

FLYING THE FIESELER STORCH

.Incredible looking with its long spindly undercarriage, a wingspan which at 48ft is as wide as a Fairey Swordfish, full span slats, long fuselage and large "greenhouse" cabin, the Fieseler *Storch* (appropriately "Stork") was one of the most unusual aircraft of World War II. Its slow flying ability is the greatest cause of interest whenever pilots and enthusiasts see the aeroplane. It is a rare beast with only 20 of its variants flying in the world.

Originally designed in 1935 the Storch served as an army-cooperation, reconnaissance aircraft and additionally as an air ambulance. It was operated by the Luftwaffe in many theatres including the Arctic, the Western Desert, the Eastern Front and throughout Europe. Famously used by Field Marshall Rommel, it was also used on the "other side" by Field Marshall Montgomery. The most famous flights made by the Storch were the rescue at Gran Sasso in the Apennine mountains of the Italian dictator Mussolini and a flight by the famous German pilot Hanna Reitsch landing in the centre of Berlin in the last few days of the war to try to get through to Hitler in his bunker

Fieseler initially built the Storch in Germany but the need to produce the Messerschmitt 109 at the plant and the fall of France enabled production to be moved to Morane-Saulnier in France where it was called the M.S.500 *Criquet*. What is less well-known was that it was also produced by Mraz in Czechoslovakia as the K-65 *Cap*.

The example I have flown a number of times is *Hotel-Zulu*, operated by *Historic Aircraft Collection* and based at Duxford. It was built in France in 1942 as Werke.Nummer.1827 and was originally fitted with an Argus inverted V8 engine. After its wartime service it was used by the French *Armee de L'Air* where it was designated as an MS 500, later re-engined with a Jacobs "Shaky Jake" radial to become an MS 505 *Criquet*. The original Argus engine was deemed unreliable for *Hotel-Zulu's* time in *L'Armee De L'Aire* service.

Prior to flying the Storch I prepared in my usual manner, "hangar flying" in the cockpit and reading as many flight tests as I could find including "*Testing for Combat*" (Airlife) by the record-breaking test pilot Captain Eric "Winkle" Brown.

The Storch cockpit is entered by climbing up two steps on the undercarriage strut and through the large gull wing door on the starboard side which can be left open in flight if required. The

pilot's position is comfortable and like sitting in a large cab. It has a quite magnificent view including downwards through angled clear vision panels and is the best I have seen apart from the the cockpit of the Dragon Rapide or Westland Lysander. There is a roomy second seat in tandem which is big and roomy enough for your passenger to carry a coffee flask and sandwiches for the transit flights – which take an age.



Starting and pre-takeoff

Chocks in and climb in. Mags off, Fuel D + G (*Droit et Gauche*). Mixture Rich, Carb Heat – cold. Battery – On, Generator Warning Light – On, 24 volts indicating. The brakes are typical WWII Germans foot brakes, like standing on a rocking ski shoe. Chocks in will save the brakes – which fade - and the feet – as it takes a good deal of time to warm up the engine.

Throttle $\frac{3}{4}$ " open. Ground crew turns the propeller for three revolutions while I prime in the cockpit. Fuel pump – On. Prop clear. The Jacobs 300hp radial has an unusual ignition system in that the engine has a left hand magneto "M" and a right hand distributor and coil "B". Press starter, turn 4 blades and Magnetos "B" and then "M". Radial cough and splutter and away it goes. Run up at 800-900rpm taking the usual necessary warm up for a radial engine which can be 10 minutes. Oil pressure between 4.12 – 6.2 Hpz, Fuel Pump ON to test but as this can over pressurise it is checked and then goes to OFF. Instruments; turn and bank and Generator ON.

With the Oil Temperature up to 27 degrees C and Cylinder Head Temperature up to 110C the engine is ready for power checks. With caution in mind with the stick only goes aft of neutral. You cannot run up with stick fully back or it will bend the fuselage. Run up to 1800rpm, Generator light out and check mags for max drop of 90rpm. Slow run at 600 rpm. Call up to taxi – although often you can just taxi forward and take off from wherever you are. This is a Storch after all. However when taxiing the aeroplane feels like there is plenty of weight in the tail. However it is a big aeroplane with a big “keel” area and taxiing downwind takes a little caution. The view taxiing – as at any other time in the Storch – is outstanding.

TTMMPPFFGGHH.

Trim +1.5

Throttle Friction

Mixture Rich

Mags on both

Primer locked

Propeller fixed

Fuel D + G, (*Droit et Gauche*) Pump – check pressure

Flaps 15 degrees. Look above your head at the Flap Indicator in the main spar

Gauges Oil Temp 27 – 60C, Oil Pressure 4.12 – 6.2 Hpz, CHT 110C

Gyros

Harness

Hatches. On nice warm day the gullwing door can stay up

As you will have noticed throughout the checks the instrumentation is very French from its *L'Armee de L'Air* days, Morane Saulnier it may be – but this is a Storch as you are about to find out.

Take off – Wow!

Throttle smoothly to max rpm of 2200, the long undercarriage legs extend and we are off – ridiculous! With a 20 knot headwind I have lifted off in 50 yards – to get back to Imperial measures for a moment - and that with just 15 degrees of flap. It is like going up in a lift and you can be at 1,000ft at the airfield boundary. The climb is very impressive at the “normal” climb speed of 100kph. It is possible to climb steeper at 90kph which angle-wise is very impressive.

Winding the yellow handle connected via a bicycle chain adjacent to my left shoulder to retract the flaps and you must be careful of the nose up change in trim and lower the nose to keep the speed at 100kph.

Into the cruise

Levelling off into the cruise at 2,000 rpm which gives a cruising speed of 120kph where it is more speed stable. When fuel checks are required it is simply a matter of looking out at the two glass tubes sticking vertically down below the wing. Cruising in the Storch is a very loud experience but visibility wise it is a very pleasant one. On a summers day with the door open it is comfortable and visibility is even better, almost helicopteresque.

The speed – or lack of it – is another matter. This is very different from the allied reconnaissance and army co-operation type the Lysander. The Lysander has good speed and agility thanks to its 860hp Mercury. This is very different from the Storch plodding along with a 240hp Argus or 300 hp Jacobs running up front. It has its design entirely focussed on slow speed handling whereas the Lysander has more of a multi-role capable.

To the casual observer the Storch looks just like a bigger version of a high wing taildragger but it is a heavy and tiring aeroplane to fly. It does inspire great confidence in that when looking for fields in planning for the eventually of an engine failure you feel that you can land almost anywhere – and you probably can!

General handling and (very) slow flight

Moving on into turns the Storch is comfortable to manoeuvre at speeds over 100kph. For a display routine I prefer to lower the flaps 15 degrees and fly at 90kph. This enables the aeroplane to be kept tight for the manoeuvring necessary for a display routine and ready to move into the slow – in this aeroplane's case VERY slow – phase of the display.

Bringing the power back to idle and gliding and there is a definite lack of elevator authority and from this you can gauge that gliding in to land is something best avoided

The ultra slow phase of flight in the Storch should be flown with a touch of power on and when practiced for the first time should be carried out at a safe height. Winding the flaps down by the yellow handle and "bike chain" down to 40 degrees the ailerons droop with the flaps beyond 20 degrees. There is a limit speed 125kph (67

knts). As the flaps go down the nose needs to go down to maintain a level attitude with 80kph (43knts) as a good manoeuvring speed! The tail plane incidence can be changed to give up or nose-down trim.

The Storch allegedly claimed a number of pilots' lives because the stall can result in extreme attitudes in roll, once the wings roll they could get through to inverted with insufficient control effectiveness to recover. To quote the famous aviation author and pilot Alan Bramson – he gave it an Oscar for being *“the most unpleasant from the handling point of view”!*

It is therefore a matter of testing the slow flight capabilities rather than full stalling, and flying as slow as you can feel comfortable with. It feels as if you are sitting on top of a knitting needle, unstable in all axes. If at any point you feel that the aeroplane is going to fall off of the knitting needle it can be “caught” with smooth applications of power. With a touch of power I was flying with 40 degrees of flap at 67kph – that is 36 knots. Into a stiff breeze in a display the Storch can demonstrate its legendary ability to “hover”. What other aeroplane can do this! It looks easy but it takes careful handling and feels quite uncomfortable and precarious.

Approach and landing:

As you will have noticed from earlier comments the Storch fuselage is fragile and getting the landing wrong can bend the fuselage. Side slipping is not advisable as it too will put undue strain on the fuselage and particularly the fin and rudder. After the experience of slow flight you realise that a power on approach is required.

The view on the approach in the Storch as in all phases of flight is outstanding. 1,000 rpm and 15 -20 degrees of flap is all that is required with 100kph for the initial approach. With 40 degrees of flap the Storch is susceptible to the slightest gust and 15 -20 degrees will suffice in most conditions - after all we are not landing in the streets of Berlin or on the side of an Italian mountain! The approach is adjusted with power and must be such that there is some power on to keep elevator authority in the round-out.

Another feature of the Storch that can catch you unawares is the main undercarriage and how the oleos will compress. They extend by two feet on take off – and therefore on landing they will compress by two feet. Thus landing is a balance of allowing for any crosswind with the big 48 ft wings, caution with the fragile fuselage, and a touch of power for control authority and handling that makes it feel that you are flying even slower than you already are! Landing into wind is preferable for the shortest landing performance and you

can almost land across ways on wide runways if the wind is 90 degrees across it.

The Storch landing is at 80kph (50 mph) with a trickle of power over the numbers and then fly the wheels on which then sees the oleos compress and you have arrived in three points although your pitch attitude has remained consistent throughout the approach and landing. As you touch down cut the throttle – and stop inside 100 yards without even trying. Any swing can be dealt with a burst of power. The Storch has a crosswind limit of 15 knots. In 2005 I landed with half flap at Sandown Airfield with a headwind of 20 knots – and was down and stopped in 50 yards with little effort and without using the brakes – and had to spend a long time taxiing as a result. For a display the Storch can demonstrate the short landing, stop, power on and go for the shortest fixed wing stop and go that you will see at an airshow.

The record-breaking test pilot Captain Eric “Winkle” Brown describes in his excellent book *“Testing For Combat”* (Airlife) his spot landing a Storch on the lift of the aircraft carrier HMS Triumph, the crew then folded its wings and lowered it straight down into the hangar with its engine still running.

After landing taxi in and run for a few minutes before shutting down as is standard radial engine practice, the maximum shutdown temperature is 160deg C. It is then a matter of putting the aeroplane back into the hangar where it is one of the worst aircraft in terms of the space it requires with its 48 foot wingspan

At first glance the Storch may appear easy to fly in that it flies slowly but this is deceptive. It is very heavy and you have to keep it in balance at all times - but it is like flying no other aeroplane. Even today the Storch is a unique machine, as close as a fixed-wing pilot can get to flying a helicopter and a unique experience in flying historic aircraft, Just be careful with it as it is not as forgiving as it may look!

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Specifications: Fi 156 Storch

Engine: One 240-hp Argus 8-cylinder inverted-V piston engine

G-BPHZ has been re-engined with a 300hp 7-cylinder Jacobs radial

Maximum all up weight 1,590kg:

Wing Span: 48ft. 4in.
Length: 32ft. 5.75in.
Height: 10ft.

Performance:

VNE 185kph
Vfe (40 degree) 125kph
Cruising Speed: 2000rpm 120kph
Ceiling: 15,090 ft.
Range: 239 miles
Take off run 10 knot wind 50 yards
Landing distance from 50ft (10 knot wind) 100yards
Armament: One rear-firing 7.92-mm (0.31-inch) MG15 machine gun

The Last Dogfight on the Western Front

The Fieseler Storch was the last dogfight victim of the US Forces on the Western Front in World War II. USAAF Pilot Duane Francies and his observer, Lt. William Martin, of the 5th US Army Division were on a spotting sortie in their Piper L4 Grasshopper (Cub) when they saw a Storch circling below them. They dived after the Storch, and opened fire with the only armament that they had - their Colt .45 automatic pistols.

The Storch was forced down to the ground. Chasing them down to the ground Francies and Martin captured the Storch crew. Not only was this Storch the last Luftwaffe aircraft downed by US Forces in World War II, in shades of the first days of air combat in the First World War, it was also the only enemy plane downed by pistol fire during the Second World War.

The *Historic Aircraft Collection* Storch together with Glenn Denney's L4 Grasshopper flies the re-enactment of the "last dogfight" complete with pistol fire and smoke. The spirit of the Blue Max but a World War later! A very different display act to see - and to fly!