

Fisher™ ENVIRO-SEAL™ H2 Duplex High-Pressure Packing

Use these instructions to install ENVIRO-SEAL H2 Duplex high-pressure packing in valves that have standard packing or when inspecting or replacing ENVIRO-SEAL H2 Duplex high-pressure packing for applications up to 149°C (300°F) and 330 bar (4800 psi) on Fisher easy-e™, EH, and HP valves.

⚠ WARNING

Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before performing any installation operations:

- Always wear protective clothing, gloves, and eyewear.
- Do not remove the actuator from the valve while the valve is still pressurized.
- Disconnect any operating lines providing air pressure, electric power, or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the control valve.
- Use bypass valves or completely shut off the process to isolate the control valve from process pressure. Relieve process pressure from both sides of the control valve. Drain the process media from both sides of the valve.
- Vent the pneumatic actuator loading pressure and relieve any actuator spring precompression so the actuator is not applying force to the valve stem; this will allow for the safe removal of the stem connector.
- Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.
- Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

If you are installing the system in a valve that is still connected to an actuator, remove the actuator from the valve to provide sufficient space to install the packing assembly. If a spring-return actuator is used, it is possible that disconnecting the stem connector will allow the spring to force the actuator to the end of its travel. Be sure the actuator spring is resting on its travel stop. Refer to the appropriate valve and actuator instruction manuals to remove the actuator.

1. Carefully remove the old packing parts from the packing box. The surface condition of the valve stem and the packing box wall is critical in obtaining a good seal. If the valve stem needs to be replaced, or any other valve part, refer to the appropriate valve instruction manual for replacement procedures. Complete all valve maintenance before installing the ENVIRO-SEAL H2 Duplex high-pressure packing system into the bonnet.
2. Install new studs (key 200) and nuts (key 212) from the retrofit kit.

Note

Ensure that the packing box parts are assembled in the correct order. Packing parts cannot function properly if the Belleville springs or other packing parts are not stacked correctly.

3. Use figure 1 to ensure packing parts are assembled in the correct order. Install the packing parts into the packing box.
4. Install the spring pack assembly (key 217), which includes the attached springs, and packing flange (key 201), on the stem. Install the nuts (key 212) and hand-tighten them.

Note

Lubrication is required for the packing studs and nuts. Although it is important to properly lubricate the stud threads and internal nut threads, it is also important to properly lubricate the contacting face of the nut.

5. You will obtain maximum benefit from your ENVIRO-SEAL H2 Duplex high-pressure packing system when you tighten the packing flange nuts and compress the Belleville springs to their “target load”. The Belleville springs are designed for optimum performance when they are compressed to 85% of their maximum deflection, or nearly flat. (Maximum deflection is when the springs are 100% compressed, or completely flat.)

To obtain the target load of 85% compression of maximum deflection, perform the following:

- Tighten the packing flange nuts alternately and evenly, keeping the packing flange parallel with the valve flange, until the Belleville springs are compressed 100% (or completely flat).
 - Loosen each packing flange nut 1/4 turn (90° of rotation). The “target load” of 85% compression has now been reached.
6. The “springs flat” procedure described above is the preferred method of adjusting ENVIRO-SEAL H2 Duplex high-pressure packing. However, the torque values in table 1 can also be used as a guideline for 85% spring compression. These values are based on generous lubrication of the packing studs and nuts with anti-seize lubricant (key 213).

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Other Considerations

When retrofitting an existing packing system or repacking a valve with ENVIRO-SEAL H2 Duplex high-pressure packing that has been in service, check the condition of the packing bore after you have removed the packing. An easy method for cleaning debris and minor imperfections from the bore is to use a brake cylinder hone attached to an electric drill. The method will do a good job of cleaning the packing bore without changing the dimension of the bore.

If less than 20% of the surface area of the bore is pitted and if there are no pits deeper than 0.020 inch, then your packing should work as designed. This does not need to be an exact measurement; visual inspection is adequate. If the packing bore does not meet this criterion, however, you should replace the bonnet.

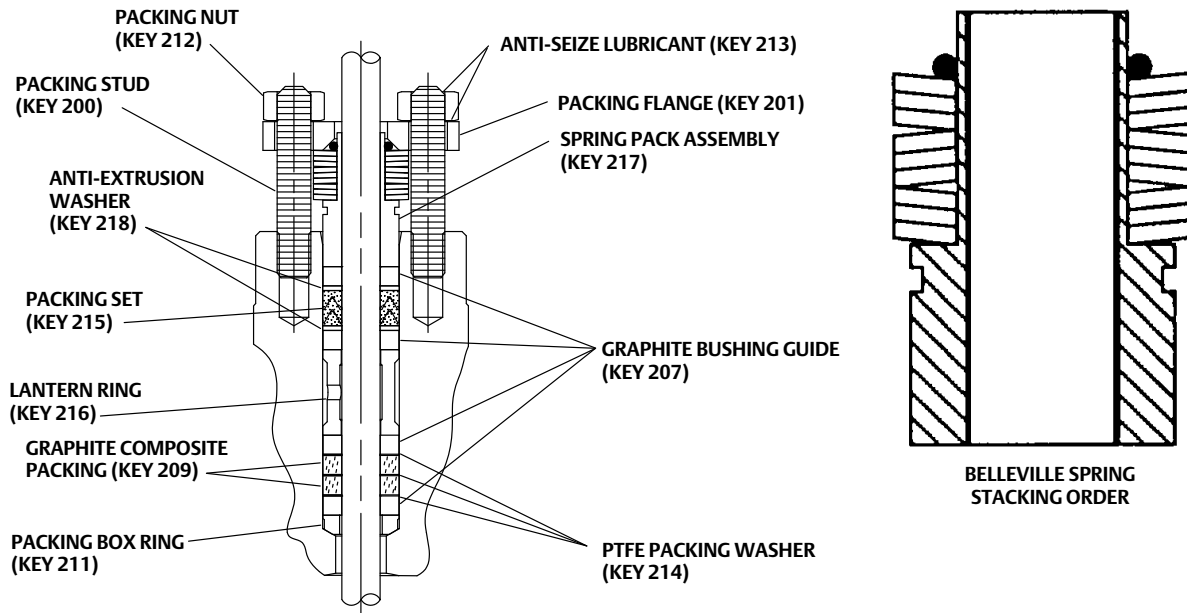
Table 1. ENVIRO-SEAL H2 Duplex High Pressure Packing Torque

STEM DIAMETER		TORQUE		
mm	Inch	N • m	Lbf • in	Lbf • ft
12.7	1/2	8.5	76	6.3
19.1	3/4	21	187	16
25.4	1	47	420	35
31.8	1-1/4	56	495	41

Table 2. Fisher easy-e, EH, and HP Kits

STEM DIAMETER		RETROFIT KITS
mm	Inch	
12.7	1/2	RPACKH2X012
19.1	3/4	RPACKH2X022
25.4	1	RPACKH2X032
31.8	1-1/4	RPACKH2X042

Figure 1. ENVIRO-SEAL H2 Duplex High-Pressure Packing Assembly



WARNING

Use only genuine Fisher replacement parts. Components that are not supplied by Emerson Process Management should not, under any circumstances, be used in any Fisher valve, because they may void your warranty, might adversely affect the performance of the valve, and could cause personal injury and property damage.

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