



McCANNA/MARPAC Valves

Product Data Bulletin  
FCD MMAPS0007-00  
(Part PDB-4)

## Double Block and Bleed McCannaSeal® Valves

It has been customary for manifold systems and other process piping, where inter-contamination of products was undesirable, to position two valves back to back with a small bleed valve located between them. This is commonly referred to as a “Double Block and Bleed System” or “Block and Bleed Service.”

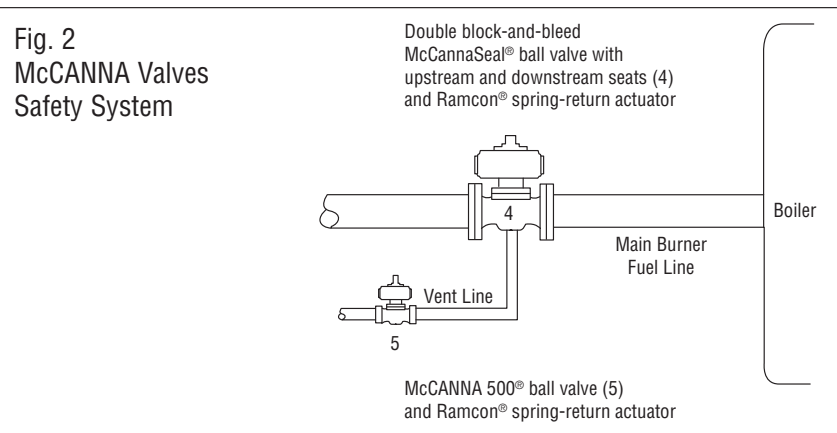
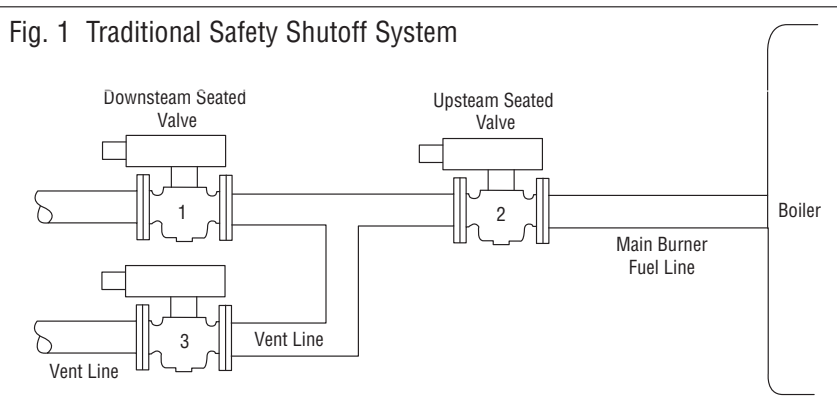
Using TFE or RTFE as a seat material has permitted the substitution of a single valve for the two valves which made up the previous system. A bleed valve is required and is connected to the body cavity around the ball of the ball valve. A Double Block and Bleed application requires that both seats be tight and act as upstream seals when there is pressure on one or both sides of the valve,

with the cavity around the ball being bled to atmosphere by opening the body drain valve.

### Design Features

A special Block and Bleed seat design has been developed in valve sizes 3/4" through 8" inclusive, which will act as an upstream seat without impairing its ability to act also as a downstream seat. Refer to Figure 3 (back) for a cross-sectional view of this design.

In a standard floating ball type of valve such as the McCannaseal, it is always the downstream seat which is tight. The line pressure provides the necessary seating force by pressing the ball



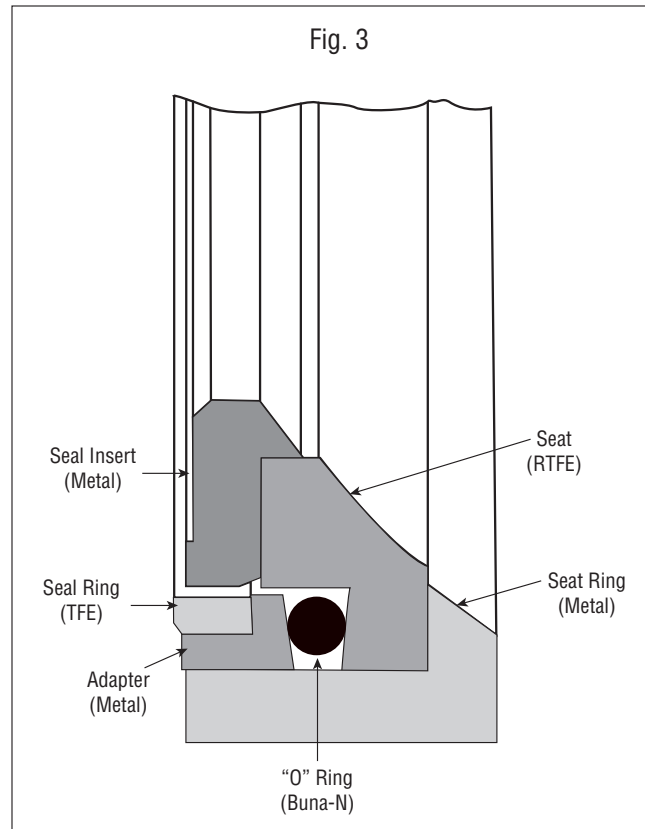
into the seat. This movement of the ball toward the downstream seat relieves the seating force between the ball and upstream seat by the same amount. In the McCannaseal, the upstream seat is leaking until the pressure between the upstream line and the cavity around the ball is equalized. It is obvious then that the standard seat design will not function as a Block and Bleed seat.

This seat design is basically a Fire-Seal® design with a modified reinforced TFE seat and an adapter and seal ring subassembly. The subassembly is backed by an O-ring which is under compression. This acts both as a seal and a spring against the metal adapter, thereby forcing the TFE seal ring to make contact with the valve body.

The force on the upstream seal ring due to compression of the O-ring diminishes as soon as the line pressure moves the ball toward the downstream seat. For this reason, it is necessary to limit the pressure for Block and Bleed applications to 300 psi for the ANSI class 300 valves because only this pressure can be held on the upstream seats. ANSI class 150 valves in Double Block and Bleed applications are rated to the full pressure rating. When acting as downstream sealing seats, the full pressure rating of the valve can be handled by both class 150 and 300 valves.

The Block and Bleed valve assemblies require that a special washer be inserted between the stem and ball. This washer is used to prevent the ball from lifting under line pressure which causes leakage between the body face and the back of the upstream seat. The body seat faces must also be lapped flat and smooth to a surface finish of 16 microinches or better. Conversion of valves in the field to Block and Bleed valves requires these body seat surfaces to be cleaned and lapped.

The bodies for Block and Bleed service are drilled and tapped for a bottom drain. For installation of the required bleed valve, the McCannaSeal is shipped with a pipe plug to prevent entry of foreign contaminant into the valve cavity.



Block and Bleed seats should be used only in applications within the temperature and corrosion range of Buna-N. They also contain a seal ring adapter made of SS 304 which will serve most applications compatible with Buna-N O-rings.

The sales ordering code for Double-Block and Bleed seats is "D." For example, a 2" McCannaSeal 1501b., 316 SS, flanged ends and Block and Bleed Seats would be ordered as follows:

2" S151-S6-D-S6.

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**FLOWERVE CORPORATION**  
**FLOW CONTROL DIVISION**  
 1978 Foreman Drive  
 Cookeville, Tennessee 38501 USA  
 Phone: 931 432 4021  
 Facsimile: 931 432 3105  
[www.flowserve.com](http://www.flowserve.com)