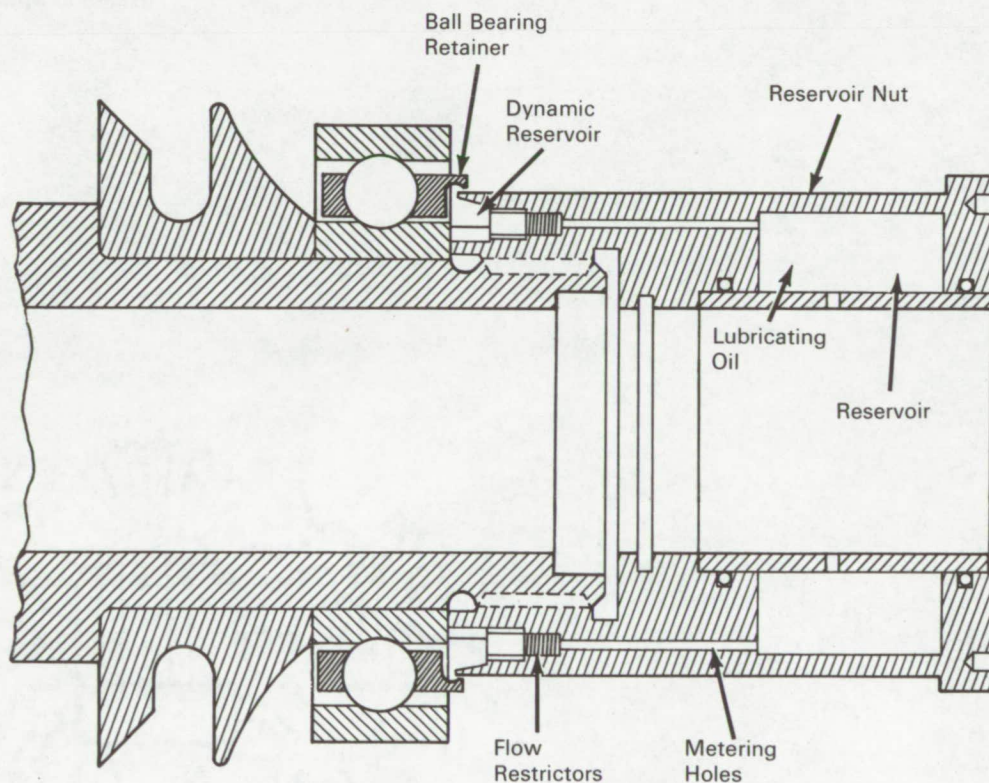


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Dynamic-Reservoir Lubricating Device



A device has been designed to satisfy a need for a means of supplying controlled amounts of lubricating oil to ball bearings only during operation of the bearings. The main purpose of the device is to ensure optimum supply of lubricant to increase the operating life of the bearing without application of additional power. Wick feeds are not satisfactory because they

introduce friction (which consumes power) and result in waste of oil.

The new device utilizes the centrifugal force of the rotating bearing to exert an outlet pressure on the oil which is proportional to the square of the angular velocity of the wheel. The flow of the oil to the bearing is through commercially available filter restrictors. The

(continued overleaf)

flow rate through these filters is then proportional to the outlet pressure which results from the centrifugal force.

The dynamic reservoir lubricating device includes a rotating reservoir nut which locks the inner race of the bearing to the wheel journal and rotates at the wheel speed. The reservoir of the device is a hollow cylinder filled with lubricating oil. Flow restrictors, selected for the desired flow range, are locked into metering holes. The metered oil passes from the restrictors to the transfer edge of the dynamic reservoir and is forced against the ball bearing retainer. The retainer has a lip which contains the oil received from the dynamic reservoir and directs it through the retainer to the bearing raceway. The retainer may contain small bleed holes to direct minute oil flows to the raceway.

Notes:

1. The device has been described for an inner-race-running bearing; the same principle may be applied to an outer-race-running bearing.
2. Details may be obtained from:
Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B68-10261

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: H. E. Schulien and W. H. Ficken
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