

Hispano-Suiza 12X

4 languages

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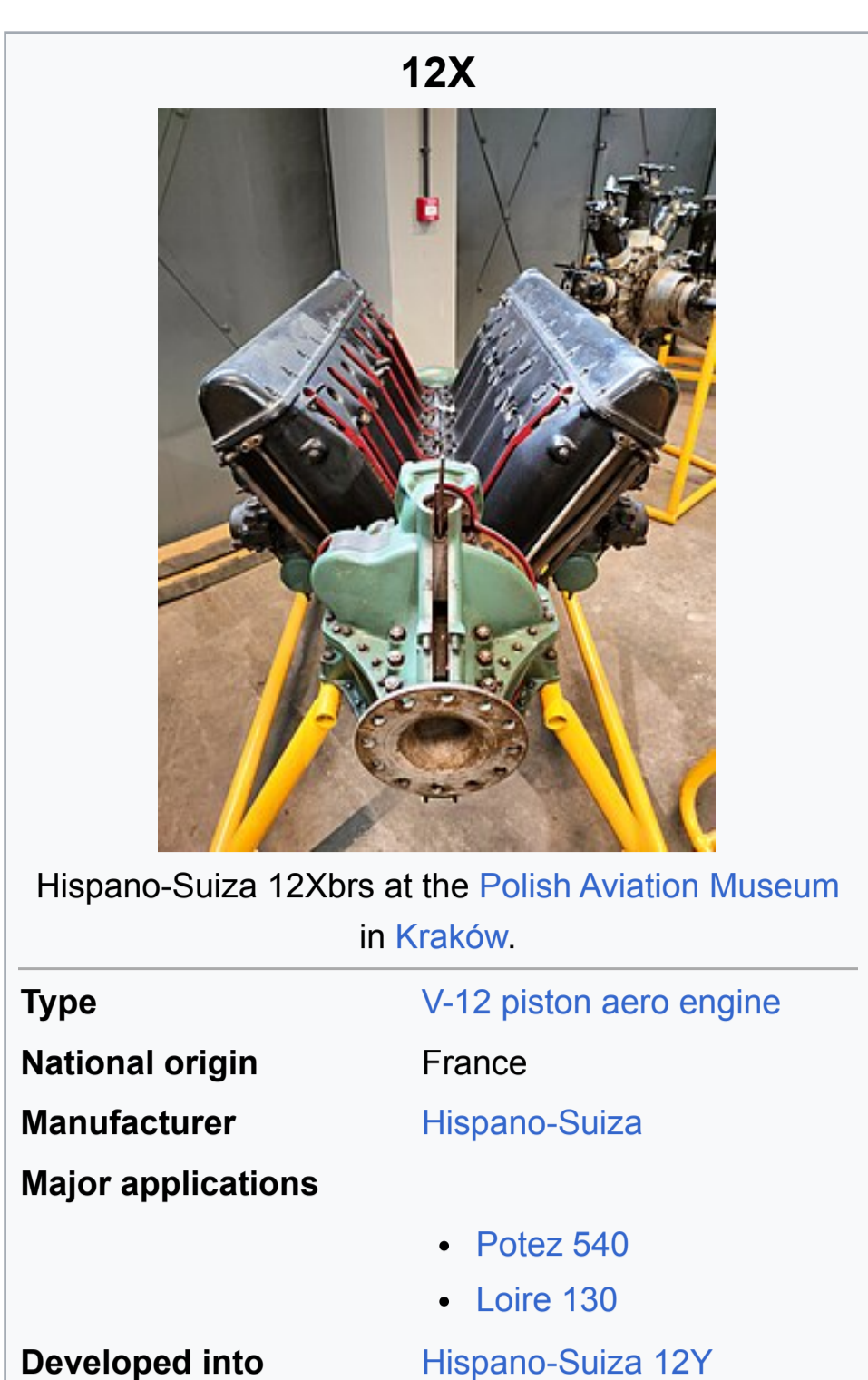
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From Wikipedia, the free encyclopedia

"*12X*" *redirects here*. *For the prototype electric locomotive, see AEG 12X.*

The **Hispano-Suiza 12X** was an aircraft piston engine designed in France by Hispano-Suiza during the early 1930s. A 12-cylinder Vee, liquid-cooled design, the 12X was used on several aircraft types, some of them being used in limited numbers during World War II. Due to the 12X's limited power output, its derivative the more powerful Hispano-Suiza 12Y had a longer career.



Variants [edit]

Tabulated data from: Lage, 2004^[1]

Type 72 Hispano-Suiza 12X engines. V-12, bore=130 mm, stroke=170 mm, capacity=27.0 litres.

| Model | Year | Compression | Power (hp) | @ r.p.m. | T-O power (hp) | Output reduction | Supercharger optimum altitude (m) | Weight (kg) | Comments |
|------------------|------|-------------|------------|----------|----------------|------------------|-----------------------------------|-------------|--|
| 12Xbr (500 hp) | 1932 | 6.4 | 610 | 2,200 | 610 | 1.5 | 0 | 355 | Unsupercharged. Rated power (500 hp) less than nominal 610 hp |
| 12Xbrs (500 hp) | 1932 | 5.8 | 650 | 2,650 | 600 | 1.5 | 4,000 | 370 | Rated power (500 hp) less than nominal 650 hp |
| 12Xbrg (500 hp) | 1932 | 5.8 | 715 | 2,650 | 670 | 1.5 | 2,000 | 370 | Rated power (500 hp) less than nominal 650 hp |
| 12Xbr (600 hp) | 1934 | 6.4 | 600 | 2,200 | 630 | 1.5 | | 355 | For this and all later entries in both tables, Rated power = Nominal power = Power |
| 12Xbrs (690 hp) | 1934 | 5.8 | 690 | 2,600 | 660 | 1.5 | 4,500 | 370 | |
| 12Xbrs1 (720 hp) | 1934 | 5.8 | 720 | 2,600 | 704 | 1.5 | 2,750 | 370 | |
| 12Xdrs | 1935 | 5.8 | 690 | 2,600 | 670 | 1.5 | 4,000 | 370 | Left handed |
| 12Xfrs | 1935 | 5.8 | 690 | 2,600 | 670 | 1.5 | 4,000 | 370 | Right handed |
| 12Xgrs | 1935 | 5.8 | 690 | 2,600 | 670 | 1.5 | 4,000 | 370 | Hamilton propeller, right handed |
| 12Xgrs1 | 1937 | 5.8 | 720 | 2,600 | | 1.5 | 2,100 | 370 | Hamilton propeller, right handed |
| 12Xhrs | 1935 | 5.8 | 690 | 2,600 | 670 | 1.5 | 4,000 | 370 | Hamilton propeller, left handed |
| 12Xhrs1 | 1937 | 5.8 | 720 | 2,600 | | 1.5 | 2,100 | 370 | Hamilton propeller, left handed |
| 12Xirs | 1935 | 5.8 | 690 | 2,600 | 670 | 1.5 | 4,000 | 370 | Flat flange propeller, left handed |
| 12Xjrs | 1935 | 5.8 | 690 | 2,600 | 670 | 1.5 | 4,000 | 370 | Flat flange propeller, right handed |

Type 76 Hispano-Suiza 12X engines with 20 mm calibre Hispano-Suiza 404 cannon between cylinder banks, firing through propeller shaft. Cylinder dimensions as Type 73.

| Model | Year | Compression | Power (hp) | @ r.p.m. | T-O power (hp) | Output reduction | Supercharger optimum altitude (m) | Weight (kg) | Comments |
|-----------------|------|-------------|------------|----------|----------------|------------------|-----------------------------------|-------------|--------------------------|
| 12Xcrs (690 hp) | 1934 | 5.8 | 690 | 2,600 | 660 | 1.5 | 4,500 | 380 | |
| 12Xers | 1934 | 5.8 | 690 | 2,600 | 660 | 1.5 | 4,500 | 380 | Variable-pitch propeller |
| 12Xirs | 1937 | 5.8 | 690 | 2,600 | 660 | 1.5 | 3,900 | 385 | Left handed |
| 12Xjrs | 1937 | 5.8 | 690 | 2,600 | 660 | 1.5 | 3,900 | 385 | Right handed |
| 12Xirs1 | 1937 | 5.8 | 720 | 2,600 | 738 | 1.5 | 2,100 | 385 | Left handed |
| 12Xjrs1 | 1937 | 5.8 | 720 | 2,600 | 738 | 1.5 | 2,100 | 385 | Right handed |
| 12X 13 | 1937 | | 690 | 2,600 | 738 | 1.5 | 3,900 | 371 | |

Hispano-Suiza 12Xrs

Applications [edit]

- Bernard 260
- Blériot-SPAD S.510
- Dewoitine D.500
- Hanriot H.110
- Hawker Spanish Fury
- Hawker Spanish Osprey
- Loire 102
- Loire 130
- Loire-Nieuport LN.40
- Lioré et Olivier H-246
- Mitsubishi A5M3a
- Morane-Saulnier M.S. 227
- Nakajima Ki-12
- Potez 540
- Potez 650

Specifications (12Xcrs) [edit]

Data from ^[2]

General characteristics

- Type:** Twelve-cylinder supercharged liquid-cooled 60° Vee piston engine
- Bore:** 130 mm (5.12 in)
- Stroke:** 170 mm (6.69 in)
- Displacement:** 27 L (1,648 in³)
- Length:** 1,577 mm (62.09 in)
- Width:** 726 mm (28.58 in)
- Height:** 904 mm (35.59 in)
- Dry weight:** 380 kg (838 lb)

Components

- Valvetrain:** Overhead camshaft with two valves per cylinder
- Supercharger:** Single-speed centrifugal type supercharger, 10:1 reduction
- Fuel system:** Six Solex carburetors
- Fuel type:** 85 octane rating gasoline
- Cooling system:** Liquid-cooled
- Reduction gear:** Spur, 2:3

Performance

- Power output:**
 - 486 kW (651 hp) at 2,600 rpm for takeoff
 - 508 kW (681 hp) at 2,600 rpm at 4,500 m (14,765 ft)
- Specific power:** 18.81 kW/L (0.41 hp/in³)
- Compression ratio:** 5.8:1
- Specific fuel consumption:** 328 g/(kW·h) (0.54 lb/(hp·h))
- Oil consumption:** 11 g/(kW·h) (0.28 oz/(hp·h))
- Power-to-weight ratio:** 1.34 kW/kg (0.81 hp/lb)

See also [edit]

Comparable engines

- BMW VI
- Curtiss V-1570
- Rolls-Royce Kestrel

Related lists

- List of aircraft engines

References [edit]

- ↑ Lage, 2004, p.486-7
- ↑ Tsygulev (1939). *Авиационные моторы военных воздушных сил иностранных государств (Авиационные моторы военных воздушных сил иностранных государств)*. Moscow: Gosudarstvennoe voennoe izdatelstvo Narkomata Oborony Soyuza SSR. Archived from the original on 2009-03-24.
- Danel, Raymond and Cuny, Jean. *L'aviation française de bombardement et de renseignement 1918-1940* Docavia n°12, Editions Larivière
- Lage, Raymond (2004). *Hispano-Suiza in Aeronautics*. Warrendale, USA: SAE International. pp. 486–7. ISBN 0-7680-0997-9.

 V • T • E **Hispano-Suiza aircraft engines** [show]

Categories: Hispano-Suiza aircraft engines | 1930s aircraft piston engines | V12 aircraft engines

