X-Plane
Robinson R22

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Contents

The Robinson R22

The **Robinson R22** is a light utility helicopter manufactured by the Robinson Helicopter Company (located in Torrance, California). The R22 was designed in 1973, and seats two occupants. It uses a single piston-engine powerplant, coupled to a two-bladed rotor. Variants have been in production since 1979.

The R22 was certified by the Federal Aviation Administration (FAA) in March 1979, following flight testing conducted in the USA. Sales began shortly after. The model proved popular for flight training, due to relatively low purchase and operating costs (relative to turbine-powered helicopters).

All R22s feature a low-inertia rotor system - whereby the main rotor stores less kinetic energy than conventional systems. Less energy is required to maintain safe rotor rpm, but conversely this decays more easily, and care must be taken by the pilot to remain within the safe operating window. Because of this, special endorsement from a flight instructor is required in accordance with Special Federal Aviation Regulation 73 (SFAR 73).

Control inputs to the main and tail rotors are direct (via pushrods) and feature no hydraulic assistance.

Standard production models feature skids for landing gear. Floats are also available for water operations – designated the ‘Mariner’ variant.

The R22 utilizes a steel-tube frame, to which the powerplant and other mechanicals are fixed. Passenger accommodations (with removeable doors) are provided by a forward-mounted fuselage manufactured from aluminum and fiberglass.

Variants

R22: The initial production model was fitted with a Lycoming O-360 A2B four-cylinder reciprocating engine developing 124 hp, and driving a twin-bladed main rotor, and twin-bladed tail rotor.

R22HP: Fitted with a Lycoming O-360 B2C powerplant.

R22 Beta: Featuring high-capacity oil cooler, improved heater and demister, silencer, and rotor-brake.

R22 Beta II (model featured in X-Plane): Fitted with the Lycoming O-360 J2A powerplant downrated to 145 hp (for structural integrity).

R22 Mariner: Featuring floats and integrated wheels.

R22 Police: Featuring special communications options, and port-side controls and an uprated generator for floodlight operations.

R22 IFR: Equipped with additional avionics for instrument training. Not IFR operations approved.

Production

The R22 has been in production since 1979, and to date nearly 5,000 units have been built across all variant types. Suggested retail price of new variants at time of publication is $US 318,000.

Robinson R22 Specifications *(credit: Robinson Helicopter Company / Wikipedia)*

General:

Crew	--	2

Powerplant:

Engine	--	Lycoming O-360 four-cylinder, carbureted
Power	--	131 hp takeoff / 124 hp continuous

Fuel:

Fuel Capacity	--	16.9 US gal
(Optional) Auxiliary Fuel Capacity	--	9.4 US gal
Fuel Consumption	--	9 gal / hour *

Weights and Capacities:

Empty Weight	--	880 lbs. / 399 kg
Max Gross Weight	--	1370 lbs. / 622 kg

Performance:

Maximum Range (with aux fuel)	--	250 nm * / 460 km *
Cruise Speed	--	96 kts
Max Airspeed (Vne)	--	102 kts
Hover Ceiling	--	9400 ft
Max Operating Altitude	--	14,000 ft

Dimensions:

Main Rotor Diameter	--	25 feet 2 inches (7.67 meters)
Length		28 feet 8 inches (8.74 meters)
Height	--	8 feet 11 inches (2.72 meters)
Width	--	3 feet 6 inches (1.07 meters)

- *Representative value depending on conditions*

The X-Plane R22 Beta II

The X-Plane flight model 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 aircraft 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 R22 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 R22 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 R22 features a detailed 3-D cockpit with many of the primary controls and systems modeled, including: Flight controls (cyclic & collective, anti-torque pedals, throttle) 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 R22, 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.

Left (interior) Door

Right (interior) Door

Pilot View
Forward

Main Instrument
Panel

Passenger View
Forward

Left Glance View

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. Click the mouse button to complete the operation.

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 counterclockwise arrow appears. This indicates that you are ready to rotate the control counterclockwise. 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).

The Cyclic changes the helicopter's direction of movement. In a hover, the cyclic controls the movement of the helicopter forward, back, and laterally. During forward flight, the cyclic controls roll and pitch in a way that is similar to fixed-wing aircraft flight. **source Wikipedia*

This control is called the cyclic because it changes the mechanical pitch angle of each main rotor blade independently, depending on its position in the rotational cycle.

**source Wikipedia*

Assign your chosen (cyclic) peripheral device to the “Roll” and “Pitch” axes in X-Plane. This is discussed in greater detail later in the guide.

The Collective controls the total lift generated by the main rotor.

This control is called the collective because it changes the mechanical pitch angle of each main rotor blade collectively (at the same time).

**source Wikipedia*

Assign your chosen (collective) peripheral device to the “Collective” axes in X-Plane. This is discussed in greater detail later in the guide.

The Anti-Torque Pedals work similarly to rudder pedals in a fixed-wing aircraft.

Yaw is achieved by varying the pitch of the tail rotor blades.

These controls are operated by assigning a peripheral device to the “Yaw” axis in X-Plane.

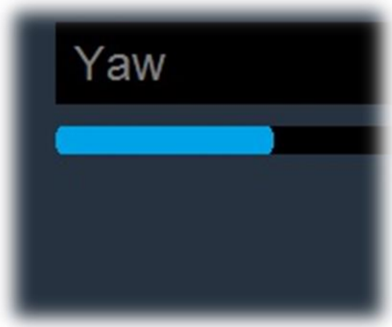
Note that you may also assign keys on your keyboard, or buttons on your external peripheral to move the anti-torque pedals to the left or right, or to center the “rudder”.

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 Citation X 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.

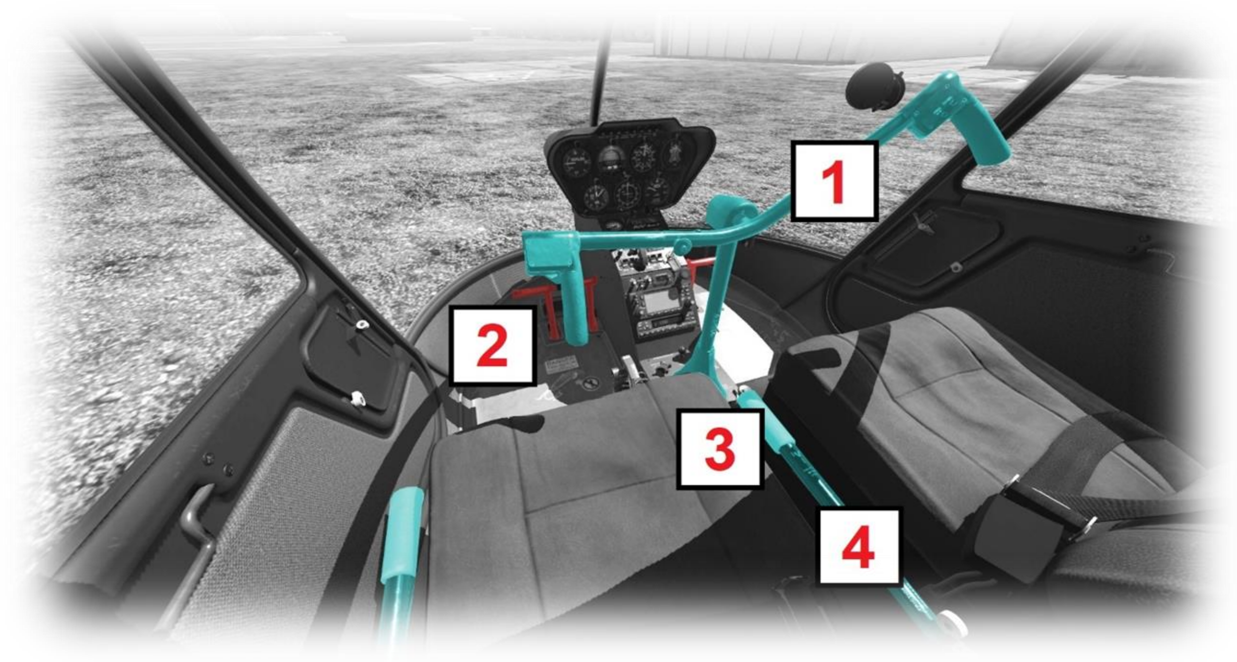
		**Roll and Pitch:** This aircraft is equipped with a cyclic that provides roll and pitch control. Assign the lateral axis of your joystick (or yoke) to the “Roll” command in X-Plane, and the vertical axis to the “Pitch” command.
		**Collective:** This aircraft is equipped with a collective that controls the pitch of the main rotor blades. This provides a method to vary the lift generated by the blades. Assign an axis on your joystick to the “Collective” command in X-Plane.
		**Throttle:** This aircraft is equipped with (dual) throttle controls built into the collectives. This controls the power output from the engine. Assign an axis on your joystick or throttle quadrant to the “Throttle” property in X-Plane.

		**Yaw** This aircraft features anti-torque pedals that control the pitch of the tail rotor blades. This provides yaw control. Assign the yaw axis of your pedals peripheral device (or a joystick axis) to the "yaw" property in X-Plane.

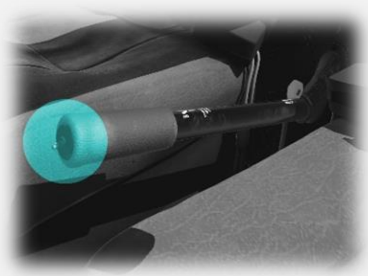
A Tour of the Cockpit

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.

Primary Flight Controls



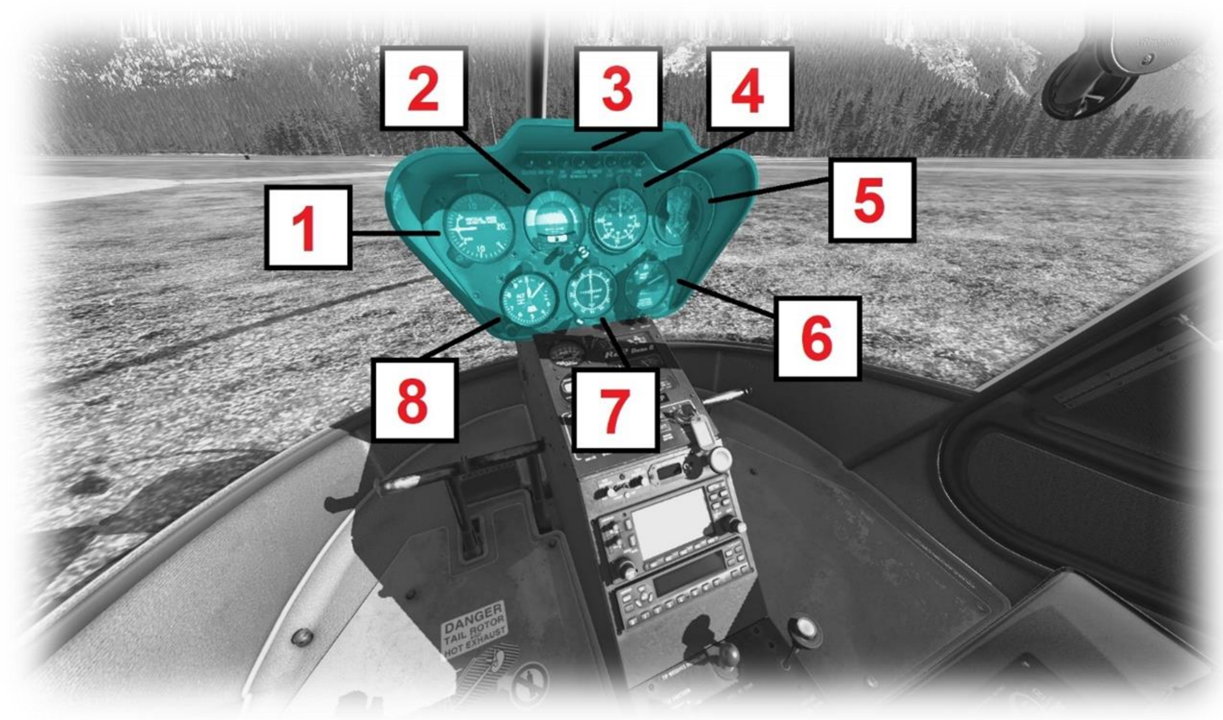
1	Cyclic	Controls pitch and roll. Actuates the pitch of the main rotor blades independently. See also: Roll and Pitch:
2	Anti-Torque Pedals	Controls Yaw. Actuates the pitch of the tail-rotor that is built into the tail-assembly. See also: Yaw
3	Throttle	Controls engine power. The throttle rotary is integrated with the collective, and controls engine power (indicated by manifold pressure).See also: Throttle:
4	Collective	Controls lift. Actuates the pitch of the main rotor blades collectively to increase or decrease lift.

		Governor Switch: Enables or disables the engine RPM governor system, which maintains engine RPM at (or around) 104%. This relieves the pilot from managing the engine RPMs to ensure the main-rotor RPMs are in the safe (green arc) range. When the governor is disabled, the orange ‘GOV’ light illuminates.
		Landing Lights Switch: Enables or disables the twin landing lights mounted in the nose of the aircraft.

Overhead

1	Main Rotor Brake	When power is not being supplied to the main rotor, this lever may be used to slow and stop the blades. Hint: Pull and hold until rotor has stopped turning.

Primary Instrument Panel



1	Vertical Speed Indicator	5	Engine and Rotor Tachometer
2	Attitude Indicator	6	Manifold Pressure Indicator
3	Annunciator Lights	7	Course Deflection Indicator
4	Airspeed Indicator	8	Altimeter

Vertical Speed Indicator

This instrument informs the pilot of the rate of climb, or the rate of descent, in hundreds of feet per minute.

Attitude Indicator (EADI)

This instrument displays the attitude of the aircraft relative to the horizon. This informs the pilot whether the aircraft is flying straight, or turning, and whether the aircraft is climbing, or descending. This information is crucial in "instrument conditions" - when the outside horizon is not visible.

Airspeed Indicator

This instrument displays the speed of the aircraft relative to the air moving past it (and not relative to the ground).

The outer scale is calibrated in KNOTS and the inner scale MPH.

The green arc (50 to 100 knots) indicates the normal operating range.

Engine and Rotor Tachometer

The left needle indicates engine RPMs and the right indicates main rotor RPMs.

The green arc indicates the normal operating range. The yellow and red arcs indicate caution and prohibited ranges respectively.

Manifold Pressure Indicator

This instrument indicates the air pressure in the engine inlet manifold.

When the engine is not running, this will be the same as the outside air pressure.

When the engine is running, this is a measure of the power the engine is producing.

The maximum continuous power for this engine (when coupled to the R22 airframe) is 124 horsepower. Using the table in Appendix A, the pilot must select the appropriate manifold pressure to maintain MCP for a given temperature and altitude.

Course Deflection Indicator

This instrument displays the course deviation from the desired radial of a VOR transmitter, or ILS localizer. This is selected via the VLOC1 frequency of the Garmin G430 navigation device. See: Avionics

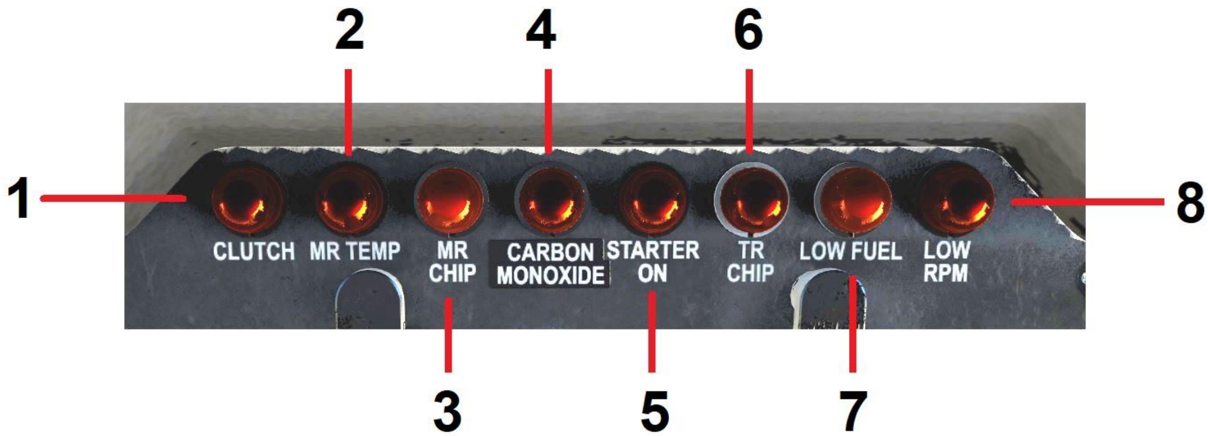
The desired radial is selected using the OBS rotary control. The lateral course deflection is then displayed, providing the pilot with the direction in which he needs to steer to intercept that radial. The “To/From” indicator informs the pilot if he is flying towards, or away from, the VOR transmitter.

Altimeter

The altimeter displays the altitude above sea level (not the altitude above the ground). This model uses a clock analogy – the 'hour' hand displays the altitude in thousands of feet, and the 'minute' hand in hundreds of feet. In the example to the left, the altitude is 2,250 feet.

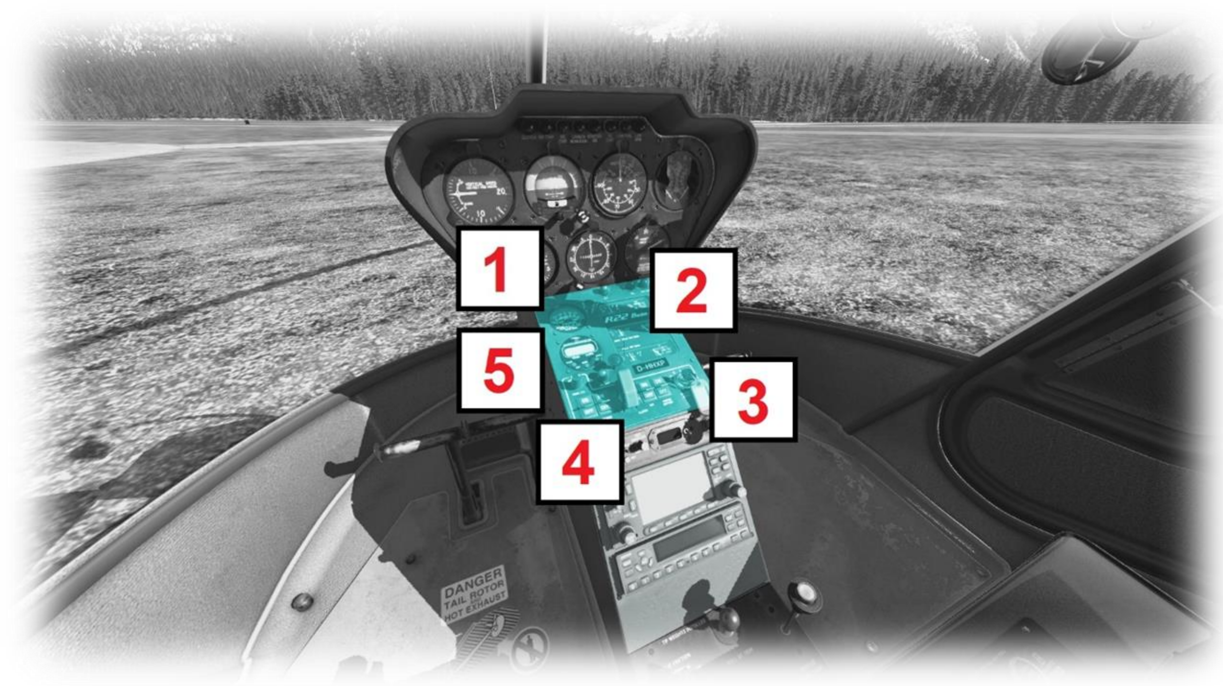
Altimeters use barometric pressure to determine altitude. As such, they must be calibrated at the start of the flight, and periodically re-calibrated during the flight, to account for the current local conditions. To calibrate this instrument, the pilot must set the published barometric pressure at his current location. This setting is displayed in the window inset at the 3 o'clock position.

Annunciator Lights



1	CLUTCH	Illuminates to warn pilot the automated rotor belt-tensioning system is active.
2	MR TEMP	Illuminates to warn pilot the main-rotor bearing is too hot.
3	MR CHIP	Illuminates to warn pilot that metal fragments have been detected in the main-rotor oil.
4	CARBON MONOXIDE	Illuminates to warn pilot that carbon monoxide is present in the cockpit.
5	STARTER ON	Illuminates to warn pilot the starter motor is engaged (potentially hung).
6	TR CHIP	Illuminates to warn pilot that metal fragments have been detected in the tail-rotor oil.
7	LOW FUEL	Illuminates when one gallon of fuel is remaining.
8	LOW RPM	Illuminates to warn pilot the main-rotor RPMs are below safe operating range (95%).

Switch Panel



1	Carburetor Temperature	4	Electrical Panel
2	Engine Instrument Cluster	5	Chronometer
3	Starter Key		

Carburetor Temperature

This instrument displays the temperature of the air inside the carburetor to assist the pilot in determining if icing is likely that could compromise airflow into the engine itself.

When the indicator is in the yellow range, icing is possible, and the pilot should use the carburetor heat feature. See: Carburetor Heat Control

Engine Instrument Cluster

Alternator Annunciator

When illuminated, this indicates the alternator is not providing charge to the battery.

Oil Pressure Annunciator

When illuminated, this indicates the oil pressure is outside of the safe operating range.

Ammeter:

Indicates if the alternator is producing an adequate supply of electrical power. A plus indication means the battery is being charged, and a negative indication means the battery is being depleted.

Oil Pressure:

Indicates the pressure (in PSI) of the engine lubricating oil. The green bar indicates the normal operating range. A low value can indicate insufficient oil, or a pump failure, and a high value can indicate too much oil, or a faulty pressure relief valve.

Oil Temperature:

The temperature (in degrees F) of the engine lubricating oil. The green bar indicates the safe range,

Auxiliary and main Fuel Gauges:

Indicate the remaining fuel in the auxiliary and main fuel tanks respectively.

Cylinder Head Temperature:

Indicates the temperature of an air-cooled engine inside one of the cylinders, near the spark plug. This is a good indication of the current level of stress the engine is under. The green band indicates the safe range.

Starter Key

The starter key has five positions:

OFF – Both magnetos off

RIGHT – Right Magneto only

LEFT – Left Magneto only

BOTH – Both Magnetos (normal operation)

START – Engages starter-motor

Use the mouse-rotary control to set the position of the key. Click and hold the left-mouse button to engage the starter-motor.

Electrical Panel

1. Panel Lights rotary control

Varies the intensity of the instrument panel back-lighting.

2. Navigation Lights switch

Illuminates external red, green and white navigation lights.

3. Strobe Lights switch

Illuminates external strobe lights for added visibility.

4. Alternator switch

Activates alternator, which charges the battery when the engine is running.

5. Master Battery switch

Energizes the master bus that powers the DC electrical systems

6. Clutch (guarded) switch

Couples or de-couples the engine to the main rotor blades.

Chronometer

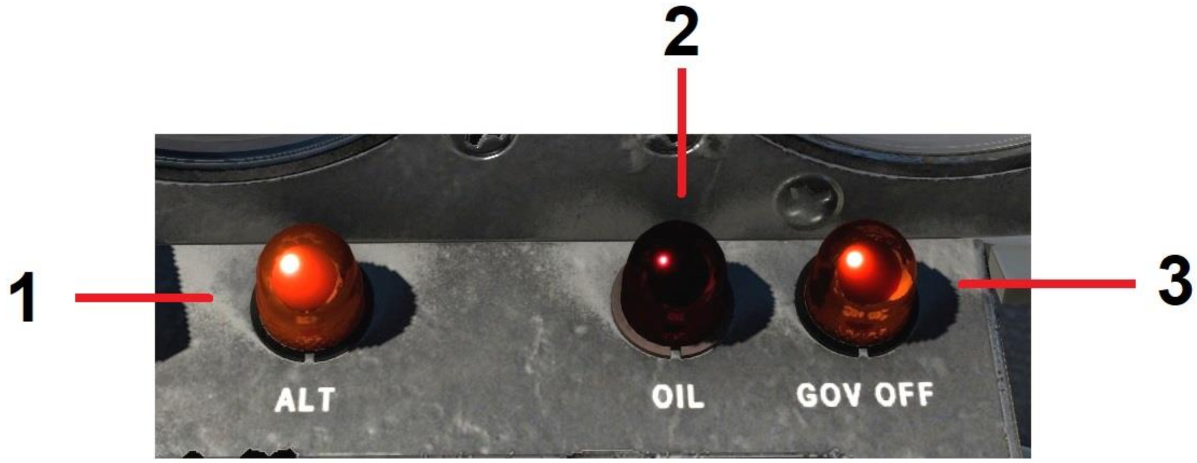
This instrument supports three modes:

Elapsed Time (ET)
Universal Time (UT)
Local Time (LT)

Cycling through each of the chronometer modes is accomplished by clicking the "MODE" button.

Starting and stopping the elapsed time is accomplished by clicking the "ST/SP" button.

Warning Lights



1	ALT	Illuminates to warn pilot the alternator is not charging the battery.
2	OIL	Illuminates to warn pilot the oil pressure is low.
3	GOV OFF	Illuminates to warn pilot the engine RPMs governing system is disengaged.

Avionics

GNS 530

The GNS 530 is Laminar Research's interpretation of the Garmin 530 series of GPS (Global Positioning System) receivers.

This unit provides the pilot with the ability to input a pre-determined flight plan, which is then presented in 'plan' view on the display. The pilot may elect to follow the course either manually or using the autopilot.

Instructions for operating the Laminar Research GPS units can be found here*:*

http://x-plane.com/manuals/G530_Manual.pdf

Transponder

The transponder works in conjunction with ATC radar, to identify the aircraft to controllers. When operating in controlled airspace, each aircraft is provided with a unique transponder code to accomplish this.

Use the pushbuttons to set the transponder code.

Set the transponder to STBY when setting and operating on the ground, and ON, or ALT, when airborne. ALT mode reports both location and altitude.

The IDENT button highlights your location to the controller and should only be used when instructed.

Center Console

Cyclic Friction Control

Provides the pilot with a method of changing the force it takes to move the cyclic control.

RT (Right Trim) Control

Pulling this know reduces the tendency of the cyclic to pull to the left during high-speed flight. This control connects to a pully system that applies right-force to the cyclic so the pilot may be relieved of this.

Important: Trim must not be in effect during takeoff and landing.

Mixture Control

The mixture control alters the ratio of fuel and air entering the engine.

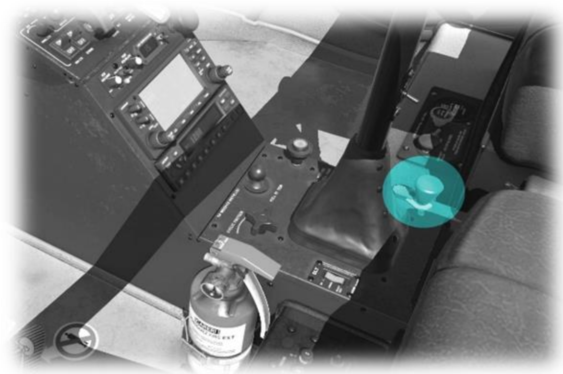
Pull backwards to lean the mixture.

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.

The Mixture control is also used to stop the engine, by pulling it to the ‘full-lean’ position.

Carburetor Heat Control



Pull this control to introduce heated air into the carburetor to melt any ice which has formed or is likely to form.

Fuel Shutoff Valve

Used to Enable or disable fuel supply to the engine.

Load Sheet Tables

The tables below illustrate a series of hypothetical load-sheet scenarios. Fuel consumption calculations reference the X-Plane R22 and may differ from the real aircraft. Passengers are deemed to have a weight of 200 lbs., and baggage a weight of 50 lbs.

SINGLE PILOT NO BAGGAGE:

Flight Time (Minutes)	Total Fuel (lbs.)	# PAX	Baggage Weight (lbs.)	Payload (lbs.)	Basic Empty Weight (lbs.)	Takeoff Weight (lbs.)	CG X-Plane
20	7	1	0	200	830	1037	CENTER
40	14	1	0	200	830	1044	CENTER
60	20	1	0	200	830	1050	CENTER
80	27	1	0	200	830	1057	CENTER
100	33	1	0	200	830	1063	CENTER
120	40	1	0	200	830	1070	CENTER
140	47	1	0	200	830	1077	CENTER
160	53	1	0	200	830	1083	CENTER
180	60	1	0	200	830	1090	CENTER
200	66	1	0	200	830	1096	CENTER
220	73	1	0	200	830	1103	CENTER
240	79	1	0	200	830	1109	CENTER
260	86	1	0	200	830	1116	CENTER

SINGLE PILOT WITH BAGGAGE:

Flight Time (Minutes)	Total Fuel (lbs.)	# PAX	Baggage Weight (lbs.)	Payload (lbs.)	Basic Empty Weight (lbs.)	Takeoff Weight (lbs.)	CG X-Plane
20	7	1	25	225	830	1062	CENTER
40	14	1	25	225	830	1069	CENTER
60	20	1	25	225	830	1075	CENTER
80	27	1	25	225	830	1082	CENTER
100	33	1	25	225	830	1088	CENTER
120	40	1	25	225	830	1095	CENTER
140	47	1	25	225	830	1102	CENTER
160	53	1	25	225	830	1108	CENTER
180	60	1	25	225	830	1115	CENTER
200	66	1	25	225	830	1121	CENTER
220	73	1	25	225	830	1128	CENTER
240	79	1	25	225	830	1134	CENTER
260	86	1	25	225	830	1141	CENTER

DUAL PILOTS NO BAGGAGE:

Flight Time (Minutes)	Total Fuel (lbs.)	# PAX	Baggage Weight (lbs.)	Payload (lbs.)	Basic Empty Weight (lbs.)	Takeoff Weight (lbs.)	CG X-Plane
20	7	2	0	400	830	1237	CENTER
40	14	2	0	400	830	1244	CENTER
60	20	2	0	400	830	1250	CENTER
80	27	2	0	400	830	1257	CENTER
100	33	2	0	400	830	1263	CENTER
120	40	2	0	400	830	1270	CENTER
140	47	2	0	400	830	1277	CENTER
160	53	2	0	400	830	1283	CENTER
180	60	2	0	400	830	1290	CENTER
200	66	2	0	400	830	1296	CENTER
220	73	2	0	400	830	1303	CENTER
240	79	2	0	400	830	1309	CENTER
260	86	2	50	400	830	1316	CENTER

DUAL PILOTS WITH BAGGAGE:

Flight Time (Minutes)	Total Fuel (lbs.)	# PAX	Baggage Weight (lbs.)	Payload (lbs.)	Basic Empty Weight (lbs.)	Takeoff Weight (lbs.)	CG X-Plane
20	7	2	50	450	830	1287	CENTER
40	14	2	50	450	830	1294	CENTER
60	20	2	50	450	830	1300	CENTER
80	27	2	50	450	830	1307	CENTER
100	33	2	50	450	830	1313	CENTER
120	40	2	50	450	830	1320	CENTER
140	47	2	50	450	830	1327	CENTER
160	53	2	50	450	830	1333	CENTER
180	60	2	50	450	830	1340	CENTER
200	66	2	50	450	830	1346	CENTER
220	73	2	50	450	830	1353	CENTER
240	79	2	50	450	830	1359	CENTER
260	86	2	50	450	830	1366	

Checklists

The following check lists are designed with the convenience of the simulation pilot in mind and customized to the X-Plane R22. 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.

MASTER BATTERY

ON

FUEL QTY

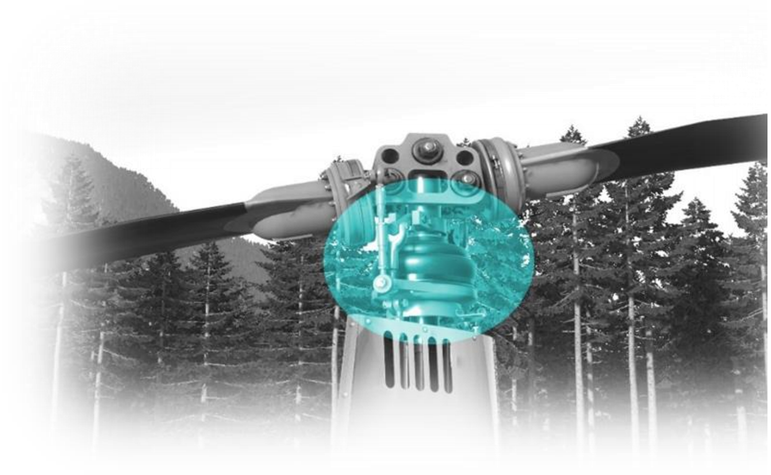
CHECK

TAIL ROTOR

CHECK ROTOR BLADES MOVE WITH YAW INPUT

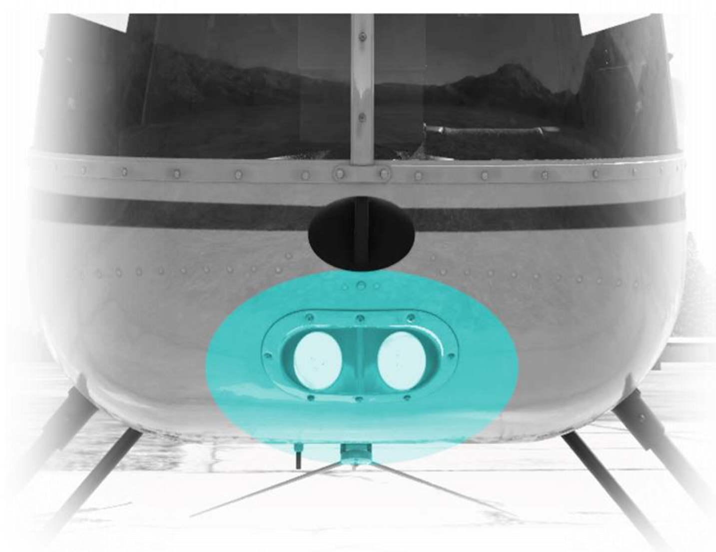
MAIN ROTOR

CHECK ROTOR BLADES MOVE WITH PITCH AND ROLL INPUTS



LANDING LIGHTS

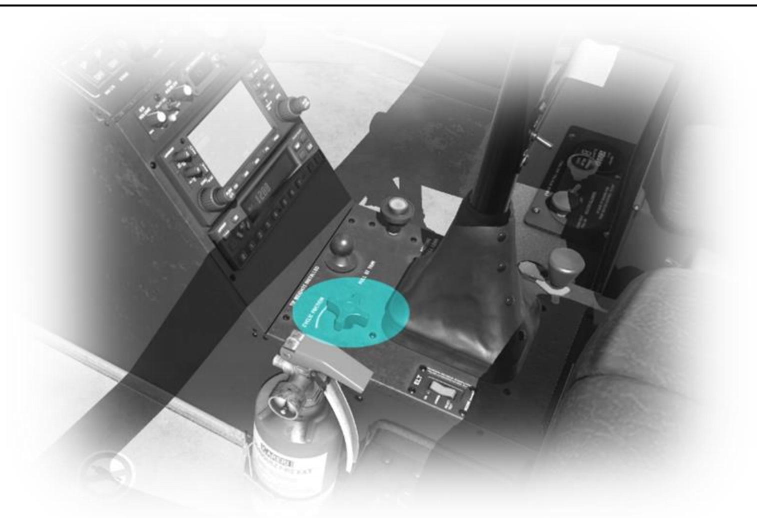
CHECK

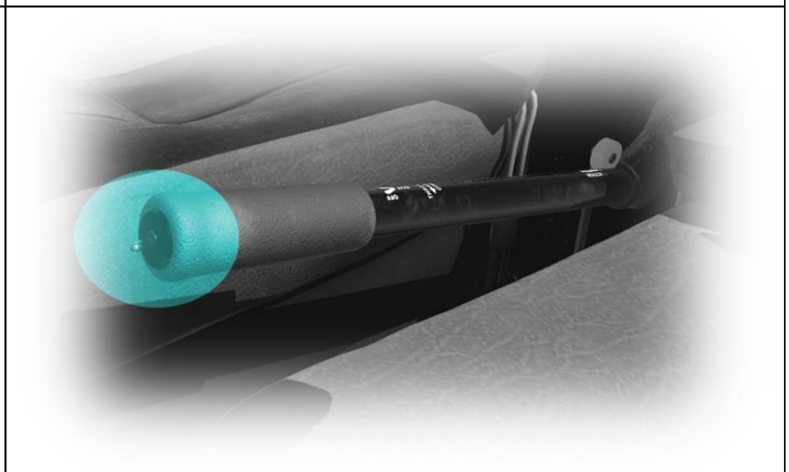


MASTER BATTERY

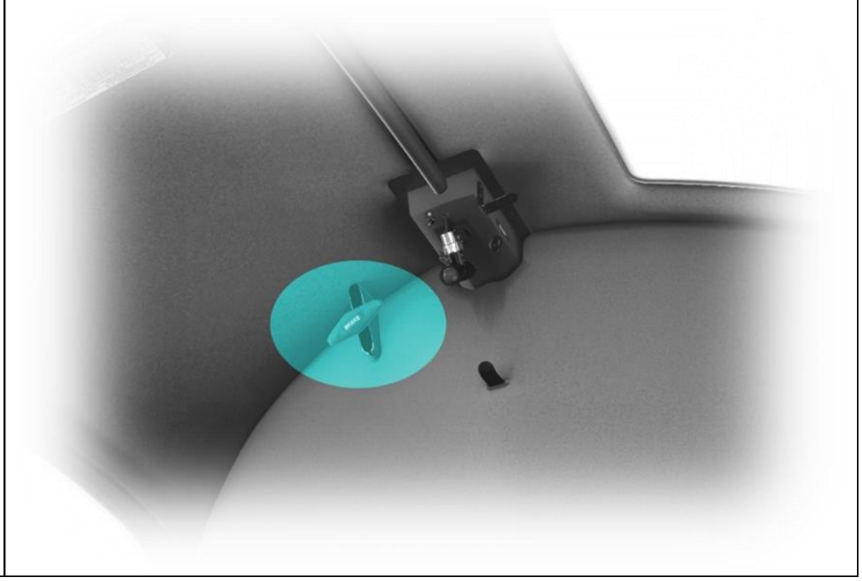
OFF

Before Starting Engine

DOORS CLOSED AND LATCHED	
FUEL SHUT-OFF ON	
CYCLIC FRICTION OFF	

THROTTLE IDLE	
GOVERNOR OFF	
CARB HEAT OFF	

MIXTURE FULL RICH (DOWN)	
CLUTCH DISENGAGED	
ALTIMETER SET (CURRENT BARO / FIELD ELEVATION)	35 

ROTOR BRAKE DISENGAGED (SEATED)	35 

Engine Start

MASTER BATTERY

ON

THROTTLE

CLOSED

STROBE

ON

STARTER KEY

START, THEN BOTH

CLUTCH

ENGAGED

ALTERNATOR

ON

OIL PRESSURE

CHECK

ENGINE GAGES

GREEN

MAGNETOS

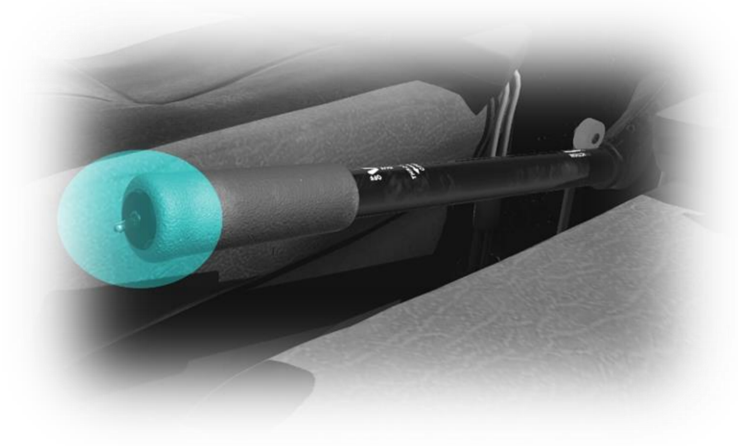
LEFT ONLY – CHECK

RIGHT ONLY – CHECK

SET BOTH

GOVERNOR

ON



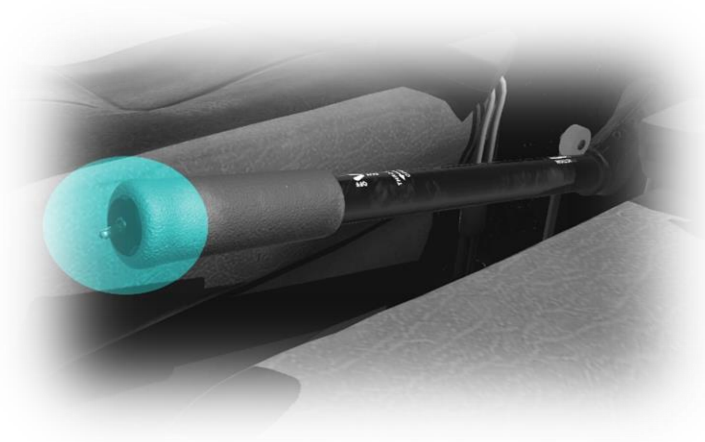
Engine Shutdown

CYCLIC FRICTION

ON

GOVERNOR

OFF



THROTTLE

CLOSED

CLUTCH

DISENGAGED

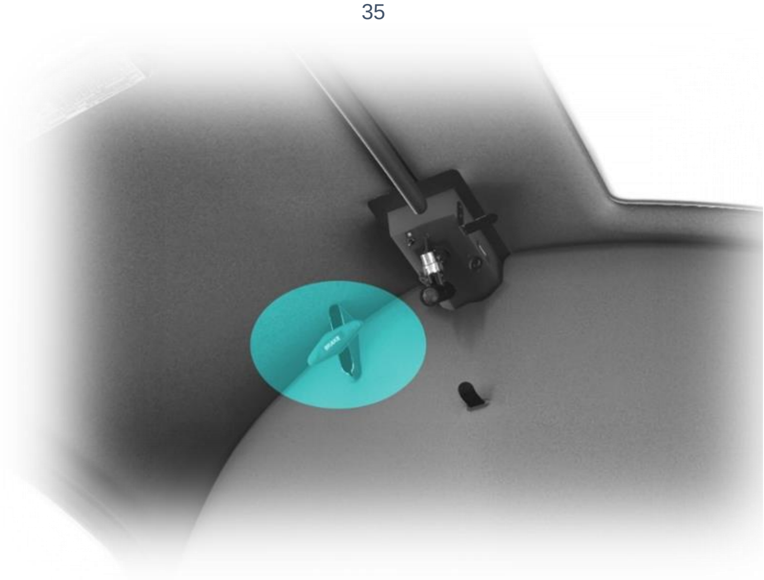
MIXTURE

IDLE CUT-OFF

35

ROTOR BRAKE

ENGAGED (UNTIL ROTOR STATIONARY)



35

ELECTRICAL SWITCHES

NAV LIGHTS = OFF

STROBE – OFF

ALTERNATOR – OFF

MASTER BATTERY

OFF

Appendix A

Table of Manifold Pressure (in red) required to maintain Maximum Continuous Power for a given altitude and temperature:

MAXIMUM CONTINUOUS POWER (128HP)								
PRESS ALT - FT	OUTSIDE AIR TEMP - DEGREES CELSIUS							
	-30	-20	-10	0	10	20	30	40
SL	21.5	21.8	22.1	22.4	22.6	22.9	23.1	23.3
2000	20.9	21.2	21.5	21.8	22.1	22.3	22.5	22.8
4000	20.4	20.7	21.0	21.3	21.5	21.8	22.0	22.2
6000	19.9	20.2	20.5	20.8	21.0	21.3	21.5	21.7
8000	19.5	19.8	20.1	20.3	20.6	20.8	21.0	21.3
10000	19.1	19.4	19.6	19.9	FULL THROTTLE			
12000								
FOR MAX TAKEOFF POWER (5 MIN), ADD 2.8 IN.								