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CF-105

Description and Maintenance Instructions

General Electric Constant Speed Drive

NRC - CISTI  
J. H. PARKIN  
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JUN 8 1995

ANNEXE  
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ENGINEERING DIVISION

AVRO AIRCRAFT LIMITED, MALTON, ONTARIO



## 1. INTRODUCTION

This report describes the Alternator Constant Speed Drive to be used on the CF105. This information was requested by the Maintenance Sub-committee at a meeting held 17 January 56, item 16, para. 54-55.

## 2. DESCRIPTION

The type of Constant Speed Drive to be used on all J75 engines will be a General Electric, model LKE20B. This drive consists of a hydraulic variable-speed-ratio transmission and an associated governor unit.

The transmission is capable of delivering power continuously at a constant output speed of 8000 rpm over an input speed range from 2500 to 7500 rpm.

The overall size of the unit is 11 inches long, 11 inches wide and the weight is 62 lbs.

This unit has a flange mounting at each end. At the input end, the flange will mate with the pad mounting on the J75 engine; at the output end the flange will mate with the alternator.

## 3. MAINTENANCE

### 3.1 Removal

Due to the location of the Constant Speed Drive, it is recommended that no maintenance be carried out, other than a visual check, without first removing the engine from the aircraft.

To remove the Constant Speed Drive, the following procedure will be taken:

- (a) Remove the nose bullet.
- (b) Disconnect the electrical leads from the Alternator, then remove the Alternator from the Constant Speed Drive by undoing 12 - 5/16" hold down bolts.
- (c) Disconnect three pipe lines from the Constant Speed Drive, then remove unit from the engine by undoing nuts on 12 - 5/16" studs.

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### 3.2 Lubrication

The transmission of the Constant Speed Drive is lubricated with oil, specification MIL-L-7808 and will be interconnected with and supplied by the Accessories Gear Box lubrication system. Any loss of oil in this system will be noted during the primary inspection by the oil level in the sight gauge on the Accessories Gear Box. When necessary, the oil supply will be topped up, using the oil filler rig. A quick disconnect fitting is supplied for attaching the filler hose.

### 3.3 Cooling

The cooling of the Constant Speed Drive is accomplished two ways:

- (a) A small amount of cooling will be obtained from the ram air through the bullet.
- (b) Most of the cooling will come from the circulating oil. The cooling and lubrication of the Constant Speed Drive is as follows: Oil from the accessories gear box and C.S.D. storage unit will flow through the Air Oil Cooler, Fuel Oil Cooler and Filter into the Constant Speed Drive at 4 g.p.m. (US). There it will be mixed with air, which enters the C.S.D. at 2 g.p.m. (US). From the C.S.D. the mixed Oil and Air are separated; the air is vented and the oil returned to the accessories gear box and C.S.D. storage tank.

### 3.4 Overhaul Life

The 20 KVA Constant Speed Drive will satisfactorily drive the 30 KVA Alternator at a continuous rating, but in doing so the life of the C.S.D. will be reduced by 50% to 250 hours.

### 3.5 Alternator Output Control

An amendment to Specification E230, item 5.3.4, is being drawn up to incorporate an underspeed switch in the Constant Speed Unit. This switch will control the output of the Alternator at low output r.p.m. It will be hydraulically actuated by the C.S.D. and set to close between 7500 and 7700 r.p.m. and open between 7500 and 7200 r.p.m.

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