KODIAK 100 AIRCRAFT MANUAL (WHEELED VARIANT)

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1. ABOUT THE AIRCRAFT

The Kodiak 100 is high-wing, single-engine turboprop aircraft. It is capable of transporting up to 9 passengers or cargo up to a distance of 1,132nm. The Series II aircraft was introduced in 2018, bringing the G1000 NXi, the ESI500 Electronic Standby Instrument and improved cabin sealing. Equipped with the Pratt & Whitney Canada PT6A-34 engine flat-rated at 750shp, the aircraft is capable of taking off and landing in less than 350ft, enabling it to operate from small, unprepared airstrips all over the world.

With our rendition for Microsoft Flight Simulator we tried to capture every aspect of this magnificent aircraft. The current package features four exterior and five interior variations of the aircraft, created using factory CAD data and hundreds of images. Sound recordings were done in a real aircraft, capturing everything; the propeller roar, the engine whine, the door seals and switches, everything has been represented meticulously.

Aircraft handling and performance were tested by pilots of the real aircraft and created using data from Daher and Hartzell. In the cockpit, most switches and circuit breakers are functional. The aircraft uses the default G1000 suite that comes with Microsoft Flight Simulator, but is also compatible* with the NXi mod. We have also developed a custom ESI500 standby instrument with full navigational capabilities.

*NXi mod support is fully supported at the time of writing this manual. However, our priority will always be supporting the default G1000 system, as mods may not work properly in all versionsof the game.

2. CREDITS

The Kodiak 100 was created under license by Daher Aerospace and made possible because of the hard work of the development team. The plane underwent many iterations and rebuilds to ensure that it holds up to the highest standards.

- Alessandro Schimicci: 3D Modelling, animation
- Matt Wynn: Exterior textures
- Elias Strikos: Interior textures
- Paul Frimston: Flight Dynamics
- Evripides Efthymiou: ESI500 and Air Conditioning
- SimAcoustics: Aircraft and cockpit audio
- Maxim “Mugz” Brykov: Lighting effects
- Alex Vletsas: Systems, Engine, Programming, project coordination

We would also like to extend our thanks to Daher Aerospace, Kodiak Aircraft Inc and Aviation sans Frontières France who provided us with the resources required to make a high-quality rendition of the aircraft.

Finally, we would like to thank our testing team for their patience and help during the long testing period, without which a lot of major issues would go unnoticed.

3. SETTINGS

We recommend the following settings:

- Crashes due to aircraft stress DISABLED: when Flight Simulator detects an exit opening in mid-air, it will consider the aircraft overstressed. This will preclude you from using the storm window and skydive door.
- Flight Model: Maximum realism, Modern Flight Model

4. PRODUCT OVERVIEW

4.1 FEATURES

The aircraft features fully animated control surfaces and cockpit, along with many custom features that are listed below:

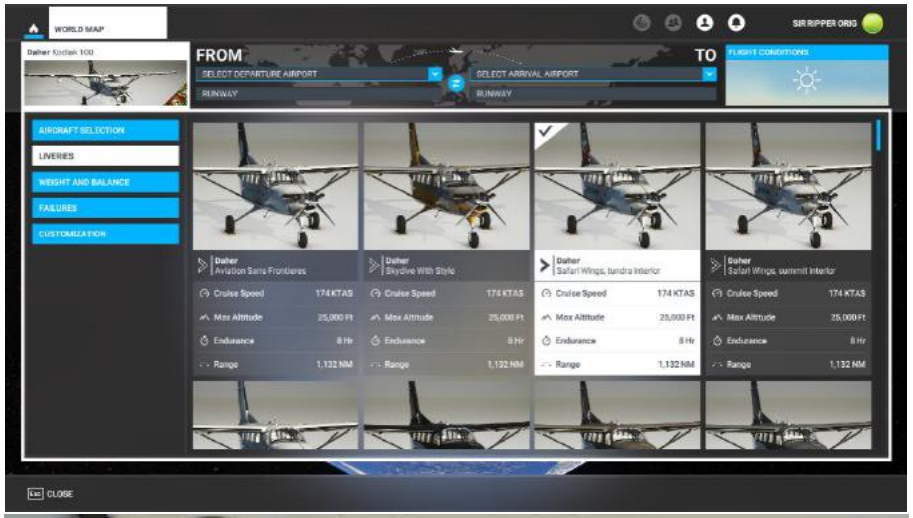
- 36 factory and 4 custom liveries
- Flexing landing gear
- Wheel chocks visible when the plane is cold
- Working exits & storm window
- Roll-up door and jump lights (Skydive model)
- Animated pilot and passenger armrests
- Animated air conditioning vents and cup holders
- Realistic backlighting and floodlighting
- Individually controlled reading and aisle lights
- Weight based visibility of cargo and passengers in Tundra, Mixed and Cargo versions
- Animated roll-up door with pull-handle to close it (Skydive)
- Working jump lights. Roll-up door will automatically open when set to READY to emulate the presence of a jumpmaster
- Rain and icing effects
- Custom air conditioning system that accounts for temperature differences between zones and inflow from the outside
- Custom ESI500 Backup instrument
- Flap auto-trim system

4.2 SELECTING AIRCRAFT VARIATIONS

The SWS Kodiak comes with four exterior and five interior models. Exterior models can be found in the AIRCRAFT SELECTION section. Interiors are assigned per-livery and each livery is suffixed with the type of interior to indicate the cabin configuration:

- Cargo: all-cargo interior
- Mixed: 4 passengers in front, cargo in the rear
- Tundra: passenger variant featuring 8 passenger seats.
- Summit: Executive interior
- Skydive

Interiors can be selected from the LIVERIES section.



4.3 PAYLOAD

Payload is controlled using the ingame weight menu and allows you to control visibility of the copilot, passengers and cargo. For the Tundra and Summit interiors, the seat that is located in front of the cargo door is hidden by default. To make it visible, add weight to Row 4 Left.

WARNING: Always load the aircraft so that it is within the Center of Gravity limits of 14-40% MAC. Exceeding the CG limits can result in unexpected reactions to handling and loss of aircraft control.

HINT: If you don't see the CG schematic to the right of the payload window, drag the right edge of the window to make it bigger and the schematic will appear.

5. AIRCRAFT DATA SHEET

Weight	
Empty weight*:	3,775lbs
Total fuel:	320gal. total, 315 usable
Max useful weight:	3,480lbs
Maximum gross weight:	7,255lbs

*The cargo pod variant weight an additional 175lbs.

Speeds	
Rotate:	60KIAS
Takeoff:	79KIAS
Takeoff climb (Flaps 20°):	88KIAS
Enroute climb (Flaps 0°):	101KIAS

Speeds (continued)	
Cruise (max endurance):	135KIAS
Cruise (max speed):	174KIAS
Stall (full flaps/flaps up)	47 / 61 KIAS
Barber pole:	182KIAS

Flap limits	
Position (degrees)	**Maximum speed (KIAS)**
Flaps 10	138
Flaps 20	120
Flaps 35	108

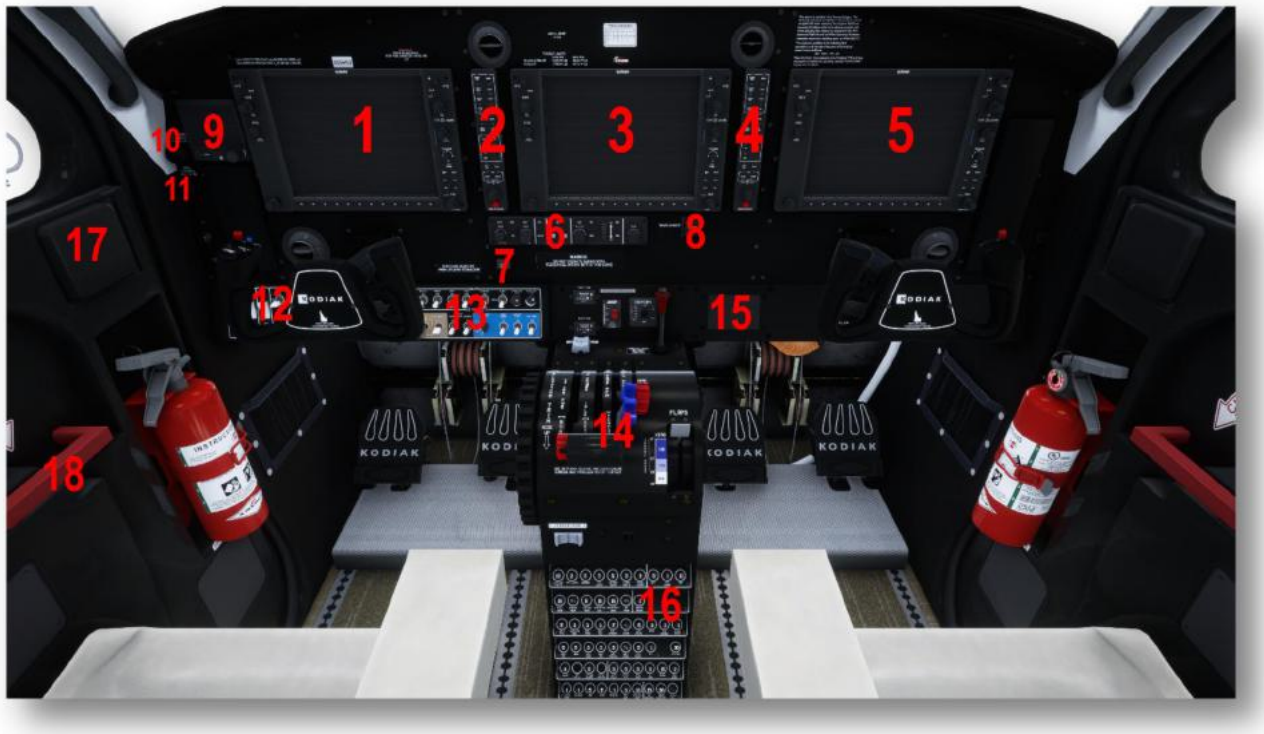
Engine	
Max torque	1790 ft-lbs @2200rpm 1970 ft-lbs @2000rpm
Max climb torque:	1670 ft-lbs @2200rpm 1840 ft-lbs @2000rpm
Propeller max RPM:	2,200
Propeller caution range:	450-1050
Oil pressure:	Maximum: 105psi Normal: 85-105psi Caution: 40-85psi Minimum: 40psi

Engine (continued)	
ITT Normal range:	200-925 °C Startup 400-760 °C Normal
ITT Caution range:	925-1090 °C Startup 760-790 °C Normal
ITT Redline (2 seconds max):	1090°C Startup 790°C Normal
Oil temperature:	Maximum: 99 °C Normal: 10-99 °C Caution: -40-10 °C Minimum: -40 °C

6. COCKPIT

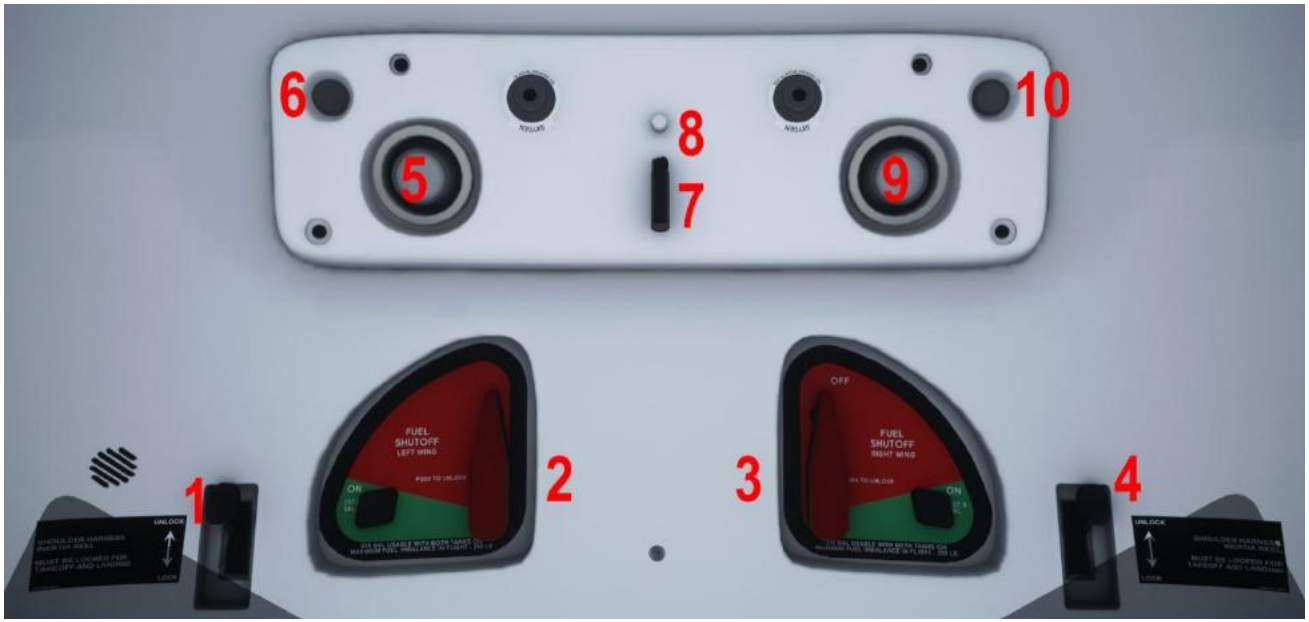
6.1 FORWARD PANEL

1. Pilot Primary Flight Display
2. Pilot Audio Panel
3. Multi-function Display
4. Copilot Audio Panel
5. Copilot Primary Flight Display
6. GMA700 autopilot
7. Leveller switch
8. TAWS Inhibit switch
9. ESI500 backup instrument
10. Overspeed Governor test switch (INOP)
11. Stall Warning test switch
12. Left Switch Panel
13. Right Switch Panel
14. Pedestal
15. Air Conditioning Panel
16. Circuit Breaker Panel
17. Coffee cup holder
18. Door latch



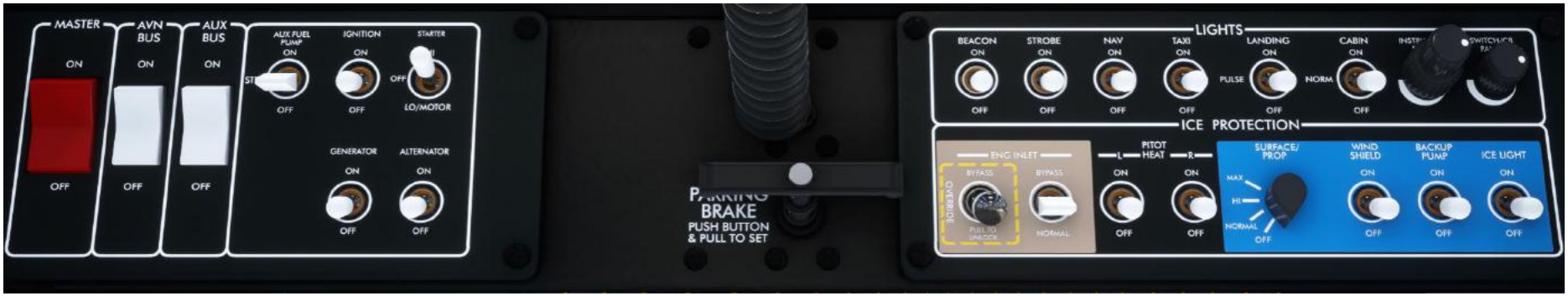
6.2 OVERHEAD PANEL

1. Pilot shoulder harness lock lever
2. Left fuel tank selector
3. Right fuel tank selector
4. Copilot shoulder harness lock lever
5. Pilot reading light
6. Pilot reading light switch
7. Overhead light
8. Overhead light switch
9. Copilot reading light
10. Copilot reading light switch



6.3 SWITCH PANELS

The Left and Right Switch Panel are located at the lower end of the instrument panel, left and right of the parking brake lever. The left switch panel contains the switches that control the aircraft's fuel pump, starter and electrical system, while the right switch panel contains the lighting and de-icing system switches.



LEFT SWITCH PANEL

BATTERY MASTER SWITCH

The battery master switch is a red, two-position switch located on the lower left corner of the instrument panel and is labeled MASTER. When the switch is in the ON position, battery power is supplied to the two main buses and the Essential Bus. The OFF position cuts off battery power to all buses.

AVIONICS MASTER SWITCH

The avionics master switch is a white, two-position switch located on the lower left corner of the instrument panel adjacent to the Battery Master Switch and is labeled AVN BUS. When the MASTER and AVN BUS switches are placed in the ON position, battery power is supplied to the avionics bus.

AUXILIARY BUS SWITCH

The auxiliary bus switch is a white, two-position switch located on the lower left corner of the instrument panel adjacent to the Avionics Master Switch and is labeled AUX BUS. When the MASTER and AUX BUS switches are placed in the ON position, battery power is supplied to the auxiliary bus. The environmental control systems are powered by the auxiliary bus. The AUX BUS switch is provided for ease of load shedding should an electrical power failure occur.

FUEL PUMP SWITCH

The switch labeled AUX FUEL PUMP is a three-position switch located on the lower left corner of the instrument panel. The switch controls the operation of the aircraft's Auxiliary Fuel Pump and has positions for OFF, STBY and ON. The Auxiliary Fuel Pump requires electrical power to be available in order to operate.

IGNITION SWITCH

The ignition switch is a two-position toggle-type switch labeled IGNITION and is located on the lower left corner of the instrument panel. The switch has position for OFF and ON.

STARTER SWITCH

The starter switch is a three-position toggle-type switch labeled STARTER and is located on the lower left corner of the instrument panel. The switch provides positions for OFF, LO/MOTOR, and HI START.

GENERATOR SWITCH

The generator switch is a two-position toggle-type switch labeled GENERATOR and is located on the lower left corner of the instrument panel. The switch has positions for OFF and ON. When the generator switch is placed in the ON position, the Master Control Unit will automatically control the generator line contactor for normal operation of the generator. When the switch is placed in the OFF position, the Master Control Unit will disconnect the generator from the electrical system.

ALTERNATOR SWITCH

The alternator switch is a two-position toggle-type switch labeled ALTERNATOR and is located on the lower left corner of the instrument panel adjacent to the GENERATOR switch. The switch has positions for OFF and ON. When the alternator switch is placed in the ON position, the Alternator Control Unit will automatically control the line contactor for normal operation of the alternator, and the alternator will supply power to the Essential Bus. When the switch is placed in the OFF position, the Alternator Control Unit will disconnect the alternator from the Essential Bus.

RIGHT SWITCH PANEL

BEACON LIGHT SWITCH

The switch controls an aviation red LED flashing beacon that is installed on the top of the fuselage near the vertical tail. The flashing beacon is utilized as an additional source for anti-collision protection in-flight and for recognition during ground operations. The flashing beacon is protected by a circuit breaker, labeled NAV LIGHTS.

STROBE LIGHTS SWITCH

A high intensity LED strobe light system is installed on the airplane. The system includes two white strobe lights, one on each wing tip. The lights enhance the anti-collision protection for the airplane and meet the FAA requirements for night operations. The strobe lights are protected by a circuit breaker, labeled STROBE.

NAVIGATION LIGHTS SWITCH

LED navigation lights are installed on the wing tips and the tail-cone stinger. The navigation lights are protected by a circuit breaker labeled NAV LIGHTS.

TAXI LIGHTS SWITCH

Two incandescent taxi lights are installed on the airplane, one in each outboard wing leading edge. The lights are positioned to provide adequate lighting for taxi operations. The taxi lights are protected by a circuit breaker labeled TAXI LIGHTS.

LANDING LIGHTS SWITCH

Two high intensity discharge (HID) xenon landing lights are installed on the airplane, one in each outboard wing leading edge. The lights provide illumination

forward and downward for accomplishing night takeoffs and landings. The lights are protected by a circuit breaker labeled LANDING LIGHTS.

The landing lights are also utilized as pulsing recognition lights. When the landing light switch is placed in the PULSE position, the landing lights initiate an alternating pulsing sequence, providing great visual recognition by other aircraft.

Pulse Landing Lights will not begin their strobe operation until 30 seconds after the landing lights have been turned ON.

CABIN LIGHTS SWITCH

Cabin overhead lighting consists of four main cabin lights and two cockpit reading lights. The cabin overhead lights are controlled by a three-position switch (ON-NORM-OFF) labeled CABIN. When the CABIN light switch is placed in the NORM position, the optional cabin overhead reading lights may be turned ON at each individual reading light throughout the cabin.

INSTRUMENT PANEL LIGHTING KNOBS

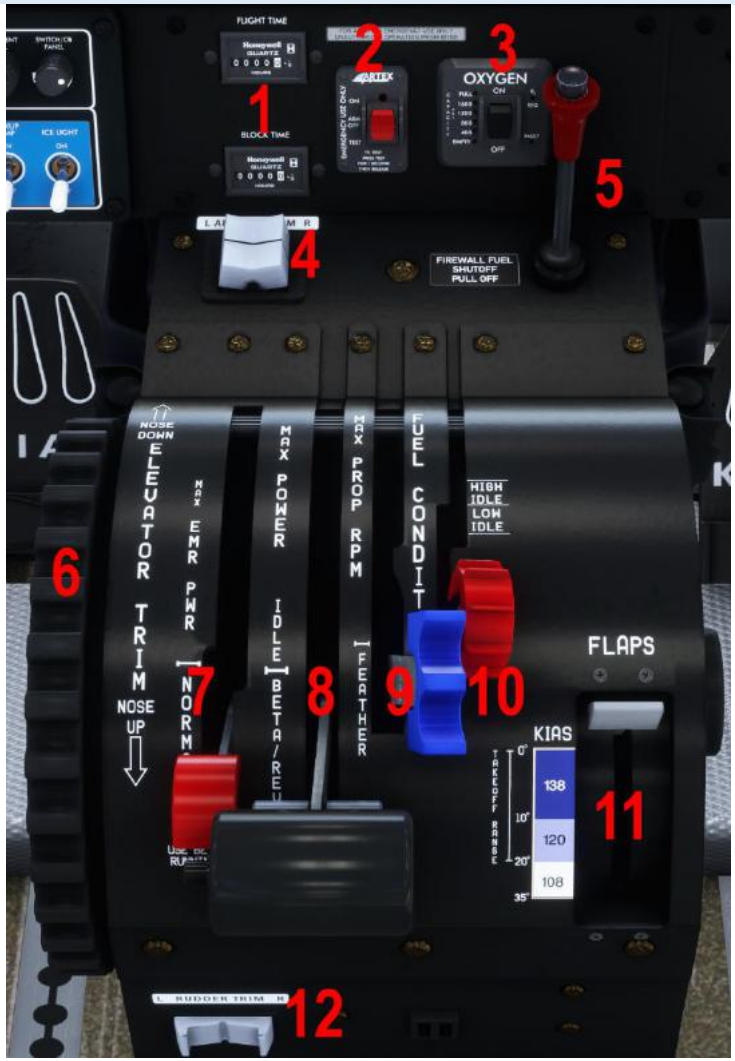
There are two super-positioned knobs that control instrument panel lighting, labeled INSTRUMENT PANEL. The outer knob controls the intensity of the rope-type LED light strip that is mounted under the glareshield. The inner knob controls the backlighting intensity of the G1000, audio panels and autopilot panel. The instrument panel lights are protected by the circuit breaker labeled PANEL LIGHTS.

SWITCH PANEL LIGHTING KNOB

The knob labeled SWITCH/CB PANEL controls the backlighting of the switch panels and circuit breaker panel.

6.4 CENTRE PANEL AND PEDESTAL

1. Hobbs metres
2. Emergency Location Transmitter
3. Oxygen panel
4. Aileron trim switch
5. Firewall fuel shutoff lever
6. Elevator trim wheel
7. Emergency power lever
8. Power lever
9. Propeller lever
10. Conditioning lever
11. Flap handle
12. Rudder trim switch



CENTRE PANEL

HOBBS METRES

Two Hobbs metres labeled FLIGHT TIME and BLOCK TIME are installed in the middle of the lower part of the instrument panel. The BLOCK TIME Hobbs metre records the hours of engine use. The FLIGHT TIME Hobbs metre records the hours of flight time and is activated by a squat switch.

EMERGENCY LOCATOR TRANSMITTER

The Emergency Locator Transmitter is located aft of the rear cabin bulkhead; it is controlled by the red-coloured switch located in the middle of the instrument panel, to the right of the Hobbs metres. The ELT switch has three positions, TEST, ARM OFF and ON.

OXYGEN PANEL

The SWS Kodiak includes a simulated oxygen supply, with varying depletion rate depending on the number of passengers on board. When a station carries a weight that is 120lbs or greater, the system considers that a passenger is present in that station. Oxygen quantity is indicated by the lights to the left of the oxygen switch. The light labeled O_2 REQ illuminates if the oxygen pressure is at 400psi or less, indicating a low oxygen supply. The light labeled FAULT will illuminate in red if the oxygen system is not receiving power.

PEDESTAL

AILERON TRIM SWITCH

The spring-loaded aileron trim switch allows for changing the aileron trim. The switch is time-limited to a maximum of 1 second of continuous pressing, to avoid accidental over-trimming. To continue trimming, release the trim switch and press again. It is protected by the circuit breaker labeled AIL TRIM.

FIREWALL FUEL SHUTOFF VALVE

When pulled out, the firewall fuel shutoff valve will cut fuel feed from the wing tanks to the engine by closing the firewall shutoff valve.

ELEVATOR TRIM WHEEL

The elevator trim wheel is used as a backup means of trimming the aircraft pitch, in the event the trim switch on the pilot's yoke fails.

EMERGENCY POWER LEVER

The emergency power lever is partially simulated in the SWS Kodiak.

LEVERS

Levers on the SWS Kodiak have simulated gates that prevent them from being inadvertently dragged past a position. When dragging a lever with the mouse and reaching a stop, in order to continue past the stop:

- Continue dragging until the lever moves past the gate
- Release the mouse button, click again and drag

Gates are featured in the following levers:

- Power lever: Idle position, preventing accidental movement to and from beta range
- Propeller lever: FEATHER gate, preventing accidental feathering of the propeller in flight, or unfeathering during startup and shutdown
- Conditioning lever: LOW IDLE gate prevents accidental shutoff of the engine or inadvertent movement into high idle from shutoff during startup.

FLAPS LEVER

The paddle switch labeled FLAPS is located on the right side of the pedestal and has positions for UP, 10, 20 and 35 degrees of flaps. The flaps are actuated by an electrical motor located in the cabin ceiling, between the wings. The maximum speed limits in knots for each flap setting is labeled to the left of the paddle switch for quick reference in flight. Takeoff range is also indicated left of the paddle switch. The flap motor is protected by a circuit breaker labeled FLAPS in the circuit breaker panel.

Flap operation at speeds higher than the maximum permitted will trigger warnings in the G1000 Primary Flight Display. Operating the flaps above their

maximum allowed speed may damage them and negatively impact aircraft handling and stability.

The flaps are supplemented by a flap auto-trim system that automatically compensates for changes in aircraft pitch due to flap operation. The auto-trim system is activated automatically when the Autopilot is off at indicated airspeeds above 35 knots. The system is inactive below 35 knots to avoid changing takeoff trim when the pilot sets flaps for takeoff.

RUDDER TRIM SWITCH

The rudder trim switch is located at the rear face of the pedestal, above the circuit breaker panel and allows adjustment of the aircraft's rudder trim. It is protected by the circuit breaker labeled RDR TRIM.

6.5 CIRCUIT BREAKER PANEL

The Circuit Breaker Panel is located on the rear side of the pedestal and contains the circuit breakers that protect the various electrical systems. Each circuit breaker is labeled with the maximum allowed amperage for that system. When a circuit breaker is pulled, power to the respective circuit is interrupted. The circuit breaker labels are backlit and lighting is controlled by the SWITCH/CB PANEL knob.

Note: Some systems are not simulated because of limitations of Microsoft Flight Simulator. Circuit breakers pertaining to such systems will appear pulled out. Circuit breakers of systems that are independent in the real aircraft but unified in Microsoft Flight Simulator will move in unison. E.g. pulling the ADC1 circuit breaker will also trigger the AHRS1 circuit breaker

6.6 G1000

OVERVIEW

The SWS rendition of the aircraft comes with the default G1000 but has also been configured to work with the NXi mod by Working Title.

The pilot and copilot PFDs are mirrored due to a bug in the core G1000 system. When the problem is solved, we intend to separate them into independent displays.

ANNUNCIATIONS

The SWS Kodiak includes the following annunciations, which are also present in the real aircraft, which can be seen here. More may be introduced in the future.

WARNING ALERTS

Message	Audio alert	Meaning
PTRIM	Repeating Chime	Pitch trim deactivated or failed
YAW	Repeating Chime	Yaw trim deactivated or failed
ROLL	Repeating Chime	Roll trim deactivated or failed
OIL PRESS LOW	Repeating Chime	Oil pressure below 45psi
HIGH VOLTS	Repeating Chime	Voltage greater than 30V
INLET NOT BP	Repeating Chime	Engine inlet not in BYPASS position and OAT less than 5°C
FLAP OVERSPEED	Repeating Chime	Flaps above retraction speed
OVERSPD WARN	Repeating Chime	Airspeed above Vmo
FUEL OFF L-R	Repeating Chime	Both fuel selectors OFF
FUEL OFF L	Repeating Chime	Left fuel selector OFF
FUEL OFF R	Repeating Chime	Right fuel selector OFF
RESERVOIR FUEL	Repeating Chime	Total fuel in reservoir less than 5 gallons US
NG OVERSPEED	Repeating Chime	Ng turbine RPM above 101.6% limit
NP OVERSPEED	Repeating Chime	Propeller RPM above 2200RPM
TORQUE	Repeating Chime	Torque above the maximum limit.
ITT	Repeating Chime	ITT above 1090°C when starting or 790°C in normal operation.
CARGO DOOR	Repeating Chime	Cargo door is not closed and locked (in air)

CAUTION ALERTS

Message	Audio alert	Meaning
EMER PWR LVR	Single Chime	Emergency power lever out of NORMAL position
GEN FAIL	Single Chime	Generator OFF or failed
ALTERNATOR FL	Single Chime	Alternator OFF or failed
PITOT OFF L-R	Single Chime	Pitot heating off for both tubes, and OAT less than 5°C
PITOT OFF L	Single Chime	Pitot heating off for left tube, and OAT less than 5°C
PITOT OFF R	Single Chime	Pitot heating off for right tube, and OAT less than 5°C
BOTH ON ADC1	Single Chime	Flight data taken from ADC1
BOTH ON AHRS1	Single Chime	Attitude-Heading reference taken from AHRS1
BOTH ON ADC2	Single Chime	Flight data taken from ADC2
BOTH ON AHRS2	Single Chime	Attitude-Heading reference taken from AHRS2
FUEL LOW L-R	Single Chime	Fuel tank level below 5 gallons US in both tanks
FUEL LOW L	Single Chime	Fuel tank level below 5 gallons US in left tank
FUEL LOW R	Single Chime	Fuel tank level below 5 gallons US in right tank
FUEL PRESS LOW	Single Chime	Fuel pressure below 4psi
VOLTAGE LOW	Single Chime	Voltage less than 24V
CARGO DOOR	Single Chime	Cargo door is not closed and locked (on ground)

ANNUNCIATION ADVISORY

Message	Audio alert	Meaning
AUX PUMP ON	None	Auxiliary fuel pump ON
STARTER ON	None	Starter ON
IGNITION ON	None	Ignition switch ON
BETA	None	Power lever in beta range
ENG INLET BP	None	Engine inlet in BYPASS position
ENG INLET NRM	None	Engine inlet in NORMAL position
TKS MAX MODE	None	TKS anti-ice system in MAX mode
TKS HI MODE	None	TKS anti-ice system in HI mode
TKS NRM MODE	None	TKS anti-ice system in Normal mode
TAWS TEST	None	TAWS system test in prorgress

REVERSIONARY MODE

If power is lost to the MFD, the PFD will switch to reversionary mode. The Engine Information System will then be displayed on the PFD.

G1000 PFD in normal mode

G1000PFD in Reversionary mode

GFC700 AUTOPILOT

The Series II Kodiak comes equipped with the GFC700 Autopilot as standard equipment. The Autopilot ties into the G1000 system seamlessly and can be used for full navigation, to the full extent of the simulator's capabilities.

FLAP AUTOTRIM SYSTEM

The SWS Kodiak comes equipped with a flap autotrim system, which helps in maintaining the aircraft's pitch the same when the flaps are in use. When the flaps extend past 5 degrees, the flap autotrim system will trim down to compensate for the nose up motion of the aircraft when the flaps are extending; When the flaps are being retracted, the flap autotrim system will trim up to compensate for the nose being lowered when the flaps are being retracted. The pilot can use the trim switch on the yoke to negate the effect of the autotrim system if that is desired. The flap autotrim system is engaged automatically at airspeeds above 35 knots. This is done to prevent the system from putting the aircraft in an out-of-trim condition when the pilot sets the flaps for takeoff on the ground.

LVL SWITCH

The LVL switch is located under the GFC700 Autopilot panel and can be used by the pilot to bring the aircraft to wings-level flight.

6.7 ESI500 BACKUP INSTRUMENT

The Kodiak Series II comes equipped with the ESI500 Standby Instrument, a 3-in-1 instrument offering full navigational capabilities in the event of a complete failure of the G1000 system. It is tied into Navigation Radio #2 and the GPS circuit. It is fully capable of VOR and GPS navigation.

AIRSPEED TAPE

The airspeed tape indicates the aircraft speed in knots, starting from 20 and up to a maximum of 340 knots. Coloured areas of the tape indicate reference speeds.

Marking	KIAS range	Significance
Red band	20 to 47	Low airspeed warning. This section is white when on the ground
White band	47 to 108	Full Flap Operating range. The lower speed represents the stall speed at maximum gross weight with flaps extended. The upper limit represents the maximum permissible speed with the flaps fully extended
Green band	68 to 182	Normal Operating Range. The lower speed represents the stall speed at maximum gross weight, at the most forward CG, with flaps retracted. The upper limit is the maximum operating speed
Red band	≥182	The red line indicates the maximum speed for normal flight operations

ESI500 MENU

The pilot can interact with the ESI500 using the Menu button and the knob on the instrument's bezel. The Menu button is used to open the instruments menu, through which a number of functions can be accessed. When the menu system is already open, the Menu button can be used to move back to the previous menu level.

When the menu is turned off, the knob can be used to adjust the instrument's barometric pressure; this is done by using the scroll wheel or clicking left/right of the knob. Clicking on the centre of the knob will toggle between current barometric pressure and STD. When the menu is open, rotating the knob will allow you to move through the different option. Clicking the knob will select that option.

The functions of the ESI500 contains the following options:

- Set BRT Trim: Allows the setting of the instrument's brightness
- BARO Units: Changes the display of barometric pressure between inHg, hPa or Millibars
- Metric ALT: Toggles the display of an overlay window that indicates the altitude in Metres
- Align Attitude: Not simulated
- BATT Calibration: Not simulated
- System Status: Allows viewing of system information
- BATT Shutdown: Not simulated

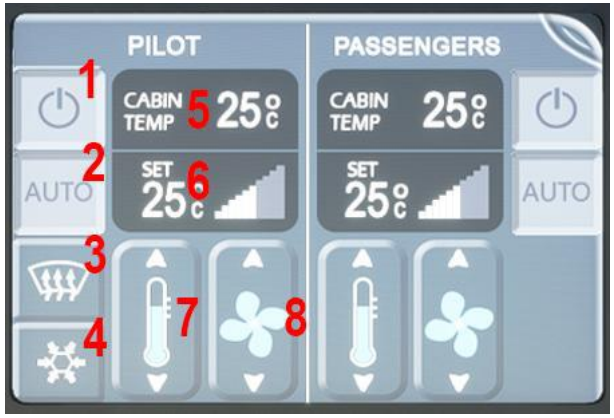
- NAV Mode: Allows selection between different navigation sources. Available options are GPS, VOR/LOC and Off.
- CRS Direct To: When Enabled, navigational information from the G1000 will be relaid to the ESI500 and displayed in GPS mode
- Set CRS: Allows the setting of a course to be used with VOR/LOC mode. This is tied into Navigation Radio 2
- SVS On: Not simulated
- SVS Gridlines: Not simulated

6.8 ENVIRONMENTAL CONTROL SYSTEM (ECS)

The SWS Kodiak comes equipped with a detailed ECS as well as simulated heat transfer between zones, temperature change from opening the doors and window and heat leakage between aircraft and the outside environment. The aircraft cabin is split into two zones, pilot and passenger, each with its individual climate controls. The airplane is equipped with four air conditioning nozzles on the main panel and one overhead of each passenger. Additionally, eight electrical heating devices are provided, located on the walls near the floor. The entire system is powered by the Auxiliary Power Bus, which can be toggled using the AUX BUS switch.

The aircraft's Automatic Climate Control System (ACCS) is a fully automatic system with manual capabilities, which will try to maintain temperature within five degrees of the desired value. The ACCS is controlled from a touchscreen located at the bottom of the instrument panel, right of the pedestal. The touch screen will be dimmed when the Navigation light switch is placed in the ON position.

The ACCS touchscreen features two pages through which the system is controlled. Pages can be switched by clicking on the button at the top-right corner of the screen. The first page contains the ECS temperature settings, allowing you to set the target temperature and select between ACCS operating modes.

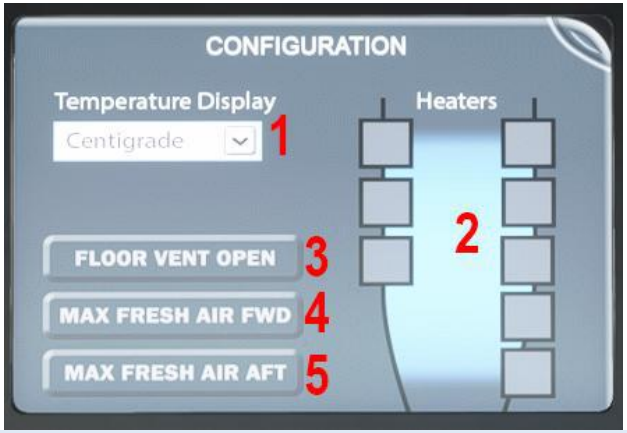


On the first page, the following controls can be seen:

1. ACCS on/off switch. Repeated on the other side for passenger zone
2. Automatic mode on/off. Repeated on the other side for passenger zone
3. Windshield defog (not simulated)
4. Air Conditioning mode On/Off
5. Current temperature in the respective zone
6. Desired target temperature in the respective zone
7. Increase/decrease target temperature
8. Increase/decrease fan speed

The second page contains the ECS configuration settings and aft heating controls. The following settings are available:

1. Temperature units selection: allows the crew to toggle between degrees Celsius and Fahrenheit
2. Passenger electric heaters can be controlled individually. Heater box is highlighted green when ON
3. Toggle cockpit floor vent open/closed for cockpit air distribution. Turned off when AUTO mode is selected
4. Toggles cockpit fresh air vent ON/OFF
5. Toggles aft cabin fresh air vent ON/OFF

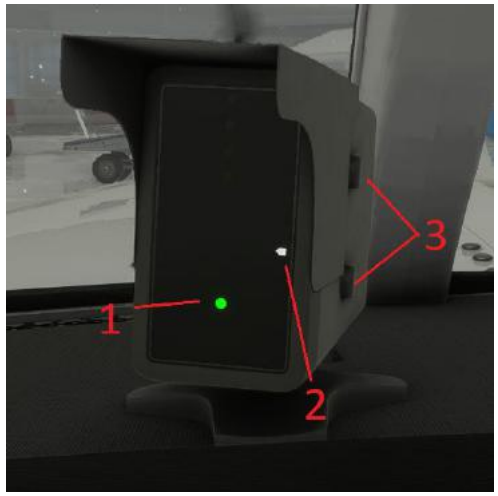


6.9 ANGLE OF ATTACK INDEXER

The Kodiak 100 Series II comes equipped with the SCc Angle of Attack indexer. The instrument is mounted on the glareshield in clear view of the pilot and consists of LED lights that provide the pilot with a visual cue for the aircraft's angle of attack. When the aircraft is flying at the optimum approach AoA, a cross-shaped indication will illuminate on the indexer. As the aircraft AoA increases, the upper range of the AoA will illuminate with yellow-coloured lights. Red lights will illuminate when the aircraft is flying close to stall AoA,

The following features can be identified on the SCc AoA indexer:

1. Angle of Attack indication lights
2. Angle of Attack reference bug. The bug can be changed between 10 different positions
3. Angle of Attack reference bug adjustment buttons. The upper button will move the reference bug up, the lower button will move the reference bug down.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6.10 ENGINE FATIGUE AND DAMAGE

As of version 1.2.0 the SWS Kodiak features engine fatigue and damage. Fatigue accumulates as the engine and starter are used. A failure probability always exist, but that increases as the use approaches a failure threshold.

For the engine, probability of failure begins increasing substantially after 1000 hours of use with increasing chance of failure up to 3500 hours. Similarly, you are unlikely to encounter a starter failure before 1000 uses, but its chance of failure will increase from 1000 to 1500 uses, at which point it is due for replacement. The starter counts uses even when you start the flight with the engine running. The engine can be damaged by exceeding ITT, Ng or Np limits. Failure will depend on the amount of excess stress imposed on the engine as well as the duration of the stress.

Lastly, hot starts are a particularly dangerous situation for the engine. A hot start can caused in the SWS Kodiak in two ways:

- **Early fuel induction:** if the pilot moves the condition lever out of cutoff before the engine reaches 14% Ng, the engine will experience a hot start. This happens because the compressor provides air to cool the engine through the intake and that airflow is not sufficient before 14% Ng.
- **Residual ITT:** If you have to shut down the engine, ITT will take several minutes to cool down. Starting the engine with that residual ITT will result in higher temperatures and can cause a hot start. The engine should not be started until the ITT is well below 150°C. To accelerate engine cooling you can dry-motor the engine by putting the starter switch to LO/MOTOR. The compressor will introduce cool air through the intake and that will make the engine cool much faster.

Once a failure has manifested, the only way to reverse it is to start a new flight which will reset the failure. If the failure was due to the component going past its lifetime, that component will also be replaced with a factory fresh one.

7. PERFORMANCE

7.1 TAKE-OFF MAXIMUM TORQUE

CONDITIONS

- Engine Inlet: NORMAL
- Takeoff torque should be achievable without excee ding 101.6%N_G and 790°C ITT

ENGINE INLET NORMAL, ITT <790°C, N_G <101.6%							
TEMP °C (°F)	TAKEOFF TORQUE FT-LB, 2200 RPM						
	SEA LEVEL	2000 FT	4000 FT	6000 FT	8000 FT	10000 FT	12000 FT
50 (122)	1310	-	-	-	-	-	-
40 (104)	1480	1370	1270	-	-	-	-
30 (86)	1640	1530	1410	1310	1210	1110	-
20 (68)	1790	1670	1550	1440	1330	1220	1120
10 (50)	1790	1790	1680	1560	1440	1320	1220
0 (32)	1790	1790	1790	1660	1540	1420	1310
-10 (14)	1790	1790	1790	1760	1630	1510	1390
-20 (-4)	1790	1790	1790	1790	1710	1590	1470
-30 (-22)	1790	1790	1790	1790	1770	1660	1540
-40 (-40)	1790	1790	1790	1790	1790	1730	1600
-50 (-58)	1790	1790	1790	1790	1790	1790	1650

7.2 TAKE-OFF ROLL

CONDITIONS

- Engine Inlet: NORMAL
- Flaps 20°

TEMP °C (°F)	TAKEOFF DISTANCE - 4000 LBS GROUND ROLL (50' OBS)						
	SEA LEVEL	2000 FT	4000 FT	6000 FT	8000 FT	10000 FT	12000 FT
50 (122)	321 (541)	-	-	-	-	-	-
40 (104)	271 (456)	325 (536)	390 (633)	-	-	-	-
30 (86)	233 (392)	278 (459)	333 (540)	400 (635)	483 (754)	586 (898)	-
20 (68)	204 (343)	241 (398)	289 (467)	345 (548)	417 (650)	505 (773)	615 (924)
10 (50)	193 (326)	215 (354)	253 (408)	303 (481)	364 (568)	441 (674)	537 (807)
0 (32)	181 (309)	202 (336)	226 (366)	268 (426)	322 (502)	388 (595)	471 (708)

TEMP °C (°F)	TAKEOFF DISTANCE - 5000 LBS GROUND ROLL (50' OBS)						
	SEA LEVEL	2000 FT	4000 FT	6000 FT	8000 FT	10000 FT	12000 FT
50 (122)	573 (942)	-	-	-	-	-	-
40 (104)	484 (793)	580 (933)	696 (1101)	-	-	-	-
30 (86)	417 (681)	497 (798)	596 (939)	714 (1105)	863 (1312)	1047 (1563)	-
20 (68)	535 (597)	431 (692)	516 (813)	617 (954)	745 (1130)	902 (1345)	1099 (1608)
10 (50)	344 (566)	384 (616)	451 (711)	541 (836)	651 (988)	787 (1173)	960 (1404)
0 (32)	324 (536)	361 (584)	403 (636)	478 (741)	575 (874)	694 (1035)	842 (1232)

TEMP °C (°F)	TAKEOFF DISTANCE - 6000 LBS GROUND ROLL (50' OBS)						
	SEA LEVEL	2000 FT	4000 FT	6000 FT	8000 FT	10000 FT	12000 FT
50 (122)	920 (1481)	-	-	-	-	-	-
40 (104)	778 (1248)	931 (1468)	1119 (1732)	-	-	-	-
30 (86)	670 (1072)	799 (1256)	957 (1478)	1147 (1739)	1387 (2066)	1683 (2460)	-
20 (68)	586 (938)	693 (1089)	829 (1279)	991 (1502)	1196 (1779)	1449 (2116)	1766 (2531)
10 (50)	553 (891)	616 (970)	725 (1118)	869 (1316)	1045 (1555)	1265 (1847)	1542 (2210)
0 (32)	520 (843)	580 (918)	647 (1001)	769 (1167)	923 (1376)	1115 (1629)	1352 (1940)

TEMP °C (°F)	TAKEOFF DISTANCE - 7255 LBS GROUND ROLL (50' OBS)						
	SEA LEVEL	2000 FT	4000 FT	6000 FT	8000 FT	10000 FT	12000 FT
50 (122)	1508 (2376)	-	-	-	-	-	-
40 (104)	1275 (2002)	1523 (2355)	1833 (2779)	-	-	-	-
30 (86)	1097 (1720)	1308 (2015)	1568 (2372)	1879 (2790)	2273 (3315)	2757 (3949)	-
20 (68)	961 (1506)	1135 (1747)	1358 (2052)	1625 (2410)	1960 (2856)	2375 (3397)	2893 (4063)
10 (50)	906 (1429)	1010 (1556)	1187 (1795)	1423 (2113)	1713 (2496)	2072 (2964)	2527 (3548)
0 (32)	852 (1353)	950 (1473)	1061 (1607)	1260 (1872)	1513 (2208)	1826 (2615)	2215 (3113)

- Torque: Max take-off

7.3 TAKE-OFF CLIMB PERFORMANCE

CONDITIONS

- Flaps 20°
- Torque: Max climb

4000 POUNDS WEIGHT						
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM				
		-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	88	3166	3157	3123	2422	1999
2000	88	3159	3129	2859	2142	1730
4000	87	3133	3097	2568	1874	1473
6000	86	3104	2831	2307	1624	-
8000	84	2931	2557	2047	1388	-
10000	83	2657	2283	1789	1167	-
12000	82	2377	2005	1529	924	-

6000 POUNDS WEIGHT						
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM				
		-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	88	1872	1856	1825	1349	1062
2000	88	1857	1827	1638	1151	872
4000	87	1829	1794	1432	960	688
6000	86	1795	1603	1244	778	-
8000	84	1664	1403	1052	602	-
10000	83	1464	1202	862	436	-
12000	82	1261	1001	672	257	-

5000 POUNDS WEIGHT						
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM				
		-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	88	2404	2391	2360	1794	1453
2000	88	2392	2363	2143	1564	1232
4000	87	2366	2331	1903	1343	1019
6000	86	2335	2111	1687	1135	-
8000	84	2188	1882	1469	936	-
10000	83	1960	1654	1253	749	-
12000	82	1727	1423	1036	545	-

7255 POUNDS WEIGHT						
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM				
		-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	88	1383	1364	1332	932	692
2000	88	1364	1333	1170	762	527
4000	87	1333	1298	991	595	366
6000	86	1296	1130	826	434	-
8000	84	1176	952	655	276	-
10000	83	999	775	485	125	-
12000	82	821	597	317	-35	-

7.4 ENROUTE CLIMB PERFORMANCE

CONDITIONS

- Flaps 0°
- Torque: Max climb

4000 POUNDS WEIGHT							
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM					
		-40°C (-40°F)	-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	101	3246	3254	3246	2869	1949	1465
5000	101	3215	3224	2895	2146	1283	-
10000	101	3070	2682	2131	1440	-	-
15000	101	2299	1902	1362	677	-	-
20000	101	1534	1137	620	-	-	-
25000	101	766	401	-	-	-	-

6000 POUNDS WEIGHT							
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM					
		-40°C (-40°F)	-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	101	1966	1963	1950	1691	1070	743
5000	101	1926	1923	1697	1188	605	-
10000	101	1809	1540	1167	694	-	-
15000	101	1272	996	625	158	-	-
20000	101	735	458	102	-	-	-
25000	101	193	-	-	-	-	-

5000 POUNDS WEIGHT							
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM					
		-40°C (-40°F)	-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	101	2490	2492	2481	2175	1435	1046
5000	101	2455	2457	2192	1585	891	-
10000	101	2328	2012	1570	1008	-	-
15000	101	1698	1374	937	383	-	-
20000	101	1072	748	328	-	-	-
25000	101	441	142	-	-	-	-

7255 POUNDS WEIGHT							
PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM					
		-40°C (-40°F)	-20°C (-4°F)	-0°C (32°F)	20°C (68°F)	40°C (104°F)	50°C (122°F)
S.L.	101	1490	1482	1465	1246	727	454
5000	101	1444	1435	1243	815	327	-
10000	101	1333	1104	788	391	-	-
15000	101	872	636	323	-	-	-
20000	101	410	173	-	-	-	-
25000	101	-	-	-	-	-	-

7.5 CRUISE PERFORMANCE

WEIGHT 7255 LBS, ENGINE INLET NORMAL

TEMP °C (°F)	MAX CRUISE TORQUE FT-LB, 2200 RPM					
	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
50 (122)	1130	-	-	-	-	-
40 (104)	1270	1090	-	-	-	-
30 (86)	1460	1220	980	-	-	-
20 (68)	1650	1380	1110	900	-	-
10 (50)	1670	1520	1240	1010	790	-
0 (32)	1670	1660	1360	1100	870	-
-10 (14)	1670	1670	1470	1210	960	-
-20 (-4)	1670	1670	1560	1290	1020	820
-30 (-22)	1670	1670	1640	1360	1090	870
-40 (-40)	1670	1670	1670	1420	1140	920
-50 (-58)	1670	1670	1670	1490	1200	980

TEMP °C (°F)	MAX CRUISE TORQUE FT-LB, 2000 RPM					
	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
40 (104)	1240	-	-	-	-	-
40 (104)	1400	1200	-	-	-	-
30 (86)	1610	1340	1080	-	-	-
20 (68)	1810	1520	1220	990	-	-
10 (50)	1840	1680	1370	1110	860	-
0 (32)	1840	1830	1490	1210	960	-
-10 (14)	1840	1840	1620	1330	1050	-
-20 (-4)	1840	1840	1720	1410	1130	900
-30 (-22)	1840	1840	1810	1490	1190	960
-40 (-40)	1840	1840	1840	1570	1260	1010
-50 (-58)	1840	1840	1840	1640	1320	1080

TEMP °C (°F)	MAX CRUISE FUEL FLOW PPH, 2200 RPM					
	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
50 (122)	332	-	-	-	-	-
40 (104)	354	299	-	-	-	-
30 (86)	384	321	260	-	-	-
20 (68)	416	348	282	230	-	-
10 (50)	418	374	305	248	195	-
0 (32)	416	400	328	267	211	-
-10 (14)	414	401	352	288	229	-
-20 (-4)	412	401	374	307	245	196
-30 (-22)	410	400	395	327	261	210
-40 (-40)	409	399	404	347	277	224
-50 (-58)	407	399	405	371	297	243

TEMP °C (°F)	MAX CRUISE FUEL FLOW PPH, 2000 RPM					
	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
40 (104)	332	-	-	-	-	-
40 (104)	355	300	-	-	-	-
30 (86)	387	323	262	-	-	-
20 (68)	421	352	285	232	-	-
10 (50)	424	381	311	253	199	-
0 (32)	422	412	337	274	216	-
-10 (14)	421	414	365	299	237	-
-20 (-4)	420	414	391	322	256	140
-30 (-22)	418	414	417	346	275	151
-40 (-40)	417	414	429	370	295	158
-50 (-58)	416	415	432	400	320	164

WEIGHT 7255 LBS, ENGINE INLET NORMAL

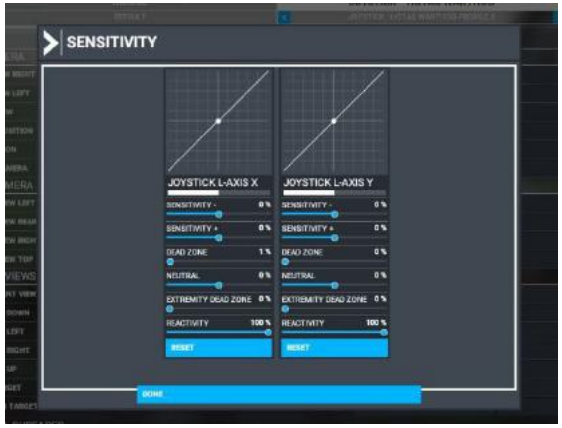
TEMP °C (°F)	MAX CRUISE SPEED TAS KTS, 2200 RPM					
	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
50 (122)	146	-	-	-	-	-
40 (104)	154	152	-	-	-	-
30 (86)	162	159	151	-	-	-
20 (68)	169	167	160	149	-	-
10 (50)	168	172	167	159	134	-
0 (32)	166	176	172	165	149	-
-10 (14)	163	174	176	171	159	-
-20 (-4)	161	172	178	174	164	140
-30 (-22)	159	170	179	176	168	151
-40 (-40)	156	167	178	178	170	157
-50 (-58)	154	164	176	179	173	163

TEMP °C (°F)	MAX CRUISE SPEED TAS KTS, 2000 RPM					
	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
40 (104)	149	-	-	-	-	-
40 (104)	156	153	-	-	-	-
30 (86)	164	161	152	-	-	-
20 (68)	170	168	161	151	-	-
10 (50)	169	173	168	160	135	-
0 (32)	167	177	173	166	150	-
-10 (14)	165	175	177	172	159	-
-20 (-4)	163	173	179	175	165	140
-30 (-22)	161	171	181	177	169	151
-40 (-40)	158	169	179	179	171	155
-50 (-58)	156	166	177	180	174	164

8. TIPS FOR FLYING IN MICROSOFT FLIGHT SIMULATOR

CONTROL CURVES

We recommend setting all control curves to linear, to allow for finer control response.



TAKE-OFF RUDDER TRIM

The Kodiak has a very strong pull to the left at maximum power. When taking off, we recommend using 30-50% right trim. Reduce for a right crosswind, increase for a left crosswind.

TAKE-OFF TRIM

Take-off trim range in the Kodiak is 0 to 75% nose-down trim. More aft CG, more forward trim is required. As the G1000 in MSFS does cannot support the layout of the real Kodiak, we opted to include a white line on the trim wheel until the trim overlay is introduced. When the white line is pointing up vertically, trim will be centered. Rotating forward will trim down and rotating back will trim the nose up. When the line is pointing down, trim is at 100% of travel.

INFLIGHT

To ensure a smooth flying experience, when preparing to trim the aircraft for any phase of flight:

1. Set torque to the desired value with the power lever
2. Trim for pitch
3. Trim for rudder to centre the slip indicator
4. Trim for roll if required.

When making a turn with the aircraft trimmed, use the rudder pedals to centre the slip indicator. Cross-steering (movement of the yoke opposite to the rudder) may be required depending on the amount of rudder used.

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