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ANALYZED

ENGINE AND GEARBOX OIL DISPENSER

LOG/105/34

May 1956

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ENGINE AND GEARBOX OIL DISPENSER

Classification cancelled / Changed to UNCLASS
By authority of AVRS
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Signature P. Bell
Unit / Rank / Appointment AVRS

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ENGINEERING DIVISION

AVRO AIRCRAFT LIMITED, MALTON, ONTARIO



1. INTRODUCTION

This report deals with the requirement for an oil dispenser for use in filling and topping up engine oil and gearbox oil systems; with particular reference to the modifications necessary to adapt existing R.C.A.F. equipment to meet the requirement.

The existing R.C.A.F. equipment proposed for use in the above capacity, is the "Oil Dispenser", "Helot" Model, manufactured by the Prencro Progress and Engineering Corp., and listed in CAP 10, section 4G; Reference 448; PT No. 9600.

2. PURPOSE

The function of the Engine and Gearbox Oil Dispenser is:

- (a) To fill or top up the J75 engine oil tanks, each of which has a capacity of approx. 5.5 gals. (U.S.), of oil to specification MIL-L-7808B. Each tank is filled separately through a quick disconnect fitting conforming to Avrocan Spec. E403 and Drawing No. 7-2700-697.
- (b) To fill or top up the auxiliaries gearbox oil systems, each of which contain approx. 3 gals. (U.S.) of oil to specification MIL-L-7808B. Each system is filled separately through a quick disconnect fitting similar to those used on the engine oil tanks.

3. REQUIREMENTS

To carry out the purposes stated above, the equipment should embody the following features:

(a) Chassis

The chassis should be mobile, light, highly manoeuvrable, mounted on pneumatic wheels, preferably three; have a towing or steering bar, and be capable of being towed over improved surfaces.

3. REQUIREMENTS (cont'd)(b) Tank

The tank should have sufficient capacity as to preclude frequent re-filling (App. 30-40 Gal.), and offer maximum protection against contamination of the oil through the ingress of dirt, water etc. The outlet should be above the bottom level of the tank, and the breather should be protected against the ingress of dust etc.

(c) Pump

The pump should be self-priming, hand operated rotary or semi-rotary type, capable of a flow rate of not less than two gals. per minute, at a pressure sufficient to give adequate flow in extreme cold weather conditions (App. 50 p.s.i.). It should be mounted in such a position as to give maximum ease of operation.

(d) Filter

The pump discharge line must incorporate a replaceable element type filter, of 30 micron degree of filtration, the capacity to be such as to offer the minimum amount of back pressure when operating under extreme cold weather conditions.

The filter must be mounted in such a position as to be readily accessible for servicing.

NOTE: The filter must not incorporate a by-pass.

(e) Hose

All hose used on this dispenser must be suitable for use with synthetic oils to specification MIL-L-7808, i.e. hose incorporating an inner tube of Buna N material.

The pump discharge hose should be not less than $\frac{1}{2}$ inch in diameter, and not less than 15 feet in length.

The delivery end must have a self sealing half coupling and dust cap conforming to Avrocan Specification E403, and Avro drawing No. 7-2700-697.



3. REQUIREMENTS (cont'd)

(f) Safety Precautions

Oil dispensers used for MIL-L-7808 should be plainly identified as such by a suitable stencil or warning placard displayed in a clearly visible location.

4. MODIFICATIONS

Modifications required to adapt the "Helot" model oil dispenser to the foregoing requirements:

(a) Pump

The "Helot" model oil dispenser is presently equipped with either of two pump installations:

- (1) The model WH 404, capable of 10 gallons per minute.
- (2) The model TA 414, capable of 14 gallons per minute.

If tests show that neither of these pumps have sufficient capacity to meet the requirement noted in (3c), i.e. 2 g.p.m. at 50 p.s.i., a pump of sufficient pressure rating must be installed.

(b) Filter

To fill the requirement of (3d), the "Helot" model oil dispenser requires the installation, in the pump discharge line, of a replaceable element type filter, capable of a 30 micron degree of filtration, and of sufficient capacity to ensure the minimum amount of back pressure when operating under extreme cold weather conditions.

The filter is to be installed in such a manner as to be readily accessible for servicing.

NOTE: The filter is not to incorporate a by-pass.

4. MODIFICATIONS (cont'd)(c) Hose

To conform to the requirement of (3e), all hose on the "Helot" model oil dispenser must be of a specification suitable for use with synthetic oils to specification MIL-L-7808, e.g. Aeroquip 601, Aeroquip 617 L.P. or other hose incorporating an inner tube of Buna "N" composition.

The pump discharge hose must be 1 inch in diameter and 15 feet in length. One end is to be attached to the filter outlet by a standard AN coupling, and the delivery end is to have a self-sealing half coupling and dust cap to Avrocan Specification E403, and Avro drawing No. 7-2700-697. The dust cap will be attached to the half coupling by a 15 inch length of free swivelling chain.

The pump suction hose is acceptable in its present configuration, but must be suitable for use with oil to specification MIL-L-7808.

(d) Breather

A hooded, screened, vent plug must be provided, the plug to have a 1 inch standard American straight pipe thread, to fit the small bung opening in a standard 45 gallon oil drum. The vent plug should be equipped with a 12 inch length of safety chain (e.g. #16 Jack chain), and a safety lock pin, AN416-719, to permit stowage of the vent plug on the dispenser when not in use.

(e) Warning Placard

Each dispenser is to be equipped with a metal placard, attached to the upright frame at the front of the dispenser, and bearing the warning notice on front and reverse faces - "Use only for MIL-L-7808".

NOTE: Use of the "Helot" Model oil dispenser requires user units to demand MIL-L-7808, packaged in 45 gallon barrels.

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