



**Agilent Technologies**

*Vacuum Products Division*

# ***Stainless Steel Valve***

*INSTRUCTION MANUAL*

Manual No. X3200-90000

Revision A

January 2013

# Stainless Steel Valve



# Warranty

Products manufactured by Seller are warranted against defects in materials and workmanship for twelve (12) months from date of shipment thereof to Customer, and Seller's liability under valid warranty claims is limited, at the option of Seller, to repair, to replace, or refund of an equitable portion of the purchase price of the Product. Items expendable in normal use are not covered by this warranty. All warranty replacement or repair of parts shall be limited to equipment malfunctions which, in the sole opinion of Seller, are due or traceable to defects in original materials or workmanship. All obligations of Seller under this warranty shall cease in the event of abuse, accident, alteration, misuse, or neglect of the equipment. In-warranty repaired or replaced parts are warranted only for the remaining unexpired portion of the original warranty period applicable to the repaired or replaced parts. After expiration of the applicable warranty period, Customer shall be charged at the then current prices for parts, labor, and transportation.

Reasonable care must be used to avoid hazards. Seller expressly disclaims responsibility for loss or damage caused by use of its Products other than in accordance with proper operating procedures.

Except as stated herein, Seller makes no warranty, express or implied (either in fact or by operation of law), statutory or otherwise; and, except as stated herein, Seller shall have no liability under any warranty, express or implied (either in fact or by operation of law), statutory or otherwise. Statements made by any person, including representatives of Seller, which are inconsistent or in conflict with the terms of this warranty shall not be binding upon Seller unless reduced to writing and approved by an officer of Seller.

## Warranty Replacement and Adjustment

All claims under warranty must be made promptly after occurrence of circumstances giving rise thereto, and must be received within the applicable warranty period by Seller or its authorized representative. Such claims should include the Product serial number, the date of shipment, and a full description of the circumstances giving rise to the claim. Before any Products are returned for repair and/or adjustment, written authorization from Seller or its authorized representative for the return and instructions as to how and where these Products should be returned must be obtained. Any Product returned to Seller for examination shall be prepaid via the means of transportation indicated as acceptable by Seller. Seller reserves the right to reject any warranty claim not promptly reported and any warranty claim on any item that has been altered or has been returned by non-acceptable means of transportation. When any Product is returned for examination and inspection, or for any other reason, Customer shall be responsible for all damage resulting from improper packing or handling, and for loss in transit, notwithstanding any defect or non-conformity in the Product. In all cases, Seller has the sole responsibility for determining the cause and nature of failure, and Seller's determination with regard thereto shall be final.

If it is found that Seller's Product has been returned without cause and is still serviceable, Customer will be notified and the Product returned at Customer's expense; in addition, a charge for testing and examination may be made on Products so returned.

### Voiding the Warranty

The valves described in this manual are designed to be used in a clean system. Minute particles such as a piece of lint can seriously affect the ability of the valve to produce a vacuum-tight seal. Therefore, opening the valve before it is to be used, storing it, or operating it in any environment other than as a clean system is considered by Agilent, Inc. as misuse of the equipment and will render the warranty null and void.

When a valve is used with toxic chemicals, or in an atmosphere that is dangerous to the health of humans, or is environmentally unsafe, it will be the responsibility of the Customer to have the valve cleaned by an independent agency skilled and approved in handling and cleaning contaminated materials before the valve will be accepted by Agilent, Inc. for repair.

Therefore, all details of the Agilent, Inc. "Request for Return Health and Safety Certification" (attached) must be complied with including the requirement that a notarized certificate from the cleaning agency certifying that the valve has been cleaned and is harmless to humans and environmentally safe before Agilent, Inc. will accept the returned valve. The certificate must accompany all other shipping papers, including the completed Request for Return Health and Safety Certification, and be attached securely to the outside of the box containing the valve. Improper and/or incomplete documentation will result in the unopened, unrepaired valve being returned to the Customer at the Customer's expense.

Agilent, Inc. will ship a replacement valve at no charge to assist the Customer and to minimize downtime. However, if the malfunctioning valve is not returned to Agilent, Inc. within 30 days and meeting all of the requirements of paragraphs 2 and 3 above, the Customer will be billed for the replacement valve at the then current rate plus shipping charges.

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## Stainless Steel Valve

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# Preface

## Hazard and Safety Information

This manual uses the following standard safety protocols:

**WARNING**



*The warning messages are for attracting the attention of the operator to a particular procedure or practice which, if not followed correctly, could lead to serious injury.*

**CAUTION**



*The caution messages are displayed before procedures, which if not followed, could cause damage to the equipment.*

**NOTE**



*The notes contain important information.*

This product must only be operated and maintained by trained personnel.

Before operating or servicing equipment, read and thoroughly understand all operation/maintenance manuals provided by Agilent. Be aware of the hazards associated with this equipment, know how to recognize potentially hazardous conditions, and how to avoid them. Read carefully and strictly observe all cautions and warnings. The consequences of unskilled, improper, or careless operation of the equipment can be serious.

In addition, consult local, state, and national agencies regarding specific requirements and regulations. Address any safety, operation, and/or maintenance questions to your nearest Agilent office.

## Contacting Agilent

In the United States, you can contact Agilent Customer Service at 1-800-882-7426. See the back cover of this manual for a listing of our sales and service offices.

Visit our web site at: <http://www.agilent.com/chem/vacuum>.

## Stainless Steel Valve

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# Section I

## Description

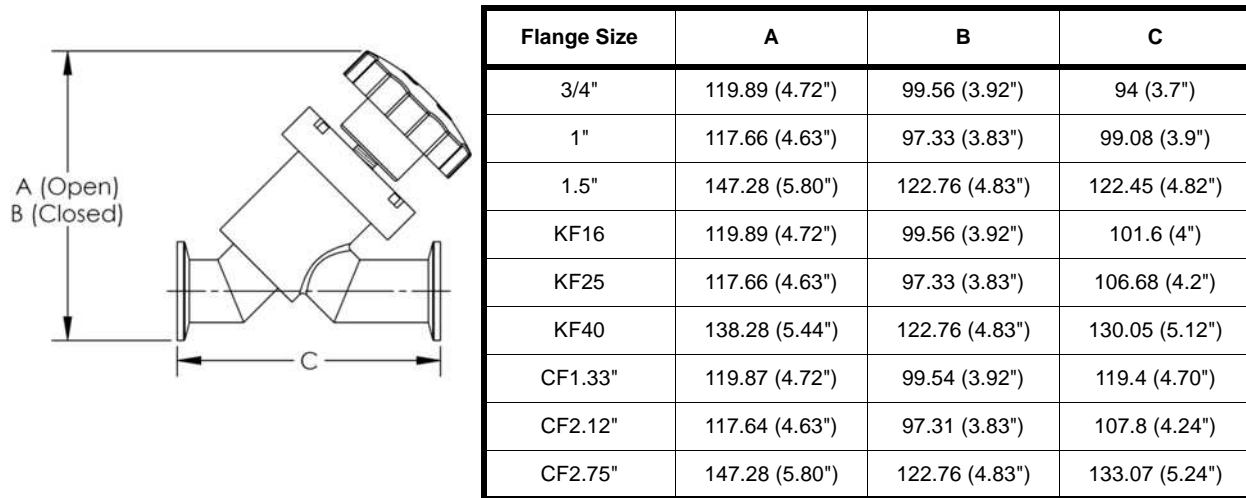
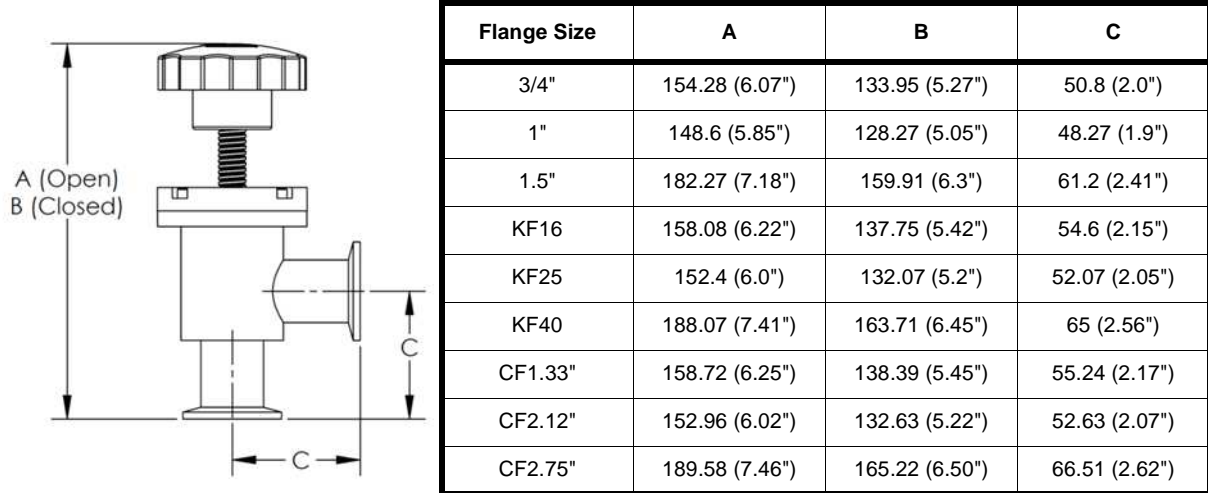
### General

The Agilent stainless steel valve, available in right angle and in-line designs, is a maintenance-free bellows-sealed valve. It is designed for use in roughing and high-vacuum applications where reliable sealing, bakeability, and long cycle life are required. The valve operates reliably at pressures from atmosphere to below  $1 \times 10^{-8}$  mbar and, in the fully open position, its conductance is equivalent to that of an elbow.

### Actuators

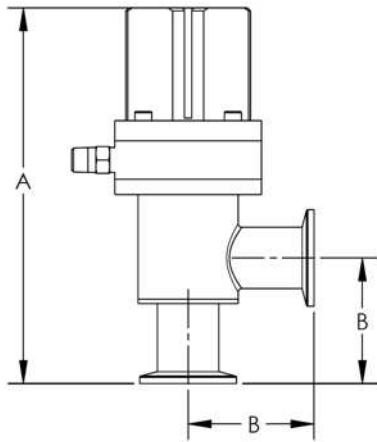
The valves are available in both manually- and pneumatically-operated versions. The manual actuator, designed for hand operation, uses a double-lead stem screw which fully opens the valve. The pneumatic actuator, designed for remote operation, is a single-acting cylinder, with a closing spring. A position indicator is available as an option for the pneumatically-operated versions, which mounts conveniently to the side of the air cylinder. Both actuator versions utilize a stainless steel, welded bellows which exhibits extremely long cycle life.

## Stainless Steel Valve

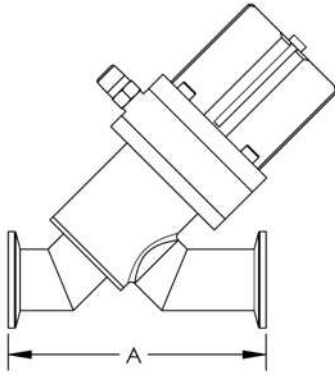


**Figure 1 Manually Operated by Flange Size Dimensions**

## Stainless Steel Valve



Flange Size	A	B
3/4"	157.58 (6.25")	50.8 (2")
1"	151.9 (5.98")	48.27 (1.9")
1.5"	172.56 (6.79")	61.2 (2.41")
KF16	157.58 (6.20")	50.8 (2")
KF25	155.7 (6.13")	52.07 (2.05")
KF40	176.36 (6.94")	65 (2.56")
CF1.33"	162.02 (6.38")	55.25 (2.18")
CF2.12"	156.29 (6.15")	52.63 (2.07")
CF2.75"	177.87 (7.00")	66.51 (2.62")



Flange Size	A
3/4"	94 (3.7")
1"	99.08 (3.9")
1.5"	122.45 (4.82")
KF16	101.6 (4")
KF25	106.67 (4.2")
KF40	130.1 (5.12")
CF1.33"	119.41 (4.70")
CF2.12"	107.79 (4.24")
CF2.75"	133.07 (5.24")

**Figure 2 Air Operated by Flange Size Dimensions**

## Stainless Steel Valve

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### Specifications

**Table 1 Physical and Operational Specifications**

Specification	Definition
Pressure Range	Atmosphere to below $1 \times 10^{-8}$ mbar ( $7.5 \times 10^{-9}$ Torr)
Leak Rate	Less than $1 \times 10^{-9}$ std cc/second He
Service Life	1.5 million cycles (minimum)
Conductance	<input type="checkbox"/> $\frac{3}{4}$ " Right angle valve: 6 liters/sec <input type="checkbox"/> $\frac{3}{4}$ " In-line valve: 5 liters/sec <input type="checkbox"/> 1" Right angle valve: 15 liters/sec <input type="checkbox"/> 1" In-line valve: 13 liters/sec <input type="checkbox"/> 1 $\frac{1}{2}$ " Right angle valve: 48 liters/sec <input type="checkbox"/> 1 $\frac{1}{2}$ " In-line valve: 44 liters/sec
Bakeability	<input type="checkbox"/> Valve open: 200°C (392°F) <input type="checkbox"/> Valve closed: 150°C (302°F) <input type="checkbox"/> w/Position Indicator (A/O optional): 70°C (158°F) <input type="checkbox"/> w/Solenoid (A/O optional): 60°C (140°F)
Materials	<input type="checkbox"/> Valve body: 304L stainless steel <input type="checkbox"/> Bellows: AM-350 <input type="checkbox"/> Bellows flange: 304 stainless steel <input type="checkbox"/> Seal plate: 304 stainless steel <input type="checkbox"/> Bonnet gasket: Viton (V747) <input type="checkbox"/> O-rings: Viton (V747)
Mounting position	Valve can be mounted in any orientation and sealed against atmospheric pressure at either port

### Stainless Steel Tube Valve: Variant Configurator Ordering Instructions

Table 2 lists valve ordering instructions for Agilent Stainless Steel Tube valves using a configurator. Only two part numbers are needed; *X3200A* for angle valves and *X3201A* for in-line valves. Each option need only be requested in the order (option numbers are shown for reference only, and are not ordering part numbers). The solenoids and position indicators can also be ordered if needed for the air operated valves only. If ordering a solenoid, choose one of either 24 VDC, 120 VAC, or 220 VAC for the valve. The position indicator can be chosen also for any air operated valve, with or without a solenoid. The solenoids and position indicators are shipped *loose* with the valves, so they can be installed as per “Valve Accessories Assembly” on page 19.

#### *Ordering Instructions:*

- ❑ Use only the *Product Number* list in the *Product Number* column.
- ❑ Numbers in the *Option Number* column are for reference only; use *Short Description* for ordering options.

Example Order (for a right angle, 1-1/3" pneumatic valve with position indicator for the valve, and a spare position indicator):

#### Item 1:

- ❑ X3200A: Agilent Stainless steel tube valves, right angle
- ❑ Option: Pneumatically operated 1-1/3" conflat (021)
- ❑ Option: Position indicator with LED light (060)

#### Item 2:

- ❑ X3200-63000: Position indicator (as a separate spare part)

## Stainless Steel Valve

**Table 2 Service Part Numbers**

<b>Product or Option</b>	<b>Product Number</b>	<b>Option Number</b>	<b>Short Description</b>	<b>Ordering Instructions</b>
Product	X3200A		Stainless Steel Tube Right Angle Valve	
Option		001	Hand Operated, ConFlat Flange, 1 1/3"	No other options available
Option		002	Hand Operated, ConFlat Flange, 2 1/8"	No other options available
Option		003	Hand Operated, ConFlat Flange, 2 3/4"	No other options available
Option		004	Hand Operated, Tube End, 3/4"	No other options available
Option		005	Hand Operated, Tube End, 1"	No other options available
Option		006	Hand Operated, Tube End, 1 1/2"	No other options available
Option		007	Hand Operated, NW Flange, 16	No other options available
Option		008	Hand Operated, NW Flange, 25	No other options available
Option		009	Hand Operated, NW Flange, 40	No other options available
Option		021	Air Operated, ConFlat Flange, 1 1/3"	Choose either no options, option 50, 51, or 52 and/or 60
Option		022	Air Operated, ConFlat Flange, 2 1/8"	Choose either no options, option 50, 51, or 52 and/or 60
Option		023	Air Operated, ConFlat Flange, 2 3/4"	Choose either no options, option 50, 51, or 52 and/or 60
Option		024	Air Operated, Tube End, 3/4"	Choose either no options, option 50, 51, or 52 and/or 60
Option		025	Air Operated, Tube End, 1"	Choose either no options, option 50, 51, or 52 and/or 60
Option		026	Air Operated, Tube End, 1 1/2"	Choose either no options, option 50, 51, or 52 and/or 60
Option		027	Air Operated, NW Flange, 16	Choose either no options, option 50, 51, or 52 and/or 60
Option		028	Air Operated, NW Flange, 25	Choose either no options, option 50, 51, or 52 and/or 60
Option		029	Air Operated, NW Flange, 40	Choose either no options, option 50, 51, or 52 and/or 60
Product	X3201A		Stainless Steel Tube In-Line Valve	
Option		001	Hand Operated, ConFlat Flange, 1 1/3"	No other options available
Option		002	Hand Operated, ConFlat Flange, 2 1/8"	No other options available
Option		003	Hand Operated, ConFlat Flange, 2 3/4"	No other options available

## Stainless Steel Valve

**Table 2 Service Part Numbers (Continued)**

<b>Product or Option</b>	<b>Product Number</b>	<b>Option Number</b>	<b>Short Description</b>	<b>Ordering Instructions</b>
Option		004	Hand Operated, Tube End, 3/4"	No other options available
Option		005	Hand Operated, Tube End, 1"	No other options available
Option		006	Hand Operated, Tube End, 1 1/2"	No other options available
Option		007	Hand Operated, NW Flange, 16	No other options available
Option		008	Hand Operated, NW Flange, 25	No other options available
Option		009	Hand Operated, NW Flange, 40	No other options available
Option		021	Air Operated, ConFlat Flange, 1 1/3"	Choose either no options, option 50, 51, or 52 and/or 60
Option		022	Air Operated, ConFlat Flange, 2 1/8"	Choose either no options, option 50, 51, or 52 and/or 60
Option		023	Air Operated, ConFlat Flange, 2 3/4"	Choose either no options, option 50, 51, or 52 and/or 60
Option		024	Air Operated, Tube End, 3/4"	Choose either no options, option 50, 51, or 52 and/or 60
Option		025	Air Operated, Tube End, 1"	Choose either no options, option 50, 51, or 52 and/or 60
Option		026	Air Operated, Tube End, 1 1/2"	Choose either no options, option 50, 51, or 52 and/or 60
Option		027	Air Operated, NW Flange, 16	Choose either no options, option 50, 51, or 52 and/or 60
Option		028	Air Operated, NW Flange, 25	Choose either no options, option 50, 51, or 52 and/or 60
Option		029	Air Operated, NW Flange, 40	Choose either no options, option 50, 51, or 52 and/or 60
Option		050	Solenoid DC 24 V	Air Operated valve solenoid: choose only one for any air operated valve
Option		051	Solenoid 110 VAC	Air Operated valve solenoid: choose only one for any air operated valve
Option		052	Solenoid 220 VAC	Air Operated valve solenoid: choose only one for any air operated valve
Option		060	Position Indicator with LED light	

## Stainless Steel Valve

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**Table 2 Service Part Numbers (Continued)**

<b>Product or Option</b>	<b>Product Number</b>	<b>Option Number</b>	<b>Short Description</b>	<b>Ordering Instructions</b>
Product	X3200-63024		Solenoid DC 24 V	Ordered separately as a spare part
Product	X3200-63110		Solenoid 110 VAC	Ordered separately as a spare part
Product	X3200-63220		Solenoid 220 VAC	Ordered separately as a spare part
Product	X3200-63000		Position Indicator with LED light	Ordered separately as a spare part



## Section II

### Assembly and Installation

#### General

The following assembly and installation instructions apply to both the manual and pneumatic valves, unless otherwise indicated.

#### Storage

Valves are cleaned for ultrahigh vacuum service prior to shipping. To prevent contamination, keep them in their protective packages until they are required for installation. Prevent foreign particles that could interfere with sealing from entering the valves.

#### Installation in a Vacuum System



*Wear clean, lint-free gloves when handling the valve vacuum surfaces.*

#### ConFlat Flanges

To install a valve with ConFlat<sup>®</sup> flanges:

1. Place a new copper gasket between the mating flanges of the valve and the vacuum system. The gasket fits into the steps of both flanges to ensure axial alignment.
2. Insert mounting screws through both flanges and lubricate the exposed threads with high-pressure, high-temperature lubricant (Fel-Pro C-100 or equivalent). Also lubricate the surface of the nuts making contact with the flange.
3. Tighten each nut to partially close the gap between the flange faces.
4. Continue to tighten the nuts sequentially with a box or socket wrench until the flange faces meet. Recommended seating torque for the mounting screws is 123 inch-pounds.

#### KF Flanges

To install a valve with Klamp<sup>®</sup> (KF) flanges:

1. Lightly lubricate a clean O-ring with Apiezon L vacuum lubricant (Order Agilent Part No. 5000-6954-00-004).
2. Place a centering ring and an O-ring between the mating flanges of the valve and the vacuum system.

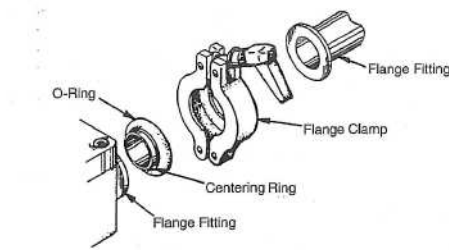
## Stainless Steel Valve

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3. Assemble the Klamp flange coupling around the flanges and tighten the wing nut or ratchet firmly to ensure proper compression of the O-ring seal.
4. Tube-type valves are designed to be welded directly into the vacuum system without O-rings or clamps.

### Air Connection - Pneumatic Valves

Pneumatic valves use a 1/8 NPT inlet fitting and require 60 to 80 psig air pressure to operate. Install a filter and lubricator in the air inlet line.



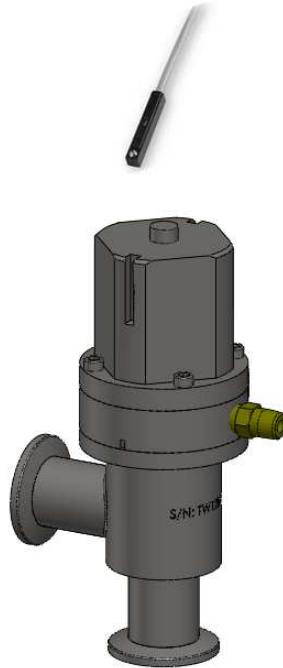
**Figure 3 Installing the Valve in a Vacuum System**

### Solenoid/Air Line Connection - Pneumatic Valves

Where ambient temperatures do not exceed 60 °C, the solenoid control valve (optional) can be mounted directly to the valve air cylinder using 1/8" NPT fittings. If bakeout temperatures above 60 °C are intended, the solenoid control valve must be mounted remotely. Use a suitable air line material that will withstand normal operating pressures (60 to 80 psig) and intended bakeout temperatures (200 °C maximum).

## Valve Accessories Assembly

### Installing the Position Indicator



**Figure 4 Position Indicator**

To install the position indicator:

1. Insert into the groove positioned firmly against the bottom surface.
2. Tighten the miniature screw to lock in place. Refer to Table 3 for electrical specifications and Figure 5 on page 20 for a connection diagram.

**Table 3 Position Indicator Electrical Specifications**

Item	Description
Circuits	Two-Wire Type (Reed)
Switching Logic	SPST, Normally Open
Maximum Voltage	5 - 240 VDC/AC
Switching Current	100 mA maximum
Contact Rating	10 Watt maximum (Never exceed rating, permanent damage to sensor will occur)
LED color	Green LED
Temperature	0 °C - 60°C

## Stainless Steel Valve

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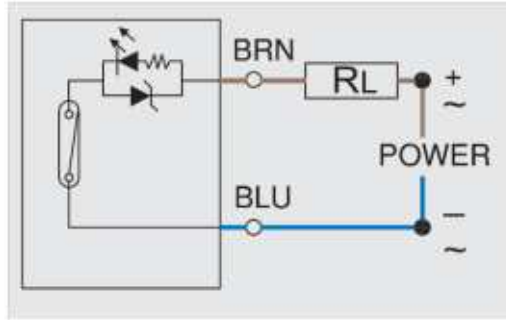


Figure 5 Positioner Connection Diagram

### Solenoid/Air Line Connection - Pneumatic Valves



*If bake out temperatures exceeding 60 °C, are intended, the solenoid control valve must be mounted remotely. Use a suitable airline material that can withstand normal operating pressures (60 to 80 psig) and bakeout temperatures (200 °C maximum).*

### Solenoid/Electrical Connections - Pneumatic Valves

The solenoid-controlled valve (optional) is available in three voltage configurations:

- ❑ 110/120 V, 50/60 Hz
- ❑ 220/240 V, 50/60 Hz
- ❑ 24 VDC

The leads protruding from the coil are No. 20 AWG, 12" long.

## Section III

### Operation

#### Manually-Operated Valves

The manual valve operates by means of a hand-actuated knob. Turn the knob in a clockwise direction to close the valve. To obtain a good vacuum seal:

1. Turn the knob clockwise until a slight resistance is felt.
2. Firmly torque the knob approximately 1/4 turn. This properly compresses the main O-ring seal.

To open the valve:

- Turn the knob counterclockwise until the valve is fully open to ensure maximum conductance.

#### Pneumatically-Operated Valves

Pneumatic valves are spring-closed, air-opened valves. When electric power is supplied to the solenoid-operated valve, air is supplied to the cylinder and the valve opens. When electric power is removed, the valve closes.

### Maintenance Bellows Replacement

To order a bellow replacement kit refer to table Table 4 for ordering part number. Each kit comes with a replacement bellow, a new bonnet plate O-ring and a new seal plate O-ring.

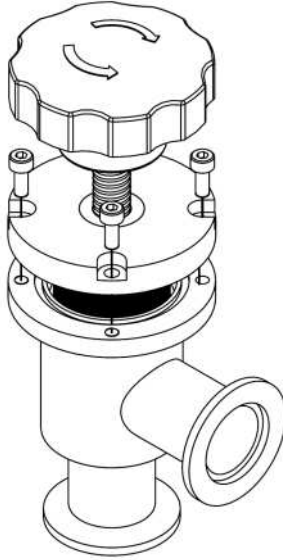
**Table 4 Bellows Replacement Parts Numbers**

Part Number	Valve Size	Description
X3200-67000	KF16/25 3/4" and 1"	Bellow Replacement Kit (Includes Qty:1 of AM350 Bellows, Viton Bonnet Plate and Seal Plate O-Rings)
X3200-67001	KF40 1_1/2"	Bellow Replacement Kit (Includes Qty:1 of AM350 Bellows, Viton Bonnet Plate and Seal Plate O-Rings)

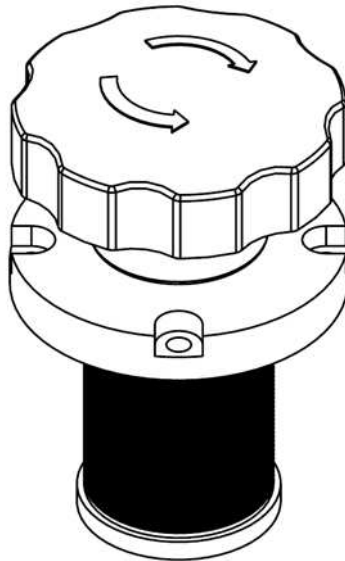
## Stainless Steel Valve

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1. Remove the four socket head cap screws (Figure 6) and carefully remove the trim assembly (Figure 7) from the valve body.



**Figure 6 Screw Removal**



**Figure 7 Trim Assembly**

**NOTE**

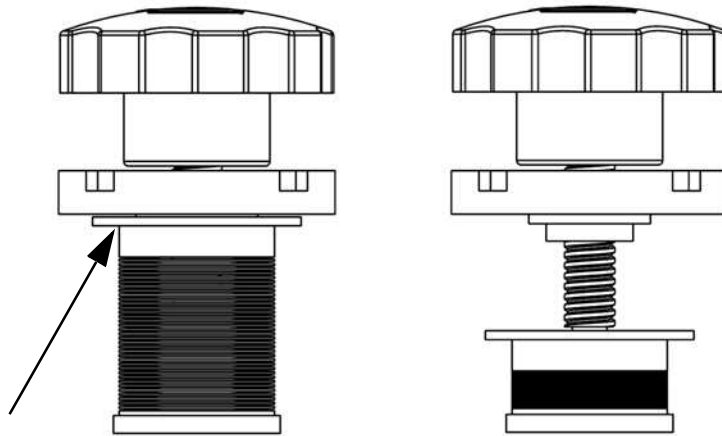


*For the air operated valve (not shown), maintain compression on the cylinder head while removing screws. Be careful to avoid dropping the spring when releasing compression to remove the trim assembly.*

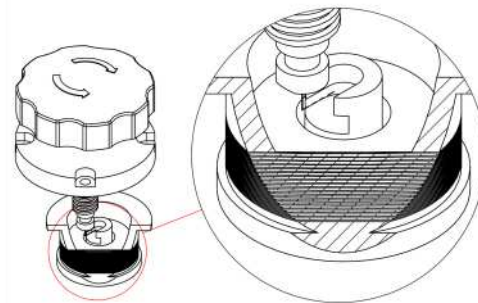
## Stainless Steel Valve

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2. Remove the bellow from the trim assembly by:
  - a. Fully compress the bellow (Figure 8) and disengage the valve stem (Figure 9) from the seal plate notch. Use caution when handling parts to avoid scratching any O-ring sealing surface. These surfaces are identified in (Figure 8).
  - b. Removing the bonnet plate and seal plate O-rings from the valve body and bellow respectively and discard.



**Figure 8 Bellow Compression**

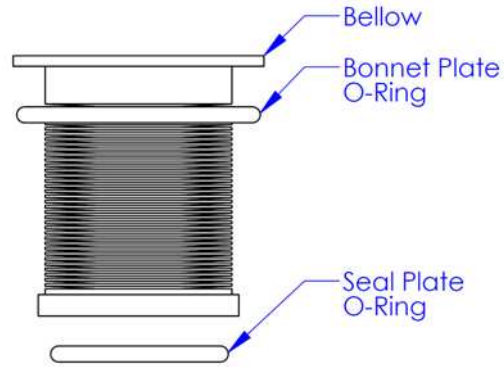


**Figure 9 Valve Stem and Bellow Removal**

3. Carefully inspect the O-ring grooves and bellow sealing surface for scratches (Figure 10).

## Stainless Steel Valve

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**Figure 10 Bellow Replacement Kit**

4. Lightly lubricate the new O-rings with Krytox<sup>®</sup> LVP or equivalent.
5. Install the replacement O-rings.
6. Re-assemble the trim assembly by fully compressing the replacement bellows to expose the seal plate notch and insert the valve stem (Figure 9).
7. Release bellows compression.
8. Re-install the trim assembly and secure with socket head cap screws.



## Vacuum Products Division Instructions for returning products

Dear Customer:

Please follow these instructions whenever one of our products needs to be returned.

- 1) Complete the attached Request for Return form and send it to Agilent Technologies (see below), taking particular care to identify all products that have pumped or been exposed to any toxic or hazardous materials.
- 2) After evaluating the information, Agilent Technologies will provide you with a Return Authorization (RA) number via email or fax, as requested.  
**Note:** Depending on the type of return, a Purchase Order may be required at the time the Request for Return is submitted. We will quote any necessary services (evaluation, repair, special cleaning, eg).
- 3) **Important steps for the shipment of returning product:**
  - Remove all accessories from the core product (e.g. inlet screens, vent valves).
  - Prior to shipment, drain any oils or other liquids, purge or flush all gasses, and wipe off any excess residue.
  - If ordering an Advance Exchange product, **please use the packaging from the Advance Exchange to return the defective product.**
  - Seal the product in a plastic bag, and package product carefully to avoid damage in transit. You are responsible for loss or damage in transit.
  - Agilent Technologies is not responsible for returning customer provided packaging or containers.
  - **Clearly label package with RA number.** Using the shipping label provided will ensure the proper address and RA number are on the package. Packages shipped to Agilent without a RA clearly written on the outside cannot be accepted and will be returned.
- 4) Return only products for which the RA was issued.
- 5) **Product being returned under a RA must be received within 15 business days.**
- 6) **Ship to the location specified on the printable label, which will be sent, along with the RA number, as soon as we have received all of the required information.** Customer is responsible for freight charges on returning product.
- 7) Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.

RETURN THE COMPLETED **REQUEST FOR RETURN** FORM TO YOUR NEAREST LOCATION:

**EUROPE:**

Fax: 00 39 011 9979 330  
Fax Free: 00 800 345 345 00  
Toll Free: 00 800 234 234 00  
[vpt-customer@agilent.com](mailto:vpt-customer@agilent.com)

**NORTH AMERICA:**

Fax: 1 781 860 9252  
Toll Free: 800 882 7426, Option 3  
[vpl-ra@agilent.com](mailto:vpl-ra@agilent.com)

**PACIFIC RIM:**

please visit our website for individual office information  
<http://www.agilent.com>



Please read important policy information on Page 3 that applies to all returns.

1) CUSTOMER INFORMATION

Form with fields: Company Name, Contact Name, Tel, Email, Fax, Customer Ship To, Customer Bill To, Europe only: VAT reg. Number, USA/Canada only: Taxable, Non-taxable

2) PRODUCT IDENTIFICATION

Table with 4 columns: Product Description, Agilent P/N, Agilent S/N, Original Purchasing Reference

3) TYPE OF RETURN (Choose one from each row and supply Purchase Order if requesting a billable service)

- 3A. [ ] Non-Billable [ ] Billable -> New PO # (hard copy must be submitted with this form):
3B. [ ] Exchange [ ] Repair [ ] Upgrade [ ] Consignment/Demo [ ] Calibration [ ] Evaluation [ ] Return for Credit

4) HEALTH and SAFETY CERTIFICATION

AGILENT TECHNOLOGIES CANNOT ACCEPT ANY PRODUCTS CONTAMINATED WITH BIOLOGICAL OR EXPLOSIVE HAZARDS, RADIOACTIVE MATERIAL, OR MERCURY AT ITS FACILITY. Call Agilent Technologies to discuss alternatives if this requirement presents a problem. The equipment listed above (check one): [ ] HAS NOT pumped or been exposed to any toxic or hazardous materials. OR [ ] HAS pumped or been exposed to the following toxic or hazardous materials. If this box is checked, the following information must also be filled out. Check boxes for all materials to which product(s) pumped or was exposed: [ ] Toxic [ ] Corrosive [ ] Reactive [ ] Flammable [ ] Explosive [ ] Biological [ ] Radioactive List all toxic/hazardous materials. Include product name, chemical name, and chemical symbol or formula: NOTE: If a product is received at Agilent which is contaminated with a toxic or hazardous material that was not disclosed, the customer will be held responsible for all costs incurred to ensure the safe handling of the product, and is liable for any harm or injury to Agilent employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product. Print Name: Authorized Signature: Date:

5) FAILURE INFORMATION:

Failure Mode (REQUIRED FIELD. See next page for suggestions of failure terms): Detailed Description of Malfunction: (Please provide the error message) Application (system and model):

I understand and agree to the terms of Section 6, Page 3/3. Print Name: Authorized Signature: Date:



**Vacuum Products Division  
Request for Return Form  
(Health and Safety Certification)**

Please use these Failure Mode to describe the concern about the product on Page 2.

**TURBO PUMPS and TURBO CONTROLLERS**

APPARENT DEFECT/MALFUNCTION	POSITION	PARAMETERS
- Does not start - Does not spin freely - Does not reach full speed - Mechanical Contact - Cooling defective - Noise - Vibrations -Leak -Overtemperature -Clogging	- Vertical -Horizontal -Upside-down -Other: .....	Power:                      Rotational Speed: Current:                    Inlet Pressure: Temp 1:                     Foreline Pressure: Temp 2:                     Purge flow: OPERATING TIME:

**ION PUMPS/CONTROLLERS**

- Bad feedthrough - Vacuum leak - Error code on display - Poor vacuum - High voltage problem - Other
---

**VALVES/COMPONENTS**

- Main seal leak - Solenoid failure - Damaged sealing area - Bellows leak - Damaged flange -Other
--

**LEAK DETECTORS**

- Cannot calibrate - Vacuum system unstable - Failed to start -No zero/high background - Cannot reach test mode - Other
--

**INSTRUMENTS**

- Gauge tube not working - Communication failure - Error code on display - Display problem - Degas not working - Other
---

**SCROLL AND ROTARY VANE PUMPS**

- Pump doesn't start - Doesn't reach vacuum - Pump seized - Noisy pump (describe) - Over temperature - Other
---

**DIFFUSION PUMPS**

- Heater failure - Doesn't reach vacuum - Vacuum leak - Electrical problem - Cooling coil damage - Other
---

Section 6) **ADDITIONAL TERMS**

**Please read the terms and conditions below as they apply to all returns and are in addition to the Agilent Technologies Vacuum Product Division – Products and Services Terms of Sale.**

- Customer is responsible for the freight charges for the returning product. Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.
- Customers receiving an Advance Exchange product agree to return the defective, rebuildable part to Agilent Technologies **within 15 business days**. Failure to do so, or returning a non-rebuildable part (crashed), will result in an invoice for the non-returned/non-rebuildable part.
- Returns for credit toward the purchase of new or refurbished Products are subject to prior Agilent approval and may incur a restocking fee. Please reference the original purchase order number.
- Units returned for evaluation will be evaluated, and a quote for repair will be issued. If you choose to have the unit repaired, the cost of the evaluation will be deducted from the final repair pricing. A Purchase Order for the final repair price should be issued within 3 weeks of quotation date. Units without a Purchase Order for repair will be returned to the customer, and the evaluation fee will be invoiced.
- A Special Cleaning fee will apply to all exposed products per Section 4 of this document.
- If requesting a calibration service, units must be functionally capable of being calibrated.

## Stainless Steel Valve

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# Service & Support

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