THE LOCKHEED P-38 "LIGHTNING"

AKA: "Fork Tailed Devil" (German), "Two Planes, One Pilot" (Japanese)

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In 1937, **Kelly Johnson**, yes, the same Kelly Johnson who later led the design of the SR-71 "Black Bird" and U-2 spy plane, was tasked by **Lockheed** to design a new interceptor aircraft for the Army Airforce that would reach 20,000 feet in six minutes or less. No small task in an era where high performance powerplants were just beginning to be built. Johnson was up to the task and Lockheed built the YP-38 prototype with twin Allison turbocharged engines in a twin boom design with a then unique tricycle landing gear. The twin turbocharged Allison V-12 engines allowed excellent performance up to as high as 30,000 feet above sea level (MSL).

It took until mid 1942 for the first production Lightnings were delivered in quantity and, by the end of production, 10,037 were delivered according to one reference. The high altitude performance and heavy firepower of the P-38 quickly ran up impressive combat histories both in the European and Pacific Theatres**. Major Richard Bong** scored all of his forty victories in a P-38 and **Major Thomas McGuire** 38 victories, mostly in a P-38. Other aces also flew the P-38.

These impressive totals came about although the P-38 was used by only 27 air groups, as contrasted by the 58 air groups using the P-47 Thunderbolt. P-38's flew about 130,000 sorties while the P-47 flew almost four times the number of sorties.

Oh, by the way, only 23 of the P-38 air groups saw actual combat. Lightnings had their greatest success in the Pacific theatre where the long range and extra safety of a second engine were definite assets.

At one point **Charles Lindberg** was sent to the Pacific zone to teach fuel management/economy to pilots so they could get maximum range on the long missions. It has been suspected that he participated in a few combat missions and may even have scored a kill or two.

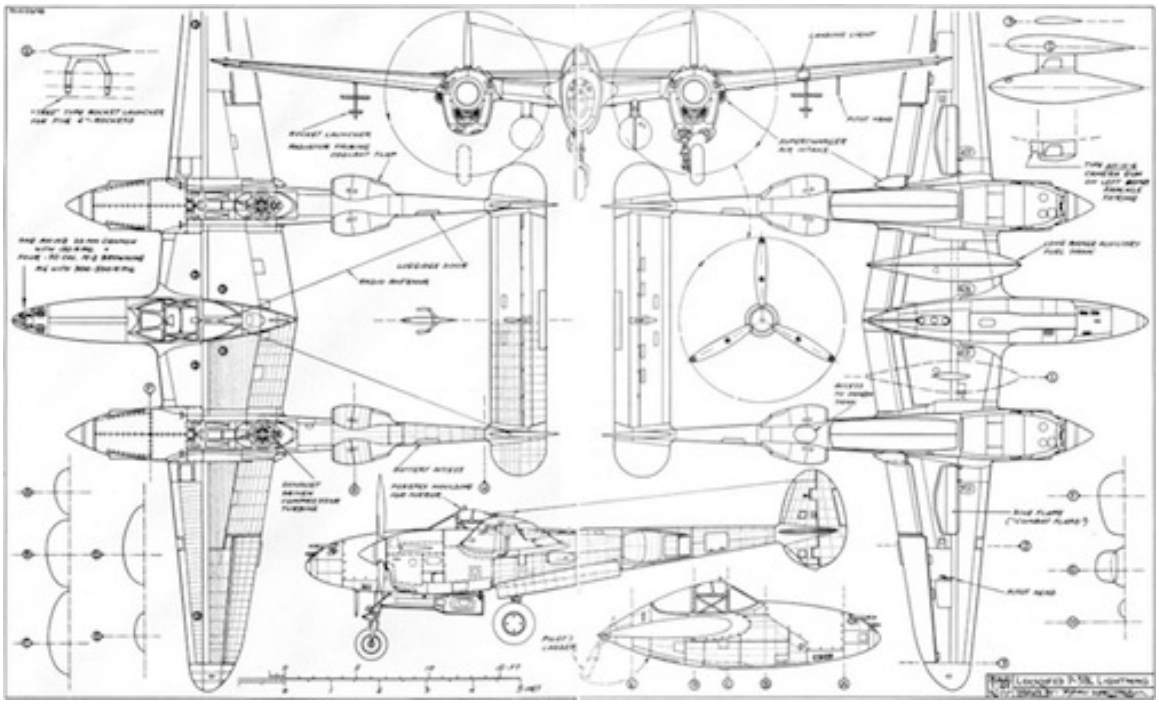
Over the years many countries have built a multi-engine interceptor but none overcame the size, drag, and weight penalties of the multi-engine format as well as the P-38. The Lightning was big for an interceptor with a 52 foot wingspan and weighed 17,500 pounds. With wing drop tanks the range could be over 1150 miles.

The design was not without problems. The high power and sleek lines allowed the P-38 to reach speeds approaching Mach 1 (0.67-0.72) in a dive causing high control surface forces and buffeting which was controlled by adding dive flaps to restrict dive speeds. Top speed approached 440 MPH in level flight and landing speed was kept low by using Fowler flaps to increase wing area, lift, and slow airspeed during landing approaches.

The aircraft was complex with twin engines and it used more fuel. More maintenance was required as well. Both could be problems at far-flung combat bases. The tricycle landing gear made pilot visibility superior and the turbos reduced engine noise on long flights.

Another problem was that the original design had contra-rotating engines to minimize torque effects. The problem was the direction of rotation maximized the effect of the prop in engine-out conditions. Both engines were 'critical' because asymmetric thrust from either engine was on the outboard side of the prop 'disc' making aerodynamic control difficult. This problem was solved by swapping engines from side to side, making the asymmetric thrust on the inboard side close to the aircraft centerline. The aircraft then had no 'critical' engine. If either engine quit aerodynamic control was fairly simple and equal to either side.

Armament varied until it was standardized as four 50 cal. Machine guns in the nose above one 20 mm cannon. With the pilot directly behind the guns, it was "point and shoot" to great effect. The plane could carry drop tanks for range, or bombs and/or rockets on wing hard points. A few P-38s were built as two place 'bombers' with a bombardier in the extended nose. The idea was that the fighter could lead a group of bombers and signal the exact time and place to dump the bomb loads.



One of the most famous P-38 sorties was the effort to kill Japanese **Admiral Yamamoto** when information of an inspection flight by the admiral became known. A group of P-38s was sent to intercept the admiral's flight, and down it if possible. It was possible! Yamamoto was found and killed.

After WWII almost all the P-38s became frying pans and aluminum siding, or some other peaceful item. A few were sold and used as air racers in the Thompson Trophy races. In 1946 **Tony Levier** entered a bright red P-38 and won2nd place. In 1947 Levier took 5th place while another P-38 had mechanical problems and dropped out in the second lap.

In 2004 **Dennis Crooks** flew a large-scale model P-38 in the Scalemasters Championships at Dayton OH. Amazingly, he had two engine-out scenarios. In the first incident a wire on his ignition broke and shut down one engine and in the second, the G-62 engine came off the firewall and flopped around in the cowl while still running. In each case Dennis reduced throttle and calmly flew around the pattern to a safe landing. Electric motor advances make multi-engine models relatively reliable and much more fun.

End

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Ref: 1. American Aviation Series No. 10 Lockheed P-38 Lightning
Auth: **Richard Ward** 1970
2. Thompson Trophy Racers
Auth: **Roger Huntington** 1989
3. Various internet sources.