



RUTAN 61 LONG-EZ

USER MANUAL

Virtavia Rutan 61 Long E-Z – DTG Steam Edition
Manual Version 1.0

INTRODUCTION

The Rutan 61 Long-EZ is an incredibly popular home-built aircraft flown by pilots all over the world. The prototype of the Long-EZ first flew in 1979. Approximately 700 Long-EZ exist in the USA alone, with many more being built.



SUPPORT

Should you experience difficulties or require extra information about the Virtavia Long-EZ, please e-mail our technical support on tech.support@virtavia.com

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PACKAGE CONTENTS

The Virtavia Long-EZ package contains the following three model variants – the O-235, the O-235 with underwing pods, and finally the more powerful O-320 variant. There are several colorful texture choices for each model :







SOME ODD FEATURES

- Whilst the Long-EZ has a ventral mounted spoiler, the brakes can also be depressed in order to deflect both rudders outwards. With the parking brake on, both rudders will deflect automatically.
- At first it may appear so, but the canard-mounted elevator is NOT actually animated incorrectly. Due to the elevator being in front of the centre of gravity, the directions in which the surface should move are reversed.
- The cockpit & 2D camera will not move with the aircraft when knelt.
- Lights can appear to differ in position when viewed from different viewpoints, such as the tower view. This is a known FSX issue, and not an issue with the model.

PACKAGE INFORMATION



RealGauge Technology & the 2D panel

With “RealGauge”, each gauge is crafted in 3D and uses high resolution textures in order to create a level of immersion not possible with conventional 2D gauges. “RealGauge” creates very little overhead in the sim, allowing both your processor and graphics card to concentrate on proving a totally fluid sim experience. FPS with RealGauge technology is often higher than with less detailed conventional 2D panels.

This product is designed to be completely flown from the Virtual Cockpit. A basic 2D panel is included with GPS and avionics stack pop-ups.

EXTERIOR MODEL

Paint and model variants

In total there are SIX different model variants, TEN paint schemes, and THREE different flight models included in the Long-EZ package. The models and paints are documented below.

Model variants:

Lycoming O-235 powered versions

- Small rudders, straight canard, 2 bladed prop
- Small rudders, straight canard, 2 bladed prop & transit pods
- Large rudders, wing strakes, tapered canard, 2 bladed prop
- Large rudders, wing strakes, tapered canard, 2 bladed prop & transit pods

Lycoming O-320 powered versions

- Small rudders, straight canard, 3 bladed prop, racing spinner, racing pants
- Large rudders, straight canard, 3 bladed prop, racing spinner, racing pants

EXTERIOR LIGHTING

Pressing the L key will turn on all lights. You may however wish to turn them on using the appropriate switches in the cockpit, as the L key also turns the on navigation, landing lights and flood lighting in the cockpit, which should ideally be switched separately.

Shift-L will toggle the nav lights and the cockpit light.

Crtl-L will toggle the landing light.

Please refer to the cockpit section of this manual for information regarding light switch location.

ALTERNATIVE VIEWPOINTS IN FSX

There are several different ways of looking at the aircraft and the cockpit, select these alternative views by right-clicking in an empty area and picking the 'Aircraft' menu for external views and the 'Cockpit' menu for views inside the cabin. It is possible to zoom and pan as normal in these alternative views. Cycle through the available ones by pressing the A key.

Exterior View Options

It is possible to pan and zoom as normal in all external views.

Right View



Left view



Rear view

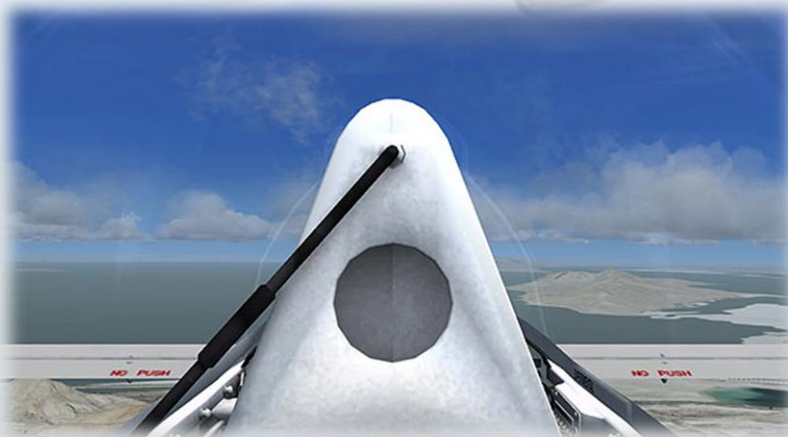


Interior View Options

Pilot's Cockpit View (default, zoomed out)



Rear Cockpit View



Switch Panel View



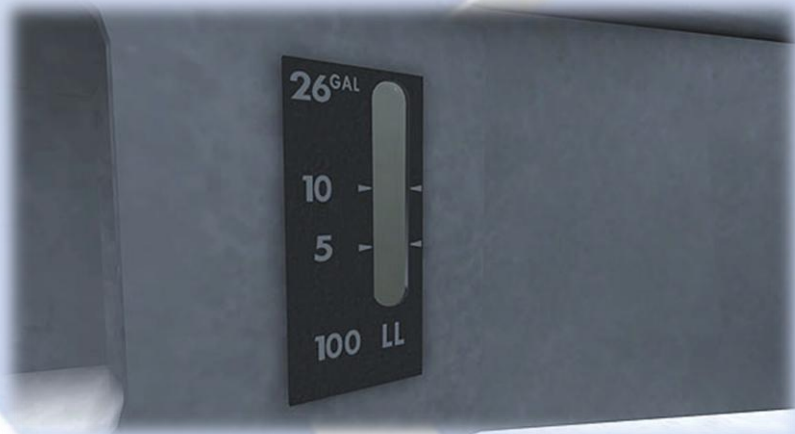
Avionics Stack View



Left Fuel Gauge View



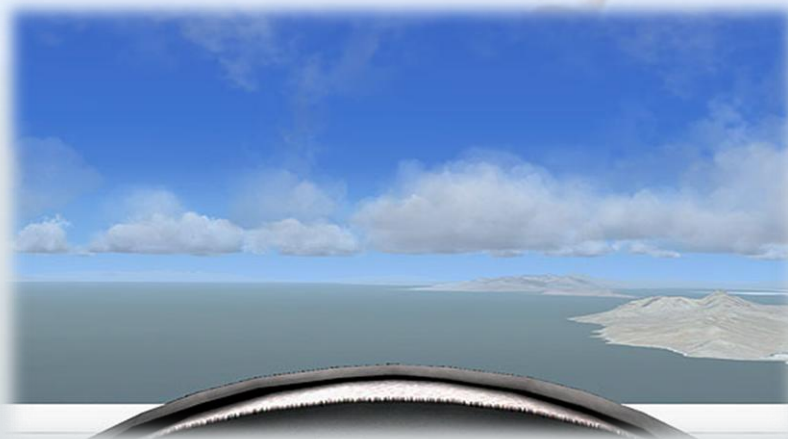
Right Fuel Gauge View



'RealGauge' View



Basic 2D Panel View



Shift-2 and Shift-3 will bring up the radios and the GPS respectively.

Forward Right Panel



- 1) **Gear/ canopy warning light** This will illuminate if the canopy is open, or the landing gear is down. The visual identification window below the main panel allows you to see the position of the landing gear.
- 2) **Miniflo-L fuel computer** Please see the Miniflo-L section for more details.
- 3) **Autopilot track switch** Toggles between NAV and GPS follow modes.
- 4) **Panel lights dimmer switch** Toggles the panel lights.
- 5) **Airspeed Indicator**
- 6) **VOR1 Indicator**
- 7) **Turn & Slip indicator**
- 8) **Avionics stack**
 - Autopilot
 - NAV/COMM radio unit
 - Transponder
 - DME unit
- 9) **Digital EGT/ CHT gauge**
- 10) **Low oil pressure light**

- 11) **N-number identification placard**
- 12) **Suction gauge**
- 13) **Analogue fuel flow gauge**
- 14) **Oil pressure gauge**
- 15) **GPS unit** - To operate, use the left mouse button on the GPS arm to drag it outwards. Right mouse button & dragging retracts the arm. The mouse wheel can be used for both functions. To power the GPS up, click the antenna. To display the GPS 2d pop-up, click the unit behind the fascia area.

Main Switch Panel



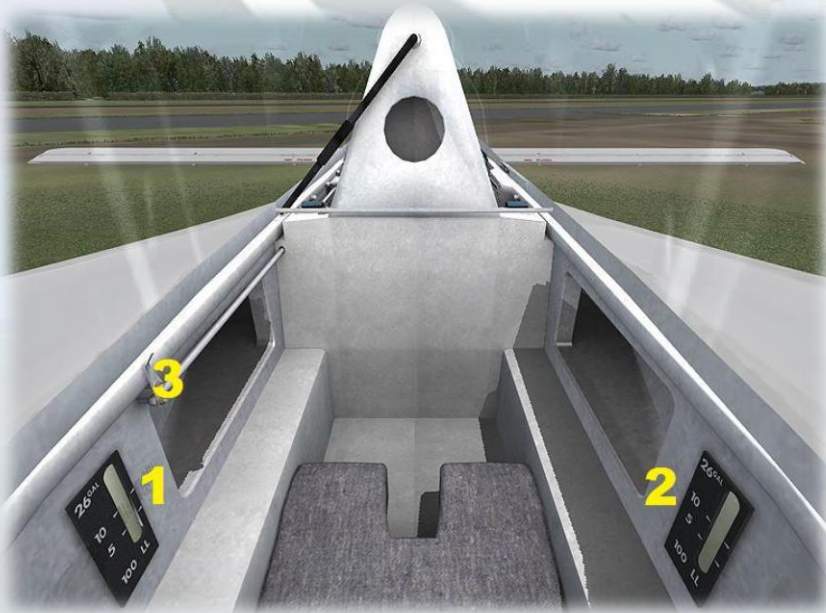
- 1) **Landing light switch**
- 2) **Navigation lights switch**
- 3) **Pitot heat switch**
- 4) **Master battery switch**
- 5) **Master avionics switch**
- 6) **Backup fuel pump switch**
- 7) **Magneto/ starter system**
 - Magnetos – OFF
 - Magnetos – LEFT
 - Magnetos – RIGHT
 - Magnetos – BOTH
 - Engine start
- 8) **Push-to-talk switch** (Toggles ATC window in FSX)

Left Side Bulkhead



- 1) Elevator trim control
- 2) Map reference board (Click to toggle map display)

Rear cockpit



- 1) Left fuel tank contents gauge
- 2) Right fuel tank contents gauge
- 3) Canopy latch (Clicking this will open/close the canopy)

Digital-readout pop ups

The altimeter, ASI, HSI, IVSI, RPM and Vor1 gauge are all fitted with a digital readout pop-up utility. Click the areas highlighted in the following image in order to toggle the display.



Miniflo-L fuel computer

Located on the top right of the panel, the Miniflo has four modes of operation, detailed below. Fuel flow is ALWAYS shown on the left.



Mode 1, standard

Mode 1 displays fuel remaining, in lbs.

Modes 1 and 2 can be toggled using the LB Rem/ LB used button.



Mode 2, fuel used

Mode 2 displays fuel used, in lbs.

Modes 1 and 2 can be toggled using the LB Rem/ LB used button.



Mode 3, endurance

Mode 3 displays endurance at the current fuel flow rate, in hrs: minutes.

Modes 3 and 4 can be toggled using the selector knob.

Left click to enter mode 3, right click to enter mode 4.



Mode 4, fuel economy

Mode 4 displays fuel economy, in NM per 10lbs.

Modes 3 and 4 can be toggled using the selector knob.

Left click to enter mode 3, right click to enter mode 4.

VIRTAVIA RUTAN LONG EZ 0-235 REFERENCE INFORMATION

For standard procedures, see the Checklists tab.

Total Flight Simulator aircraft weight with full fuel	1307 lbs
Maximum normal takeoff weight	1325 lbs
Maximum special takeoff weight	1425 lbs

NOTE: To adjust fuel load, on the Aircraft menu, click Fuel and Load.

DO NOT DELETE the engine payload; this model has been created with the engine as an active part of the weight and balance dynamics.

VNE - Never Exceed Speed	190 KIAS
VS - Stalling Speed (max weight, airbrake in)	61 KIAS
VSO - Stalling Speed in Landing Configuration	60 KIAS
VX - Best Angle-of-Climb Speed (sea level)	70 KIAS
VY - Best Rate-of-Climb Speed (sea level)	90 KIAS
Best Glide Speed	75 KIAS
Maximum crosswind, takeoff	15 knots
Maximum crosswind, landing	20 knots

Maximum Speed brake and Landing Gear Placard Speeds:

Speed brake	90 KIAS
Nose Gear	120 KIAS

NOTE: For explanations of speeds used on this tab, see "V-speeds" in the Learning Center Glossary.

AMPLIFIED PROCEDURES

FIRST FLIGHT

Before your first flight in the Long EZ, you should be aware of some important points where the Long EZ differs from sluggish training aircraft such as a Cessna 150 or Piper Cub. First, the aircraft is much cleaner and will accelerate and develop speed with amazing rapidity if you are not prepared for it. Everything happens MUCH faster in a Long EZ. Be ready.

Second, the novice Long EZ pilot will by force of habit expect the Long EZ to handle like the sluggish conventional trainers he or she last flew. This always leads to pitch over-controlling. The experienced pilot will know of this in advance and adapt quickly. Practice controlling pitch at a fast taxi in order to get the feel of the side stick control. Never exceed the attitude where the canard is above the horizon, and even better, keep it a couple of degrees below, when taking off.

In short, do NOT horse the plane around or ham-hand the stick. The plane will be all over the sky and you will be very frustrated. This flight model is extremely accurate and will reward the patient pilot who takes the time to learn to fly it.

TAKEOFF

Set the trim control for a substantial amount of nose-up trim to allow for adequate canard control. Use full back stick at 40 knots, and lift the nose as soon as possible thereafter to the point where the canard is level with the horizon. NEVER exceed this attitude on takeoff. Allow the plane to fly itself off the runway and raise the nose wheel as soon as a positive rate of climb is achieved.

Takeoff distance for this aircraft at 1324 pounds is 990 feet to liftoff at a speed of 70 KIAS. The aircraft is normally limited to a gross weight of 1325 pounds for all takeoff operations, but can be operated at a takeoff weight of up to 1425 pounds provided sufficient runway length is available, weight and balance information is checked, and the landing is expected to be after sufficient fuel is consumed to reduce the weight to 1325 pounds or less.

CLIMB

Climb at 90 KIAS. Adjust trim as required. Adjust mixture as required if not set to auto mixture. Climb at 110 KIAS for better visibility, engine cooling, and to extend the distance traveled during the climb.

Climb Performance Chart

Elapsed Time	Distance, NM	Rate of Climb, fpm	Altitude, MSL	KIAS
--	--	1116	500	89
1:53	3	1072	2000	90
5:06	9	807	5000	90
13:42	24	431	10000	90
23:24	47	265	14000	90

TRIM

The Long EZ is designed to be able to be trimmed for “hands-off” flight between about 80-150 KIAS when the center of gravity is in the normal range. The plane is designed so that it wants to be trimmed for a particular airspeed, rather than a specific attitude, which is a very desirable trait in this kind of plane. If you have the plane trimmed for 90 KIAS, for example, as during the climb, and you reduce power, the nose will fall until the plane attains a speed of 90 KIAS, and it will stabilize at this speed in a new attitude. Likewise with cruise; you can trim the Long EZ to fly “stick-free” at a specified speed. Reducing or increase power will cause the aircraft to seek the attitude where the trimmed airspeed is regained. Thus, adding power will cause the plane to climb, and reducing power will cause it to descend, if the trim control is not adjusted.

The trim characteristics of this plane in the roll axis are the opposite of what would be expected in a tractor aircraft; as more power is applied, you will need to add trim to bring the left wing down. On takeoff, the LEFT rudder will need to be applied to keep the aircraft rolling straight, although this is quite mild. This is, of course, because the torque and P-factor effects on the Long EZ are the opposite of a normal, tractor airplane.

The plane will seem quite sensitive to trim for pilots not used to this type of light, responsive plane, and must be flown with one hand constantly on the trim if the airspeeds and power are varying, as during maneuvering. This is not difficult and becomes second-nature rather quickly.

When the nose gear and speed brake are deployed, very desirable nose-up trim results. This reduces the amount of pitch trim needed to maintain a “stick-free” approach. Observe placard limitations for extension of the brake and gear.

MANEUVERING

The Long EZ is a very agile aircraft but exhibits excellent stability about all three axes. The maximum roll rate is about 60 degrees per second. Pitch control is excellent but not overly sensitive, but will seem so to pilots transitioning to this type of aircraft. In time this sensation will go away and the Long EZ’s superb agility and control characteristics will seem natural, and more traditional aircraft will begin to feel like sluggish and truck-like.

SPEED AND PERFORMANCE

The Long EZ is a very clean airplane with a very low base drag value. It accelerates very quickly and decelerates slowly. This makes it quite responsive to power and pitch changes, and also requires more planning when maneuvering, especially for final approach and landing. The landing rollout for this plane will be substantially longer than for similar, conventional planes.

CRUISE

The Long EZ has astonishing range due to its large fuel capacity, clean aerodynamic design, and low fuel consumption. Cruise fuel flows will range from 2.5 to 7 gallons per hour. The “gas mileage” is far better than most of the automobiles in operation today, including many of the so-called “green” hybrid autos. Review the following charts for actual, in-game aircraft performance. These charts are identical to the ones for the real aircraft.

A good cruise configuration is at 8,000 feet and full throttle. Pay close attention to your propeller RPM so as not to exceed the maximum of 2800. Some overrun is acceptable, up to 100-200 RPM at cruising altitudes where power is limited by the pressure altitude.

LANDING

Landing the aircraft is much the same as with any small training plane, with some exceptions. Because the aircraft is so clean, it takes much longer to slow down. The speed brake is provided to assist with this. Also, the absence of landing flaps will cause the approach to be shallower and the approach speed will be necessarily faster than a conventional aircraft of similar weight with landing flaps, such as a C152. The landing roll can be doubled if the touchdown speed is increased by as little as 10-15 knots, so speed management is critical. Until you are completely familiar with the aircraft, give yourself plenty of room and avoid the temptation to fly a “tight” pattern. Because there is neither stall warning nor landing flaps, it’s recommended to land a bit faster than you normally would at first to avoid stalling the aircraft above the runway and suffering a sharp bump due the sudden sink rate. The winglets and lack of flaps reduce ground effect substantially, so when the plane stalls, it sinks rapidly. So use a longer runway when transitioning to this plane and give yourself plenty of extra room.

A normal pattern speed is 75-80 KIAS, with final approach at about 65-70 KIAS and touchdown at 55-60 KIAS, depending on aircraft weight. As with any tricycle gear, hold the nose off and brake as lightly as possible.

STALLS

The stall in the Long EZ is exceptionally benign. There is no tendency to roll off or spin; the plane simply mushes along in level flight. Roll control remains good even in the stall. In fact, you cannot even really term a stall in the Long EZ a traditional “stall” as the plane provides none of the normal warning signs or bad behavior associated with a conventional training plane. You can hold the stick full back and still retain good rudder and aileron authority, and the plane will not respond adversely to any power change, whether it be full throttle or a cut to idle. The plane has no tendency to spin and is in fact nearly impossible to spin even when the attempt is made. The plane will rotate when stalled, but this cannot really be called a spin as it remains in full control of the pilot and can be restored to a normal flying attitude immediately.

AEROBATICS

No aerobatic maneuvers are allowed except the following:

- Chandelles
- Lazy Eights
- Steep Turns

The entry speed for the above maneuvers is 130 KIAS.

- Stalls: decelerate slowly
- Accelerated Stalls: enter at 110 KIAS

The abrupt use of the controls is prohibited at indicated airspeeds above 120 knots. Intentional spins are prohibited.

STEERING

This flight model has been equipped with nose wheel steering, to make the job of taxiing easier for those without rudder pedals and differential brakes. To set up your Long EZ to have a fully-castoring nose wheel and differential brake steering, as the real one, open your aircraft.cfg file and find the [contact_points] section. The first contact point, "point.0", is the nose gear. There are two entries for the first point. The first entry has been "remarked out" with the "//" characters. Delete these two characters and place them in front of the second entry. This will enable the fully-swiveling nose wheel and differential-brake taxiing.

Be sure to back up any files before attempting to modify them.

VIRTA VIA RUTAN LONG EZ 0-320 REFERENCE INFORMATION

For standard procedures, see the Checklists tab.

Total Flight Simulator aircraft weight with full fuel	1325 lbs
Maximum normal takeoff weight	1325 lbs
Maximum special takeoff weight	1425 lbs

NOTE: To adjust fuel load, on the Aircraft menu, click Fuel and Load.

DO NOT DELETE the engine payload; this plane has been created with the engine as an active part of the weight and balance dynamics.

VNE - Never Exceed Speed	190 KIAS
VS - Stalling Speed (max weight, airbrake in)	61 KIAS
VSO - Stalling Speed in Landing Configuration	60 KIAS
VX - Best Angle-of-Climb Speed (sea level)	70 KIAS
VY - Best Rate-of-Climb Speed (sea level)	90 KIAS
Best Glide Speed	75 KIAS
Maximum crosswind, takeoff	15 knots
Maximum crosswind, landing	20 knots

Maximum Speed brake and Landing Gear Placard Speeds :

Speed brake	90 KIAS
Nose Gear	120 KIAS

NOTE: For explanations of speeds used on this tab, see "V-speeds" in the Learning Center Glossary.

AMPLIFIED PROCEDURES

FIRST FLIGHT

Before your first flight in the Long EZ, you should be aware of some important points where the Long EZ differs from sluggish training aircraft such as a Cessna 150 or Piper Cub.

First, the aircraft is much cleaner and will accelerate and develop speed with amazing rapidity if you are not prepared for it. Everything happens MUCH faster in a Long EZ. Be ready.

Second, the novice Long EZ pilot will by force of habit expect the Long EZ to handle like the sluggish conventional trainers he or she last flew. This always leads to pitch over-controlling. The experienced pilot will know of this in advance and adapt quickly. Practice controlling pitch at a fast taxi in order to get the feel of the side stick control. Never exceed the attitude where the canard is above the horizon, and even better, keep it a couple of degrees below, when taking off.

Finally, the Long EZ with the 160 HP engine is much faster than the standard version. It is no problem to exceed placarded maximum speeds IN LEVEL FLIGHT. Use more caution and take your time getting used to the power.

In short, do NOT horse the plane around or ham-hand the stick. The plane will be all over the sky and you will be very frustrated. This flight model is extremely accurate and will reward the patient pilot who takes the time to learn to fly it.

TAKEOFF

Set the trim control for a substantial amount of nose-up trim to allow for adequate canard control. Use full back stick at 40 knots, and lift the nose as soon as possible thereafter to the point where the canard is level with the horizon. NEVER exceed this attitude on takeoff. Allow the plane to fly itself off the runway and raise the nose wheel as soon as a positive rate of climb is achieved.

Takeoff distance for this aircraft at 1324 pounds is 698 feet to liftoff at a speed of 72 KIAS. The aircraft is normally limited to a gross weight of 1325 pounds for all takeoff operations, but can be operated at a takeoff weight of up to 1425 pounds provided sufficient runway length is available, weight and balance information is checked, and the landing is expected to be after sufficient fuel is consumed to reduce the weight to 1325 pounds or less.

CLIMB

Climb at 90 KIAS. Adjust trim as required. Adjust mixture as required if not set to auto mixture. Climb at 110 KIAS for better visibility, engine cooling, and to extend the distance traveled during the climb.

Climb Performance Chart, 1324 lbs, O-320 Engine

Elapsed Time	Distance, NM	Rate of Climb, fpm	Altitude, MSL	KIAS
1:10	2	1869	1730	91
3:07	6	1600	5000	92
7:20	14	1000	10000	93
12:05	24	630	14000	89

TRIM

The Long EZ is designed to be able to be trimmed for “hands-off” flight between about 80-150 KIAS when the center of gravity is in the normal range. The plane is designed so that it wants to be trimmed for a particular airspeed, rather than a specific attitude, which is a very desirable trait in this kind of plane. If you have the plane trimmed for 90 KIAS, for example, as during the climb, and you reduce power, the nose will fall until the plane attains a speed of 90 KIAS, and it will stabilize at this speed in a new attitude. Likewise with cruise; you can trim the Long EZ to fly “stick-free” at a specified speed. Reducing or increase power will cause the aircraft to seek the attitude where the trimmed airspeed is regained. Thus, adding power will cause the plane to climb, and reducing power will cause it to descend, if the trim control is not adjusted.

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The plane will seem quite sensitive to trim for pilots not used to this type of light, responsive plane, and must be flown with one hand constantly on the trim if the airspeeds and power are varying, as during maneuvering. This is not difficult and becomes second-nature rather quickly.

When the nose gear and speed brake are deployed, very desirable nose-up trim results. This reduces the amount of pitch trim needed to

maintain a “stick-free” approach. Observe placard limitations for extension of the brake and gear.

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A good cruise configuration is at 9,000 feet and full throttle. Pay close attention to your propeller RPM so as not to exceed the maximum of 2700. Some overrun is acceptable, up to 100-200 RPM at cruising altitudes.

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Landing the aircraft is much the same as with any small training plane, with some exceptions. Because the aircraft is so clean, it takes much longer to slow down. The speed brake is provided to assist with this. Also, the absence of landing flaps will cause the approach to be

shallower and the approach speed will be necessarily faster than a conventional aircraft of similar weight with landing flaps, such as a C152. The landing roll can be doubled if the touchdown speed is increased by as little as 10-15 knots, so speed management is critical. Until you are completely familiar with the aircraft, give yourself plenty of room and avoid the temptation to fly a “tight” pattern. Because there is neither stall warning nor landing flaps, it’s recommended to land a bit faster than you normally would at first to avoid stalling the aircraft above the runway and suffering a sharp bump due the sudden sink rate. The winglets and lack of flaps reduce ground effect substantially, so when the plane stalls, it sinks rapidly. So use a longer runway when transitioning to this plane and give yourself plenty of extra room.

A normal pattern speed is 75-80 KIAS, with final approach at about 65-70 KIAS and touchdown at 55-60 KIAS, depending on aircraft weight. As with any tricycle gear, hold the nose off and brake as lightly as possible.

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- Steep Turns

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- Stalls: decelerate slowly
- Accelerated Stalls: enter at 110 KIAS

The abrupt use of the controls is prohibited at indicated airspeeds above 120 knots. Intentional spins are prohibited.

STEERING

This flight model has been equipped with nose wheel steering, to make the job of taxiing easier for those without rudder pedals and differential brakes. To set up your Long EZ to have a fully-castoring nose wheel and differential brake steering, as the real one, open your aircraft.cfg file and find the [contact_points] section. The first contact point, "point.0", is the nose gear. There are two entries for the first point. The first entry has been "remarked out" with the "//" characters. Delete these two characters and place them in front of the second entry. This will enable the fully-swiveling nose wheel and differential-brake taxiing.

Be sure to back up any files before attempting to modify them.

Checklists – O-235 powered aircraft

VIRTAVIA RUTAN LONG EZ 0-235 COCKPIT PROCEDURES – QUICK START

The simulation of Burt Rutan's world-famous Long-EZ you are about to fly is as accurate as the Microsoft Flight Simulator game engine will allow. In every way possible, it performs precisely as the real aircraft, particularly with respect to engine and flight performance. It is so accurate, you can – and should – use the actual Long-EZ pilot's operating handbook to fly it. Here, we provide an abbreviated version of the checklist procedures, modified for Flight Simulator. We have followed the standard Flight Simulator format so you can get started flying right away; amplified procedures will be found in the "Reference" document. Please read the Reference carefully for more details about the Long EZ and how to fly it.

BEFORE STARTING ENGINE

<input type="checkbox"/> Brakes	TEST
<input type="checkbox"/> Electrical Equipment, Autopilot	OFF
<input type="checkbox"/> Avionics Master Switch	OFF
<input type="checkbox"/> Fuel Selector Valve	FULLEST TANK
<input type="checkbox"/> Speed brake	RETRACTED
<input type="checkbox"/> Weight and Balance	CHECKED

ENGINE START

Press CTRL+E to initiate engine auto start sequence, or:

<input type="checkbox"/> Throttle	OPEN 1/4 INCH
<input type="checkbox"/> Mixture	RICH (press CTRL+SHIFT+F4)
<input type="checkbox"/> Carburettor Heat	OFF
<input type="checkbox"/> Propeller Area	CLEAR
<input type="checkbox"/> Master Switch	ON
<input type="checkbox"/> Auxiliary Fuel Pump Switch	ON
<input type="checkbox"/> Ignition Switch	START
<input type="checkbox"/> Oil Pressure	CHECK
<input type="checkbox"/> Auxiliary Fuel Pump	OFF
<input type="checkbox"/> Flashing Beacon and Nav Lights	ON as required
<input type="checkbox"/> Avionics Master Switch	ON

BEFORE TAKEOFF

<input type="checkbox"/> Parking Brake	SET (press CTRL+PERIOD)
<input type="checkbox"/> Flight Controls	FREE AND CORRECT
<input type="checkbox"/> Flight Instruments	CHECK and SET
<input type="checkbox"/> Fuel Quantity	CHECK
<input type="checkbox"/> Mixture	RICH (press CTRL+SHIFT+F4)
<input type="checkbox"/> Fuel Selector Valve	RECHECK BOTH
<input type="checkbox"/> Elevator Trim	SET for takeoff; about halfway back for nose-up trim.
<input type="checkbox"/> Throttle	1800 RPM
<input type="checkbox"/> Magnetos	CHECK
<input type="checkbox"/> Suction Gauge	CHECK
<input type="checkbox"/> Engine Instruments and Ammeter	CHECK
<input type="checkbox"/> Instrument Panel	CHECK
<input type="checkbox"/> Throttle	1000 RPM or less
<input type="checkbox"/> Lights	AS DESIRED
<input type="checkbox"/> Radios and Avionics	SET
<input type="checkbox"/> Autopilot	OFF
<input type="checkbox"/> Brakes	RELEASE
TAKEOFF	
<input type="checkbox"/> Throttle	FULL OPEN
<input type="checkbox"/> Mixture	RICH
<input type="checkbox"/> Elevator Control	LIFT NOSE WHEEL (at 50 KIAS) Note: NEVER RAISE CANARD ABOVE THE LEVEL OF THE HORIZON
<input type="checkbox"/> Nose Gear	RETRACT
<input type="checkbox"/> Climb Speed	90 KIAS

EN ROUTE CLIMB

<input type="checkbox"/> Airspeed	90 KIAS
<input type="checkbox"/> Throttle	FULL OPEN SMOOTHLY
<input type="checkbox"/> Mixture	USE AUTOMIXTURE OR SET TO RICH; LEAN GRADUALLY ABOVE 3,000 FEET TO MAINTAIN BEST POWER

CRUISE

- Power 2000-2800 RPM
- Elevator Trim ADJUST
- Mixture USE AUTOMIXTURE OR LEAN AS DESIRED

DESCENT

- Power AS DESIRED
- Mixture USE AUTOMIXTURE OR ADJUST AS DESIRED
- Fuel Selector Valve BEST TANK

BEFORE LANDING

- Fuel Selector Valve BEST
- Mixture RICH
- Landing/Taxi Lights ON
- Autopilot OFF
- Nose Gear DOWN
- Carburettor Heat CHECK

LANDING

- Airspeed Less than 90 KIAS
- Speed brake EXTENDED
- Over the fence airspeed 80 KIAS
- Touchdown 70 KIAS, MAIN WHEELS FIRST
- Landing Roll LOWER NOSE WHEEL GENTLY

AFTER LANDING

- Speed brake UP
- SECURING AIRPLANE
- Parking Brake SET (press CTRL+PERIOD)
- Avionics Master Switch, Electrical Equipment, Autopilot OFF
- Mixture IDLE CUT OFF
- Ignition Switch OFF
- Master Switch OFF
- Fuel Selector Valve OFF

Checklists – O-320 powered aircraft

VIRTAVIA RUTAN LONG EZ 0-320 COCKPIT PROCEDURES – QUICK START

BEFORE STARTING ENGINE

<input type="checkbox"/> Brakes	TEST
<input type="checkbox"/> Electrical Equipment, Autopilot	OFF
<input type="checkbox"/> Avionics Master Switch	OFF
<input type="checkbox"/> Fuel Selector Valve	FULLEST TANK
<input type="checkbox"/> Speed brake	RETRACTED
<input type="checkbox"/> Weight and Balance	CHECKED

ENGINE START

Press CTRL+E to initiate engine auto start sequence, or:

<input type="checkbox"/> Throttle	OPEN 1/4 INCH
<input type="checkbox"/> Mixture	RICH (press CTRL+SHIFT+F4)
<input type="checkbox"/> Propeller Area	CLEAR
<input type="checkbox"/> Master Switch	ON
<input type="checkbox"/> Auxiliary Fuel Pump Switch	ON
<input type="checkbox"/> Ignition Switch	START

Then:

<input type="checkbox"/> Oil Pressure	CHECK
<input type="checkbox"/> Auxiliary Fuel Pump	OFF
<input type="checkbox"/> Flashing Beacon and Nav Lights	ON as required
<input type="checkbox"/> Avionics Master Switch	ON

BEFORE TAKEOFF

<input type="checkbox"/> Parking Brake	SET (press CTRL+PERIOD)
<input type="checkbox"/> Flight Controls	FREE AND CORRECT
<input type="checkbox"/> Flight Instruments	CHECK and SET
<input type="checkbox"/> Fuel Quantity	CHECK
<input type="checkbox"/> Mixture	RICH (press CTRL+SHIFT+F4)
<input type="checkbox"/> Fuel Selector Valve	RECHECK BOTH
<input type="checkbox"/> Elevator Trim	SET for takeoff; about 2/3 of the way back for nose-up.
<input type="checkbox"/> Throttle	1800 RPM

- Magnetos CHECK
- Suction Gauge CHECK
- Engine Instruments and Ammeter CHECK
- Instrument Panel CHECK
- Throttle 1000 RPM or less

TAKEOFF

- Throttle FULL OPEN
- Mixture RICH
- Elevator Control LIFT NOSE WHEEL (at 50 KIAS)
Note: NEVER RAISE CANARD ABOVE THE LEVEL OF THE HORIZON
- Nose Gear RETRACT
- Climb Speed 90 KIAS

EN ROUTE CLIMB

- Airspeed 90 KIAS
- Throttle FULL OPEN (press F3 as necessary)
- Mixture USE AUTOMIXTURE OR SET TO RICH;
LEAN GRADUALLY ABOVE 3,000 FEET TO MAINTAIN BEST POWER

CRUISE

- Power 1800-2700 RPM
- Elevator Trim ADJUST
- Mixture USE AUTOMIXTURE OR LEAN AS DESIRED

DESCENT

- Power AS DESIRED
- Mixture USE AUTOMIXTURE OR ADJUST AS DESIRED
- Fuel Selector Valve BEST TANK

BEFORE LANDING

- Fuel Selector Valve BEST
- Mixture RICH
- Landing/Taxi Lights ON
- Autopilot OFF
- Nose Gear DOWN

LANDING

- Airspeed Less than 90 KIAS
- Speed brake EXTENDED
- Over the fence airspeed 75 KIAS
- Touchdown 60 KIAS, MAIN WHEELS FIRST

AFTER LANDING

- Speed brake UP

SECURING AIRPLANE

- Parking Brake SET (press CTRL+PERIOD)
- Avionics Master Switch, Electrical OFF
- Equipment, Autopilot
- Mixture IDLE CUT OFF
- Ignition Switch OFF
- Master Switch OFF
- Fuel Selector Valve OFF