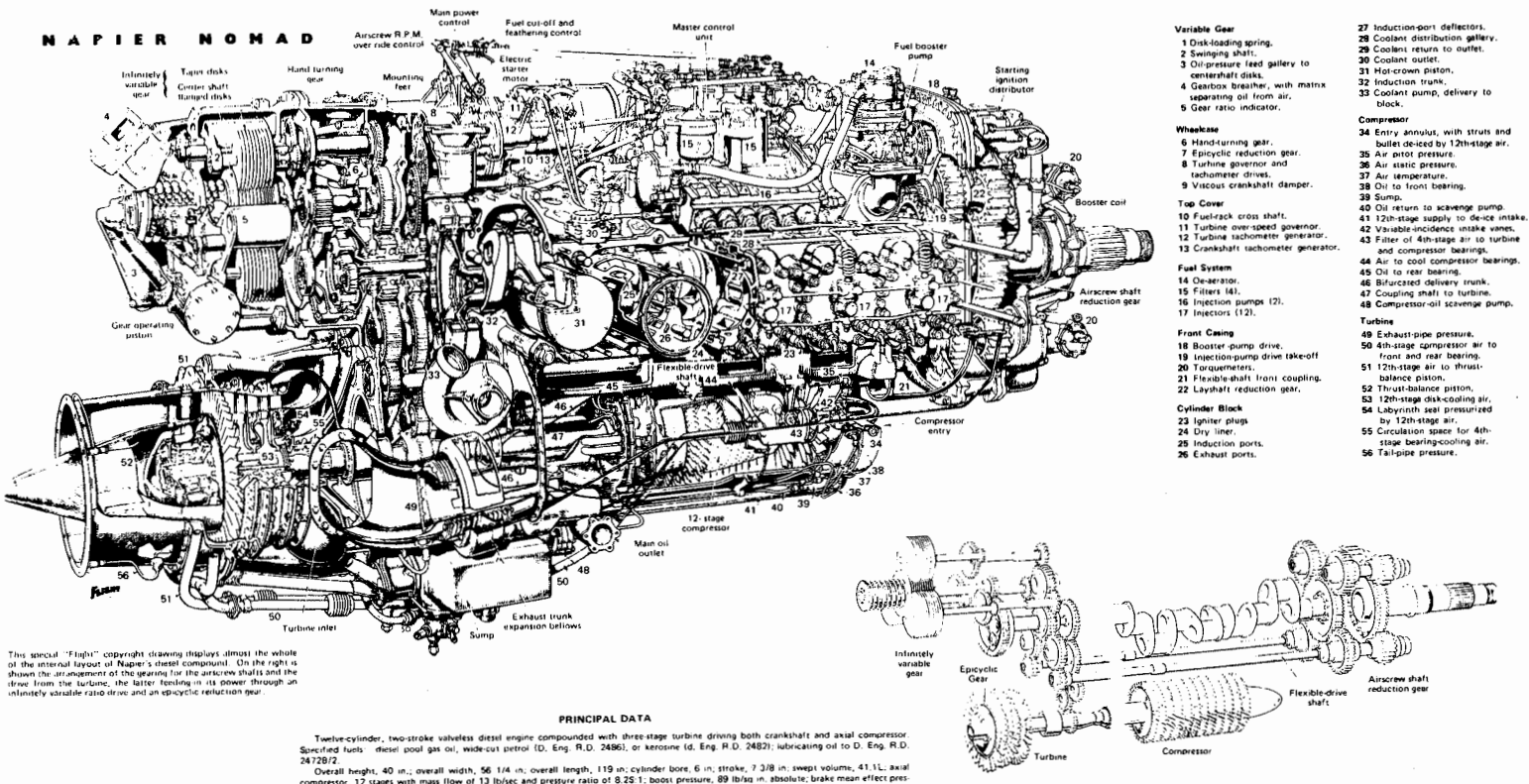

This special "Flight" copyright drawing displays almost the whole of the internal layout of Napier's diesel compound. On the right is shown the arrangement of the gearing for the airscrew shafts and the drive from the turbine, the latter feeding in its power through an infinitely variable ratio drive and an epicyclic reduction gear.

PRINCIPAL DATA

Twelve-cylinder, two-stroke valveless diesel engine compounded with three-stage turbine driving both crankshaft and axial compressor. Specified fuels: diesel pool gas oil, wide-cut petrol (D. Eng. R.D. 2486), or kerosine (d. Eng. R.D. 2482); lubricating oil to D. Eng. R.D. 2472/9/2.

Overall height, 40 in.; overall width, 56 1/4 in.; overall length, 119 in; cylinder bore, 6 in; stroke, 7 3/8 in; swept volume, 41.1L; axial compressor, 12 stages with mass flow of 13 lb/sec and pressure ratio of 8.25:1; boost pressure, 89 lb/sq in. absolute; brake mean effect pressure, 205 lb/sq in; overall expansion ratio, 24.1; airscrew reduction gear ratio, 0.526, 0.555, 0.569, 0.614 or 0.660 to 1; airscrew type Plotol (solid light-alloy blades) or de Havilland (hollow-steel blades) in sizes from 13 ft to 16 ft diameter, dry weight, 3,580 lb. Note: The performances given refer to full power at sea level.

The principal features of the Nomad's performance are given in the power and s.f.c. curves on page 551: actual points from these curves are: sea level take-off (crankshaft 2,050 rpm, turbine 18,200 rpm) 3,046 shp at 0.355 lb/hr/shp, or 3,135 ehp (allowing for 320 lb thrust) at 0.345 lb/hr/ehp; operational necessary at 11,000 ft, in ICAN atmosphere at 300 knots TAS (crankshaft, 2,050 rpm, turbine 19,800 rpm), 3,110 shp at 0.346 lb/hr/shp) or 3,250 ehp at 0.323 lb/hr/ehp; cruising at 25,000 ft under same conditions (crankshaft 1,750 rpm, turbine 19,600 rpm), 1,952 shp at 0.340 lb/hr/shp or 2,024 ehp at 0.327 lb/hr/ehp.

FIG. 11-12 Napier Nomad. The reader may consider this a complex engine, but Napier did not; for example, it described the flat-twelve two-stroke Diesel that formed its reciprocating component as "the simplest possible type." *(Courtesy of Flight via NASM-Smithsonian.)*