

Enhanced ENVIRO-SEAL™ Packing Systems for Fisher™ Rotary Valves

Fisher enhanced ENVIRO-SEAL packing systems consist of ENVIRO-SEAL and ENVIRO-SEAL IS (ISO-Seal) and offer exceptional shaft sealing capabilities. These packing systems, available with PTFE or graphite packing material, feature live-loading and unique packing ring arrangements for long-term, consistent sealing performance.

Enhanced ENVIRO-SEAL packing systems easily install in your existing valves or can be purchased with new valves. Enhanced ENVIRO-SEAL packing systems help seal your process to conserve valuable process fluid. The long life and reliability of these systems also reduce your maintenance cost and downtime.

For process control applications requiring compliance with specific environmental protection regulations, the Fisher solution is the unique enhanced ENVIRO-SEAL packing system. The enhanced ENVIRO-SEAL packing systems offer certified performance to ISO-15848-1 at a tightness class of AM (≤ 50 ppm) and BH ($\leq 1.78 \times 10^{-7}$ mbar \cdot l \cdot s $^{-1}$ per mm of stem/shift diameter) with actual performance being lower.

For an excellent shaft seal in applications that are not environmentally-sensitive, enhanced ENVIRO-SEAL packing systems may be applied at higher pressure/temperature ratings [103 bar (1500 psig)/-46 to 232°C (-50 to 450°F) for PTFE design or 207 bar (3000 psig)/-198 to 400°C (-325 to 752°F) for graphite design]. Such applications offer excellent shaft sealing, extended packing life, and reduced maintenance costs when you compare ENVIRO-SEAL packing systems to standard packing arrangements. Contact your [Emerson sales office](#) for applications assistance.

Features

- **Compliance with the Clean Air Act**—The excellent shaft sealing of the enhanced ENVIRO-SEAL packing system (figure 1) can control emissions to below the EPA maximum of 100 ppm, even to the <10 ppm range. Enhanced ENVIRO-SEAL packing systems provide an excellent shaft seal to prevent the loss of process fluid.
- **Improved Service Life**—Enhanced ENVIRO-SEAL packing system design, the anti-extrusion rings that contain the packing, and live loading combine to give you long service with very low maintenance. External liveloading provides a constant load over the life of the packing material which reduces your need for constant packing box adjustment and high levels of packing maintenance. Installed enhanced ENVIRO-SEAL packing systems provide excellent shaft sealing, guiding, and transmission of loading force.
- **Easy Installation in Existing Valves**—All parts needed to install the systems in existing valves are available in a convenient kit. Some larger valves may require the packing box to be sleeved to accommodate a smaller cross section of packing.
- **Adaptable to Many Applications**—Enhanced ENVIRO-SEAL packing systems are available with PTFE or graphite packing rings. Enhanced ENVIRO-SEAL packing systems fit a wide range of Fisher rotary valves. See the valve product bulletin for specific availability information. **Note:** ENVIRO-SEAL PTFE and graphite packing systems can be used in vacuum service applications with packing rings in the standard orientation. It is not necessary to reverse the PTFE packing rings.

Enhanced ENVIRO-SEAL Packing System Specifications

Rotary Valve Designs, Packing Availability

See table 1

Maximum Temperature/Pressure Limits⁽¹⁾

Maximum Application Temperature/Pressure Limits To Meet the Fugitive Emission Standard of AM (≤ 50 ppm) and BH ($\leq 1.78 \times 10^{-7}$ mbar^{*l} *s⁻¹ per mm of stem/shift diameter) PPM⁽²⁾:

For ENVIRO-SEAL single PTFE packing material: 232°C (450°F). Not restricted by pressure for class rating of valves listed in this bulletin, see table 1

For ENVIRO-SEAL graphite packing material: 400°C (752°F). Not restricted by pressure for class rating of valves listed in this bulletin, see table 1

Material Temperature Range:

For ENVIRO-SEAL PTFE Packing Material: -46 to 232°C (-50 to 450°F)

For ENVIRO-SEAL Graphite Packing Material: Up to 400°C (752°F)

Construction Materials

Packing Rings:

■ ENVIRO-SEAL; PTFE V-ring⁽³⁾

Male and Female Adaptor Rings:

Carbon-filled PTFE V-ring

■ ENVIRO-SEAL IS; Braided PTFE Ring

Anti-Extrusion Rings: High strength polymer
Packing Box Rings: S31600 (316 SST)

Graphite Packing System:

Packing Rings: Graphite

Anti-Extrusion Rings: Carbon

Packing Box Rings: S31600 (316 SST)

Packing Flange: S31600 (316 SST, other materials available upon request)

Packing Box Studs:

Steel, SA-193-B7, is standard for all Fisher Vee-Ball™ and eccentric disk rotary valves, except 8532, A31A, and A31D high-performance butterfly valves.

Strain-hardened S31600, SA-193-B8M, strain hardened, is standard for Fisher 8532, A31A, and A31D rotary valves

Packing Box Nuts:

Steel, SA-194-2H, is standard for all Fisher Vee-Ball and eccentric disk rotary valves, except 8532, A31A and A31D. Steel SA194 Grade 8M is standard for Fisher 8532, A31A, and A31D rotary valves

Spring Pack Components:

O-ring: Nitrile. The O-ring serves as an assembly convenience to hold the springs in position on the packing follower

Packing Follower: S31600 with carbon-filled PTFE liner

Springs: ■ N07718 or ■ S17400 (17-4 PH) for larger sizes

1. The pressure/temperature limits in this bulletin, in the valve body bulletin, and any applicable code or standard limitation, should not be exceeded.

2. The Environmental Protection Agency (EPA) has set a limit of 100 ppm (parts per million) for fugitive emissions from a valve in selected VOC (Volatile Organic Compound) services.

3. In vacuum service, it is not necessary to reverse the ENVIRO-SEAL PTFE packing rings.

Figure 1. Typical ENVIRO-SEAL Packing Arrangements for Fisher Rotary Valves

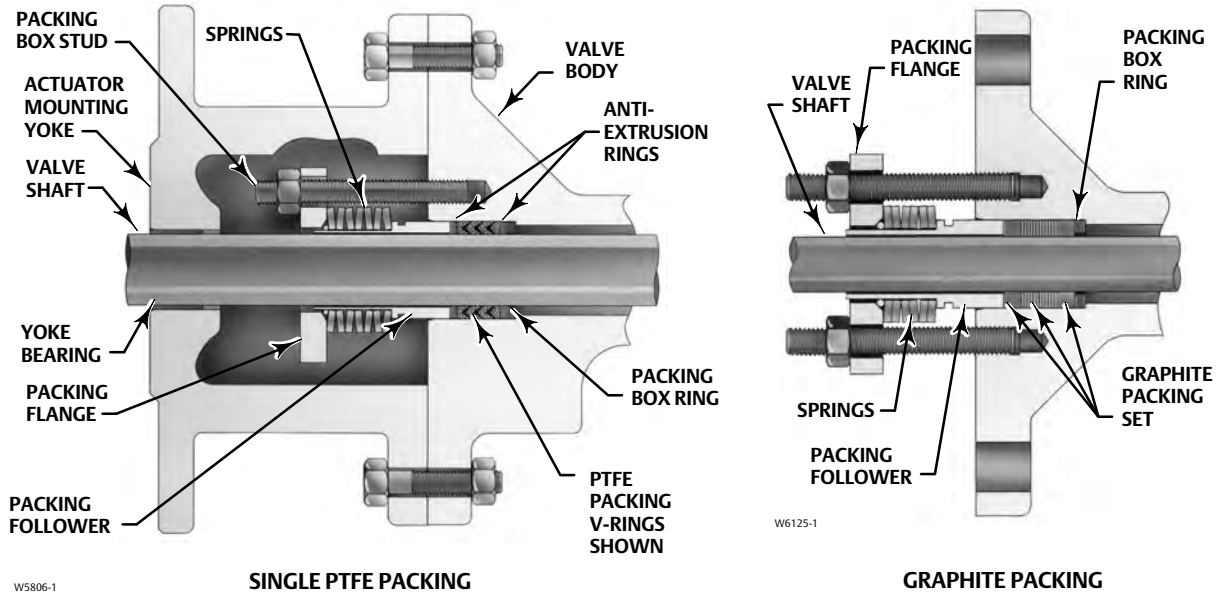


Figure 2. Fisher 8580 and Control-Disk Valves with Enhanced ENVIRO-SEAL IS Packing Arrangement

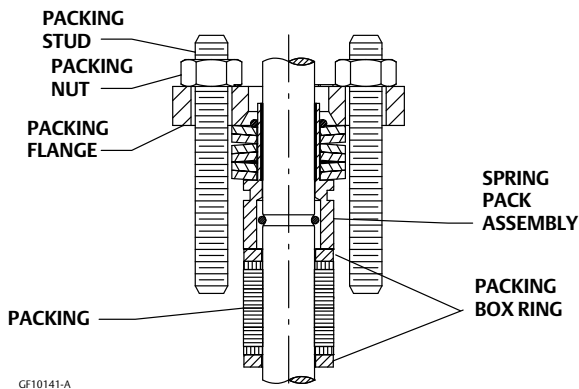


Figure 3. Fisher Vee-Ball Valve with Enhanced ENVIRO-SEAL IS Packing Arrangement

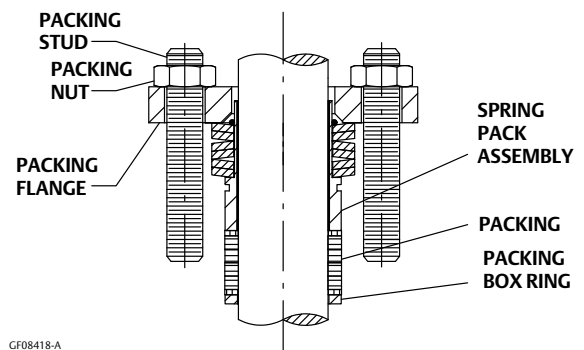


Table 1. Packing Availability⁽¹⁾ in PTFE and Graphite

Rotary Valve Design	Valve Size, NPS
Fisher Control-Disk™ Valve	2 through 24
Fisher 8580 valve	2 through 12
Fisher 8532, A31A, and A31D	3 through 24
Fisher 8560	2 through 12
Fisher 8590	3 through 24
Fisher V150 Vee-Ball	2 through 12
Fisher V200 Vee-Ball	1 through 10
Fisher V300 Vee-Ball	2 through 12
Fisher V500	1 through 8
Fisher CV500	3 through 12
1. Larger valve sizes and ratings are available upon request. Consult your Emerson sales office .	

Installation

The following lubrication recommendations for enhanced ENVIRO-SEAL packing systems are provided to assist with proper installation of the packing.

Enhanced ENVIRO-SEAL internal packing parts, valve drive shaft and packing box do not require lubrication as do some other types of packing. Lubrication on packing component parts may cause “slip-stick” operation. Also, the lubricant may not be compatible with the process.

Lubrication is required for the packing studs and nuts. It is important to lubricate the contact surface of the nuts on the flange surface. Friction between the unlubricated surface may cause incorrect torque indication.

Neither Emerson, nor any of their affiliated entities assumes responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use, and maintenance of any product remains solely with the purchaser and end user.

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Ordering Information

When ordering enhanced ENVIRO-SEAL packing systems, specify:

For Existing Valves

1. Process fluid
2. Process fluid temperature
3. Maximum valve inlet pressures
4. Maximum valve pressure drops
5. Valve type (8590, V200, etc.), size, and class
6. Actuator type

For New Valves

1. Refer to the valve bulletin for ordering information.
2. Refer to the specifications on page 2. Review the information under each specification. Write down your choice whenever a selection is to be made.

