

FORD FLIVVER

HISTORY: Aircraft were an important part of Ford Motor Company history, but most people remember only the Ford trimotor transports produced between 1926 and 1933. During that era the company also built a few experimental aircraft, among them the Ford Model 2A "Flivver" single-seat personal plane. This "Model T of the Air" was designed by Otto Koppen, a young Ford employee who had recently graduated from the Massachusetts Institute of Technology. Power for the Flivver was provided by a French three-cylinder Anzani engine. For a time, it was replaced by a two-cylinder engine of Ford manufacture, but later the Anzani was reinstalled.

Many airframe changes were made during development, affecting the wing, horizontal tail, landing gear, headrest and cowling. The machine originally featured full-span ailerons, which also functioned as landing flaps and were interconnected to the elevators. However, more conventional ailerons were eventually installed.

Only two pilots ever flew this aircraft: Ford Chief Test Pilot Harry Brooks and Charles A. Lindbergh, both trusted friends of Henry Ford.

Another, more refined Flivver (two-cylinder Ford powered), was a record-breaking performer, which unfortunately, went down into the ocean off the coast of Florida in 1928, with Harry Brooks aboard. With this tragic loss, Henry Ford cancelled the entire project.

The prototype Flivver exists today, as does a two-cylinder engine, in the Dearborn Michigan Henry Ford Museum.

FORD FLIVVER SPECIFICATIONS: Span: 21'9" Weight (empty): 350 pounds
Horsepower (Anzani) approximately 35
Speed: 85 mph

COLOR INFORMATION:

Fuselage, fin and rudder: Dark blue Cockpit coaming: Black
Wings, cowling, horizontal tail, headrest fairing and wheel discs: Aluminum
Manifolds: Aluminum Cylinders: Black Control stick: Aluminum with black grip
Landing gear struts: Black Tailwheel struts: Blue
Propeller (long aileron version): Varnished natural wood with entire spinner painted aluminum. One photo shows what appears to be both spinner and propeller painted aluminum.
Propeller (short aileron restored version): Varnished natural wood prop and spinner hub. Spinner cap: Aluminum Propeller sheathing: Copper
Markings: As shown in drawings and box cover painting.

REFERENCES: *Sport Aviation*, June, 1961 *The Lightplane*, 1970

Grateful thanks for research assistance to: Herbert A. Browar, John Underwood, Robert F. Pauley, George Ardwin, Randy Mason (Curator, Transportation Collection, Henry Ford Museum), Oran Barber, Everette Payette, Stan Wallis and Steve Hudek.

CONSTRUCTION

GENERAL INFORMATION: Read instructions and study drawings carefully before starting construction. Clean all plastic parts in lukewarm water and liquid detergent; rinse in clear water and allow to dry, so that paint may adhere properly.

CAUTION: CUT parts from plastic "tree," rather than attempting to break them off, which might result in damage.

Remove any plastic "flash" present on the parts, and use a sanding block to dress all mating surfaces. A suitable block is a flat scrap of wood with number 400 sandpaper attached.

Check the fit of each part BEFORE applying cement, and adjust if necessary. Use cement intended for styrene plastic and avoid excess amounts which may damage the surface. **CAUTION:** For safety and efficiency, follow cement manufacturer's instructions explicitly.

PAINTING: We suggest painting individual sub-assemblies separately. Small parts may be painted while still attached to their "trees." Separate only as needed, to reduce risk of loss. When cementing components to already painted surfaces, first scrape away paint in the joining areas to permit proper adhesion. **CAUTION:** Follow paint manufacturer's directions explicitly for safety and efficiency.

It is suggested that decals be applied to painted surfaces before assembly for ease of alignment.

FUSELAGE AND ENGINE: Drill tiny (size #80) holes in rear fuselage sides to accept the rudder control cables. Paint interior of fuselage halves (No. 1 and 2). Original color is unknown, but flat gray provides a good visual effect.

Paint instrument panel (No. 3) aluminum, and apply instrument decal. Cement instrument panel into starboard (No. 2) fuselage half.

Smooth edges of seat (No. 4), apply cement at fold-line, fold upward and hold or clamp until dry. Paint seat-cushion and back black, and install in fuselage half (No. 2).

Install propeller shaft (No. 8) into back of crankcase (No. 7). Cement crankcase onto firewall (No. 5), avoiding excess cement which might prevent the shaft from turning freely. Cement firewall into fuselage half (No. 2).

Check fit of port fuselage half (No. 1) and modify any parts if required to allow fuselage halves to join properly. Cement fuselage halves together and clamp while drying. Smooth joining seams, prime and when thoroughly dry, paint. Paint engine cylinders (No. 6, three required) black. Install cylinders, adjusting fit if necessary.

WING: Smooth mating surfaces of wing halves (No. 10 and 11). Drill tiny holes in lower wing panel for aileron cables if the short aileron version is being modeled, or for the front of the actuating linkage if the long aileron version is chosen. Cement wing halves together and clamp while drying. Smooth seams. If long aileron version is being modeled, fill short aileron grooves with a suitable putty, and scribe in long ailerons as indicated in wing bottom and end-view drawings. Note that the upper groove should be wider and deeper than the lower groove, since the long ailerons were hinged at the bottom, and clearance was required when the ailerons were deflected upward. Note also, that the cutout in the center of the long aileron wing is splayed slightly outward, as shown in the bottom-view drawing. The wing may be easily altered to this configuration with a file and sanding block. Prime and paint wing. Make aileron horns or actuating linkage from scrap plastic and wire (not furnished) to suit your choice of wing configuration. These should be painted aluminum and installed.

TAILPLANES: Smooth edges of tailplanes (No. 14 and 15), and drill size #80 holes for rigging.

MISCELLANEOUS: Smooth and paint remaining parts.

ASSEMBLY: Check fit of each sub-assembly BEFORE applying cement.

Install control stick (No. 6) in top center of wing. Install wing in fuselage, leading-edge first, checking alignment as viewed from the top and front. Note that center rear of wing projects slightly beneath fuselage.

Install horizontal tail (No. 14) and vertical tail (No. 15), checking alignment carefully before the cement dries.

Install main landing-gear struts (No. 16, two required). Cement aft landing-gear struts (No. 17, two required) in position, and cement wheels on main landing-gear strut axles.

Install tailwheel mount (No. 19) and tailwheel (No. 21), cementing in position. Add tailwheel bracing struts (No. 20, two required), as shown on side-view drawing.

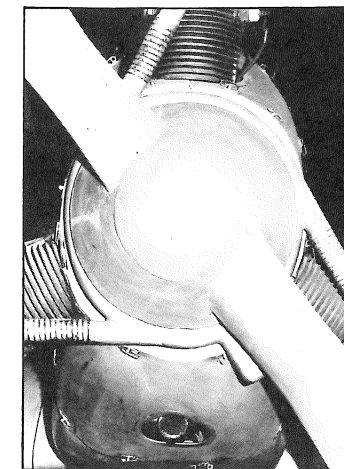
RIGGING: Install monofilament tail-bracing and rudder control cables, securing them with any glue suitable for nylon.

FINAL DETAILS: Cement exhaust manifold ring (No. 23) on front of fuselage, centering and aligning it as shown on front-view drawing. Install propeller (No. 24) onto shaft (No. 8). Cement on gas cap (No. 22).

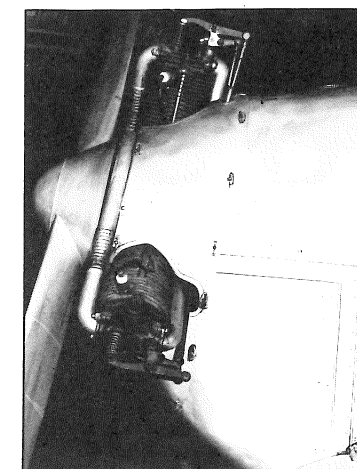
OPTIONAL: Decals may be sealed onto model with a suitable clear coating if desired. Caution: Be certain clear coating is compatible with decals and paint.

Finally, cut windshield to shape from furnished clear plastic, and install, using water-base glue which will permit easy clean-up of any smears.

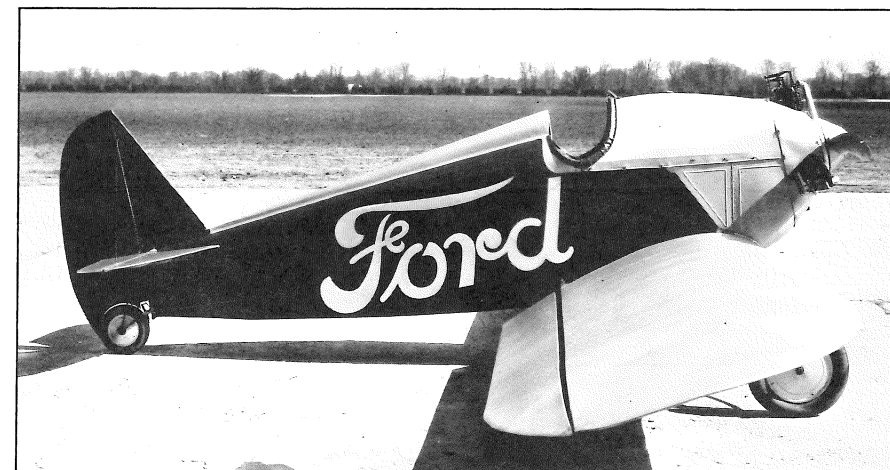
And there is your finished Ford Flivver!



Close-up of nose before restoration. Robert F. Pauley photo.



Side-view of nose and engine before restoration. Robert F. Pauley photo.



Full-span version during 1927. Note that there are no markings on rudder or top of wing. Photo from Underwood/Collinge collection.

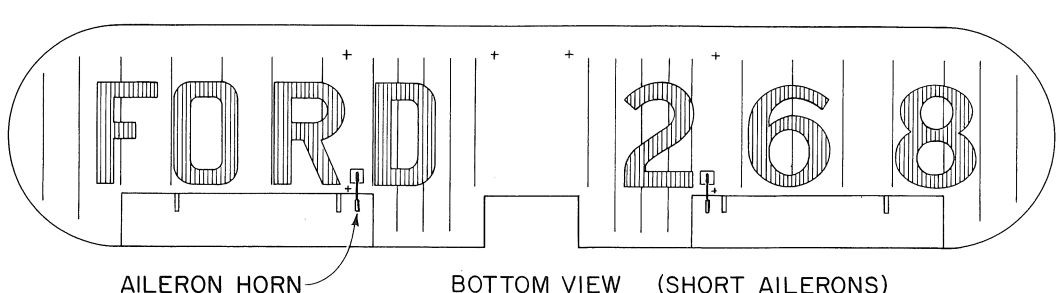
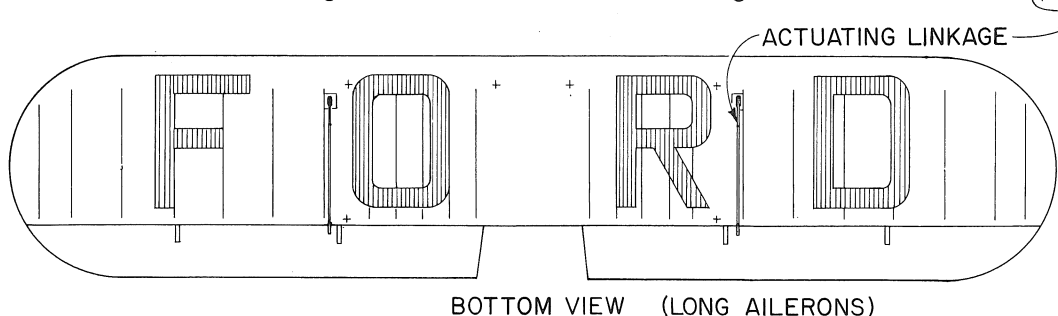
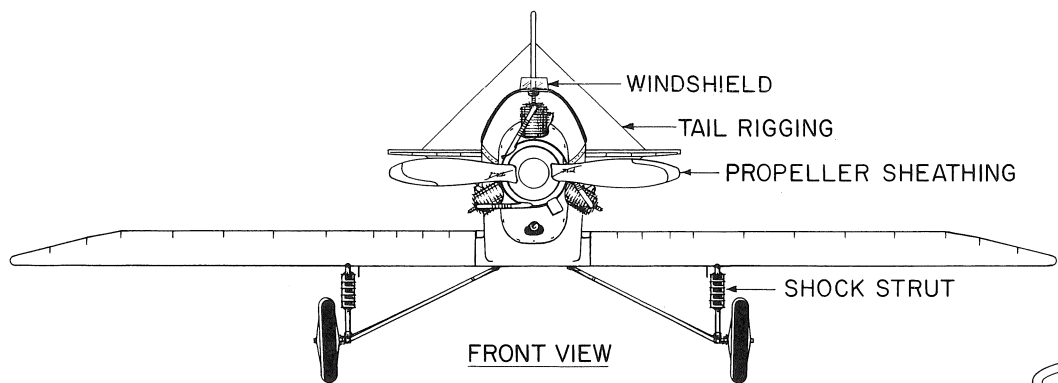
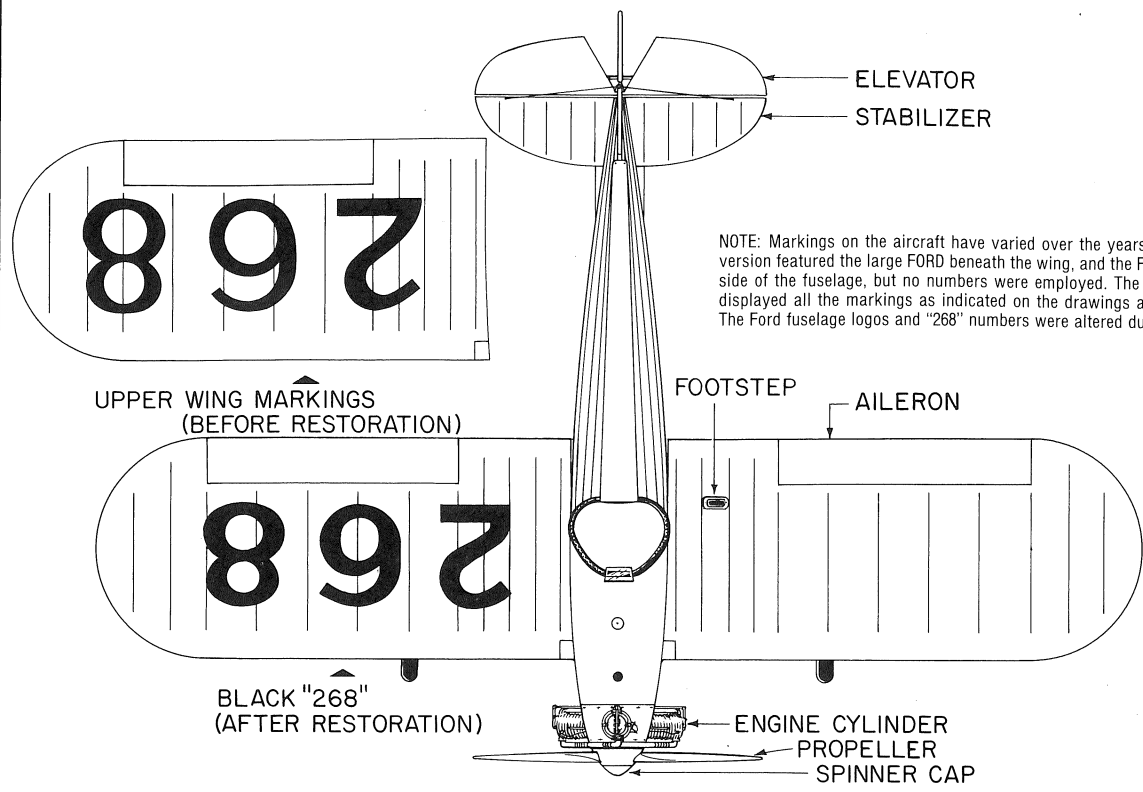


Full-span version during 1927. Note actuating linkage beneath wing and that propeller and spinner appear all one color. Photo from Underwood/Collinge collection.

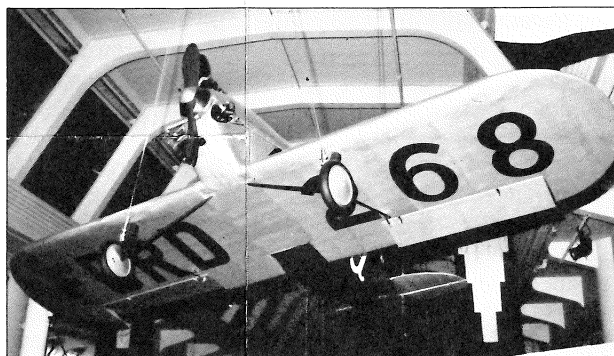
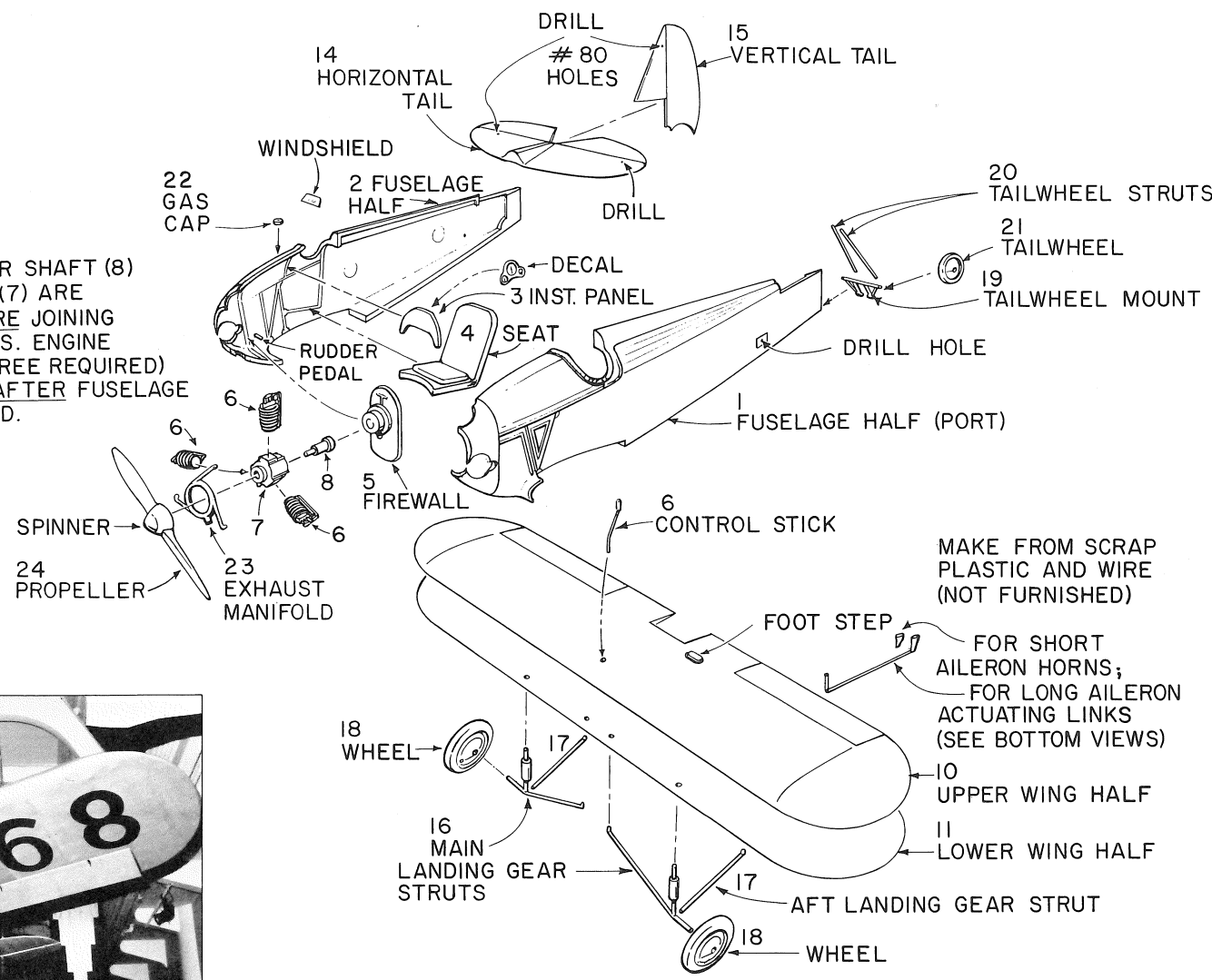
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HANNAN GRAPHICS

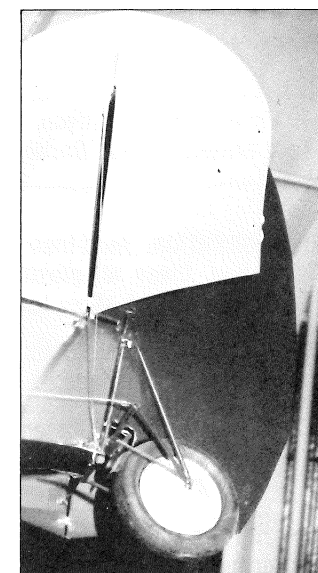
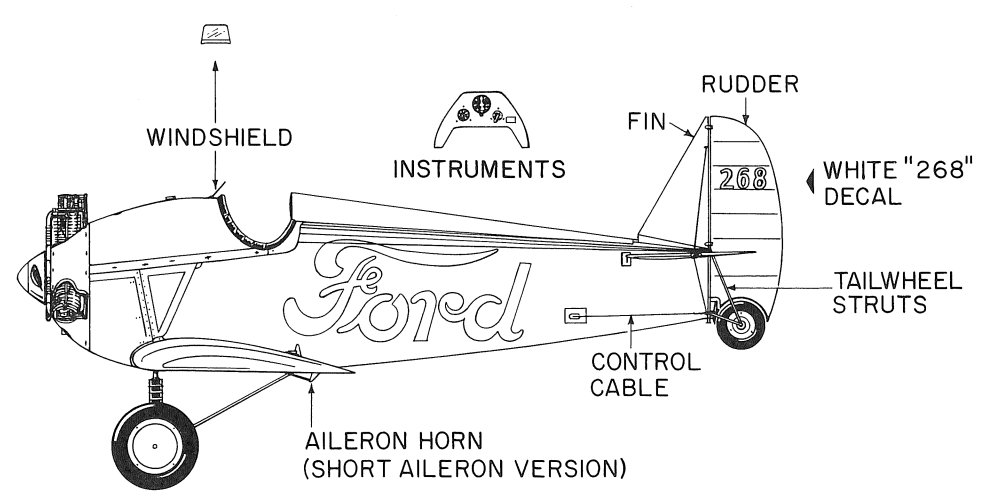
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NOTE: PROPELLER SHAFT (8) AND CRANKCASE (7) ARE INSTALLED BEFORE JOINING FUSELAGE HALVES. ENGINE CYLINDERS (6, THREE REQUIRED) ARE INSTALLED AFTER FUSELAGE SIDES ARE JOINED.



Restored Ford Flivver as it appears in the Henry Ford Museum. Note the natural wood propeller with aluminum spinner cap. George Ardwin photo.



Details of the tailwheel mounting. George Ardwin photo.