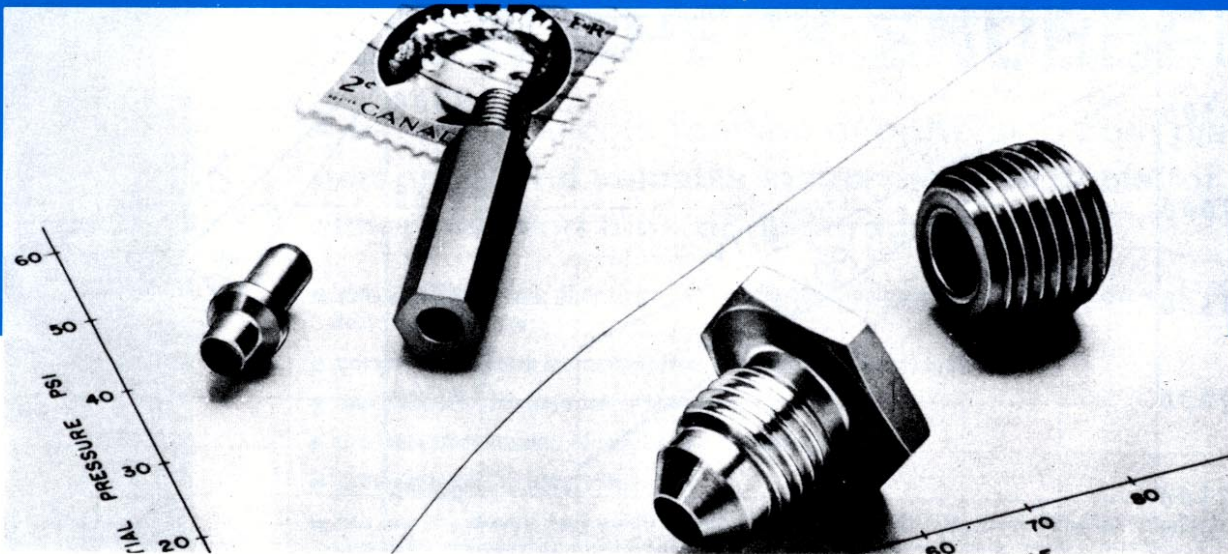


# FLOW RESTRICTORS (BLEED VALVES)



**TYPICAL CHEMIQUIP FLOW RESTRICTORS**

Other Styles Are Available On Order

Many of the highly sophisticated systems which are currently used by industry and in the aerospace program, require a restrictor for accurately metering limited quantities of liquids or gases. These restrictors have to fulfill rigid size, weight, accuracy and repeatability standards. The usual method for effecting this control is the employment of needle valves, capillary tubing or orifice plates. Objection to these methods may be found in their susceptibility to erosion, high cost of production, difficulty in machining and a high weight factor. Using these methods, it is difficult to achieve repeatable and duplicate performance for many flow restrictors on production runs. The Chemiquip system, involving the use of a porous restrictor element, fulfills all of the requirements for compactness, lightness and extreme accuracy. It is also inexpensive to produce and capable of highly repeatable results for the full production run. The Chemiquip porous metal restrictor element consists of a porous membrane having myriads of fine ports. By careful control of the porous membrane, in terms of its pore size, it is possible to achieve accuracy beyond the limits of any other known production method.

In addition to its extreme accuracy, the Chemiquip Flow Restrictor is versatile in that it may be fitted into wide varieties of housings for assembly in the most convenient fashion. A few typical types of mounting are pictured.

In addition, it is possible to supply flow restrictors having conventional pipe thread or tubing connections. Unmounted flow restrictor elements may also be provided. However, since it is necessary to calibrate the flow restrictor element after it has been mounted, the accuracy of the unmounted element may not be as high, in terms of flow control, as that of the mounted element. Since the flow control is achieved by the use of a porous membrane which is a fraction of an inch in thickness and diameter, the weight of the completed device is essentially the weight of the mounting.

The flow restriction which is achieved with this small wafer can be likened to many feet of weighty and cumbersome capillary tubing. Since flow restrictors are usually designed to suit specific applications, there is no standard unit available. The tolerance for specific flow of liquids or gases may be indicated by the user. The flow restrictor is guaranteed to fulfill all prescribed requirements.

Typical examples of flow vs. pressure drop are shown on the accompanying curves. It will be noted that the flows plotted on these curves are virtually linear. In addition to these characteristics, it is possible to achieve and maintain high accuracy. Flows of as little as 1 cc/sec. of standard air at a pressure difference of 60 psig have been produced on a production basis, while maintaining a tolerance of 10% deviation from the mean flow. The same high accuracy and repeatable performance can be expected for the entire production run. These results are achieved at a far lower cost than that available from any other standard flow restrictor.

**When ordering, the following information shall be furnished:**

- 1. Size and style of connections (i.e., pipe, tubing or other)**
- 2. Material of construction.**
- 3. Phase and viscosity of fluid to be restricted.**
- 4. Flow requirement and pressure differential.**
- 5. Flow tolerance.**