to about 25 large automobile engines each delivering 100 hp, yet it weighs only 1250 pounds.

Technical Data

The nine-stage axial flow compressor is preceded by precision cast aluminum alloy inlet guide vanes, and discharges its air directly into the combustion chambers through six diffusers. The first two stages of rotor blades are stainless steel; the remainder aluminum alloy.

The rotor is supported in a self-aligning anti-friction bearing at the front end, and a duplex-type ball bearing in a self-aligning mounting at the rear.

The combustion system consists of six interconnected straight-through combustion chambers discharging into a fabricated nozzle box, each chamber consisting of an outer air casing and an inner flame tube. It is because of this construction that the observers may touch the outer housing while the engine is running.

The turbine rotor comprises an alloy steel disc with an integrally forged stub shaft, and chrome nickel alloy rotor blades fastened to the rim with fir tree roots. Cast chrome cobalt nozzle guide vanes are used. The front end of the turbine shaft connects directly to the rear of the compressor rotor through a flexible coupling designed to compensate for angular misalignment.

The tail cone is fabricated from stainless steel sheet with cast flanges at front and rear, and is insulated by glass wool blankets encased in silver foil shields under a sheet aluminum outer covering.

The fuel system comprises two Lucas variable delivery positive displacement pumps, one flow control unit, a pressure regulating valve, six burners, a combined solenoid and torch igniter reducing valve and two torch igniters.

A dry sump lubrication system is used which incorporates a multiple type pump consisting of one pressure and two scavenge elements. The two scavenge pumps draw oil from the front and rear main bearings, with the centre bearing drained by gravity both fore and aft. An oil tank, oil filter and pressure regulator complete the system.

A direct drive electric motor is used for starting the engine from a 24 volt DC supply.

Anti-Icing Developments at Avro

Thermal system for intake components and electrical insert for compressor blades

Coincident with the design and building of the Avro Chinook, Canada's first jet engine, at the Malton plant of A. V. Roe Canada Limited, there have been several developments suggested and worked out by the men engaged in this project. These have been made available to the plant development and engineering staff for possible refinement or incorporation into the engine.

Two of these developments are concerned with gas turbine anti-icing, and are expected to prove specially valuable in jet engine operations in Canada.

Thermal anti-icing of intake components is the theme of one of these developments suggested by Winnett Boyd, chief designer of the gas turbine division, while the second development concerns itself with electric anti-icing of jet engine compressor blades and is the joint effort of Mr. Boyd and G. F. Kelk of the design office.

Under certain atmospheric conditions, ice will form on the various parts of the intake end of an aircraft gas turbine engine, and it is this condition which is being fought by attempting to supply enough heat to the surfaces involved to keep them above the freezing point of water and prevent ice formation.

Mr. Boyd suggests a method of anti-icing the intake components of a turbo jet engine by making them double walled structures and passing hot air through them in order to raise the surface temperature of the parts.

The intake components of a turbo jet engine of the axial flow type consist of the intake fairing (13), the intake struts (section A-A) and the nose bullet (14). The anti-icing method developed by Mr. Boyd calls for the introduction of hot air into a closed intake fairing (13), passing it through the double wall (2) of the fairing and discharging it out an