FSX AIRCRAFT REFERENCE INFORMATION

For detailed instructions on how to install, optimize and fly this add-on aircraft on your simulation platform, please refer to your **GLJ Model 25 SE Flight Manual**.

Maximum Gross Weight - Gates Learjet Model 25D	15,000 lbs.
--	-------------

Note: To adjust fuel load, on the "Aircraft" menu, click "Fuel and Payload".

V _{MO} - Maximum Operating Speed	359 KIAS
M _{MO} - Maximum Operating Mach	.82 Mach
V _A - Maneuvering Speed 10,000 lbs. (sea level)	160 KIAS
V _A - Maneuvering Speed 10,000 lbs. (20,000 ft.)	165 KIAS
V _A - Maneuvering Speed 10,000 lbs. (45,000 ft.)	170 KIAS
V _A - Maneuvering Speed 15,000 lbs. (sea level)	200 KIAS
V _A - Maneuvering Speed 15,000 lbs. (20,000 ft.)	205 KIAS
V _A - Maneuvering Speed 15,000 lbs. (45,000 ft.)	220 KIAS
V _{LO} - Maximum Gear Operating Speed	200 KIAS
V _{LE} - Maximum Landing Gear Extension Speed	265 KIAS

Maximum Flap Placard Speeds

Flaps degrees	KIAS
8	202
20	200
40	153

Note: For complete V-speed tables covering various loading and atmospheric conditions, please refer to Section 6 ("Flight Planning") in your **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.	138 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

ADDING THIRD-PARTY ADDONS, SYSTEMS AND GAUGES (USER GUIDE) APPENDIX 2



Note: The following pages have been written for users with no programming experience and limited knowledge about what lies behind their simulation platform. If you are an experienced programmer, are familiar with the SDK that comes with your simulation platform, and with configuring instrument panels and programming XML gauges, you can skip parts of the discussion, jump to the sections that interest you the most and use the following topics as a reference guide.

ABOUT THIRD-PARTY ADDONS

The virtual cockpits or your new GLJ Model 25 SE v3.0 addon contains fully animated, 3D representations of the GNS 530, the GTN 650, the GTN 750 and of a generic weather radar and transponder. Please note that the software to drive these models is not included with your GLJ Model 25 SE addon and must be purchased separately from third-party developers or vendors.

All screens, buttons and knobs on the bezels of these virtual devices can be configured by the user to integrate almost any Prepar3D and/or FSX-compatible third-party addon, system or gauge.

While it is impossible for us to offer full support and/or custom configuration panels for the installation and integration of every third-party addon available in the world of flight simulation, we are trying our best to provide as much information as possible in order to assist you, should you decide to install your own third-party navigation systems, radars or transponders in the future.

In this section, we presume that your third-party addons are fully compatible with your simulation platform, have been installed properly and are working well with other add-on or stock aircraft installed on your system. We recommend not to add your third-party addons to the cockpit of the GLJ Model 25 SE by using a setup utility or configuration panel provided by the developer (more about this later).

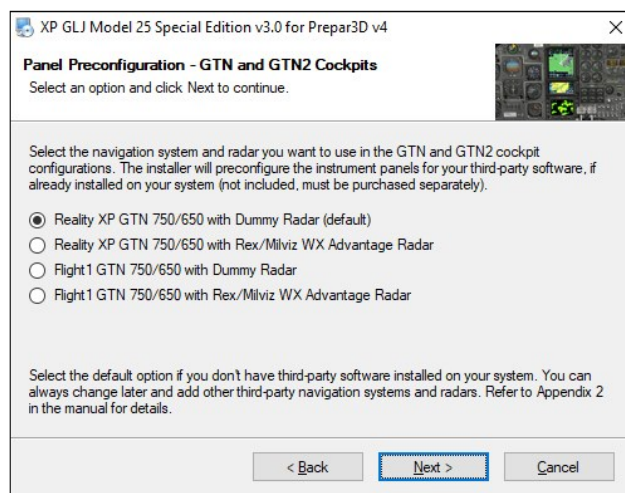
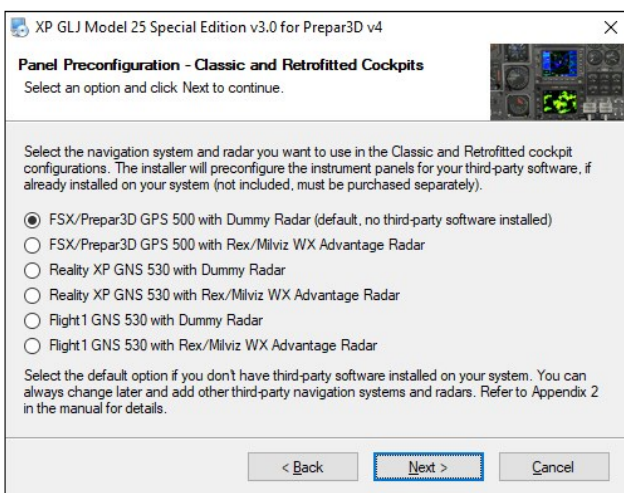
ADDING THIRD-PARTY ADDONS DURING INSTALLATION

The easiest way to add third-party software to the cockpits of the GLJ Model 25 SE v3.0 addon is during initial installation (see section 2, page 4).

The GLJ Model 25 SE v3.0 comes preconfigured for the GNS/GTN systems from [Reality XP](#) and [Flight1](#), and for the Rex/Milviz WX Advantage radar from [Rex Simulations](#). It is also preconfigured for the basic GPS 500 and transponder included with your simulation platform.



During installation, you must select which third-party navigation system and/or radar you intend to use with your GLJ Model 25 SE addon. The installer will preconfigure the instrument panels and program the buttons and knobs in the 3D model for your third-party software.



By default, the Classic and Retrofitted cockpits are preconfigured for the basic GPS 500 that comes with your simulation platform and for a dummy radar screen. This is the option you need to select if you don't have third-party software installed on your computer. You can always change later and add third-party navigation systems and radars.

The GTN and Dual GTN (GTN2) cockpits are preconfigured for the Reality XP (or Flight1) GTN 750/650 and a dummy radar screen. We do not recommend flying the GLJ Model 25 SE addon with the GTN or GTN2 cockpit configurations if you don't have a third-party GTN system installed, because you won't have any GPS and radios. The COM1/COM2 and NAV1/NAV2 radios are fully integrated into the third-party GTN software.

You can switch configurations at any time by reinstalling the GLJ model 25 SE addon and selecting the new navigation systems and radar you intend to use. We always recommend uninstalling the addon before reinstalling it.

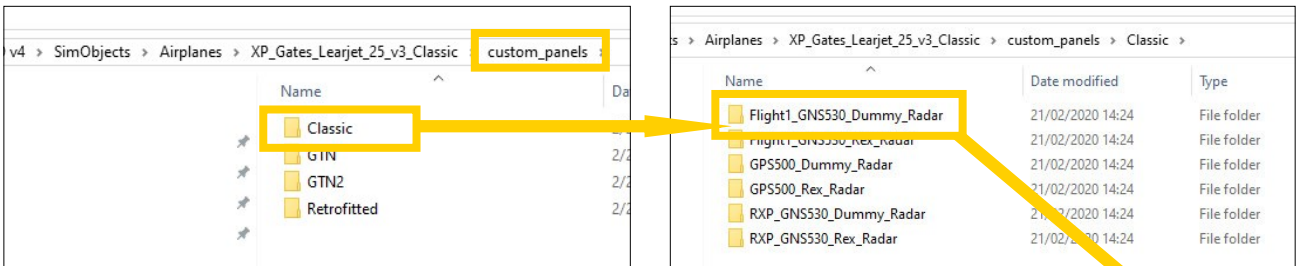
Once the aircraft panels are preconfigured and the 3D buttons programmed for your third-party

addons, your navigation systems and/or radar will become functional in the virtual cockpits. Please refer to the documentation included with your third-party addons for special instructions on how to operate and configure your GNS, GTN or radar for your simulation platform.

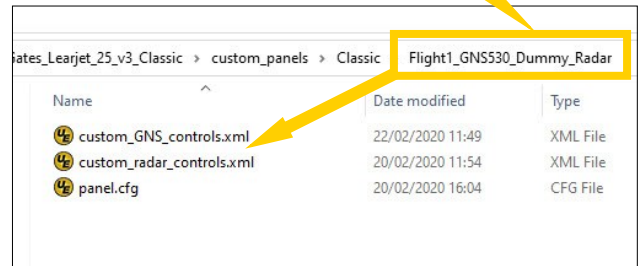
ADDING THIRD-PARTY ADDONS BY COPYING FILES

If you are familiar with your simulation platform and know how to manually install and configure airplanes, you can switch cockpit configurations at any time without reinstalling the GLJ Model 25 SE addon simply by copying the necessary preconfigured “panel.cfg” and control gauges (more on this later) to the aircraft’s panel and gauge folders.

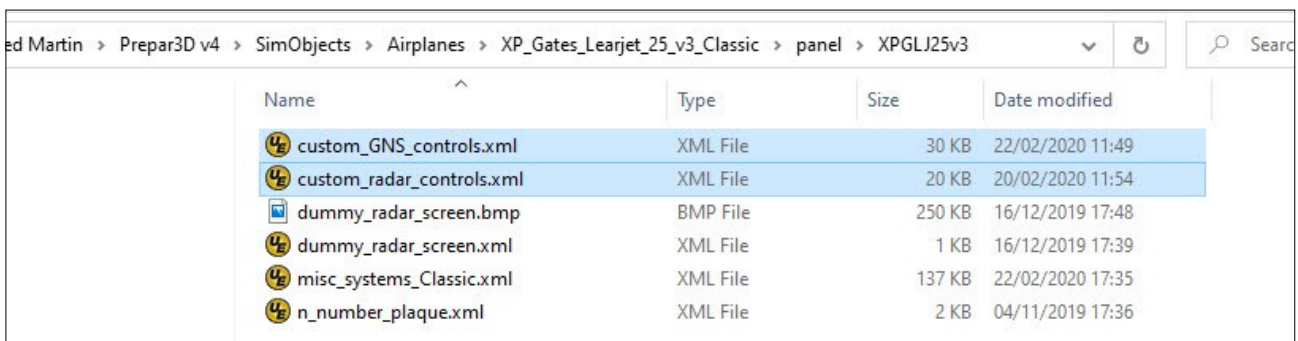
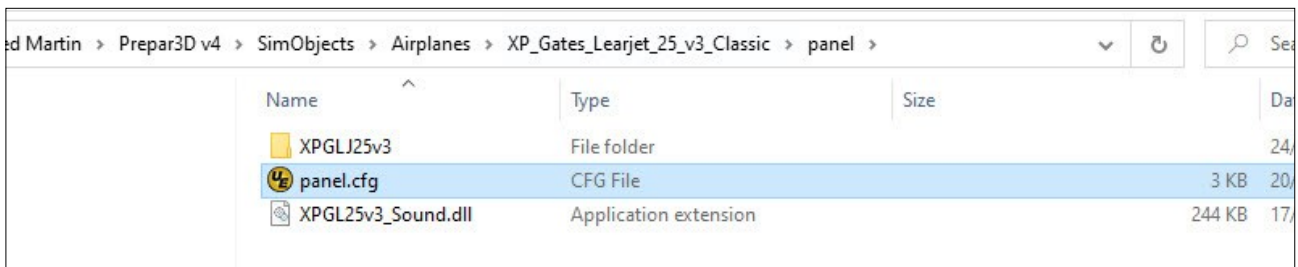
For your convenience, the preconfigured “panel.cfg” and control gauges for the different cockpits are provided in the “...**custom_panels**” folder contained in the addon’s Classic airplane folder.



For each cockpit configuration, three files must be copied. The “panel.cfg” file must be copied to the aircraft’s panel folder, and the two control gauges must be copied to the aircraft’s gauge folder (XPGLJ25v3) that is contained inside the panel folder.



Select the files you need for your cockpit configuration and copy the “panel.cfg” to the aircraft’s panel folder and the two control gauges to the aircraft’s gauge folder (XPGLJ25v3) inside the panel folder. Once the files are copied to their destination folder, your navigation systems and/or ra-



dar will become functional in the virtual cockpits. Please refer to the documentation included with your third-party addons for special instructions on how to operate and configure your GNS, GTN or radar for your simulation platform.

ADDING OTHER THIRD-PARTY ADDONS



Adding other third-party addons than those mentioned before is also possible by changing a few lines in the aircraft's "panel.cfg" (the panel configuration file). Programming the 3D buttons and knobs in the virtual cockpit so they can communicate with your third-party addons is achieved by changing a few lines in specially provided "control gauges" that are included with your GLJ Model 25 SE addon. This only requires a text editor like Notepad that comes with Windows. Detailed instructions and examples are provided in the next pages.

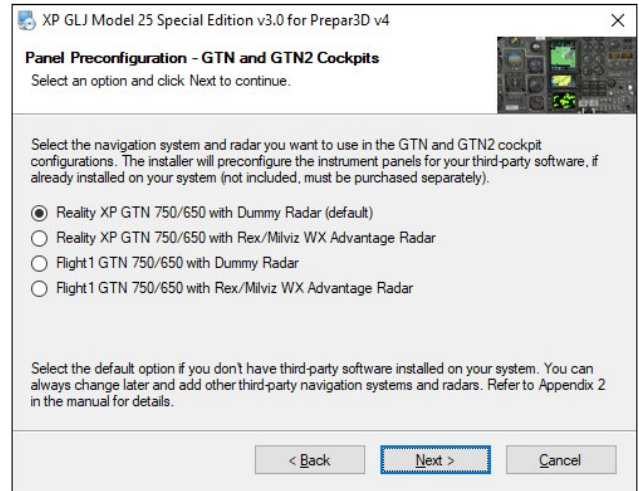
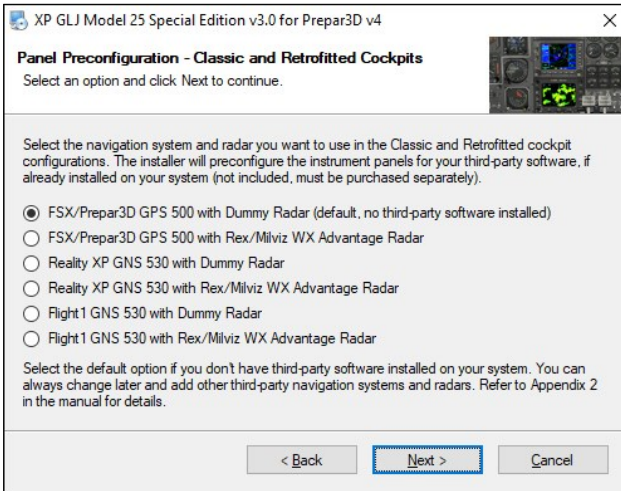
Buttons and knobs are preprogrammed to be compatible with the most popular GPS/GNS/GTN and radar third-party addons. However, should you want to install devices from other developers, including freeware, this would require modifying the control gauges. This method gives you maximum flexibility and control when adding third-party addons, systems or gauges to the cockpit of your GLJ Model 25 SE business jet addon.

Third-party gauges can also be installed as "popup" gauges that are available from the simulator's top menu bar. You can use them in detached windows or on a separate monitor. This also requires modifying a few lines in the "panel.cfg" as you will see later.

Like before, we presume that your third-party addons are fully compatible with your simulation platform, have been installed properly and are working well with other add-on or stock aircraft installed on your system. We recommend not to add your third-party addons to the cockpit of the GLJ Model 25 SE by using a setup utility or control panel provided by the developer for reasons we will explain later.

Please note that Xtreme Prototypes cannot provide support for third-party addons, systems and gauges other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE add-on aircraft may require some experimentation on the part of the user.

Please refer to the documentation included with your third-party addons for special instructions on how to operate and configure the devices for your simulation platform and contact the developer for further assistance. Refer to your simulator's SDK for more information about how to modify the aircraft "panel.cfg" should you need it.



CONFIGURATION BY DEFAULT

If you have selected the default configurations (see above) when you first installed the GLJ Model 25 SE addon on your computer, the GNS/GTN, radar and transponder 3D models in the virtual cockpits are preconfigured as follows:

GNS 530

Classic and Retrofitted cockpit configurations only

- **Gauge and screen:** Basic GPS 500 that comes with your simulation platform
- **Buttons and knobs:** Basic GPS 500 that comes with your simulation platform, compatible with the [Reality XP](#) GNS 530 addon that accepts standard GPS commands from the simulator

GTN 650 and 750

GTN 650/750 and Dual GTN 750 cockpit configurations only

- **Gauge and screen:** Reality XP GTN 650/750 addon
- **Buttons and knobs:** Reality XP GTN 650/750 addon that accepts standard GPS commands from the simulator

Generic Weather Radar

All cockpit configurations

- **Gauge and screen:** Dummy radar screen that comes with your GLJ Model 25 SE addon
- **Buttons and knobs:** Dummy radar screen that comes with your GLJ Model 25 SE addon

Generic Transponder

All cockpit configurations except the Classic cockpit configuration

- **Gauge and screen:** Basic transponder that comes with your simulation platform
- **Buttons and knobs:** Basic transponder that comes with your simulation platform

BACKING UP YOUR PANEL CONFIGURATION FILES

Most third-party addons are installed like standard Prepar3D/FSX gauges by modifying a few lines in the aircraft's "panel.cfg" (the panel configuration file) with a text editor. Other addons may have their own installers and configuration panels that will make the changes for you.

Unfortunately, too many third-party setup utilities have the bad habit of altering the content of your configuration files, including the "panel.cfg". In some instances, sections and comments may be removed entirely and you may lose important information that we have added to the "panel.cfg" to guide you when installing or configuring your third-party addons.

For this and other reasons, it is good practice **to always back up** your "panel.cfg" files before attempting to install, set up or configure any third-party addon, system or gauge for your GLJ Model 25 SE addon.

We also recommend not to add your third-party addons to the cockpit of the GLJ Model 25 SE by using a configuration panel provided by the developer and to follow the instructions in the following pages instead. We believe that this "manual" approach gives you maximum flexibility while remaining in full control of the changes that are being made.

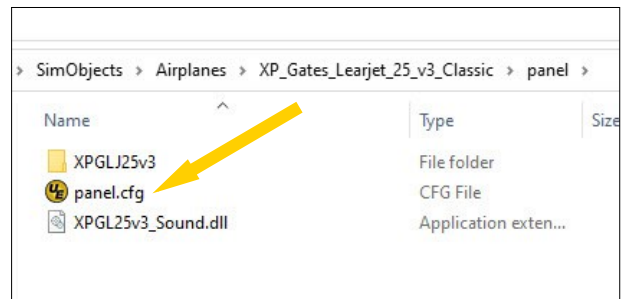
Should anything go wrong when installing your third-party addons, simply revert to your backups or to the original configuration files and start over.

Just in case the worst happens, we have made backup copies of the original "panel.cfg" files for you. They are saved in the "...\custom_panels" folder contained in the addon's Classic airplane folder (see page A2-3).

Backing Up the Files

Normally, the "panel.cfg" files can be found at the following locations. Simply copy and paste the link to your Windows File Explorer to quick access the location. If you have installed your simulation platform at a different location, you will need to change the path to the new location.

For the Classic cockpit configuration, the "panel.cfg" file can be found in the following folder:



Prepar3D:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Classic\panel

FSX Steam:

C:\Program Files (x86)
\Steam\steamapps\common\FSX\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Classic\panel

FSX:

C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator
X\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Classic\panel

For the Retrofitted cockpit configuration, the “panel.cfg” file can be found in the following folder:

Prepar3D:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Retrofitted\panel

FSX Steam:

C:\Program Files (x86)
\Steam\steamapps\common\FSX\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Retrofitted
\panel

FSX:

C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator
X\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Retrofitted\panel

For the GTN 650/750 configuration, the “panel.cfg” file can be found in the following folder:

Prepar3D:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN\panel

FSX Steam:

C:\Program Files (x86)
\Steam\steamapps\common\FSX\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN\panel

FSX:

C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator
X\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN\panel

For the Dual GTN 750 configuration, the “panel.cfg” file can be found in the following folder:

Prepar3D:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN2\panel

FSX Steam:

C:\Program Files (x86)
\Steam\steamapps\common\FSX\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN2
\panel

FSX

C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator
X\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN2\panel

INSTALLING A GPS 500 OR A GNS 530

The GNS 530 model in the Classic and Retrofitted cockpit configurations is preconfigured for the basic GPS 500 that comes with your simulation platform, or for the [Reality XP](#) or [Flight 1](#) GNS 530 third-party addons.

You must select the device you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The GNS 530 model can also be configured by the user to work with other third-party navigation/communication systems by following the procedures and example below.

It is impossible for us to offer full support and custom configuration panels for the installation and integration of every available third-party addon, system or gauge and we cannot guarantee that they will all be compatible with your new GLJ Model 25 SE business jet addon.

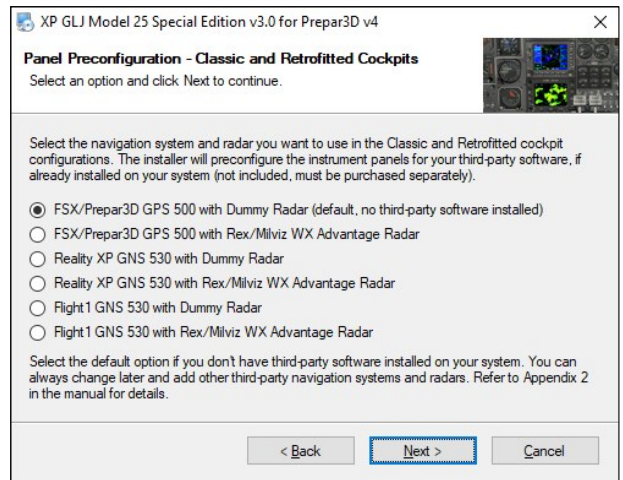
Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.

Please refer to the documentation included with your third-party addon for instructions and contact the developer should you need further assistance.

Installing the Gauge

The following procedures will install a third-party navigation/communication system in the virtual cockpit of the GLJ Model 25 SE to replace the proposed Reality XP GNS 530. This is achieved by changing a few lines in the aircraft's "panel.cfg". The new device will also be installed in a popup window available from the simulator's top menu bar.

1. Make sure that your third-party addon is fully compatible with your simulation platform, has been installed properly and is working well with other add-on or stock aircraft installed on your system. Do not add your third-party addon to the cockpit of the GLJ Model 25 SE by using a setup utility or configuration panel provided by the developer.
2. Please make a backup copy of the aircraft's "panel.cfg" file before proceeding.
3. Using a text editor like Notepad that comes with Windows, open the aircraft's "panel.cfg" file.
4. Following the example below, modify the **red lines** in the "panel.cfg" file for your third-party addon. You will need to replace the existing gauge(s) with your new gauge(s). Please refer to the documentation included with your third-party addon for the correct changes that need to



be made. Be careful and do not change anything else in the file. If this is not done correctly, your third-party addon and/or your GLJ Model 25 SE aircraft may not work properly.

```
// Xtreme Prototypes Gates Learjet Model 25 Special Edition for Prepar3D and FSX
// Version 3.0
```

```
// Panel Configuration File
// Classic Variation
// preconfigured for My Third-Party Addon
// and a dummy radar
```

```
// Copyright (C) 2009-2020 by Xtreme Prototypes, Inc.
// http://www.xtremeprototypes.com
```

```
// 2D COCKPIT SECTION STARTS HERE //////////////////////////////////////
```

```
[Default View]
```

```
X=0
Y=0
SIZE_X=8192
SIZE_Y=6144
```

```
[Color]
```

```
Day=255,255,255
Night=10,10,10
Luminous=255,255,255
```

```
[Window Titles]
```

```
Window00=2D Cockpit
Window01=My Third-Party Addon
```

```
// This addon has no main 2D panel (do not edit) -----
```

```
[Window00]
```

```
background_color=0,0,0
size_mm=1920,1200
window_size_ratio=1.000
position=0
visible=1
ident=MAIN_PANEL
window_size=1.000,1.000
window_pos=0.000,0.000
view_window_rect=8192,6144
nomenu=1
```

```
// My third-party addon 2D panel -----
```

```
[Window01]
```

```
background_color=0,0,0
size_mm=490,357
position=0
visible=0
always_visible=0
ident=15531
window_size=0.360,0.400
sizeable=1
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGauge,0,0,490,357
```

```

// VIRTUAL COCKPIT SECTION STARTS HERE //////////////////////////////////

// My third-party addon display -----

[Vcockpit00]
background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
texture=$GLJ25_01_G_C
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGauge,125,212,677,498,NO_BEZEL
gauge01=XPGLJ25v3!custom_GNS_controls,1,1,1,1

// Dummy radar display -----

[Vcockpit01]
background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
texture=$GLJ25_05_G_C
gauge00=XPGLJ25v3!dummy_radar_screen,218,290,596,427
gauge01=XPGLJ25v3!custom_radar_controls,1,1,1,1

// Tail number plaque (do not edit) -----

[Vcockpit02]
background_color=0,0,0
size_mm=256
visible=1
pixel_size=256,256
no_luminous=1
texture=$GLJ25_04_G_C
gauge00=XPGLJ25v3!n_number_plaque,0,0,250,100

// System gauges (do not edit) -----

[Vcockpit03]
background_color=0,0,0
size_mm=256,256
visible=0
pixel_size=256,256
texture=$GLJ25_03_G_D
gauge00=XPGL25v3_Sound!
FBGS_XMLSound,18,5,1,1,SimObjects\\Airplanes\\XP_Gates_Learjet_25_v3_Classic\\sound\\extra#51
gauge01=XPGLJ25v3!misc_systems_Classic,20,5,1,1

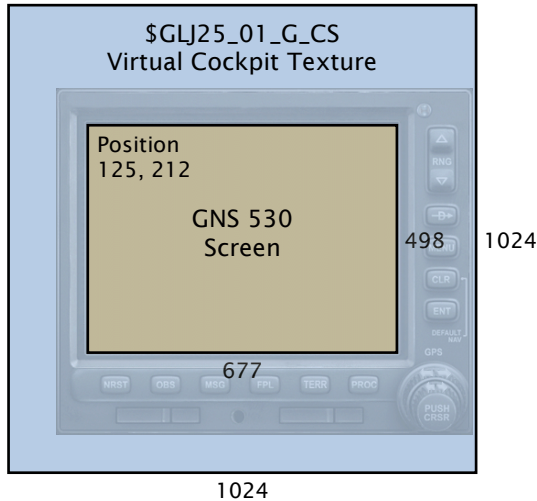
```

Important! The line “gauge01=XPGLJ25v3!custom_GNS_controls,1,1,1,1” that contains the control gauge in the example above should not be removed or the 3D buttons and knobs in the virtual cockpit will not be able to communicate with your third-party addon.

The above example is for adding your third-party addon to the Classic virtual cockpit of the GLJ Model 25 SE. You will need to repeat the procedures for the Retrofitted virtual cockpit if desired.

Experimentation may be required on the part of the user to fit the gauge into the LCD screen of the generic 3D model. The coordinates and gauge size above are for the Reality XP GNS 530. You will need to adjust these parameters for your own third-party addon.

Please note that the GPS/GNS screen (size 677 x 498) is mapped at the center of a 1024 x 1024 VC texture (\$GLJ25_01_G_C) at position 125, 212 (upper left corner). The reason for this is to mask the bezel of the basic GPS gauge that comes with your simulation platform (some addons give you the option of removing the bezel, some don't). This gives you enough room to move around and center the screen of your third-party gauge inside the bezel of the 3D model in the virtual cockpit.



Programming Buttons and Knobs

The buttons and knobs of the GNS 530 model in the Classic and Retrofitted cockpit configurations are preprogrammed for the basic GPS 500 that comes with your simulation platform or for the [Reality XP](#) or [Flight1](#) GNS 530 third-party addons.

You must select the device you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The buttons and knobs can also be programmed by the user to work with other third-party navigation/communication systems.

Programming the buttons and knobs of the GNS 530 model so they can communicate with other third-party addons is achieved by changing a few lines in specially provided "control gauges", if needed. Please refer to "Programming Buttons and Knobs" on page A2-30.

Notes:

- *For more information about how to make changes to the addon's "panel.cfg" file, please refer to the SDK for your simulation platform.*
- *Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Please contact the developer for further assistance.*
- *Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.*

INSTALLING A GTN 650/750 COMBINATION

The GTN 650/750 models in the GTN cockpit configuration are preconfigured for the [Reality XP](#) or [Flight1](#) GTN 650/750 third-party addons.

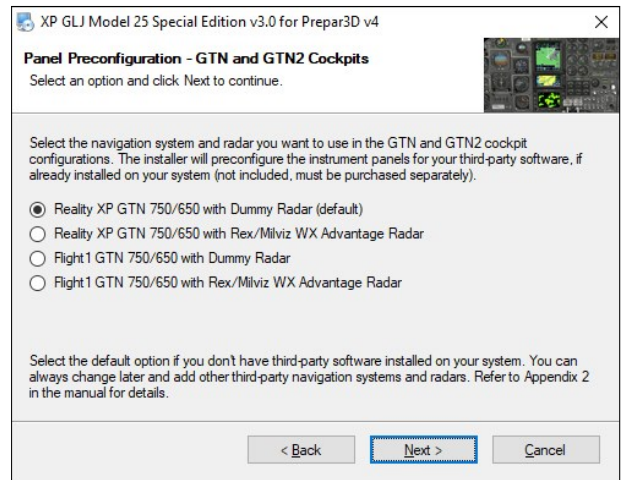
You must select the devices you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The GTN 650/750 models can also be configured by the user to work with other third-party navigation/communication systems by following the procedures and example below.

It is impossible for us to offer full support and custom configuration panels for the installation and integration of every available third-party addon, system or gauge and we cannot guarantee that they will all be compatible with your new GLJ Model 25 SE business jet addon.

Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.

Please refer to the documentation included with your third-party addon for instructions and contact the developer should you need further assistance.



Installing the Gauge

The following procedures will install third-party navigation/communication systems in the virtual cockpit of the GLJ Model 25 SE to replace the proposed Reality XP GTN 650/750 pair. This is achieved by changing a few lines in the aircraft's "panel.cfg". The new devices will also be installed in popup windows available from the simulator's top menu bar.

1. Make sure that your third-party addon is fully compatible with your simulation platform, has been installed properly and is working well with other add-on or stock aircraft installed on your system. Do not add your third-party addon to the cockpit of the GLJ Model 25 SE by using a setup utility or configuration panel provided by the developer.
2. Please make a backup copy of the aircraft's "panel.cfg" file before proceeding.
3. Using a text editor like Notepad that comes with Windows, open the aircraft's "panel.cfg" file.
4. Following the example below, modify the **red lines** in the "panel.cfg" file for your third-party addon. You will need to replace the existing gauge(s) with your new gauge(s). Please refer to the documentation included with your third-party addon for the correct changes that need to be made. Be careful and do not change anything else in the file. If this is not done correctly,

your third-party addon and/or your GLJ Model 25 SE aircraft may not work properly.

```
// Xtreme Prototypes Gates Learjet Model 25 Special Edition for Prepar3D and FSX
// Version 3.0

// Panel Configuration File
// GTN 650-750 Variation
// preconfigured for the My Third-Party Addon
// and a dummy radar

// Copyright (C) 2009-2020 by Xtreme Prototypes, Inc.
// http://www.xtremeprototypes.com

// 2D COCKPIT SECTION STARTS HERE //////////////////////////////////////

[Default View]
X=0
Y=0
SIZE_X=8192
SIZE_Y=6144

[Color]
Day=255,255,255
Night=10,10,10
Luminous=255,255,255

[Window Titles]
Window00=2D Cockpit
Window01=My Third-Party Addon Unit 1
Window02=My Third-Party Addon Unit 2

// This addon has no main 2D panel (do not edit) -----

[Window00]
background_color=0,0,0
size_mm=1920,1200
window_size_ratio=1.000
position=0
visible=1
ident=MAIN_PANEL
window_size=1.000,1.000
window_pos=0.000,0.000
view_window_rect=8192,6144
nomenu=1

// My third-party addon Unit 1 2D panel -----

[Window01]
background_color=0,0,0
size_mm=100,100
position=0
visible=0
always_visible=0
zorder=99
ident=15751
window_pos=0.000000,0.000000
window_size=0.439153,0.715580
sizeable=1
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit1,0,0,100,100
```

```

// My third-party addon Unit 2 2D panel -----

[Window02]
background_color=0,0,0
size_mm=100,100
position=1
visible=0
always_visible=0
zorder=99
ident=15652
window_pos=0.000000,0.715580
window_size=0.439153,0.317029
sizeable=1
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit2,0,0,100,100

// VIRTUAL COCKPIT SECTION STARTS HERE //////////////////////////////////////

// My third-party addon Unit 1 display -----

[Vcockpit00]
background_color=36,36,36
size_mm=1024, 1024
visible=1
pixel_size=1024,1024
texture=$XPGLJ25_08_G
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit1,211,158,600,708,NO_BEZEL
gauge01=XPGLJ25v3!custom_GTN_controls,1,1,1,1

// My third-party addon Unit 2 display -----

[Vcockpit01]
background_color=36,36,36
size_mm=1024, 1024
visible=1
pixel_size=1024,1024
texture=$XPGLJ25_07_G
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit2,211,158,600,290,NO_BEZEL

// Dummy radar display -----

[Vcockpit02]
background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
texture=$GLJ25_05_G_C
gauge00=XPGLJ25v3!dummy_radar_screen,218,290,596,427
gauge01=XPGLJ25v3!custom_radar_controls,1,1,1,1

// Tail number plaque (do not edit) -----

[Vcockpit03]
background_color=0,0,0
size_mm=256
visible=1
pixel_size=256,256
no_luminous=1
texture=$GLJ25_04_G_C
gauge00=XPGLJ25v3!n_number_plaque,0,0,250,100

```

```
// Digital radios and altimeters (do not edit) -----

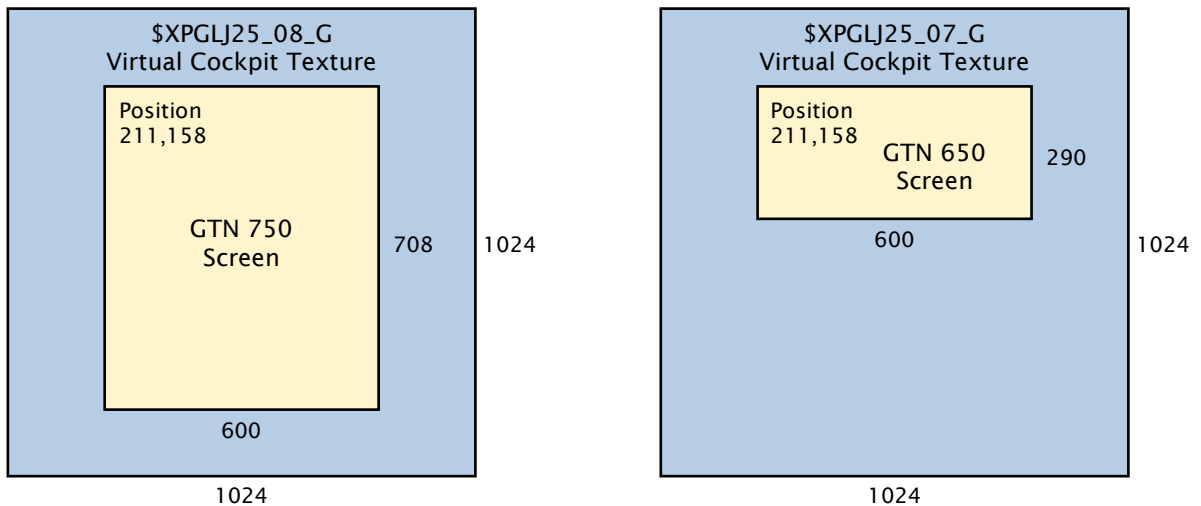
[Vcockpit04]
background_color=0,0,0
size_mm=2048
visible=1
pixel_size=2048,2048
texture=$GLJ25_06_G_C
gauge00=XPGLJ25v3!digital_altimeter_display,22,856,638,440
gauge01=XPGLJ25v3!digital_altimeter_display,22,1316,638,440
gauge02=XPGLJ25v3!ADF_radio_display,25,19,600,395
gauge03=XPGLJ25v3!ATC_radio_display,650,19,600,395
gauge04=XPGLJ25v3!custom_transponder_controls,1,1,1,1

// System gauges (do not edit) -----

[Vcockpit05]
background_color=0,0,0
size_mm=256,256
visible=0
pixel_size=256,256
texture=$GLJ25_03_G_D
gauge00=XPGL25v3_Sound!FBGS_XMLSound,
18,5,1,1,SimObjects\\Airplanes\\XP_Gates_Learjet_25_v3_Classic\\sound\\extra#51
gauge01=XPGLJ25v3!misc_systems_GTN,20,5,1,1
```

Important! The line “gauge01=XPGLJ25v3!custom_GTN_controls,1,1,1,1” that contains the control gauge in the example above should not be removed or the 3D buttons and knobs in the virtual cockpit will not be able to communicate with your third-party addon.

Experimentation may be required on the part of the user to fit the gauges into the LCD screen of the generic 3D models. The coordinates and gauge size above are for the Reality XP GTN 650/750 addon. You will need to adjust these parameters for your own third-party addon.



Please note that the GTN 750 screen (size 600 x 708) is mapped on a 1024 x 1024 VC texture (\$XPGLJ25_08_G) at position 211,158 (upper left corner). The GTN 650 screen (size 600 x 290) is mapped on a 1024 x 1024 VC texture (\$XPGLJ25_07_G) at position 211,158 (upper left corner). The reason for this is to mask the bezel of the third-party gauges (some addons give you the option of removing the bezel, some don't). This gives you enough room to move around and center the screen of your third-party gauges inside the bezel of the 3D models in the virtual cockpit.

Programming Buttons and Knobs

The buttons and knobs of the GTN 650/750 models in the GTN cockpit configuration are preprogrammed for the [Reality XP](#) or [Flight1](#) GTN 650/750 third-party addons.

You must select the device you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The buttons and knobs can also be programmed by the user to work with other third-party navigation/communication systems.

Programming the buttons and knobs of the GTN 650/750 models so they can communicate with other third-party addons is achieved by changing a few lines in specially provided “control gauges”, if needed. Please refer to “Programming Buttons and Knobs” on page A2-30.

Notes:

- *For more information about how to make changes to the addon’s “panel.cfg” file, please refer to the SDK for your simulation platform.*
- *Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Please contact the developer for further assistance.*
- *Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.*

INSTALLING A PAIR OF GTN 750

The GTN 750 models in the GTN2 cockpit configuration are preconfigured for the [Reality XP](#) or [Flight1](#) GTN 650/750 third-party addons.

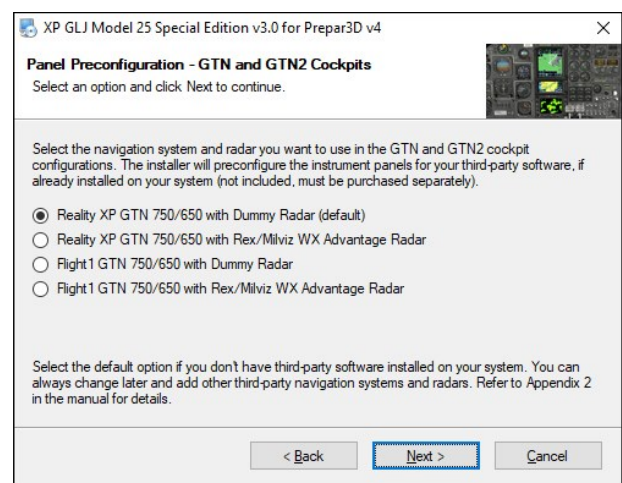
You must select the devices you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The GTN 750 models can also be configured by the user to work with other third-party navigation/communication systems by following the procedures and example below.

It is impossible for us to offer full support and custom configuration panels for the installation and integration of every available third-party addon, system or gauge and we cannot guarantee that they will all be compatible with your new GLJ Model 25 SE business jet addon.

Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.

Please refer to the documentation included with your third-party addon for instructions and contact the developer should you need further assistance.



Installing the Gauge

The following procedures will install third-party navigation/communication systems in the virtual cockpit of the GLJ Model 25 SE to replace the proposed Reality XP GTN 750 pair. This is achieved by changing a few lines in the aircraft's "panel.cfg". The new devices will also be installed in popup windows available from the simulator's top menu bar.

1. Make sure that your third-party addon is fully compatible with your simulation platform, has been installed properly and is working well with other add-on or stock aircraft installed on your system. Do not add your third-party addon to the cockpit of the GLJ Model 25 SE by using a setup utility or configuration panel provided by the developer.
2. Please make a backup copy of the aircraft's "panel.cfg" file before proceeding.
3. Using a text editor like Notepad that comes with Windows, open the aircraft's "panel.cfg" file.
4. Following the example below, modify the **red lines** in the "panel.cfg" file for your third-party addon. You will need to replace the existing gauge(s) with your new gauge(s). Please refer to the documentation included with your third-party addon for the correct changes that need to be made. Be careful and do not change anything else in the file. If this is not done correctly,

your third-party addon and/or your GLJ Model 25 SE aircraft may not work properly.

```
// Xtreme Prototypes Gates Learjet Model 25 Special Edition for Prepar3D and FSX
// Version 3.0

// Panel Configuration File
// Dual GTN 750 Variation
// preconfigured for My Third-Party Addon
// and a dummy radar

// Copyright (C) 2009-2020 by Xtreme Prototypes, Inc.
// http://www.xtremeprototypes.com

// 2D COCKPIT SECTION STARTS HERE //////////////////////////////////////

[Default View]
X=0
Y=0
SIZE_X=8192
SIZE_Y=6144

[Color]
Day=255,255,255
Night=10,10,10
Luminous=255,255,255

[Window Titles]
Window00=2D Cockpit
Window01=My Third-Party Addon Unit 1
Window02=My Third-Party Addon Unit 2

// This addon has no main 2D panel (do not edit) -----

[Window00]
background_color=0,0,0
size_mm=1920,1200
window_size_ratio=1.000
position=0
visible=1
ident=MAIN_PANEL
window_size=1.000,1.000
window_pos=0.000,0.000
view_window_rect=8192,6144
nomenu=1

// My third-party addon Unit 1 2D panel 1 -----

[Window01]
background_color=0,0,0
size_mm=100,100
position=0
visible=0
always_visible=0
zorder=99
ident=15751
window_pos=0.000000,0.000000
window_size=0.439153,0.715580
sizeable=1
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit1,0,0,100,100
```



```

// My third-party addon Unit 2 2D panel 2 -----

[Window02]
background_color=0,0,0
size_mm=100,100
position=1
visible=0
always_visible=0
zorder=99
ident=15652
window_pos=0.000000,0.715580
window_size=0.439153,0.317029
sizeable=1
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit2,0,0,100,100

// VIRTUAL COCKPIT SECTION STARTS HERE //////////////////////////////////

// My third-party addon Unit 1 - Captain Side -----

[Vcockpit00]
background_color=36,36,36
size_mm=1024, 1024
visible=1
pixel_size=1024,1024
texture=$XPGLJ25_08_G
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit1,211,158,600,708,NO_BEZEL
gauge01=XPGLJ25v3!custom_GTN2_controls,1,1,1,1

// My third-party addon Unit 2 - Copilot Side -----

[Vcockpit01]
background_color=36,36,36
size_mm=1024, 1024
visible=1
pixel_size=1024,1024
texture=$XPGLJ25_09_G
gauge00=MyThirdPartyAddonFolder!MyThird-PartyAddonGaugeUnit2,211,158,600,708,NO_BEZEL

// Dummy radar display -----

[Vcockpit02]
background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
texture=$GLJ25_05_G_C
gauge00=XPGLJ25v3!dummy_radar_screen,218,290,596,427
gauge01=XPGLJ25v3!custom_radar_controls,1,1,1,1

// Tail number plaque (do not edit) -----

[Vcockpit03]
background_color=0,0,0
size_mm=256
visible=1
pixel_size=256,256
no_luminous=1
texture=$GLJ25_04_G_C
gauge00=XPGLJ25v3!n_number_plaque,0,0,250,100

```

```
// Digital radios and altimeters (do not edit) -----

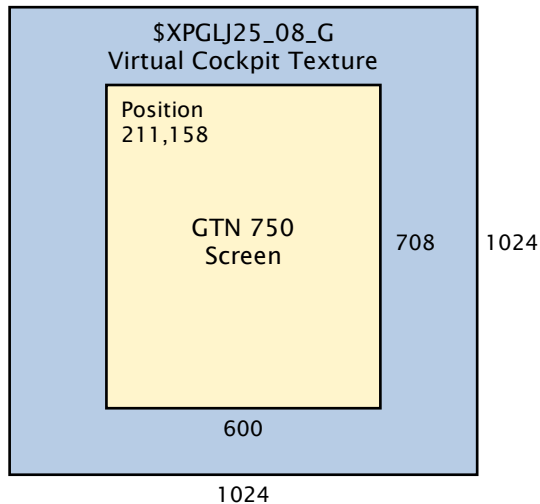
[Vcockpit04]
background_color=0,0,0
size_mm=2048
visible=1
pixel_size=2048,2048
texture=$GLJ25_06_G_C
gauge00=XPGLJ25v3!digital_altimeter_display,22,856,638,440
gauge01=XPGLJ25v3!digital_altimeter_display,22,1316,638,440
gauge02=XPGLJ25v3!ADF_radio_display,25,19,600,395
gauge03=XPGLJ25v3!ATC_radio_display,650,19,600,395
gauge04=XPGLJ25v3!custom_transponder_controls,1,1,1,1

// System gauges (do not edit) -----

[Vcockpit05]
background_color=0,0,0
size_mm=256,256
visible=0
pixel_size=256,256
texture=$GLJ25_03_G_D
gauge00=XPGLJ25v3_Sound!FBGS_XMLSound,
18,5,1,1,SimObjects\\Airplanes\\XP_Gates_Learjet_25_v3_Classic\\sound\\extra#51
gauge01=XPGLJ25v3!misc_systems_GTN2,20,5,1,1
```

Important! The line “`gauge01=XPGLJ25v3!custom_GTN2_controls,1,1,1,1`” that contains the control gauge in the example above should not be removed or the 3D buttons and knobs in the virtual cockpit will not be able to communicate with your third-party addon.

Experimentation may be required on the part of the user to fit the gauges into the LCD screen of the generic 3D models. The coordinates and gauge size above are for the Reality XP GTN 650/750 addon. You will need to adjust these parameters for your own third-party addon.



Please note that the GTN 750 screens (size 600 x 708) are mapped on 1024 x 1024 VC textures (\$XPGLJ25_08_G and \$XPGLJ25_09_G) at position 211,158 (upper left corner). The reason for this is to mask the bezel of the third-party gauges (some addons give you the option of removing the bezel, some don't). This gives you enough room to move around and center the screen of your third-party gauges inside the bezel of the 3D models in the virtual cockpit.

Programming Buttons and Knobs

The buttons and knobs of the GTN 750 models in the GTN2 cockpit configuration are preprogrammed for the [Reality XP](#) or [Flight1](#) GTN 650/750 third-party addons.

You must select the device you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The buttons and knobs can also be programmed by the user to work with other third-party navigation/communication systems.

Programming the buttons and knobs of the GTN 750 models so they can communicate with other third-party addons is achieved by changing a few lines in specially provided “control gauges”, if needed. Please refer to “Programming Buttons and Knobs” on page A2-30.

Notes:

- *For more information about how to make changes to the addon’s “panel.cfg” file, please refer to the SDK for your simulation platform.*
- *Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Please contact the developer for further assistance.*
- *Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.*

INSTALLING A WEATHER RADAR

The generic weather radar model in the four virtual cockpit configurations is preconfigured for the Rex/Milviz WX Advantage weather radar from [Rex Simulations](#).

You must select the radar you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The generic weather radar model can also be configured by the user to work with other third-party radars by following the procedures and example below.

It is impossible for us to offer full support and custom configuration panels for the installation and integration of every available third-party addon, system or gauge and we cannot guarantee that they will all be compatible with your new GLJ Model 25 SE business jet addon.

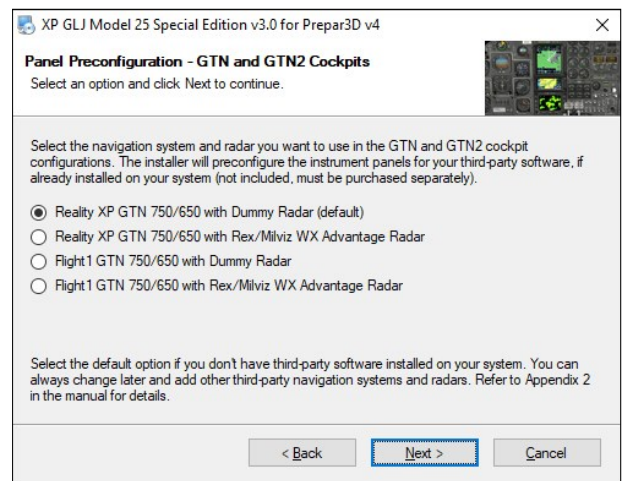
Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.

Please refer to the documentation included with your third-party radar for instructions and contact the developer should you need further assistance.

Installing the Gauge

The following procedures will install a third-party radar in the virtual cockpit of the GLJ Model 25 SE to replace the proposed Rex/Milviz WX Advantage weather radar. This is achieved by changing a few lines in the aircraft's "panel.cfg". The new radar will also be installed in a popup window available from the simulator's top menu bar.

1. Make sure that your third-party radar is fully compatible with your simulation platform, has been installed properly and is working well with other add-on or stock aircraft installed on your system. Do not add your third-party radar to the cockpit of the GLJ Model 25 SE by using a setup utility or configuration panel provided by the developer.
2. Please make a backup copy of the aircraft's "panel.cfg" file before proceeding.
3. Using a text editor like Notepad that comes with Windows, open the aircraft's "panel.cfg" file.
4. Following the example below, modify the **red lines** in the "panel.cfg" file for your third-party radar. You will need to replace the existing gauge(s) with your new gauge(s). Please refer to the documentation included with your third-party radar for the correct changes that need to



be made. Be careful and do not change anything else in the file. If this is not done correctly, your third-party radar and/or your GLJ Model 25 SE aircraft may not work properly.

```
// Xtreme Prototypes Gates Learjet Model 25 Special Edition for Prepar3D and FSX
// Version 3.0

// Panel Configuration File
// Classic Variation
// preconfigured for the basic FSX-Prepar3D GPS 500
// and My Third-Party Radar Addon

// Copyright (C) 2009-2020 by Xtreme Prototypes, Inc.
// http://www.xtremeprototypes.com

// 2D COCKPIT SECTION STARTS HERE //////////////////////////////////////

[Default View]
X=0
Y=0
SIZE_X=8192
SIZE_Y=6144

[Color]
Day=255,255,255
Night=10,10,10
Luminous=255,255,255

[Window Titles]
Window00=2D Cockpit
Window01=GPS
Window02=My Third-Party Radar

// This addon has no main 2D panel (do not edit) -----

[Window00]
background_color=0,0,0
size_mm=1920,1200
window_size_ratio=1.000
position=0
visible=1
ident=MAIN_PANEL
window_size=1.000,1.000
window_pos=0.000,0.000
view_window_rect=8192,6144
nomenu=1

// Basic FSX-Prepar3D GPS 500 2D panel -----

[Window01]
background_color=0,0,0
size_mm=456,378
position=0
visible=0
always_visible=0
ident=GPS_PANEL
window_size=0.360,0.440
sizeable=1
gauge00=fs9gps!gps_500,0,0,456,378
```

```

// My third-party radar 2D panel -----

[Window02]
background_color=0,0,0
size_mm=419,381
position=2
visible=0
always_visible=0
ident=71
window_size=0.218,0.335
sizeable=1
gauge00=MyThirdPartyRadarFolder!MyThirdPartyRadarGauge,0,0,419,381

// VIRTUAL COCKPIT SECTION STARTS HERE //////////////////////////////////////

// Basic FSX-Prepar3D GPS 500 display -----

[Vcockpit00]
background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
texture=$GLJ25_01_G_C
gauge00=fs9gps!gps_500,56,134,912,756
gauge01=XPGLJ25v3!custom_GNS_controls,1,1,1,1

// My third-party radar display -----

[Vcockpit01]
background_color=36,36,36
size_mm=1024
visible=1
pixel_size=1024,1024
texture=$GLJ25_05_G_C
gauge00=MyThirdPartyRadarFolder!MyThirdPartyRadarGauge,218,282,596,427,NO_BEZEL
gauge01=XPGLJ25v3!custom_radar_controls,1,1,1,1

// Tail number plaque (do not edit) -----

[Vcockpit02]
background_color=0,0,0
size_mm=256
visible=1
pixel_size=256,256
no_luminous=1
texture=$GLJ25_04_G_C
gauge00=XPGLJ25v3!n_number_plaque,0,0,250,100

// System gauges (do not edit) -----

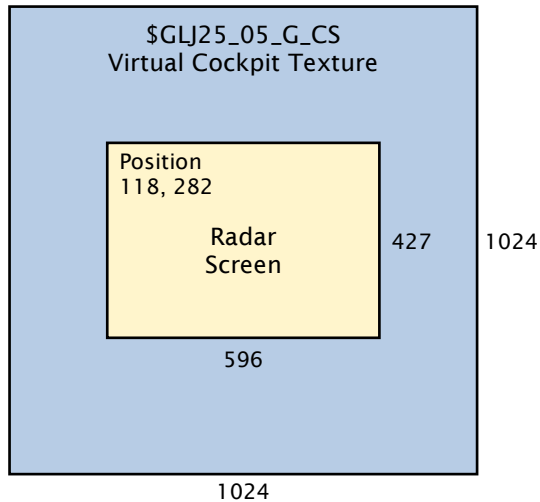
[Vcockpit03]
background_color=0,0,0
size_mm=256,256
visible=0
pixel_size=256,256
texture=$GLJ25_03_G_D
gauge00=XPGLJ25v3_Sound!
FBGS_XMLSound,18,5,1,1,SimObjects\\Airplanes\\XP_Gates_Learjet_25_v3_Classic\\sound\\ext
ra#51
gauge01=XPGLJ25v3!misc_systems_Classic,20,5,1,1

```

Important! The line “`gauge01=XPGLJ25v3!XPGLJ25v3!custom_radar_controls,1,1,1,1`” that contains the control gauge in the example above should not be removed or the 3D buttons and knobs in the virtual cockpit will not be able to communicate with your third-party radar.

The above example is for adding your third-party radar to the Classic virtual cockpit of the GLJ Model 25 SE. You will need to repeat the procedures for the other virtual cockpits if desired.

Experimentation may be required on the part of the user to fit the gauge into the screen of the generic radar 3D model. The coordinates and gauge size above are for the Rex/Milviz WX Advantage weather radar. You will need to adjust these parameters for your own third-party radar.



Please note that the radar screen (size 596 x 427) is mapped at the center of a 1024 x 1024 VC texture (`$GLJ25_05_G_C`) at position 218, 282 (upper left corner). The reason for this is to mask the bezel of the third-party radar gauge (some addons give you the option of removing the bezel, some don't). This gives you enough room to move around and center the screen of your third-party radar gauge inside the bezel of the 3D model in the virtual cockpit.

Programming Buttons and Knobs

The buttons and knobs of the generic weather radar model in the four virtual cockpit configurations are preprogrammed for the Rex/Milviz WX Advantage weather radar from [Rex Simulations](#).

You must select the radar you intend to use when installing your GLJ Model 25 SE addon for the first time. **You have nothing to do if you have selected one of the proposed options during installation.**

The buttons and knobs can also be programmed by the user to work with other third-party radars.

Programming the buttons and knobs of the generic weather radar model so they can communicate with other third-party radars is achieved by changing a few lines in specially provided “control gauges”, if needed. Please refer to “Programming Buttons and Knobs” on page A2-30.

Notes:

- *For more information about how to make changes to the addon's “panel.cfg” file, please refer to the SDK for your simulation platform.*
- *Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Please contact the developer for further assistance.*

INSTALLING A SPECIAL TRANSPONDER

The generic transponder model in the three retrofitted cockpit configurations is preconfigured for the basic transponder that comes with your simulation platform.

You have nothing to do if you are using the transponder that comes with your simulation platform.

The generic transponder model can also be configured by the user to work with third-party transponder addons supporting various modes of operation and other features (not included, available from third-party developers), by following the procedures and example below.

***Note:** The transponder in the Classic cockpit configuration cannot be upgraded.*



It is impossible for us to offer full support and custom configuration panels for the installation and integration of every available third-party addon, system or gauge and we cannot guarantee that they will all be compatible with your new GLJ Model 25 SE business jet addon.

Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.

Please refer to the documentation included with your third-party radar for instructions and contact the developer should you need further assistance.

Installing the Gauge

The following procedures will install a third-party transponder in the virtual cockpit of the GLJ Model 25 SE to replace the basic transponder that comes with your simulation platform. This is achieved by changing a few lines in the aircraft's "panel.cfg".

Option 1: Fitting your transponder gauge into the VFD display of the 3D model

Your first option is to install your third-party transponder in such a way that the full gauge (or just the screen if you prefer) appears in the VFD display of the generic 3D model in the virtual cockpit of the GLJ Model 25 SE. Please note that some experimentation will be necessary to fit the gauge into the VFD display of the 3D model. If you prefer to keep the original yellow VFD display of the generic 3D model to show the reading of your third-party transponder, please use option 2, below.

1. Make sure that your third-party transponder addon is fully compatible with your simulation platform, has been installed properly and is working well with other add-on or stock aircraft installed on your system. Do not add your third-party transponder to the GLJ Model 25 SE by using the setup utility or configuration panel provided by the developer.
2. Please make a backup copy of the aircraft's "panel.cfg" file before proceeding.
3. Using a text editor like Notepad that comes with Windows, open the aircraft's "panel.cfg" file.
4. Following the example below, modify the **red lines** in the "panel.cfg" file for your third-party transponder. You will need to replace the existing gauge with your new gauge. Please refer to

the documentation included with your third-party transponder for the correct changes that need to be made. Be careful and do not change anything else in the file. If this is not done correctly, your third-party transponder and/or your GLJ Model 25 SE aircraft may not work properly.

For the Retrofitted cockpit configuration:

```
// VIRTUAL COCKPIT SECTION STARTS HERE ////////////////////////////////////
// Digital radios and altimeters (do not edit) -----

[Vcockpit03]
background_color=0,0,0
size_mm=2048
visible=1
pixel_size=2048,2048
texture=$GLJ25_06_G_C
gauge00=XPGLJ25v3!digital_altimeter_display,22,856,638,440
gauge01=XPGLJ25v3!digital_altimeter_display,22,1316,638,440
gauge02=XPGLJ25v3!COM1_radio_display,23,439,600,395
gauge03=XPGLJ25v3!COM2_radio_display,650,439,600,395
gauge04=XPGLJ25v3!NAV1_radio_display,1276,19,600,395
gauge05=XPGLJ25v3!NAV2_radio_display,1276,439,600,395
gauge06=XPGLJ25v3!ADF_radio_display,25,19,600,395
gauge07=YourTransponderGaugeFolderHere!YourTransponderGaugeNameHere,650,19,600,395
gauge08=XPGLJ25v3!custom_transponder_controls,1,1,1,1
```

For the GTN 650/750 and Dual GTN 750 cockpit configurations:

```
// VIRTUAL COCKPIT SECTION STARTS HERE ////////////////////////////////////
// Digital radios and altimeters (do not edit) -----

[Vcockpit04]
background_color=0,0,0
size_mm=2048
visible=1
pixel_size=2048,2048
texture=$GLJ25_06_G_C
gauge00=XPGLJ25v3!digital_altimeter_display,22,856,638,440
gauge01=XPGLJ25v3!digital_altimeter_display,22,1316,638,440
gauge02=XPGLJ25v3!ADF_radio_display,25,19,600,395
gauge03=YourTransponderGaugeFolderHere!YourTransponderGaugeNameHere,650,19,600,395
gauge04=XPGLJ25v3!custom_transponder_controls,1,1,1,1
```

Important! The line “gauge04=XPGLJ25v3!custom_transponder_controls,1,1,1,1” that contains the control gauge in the example above should not be removed or the 3D buttons and knobs in the virtual cockpit will not be able to communicate with your third-party transponder.

The previous steps will install your third-party transponder in the virtual cockpit but some tweaking will be necessary to fit the gauge into the VFD display of the generic 3D model.

The coordinates and gauge size are for the XP transponder gauge that comes with your GLJ Model 25 SE add-on. You will need to adjust these parameters for your own third-party transponder. Please note that all VFD radio gauges in your GLJ Model 25 SE add-on are mapped at different loca-

tions on a 2048 x 2048 VC texture (\$GLJ25_06_G_C). The transponder VFD display is mapped at location 650, 19 (upper left corner). Size: 600 x 395.

Please note that the lines above are provided as an example only and that experimentation will be required.

Option 2: Sending data from your transponder to the VFD display of the 3D model

Another (and much simpler) option is to keep the XP transponder gauge/display like in the original configuration, and to add your third-party transponder as an additional gauge to the aircraft's "panel.cfg". By using this option, you can configure the panel so that your transponder gauge won't be displayed in the virtual cockpit, but its reading will be sent to the VFD display of the 3D model.

If you are using this option, you will also need to modify a few lines in the transponder control gauge in order for your third-party transponder to send its reading to the VFD display of the transponder model in the virtual cockpit (see pages A2-29 and A2-39).

1. Make sure that your third-party transponder addon is fully compatible with your simulation platform, has been installed properly and is working well with other add-on or stock aircraft installed on your system. Do not add your third-party transponder to the GLJ Model 25 SE by using the setup utility or configuration panel provided by the developer.
2. Please make a backup copy of the aircraft's "panel.cfg" file before proceeding.
3. Using a text editor like Notepad that comes with Windows, open the aircraft's "panel.cfg" file.
4. Following the example below, add your third-party transponder to the aircraft's "panel.cfg" file (**red line**). Please refer to the documentation included with your third-party transponder for the correct changes that need to be made. Be careful and do not change anything else in the file. If this is not done correctly, your third-party transponder and/or your GLJ Model 25 SE aircraft may not work properly.

```
// VIRTUAL COCKPIT SECTION STARTS HERE //////////////////////////////////////
```

```
// Digital radios and altimeters (do not edit) -----
```

```
[Vcockpit04]
background_color=0,0,0
size_mm=2048
visible=1
pixel_size=2048,2048
texture=$GLJ25_06_G_C
gauge00=XPGLJ25v3!digital_altimeter_display,22,856,638,440
gauge01=XPGLJ25v3!digital_altimeter_display,22,1316,638,440
gauge02=XPGLJ25v3!ADF_radio_display,25,19,600,395
gauge03=XPGLJ25v3!ATC_radio_display,650,19,600,395
gauge04=XPGLJ25v3!custom_transponder_controls,1,1,1,1
gauge05=YourTransponderGaugeFolderHere!YourTransponderGaugeNameHere,2,2,1,1
```

You may also want your transponder gauge to be displayed in a popup window available from the simulator's top menu bar:

```
// 2D COCKPIT SECTION STARTS HERE //////////////////////////////////////

[Window Titles]
Window00=2D Cockpit
Window01=GPS
Window02=Reality XP GNS Unit 1 (managed)
Window03=My Third-Party Transponder

My Third-Party Transponder 2D panel -----

[Window03]
background_color=0,0,0
size_mm=419,381
position=2
visible=0
always_visible=0
ident=71
window_size=0.218,0.335
sizeable=1
gauge00=YourTransponderGaugeFolderHere!YourTransponderGaugeNameHere,0,0,419,381,1
```

Please note that the lines above are provided as an example only and that experimentation will be required on the part of the user.

Programming Buttons and Knobs

The buttons and knobs of the generic transponder model in the three retrofitted cockpit configurations are preprogrammed for the basic transponder that comes with your simulation platform.

You have nothing to do if you are using the transponder that comes with your simulation platform.

Programming the buttons and knobs of the generic transponder model so they can communicate with third-party transponder addons, including freeware, is achieved by changing a few lines in specially provided “control gauges”, if needed. Please refer to “Programming Buttons and Knobs” on page A2-30 for details.

The transponder “control gauge” can also be used to send the reading of your third-party transponder to the VFD display of the transponder model in the virtual cockpit with minimal modifications to the “panel.cfg” (see option 2 on page A2-28 and example on page A2-39).

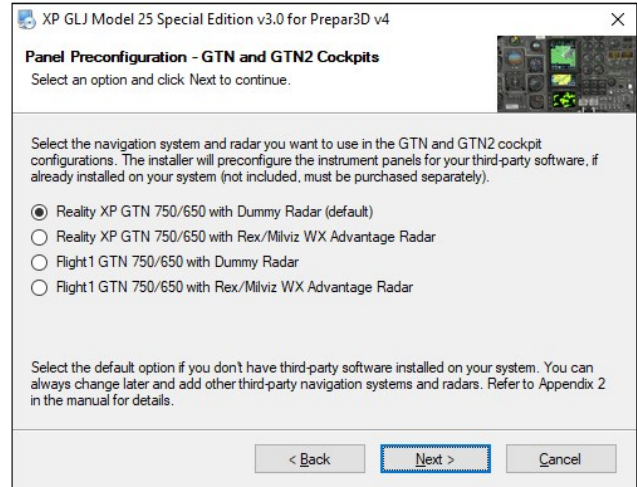
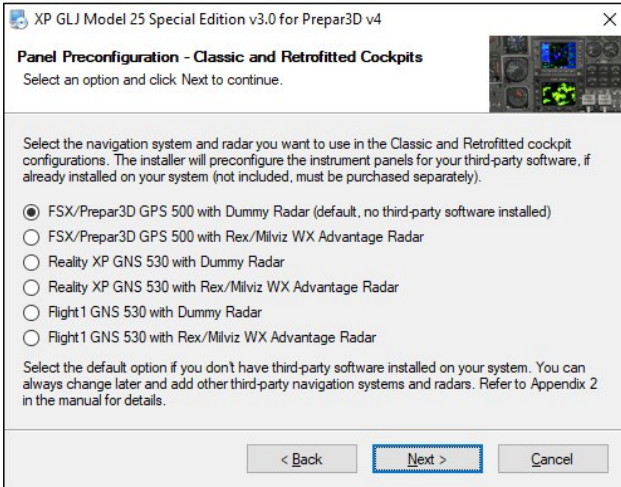
Notes:

- *For more information about how to make changes to the addon's “panel.cfg” file, please refer to the SDK for your simulation platform.*
- *Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Please contact the developer for further assistance.*
- *Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.*

PROGRAMMING BUTTONS AND KNOBS

The GLJ Model 25 SE v3.0 comes preconfigured for the GNS/GTN systems from [Reality XP](#) and [Flight 1](#), and for the Rex/Milviz WX Advantage radar from [Rex Simulations](#). It is also preconfigured for the basic GPS 500 and transponder included with your simulation platform.

You have nothing to do if you have selected one of the options that were proposed to you when installing your GLJ Model 25 SE addon for the first time.



The GNS/GTN, radar and transponder models in the virtual cockpits can also be configured by the user to work with other third-party addons.

As we saw in the previous pages, adding you own third-party addons, systems and gauges was made relatively easy by changing just a few lines in the aircraft's "panel.cfg".

Making the hard-coded buttons and knobs of the GNS/GTN, radar and transponder 3D models in the four virtual cockpits compatible with almost any available third-party addon was a bit more challenging. We wanted to provide our users with a method that is open, flexible and universal. We also wanted to provide enough information in order to make the process of customizing the virtual cockpits to your own needs as simple and straightforward as possible, even for non programmers.

With these objectives in mind, we have developed special "control gauges" that act as universal interfaces between the hard-coded buttons and knobs inside the virtual cockpits and your third-party addons, systems and gauges.




The control gauges are standard editable XML gauges that are added like any other Prepar3D/FSX gauge to the aircraft's "panel.cfg".

They should not be removed or the buttons and knobs of the GNS/GTN, radar and transponder in the virtual cockpits will no longer work!

For example:

```
// Rex-Milviz WX Advantage radar display -----  
  
[Vcockpit02]  
Background_color=36,36,36  
size_mm=1024  
visible=1  
pixel_size=1024,1024  
texture=$GLJ25_05_G_C  
gauge00=MV_WX!WX,218,282,596,427  
gauge01=XPGLJ25v3!custom_radar_controls,1,1,1,1
```



The last line (“**gauge01=XPGLJ25v3!custom_radar_controls,1,1,1,1**”) refers to the “custom_radar_controls.xml” gauge contained in the “XPGLJ25v3” gauge folder, inside the addon’s “panel” folder. This is a special XML control gauge that acts as an interface between the hard-coded buttons and knobs of the generic radar 3D model in the virtual cockpit and the third-party weather radar gauge. The control gauges are pre-programmed for the most popular third-party addons and are copied to the aircraft’s gauge folder at the time of installation. They are also added to the aircraft’s “panel.cfg” during installation.

By modifying editable fields in those gauges, you can enter custom commands for your own third-party addons that are executed when the hard-coded buttons and knobs are actuated in the virtual cockpit.

Customizing the control gauges for your third-party addons only requires a text editor like Notepad that comes with Windows.

Detailed instructions are provided in the following pages and inside each control gauge file to guide you during the customization process.

Custom Commands

Most third-party addons such as navigation systems and radars ultimately come in the form of unique Prepar3D or FSX-compatible gauges that are added to your add-on aircraft instrument panels through the “panel.cfg” (the panel configuration file). The basic 500 GPS that comes with your simulation platform is a good example of such a gauge.

These gauges, when displayed in an instrument panel or in popup windows, become functional 2D models of the real instruments or devices they are supposed to represent. Normally they are responsive to user clicks.

Some of these gauges need to respond to commands (from users) in order to execute specific tasks. Users usually control these gauges by clicking screens, buttons and knobs that are part of the gauges. For example, if a user rotates a knob on a radio gauge to select a specific frequency, the knob will send a special command to the radio gauge and/or to the simulation platform for selecting the frequency.

2D gauges can also be installed in the virtual cockpit. However, in full-3D virtual cockpits such as the ones included with your GLJ Model 25 SE v3.0 addon, only the flat portion of a 2D gauge (usually an LCD screen or a LED/VFD digital display) is kept and appears inside the bezel of a 3D model of the instrument. The flat 2D switches, buttons and knobs of the gauge are hidden and replaced by their animated 3D counterparts in the model.

The 3D switches, buttons and knobs in the virtual cockpit need to be programmed in such a way that they could send the correct “custom commands” to your third-party gauges for them to become responsive. Because the 3D models are hard-coded in the virtual cockpit and cannot be modified by the user, this is done through the special “control gauges” that are included with your

GLJ Model 25 SE business jet addon.

By following the instructions provided in the next pages, you can customize the 3D switches, buttons and knobs in the virtual cockpit with your own commands and make them compatible with almost any third-party addon, system or gauge you may want to install. This approach gives you maximum flexibility and control.

Commands can be standard Prepar3D/FSX “Event IDs” (simulator commands) contained in very short scripts or more elaborate XML code that uses both Event IDs and variables (simulator variables or custom local variables from your third-party addons).

In all cases, they must be scripts that can be sent from/to an XML gauge.

For example, this is the command you would enter to turn the Rex/Milviz WX Advantage weather radar’s Brightness Knob clockwise (a custom instruction through a local variable):

```
0x14007 (>L:WXEVENT, enum)
```

And this is the command to actuate the GPS/GNS/GTN Menu Button (a simulator Event ID):

```
0 (>K:GPS_MENU_BUTTON)
```

Before you start customizing the buttons and knobs in the virtual cockpit for your own needs, please check the documentation that comes with your third-party addons for the list of commands and variables that are available for your devices. Event IDs to send commands to the simulator are listed in the SDK for your simulation platform.

Custom Variables from Third-Party 2D Gauges

Some third-party 2D gauges provide virtual cockpit developers with custom variables that can be used to store the state of their buttons and knobs, among other functions. These variables are a must when programming animations in hard-coded virtual cockpits. They allow third-party 2D gauges to send valuable information or feedback to the virtual cockpit and not just the other way around.

For example, if you change the position of a knob on your third-party radar’s 2D popup window, the change should be reflected on the same knob in the virtual cockpit. By opposition, if you change the position of a knob in the virtual cockpit, it should be reflected on the 2D gauge. This is because the virtual cockpit 3D model is capable of sending commands to the third-party 2D gauge, and is also capable of receiving feedback from the 2D gauge.

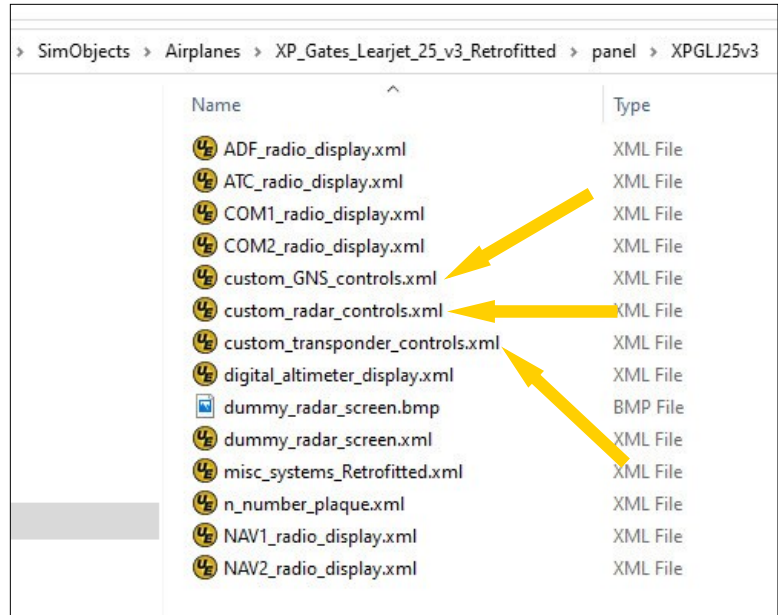
The special XML control gauges included with your GLJ Model 25 SE addon have provisions for these variables for some knobs.

THE CONTROL GAUGES

The special XML “control gauges” that allow the hard-coded buttons and knobs in the virtual cockpits to communicate with your third-party addons are located in the “XPGLJ25v3” gauge folder contained in the aircraft’s “panel” folder for each virtual cockpit configuration.

Here is the list of the control gauges included with your GLJ Model 25 SE addon for Prepar3D, with their location and what they are used for (the gauges are located at their corresponding location in FSX and FSX Steam).

Please make sure to back up the control gauges you wish to modify before making any change!



For the Classic cockpit configuration, the control gauges are located in this folder:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Classic\panel\XPGLJ25v3

custom_GNS_controls.xml

A special control gauge that allows the buttons and knobs of the GNS 530 model in the virtual cockpit to communicate with your third-party navigation/communication system.

custom_radar_controls.xml

A special control gauge that allows the buttons and knobs of the generic weather radar model in the virtual cockpit to communicate with your third-party radar.

For the Retrofitted cockpit configuration (see image above), the control gauges are located in this folder:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_Retrofitted\panel\XPGLJ25v3

custom_GNS_controls.xml

A special control gauge that allows the buttons and knobs of the GNS 530 model in the virtual cockpit to communicate with your third-party navigation/communication system.

custom_radar_controls.xml

A special control gauge that allows the buttons and knobs of the generic weather radar model in the virtual cockpit to communicate with your third-party radar.

custom_transponder_controls.xml

A special control gauge that allows the buttons and knobs of the generic transponder model in the virtual cockpit to communicate with your third-party transponder. The gauge also allows your third-party transponder to send its reading to the VFD of the generic transponder model.

For the GTN 650/750 configuration, the control gauges are located in this folder:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN\panel\XPGLJ25v3

custom_GTN_controls.xml

A special control gauge that allows the buttons and knobs of the GTN 650 and 750 models in the virtual cockpit to communicate with your third-party navigation/communication systems.

custom_radar_controls.xml

A special control gauge that allows the buttons and knobs of the generic weather radar model in the virtual cockpit to communicate with your third-party radar.

custom_transponder_controls.xml

A special control gauge that allows the buttons and knobs of the generic transponder model in the virtual cockpit to communicate with your third-party transponder. The gauge also allows your third-party transponder to send its reading to the VFD of the generic transponder model.

For the Dual GTN 750 configuration, the control gauges are located in this folder:

C:\Program Files\Lockheed Martin\Prepar3D v4
\SimObjects\Airplanes\XP_Gates_Learjet_25_v3_GTN2\panel\XPGLJ25v3

custom_GTN2_controls.xml

A special control gauge that allows the buttons and knobs of the two GTN 750 models in the virtual cockpit to communicate with your third-party navigation/communication systems.

custom_radar_controls.xml

A special control gauge that allows the buttons and knobs of the generic weather radar model in the virtual cockpit to communicate with your third-party radar.

custom_transponder_controls.xml

A special control gauge that allows the buttons and knobs of the generic transponder model in the virtual cockpit to communicate with your third-party transponder. The gauge also allows your third-party transponder to send its reading to the VFD of the generic transponder model.

PROGRAMMING THE CONTROL GAUGES TO SUIT YOUR NEEDS

Before you start modifying the control gauges to customize the buttons and knobs in the virtual cockpit to suit your own needs, please check the documentation that comes with your third-party addons for the list of commands and variables that are available for your devices.

The commands must be expressions or scripts that can be sent from/to XML gauges, for example:

```
0x14007 (>L:WXEVENT, enum)
```

Modifying the control gauges requires a text editor like Notepad that comes with Windows.

Important! Please make sure to back up the control gauges you wish to modify before making any change!

Please follow the instructions very carefully and modify the user-editable sections of the gauge only. If the changes are not made correctly, your third-party addon and/or your GLJ Model 25 SE add-on aircraft may not work properly. Should anything go wrong, simply revert to the original files and start over.

Unless you know what you are doing and are familiar with XML coding and with your simulator's SDK, we do not recommend modifying any section of the control gauge other than those that are indicated in the gauge.

When opening the control gauge with your text editor, you will notice the followings:

1. A commented top section named "INSTRUCTIONS_FOR_END_USERS_1_OF_2". This section contains instructions for modifying the gauge. Please read it carefully (see example on page A2-37).
2. The end of the top section is marked "USER-CONFIGURABLE SECTION BEGINS HERE". This is the start of the user-editable section that contains a series of small blocks of XML code called "macros" (for "macroinstructions").
3. A typical macro (or macro element) looks like this:

```
<Macro Name="RIGHT_INNER_KNOB_CLOCKWISE">  
  <MacroValue>0 (>K:GPS_PAGE_KNOB_INC)</MacroValue>  
</Macro>
```

4. Each macro contains a self-explanatory and user-friendly macro **Name** that is associated with a hard-coded knob or button in the 3D model. It may contain the name and or the function of the knob or button. In the example (3) above, the macro **Name** for the action of turning the right inner knob of the GNS 530 model clockwise is: "RIGHT_INNER_KNOB_CLOCKWISE". **The macro Name is precoded and should not be changed by the user!**
5. Each macro also contains a `<MacroValue>` sub-element **that can be customized by the user**. The `<MacroValue>` sub-element contains the **command (or script)** that needs to be sent to your third-party addon so it can perform the action mentioned in the macro **Name**. For example, the command associated by default with the macro **Name** "RIGHT_INNER_KNOB_CLOCKWISE" is "0 (>K:GPS_PAGE_KNOB_INC)" (in this case, a simulator Event ID).
6. The **command or script** must be typed inside the opening and closing tags of the `<MacroValue>` sub-element, for example:

```
<MacroValue>0 (>K:GPS_PAGE_KNOB_INC)</MacroValue>
```
7. The `<MacroValue>` sub-element can remain blank if no action is required from the selected

knob or button, for example: `<MacroValue> </MacroValue>`

8. Comments (*comment*) are permitted in the `<MacroValue>` sub-element, for example:
`<MacroValue>(*No command here*)</MacroValue>`
9. Users are allowed to change the “content” of the `<MacroValue>` sub-element with custom commands or XML scripts if you are familiar with XML programming and the simulator’s SDK and know what you are doing. If you are not familiar with XML programming, please limit yourself to entering the custom commands provided by the third-party addon developer with the required formatting, for example: `<MacroValue>0 (>K:GPS_GROUP_KNOB_INC)</MacroValue>` or `<MacroValue>0 (>K:GPS_DIRECTTO_BUTTON)</MacroValue>`
10. Please refer to the documentation that comes with your third-party addon for the list of commands and variables that are available for your device.
11. At the end of the series of customizable macros, you will find a section named “INSTRUCTIONS_FOR_END_USERS_2_OF_2” that is marked “USER-CONFIGURABLE SECTION ENDS HERE - DO NOT EDIT BELOW THIS LINE”. **Please do not make any change below this line!**

After you have entered your custom commands, variables or scripts in the selected macros, simply save the file and test your third-party addon in the simulator. Check if all the buttons and knobs are working.

Don’t be discouraged if your addon or gauge does not work as expected the first time. Minor editing errors are frequent and may prevent some knobs or buttons from functioning properly. If needed, simply re-open the control gauge and check the changes you have made. Customizing the virtual cockpit of your GLJ Model 25 SE for third-party addons, systems and gauges may require a little bit of research and experimentation on your part.

Also, please make sure that your third-party addon is configured properly to receive commands from the simulator (or XML gauges). For example, if you write standard Prepar3D or FSX GPS commands (Event IDs) in the control gauge to be sent to your third-party navigation system, make sure that the latter is configured to accept standard GPS commands from the simulator. If not, the buttons and knobs will not work.

Notes

- *For more information about how to make changes to XML gauges and for the list of Event IDs (simulator commands), please refer to the SDK for your simulation platform.*
- *For the list of commands and variables that you can use to control your third-party addons through the buttons and knobs in the virtual cockpits, please refer to the documentation included with your third-party addons, systems or gauges. The commands and variables can usually be found in the user manual.*
- *Xtreme Prototypes cannot provide support for third-party addons other than the one provided in this manual. Please contact the developer for further assistance.*
- *Installing and configuring third-party addons for the GLJ Model 25 SE addon may require some experimentation on the part of the user.*

SOME EXAMPLES

1. Here are the instructions you will find when opening the “**custom_GNS_controls.xml**” gauge, a special XML control gauge that allows the buttons and knobs of the GNS 530 model in the virtual cockpit to communicate with your third-party navigation/communication system through your simulation platform:

```
<Comment id="INSTRUCTIONS_FOR_END_USERS_1_OF_2">
  <Value>
```

The following section contains user-configurable macros to customize the knobs and buttons of the GNS 530 3D model that is installed in the virtual cockpit of the Xtreme Prototypes GLJ Model 25 SE v3 addon.

Depending on which GNS 530 or GPS third-party software is installed on your system, you can program the knobs and buttons to suit your individual needs.

The knobs and buttons of the GNS 530 3D model in the virtual cockpit are pre-configured for the basic GPS 500 that comes with your simulation platform, but they can be configured by the user for other third-party addons as well.

In the following lines, the Macro **Name** is a **user-friendly name** of the knob, button or function of the GNS 530 3D model that is installed in the virtual cockpit. Please DO NOT EDIT the Macro **Name**.

The **MacroValue** is the **custom script or command** for the knob, button or function. You can change the content of the **MacroValue** to customize the knobs and buttons for your third-party addon.

Please refer to the XP GLJ Model 25 SE v3 manual for more information about how to customize knobs and buttons in the VC and adding third-party addons, systems or gauges. Refer to your third-party software documentation for installation instructions and for the list of commands or scripts you can use to replace the commands or scripts that appear in the **MacroValue** fields below.

Please DO NOT EDIT other portions of this gauge and make a backup copy before making any change.

Remember:

Macro **Name** = **User-friendly name** of the knob or button (or its function) in the VC - DO NOT EDIT

MacroValue = **Custom command or script** associated with the knob, button or function - CAN BE EDITED BY THE USER

NOTE: The GNS/GPS is turned off when the top volume knob is turned fully counterclockwise or if there is no avionics power (required for the built-in radios). A blank screen will appear on top of the GNS/GPS gauge when it is off. With avionics power on, the GNS/GPS is turned on when the top volume knob is turned clockwise and the blank screen is removed from the GNS/GPS gauge. This is hardcoded in the 3D model and cannot be changed.

USER-CONFIGURABLE SECTION BEGINS

```
HERE //////////////////////////////////////
////////////////////////////////////
////////////////////////////////////
```

```
</Value>
</Comment>
```

2. Here are a few customizable macros from the “**custom_radar_controls.xml**” gauge, a special XML control gauge that allows the buttons and knobs on the generic weather radar model in the virtual cockpit to communicate with your third-party radar through your simulation platform:

```
<Comment>
  <Value>
    The return variable for the MODE_KNOB_ANIMATION macro below for the Rex
    Advantage Radar is: (L:WX_Radar_ModeSelect, enum)
    This variable is a return variable from the third-party radar for ani-
    mating the knob on the 3D model in the virtual cockpit. It synchronizes
    the knob on the radar popup gauge with the knob on the 3D model. The
    value is from 0 to 4 for OFF, TEST, WX, WX/T, MAP.
  </Value>
</Comment>

<Macro Name="MODE_KNOB_ANIMATION">
  <MacroValue>(L:WX_Radar_ModeSelect, enum)</MacroValue>
</Macro>

<Macro Name="MODE_KNOB_CLOCKWISE">
  <MacroValue>
    0x14003 (&gt;L:WXEVENT, enum)
  </MacroValue>
</Macro>

<Macro Name="MODE_KNOB_COUNTERCLOCKWISE">
  <MacroValue>
    0x14002 (&gt;L:WXEVENT, enum)
  </MacroValue>
</Macro>

<Macro Name="RANGE_DOWN_BUTTON_DN">
  <MacroValue>0x14000 (>L:WXEVENT, enum)</MacroValue>
</Macro>

<Macro Name="RANGE_DOWN_BUTTON_UP">
  <MacroValue>(*no command here*)</MacroValue>
</Macro>

<Macro Name="RANGE_UP_BUTTON_DN">
  <MacroValue>0x14001 (>L:WXEVENT, enum)</MacroValue>
</Macro>

<Macro Name="RANGE_UP_BUTTON_UP">
  <MacroValue>(*no command here*)</MacroValue>
</Macro>
```

- The **transponder control gauge (custom_transponder_controls.xml)** has a special macro that allows your third-party transponder to send its reading to the VFD display of the generic transponder 3D model in the virtual cockpit. By default, the macro value contains the simulator variable (`A:TRANSPONDER1 CODE, BCO16`) from the basic transponder that comes with your simulation platform. This variable can be replaced by a local variable from your third-party transponder, for example: (`L:MY TRANSPONDER CODE, BCO16`)

```
<Macro Name="TOOLTIP_VALUE">
  <MacroValue>

    (*The ATC code value you want the VFD display and the tooltip to show - must
    be in the BCO16 format.*)

    (A:TRANSPONDER1 CODE, BCO16)

  </MacroValue>
</Macro>
```

- Below are a few examples of **XML scripts** that perform different functions in some of the control gauges included with your GLJ Model 25 SE addon. Again, please do not attempt to modify XML scripts unless you are familiar with XML programming and with your simulator's SDK and know what you are doing.

Transponder Power Switch

```
<Macro Name="POWER_SWITCH">
  <MacroValue>

    (*Toggles the transponder power and display depending on avionics power and
    the position of the function selector knob. The transponder display is ON if
    there is avionics power and the transponder function selector knob is set to a
    position greater than 0. The transponder display is OFF if there is no avionics
    power and the function selector knob is set to OFF or position 0. The local
    variable for the position of the function selector knob is v3ATCFunction-
    SelectorKnobPosition plus 5. The local variable transponder power is Learjet
    Transponder Power. You can keep this script or enter your own script here.*)

    (A:ELECTRICAL AVIONICS BUS VOLTAGE, volts) 17 &lt; !
    (L:v3ATCFunctionSelectorKnobPosition, number) 5 + 0 &gt; & & if{ 1
    (&gt;L:Learjet Transponder Power, bool) } els{ 0 (&gt;L:Learjet Transponder
    Power, bool) }

  </MacroValue>
</Macro>
```

Radar Power Light

```
<Macro Name="MODE_SELECTOR_KNOB_OFF">
  <MacroValue>

  (*Turns off the radar power light - optional*)
  0 (&gt;L:RadarPowerLight, bool)

  (*the script for the Rex-Milviz WX Advantage radar mode selector knob is hard-
  coded in the 3D model - if you install a radar from another developer, you can
  enter your script here for the OFF mode*)

  </MacroValue>
</Macro>

<Macro Name="MODE_SELECTOR_KNOB_TEST">
  <MacroValue>

  (*Turns on the radar power light with AC power on and the mode selector knob
  not set to OFF - optional*)
  1 (&gt;L:RadarPowerLight, bool)

  (*the script for the Rex-Milviz WX Advantage radar mode selector knob is hard-
  coded in the 3D model - if you install a radar from another developer, you can
  enter your script here for the OFF mode*)

  </MacroValue>
</Macro>
```

GNS Power Light

```
<Macro Name="POWER_SWITCH">
  <MacroValue>

  (*This script is used to flag that the GNS unit is turned on or off - an op-
  tional green LED is illuminated when the unit is on*)
  (A:AVIONICS MASTER SWITCH, bool) 1 == (A:ELECTRICAL MAIN BUS VOLTAGE, volts)
  17 &lt; ! &amp;&amp; (L:v3GNS530TopVolumeKnobPosition, number) 0 != &amp;&amp;
  if{ 1 (&gt;L:v3GNS530 Power, bool) 1 (&gt;L:v3GNS530 Power Light, bool) } els
  { 0 (&gt;L:v3GNS530 Power, bool) 0 (&gt;L:v3GNS530 Power Light, bool) }

  </MacroValue>
</Macro>
```



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

Stormy Genius:

The Rags to Riches Life of Bill Lear

Richard Rashke

Publisher: KR Books (1985, 2017 reprint)

Paperback: 351 pages

ISBN-13: 978-1499217858

Learjets: The World's Executive Aircraft

Donald J. Porter

Publisher: Tab Books (1990)

Paperback: 120 pages

ISBN: 0-8306-2440-6

Flying the Classic Learjet (Models 35/36)

Peter D. Condon

Publisher: Peter D. Condon (2007)

Paperback: 210 pages.

ISBN: 978-0-646-48135-7

Learjets

Geza Szurovy

Publisher: Motorbooks International (1996)

Paperback: 96 pages

ISBN: 0-7603-0049-6

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

Publisher: Flight Safety (2005)

Paperback: 373 pages

Learjet 24/25

Cockpit Reference Handbook

Publisher: CAE SimuFlite (2010)

Paperback: 592 pages

Learjet 25

Operating Handbook

Publisher: CAE SimuFlite (2005)

Paperback: 132 pages

Gates Learjet 25B/C/D/F Manuals

Publisher: Gates Learjet Corporation (1969 and 1977)

Paperback: 1,500 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 in Appendix 5 to help you find answers to the most common questions you may have about your new GLJ Model 25 SE addon.

Known issues are discussed in the "Known Issues" section in Appendix 6.

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 the same day or within two business days.

We offer free, personalized technical support via email to registered users only.

How to Contact Us

The best way to reach us is by using 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/shopcustcontact.asp>

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

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

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

Find us on 

Please note that we do not offer technical support on Facebook:

<https://www.facebook.com/XtremePrototypes/>

Software Updates

When available, patches and updates for your Xtreme Prototypes addons are now listed at the bottom of each product page on our website. To download these files, please login to your user account and review your previous orders.

Manuals

Manuals are updated regularly. Please make sure you have the latest version:

<http://xtremeprototypes.com/shopcontent.asp?type=manuals>

We Need Your Feedback

Our products are designed to evolve with time, according to the feedback we receive from our users. Please let us know your comments, ideas and suggestions and report any issue you may encounter. We thank you for helping us in developing great addons.

If you are a real-world Learjet 25 pilot or were involved in the development of the real Learjet 20 Series from 1960-1980, it would be an honor to hear from you.



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

GENERAL

What do I get with my GLJ Model 25 SE v3.0 addon?

Your software license gives you:

- Four virtual cockpit configurations and 23 exterior model variations of the GLJ Model 25 SE addon, for three simulation platforms: Prepar3D v4.5 (Hotfix 2), FSX: Steam Edition and FSX SP2 with Acceleration Expansion Pack). The version for Prepar3D is a native version.
- A 325-page printable PDF manual.
- Free patches and updates.
- Free personalized technical support via email, in English or French. We try our best to answer our users the same day or within two business days.

For the list of features included with the Xtreme Prototypes GLJ Model 25 SE v3.0 addon, please refer to “Addon Description”, in section 1, page 15.

Is the GLJ Model 25 SE v3.0 addon an upgrade to v2.x?

Yes. Version 3.0 is a major upgrade to the previous version with a number of new features, modifications, improvements and fixes. Worth mentioning are four new virtual cockpit configurations with retrofitted instrument panels, full 3D integration of the most popular navigation systems and radar, customizable buttons and knobs, 23 exterior model variations, interior and exterior dynamic lights (Prepar3D), new interior/exterior textures, a fully-functional GPU (Prepar3D), new pilots and an updated 325-page flight manual. It is offered at a reduced price to registered users of version 2.x.

Is the GLJ Model 25 SE v3.0 addon an update to your previous 20 Series Business Jets addons (version 1.x)?

No. The GLJ Model 25 SE v3.0 addon is a completely redesigned product. Version 1.0 (2009) is now a legacy product and is no longer supported.

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.

Where is the manual?

You can download the complete 325-page manual for this addon from our "Downloads" section on our website (select "Manuals"). All our manuals are free and available online. Registered users can print copies of the manual for their own use.

Le manuel est-il disponible en français ? (Is the manual available in French?)

Un guide complet des procédures normales et d'urgence en français - sections 7 et 8 du manuel - est actuellement disponible et peut être téléchargé à partir de notre site Internet. Bien que le manuel complet de ce nouveau produit ne soit pour l'instant disponible qu'en anglais, nous offrons à nos utilisateurs francophones enregistrés une assistance technique en ligne personnalisée en français pour l'ensemble de nos produits.

Are all the Learjet 25 systems simulated?

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

Due to limitations in the currently available simulation platforms, some systems may operate differently from those in the real aircraft. In the case of systems that are not fully simulated, we have strived to provide you with working switches and knobs to allow you to fully follow the procedures outlined in the manual for a more realistic experience. The

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

Significantly modifying the simulator's built-in systems goes beyond the scope of this project aimed at producing a reasonably priced and already complex addon for the general public and the average user. As the simulation platforms evolve, so will the systems in future versions of this addon.

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

The operation of the addon 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.

While we regard this addon as a mini aircraft simulator rather than a game, we do not pretend that it is one hundred percent historically or technically accurate or that it truly reproduces all the systems and flight characteristics of the real Gates Learjet Model 25D. Nevertheless, we always pay attention to every detail and we do our best to make sure we provide our users with the best flight simulation experience they can get within the limitations of the currently available simulation platforms.

This addon strives to bring you not only the actual feeling of flying a high performance aircraft now equipped with modern avionics but also the spirit of maneuvering such a vehicle at a time when LCD screens and powerful computers didn't exist and pilots needed to know how to fly and navigate with minimal resources and rely on their own experience, abilities and judgment.

This addon was developed under the supervision of an aeronautical engineer and a real-world Learjet 25D pilot. We believe it is the most advanced, detailed and faithful classic Learjet simulation you can find.

Xtreme Prototypes addons and manuals for the general public are considered edutainment software and shall not be used for real-world training. There are differences between the model and the real aircraft.

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

While this addon 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 our GLJ Model 25 SE addon remains relatively simple to operate. Anyone who masters the simulator's default jets can fly the Model 25 addon. 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 addon is for you. This is your chance to go beyond books and films and jump in the cockpit of this extraordinary aircraft in a compelling simulation environment.

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 (section 7), which contains all the procedures with images and additional information, and a condensed set called "quick start procedures" (section 9), for those who want a shorter check list.

The addon reproduces nearly all functionalities of the real Learjet 25 aircraft. Like a real Learjet pilot, the virtual pilot needs some time to become familiar with the cockpit and the operation of the aircraft, and to be able to remember and perform the required procedures listed in the manual.

If you're feeling overwhelmed by the cockpit of the GLJ Model 25 SE addon, we suggest you give 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!

Why are some tail numbers on your liveries not accurate?

For a number of reasons, the tail numbers on the 23 liveries included with the GLJ Model 25 SE addon are fictitious. You can use the paintkit to create liveries with your own tail numbers. Refer to section 3, page 3 for more details.

What is a VR-ready, full-3D virtual cockpit?

Most virtual cockpits found in other addons or in the stock aircraft that come with your simulation platform use conventional Prepar3D/FSX 2D gauges that are "projected" onto the various instrument panels. When viewed from an angle, these gauges appear flat even though they might contain needles, 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. Most of these gauges use low-resolution graphics and are limited in size. The stock Garmin 500 GPS that comes with your simulation platform is a good example of a "flat" 2D gauge that contains both bitmaps and vector graphics. Viewed from the side, the knobs and buttons on the bezel look flat.

Xtreme Prototypes full-3D virtual cockpits do not integrate 2D gauges, except for the CRT/LCD screens and for some LED/VFD displays that are flat by nature, such as in the GPS/GNS/GTN, radar and radios. Our cockpits contain fully modeled 3D instruments and gauges with real moving parts.

This, along with the highly detailed aircraft interior, makes this addon an ideal candidate for new virtual reality devices and applications. Equipped with the necessary software and VR goggles, the desktop pilot really feels he/she is inside the real aircraft, in front of a real instrument panel instead of a 2D drawing. The full-3D virtual cockpit allows for a total immersion into the Gates Learjet Model 25 cabin and cockpit.

Each virtual cockpit contains about 1,500 parts and 250 custom systems, animated gauges, switches, knobs, levers, light indicators and flight instruments with integrated tooltips (small rectangles with text that appear under the mouse pointer with useful information).

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.

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

No. Xtreme Prototypes next generation addons no longer include 2D panels found in legacy products. They are replaced by fully functional, VR-ready, 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. Maximum airspeed is 359 KIAS (306 KIAS under FL140).

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. 51,000 feet is the absolute ceiling. 45,000 feet is the service ceiling.

Are the GNS/GTN and radar included?

No. The GNS/GTN navigation systems, radar and special transponder addons are not included and must be purchased separately from third-party vendors/developers. However, the four virtual cockpits contain fully animated, 3D models of these devices that can be configured by the user to integrate almost any Prepar3D and/or FSX-compatible third-party addon, system or gauge.

For users who don't plan to install third-party addons, the GNS 530 in the Classic and Retrofitted cockpit configurations is preconfigured for the basic Garmin GPS 500 that comes with your simulation platform. The radar comes with a dummy radar screen that that be turned on and off, and the transponder uses the basic transponder that comes with your simulator.

Is the radar unit in the main panel functional?

Not by default. You will need to add your own third-party radar (not included, available from third-party developers/vendors) to make it fully functional. The buttons and knobs on the radar model in the virtual cockpit are animated and can be programmed by the user to send commands to third-party radars.

Can I add my own third-party navigation systems, radars and transponders to the virtual cockpit?

Yes. The four virtual cockpits or your new GLJ Model 25 SE v3.0 addon contain fully animated, 3D models of the GNS 530, the GTN 650, the GTN 750 and of a generic weather radar and transponder. All screens, buttons and knobs on the bezels of these virtual devices can be configured by the user to integrate almost any Prepar3D and/or FSX-compatible third-party addon, system or gauge (not included and sold separately).

While it is impossible for us to offer full support for every third-party addon available on the market today, we will try our best to share with you as much information as possible in order to assist you, should you decide to install your own third-party navigation systems, radars or transponders in the future.

Adding you own third-party addons to the virtual cockpits of the GLJ Model 25 SE is made easy by changing just a few lines in the add-on aircraft's "panel.cfg" (the panel configuration file). Programming the buttons and knobs for those devices in the virtual cockpit so they can communicate with your third-party addons is achieved by changing a few lines in specially provided "control gauges" that are included with your GLJ Model 25 SE addon, if needed. This only requires a text editor such as Notepad that comes with Windows. Detailed instructions and examples are provided in Appendix 2.

Buttons and knobs are preprogrammed to be compatible with the most popular GPS/GNS/GTN and radar third-party addons. In most cases, no change to the control gauges is required.

However, should you want to install devices from other developers, including freeware,

this would require modifying a few editable fields in the control gauges. This method gives you maximum flexibility and control when adding third-party addons, systems or gauges to the cockpit of your GLJ Model 25 SE add-on aircraft.

Refer to Appendix 2 for more details.

Is a glass cockpit available for this add-on?

Not at this time.

Are there passengers in the cabin?

No. Over the years, we found out that whatever characters we've put in the cabin, some users didn't like it. So we've decided to install the pilots only in the exterior model and to remove the passengers in the cabin. We preferred to keep those precious polygons for other, more important aircraft features.

Where's the parabrake?

Although a parabrake was installed on some 20 Series aircraft, your GLJ Model 25 SE add-on doesn't have one. You can use the thrust reversers and the spoilers instead of the parabrake for deceleration.

SOFTWARE INSTALLATION AND SETUP

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

The installers for the GLJ Model 25 SE v3.0 add-on are contained in 3 GB (on less) "zip" files. Normally, it should take no more than about 10 to 20 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 downloading your add-on. If you are not able to download your add-on after several attempts, we recommend using another and better Internet 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 download your add-on, please contact us for other options.

We recommend using your Internet browser (Chrome, Edge, Explorer, Firefox, etc.) to download your add-on. 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 add-on. Make sure your antivirus does not interfere with your downloads. Some antivirus won't allow you to download "zip" and ".exe" files. You can disable your antivirus program temporarily while downloading your add-on 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 v3.0 add-on?

The GLJ Model 25 SE v3.0 is an add-on software package that requires Lockheed Martin Prepar3D v4.5 (Hotfix 2) or later, Microsoft Flight Simulator X: Steam Edition or Microsoft Flight Simulator X with Acceleration Expansion Pack (or Flight Simulator Gold fully installed) 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 developer.

Xtreme Prototypes next generation add-ons are designed to take advantage of the new and more powerful gaming computers that are available today. They require better graphics cards and more processing power and RAM than other more conventional add-ons. Increased performance will be noticed on more powerful systems.

Refer to "Minimum System Requirements" in section 2, page 1, for more details.

How do I install the add-on I've purchased?

Refer to "Software Installation" in section 2, page 4.

Will version 3.0 replace versions 2.0/2.1 on my computer?

No. The installer will not erase nor replace versions 2.0/2.1, if already installed on your com-

puter. Version 3.0 will be installed in different folders. However, we recommend removing the previous versions (2.0/2.1) from your computer before installing version 3.0. This is to avoid confusion between aircraft bearing similar names. Previous versions 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.

Will version 3.0 replace version 1.0 on my computer?

No. The installer will not erase nor replace the original 20 Series Business Jets addon (version 1.x), if installed on your computer. Version 3.0 will be installed in different folders. You may choose to delete or keep version 1.x before installing the new version. Please note that the original 20 Series Business Jets addon is now a legacy product for which we can no longer offer support.

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 your account on our website. You may download your addon a limited number of times. After that, you will need to contact us if you need the files 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 license agreement, section 1, page 26, 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 was linked to your original purchase.

Please use our general contact form:

<https://xtremeprototypes.com/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 that appears in your purchase history 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 "Software Installation" in section 2, pages 4-5.

Is the GLJ Model 25 SE v3.0 addon compatible with Lockheed Martin Prepar3D?

Yes. The GLJ Model 25 SE v3.0 addon for Prepar3D is a native version optimized for Lockheed Martin Prepar3D v4.5 (Hotfix 2) or later. Make sure that you install the correct addon version for your simulation platform. Refer to section 2 for more information.

Is the version for Prepar3D v4.5 (Hotfix 2) compatible with previous versions of Prepar3D and Microsoft Flight Simulator X?

No. The versions for Lockheed Martin Prepar3D v4.5 (Hotfix 2) is a native version that 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 section 2 for more information.

Is the addon version for Flight Simulator X compatible with Prepar3D?

Yes. However, we recommend installing the correct addon version for your simulation platform to benefit from the new features available in the latest versions of Prepar3D. Refer to section 2 for more information.

Please note that due to software limitations, the FSX version contains less features and animations than the native Prepar3D version.

Is the GLJ Model 25 SE v3.0 addon compatible with Microsoft Flight Simulator X?

Yes. The GLJ Model 25 SE v3.0 addon is compatible with 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 section 2 for more information.

Remember that Microsoft Flight Simulator X was released in 2006 and that the latest Service Pack is more than ten years old. While the GLJ Model 25 SE addon was tested in the original FSX, some known issues were still noticed due to aged software components installed in newer versions of Windows. This is why we highly recommend Microsoft Flight Simulator: Steam Edition instead of the boxed version. The development team at Dovetail Games did a fantastic job at recompiling and upgrading the platform, adding more features and improving stability and performance. You may also consider upgrading to the more advanced 64-bit Prepar3D simulation platform.

Please note that due to software limitations, the FSX version contains less features and animations than the native Prepar3D version.

Is the GLJ Model 25 SE v3.0 addon compatible with Microsoft Flight Simulator X: Steam Edition?

Yes. The GLJ Model 25 SE addon is compatible with Microsoft Flight Simulator X: Steam Edition.

Please note that FSX Steam is installed in a different way to the boxed version and occupies a different location on your computer. Make sure that you install the correct addon version for your simulation platform. Refer to section 2 for more information.

We highly recommend Microsoft Steam over the boxed version (original FSX). The development team at Dovetail Games did a fantastic job at recompiling and upgrading the platform, adding more features and improving stability and performance.

While the GLJ Model 25 SE addon was tested in the FSX Steam, some known issues were still noticed, probably due to aged software components. For this reason, you may consider upgrading to the more advanced 64-bit Prepar3D simulation platform.

Please note that due to software limitations, the FSX Steam version contains less features and animations than the native Prepar3D version.

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

No. Refer to section 2 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 (64-bit version required for Prepar3D). Please note that Microsoft no longer provides security updates or support for PCs with Windows 7. We recommend upgrading to Windows 10.

Because of issues related to installation and performance, we cannot provide support for 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 documentation for more information about the recommended version of DirectX.

Please note that Flight Simulator X seems to perform better under DirectX 9. Refer to section 2, pages 12-15, for more information.

My GLJ Model 25 SE addon has no cockpit. How is that possible?

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 section 4 for details.

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

If some aircraft variations are missing and only one airplane seems to be installed, make sure the "Show all variations" option is selected on the "Select Aircraft" page (FSX only). Refer to section 2 for more information.

Some aircraft variations are missing in Prepar3D. How can I fix this?

The "Show Only Favorites" option on the "Select Vehicle" page may prevent some aircraft variations from being displayed. You may need to uncheck this option. You may also select only the aircraft variations that you want to fly as your favorites. This will speed up loading time when selecting a vehicle. Refer to section 2 for more information.

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

Make sure that 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 system DLL was not installed properly during the installation process. You will need to reinstall the addon to solve this issue.

If you are using FSX, make sure that you "trust" the sound system DLL when starting your simulation platform for the first time after reinstalling your addon. This needs to be done only once. Refer to section 2 for more information.

If you have installed the FSX version in Prepar3D (not recommended), you will need to copy the included 64-bit sound system DLL to the addon's "panel" folder. The DLL is available in the "64-bit sound" subfolder located in the main addon folder. Follow the instructions carefully. Without the 64-bit sound system DLL, you will not be able to hear the cockpit sound effects. We recommend installing the correct addon version for your simulation platform.

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). The uninstallation program is located in the application folder that was created during the installation process and is used by the Windows Control Panel.

We recommended removing the previous version (2.0/2.1) before installing version 3.0.

AIRCRAFT OPERATION AND PROCEDURES

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

Complete instructions on how to fly the GLJ Model 25 SE addon are in the manual. Refer to "Normal Procedures and Check Lists" in section 7.

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

Going through the procedures makes for a much more enjoyable and realistic experience. That being said, you can use the "Auto Start" feature now available in v3.0. Please refer to the Release Notes, pages 6-7, for details. "CTRL+E" will start the engines, but you will need to turn on a few custom systems (that are unique to this addon) manually. Most important, the Inverter Switches must be turned **ON** for some systems to function. Make sure the Radio Master Switch (avionics) is also turned **ON** or the radios will not work.

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

Yes, but not recommended. Use the "Auto Start" feature instead. See previous topic.

Why can't I reach the maximum altitude?

If you are using FSX, make sure that you have the latest version and that the Acceleration Expansion Pack is installed. Refer to "Minimum System Requirements" in section 2, page 1.

Maximum cruise altitude can only be reached with lighter weights (all platforms). As your aircraft burns fuel during cruise, you may step-climb from FL410 up to FL510 at a low vertical speed (sometimes not greater than 500 feet per minute).

It must be remembered that FL510 is never reached during normal operation. To reach this level, you would need perfect conditions, an empty plane and about 2,000 pounds of fuel.

With the real aircraft, there is no way you can reach this high level directly after taking off with 5,000 pounds of fuel and 7 passengers plus crew. It is normal to climb at 500 fpm above FL400. If your climb rate is more than 500 fpm above FL450, be careful!

I noticed that you need to put a lot of power for the plane to begin rolling. Is this normal?

It depends how much fuel and payload are on board. With the maximum ramp weight, to break the inertia you sometimes have to apply more than 85% RPM with the real aircraft, according to our real-world Learjet pilot. In the simulator, it is around 70% RPM and this is perfectly normal. Make sure to be properly trimmed for takeoff!

After loading a saved flight, several switches were not in the state they were when the flight was saved. Consequently, I had to change the status of those switches to get the instruments working. Are you aware of this and is there a plan to fix it?

Unfortunately, this is normal and is due to some limitations in the current simulation platforms. It is not an addon issue.

Our addons are complex aircraft simulators with many custom systems and controls that are not currently supported in the simulator and that you won't find in the stock aircraft (for example: the inverter switches or the 3-position starter/generator switches in the GLJ Model 25 SE virtual cockpit). These custom systems use their own sets of proprietary variables and commands. At this time, these variables are not kept by the simulator when a flight is saved. This explains why some of the

switches need to be reset manually after loading a saved flight or changing vehicles.

A solution would be for us not to implement those custom systems in our Learjet addons at the price of realism. We believe our Learjet fans would prefer to keep the systems intact even if it means resetting some switches manually after loading a saved flight.

As the simulation platforms evolve, so will our addons.

Is a GPU available so you can go through the preflight procedures without starting the engines and depleting the batteries? How is this done with the real aircraft?

The GLJ Model 25 SE v3.0 addon for Prepar3D comes with a ground power unit (GPU) that supplies 28 VDC to the aircraft during maintenance, training or preflight procedures. The GPU is available when the aircraft is on the ground and is not moving.

In Prepar3D, click the aileron on the left wing-tip tank on the exterior model to call for a ground power unit. Start the GPU by clicking the GPU control panel cover. Don't forget to turn off and disconnect the GPU after the engines have started.

The GPU is not available in FSX/FSX Steam.

In FSX/FSX Steam, you can switch to the Emergency Batteries to simulate an external power source. In reality, this is like using a fictitious APU that does not exist in the real aircraft but is available in the simulation platforms. Since the simulator does not provide emergency batteries, we are using the available APU as an emergency power source. Turn on the Emergency Battery Switch to simulate an external power source. Don't forget to turn off the switch after the engines have started.

In the real world, GPUs are rarely used with this aircraft because the ground procedures can be performed in a relatively short period of time.

How come there is no pilot in the cockpit?

The captain and the copilot now appear by default in the cockpit of the exterior model

when the aircraft model is loaded in the simulator. You can click the steps on the lower portion of the main door to bring the crew on board or to make it leave the cockpit after the aircraft is parked (exterior model in Prepar3D, interior model in both Prepar3D and FSX/FSX Steam). You can select between three male pilots and one female pilot. Switching pilots is done by clicking the Learjet logo at the center of each yoke in the virtual cockpit or by clicking each pilot's shirt in the exterior model (Prepar3D).

How do I install the “Remove Before Flight” items after the aircraft is parked?

The “Remove Before Flight” items (ribbons and Pitot covers, wheel chocks, engine inlet covers, tail stand) need to be installed manually after the aircraft is parked. Click the white label above the Anti-Skid Lights in the virtual cockpit to install/remove the “Remove Before Flight” components. The items can also be removed by clicking the nose gear doors of the exterior model when the aircraft is parked (Prepar3D). The “Remove Before Flight” items cannot be installed if the aircraft is not parked, not on the ground or if the starters/engines are running. Please note that the tail stand is installed only when the aircraft is full of fuel (85% or more, CoG near aft limit).

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). This addon has no 2D cockpit. Try cycling the different views by pressing the “S” and “A” keys on your keyboard until you get in the virtual cockpit view.

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 and has an astonishing climb performance). 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 on the simulator’s “Settings/Options - Realism” page. Refer to “Performance” and “Recommended Settings” in section 2, page 8-15, and to “Recommended Settings for Beginners” in section 7, page 2.

When the autopilot is engaged, the yoke pushes the aircraft in a steep dive or a steep climb before recovering after a stall or an overspeed condition. Is this normal?

The GLJ Model 25 SE is equipped with a stick nudger/puller like in the real aircraft. It is normal for the yoke to react to stall and overspeed conditions when the autopilot stick nudger/puller is active. While stall and overspeed should be avoided at all time under normal conditions, you can disable the stick nudger/puller with the Autopilot Stick Nudger/Puller Switch. By default, the stick N/P system is always active. Please refer to section 5, page 23, for more details.

For some reason I can only climb after takeoff, basically vertically until stalling. Thought it might be a trim issue. Can you help?

First remember that with this type of aircraft, the autopilot should never be used for takeoff (or landing). If the autopilot was tested or engaged prior to takeoff, always remember to turn it off and check the elevator trim indicator [3, fig. 4-14] for the correct takeoff position (about one needle thickness below center). When engaged while the aircraft was on the ground, the autopilot might have tried to compensate by running the trim all the way nose up or nose down. If unnoticed, you may lose control of the aircraft during takeoff or initial climb. For the same reason, do not attempt to manually control the aircraft with the joystick while the autopilot is engaged. The autopilot will compensate by running the trim and could even disengage itself after hitting the trim limits. This may lead to very unpleasant situations.

Before takeoff, make sure the Takeoff Trim Alert Annunciator is **OFF**. If you cannot turn off the Takeoff Trim Alert Annunciator before takeoff by using the trim controls on your joystick, it means that the latter may not be calibrated properly. Trim is indicated on the main

panel, in front of the captain's yoke. The needle should move when adjusting your trim with the buttons on your joystick. A calibrated joystick is a must.

After takeoff, adjust your trim to maintain the proper rate of climb. When speed is stabilized, you have the option to engage the autopilot. It will capture and maintain the pitch and level the wing. Always check your speed during all phases of the flight and engage the autopilot SPD Hold Mode if necessary. You may need to use the spoilers and the throttle to reduce velocity.

Your add-on should be controlled with only constant and light movements of the joystick/yoke. The controls should never be pushed hard and should always be properly trimmed. 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.

We recognize that the takeoff sequence happens quite fast and requires an efficient drill in order to observe and maintain altitude, speed and climb rate. The Learjet 25 is a very performant aircraft and the climb rate right after takeoff could easily get out of control.

Please refer to section 7 for complete takeoff and climb procedures.

Note: *The GLJ Model 25 SE add-on has its own flight dynamics that have been tweaked, tested and retested by our aeronautical engineer, our real world Learjet 25D pilot and a number of beta testers in order to emulate as closely as possible the behavior of the real Gates Learjet Model 25D within the limitations of the current simulation platforms. If you don't like the flight model and would like to tweak it to your own preferences, you can always tweak some of the values in the [flight_tuning] and [airplane_geometry] sections of the "aircraft.cfg" (please backup the original file before making any change). We recommend modifying the "aircraft.cfg" only if you know what you are doing. This would require some experimentation on the part of the user.*

When using the autothrottle TO/GA mode, the aircraft always stalls and crashes upon takeoff. Am I doing something wrong?

This happens usually because the autopilot was engaged before the TO/GA Button was depressed. The autopilot should never be used for takeoff.

If the autopilot was tested or engaged prior to takeoff, always remember to turn it off and check the elevator trim indicator [3, fig. 4-14] for the correct takeoff position (about one needle thickness below center). When engaged while the aircraft was on the ground, the autopilot might have tried to compensate by running the trim all the way nose up or nose down. If unnoticed, you may lose control of the aircraft during takeoff.

The elevator trim should always be checked and set correctly before takeoff.

In the simulator, depressing the TO/GA Button disengages all autopilot pitch, roll and speed modes, turns on the flight director and engages the autothrottle Takeoff/Go-Around mode. Throttles automatically advance to takeoff power, the WING LEV is engaged, vertical speed is set to 4,500 fpm, and the flight director indicates takeoff pitch.

Remember that you, the pilot, still have manual control of the aircraft's pitch until the autopilot is engaged. The autopilot can be engaged after the aircraft has taken off and it will follow the flight director takeoff pitch.

Releasing the TO/GA Button disengages the TO/GA mode, engages the autopilot (if not already engaged), levels the wing, and captures and maintains the aircraft's pitch attitude.

Note: *The autothrottle is not available in the real aircraft.*

The spoilers caused the aircraft to climb when extended. Isn't it supposed to be the opposite?

This is how the real airplane behaves when the spoilers are deployed, and this is how we have programmed our add-on to reproduce the effect. Real world Learjet 25 pilots are aware of this unusual behavior and they must anticipate

it. It is part of their training. For the Learjet 25, the real one and the add-on, spoilers extension causes a climb because of the location of the spoilers with respect to the center-of-gravity. Each aircraft has its own challenges.

Is there a button to set the cockpit to “cold and dark” or to prepare the aircraft for taxi and takeoff?

Yes! The white seatbelt label located in the upper center section of the main instrument panel is now a hot spot for initiating a “Cold and Dark” reset cycle or an “Auto Start” sequence.

Left clicking the label will shut down the engines and turn off all lights and aircraft systems in less than 10 seconds. The cockpit will be reset to its “Cold and Dark” state and the airplane will be parked.

Right clicking the label will launch the “Auto Start” sequence. The automatic sequencer will start the engines and set up all aircraft systems ready for taxi. The pilot has nothing to do, but to wait and watch the sequencer perform the required preflight procedures automatically. Buttons, switches and lights will be animated with sound during the entire sequence. It takes about 80 seconds for the sequencer to perform the necessary preflight procedures. The “Auto Start” sequencer goes beyond the simulator’s standard CTRL+E command by actuating every Learjet 25 custom system needed for taxi (and pre-takeoff). We recommend using this feature instead of CTRL+E.

The two battery indicators (BAT140 and BAT160) in the upper right corner of the annunciator panel [28-29, fig. 4-30] warn the pilot that the “Cold and Dark” reset cycle or the “Auto Start” sequence is in progress. An audio alert will be triggered at the beginning and at the end of both cycles.

It is not possible to initiate both cycles simultaneously for obvious reasons, and although the cycles cannot be stopped when initiated, they can be paused.

Please refer to the Release Notes, pages 6-7, for more details

I’m using third-party navigation systems and radar and I cannot power up the units in the virtual cockpit. Am I forgetting something?

The GNS/GTN navigation systems both need DC and avionics power (Battery Switches ON and Radio Master Switch ON). The radar needs AC power (Battery Switches ON and Inverter Switches ON). Navigation systems and radars may also have a power or selector switch/knob that must be turned ON. Most third-party add-ons also have different power up options. Please refer to the documentation included with your navigation system or radar.

See also Appendix 6, page 9.

The autopilot cannot track the GNS/GTN GPS. Can you help?

Normally, the autopilot will track the GPS when the Autopilot NAV1/GPS Switch is set to GPS. However, some third-party navigation systems have different options that can be set in a control panel for the simulator’s autopilot to track the GPS. Please refer to the documentation included with your third-party add-on or contact the developer for further assistance.

I am trying to engage the autopilot, but nothing works, and the lights remain off. What’s wrong?

The autopilot in the GLJ Model 25 SE requires avionics power in addition to DC and AC power. Please make sure the batteries (or generators) are ON, the inverter switches are ON and the Radio Master Switch (avionics) is ON. The autopilot needs to be engaged (blue button on the flight controller or the first Korry switch on the captain’s panel).

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

No. It sometimes occurs that the pilot’s 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.

Note: It is now possible to click objects through other objects in Prepar3D.

3-position switches and knobs require a wheelmouse. Refer to “How to Activate the Switches, Buttons, Knobs and Levers” in section 4, page 7, for more information.

Please note that the FSX/FSX Steam versions contain switches and controls that are functional but not animated due to software limitations. This has no impact on the simulation.

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

Please make sure that the avionics are powered up. You need to have the Radio Master Switch ON with the Battery Switches ON (or the engines running and the generators ON). The autopilot and the radar, among other systems, also need AC power (both Inverter Switches ON). Please review sections 4, 5 and 7 for more details.

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

We noticed that for some unknown reasons (to this day) the tooltips may not always appear when the mouse pointer hovers above objects in the virtual cockpit. We believe this to be an intermittent simulator or display issue and not an addon issue. Please make sure that your simulation platform, operating system and graphics drivers are all up to date. You may also restart your simulation platform or reboot your computer if necessary.

Also, make sure the “Show cockpit tooltips” option is selected in your simulator's display settings.

The throttles cannot be moved. How come?

The Engine Throttles and Subthrottles cannot be moved if they are locked (CUTOFF position), like in the real aircraft. Click the Throttle Release Lever (under each Throttle) or open the fuel valve for the selected engine to release and set the Throttle to IDLE. Refer to sections 4 and 7 of the manual for more details.

No pitch trim in motion clicker sound. Why?

Like in the real aircraft, there is no clicker sound when the autopilot is engaged and/or the flaps are extended more than 3°.

No dynamic lights in FSX. Why?

Dynamic lights, some with projected light beams, are a new feature of the latest versions of Prepar3D. They are not supported in FSX/FSX Steam. Traditional light effects are used instead.

The fuel tanks are empty or half full at the beginning of a new flight. How is this possible?

We always take for granted that all tanks are full before starting a new flight. However, the simulator might have kept the fuel levels from a previous or saved flight. Please make sure to check your fuel status at the beginning of a new flight and service the aircraft if necessary. Refer to “20 Series Fuel System” in section 5, page 6, and to “Flight Planning” in section 6 for more details.

There is no autothrottle in the real aircraft. Why is an autothrottle provided with the GLJ Model 25 SE addon?

The real Gates Learjet Model 25 is not equipped with an autothrottle for the SPD/MACH Hold modes, even though we give our users the option to use the autothrottle that is readily available in the current simulation platforms. We know purists may find this feature unrealistic in the case of the Lear 25, but the vast majority of our users still appreciate the convenience of a modern autothrottle, especially when learning to fly the aircraft when there is so much to do. However, if you prefer not to use the autothrottle to better conform to the mode of operation of the real aircraft, we now give you the option to use the new “Speed Hold by Pitch” mode with its own limitations.

The “Speed Hold by Pitch” mode is a legacy autopilot mode, precursor to what eventually became the so-called “Flight Level Change” mode, which maintains the airspeed by varying the aircraft's pitch in a climb or descent.

Because the aircraft will pitch up and down to maintain speed, thus creating unavoidable oscillations, this mode is not recommended for level flight and cannot be used concurrently with the autopilot SPD/Mach, ALT, ATT, G/S and C/APPR modes, for obvious reasons.

However, this mode may be helpful when ATC requests you to maintain a specified airspeed in a climb or descent. It was the only speed hold mode that was available in some of the J.E.T. FC-110 autopilots installed in the original Gates Learjet 25 aircraft.

By comparison, the autothrottle that is offered in the simulator is a far more advanced speed controller than the original "Speed Hold by Pitch" PID controller installed in the original aircraft, with much less limitations.

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

No. Frame rate varies depending on your hardware and a number of factors such as your graphics options, the complexity of the scene (especially with add-on sceneries), installed third-party addons, etc. For example, it is normal for the frame rate to drop over high-density sceneries such as big cities or airports (with any aircraft). Also, it is normal for the exterior model to cause a slightly lower frame rate because it contains not only the exterior parts but some of the interior parts as well that are visible from the exterior such as the seats, cabin lights, instrument panels, etc.

The GLJ Model 25 SE addon is a complex aircraft simulator (not a toy) with high-resolution models and textures, hundreds of animations, visual and sound effects and complex aircraft systems that are fully simulated. It requires a powerful computer to run. It cannot be compared to the stock aircraft that come with your simulation platform nor to third-party addons with limited functionalities and systems, low resolution textures and 3D models, flat 2D gauges or single glass cockpit, etc.

It's always a dilemma for developers and users to manage quality and details vs performance. We've decided to invest in quality, systems and features as we expect computer systems to evolve and to become more powerful in the future. More recent gaming computers equipped with the latest graphics cards and a

powerful CPU will allow for a higher frame rates that older systems (above 70 to 100 fps).

You may need to tweak your simulator's graphics settings to improve performance. You can try moving all the cursors to their middle (medium or standard) position to see if it makes a difference. Combining aggressive settings with a next generation addon such as the GLJ Model 25 SE may affect performance on your PC.

Unless you own one of the latest generation high-end graphics cards, we recommend limiting your frame rate to 30 fps. This will free other computer resources for other tasks. 30 fps (standard NTSC video frame rate) is enough for flight simulation and should improve performance on slower systems. Note that the graphics card is usually the weakest component in a given system, especially in laptop computers.

Regarding what computer to buy for flight simulation, we would recommend a reliable desktop computer equipped with a high-end graphics card. There are computer systems made specifically for 3D gaming. SSD drives are recommended because they are faster and more reliable than mechanical drives. Don't hesitate to invest in the best graphics card you can afford. It makes all the difference. Most modern computer systems have the necessary processing power, motherboard and RAM to run the latest simulation platforms.

If you are using FSX/FSX Steam, please note that FSX is an old 32-bit simulation platform that has not really evolved since 2009 (except for some nice improvements by the Steam team at Dovetail Games). Users have noticed a significant raise in performance with the more modern 64-bit Prepar3D v4.x.

Refer to section 2 for additional information about how to optimize your system for this addon.

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

May we strongly recommend that you revisit sections 4, 5 and 7 of the manual?

Under normal circumstances, this situation will never occur unless the simulator freezes! In this case, restarting the simulator and starting a new flight is the only solution.

It sometimes occurs that the pilot's 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.

Some switches and knobs can only be actuated with the mouse wheel, some with left or right clicks or a combination of both. With this addon, you absolutely need a wheelmouse to operate in the virtual cockpit.

Please make sure that the avionics are powered up and that DC and AC power is available. You need to have both Inverter Switches ON, the Radio Master Switch ON and the Battery Switches ON (or the engines running and the generators ON).

The Engine Throttles cannot be moved if they are locked (CUTOFF position), like in the real aircraft. Click the Throttle Release Lever or open the fuel valve for the selected engine to release and set the throttle to IDLE.

TROUBLESHOOTING

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

If you are experiencing many issues with your new GLJ Model 25 SE addon, please read the information provided in section 2 very carefully. 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?** Make sure the latest service packs and hotfixes, if any, are installed.
3. **Is the GLJ Model 25 SE addon the only add-on aircraft installed on your computer that is experiencing or causing the issue(s)?** If not, the addon is not causing the issue(s).
4. **Do you have the latest version of the GLJ Model 25 SE addon?** Please visit our "Downloads" page to check for new patches or updates for your addon.
5. **Did you install the correct version of the GLJ Model 25 SE addon for your simulation platform?** Make sure that you install the correct addon version for your simulation platform. Because of differences between the simulation platforms, the installers are not interchangeable.
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 graphics 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 requires DirectX 11 (and a DirectX 11-compatible graphics 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 with the current software version, try unchecking the "Light bloom" option box on the FSX display settings page. This may also improve your frame rate. Refer to "Recommended Settings for Flight Simulator X" in section 2, page 12.
9. **Can you actually see at least one GLJ Model 25 SE aircraft on the "Select Aircraft" (or "Select Vehicle") page?** If not, the addon is not installed properly or there is a display or compatibility issue. Make sure that your simulation platform is configured properly. Refer to "Compatibility, Performance and Settings" in section 2.
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. Please refer to section 2. It has been reported that some third-

party addons or FS utilities may interfere with the correct installation of the GLJ Model 25 SE addon in FSX. 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, if installed. 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 section 2 and make sure that your simulation platform is configured properly.
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. Make sure that your simulation platform is configured properly. 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 reloading 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. Please note that Microsoft no longer provides security updates or support for PCs with Windows 7. We recommend upgrading to Windows 10. A 64-bit version is required for Prepar3D.
15. **Did you install the latest driver for your graphics card?** Many times, it solves display issues.

16. **Did you try tweaking the different parameters and options that are available for your simulation platform?** If you experience poor performance and low frame rate, try adjusting your display parameters. Moderate traffic, weather and sceneries settings may also improve your system performance. Please refer to section 2 and to page A5-12.

17. **Do you suspect the GLJ Model 25 SE installer 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 graphics card. Refer to “Minimum System Requirements” in section 2, page 1.

If you are still unable to solve your issue(s) please contact us for technical support.

TECHNICAL SUPPORT AND CONTACT INFORMATION

I have another question about my GLJ Model 25 SE addon, can I contact you?

Yes. We'll try our best to answer you the same day or within 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/shopcustcontact.asp>

For technical support:

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

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

Make sure all the required fields in the form are filled out correctly and provide us with as

much information as possible about your technical issue.

How do I get product patches and software updates?

When available, patches and updates for your Xtreme Prototypes addons are now listed at the bottom of each product page on our website. To download these files, please login to your user account and review your previous orders.

I'm a real-world Learjet 25 pilot and I have some ideas about improving the GLJ Model 25 SE addon. Can I contact you?

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

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

I was involved in the development of the real Gates Learjet Model 25 during the 1970's/80's and I would be interested in helping you develop 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/shopcustcontact.asp>



As it is always the case with computer software, and especially with addons to existing third-party platforms over 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 working around them and expecting a fix from the developer 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 feedback from our users, so please don't hesitate to report any issue or bug you might have experienced while flying the GLJ Model 25 SE v3.0 addon.

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

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

Please make sure that all the required fields in the form are filled out correctly and provide us with as much information as possible about your technical issues.

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)
- Your third-party addons and sceneries

More issues reported when flying this addon in FSX instead of Prepar3D

Please remember that Microsoft Flight Simulator X was released in 2006 and that the latest Service Pack is more than ten years old. While the GLJ Model 25 SE addon was tested in the original FSX, some known issues were still noticed due to aged software components installed in newer versions of Windows. Most of the issues mentioned in this section are related to FSX and FSX Steam.

For FSX users, we highly recommend Microsoft Flight Simulator: Steam Edition instead of the boxed version. The development team at Dovetail Games did a fantastic job at recompiling and upgrading the platform, adding more features and improving stability and performance. You may also consider upgrading to the more advanced 64-bit Prepar3D simulation platform.

Please note that due to software limitations, the FSX/FSX Steam versions contains less features and animations than the native Prepar3D version.

Windows security warnings appear when installing the software or starting the simulation platform (FSX/FSX Steam)

Essential software components need to be installed on your system for the GLJ Model 25 SE addon to function properly. Some are DLLs (software libraries) that are copied to the ad-

don's panel folder during the installation process. You must trust these software components 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.

The GLJ Model 25 SE addon will not work properly without these very important software components. You must allow them to be installed.

Refer to "Software Installation" in section 2, page 5, for more information.

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

In addition to the basic aircraft sounds that are controlled by the simulator's own sound engine, the GLJ Model 25 SE addon features more than 50 extra sound effects, mainly cockpit sounds, that are managed by the addon's special systems but 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. This has no impact on the overall simulation.

No volume control to adjust cockpit sounds

While we took great care to adjust the extra cockpit sound effects individually so they fit well in the overall sound mix, there is no separate control to adjust the volume of the extra cockpit sounds in this software version. This is mainly due to limitations in the current simulation platforms. However, it is possible to balance the extra cockpit sounds with the basic aircraft sounds that are controlled by the simulator by using the master volume control of your computer sound system. First, adjust the master volume on your computer so that the cockpit sounds are at a correct level. Cockpit sounds can be heard by clicking some of the switches, levers and knobs in the virtual cock-

pit. Then adjust the basic aircraft sounds in the "Settings/Options - Sound" page, under "Volume Levels" for the proper balance. This has no impact on the overall simulation and needs to be done only once.

Frame rate drops when the mouse cursor enters the visual cockpit

When the mouse cursor is moved inside the main window when in the virtual cockpit view, the frame rate may drop significantly. This depends mainly on your computer system and graphics hardware but is more apparent in FSX/FSX Steam than in Prepar3D. When the mouse is moved out of the window, the frame rate goes back 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 computer systems. We recommend moving the mouse cursor out of the main simulation window when not needed. Increased performance will be noticed on more powerful systems. See also section 2 and Appendix 5, page 14.

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

This is a simulator issue. If you experience blue or white "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. Free third-party DirectX 10 "shader fixers" are also available in flight simulation forums. Note that a small delay (especially on slower computer systems) before the addon textures are loaded is normal with the current simulation platforms, especially when loading 4096 x 4096 high resolution textures.

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 (FSX/FSX Steam)

The aircraft lights and other special visual effects are properly positioned. This is a simulator issue. We have noticed the same thing de-

pending 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 shown in the manual and on the product page

This issue seems to be fixed in Prepar3D v4.5 and is less apparent in FSX/FSX Steam.

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 that is purely cosmetic and has no impact on the overall simulation.

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 updated in v2.1 to conform to the new Prepar3D specifications.

Fire extinguishing can be performed only once during a flight

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

Electrically actuated/controlled trim tabs (including the horizontal stabilizer) can be moved without the aircraft powered up

Due to some limitations on all platforms, electrically powered trim tabs can be activated with your controller (joystick/yoke) buttons even when the aircraft is not powered up. This is a known simulator issue.

Hydraulically controlled spoilers and/or flaps are operable with low hydraulic pressure (FSX/FSX Steam)

This is a known simulator issue. It is no longer an issue in Prepar3D.

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

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 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/FSX Steam)

It has been reported 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, if installed, to solve the issue.

Also, depending on security settings and permissions in Windows Vista, you may not be able to install essential 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. We recommend upgrading to Windows 10. See "Minimum System Requirements" in section 2, page 1.

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. Do not use the standard installer for FSX.

Please note that FSX Steam is installed in a different way to the boxed version and occupies a different location on your computer. Make sure you are using the correct installer for your simulation platform. Refer to "Software Installation" in section 2, pages 4-5, for more information.

Some of the cockpit lights seem to interfere with each other (FSX/FSX Steam)

In addition to some of 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 illuminate the cockpit, the instrument panel, 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.

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.

No cockpit sounds when installing the FSX version in Prepar3D

Please make sure you are using the correct installer for your simulation platform. If you have installed the FSX version in Prepar3D (not recommended), you will need to copy the included 64-bit sound system DLL to the ad-

don's "panel" folder. The DLL is available in the "64-bit sound" subfolder located in the Classic addon folder. Follow the instructions carefully. Without the 64-bit sound system DLL, you will not be able to hear the cockpit sound effects.

After loading a saved flight, several switches are not in the same state they were when the flight was saved

Unfortunately, this is normal and is due to some limitations in the current simulation platforms. It is not an addon issue.

Our addons are complex aircraft simulators with many custom systems and controls that are not currently supported in the simulator and that you won't find in the stock aircraft (for example: the inverter switches or the 3-position starter/generator switches in the GLJ Model 25 SE virtual cockpit). These custom systems use their own sets of proprietary variables and commands. At this time, these variables are not kept by the simulator when a flight is saved. This explains why some of the switches need to be reset manually after loading a saved flight.

A solution would be for us not to implement those custom systems in our Learjet addons at the price of realism. We believe our Learjet fans would prefer to keep the systems intact even if it means resetting some switches manually after loading a saved flight.

The throttles are shaking (FSX/FSX Steam)

We know. They all do. This seems to be a simulator issue that has no impact on the simulation. Also, please make sure that your physical throttle quadrant is not fighting with the position of the throttles in the virtual cockpit.

The flight director behaves erratically

On some occasions, it might be necessary to reset the flight director if the V-bars are not responding properly (sometimes after the autopilot has been turned on and off). If you suspect that the flight director is not giving you correct indications, simply reset the flight director by turning the Flight Director Power Switch to OFF, then back to ON again. This is a simulator issue.

The aircraft behaves erratically (lost of control) after being repositioned at altitude with the map

Repositioning the addon at altitude with the map while the autopilot is engaged may lead to unpredictable aircraft behavior. To avoid this issue, turn off the autopilot before repositioning the addon with the map. This is a simulator issue.

The autopilot changes the elevator (pitch) trim setting if energized before flight, even after the elevator was trimmed correctly for takeoff

If the autopilot is engaged before takeoff, the autopilot will move the horizontal stabilizer (elevator pitch trim) out of range for takeoff to follow the flight director. Prior to takeoff, disengage the autopilot and set the elevator trim correctly for takeoff - normally about one needle thickness below center.

The “Auto Start” sequencer will automatically set the elevator trim correctly for takeoff, if initiated. Do not engage the autopilot before takeoff.

The fuel tanks are empty or half full at the beginning of a new flight

We always take for granted that all tanks are full before starting a new flight. However, the simulator might have kept the fuel levels from a previous or saved flight.

Please make sure to check your fuel status at the beginning of a new flight and service the aircraft if necessary. Refer to “20 Series Fuel System” in section 5, page 6, and to “Flight Planning” in section 6 for more details.

The aircraft textures appear blurred and in a much lower resolution than what is shown in the product screenshots

The GLJ Model 25 SE addon uses ultra crisp 4096 x 4096 high resolution textures.

For optimal graphics quality in Prepar3D, make sure the texture resolution is set to “Ultra - 4096x4096” in your graphics options (under “Image and Texture Quality”).

In FSX, make sure that the “Global texture resolution” slider on the “Graphics” tab (“Settings - Display” panel) is fully moved to the right (maximum resolution).

You may also need to modify two lines in the “fsx.CFG” file:

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

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

If these settings are not made, the simulator will downsize the high-resolution 4096 x 4096 textures to a lower resolution (2048 x 2048, for example) and it does it badly. It is normal for uncompressed native 2048 x 2048 textures to look better than downsized 4096 x 4096 textures if the above settings are not made. Your textures should look crisp and detailed with no reduction/compression artifacts, like the ones in our screenshots.

Also, the textures on the exterior model use mipmaps (optimized sequences of images with progressively lower resolution to increase rendering speed and reduce artifacts when the model is viewed at a distance). In Prepar3D, we recommend the Anisotropic 16x Texture Filtering option (under “Graphics/Options-Display/Image and Texture Quality”). In FSX/FSX Steam, we recommend the Anisotropic texture filtering option (under “Settings-Display/Graphics/Device-specific options”).

Refer to section 2 for more details.

2D gauges - text and images - in the virtual cockpits appear jagged and are hard to read at a distance (FSX/FSX Steam)

This only affects 2D gauges such as the new radios VFD displays, the ADDUs, the radar and the GPS/GNS/GTN, in FSX and FSX Steam.

Prepar3D has a special setting for mipmapping and antialiasing the virtual cockpit’s 2D gauges, so they always appear sharp. This feature is missing in FSX and the gauges may look jagged when viewed at a distance. This is a simulator issue, not an addon issue. When this happens, simply zoom in a bit to read the gauge.

Some aircraft parts and textures are missing on the exterior model and in the virtual cockpit and the addon is not working properly

Try resetting the flight or restarting the simulator. If this does not solve the issue, it may be because some essential 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/FSX Steam, make sure that you trust the addon's system DLLs (you should click "YES" or "RUN" when the dialogs appear when starting your simulation platform for the first time after installing the addon). This needs to be done only once. Refer to "Software Installation" in section 2, page 5, for more information.

Textures are slow to load, and some parts in the interior or exterior model appear black with no texture when switching vehicles (FSX/FSX Steam)

This is a simulator issue. It is not an addon issue. When this happens, you can switch views, reset the flight, reload the aircraft or restart the simulator to solve the issue.

The simulator shows a black screen and shuts down after switching vehicles

The only time we experienced this issue, it was caused by third-party software (the radar, in our case). Please contact the third-party developer for assistance and make sure you have the latest software version for your simulation platform. This is not a GLJ Model 25 SE addon issue.

The instrument panels appear "frozen" after a new aircraft is loaded

This is not likely to happen in this software version and with the latest simulation platforms. However if it does, simply end the flight and start a new flight. Restart the simulator if the problem persists.

FSX/FSX Steam crashes with an out of memory error

Out of memory (OOM) crashes are not a frequent issue but they may be caused by several factors. First, make sure that you have enough memory installed in your computer to run Windows 10, plus FSX/FSX Steam, plus all your third-party addons and sceneries, and plus the GLJ Model 25 SE addon.

The more addons you have, the more complex your third-party sceneries are and the more aggressive your simulation platform's settings are, the more you increase the chance of OOM crashes. Microsoft recommends at least 16 GB of RAM for Windows 10. We recommend 32 GB. Remember that both FSX and FSX Steam are still 32-bit platforms with their own limitations as far as memory usage is concerned, even on powerful systems. The 64-bit Prepar3D is a major improvement but you will still need a good computer to make the switch.

The GLJ Model 25 SE is a study-level, complex addon with high-resolution models and (4096x4096) textures, hundreds of animations and many custom systems, 2D gauges and effects, all working together. It requires a powerful computer system (CPU, memory and graphics) to perform, depending on your simulation platform and settings (sceneries, traffic, weather, graphics) and your third-party addons.

One short-term solution may be to limit the texture size to 2048 x 2048 or lower by adjusting the "Global texture resolution" slider on the Graphics tab (Settings - Display panel). This can also be done by editing one line in the "FSX.cfg". Unfortunately, this will decrease the quality of the addon's textures.

Limiting the frame rate in the sim may also help, as it will allow more resources to other tasks. We recommend limiting your frame rate to 30 fps.

Ultimately, you may need to upgrade your computer. Please refer to section 2 for more information.

Tooltips won't show

We noticed that for some unknown reasons (to this day) the tooltips may not always appear when the mouse pointer hovers above objects in the virtual cockpit. We believe this to be an intermittent simulator or display issue and not an addon issue. Please make sure that your simulation platform, operating system and graphics drivers are all up to date. You may also restart your simulation platform or reboot your computer if necessary.

Also, make sure the "Show cockpit tooltips" option is selected in your simulator's display settings.

Nose wheel steering seems not to work all the time when taxiing

In the current simulation platforms, nose wheel steering is initiated automatically at certain speeds only when taxiing. Because this is done by the simulator (and not by the GLJ Model 25 SE addon), there is very little we can do about it until the platform's developers give us more options to control nose wheel steering at any speed.

You will need to reduce speed in order to activate nose wheel steering (under about 45 knots). Above that speed, the nose gear will be locked.

To add a touch of realism in v3.0, we have disabled the rudder animation when nose wheel steering is engaged by the pilot (Nose Gear Steer Lock Switch momentary clicked, green annunciator ON).

The Gyro Drift Compensation Switch and the Directional Gyro Compensation Knob are disabled by default

By default, the direction indicators (HSI, RMI, directional gyro, etc.) in the cockpit of the GLJ Model 25 SE are configured to be slaved to an electro-magnetic slaved compass. This mode of operation normally requires no gyro drift correction on the part of the pilot and is used in areas where magnetic references are reliable. When this mode of operation is selected in the current simulation platforms, it is not possible to make manual corrections by using the Gyro Drift Compensation Switch or the Directional Gyro Compensation Knob, even when the Directional Gyro Free/Slave Switch is set to

FREE.

***In the real aircraft:** The directional gyroscope in the real aircraft can operate in two modes: the SLAVE mode and the FREE mode. When the Directional Gyro Free/Slave Switch is set to SLAVE, the directional gyro is slaved to the magnetic flux valve for correcting the apparent gyro drift. When the switch is set to FREE, the pilot is free to make manual corrections with the Gyro Drift Compensation Switch (or the Directional Gyro Compensation Knob). The SLAVE position is the normal mode of operation in areas where magnetic references are reliable.*

Unfortunately, the current simulation platforms do not provide means to switch from the SLAVE mode to the FREE mode and vice versa after the aircraft model is loaded. Addon aircraft developers and users must decide in advance if they want the direction indicators in the cockpit to be slaved to an electric gyroscope (FREE mode) or to an electro-magnetic slaved compass (SLAVE mode). This is set in the [direction_indicators] section of the "aircraft.cfg" (the aircraft configuration file located in the addon's main folder):

```
[direction_indicators]
direction_indicator.0 = 3
```

The first number ("0") is the reference for the direction indicator, the second number ("3") is the type of device to which the direction indicator is slaved. In the current simulation platforms, the types are:

0. None
1. Vacuum gyro
2. Electric gyro
3. **Electro-mag slaved compass**
4. Slaved to another indicator

By default, the direction indicators in the GLJ Model 25 SE addon are set to operate in **mode "3" (electro-mag slaved compass)** and **do not require manual adjustments**. This is how the direction indicators in most of the stock aircraft included with your simulation platform, including the Learjet 45 in FSX, are configured.

However, if you prefer to have full control over the instrument, for example if you fly in areas where magnetic references are not reliable, you can switch to mode "2" (electric gyro) by

changing the value in the “aircraft.cfg”. Please make a backup copy of the file before making any change. Also, consider that in mode “2”, you will need to make manual gyro drift corrections periodically. If you don’t want to make manual gyro drift corrections, you can disable gyro drift in your simulator’s options (under “Realism”).

Please note that in the current software version, the Directional Gyro Free/Slave Switch does not work like in the real aircraft for the reasons mentioned above and has no special function except to disengage the autopilot when clicked.

Third-party GTN/GPS/radar screens too bright at night

The GLJ Model 25 SE v3.0 addon now uses the “AdditiveUserControlled” method for blending third-party 2D gauges in the 3D virtual cockpits. This prevents the gauges from being too dim during the day or at dawn/dusk. Most third-party addons such as GTN or radars now have a brightness control to adjust the screen luminosity under different lighting conditions. Please refer to your third-party addon’s documentation for more information or contact the developer for further assistance.

Dragging controls with the mouse causes the screen to freeze temporarily (Prepar3D)

We noticed that for some unknown reasons (to this day), the screen may freeze for a few seconds when dragging objects (throttles, sunvisors, defog lever, etc.) with the mouse in the virtual cockpit. This is an intermittent issue and we believe it is not an addon issue because it was reported with other aircraft as well. Refreshing the screen (minimizing then maximizing the window) seems to temporarily unfreeze the screen until another object is dragged. However, it might sometimes be necessary to reboot the computer to fix the issue. This looks like a display issue and it seems to be more frequent when several graphics-intensive programs are opened simultaneously on the desktop.

Some panel lights may not show properly (intermittent, Prepar3D)

You may or may not experience this issue, depending on your computer system, simulator version, graphics card and settings. Some panel lights (ex.: autopilot Korry switches) may not show as they are supposed to, in their ON or OFF state, leaving a black empty socket in the panel instead. We don’t know at this time what is causing this intermittent issue that is hard to reproduce. We believe it is not an addon issue. If this happens, simply reset the flight to solve the issue.

Some gauges with VFD displays may not show properly (intermittent, Prepar3D)

You may or may not experience this issue, depending on your computer system, simulator version, graphics card and settings. Similar to the panel light issue mentioned above, some 2D gauges with VFD displays (ex.: retrofitted radios, ADDUs) may not show as they are supposed to. Some text and numbers on the gauge may appear extinguished instead of illuminated. We don’t know at this time what is causing this intermittent issue that is hard to reproduce. It usually appears after installation, before the initial flight. The issue usually disappears by itself in subsequent flights. We believe it is not an addon issue. If this happens, simply reset the flight to solve the issue.

Engines won’t start when the fuel valves open and the throttles are released

In version 3.0, releasing the throttles with the Throttle Release Levers [2, 4, fig. 4-41] opens the fuel valves, like in the real aircraft. During the engine startup cycle (see section 7, page 11), when the fuel valves open, the engines should start. However, if the fuel mixture is not rich enough, the engines won’t start. In the real world, jet engines don’t require fuel mixture adjustments like piston engines. However, the current simulation platforms seem to make no distinction and mixture control is available, even for jet engines. Make sure the fuel mixture is set to “rich” before starting the engines (CTRL+SHIFT+F4 on your keyboard, or using the mixture lever on your physical throttle quadrant or game controller).

The “Auto Start” sequence, if initiated, will set the fuel mixture properly.

Note: *In version 2.x, the Throttle Release Levers controlled the fuel mixture instead of the fuel valves, which was not conform to how the real aircraft functions but was a nice work-around for solving the fuel mixture issue.*

Some buttons, switches and knobs are not animated in FSX/FSX Steam

This was done on purpose.

The GLJ Model 25 SE v3.0 addon is a complex simulation with full 3D virtual cockpits with hundreds of animated parts. Unfortunately, there is a limit to the number of animations that are allowed in FSX/FSX Steam (this was also the case in Prepar3D, prior to version 4.1).

The native version for Prepar3D v4.5 is fully animated. However, we had to reduce the number of animated parts in the virtual cockpits of the FSX/FSX Steam version to avoid serious geometry issues.

Please note that the buttons, switches and knobs that are not animated due to limitations in FSX are still fully functional.

We tried our best to remove the animation from objects that are not essential for the simulation or where it is less apparent. For example, the rotation of a black knob is barely noticeable.

Please note that these limitations have no impact on the simulation and that systems and procedures are the same on all platforms.

If you are looking for a fully animated cockpit, please consider upgrading to the more advanced 64-bit Prepar3D simulation platform.

Note: *The GLJ Model 25 SE v3.0 addon contains a large number of virtual cockpit animations because of its limited use of flat 2D gauges. Flight instruments are fully modeled in 3D and some contain dozens of animated mechanical parts, like in their real-world counterparts. Addons that use a large number of 2D gauges instead of fully modeled 3D instruments in their virtual cockpits have fewer animated parts.*

Third-party addons won't show in the virtual cockpit

First, make sure that your navigation system or radar is powered up. The GPS/GNS/GTN systems need avionics power and the radar needs AC power (inverters ON).

The GLJ Model 25 SE v3.0 addon comes with preconfigured instrument panels for the following systems:

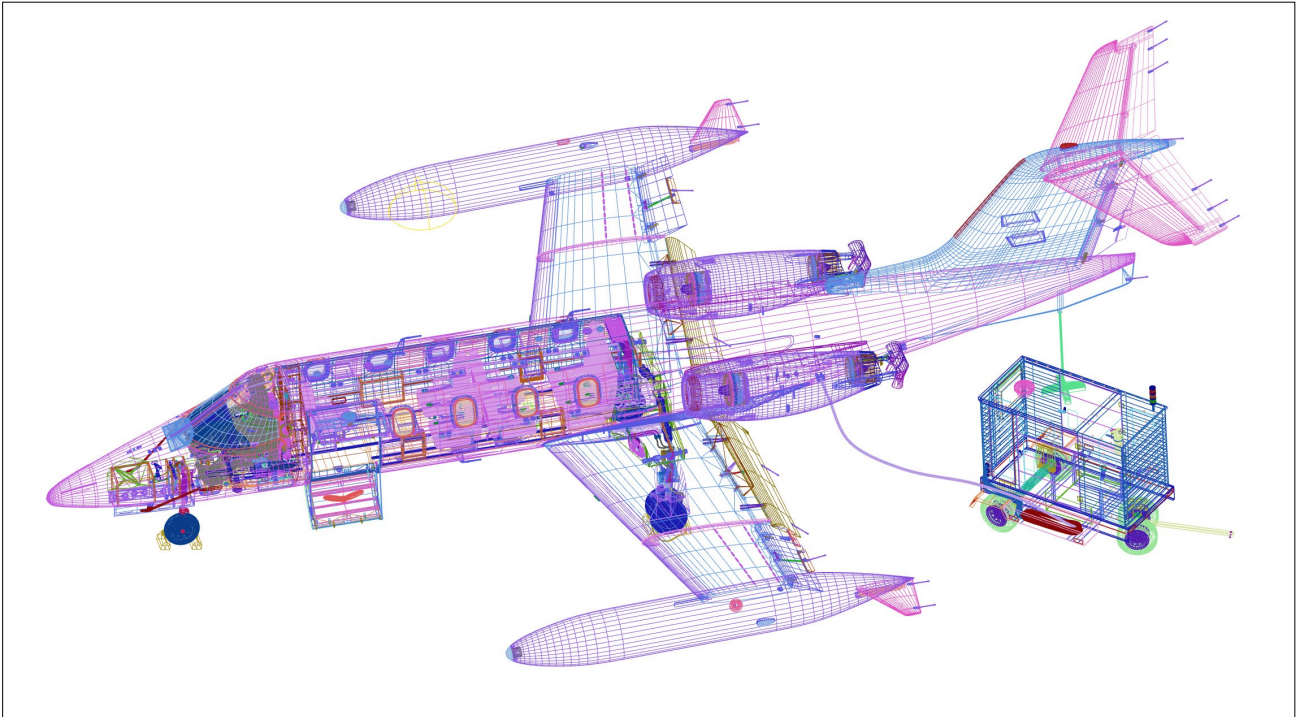
- The basic GPS 500 included with your simulation platform - or - the GNS/GTN systems from [Reality XP](#) and [Flight1](#) (not included, sold separately);
- A dummy radar screen - or - the Rex/Milviz WX Advantage radar from [Rex Simulations](#) (not included, sold separately).

You must select which navigation system and radar you intend to use at the time of installation (see section 2, page 4). The installer will preconfigure the instrument panels and program the 3D buttons and knobs in the virtual cockpits for your selected software.

Third-party software must be installed and working properly on your simulation platform prior to installing the GLJ Model 25 SE v3.0 addon. We do not recommend using third-party setup utilities or configuration panels to add your third-party navigation systems or radars to the virtual cockpits of the GLJ Model 25 SE addon.

Note: *Many third-party setup utilities have the bad habit of altering the content of your configuration files, including the “panel.cfg”. In some instances, sections and comments may be removed entirely and you may lose important information that we have added to the “panel.cfg” to guide you when installing or configuring your third-party addons.*

Adding other third-party addons, systems or gauges is possible by modifying a few lines in the “panel.cfg” and in the special control gauges that are provided with the GLJ Model 25 SE addon. Appendix 2 contains important information and detailed instructions for adding third-party addons, systems or gauges to the virtual cockpits of the GLJ Model 25 SE v3.0 addon and how to program the 3D buttons and knobs for your own devices.

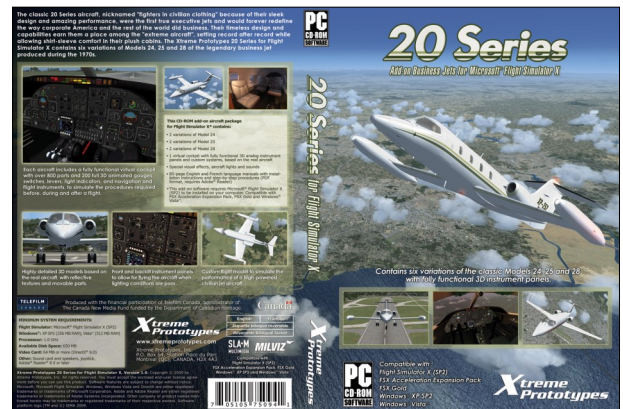


FROM VERSION 1.0 TO VERSION 3.0

Version 1.0 of our [20 Series Business Jet](#) add-on, now a legacy product, was released in the summer of 2009 and became the foundation for our adventure in the world of classic Learjet aircraft simulators for home pilots.

The project originated from an idea from former pilot and aeronautical engineer Miguel Zaera, a Learjet fan and early partner in Xtreme Prototypes who later became project manager for Xtreme's 20 Series products. Miguel's experience at CAE and Bombardier, and in software development was a big asset for our young studio.

3D modeling was achieved by contract with Montreal-based developer Milviz, thanks to the financial participation of Telefilm Canada and a tax credit for multimedia production from Investissement Québec. Xtreme Prototypes developed the animation code, some of the exterior textures, the aircraft systems, the flight model, the manual and took care of distribution and marketing.



The 20 Series Business Jet add-on for FSX proposed seven variations of the legendary Gates Learjet Models 24, 25 and 28 and merited two international awards after it was released.

At the time, it was one of the very few business jet add-ons available for the computer pilot and one with the most accurate flight model and aircraft systems. It was offered with a bilingual manual (English and French) on CD-ROM for physical distribution or via download from Xtreme Prototypes and third-party resellers websites.



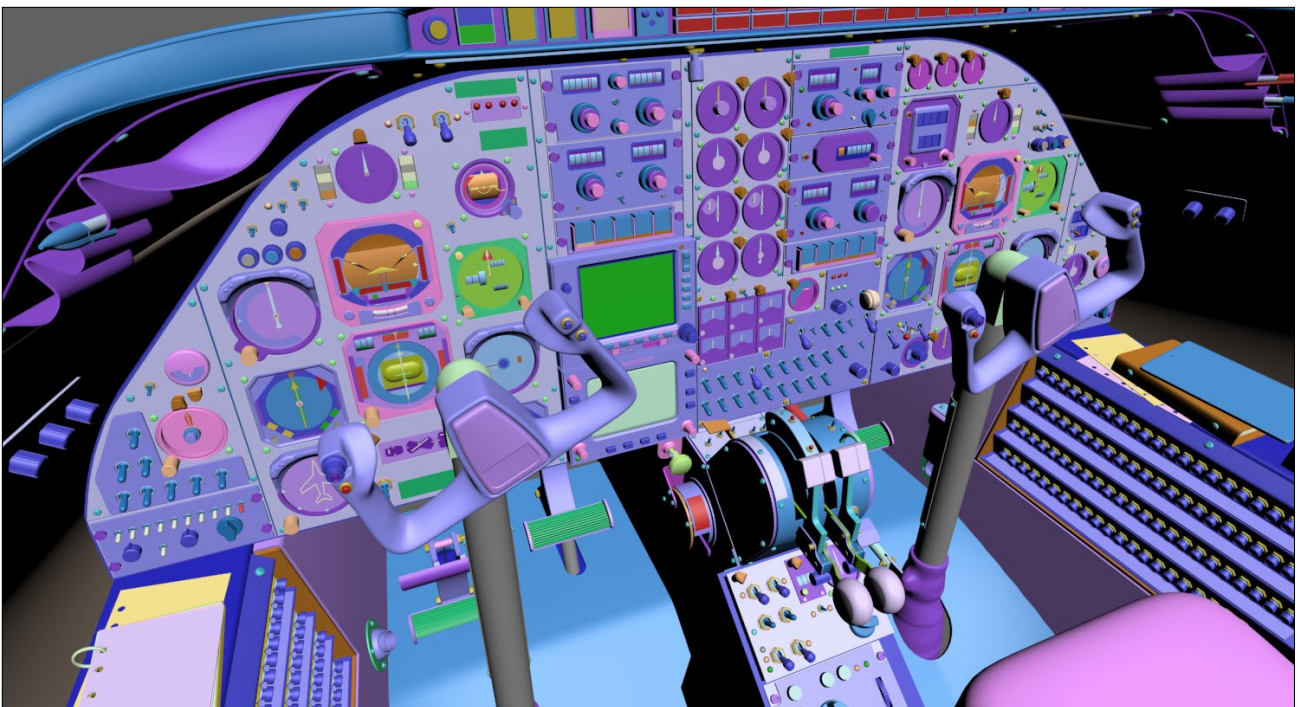
The original 20 Series addon strived to bring our users the actual spirit of flying a high performance aircraft at a time when LCD screens, miniature computers and GPS didn't exist and pilots needed to know how to fly and navigate (IFR) with minimal resources and to rely on their own experience, abilities and judgment. Classic business jet fans just loved it!

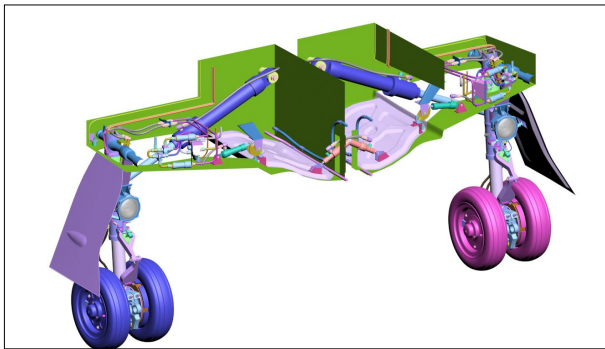
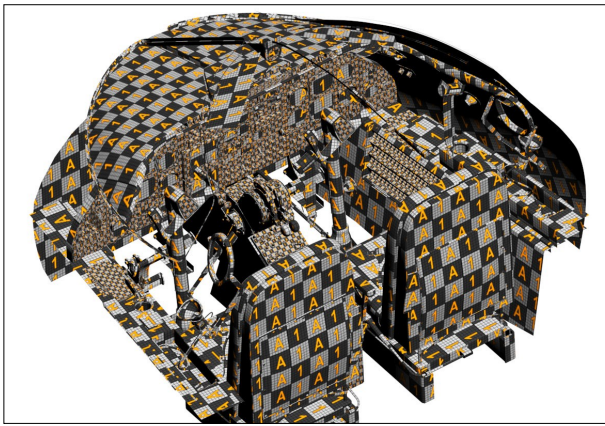
After the release of version 2.0 of the [X-15A-2 Special Edition](#) addon back in 2015, Xtreme Prototypes decided to revisit the 20 Series aircraft and to give it another Xtreme treatment.

This time, production was entirely handled internally by Xtreme Prototypes who took care of the project design, 3D modeling, 3D animation, textures, programming and software integration, distribution and marketing. Project management was passed to Lead Designer Alain Rouleau, with Miguel Zaera still acting as special consultant and project engineer.



Version 2.0 was a big makeover with new high resolution exterior and interior models and textures, new animations, a VR-ready and fully functional virtual cockpit, the possibility to add third-party navigation systems and radars, revised aircraft systems, engine thrust reversers, a sound system with new sound effects, and even a functional "Jetstar 8" virtual 8-track tape player, as a tribute to the inventive genius of Bill Lear!





After more than a year of research and development, the Xtreme Prototypes GLJ Model 25 SE v2.0 addon was finally released in the fall of 2016. Users and reviewers were very receptive to this new version which was universally acclaimed and became a bestseller worldwide.

EXTENSION



GLJ modèle 25D

Édition spéciale

Luxe nostalgique

Offrez-vous un Learjet : ce symbole de réussite sociale dans les années soixante-dix est devenu accessible par la magie de la simulation. En revanche, il faut s'attendre à un pilotage délicat : faire partie de l'élite se mérite !

Par Emmanuel Blanchard

Dans le monde de l'aviation, la gamme Learjet du constructeur Gates occupe une place comparable à celle des véhicules Rolls-Royce dans le monde de l'automobile. Ces bimoteurs d'affaires sont associés aux idées de luxe, fiabilité et performances que tous les concurrents envient. Même si aujourd'hui les Learjet sont un peu dépassés par les Citation II de Cessna ou les Falcon de Dassault, ils ont été les pionniers du genre et restent liés à l'image de la « Jet-

set - des années pour l'anniversaire, dans la chanson - et Floyd comme un réservoir financier. La version 25D est constituée de 11 modules, elle représente l'aboutissement du modèle 25, allongé rapport au modèle précédent de ce fait supplémentaire, est constituée de General Electric

En haut : La planche principale, l'ECAS occupe la place dévolue aux gauges paramétrables.

En bas : Une silhouette réaliste, même au sol.

Le gold and dark d'acier.

28 **PC PILOT** N° 373 Octobre 2016

Enhancement for Microsoft
Flight Simulator X and Prepar3D

REVIEW

Xtreme Prototypes GATES GLJ MODEL 25

**PC PILOT
CLASSIC
PRODUCT**

Special Edition



LEFT: The cabin views display a fairly 1970s interior.

BELOW RIGHT: Even at first glance, the high definition views with lots of animated features and effects make the Lear 25 look special.

The range of bizjets designed by Bill Lear was also becoming well-known. With its origins based on a Swiss fighter design, Lear had released the Model 20 Learjet in the 1960s but a series of accidents soon saw the evolution of the Model 25 which incorporated airline standard excess and system redundancies. While time has seen the design grow from this 6.6 page jet to the modern Lear 85 which can fly up to 10 passengers and crew up to 5000km across continents, the Lear 25 still holds a place in the hearts of pilots and aviation enthusiasts as a trendsetter of its day.

If you were born after that era, the cockpit probably looks like it.

It's powered by rubber bands and it is certainly true that it is what we would now call a 'steam gauge' aircraft. Despite its ability to fly at altitudes up to 45,000ft as MO.81, it still relied on VOR/ADF navigation and had no horizons such as GPS or autothrottles. The pilot had to plan well ahead and constantly manage the aircraft's systems as they roared through the sky.

Xtreme by nature
Xtreme Prototypes have previously released well received models such as the XLS and D44 K1 rocket planes, as well as an earlier Lear '20 series' model. This new release Lear GLJ Model 25 Special Edition is closely based on the Model 25D variant of the 1970s. The list of updates and refinements over the original are so extensive, it really has



PC Pilot Issue 107 | www.pcpilot.net

In early 2017, Learjet 25 pilot Alan Velasquez became a special consultant on the project and Miguel Zaera remained on the team as engineer and advisor.

Version 2.1 was released in the fall of 2017 with a number of fixes, improvements and new features, including a new fuel system, additional sound effects from the real aircraft, an enhanced autopilot, new aircraft systems and a 225-page flight manual. It won a PC Pilot Classic Aircraft award and was welcomed as one of the most advanced, detailed and faithful business jet simulations by real Learjet pilots, reviewers and users.

It must be mentioned that because of the evolution (and multiplication) of the simulation platforms, it became more and more challenging to develop new high-quality add-on aircraft that would exceed advanced users expectations. What required just a few months of production for Microsoft Flight Simulator 2004 now necessitated more than one year of research and development. To make things even more complex, developers needed to make their products compatible

with a number of simulation platforms including FSX, FSX with AEP, and eventually FSX Steam and new versions of Prepar3D (not mentioning X-Plane and emerging platforms).

While production costs have increased over the years, desktop flight simulation still remained a relatively modest and competitive niche industry. There were limits to what users were willing to pay for an add-on aircraft package, but at the same time, production (and marketing) costs continued to climb. It was always heartbreaking when talented developers were obliged to turn down interesting project ideas because of cost considerations, or to shut down their entire operation for financial reasons. For the developers who remained, deciding on new projects and features to add to existing franchises became the center of heated internal debates. Difficult editorial decisions needed to be made continuously.

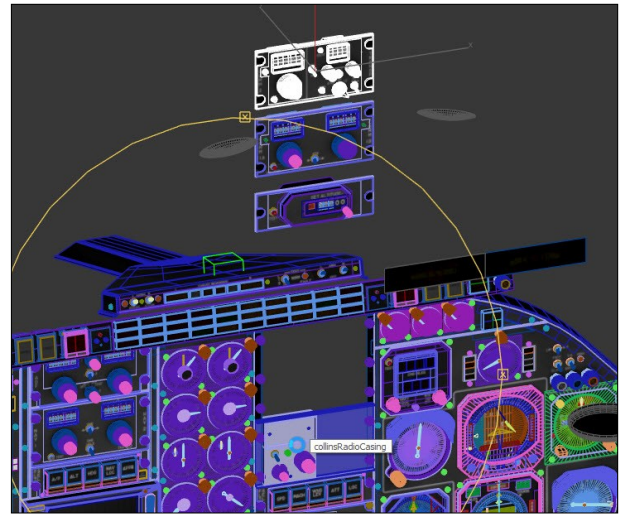
It is within this context that the passionate team at Xtreme Prototypes decided to start the production of version 3.0 of the GLJ Model 25 SE in the fall of 2017.

With the increasing popularity of modern avionics among computer pilots, it was decided to fully integrate the most popular third-party GNS, GTN and radar systems into v3.0 of our Learjet 25 addon. The challenge was to fit these modern devices in an instrument panel that was already densely packed and that was not designed to integrate such systems that did not exist in the 1970's.

After analysis, it was decided to offer v3.0 with three new retrofitted virtual cockpits in addition to the classic and original Learjet 25 cockpit of v2.1. They would represent the interior of a typical Gates Learjet Model 25D at different time periods: 1970's, 1980's and today with the addition of modern avionics.

Because of significant differences between the different panel configurations, aircraft systems and third-party addons, it was not possible to create a "one-size-fits-all" cockpit. Instruments and sub-panels had to be moved around or replaced to make room for modern avionics and new devices. Systems had to be re-programmed and panels reconfigured.

In our efforts to modernize the cockpit for v3.0, we absolutely wanted to keep the look and feel of the original instrument panel, but



at the same time, we also wanted to give users the possibility to add their own contemporary navigation/communication systems and radars acquired from third-party developers.

The first step in our efforts to modernize the cockpits was to reduce the size of the radios by replacing the original analog sets from the 1970's with more modern units with VFD displays from the 1980's. The flight director mode selector panels were also upgraded with new models that provided more selector switches for the same occupied space.

3D models of the GTN 650/750 were created, animated, programmed and added to the two GTN cockpit configurations. The GPS 500 from v2.1 was replaced with a fully functional GNS 530 and installed in the classic and retrofitted cockpit configurations.

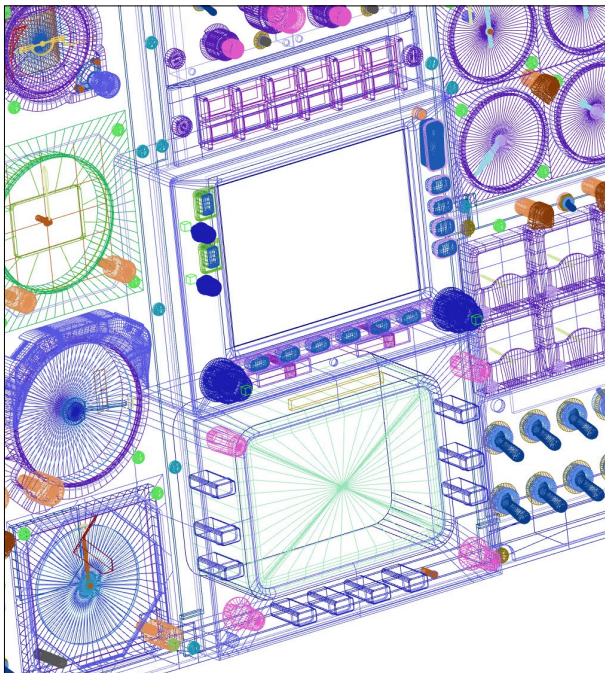


for communicating with special third-party transponder addons.

The process of adding third-party addons, systems and gauges to the cockpit of the GLJ Model 25 SE needed to be made relatively easy for end users. Making the hard-coded buttons and knobs of the GNS/GTN, radar and transponder 3D models compatible with almost any available third-party addon proved to be a big challenge. We wanted to provide our users with a method that was open, flexible, universal and straightforward, even for non programmers.

With these objectives in mind, we have developed special "control gauges" that act as universal interfaces between the hard-coded buttons and knobs inside the virtual cockpits and third-party addons, systems and gauges. The control gauges are standard editable XML gauges that are added like other Prepar3D/FSX gauges to the aircraft's "panel.cfg".

New aircraft systems and instruments were also designed and integrated into the retrofitted instrument panels. Some new features were added to the existing instruments.



The generic radar was also upgraded, fully animated and programmed in order to be compatible with most third-party radars. A new transponder was modeled and programmed





All interior high resolution textures were updated and improved for crisp sharp quality, better reflection and specularity, and to prevent VR issues.

Dynamic lights, which project real light beams to other objects, were added to the four cockpits and cabins of the Prepar3D version, in which the pilots map lights and passengers reading lights can be controlled individually.

A curtain, that can be opened or closed like in the real aircraft, was installed between the cockpit and the passenger cabin.

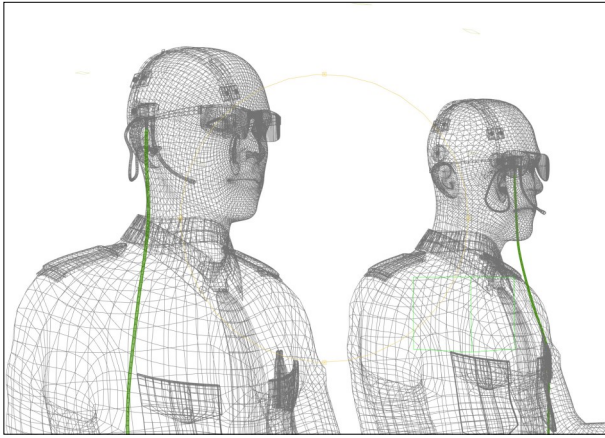
The exterior model was also revised. Dynamic

lights, including separate left and right landing and taxi lights, entry lights and real rotating beacon lights with projected beams were added to the Prepar3D version. A new right wing inspection light was also installed and the user can now choose between one or two recognition lights on the wingtip tanks.

New set of improved textures were created for the 23 aircraft variations, including 13 new liveries inspired from real and fictitious aircraft.

The GLJ Model 25 SE now has new pilots sitting in the cockpit of the exterior model. The user can select between three male pilots and

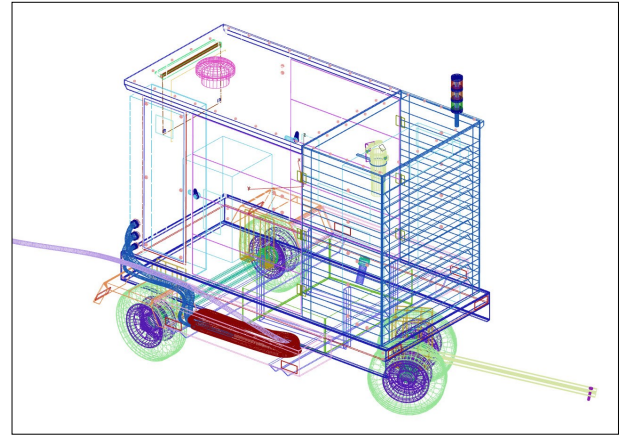




one female pilot, with or without sunglasses!

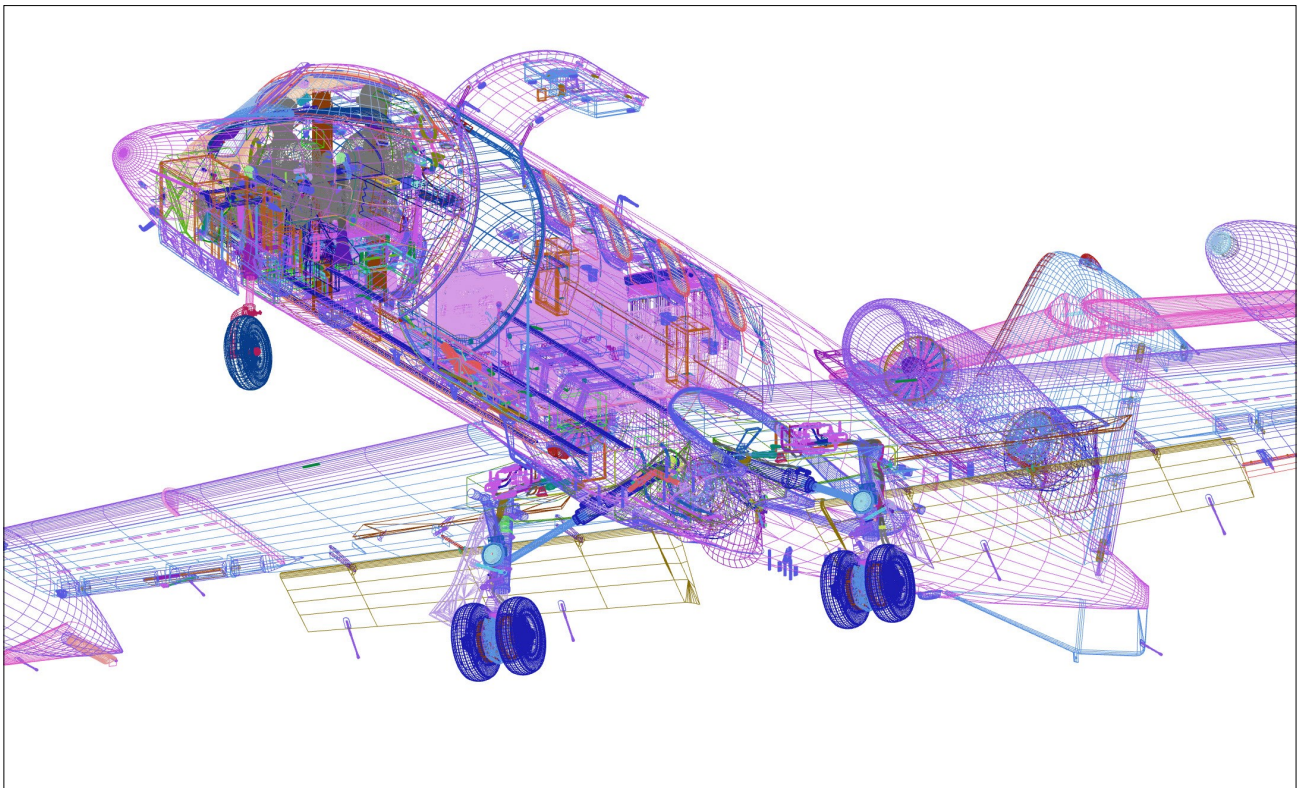
A functional ground power unit (GPU), with light, sound and smoke effects, was modeled for the Prepar3D version. The GPU can supply 28 VDC to the aircraft during ground procedures or maintenance when the engines are not running.

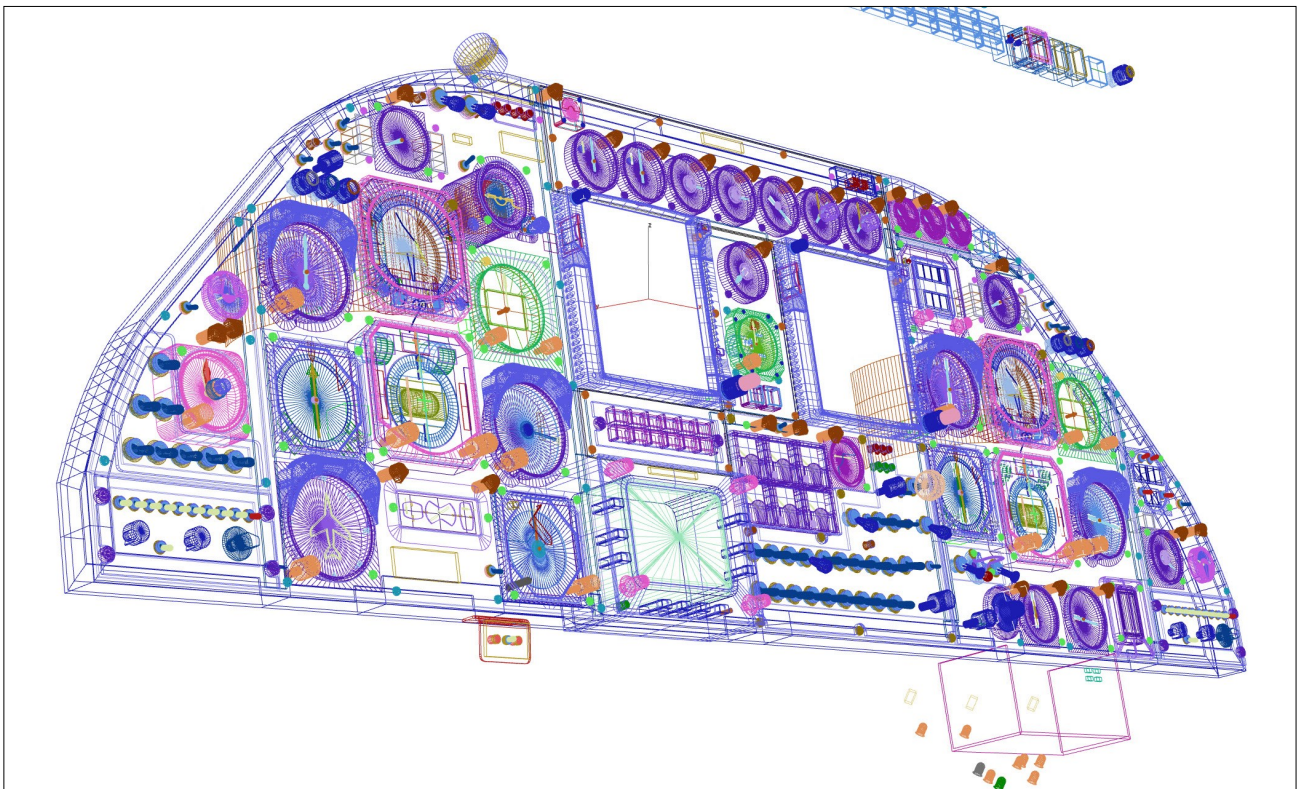
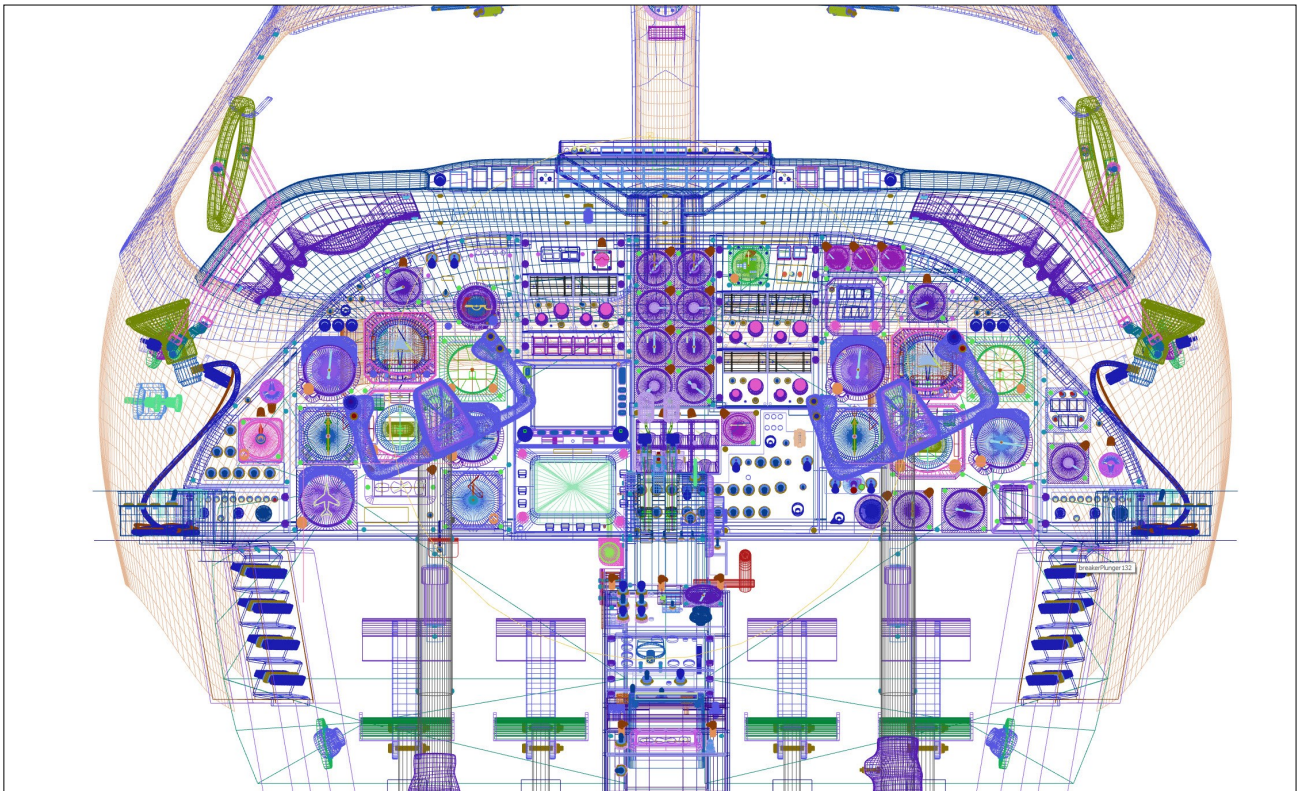
Production was halted in mid 2018 due to the loss of two key team members for personal reasons. Version 3.0 was supposed to be released at the end of 2018 but suffered a major delay due to circumstances out of our control.



Production resumed in the summer of 2019 with a goal of releasing the addon by year's end. Unfortunately, the new deadline was missed again due to the complexity of making the retrofitted instrument panels fully compatible with third-party software, each one with its own sets of features, commands and variables.

The 335 page manual was completed in March 2020. At the time of this writing, the team was conducting the Beta phase with a goal of launching v3.0 sometime in the first half of the year.





THE GLJ MODEL 25 SE V3.0 ADDON IN NUMBERS

- Four high resolution 3ds Max 2019 interior models, each with at least:
 - 948,000 polygons
 - 2,633 objects
 - 41 materials
 - 250 animations
- One high resolution 3ds Max 2019 exterior model, with at least:
 - 978,000 polygons
 - 2,200 objects
 - 41 materials
 - 80 animations
- Different 3D models for Prepar3D and FSX
- 23 different liveries
- 249 (4096 x 4096) texture sheets with alpha channel, some with more than 100 layers in the native Photoshop file (one set for Prepar3D, another set for FSX)
- 29,700 lines of animation code
- 18,200 lines of special systems and gauge code
- 31 visual special effects, including dynamic light effects (Prepar3D)
- 36 main sound effects
- 51 extra sound effects
- 20 third-party addon preconfiguration options for the four virtual cockpits
- 42 special XML system and instrument gauges
- 1 pilot-tested custom flight model
- 25 simulated aircraft systems, including a GPU (Prepar3D)
- 15 camera views
- A 335-page flight manual
- A mini SDK for integrating third-party addons
- Thousands of hours of research and development, testing and writing
- 32 large Domino's pizzas and 26 cases of beer (well, maybe not that much...)

Note: *Some numbers are approximations.*



Preflight checks in progress.



U.S. Army Night Camouflage Transport variation (fictitious tail number 68052X).



Calling for a ground power unit (GPU) during preflight procedures.



www.xtreme prototypes.com

Emergency landing with an engine fire.



www.xtremeprototypes.com

Dual GTN 750 virtual cockpit configuration (copilot's side).



www.xtremeprototypes.com

Copilot's instrument panel.



Captain's instrument panel.



www.xtremeprototypes.com

GTN 650/750 virtual cockpit configuration with instrument and panel flood lights on.



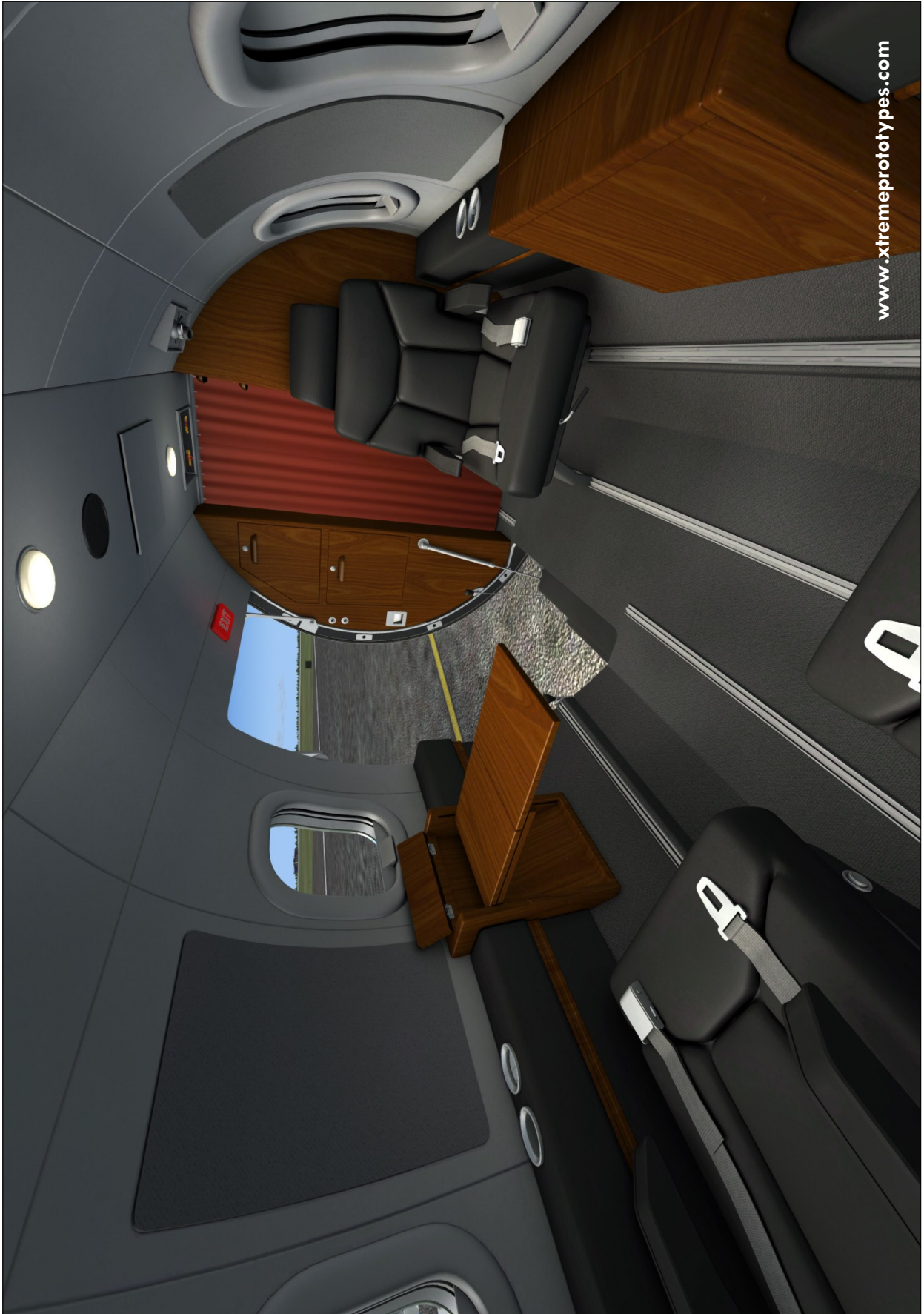
www.xtremeprototypes.com

Cold and dark cockpit.



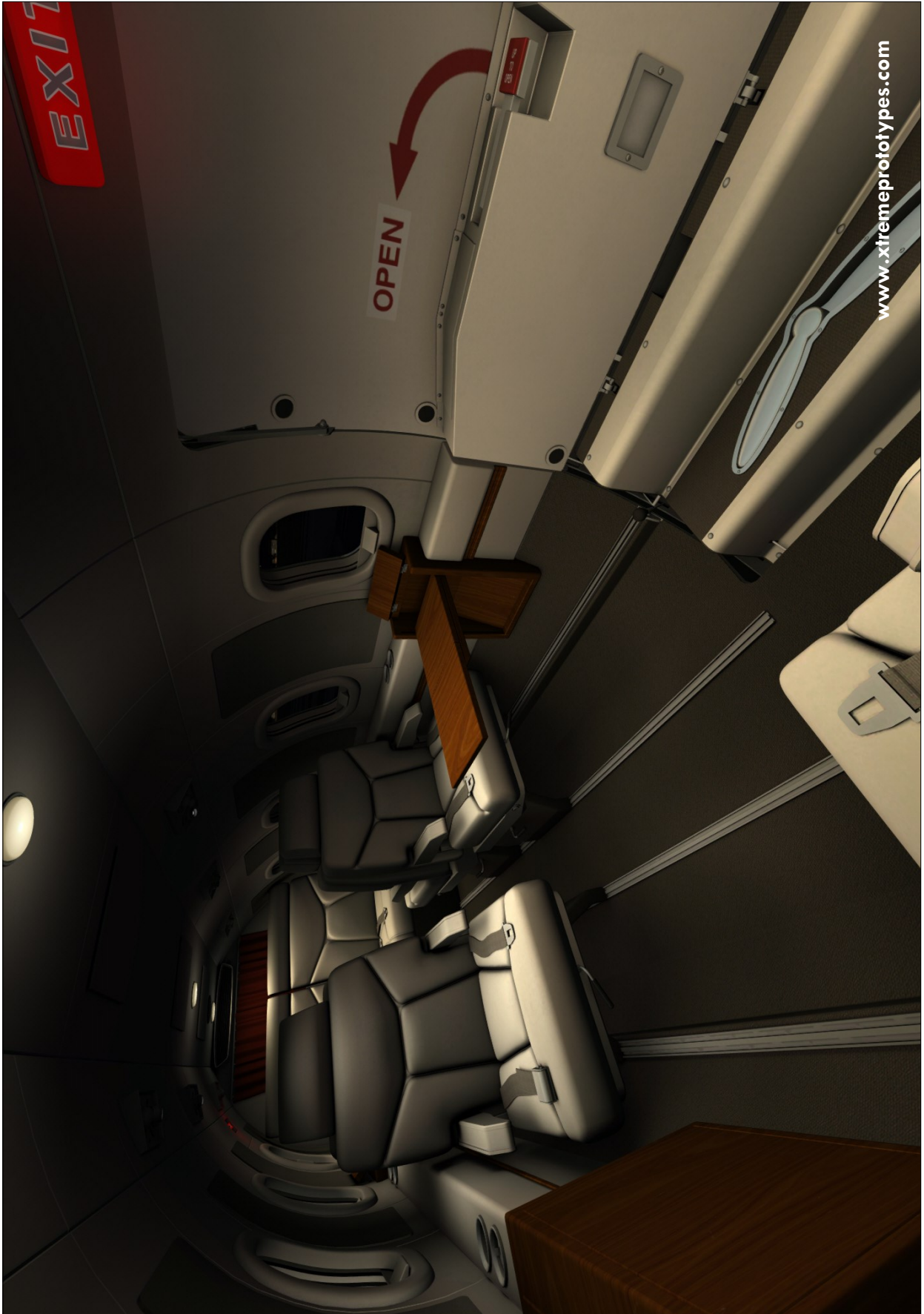
www.xtremeprototypes.com

Classic virtual cockpit configuration.



www.xtremeprototypes.com

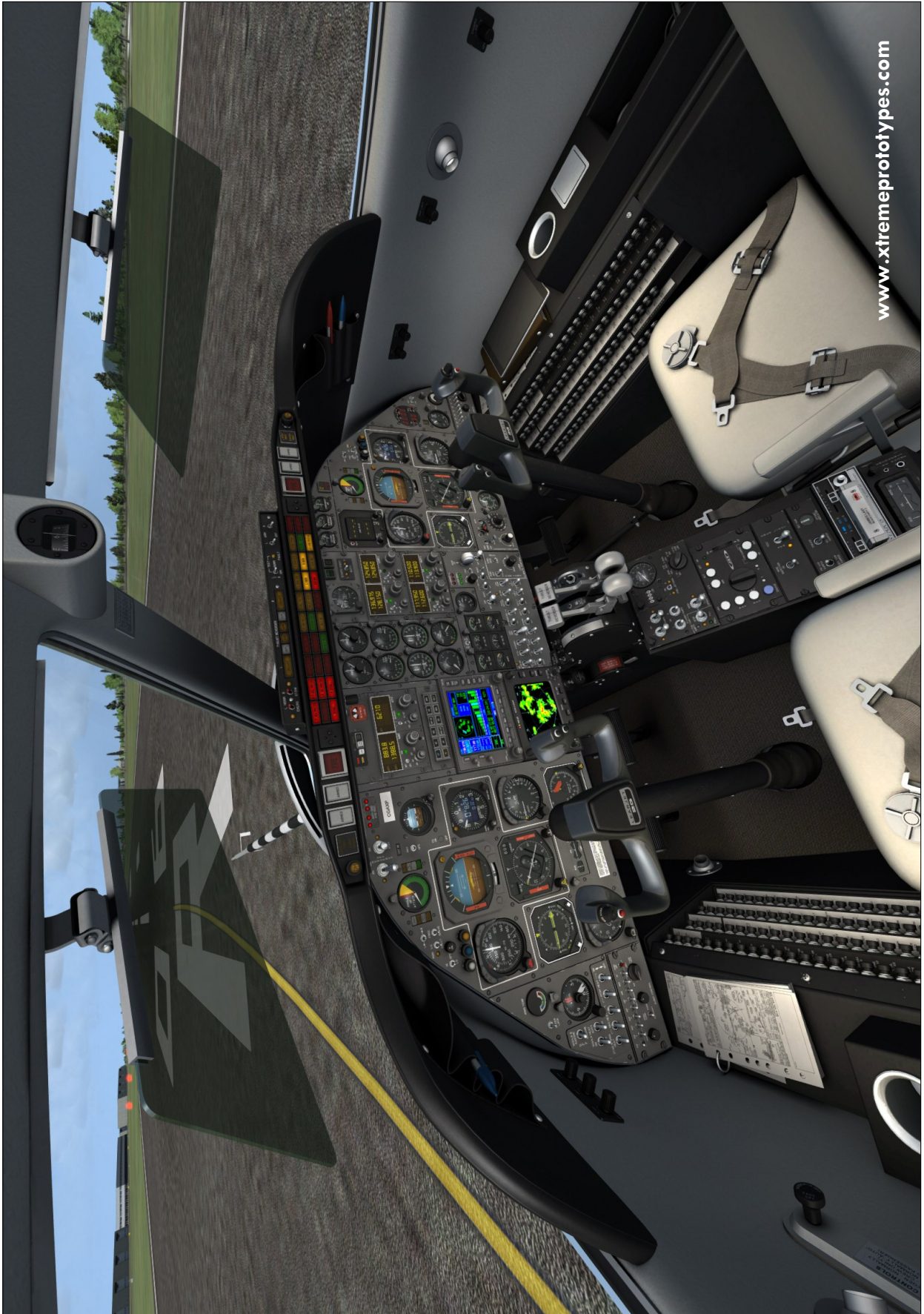
Black cabin interior.



Classic beige cabin interior.



Waiting for last-minute passengers.



www.xtremeprototypes.com

Test aircraft with retrofitted virtual cockpit configuration and boom nose.



Preparing for takeoff.



Canadian Government Black V.I.P. Transport variation, inspired from actual liveries (fictitious tail number 150018XP).



www.xtremeprototypes.com

Australian Private variation (fictitious tail number VH-XPA).



U.S. Air Force V.I.P. Transport variation, inspired from actual liveries (fictitious tail number 60214XP).

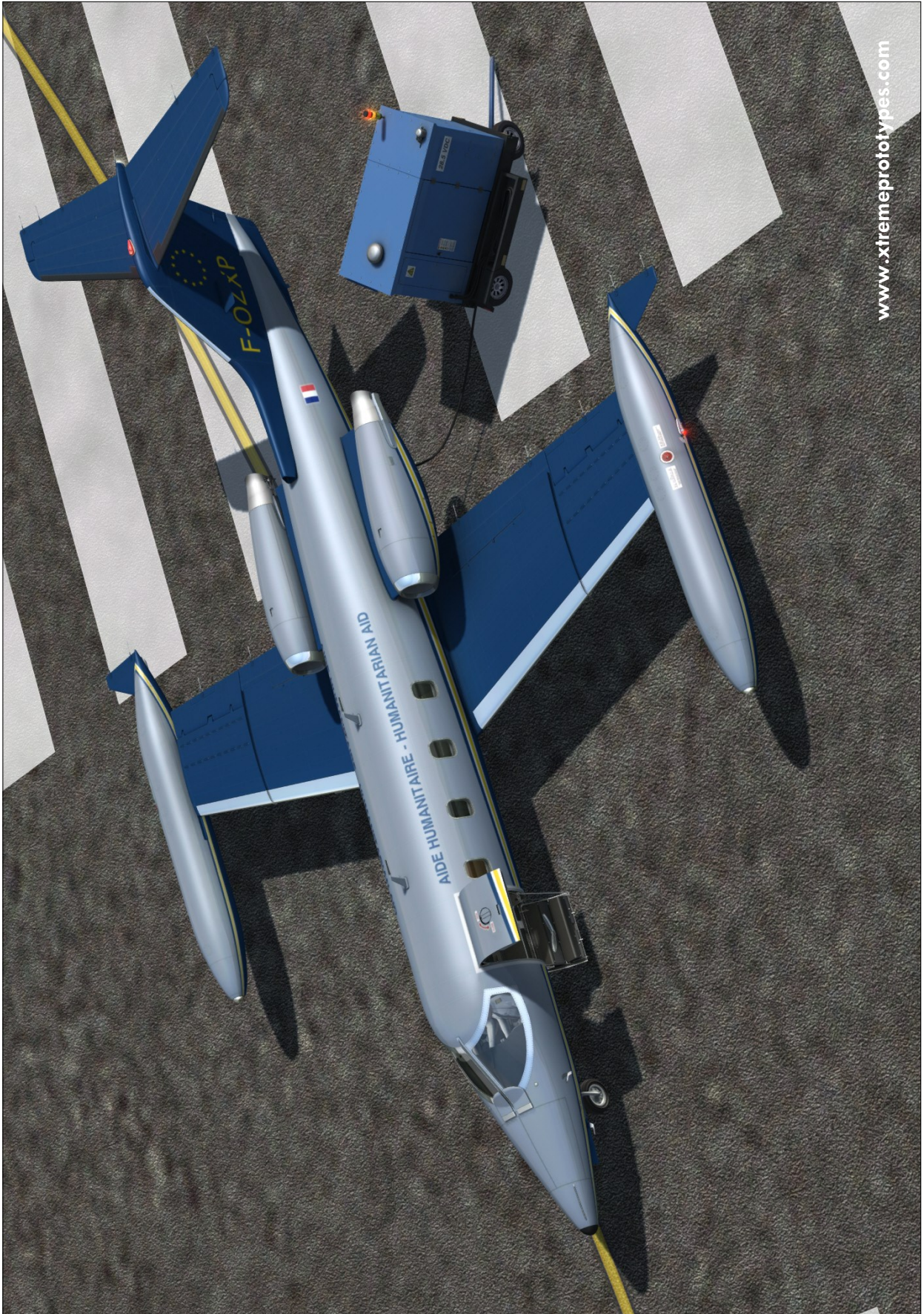


U.S. Army V.I.P. Transport variation (fictitious tail number 68052X).



www.xtremeprototypes.com

XP GLJ25SE v3 Rollout Version (fictitious tail number C-XPV).



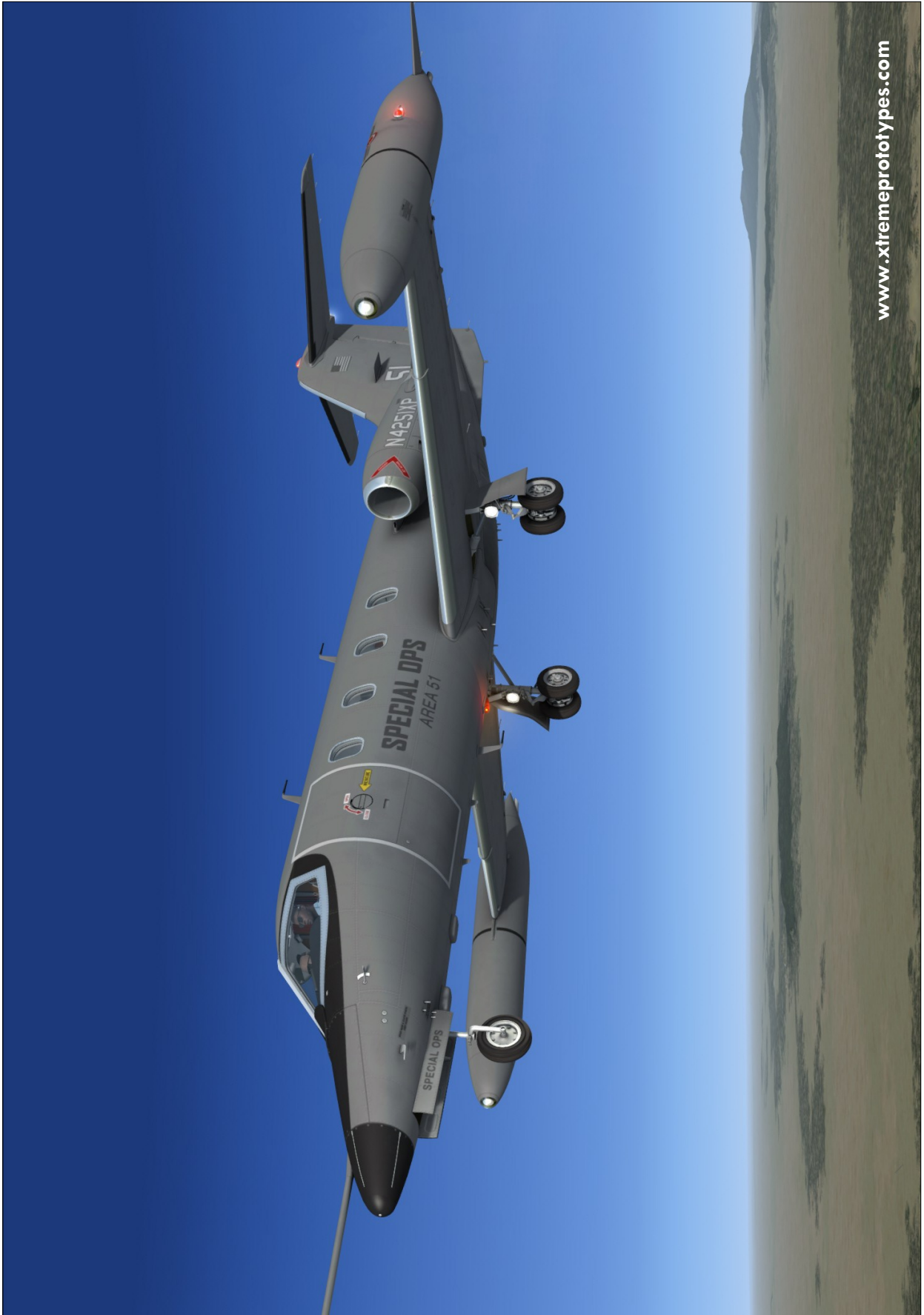
www.xtremeprototypes.com

European Humanitarian Aid Transport variation with GPU (fictitious tail number F-OZXP).



www.xtremeprototypes.com

Canadian Federal Police variation (fictitious tail number CGMXP).





www.xtremeprototypes.com

Brazilian Private variation (fictitious tail number PR-ZXP).



U.K. Blue Bird Private variation, inspired from actual liveries (fictitious tail number G-KEXP).



Italian Private variation (fictitious tail number I-XPAO).



Canadian Federation Red Bird variation (fictitious tail number C-GAXP).



www.xtremeprototypes.com

Classic virtual cockpit configuration (main instrument panel).



www.xtremeprototypes.com





www.xtremeprototypes.com

Dual GTN 750 virtual cockpit configuration (main instrument panel).



Xtreme Prototypes

xtremeprototypes.com

Xtreme Prototypes, Inc.
Montreal, Québec, CANADA

Find us on 

facebook.com/XtremePrototypes