X-Plane
Van's RV-10

Pilot's Operating Manual

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Contents

The Van’s RV-10

The Van’s RV-10 is a single-engined four-seater home-built General Aviation aircraft that is currently the world’s most popular four-seat kit airplane. The RV-10 offers budget-minded pilots similar capability to the benchmark Cirrus SR-22, for a much lower price.

The prototype aircraft first flew in May 2003 and delivery of kit parts to customers followed in September of the same year. Approximately 1,000 aircraft have been sold to date.

Van’s Aircraft Inc. was founded in 1972 by Richard VanGrunsven. The company was initially located in Reedville, Oregon, and started selling plans (and some parts) for their RV-3 aircraft. This later grew to the manufacture of complete aircraft kits, and the company moved first to North Plains, and later to Aurora, Oregon, from which it currently manufactures several hundred kits per year. In total, over 10,00 kits have been sold, comprising the RV-3, RV-4, RV-6, RV-7, RV-8, RV-9, RV-10, and RV-12 models.

The RV-10 is available with fixed tricycle landing gear only but has a number of powerplant options. These range from 210 to 260 hp. The most popular is the Lycoming IO-540 which develops between 235 and 260 hp, depending on the variant.

The aircraft accommodates four full-sized adults, 100 lbs. of baggage and 60 gallons of fuel - enough for four hours at cruise speed, or five hours at economy cruise.

Construction is mostly from aluminum, with the exception of the gull-winged doors that are made from composite materials, and the landing gear that is tubular steel. The nosewheel is free-castering, and the aircraft is steered on the ground with differential braking.

A ballistic parachute option is available from a third-party. The parachute occupies part of the baggage compartment.

According to the company, the average build-time for an RV-10 kit is 2,000 hours. At time of publication, prices began around $US 50,000 for the airframe - excepting engine and avionics.

Van's RV-10 Specifications

Engines:		
Model	----------	1 × Lycoming IO-540 piston-engine
Power	----------	260 hp (194 kW)
Fuel:		
Capacity	----------	60 U.S. gallons (227 Liters)
Type	----------	Avgas
Burn (cruise)*	----------	11 US gallons (42 liters) per hour
Weights and Capacities:		
Max. Takeoff Weight	----------	2,700 lbs. / 1225 kg.
Basic Empty Weight	----------	1,520 lbs. / 689 kg.
Useful Payload	----------	1,050 lbs. / 476 kg.
Maximum Persons	----------	4
Performance:		
Max. Cruise Speed	----------	175 KTAS
Stall Speed	----------	55 KCAS (full flap)
Never Exceed Speed	----------	200 KTS
Service Ceiling	----------	20,000 ft. / 6,096 m
Rate of Climb	----------	1,450 ft. per min / 442 m per min
Range	----------	750 nm
Dimensions:		
Wingspan	----------	32 ft. / 9.75 m
Length	----------	24.5 ft. / 7.5 m
Height	----------	8.75 ft. / 2.7 m

- *Representative value depending on conditions*

The X-Plane RV-10

Unlike other flight simulators, X-Plane employs a technique called “Blade Element Theory”. This utilizes the actual shape of the aircraft (as modeled in the simulator) and breaks down the forces on each part separately. The force of the “air” acting on each component of the model is individually calculated, and combined, to produce extremely realistic flight.

When you “fly” an airplane in X-Plane, there are no artificial rules in place to govern how the aircraft behaves. Your control inputs move the control surfaces of the aircraft, and these interact with the virtual flow of air around it. As such, you may consider that you are really flying the aircraft.

Due to the use of “Blade Element Theory” in X-Plane, an aircraft must be modeled with great accuracy, in order that it behaves like its real-life counterpart. This means the fuselage, wings and tail surfaces must be the right size and shape, the center of lift and center of gravity must be in the right places, and the engine(s) must develop the right amount of power. In fact, there are a great many properties that must be modeled correctly to achieve a high-fidelity flight model.

The RV-10 featured in X-Plane has been modeled by our design team with a degree of accuracy that ensures its flight characteristics are similar to the real aircraft. However, despite this, some differences will be apparent, because even the smallest factor plays into the ultimate behavior of the aircraft in reality, and in X-Plane. The systems modeling of this aircraft involves some compromise too, because of the degree of complexity present in a real aircraft. However, in many cases, the actual RV-10 procedures could be followed when operating the X-Plane version. Checklists are presented later in this document (with modifications to suit this specific simulation platform and model). It is recommended that X-Plane pilots follow those procedures when operating the aircraft.

Views and Controls

The X-Plane RV-10 features a detailed 3-D cockpit with many of the primary controls and systems modeled, including: Flight controls (control sticks, rudder pedals, throttle, prop, and mixture), electrical systems, pneumatic systems, navigation aids, radios, interior and exterior lighting, and fuel systems.

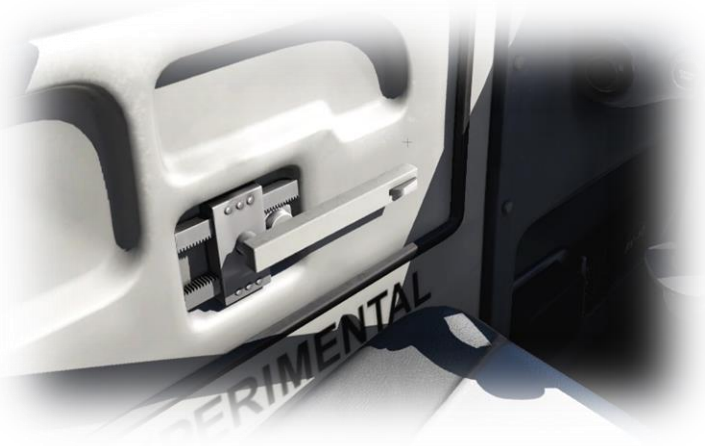
Creating “Quick Look” views

Before discussing the controls, we suggest that the pilot establish a series of “Quick Look” views that will be helpful later when interacting with this particular aircraft. If you are not familiar with this technique, more information is available in the X-Plane Desktop Manual.

The following “Quick Look” views are recommended for the RV-10, where the pilot is not using a Virtual Reality (VR) headset, or a head tracking device. To some degree, these correspond (on the keyboard Number Pad) with their physical locations in the cockpit - and are therefore logical and easy to recall later.

Parking Brake

Left Door Handle



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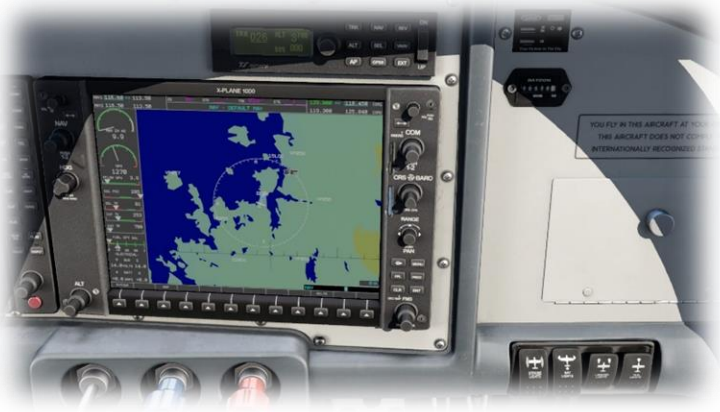
Throttle Quadrant

Right Door Handle

Pilot View Forward

G1000 PFD, Audio and Electrical Panels

G1000 MFD, Autopilot and External Lights Panel



Left Glance View

Cabin Overhead Lighting

Right Glance View

Operating the controls

This section covers the control manipulators used in X-Plane. The specific illustrations in THIS chapter may differ from YOUR aircraft.

Toggle and Rocker switches are operated with a single click of the mouse. Place the mouse pointer slightly above, or below, the center point of the switch, depending on the direction you intend to move it. A small white arrow is displayed to confirm the intended direction. Click the mouse button to complete the operation.

- Illustration not taken from this aircraft

Levers are operated by assigning a peripheral device to the necessary axes in X-Plane (throttle, prop, mixture etc.). More information is available in the X-Plane Desktop Manual.

Levers may also be operated by clicking and dragging the mouse pointer.

- Illustration not taken from this aircraft

Some rotary dials are operated by positioning the mouse pointer on top of the control, and then a click and drag to the right, or to the left. The same can be accomplished using the mouse wheel - if one is present on your device.

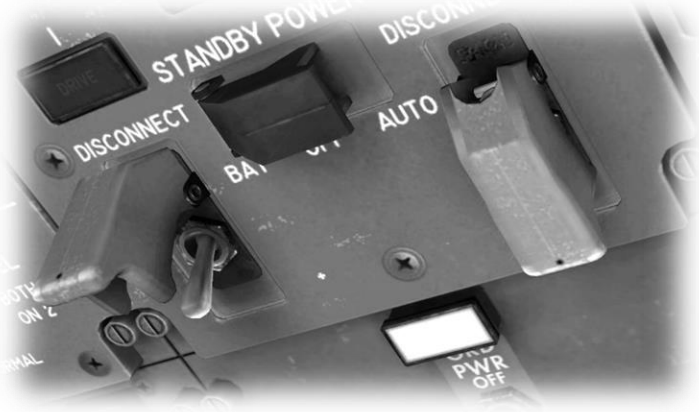
Other rotary controls require finer precision. When the mouse pointer is positioned slightly to the left of such a control, a counter-clockwise arrow appears. This indicates that you are ready to rotate the control counter-clockwise. Correspondingly, a clockwise arrow indicates that you are ready to rotate the control clockwise. After positioning the mouse pointer, changing the frequency in the desired direction is accomplished in two ways:

i) By rolling the mouse wheel forwards, or backwards

ii) By clicking (dragging is not supported here)

Radio and Navigation frequency rotary dials are grouped together as “twin concentric knobs”. Here, the larger rotary is used to tune the integer portion of the frequency, and the smaller rotary is used to tune the decimal portion. Each works independently, using the same technique, as described above.

Push buttons are operated by pointing and clicking with the mouse.



Guarded switches are used in situations where accidental activation of the switch must be prevented. To operate a guarded switch, the guard must first be opened. Do this by positioning the mouse pointer over the switch until the two vertical white arrows are displayed. Click once. If the switch is currently closed, it will open, and vice-versa. After the guard has been opened, the switch may be operated like a toggle and rocker switch (see earlier in this section).

- Illustration not taken from this aircraft

The Control Stick is operated by assigning a peripheral device to the “roll” and “pitch” axes in X-Plane. This is discussed in greater detail later in the guide.

- Illustration not taken from this aircraft

The Rudder Pedals are operated by assigning a peripheral device to the “yaw” axis in X-Plane. If your rudders also support toe braking, create additional assignments to the “left toe brake” and “right toe brake” axes in X-Plane. This is discussed in greater detail later in the guide.

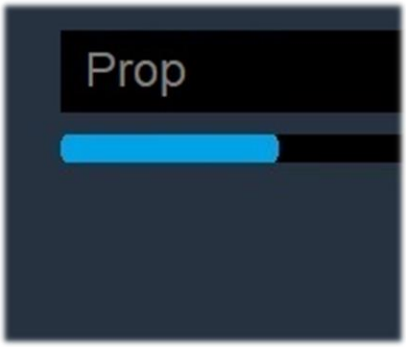
Note that you may also assign keys on your keyboard, or buttons on your external peripheral to move the rudder to the left or right, or to center the rudder.

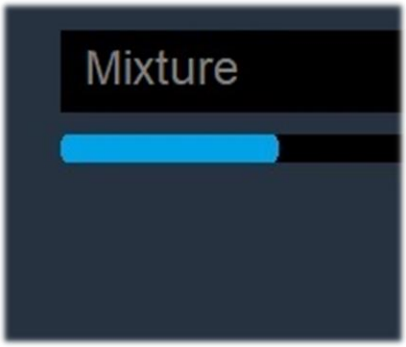
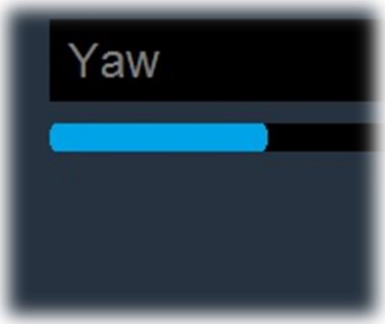
- Illustration not taken from this aircraft

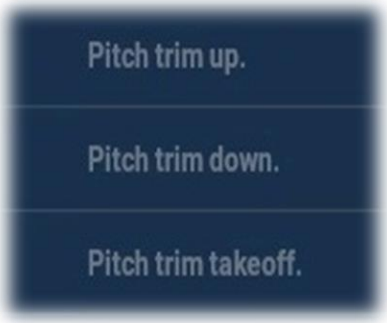
Assigning peripheral devices

This section of the manual deals with an “ideal” scenario, in terms of the assignment of external computer peripherals to operate the X-Plane PA18 with the highest degree of realism. If you are missing some of these external peripherals, you may elect to choose a different configuration that better suits your hardware.

More information is available in the X-Plane Desktop Manual.

		This aircraft is equipped with a control stick, for roll and pitch control. Assign the lateral axis of your joystick (or yoke) to the “Roll” command in X-Plane, and the vertical axis to the “Pitch” command.
		This aircraft is equipped with a single throttle – which controls the torque (power) output by the engine. Assign the throttle lever on your quadrant to the “Throttle” property in X-Plane.
		This aircraft is equipped with a variable pitch propeller. The pitch of the propeller is optimized for each phase of the flight using the Prop Lever. To simulate this, assign the (blue) prop lever on your quadrant to the “Prop” property in X-Plane.

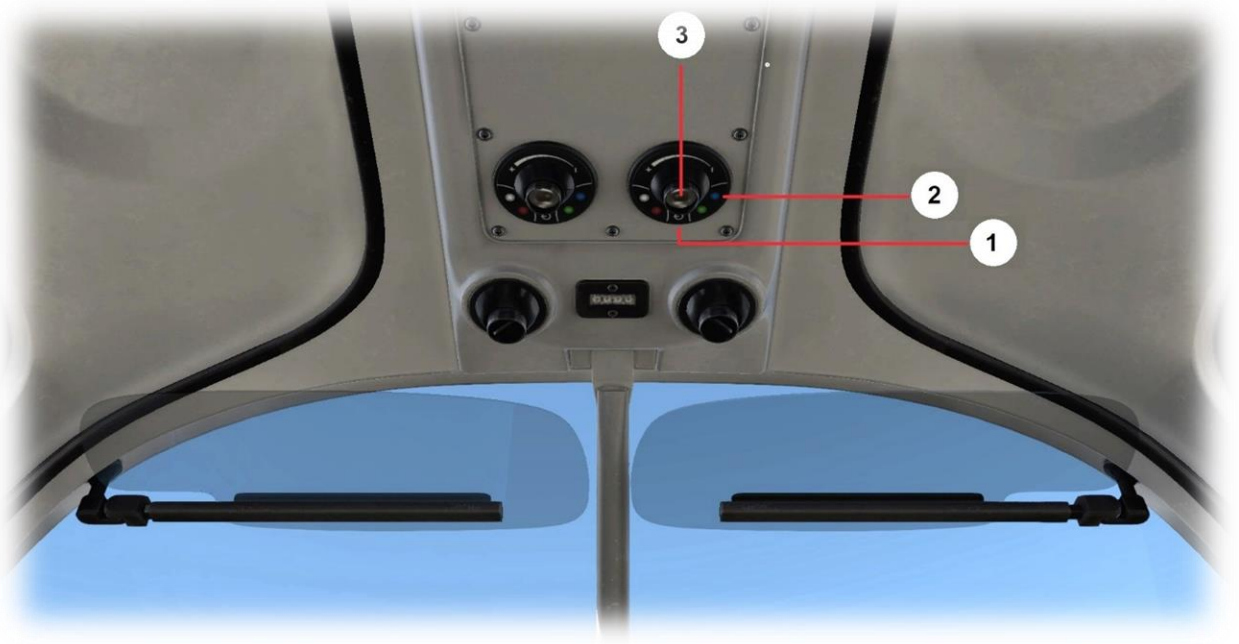
		This aircraft is equipped with a single mixture lever which controls the ratio of fuel to air entering the engine's combustion chambers. Assign the throttle lever on your quadrant to the "Mixture" property in X-Plane.
		This aircraft is equipped with a Flap lever, which controls the deployment of the flaps. Assign a peripheral lever to the "Flaps" property in X-Plane. .
		This aircraft has conventional rudder controls, actuated by the rudder pedals. Assign the yaw axis of your pedals peripheral device (or a joystick axis) to the "yaw" property in X-Plane.

		This aircraft has conventional rudder toe-braking, actuated by the tip of the rudder pedals. To simulate this, assign the brake “toe-tipping” motion of each individual pedal (or a joystick axis) to the “left toe brake” and “right toe brake” property in X-Plane.
		This aircraft features an electric pitch trim system. Assign joystick buttons, or hat-switch axes to the following properties in X-Plane: ‘Pitch trim up’ ‘Pitch trim down’ ‘Pitch trim takeoff’

A Tour of the Cockpit

In this section of the manual, the cockpit will be broken down into distinct functional areas, and the controls that are featured in those areas will be identified and described. This will assist in locating the necessary instruments and controls later, when working through the aircraft check lists, and flying the aircraft.

Overhead



1	Overhead Light Power (toggle) Button	Click to toggle the overhead-light on and off.
2	Overhead Light Color Button	Click to change the overhead-light color. Options are white, red, green, and blue.
3	Overhead (LED) Light	Each light is directional and may be moved with a mouse-click and drag operation.

Battery and Electrical Panel

Select MASTER BATTERY to energize the electrical systems when the engine is not running. The display panel on the left will support both PFD and MFD functions in this condition.

Select ALT (Alternator) to energize the electrical systems when the engine is running, and also to charge the battery.

Select AUTO PILOT to energize the AC bus that powers the autopilot.

Select AVIONICS MASTER to energize the avionics electrical bus. When this bus is energized, the PFD and MFD displays will function in their normal modes.

Select FUEL PUMP Activates the electric fuel pump, for priming the engine before starting. This also provides a backup to the engine-driven pump.

Select PITOT HEAT to energize the pitot tube heating element (only in the event of potential icing).

Engine Starter Button

Depress this button to engage the engine starter motor.

The engine will start if the battery is sufficiently charged, there is fuel present in the tanks, the fuel selector is in the Left, Right or Both positions, with the mixture is not at the cut-off position.

External Lighting Panel

Select NAV LIGHTS to activate the green, red, and white navigation lights that provide visibility to other aircraft, together with direction and orientation.

Select LANDING LIGHTS to activate the landing lights that are mounted in both wing leading edges. These provide additional lighting to assist in these phases of flight.

Select TAXI LIGHTS to activate the single taxi-light that is mounted in the right-wing leading edge.

Select STROBE LIGHTS to activate the wingtip mounted strobes that provide enhanced visibility of the aircraft.

Note: This aircraft does not have a beacon light. The FAA allows the use of strobe lights in place of a beacon, to warn persons in the area that engine start is imminent.

Parking Brake

This lever toggles the parking brake on / off

Pull to set. Push to release.

Note: The parking brake will not keep the aircraft stationary with a throttle setting that exceeds idle.

Primary Flight Controls

1	**Control Stick**	Controls pitch and roll. Actuates the ailerons that are built into the wings.
2	**Rudder Pedals**	Controls Yaw. Actuates the rudder that is built into the tail assembly.
3	**Rudder Toe Brakes**	Toe-tipping motion actuates the left and right wheel brakes.
4	**Flap Lever**	Actuates the flaps built into the wings. The flap lever can be set in three positions: No Flap (Normal Flight) Half Flap (Reduces takeoff distance) Full Flap (For landing)

G1000 Avionics Panels

Primary Flight Display (PFD)

(See also: PFD Controls & Features)

This aircraft features the Garmin G1000 avionics system, represented here by the X-Plane 'X1000' version.

The X1000 avionics system is comprised of a Primary Flight Display (PFD) on the left, and a Multi-Function Display (MFD) on the right.

The Primary Flight Display incorporates airspeed, altitude, and attitude information, and replaces the traditional 'six-pack' gauges found on older aircraft.

The PFD also incorporates capability for flight planning, route display, and radio operations.

A detailed manual for the operation of the X1000 avionics system is available here:

https://x-plane.com/manuals/G1000_Manual.pdf

Multi-Function Display (MFD)

(See also: MFD Controls & Features)

This aircraft features the Garmin G1000 avionics system, represented here by the X-Plane 'X1000' version.

The X1000 avionics system is comprised of a Primary Flight Display (PFD) on the left, and a Multi-Function Display (MFD) on the right.

The Multi-Function Display incorporates flight-plan input, coupled with GPS, VOR and ILS navigation capability and map display.

The MFD also incorporates an Engine Indication System (EIS) that displays thrust and diagnostic information that is customized to the engine configuration of the host aircraft.

A detailed manual for the operation of the X1000 avionics system is available here:

https://x-plane.com/manuals/G1000_Manual.pdf

Audio Panel

This panel manages the active audio sources.

Select COM1 / COM2 / COM3 to enable or disable audio from the COM1 / COM2 /COM3 radios respectively.

Select COM 1 MIC / COM2 MIC / COM3 MIC to enable the microphone associated with the COM1 / COM2 /COM3 radios respectively.

Select NAV1 / NAV2 to enable or disable the audio Morse code identifier for the navigation aid station currently tuned to the NAV 1 / NAV2 radios, respectively.

Select DME to enable or disable the audio Morse code identifier for the Distance Measuring Equipment (DME) tuned to the NAV 1 radio.

Select ADF to enable or disable the audio Morse code identifier for the Automatic Direction Finder (ADF) tuned to the NAV 1 radio.

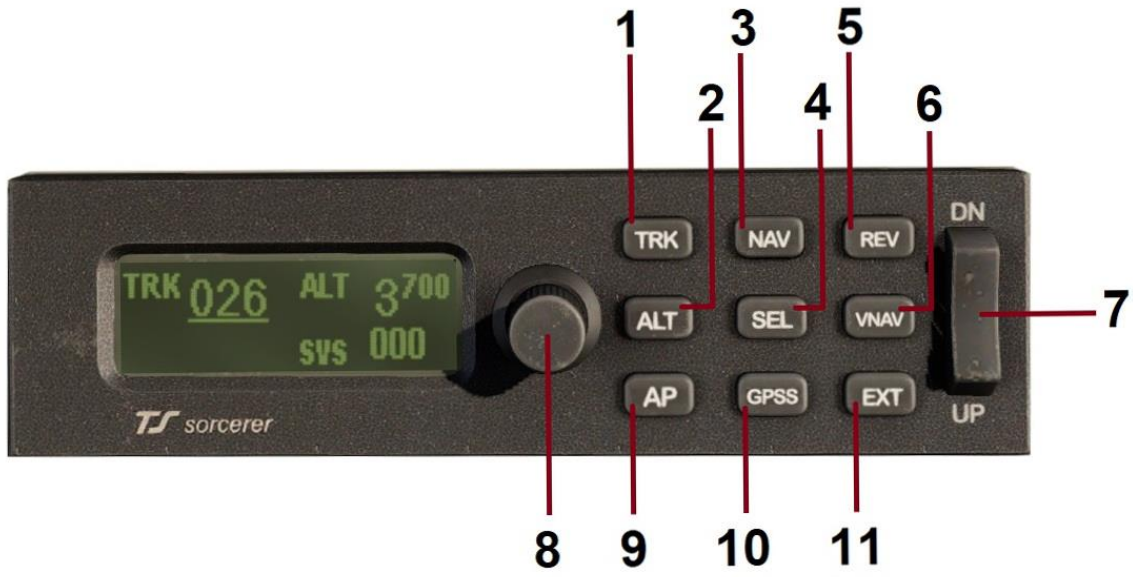
Select MKR / MUTE to toggle the audio for the inner and outer (approach) marker beacons.

Select HI SENS to toggle the sensitivity of the marker beacon reception (high – illuminated, or normal).

Backup Primary Flight Display (PFD)

Provides redundancy for the G1000 PFD. This panel operates independently from the avionics electrical bus.

Autopilot



1	**TRK (Track) Mode Button**	Engages Track mode. The aircraft will steer according to the selected heading (see 2). Note: On the LCD panel, the graphic 'TRK' is always displayed even if Track Mode is OFF. A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf
2	**ALT (Altitude) Button**	Levels the aircraft at the current altitude. Note: On the LCD panel, the graphic 'ALT' is always displayed even if Altitude Mode is OFF.
3	**NAV (Navigation) Mode Button**	Engages NAV mode. The aircraft will follow a flight plan, ILS Localizer, or VOR Radial. A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf

4	**SEL (Altitude Select) Button**	Used together with the Altitude Rotary (2) and Vertical Speed Switch (12) to ascend or descend to a pre-selected altitude.
5	**REV (ILS Reverse Course)**	The aircraft will follow the back-course of an ILS Localizer when selected using the G1000 PFD. A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf
6	**VNAV Mode Button**	Engages VNAV mode. The aircraft will adhere to the vertical component of a flight plan input using the G1000 PFD. A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf
7	**Vertical Speed (Rocker) Switch**	Used together with SEL (Altitude Select) mode to control the vertical speed when a pre-selected altitude is in effect.
8	**Altitude Track Rotary**	Used together with the SEL (Altitude Select mode) button (6) and Vertical Speed Switch (12) to pre-select a desired altitude. Used together with the TRK (Track mode) button to pre-select a desired heading.
9	**AP Button**	Used to couple, or disable the autopilot.
10	**GPSS (GPS Steering) Mode Button**	Engages GPS Steering mode. The aircraft will steer towards the next waypoint. A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf
11	**EXT Button**	Not modelled.

Center Console and Throttle Quadrant

Throttle Lever

This aircraft is equipped with a single throttle – which controls the torque (power) output by the engine.

In flight, the throttle **does not change** the propeller RPM, which is set using the Propeller Lever.

Propeller Lever

This aircraft is equipped with a constant speed (and variable pitch) propeller.

The RPM is controlled by a “governor”, and the desired RPM setting is made using the Propeller Lever. Once the RPM has been set, this remains the same, irrespective of the throttle position.

Mixture Lever

This aircraft is equipped with a single mixture control that alters the ratio of fuel and air entering the engine.

Pull backwards to lean the mixture.

Push forwards to richen the mixture.

As altitude increases, the pilot leans the mixture to compensate for the decrease in air-density. Mixture also affects the engine temperature, and fuel consumption.

Cockpit Lighting Controls

DOME:

This rotary controls the intensity of the overhead lighting.

DIMMER:

This rotary controls the intensity of the switchgear back-lighting.

Fuel Selector

Used to select the desired fuel tank(s) supplying fuel to the engine.

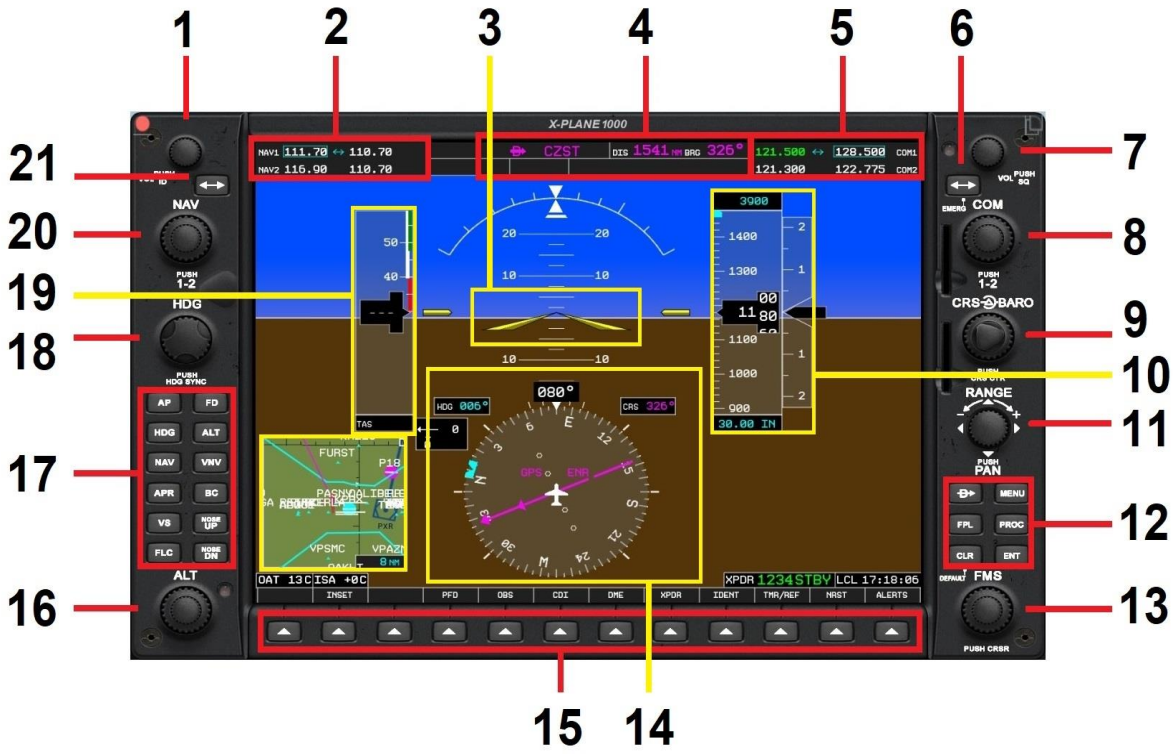
Options are:

- OFF (fuel shutoff)
- Right (tank)
- Left (tank)

Normal operating procedure is to switch tanks periodically to maintain an even weight distribution between the left and right (wing) fuel tanks.

PFD Controls & Features

This section identifies the controls and features of the (pop-up) X1000 PFD (Primary Flight Display). A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf



1	**NAV Audio Squelch**	Toggles the Morse code audio identifier (of the selected NAV radio frequency) ON and OFF. Note that when toggling to 'Off', the Morse will finish its cycle before the audio is cut.
2	**Active & Stand-by NAV1 and NAV2 Frequencies**	This area of the display panel features the active and stand-by frequencies for the NAV1 and NAV2 radios. The active frequency is on the right, and the stand-by frequency is on the left.

3	**Attitude Indicator**	Displays the aircraft's attitude, relative to the horizon. In Flight Director mode, displays an inverted-V style Flight Director
4	**Next Waypoint**	This area of the display panel features the next waypoint in your flight plan, together with the distance and bearing to that waypoint from the current location.
5	**Active & Stand-by COM1 and COM Frequencies**	This area of the display panel features the active and stand-by frequencies for the COM1 and COM2 radios. The active frequency is on the left, and the stand-by frequency is on the right.
6	**COM Frequency Toggle**	Toggles between the active and stand-by COM1 or COM2 radio frequency.
7	**COM Audio Squelch**	Toggles the audio of the selected COM radio frequency ON and OFF. Note that when toggling to 'Off', the message will finish before the audio is cut.
8	**COM Rotary**	Click the center of this control to switch between COM1 and COM2 in the 'Active & Standby COM Frequencies' area. Use the outer and inner rotary controls to adjust the numeric and decimal portion of the stand-by COM frequency respectively.

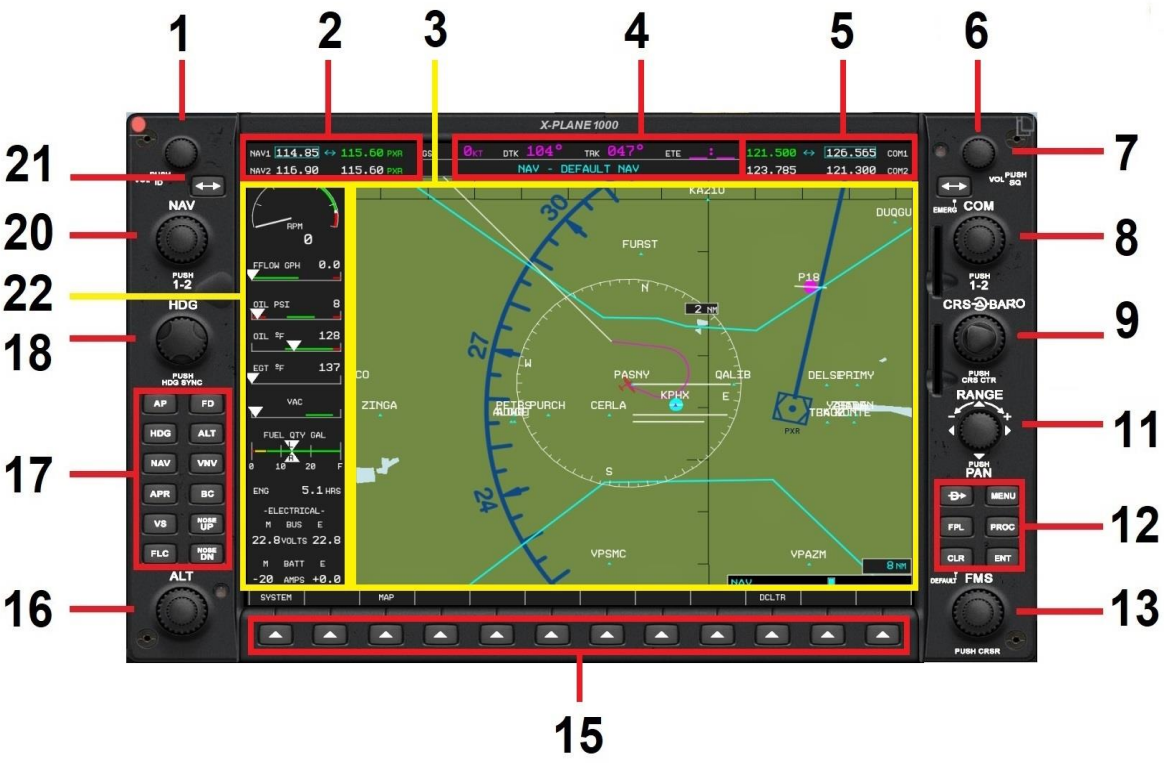
9	**CRS/BARO Rotary**	Use the outer rotary control to set the altimeter barometric pressure. Use the inner rotary control to adjust the CDI (Course Deviation Indicator) when the HSI is in VOR/LOC or GPS-OBS mode. Pressing the inner rotary will reset the selected course to the bearing or the localizer front course, depending on selected navigation source.
10	**Altimeter**	Displays current altitude, Baro Minimum Reference Altitude, Autopilot Selected Altitude, Vertical Speed, and Barometric Altimeter Setting.
11	**Joystick**	This rotary control adjusts the map range (zoom level) display). Rotate clockwise to zoom out, and counterclockwise to zoom in. Push in the center to activate or de-activate panning.
12	**Flight Plan Key Group**	Direct-to Key: Used to establish a direct course to a selected waypoint, or Map Pointer position. FPL Key: Invokes the Flight Plan Page, to create or edit the active flight plan. CLR Key: Cancel or erase an entry. Click and HOLD this key to clear pages from the main display. MENU Key – Displays menu of options that is context-driven. PROC Key – Selects approaches, departures and arrivals associated with a waypoint in the flight plan. ENT Key – Confirms the current selection or operation.

13	**FMS Rotary**	Click the center of this control to activate the flight plan cursor (when the Flight Plan Page is displayed). When viewing the flight plan, use the outer rotary to SELECT the next or previous waypoint. Use the inner rotary to commence input of a new waypoint, and to change each character in the waypoint identifier. Use the outer rotary to move to the next or previous character within the waypoint identifier.
14	**Horizontal Situation Indicator (HSI)**	Displays the (magnetic) heading currently being flown. Also supported is an adjustable heading bug used together with the autopilot (in HDG mode), and a course indicator (GPS flight plan, or a VOR). Bearing pointers can also be displayed here.
15	**Soft Keys**	Context-driven keys. The function of these keys will depend on the action being performed by the pilot.
16	**ALT Rotary**	Used to select the Autopilot Selected Altitude (displayed above the altimeter). The Autopilot Selected Altitude is used by the Autopilot in certain modes and operations, such as altitude hold or altitude capture. The outer rotary increments or decrements in units of 1,000 feet. The inner rotary increments or decrements in units of 100 feet.
17	**Autopilot Key Group**	Autopilot mode control – see Autopilot Panel
18	**HDG Rotary**	Used to a control the heading bug which forms part of the HSI. Click the center of this rotary to synchronize the heading bug with the current heading. Click the rotary at the 9-o'clock position to move the heading bug clockwise, and the 3-o'clock position to move the heading bug counter-clockwise.

19	**Airspeed Indicator**	Displays the Airspeed in knots (relative to the air around the aircraft). Numeric labels are shown at intervals of 10 knots. Minor increments are shown at intervals of five knots. A color-coded speed range is also displayed, which differs for individual aircraft. The colors denote flaps operating range (white), normal operating range (green), caution range, and never-exceed speed (red). A red range is also present for airspeeds that are dangerously low. On twin-engine aircraft, a red mark for V_{MC} and a blue mark for V_{YSE} will be displayed on the speed tape.
20	**NAV Rotary**	Click the center of this control to switch between COM1 and COM2 in the 'Active & Standby COM Frequencies' area. Use the outer and inner rotary controls to adjust the numeric and decimal portion of the stand-by NAV frequency respectively.
21	**NAV Frequency Toggle**	Toggles between the active and stand-by COM1 or COM2 radio frequency.

MFD Controls & Features

This section identifies the controls and features of the (pop-up) X1000 MFD (Multi-Function Display). A detailed manual for the operation of the X1000 avionics system is available here: https://x-plane.com/manuals/G1000_Manual.pdf



1	**NAV Audio Squelch**	Toggles the Morse code audio identifier (of the selected NAV radio frequency) ON and OFF. Note that when toggling to 'Off', the Morse will finish its cycle before the audio is cut.
2	**Active & Stand-by NAV1 and NAV2 Frequencies**	This area of the display panel features the active and stand-by frequencies for the NAV1 and NAV2 radios. The active frequency is on the right, and the stand-by frequency is on the left.

3	**Navigation Map**	The Navigation Map displays aviation data (airports, VORs, airways, airspaces), geographic data (cities, lakes, highways, borders), topographic data (map shading indicating elevation), and hazard data (traffic, terrain, weather)
4	**Data Fields**	This area of the display panel shows information pertaining the activate navigation leg. It shows ground speed (GS), desired track (DTK) to the active waypoint, ground track (TRK) and estimated time enroute (ETE) to the active waypoint.
5	**Active & Stand-by COM1 and COM Frequencies**	This area of the display panel features the active and stand-by frequencies for the COM1 and COM2 radios. The active frequency is on the left, and the stand-by frequency is on the right.
6	**COM Frequency Toggle**	Toggles between the active and stand-by COM1 or COM2 radio frequency.
7	**COM Audio Squelch**	Toggles the audio of the selected COM radio frequency ON and OFF. Note that when toggling to 'Off', the message will finish before the audio is cut.
8	**COM Rotary**	Click the center of this control to switch between COM1 and COM2 in the 'Active & Standby COM Frequencies' area. Use the outer and inner rotary controls to adjust the numeric and decimal portion of the stand-by COM frequency respectively.
9	**CRS/BARO Control**	Use the outer rotary control to set the altimeter barometric pressure. Use the inner rotary control to adjust the CDI (Course Deviation Indicator) when the HSI is in VOR/LOC or GPS-OBS mode. Pressing the inner rotary will reset the selected course to the bearing or the localizer front course, depending on selected navigation source.

11	**Joystick**	This rotary control adjusts the map range (zoom level) display). Rotate clockwise to zoom out, and counterclockwise to zoom in. Push in the center to activate or de-activate panning.
12	**Flight Plan Key Group**	Direct-to Key: Used to establish a direct course to a selected waypoint, or Map Pointer position. FPL Key: Invokes the Flight Plan Page, to create or edit the active flight plan. CLR Key: Cancel or erase an entry. Click and HOLD this key to clear pages from the main display. MENU Key – Displays menu of options that is context-driven. PROC Key – Selects approaches, departures and arrivals associated with a waypoint in the flight plan. ENT Key – Confirms the current selection or operation.
13	**FMS Rotary**	Click the center of this control to activate the flight plan cursor (when the Flight Plan Page is displayed). When viewing the flight plan, use the outer rotary to SELECT the next or previous waypoint. Use the inner rotary to commence input of a new waypoint, and to change each character in the waypoint identifier. User the outer rotary to move to the next or previous character within the waypoint identifier.
15	**Soft Keys**	Context-driven keys. The function of these keys will depend on the action being performed by the pilot.

16	**ALT Rotary**	Used to select the Autopilot Selected Altitude (displayed above the altimeter). The Autopilot Selected Altitude is used by the Autopilot in certain modes and operations, such as altitude hold or altitude capture. The outer rotary increments or decrements in units of 1,000 feet. The inner rotary increments or decrements in units of 100 feet.
17	**Autopilot Key Group**	Autopilot mode control – see Autopilot Panel
18	**HDG Rotary**	Used to a control the heading bug which forms part of the HSI. Click the center of this rotary to synchronize the heading bug with the current heading. Click the rotary at the 9-o'clock position to move the heading bug clockwise, and the 3-o'clock position to move the heading bug counter-clockwise.
20	**NAV Rotary**	Click the center of this control to switch between COM1 and COM2 in the 'Active & Standby COM Frequencies' area. Use the outer and inner rotary controls to adjust the numeric and decimal portion of the stand-by NAV frequency respectively.
21	**NAV Frequency Toggle**	Toggles between the active and stand-by COM1 or COM2 radio frequency.
22	**Engine Indication System (EIS)**	Displays dial gauge(s), horizontal bar indicators, and other readouts for critical engine and electrical systems. This is context-driven and depends on the aircraft-type. See: [MFD] Engine Indication System (EIS)

Weight & Balance

THIS CHAPTER IS DELIBERATELY LEFT BLANK PENDING REVISIONS TO WEIGHT AND BALANCE UI EXPECTED IN XP12.

Checklists

The following check lists are designed with the convenience of the simulation pilot in mind and customized to the X-Plane RV-10. These differ from those of the real aircraft.

Pre-Flight Exterior Inspection

A Pre-Flight Inspection should always precede flight in any aircraft. The purpose of this inspection is to ensure the aircraft is in a state of readiness for the upcoming flight.

In X-Plane, a pre-flight inspection is not merely undertaken to simulate reality, but does in fact have real purpose, because the control surfaces of the aircraft interact directly with the airflow over and around them, just as in real life. As such, correct movement of all control surfaces is necessary for normal flight.

Hold roll axis at full deflection.

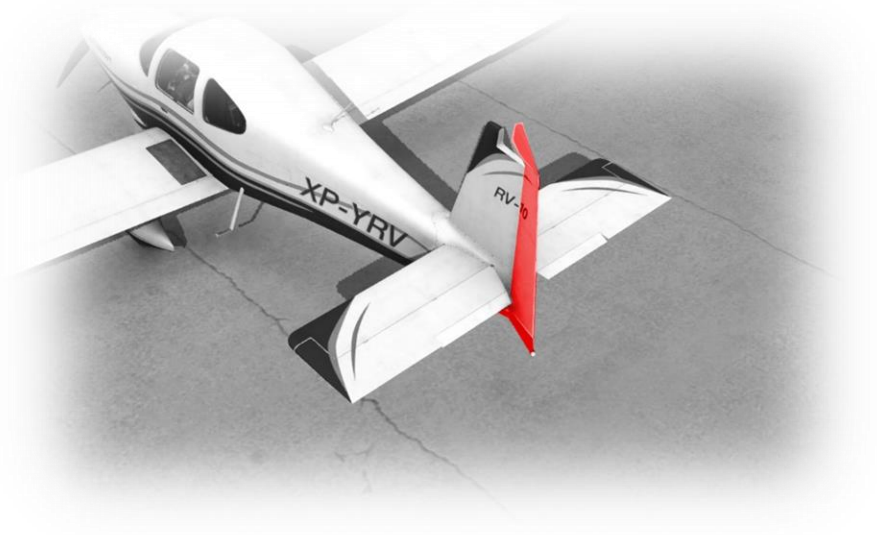
Visually check corresponding movement of ailerons.

Hold pitch axis at full deflection.

Visually check corresponding movement of elevators.

Hold yaw axis at full deflection.

Visually check corresponding movement of rudder.

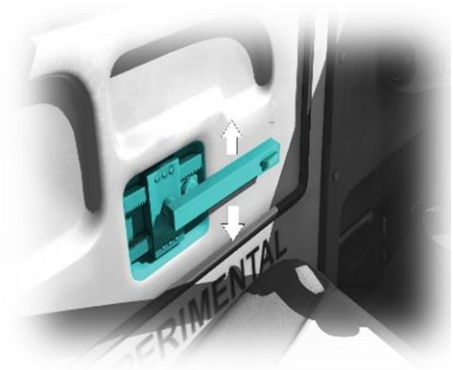


Cold and Dark to Engine Start

The following check list is a sub-set of the real procedures, and includes only the essential steps leading to engine start:

CABIN DOOR – CLOSED

Hint: When inside aircraft, use click-spots on interior door handle and window above to open or close.



PARKING BRAKE – CHECK ON

FUEL SELECTOR – AS REQUIRED

(LEFT OR RIGHT TANK)

BATTERY MASTER – ON

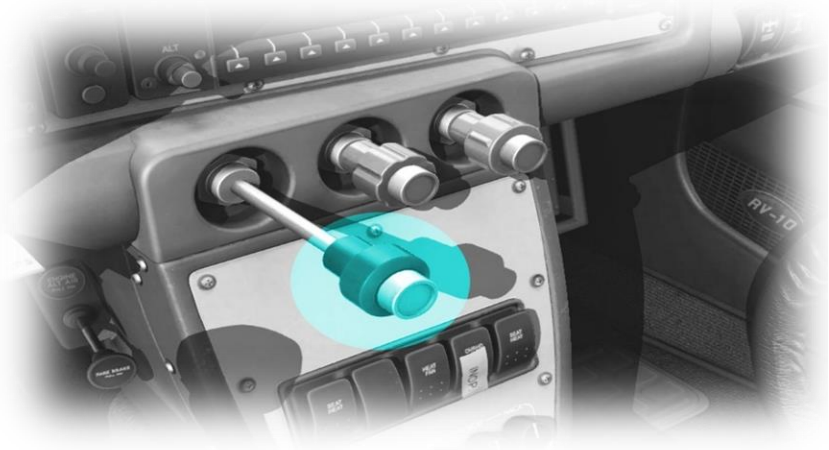
FUEL QUANTITY - CHECK

MIXTURE – FULL RICH

FUEL PUMP – ON (2 SECONDS)

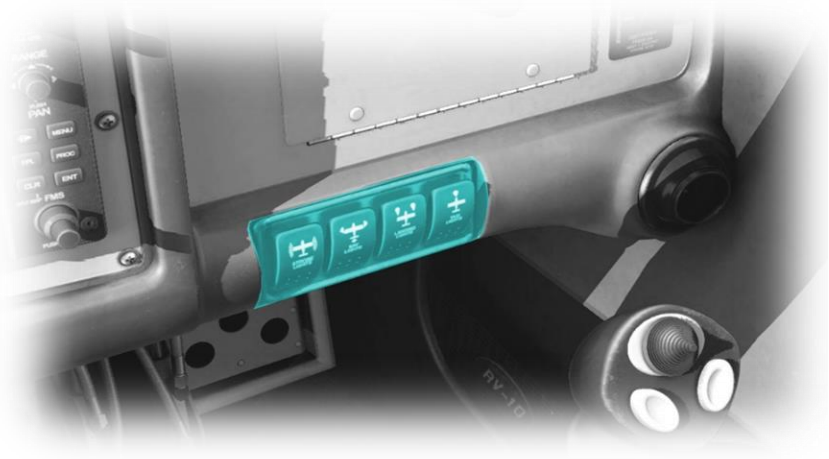
FUEL PUMP – OFF

THROTTLE – IDLE



STROBES – ON

Note: This aircraft does not have a beacon light. The FAA allows the use of strobe lights in place of a beacon, to warn persons in the area that engine start is imminent.



ENGINE – START

(PRESS AND HOLD BRIEFLY)

ALTERNATOR – ON

AVIONICS MASTER - ON

Before Taxi

ELEVATOR TRIM – TAKEOFF

Hint: This aircraft does not feature a trim wheel or trim indicator.

To change the pitch trim in flight, use a peripheral device mapped to the Trim Up' and 'Trim Down' properties

To set the pitch trim for takeoff, use a peripheral device mapped to the 'Pitch trim takeoff' property.

For more info, see:

Assigning peripheral devices)

FLIGHT CONTROLS – CHECKED

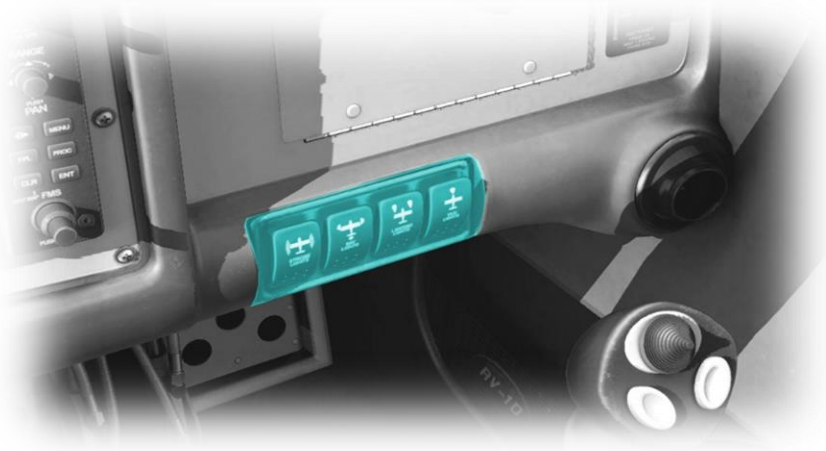
(Pitch / Roll / Yaw)

See: Assigning peripheral devices

STROBES – AS REQUIRED

NAV LIGHTS – ON

TAXI LIGHTS – ON.



TRANSPONDER – ON

PARKING BRAKE – OFF

Before Takeoff

FLAPS – SET

(50%)

ALTIMETER - SET

LANDING LIGHTS – ON

TAXI LIGHTS – OFF

TRANSPONDER – ALT

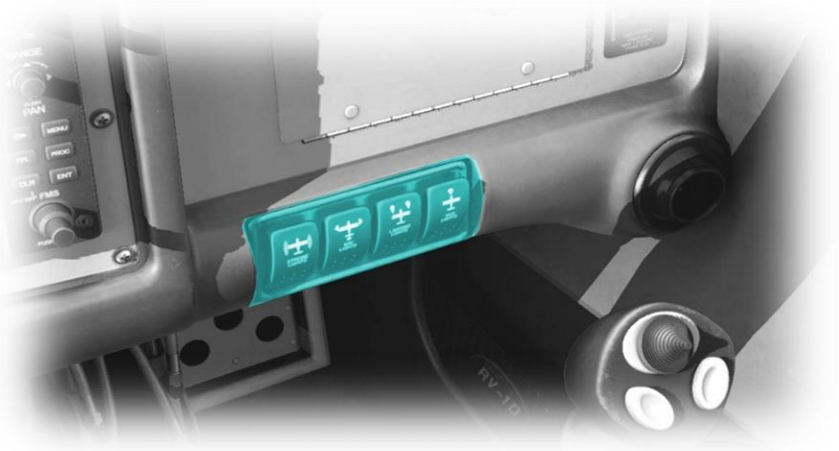
After Takeoff

FLAPS – RETRACTED

THROTTLE – SET AS REQUIRED

Cruise

LANDING LIGHTS - OFF



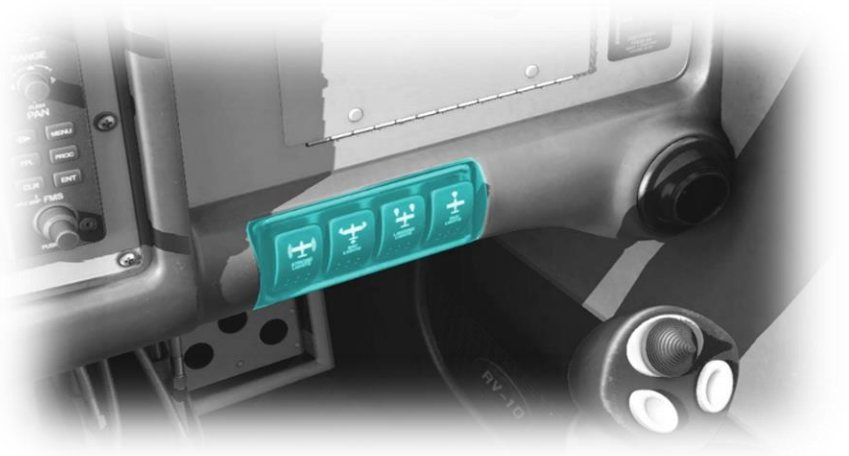
MIXTURE – LEAN AS REQUIRED

ALTIMETER - SET

Before Landing

ALTIMETER - SET

LANDING LIGHTS - ON



MIXTURE – FULL RICH

FLAPS – AS REQUIRED

Landing

FLAPS – SET

(100%)

After Landing

FLAPS – RETRACTED

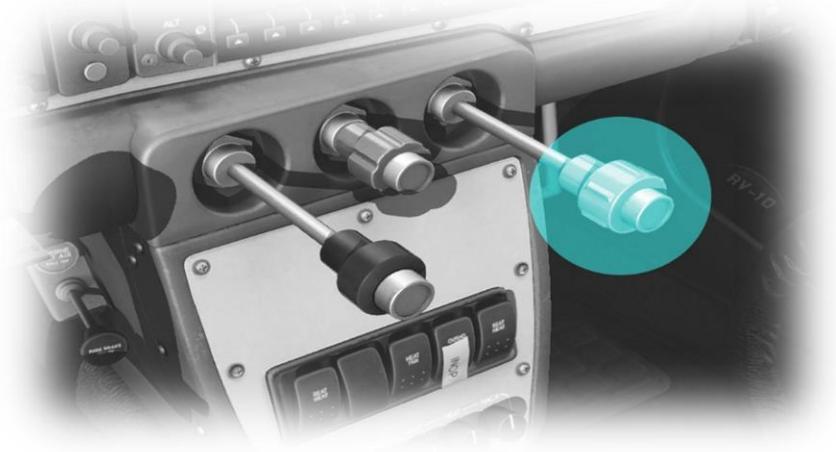
TRANSPONDER – ON

Parking

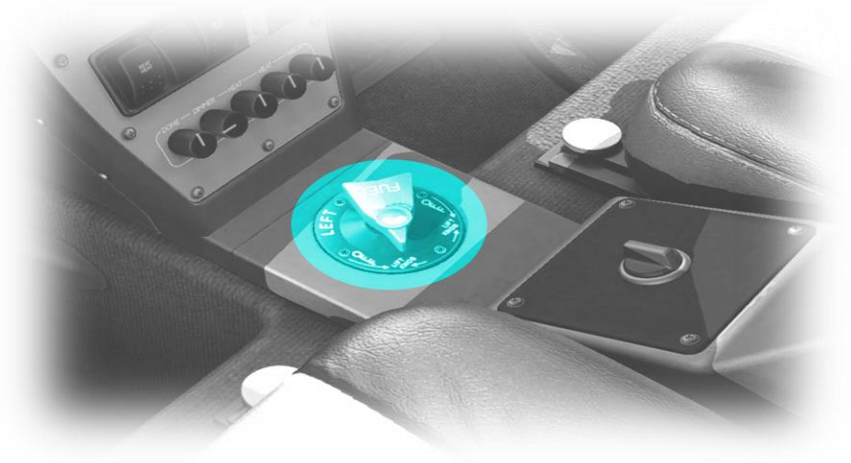
THROTTLE - IDLE

PARKING BRAKE – ON

MIXTURE – CUT OFF



FUEL SELECTOR – OFF



TRANSPONDER – STBY

AVIONICS MASTER – OFF

ALTERNATOR – OFF

BATTERY MASTER - OFF

Operating-Speeds

Rotate Speed *	Vr	65 KIAS
Stall Speed, Flaps 100%, Power Off	Vso	56 KIAS
Minimum Controllable Speed	Vs	60 KIAS
Best Angle of Climb	Vx	65 KIAS
Best Rate of Climb	Vy	103 KIAS
Best Glide Speed	Vbg	85 KIAS
Maximum flaps Extended Speed	Vfe	95 KIAS
Maximum Maneuvering Speed	Va	125 KIAS
Maximum Structural Speed	Vno	188 KIAS
Never Exceed Speed	Vne	200 KIAS
Maximum Demonstrated Crosswind		25 KNOTS

- *Representative value depending on conditions*