v1.0.0

#FLYTHEDAMNPLANE

The JetStar

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Extras, Limitations and Known Issues

NOTAM

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Introduction

Thank you for purchasing The JetStar. This manual will guide through everything you need to know to take your vintage business jet on the adventures of your dreams!

Installation

Copy the contents of the ZIP file to your community folder. The default locations are

Windows Store:
C:\Users\[YOUR USERNAME]\AppData\Local\Packages\Microsoft.FlightSimulator_[RANDOM LETTERS]\LocalCache\Packages\Community

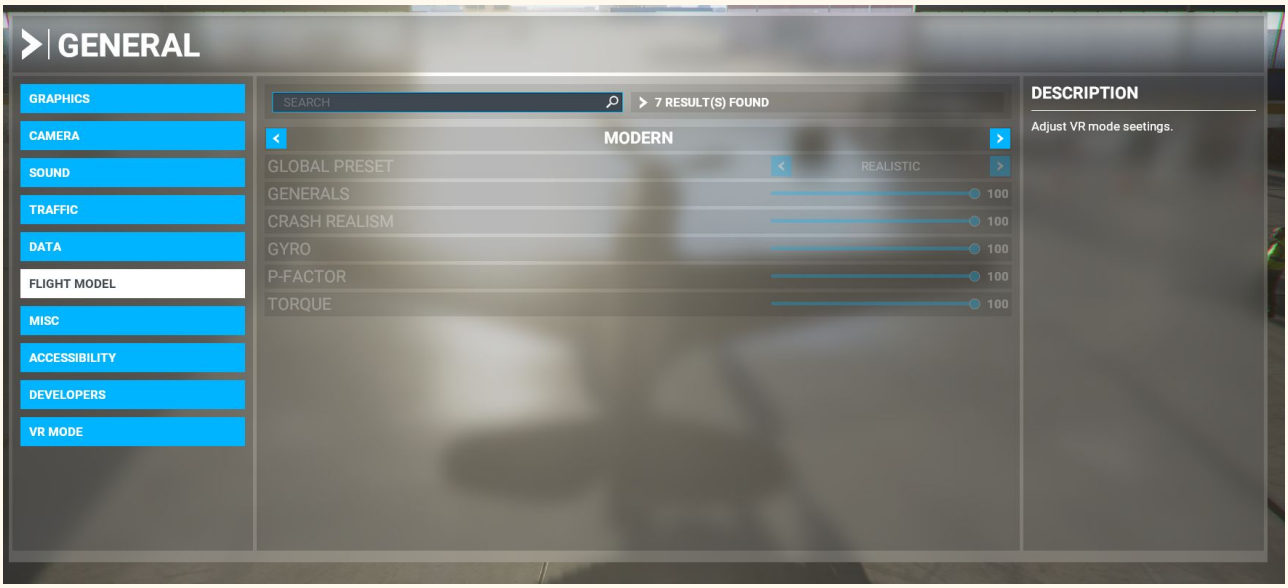
Steam:
C:\Users\[YOUR USERNAME]\AppData\Roaming\Microsoft Flight Simulator\Packages\Community
Or
C:\Users\[YOUR USERNAME]\AppData\Local\Packages\Microsoft.FlightDashboard_[RANDOM LETTERS]\LocalCache\Packages\Community

Recommended Specs & Settings

The JetStar has been modeled with fluidity of frame rates in mind, which means you should not notice a significant drop in performance when using it.

Please use the same graphics settings you are used to.

The flight model has been specifically designed to feel best when following settings are used.

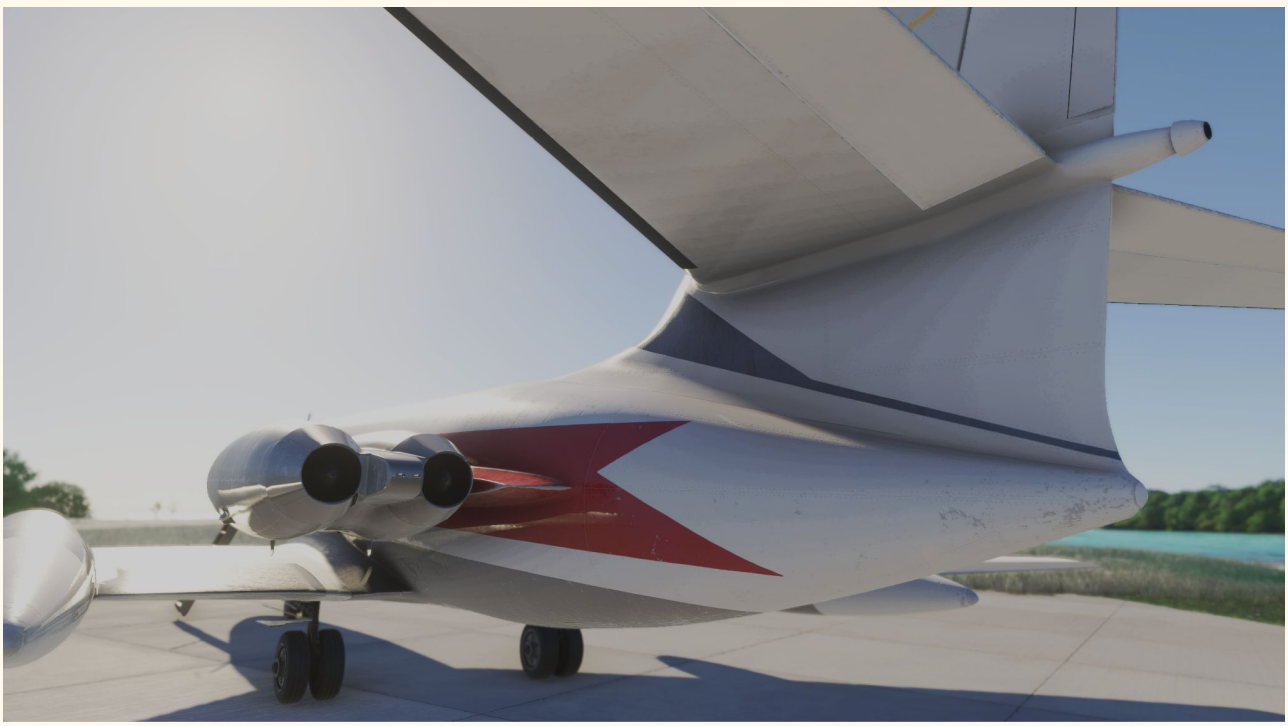


The JetStar will fly on any difficulty levels you set - but if you are experiencing greater mishaps than normal on takeoff and landings, please try feel free to turn down some of these settings. Or practice takeoffs and landings more 😉

History of the JetStar

The Lockheed JetStar (L-329 and L-1329) traces its origins back to the 1950s, where Lockheed was trying to win a USAF contract. Budget constraints made this task impossible, however, and so Lockheed decided against continuing the endeavour. Instead, they kept working on the project and aimed for the business market. The first ever prototype looked very different from the JetStar we know today. It originally had 'clean' wings before the slipper tanks were added on the second prototype. Both of them were powered by two Bristol Siddeley Orpheus engines, which Lockheed attempted to license-build in the US. But the negotiations failed, and so they decided to replace the engines with four Pratt & Whitney JT12, giving the JetStar its truly remarkable silhouette.

The flight tests proved to be very successful, and so the JetStar went into production and entered commercial service in 1961. It featured several interesting technical choices besides its unusual engine layout, such as leading edge flaps (yes, the technical documentation is specific about them being flaps, not slats) to decrease stall speed without the airspeed limitation you have when extending the regular flaps. Furthermore, it has an airbrake, which extends from the bottom of the aft fuselage. The most well-known quirk is its unique pitch trim, however. Instead of harnessing trim tabs like other aircraft, the JetStar is trimmed by tilting the entire empennage up or down. Below the horizontal stabiliser, an unpainted strip of the fuselage is clearly visible. The tail is hinge mounted and the unpainted area moves into and out of the fuselage, changing not only the pitch of the entire horizontal stabiliser, but also the vertical stabiliser's geometry.



At the time it went into service, the JetStar opened an entirely new market as it was the first ever business jet. As such, it quickly gained the attention of businessmen and celebrities. A military VIP transport version, labelled VC-140B, was used by Jimmy Carter as a short distance mode of transport. This version gained the nickname ‘Peanut One’. During Lyndon B. Johnson’s presidency, the JetStar served as Air Force One. During the ’70s and ’80s, it occasionally filled this role as well.

Probably the most famous JetStar was the 1960 built L-1329 JetStar (N777EP) acquired by Elvis Presley in 1975 and named ‘Hound Dog II’. After Elvis died, his family sold the aircraft, but it was reacquired later and is now on display at Graceland.

Elvis even had a second one he bought in 1976, a JetStar II built in 1962 (N-20TF). Not a lot is known about it, but it was in service in Saudi Arabia before being brought to Roswell, where it was left in a sad state. It was auctioned off multiple times, and in January of 2023 the aircraft was acquired by YouTuber ‘Jimmy’s World’. It still has the original upholstery and appliances installed. But sadly, it will probably never fly again, as cost and strict noise regulations would make this project unfeasible. Instead, it was converted into a caravan, retaining all the original interior.

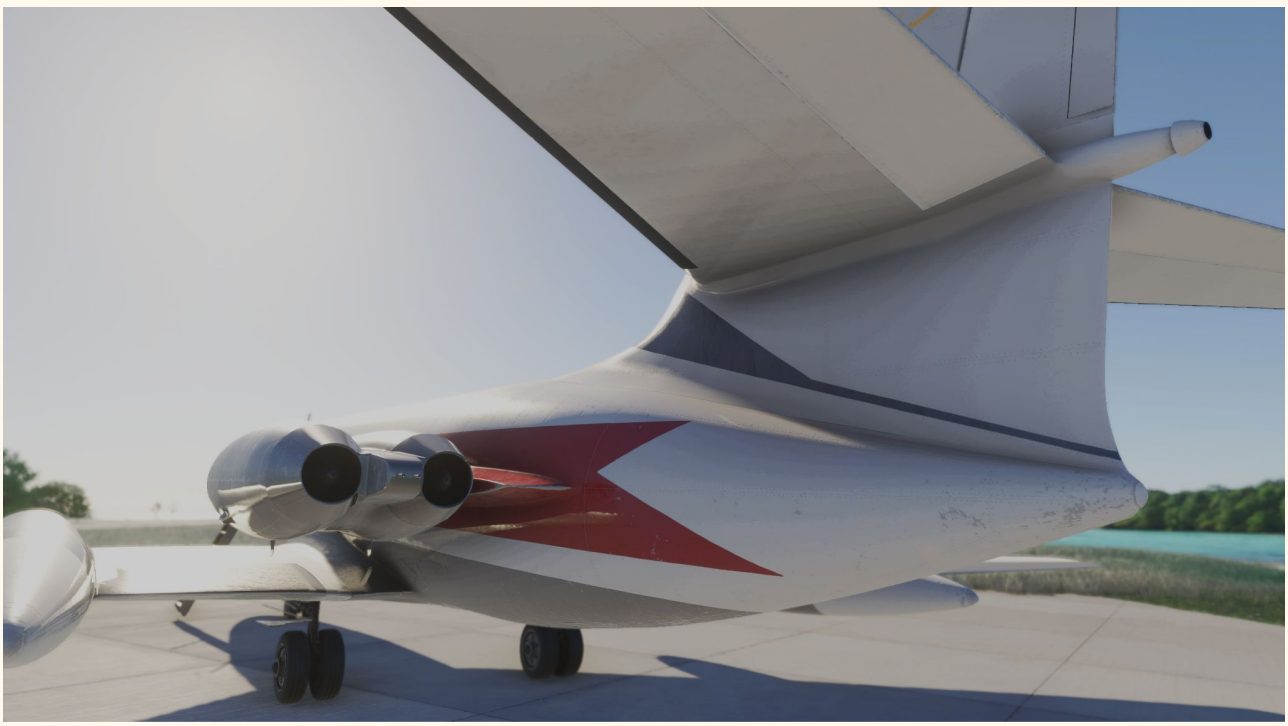
Sadly, no flying JetStar is left. The ‘last of its kind’, a JetStar in regular flight service, retired in 2019, and only two more ferry flights of a JetStar II took place after that. Today, you can own and operate your virtual Lockheed JetStar I and revive the legend. We recreated the first version of this beautiful airframe, as it was the first production model and started the era of business jets, making it a true pioneer.

Specifications

The Lockheed J is a high performance business jet that can be flown by two pilots and can carry up to ten passengers.

The Pratt & Whitney JT12A6 engines, producing 14,7 kN of thrust each, are powerful enough to reach a cruise speed of 445 knots and the aircraft has a service ceiling of 43 000 ft (around 13 000 m). With its tank capacity, you have a range of 2 600 NM (4 800 km).

Length:	18,4 m
Wingspan:	16,6 m
Height:	6,2 m
Passengers:	10
Empty Weight:	11 200 kg
Max Takeoff Weight:	20 190 kg



Quick Start Guide

If you are just too eager to fly to care about real world procedures, please follow these tips and tricks to get you up in no time.

Center of Gravity

The empty Center of Gravity (CG) value in MSFS can be changed by the user and is reset upon loading any plane. We have fixed the CG for our JetStar, but it is good practice to check before the flight. Please make sure the CG is at 26.9% MAC (± 1%), otherwise you may have an uncontrollable plane.

STARTUP

Simply use the default keybind Ctrl+E to start your engines and electrical systems.

TAXI

Taxiing this aircraft is rather simple. Keep your speed moderate to avoid mishaps, as the aircraft has a bit of inertia when steering. For extra style, slide open the pilot and copilot windows to look cool and to wave to people on the ground.

TAKE OFF

Set flaps to the second notch, which is takeoff configuration. Swiftly but smoothly apply full throttle (720°C Exhaust Temperature max. Use less throttle if necessary). The aircraft will start accelerating. Between 110 and 120 Knots, gently pull the yoke back until the nose starts rising. Immediately return the yoke to almost neutral to avoid exceeding maximum pitch. When you reach 500 ft, retract the landing gear. As you speed up, retract the flaps as well.

CRUISE

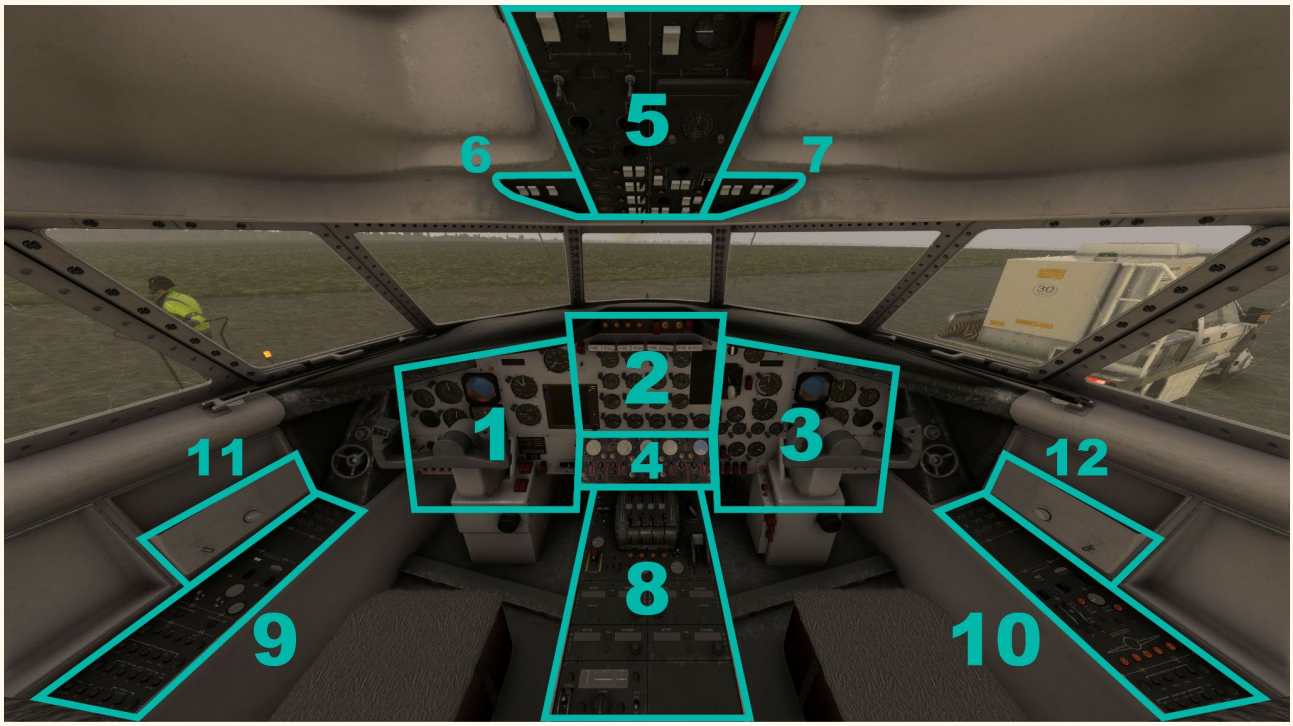
At 85 % RPM you will reach a comfortable cruise speed. If you fly at high altitude, you can cover a lot of ground quickly this way. At 25 000 ft, this power setting results in a speed around Mach 0,65 and at 43 000 ft you will reach Mach 0,7.

LANDING

Slow down and lower your leading and trailing edge flaps (second stage of flaps) and landing gear at around 170 Knots. If you want to decelerate quicker, extend the speed brake. Increase to full flaps at 150 Knots. Retract the speed brake. Now you are in a full flaps landing configuration. Slow down to and maintain 130 Knots throughout the approach and aim for a touchdown speed between 100 and 110 Knots. After touchdown, slow down using the thrust reverser before applying brakes.

Cockpit Layout

This is an overview of all the panels you will find in the cockpit of your legendary Jetstar. The instrument overview and the checklists will reference the numbers you see in the picture below. Everything on this page, including the boxes shown in the picture, is clickable.



What the hell is it?
What the hell does it do?

If you have read the manual of our previous releases, you will notice that this section differs a bit from how it used to look. It shows a picture of every single item available to you in the aircraft, its name and a brief description of what it is, just like you are used to.

Compared to our previous releases, the JetStar features a very complex and complicated cockpit, however. To make your life easier when learning the cockpit elements, all elements are grouped by panel this time.

Please refer to the layout diagram on the previous page to see the location of any group in the cockpit. As an additional QoL feature, you can click on any panel name on the layout page or in the layout image to jump directly to the respective page.

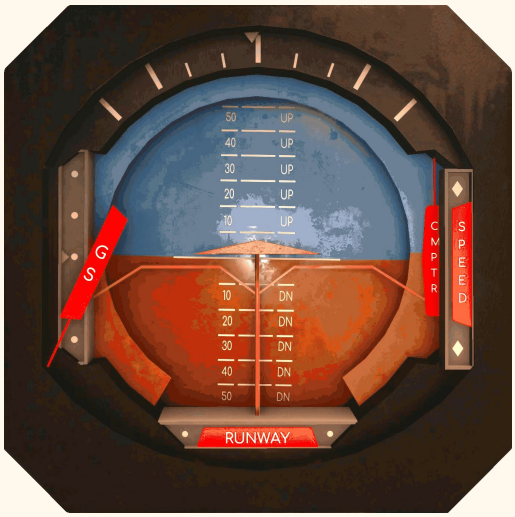
If you want to learn the elements of the overhead panel, for example, you can click either on

5 - Main Overhead Panel

or the coloured box numbered 5 in the image itself to jump to the subchapter going through all overhead panel features. At the end of each subchapter, you will find a link that takes you back to the layout diagram.

Without further ado, let’s dive into all the instruments, switches and buttons. Have fun learning how to operate The JetStar!

1 - Pilot's Panel



Attitude Indicator: Shows your current pitch and bank angle. In addition to that, it will show your position relative to a ground track and glideslope when flying an ILS approach.

Horizontal Situation Indicator (HSI): Shows your current heading and allows you to set a heading bug (small marker on the outside) as well as a desired track for VOR navigation (large, yellow needle). It also shows distance and course to the received VOR station, as well as deviation from ground track.

Airspeed and Mach Indicator: Shows your current indicated airspeed in Knots, as well as Mach number on a self-adjusting scale.

True Mach Indicator: Shows your speed in true Mach.

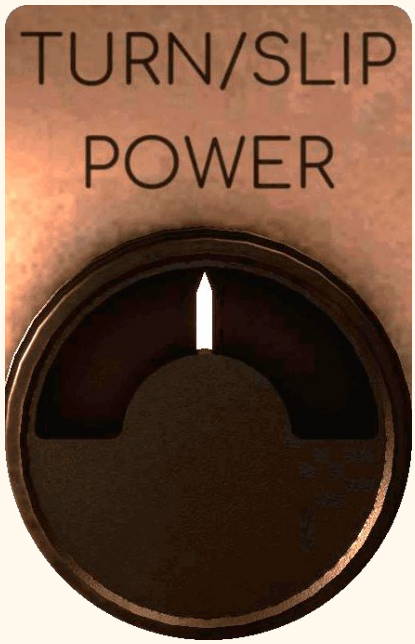
Altimeter: Shows your current barometric altitude in feet. The displays show barometric sea level pressure in millibars (top) and InHg (bottom).

Vertical Speed Indicator: Shows your current rate of climb or descent in thousands of feet per minute.

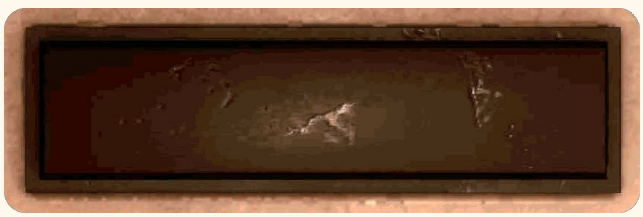
Gyro Compass: The needle shows your current heading using a gyroscope.

Clock: You know what a clock is, right? Oh look, it's #FlyTheDamnPlane o' clock!

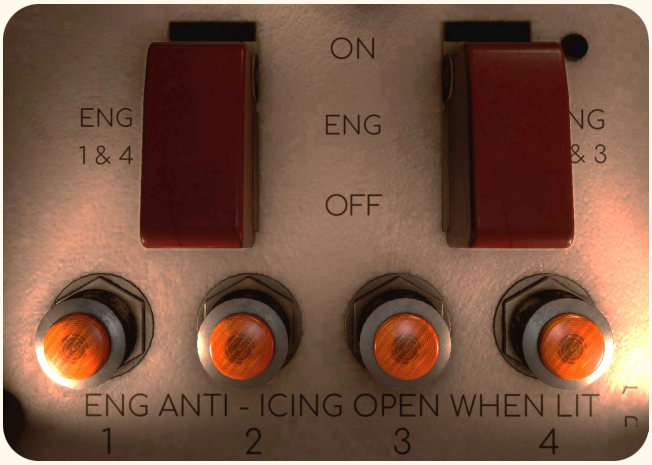
Distance Measuring Equipment (DME): Shows the distance between you and the navigation station tuned in NAV 1 or NAV 2. The selector knob is used to select the former (N 1) or the latter (N 2).



Turn / Slip Power: Acts as a turn / slip indicator. Currently INOP.

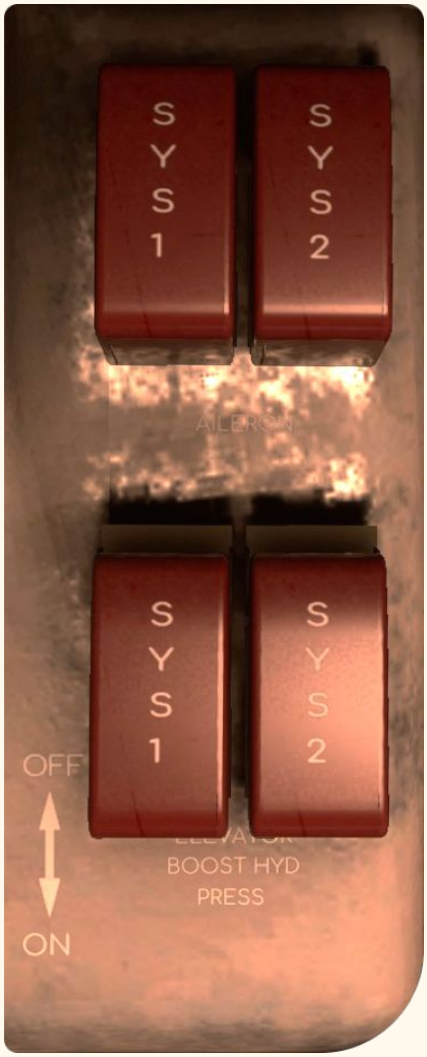


Master Caution: Master caution light, lights up when things go wrong.



Engine De-Icing Controls: Allow you to turn on or off both engine de-icing groups. In the JetStar, There is an outer (Engines 1 & 4) and an inner (Engines 2 & 3) group. The pushlights below indicate active de-icing. Push to test if light is working.

Emergency Landing Gear Control: Switches the landing gear controls into emergency mode.



Control Surface Hydraulics Boost: Engages or disengages hydraulics boost for control surfaces, reducing force needed for control surface deflection. Should always be on if hydraulics are available.

Parking Brake Handle: Parking brake to lock brake lines to full application without having to manually press the brakes.

Drag Chute Deploy Handle: Deploys the drag chute, another special quirk of the JetStar. Currently INOP.

Nose Wheel Tiller: Controls nose wheel steering in the real plane. In the BR JetStar you can simply use your rudder pedals.

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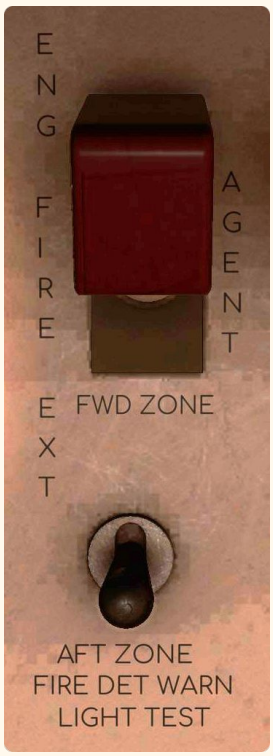
2 - Engine Monitoring Panel

Glareshield Advisory Lights: The lights numbered 1 through 4 show thrust reversers extended. The pair of lights on the right are stall warning system 1 heater (left) and stall warning system 2 heater (right) lights. The covered switches turn stall warning systems heat 1 and 2 on or off respectively.

Fire Extinguisher T-Handles: In case of engine fire, pull handle hard to cut off all supply for the respective engine. The T-Handle also selects the respective engine as extinguishing agent destination in case the fire is not contained by cutting supply.



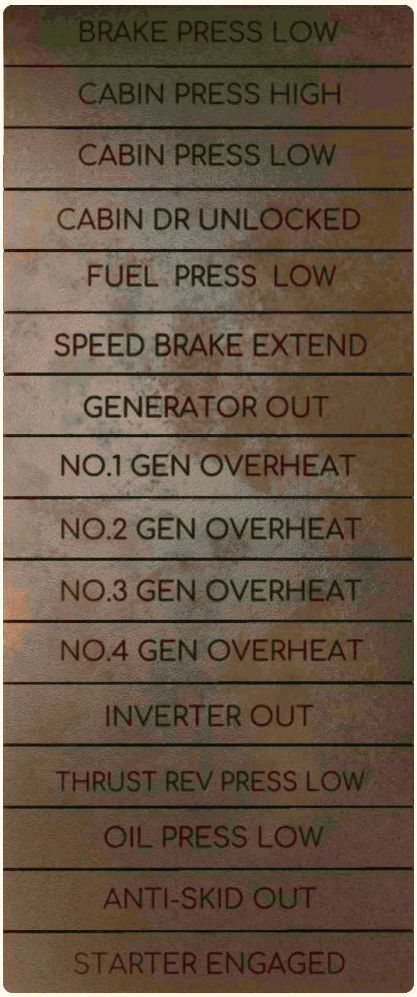
Agent Discharge Selector: If a T-Handle is pulled and the engine is still burning, move the covered switch either up or down to discharge extinguishing agent from either the normal or the reserve bottle.

Engine Pressure Ratio (EPR): Similar to manifold pressure in aircraft with combustion engines, this shows the ratio of pressure between air entering the jet engine compressor and air exiting the jet engine nozzle.

RPM: Shows the percentage of revolutions per minute.

Exhaust Temperature: Displays the temperature of exhaust gas in hundreds of degrees Celsius. 760°C are never to be exceeded.

Fuel Flow: Displays fuel flow in thousands of pounds per hour.



Annunciator Panel: Contains caution and warning lights.

Outside Air Temperature (OAT): Displays ambient air temperature in degrees Celsius.

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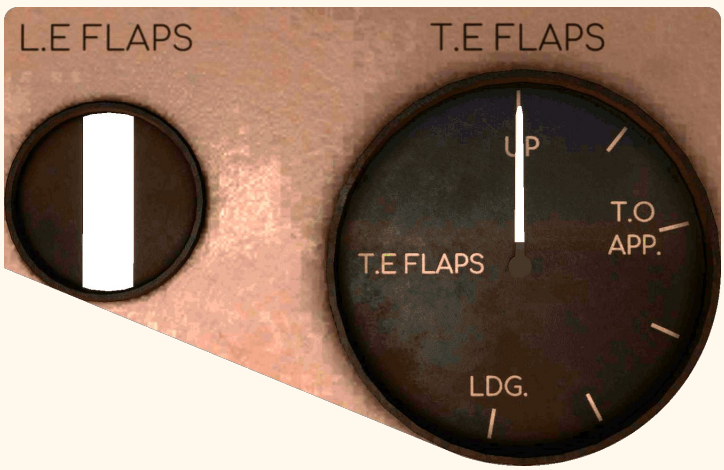
3 - First Officer's Panel

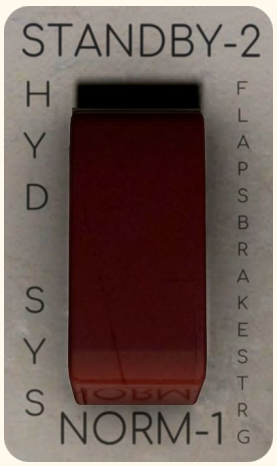
Most of the instruments on this panel are identical to the Pilot's Panel. Thus, we only go through the elements that are unique to the First Officer's Panel.

Landing Gear Controls: Contains the landing gear lever to lower or raise the undercarriage, along with three lights above that illuminate green if the respective gear is safely extended and locked.

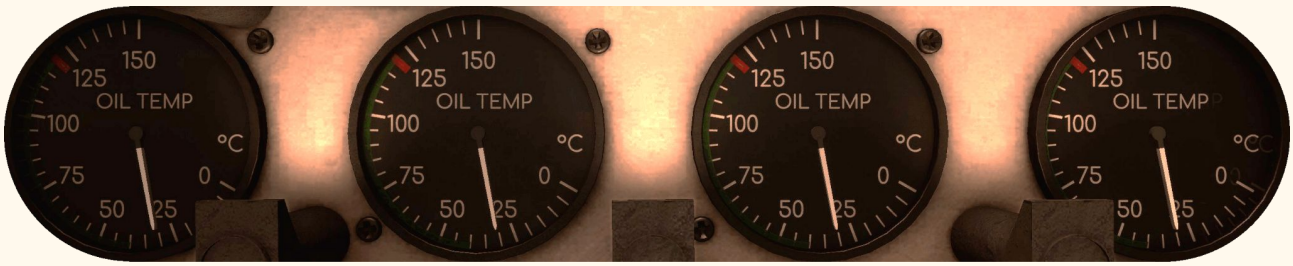


Flaps Indicators: The left side indicates the position of leading edge flaps (blank indicates retracted, black / yellow indicates extended). The gauge on the right displays the position of trailing edge flaps through three detents (Up, T.O. APP., LDG.).

Auxiliary Hydraulics Switch: Lets you engage or disengage auxiliary hydraulics (System 3).

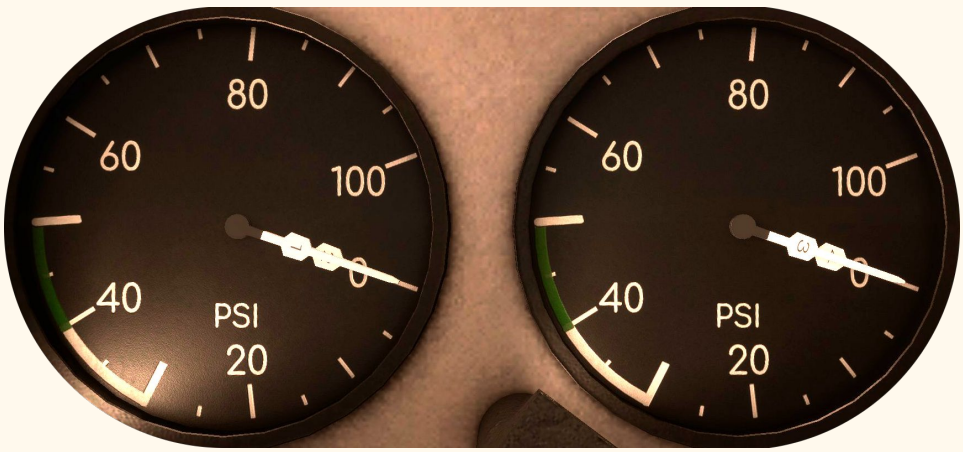


Hydraulics Switch: Allows you to switch the main hydraulics from the regular (Norm-1, System 1) to the backup (Standby-2, System 2) system.

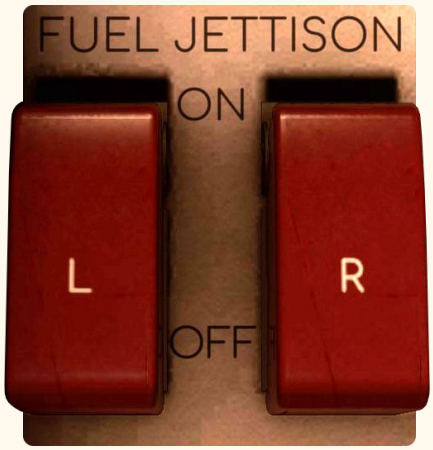


Oil Temperature: Displays oil temperature per engine in degrees Celsius.

Hydraulics System Pressure: Shows the currently available hydraulics pressure in thousands of PSI.

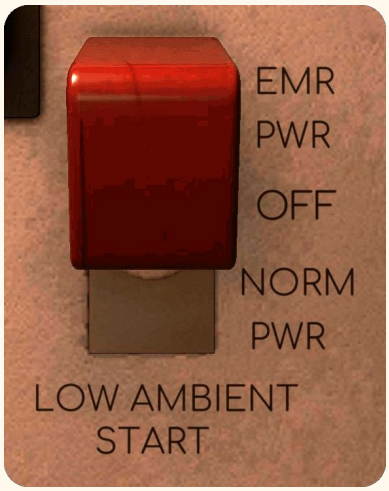


Fuel Pressure: Displays fuel pressure per engine in PSI, each needle is labelled with the engine number.



Fuel Jettison: Allows you to jettison fuel on the port or starboard side respectively in case of emergency. The fuel panel (Panel 4) can be configured to jettison only from selected tanks.

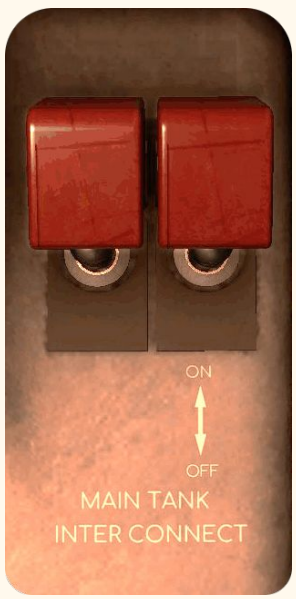
Tank Isolation Valves: These valves allow you to close the fuel lines between an engine boost pump and the respective engine. Combine with crossfeed and boost pumps (Panel 4) for in-depth fuel balancing.



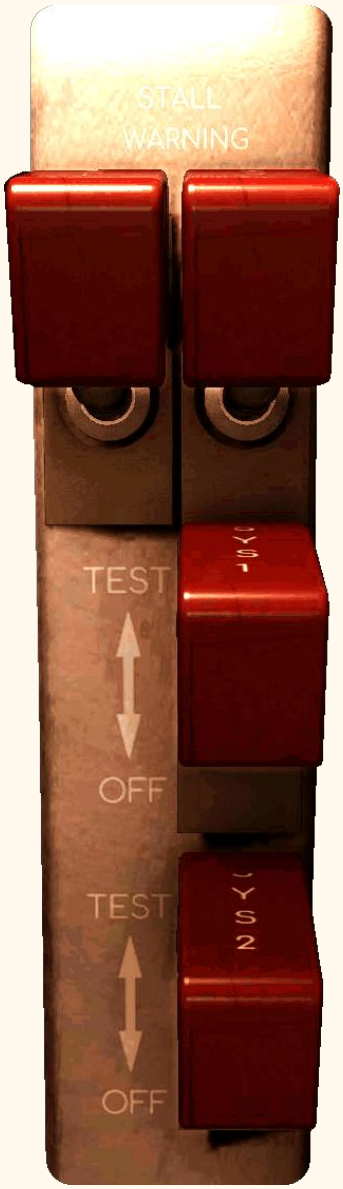
Windshield De-Icing Power : Allows to switch between windshield de-icing modes. Norm is the standard operating mode when de-icing is needed. If inverters fail, the emergency position allows de-icing of only the pilot's windshield. Currently INOP.

Windshield De-Ice Heat Control, Low Heat Start & Fuel Heaters: The left Switch lets you change the windshield de-icing to low (top) or high (bottom) heat. The push button is only used to start the de-icing system, when OAT is below -48°C. The fuel heaters on the right are used to pre-heat fuel prior to engine ignition. Currently INOP.

Anti-Skid, Baggage Smoke Detector & Fuel QTY Test: Lets you turn on Anti-Skid and the Baggage compartment smoke detection system. The push button is used to test the fuel quantity indicators (Panel 4).



Tank Interconnect Switches: These switches open or close the valves connecting main tanks 1 and 2 or main tanks 3 and 4 respectively.



Stall Warning Test Switches: These switches are used to test the stall warning system. A and B switches to select the circuit to test, SYS1 and SYS2 switches to test the respective stall system. Currently INOP.

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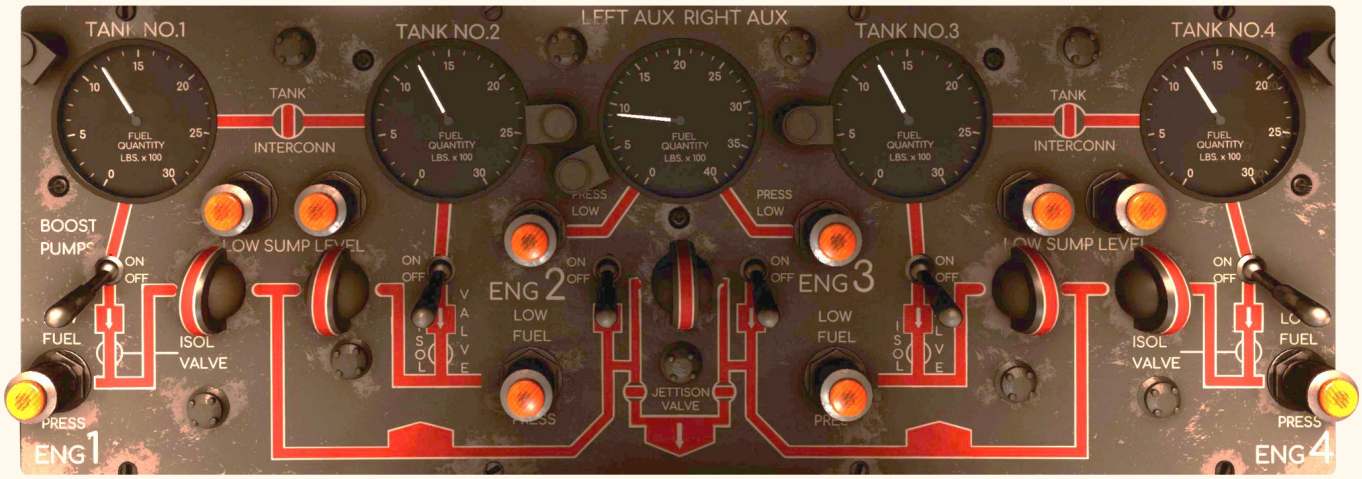
4 - Fuel Balancing Panel



Fuel Balancing Panel: This panel combines most fuel controls needed to accurately balance fuel tank quantities. On it, you will be able to turn fuel booster pumps on or off, as well as open and close crossfeed valves. To help visualise the fuel system, it is printed on the panel as a layout. The location of controls represents their position in the aircraft's fuel system.

The controls on this panel are used in combination with the tank isolation, tank interconnect and fuel jettison switches to achieve your desired result.

While the panel seems complicated to use, it becomes rather intuitive once you know how it works. If you want guidance, this manual will provide examples and teach you how to operate the complex fuel system of the JetStar.

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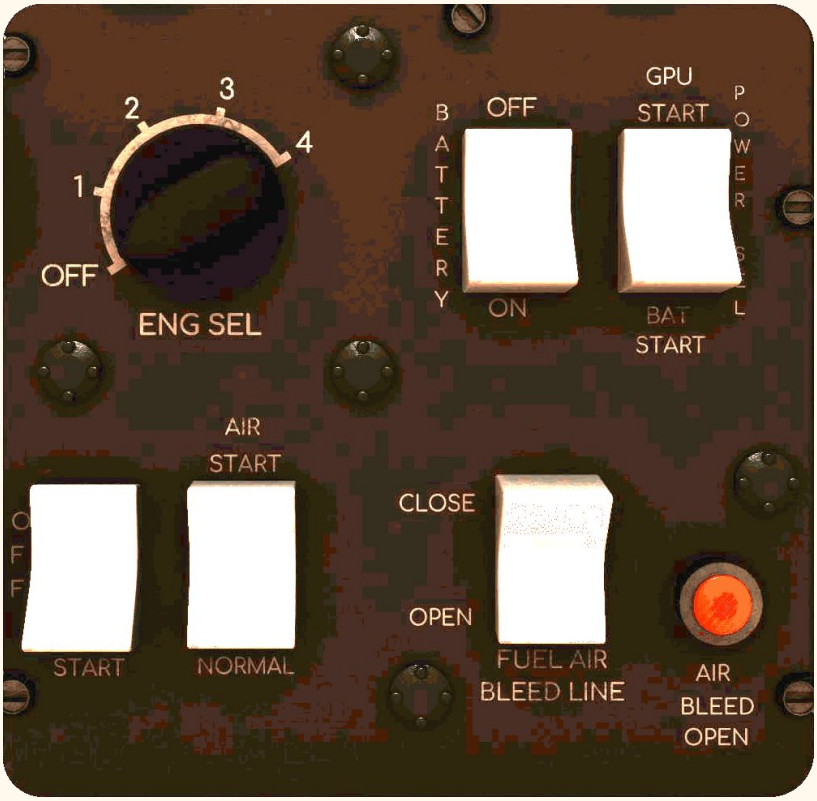
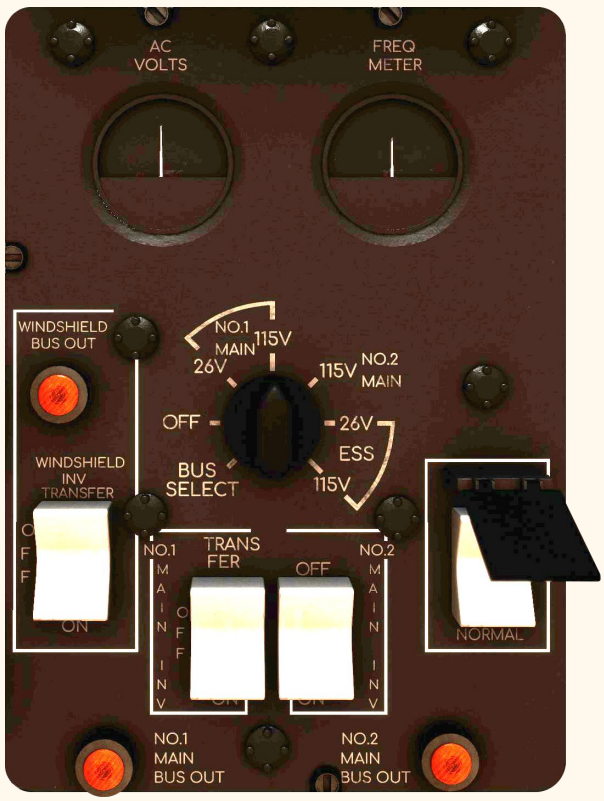
5 - Main Overhead Panel



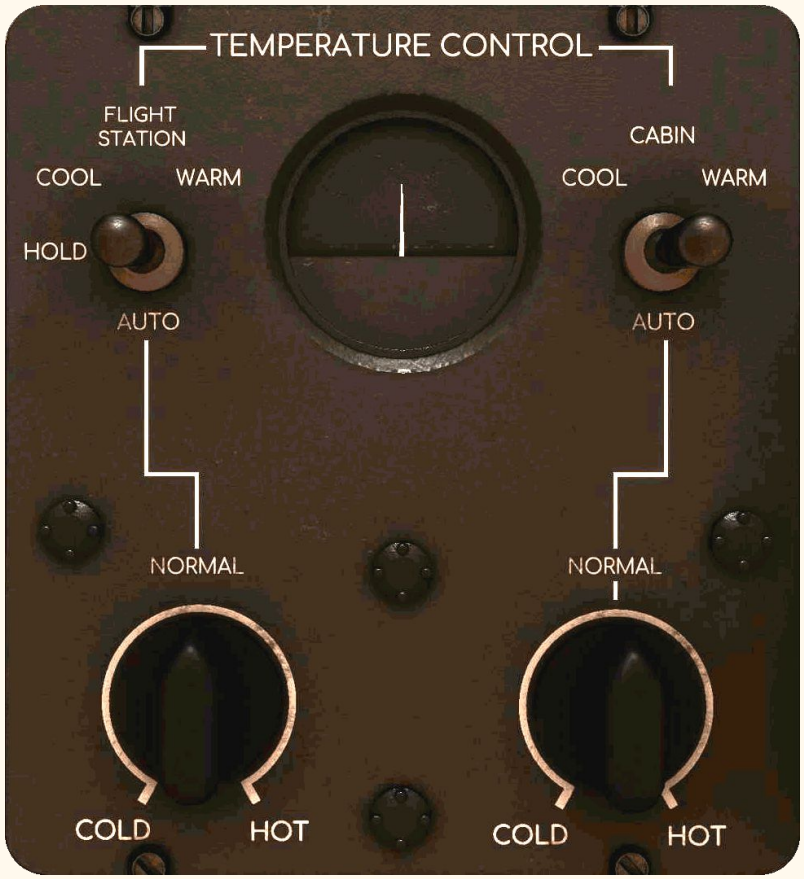
Engine Start Controls: Controls to prepare starters and to start the engines.



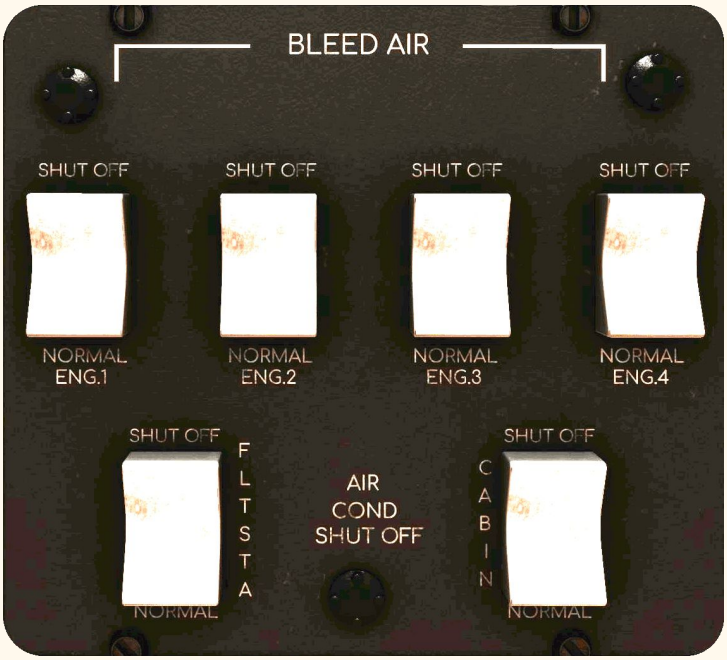
Electrical Bus Controls: Allows you to switch powered AC bus and to set up inverters for engine start and other aircraft systems post-startup.

Generator Controls & Ammetres: Using these switches, you can individually trip and reset generators, turn them on or off or switch them into emergency mode. The ammetres display charging current.

DC Voltmetre Source Selector: Here, you can select the source for the voltmetre display. BATT displays battery voltage once the battery is connected, while GEN 1 through 4 displays generator voltage. Note that GEN 1 through 4 will show voltage when the engines are on, even when the generators are off.

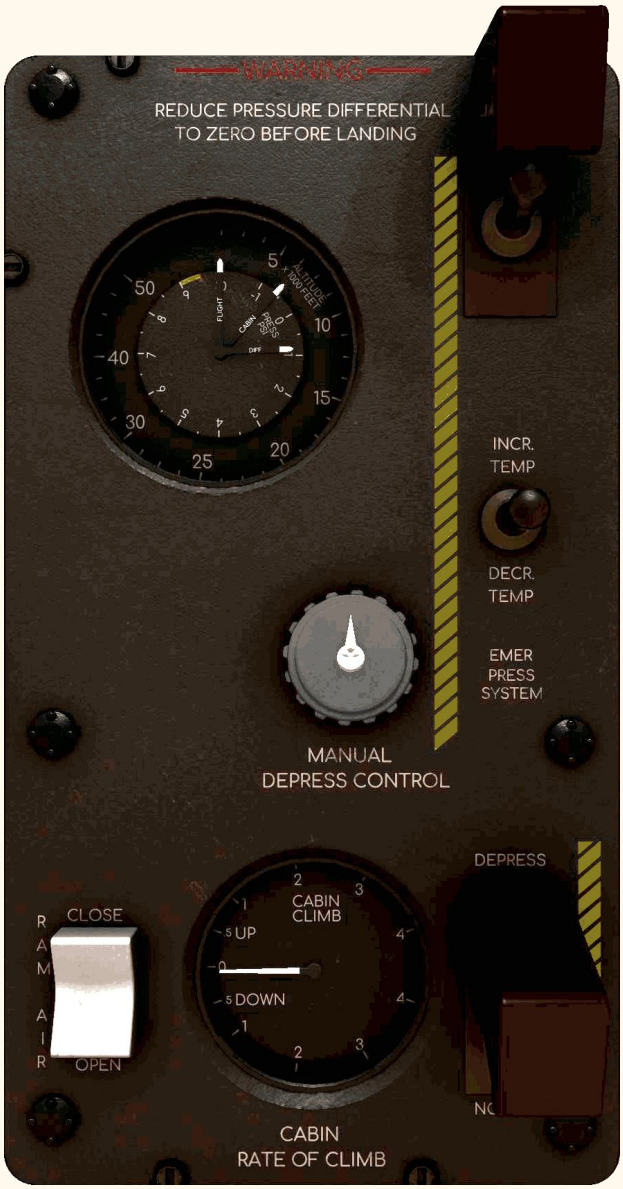


Air Conditioning Controll: This panel allows you to individually set air conditioning mode and desired temperature for cockpit and cabin. The temperature gauge displays cabin temperature.



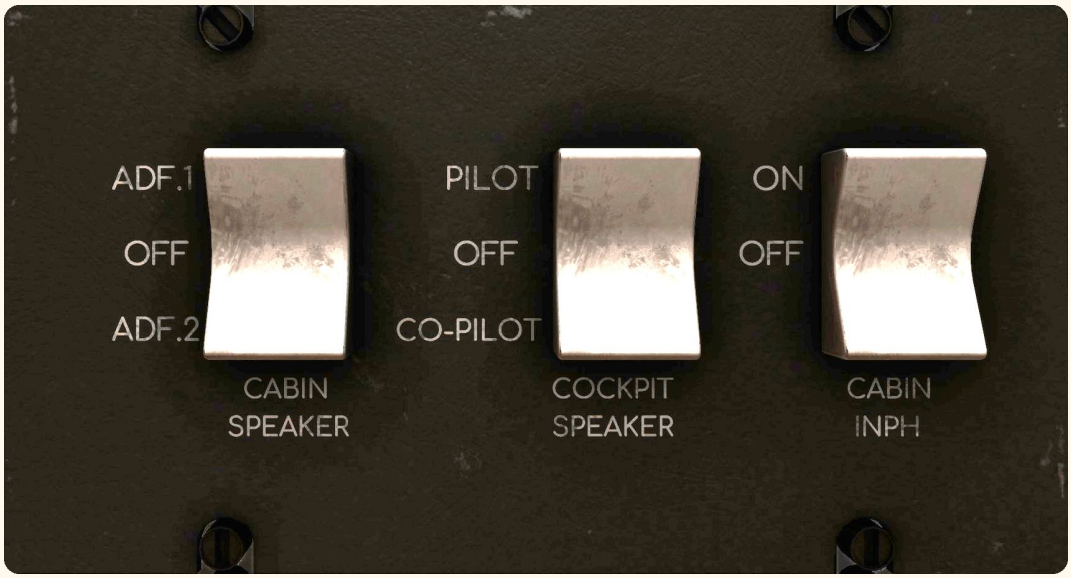
Bleed Air Controls: Use this panel to set up bleed air sources for the air conditioning system and to activate or deactivate the cockpit and cabin A/C systems altogether.

Cabin Pressurisation Setup: Allows you to set your desired cabin pressure altitude and rate of pressure change during climb and descent.



Cabin Pressurisation System: The gauge on top shows the current cabin pressure altitude, the gauge on the bottom shows rate of pressure change as climb or sink rate. The switch on the bottom left opens or closes the ram air valve. The emergency pressurisation system consists of a master switch (top), a temperature switch to manually adjust cabin temperature, and an emergency depressurisation switch to allow manual depressurisation control.

Emergency Generator Selector: Allows you to select any generator as an emergency DC source to power the DC essential bus. Respective generator has to be in EMER mode. Currently INOP.



Speaker Panel: Here, you can set up cockpit and cabin speakers.

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6 - External Lighting Overhead

External Lighting Panel: Used to set external lights (except landing / taxi lights) and windshield wipers.

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7 - Internal Lighting Overhead

Internal Lighting Panel: Used to set passenger instruction lights, cockpit floodlight, overhead instrument lights and glareshield light.

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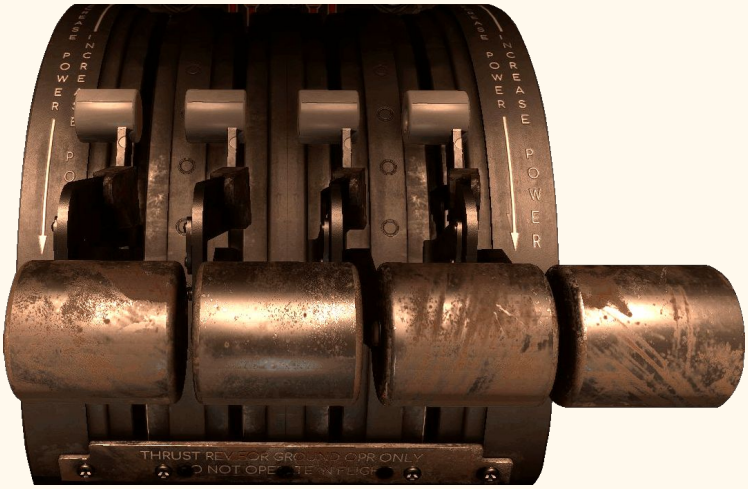
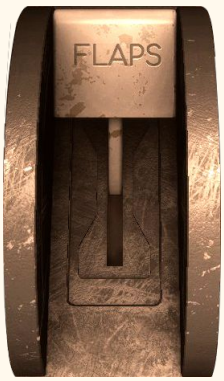
8 - Centre Pedestal



Throttle Quadrant: Four throttle and four reverser levers. Pitch trim wheels are attached on both sides. No auto throttle or other shenanigans.

Landing Light Controls: Lets you turn on or off the taxi light and landing lights. Landing lights have a takeoff and an on position.

Rudder Locking Mechanism: Does just what it says on the tin. Locks the rudder control surface to prevent movement (Gust lock).

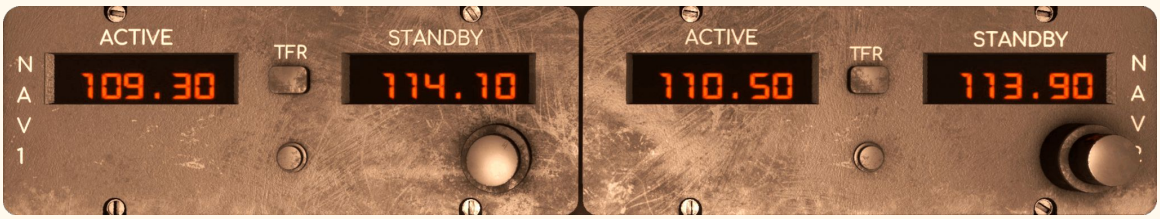


Flaps Lever: A four position flaps lever. Detents are labelled on the frame and are as follows: Up, Leading Edge Down, Trailing Edge Takeoff / Approach, Trailing Edge Down Landing.

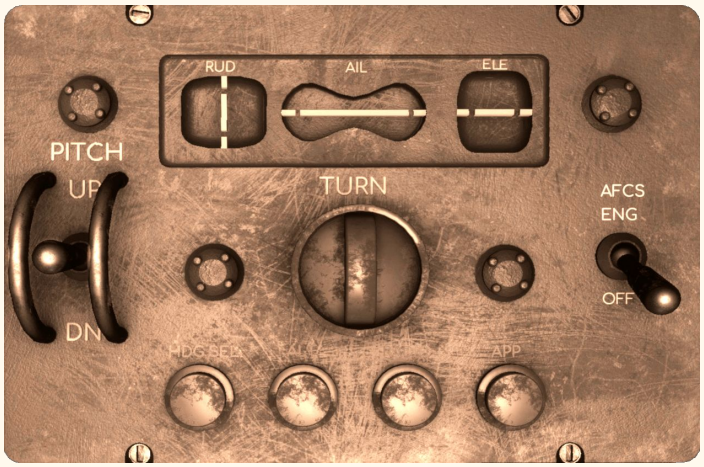
Elevator Trim System: The gauge displays current empennage position for pitch trim. The switch below allows you to switch the trim system into emergency mode if main trim fails.

Rudder / Aileron Trim System: Seated directly aft of the throttle quadrant, this section houses advisory lights for thrust reversers and the rudder and aileron trim controls. A knob adjusts rudder trim with the gauge showing rudder trim position. The switch on the right controls aileron trim with the gauge showing aileron trim position. The centre switch controls the speed brake.

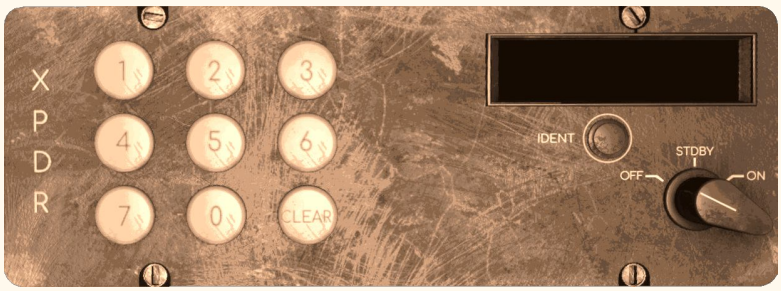
VHF Radios: Directly aft of the trim system, you find the VHF 1 and VHF 2 radios. They use a standard layout, where the knobs control frequency and the TFR button switches active and standby frequencies.



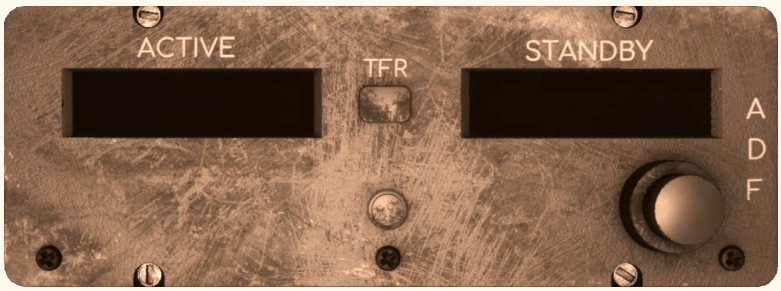
NAV Radios: The NAV 1 and NAV 2 radios are located aft of the VHF radios and use the same standard layout.



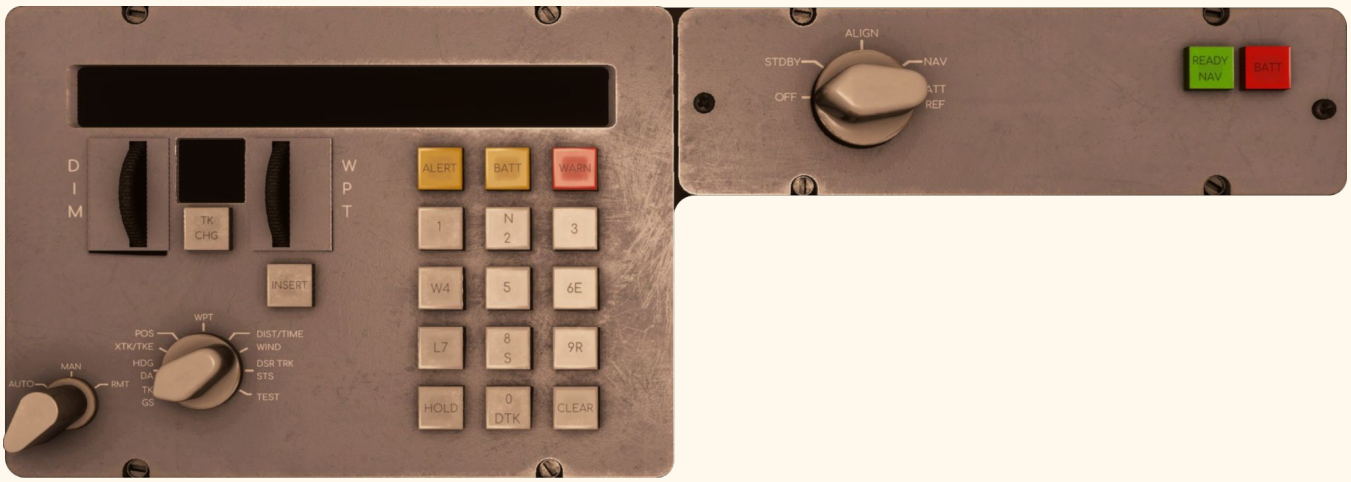
Automated Flight Control System (AFCS): This panel lets you control the AFCS. Left switch allows you to adjust pitch angle, the centre knob controls turn rate. The AFCS automatically coordinates turns with rudder and aileron input. The windows in front of the knob show current control surface positions. Use the right switch to engage or disengage AFCS. The four push buttons activate AFCS modes (HDG, ALT, RADIO, APP).



Transponder: Used to transmit flight data to air traffic controllers. Use the keypad to enter transponder code. It has an ident button and a mode selector to select one of three modes (Off, Standby, On).



Automatic Direction Finder (ADF): A medium and long wave radio receiver for radio navigation. Tune NDB in range to see the relative bearing to it on your HSI.



Carousel IV-A Inertial Navigation System (CIVA INS): This is the heart of the JetStar's navigation capabilities. The Carousel IV-A inertial navigation computer is used to get real time data on position, heading, waypoints, distance and time, as well as wind.

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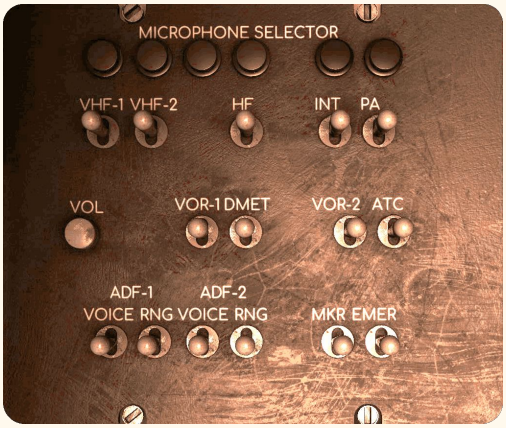
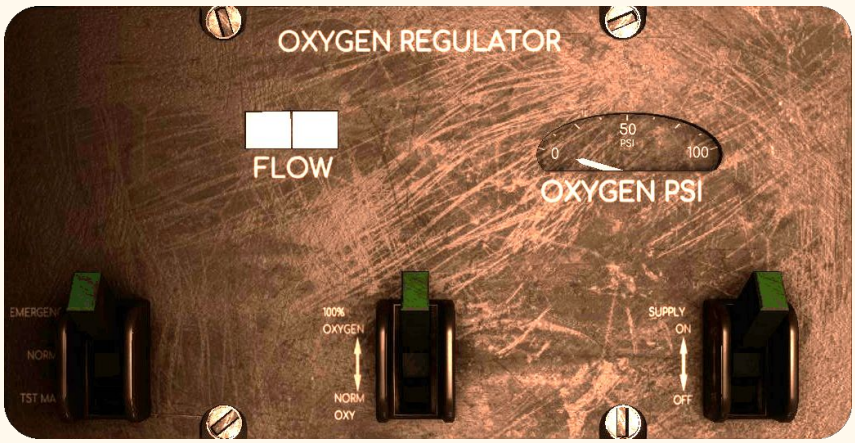
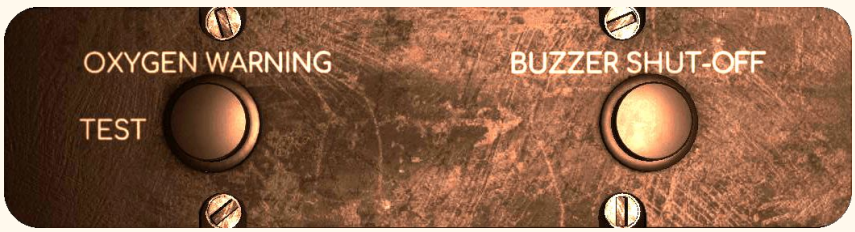
9 - Pilot's Side Console



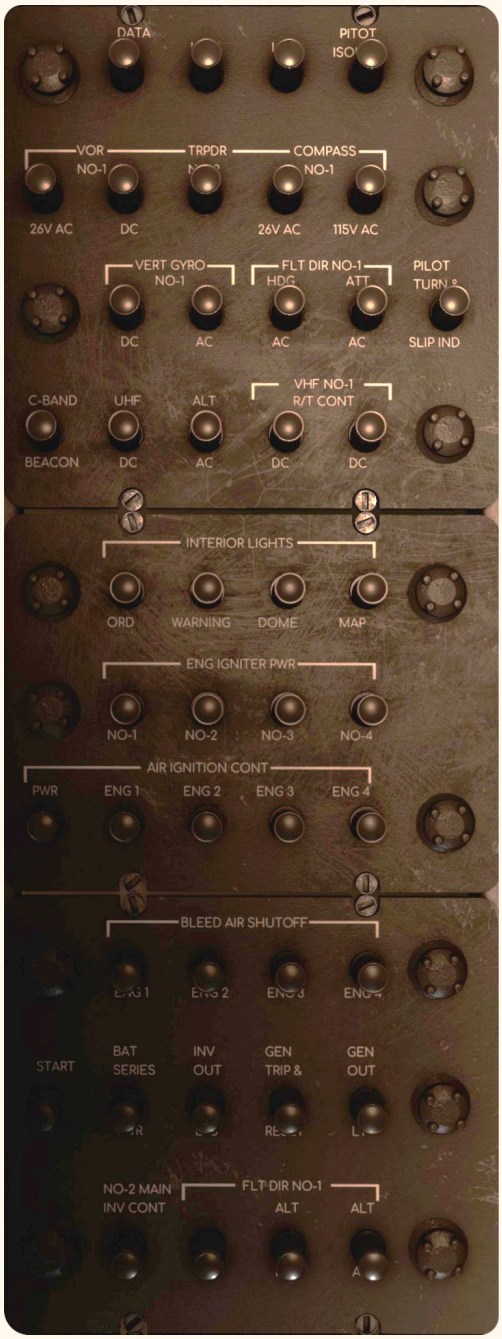
Sound Selector: Allows you to mute and unmute different audio channels. Currently INOP.



Oxygen Regulator: Allows you to toggle the oxygen supply and select supply modes.



Oxygen Warning Buzzer Controls: Lets you test the oxygen warning system and mute the warning buzzer if it's going off. Currently INOP.



Circuit Breaker Panel: Contains circuit breakers for various systems. Currently INOP.

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10 - First Officer's Side Console

Structural De-Icing Controls: This panel lets you select the de-icing mode according to outside conditions. Three modes are available (Off, Light Icing, Heavy Icing).

The remaining elements on the First Officer's side panel match the Pilot's side panel, so we won't repeat them here.

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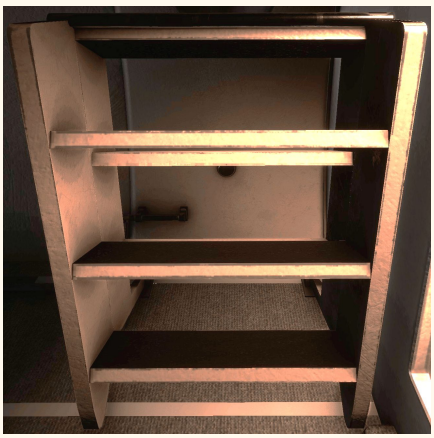
11 & 12 - Pilot's & First Officer's Lighting Panel

Panel & Instrument Lights: The switch controls brightness of the left console lights for the pilot and the right console lights for the first officer. The Rheostat controls brightness for pilot's and first officer's front panels respectively.

Cabin



Boarding Stairs: Boarding passengers would be difficult without them. Just make sure you open the door before trying to extend the stairs to avoid ugly dents.

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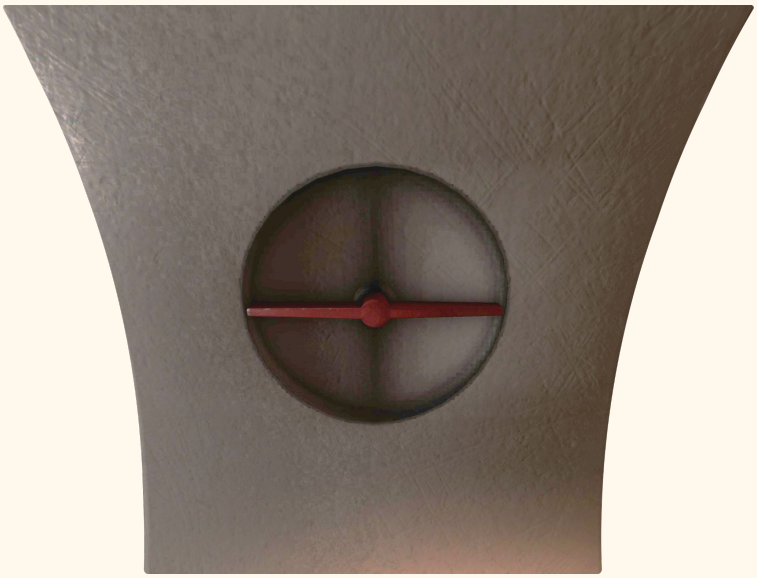

Door with Latching Mechanism: Open to significantly improve boarding experience. Use in combination with stairs for maximum effect. Do not open during flight, we are not liable for any damage caused by irresponsible use!

This concludes the interior tour. Thank you for joining in, we hope you learnt all the cockpit and cabin items you need to know. But in order to safely operate your shiny new JetStar, there are some quirks you have to get used to.

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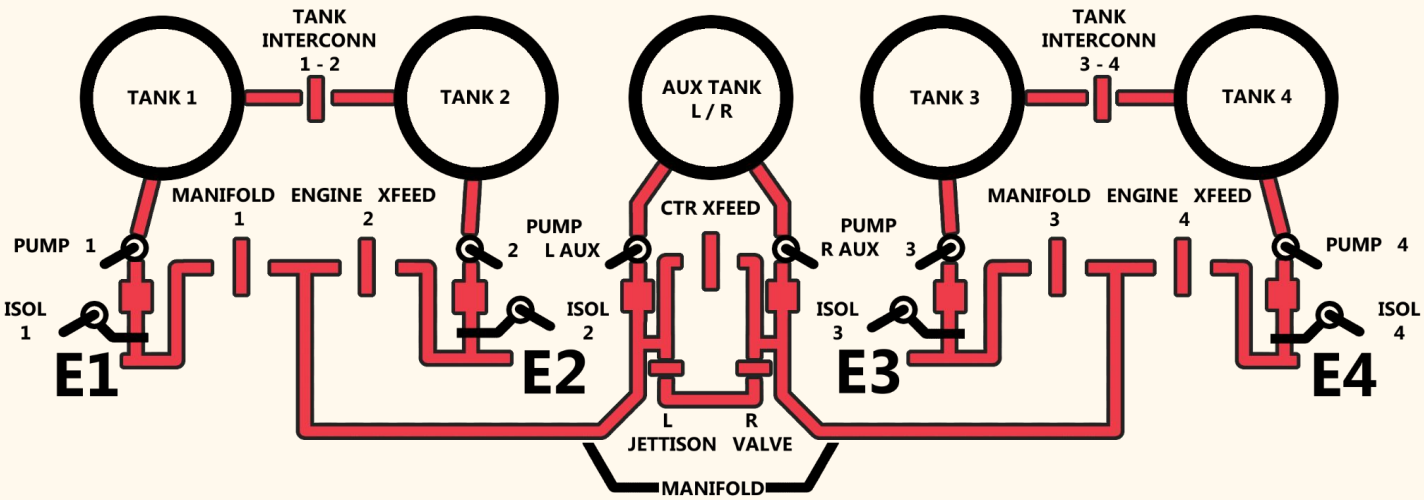
Balancing Fuel Like a Pro

You already got a glimpse of the complex fuel management panel of the JetStar. To help you become a pro at balancing tanks under all circumstances, we'll now dive into how this system works.



Upon entering the aircraft, you should find the fuel system set up according to the diagram above. But remember, the switches labelled ISOL 1 through 4 and the jettison valves are at the bottom of the first officer's panel (3), not on the fuel panel (4) itself. This is the base configuration with Manifold crossfeed valves and central crossfeed closed, all engine boost pumps off and all isolation switches off.

To help you get the most out of your JetStar, we will cover all the elements of the fuel system one by one before showing you some example configurations. That way, you can get an in-depth understanding of how the system works and handle the aircraft like a pro, no matter what the sim may throw at you.

We came up with catchy (not really) names for the following examples than, say, 'Diagram 3A' to make memorising the information presented easier. Good thing we're talking about liquids, otherwise this chapter would be bone dry. But stick with it, operating the fuel system is really fun if you know how it works.

Let's start by quickly going through all the elements you can see in the diagram and by briefly explaining, what each of them does.

TANK 1 - 4: These four tanks are internal main tanks used to supply the fuel lines. Each of them can be used to fuel its respective engine directly, but the fuel system can be set up in a variety of crossfeed configurations for complex fuel balancing.

AUX TANK L / R: Also called the slipper tanks, these are the external tanks that are mounted to the wings and make the JetStar look super cool. As a side effect, they almost double the range.

TANK INTERCONN 1-2 / 3-4: These valves interconnect the left or the right main tanks, allowing fuel to flow between both of them.

PUMP 1 - 4: Engine boost pumps used to pump fuel from the tank to the its engine in a tank to engine configuration or to engine and manifold in a crossfeed configuration. Each engine boost pump has a maximum throughput of 7 300 pounds per hour.

L / R AUX PUMP: Aux fuel pumps to supply the manifold on the respective side of the aircraft with fuel from each external slipper tank. If the central crossfeed valve is open, any aux boost pump can supply the entire manifold. They operate at higher pressure than the engine boost pumps, so the slipper tanks are emptied first if engine and aux boost pumps supply the same engine.

ISOL 1 - 4: These isolation switches, if turned on, isolate a fuel tank by closing its fuel line just after the respective engine boost pump. The tank cannot supply the fuel system while it is isolated, unless the interconnect valve is open. To prevent the respective engine from shutting off, a crossfeed configuration will be required.

MANIFOLD ENGINE XFEED 1 - 4: These valves connect the respective engine to the manifold, allowing it to draw fuel from other tanks if the engine's tank is isolated. Tese will be referred to simply as 'crossfeed 1 - 4' throughout this chapter.

CTR XFEED: This is the central crossfeed valve, connecting left and right manifolds if open. This valve allows for crossfeed configurations, where tanks on one side supply engines on the opposite side.

E1 - E4: Obviously, these are the engines. As long as fuel can reach the end of a line connected to any E symbol (according to the diagram), you are reasonably safe.

L / R JETTISON VALVE: As the name suggests, these are used to supply not the engines, but the outside air with fuel. What a waste, that stuff costs money! In the JetStar, this is only used in emergencies.

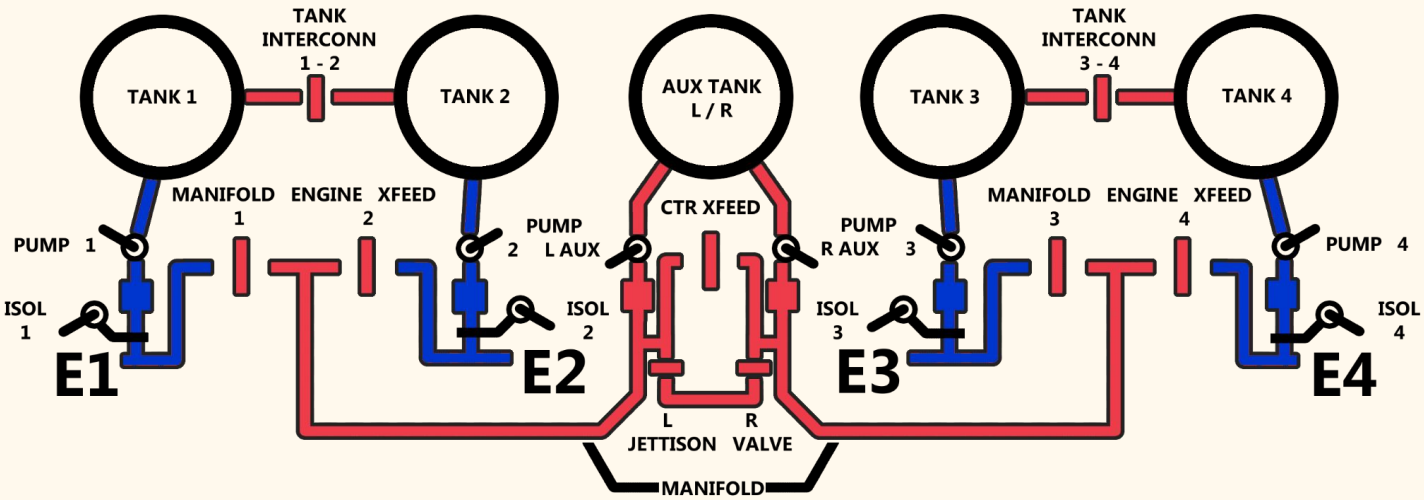
MANIFOLD: Split in two parts (left and right manifold), this is the central part of the fuel crossfeed system. Left and right manifold can be linked via the Central Crossfeed valve to move fuel from one side of the aircraft to the other. The manifold leads into the engine nacelles and can be connected directly to the engines via Manifold to Engine Crossfeed valves.

Example Fuel Setups

Did all that sound too technical? Worry not, let's go over some example configurations. Every example is thoroughly explained so you know exactly what it does and why. If possible, please load the aircraft in MSFS and follow the examples to get a practical feel of operating the fuel system. Instead of just going through all switch positions, we are going to follow the fuel stream from one element to the next. Colours are used to highlight direct, manifold and aux paths:

- Fuel flow that goes from a tank to an engine of the same number.
- Fuel flow that enters the fuel manifold or is supplied from the manifold via crossfeed.
- Fuel that is pumped via L / R AUX fuel pump.

Tank to Engine

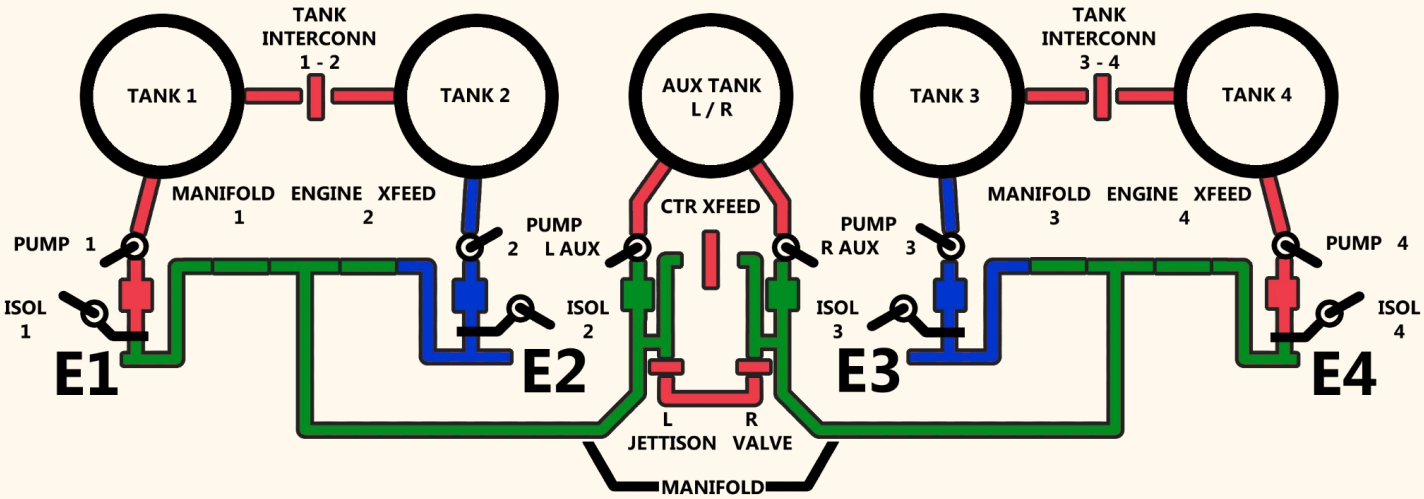


This is the simplest configuration, as it is the one you set throughout the engine start checklist.

Boost pump 1 is on, so fuel is pumped out of tank 1. The isolation switch is off, allowing it to fill the fuel line supplying E1. Crossfeed 1 is closed, so the fuel cannot enter the manifold.

The exact same configuration is repeated for all four main tanks. As a result, tank 2 supplies only E2, tank 3 supplies only E3 and tank 4 only supplies E4, hence the name "Tank to Engine".

Two for Four



Here you can see another simple configuration. This time, we are using the manifold as well. If you have the JetStar loaded up, take your time to set the fuel panel and isolation switches as displayed in the diagram above. Make sure to set crossfeed valves FIRST, then activate the isolation switches. Disable fuel pumps last. Otherwise, you cut off fuel supply for a running engine. When you are ready, read on to learn about what is happening and why.

Fuel pump 1 is off, isolation switch 1 is on and tank interconnect 1-2 is closed as well, so tank 1 is fully isolated from the fuel system. The same is true for fuel pump 4, isolation switch 4 and tank interconnect 3-4. Both tanks remain untouched, their contents will not change.

Fuel pump 2 is on, meaning fuel is drawn from tank 2. It flows past the isolation valve, because isolation switch 2 is in the 'off' position. As a result, E2 is supplied with fuel. The fuel pump for tank 3 is active as well and isolation switch 3 off. Fuel from tank 3 is pumped into the engine fuel line in the same way, supplying E3.

Crossfeed 2 is open. This means that the fuel pumped out of tank 2 will also enter the manifold. Crossfeed 1 is open, which allows fuel from the manifold into the engine fuel line of E1, so E1 is supplied by tank 2 as well.

On the other side, the configuration is exactly the same. Fuel can flow through the open crossfeed 3 into the manifold, then through crossfeed 4 into E4's fuel lines. Tank 3 supplies both E3 and E4.

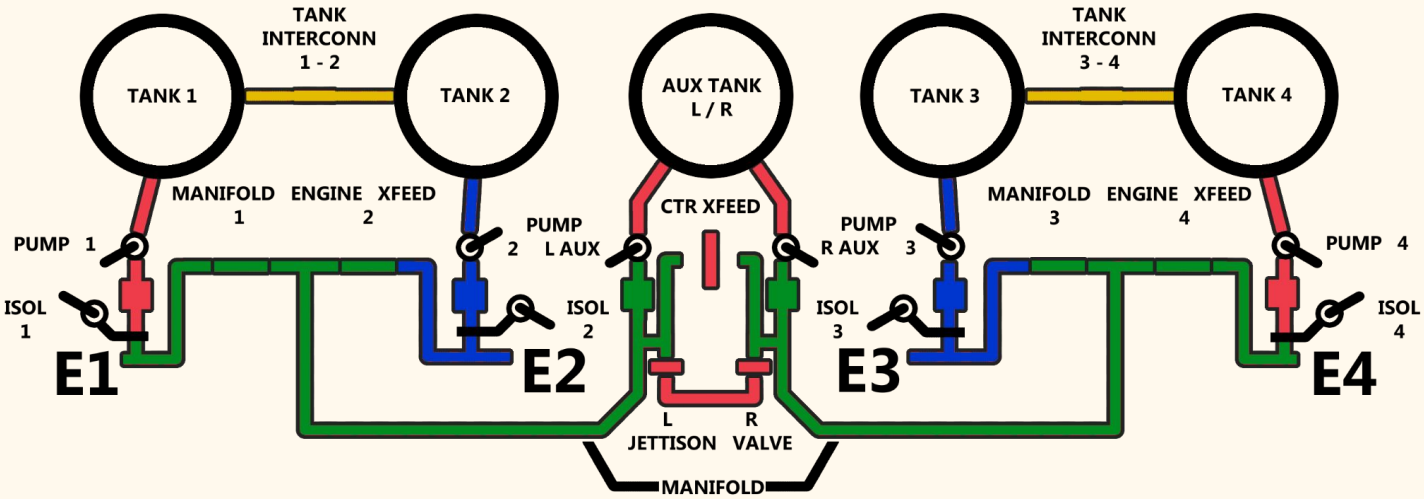
The centre crossfeed valve is closed though, so the fuel in the left manifold cannot enter the right manifold and vice versa.

The aux tanks are unused, both aux pumps remain off.

So we have configured the fuel system to keep two main tanks (1 and 4) isolated, while the remaining two main tanks supply all four engines, i.e. "Two for Four".

Now throttle up and check the four fuel flow indicators on panel 2. Remember the number indicated, we'll come back to it later. Then you can throttle back to idle and continue reading.

Four for Four



Let's add those tank interconnects. This is a variation of "Two for Four", all of it is set up exactly the same, except the tank interconnects for 1-2 and 3-4. Since they connect both tanks, we can draw fuel even from tanks that are closed off by the isolation switch.

You can probably imagine, how handy this can be when an isolation valve fails and cannot be opened.

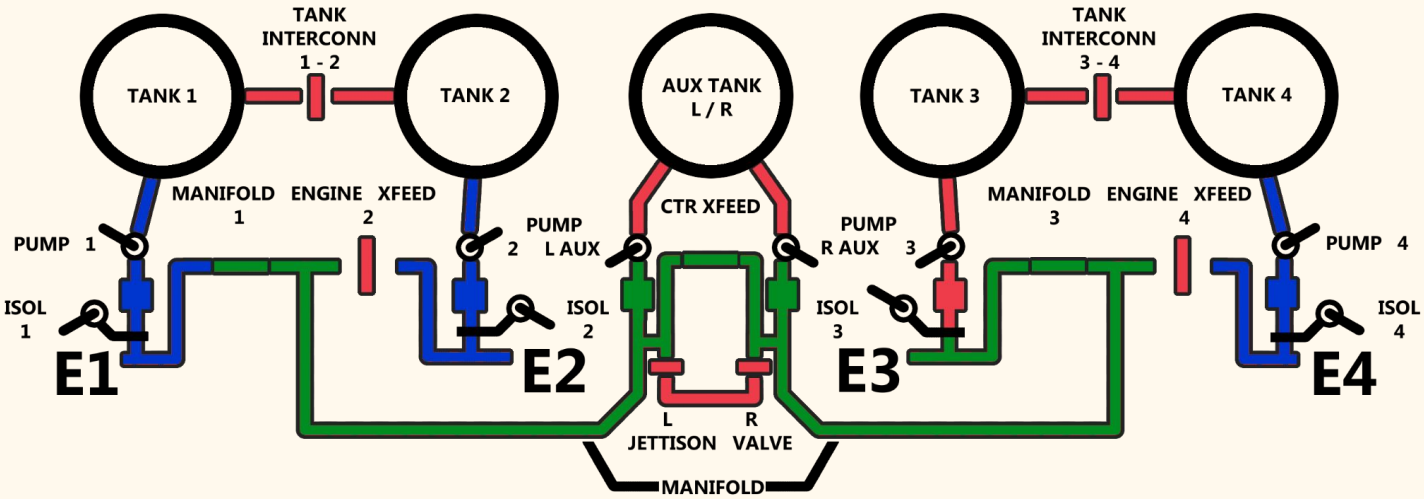
With interconn 1-2 open (switch on panel 3), the fuel pumped from tank 2 is immediately replaced by fuel drawn in from tank 1. This way, both tank 1 and 2 will supply E2 directly and E1 through the manifold.

On the other side, this process is mirrored. Tank interconn 3-4 is open, fuel pumped out of tank 3 is replaced by fuel from tank 4. Tanks 3 and 4 supply E3 directly and E4 through the manifold.

Not too bad, right? It takes a bit of time and practice to learn the fuel system, but it's much easier when it clicks.

Time for a more complex configuration, we still haven't used that centre crossfeed valve after all.

Three Direct, One Crossfed



This should live up to the promise made on the previous page. Here you can see a rather complex crossfeed configuration. Good thing we found the coloured markers, right?

But here's another promise: It's not as bad as it looks at first glance!

Match the fuel configuration in your JetStar to the diagram above again. Just remember the (thankfully logical) order of steps:

When isolating a tank, set crossfeed first to ensure continuous fuel supply from other tanks. Then isolate the tank with the pump still on to avoid air entering the fuel line. Shut off the fuel pump last.

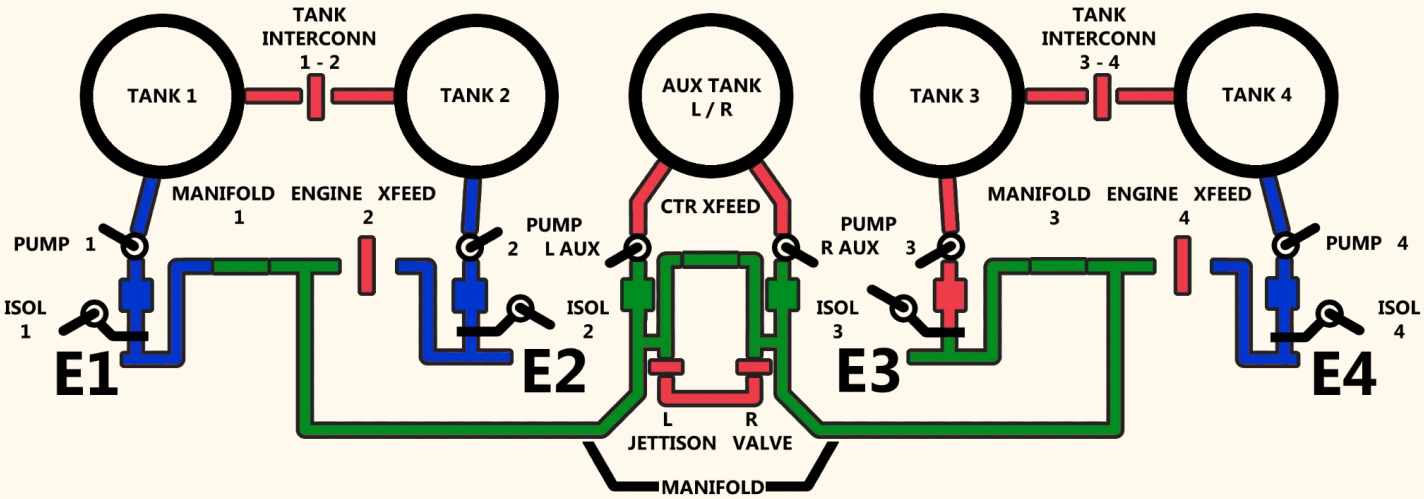
When adding a previously isolated tank, enable the fuel pump first to make sure there is no air in the line. Then turn off the isolation switch to establish fuel flow from the tank into its engine. If the desired fuel configuration requires you to shut off the crossfeed valve for the respective engine, do that step last.

As long as you remember these rules, you will never risk unintentionally shutting off an engine.

Let's get the easy stuff out the way first. Tank pumps 2 and 4 are on, isolation switches 2 and 4 are off, crossfeed valves 2 and 4 are closed. This sets up E2 and E4 to be directly fed from their respective tanks.

Pump 1 is on and isolation switch 1 is off, so E1 is directly fed by tank 1 as well. We already have three engines in a direct Tank to Engine configuration. As the headline suggests, E3 is missing and must be crossfed.

Three Direct, One Crossfed (Part 2)



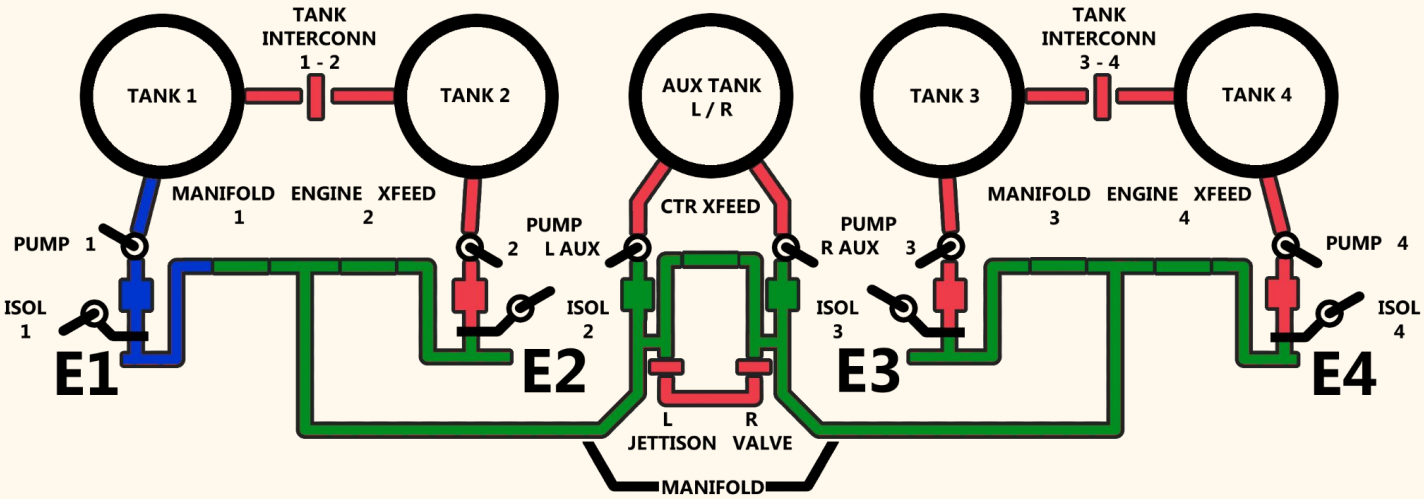
To achieve this, crossfeed valve 1 is open to allow fuel pumped from tank 1 into the left manifold. On the diagram, you can see the line pressurised all the way to the centre, where the jettison valves are. And here you can also see the central crossfeed valve open. This allows the fuel to continue into the right manifold, which is connected to the starboard engine nacelles. All that is missing now is to open crossfeed 3 as seen in the diagram, allowing E3 to be fuelled by tank 1.

So we have tank 1 to E1 and (via manifold and crossfeed) to E3, tank 2 to E2, tank 4 to E4.

As you can see, even a more complex fuel configuration does not have to be difficult to comprehend. If you can visualise fuel flow, you're almost there. The only thing missing is to set the valves and pumps accordingly to achieve what you have in mind.

There are two more cases we want you to know in order to avoid unpleasant surprises while flying, then we'll send you on your way to become a JetStar fuel balancing wizard.

Single Tank Spin Trainer



When working with crossfeed through engine pumps, you can be very creative in how you drain tanks and route fuel. And it is super fun to do so, but you can reach a point where the fuel system is no longer able to keep up.

Let's visualise this by setting up your JetStar according to the diagram. But only do so while on the ground, not while flying. When ready, continue to find out what's different about this configuration.

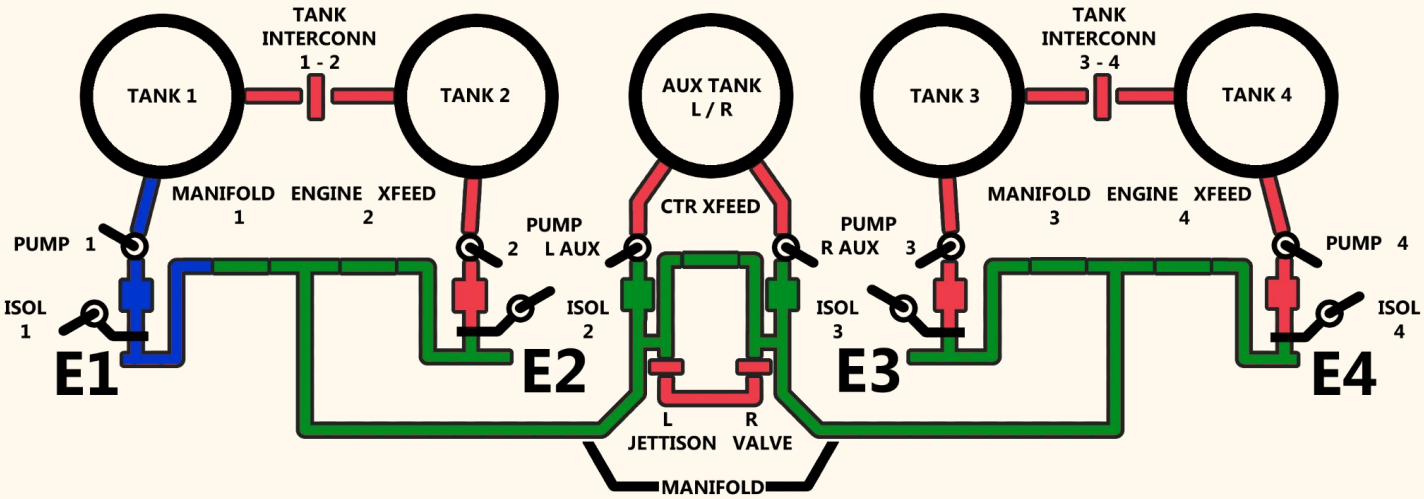
Tank pumps 2, 3 and 4 are off. Tank interconnection switches for 1-2 and 3-4 are off, and the isolation switches for tanks 2, 3 and 4 are on. You have now completely isolated tanks 2 through 4. Both aux pumps are off, so the slipper tanks are not used either.

Tank pump 1 is on and isolation switch 1 is off, so tank 1 supplies E1. Furthermore, all four crossfeed valves and the central crossfeed are open. Fuel from tank 1 is pumped into the left manifold and the E2 fuel lines, through the centre crossfeed into the right manifold and through crossfeed valves 3 and 4 into E3 and E4.

Now you are running all four engines on a single tank. Here's where the name used in the headline will start to make sense:

Like everything, fuel pumps have limitations. It was already mentioned in the brief descriptions, that the engine fuel pumps have a maximum throughput of 7 300 pounds per hour, which is more than enough to supply two and even three engines.

Single Tank Spin Trainer (Part 2)



You remembered the fuel flow you achieved when throttling up at the end of the first example? Great, now add the fuel flow of all engines together and you'll notice it exceeds 7 300 pounds per hour (you're probably somewhere in the 8 000 range). That doesn't mean the engines are shutting off, mind you. But it means not all engines can supplied the amount of fuel they need.

If your throttles are currently in idle, you will notice all engines happily running as if nothing ever happened. Now throttle up again, listen to the engines and observe the fuel flow gauges while the engines spin up.

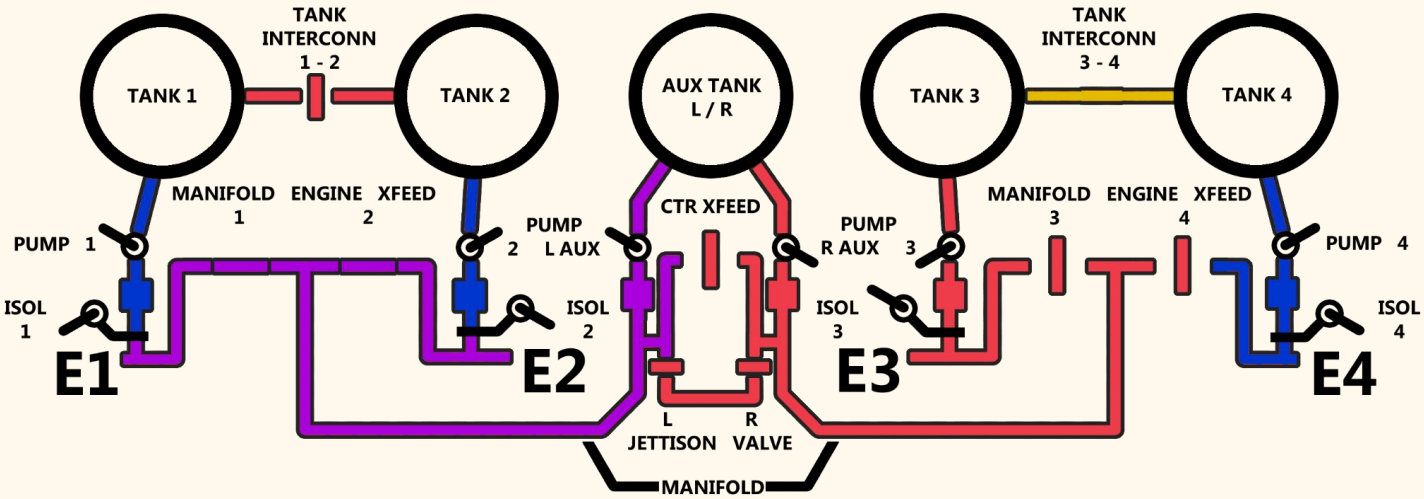
At first, nothing unusual happens. But once the combined fuel flow exceeds the pump's limitation, the engines furthest away (which always means the opposite side of the aircraft) cannot keep up. Their fuel flow is limited, thus limiting their power output.

Now you see the name checks out. If you configure the crossfeed like this mid-flight, you would go from peaceful bliss, enjoying the clouds and scenery, to fighting a potentially irrecoverable spin quicker than you can say 'JetStar'.

When setting up crossfeed, always remember to stay below 7 300 pounds per hour for a single pump and (almost) nothing can go wrong.

Almost there, only one more thing to learn. So adjust your aviator sunglasses, the next example packs a punch.

One Down, One Direct, Two External



Of all the configurations covered, this one is the most complex. Set up your JetStar as shown above and, as always, remember to stick to the correct order.

This time you cannot prevent all engines from shutting down. As you can see, we completely lost E3. To spare you yet another diagram, we are now covering two different situations in a single take. Centre crossfeed is closed to isolate port and starboard as two different cases. Let's start with the starboard side.

You have seen a very similar configuration earlier. But this time, crossfeed valves 3 and 4 are closed. Fuel pump 3 is closed and isolation switch 3 turned on. In combination with closed crossfeed, this means that E3 cannot receive any fuel and remains off.

Tanks 3 and 4 are interconnected, pump 4 is running and isolation switch 4 is off. Fuel supply for E4 is guaranteed and it is using both starboard tanks through only fuel pump 4.

Nothing special about this configuration, aside from being down one engine. Now we have a look at why the port configuration is kind of special and maybe a bit unexpected.

As you can see, the left aux pump is on and supplies the manifold. Crossfeed 1 and 2 are open so E1 and E2 can be supplied from the left slipper tank. The pumps for tanks 1 and 2 are running and both isolation switches are off. Technically, you could expect this configuration to run tanks 1 and 2 as Tank to Engine with both of them supplying the manifold as well.

Yet, you can see that fuel from neither tank enters the engine. Instead, E1 and E2 are supplied solely from the slipper tank.

Why is that? The answer to this question is, luckily, rather simple: Pressure. The aux fuel pumps supply fuel at a higher pressure than the individual engine fuel pumps can. This prevents fuel from any main tank from draining, as long as an aux tank is feeding the respective engine.

This, in turn, ensures that the aux tanks will always drain first if they are in use.

Fuel Jettison

If you ever find yourself needing to drain fluid (the JetStar's fuel, that is. Otherwise, you will find a spacious lavatory in the aft section of the cabin), you can open either jettison valve by turning the fuel jettison switches on.

You have seen enough diagrams to know that these valves are located in the centre of the manifold. Just remember, they obey crossfeed as well. If the centre crossfeed is closed, the left jettison valve only drains fuel from the left manifold and vice versa. If you want to drain both sides evenly, either turn on both jettison switches or open the centre crossfeed.

That's everything you need to know about the JetStars fuel balancing. With a bit of practice, you will be managing tanks like a boss in no time! Have fun experimenting with with the fuel system.

Flying Tips & Tricks

Since you now know everything you need to operate your pioneer business jet, let's break out of the normal envelope a bit and talk about some advanced techniques. But if someone asks, you didn't get these from us 😉

Short Takeoff:

If you want to take off from a short runway, keep in mind that you do not have a lot of wiggle room in the JetStar. She's no bush plane after all. But there are steps you can take to decrease the distance needed from brakes off to lift off.

We already gave the first one away. Apply brakes so the aircraft won't start rolling the moment you apply takeoff throttle.

Also keep the flaps fully retracted at this point. Flaps are great for takeoff because they add more lift, but more lift also means more drag. When trying to accelerate as quickly as possible, drag is a bad thing.

Next, and we recommend only doing this if your mechanic likes you, you can ditch the 720°C exhaust temperature limit on takeoff power. Make that 760 instead, but know that official procedure demands you write a mechanic's note in this case, because the engines have to be inspected for heat damage afterwards.

Now release brakes to start rolling. Keep monitoring exhaust temperature during takeoff roll, because the engines will speed up a bit once intake air speeds up. Manage throttle to maintain 760°C. At the same time, you will have to monitor airspeed.

Once airspeed reaches 75 or 80 Knots, quickly set flaps to takeoff configuration. This way, they should lock in place at around 110 Knots. The last steps have to be executed very quickly, otherwise they offer no benefit at all.

To rotate quicker, push the yoke forward for a very brief moment. This way, you use the elevator to put tension on the nose gear suspension. Then immediately pull back harder than you would for a normal takeoff. The effect is not very strong, but you can shave 30 to 50 feet off your takeoff run, potentially even a bit more.

If the timing during the push-pull rotation is off, it won't have any adverse effect. But it will also not shorten your takeoff roll at all.

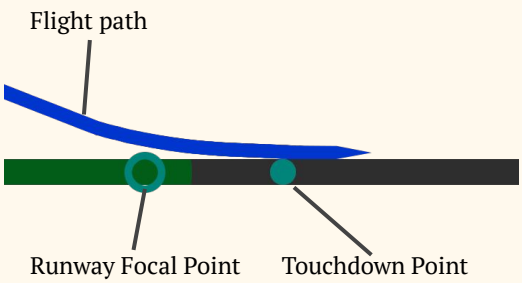
Runway focal point:

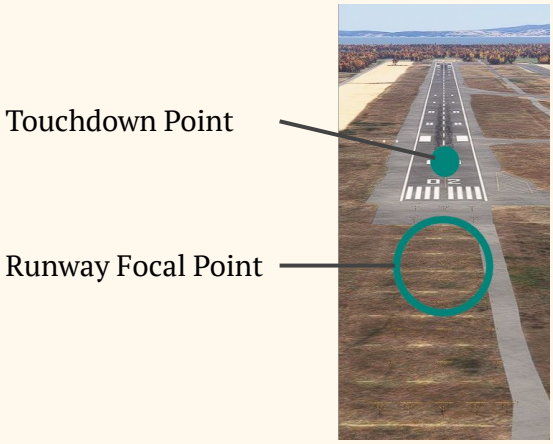
Have you ever wondered how to consistently touch down exactly where you want, making every landing a precision landing?

The key, besides practice, is to find a runway focal point. This is a ground reference point you aim for during the entire approach. If you focus on a point, you will intuitively adjust your flight path to approach exactly this point.

You could go by trial and error. Sooner or later you will find a reference that works. But the process can be sped up significantly.

The trick is to look for a point before the runway threshold. This can be either the grass in front of the threshold or the edge of a blast pad. Just make sure that you pick a reference point between your current position and your desired touchdown point.





The reason is quite simple. When you approach the reference point you established and come within 250 feet, less for smaller aircraft, reduce throttle to idle and start pulling the yoke to flare. This catches your descent for a smooth touchdown and also causes the aircraft to lose speed. But at the same time, you will enter ground effect, where you get much more lift due to proximity to the ground. The additional lift lowers your stall speed and carries you further along the runway before you are slow enough to touch down.

If you approach too fast, you will 'float' for a long time, possibly only touching down somewhere two thirds down the runway. If you approach too slow, the plane will stall before touching the ground (although it touches the ground shortly after stalling too). But if the speed is dialled in just right, you will be carried a short distance before the landing gear touches down. That is why you aim in front of the runway, approach this point and flare just before reaching it.

When you are down, retract flaps to allow the aircraft to beautifully settle on the ground.

Approach by feel:

Flying seems intimidating to many, with so many numbers and procedures involved. It's easy to overlook a very crucial part of the experience, especially in flight sims: Feel!

Yes, feel for your aircraft plays not only a major, but an absolutely vital role. Ditch the numbers for a bit and learn to interpret what you feel and see.

You can get a very accurate idea of airspeed by just wiggling the controls a bit during cruise and observing how the plane responds. Is the control response sharp and precise? Great, you're flying at a decent airspeed. Does the plane respond sluggishly? Speeding up would be a good idea in this case. With enough practice, you will be able to recognise even very small nuances and accurately judge your indicated airspeed.

After a while, you can tell exactly how close you are to the aircraft's limit. A stall, for example, will announce itself clearly. The controls are sluggish and the plane will seemingly develop a mind of its own, requiring frequent rudder input to keep the nose tracking straight. At this point, the stall horn has already screamed at you for a good while. Yet, the aircraft is still flying even though you have to use a lot of throttle to keep it that way.

You can also judge your altitude and climb or sink rate by simply looking outside. It will take practice, because you have to match visual references to measured values. But with experience, you will get a good feel for it that carries over to other aircraft as well.

You can combine all of these points with a good visual reference to fly an approach entirely by feel. Assuming you are already at a reasonably low altitude at this point, slow down and drop the landing gear. Check control response and lower the flaps when it feels sluggish. Add some throttle right away to catch the deceleration caused by the increase in drag. Do not trim for full yoke release, otherwise you might lose some feel for how much further you can push the aircraft.

Establish a visual runway focal point and approach it. Just make sure you don't speed up accidentally. Keep the controls sluggish, but avoid dipping into a speed range that requires rudder to prevent the nose from swaying back and forth. Just before reaching it, as explained on the previous page, pull the throttle levers all the way back to flare in one smooth motion.

If you did everything correctly, the aircraft will gently settle down right on or just past the runway numbers. Shifting your focal point a bit helps you fine tune the exact touchdown point.

Congratulations, you just flew an entire approach without referencing any instruments!

Short Landing:

If you want to land on a runway that seems awfully short for the JetStar, there are a few things you can do to shorten the landing roll. To minimise stopping distance, all of the following steps are vital and need to be carried out with confidence.

First, make sure you are absolutely comfortable with slow flight. For the shortest possible landings, you have to stretch slow flight even further. Practice flying at low airspeed with full flaps and drop the speed one or two Knots every time.

When the stall horn sounds, you will notice it's still possible to control the aircraft, although it requires many small rudder inputs by now. Add throttle and slowly pull up a bit further. Too much and you stall the aircraft. You have to get a feel for how much throttle to add and how much to pull. If done correctly, you can stay in control of the JetStar even below her full flaps stall speed of 107 Knots.

Now use this to your advantage. Approach as slow as you possibly can and establish a runway reference point further than usual from the threshold. The goal is to touch down as early as possible to maximise runway distance available for stopping the aircraft.

Do not pull throttle all the way back immediately before rounding out, but instead make it a more gradual motion. You want to reach idle throttle halfway through the landing flare.

Once the wheels touch down, immediately retract flaps all the way and fully open reverse thrust. Smoothly apply brakes and brake as hard as you can, but avoid locking up the wheels. Only close reverse thrust once you come to a full stop.

Performing this kind of short field landings requires practice first and foremost. There are not many steps to follow, but all of them require a great feel for the aircraft and extremely high precision manoeuvring. If it feels like you can barely shorten your landing roll, don't worry and just keep practising. It is very challenging to do and will take significant effort.

Steep approach:

If you find that real life gets in the way and you have to land quickly, you may want to expedite the descent a little bit. To reach dizzying descent rates, simply reduce throttle to idle and extend the speed brake.

Establish a comfortable airspeed for descent and maintain it. The faster you want to go, the steeper your descent will be. At around 200 Knots, you can descend with the nose pointing almost 30 degrees down. When catching the descent, you will quickly lose airspeed if you leave the speed brake extended, which can be beneficial for a rapid approach.

Those were all the tips we can think of, but as long as you keep experimenting, you can come up with your own cool tricks to get around limitations or to push the boundaries even further. As long as you're having fun, you can try anything you like.

But, as mentioned earlier, make sure your mechanic likes you. They may be facing some late work hours if things go wrong.

Now, whether you want to replicate real world routes or just take off and see where she takes you, we hope you have a great time and wish you a lot of fun with your vintage JetStar. And feel free to tell us about your epic adventures in this beautiful aircraft.

Checklists

To make your life easier in the cockpit, the following checklists will indicate the panel number for each item, as per the cockpit layout, in braces ( ) at the start of each line.

Post Boarding

```
BOARDING.....COMPLETE
STAIRS.....RETRACTED
DOOR.....CLOSED & LATCHED
CUPS AND GLASSES.....STOWED IN CABINET
```

Cockpit Check

```
(5) BATTERY.....OFF
(5) GPU POWER SEL.....BAT START
(5) ENG SEL.....OFF
(5) GEN VOLTMETER SEL.....OFF
(5) NO.1-4 GENERATOR.....OFF
(5) WINDSHIELD INVERTER.....OFF
(5) NO.1 INVERTER.....OFF
(5) NO.2 INVERTER.....OFF
(5) BUS SELECT.....OFF

(6) WING INSP.....OFF
(6) BEACON.....OFF
(6) NAV POS.....OFF
(6) WINDSHIELD WIPERS.....OFF

(7) NO SMOKING.....OFF
(7) FASTEN SEATBELTS.....OFF
(7) FLT SA.....AS REQ
(7) OVHD INST LTS.....AS REQ
(7) ENG PANEL LTS RHEOSTAT.....AS REQ

(5) FUEL AIR BLEED LINE.....OPEN
(5) START.....OFF

(4) FUEL QTY GAUGES.....CHECK & VERIFY
(4) TANK NO.1-4 BOOST PUMPS.....OFF
(4) LEFT/RIGHT AUX BOOST PUMPS.....OFF
(4) MANIFOLD->ENG 1-4 CROSSFEED VALVES.....CLOSED
(4) CENTRE CROSSFEED VALVE.....CLOSED
```

(Continued) Cockpit Check

(8) THROTTLES.....FULL AFT
(8) REVERSER LEVERS.....FULLY DISENGAGED
(8) AUX LND LT.....OFF
(8) LANDING LIGHTS L/R.....OFF (CENTRE)
(8) FLAPS.....FULL FWD
(8) SPEED BRAKE.....OFF (CENTRE)
(8) AFCS PITCH.....CENTRED
(8) AFCS TURN.....CENTRED
(8) AFCS ENG.....OFF
(8) XPDR.....OFF
(8) CIVA WPT MODE.....RMT
(8) CIVA DISPLAY MODE.....TK GS
(8) CIVA MASTER MODE.....OFF

(11) LEFT CONSOLE & VERT PANEL.....AS REQ
(11) LEFT INST PANEL LTS.....AS REQ

(9) OXYGEN FLOW.....NORMAL
(9) OXYGEN MODE.....NORM OXY
(9) OXYGEN SUPPLY.....OFF

(1) DME.....OFF
(1) ENG ANTI-ICING 1&4.....OFF & SHELTERED
(1) ENG ANTI-ICING 2&3.....OFF & SHELTERED
(1) PARKING BRAKE.....SET
(1) AILERON BOOST HYD SYS1/SYS2.....ON & SHELTERED
(1) ELEVATOR BOOST HYD SYS1/SYS2.....ON & SHELTERED
(1) EMERGENCY LDG GEAR CONTROL.....NORM & SHELTERED
(1) CLOCK.....WORKING, CORRECT TIME
(1) ATT INDICATOR.....CAGED
.....GS, SPEED, RUNWAY FLAGS VISIBLE
(1) HSI.....CAGED
.....HDG, VERT, NAV FLAGS VISIBLE
(1) ALTIMETER.....ZEROED OR FIELD ELE

(2) PRESS RATIO GAUGES.....READ 1
(2) RPM, FUEL FLOW.....READ 0
(2) EXH TEMP.....MATCH OAT
(2) OAT.....CHECK & VERIFY

(Continued) Cockpit Check

(3) LG.....DOWN
(3) AUX HYD.....OFF & SHELTERED
(3) HYD SYS.....NORM-1 & SHELTERED
(3) FUEL JETTISON L/R.....OFF & SHELTERED
(3) FUEL TANK ISOLATION NO.1-4.....OFF & SHELTERED
(3) DME.....OFF
(3) L.E FLAPS INDICATOR.....BLANK
(3) T.E FLAPS INDICATOR.....UP
(3) HYD PRESS.....READ 0
(3) OIL TEMP.....MATCH OAT
(3) ATT INDICATOR.....CAGED
(3) CDI.....OFF
(3) ALTIMETER.....ZEROED OR FIELD ELE
(3) CLOCK.....WORKING, CORRECT TIME

(12) RIGHT INST PANEL LTS.....AS REQ
(12) RIGHT CONSOLE & VERT PANEL.....AS REQ

(10) STRUCT DE-ICING.....OFF (CENTRE)

Pre Start

FOR BATTERY START

(5) GPU POWER SEL.....VERIFY BAT START
(5) BATTERY.....ON
(5) GEN VOLTMETER SEL.....BATT
(5) DC VOLTMETER.....VERIFY AT LEAST 25V
(5) WINDSHIELD INVERTER.....OFF
(5) NO.1 INVERTER.....TRANS
(5) NO.2 INVERTER.....ON
(5) BUS SELECT.....ESS

FOR GROUND POWER START (NOT AVAILABLE YET)

(5) POWER SEL.....GPU START
(5) BATTERY.....VERIFY OFF

(Continued) Pre Start

ALWAYS

(4) TANK NO.1-4 BOOST PUMPS.....VERIFY OFF
(4) LEFT/RIGHT AUX BOOST PUMPS.....VERIFY OFF
(4) MANIFOLD->ENG 1-4 CROSSFEED VALVES.....VERIFY CLOSED
(4) MAIN CROSSFEED VALVE.....VERIFY CLOSED

(5) FUEL AIR BLEED LINE.....VERIFY OPEN
(5) AIR START.....NORMAL

CLEARANCE FROM GROUNDCREW.....OBTAINED

(6) WING INSP.....VERIFY OFF
(6) BEACON.....ON

Engine Start

SEQUENCE 3 -> 4 -> 2 -> 1

(5) ENG SEL.....NO.3

(4) TANK NO.3 BOOST PUMPS.....ON

(3) NO.3 FUEL PRESS.....20 PSI

ADVISE GROUNDCREW.....TURNING NO.3 ENGINE

(5) START.....START

(2) NO.3 RPM.....RISING WITHIN 10S
(2) NO.3 EXH TEMP.....RISING AFTER 12% RPM
.....MONITOR DURING START, SHOULD NOT EXCEED 520°C
(2) NO.3 FUEL FLOW.....RISING AFTER 12% RPM

(3) NO.3 OIL TEMP.....RISING AFTER 12% RPM

(2) NO.3 PRESS RATIO.....RISING AFTER 30% RPM

WHEN ENGINE RUNNING

(2) NO.3 PRESS RATIO.....STABLE AT 1.4
(2) NO.3 RPM.....STABLE AT 43% MIN
(2) NO.3 EXH TEMP.....STABLE AT 450 - 500°C

(3) NO.3 OIL TEMP.....AT LEAST 50°C

REPEAT THIS PROCESS FOR THE REMAINING ENGINES

After Engine Start

(8) THROTTLES.....IDLE

(5) DC VOLTMETER.....CYCLE GEN 1-4, VERIFY 25V MIN
(5) NO.1-4 GENERATOR.....ON

IF GROUND POWER START
(5) BATTERY.....ON
(3) AUX HYD.....ON

ALWAYS

(3) ANTI SKID.....ON

(5) WINDSHIELD INVERTER.....OFF
(5) NO.1 INVERTER.....ON
(5) NO.2 INVERTER.....OFF
(5) FUEL AIR BLEED LINE.....CLOSE

(2) CAUTION LTS.....VERIFY ALL OFF

(3) AUX HYD.....VERIFY ON
(3) HYD PRESS.....VERIFY 2 000 PSI MIN

(6) WING INSP.....ON
(6) NAV POS.....ON

Leaving Ramp

(8) AUX LND LT.....ON
(8) HORIZ STAB TRIM INDICATOR.....VERIFY NEUTRAL
(8) RUDDER TRIM TAB.....VERIFY NEUTRAL
(8) AILERON TRIM TAB.....VERIFY NEUTRAL
(8) XPDR.....ON

(3) HYD SYS.....STANDBY-2

FOLLOW THE INSTRUCTIONS OF GROUND CREW
WHEN LEAVING THE RAMP

Taxi

(8) FLAPS.....TAKEOFF/APPROACH

(3) L.E FLAPS.....INDICATING BLACK/YELLOW
(3) T.E FLAPS.....INDICATING T.O APP.

PERFORM BRAKE TEST FOR LEFT, RIGHT, AND BOTH BRAKES IN ORDER TO VERIFY WORKING CONDITION OF STANDBY HYDRAULICS SYSTEM

(3) HYD SYS.....IF BRAKES WORK, NORM-1 & SHELTERED

Runway Lineup

(8) LANDING LIGHTS L/R.....TAKEOFF (FORWARD)
LANDING LIGHTS CYCLE: MAX 1 MIN ON
THEN 5 MIN OFF WHILE ON GROUND

(1) AILERON BOOST HYD SYS1/2.....VERIFY ON & SHELTERED
(1) ELEVATOR BOOST HYD SYS1/2.....VERIFY ON & SHELTERED
(1) EMERGENCY LDG GEAR CONTROL.....VERIFY NORM & SHELTERED

(3) AUX HYD.....VERIFY ON

(2) STALL WARN HEATER 1.....OFF & SHELTERED
(2) STALL WARN HEATER 2.....ON

(8) AFCS ENG.....OFF

(7) FASTEN SEATBELTS.....ON

Takeoff

(8) FLAPS.....VERIFY TAKEOFF/APPROACH

(3) L.E FLAPS.....INDICATING BLACK/YELLOW
(3) T.E FLAPS.....INDICATING T.O APP.

BRAKES.....APPLY

(8) HORIZ STAB TRIM INDICATOR.....T/O TRIM
.....NEUTRAL TO 5 1/2°

(8) THROTTLE.....ADVANCE T/O POWER
.....MONITOR (3) EXH TEMP 718°C MAX

(1) AIRSPEED INDICATOR.....ROTATE AT Vr
.....115 KNOTS, DEPENDING ON WEATHER
.....SMOOTH PULL, RETURN TO NEUTRAL QUICKLY WHEN NOSE UP
.....ESTABLISH 15 DEGREES NOSE UP

(3) LANDING GEAR.....RETRACT AT 500 FT AGL

(8) FLAPS.....RETRACT AT 180 KIAS
.....PREPARE TO PULL YOKE TO CATCH PITCH DOWN UPON RETRACT

(8) LANDING LIGHTS.....ON (AFT)

FOR OPTIMAL CLIMB PERFORMANCE, MAINTAIN 250 KIAS THROUGHOUT INITIAL CLIMB.

Climb

(3) AUX HYD.....OFF

(4) MANIFOLD -> ENG 1 CROSSFEED VALVE.....OPEN
(4) MANIFOLD -> ENG 2 CROSSFEED VALVE.....OPEN
(4) MANIFOLD -> ENG 3 CROSSFEED VALVE.....OPEN
(4) MANIFOLD -> ENG 4 CROSSFEED VALVE.....OPEN
(4) CENTRE CROSSFEED VALVE.....AS REQ
(4) LEFT AUX BOOST PUMP.....ON
(4) RIGHT AUX BOOST PUMP.....ON

(1) ENG ANTI-ICING 1&4.....ON
(1) ENG ANTI-ICING 2&3.....ON

REDUCE THROTTLE TO 90 %
UPON REACHING 10 000 FEET. DECREASE PITCH AND ACCELERATE TO 300 KIAS.

(9) OXYGEN FLOW.....NORMAL
(9) OXYGEN MODE.....NORM OXY
(9) OXYGEN SUPPLY.....ON

Cruise

UPON REACHING DESIRED CRUISE ALTITUDE, LEVEL OUT, REDUCE THROTTLE AND TRIM FOR 320 TO 340 KIAS.

Descent

REDUCE THROTTLE TO ESTABLISH DESIRED SPEED. KEEP THROTTLE SETTING UNTIL 1 000 FEET ABOVE TARGET ALTITUDE.

(8) SPEED BRAKE.....AS REQ

(Continued) Descent

IF HIGH RATE OF DESCENT IS REQUIRED, SET FLAPS T/O APPROACH. IF ADDITIONAL DRAG IS NEEDED, EXTEND LANDING GEAR.

Approach

(7) FASTEN SEATBELTS.....ON

(1) ALTIMETER.....CHECK & VERIFY
(1) PARKING BRAKE.....VERIFY OFF

(8) SPEED BRAKE.....UP

CONFIGURE TANK TO ENGINE FUEL SUPPLY

(4) MANIFOLD -> ENG 1 CROSSFEED VALVE.....CLOSE
(4) MANIFOLD -> ENG 2 CROSSFEED VALVE.....CLOSE
(4) MANIFOLD -> ENG 3 CROSSFEED VALVE.....CLOSE
(4) MANIFOLD -> ENG 4 CROSSFEED VALVE.....CLOSE
(4) CENTRE CROSSFEED VALVE.....CLOSED
(4) LEFT AUX BOOST PUMP.....OFF
(4) RIGHT AUX BOOST PUMP.....OFF

(9) OXYGEN SUPPLY.....OFF

MAINTAIN APPROACH SPEED 130 KIAS.

Landing

UPON MAIN GEAR TOUCHDOWN, IMMEDIATELY START USING THE BRAKES. USE ELEVATOR CONTROL TO GENTLY LOWER NOSE WHEEL.

APPLY FULL REVERSE THRUST ONCE NOSE WHEEL TOUCHES THE GROUND. USE AILERON CONTROL TO KEEP WINGS LEVEL. RUDDER AND BRAKES ARE NEEDED TO KEEP THE AIRCRAFT STRAIGHT.

After Landing

(8) FLAPS.....UP
(8) XPDR.....OFF

(2) STALL WARN HEATER 1.....OFF & SHELTERED
(2) STALL WARN HEATER 2.....OFF & SHELTERED

(8) AUX LND LT.....OFF
(8) LANDING LIGHTS L/R.....OFF (CENTRE)

WHEN RAMP REACHED

(1) PARKING BRAKE.....SET

Shutdown

(5) WINDSHIELD INVERTER.....OFF
(5) NO.1 INVERTER.....OFF
(5) NO.2 INVERTER.....OFF
(5) BUS SELECT.....OFF
(5) FUEL AIR BLEED LINE.....CLOSE

RUN THE ENGINES AT IDLE FOR AT LEAST ONE MINUTE PRIOR TO ENGINE SHUTDOWN.

---

(3) AUX HYD.....OFF & SHELTERED
(5) NO.1-4 GENERATOR.....OFF

SEQUENCE 3 -> 4 -> 2 -> 1
(4) TANK NO.3 BOOST PUMPS.....OFF
.....MONITOR EXH TEMP FOR CLEAN DROP
.....WAIT FOR RPM TO REACH 0%

REPEAT THIS PROCESS FOR THE REMAINING ENGINES

(Continued) Shutdown

(1) ENG ANTI-ICING 1&4.....OFF
(1) ENG ANTI-ICING 2&3.....OFF

(6) WING INSP.....OFF
(6) BEACON.....OFF
(6) NAV POS.....OFF

(7) NO SMOKING.....OFF
(7) FASTEN SEATBELTS.....OFF
(7) FLT SA.....OFF
(7) OVHD INST LTS.....OFF
(7) ENG PANEL LTS RHEOSTAT.....OFF

(5) BATTERY.....OFF

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“Leprechaunlive”
&
BeeJay “OzWookiee” Bristow-Stagg

Flightmodel

BeeJay “OzWookiee” Bristow-Stagg

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