

**Val-Matic® Cam-Centric®  
Rectangular Ported, Eccentric Plug Valves  
Shaft Seals**

The shaft seal in the rectangular ported, eccentric plug valve is of the gland type utilizing Vee type packing, a packing follower and a grit seal. It fully complies with ANSI/AWWA C504. The packing is field adjustable and replaceable under pressure without removal of the actuator.

Having stated the above it is important to explain two plug valve design myths which have been perpetuated for some time now and need clarification.

**Vee Type Packing vs. Adjustable**

These are two terms which should be used together only with extreme caution. Adjustable glands were originally developed for use with braided type packing. As the braid wore the gland was tightened to prevent leakage. The confusion began when a Plug Valve Manufacturer switched to Vee Type packing without changing their gland and follower. To alleviate customer concerns they claimed that the new Vee type packing could be "adjusted" just like the old braided type. The problem is that Vee type packing is not meant to be adjusted to the degree in which braided type packing is. A leading manufacturer of Vee type packing, John Crane, states the following on page four of their Bulletin #P-420-2 entitled, *V-Ring Packings*: "They are designed so that they become pre-loaded when installed. Since the packings are automatic in action and sensitive to pressure changes, no gland pressure is required." Over tightening of the gland follower will in fact disrupt the packing's pressure sensing abilities and could lead to premature leakage.

For this reason the Val-Matic® Shaft Seal utilizes a set follower in the gland. The follower is factory set by placing removable shims under the follower flange which prevents the follower from being over tightened and causing leakage. The system was developed to meet Vee type packing requirements as designated by the manufacturer. The shims are easily removed, allowing for adjustment in the field with the valve under pressure and without removal of the actuator. Replacement of the packing can also be performed in the same manner. However, for ease of replacement it is recommended that the valve be isolated from service and the actuator removed.

**ANSI/AWWA C504 Compliance vs. Plug Valves**

Most Plug Valve Manufacturers, including Val-Matic®, state that their shaft seals comply with ANSI/AWWA C504 for Rubber-Seated Butterfly Valves. While the shaft seal requirements called for in C504 are clear and concise, it must be remembered that they were written for a Rubber-Seated Butterfly Valve for use in raw or potable water, not the untreated wastewater to which Plug Valves are frequently subjected. Therefore, these requirements must be looked at as a minimum if plant personnel are to be protected from raw sewage oozing through a failed shaft seal.

It is for this reason that Val-Matic® incorporates the Grit-Guard shaft seal. The Grit-Guard extends packing and bearing life by minimizing their exposure to the line media, in this case gritty, abrasive raw sewage. It is supplied standard on all Val-Matic® Plug Valves.

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