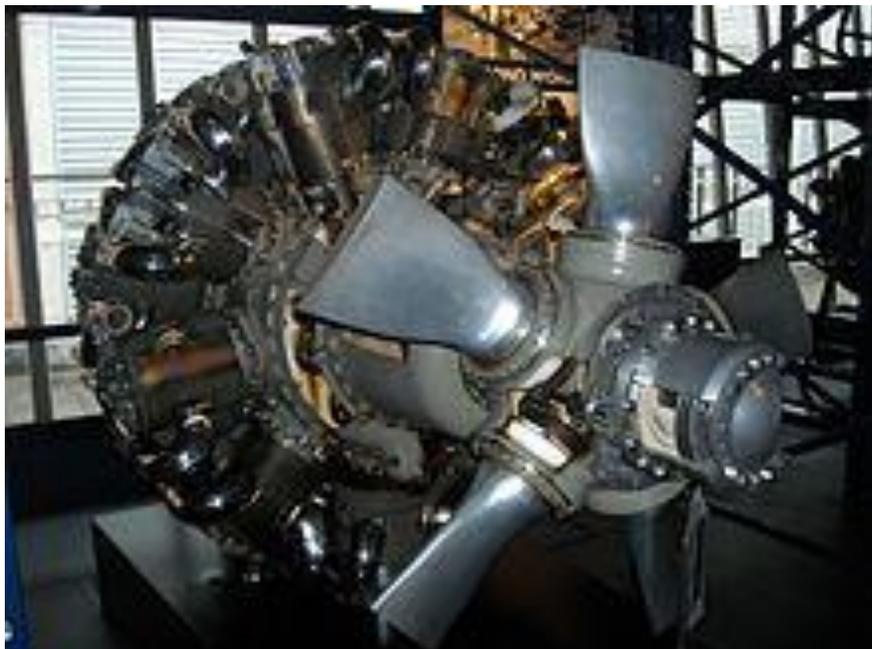


Bristol Centaurus



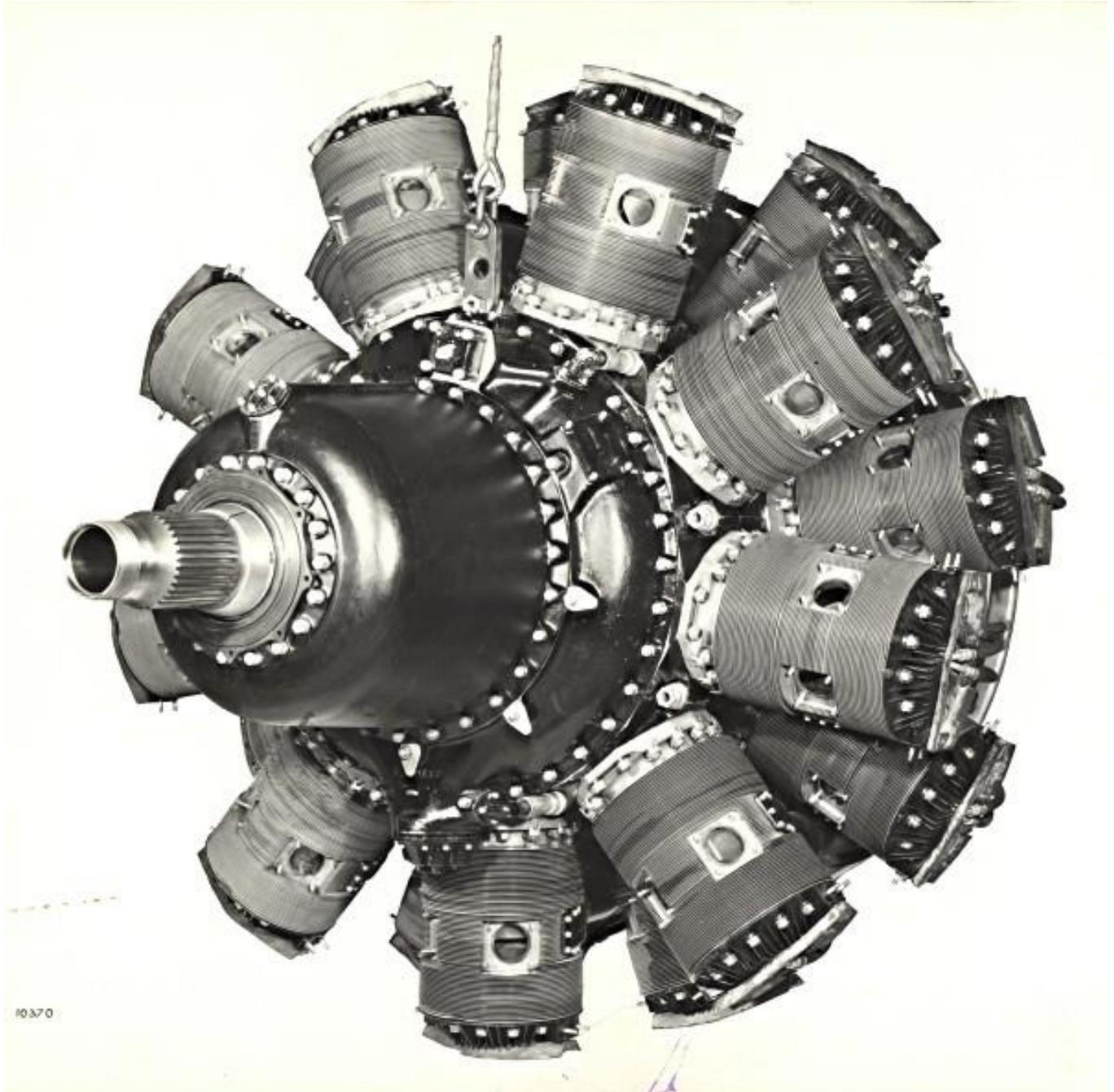
Le Centaure est le dernier développement dans les moteurs à pistons équipés une gaine valves produit par le Bristol Engine Company, une division de l'automobile Bristol Aeroplane Company. Le Centaure était un grand moteur radial 18 [cylindres](#) deux étoiles de 9 cylindres chacun. Dans les dernières versions du moteur produit 3000 ch (2237 kW).

Comme de nombreux moteurs produits par Bristol, qui a repris la mécanique générale, aussi le Centaure était équipé du classique, pour le Bristol, le piston 146 mm de diamètre qui avait été utilisé pour la première fois 1918 sur Jupiter. Dans ce moteur, le piston a été placé dans un cylindre avec une longue course. Cela, et le doublement du nombre de cylindres, signifie que le déplacement total a atteint le moteur de 53,6 litres, faisant de lui venir droite parmi les plus grands moteurs à pistons de son temps.



Centaurus Un modèle stocké dans le Musée des sciences de [Londres](#).

Le Bristol considéré comme le moteur prêt pour 1938 mais la production n'a pas commencé que 1942. En fait, à la fin du moteur, il ne sera utilisé à la fin de la Seconde Guerre mondiale. Son premier emploi il n'y avait pas un avion très chanceux: la Vickers Warwick. Il a ensuite été employé, même après la fin du conflit, le Bristol Brigand et Buckmaster, sur [Hawker Tempest II](#) et [Sea Fury](#). Il a également été utilisé sur [Blackburn Firebrand](#). Le moteur a connu également une utilisation civile limitée. Ils ont été les moteurs utilisés sur Centaure [Brabazon](#), a échoué projet pour un gros avion de transport commercial d'après-guerre la production britannique.



Bien qu'à certains égards, il était, à la fin de la guerre, considérée comme plus fiable que les moteurs radiaux équivalents de grande puissance américaine, le Centaure n'a pas, à cause de la force différente de l'industrie de l'aviation britannique, la même prévalence de celle-ci. De plus avec l'avènement de de Havilland Comet DH.106, premier avion à réaction ligne au monde, son destin en tant que moteur pour l'aviation commerciale était en tout cas déjà marqué.

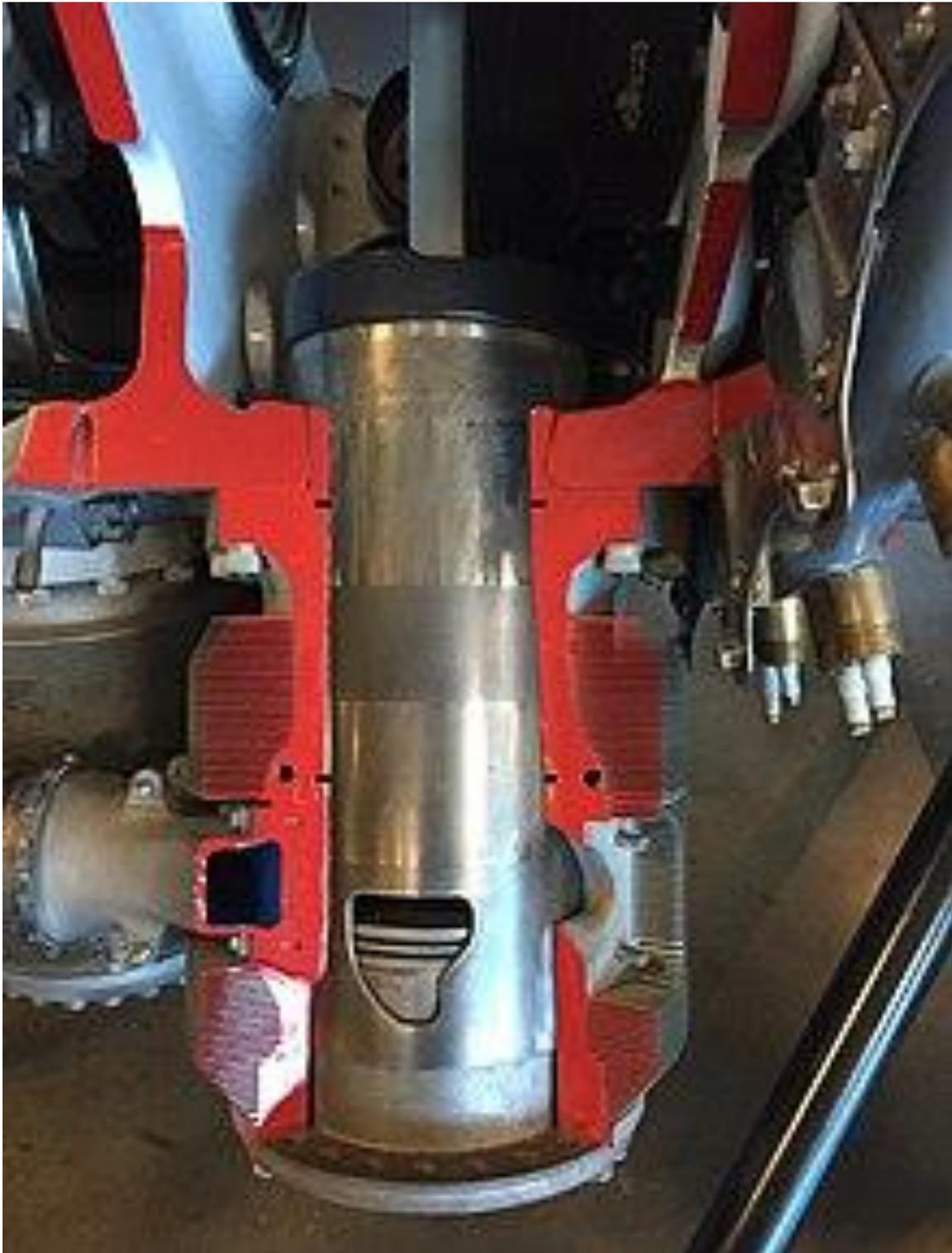
Source : <https://boowiki.info/art/les-moteurs-d-avions-britanniques/bristol-centaure.html>

Version anglaise

The **Centaurus** was the final development of the [Bristol Engine Company's](#) series of [sleeve valve radial aircraft engines](#). The Centaurus is an 18-cylinder, two-row design that eventually delivered over 3,000 hp (2,200 kW). The engine was introduced into service late in the [Second World War](#) and was one of the most powerful aircraft piston engines to see service.

Design and development

Like other Bristol sleeve valve engines, the Centaurus was based on the design knowledge acquired from an earlier design, in this case the [Bristol Perseus](#) cylinder. The Centaurus used 18 Perseus cylinders. The same cylinder was in use in the contemporary 14-cylinder [Hercules](#), which was being brought into production when the design of the Centaurus started.



Sectioned cylinder showing sleeve valve

The Centaurus had a cylinder swept volume of 3,272 cu in (53.6 L), nearly as much as the American 3,347.9 cu in (54.9 L) [Wright R-3350 Duplex-Cyclone](#) large radial, making the Centaurus one of the largest aircraft piston engines to enter production, while that of the Hercules was 2,363 cu in (38.7 L). The nearly 40 percent higher capacity was achieved by increasing the stroke from 6.5 to 7 in (170 to 180 mm) and by changing to two rows of nine cylinders instead of two rows of seven. The diameter of the Centaurus was only just over 6 percent greater than the Hercules in spite of its much greater swept volume.

The cylinder heads had an indentation like an inverted top hat, which was finned, but it was difficult to get air down into this hollow to adequately cool the head. During development, Bristol contacted [ICI Metals Division](#), Birmingham, to enquire whether a copper-chromium alloy with higher thermal conductivity would have sufficient high temperature strength to be used for this purpose. With the same cylinder volume and using the new material, the horsepower per cylinder was raised from 110 hp (82 kW) to 220 hp (160 kW).

Bristol maintained the Centaurus from type-testing in 1938, but production did not start until 1942, owing to the need to get the Hercules into production and improve the reliability of the entire engine line.^[2] Nor was there any real need for the larger engine at this early point in the war, when most military aircraft designs had a requirement for engines of about 1,000 hp (746 kW). The Hercules power of about 1,500 hp (1,119 kW) was better suited to the existing airframes.

The Centaurus did not enter service until near the end of the war, first appearing on the [Vickers Warwick](#). Other wartime, or postwar, uses included the [Bristol Brigand](#) and [Buckmaster](#), [Hawker Tempest](#) and [Sea Fury](#) and the [Blackburn Firebrand](#) and [Beverley](#). The engine also entered service after the war in a civilian airliner, the [Airspeed Ambassador](#) and was also used in the [Bristol Brabazon I](#) Mark 1 prototype aircraft until the Brabazon trans-Atlantic airliner programme was cancelled. The eight Centaurus engines were to be replaced with eight [Bristol Proteus](#) gas turbines on the Mark II giving a 100 mph faster cruising speed at 10,000 ft higher altitude. By the end of the war in Europe, around 2,500 examples of the Centaurus had been produced by Bristol.

The 373 was the most powerful version of the Centaurus and was intended for the Blackburn Beverley transport aircraft. Using direct fuel injection, it achieved a remarkable 3,220 hp (2,400 kW), but was never fitted. A projected enlarged capacity version of the Centaurus was designed by Sir [Roy Fedden](#); cylinders were produced for this engine, but it was never built. Known as the Bristol Orion, a name used previously for a variant of the Jupiter engine and [later re-used for a turboprop](#), this development was also a two-row, 18 cylinder sleeve valve engine, with the displacement increased to 4,142 cu in (67.9 L) (6.25 in x 7.5 in (159 mm x 191 mm)), nearly as large as the American [Pratt & Whitney R-4360 Wasp Major](#) four-row, 28-cylinder radial, the largest displacement aviation radial engine ever placed in quantity production.

Variants

The Centaurus was produced in 34 variants, ranging from the 2,000 hp (1,500 kW) Centaurus I to the final 2,405 hp (1,793 kW) Centaurus 663 for the [Airspeed Ambassador](#) airliner. The most powerful variants to enter service were the 2,625 hp (1,957 kW) Centaurus 170, 173, 660, 661 and 662.^[6]

Specifications (Centaurus VII)



A Centaurus with cylinders removed exposing the [sleeve valves](#).

General characteristics

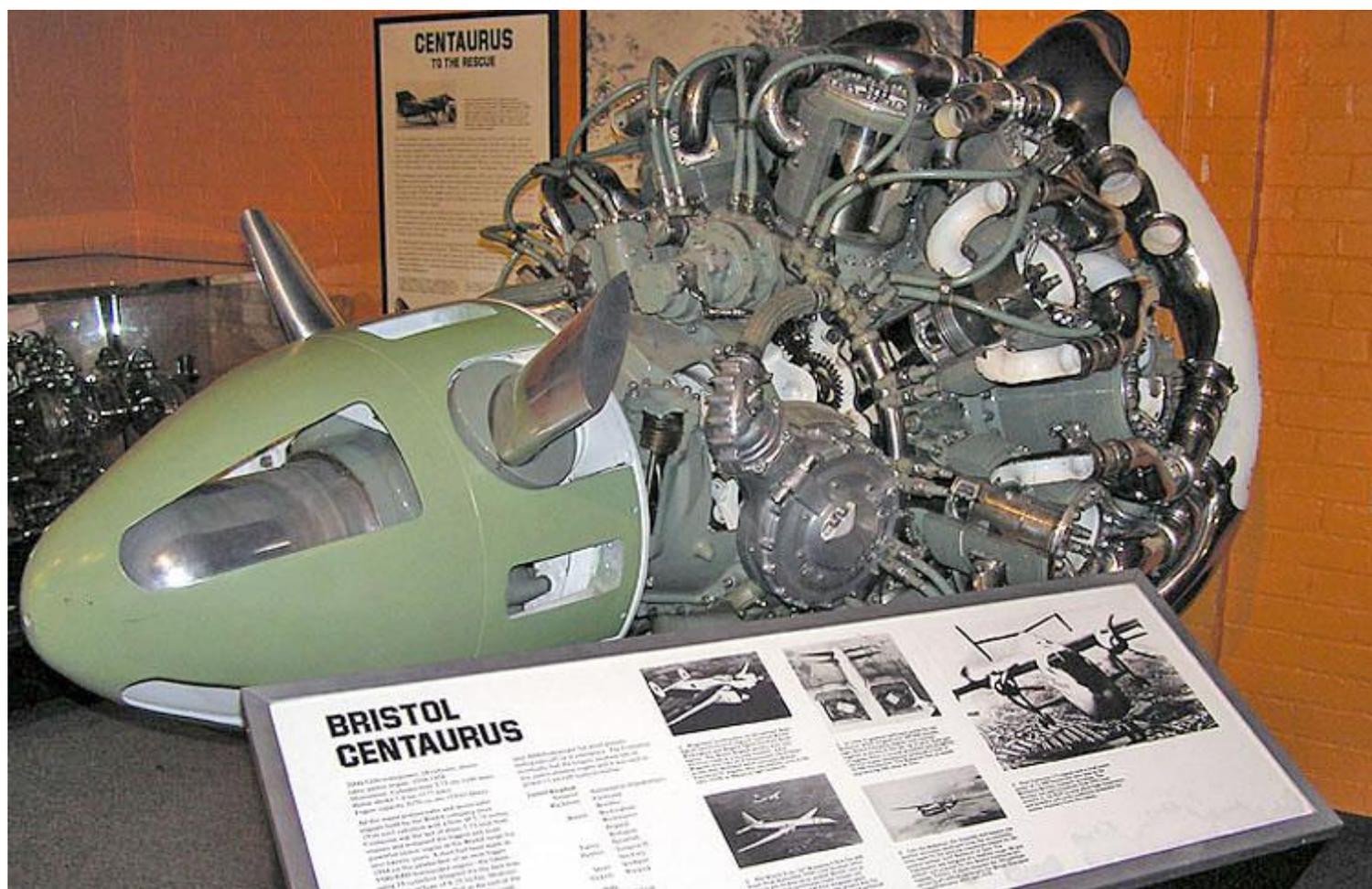
- **Type:** 18-cylinder, air-cooled, two-row [radial engine](#)
- **Bore:** 5.75 in (146 mm)
- **Stroke:** 7.00 in (178 mm)
- **Displacement:** 3,270 cu in (53.6 L)
- **Diameter:** 55.3 in (1,400 mm)
- **Dry weight:** 2,695 lb (1,222 kg)

Components

- **Valvetrain:** [Sleeve valve](#), four ports per sleeve
- **Supercharger:** Two-speed centrifugal, single stage
- **Fuel system:** Injection
- **Fuel type:** 100/130 [Octane petrol](#)
- **Oil system:** Direct-pressure lubrication
- **Cooling system:** Air-cooled

Performance

- **Power output:** 2,520 hp (1,880 kW) at 2,700 rpm
- **Specific power:** 0.77 hp/cu in (35.0 kW/L)
- **Compression ratio:** 7.2:1
- **Power-to-weight ratio:** 0.94 hp/lb (1.55 kW/kg)



Source : https://en.wikipedia.org/wiki/Bristol_Centaurus