Aerosoft

American Aerolites

Falcon

CONTENTS

SYSTEM REQUIREMENTS

- Microsoft Flight Simulator FSX (SP2 or Acceleration)
- Windows XP/Vista/Windows 7 (fully updated)
- 2.0 GHz processor (Intel Core 2 Duo highly recommended)
- 2 GB RAM internal memory
- 256 MB graphic card (512 Mb highly recommended)
- PDF reader for manual

CREDITS

Concept:	Dave Rowberry
Modeling/Texturing:	Dave Rowberry, Joachim Schweigler
Flight Modeling:	John Cagle
Project Management:	Mathijs Kok
Manual, documentation:	Mathijs Kok
Images:	Nick Churchill
Installer:	Andreas Mügge
Testing:	Several good folks who will all be getting a free copy

Special thanks to Mike Fithian (http://www.aerofalcon.com/Table%20of%20contents.htm) for providing a complete manual.

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Aerosoft GmbH
Lindberghring 12
D-33142 Büren, Germany
www.aerosoft.com

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and we advise the Customer Support > Scenery Discussions & Support section for any questions on this product. This should be your first stop for any support.

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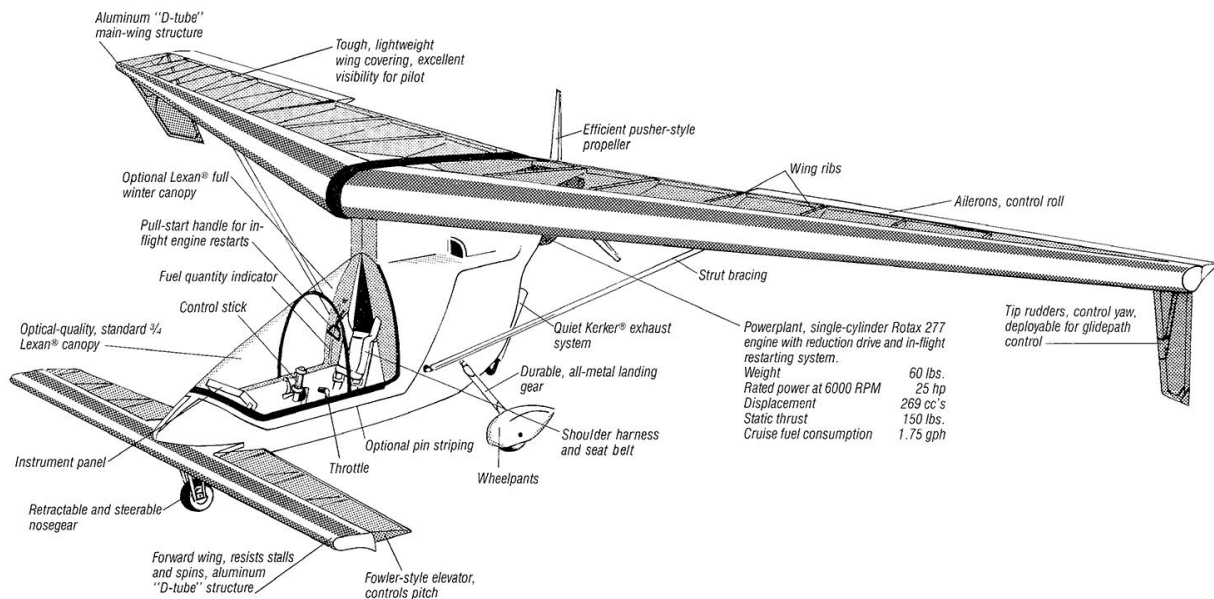
REMOVING THE AIRCRAFT FROM YOUR SYSTEM

Never remove the product manually, always used the control panel applet to do so. Failing to do so could create serious problems.

INTRODUCTION

It sounds amazing but when the American Aircraft Falcon was launched you could order one, bolt it together and go flying without any license or training. You will even find text like these in documents: "A driving instructor is not a suitable substitute for a flying instructor" and "Experience in operating vehicles is not a suitable substitute for flight training". Nowadays, of course, this is no longer possible but it speaks for the spirit in which the Falcon was designed. The Falcon is a small bundle to pure unadulterated fun. Forget SIDs and STARs and just enjoy the agility of this amazing ultralight.

BASIC DESIGN

The Falcon is a forward-wing-configuration (also known as a canard configuration) aircraft intended for VFR recreational use. The combination of canard wing and pusher propeller makes it extremely safe to handle as stalls and spins are unlikely to occur. Although the engine is one of the smallest used on aircraft, the Falcon is an agile and high performance aircraft.
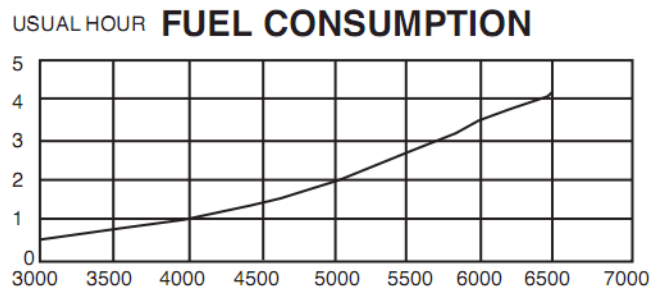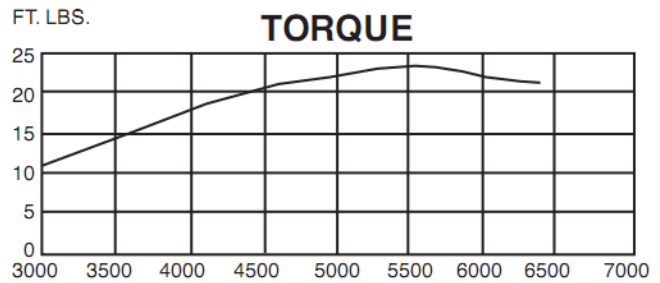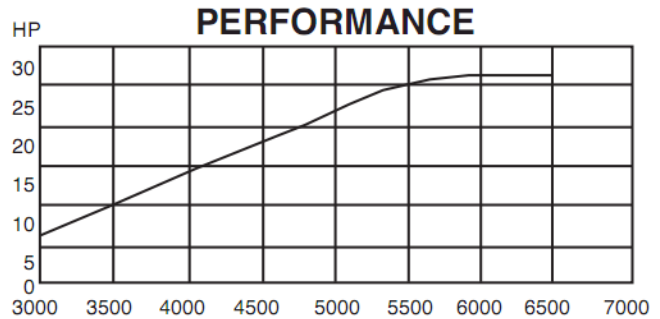
The design started in May 1981 and in January 1984 the first aircraft were delivered. The owner would get the aircraft partly assembled and the final assembly would take about 45 hours.

POWER SYSTEM INFORMATION

The power plant of the Falcon is the Austrian made Rotax 227, single cylinder, 2 stroke engine. It will provide you with about 25 horsepower in optimal conditions. The three-blade fiberglass propeller is driven via a 2.58:1 speed-reduction gearbox.

The power system is highly reliable (mainly because it so simple) as long as the following guidelines are observed:

- Make all power changes as slow and smooth as possible to avoid undue stress on the engine and gearbox.
- When descending, reduce power setting slowly and gradually top avoid shock-cooling the engine.
- Try to avoid idling below 2200 rpm on ground as this might cause spark plug fouling.
- At certain rpm settings the structure may vibrate, try to avoid these rpm settings.
- Idle should be set to 1600-2000 rpm and maximum rpm should be kept below 6000 rpm.
- Always clean the spark plug before starting if the aircraft is not used for several days.

WEIGHT AND DIMENSIONS

Weight .... 257 lbs.
Length .... 14.3 ft.
Height .... 5.6 ft.
Span .... 35.12 ft.
Total wing area .... 180.3 sq. ft.
Power system (including propeller) .... 56 lbs.
Gear width .... 5.2 ft.

PERFORMANCE DATA

These figures depend on conditions (in load and atmosphere) but are given for standard conditions at 170 lb. load, full fuel and 59 degrees F at sea level.

Maximum Level Speed, Full Power	63 mph
Speed, 75% power	55 mph
Speed, 55% power	45 mph
Minimum Controllable Airspeed	27 mph
Climb Rate	650 fpm
Vx (best angle-of-climb speed)	35 mph
Vy (best rate-of-climb speed)	45 mph
Takeoff Distance	200 ft.
Distance for 50-ft. obstacle Takeoff Distance	700 ft.
Landing Distance	250 ft.
Distance for 50-ft. obstacle Landing Distance	650 ft.
Takeoff Speed	35 mph
Landing (touchdown) Speed	30-35 mph
Cruise Speed	50-60 mph
Service Ceiling	15,000 ft
Best L/D (glide ratio)	15:1 @ 35 mph
Minimum sink rate	250 fpm @ 35 mph
Range at 75% power	120 miles
Range at 55% power	160 miles

ANIMATIONS

There are a few animations that are not easy to find.

- Click on the canopy frame to toggle the closed winter canopy
- Click on the main wheel support to toggle wheel covers (not on all models)
- Click on the harness lock to toggle the pilot.

PREFLIGHT PROCEDURE

Full walk around the aircraft checking all cables and all surfaces.

ENGINE START AND PRETAKE-OFF CHECKLIST

Securely restrain Falcon from rolling (parking brake set is NOT enough)

Throttle .... CLOSED
Choke .... PULLED
Ignition Key .... CHECK OFF
Magneto Switch .... CHECK OFF
Prop .... CHECK CLEAR
Prop .... PULL OVER TWICE (not for FSX)
Ignition Key .... ON
Magneto Switch .... ON
Throttle .... CHECK CLOSED
Prop .... CHECK CLEAR
Starter Button .... PUSH
Choke .... OFF WHEN ABLE
Engine .... WARM TO 125 DEGREES
Altimeters .... SET
Controls .... MOVE TO CHECK
Brake .... TEST

NORMAL TAKEOFF

1. Line up into takeoff direction
2. Smoothly apply full power
3. Use nosewheel steering initially, use tip rudders only close to takeoff speed (around 25 mph)
4. Pull stick back slightly at takeoff speed
5. Climb to 200 ft. at 40 to 45 mph
6. Maintain full power until 200 feet is reached, and then reduce when needed.

MAXIMUM PERFORMANCE TAKEOFF

1. Line up into takeoff direction, apply brake
2. Smoothly apply full power, hold brake
3. Release brakes and accelerate with stick forward of center to reduce drag
4. Use nosewheel steering initially, use tip rudders only close to takeoff speed (around 25 mph)
5. Pull stick back fast at takeoff speed to lift off the nosewheel
6. Ease stick forward to establish 40 mph airspeed
7. Climb to 200 ft. at 40 mph
8. Maintain full power until 200 feet is reached, and then reduce when needed.

CROSSWIND TAKEOFF

1. Line up with slight angle to runway to minimize crosswind
2. Follow Maximum Performance Takeoff (starting at step 2)
3. Apply aileron towards upwind wing to keep wing level
4. When craft rotates, it will weathervane into the wind, do NOT attempt to correct as this could reduce performance.

FLIGHT SPEEDS

The following speeds are typical for a standard weight pilot in standard conditions and a fully fueled up aircraft. Due to the nature of the aircraft and location of the airspeed indicator, these are only guides and should not be seen as absolute values.

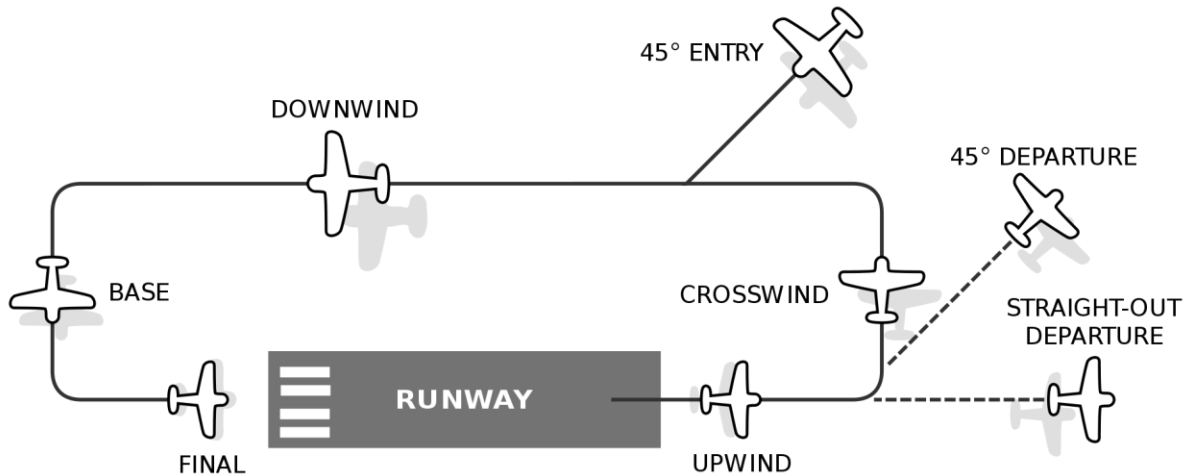|	
Minimum Speed (stall)	27 mph
Best Angle of Climb	40 mph
Best Rate of Climb	45 mph
Cruise Speed	50-60 mph
Maximum Speed in Level Flight	63 mph
Rough Air Penetration Speed	38 mph min / 50 mph max

CLIMB

The recommended climb procedure is to apply full power to takeoff and up to 200 feet, then reduce power by about 500 rpm for the rest of the climb. Note that the aircraft is sensitive to the vertical air movements. Climbing in a upward thermal will increase the vertical speed considerably but climbing in a descending air column could easily negate any increase in altitude!

CRUISE

The Falcon will cruise with the stick in neutral position and **altitude control is entirely by throttle setting**. To the new pilot it may seem the aircraft flies in an unnatural nose-high position but this is by design. For a pilot of average height the forward wing will line up with the horizon.

APPROACH AND LANDING

A standard approach pattern is highly recommended as it allows the best opportunity to see other traffic and to notice any problems on the airfield that might interfere with your landing.

NORMAL APPROACH

1. Check pattern for traffic
2. Turn to final with minimally 100 feet altitude AGL
3. Establish approach speed (50 mph)
4. Throttle back to high idle (2500 rpm)
5. Center nosewheel
6. Initiate flare at 5-8 feet AGL
7. Touch down with main wheels and stick aft of center, then smoothly lower nose.

SHORT FIELD APPROACH

1. Check pattern for traffic
2. Turn to final with minimally 100 feet altitude AGL
3. Deploy rudder dive brakes while adding forward stick to establish an approach speed of 35-40 mph.
4. Adjust power to achieve a sink rate of 300 fpm maximum
5. Center nosewheel
6. Because of the low speed it will be hard to achieve any flare
7. Just before touch down use kill switch to stop engine
8. Touch down with main wheels and stick aft of center, then quickly lower the nose and maintain full forward stick and apply nosewheel brake firmly.

CROSSWIND APPROACH

1. Check pattern for traffic
2. Turn to final with minimally 100 feet altitude AGL
3. Establish approach speed (50 mph)
4. Apply aileron slightly to lower upwind wing and use opposite rudder to keep course
5. Throttle back to high idle (2500 rpm)
6. Center nosewheel
7. Verify the low wing has enough ground clearance just before touch down
8. Avoid a prolonged flare
9. Touch down with main wheels and stick aft of center, then smoothly lower nose.
10. If the upwind wing begins to lift up after landing immediately apply rudder towards the low wing.

GROUNDHANDLING

The Falcon handles easy on the ground with the steerable nosewheel but it is easy to lose track of the wingspan of the Falcon. Not only should great care be taken to avoid colliding with objects but also to keep the wings level and not letting a wing tip hit the ground with a sudden change of direction.
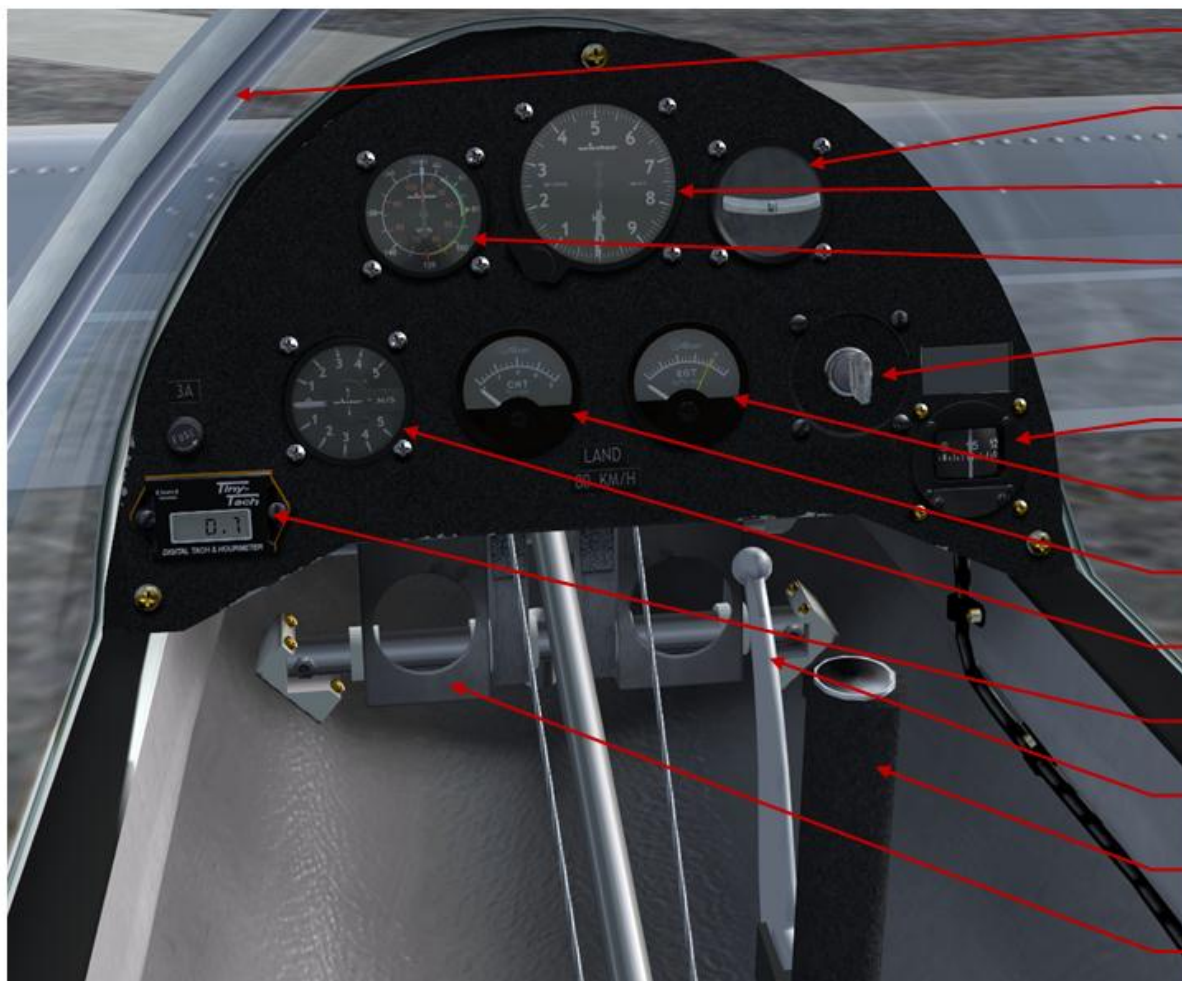
Taxiing in winds over 15 mph should be avoided if possible and done with the utmost care if necessary. It is highly recommended to have a person holding the upwind wing.
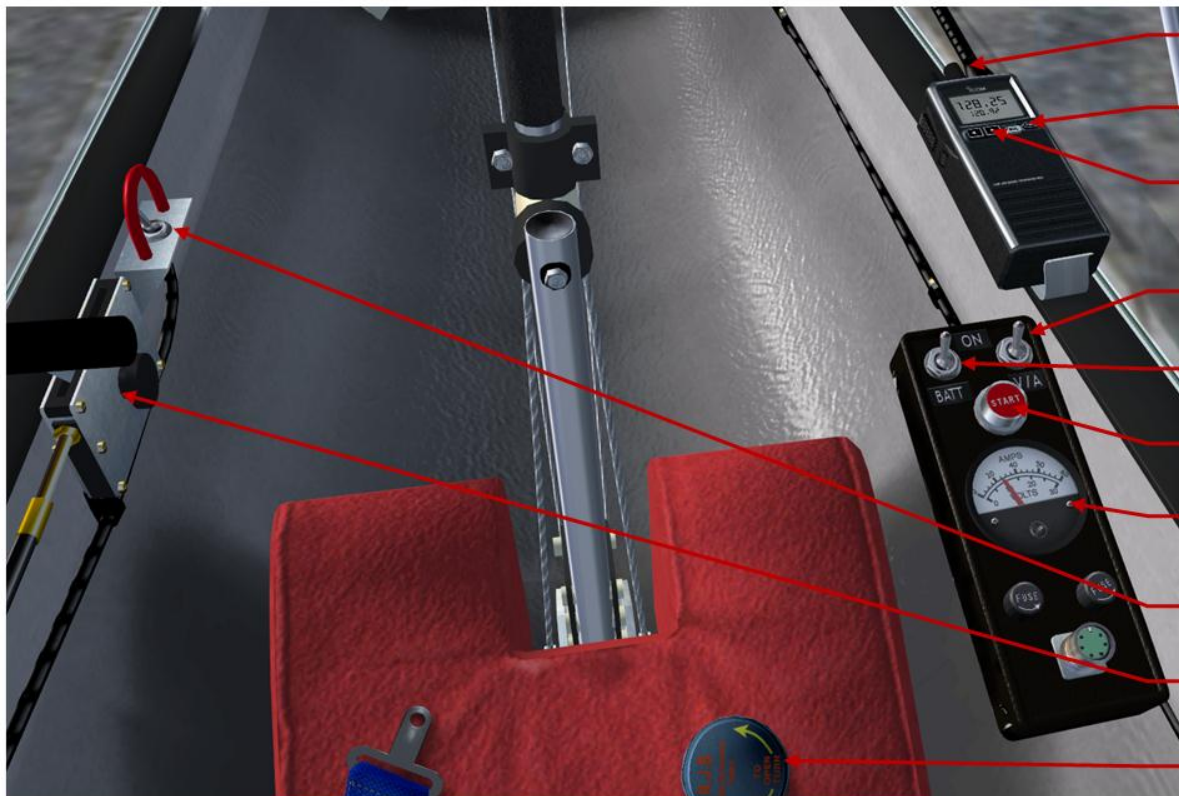
EMERGENCY PROCEDURES

The pilot is HIGHLY recommended to study these procedures before any flight.

Emergency	Altitude AGL	Procedure
Power failure	< 100 ft.	Stick forward, establish landing speed and land straight forward
Power failure	100 <> 200 ft.	Stick forward, establish landing speed, locate safe landing location (but do not turn more them 90 degrees!)
Power failure	> 200 ft.	Establish best glide speed; locate safe landing location and attempt to land into the wind. Keep in mind the smooth ground with a downwind landing is most likely better than a upwind landing into obstacles.
High vibration	Any	Throttle to idle, if vibration remains switch engine off. Land as soon as possible.
Jammed tip rudder	Any	Apply opposite tip rudder, stick forward to maintain speed. Land as soon as possible.
Jammed Aileron	Any	Use rudders for directional control, reduce speed. Land as soon as possible.
Jammed Pitch Control	Any	Locate landing location and fly standard pattern with higher power settings. Cut power just before landing.
Flutter	Any	Reduce power and air speed, regain control.
Sudden wind gusts	Any	Land as soon as possible. Avoid any banks over 10 degrees, fly at maneuver speed.
Fire	Any	Engine switch off, full tip rudders for maximum rate of descent. Land immediate. The light structure of the aircraft and materials mean there is almost no 'safe' time in the air in case of ANY fire.

Toggle Winter Canopy

Slip Indicator

Altitude Indicator

Airspeed Indicator

Ignition Key

Magnetic Compas

Exhaust Gas Temp

Cylinder Head Temp

Vertical Speed

Tach/Hour Meter

Wheel Brake

Control Yoke

Rudder / Air Brake

Change Frequency

On/Off

Toggle Active/Standby

Toggle Volts/Amps

Main Battery Switch

Start Button

Volt/Amp Meter

Magneto

Throttle

Toggle Pilot