

The Emsco Mid-Wings



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The Emsco B-4 and B-7 monoplanes of 1930-31 are prime examples of interesting airplanes that did not achieve success in spite of an advantageous start. They lost out on two counts—innovative design that was sufficiently different from conventional designs to develop customer resistance, and because of poor timing. The prototype appeared right at the beginning of the great depression that shut down a great portion of the U.S. aircraft industry and ended the careers of some excellent and very popular designs. A small newcomer to the business couldn't buck such odds for long.

Had the timing been better, the Emsco line might have become famous, since it started under very favorable circumstances. The Emsco Aircraft Corp. of Downey, Calif., was formed early in 1929, right at the

height of the "Lindbergh Boom," as a wholly owned subsidiary of the E.M. Smith Co., a firm with varied holdings. The word Emsco was an acronym for E.M. Smith Co.

Smith began by buying established talent. He bought the Albatross Aircraft Co. of Long Beach, Calif., and with it the services of its chief designer, Charles F. De Rocheville. De Rocheville's first job at Emsco was to redesign his previous Albatross trimotor in his old factory while Smith was building a new million-dollar factory for Emsco at Downey.

With the B-3 trimotor certificated and in production in very small numbers, De Rocheville designed a two-seat sportplane, the B-4. By the standards of the day it seemed to be a major step backward. Two open cockpits in tandem were still the in-

dustry standard, but a wire-braced center wing was almost an anachronism that presented problems. The supposed advantage was that the centerline location minimized trim changes with changes in airspeed and made for easier piloting. The disadvantages far outweighed this doubtful gain. Downward visibility was nil, and was hardly improved by the use of small windows in the sides of the cockpit below the wing. Access was also complicated; the occupants had to climb up onto the wing with the aid of built-in steps, and then step way down into the deep cockpits.

Except for its wing location and bracing, the B-4 was conventional, with welded steel tube fuselage and wood-frame wings. The latter were semicantilever, and unlike other wire-braced wings of the time were tor-

A factory photo shows the Emsco B-7C as developed from the B-4 by Gerald Vultee. The front-mounted exhaust collector ring on the Continental A.70 engine made it easy to mistake for the contemporary Wright J-6-7 Whirlwind with a similar collector.

sionally stiff, with the wires being attached much farther inboard than on equivalent designs. The powerplant was the 90-hp American Cirrus, a development of the famous British four-cylinder, air-cooled, upright design.

Two major advantages of wires for wing bracing were weight saving and reduced cost. A less appreciated but really significant advantage was reduced drag, especially in the shallow intersections between the wires and the wings. The angle was so shallow, in fact, that it was structurally inefficient. The angle was increased some for the heaviest load-carrying wires below the wing by anchoring them to an auxiliary structure beneath the belly instead of to the logical point on the lower longerons. This structure also served as the center point of the landing gear. The wires above the wing were anchored to superstructure above the upper longerons. Fuel was carried in two tanks in the wing roots and was pumped to a small gravity tank in the top of the fuselage.

De Rocheville was pessimistic about the future of Emsco after the depression got under way, and left the company. The B-4, with a lot of unresolved inadequacies, was never certificated. As his replacement, Emsco brought in Gerald Vultee, recently chief engineer of Lockheed. Vultee reworked the existing B-4 airframe into the improved and more powerful B-7 model, which used the 165-hp Wright J-6-5 Whirlwind engine. This model received Approved Type Certificate (ATC) A-403 on Feb. 21, 1931, but did not attain production status; only one was built.

The B-7 was followed by an improved B-7C model powered with the new 165-hp Continental A.70 engine. This received ATC A-424 on June 2, 1931, but again a shortage of customers limited production to a single article. Vultee, too, saw no future at Emsco and left to form his own company and build a truly advanced design of his own.

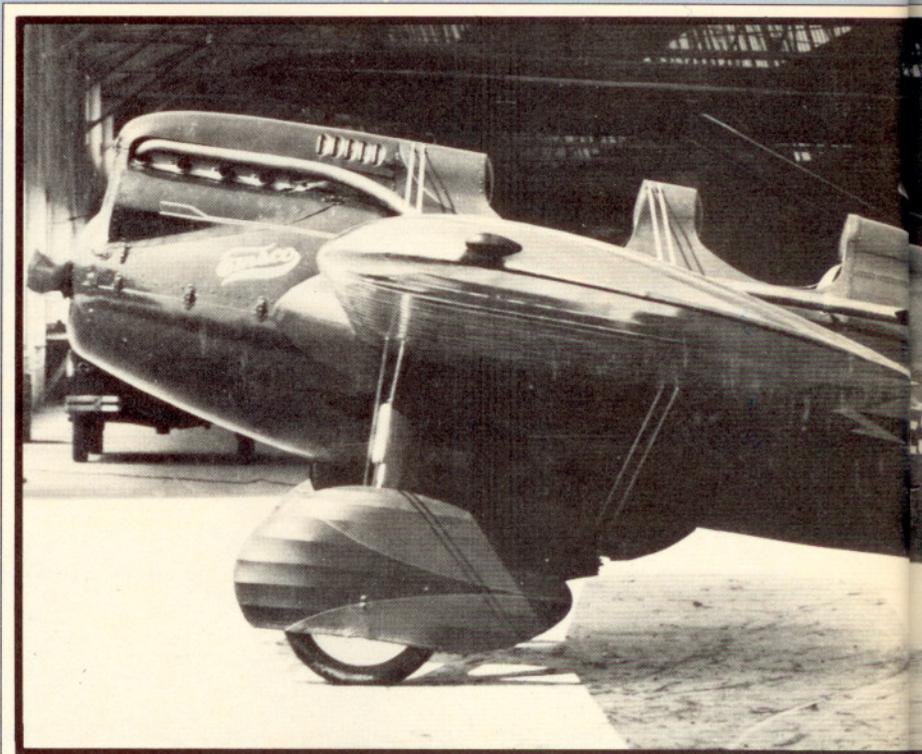
His replacement at Emsco was T.V. Van Stone, who put further effort into the B-7 and produced the B-7CH, which was powered by the unique six-cylinder twin-row Curtiss Challenger that delivered 185 horsepower. The revised model did not qualify for a full ATC but received the lesser Category 2, or Memo Certification 2-396 on Dec. 31, 1931. Records do not indicate whether the B-7CH was another Emsco one-only.

In 1932, Emsco Aircraft closed its doors but the parent E.M. Smith Co., with a firm financial base in more substantial industries, survived. □

Emsco Mid-Wings

EMSCO B-7C

Specifications			
Powerplant	Continental A.70	Fuel	31 gal
	165 hp @ 2,000 rpm	Price	\$5,000
Span	36 ft	Performance	
Length	23 ft 9 in	High speed	130 mph
Wing area	194 sq ft	Cruising speed	110 mph
Wing loading	10.8 lb/sq ft	Landing speed	40 mph
Power loading	12.7 lb/hp	Initial climb	1,000fpm
Empty weight	1,490 lb	Service ceiling	18,000 ft
Gross weight	2,100 lb	Range	350 mi @ 9 gal/hr



The De Rocheville-designed Emsco B-4 had an American Cirrus engine, and . . .



The final version of the Emsco Mid-wing was the B-7CH. A Curtiss Challenger engine replaced the Continental and Wright J-6-5 Whirlwind of earlier models.



The original B-7 and B-7C did not sell. The single Emsco B-7C, above, had improved cockpits and windshields and a "speed ring" around the radial engine.



the wheel pants were built-up steel tube frames covered with fabric.



The single B-7C at Van Nuys, Calif., in later years. Note the large number of stringers used to round out the square fuselage frame and deletion of cowling.