

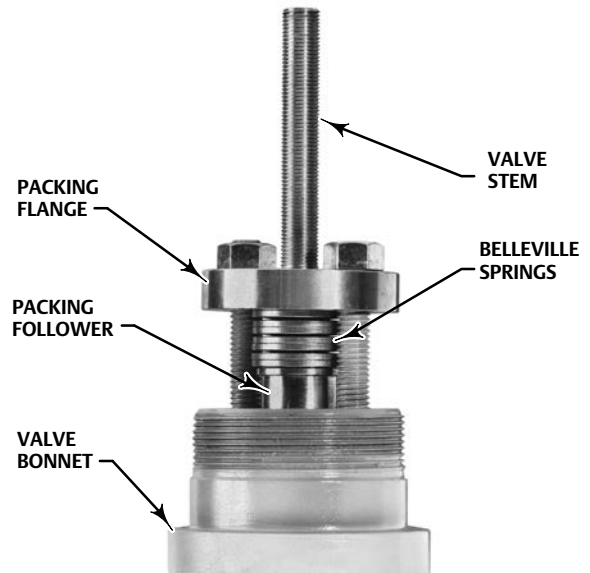
# Fisher™ ENVIRO-SEAL™ and HIGH-SEAL Packing Systems for Sliding-Stem Valves (Live-Loaded)

Fisher ENVIRO-SEAL and HIGH-SEAL live-loaded packing systems offer exceptional stem sealing capabilities. These systems easily install in your existing valves or can be purchased with new valves. ENVIRO-SEAL and HIGH-SEAL packing systems help seal your process to conserve valuable process fluid and protect the environment against the emission of hazardous or polluting fluids. The long life and reliability of these systems also reduce your maintenance costs and downtime.

For process control applications requiring compliance with mandated environmental protection regulations, the unique ENVIRO-SEAL packing system and, for hazardous service, the ENVIRO-SEAL bellows seal system are offered. These packing systems keep fugitive emission concentrations below the 100 ppm (parts per million) requirement set by the federal Environmental Protection Agency (EPA).

The HIGH-SEAL packing system (figure 1) provides excellent sealing at pressure/temperature ratings beyond ENVIRO-SEAL limits.

Both ENVIRO-SEAL and HIGH-SEAL packing systems feature live-loading and unique packing-ring arrangements for consistent, long-term sealing performance. The ENVIRO-SEAL packing system is available in double PTFE, graphite ULF, and duplex configurations. The HIGH-SEAL packing system is offered without PTFE washers (graphite composite), for nuclear applications where PTFE is prohibited, and with PTFE washers (graphite ULF) for all other applications.



WS814-1\*

Fisher easy-e™ Valve Bonnet with ENVIRO-SEAL Packing Installed

## Features

- **Compliance with the Clean Air Act--** The excellent stem sealing of the ENVIRO-SEAL packing system (figure 1) controls emissions to below the EPA minimum of 100 ppm (parts per million). ENVIRO-SEAL packing systems provide an excellent stem seal to help prevent the loss of process fluid.
- **Improved Service Life--** ENVIRO-SEAL and HIGH-SEAL packing systems, coupled with a very smooth stem surface and live-loading, give you long service life with very low maintenance. The live-loading provides a constant load over the life of the packing material. This greatly reduces or, in

many applications, helps to eliminate your need for packing box adjustment and maintenance. The installed packing system provides excellent 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.
- **Adaptable to Many Applications**-- ENVIRO-SEAL systems are available with PTFE, Graphite ULF, or Duplex packing for 9.5 through 31.8 mm (3/8 through 1-1/4 inch) diameter valve stems on CL125 through CL600 valves. HIGH-SEAL systems with Graphite ULF packing are available for 9.5 through 50.8 mm (3/8 through 2 inch) diameter valve stems on CL600 through CL2500 valves. Standard ENVIRO-SEAL PTFE packing systems can be used in vacuum service with packing rings in the standard orientation. It is not necessary to reverse the PTFE packing rings.

## Lubrication Recommendations for ENVIRO-SEAL Packing Systems

Do not lubricate ENVIRO-SEAL packing components or the bonnet bore prior to assembly. Lubrication is often used as part of standard valve assembly techniques. However, lubrication is not required for the ENVIRO-SEAL packing systems.

Lubrication is required for the packing studs and nuts. While 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.

## ENVIRO-SEAL Duplex and H2 Duplex Packing Systems

### ENVIRO-SEAL Duplex

ENVIRO-SEAL Duplex packing systems (figure 1) are available for Fisher sliding-stem valves with valve stem diameters ranging from 9.5 to 31.8 mm (3/8 to 1-1/4 inches). See table 2 for a list of applicable product types and stem diameters.

ENVIRO-SEAL Duplex packing systems were developed, utilizing the benefits of both PTFE and graphite components. These special packing systems provide the capability of graphite packing along with low friction advantages of PTFE packing. Thus, ENVIRO-SEAL Duplex packing systems provide a low friction, low emission, fire-tested solution for applications with process temperatures below 232°C (450°F). ENVIRO-SEAL Duplex packing systems were tested in accordance with API Standard 589, "Fire Test Evaluation of Valve Stem Packing", first edition.

### ENVIRO-SEAL H2 Duplex

ENVIRO-SEAL H2 Duplex packing systems (figure 1) were developed for high pressure applications requiring low emission performance at pressures up to 138 bar (2000 psig) and temperatures up to 149°C (300°F). ENVIRO-SEAL H2 Duplex packing systems are available for Fisher sliding-stem valves with valve stem diameters ranging from 12.7 to 31.8 mm (1/2 to 1-1/4 inches). See table 3 for a list of applicable product types and stem diameters.

**ENVIRO-SEAL Packing System Specifications**

**Applicable Sliding-Stem Valve Designs and Stem Diameters**

See tables 1, 2, and 3

**Pressures and Temperatures<sup>(1)</sup>**

See bulletin 59.1:062, Packing Selection Guidelines for Sliding-Stem Valves, [D101986X012](#).

**Construction Materials**

**PTFE Packing Systems:**

*Packing Ring and Lower Wiper:* PTFE V-ring<sup>(2)</sup>

*Male and Female Adaptor Rings:* Carbon-filled PTFE V-ring

*Optional Male and Female Adaptor Rings:* Glass-filled PTFE V-ring

**Graphite ULF Packing Systems:**

*Packing Rings:* Graphite

*Anti-Extrusion Washer:* Filled PTFE (not required for graphite packing)

*Lantern Ring:* S31600 (316 stainless steel) (not required for graphite packing)

*Packing Box Flange:* S31600

*Spring:* N07718

*Packing Follower:* S31600 lined with carbon-filled PTFE

*Packing Box Studs:* Strain-hardened 316 stainless steel

*Packing Box Nuts:* 316 stainless steel SA194 Grade 8M

1 The pressure/temperature limits in this bulletin, in the valve bulletin, and any applicable code or standard limitation, should not be exceeded.  
2. In vacuum service, it is not necessary to reverse the ENVIRO-SEAL PTFE packing rings.

**HIGH-SEAL Packing System Specifications**

**Applicable Sliding-Stem Valve Designs**

CL600: ■ easy-e<sup>(1)</sup>, ■ YD, and ■ YS

CL1500: ■ CAV4, ■ HPD, ■ HPS, and ■ HPT

CL2500: ■ EHD, ■ EHS, ■ EHT, ■ HPD, ■ HPS, and ■ HPT

**Applicable Stem Diameters**

**Millimeters:** ■ 9.5, ■ 12.7, ■ 19.1, ■ 25.4, ■ 31.8, and ■ 50.8

**Inches:** ■ 3/8, ■ 1/2, ■ 3/4, ■ 1, ■ 1-1/4, and ■ 2

**Maximum Pressures and Temperatures<sup>(2)</sup>**

See bulletin 59.1:062, Packing Selection Guidelines for Sliding-Stem Valves, [D101986X012](#).

**Construction Materials**

*Packing Rings:* Carbon/graphite composition, graphite, and zinc

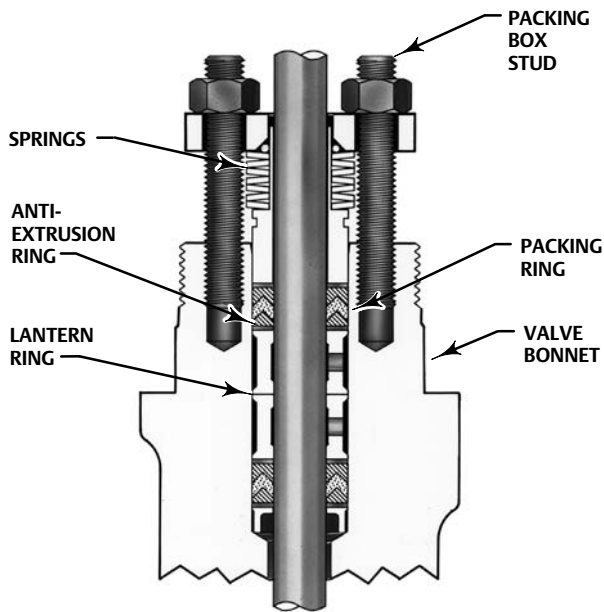
*Packing Box Bushing:* Graphite

*Packing Box Flange, Studs, and Nuts:* S31600 (316 stainless steel) (other materials are available on request)

*Springs:* ■ S17700 (17-7 stainless steel) or ■ N07718

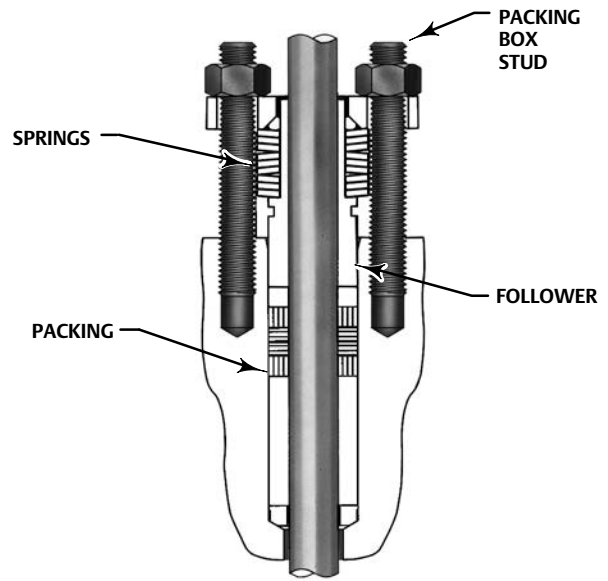
1. easy-e includes ED, ES, ET, EW, and EZ valves.  
2. The pressure/temperature limits in this bulletin, in the valve bulletin, and any applicable code or standard limitation, should not be exceeded.

Figure 1. Fisher ENVIRO-SEAL and HIGH-SEAL Packing Systems



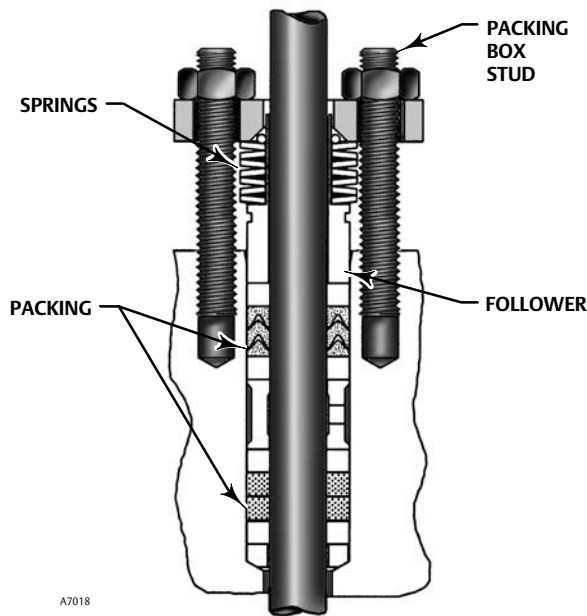
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TYPICAL ENVIRO-SEAL PACKING SYSTEM WITH PTFE PACKING



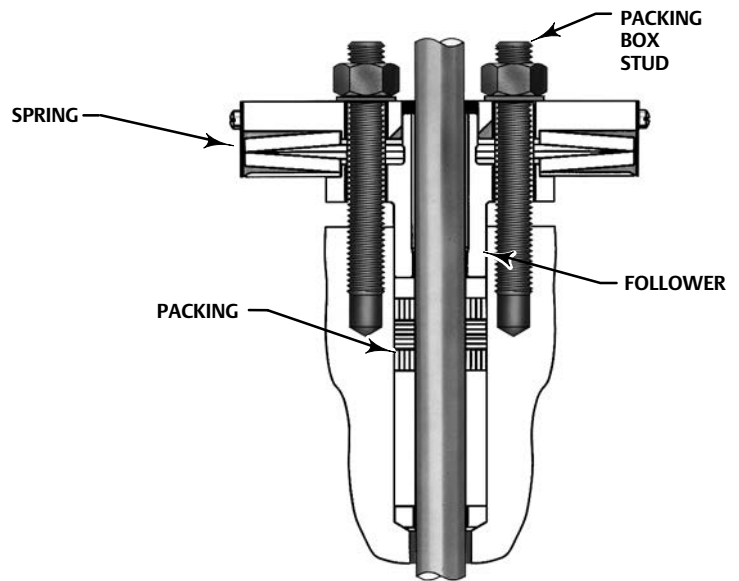
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TYPICAL ENVIRO-SEAL PACKING SYSTEM WITH GRAPHITE ULF PACKING



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TYPICAL ENVIRO-SEAL PACKING SYSTEM WITH DUPLEX PACKING



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TYPICAL HIGH-SEAL PACKING SYSTEM WITH GRAPHITE ULF PACKING

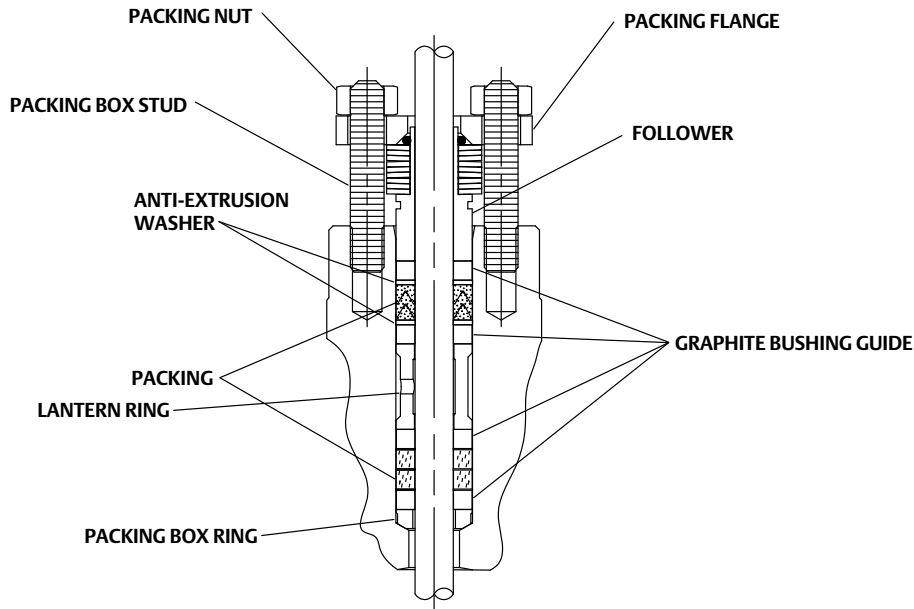
**Table 1. Sliding-Stem Product Availability for Fisher ENVIRO-SEAL PTFE and Graphite ULF Packing Systems**

VALVE TYPE	STEM DIAMETER, mm (INCHES)					STEM DIAMETER, mm		
	9.5 (3/8)	12.7 (1/2)	19.1 (3/4)	25.4 (1)	31.8 (1-1/4)	10 mm	14 mm	19 mm
A	X	X	X	X	X	---	---	---
CAV4	---	---	X	X	X	---	---	---
D	---	X	---	---	---	---	---	---
DA	---	X	---	---	---	---	---	---
DBQ	---	X	X	X	X	---	---	---
DBQ-NS	---	X	---	---	---	---	---	---
easy-e (ED, ES, ET, EZ, EW)	X	X	X	X	X	---	---	---
E-NS	---	X	---	---	---	---	---	---
EH	---	X	X	X	X	---	---	---
ENA	---	---	---	---	X	---	---	---
ET-C	---	X	X	X	---	---	---	---
EWT-C	---	X	X	X	---	---	---	---
EZ-C	X	X	X	---	---	---	---	---
FB	---	---	---	X	X	---	---	---
GX	---	---	---	---	---	X	X	X
GX 3-Way	---	---	---	---	---	X	X	---
HP	---	X	X	X	X	---	---	---
HS	---	X	X	X	---	---	---	---
SS-79	---	---	X	---	---	---	---	---
SS-83	---	---	X	X	X	---	---	---
SS-85	---	X	---	---	---	---	---	---
SS-95	---	X	---	---	---	---	---	---
SS-98	---	---	---	X	---	---	---	---
YD	X	X	X	X	X	---	---	---
YS	X	X	X	X	X	---	---	---

**Table 2. Sliding-Stem Product Availability for Fisher ENVIRO-SEAL Duplex Packing**

VALVE TYPE	STEM DIAMETER, mm (INCHES)				
	9.5 (3/8)	12.7 (1/2)	19.1 (3/4)	25.4 (1)	31.8 (1-1/4)
A	X	X	X	X	X
DBQ	---	X	X	X	X
easy-e (ED, ES, ET, EZ, EW)	X	X	X	X	X
EH	---	X	X	X	X
FB	---	---	---	X	X
HP	---	X	X	X	X
HS	---	X	X	X	---
SS-83	---	---	X	X	X
YD	X	X	X	X	X
YS	X	X	X	X	X

Figure 2. Fisher ENVIRO-SEAL H2 Duplex Packing System



**ENVIRO-SEAL H2 DUPLEX PACKING**

Table 3. Sliding-Stem Product Availability for Fisher ENVIRO-SEAL H2 Duplex Packing

VALVE TYPE	STEM DIAMETER, mm (INCHES)			
	12.7 (1/2)	19.1 (3/4)	25.4 (1)	31.8 (1-1/4)
A	X	X	X	X
DBQ	X	X	X	X
easy-e (ED, ES, ET, EZ, EW)	X	X	X	X
EH	X	X	X	X
FB	---	---	X	X
HP	X	X	X	X
HS	X	X	X	---
SS-83	---	X	X	X
YD	X	X	X	X
YS	X	X	X	X

Figure 3. Applications Guidelines Chart for 100 PPM Service

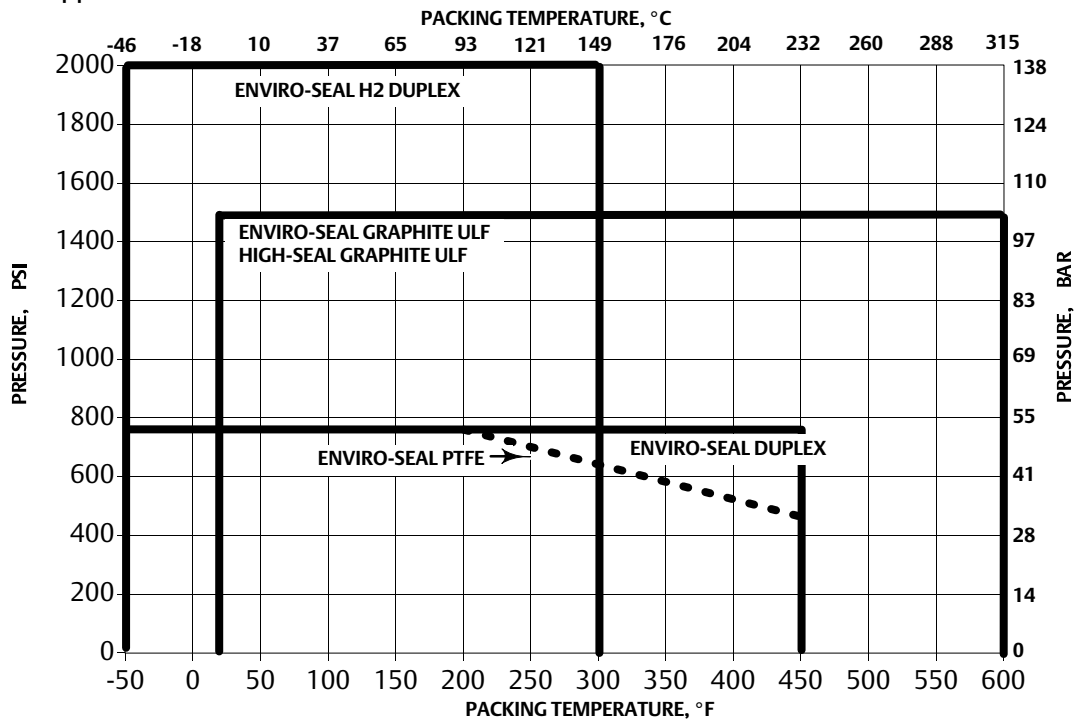
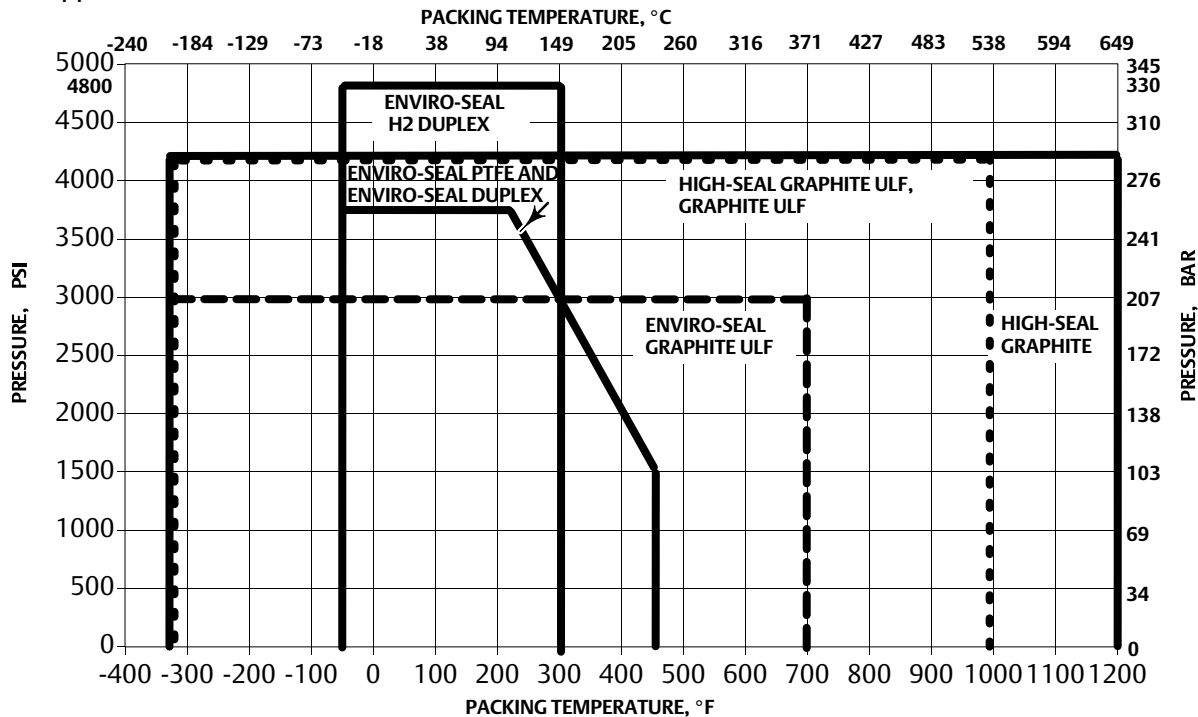


Figure 4. Applications Guidelines Chart for Nonenvironmental Service



## Ordering Information

When ordering, specify:

### For Existing Valves

1. Process fluid
2. Process fluid temperature
3. Maximum valve inlet pressures
4. Maximum valve pressure drops
5. Valve design (ED, YD, etc.), size, and pressure rating

6. Valve stem diameter and bonnet type (plain, extension, or bellows)

7. Refer to the specifications. Review the information under each specification. Write down your choice whenever a selection is to be made.

### For New Valves

1. Refer to the valve bulletin for ordering information.
2. Also refer to the specifications. Review the information under each specification and in the referenced tables; write down your choice whenever there is a selection to be made.

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Emerson Automation Solutions  
Marshalltown, Iowa 50158 USA  
Sorocaba, 18087 Brazil  
Cernay, 68700 France  
Dubai, United Arab Emirates  
Singapore 128461 Singapore

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