Author: Brian Cooper/Photos: Brian Cooper/Tony van Geffen

Yak-52

Brian Cooper gets to grips with this 1610 mm span scale Russian classic 2-seater from Seagull Models

Whenever the word 'Yak' is mentioned, many of us automatically think of wildly aerobatic, 3-D models. However, apart from those impressively manoeuvrable aeroplanes, Yaks also came in somewhat tamer versions.

The Yak-52, which first flew in 1976, was (is) used as a Soviet primary trainer. With the demise of the Soviet Union, it wasn't long before talented Western pilots discovered this aeroplane and found it to be responsive and a very capable aerobatic aircraft, yet it is also easy to fly and land. As a bonus, it proved itself to be very rugged and it has been used in international aerobatic competition up to the Advanced level. The full size versions are stressed to +7 and -5 Gs, roll at 180 degrees per second and are capable of every manoeuvre in the book. Not bad for a 'trainer'. So it's still a Yak, then!

Assembling the Model

This ARTF model of the Yak-52, by Seagull Models, is a semi-scale aeroplane, which features flaps and a retractable undercarriage, and is aimed at intermediate to advanced pilots.

The airframe is built with a conventional mix of accurately cut balsa and plywood and it certainly has a rugged feel to it. We are also spoilt for choice when it comes to powering it, and although the instructions are biased towards I/C engines, the kit also contains plywood parts for converting to your choice of electric power.

Although it's an ARTF, this particular model is not one of those 'shake the box and it's done' type of models; this one took a bit of time to put together.

The wings have a semi-symmetrical section and have a conventional 'D' box construction. The servo mounts for the ailerons and the flaps are on plates, which fit flush with the underside of the wings. The mounts are made very slightly undersize to allow for personal choice of servos, but it does slow down the build when adjusting them to suit our servos.

There are also lights fitted into the wings, and these need to have the mounts and the transparent covers cut out for them.

We have to install the control hinges before turning our attention to the retracts. In addition we have to install the mounting blocks and the plastic wheel wells. The retract units are mounted in a curious way and the rear edges of the units stick out quite markedly. However, when they are retracted, the wheels fit into the wheel wells very neatly. It all works okay, but it just looks a bit odd!

With all of the mechanical bits and pieces sorted out, we can then glue the two wing halves together… and it's definitely worth checking that your retract servo fits before joining the wings together!

Layout of box contents

About the Engine Installation

The fuselage is nicely built and we are directed towards installing our engine. The locating holes for engine mounts have been thoughtfully drilled for us and the holes have trap nuts installed. However, this does rather dictate the width of the engine that we can use, and, naturally, our chosen DLE 20 cc petrol engine was too wide for the mounts, so the mounts had to be altered slightly to accommodate the engine.

There is sort-of 'loft' room just behind the first bulkhead, designed to house the battery if using electric power. This space was extremely useful for housing the electronic ignition unit for the engine.

I converted the fuel system to petrol by using Tygon (petrol) tubing and also had to change the bung in the tank, and used a petrol 'filter' clunk.

Included is this extra wood pack for your optional choice of electric power

Thin cyano will hold the slotted Mylar hinges for the control surfaces

'the instructions are biased towards I/C engines'

The cowl is made from fibreglass and sits on a neat 'ring', which is bolted to the front firewall. It's quite a clever idea actually! When the engine is installed, the cowl has to be trimmed to fit. Happily, with the way the cowl is designed, there is a massive area at the rear on both sides that is open so cooling air can exit freely. With the engine installed, we can turn our attention to the tail end.

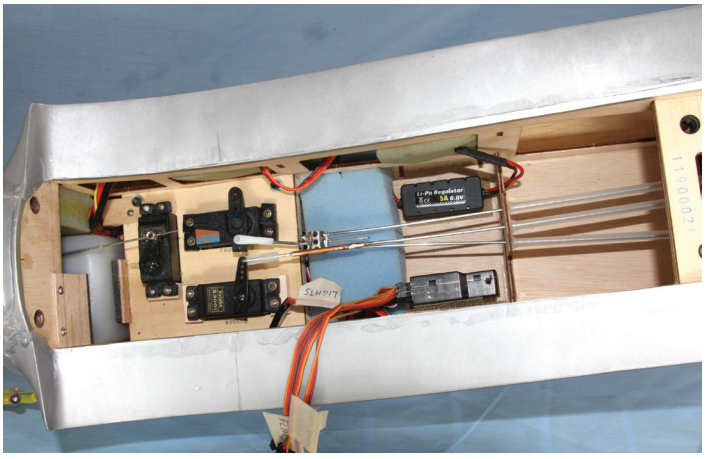
Final Fitting

The tailplane needs to have some covering removed before it can be glued into place. Removal, as always, should be done with great care to avoid scoring the wood, which could result in the tail folding up in flight.

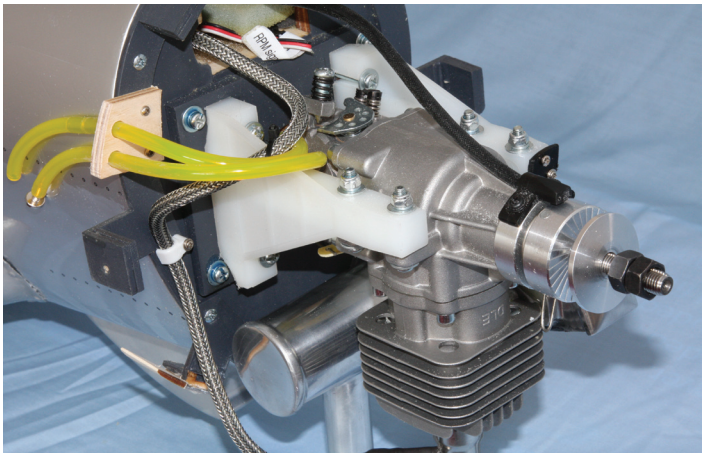
The radio bay is huge and the servos are bolted to a special plywood tray which, in turn, is bolted into the fuselage. The (piano wire) control runs to the rudder and elevators are already configured for us and we merely need to make a 90-degree bend in the wire and hook them onto our servos. The elevators are driven by one servo, but the linkage splits into two metal pushrods; these pushrods are connected together by a little block and the individual piano wire is secured with a grub screw. Being cautious, I also soldered the wires into place just in

Remove film covering from this area to adhere the fin seat

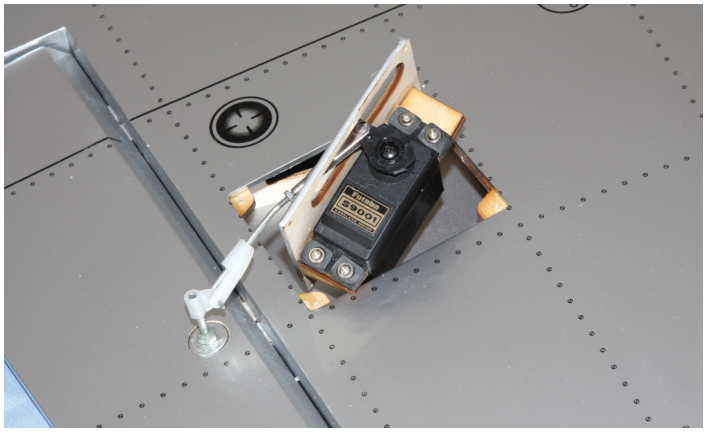
Steering tailwheel assists ground control; note the scale moulded covering over the tailwheel bracket



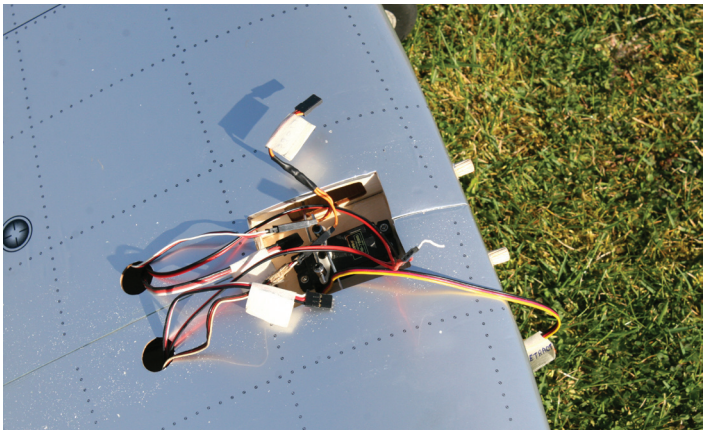
A neat radio installation, but I had to extend the rudder pushrod (see text)



The powerplant chosen was the DLE 20 cc petrol, which required a little modification to the firewall but the space inside the cowl is ample



A standard size servo fits neatly into the aileron servo box



Three servo leads from each wing panel to be connected; note the central retract servo

The flaps are inset into the wing

case the grub screws decided to work loose.

Annoyingly, the rudder rod was about 2 inches too short and had to be extended with the aid of some extra piano wire and some brass tube.

The model is now almost finished, so all we now need to fit are the 'pretty moulded bits', namely the wing root fairings, oil cooler, tailwheel fairing, servo exits, etc. These are moulded plastic parts, which look good but seem to be a bit thin and brittle, nevertheless, they seem to work okay.

The kit comes with two pilots for the cockpit, and the huge canopy is just superb. It is of excellent quality and fits like a glove. The model also comes with a removable aerial that screws into the top of the fuselage to the rear of the cockpit canopy, and a pre-painted Pitot tube that slots into the left-hand wing.

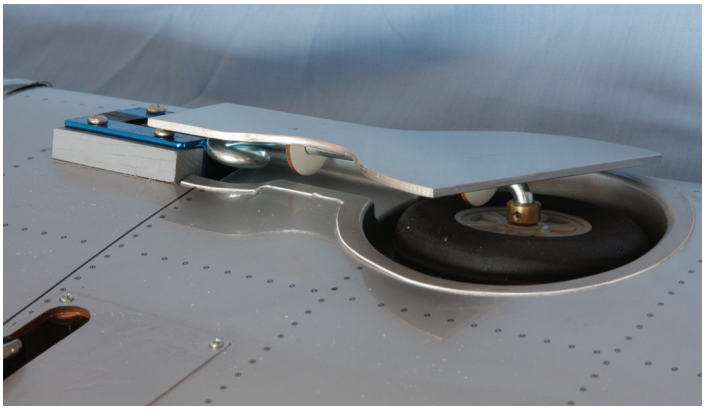
With all the bits and pieces added, we can now step back and admire our new Yak 52.

Right, that's enough drooling over it…

Let's Fly It

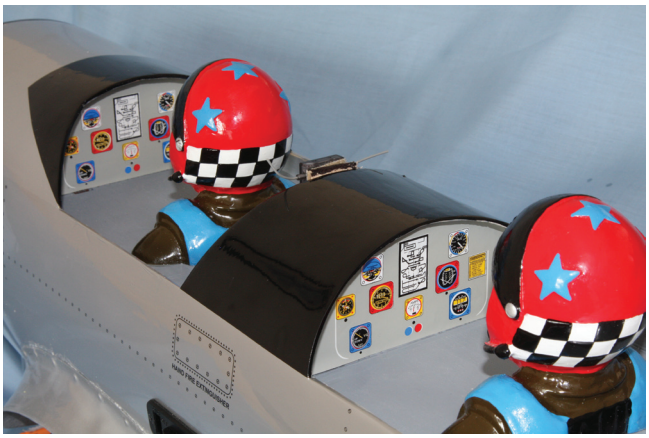
The DLE 20 was brand new (supplied by Gashangar) and it was duly given one-hour running-in time to settle it in. It didn't need a single tweak on any needle and it sounded very sweet and very strong on its 15" x 8" APC prop.

With everything checking out nicely, there were no more excuses for keeping it on the ground, so it was taxied out and pointed into wind. The flaps were lowered to about 30%, and the throttle was opened gently at first to check for any swing on the take-off run, and then given full bore. The Yak accelerated briskly and was airborne within a couple of seconds; wheels up and we were climbing nicely. Level off, the flaps were pulled up, the throttle



Main retract unit is raised from the wing to give it the correct rake angle and does not deter from the operation or flying

Colourful nose artwork of the Yak



Pre-painted pilot duo 'in the office'

Superb low flypast that could be for real

A distinctive colour scheme with a 'hi-vis' overall silver covering, and she's on a roll

Ample power for big scale loops with the DLE 20

was reduced to cruising power and we were able to examine the trim to see if it needed any tweaks to keep it on an even keel. Quite a few beeps of trim (up elevator) got it going straight and level with hands off the sticks and then we could explore what the model could do.

Despite having set-up the model as per the instructions, and balanced it at the suggested C of G location, it was somewhat nose heavy, and the elevator response was a bit sluggish and totally out of harmony with the ailerons, which were like greased lightning.

'comes with two pilots for the cockpit'

The Yak was landed and taken back to the workshop for a few adjustments to the C of G and the control throws. Fortunately there is a huge radio bay in the fuselage and it was an easy task to relocate the batteries to a more rearward position.

Having shifted the C of G rearward by 8 mm, we had another go. This was much better, and the elevators now had some 'life' in them. The ailerons were still rather more lively than the elevators, but they were getting closer.

Scale Aerobatics

Righty-ho… the full size version of this aeroplane is supposed to be an aerobatic machine, so it was given the works.

The roll rate on this model is absolutely brilliant, even if it does roll faster than the full size aeroplane. No doubt the purists might want to reduce the throws to emulate the full size performance. This is a fairly hefty model (it weighs over 10 lb with my set-up) and it has got a fairly high-ish wing loading. Nevertheless, there is very little inertia build-up in a fast roll. The high wing loading comes in very handy when flying in windy conditions, as it seems to enable the model to easily shrug off some quite breezy conditions.

The huge, radial-engine cowl creates a large amount of drag, which is useful for managing the flying speed in the down-lines. However, the DLE 20 easily overcomes this drag to pull the model vertical if required.

The elevators are massive but they seem to be fairly tame at the suggested throws. The throw was increased by about 20% and this made a useful difference. It also meant increasing the expo settings to prevent it from over reacting near the stick centres.

The rudder, at the suggested throws, was far too timid for aerobatics, and was nothing more than an ornament attached to the fin. After it was altered to move 'suitably' it became a far more useful asset on the model and enabled the Yak to do stall turns, spins and flicks.

Flying inverted requires a bit more down elevator than most models, but it isn't too alarming. I merely reduced the expo for

This 'dirty pass' shows lights on, the full extent of the flaps and wheels down approach

down elevator to compensate for it.
The Yak-52 stalls at a fairly low speed, but when it stalls it always drops a wing (the left one) and it does it quite violently. It is something worth experimenting with at height to become familiar with it.
It will stall at a lower speed with the flaps down but the wing will still drop; it just does it a little more gently.
Just for fun, we deliberately stopped the engine (in flight) to see how it would handle a dead-stick situation; this was done a few times with varying degrees of flap to see how it would behave. The Yak-52 will glide quite well but don't expect it to win any gliding endurance records. There is plenty of drag on the front of this aeroplane, so when the engine stops, it is best to start planning a landing straightaway.
Basically, in a dead-stick situation, it is best to 'fly it' down and come in with some excess speed rather than try to 'float' down to the ground. The excess speed is then bled off with the elevators at the flair-out and it all settles onto the ground nicely. Landing with the engine running is clearly more desirable, and it can be brought in quite safely with full flaps deployed and a notch or two of throttle to keep the speed up. The throttle is reduced to a pop-pop-pop idle just before flaring out… nice!

'The Yak-52 stalls at a fairly low speed'

In Conclusion

This is a model that certainly looks the part and performs quite well. It can do all the usual aerobatics that would be expected of a scale type model and it does them with a good degree of accuracy. As a bonus, it can handle breezy weather.
After about three hours of flying time, the only thing that has failed is one of the landing lights… which has gone dim. Also, a piece of thin plastic trim (the oil cooler) has split. But then I can cope with that, as it doesn't deter from the great flying. **RCMW**

SPECIFICATION

INFORMATION

Name:	Yak-52 (5500072)
Manufacturer:	Seagull Models
Distributor:	J Perkins (Distribution) Ltd
Model Type:	Sport-scale ARTF
Engine:	.61-.91 two-stroke or .90-1.20 cu.in. four-stroke. Can also be used with brushless electric motors
Test Engine:	DLE 20 cc petrol
Prop used:	APC 15" x 8"
Construction:	ARTF: Balsa and plywood; pre-printed Oracover film covering

R/C FUNCTIONS

Radio required: 6 channels with 8 servos

1: Ailerons (2x Futaba S9001)
2: Elevator (Ace R/C S1087MG)
3: Throttle (Futaba S3001)
4: Rudder (Futaba S3001)
5: Mechanical Retracting Undercarriage (Hitec HS-7588)
6: Flaps (2x Futaba S3001)

SPEC.

Wingspan:	63½" (1610 mm)
Wing Loading:	33 oz/sq ft
Wing Area:	690 sq in
Length:	52" (1320 mm)
Flying Weight:	10 lb 8 oz

TEST

Dislikes
Brittle plastic mouldings
Projecting undercarriage mounting

Likes
Scale looks
Superb finish
Ease of assembly
Flying qualities

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J Perkins (Distribution) Ltd
www.jperkinsdistribution.co.uk
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