





# KODIAK 100 AIRCRAFT MANUAL (AMPHIBIAN VARIANT)









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# 1. ABOUT THE AIRCRAFT

he 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, followed by the Series III in 2021. Equipped with the Pratt & Whitney Canada PT6A-34 engine flat-rated at 750shp, the aircraft is capable of taking off and landing on land and water and can 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 NXi suite that comes with Microsoft Flight Simulator. We have also developed a custom ESI500 standby instrument with full navigational capabilities.









## 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 and Kodiak Aircraft Inc. 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 amphibian comes with four interior models, assigned per-livery. 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

## 4.3 PAYLOAD

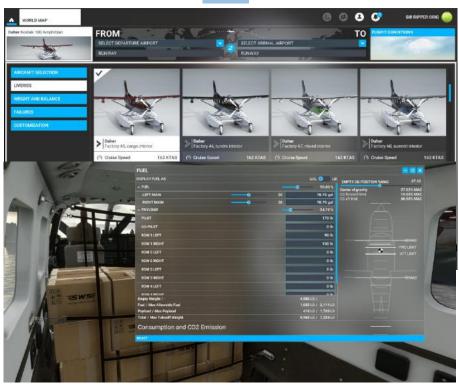
Payload is controlled using the ingame weight menu and allows you to control visibility of the copilot, passengers and cargo. For the Tundra and Summit interiors, the seat that is located in front of the cargo door is hidden by default. To make it visible, add weight to Row 4 Left.

WARNING: Always load the aircraft so that it is within the Center of Gravity limits of 19-36.5% 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.

- Tundra: passenger variant featuring 8 passenger seats.
- Summit: Executive interior

Interiors can be selected from the LIVERIES section.









# 5. AIRCRAFT DATA SHEET

Weight		
Empty weight*:	4,500lbs	
Total fuel:	320gal. total, 315	
	usable	
Max useful weight:	2,755lbs	
Maximum gross weight:	7,255lbs	

<sup>\*</sup>The cargo pod variant weight an additional 175lbs.

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

Speeds	
Short field takeoff (Flaps 20°):	73KIAS
Takeoff climb (Flaps 20°):	90KIAS
Enroute climb (Flaps 0°):	110KIAS
Short field approach (Flaps 35°):	76KIAS

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:	<mark>450-1050</mark>	
Oil pressure:	Maximum: 105psi	
	Normal: 85-105psi	
	Caution: 40-85psi	
	Minimum: 40psi	

Speeds (continued)		
Cruise (max endurance):	125KIAS	
Cruise (max speed):	162KIAS	
Stall (full flaps/flaps up)	47 / 61 KIAS	
Barber pole:	182KIAS	

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	1090°C Startup	
seconds max):	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. Landing gear panel and breakers
- 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





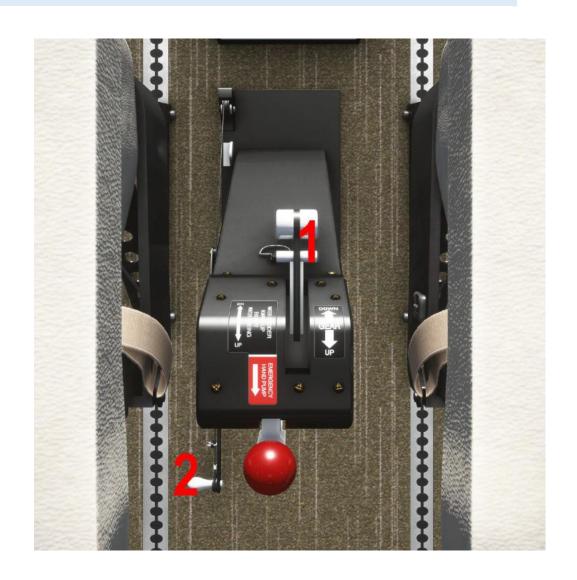




# 6.2 AMPHIBIAN PEDESTAL

The amphibian pedestal is located between the pilots' seats. It contains:

- 1. Landing gear lever
- 2. Water rudder handle









# 6.3 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









## 6.4 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.







## 6.5 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<sub>2</sub> 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.

## 6.6 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









## 6.7 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	
<b>OIL PRESS LOW</b>	Repeating Chime	Oil pressure below 45psi	
<b>HIGH VOLTS</b>	Repeating Chime	Voltage greater than 30V	
<b>INLET NOT BP</b>	Repeating Chime	Engine inlet not in BYPASS position and OAT less than 5°C	
<b>FLAP OVERSPEED</b>	Repeating Chime	Flaps above retraction speed	
<b>OVERSPD WARN</b>	Repeating Chime	Airspeed above Vmo	
<b>FUEL OFF L-R</b>	Repeating Chime	Both fuel selectors OFF	
<b>FUEL OFF L</b>	Repeating Chime	Left fuel selector OFF	
<b>FUEL OFF R</b>	Repeating Chime	Right fuel selector OFF	
<b>RESERVOIR FUEL</b>	Repeating Chime	Total fuel in reservoir less than 5 gallons US	
<b>NG OVERSPEED</b>	Repeating Chime	Ng turbine RPM above 101.6% limit	
<b>NP OVERSPEED</b>	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.	
<b>CARGO DOOR</b>	Repeating Chime	Cargo door is not closed and locked (in air)	







CAUTION ALERTS		
Message	Audio alert	Meaning
<b>EMER PWR LVR</b>	Single Chime	Emergency power lever out of NORMAL position
<b>GEN FAIL</b>	Single Chime	Generator OFF or failed
<b>ALTERNATOR FL</b>	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
<b>BOTH ON ADC1</b>	Single Chime	Flight data taken from ADC1
<b>BOTH ON AHRS1</b>	Single Chime	Attitude-Heading reference taken from AHRS1
<b>BOTH ON ADC2</b>	Single Chime	Flight data taken from ADC2
<b>BOTH ON AHRS2</b>	Single Chime	Attitude-Heading reference taken from AHRS2
<b>FUEL LOW L-R</b>	Single Chime	Fuel tank level below 5 gallons US in both tanks
<b>FUEL LOW L</b>	Single Chime	Fuel tank level below 5 gallons US in left tank
<b>FUEL LOW R</b>	Single Chime	Fuel tank level below 5 gallons US in right tank
<b>FUEL PRESS LOW</b>	Single Chime	Fuel pressure below 4psi
<b>VOLTAGE LOW</b>	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
<b>AUX PUMP ON</b>	None	Auxiliary fuel pump ON
STARTER ON	None	Starter ON
<b>IGNITION ON</b>	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 III 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 III 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

## 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.

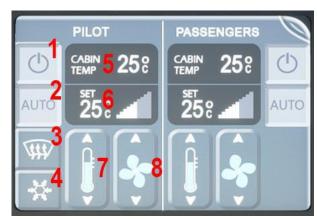
The aircraft's Automatic Climate Control System (ACCS) is a fully automatic system with manual capabilities, which will try to maintain temperature within five degrees of the desired value. The ACCS is controlled from a touchscreen located at the bottom of the instrument panel, right of the pedestal. 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.

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



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





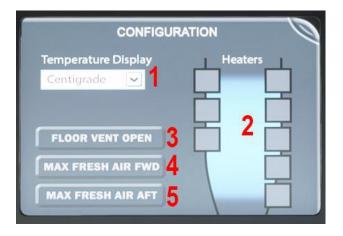


- 6. Desired target temperature in the respective zone
- 7. Increase/decrease target temperature
- 8. Increase/decrease fan speed

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







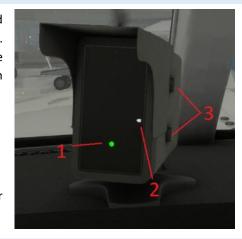


## 6.9 ANGLE OF ATTACK INDEXER

The Kodiak 100 Series III 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:

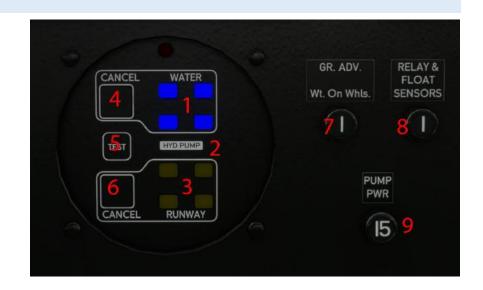
- 1. Angle of Attack indication lights
- 2. Angle of Attack reference bug. The bug can be changed between 10 different positions
- 3. Angle of Attack reference bug adjustment buttons. The upper button will move the reference bug up, the lower button will move the reference bug down.



## 6.10 LANDING GEAR PANEL

The landing gear panel is installed on the Aerocet 6650 equipped variant of the Kodiak 100. It provides the pilot with visual and audio cues as to the state of the landing gear. When the aircraft decelerates below 85kts, a switch activates the audio warnings for the landing gear. The switch is deactivated when the aircraft accelerates past 100kts. The following features can be identified on the landing gear panel:

- 1. Landing gear up lights: when the gear is retracted and secured, the lights will illuminate, followed by a repeating "Water landing. Gear is up for water landing" audio warning.
- 2. HYD PUMP light: illuminates when the landing gear pump is in transit.









- 3. Landing gear down lights: when the gear is down and locked, the lights will illuminate, followed by a repeating "Runway landing. Gear is down for runway landing" audio warning.
- 4. Gear up audio warning cancel pushbutton
- 5. Landing gear audio warning test button. Holding the button will make the system playback the warning for the current state.
- 6. Gear down audio warning cancel pushbutton
- 7. Weight on wheels sensor circuit breaker
- 8. Relay and float sensors circuit breaker
- 9. Gear pump power circuit breaker

## 6.11 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.

## 6.12 PITCH LATCH PROPELLER

The Series III Amphibian Kodiak comes with a pitch latch propeller as standard equipment. When latched the pitch latch propeller produces no thrust, which is a great advantage when in the water as the plane will not be pushed forward.

Propeller latching happens before you shut down the engine. To latch the propeller:

- put the power lever into beta
- move the conditioning lever to cut-off. This will lock the propeller into a flat pitch angle.

## WARNING:

## DO NOT ATTEMPT TO PUT THE PROPELLER INTO BETA WHEN FEATHERED

When the engine is restarted you will notice that the propeller RPM will increase much faster as the propeller is at a very fine angle and has no resistance from the air around it. This means that you will have control of engine power much more quickly from such a start.

To unlatch the propeller:

- 1. put the power lever on idle
- 2. Feather the propeller to release the locks
- 3. Unfeather the propeller

Your propeller will now move into idle pitch and you can resume normal operation.







# 7. PERFORMANCE

## 7.1 TAKE-OFF MAXIMUM TORQUE

## CONDITIONS

• Engine Inlet: NORMAL

• Takeoff torque should be achievable without exceeding 101.6%N<sub>G</sub> and 790°C ITT

		ENGINE IN	ILET NORMA	L, ITT <790°0	C, N <sub>G</sub> <101.6%	6	
TEMAD			TAKEOFF TO	ORQUE FT-LE	3, 2200 RPM		
°C (°F)	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 WATER TAKE-OFF DISTANCE

• Distances are from point where take-off power is reached

• Engine Inlet: NORMAL

• Decrease distances 10% for each 11kts of headwind. For tailwinds up to 10kts, increase distances by 10% for each 2 knots

Flaps 20°

Torque: Max take-off

• Take-off distances can vary significantly depending on pilot technique and water conditions

					7	255 POUNE	05					
9	0	°C	10	)°C	20	°C	30	)°C	40	°c	50	°c
Press. Alt (ft)	Ground roll (ft)	Total ft to clear 50 ft obstacle										
S.L.	1584	2144	1684	2269	1785	2396	2040	2735	2371	3184	2804	3774
2000	1793	2404	1906	2544	2143	2858	2470	3295	2881	3849		
4000	2033	2700	2276	3018	2603	3452	3005	3987	3513	4569		
5000	2452	3238	2770	3655	3162	4170	3657	4826				
8000	2992	3930	3387	4445	3875	5085	4494	5901				
10000	3815	5138	4330	5826	4962	6576	5760	7757				
12000	4885	6741	5572	7685	6380	8798						

					6000	POUNDS						
	0	°C	10	°C	20	°C	30	°C	40	°c	50	°C
Press. Alt (ft)	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to dear 50 ft obstade	Ground roll (ft)	Total ft to clear 50 ft obstacle
5.L.	967	1329	1028	1405	1090	1484	1245	1695	1447	1972	1711	2338
2000	1094	1489	1163	1575	1308	1769	1507	2040	1758	2383		
4000	1241	1672	1389	1869	1588	2137	1834	2496	2144	2891		
6000	1496	2004	1691	2262	1930	2581	2232	2987				
8000	1826	2432	2067	2750	2365	3147	2742	3652				
10000	2328	3177	2642	3503	3028	4129	3515	4797				
12000	2982	4156	3400	4749	3894	5438						

. 0					5	000 POUNI	os					
	0	°C 10°C		0°C 20°C		30	°C	40	)°C	50	°C	
Press. Alt (ft)	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to dear 50 ft obstade	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to dear 50 ft obstade	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle
S.L.	602	840	640	888	679	938	775	1071	901	1246	1065	1477
2000	681	941	724	995	814	1118	938	1289	1094	1505		-
4000	772	1056	865	1180	989	1349	1142	1559	1335	1826		
6000	931	1265	1052	1428	1201	1630	1389	1886		-		
8000	1136	1535	1287	1736	1472	1986	1707	2305				
10000	1449	2004	1645	2273	1885	2604	2188	3026				
12000	1856	2626	2117	2994	2424	3428						







## 7.3 WATER LANDING DISTANCE

Landing roll distance on is 20% longer compared to the tables below. Landing distances shown with Flaps 35°. Power for 3 descent to obstacle, then gradual reduction to idle at touchdown, beta range after landing. Maximum braking, Paved, level dry runway.

				720	0 POUND	S (50 foot s	peed 76 KI	AS)				
9	0	°C	10	°C	20 °C		30	°C	40	°c	50 °C	
Press. Alt (ft)	Ground roll (ft)	Total ft to clear 50 ft obstacle										
S.L.	1246	2956	1291	3026	1337	3096	1382	3168	1428	3241	1474	3314
2000	1340	3101	1389	3178	1438	3256	1487	3336	1535	3416		
4000	1442	3264	1495	3349	1548	3436	1601	3524	1653	3513		
5000	1554	3447	1611	3541	1668	3637	1725	3735				
8000	1677	3652	1738	3758	1800	3864	1861	3971				
10000	1884	4039	1953	4160	2022	4283	2091	4407				
12000	2115	4475	2193	4615	2270	4756						

				6000 P	OUNDS (5	o foot spee	d 70 KIAS)			10		
4	0	°C	10 °C		20 °C		30 °C		40 °C		50 °C	
Press. Alt (ft)	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to dear 50 ft obstade	Ground roll (ft)	Total ft to clear 50 ft obstacle
S.L.	823	2204	853	2249	883	2295	914	2342	944	2389	974	2437
2000	885	2298	918	2348	950	2399	983	2451	1015	2504		
4000	953	2404	988	2460	1023	2517	1058	2757	1093	2534		
6000	1027	2524	1065	2587	1102	2650	1140	2714				
8000	1108	2660	1149	2730	1189	2800	1230	2872				
10000	1245	2926	1290	3007	1336	3088	1382	3171				
12000	1398	3226	1449	3319	1500	3413						

				500	0 POUND	S (50 foots	peed 63 KI	AS)				
	0	°C	10	°C	20	°C	30	°C	40	°C	50	°C
Press. Alt (ft)	Ground roll (ft)	Total ft to dear 50 ft obstade	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to dear 50 ft obstade	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle	Ground roll (ft)	Total ft to clear 50 ft obstacle
S.L.	548	1705	568	1734	588	1765	608	1795	628	1827	648	1859
2000	589	1766	611	1800	632	1834	654	1868	675	1903		
4000	634	1837	657	1874	680	1912	704	1951	727	1990		
6000	683	1917	708	1959	733	2001	758	2044				
8000	737	2008	764	2055	791	2102	818	2150				
10000	828	2196	858	2250	889	2305	919	2361				
12000	930	2407	964	2470	998	2534	-	- 1				







# 7.4 TAKE-OFF CLIMB PERFORMANCE

## CONDITIONS

Flaps 20°

Torque: 1790 ft-lbsEngine Inlet: NORMAL

	7255 pounds												
PRESS	CLIMB		RATE OF CLIMB - FPM										
ALT FT	SPEED KIAS	-20℃	೦೦	20℃	40°C	50℃							
S.L.	79	1082	1047	1014	633	402							
2000	79	1049	1010	854	460	232							
4000	78	1009	972	679	290	-							
6000	77	969	810	505	124								
8000	76	881	660	365		-							
10000	74	703	478	189	100	138							

		6	200 pound	ls								
PRESS	CLIMB		RATE OF CLIMB - FPM									
ALT FT	SPEED KIAS	-20℃	೦೦	20℃	40°C	50°℃						
S.L.	79	1474	1442	1411	973	706						
2000	79	1445	1407	1233	780	516						
4000	78	1409	1374	1040	594							
6000	77	1374	1196	849	411							
8000	76	1283	1035	699	-	-						
10000	74	1089	835	507	-	=						

		5	200 pound	ls	- 191	
PRESS	CLIMB		RATE	OF CLIMB	- FPM	
ALT FT	SPEED	-20℃	೦೦	20℃	40°C	50℃
S.L.	79	1957	1926	1897	1382	1068
2000	79	1931	1894	1694	1162	851
4000	78	1898	1865	1474	951	
6000	77	1867	1665	1259	745	
8000	76	1772	1485	1094	- 1	-
10000	74	1553	1260	878	1 8- 1	







## 7.5 ENROUTE CLIMB PERFORMANCE

## CONDITIONS

• Flaps 0°

• Torque: 1674 FT-LBS

• Gear up

• Engine Inlet: NORMAL

			7255 p	ounds								
PRESS	CLIMB		RATE OF CLIMB - FPM									
ALTFT	SPEED	-40°C	-20℃	ಿ℃	20℃	<b>40℃</b>	<b>50℃</b>					
S.L.	94	1219	1191	1159	938	1113	160					
5000	94	1139	1113	923	504	771						
10000	94	1010	771	453	55	-						
15000	94	524	289		4		-					
20000	94	95	-									

6200 pounds									
ALT FT SPE	CLIMB	RATE OF CLIMB - FPM							
	SPEED	-40℃	-20°C	0°C	20℃	40℃	50°C		
S.L.	94	1599	1574	1543	1292	699	390		
5000	94	1521	1499	1284	801	240			
10000	94	1389	1118	754	296	-	=		
15000	94	841	576	213	* 1	2	2		
20000	94	364	90						

5200 pounds									
PRESS	CLIMB			RATE OF C	LIMB - FPM				
ALT FT	SPEED	-40°C	-20°℃	0℃	20℃	40℃	50℃		
S.L.	94	2087	2065	2036	1743	1043	679		
5000	94	2012	1994	1746	1177	516	-		
10000	94	1873	1559	1134	597				
15000	94	1242	936	513			-		
20000	94	698	383		- 5		- 9		







## 7.6 CRUISE PERFORMANCE

Cruise performance is generally 7-8% slower than the wheeled variant, whose tables are supplied below.

# WEIGHT 7255 LBS, ENGINE INLET NORMAL

WEIGHT 7255 LB									
TEMP	MAX CRUISE TORQUE FT-LB, 2200 RPM								
°C (°F)	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT			
50 (122)	1130	-	-	-	-	-			
40 (104)	1270	1090	-	ı	-	1			
30 (86)	1460	1220	980	ı	-	ı			
20 (68)	1650	1380	1110	900	•	ı			
10 (50)	1670	1520	1240	1010	790	ı			
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		MAX CRI	UE FT-LB, 2	2000 RPM		
°C (°F)	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT
40 (104)	1240	-	-	-	-	-
40 (104)	1400	1200	ı	ı	ı	ı
30 (86)	1610	1340	1080	ı	ı	ı
20 (68)	1810	1520	1220	990	ı	ı
10 (50)	1840	1680	1370	1110	860	ı
0 (32)	1840	1830	1490	1210	960	-
-10 (14)	1840	1840	1620	1330	1050	-
-20 (-4)	1840	1840	1 <b>7</b> 20	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	MAX CRUISE FUEL FLOW PPH, 2200 RPM								
°C (°F)	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT			
50 (122)	332	ı	ı	ı	ı	-			
40 (104)	354	299	ı	ı	ı	-			
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			

TEMAD	MAX CRUISE FUEL FLOW PPH, 2000 RPM								
°C (°F)	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT			
40 (104)	332	•	1	-	ı	•			
40 (104)	355	300	ı	-	ı	ı			
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**

	0.0				5 W 20 W 10 TO 10 W 10	professional contract of the second contract of			
TEMP	MAX CRUISE SPEED TAS KTS, 2200 RPM								
°C (°F)	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT			
50 (122)	146	•	ı	1	•	-			
40 (104)	154	152	ı	1	•	-			
30 (86)	162	159	151	ı	ı	-			
20 (68)	169	167	160	149	ı	-			
10 (50)	168	<b>17</b> 2	167	159	134	-			
0 (32)	166	176	<b>17</b> 2	165	149	-			
-10 (14)	163	174	176	171	159	-			
-20 (-4)	161	<b>17</b> 2	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			

TENAD		MAX CRUISE SPEED TAS KTS, 2000 RPM								
°C (°F)	SEA LEVEL	5000 FT	10000 FT	15000 FT	20000 FT	25000 FT				
40 (104)	149	•	-	•	-	-				
40 (104)	156	153	-	1	-	-				
30 (86)	164	161	152	-	-	-				
20 (68)	170	168	161	151	ı	-				
10 (50)	169	173	168	160	135	-				
0 (32)	167	177	<b>17</b> 3	166	150	-				
-10 (14)	165	175	177	<b>17</b> 2	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				







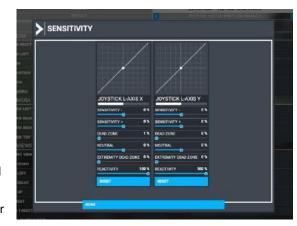
## 8. TIPS FOR FLYING IN MICROSOFT FLIGHT SIMULATOR

#### **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 65% 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.

#### WATER TAKE-OFF

When performing a water take-off pull the yoke aft. As the aircraft approaches 55kts it will begin to rotate and get on the step. At that point, relax the pressure on the stick gradually as the nose raises. Fly parallel to the water and accelerate in ground effect until 74kts before climbing.

#### LANDING

Water amd runway landings in the amphibian Kodiak 100 need to be done with a slight nose-up attitude. Especially for water landings, allow the plane slow down as you approach the water. Maintain a slight nose-up attitude and allow it to gently drop in the water to ensure a smooth water landing.







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