SECTION 8

ENGINE INSTALLATION

SECTION 8

ENGINE INSTALLATION

LIST OF CONTENTS

	Para.
INTRODUCTION	268
ENGINE COWLINGS	269
ENGINE BEARER FRAMES	270
STARTING SYSTEM	271
ENGINE ACCESSORIES	272
FUEL SYSTEM	273
FLOW TO ENGINE-DRIVEN FUEL PUMP	274
FUEL BOOSTER PUMP	275
ENGINE CONTROLS	276
LUBRICATING SYSTEM, ENGINE	277
LUBRICATING SYSTEM, ACCESSORIES	278

Engine Installation

Introduction

268. The aircraft is powered with a Rolls Royce Nene 2-VH(AUS.) turbo jet engine. The engine consists of a single stage compressor supplying air to the nine combustion chambers which discharge the products of combustion through the blades of a turbine wheel, the purpose of which is to drive the compressor and the various accessories required for aircraft services. After leaving the turbine wheel, the gas discharges at a very high velocity to the rear, thus forming a propulsive jet. For further details, see the Nene Descriptive & Servicing Manuals.

Engine Cowlings

269. The engine cowling (see Fig. 46), of light alloy panels reinforced with channelling, etc., flush riveted in position, is in three sections, namely, top and bottom cowls and the rear cone. These completely cover the engine and form a continuation of fuselage lines ending at the jet orifice.

Panels and cone are secured in position with countersunk bolts engaging anchor nuts attached to the underside of taped landings.

The bottom cowl includes auxiliary air intakes, and the tail cone includes downward identification lights. Access panels are provided for engine maintenance.

Engine Bearer Frames

270. The engine bearer frames are tubular steel structures, bolted to the main structure at the rear of the fuselage (see Fig. 47).

Starting System

271. The electrical equipment on the engine for starting comprises a compound starter motor, a torch igniter feed pump, a solenoid valve and a high voltage sparking plug in each of the two torch igniters.

Ground batteries are used for starting.

Engine Accessories

272. The following accessories (see Fig. 106) are fitted:—

A Rotol Auxiliary gearbox which drives a 2,300 watt generator, Heywood compressor and a Lockheed hydraulic pump is mounted on the engine bulkhead and driven by a rigid splined shaft from the top front of the engine. A starter motor is mounted on the right-hand side of the wheel case. Two Lucas fuel pumps (upper and lower) are mounted on the right-hand side of the wheel case. The starter, etc., are shown on Fig. 47.

Cooling air for the Heywood compressor and for the generator is withdrawn from inside the cowling and through the ducts in the rear of the wing root fairings.

Fuel System

273. The fuel system is shown diagrammatically in Fig. 96, and the fuel and air system in Fig. 107. The fuel is contained in nine tanks, eight of which are housed in the wings, and the other (centre) tank in the fuselage between bulkheads Nos. 3 and 4.

In the wing tanks, the fuel outlets are located slightly above the tank bottoms (this is unavoidable since the tanks occupy the full depth of the wing and protruding sumps would be aerodynamically unacceptable); consequently, some "dead" fuel, lying below the tank outlets, and therefore unusable, is inevitable under normal flight conditions. The amount "lost" in this way varies, as follows, with the aircraft's fore and aft attitude, being a minimum when the datum is horizontal:—

Aircraft Attitude.	Dead Fuel.
Datum horizontal	16 galls.
„ 5° Nose-up	20 galls.
„ 8° Nose-up	35 galls.

An additional tank may be carried under each wing, and these are pressurised, for fuel transfer, by air supplied from the engine compressor casing through reducing valves set at 3¼ lb./sq. in. The jettisonable tanks are of metal construction, having a capacity of 100 gal. each.

Flow to Engine-Driven Fuel Pump

274. Fuel is fed from an immersed fuel booster pump in the main collector box at the bottom of the centre tank, to the fuel pumps located on the right-hand side of the wheel case. A low pressure fuel cock and a fuel filter are fitted between the fuel tank and the engine-driven fuel pumps.

Fuel Booster Pump

275. The submerged fuel boost pump, which incorporates an inverted flight valve, is electrically driven and self-contained. The pump maintains an uninterrupted supply of fuel to the engine driven pumps under all conditions of fuel temperature, rate of climb, altitude, positive and violent negative "G" manoeuvres, also inverted flight. The fitment of the fuel booster pump is necessary owing to the difficulty involved in restarting the engine after a stoppage in the air, particularly at high altitudes (see Fig. 96).

Engine Controls

276. The engine controls, apart from electrical starting equipment, comprise throttle and two fuel cocks. These are operated by Teleflex controls and push rods as indicated in Figs. 93 and 94.

Lubricating System, Engine

277. The engine lubricating system is self-contained, and details will be found in the Nene Servicing and Descriptive Manuals.

Lubricating System, Accessories Gearbox

278. The auxiliary gearbox for the engine accessories is lubricated independently of the engine, having its oil sump incorporated in the assembly mounted on the engine bulkhead.

This file was downloaded
from the RTFM Library.
Link: www.scottbouch.com/rtfm

Please see site for usage terms,
and more aircraft documents.