



The Dyna-Jet unit is so compact that, dimensionally, it offers few installation problems. Starting air is provided by a tyre-pump or air bottle. Petrol is the fuel.

MINIATURE PULSEJET

A 16-oz Model with Over 4.25 lb Static Thrust

Below are seen Dyna-Jet installations for control-line model aircraft and cars; at the foot of the page is a scale model of the Bell X-1 supersonic research aircraft.

NOT only does America hold the world's speed record for full-sized aircraft; she also holds it for models, at a speed of 179.03 m.p.h. The prime mover which has made such a velocity possible is a pulsejet unit called the Dyna-Jet Red Head—at present not generally available for purchase over here. At least one somewhat similar unit has been under development in this country, but for various reasons—including that of the noise it makes—the type has not so far received much encouragement, and the S.M.A.E. accords it no record category.

The pulsejet principle—which was used in the German V-1 flying bombs—is an essentially simple intermediate between the relative mechanical complexity of the turbojet and the mathematical complexity of the ramjet. Reference to the cut-away view of the Dyna-Jet will clarify understanding of the operational cycle. Air enters the mouth of the venturi inlet in the finned aluminium nose-cap, and the depression in the throat causes fuel to spray through the feed pipe on the venturi axis. The combustible mixture thus formed flows through a ring of ten valve ports, past the lobes of a spring-steel valve covering the ports, to enter the combustion chamber. On ignition by the starting plug, the resulting pressure-wave first causes a negative pressure, so drawing another metered charge of fuel and air through into the combustion chamber, and then changes to a positive one, closing the valve and firing the new charge by the residual heat remaining from the previous combustion. The process is repeated automatically so long as fuel and air are supplied, the frequency in the case of the Dyna-Jet being 260-280 cycles/sec.

With a maximum diameter of 2.5in, an overall length of 21.5in and a weight of 16 oz, this unit is claimed to deliver something over 4.25 lb static thrust. Consumption is 2.5 lb/hr/lb thrust, the fuel being ordinary unleaded petrol.

When a Dyna-Jet is installed in a model, adequate insulation must be provided against heat transfer, for the combustion chamber and tail-pipe become red-hot about five seconds after starting. As we can testify from experience, these tiny units make a most penetrating noise—so much so in fact, that it is literally painful at a range of about 10 yards and can, moreover, be heard across an airfield, in the cockpit of a Tiger Moth, above the noise of an idling Gipsy engine.



The unit in part-section.

