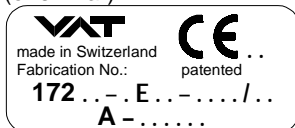


## HV Gate Valve with protective ring with manual actuator

This manual is valid for the valve ordering numbers::

- 17236- . E01/06/07/08
- 17240- . E01/06/07/08
- 17244- . E01/06/07/08
- 17246- . E01/06/07/08
- 17248- . E01/06/07/08
- 17250- . E01/06/07/08

The respective product identification is given on each valve in the following way (or similar):



Explanation of symbols:



Read declaration carefully before you start any other action!



Keep body parts and objects away from the valve opening!



Attention!



Hot surfaces; do not touch!



Product is in conformity with EC guidelines, if applicable!



Loaded springs and/or air cushions are potential hazards!



Disconnect electrical power and compressed air lines. Do not touch parts under voltage!



Wear gloves!



Read these «**Installation, Operating & Maintenance Instructions**» and the enclosed «**General Safety Instructions**» carefully before you start any other action!



## Installation, Operating, and Maintenance Instructions Series 17, DN 63 - 320 (2½" - 12")

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### Imprint:

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## Installation, Operating, and Maintenance Instructions Series 17, DN 63 - 320 (2½" - 12")

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### Technical data

Pressure range	DN 63 - 200	1 x 10 <sup>-8</sup> mbar to 2 bar (abs)
	DN 250 - 400	1 x 10 <sup>-8</sup> mbar to 1.2 bar (abs)
Differential pressure on the gate	DN 63 - 200	≤ 2 bar in either direction
	DN 250 - 400	≤ 1.2 bar
Max. differential pressure at opening		≤ 30 mbar
Admissible temperature:	Valve	≤ 150°C
	Manual actuator	≤ 80°C

Further data according to VAT catalogue «Vacuum Valves 2000».

## Installation into the vacuum system

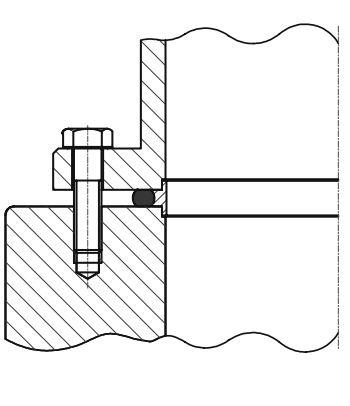
The valve seat side is indicated by the symbol "▽" on the connection flange.

### Tightening torque for mounting screws on flanges

#### 1. Mounting with centering ring

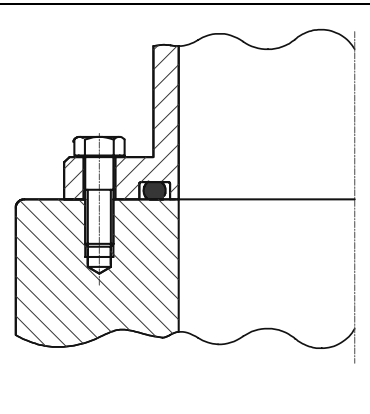
Tighten mounting screws of the flanges uniformly in crosswise order. Observe the maximum torque levels in the following table. Higher tightening torques deform the valve body and can lead to an improper function of the valve.

DN		max. tightening torque (Nm)			max. tightening torque (lbs . ft)		
mm	inch	ISO-F	JIS	ASA-LP	ISO-F	JIS	ASA-LP
63/100	4	8 – 10	8 – 10	8 – 10	6 – 8	6 – 8	6 – 8
160	6	13 – 15	13 – 15	20 - 30	9 - 11	9 - 11	15 – 22
200	8	13 – 15	13 – 15	20 - 30	9 - 11	9 - 11	15 – 22
250	10	17 – 20	17 – 20	40 – 60	13 – 15	13–15	30 – 44
320	12	17 - 20	17 – 20	40 - 60	13 – 15	13–15	30 - 44



#### 2. Mounting with O-ring in groove

Tighten mounting screws of the flanges uniformly in crosswise order. Observe the maximum torque according to the grade of screws and depth of thread you use.



## Admissible forces

Forces from evacuating the system, from the weight of other components, and from baking can lead to deformation of the valve body and to malfunction of the valve. The stress has to be relieved by suitable means, e.g. bellows sections. The following forces are admissible:

DN (nom. I.D.)		Axial tensile or compressive force «FA»		Bending moment «M»	
mm	inch	N	lbf	Nm	lbf · ft
63	2½	1960	440	78	58
100	4	2450	560	98	72
160	6	2940	660	147	108
200	8	2940	660	147	108
250	10	3430	770	196	145
320	12	3920	880	294	217
400	16	7840	1760	980	722

If a combination of both forces («FA» and «M») occurs, the values mentioned above are invalid. Please contact VAT for more information.

Table 2

## Position indicator (option): Electrical connection



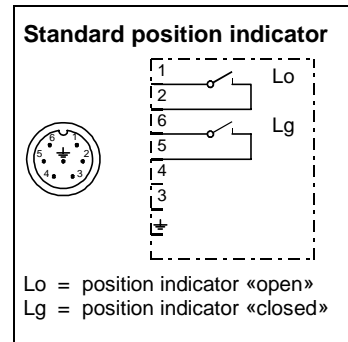
Do not touch electrical parts under voltage!



Connect electrical power only if  
 - valve has been installed into the vacuum system  
 - moving parts cannot be touched

The socket for the position indicator is supplied with the valve.

Wire the position indicator according to the diagram opposite:





## Installation, Operating, and Maintenance Instructions Series 17, DN 63 - 320 (2½" - 12")

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### Trouble shooting

- Valve does not close/open: Power available?  
Check voltage!
- Leak at gate: Clean valve seat and gate!  
Replace gate seal, if damaged!
- Leak at body: Flanges leaktight?  
Replace bonnet seal!

### Repairs

Contact VAT for repairs or maintenance. The fabrication No. (A- ..... ) marked on the valve body has always to be specified. It has to be individually decided whether the work can be performed by the customer or has to be carried out by VAT.

All supplies (e. g. compressed air, electrical power) have to be disconnected for removal/installation of the valve from/into the system.



Keep fingers and objects away from the valve opening!

Products returned to VAT for repair have to be free of harmful substances such as e.g. toxic, caustic or microbiological ones. For radioactively contaminated products the customer has to fill in the VAT form «Contamination and Radiation Report» and to send it with the product. The form is available at VAT. The maximum permissible values indicated in the form must not be exceeded.

## Operation

### Normal operation

Valve is opened and closed by means of a manual spindle.

### Admissible temperature

See «Technical data»!



## Preventive maintenance

Under clean operating conditions, the valve does not require any maintenance during the specified cycle life (100'000 cycles).

In case of severely contaminating processes it is recommended to bake the valves. In order to keep the downtime and the maintenance work on a minimum, it is possible to replace the complete mechanism.

## Maintenance

### Replacement of gate seal/mechanism assembly

The figures in brackets refer to the drawing on page 9

1. Vent vacuum chambers on either side of valve
2. Open valve
3. Switch off electrical power
4. Disconnect power lines
5. Remove screw connections (1) from bonnet (2)
6. Move mechanism manually to the final position «open»
7. Remove screw (5)
8. Remove crank bolt (6)
9. Withdraw mechanism carefully from body and put it on a clean place  
**Attention:** When withdrawing the mechanism be careful not to damage it!
10. Remove gate O-ring (4) from dovetail groove  
**Attention:** Be careful not to damage the sealing surface!
11. Disassemble mechanism into parts or groups  
**Attention:** Adjusting plate (X) must not be loosened, as it is preset at the factory!
12. Clean mechanism with expert knowledge
13. Reassemble mechanism  
**Attention:** Use only new locking balls (10), bearings/leaf springs (11) and crank bolts (6)!  
(these parts are lubricated with VAT High Vacuum Grease)
14. Clean and check groove and sealing surfaces
15. Install new gate O-ring (4)  
**Attention:** Press O-ring uniformly in crosswise order (diagonal) into groove!
16. Insert protective ring into body, attach protective ring to mechanism, insert mechanism carefully into body
17. Mount crank bolt (6)
18. Mount and tighten screw (5)
19. Move mechanism manually a bit into closing direction
20. Place seal (3) and bonnet (2)
21. Tighten screws (1) at bonnet (2) uniformly in crosswise order (diagonal)  
Tightening torque: DN 63 - 100 10 Nm / 8 lbf · ft  
DN 160 - 400 18 Nm / 13 lbf · ft
22. Connect electrical power
23. Perform function and leak test

Valve is ready for operation



## Installation, Operating, and Maintenance Instructions Series 17, DN 63 - 320 (2½" - 12")

### Spare parts

The item numbers refer to the following sketch 226801

The ordering numbers refer to standard valves without options

Item	Description	Ordering number					
		DN	63	100	160	200	250
	Mechanism compl.	89146-R1	94842-R1	84275-R1	84608-R1	85581-R1	218895
	Seal kit <sup>1)</sup>	97443-R1	97447-R1	95945-R1	95940-R1	98473-R1	98475-R1
2	Body bonnet	88280-R1	82251-R1	81891-R1	79100-R1	87334-01	87335-01
3	Bonnet seal	77775-R1	77778-R1	77781-R1	77784-R1	N-5100-378	N-5100-382
4	Gate seal	N-5102-340	N-5102-351	N-5102-364	N-5100-372	N-5102-453	N-5102-457
6	Crank bolt complete <sup>2)</sup>	205048	205048	205048	205048	205049	205049
7	Position indicator	60546-R1	60546-R1	60546-R1	60546-R1	60546-R1	60546-R1
10	1set of locking balls (lubricated)	98440-R1	98441-R1	98442-R1	95121-R1	98443-R1	98444-R1
11	1 Leaf Spring complete [...] Required quantity per valve	66856-R1 [1 pc.]	67064-R1 [2 pcs.]	84326-R1 [2 pcs.]	80642-R1 [2 pcs.]	99205-R1 [4 pcs.] <sup>3)</sup>	99205-R1 [4 pcs.] <sup>3)</sup>
12	Roll pin	N-6097-478	N-6097-478	N-6097-480	N-6097-480	N-6097-509	N-6097-509
13	Protection ring complete	63545-R1	69742-R1	66475-R1	69294-R1	84782-R1	96449-R1
14	O-Ring	220001	220001	220002	220002	220003	220003
15	O-Ring	N-5100-222	N-5100-222	N-5100-225	N-5100-225	N-5100-228	N-5100-228
16	O-Ring	219998	219998	219999	219999	220000	220000

<sup>1)</sup> Seal kit consists of items 3, 4, 14, 15 & 16 acc. to sketch (Standard material: Viton)

<sup>2)</sup> Item 5 included in *Crank bolt complete*

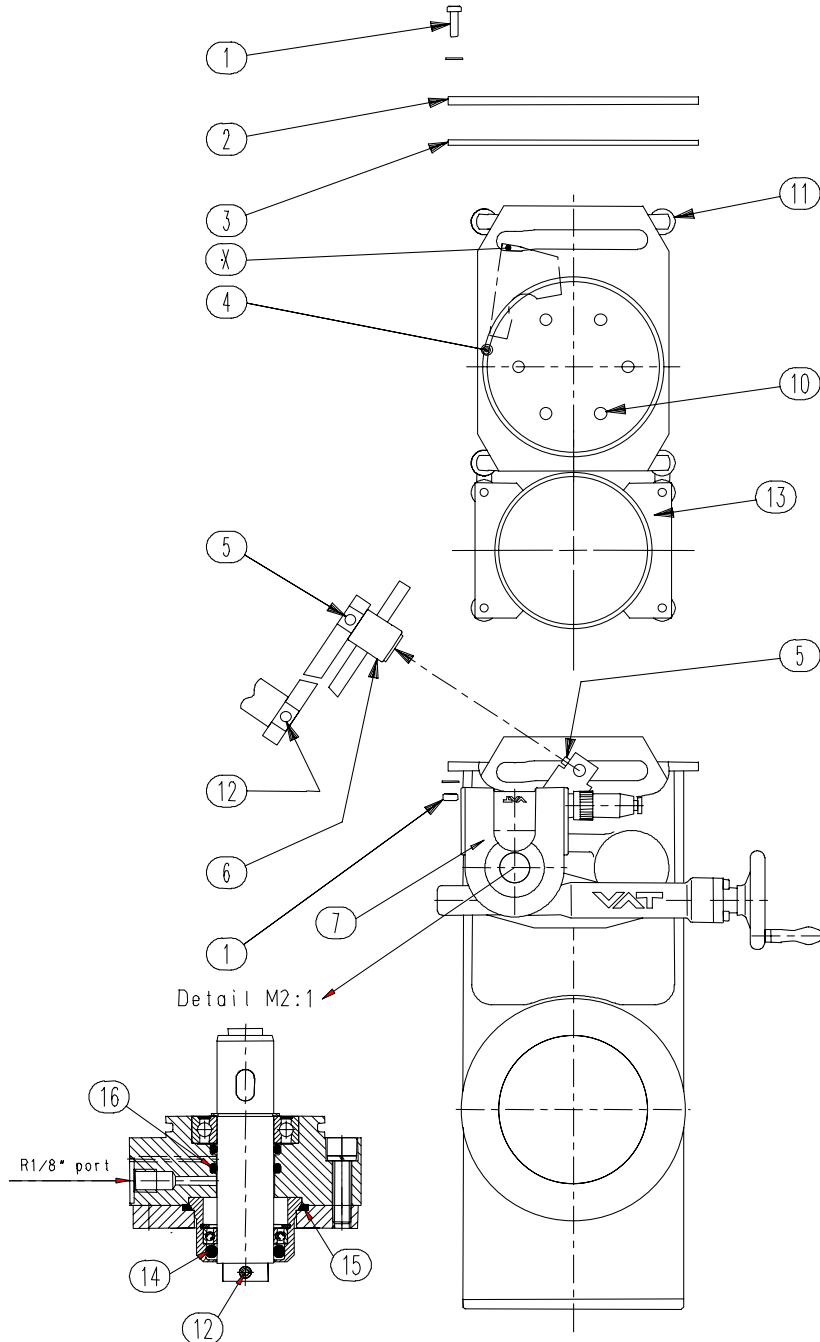
<sup>3)</sup> DN250 and DN320: lubricated ball bearing only, no leaf spring

**VAT Vakuumentile AG** invites you to have maintenance work done in our works. Please contact us or your nearest VAT sales representative. Depending on your location, maintenance is done either in Switzerland or in one of our service centers in Woburn (USA) or Ako (Japan).

Please specify the **fabrication number** of the valve (172.....) whenever you place an order for spare parts. You will find it on the yellow sticker attached to the valve (see **product identification** on page 1).



Always use lubricated original **VAT** spare parts!

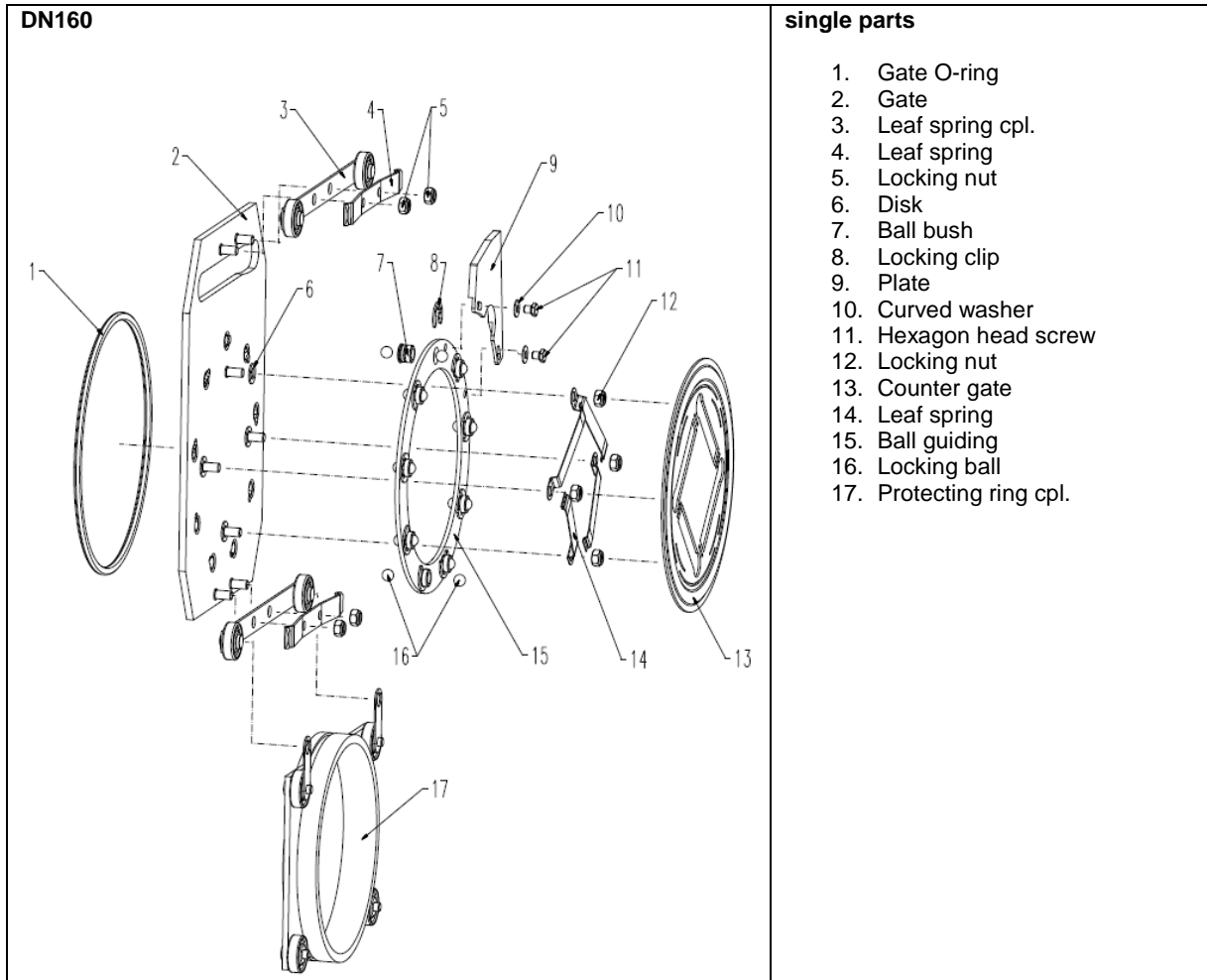


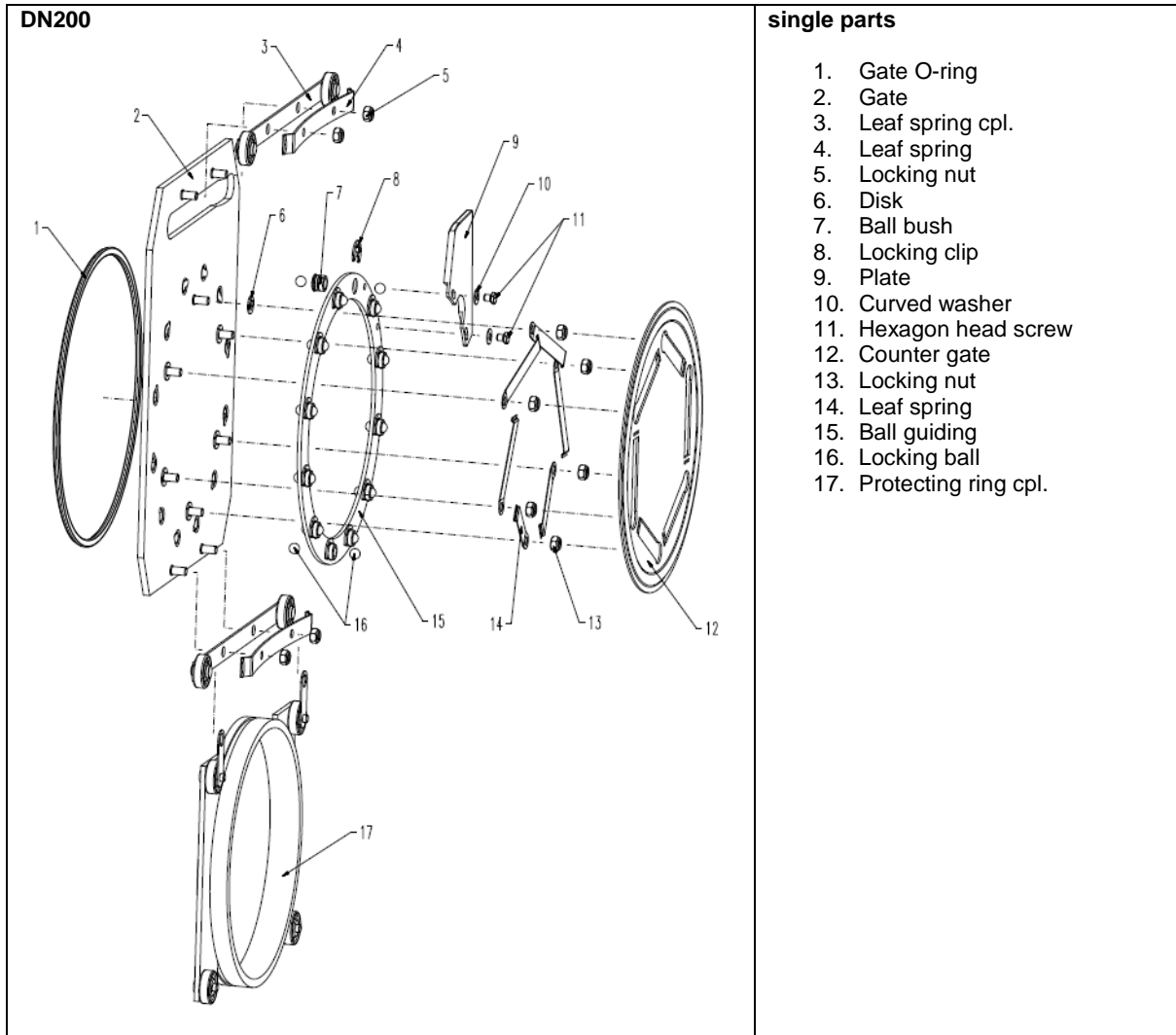
(226801)

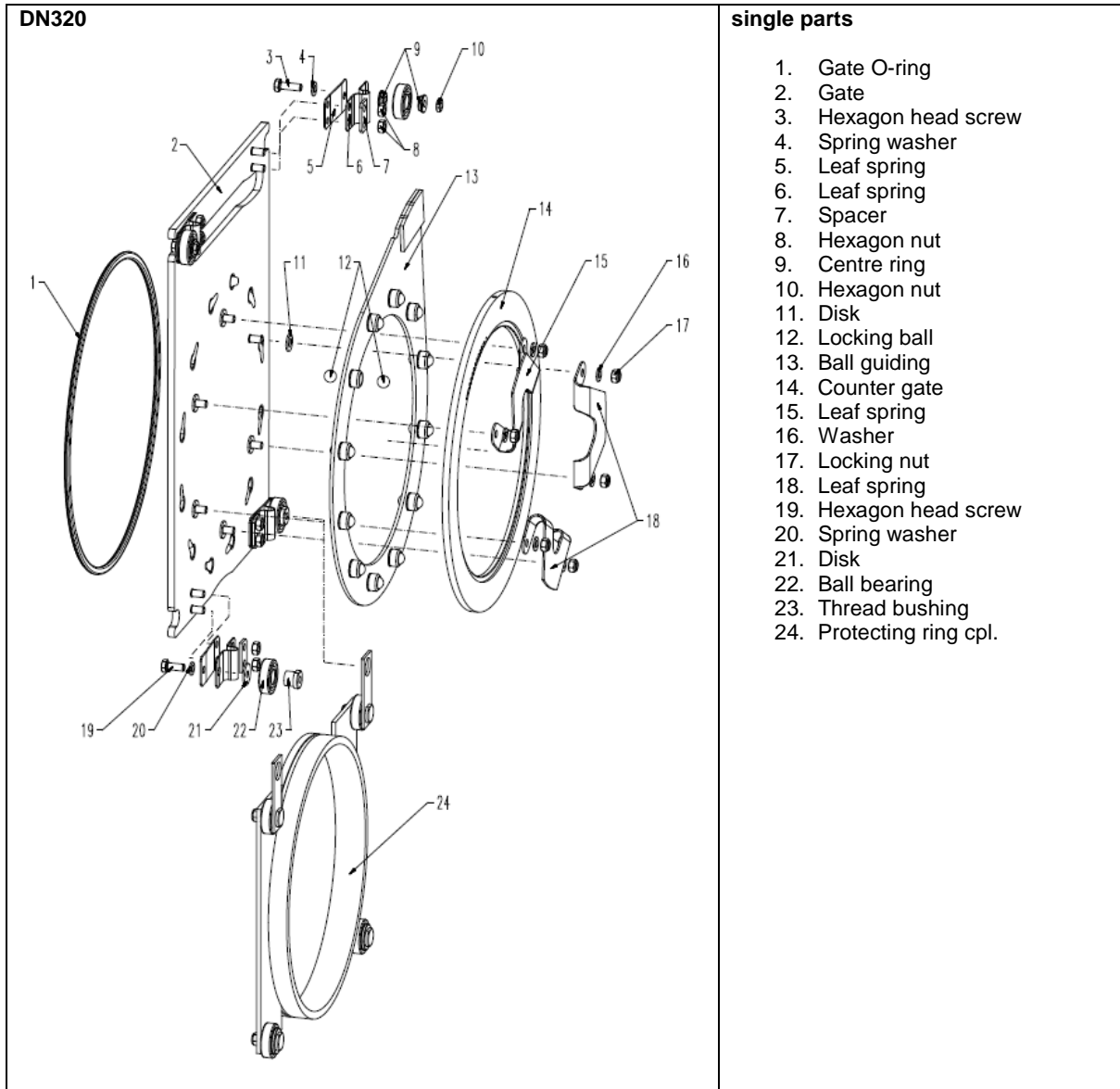
Attention: Never loose or adjust plate (X)!

### Mechanism assembly

<p><b>DN63</b></p>	<p><b>single parts</b></p> <ol style="list-style-type: none"> <li>1. Gate O-ring</li> <li>2. Countersunk screw</li> <li>3. Gate</li> <li>4. Protecting ring cpl.</li> <li>5. Leaf spring cpl.</li> <li>6. Locking nut</li> <li>7. Locking ball</li> <li>8. Ball guidance</li> <li>9. Leaf spring</li> <li>10. Ring</li> <li>11. Snap ring special</li> </ol>
<p><b>DN100</b></p>	<p><b>single parts</b></p> <ol style="list-style-type: none"> <li>1. Gate O-ring</li> <li>2. Countersunk screw</li> <li>3. Gate</li> <li>4. Protecting ring cpl.</li> <li>5. Leaf spring cpl.</li> <li>6. Locking nut</li> <li>7. Locking ball</li> <li>8. Ball guidance</li> <li>9. Leaf spring</li> <li>10. Ring</li> <li>11. Snap ring special</li> </ol>









## Installation, Operating, and Maintenance Instructions Series 17, DN 63 - 320 (2½" - 12")

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Each product sold by VAT Vakuumentile AG (VAT) is warranted to be free from the manufacturing defects that adversely affect the normal functioning thereof during the one-year period immediately following delivery thereof by VAT, provided that the same is properly operated under conditions of normal use and that regular, periodic maintenance and service is performed or replacements made, in accordance with the instructions provided by VAT. The foregoing warranty shall not apply to any product or component that has been repaired or altered by anyone other than an authorized VAT representative or that has been subject to improper installation or abuse, misuse, negligence or accident. VAT shall not be liable for any damage, loss, or expense, whether consequential, special, incidental, direct or otherwise, caused by, arising out of or connected with the manufacture, delivery (including any delay in or failure to deliver), packaging, storage or use of any product sold or delivered by VAT shall fail to conform to the foregoing warranty or to the description thereof contained herein, the purchaser thereof, as its exclusive remedy, shall upon prompt notice to VAT of any such defect or failure and upon the return of the product, part or component in question to VAT at its factory, with transportation charges prepaid, and upon VAT's inspection confirming the existence of any defect inconsistent with said warranty or any such failure, be entitled to have such defect or failure cured at VAT's factory and at no charge therefor, by replacement or repair of said product, as VAT may elect. VAT MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, (INCLUDING NO WARRANTY OR MERCHANTABILITY), EXCEPT FOR THE FOREGOING WARRANTY AND THE WARRANTY THAT EACH PRODUCT SHALL CONFORM TO THE DESCRIPTION THEREOF CONTAINED HEREIN, and no warranty shall be implied by law.

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