

A WOLSELEY MOTOR THAT “NEVER WAS” – THE H-S ‘VIPER’ W-12 AERO-ENGINE

At the time of the commencement of World War 1, Great Britain had very little in the way of aircraft engines. This was not surprising as powered flight had been going for just over a decade and also because the military could foresee very little use for fragile aeroplanes operating over a battlefield.

However, attitudes changed rapidly and by the end of 1914 Wolseley Motors, then the largest British owned manufacturer in the UK had started delivery of Renault engines in accordance with Government instructions.

Licensed building of the Hispano-Suiza V-8 by Wolseley began in late 1916 and by December 1918, 2,302 units had been delivered.

The different versions of the Wolseley H-S were given names of snakes and in this country we are lucky to have two examples of the “Viper” type – one in the Powerhouse Museum in Sydney and another at Museum Victoria in Melbourne.



Figure 1 - H-S V-8 in Museum Victoria. Note Unusual Exhaust Pipe Manifold.

The introduction of the Hispano-Suiza V-8 to GB was the result of a visit to Paris by Col. Brooke-Popham in July 1915. He was there to observe the prototype V-8 running on a test stand and he was so impressed by the looks and performance of the engine that he ordered 50 units immediately!

The H-S V-8, installed in the SE5A aircraft was a very successful combination but once series production was underway, people at the Royal Aircraft Factory were turning their thoughts to as to how to get more powerful engines into all aircraft using the H-S and how to do it with a minimum disruption to the production lines. Designing and developing new engines would be too time-consuming so the best course was to improve the current motors.

According to Manuel Lage, author of “Hispano-Suiza – Men, Engines and Aircraft” (p 108) - “The Royal Aircraft Factory had suggested assembling a trio of four-cylinder Hispano V-8 blocks on the same crankcase which would have developed a power of 300 HP in the geared version and had a well proven reliability.”

Thus, by inserting another block of 4-cylinders between the existing blocks, a 12-cylinder engine utilizing many of the components already in production could be made. And it could be made quickly, which in war-time was vital. The H-S V-8 was of 11.8 litres capacity; an additional block would have bought the swept volume up to 17.7l for a modest increase in weight.

The R.A.F. proposal also required that the 90 deg. angle between the outer blocks should remain unchanged; this would have made the new design contrary to conventional wisdom regarding the design of W-12 engines. Here, the usual arrangement was to open the bank-angle out to 120 deg., i.e. almost flat to create a “broad-arrow” motor.



Figure 2 - H-S V-8 in Sydney (Top View)

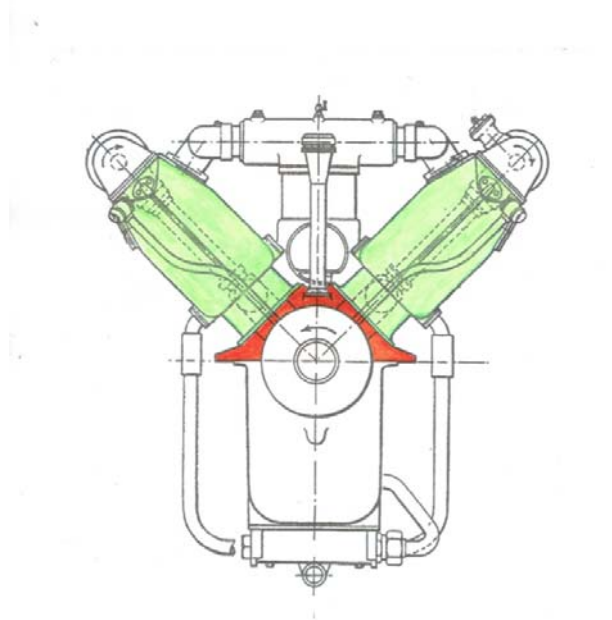


Figure 3 - Transverse Section Of The Wolseley 'Viper' V-8.

The T.S. in Fig. 3 shows the two cylinder banks (green) attached to the upper crankcase (orange). Clearly, there is not enough room between the two banks to insert another bank of four. To do this the crankcase would have to be modified and expanded to make the necessary space.

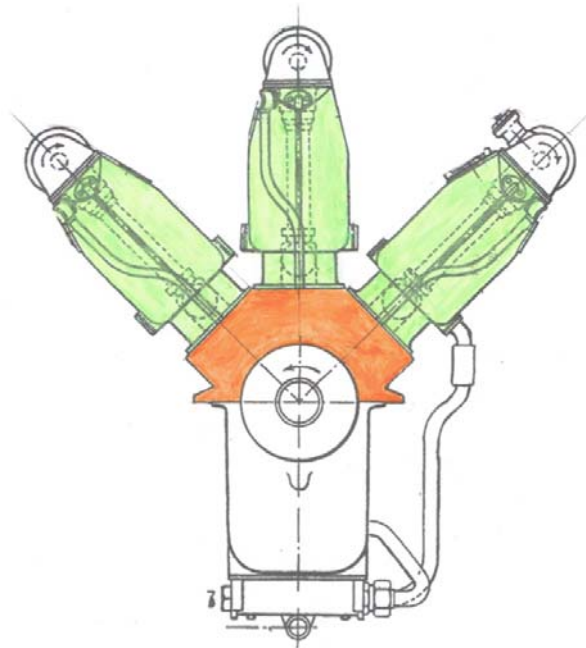


Figure 4 - T.S. Of 'Viper' W-12 Engine.

The above drawing shows how the proposed new engine might have looked. A new crankcase (orange) somewhat bigger than the original would have been needed but otherwise the same engine bearers are there thus allowing the engine to be installed in aircraft already using the V-8.

Exactly what the vibration characteristics of this arrangement might have been is completely unknown. All other W-12 engines of the time had conventional 120 deg. layout. French manufacturers in particular seem to favour the W-12 style engine, examples were the Lorraine 12Eb (1922), Farman 12WE (1924) and Salmson C12 (1916). Even Hispano-Suiza themselves produced a W-12, the 12Ga Type 50 (1924).

In England the best known W-12 was the Napier 'Lion'. Legend has it that the Royal Aircraft Factory proposal for the three-bank Hispano was put to the Napier Company at the same time as it was suggested to Wolseley. Napier rejected the original proposal but went ahead with a new 12 cylinder design. This was exactly what the R.A.F didn't want because of the time it would take to get the engine up and running and, in fact, this fear was realised as the 'Lion' was never ready for production before war's end.

Thus, it was a shame that the Wolseley Company was not able to pursue the project but there is some evidence that they gave the idea some serious consideration. This is revealed in the Patent Record via No GB 108,968 filed by JAMES DAVIES PITT in May, 1916.

J. D. Pitt (see photo) was born in 1876 and received his technical education at the local Technical School.

He joined the Wolseley Tool and Motor Car Co. in 1903 when he was 27. In the 17 years he spent with the firm, he rose to be chief draughtsman, chief engineer and chief designer for marine and aero-engine projects.

In his patent document he says,-
 "This invention relates to the type of internal combustion engine which has a triple row of cylinders of which the pistons are all connected with a common crankshaft, a type which is specially adapted for aircraft and has for its object to simplify and in consequence, reduce the cost of and the means by which the valves are operated from the said shaft."

Although the patent concerns just a drive mechanism for the camshafts, the outline shape of the cylinder blocks is the same as the H-S engine and, more importantly, the angle between the outer shafts is 90 deg. If this patent referred to a conventional W-12 engine, the angle would be 120 deg.

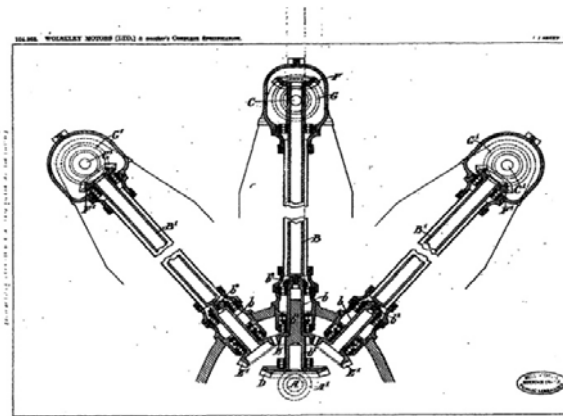


Figure 5 - Drawing From Patent No. GB108,968



Just as the Rolls-Royce 'Falcon' was a very successful second-generation aero-engine, it seems highly likely that the Wolseley 'Viper' W-12 could also have been a major contributor to the War effort if design and manufacture had been approved.

J. S. J. W.
 March, 2020.