



Agilent Technologies

Vacuum Products Division

Agilent Valves by VAT

UHV All-Metal Valves

Series 54

Instruction Manual

Part No. UserManAVbVSeries54

Rev. A

December 2013



Agilent Valves by VAT

Introduction to the

Aluminum Gate Valves Series 54

Thank you for choosing Agilent Valves by VAT. With the combination of these two well-known names in the Vacuum industry, we are confident that Agilent Valves by VAT will meet your most demanding vacuum control needs.

The valves are manually operated with a standard hex wrench, so no torque wrench is required. Thanks to the *hard-on-hard* metal seals, these valves can be operated thousands of times before requiring maintenance.

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, unrepared 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.

Imprint

Seller Agilent Technologies, Inc.

www.agilent.com

See back cover for contact information

Manufacturer VAT Vakuumventile AG, CH-9469 Haag, Switzerland



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Vacuum Equipment and Cleanliness

	 CAUTION
	<p>Do not use silicone oil or silicone grease.</p> <p>Use powder-free butyl or polycarbonate gloves to prevent skin oils from getting on vacuum surfaces.</p>

Contacting Agilent

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

Visit our website at <http://www.chem.agilent.com/en-US/Products/Instruments/vacuum/pages/default.aspx>

Contents

Table of Contents

Warranty	4
Warranty Replacement and Adjustment	4
Voiding the Warranty	5
Vacuum Equipment and Cleanliness	7
Contacting Agilent	7
1.0 Description of product	10
1.1 Identification of product	10
1.2 Use of product	10
1.3 Important information	10
1.4 Technical data	11
2.0 Safety	12
2.1 Compulsory reading material	12
2.2 Danger levels	12
2.3 Personnel qualifications	13
2.4 Safety labels	13
3.0 Design and Function	13
3.1 Design	13
3.2 Function	14
4.0 Installation	15
4.1 Unpacking	15
4.2 Installation into the system	16
4.2.1 Preparation for installation	16
4.2.2 Mounting to the system	18
5.0 Operation	19
5.1 Normal operation	19
5.2 Operation under increased temperature	19
5.3 Trouble shooting	20
6.0 Maintenance	20
6.1 Maintenance intervals	20

- 7.0 Repairs 21
 - 7.1 Replacement of dynamic seal – FLEX VATRING 22
- 8.0 Dismounting and Storage 26
 - 8.1 Dismounting 26
 - 8.2 Storage 26
- 9.0 Packaging and Transport 27
- 10.0 Valve Ordering Information..... 28

1.0 Description of product

1.1 Identification of product

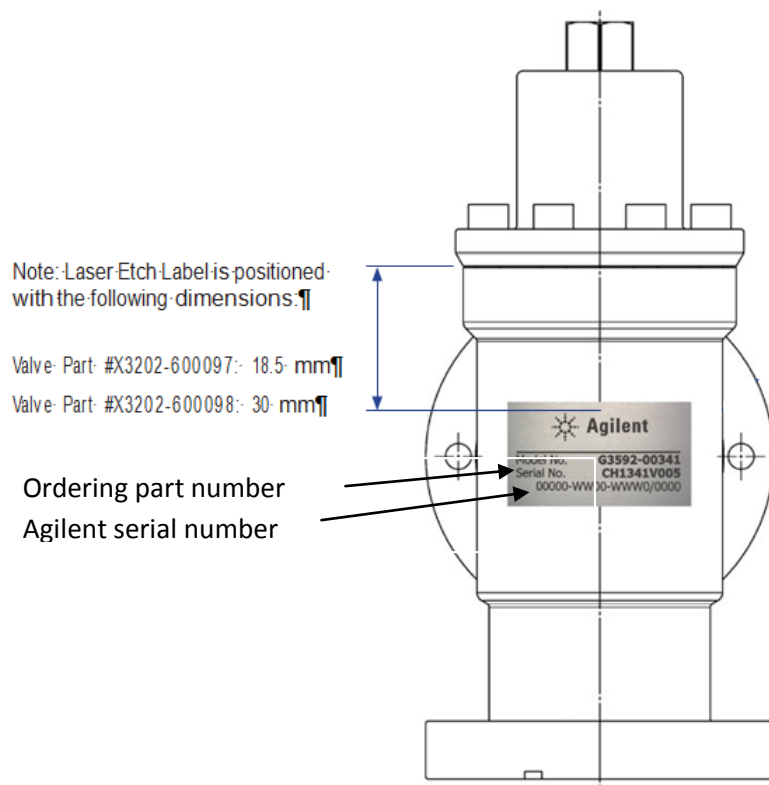


Figure 1-1

1.2 Use of product

Use product for clean and dry vacuum applications only.

1.3 Important information



This symbol points to a very important statement that requires particular attention.

Example:



Agilent disclaims any liability for damages resulting from inappropriate packaging.

1.4 Technical data

See product data sheet and dimensional drawing. Weights of standard valves:

DN 16: 0.4 kg/ .88 lb

DN 40 1.9 kg/ 4.19 lb

Leak rate: valve body, valve seat	$<1 \cdot 10^{-10} \text{ mbar ls}^{-1}$
Pressure range	XHV to 2 bar (abs)
Differential pressure on the gate	$\leq 2 \text{ bar}$
Differential pressure at opening	$\leq 1 \text{ bar}^{1)}$
Lifetime	$\geq 1000 \text{ cycles}$
Bake-out temperature ²⁾	$\leq 300 \text{ }^{\circ}\text{C}$ open and closed
Heating and cooling rate	$\leq 60 \text{ }^{\circ}\text{C h}^{-1}$
Material: valve body, mechanism, bellows	AISI 316L (1.4404, 1.4435)
Seal: bonnet, plate	metal
Feedthrough	bellows
Mounting orientation	any
Valve position indication	visual (mechanical)
Conductance (molecular flow)	NW 16: 5 ls^{-1} / NW 40: 50 ls^{-1}
Closing force	closes at a mechanical stop
Weight: NW 16 / 40	kg (lbs)
	0.4 (0.9) / 1.9 (4.2)


¹⁾ $>1 \text{ bar}$ with reduced number of cycles

²⁾ Maximum values: depending on operating conditions and sealing materials

2.0 Safety

2.1 Compulsory reading material


Read this chapter prior to performing any work with or on the product. It contains important information that is significant for your own personal safety. This chapter must have been read and understood by all persons who perform any kind of work with or on the product during any stage of its serviceable life.


	NOTICE
	<p>Lack of knowledge</p> <p>Failing to read this manual may result in property damage.</p> <p>Firstly, read manual.</p>





These Installation, Operating & Maintenance Instructions are an integral part of a comprehensive documentation belonging to a complete technical system. They must be stored together with the other documentation and accessible for anybody who is authorized to work with the system at any time.

2.2 Danger levels


	⚠ DANGER
	<p>High risk</p> <p>Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</p>

	⚠ WARNING
	<p>Medium risk</p> <p>Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>


	⚠ CAUTION
	<p>Low risk</p> <p>Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.</p>

	NOTICE
	<p>Command</p> <p>Indicates a hazardous situation which, if not avoided, may result in property damage.</p>

2.3 Personnel qualifications

	⚠ WARNING
	<p>Unqualified personnel Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>

2.4 Safety labels

Label	Location on valve
	On protective covers of flanges

3.0 Design and Function

3.1 Design

With manual actuator: ¼" NW16 and 1 ½" NW40

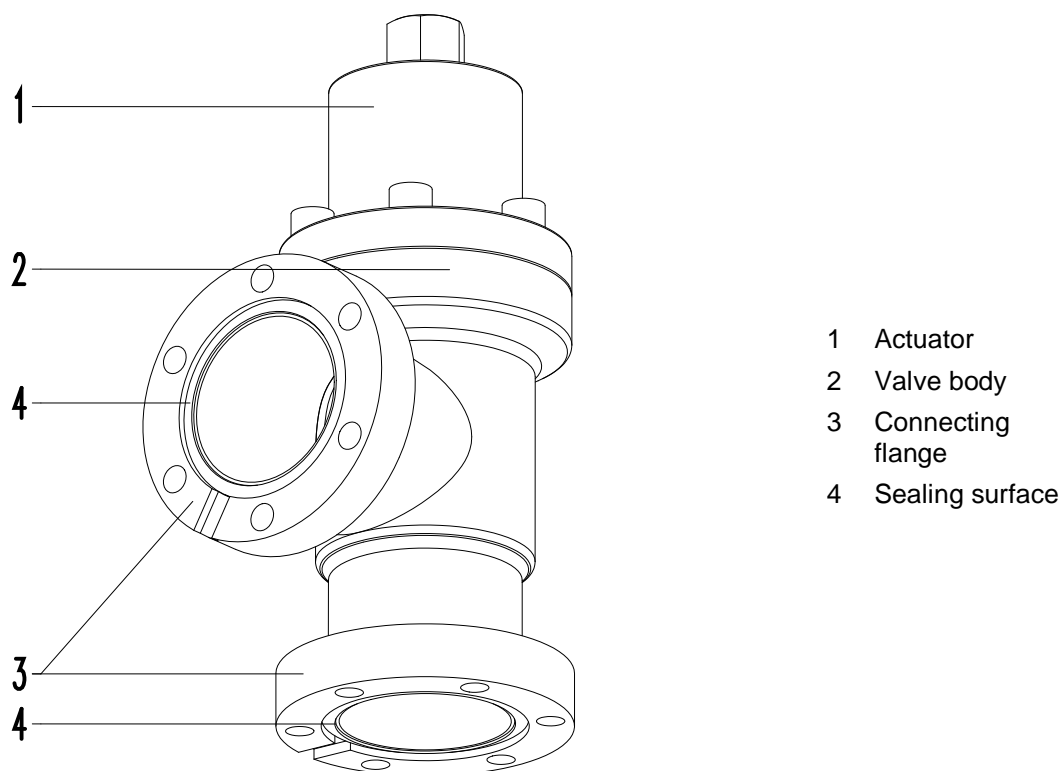


Figure 3-1

3.2 Function

Valve is closed and opened manually.

Closing: Turn hexagon head or inner square clockwise to it's stop. For moving the plate only a small closing torque is required. Then a second step with a steadily increasing torque (sealing the valve) will follow until the stop is reached.

Opening: Turn hexagon head counter clockwise to it's stop. The valve is completely open when the stop is reached.

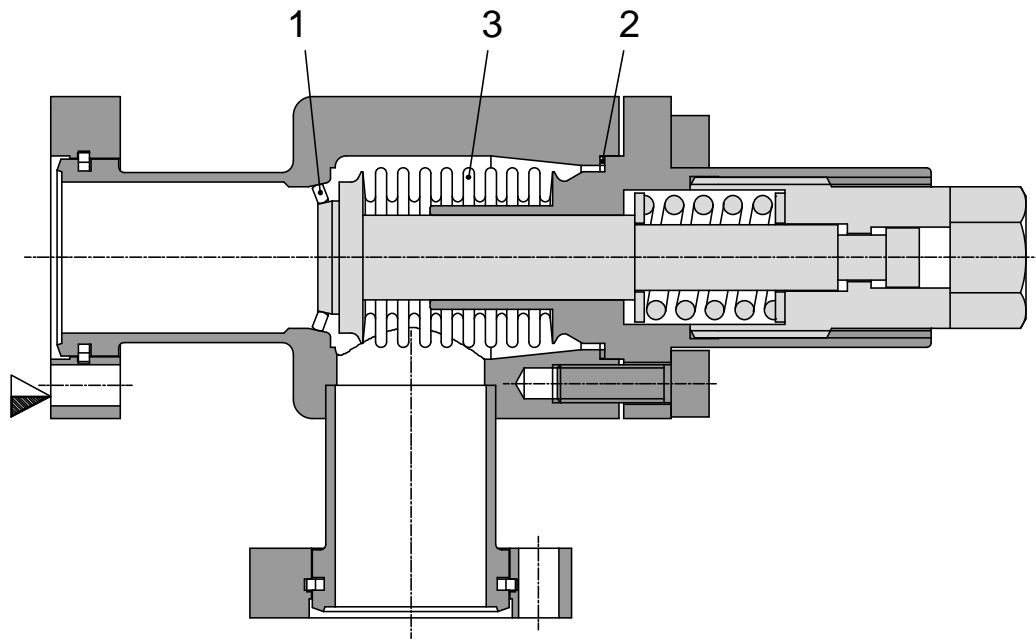



Figure 3-2

- 1 FLEX VATRING
- 2 Bonnet seal
- 3 Bellows

▼ Valve seat side

4.0 Installation

	WARNING
	Unqualified personnel Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.


4.1 Unpacking



- Make sure that the supplied products are in accordance with your order.
- Inspect the quality of the supplied products visually. If it does not meet your requirements, please contact Agilent immediately.
- Store the original packaging material. It may be useful if products must be returned to Agilent.





Don't open the plastic bag before mounting into the system.

	NOTICE
	Sensitive product Valve parts may get damaged. <ul style="list-style-type: none">– When lifting the valve, pay attention that the valve does not touch any solid objects.– Lift valve carefully and put it down on a clean surface or mount it to a clean system.


Weight of standard valves; see Section 1.4 Technical Data


4.2 Installation into the system

	NOTICE
	<p>Contamination</p> <p>Product may get contaminated.</p> <p>Always wear cleanroom gloves when handling the product.</p>

	NOTICE
	<p>Force effect from other components of the system</p> <p>Valve body may get deformed and/or malfunctions may occur.</p> <ul style="list-style-type: none"> – Do not use valve to support other components. – Make sure that forces from other components do not impair the valve; use bellows sections, for instance.

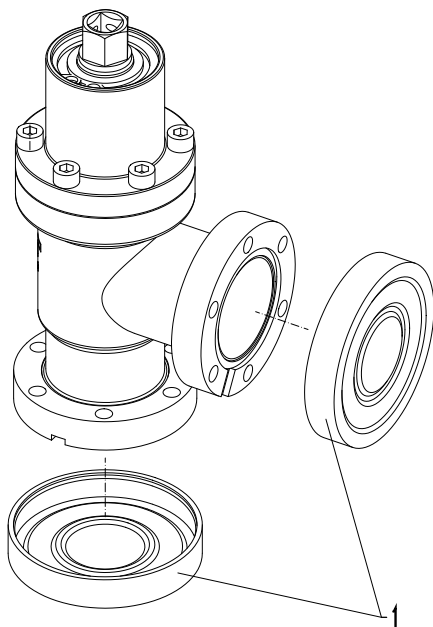
4.2.1 Preparation for installation

	⚠ WARNING
	<p>Danger of injury in case of insufficient skills</p> <p>Inappropriate handling may cause serious injury or property damage.</p> <p>Make sure that the valve does not topple or fall down while removing the protective covers from the flanges.</p>

	NOTICE
	<p>Sensitive product</p> <p>Valve parts may get damaged.</p> <p>When removing the protective covers from the flanges, be careful to avoid damage to the valve.</p>

4.2.1 Preparation for installation (cont.)

1. Remove plastic bag.
2. Remove protective covers (1); see Figure 4-1.



1 Protective covers

Figure 4-1

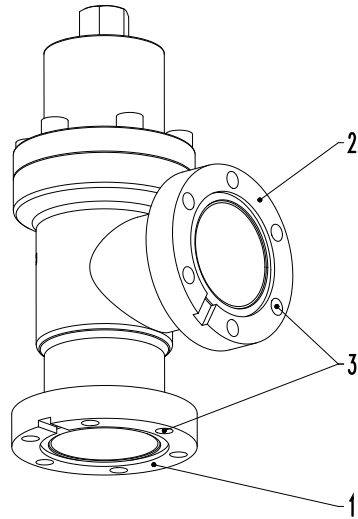


Store protective covers. They may be useful when valve needs to be repacked.

3. Clean sealing surfaces; see Figure 4-2 on page 138, with cleanroom wiper soaked with pure alcohol (Isopropanol).
4. Clean sealing surface with clean, oil free compressed air.

4.2.2 Mounting to the system



1. Mount valve to your system by using appropriate flange screws (different quantity of screws required – depending on valve size).
2. Mount screws evenly in crosswise order until the seal touches the sealing surface.
3. Tighten all screws with the torques appropriate for the property classes of the screws.



- 2 Flange A (valve seat side)
- 3 Flange B
- 4 Screw holes

Figure 4-2

5.0 Operation

	 WARNING
	<p>Unqualified personnel</p> <p>Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>

5.1 Normal operation

Valve is closed and opened manually.

Closing: Turn hexagon head or inner square clockwise to it's stop. For moving the plate only a small closing torque is required. Then a second step with a steadily increasing torque (sealing the valve) will follow until the stop is reached.



The sealing force of the valve can't be increased with a higher torque. The force to seal the valve is supplied by a spring, don't overtorque.

Opening: Turn hexagon head counter clockwise to it's stop. The valve is completely open when the stop is reached.




If the mechanical stop in open position is reached, no additional torque should be applied. To prevent any damage, the applied torque in fully open position must not exceed **15 Nm**.



For technical details, see page 11.

5.2 Operation under increased temperature

Maximum allowed temperature see product data on page 11.

	NOTICE
	<p>Inconsistent temperatures</p> <p>Performance of the valve may deteriorate.</p> <ul style="list-style-type: none"> – Actuate valve only after the bake-out temperature has been stable for two hours. – If valve must be actuated during bake-out, make sure that the heating or cooling rate does not exceed 10 °C per hour in the temperature range from 100 °C to 300 °C – Make sure that the temperature differences over the whole body do not exceed 60 °C.

5.3 Troubleshooting

Failure	Check	Action	See
Leak at gate	Condition of gate seal	Please contact Agilent	www.Agilent.com
	Condition of valve gate	Please contact Agilent	www.Agilent.com
Leak at body	Condition of bonnet seal and sealing surface	Please contact Agilent	www.Agilent.com
	Condition of bellows	Please contact Agilent	www.Agilent.com

Table 5-1

If you need any further information, please contact one of our contact centers listed on the back of this manual. You will find the addresses on our website www.agilent.com.

6.0 Maintenance

6.1 Maintenance intervals

Under clean operating conditions the valve does not require any maintenance during specified lifetime.



- Impacts from the process may require more frequent maintenance.
- When the valve has reached the specified lifetime; see product data sheet, we recommend to have it serviced by Agilent. Please contact your nearest Agilent service center to get recommendations and an offer. You will find the addresses on our website www.agilent.com.

7.0 Repairs

	<div data-bbox="833 280 1104 325">  WARNING </div> <p>Unqualified personnel Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>
	<div data-bbox="842 544 1114 587">  WARNING </div> <p>Danger of injury in case of insufficient skills Inappropriate handling may cause serious injury or property damage. Make sure that the valve does not topple or fall down while removing the protective covers from the flanges.</p>
	<div data-bbox="893 834 1065 876">NOTICE</div> <p>Contamination Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>

7.1 Replacement of dynamic seal – FLEX VATRING

In case of a seat seal leak caused by environmental influences, the FLEX VATRING seal can be replaced twice without the need for re-machining the valve seat.

Three seal rings of different diameters enable leak tight sealing on three different levels of pre-prepared sealing surface provided in the valve body. If there is damage on one level, the replacement seal ring, of a different diameter, will seal at the next level.

Agilent offers a range of service kits; see 10-1 on page 28. The seal exchange is easily carried out by the user.

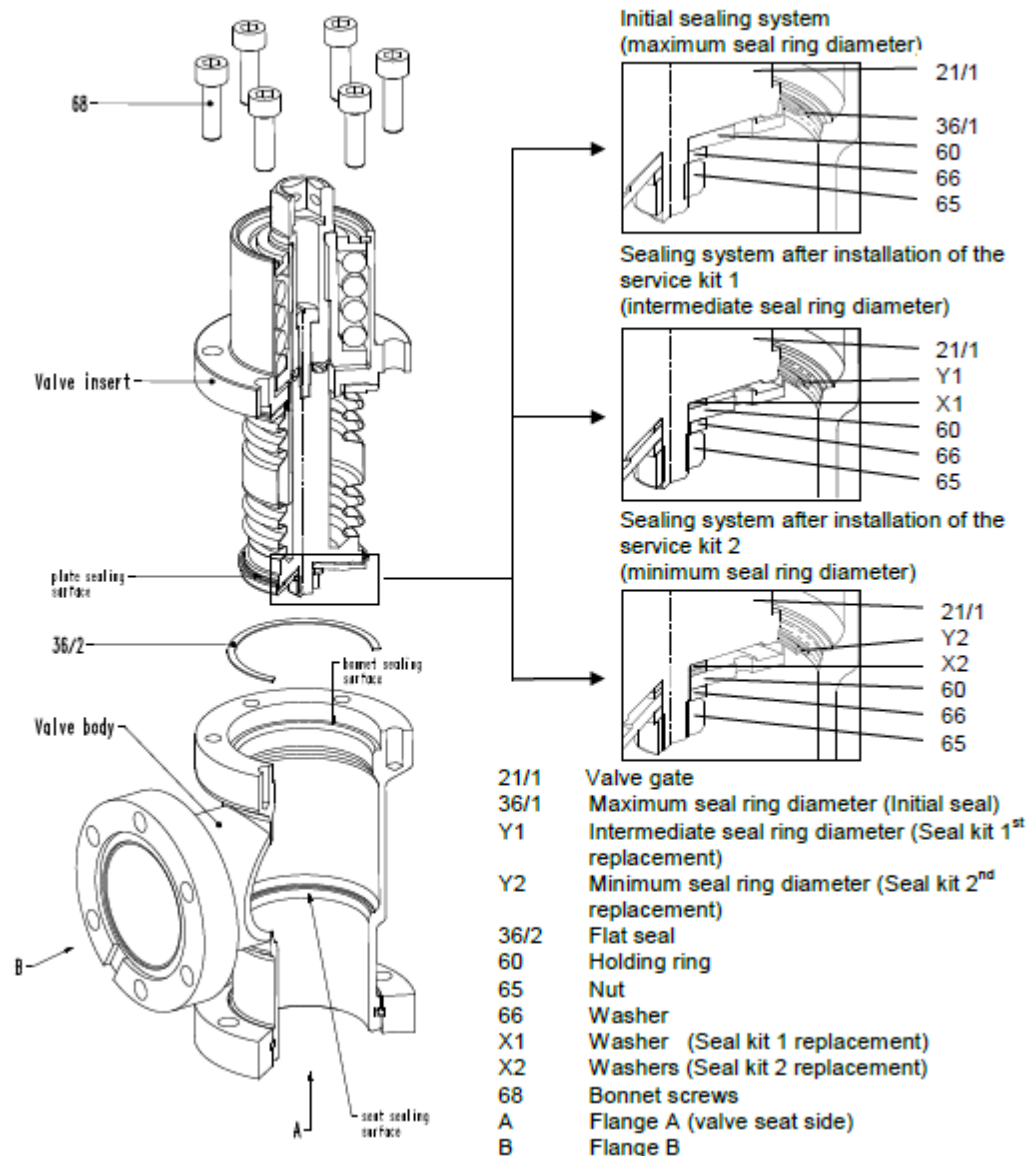


Figure 7-1

Required material: Service kit 1 or 2

Ordering information: See Chapter 10 page 28

**NOTICE****Inconvenient mounting position of valve**

Maintenance may be troublesome and parts may drop down.

Ideally dismount valve from the system and put it on a clean workbench with the actuator upwards.

Procedure:

The item numbers in brackets refer to Figure 7-1 on page 22.

4. Close valve.



Make sure that valve is closed to mechanical stop!

5. Loosen the nut (65).

6. Open valve.



Make sure that valve is opened to mechanical stop!

7. Remove bonnet screws (68).

8. Pull valve insert carefully out of the valve body without touching the body wall.
Touching the body wall may cause severe damage to delicate parts of the insert.

9. Remove flat seal (36/2).



Please note the assembly direction of the flat seal!

10. Clean sealing surfaces of bonnet and seat of valve body with pure alcohol (Isopropanol).

11. Remove the nut (65).

12. Remove washer (66).

13. Remove holding ring (60).

14. Remove FLEX VATRING (36/1).

15. Clean sealing surface of plate (21/1) with pure alcohol (Isopropanol), use a cleanroom wiper.



Make sure that the sealing surface is free of scratches.

16. Put new FLEX VATRING (Y1 or Y2) on sealing surface of plate (21/1).



Make sure that the seal ring is installed in the correct direction. The marking(s) must be visible in direction of the holding ring.

Initial condition FLEX VATRING (36/1) without mark	Seal kit 1 st replacement FLEX VATRING (Y1) with 1 mark	Seal kit 2 nd replacement FLEX VATRING (Y2) with 2 marks

Figure 7-2

17. Put 1 washer (X1) for seal kit 1st replacement or 2 washer (X2) for seal kit 2nd replacement on plate (21/1).
18. Put holding ring (60) on plate (21/1).
19. Put washer (66) on plate (21/1).
20. Insert nut (65) and tighten them slightly only.
21. Level out FLEX VATRING (Y1 or Y2) and plate (21/1) along the whole circumference. Height difference shall not exceed 0.1 mm. Check height difference accurately at four spots (measured angle 90°) around the whole circumference.

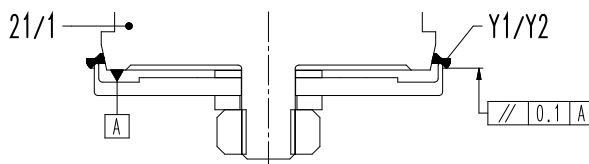


Figure 7-3

22. Clean sealing surfaces of bonnet and seat of valve body with pure alcohol (Isopropanol), use cleanroom wiper.
23. Put the flat seal (36/2) on sealing surface of valve body.



Agilent recommends using a new flat seal.
In case of reutilization of the used flat seal please assemble it in the same direction as removed before.

24. Move valve insert (in open position) carefully into body without touching the body wall. Touching the body wall may cause severe damage to delicate parts of the insert.
25. Insert all bonnet screws (68) and screw them in until they touch the bonnet flange (do not tighten).

26. Turn spindle in closing direction until the FLEX VATRING (Y1 or Y2) touches the seal surface to align the valve insert (do not tighten).

27. Tighten all bonnet screws (68) gradually in crosswise order with the following torques:

$\frac{3}{4}$ " NW16: 2.5 Nm
1 1/2" NW40: 7 Nm



28. Close valve to mechanical stop!


29. Tighten nut (65) with the following torque:

$\frac{3}{4}$ " NW16: 2.5 Nm
1 1/2" NW40: 7 Nm

Valve is ready for use.

8.0 Dismounting and Storage

	 WARNING
	<p>Unqualified personnel Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.</p>

	NOTICE
	<p>Contamination Product may get contaminated. Always wear cleanroom gloves when handling the product.</p>


8.1 Dismounting


1. Dismount valve according Chapter 4.0 Installation, however in reverse order.



Observe safety instructions of Chapter 4 Installation.

8.2 Storage

	NOTICE
	<p>Wrong storage Inappropriate temperatures and humidity may cause damage to the product. Valve must be stored at:</p> <ul style="list-style-type: none"> – relative humidity between 10% and 70% – temperature between +10 °C and +50 °C – non-condensing environment

	NOTICE
	<p>Inappropriate packaging Product may get damaged if inappropriate packaging material is used. Always use the original packaging material and handle product with care.</p>

1. Clean / decontaminate valve.
2. Cover all valve openings with a protective foil.
3. Pack valve appropriately, by using the original packaging material.

9.0 Packaging and Transport



WARNING

Unqualified personnel

Inappropriate handling may cause serious injury or property damage.
Only qualified personnel are allowed to carry out the described work.



WARNING

Harmful substances

Risk of injury in case of contact with harmful substances.
Remove harmful substances (e. g. toxic, caustic or microbiological ones) from valve before you return the valve to Agilent.



NOTICE

Inappropriate packaging

Product may get damaged if inappropriate packaging material is used.
Always use the original packaging material and handle product with care.



- When returning products to Agilent, please fill out the Agilent form Health and Safety form at the back of the manual and send it to Agilent in advance. The form can be downloaded from our website www.agilent.com.
- If products are radioactively contaminated, the Agilent form Contamination and Radiation Report must be filled out. Please contact Agilent in advance.
- If products are sent to Agilent in contaminated condition, Agilent will carry out the decontamination procedure at the customer's expense.

10.0 Valve Ordering Information



NOTICE

Non-original spare parts

Non-original spare parts may cause damage to the product.
Use original spare parts from Agilent only.



- This manual only contains spare parts that may be replaced by the customer. If you need additional service or support, contact one of our Contact Centers. You will find the addresses on our website www.agilent.com.

Valve Ordering Information	Part Number
VALVE, 3/4 METAL/MINI CFF	X3202-60097
VALVE,ALL-METAL,1-1/2in,RT-ANGLE	X3202-60098
Seal Kits	Part Number
UHV Series 54 3/4" Seal KT 1st Replace	X3202-60107
UHV Series 54 3/4" Seal KT 2nd Replace	X3202-60109
UHV Series 54 1 1/2" Seal KT 1st Replace	X3202-60108
UHV Series 54 1 1/2" Seal KT 2nd Replace	X3202-60110

Table 10-1



**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

NORTH AMERICA:
Fax: 1 781 860 9252
Toll Free: 800 882 7426, Option 3
vpl-ra@agilent.com

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



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

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

1) CUSTOMER INFORMATION

Company Name:		Contact Name:	
Tel:	Email:	Fax:	
Customer Ship To:		Customer Bill To:	
Europe only: VAT reg. Number:		USA/Canada only: <input type="checkbox"/> Taxable <input type="checkbox"/> Non-taxable	

2) PRODUCT IDENTIFICATION

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.

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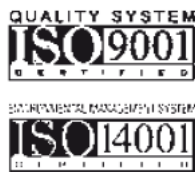
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