

Zlín Z-526 AS

20-percent precision-scale aerobat



by Dick van Mourik



The cockpit is fully detailed and shows the same attention to detail as the exterior of the model.

I have always been fascinated by airplanes. Of course, the fact that my father built and flew model aircraft contributed to this fascination. A book that my father owned, "Great Planes" by James Gilbert, included a photograph of two Zlín Z-526s flying in close mirror formation. From the first moment I saw this picture, I was captivated, and this

older type of Zlín still ranks among my most favorite aircraft.

In 1993, I found the address of the Otrokovice Zlín factory in the Czech Republic. I wrote to the company and acquired a very detailed drawing and many pictures of the 526 types. I decided to construct the 526 AS and made several visits to the factory for valuable scale documentation.



SPECIFICATIONS

Name: Zlin 526 AS

Scale: 1:5

Wingspan: 83 in.

Length: 63 in.

Weight: 12.9 lb.

Wing area: 964.87 sq. in.

Wing loading: 30.8 oz./sq. ft.

Wing airfoil: semisymmetrical at root, under-cambered at tip

Engine: Laser 1.20 4-stroke with custom-made silencer

Radio req'd: 6-channel (elevator, rudder, tailwheel, throttle, ailerons, retracts)

Comments: designed by Dick van Mourik, the Zlin 526 AS is a 20-percent, precision-scale aerobatic model. The model uses traditional balsa and plywood construction; the plan is highly detailed and shows scale, homemade retractable landing gear.

FLYING

I'm convinced that a successful first flight depends on good preparation. Check all vital points, such as engine-mounting screws and RC gear. Check the alignment of wings and tail surfaces, check the wing and tail incidence and double-check the center of gravity (CG) balance point.

Normally, I spend an afternoon just setting up an engine until it runs exactly the way I want. I also do numerous taxi trials to get the feel of the model, and I make

some short hops close to the ground. This way, you get a good idea of how the model will behave. The actual test flight is then just a matter of fueling up, starting the engine and taking off.

In all honesty, the actual first flight was a bit of a non-event. With the engine revving fully, the model just roared into the sky. It went up easily, with no noticeable elevator trim required. The Zlin has pleasant aerobatic capabilities, although knife-edge takeoffs are not in this model's flight envelope.

The large amount of washout allows very slow flight, without the risk of tip-stalling. All maneuvers are executed very scale-like at about $\frac{1}{3}$ throttle, and with the gear up, the model looks very graceful, despite its somewhat clumsy appearance on the ground. Retracting the landing gear brings a major CG change; it produces a nose-up pitch change. Putting the wheels down causes a slight nose drop (which is useful when landing). The position of the balance point proved to be not too critical, so I currently fly the model balanced (landing gear retracted) at 28-percent of the mean aerodynamic chord (MAC). This makes it quite responsive during flight and nice and steady during takeoff and landing.

Takeoff runs require about 3 yards, but this is, of course, not very scale-like. Landings are very easy; just close the throttle, and it will come in slow and easy. The model is a real floater and so requires a fairly flat landing circuit. It is capable of doing more maneuvers than I am. It is not a hot pattern ship; it has to be flown smoothly through all the figures. Personally, I find those big loops are really worth watching, but a low flyby with the model banking slightly is also a sight to behold! Because of the high aspect ratio wings, the model looks very graceful when being put through its paces, a sight enhanced by the arrow-like patterns on the wing.

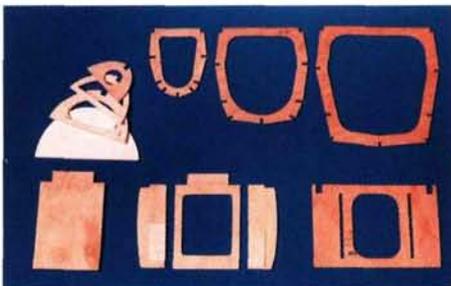




This close-up shows the static scale prop and the scale spinner to good advantage.

CONSTRUCTION

The fuselage cross-sections are very tapered toward the bottom, which doesn't allow the fuselage to be made with the common fuselage box structure using half formers. I decided to split the fuselage structure



The fuselage formers have a fully conventional layout. These are about the only ply parts in the entire model.

lengthwise along the bottom of the canopy line, which enabled the whole thing to be built inverted. The basic structure is nothing more than a plywood box in which the tank, radio and the beechwood engine rails all fit. You could use commercial mounts, but you might have trouble mounting them, as the engine thrust line is very high and the nose is narrow.

The rest of the fuselage is then built around the main structure the old-fashioned way—with formers and stringers added, followed by strip planking.

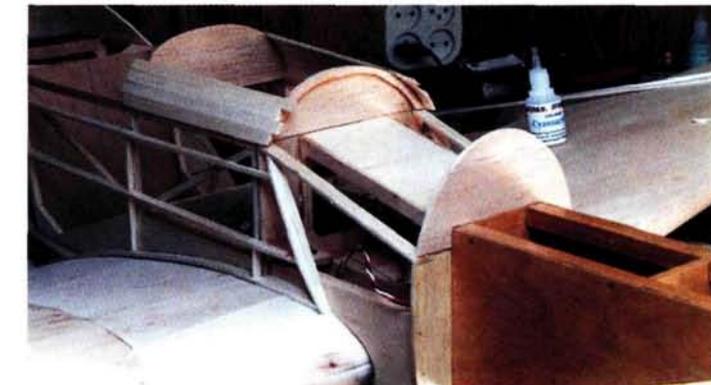
The vertical fin and horizontal stabilizer are constructed with $\frac{3}{32}$ -inch ribs and sheeted with $\frac{1}{16}$ -inch balsa. The rudder and elevators are built around $\frac{1}{16}$ -inch balsa core sheets with $\frac{1}{8}$ -inch balsa half ribs glued to each side. Plywood cores are shown on the pictures but I have since changed them to balsa because the thin plywood trailing edges (TEs) tended to warp.

• **Wings.** The Zlin's wing section is a bit odd! It changes from a thick, nearly symmetrical section at the root to a fully under-cambered section at the tip. Additionally, it has a generous 6 degrees of washout. The root incidence of 4.5 degrees makes things even more interesting, although it doesn't cause much trouble during construction. The wings must be built on a simple jig to ensure the correct amount of washout. See the detailed section sketch on page 1 of the plan.

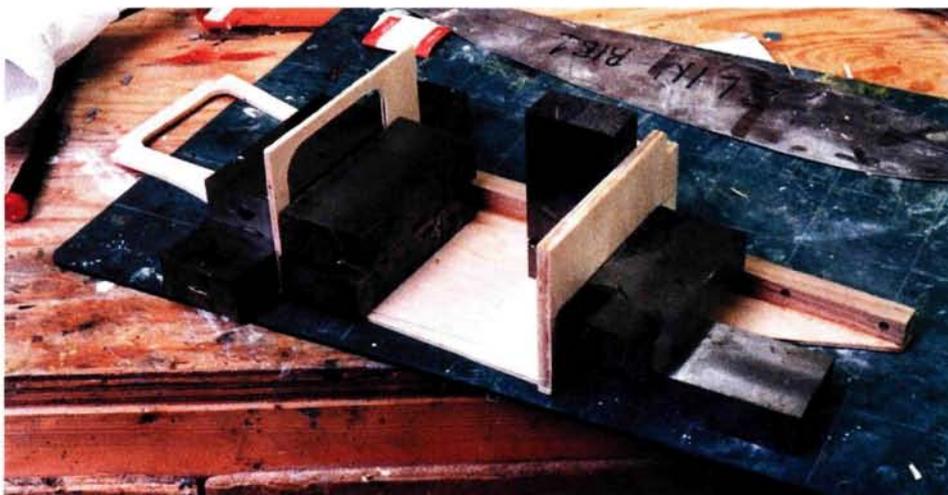
The AS version of the Z-526 has no flaps, which eliminates the need for a third longeron and also saves weight. The large amount of washout requires the longerons to be built up in two layers, which is also shown

on the plan. The retractable landing gear is mounted on two $\frac{1}{4}$ -inch aircraft-grade ply plates that are glued between two plywood ribs. The wing is sheeted with $\frac{3}{64}$ -inch balsa, and the ailerons are cut out of the wing later. Each aileron is hinged with a 2mm carbon-fiber rod, which is inserted through three Robart Hinge Point hinges.

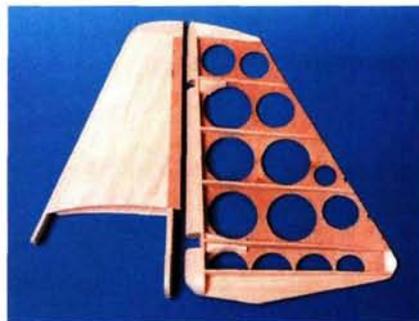
The retractable landing gear for my model is air driven and was custom



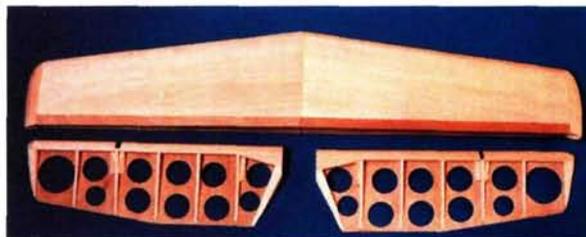
All the sheeting on the prototype model was made with $\frac{3}{32} \times \frac{3}{8}$ -inch balsa planks to eliminate structural stress.



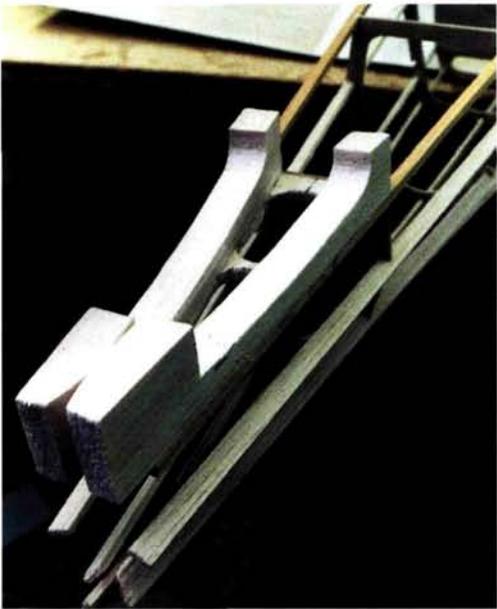
The basic fuselage is formed around the two plywood plates. Here, steel blocks help to align the bulkheads while the glue sets.



Left: vertical fin and rudder; the hinge post is later glued onto the fuselage. On the plan, I changed the $\frac{1}{64}$ -inch plywood core sheet to $\frac{1}{16}$ -inch balsa.



Below: the stabilizer and elevator are shown here; note the $\frac{1}{64}$ -inch plywood insert on the stabilizer trailing edge; it forms a thin rim that the elevator leading edge fits into.



Two 1/2-inch-thick balsa blocks form the saddle used to hold the stabilizer.

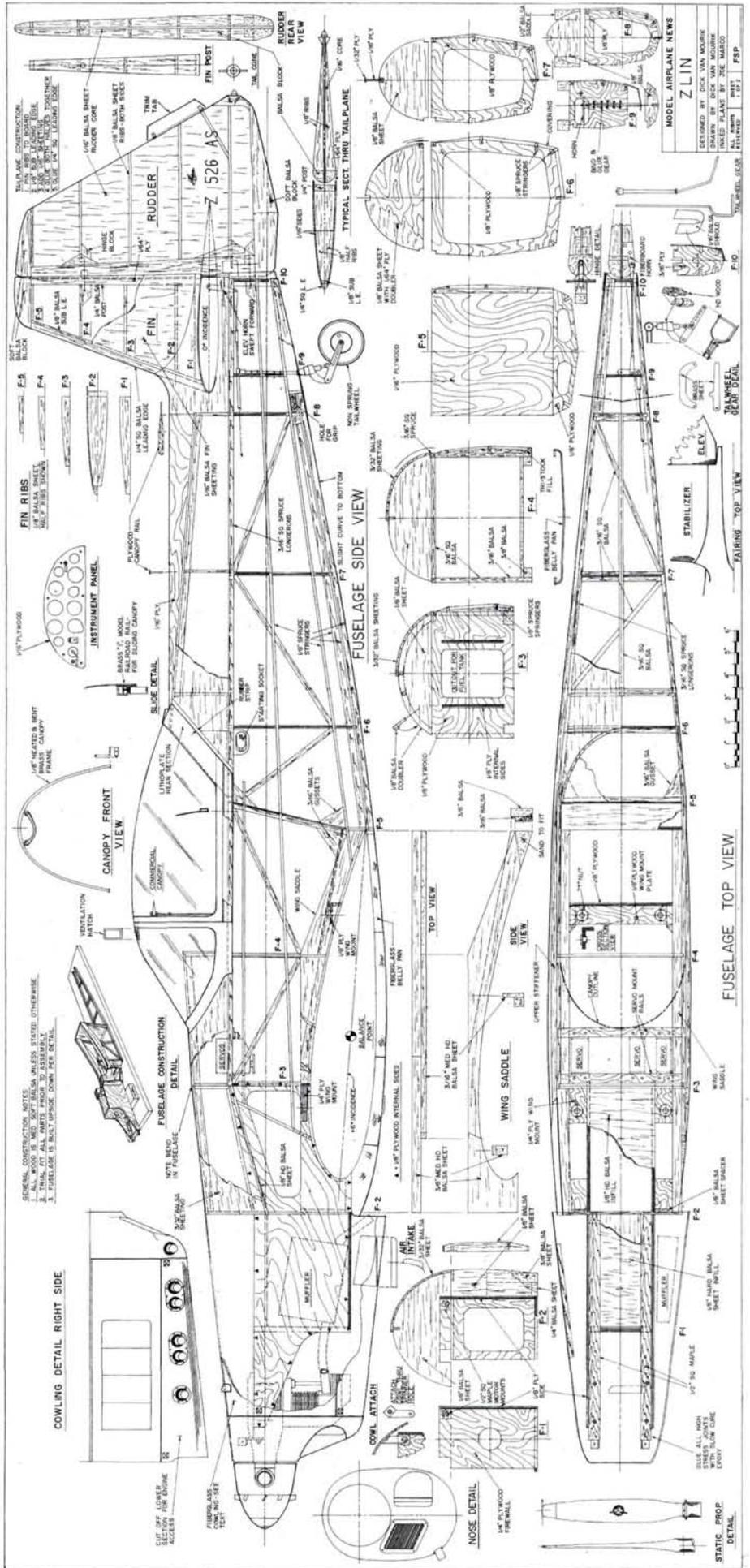
designed for the model. Details for the gear are shown on the plan. The only deviation from scale is at the pivot point, which is slightly higher for ease of construction. This is the only deviation from the full-size machine.

- **Detailing.** The cockpit interior is a real standout and was made using commonly employed materials such as scrap balsa, plastic stock and hard foam. The lever knobs were taken from a plastic pearl necklace. Perhaps the most vital point to remember when creating an interior is to do a proper painting job; it will really bring things to life. You'll also want to carefully mask the inside surface of the canopy, add some framing and spray the whole thing in gray or light green. Nothing kills the look of a cockpit interior more than being able to see the glue that was used to attached the framing.

The seat was made from annealed brass rod and covered with some thin glass cloth, which was formed over a piece of blue foam using the lost-mold method. Behind this, I installed a small first-aid kit, which took only about an hour to make, but for some reason it really interested the onlookers. The canopy-sliding mechanism is very easy to create; it's just a piece of 1/16-inch square, H-shaped brass profile running in a square 3/32-inch tube in which a slot was milled.

Another eye-catching item on Zlin aircraft is the Cessna-like aileron stiffeners, which I made from plastic strips from a Goldberg Cessna kit. This material is very easy to use; the only snag is that you'll have to order a hundred lengths at a time.

The fuel indicators in the wing were made from pieces of different colored plastic card, covered by a small transparent blister cover.



To order the full-size plan, turn to "RCStore.com" on page 196.

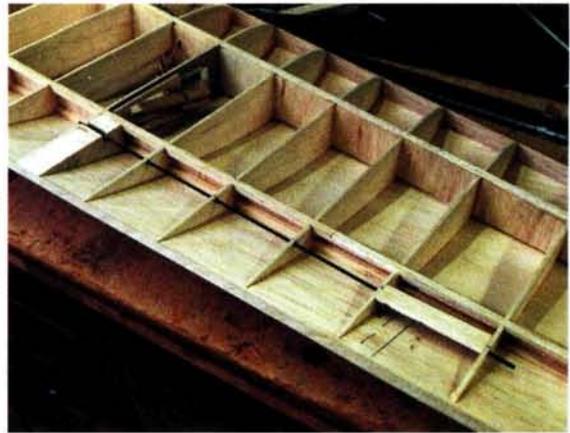
CONSTRUCTION: ZLIN Z-526 AS



Above: here, the wing center section shows the main plywood ribs and landing gear attachment blocks.



At the wing TE, the fuselage stringers are cut and bent in to follow the contour of the fuselage.

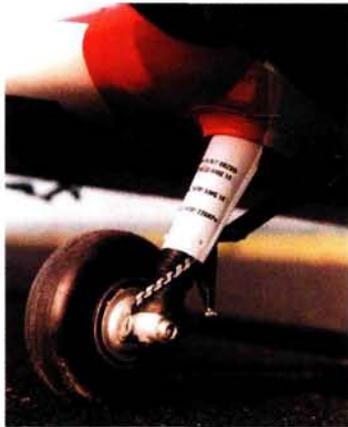


Below: the uncovered model reveals its structure. Note the weight-saving open fuselage construction.

Once the center section is completed, the outer panels are added. Because of the excessive washout, the spars are placed on supporting blocks.



• **Covering and finishing.** The wing is covered in thin glass cloth and epoxy resin. To avoid the use of primer, I applied the cloth with white pigmented epoxy resin. The fabric-covered part of the fuselage was finished with Polytex, which is available from Nelson Hobby Specialties and really is tremendous stuff. The rear turtle deck was covered with tissue and dope, which still is one of the finest methods for finishing a scale model. I painted the model with Hobby Pox, mixed in the appropriate colors.



The detailing on the landing gear legs is sure to attract attention. It takes some time, but it is well worth the effort. Keep the wheels as light as possible to avoid large shifts in the balance point position when the gear is retracted.

• **Engine and radio.** The model uses 6 servos: three in the wing (left and right aileron and retract valve) and another three in the fuselage (elevator, rudder and throttle). I also installed two parallel 1000mAh battery packs. This does not work as a battery back-up system, but in case of a bad switch or connection, it does provide extra safety.

If you use a large 4-stroke engine, as I did, it will help to move all your electronics and radio gear as far aft as possible. Because



Left: one air cylinder drives both legs simultaneously. Full details of the landing gear are shown on the plan.

of the fully detailed cockpit interior, I installed the servos just in front of the balance point, with the radio switches just behind a luggage hatch behind the cockpit. I placed the battery packs at the far rear of the fuselage (accessible through a hatch). Despite all this, the proto-

type model still needed about 5 ounces of tail ballast.

I powered the model with a Laser 1.20 because I've had good experience with these engines. For those of you who fancy really hot flying, a 1.50 could be used. A Zlin is by no means a fast machine; a good 1.00 or even an .80 4-stroke would be more than adequate for power. The slim cowl allows little room for the silencer, but after several experiments, I installed a custom-built German Zimmermann silencer behind the engine.

won't be disappointed! ✚

Editor's note: the author offers a complete package, including fiberglass engine cowl, spinner, belly pan and a molded clear plastic canopy for his Zlin 526. For more information, contact: Dick van Mourik, Weth. Mooringstraat 2, 5301 NT Zaltbommel, Netherlands; d.j.van.mourik@freeler.nl.

Balsa USA, P.O. Box 164, Marinette, WI 54143; (906) 863-6421; fax (906) 863-5878; www.balsausa.com.

Carl Goldberg Models, 4734 W. Chicago Ave., Chicago, IL 60651; (773) 626-9550; fax (773) 626-9566; www.goldbergmodels.com.

Hobby Pox, 36 Pine St., Rockaway, NJ 07866; (973) 625-3100; fax (973) 625-8303.

Nelson Hobby Specialties, 394 S.W. 211th Ave., Aloha, OR 97006; toll-free (877) 263-5766; (503) 259-8899; www.nelsonhobby.com.

Polytex; distributed by Balsa USA.

Robart Mfg., P.O. Box 1247, 625 N. 12th St., St. Charles, IL 60174; (630) 584-7616; fax (630) 584-3712; www.robart.com.

CONCLUSION

This model certainly stands out in a crowd, and it looks very impressive in flight. Have a go at this Czech masterpiece; you