Chapter 4

CENTRIFUGAL FILTER, TYPE D.N.F. SERIES

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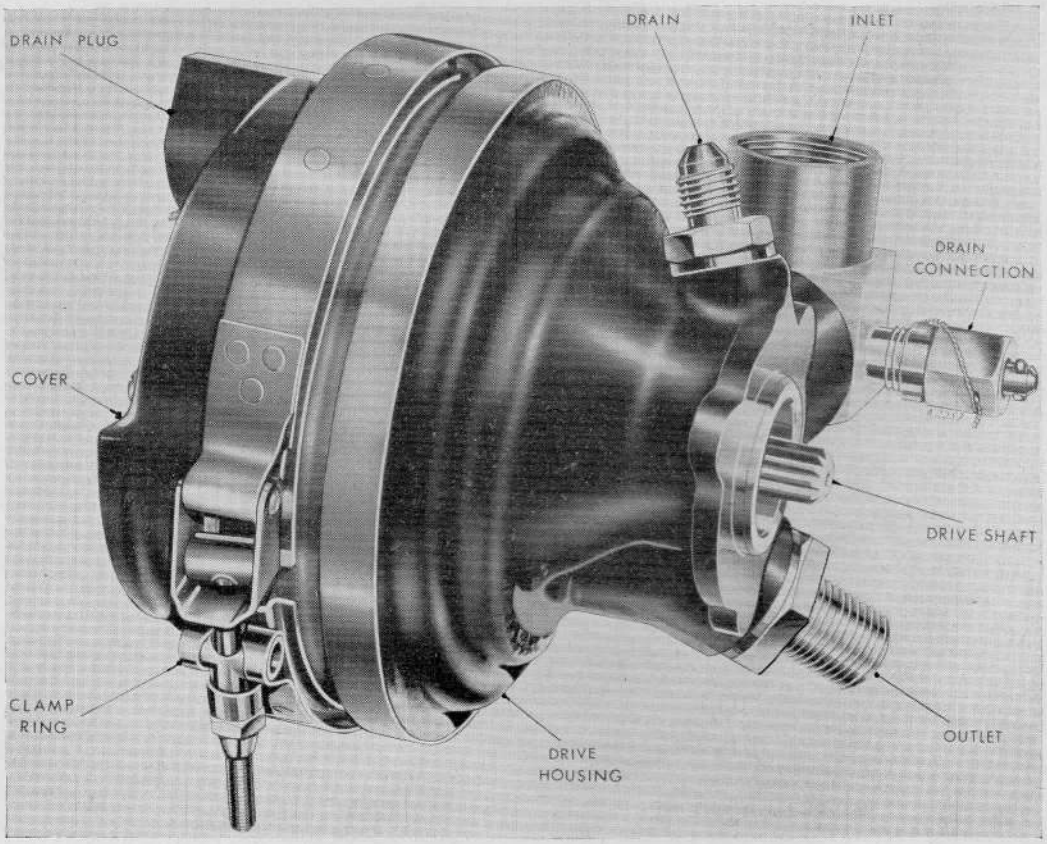

Fig. 1. Exterior view of D.N.F. filter

Introduction

1. The filter, which is of the centrifugal type, is situated in the fuel supply line between the tank and H.P. fuel pump, and is driven from the engine, the relationship between the engine and filter speeds remains constant over the whole speed range of the engine.

2. The type number of the unit, i.e. D.N.F.100, also indicates the installation standard and the calibration code to which the unit must be tested. Differences in the units of this series are listed in Table 1.

Description

3. The centrifugal filter comprises three main parts; a drive shaft assembly, a drive housing, and a centrifuge assembly. The centrifuge assembly, within which the filtering action takes place, is statically and dynamically balanced before it is assembled into the main unit.

4. The drive shaft and centrifuge assemblies are located in the drive housing; when the clamp retained cover is fitted to the housing, the housing provides a leak-tight operating chamber incorporating inlet, outlet and seal drain connections. A drain plug is provided for daily servicing.

5. The drive to the unit is picked-up by the protruding splined shaft, the opposite end of which is engaged with the centrifuge assembly.

Operation (fig. 2)

6. Under running conditions, pressurized fuel from the aircraft tanks passes into the unit via the inlet connection and a communicating passage in the drive housing. A boost impeller subsequently imparts a swirling motion to the flow whilst at the same time forcing it into a central chamber within the rotating centrifuge assembly. The flow is now under the influence of centrifugal force, the result being that any solid matter present is thrown outwards to pass through the perforated outer wall of the chamber and into the primary dirt cavity where it is finally retained.

7. From the central chamber, a series of radial passages leads the flow into an outer chamber; the inner wall of this chamber is solid; the outer wall is a second perforated shell. Centrifugal force again acts upon the flow; any foreign matter still present is forced through the louvre-type perforations in the outer wall before being finally trapped in the outer dirt cavity.

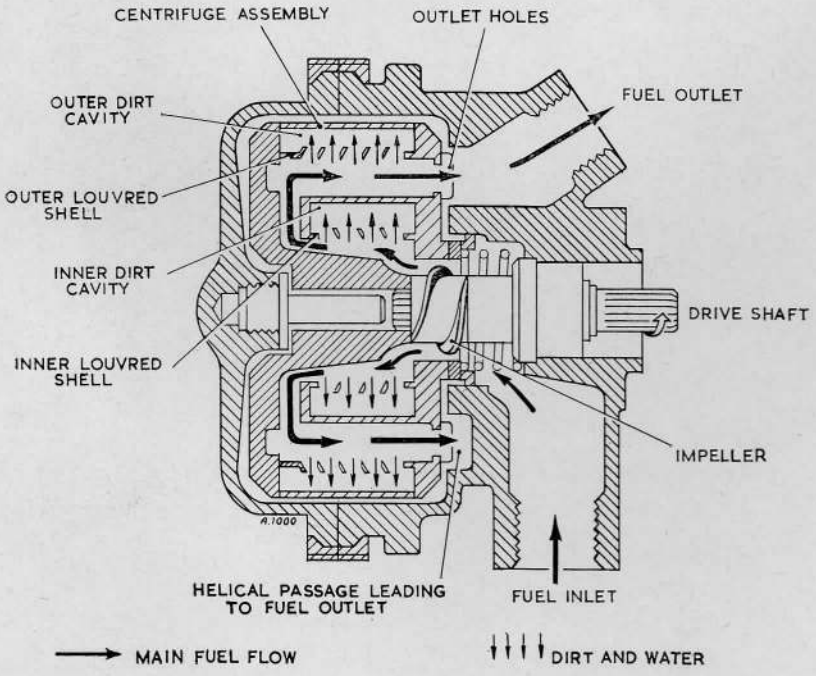

Fig. 2. Flow diagram

8. The end face of the centrifuge assembly incorporates a series of outlet holes; these holes allow the filtered fuel to pass from the centrifuge outer chamber to the outlet connection via a helical passage in the drive housing.

9. The foreign matter accumulated within the dirt cavities is retained by a series of radially-disposed vanes; these obviate out-of-balance conditions which could arise were this accumulation free to move.

Installation and servicing

10. Instructions for installing the filter on the engine are given in the relevant engin Air Publication. Apart from examining th filter for leaks, checking the security of th connections and mounting, and draining as required, no servicing is necessary.

11. Details for inhibiting the unit are given in A.P.4471A.

TABLE 1

Types of centrifugal filter, D.N.F. series

Type	Remarks
D.N.F.100	Basic unit as described.
D.N.F.101	As D.N.F.100 with modified union on seal drain connection to suit American type pipe fittings.