

AIRCRAFT INFORMATION

Pipistrel APIS/Bee

with Hirth F33 BS engine





Introduction

This document is published for the purpose of providing general information about the Pipistrel APIS Aircraft. Distributors/promoters and customers should familiarize themselves with this document to assist in their evaluation of this aircraft.

Note: The aircraft name APIS is used in some markets and the name BEE is used in others when referring to this aircraft. This information pack may refer to the aircraft under the name APIS or BEE or even APIS/BEE but they are exactly the same aircraft. The name APIS is trademarked in some countries and cannot be used.

Should more information be required, please contact

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This document has been produced to provide general information about the APIS Aircraft in May 2012. With the ongoing development of the aircraft Pipistrel reserves the right to revise this document whenever occasioned by product improvement, government/authority regulations or any other good cause.



General description

All information herein applies to the APIS/Bee equipped with the Hirth F33 BS Engine. The APIS is a pre-molded, composite built, single seat, single engine, mid-wing, classic undercarriage, high performance, self-launching glider. By concept it is single-seat version of the Taurus.

Basic Information

APIS	Hirth F33 BS
wing span	14.97 m (49.10 ft)
length	6.22 m (20.4 ft)
wing area	12.24 m ² (131.75 ft ²)
aspect ratio	18.35
flap positions	-7°, -5°, 0°, 5°, 10°

Weights, center of gravity and fuel information

The design maximum take-off weight for the APIS is 350 kg (770 lbs) with more than 120 kg (264 lbs) useful load and a fuel capacity of 20 liters (5.3 gallons). For weight restricted markets (Europe, etc.) the MTOW is 322.5 kg (710 lbs), for other markets including the USA the MTOW of 350 kg (770 lbs) is approved.

APIS	Hirth F33 BS
empty weight	215 kg (474 lbs)
max. take-off mass (MTOM)	350 kg (770 lbs)
fuel capacity	1 x 20 L (1 x 5.3 US gal)
useful fuel (in flight attitudes)	1 x 20 L (1 x 5.3 US gal)
baggage load (typical, depends on actual aircraft configuration, instruments etc.)	APIS is a glider, and there is no dedicated baggage space. Small items can be carried in the side pockets and at the seat sides.
centre of gravity (MAC)	29% - 42%

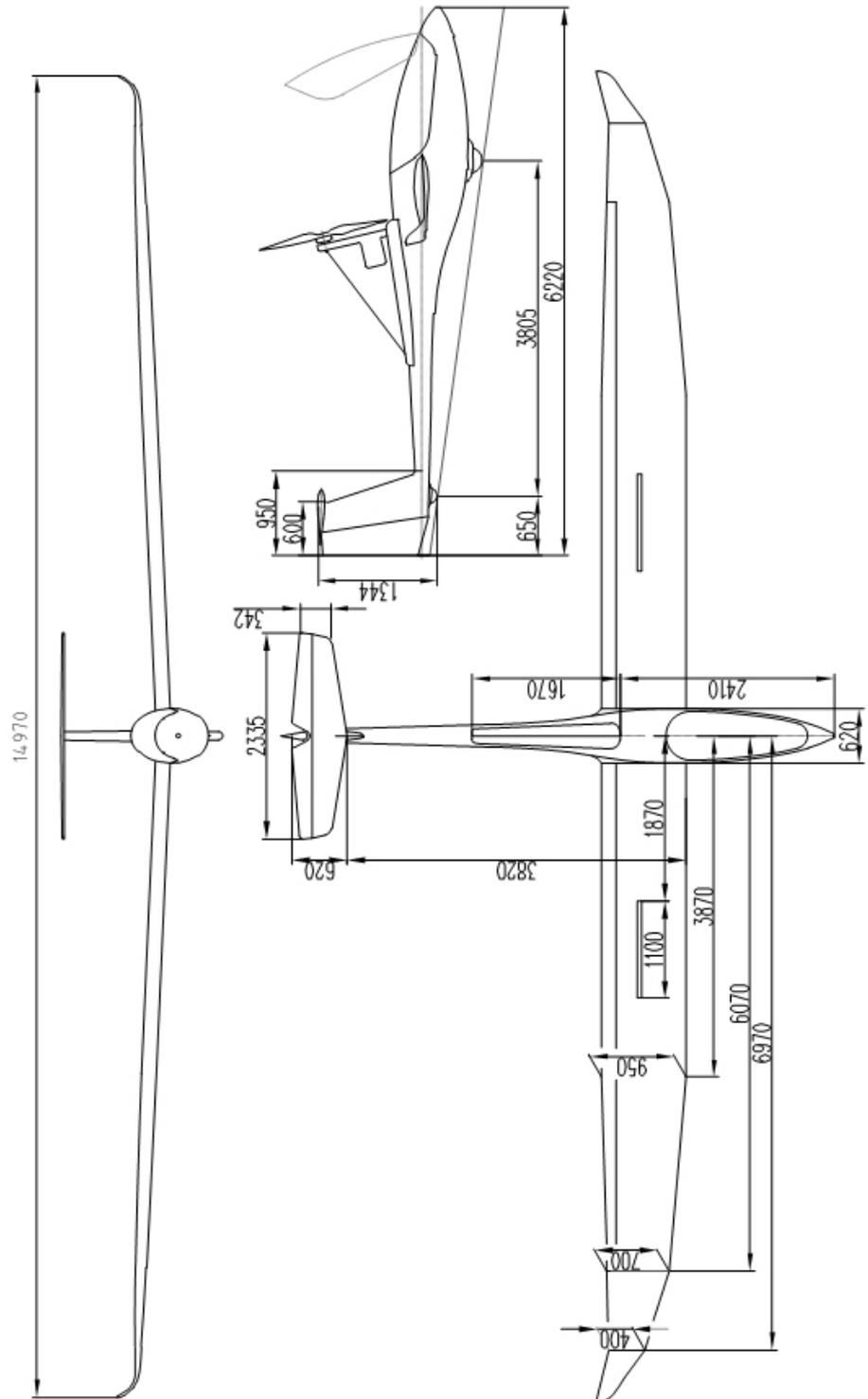
Design loads

+5.3 G, -2.65 G at Va
+4.0 G, -2.0 G at VNE

Typical CS-22 maneuver envelope. Design and tested safety factory minimum 1.875!

3-view drawing

Showing the APIS in standard configuration, dimensions are in mm (metric).

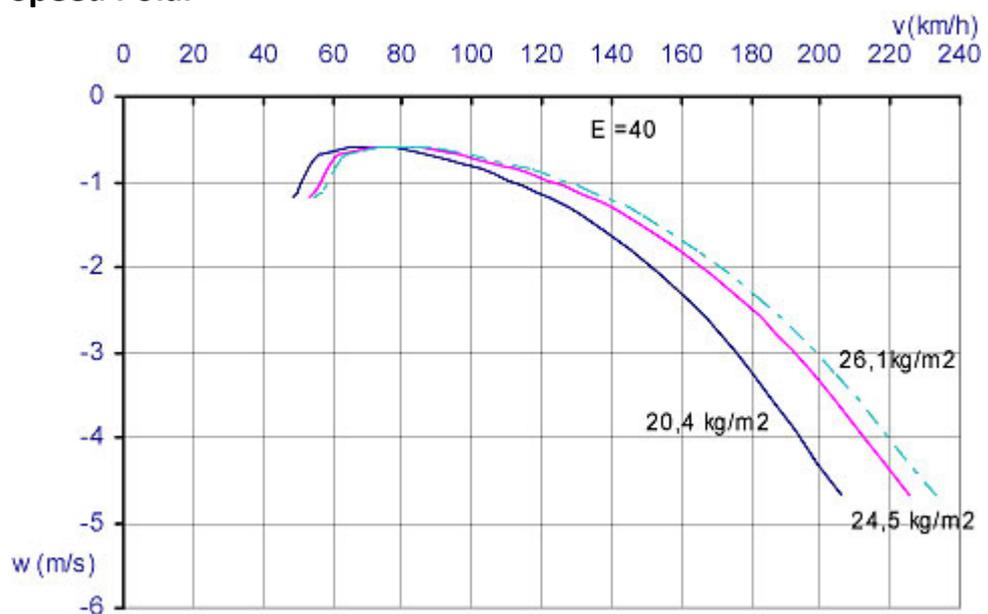


Performance

Data published here is for 322.5 kg take-off weight, ISA conditions at sea level.

APIS/Bee	F 33 BS
VS0 (stall with full flaps)	57 km/h (31 kts)
VS1 (stall in clean configuration)	61 km/h (33 kts)
max. speed for spoiler extension	220 km/h (119 kts)
VFE +5°	117 km/h (63 kts)
VFE +10°	100 km/h (54 kts)
maneuvering velocity Va	144 km/h (78 kts)
rough air speed Vb (gusts 15 m/s)	144 km/h (78 kts)
max. speed in aerotow	131 km/h (71 kts)
Vx – speed for best angle of climb	80 km/h (42 kts)
Vy – speed for best climb rate	85 km/h (45 kts)
max. climb rate MTOM	2.6 m/s (520 fpm)
minimum sink speed	84 km/h (45 kts)
minimum sink rate	0.59 m/s (120 fpm)
max. sink with spoilers extended	4.6 m/s (920 fpm)
best L/D speed	94 km/h (51 kts)
best L/D ratio	40:1
glide ratio at 150 km/h (80 kts)	27:1
takeoff runway length at MTOM	137 m (450 ft)
takeoff length over 15 m obstacle	243 m (800 ft)
45°-45° roll time	3.5 s at 100 km/h (54 kts)

Speed Polar



What is new?

The current model of the APIS by Pipistrel is the second generation of APIS. This section will provide an insight of the major improvements over the previous model.

Retractable gear & steerable tailwheel

Immediately noticeable from the outside, the tailwheel is recessed and steerable through the rudder pedals. This makes taxiing a dream! Further, the main landing gear is now available retractable as an option by manual mechanical control. The force on the handle is super-low, even lower than on the Taurus and the reliability is much better than electrically retractable landing gear with other designs. Both these improvements of course improve gliding and climb performance!

Ballistic rescue system

The APIS can now be equipped with a ballistic total rescue system (option). It is no longer necessary to wear a backpack parachute which is great benefit for the larger pilots. With the ballistic rescue system, the safety is always with you. The activation handle is a pull type and located at the right hand side of the main instrument column.

Much larger cockpit

The new seat shape and back provide much more room than the old model. Further, thanks to the ballistic rescue system option and different types of seat cushions the cockpit room has been improved by a considerable margin. Of course, the pedals remain adjustable in-flight as standard. The adjustable headrest design from the Taurus is now standard.

Lighter engine, redesigned performance propeller

The engine selected for the APIS – the Hirth F33BS is renowned for reliability and excellent power-to-weight ratio. We have designed an all new propeller and the result is a 15% performance improvement in both take-off and climb. APIS now climbs in excess of 2.6 m/s (520 fpm), which is more than most self-launching gliders and more than a glider tow.

Less vibration and better cooling

New double shock absorber mounts on the engine attachment points reduce the overall vibration. The engine cylinder head is a different new model which further improves the cooling.

Larger 20 litre fuel tank now standard in the wing

For safety and convenience the fuel tank has been moved from the fuselage into the wing. This allows for a much bigger fuel tank (20 liters instead of 8 liters) and of course much more autonomy and freedom of flight by having more fuel. Having fuel in the wing is a great safety improvement as well! When assembling the APIS, you connect the fuel using the fast-click-on connector, and you are ready to go.

New instrument column

The instrument column is now lower and wider at the top row, while providing more legroom. Now, the instrument panel can also fit the modern gliding computers, such

as the color-screen LX 8000/9000. Because of the lower profile of the instrument panel, forward visibility is improved during take-off and landing.

New ergonomics of cockpit controls

The cockpit handles and their positioning have been updated for better ergonomics for both small and large pilots. The handles resemble the positioning in the Taurus, for easier type training.

Engine management system from Taurus

Our praised (Klaus Ohlmann says it is the best!) engine management system Ibis II from the Taurus is now standard in the APIS too. The pilot must only select the position of the engine (up/down) and the system will take care of the rest. You can use the Taurus to train APIS pilots for a reduced learning curve and no problems with transitioning to the single-seater because the controls and locations are similar.

Rebalanced and lighter control feel

Primary flight controls (ailerons, elevator and rudder) have been harmonized to give the best possible pilot-feel at all speeds. The ailerons are no longer hard and the APIS now handles as lightly as the Taurus. The rudder pedals and rudder cables have been redesigned for smoother travel as well. All control surfaces now feature different high performance leak-free gaskets which also contribute to a more direct and lighter control feel while at the same time improving the overall performance.

Optional 5.00 x 5 wheel

As an option, it is possible to have the bigger 5.00 x 5 wheel/tyre. Standard is the 4.00 x 6. The bigger 5.00 x 5 wheel can be installed both as fixed and retractable! Very suitable for grass and rugged terrain.

Leather interior

People often ask – is the leather upholstery offered as optional equipment truly leather? Yes, we use 100% genuine NAPA leather with Bovine texture in a wide choice of colors which are published on our website (see Gallery). The customer can choose the color of the seats and surrounding upholstery in a single color.

Solar Panels

Solar panels can be installed as an option; they cover all electrical consumption during gliding. They will recharge the battery on ground as well.

An engine unit which can be dismantled in minutes

The complete engine unit is now modular, including all of the connections (fuel, electricity, sensors, etc.) which are now done with special plug connectors. For maintenance, you can dismantle the whole engine unit from the airframe in minutes!

Much faster engine extension/retraction

The engine extension/retraction (engine up/down movement) now takes only 12 seconds. This is much quicker than before and improves both performance and safety.

Better cockpit ventilation and canopy defogging

Now more fresh air will be entering the cockpit than ever before. It is also strategically distributed over the canopy to prevent fogging when flying below the cloudbase.

Safety Firewall

A major addition is also the safety firewall between the cockpit and the engine compartment. It improves safety and cancels a lot of the engine noise which would otherwise be entering the cockpit.

...and 116 other little improvements!

Which contribute to a lighter, safer structure, easier operation and better performance.

Frequently Asked Questions (FAQ)

This section is an attempt to sum up various questions people may have about the Pipistrel APIS Aircraft.

The name APIS

In some countries, the name "APIS" is trademarked, so we are unable to use it. These countries are, as far as we know, the following: Germany, Austria, Switzerland and some Scandinavian countries. There, the aircraft is marketed as "Bee". We chose this name because in Latin APIS means BEE

Can I do aerobatics in the APIS?

The design basis of the APIS follows the strictest German Ultralight regulations, the LTF-UL. In some cases, the EASA CS-22 is considered, as well as their FAA FAR counterparts. APIS is a high-performance airplane and not suitable for aerobatics, despite the +5.3 G, -2.65 G allowable loads. Pipistrel cannot prevent people doing aerobatic manoeuvres in the APIS, but we do not approve it – the reason is in aerodynamics. The APIS has so little drag that it picks up speed MUCH quicker than other aircraft. This can be dangerous in aerobatic manoeuvres (also spins, which are completely recoverable) and an average pilot can very quickly overstress the airframe because of high airspeeds. The aircraft can reach VNE 250 km/h (135kts) in a dive in only 3 seconds!

Exterior paint

The paint used on the APIS is a special acrylic based pigment, which is applied to the molds during the manufacturing process. Pipistrel aeroplanes are not after-painted like many other aeroplanes – instead, paint is applied onto/into the structure while molding. This makes the paint much more durable and resistant to UV light and environmental contaminants. Recommendations for care and cleaning of the aircraft can be found in the Flight manual and Maintenance manual, section Handling and Maintenance, chapter, keeping your aircraft in perfect shape.

Certifications

All APIS with the Hirth F33BS engine are still valid. We are planning for a number of new certificates in different countries including Poland, Switzerland and more.

World Records

The APIS truly is a top performer and in fact holds several World Records in its class:

Free out and return distance - 310km, (Tanja Pristavec, DU feminine)
Free distance using up to 3 turn points - 347.6km (Tanja Pristavec, DU feminine)
Free distance - 154km (Tanja Pristavec, DU feminine)
Free distance using up to 3 turn points - 808.9km (Boštjan Pristavec)
Speed over a triangular course of 100 km: 76.9km/h - (Tanja Pristavec, DU feminine)
Out-and-return distance: 501km - (Andrej Kolar, DU general)
Speed over an out-and-return course of 500km: 82.1km/h - (Andrej Kolar, DU general)
Free Three Turn Points Distance: 619.7km - (Andrej Kolar, DU general)
Free out-and-return distance: 511.6kmb - (Andrej Kolar, DU general)
Speed record over a triangular course: 118.2 km/h (Boštjan Pristavec)

Manual, documentation

The Flight and Maintenance manuals are published on our websites

www.pipistrel.si

www.pipistrel-usa.com

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