

ALABEO GNS530



1. The On/Off button turns the unit on and off.
2. The top number in each radio box correspond to the active frequency, the bottom number correspond to the standby frequency.
3. The Com and Nav Active/Standby Frequency switch toggles the active frequency to standby and vice versa.
4. Nav1 Ident readout is the 3 letter code of the Nav1 beacon tuned in the Nav1 frequency.
5. Nav1 Radial is the radial degrees from the Nav1 beacon.
6. Nav1 Distance is the distance from the Nav1 beacon.
7. The Com/Nav switch is used to toggle between the Com and Nav radios.
8. The CDI switch (NAV/GPS switch) toggles between GPS and Nav1 navigation modes.
9. The CDI, at the bottom of the screen, shows course deviation information in either Nav 1 or GPS navigation modes. In the Nav 1 mode, the CDI works exactly like the standard CDI display found on most aircraft. The deflection distance of the CDI needle corresponds to 1 mile on each side of the desired track in the Nav 1 mode and it corresponds to a 5 miles distance on each side when tracking a waypoint in the GPS mode.

10. All other buttons and their functions are the same as in the FSX defaultGPS500 unit and are described in the help section of the simulator. Please refer to this section for information on the functions.

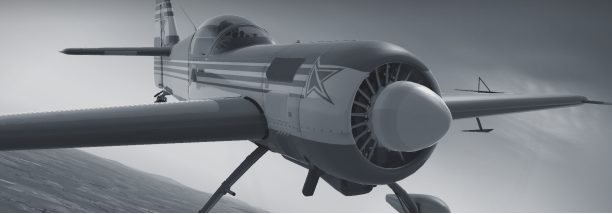
GPS Waypoint Information Bar



GPS Waypoint Information Bar

Click on the red area of the above picture to make the GPS Waypoint Information Bar appear/disappear. It could be clicked anytime you want.

The digital display of GPS waypoint information shows values only for GPS waypoints. If no waypoint is set in the GPS, the readout will display nothing.



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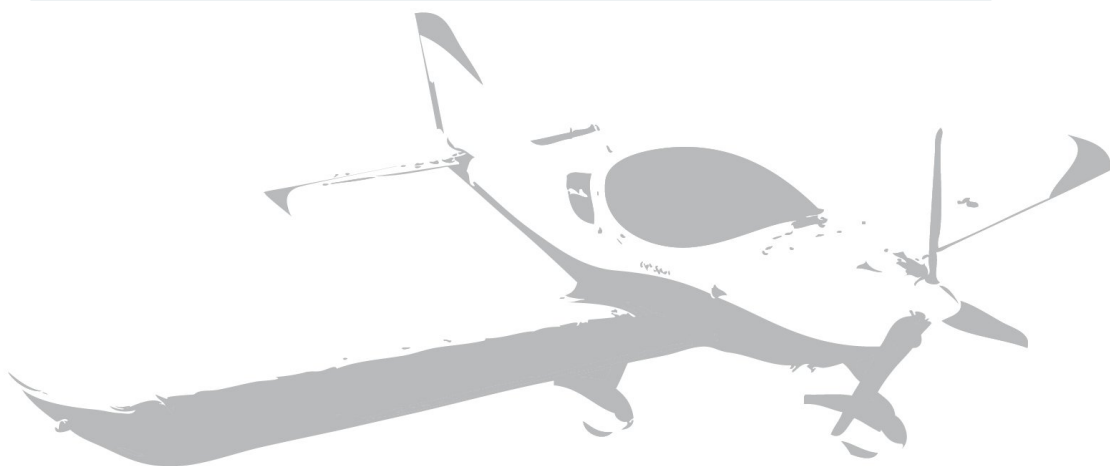
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Emergency Procedures

ALABEO®



GENERAL INFORMATION

This section provides checklists and amplified procedures for coping with various emergencies that may occur. Emergencies caused by aircraft or engine malfunction are extremely rare if proper pre-flight inspections and maintenance are practiced.

However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem.

Airspeeds for Emergency Procedures

Engine failure after takeoff 60 [knot] (70 [mph])
(flaps in T/O or retracted position)

Maneuvering speed at 1,320 [lb]..... 88 [knot] (101 [mph])

Maneuvering speed at 900 [lb]..... 70 [knot] (80 [mph])
(flaps retracted)

Gliding speed..... 60 [knot] (70 [mph])
(flaps retracted)

Precautionary landing with engine power..... 60 [knot] (70 [mph])
(flaps in any position)

Emergency landing without engine power..... 60 [knot] (70 [mph])
(flaps in any position)

Engine failure during takeoff run

- | | |
|--------------------|--------------|
| 1. Throttle | - idle |
| 2. Ignition switch | - switch OFF |
| 3. Brakes | - apply |

Engine failure after takeoff

- | | |
|-------------------------------|---|
| 1. Push control stick forward | |
| 2. Speed | - gliding at 60 [knot] (70 [mph]) |
| 3. Altitude | - below 150 [ft] : land in takeoff direction
- over 150 [ft] : choose a landing area |
| 4. Landing area | - choose free area without obstacles |
| 5. Wind | - find direction and velocity |
| 6. Flaps | - extend as necessary |
| 7. Trim | - adjust |
| 8. Safety harness | - tighten |
| 9. Fuel Selector | - close |
| 10. Ignition switch | - switch OFF |
| 11. Master switch | - switch OFF before landing |
| 12. Land | |

Loss of engine power in flight

- | | |
|-------------------------------|--|
| 1. Push control stick forward | |
| 2. Speed | - gliding at 60 [knot] (70 [mph]) |
| 3. Altitude | - in accordance with actual altitude search for a
suitable place to safe land |
| 4. Landing area | - choose free area without obstacles |
| 5. Wind | - find direction and velocity |
| 6. Emergency landing | - perform |

In-flight engine starting

- | | |
|--------------------------|--|
| 1. Switches | - switch OFF unnecessary electrical equipment |
| 2. Master switch | - switch ON |
| 3. Fuel Selector | - turn on (to tank with more quantity of fuel) |
| 4. Throttle - idle | |
| 5. Fuel pump | - switch ON |
| 6. Ignition switch | - hold activated to start the engine |
| 7. After engine starting | - fuel pump - switch OFF |
| - other switches | - switch ON as necessary |

Emergency landing without engine power

Emergency landings are generally carried out in the case of engine failure and the engine cannot be re-started.

- | | |
|--|--|
| 1. Speed | - adjust for optimum gliding
60 [knot] (70 [mph]) |
| 2. Trim | - adjust |
| 3. COMM | - giving location and intentions - if possible |
| 4. Flaps | - extend as necessary |
| 5. Fuel Selector | - close |
| 6. Ignition switch | - switch OFF |
| 7. Master switch | - switch OFF |
| 8. Safety harness | - tighten |
| 9. Perform approach without steep turns and land on chosen landing area. | |

Precautionary landing with engine power

A precautionary landing is generally carried out in the cases where the pilot may be disorientated, the aircraft has no fuel reserve or possibly in bad weather conditions.

1. Choose landing area, determine wind direction
2. Report your intention to land and landing area location if a COMM is installed in the airplane.

3. Perform low-altitude passage into wind over the right-hand side of the chosen area with flaps extended as needed and thoroughly inspect the landing area.
4. Perform circle pattern.
5. Perform approach at increased idling with flaps fully extended at 60 [knot] (70 [mph])
6. Reduce power to idle when flying over the runway threshold and touch-down at the very beginning of the chosen area.
7. After stopping the airplane switch OFF all switches, shut OFF the fuel selector, lock the airplane and seek assistance.

NOTE

Watch the chosen area steadily during precautionary landing.

Engine fire during start

- | | |
|---|--------------|
| 1. Fuel Selector | - close |
| 2. Throttle | - full power |
| 3. Ignition switch | - switch OFF |
| 4. Master | - switch OFF |
| 5. Leave the airplane | |
| 6. Extinguish fire by fire extinguisher or call for a fire-brigade if you cannot do it. | |

Engine fire in flight

- | | |
|--|---|
| 1. Heating | - close |
| 2. Fuel Selector | - close |
| 3. Throttle | - full power |
| 4. Ignition switch | - switch OFF after the fuel in carburetors is consumed and engine shut down |
| 5. Master switch | - switch OFF |
| 6. Emergency landing | - perform as soon as possible |
| 7. Leave the airplane | |
| 8. Extinguish fire by yourself or call for a fire-brigade if you cannot do it. | |

NOTE

Estimated time to pump fuel out of carburetors is about 30 [sec].

WARNING

Do not attempt to re-start the engine!

Electrical fire in flight

1. Master switch - switch OFF
2. Other switches - switch OFF
3. Heating - close
4. Ventilation - open
5. Use the fire extinguisher (if installed)
6. Emergency landing - perform as soon as possible

Generator failure

- GEN "OFF" highlighted red and blinking, bringing up the alarm bar at the bottom of the EMS screen with message, triggering the external EMS warning light and audio alert
- Voltmeter (on EMS screen) indicates voltage under 12.5 V.
- Ammeter (on EMS screen) permanently indicates negative current independently on engine RPM.

1. Switch OFF - all unnecessary electrical equipment
2. Switch ON - Master, Instruments and Avionics
3. Voltmeter - monitor voltage of battery
4. Land as soon as possible at nearest suitable airport.

CAUTION

**Use transceiver, transponder and GPS as necessary, short time only.
Operating time of battery in good condition is up to 15 minutes.
The engine runs independently on generator functioning.**

Inadvertent spin recovery

There is no uncontrollable tendency of the airplane to enter into a spin provided the normal piloting techniques are used.

Inadvertent spin recovery technique:

- | | |
|-------------------------|---|
| 1. Throttle | - idle |
| 2. Lateral control | - ailerons neutralized |
| 3. Rudder pedals | - full opposite rudder |
| 4. Rudder pedals | - neutralize rudder immediately when rotation stops |
| 5. Longitudinal control | - neutralizes or push forward and recovery dive. |

WARNING

INTENTIONAL SPINS ARE PROHIBITED!

Inadvertent icing encounter

CAUTION

Aircraft is approved to operate in VMC condition only!

- | | |
|---|--|
| 1. Leave icing area | turn back or change altitude to reach area with higher outside air temperature |
| 2. Carburetor heating | open |
| 3. Cabin heating | open |
| 4. Increase RPM to minimize ice build-up on propeller blades | |
| 5. Continue to move control surfaces to maintain their moveability | |
| 6. In case of icing on the leading edge of wing, the stall speed will increase | |
| 7. In case of icing on the pitot probe, erroneous indicating of the airspeed and altimeter | |
| 8. If you fail to recover the engine power or normal flight conditions, land on the nearest airfield (if possible) or depending on the circumstances, perform a precautionary | |

NOTE

The carburetor icing and air filter icing shows itself through a decrease in engine power and an increase of engine temperatures.

NOTE

Use carburetor heating during lengthy descents and in areas of possible carburetor icing.

Obstruction of air into engine filter

If the engine runs rough and power decrease, air filter can be clogged with some impurities e.g. dust or ice.

Perform:

1. Carburetor heating - open
 2. Check engine running and monitor engine instruments.
 3. Land as soon as possible at nearest suitable airport.
- If you fail to recover the engine power, land on the nearest airfield (if possible) or depending on the circumstances, perform a precautionary landing

3.16 Engine vibration

If any forced aircraft vibrations appear, it is necessary:

1. To set engine speed to such power rating where the vibrations are lowest.
2. To land on the nearest airfield or to perform a precautionary landing

Landing with a flat tire

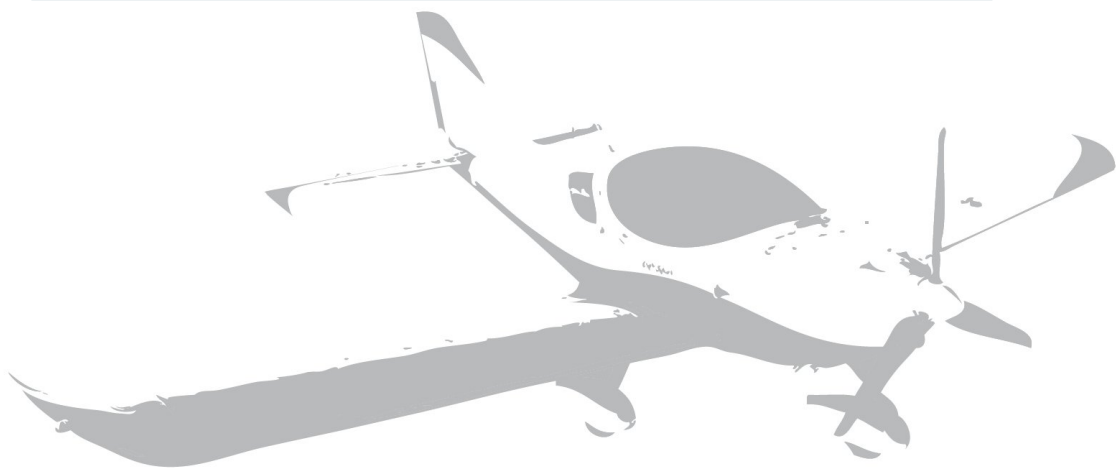
1. During landing keep the damaged wheel above ground as long as possible using the ailerons control
2. Maintain the direction on the landing roll out, applying rudder control.

Landing with a defective landing gear

4. If the main landing gear is damaged, perform touch-down at the lowest practicable speed and if possible, maintain direction during landing run.
5. If the nose wheel is damaged perform touch-down at the lowest practicable speed and hold the nose wheel above the ground by means of the elevator control as long as possible.

Normal Procedures

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Inspection Check List

- 1.-
 - Ignition
 - Master switch
 - Instruments switch
 - Avionics
 - Control system
 - Master and Instr. switches
 - Canopy
 - Check cockpit for loose objects
- 2.-
 - Engine cowling condition
 - Propeller and spinner condition
 - Engine mount and exhaust manifold condition
 - Oil quantity check
 - before this check, ensure Ignition OFF, then turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank.
 - Coolant quantity check
 - Visual inspection of the fuel and electrical system
 - Fuel system draining
 - Other actions according to the engine manual
- 3.-
 - Wing surface condition
 - Leading edge condition
 - Pitot head condition
- 4.-
 - Wing tip - surface condition, attachment
 - Aileron - surface condition, attachment, clearance, free movement
 - Wing flap - surface condition, attachment, clearance
- 5.-
 - Landing gear - wheel attachment, brakes, condition and pressure of tires
 - Wing lower surface and fuselage bottom condition
- 6.-
 - Vertical tail unit - condition of surface, attachment, free movement, rudder stops
 - Horizontal tail unit - condition of surface, attachment, free movement, elevator stops
 - Check that left side the fuselage and wing is the same as right side.

WARNING

Physically check the fuel level before each takeoff to make sure you have sufficient fuel for the planned flight.

WARNING

In case of long-term parking it is recommended to turn the engine several times (Ignition OFF!) by turning the propeller. Always handle by palm the blade area i.e. do not grasp only the blade edge. It will facilitate engine starting.

Engine starting

Before engine starting

- | | |
|-------------------|----------------------------|
| 1. Control system | - free & correct movement |
| 2. Canopy | - clean, closed and locked |
| 3. Safety harness | - tighten |
| 4. Brakes | - fully applied |

Engine starting

- | | |
|--------------------------|---|
| 1. Throttle | - idle |
| 2. Choke - cold engine | - ON (fully pulled and hold) |
| - warm engine | - OFF |
| 3. Fuel selector | - turn on (left or right fuel tank in accordance with fuel tanks filling) |
| 4. Master switch | - switch ON |
| 5. Fuel pump | - switch ON |
| 6. Propeller area | - clear |
| 7. Ignition switch | - hold activated to start the engine |
| 8. After engine starting | - Instrument - switch ON |
| | - Fuel pump - switch OFF |
| | - Avionics - switch ON |
| | - other switches - switch ON as necessary |
| 9. Choke | - gradually release during engine warming up |
| 10. Throttle | - maintain max. 2,500 [rpm] for warming up |

CAUTION

- The starter should be activated for a maximum of 10 [sec], followed by 2 [min] pause for starter cooling.
- As soon as engine runs, adjust throttle to achieve smooth running at approx. 2,500 [rpm]. Check the oil pressure, which should increase within 10 [sec]. Increase the engine speed after the oil pressure has reached 29 [psi] (2 [bar]) and is steady.
- To avoid shock loading, start the engine with the throttle lever set for idling or 10 % open at maximum, then wait 3 [sec] to reach constant engine speed before new acceleration.
- Only one magneto should be switched ON (OFF) during ignition magneto check.

Engine warm up, Engine check

Prior to engine check block the main wheels using chocks.

Initially warm up the engine to 2,000 [rpm] for approximately 2 [min], then continue to 2,500 [rpm] till oil temperature reaches 122 [°F] (50 [°C]).

The warm up period depends on ambient air temperature.

The engine speed drop during the time either magneto switched OFF should not exceed 300 [rpm].

NOTE: Only one magneto should be switched ON (OFF) during ignition magneto check.

Set max. power for verification of max. speed with given propeller and engine parameters (temperatures and pressures).

Check acceleration from idling to max. power. If necessary, cool the engine at idle [rpm] before shutdown.

CAUTION

The engine check should be performed with the aircraft heading upwind and not on a loose terrain (the propeller may suck grit which can damage the leading edges of blades).

Taxiing

Apply power and brakes as needed. Apply brakes to control movement on ground. Taxi carefully when wind velocity exceeds 20 [knot]. Hold the control stick in neutral position.

Normal Takeoff

Before takeoff

- | | |
|--|-------------------------------------|
| 1. Altimeter | - set |
| 2. Trim | - set neutral position |
| 3. Control system | - check free movement |
| 4. Cockpit canopy | - closed and locked |
| Recommendation: - manually check by pushing the canopy upwards. | |
| 5. Safety harness | - tighten |
| 6. Fuel selector | - turn ON (left or right fuel tank) |
| 7. Ignition switch | - switched ON (both magnetos) |
| 8. Wing flaps | - extend as necessary |

Takeoff

- | | |
|-----------------------|--|
| 1. Brakes | - apply to stop wheel rotation |
| 2. Takeoff power | - throttle fully forward
(max. 5,800 [rpm] for max. 5 [min]) |
| 3. Engine speed | - check rpm |
| 4. Engine gauges | - within limits |
| 5. Brakes | - release |
| 6. Elevator | - control stick pull |
| 7. Nose wheel unstick | - 32 [knot] (37 [mph]) |
| 8. Airplane lift-off | - 42 [knot] (48 [mph]) |
| 9. Climb | - after reaching airspeed
65 [knot] (75 [mph]) |
| 10. Wing flaps | - retract at safe altitude
(max. airspeed for flaps using is 75 [knot], 86 [mph]) |

Takeoff is prohibited if:

- Engine is running unsteadily
- Engine instrument values are beyond operational limits
- Aircraft systems (e.g. brakes or controls) work incorrectly

1. Throttle
 - max. takeoff power
(max. 5,800 [rpm] for max. 5 [min])
 - max. continuous power (5,500 [rpm])
2. Airspeed
 - $V_x = 60$ [knot] (70 [mph])
 - $V_y = 65$ [knot] (75 [mph])
3. Trim
 - trim the airplane
4. Engine gauges
 - oil temperature, oil pressure and CHT within limits

If the cylinder head temperature or oil temperature and/or coolant temperature approaches or exceeds limits, reduce the climb angle to increase airspeed and possibly return within limits. If readings do not improve, troubleshoot causes other than high power setting at low airspeed.

Best angle of climb speed (V_x): 60 [knot] (70 [mph])

Best rate of climb speed (Vy): 65 [knot] (75 [mph])

1. Optimum glide speed - 60 [knot] (70 [mph])

Approach

- | | |
|-------------------|------------------------|
| 1. Approach speed | - 60 [knot] (70 [mph]) |
| 2. Throttle | - as necessary |
| 3. Wing flaps | - extend as necessary |
| 4. Trim | - as necessary |
| 5. Safety harness | - tighten |

CAUTION

It is not advisable to reduce the engine throttle control lever to minimum on final approach and when descending from very high altitude. In such cases the engine becomes under-cooled and a loss of power may occur. Descent at increased idle (approximately 3,000 [rpm]), speed between 60-75 [knot] (70-86 [mph]) and check that the engine instruments indicate values within permitted limits.

Normal landing

Before landing

- | | |
|---------------|------------------------|
| 1. Throttle | - as necessary |
| 2. Airspeed | - 60 [knot] (70 [mph]) |
| 3. Wing flaps | - extend as necessary |
| 4. Trim | - as necessary |

Landing

- | | |
|-----------------|---|
| 1. Throttle | - idle |
| 2. Touch | -down on main wheels |
| 3. Apply brakes | - as necessary
(after the nose wheel touch-down) |

After landing

- | | |
|---------------|--|
| 1. Throttle | - engine rpm set as required for taxiing |
| 2. Wing flaps | - retract |
| 3. Trim | - set neutral position |

Engine shut down

- | | |
|----------------------|---|
| 1. Throttle | - idle |
| 2. Instruments | - engine instruments within limits |
| 3. Switches | - switch OFF - except Instrument and Master |
| 4. Ignition switch | - turn key to switch OFF |
| 5. Instrument switch | - switch OFF |
| 6. Master switch | - switch OFF |
| 7. Fuel Selector | - close |

CAUTION

Rapid engine cooling should be avoided during operation. This happens above all during aircraft descent, taxiing and low engine [rpm] or at engine shutdown immediately after landing.

Under normal conditions the engine temperatures stabilize during descent, taxiing and at values suitable to stop engine by switching the ignition off. If necessary, cool the engine at idle [rpm] to stabilize the temperatures prior to engine shut down.

Aircraft parking and tie-down

- | | |
|------------------------|--------------------------------------|
| 1. Ignition switch | - OFF |
| 2. Master switch | - OFF |
| 3. Fuel selector | - close |
| 4. Parking brake | - use it as necessary (if installed) |
| 5. Canopy | - close, lock as necessary |
| 6. Secure the airplane | |

NOTE

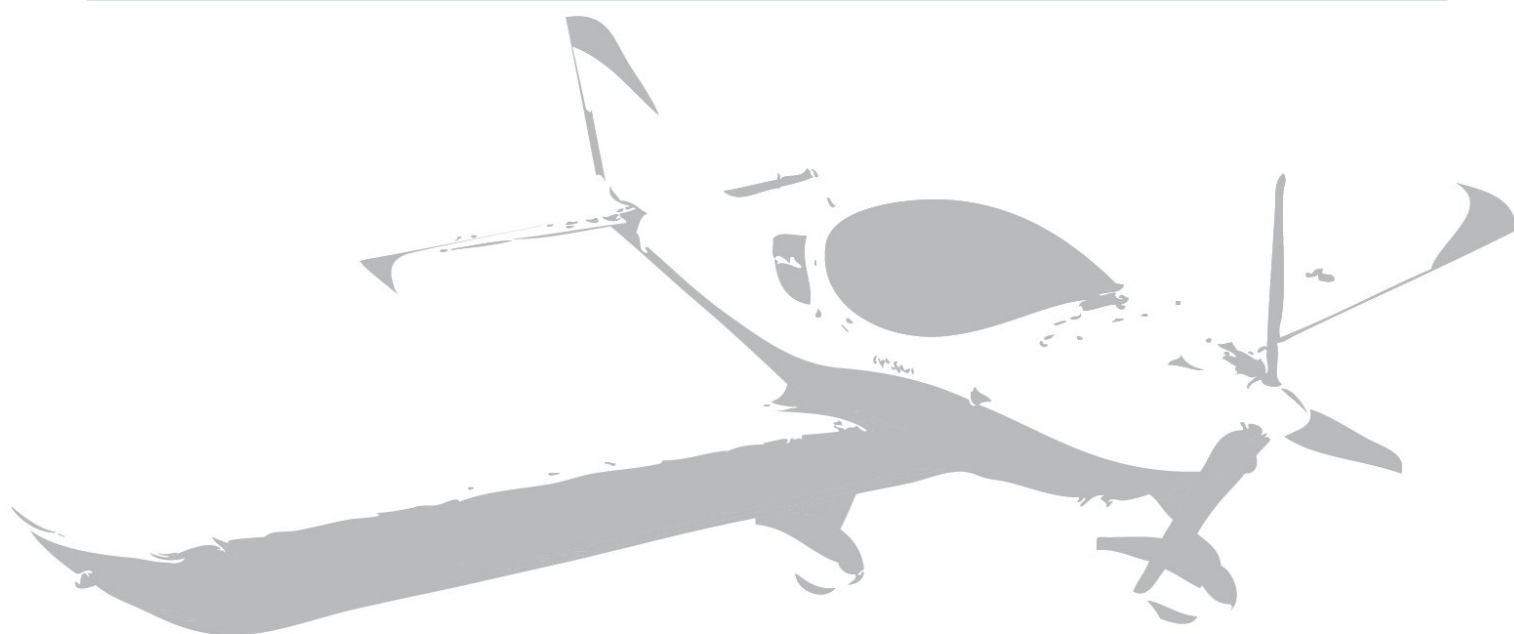
It is recommended to use parking brake (if installed) for short-time parking only, between flights during a flight day. After ending the flight day or at low temperatures of ambient air, do not use parking brake, but use the wheel chocks instead.

NOTE

Use anchor eyes on the wings and fuselage rear section to fix the airplane. Move control stick forward and fix it together with the rudder pedals. Make sure that the cockpit canopy is properly closed and locked. The anchoring before leaving the

Performance Tables

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Cruise speeds

Altitude	Engine speed	IAS		CAS	
<i>ft</i>	<i>rpm</i>	<i>knot</i>	<i>mph</i>	<i>knot</i>	<i>mph</i>
1000	4200	77	89	77	88
	4500	86	99	85	98
	4800	95	109	93	107
	5000	101	116	98	113
	5300	110	126	106	122
	5500	116	133	111	128
	5800	125	143	119	137
3000	4200	75	86	75	86
	4500	83	96	82	94
	4800	92	106	90	104
	5000	97	112	95	109
	5300	106	122	103	118
	5500	112	129	108	124
	5800	120	139	116	133
5000	4200	72	83	72	83
	4500	80	92	79	91
	4800	88	101	86	99
	5000	94	108	92	106
	5300	102	117	99	114
	5500	107	124	104	120
	5800	116	134	112	129
7000	4200	69	79	70	80
	4500	77	88	77	88
	4800	84	97	83	96
	5000	90	103	88	101
	5300	97	112	95	109
	5500	103	118	100	115
	5800	111	127	107	123
9000	4200	65	75	66	76
	4500	73	84	73	84
	4800	80	93	80	92
	5000	85	98	84	97
	5300	93	107	91	104
	5500	98	112	95	109
	5800	105	121	102	117

NOT INTENDED FOR REAL FLIGHTS.

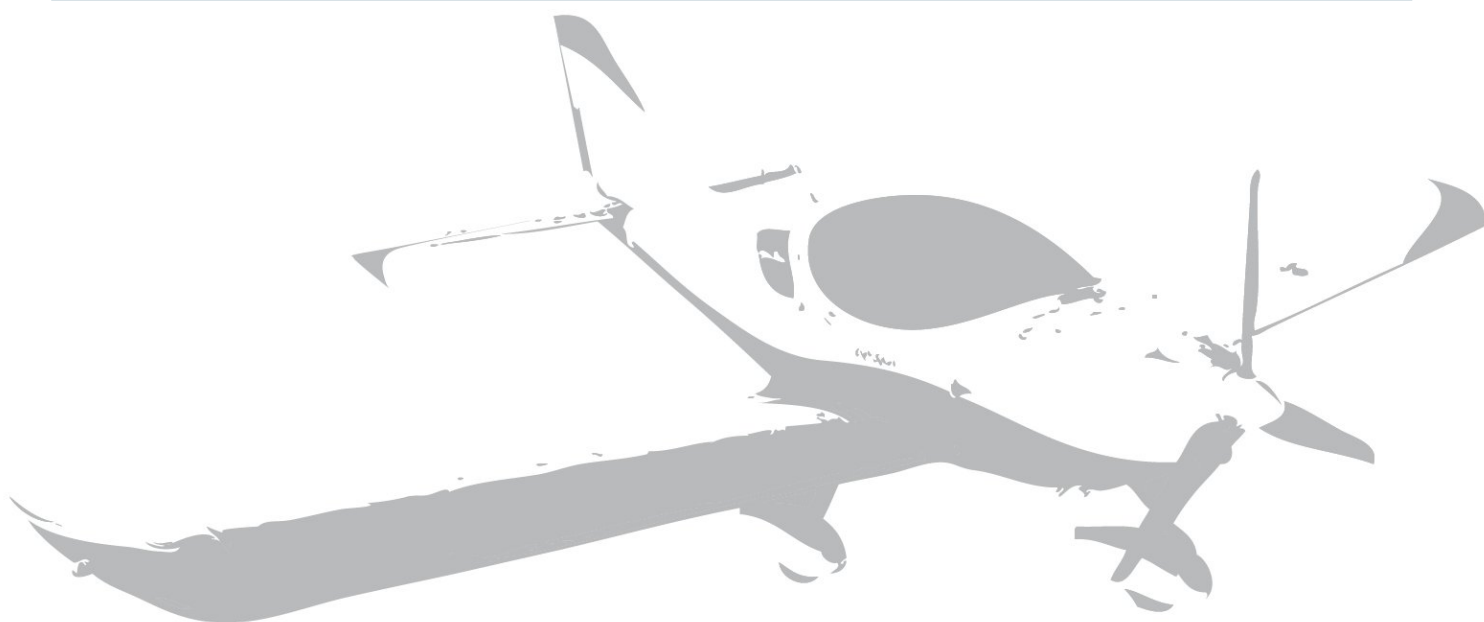
RPM setting and fuel consumption

Altitude		ft	3,000					
Engine speed		<i>rpm</i>	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption		<i>l/h</i>	11.5	14.0	16.5	18.5	21.0	23.0
		<i>US gal/h</i>	3.04	3.70	4.36	4.89	5.55	6.08
Airspeed	IAS	<i>knot</i>	75	83	92	97	106	112
		<i>mph</i>	86	95	106	111	122	129
	CAS	<i>knot</i>	75	82	90	95	103	108
		<i>mph</i>	86	94	104	109	118	124
	TAS	<i>knot</i>	78	85	93	98	106	111
		<i>mph</i>	90	98	107	113	122	128
Endurance and Range at 29.85 US gal (113 liters)								
Endurance		<i>hh:mm</i>	9:50	8:04	6:51	6:06	5:23	4:55
Range		<i>NM</i>	766	686	637	599	570	545
		<i>SM</i>	881	789	732	688	656	627
Endurance and Range at 23.77 US gal (90 liters)								
Endurance		<i>hh:mm</i>	7:50	6:26	5:27	4:52	4:17	3:55
Range		<i>NM</i>	610	546	507	477	454	434
		<i>SM</i>	702	628	583	548	522	500
Endurance and Range at 15.85 US gal (60 liters)								
Endurance		<i>hh:mm</i>	5:13	4:17	3:38	3:14	2:52	2:37
Range		<i>NM</i>	407	364	338	318	303	290
		<i>SM</i>	468	419	389	366	348	333
Endurance and Range at 7.92 US gal (30 liters)								
Endurance		<i>hh:mm</i>	2:37	2:08	1:49	1:37	1:26	1:18
Range		<i>NM</i>	203	182	169	159	151	145
		<i>SM</i>	234	209	194	183	174	167
Endurance and Range at 3.96 US gal (15 liters)								
Endurance		<i>hh:mm</i>	1:18	1:04	0:55	0:49	0:43	0:39
Range		<i>NM</i>	102	91	85	79	76	72
		<i>SM</i>	117	105	97	91	87	83

NOT INTENDED FOR REAL FLIGHTS.

Reference

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LIMITATIONS

Airspeed indicator range markings

NOTE

The stated stall speeds are valid for all flight altitudes.

Marking	IAS value or range		Significance
	<i>knot</i>	<i>mph</i>	
White arc	32-75	37-86	Flap Operating Range.
Green arc	39-108	45-124	Normal Operating Range.
Yellow arc	108-138	124-158	Maneuvers must be conducted with caution and only in smooth air.
Red line	138	158	Maximum speed for all operations.

RPM setting and fuel consumption

Flap extended speed range - V_{S0} to V_{FE}

Flap operating range (IAS):

32 - 75 [knot] (37 - 86 [mph])

Maneuvering speed - V_A

Maneuvering speed (IAS) at 1,320 [lb]:

88 [knot] (101 [mph])

Maneuvering speed (IAS) at 900 [lb]:

70 [knot] (80 [mph])

Maximum structural cruising speed – V_{NO}

Maximum structural cruising speed (IAS):

108 [knot] (124 [mph])

Never exceed speed - V_{NE}

Never exceed (IAS):

138 [knot] (158 [mph])

Service ceiling

Service ceiling.....10,000 [ft]

Load factors

Maximum positive limit load factor..... + 4 g

Maximum positive limit load factor..... - 2 g

Approved maneuvers

The Sport Cruiser is approved for normal and below listed maneuvers:

- Steep turns not exceeding 60° bank
- Lazy eights
- Chandelles
- Stalls (except whip stalls)