

CHANCE VOUGHT XF5U-1

FLYING

PANCAKE

1/32 SCALE

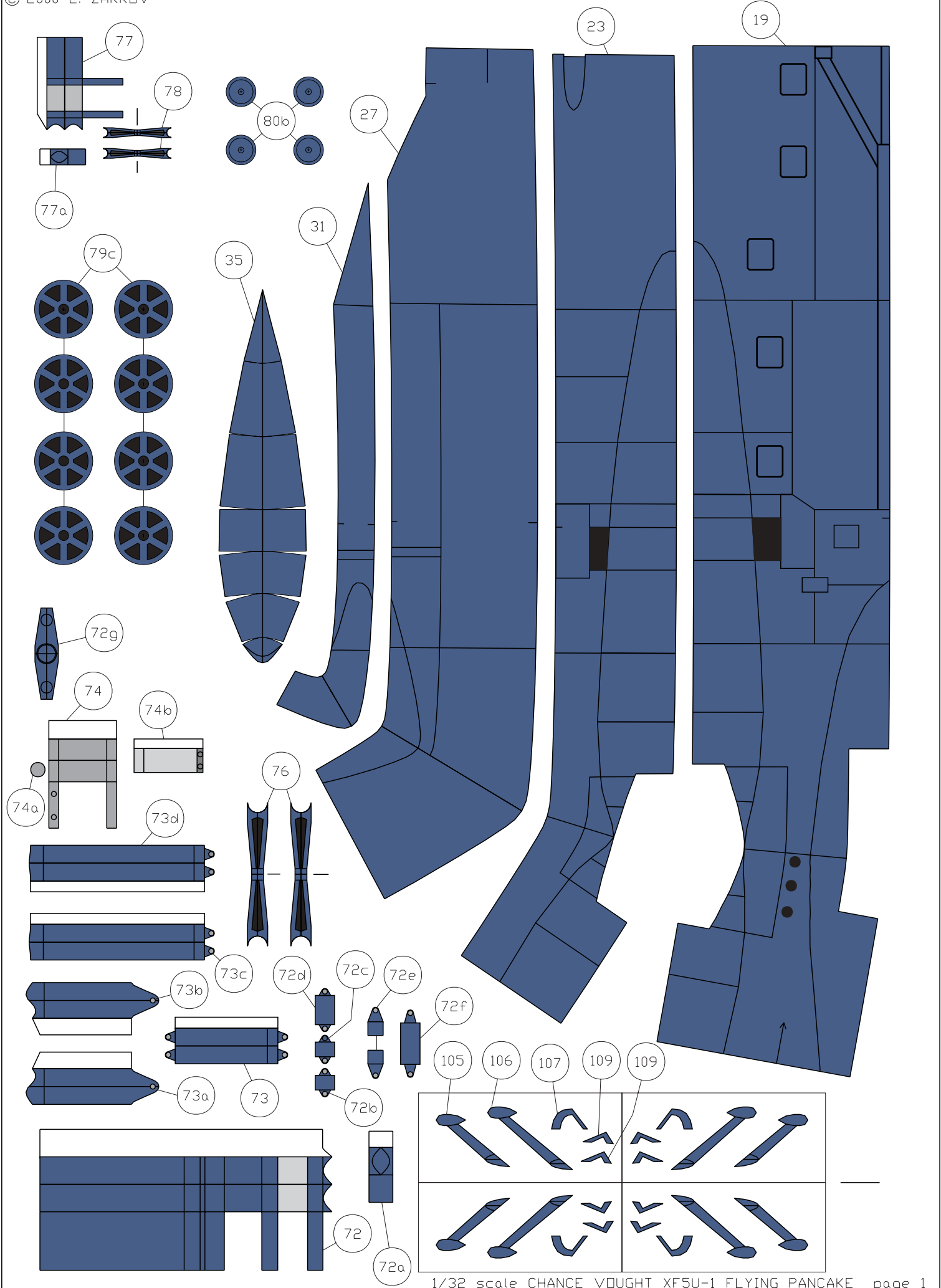
PRECISE CARD MODEL

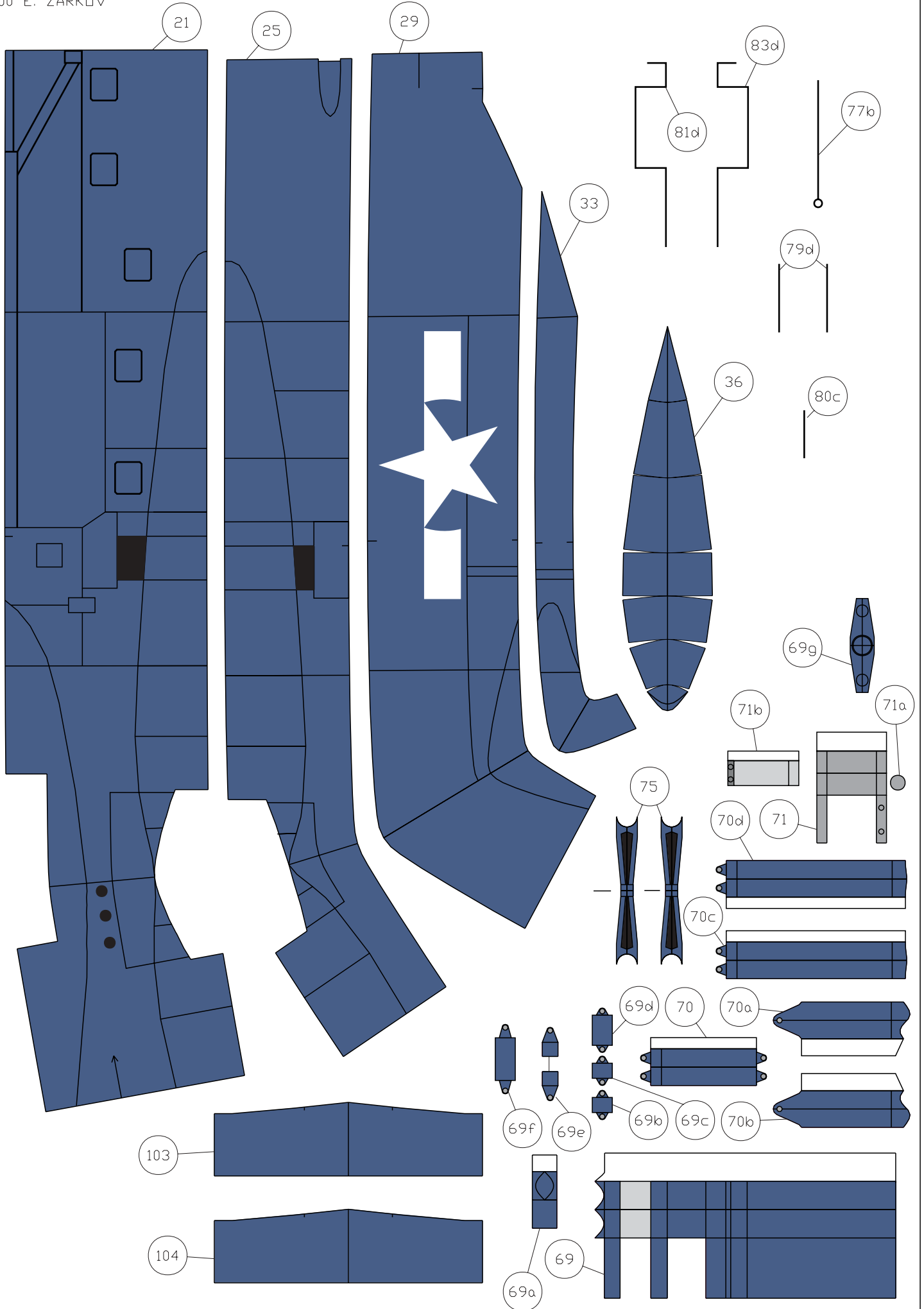


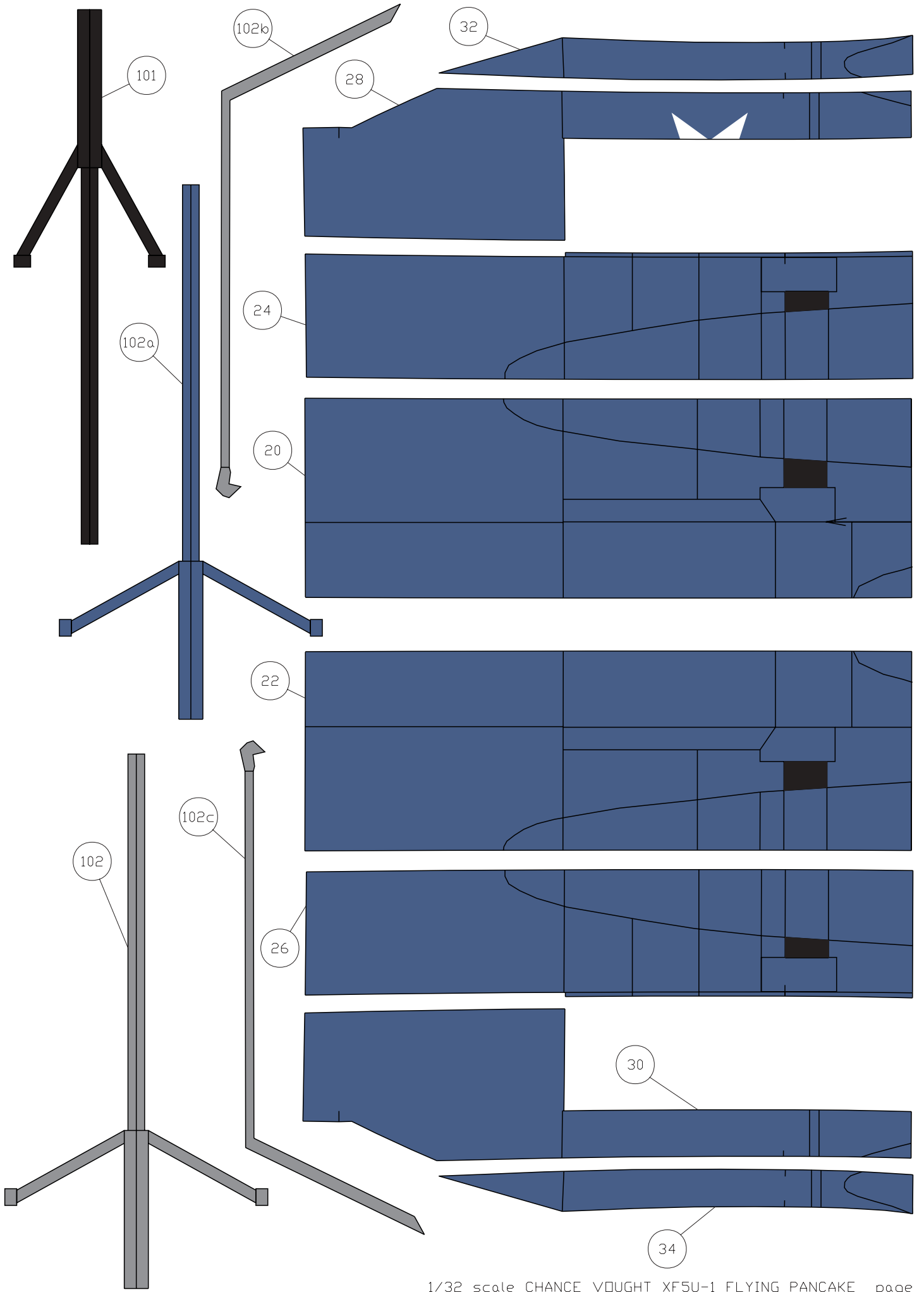
The real thing...

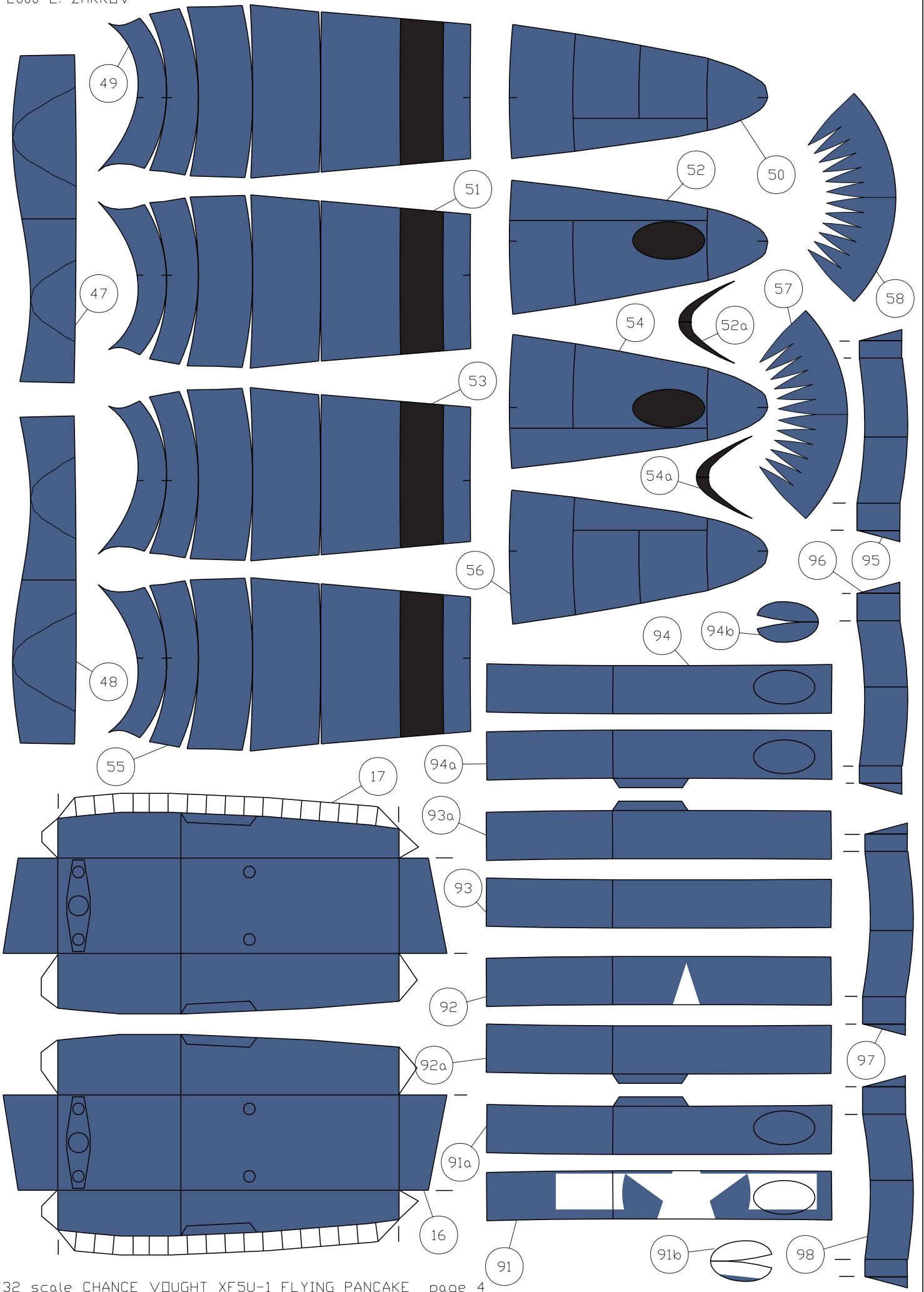
And the model

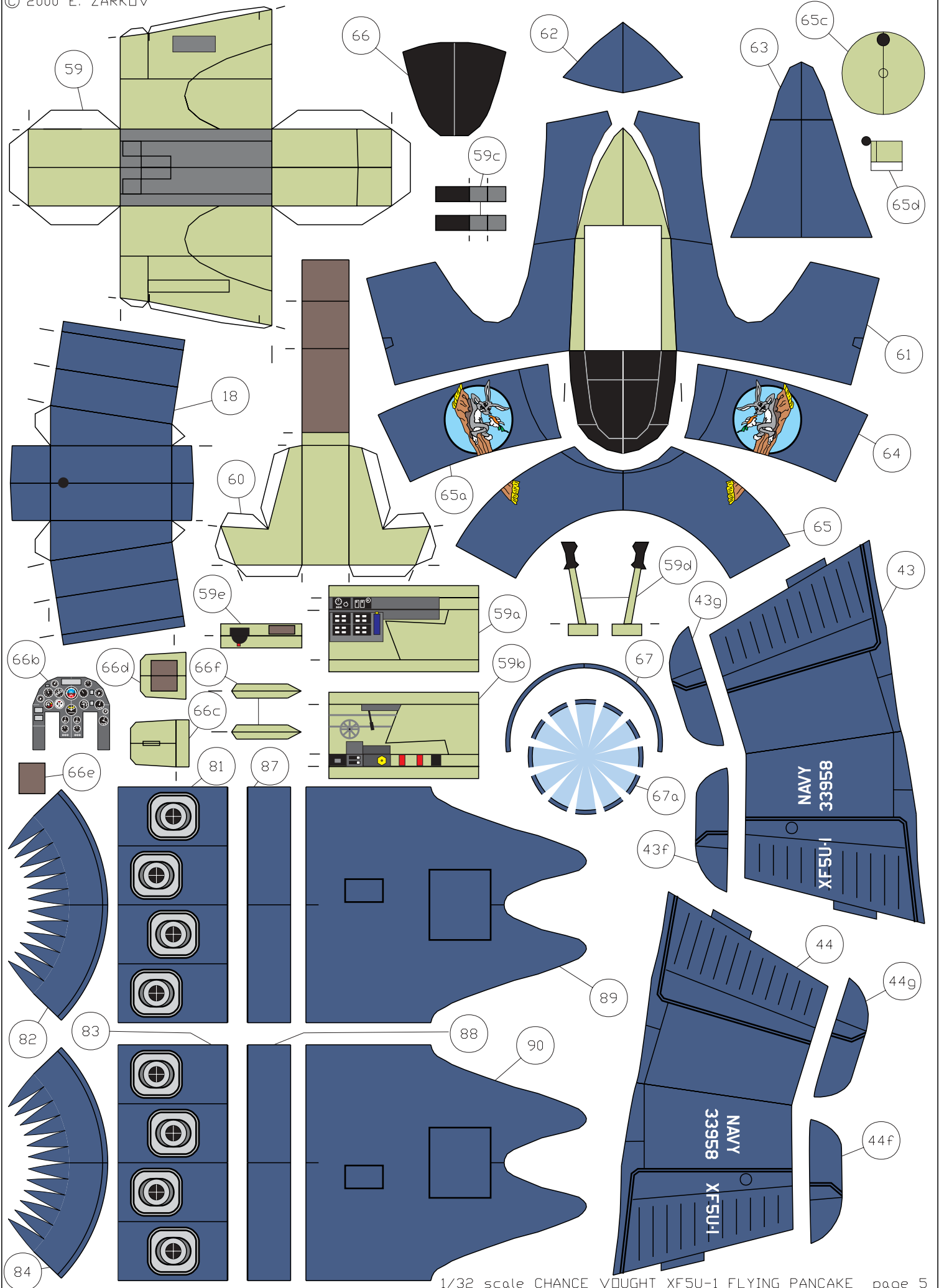


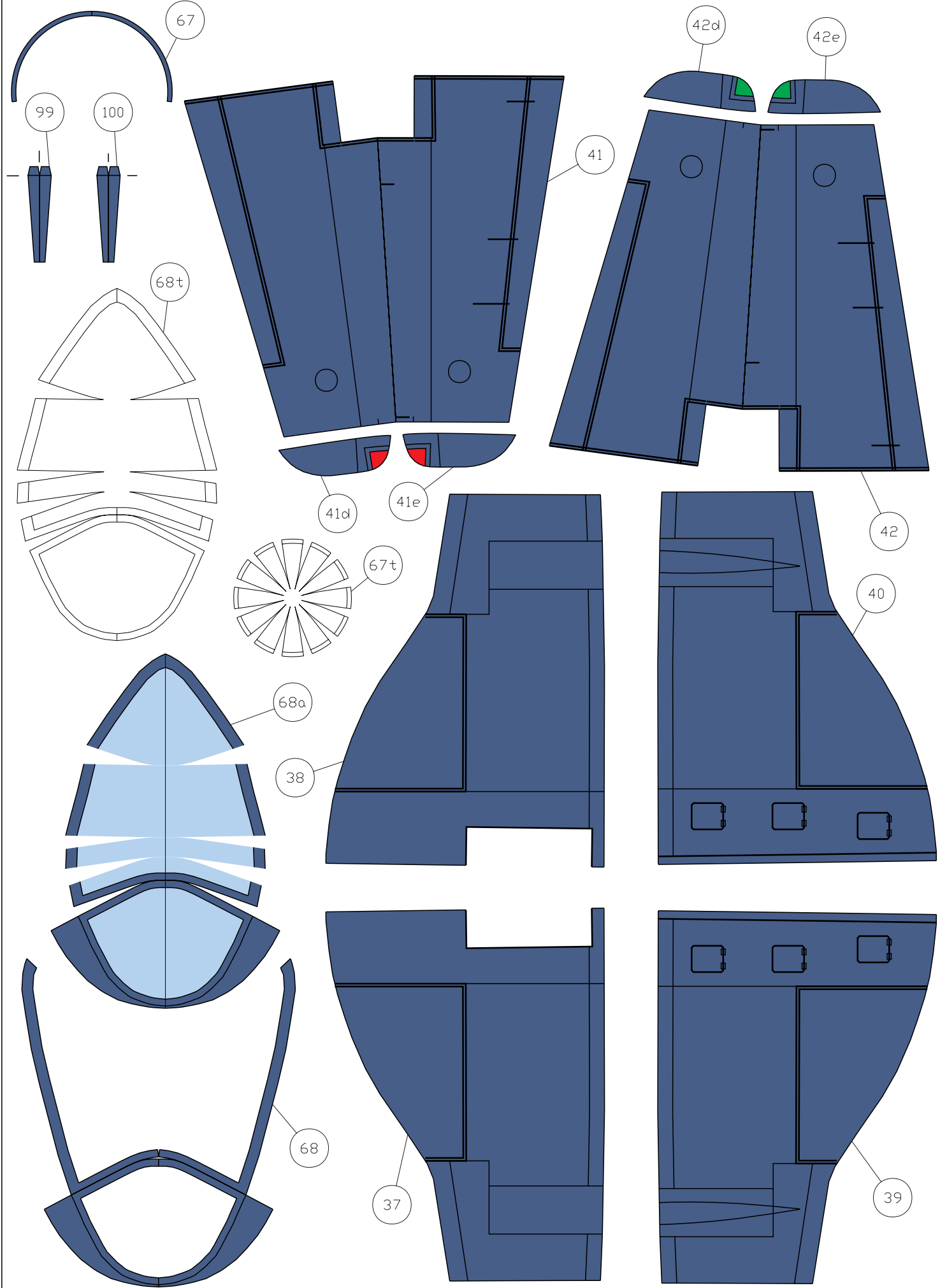


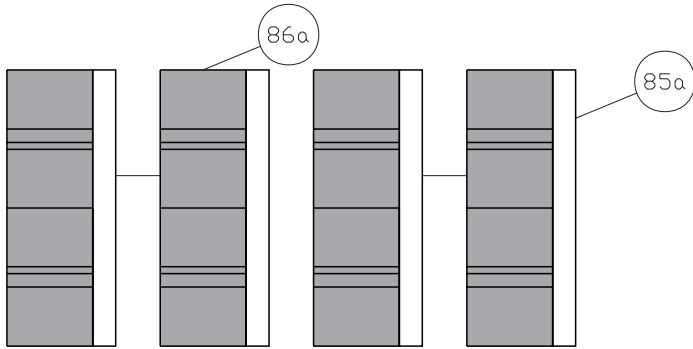
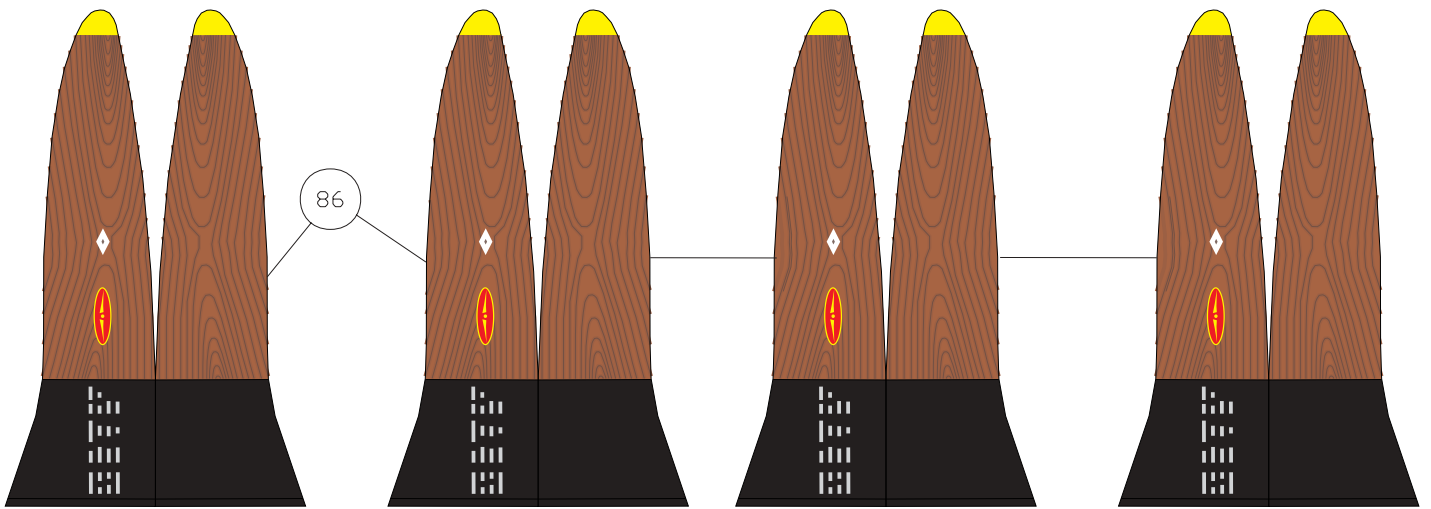
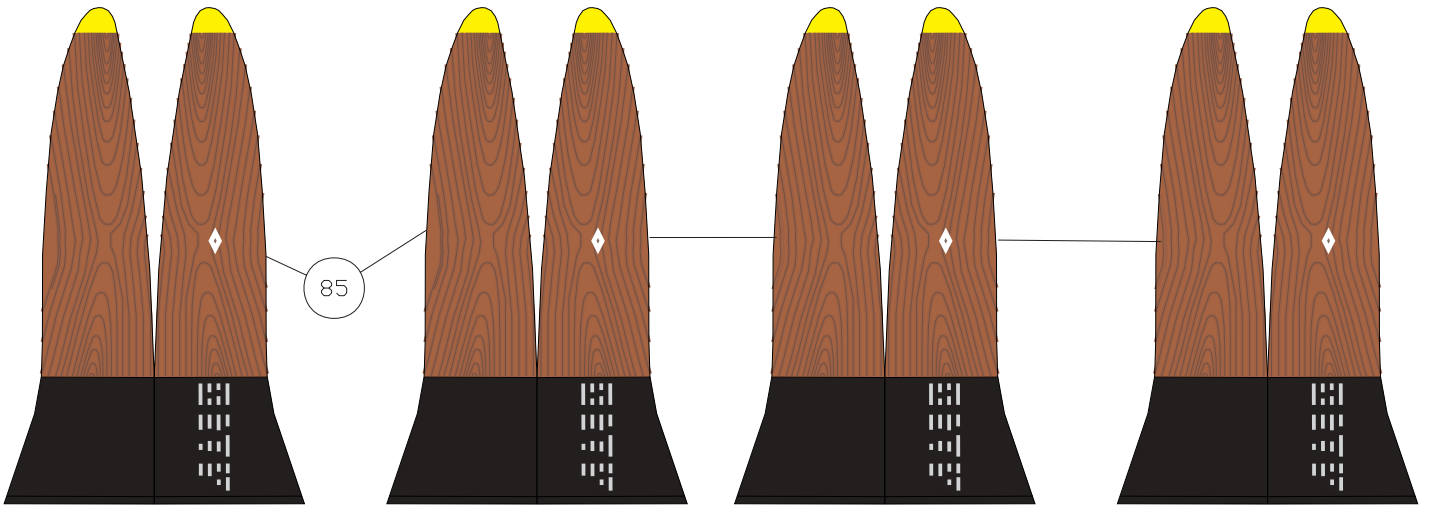


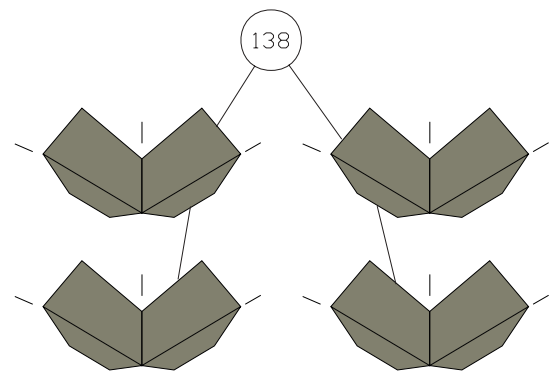
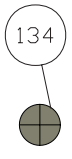
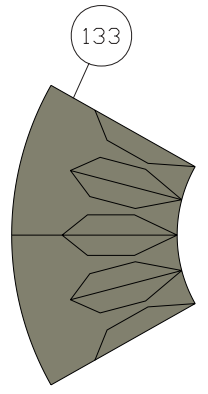
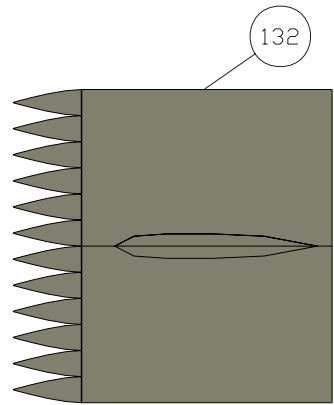
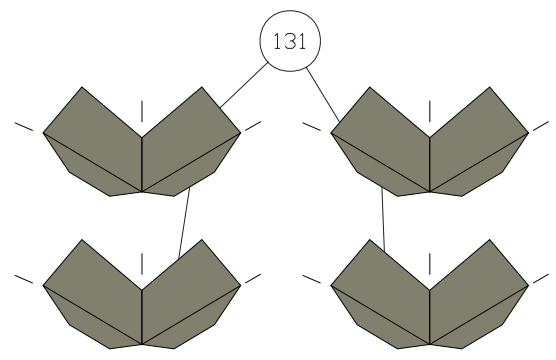
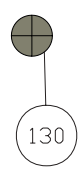
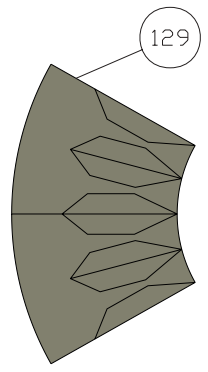
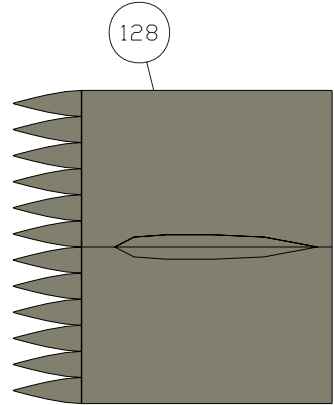
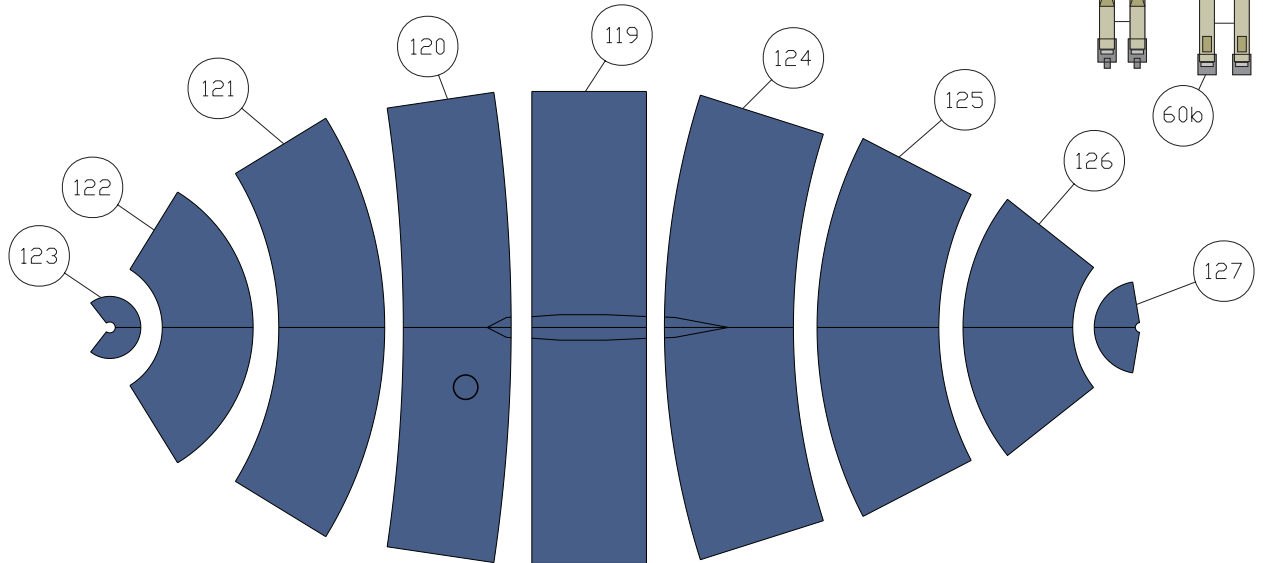
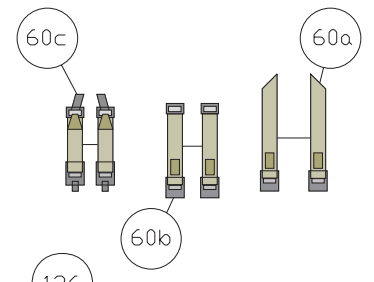
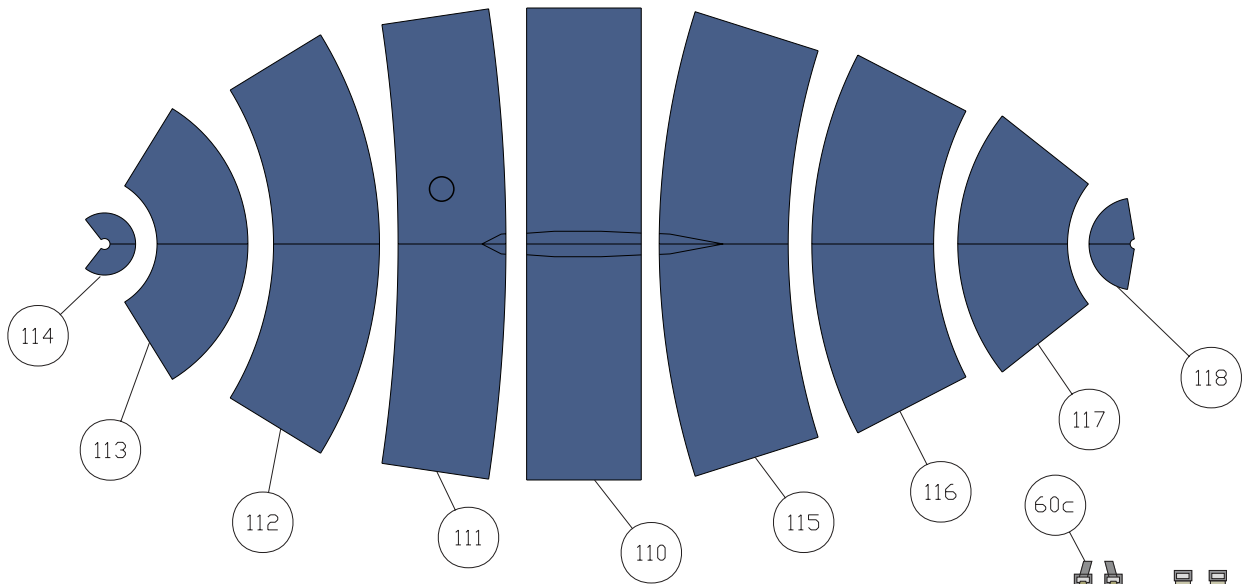


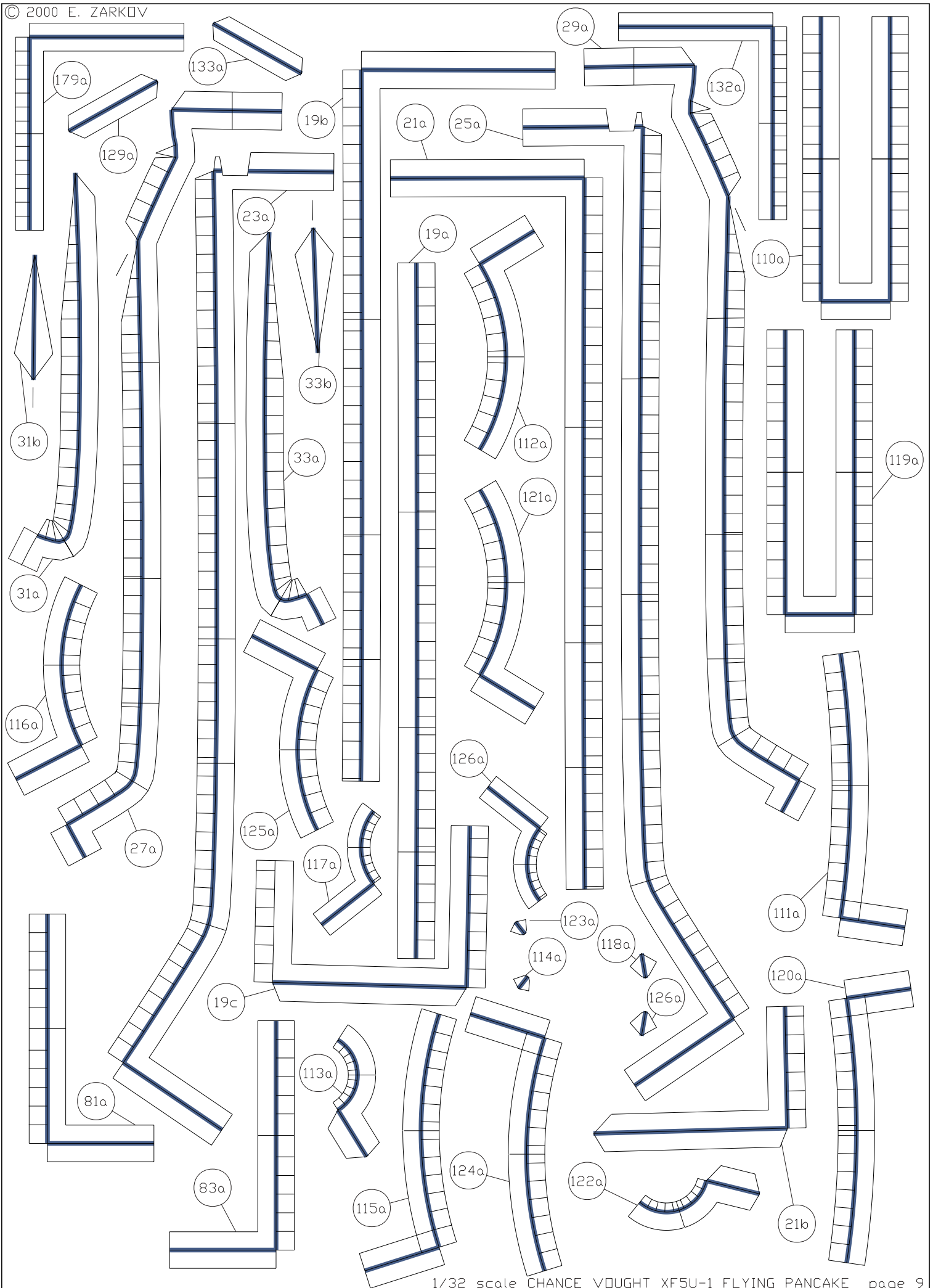


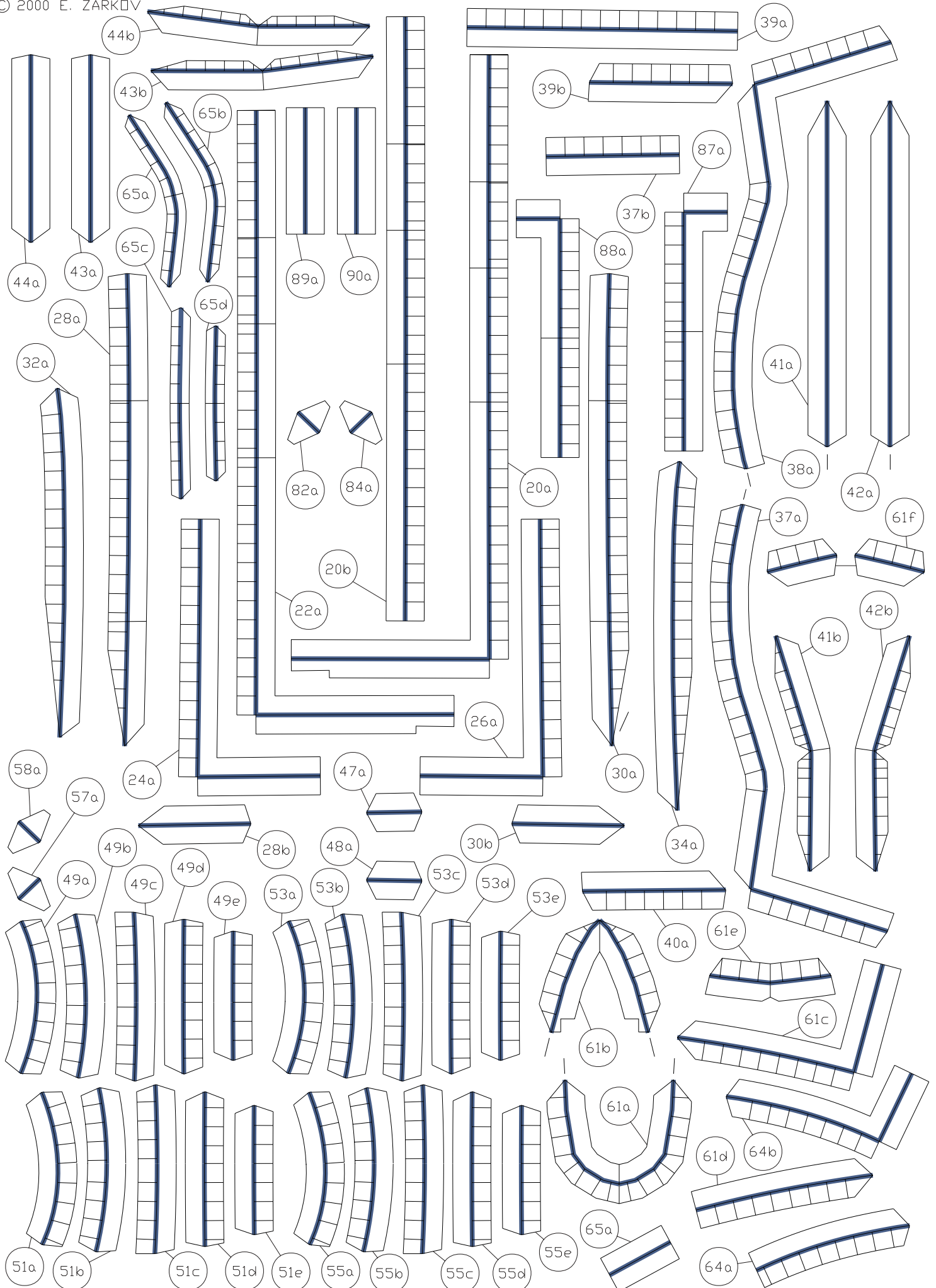


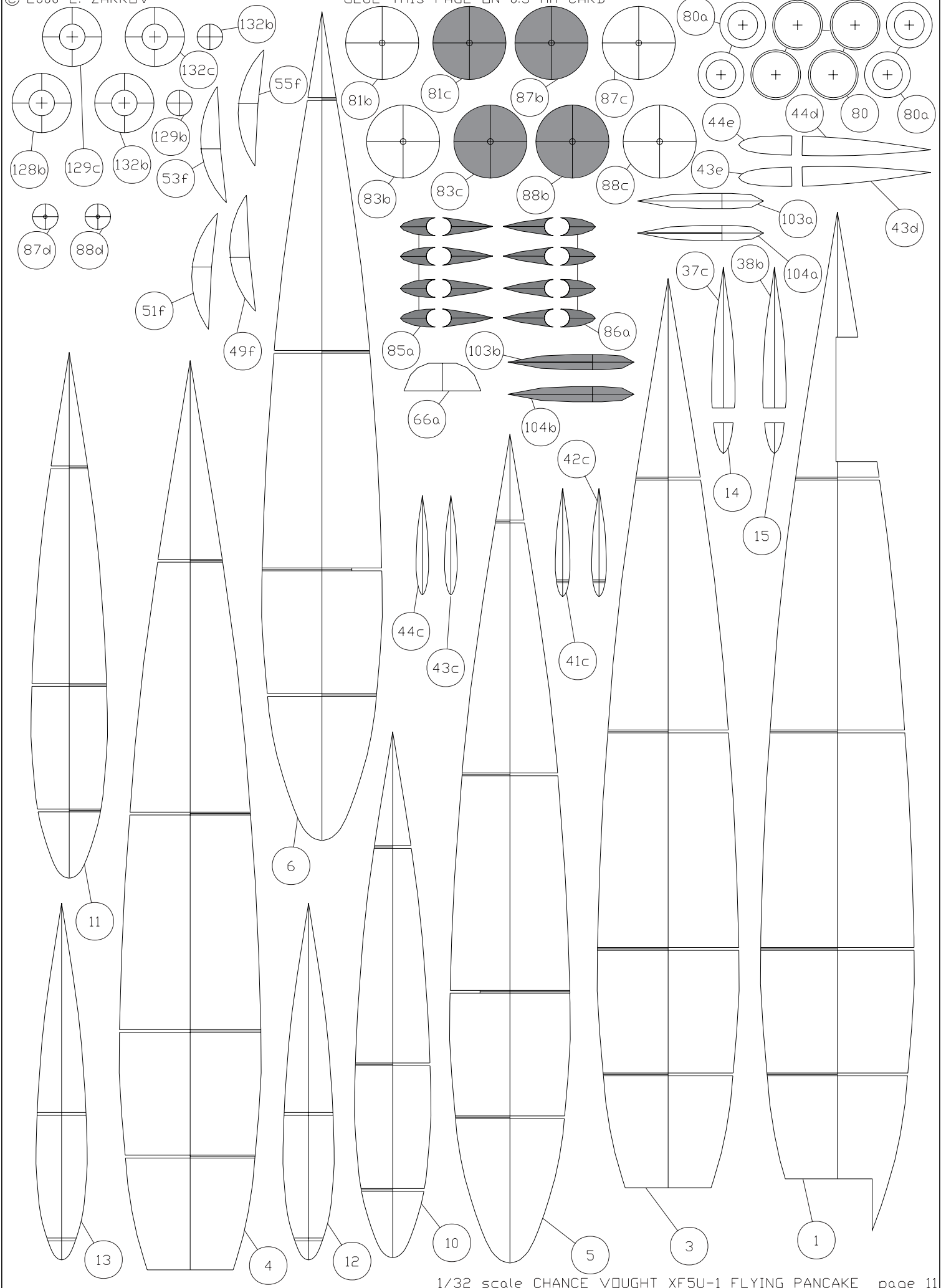


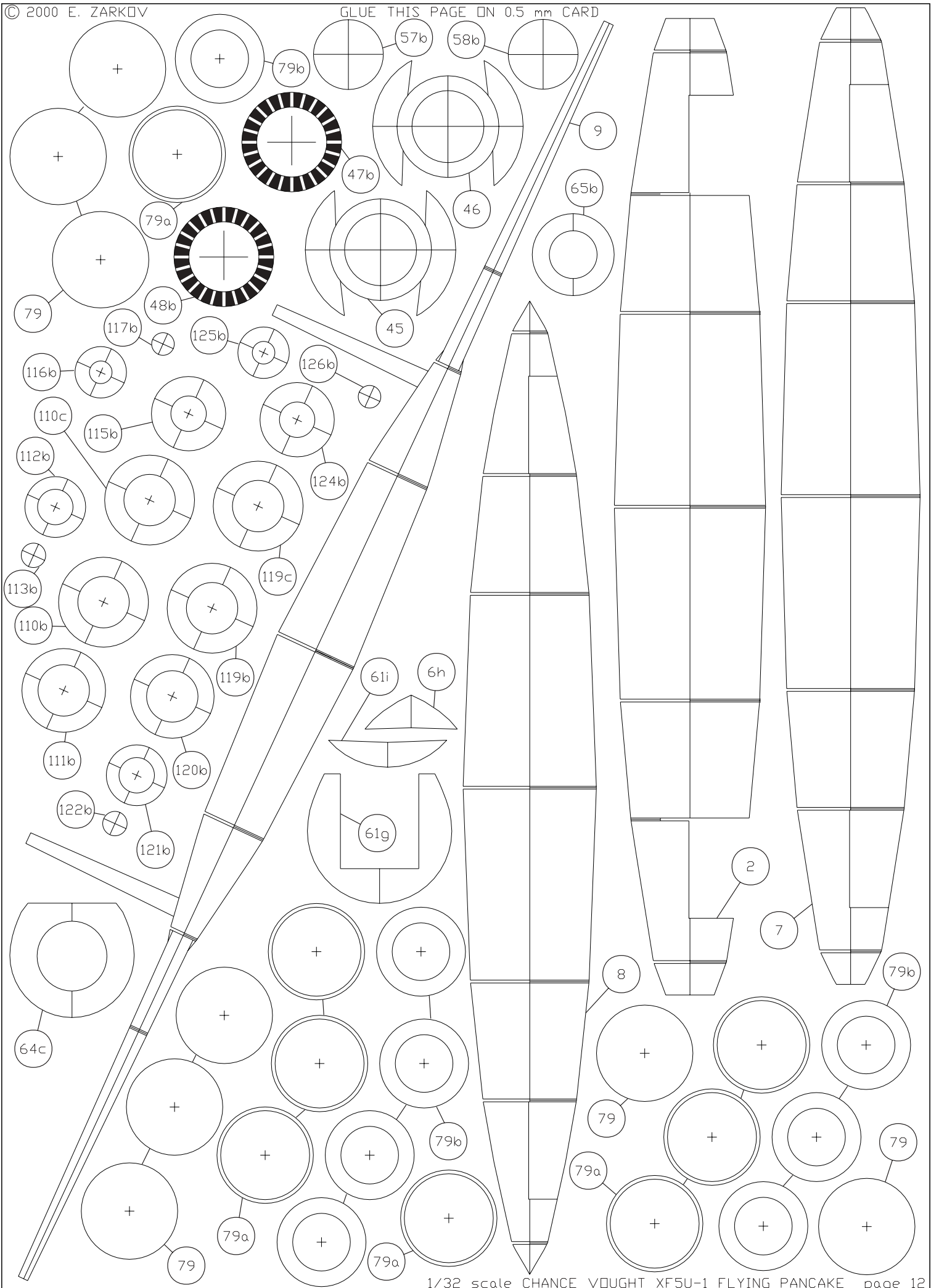




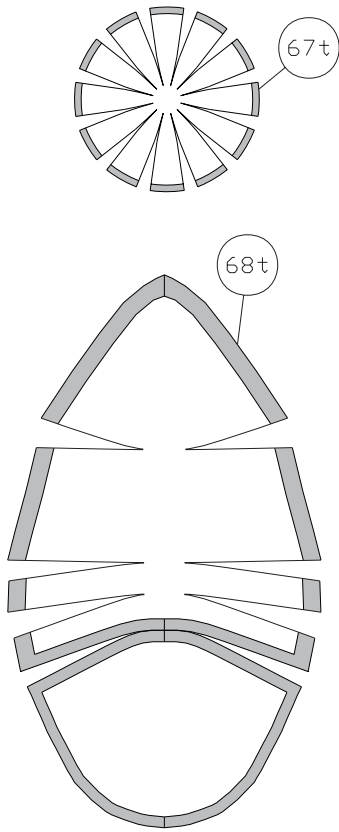






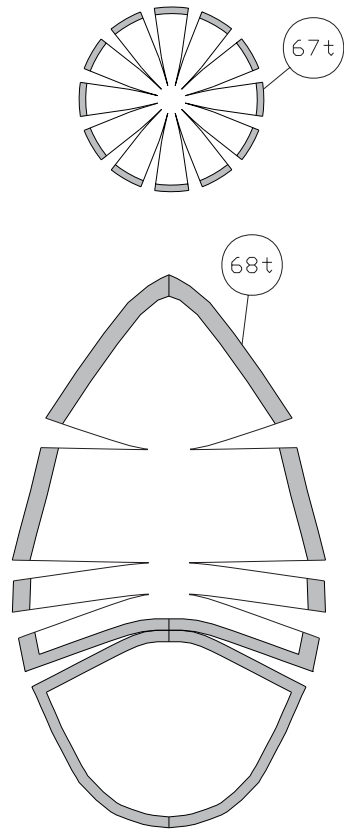


© 2000 E. ZARKOV



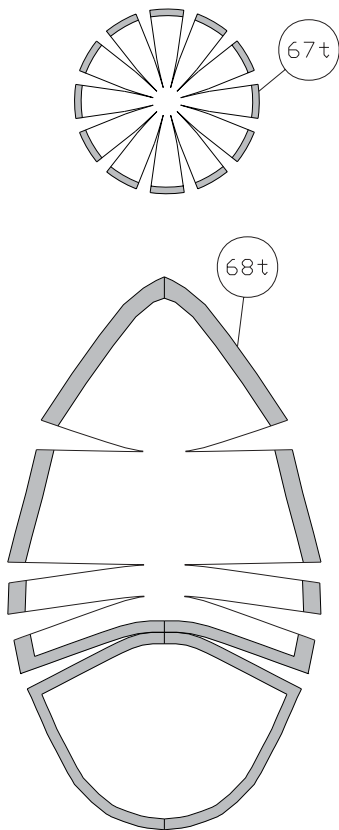
1/32 scale CHANCE VOUGHT XF5U-1 FLYING PANCAKE

© 2000 E. ZARKOV



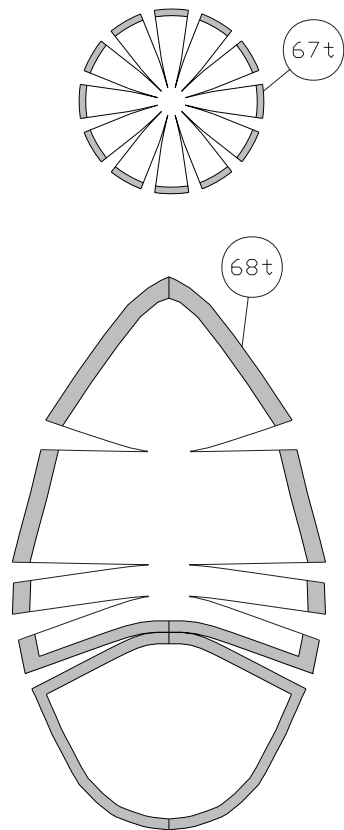
1/32 scale CHANCE VOUGHT XF5U-1 FLYING PANCAKE

© 2000 E. ZARKOV



1/32 scale CHANCE VOUGHT XF5U-1 FLYING PANCAKE

© 2000 E. ZARKOV



1/32 scale CHANCE VOUGHT XF5U-1 FLYING PANCAKE

BRIEF HISTORY OF CHANCE VOUGHT XF5U-1 FLYING PANCAKE

There are many descriptions used for XF5U-1 - the "Flying Pancake", "Flying Saucer", "Flying Flapjack" or "Zimmer's Skimmer" were all names of the Charles Zimmermann's unorthodox brainchild. If XF5U-1 was ever flown, definitely it would be described also as the world's fastest and slowest aircraft, and the world's first VTOL. Unfortunately, this strange-looking aircraft was never given the chance to be taken off the ground.

The designer of "Flying Pancakes" Charles Zimmermann is well known specialist of aeronautics, despite he graduated the University of Kansas with a degree in electrical engineering. Zimmermann made a name being a NACA employee by first solving the problem of free-spinning wind tunnel.

He started his works in the field of unusual-shaped aircraft in the early 30-s, entering NACA design competition for a civilian lightplane. In 1933 he designed a circular-wing airplane capable to fly at high speed and yet to hover like a helicopter. Due to its aerodynamic soundness his design won the competition, but NACA rejected the idea as "too advanced".

NACA rejected the idea, but Zimmermann did not. With the help of his colleagues Richard Noyes and John McKeller he worked on the concept further. In 1938 he even made an attempt to obtain a US patent for his design of small airplane in which three passengers lying prone to promote streamlining, but because of its marginal comfort the idea had been abandoned soon.

In October 1938 Zimmermann attempted to interest the Army in a short-range observation aircraft, designated V-170 and based on the same circular-wing scheme. The Army declined and then Zimmermann constructed an electric powered model V-162 and piloted remotely by two pilots. The tethered aircraft flying extremely so well during hangar tests that the Navy became interested and gave research funds.

With Navy financing the design and aerodynamic studies of the prototype V-173 were underway in 1939. As it was a full-scale test model, it was covered with standard wing fabric overall to save weight and money. Initially V-173 had no horizontal stabilizers, but after the model tests these were added. The aircraft was equipped with fixed landing gear, which gave it a heron appearance in flight. The wing platform was basically the same as in XF5U-1. The V-173 took off in the air for the first time from Stratford, Connecticut on 23 November 1942 with Vought's Chief test pilot Boone T. Guyton on the controls. During the tests V-173 was flown a total of 131 hours by Guyton and other Navy pilots and even by the famous Charles Lindbergh. Today this test aircraft that paved the way for the XF5U-1 is preserved (with its vertical fins and "flying tail" removed) in Smithsonian Institution's Air Museum storage warehouse in Silver Hill, Maryland.

In September 1941 according to the Navy request, Vought started to build two VS-315 prototypes. This designation of the military version of V-173 was later changed to XF5U-1. One prototype was intended to static tests, and another was supposed to be a flight test aircraft. The contract for XF5U-1 was officially issued on 15 July 1944. Gearbox problems in the right-angle propeller driving shafts forced Vought to ask the Navy permission to shift the tests of this secret aircraft to Muroc Dry Lake in California (today Edwards AFB) - the only airfield in the United States from which XF5U-1 had a chance to fly safely. This and some other design problems, combined with the high costs of the project (estimated at a quarter-million dollars) and the arrival of jet engines, were the reasons for the cancellation of the contract on 17 March 1947, after the XF5U-1 had made a number of successful taxiing trials, but it never had a chance to fly.

The original propellers of XF5U-1 were Hamilton Standard Hydromatics, used also on F4U-4 Corsair. Probably these were used only for engine and gear shaft tests, but it is possible that the speculations for taxi tests with these propellers are true. XF5U-1 drive system is based on counter-rotating propellers. Hamilton Standards had not left-hand and right-hand rotation options, but on the pictures it is clearly visible that the port propeller has reversed blades (the Hamilton Standard insignia is on the backside). However, later wooden propellers were mounted for taxi tests.

The XF5U-1 was powered by two Pratt & Whitney R-2000-7 engines of 1350 h.p. each. The calculated speed range of the aircraft was amazing - usually the landing speed-to top speed ratio is not better than 1:4, but XF5U-1 was expected to have a range from 40 to 425 m.p.h. with normal power, 20 to 460 m.p.h. with water injection and 0 to 550 m.p.h. with gas turbines. With 261 gal. of fuel in internal tanks the expected range was of 1000 miles.

Armament for the XF5U-1 was to be six .50 cal. machine guns or four 20mm cannons in the wings between the engines and the cockpit with capability for two 1000lb bombs or drop tanks on external pylons under the wing. No armament was ever installed on the XF5U-1 prototype.

The airframe construction was of usual spar-and-longerons type and was covered with metal-and-balsa sandwich skin, called Metalite. Its strength was outstanding. When the end came, Navy ordered the test flight prototype to be destroyed. After the engines and all instruments and salvageable items were removed, the aircraft was placed under the crane to be destroyed with a huge steel ball. The first drops failed to destroy the strong framework and it was necessary to make measurements to determine the exact place on which the ball must to be dropped. After a few drops between the main beams and spars the aircraft became a pile of twisted metal. Sad end for the fifteen years dreams of Charles Zimmermann...

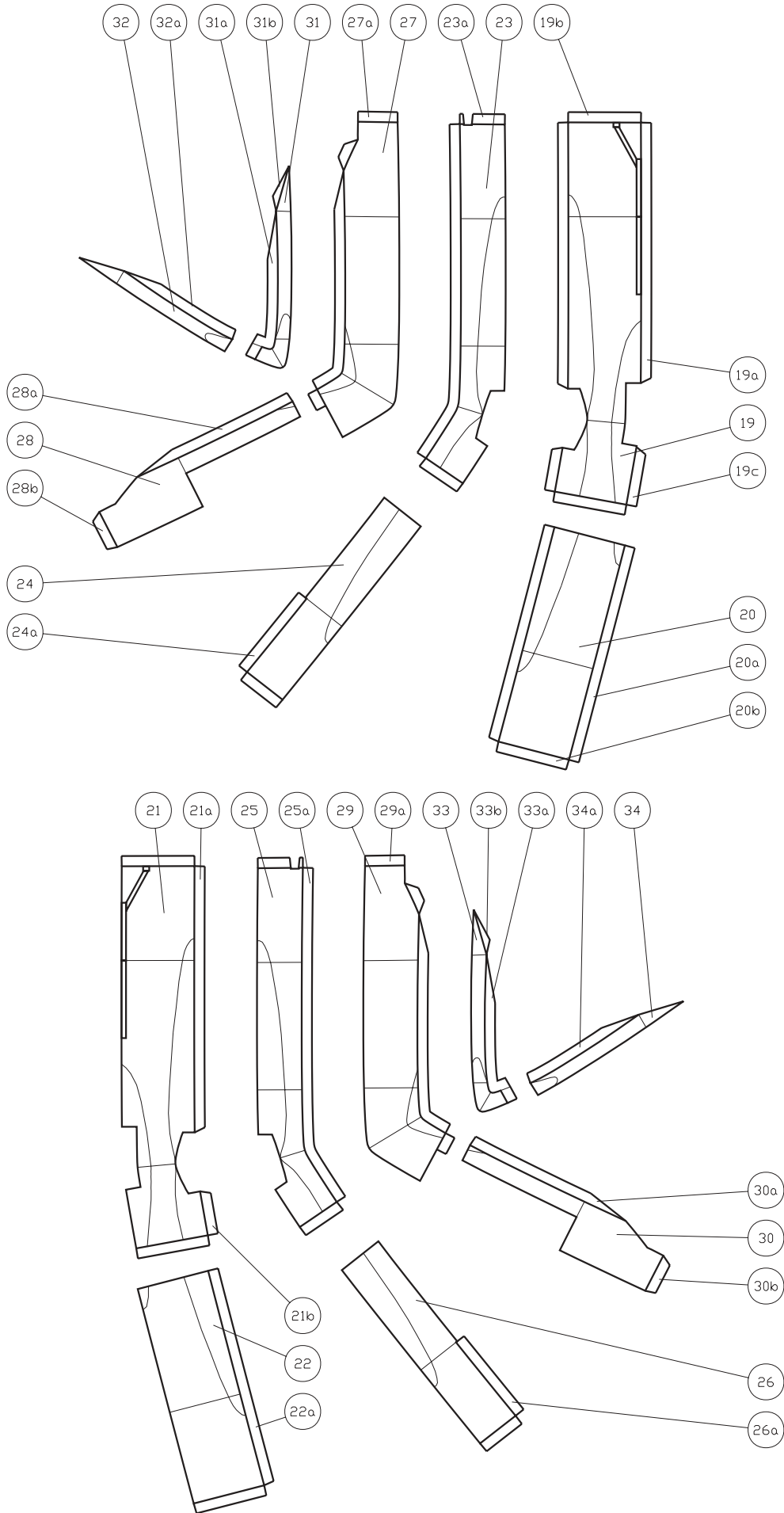
Chance Vought XF5U-1 Specification

POWERPLANT (proposed)	Two Pratt & Whitney R-2000-2(D) Twin Wasp supercharged 14-cylinder two-row radial air cooled engines
Engine power rate	1,600 h.p. max (take-off and war emergency) each
Airscrew	16 ft (4,88 m) four-bladed, articulated, wooden
Fuel capacity	internal - 280 US gal (1,060 l) provisional - two drop tanks 150 US gal (568 l) each
ARMAMENT (proposed)	Six .5 in (12,7 mm) Browning MG 53-2 machine guns with 400 rounds each
PERFORMANCE (estimated at 16,802 lb/7,620 kg)	
Max speed at military rated power	363 mph (584 km/h) at sea level 401 mph (645 km/h) at 10,000 ft (3,048 m) 418 mph (673 km/h) at 15,000 ft (4,572 m) 435 mph (645 km/h) at 20,000 ft (6,096 m) 456 mph (734 km/h) at 25,000 ft (7,620 m) 482 mph (775 km/h) at 30,700 ft (9,357 m)
Max speed at war emergency power	394 mph (634 km/h) at sea level 431 mph (694 km/h) at 10,000 ft (3,048 m) 451 mph (726 km/h) at 15,000 ft (4,572 m) 472 mph (759 km/h) at 20,000 ft (6,096 m) 492 mph (792 km/h) at 25,000 ft (7,620 m) 504 mph (811 km/h) at 30,700 ft (9,357 m)
Climb rate	2,200 ft/min (11,18 m/sec) at normal rated power 3,070 ft/min (15,60 m/sec) at military rated power 3,950 ft/min (20,06 m/sec) at war emergency power
Climb time	4,9 min to 10,000 ft (3,048 m) 11,1 min to 20,000 ft (6,096 m)
Service ceiling	32,000 ft (9,754 m)
Endurance at 1,000 ft/305 m	1,04 hr at max speed 1,81 hr at 90% max speed 3,44 hr at 75% max speed 4,26 hr at 60% max speed
Max range at 1,000 ft/305 m	910 mls (1,465 km) at 236 mph (380 km/h) average speed
Take-off run	930 ft/283 m (calm) 680 ft/207 m (15 kn/28 km/h wind) 520 ft/158 m (25 kn/48 km/h wind)
Stalling speed	105 mph/169 km/h (full load without power) 46 mph/74 km/h (full load with military rated power)
Weights	16,802 lb (7,620 kg) normal loaded 18,917 (8,581 kg) max overload 15,542 lb (7,050 kg) landing weight
DIMENSIONS	
Overall width	13 ft 6 in (9,90 m) across tailplane 31 ft 9 in (9,68 m) across airscrews (diagonal) 36 ft 5 in (11,10 m) square
Length	28 ft 7½ in (8,72 m)
Height	14 ft 9 in (4,50 m)

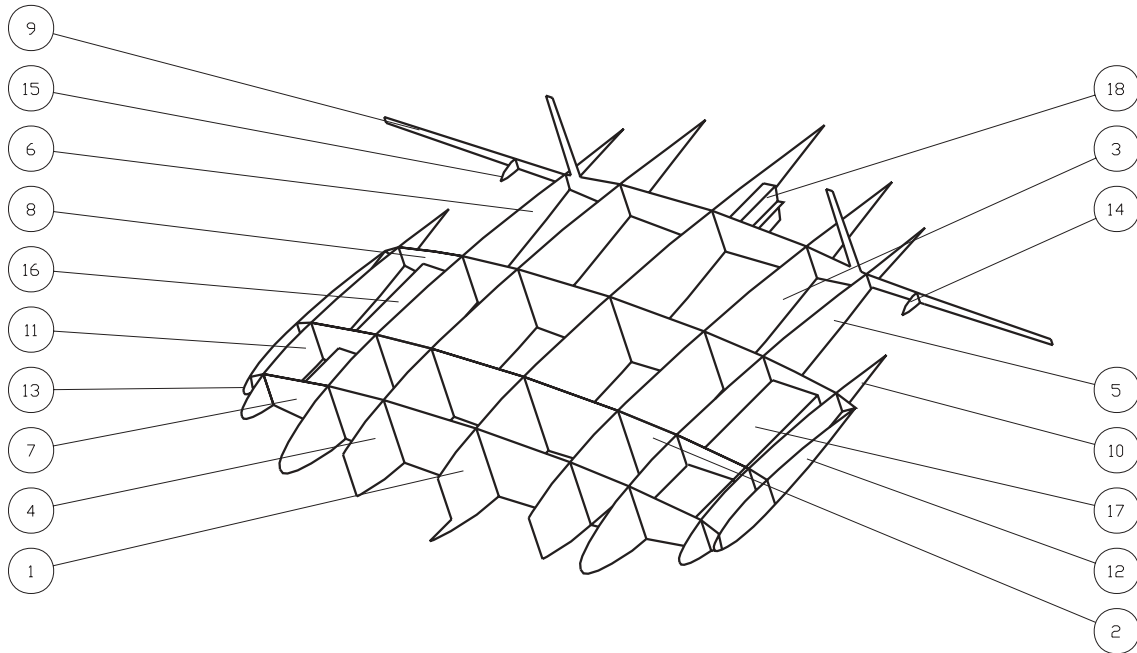
Information from "Naval Fighters # 21 - Chance Vought V-173 and XF5U-1 Flying Pancakes", Steve Ginter Books, 1992.

ASSEMBLY INSTRUCTION

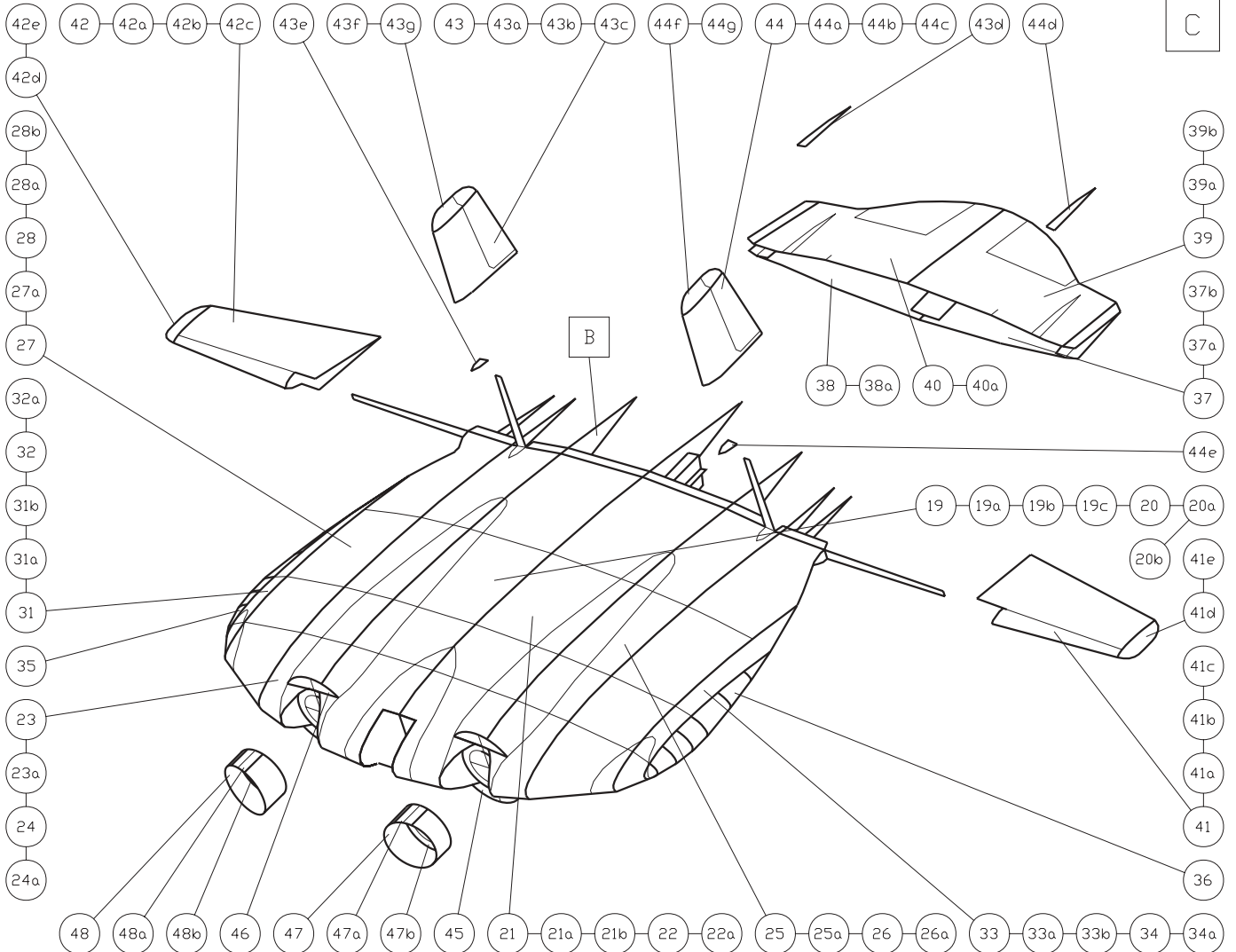
A

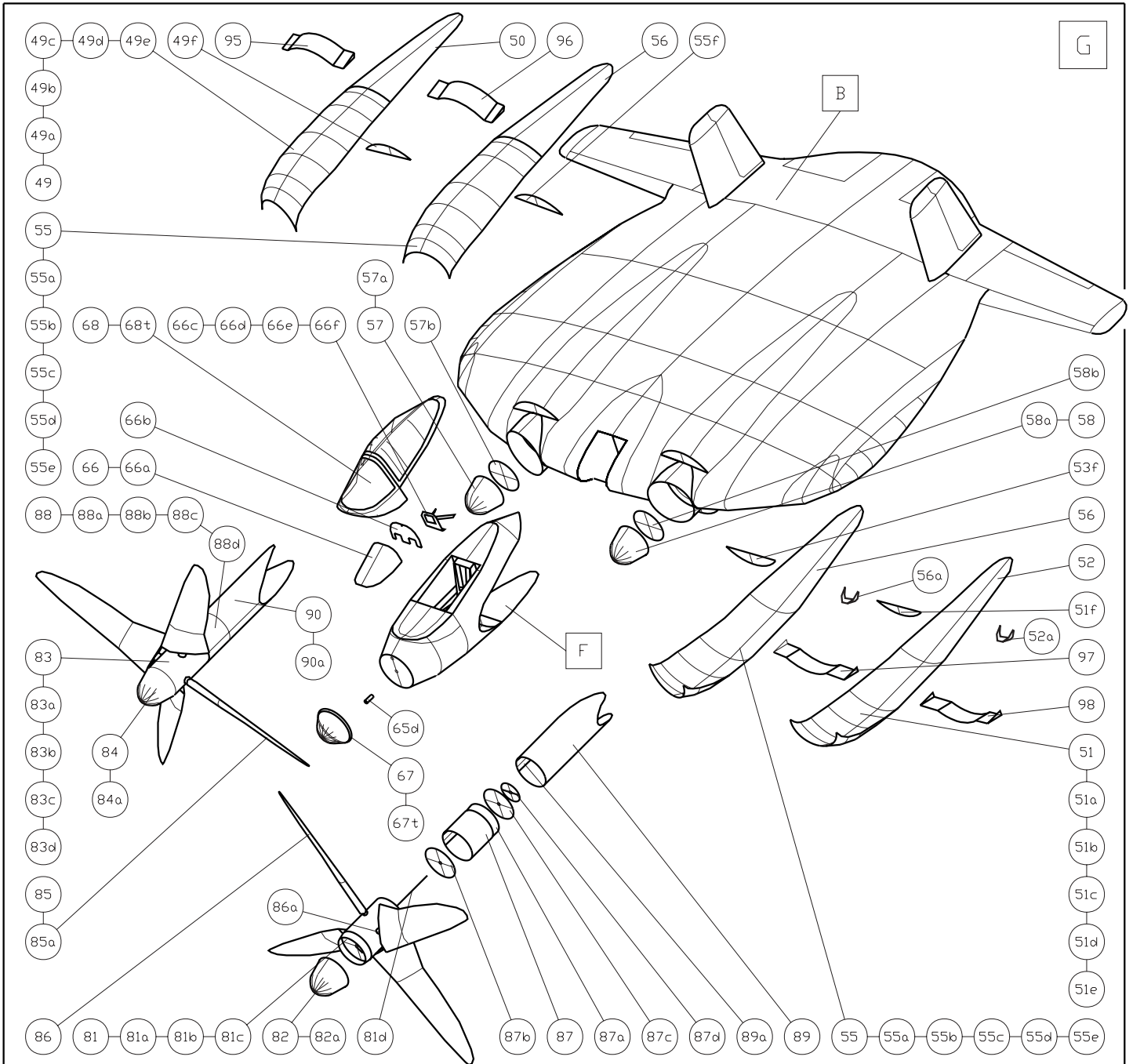
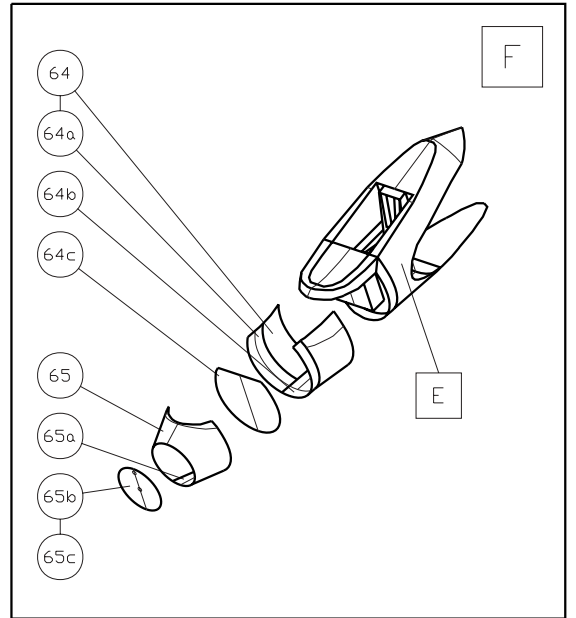
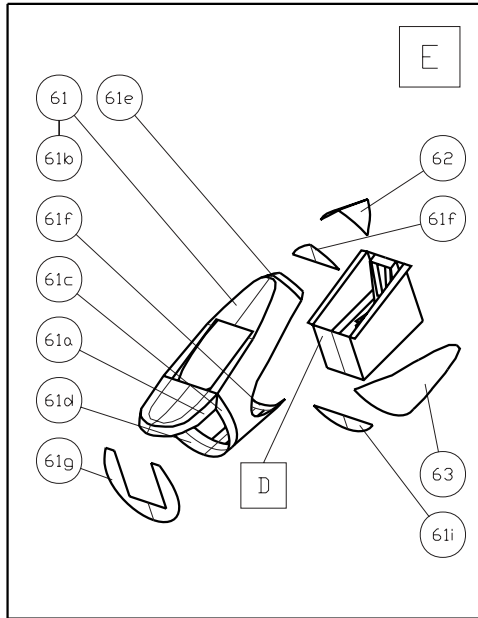
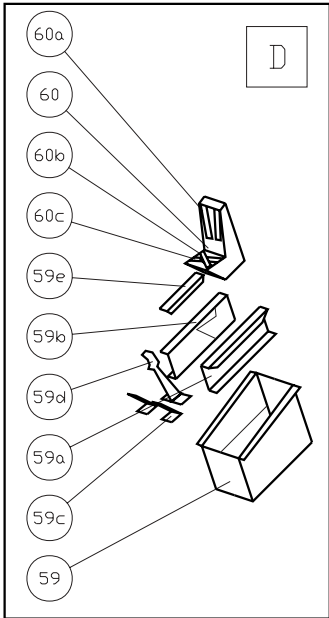


B

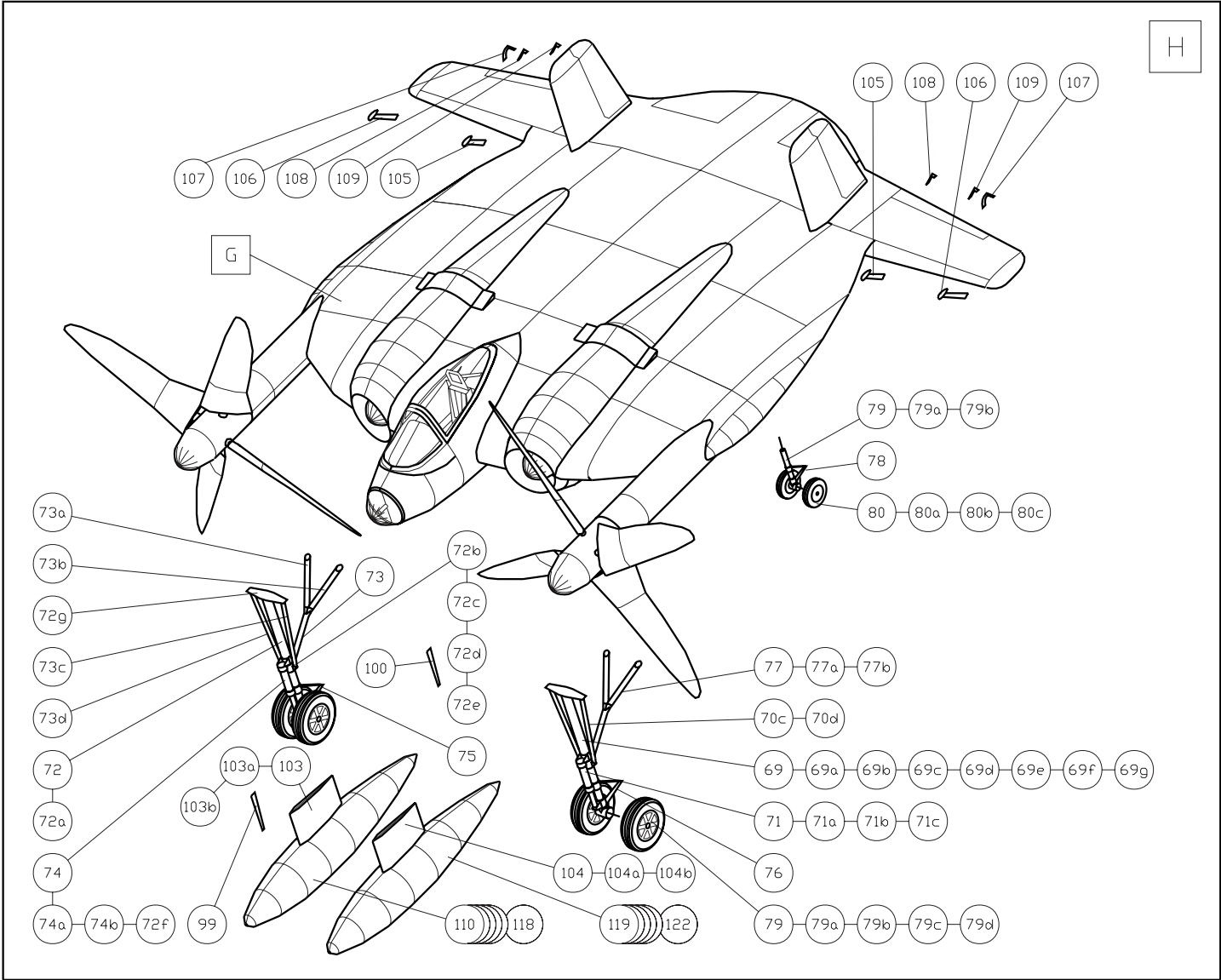


C

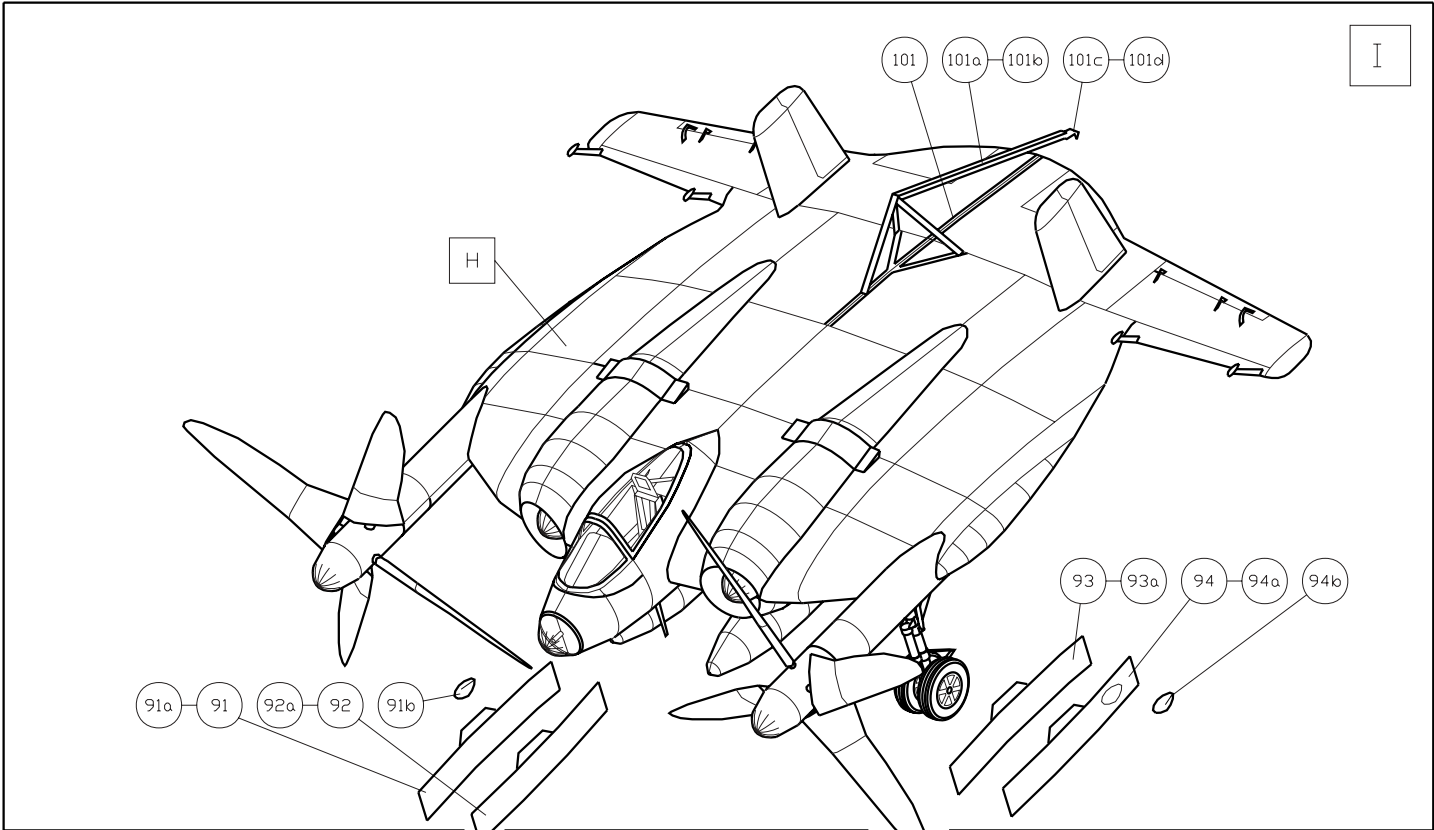




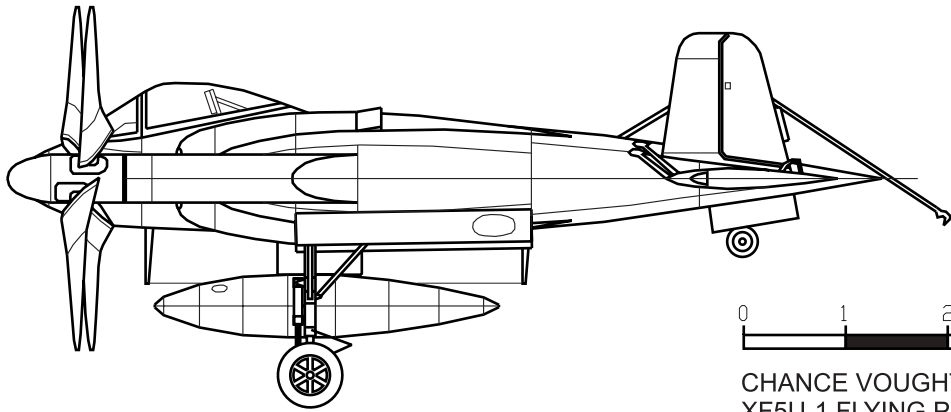
H



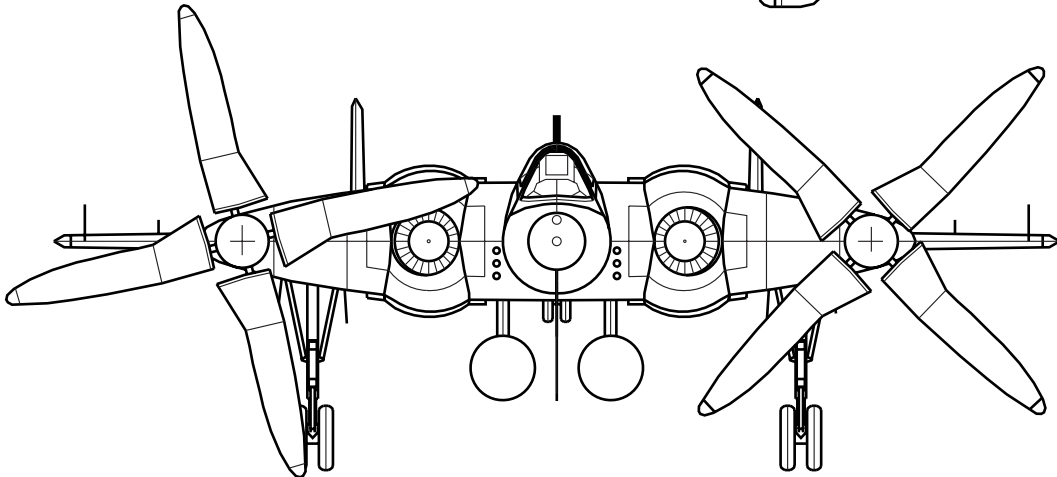
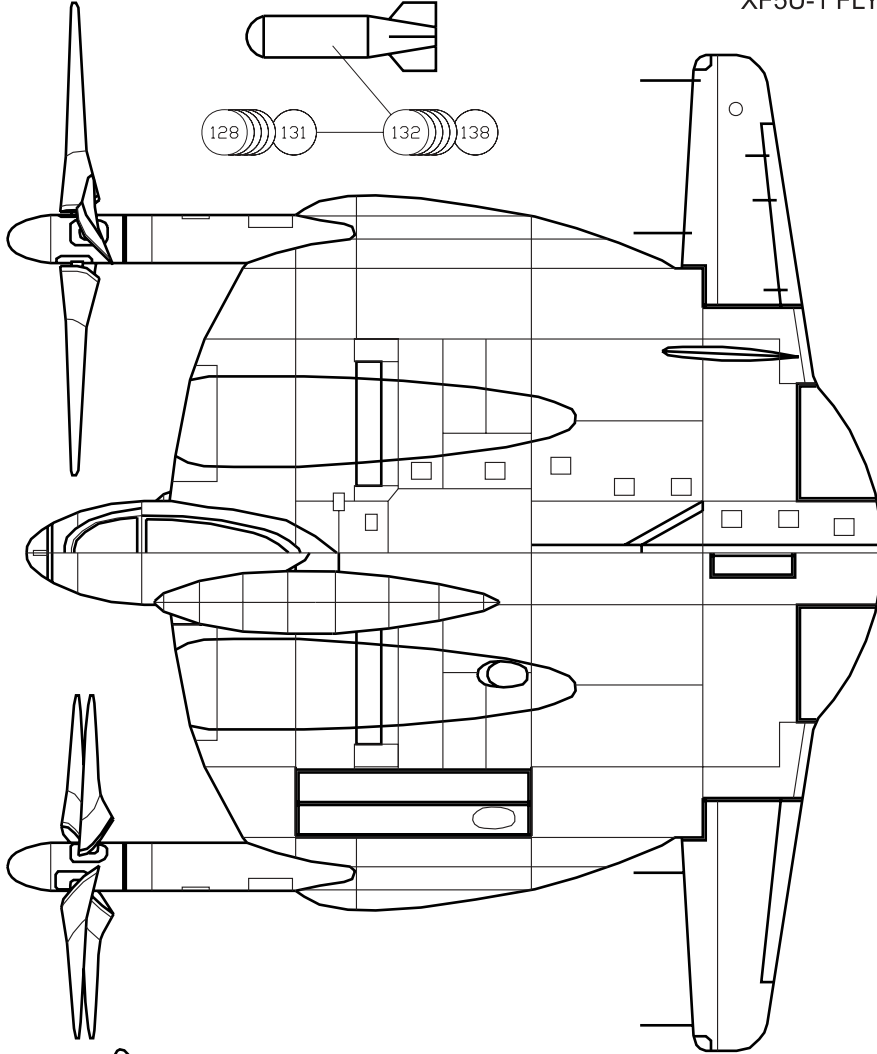
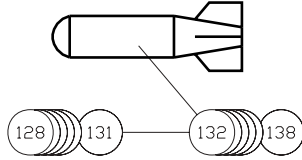
I



J



CHANCE VOUGHT
XF5U-1 FLYING PANCAKE



CHANCE VOUGHT XF5U-1 FLYING PANCAKE

1/32 SCALE PRECISE CARD MODEL

ASSEMBLY INSTRUCTION

The proposed 1/32 scale model of the CHANCE VOUGHT XF5U-1 experimental STOL fighter is with a high level of similarity to the prototype. Thus, a special attention and precision in the assembly procedure is required for achieving good results.

Begin with familiarization of the model's parts. Study carefully the illustrative drawings and pictures in present instruction and carefully examine the cutouts of the model. Try to imagine the separate assembly steps and the purpose of each detail.

Before starting the assembly process some preparation works are needed:

- Get hold of the necessary tools - scissors, sharp modeling knife, blunt knife for scoring the fold lines, prickler, ruler, nippers and sandpaper. Additional materials necessary for the assemblage are: two sheets of cardboard with thickness approximately 0.5 mm, piece of wire with diameter 0.6 - 0.8 mm and transparent foil for the canopy and nose. Supply with proper glue. As the most appropriate is recommended BISON Clear Adhesive, 3M or UHU.
- Glue the pages 11 and 12 on a 0.5 mm cardboard.
- Score all fold lines before cutting the details. The fold lines are marked with short line marks outside the contours of the details.
- Cut all the internal holes in the details by using X-acto knife.

After the acquaintance with the model, you may start the assemblage. Follow the sequence given in the instruction. Cut the necessary details shortly before their use in order to avoid possible mistakes. Do not be in a hurry with the gluing - carefully check and shape the details until obtaining exact and correct fit.

Start with the framework of the model as it is shown on the view A of the assembly instruction. Keep the sequence of the parts as they numbered during assembly. Glue the longeron 2 to the profile 1 first, then glue the profiles 3 and 4, and then complete the framework, adding the parts 5 - 15. Assembly and glue on their places the wheel housings 16, 17 for the main wheels and the housing 18 for the tail wheel.

Now start to cover the model's frame with its skin parts 19 - 36. Begin with the part 19, gluing to it all the connecting stripes 19 #. Then glue to it the beneath part of this skin section 20, together with its connecting stripes. You can see the model's frame and all the skin's parts preliminary prepared for assembly on the fig. 1. on the back cover of the kit.

Please note that on the picture shown on fig. 1 all the parts of the skin are prepared and photographed for illustration purpose only. Our recommendation is to cut and glue each part shortly before assembly.

You must be very careful with positioning the first skin elements 19, 20 and after that their symmetrical parts 21, 22. The eventual misplacement errors will be multiplied in the next sections' building.

After completion of the central skin sections 19 - 21 your model should look like this shown on fig. 2.

Continue with the rest of the skin's parts of the wing /or *pancake* if we follow the prototype's nickname/ as shown on view B of the instruction drawings. Please note that the connecting stripes are not shown on the drawings. You can figure their placement from the pictures supplied in this instruction.

After finishing the main pancake's skin /parts 23-36/, add the rear parts 37-40, horizontal stabilizers 41-42 and the vertical stabilizers 43-44. Then carefully position the engine gondolas' formers 45 and 46. Prepare and glue to them the internal surfaces of the air cooling ducts 47 and 48, together with the cooling fans 47b and 48b. Form the correct nose profile of the parts 19, 21, 23 and 25 during the assembling process. On this stage your model should look similar as this shown on fig 3.

Now leave the obtained pancake apart for a while and focus your attention to the cockpit details, as shown on the instruction drawings /view C-E/.

After completion the nose section E, continue with the rest of the pancake's details – canopy 68, transparent nose 67, engines' gondolas and propellers with their drive nacelles as shown on the view F. Be careful with gluing the propellers – their shafts must rotate freely in parts 87 and 88. Keep the direction of the propeller rotation when glue their drive nacelles to the model.

Prepare the canopy and the plexiglas nose cone /parts 67t and 68t/ from transparent foil.

If you prefer the paper nontransparent canopy you can omit the all interior parts 59 –60 shown on view C and all parts 66#. In this case you must use 67b and 68b instead the transparency parts.

Assembly the undercarriage, forming the wheel legs /parts 69-73/ to pipes and glue them as shown on the view G of the instruction drawings.

Assembly the wheels by cutting the parts 79 – 80 from 0.5 mm card and glue them together. After drying the glue round their edges with sandpaper and paint them black with ink or matt black paint.

The parts prepared in the stages of view F and G are shown on fig. 4.

Complete the model, adding the details – wheel housing covers 91 – 94, stabilizer balance weights 105-106, arresting hook in open position 101-102 /optional/ and external fuel tanks 110 – 127. Instead of the fuel tanks you can add bombs 128 – 135. The finished model is shown on views H and I and on fig. 5.

Now your model is ready.

Enjoy your XF5U-1 Pancake.

The proposed CHANCE VOUGHT XF5U-1 FLYING PANCAKE model is designed as a classic paper kit and is relatively easy to be built. Despite its relative simplicity, a special attention and precision in the assembly procedure is required for achieving excellent results. Study carefully the illustrative drawings, cutouts and present instruction before starting the work on the model. Try to imagine the separate assembly phases and the purpose of each detail.

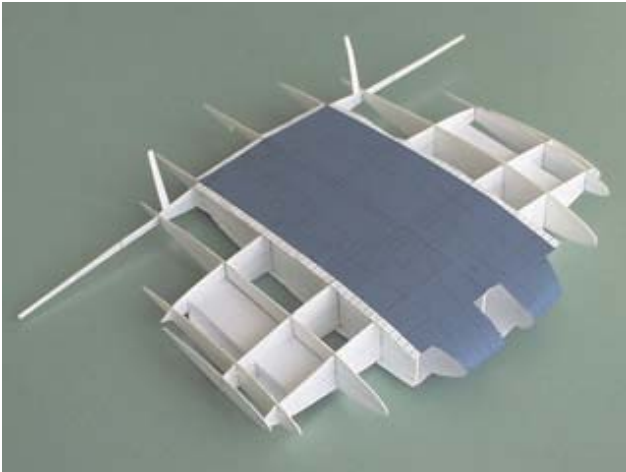


Fig. 2. The central parts of the skin glued to the model's frame

Do not be in a hurry with gluing - carefully check and shape the details until obtain the exact and correct fit. Before starting the work get hold of the necessary tools:

**scissors, sharp modeling knife,
blunt knife for scoring the fold lines,
prickle, ruler, nippers**

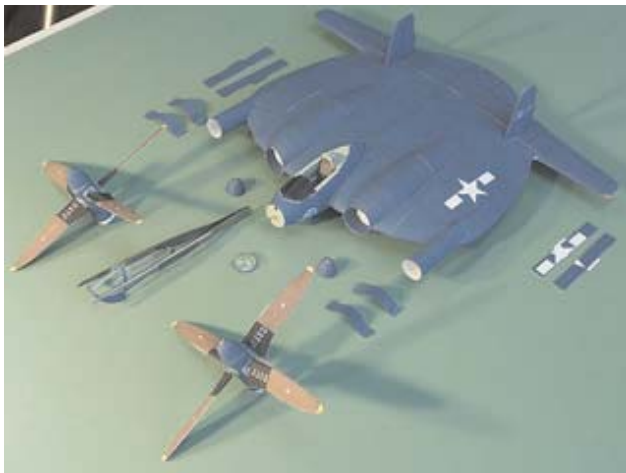


Fig. 4. Propellers, canopy and the other small details ready for assembling

After the acquaintance with the model, you may start the assemblage. Follow the sequence given in the instruction. Cut the necessary details shortly before using them in order to avoid possible mistakes. Score all fold lines before cutting the details. The places of scoring are marked with small thin lines on the continuation of fold lines outside the parts.



Fig. 1. Completed frame of the model and its parts prepared for assembling. Note the gluing of the connecting stripes

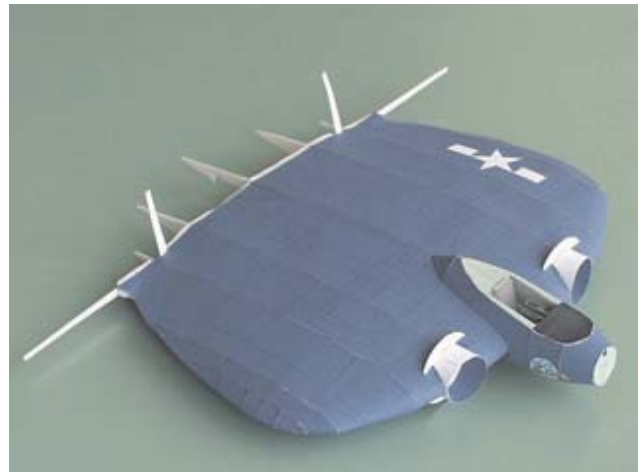


Fig. 3. The completed skin of the "Pancake". Note the placement of the cooling air ducts and nose section.

You can find detailed description of the model's building sequence in the assembly instruction supplied with this kit



Fig. 5. The completed 1/32 scale F5U-1 model.