

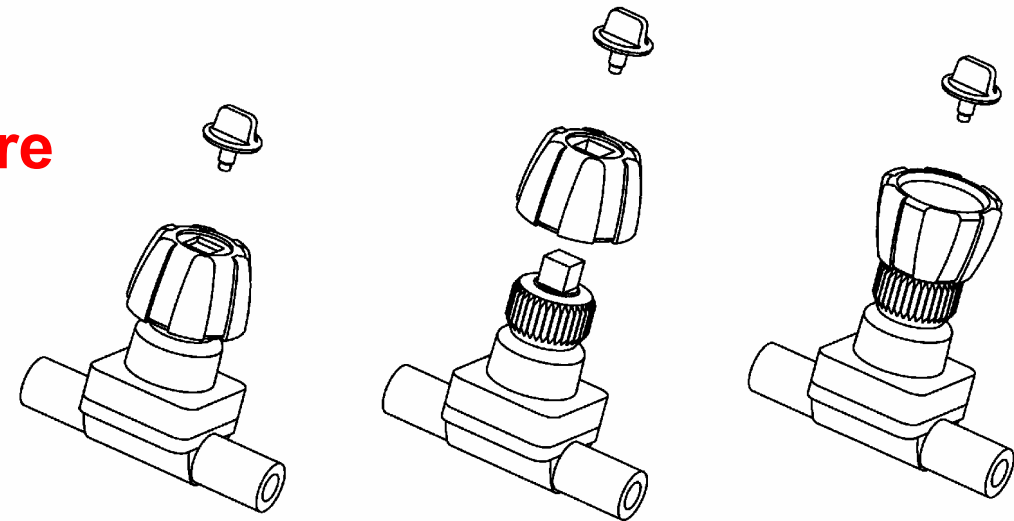
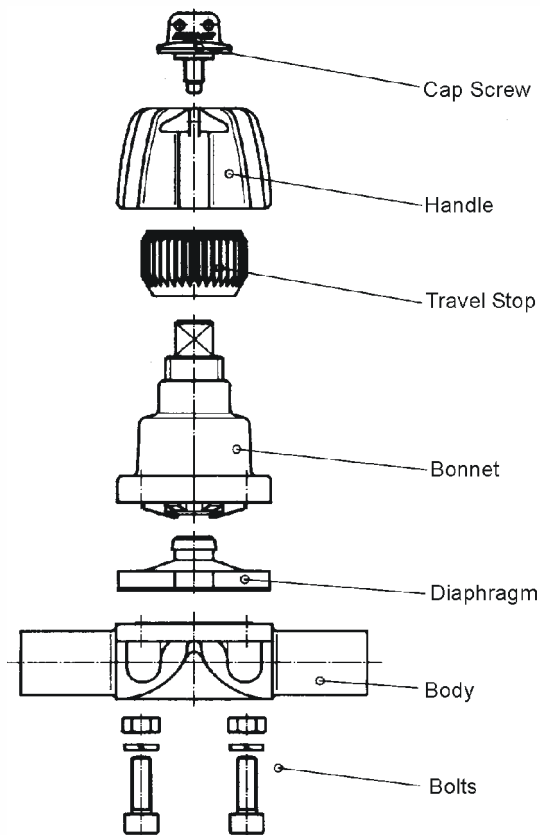
Maintenance & Operating Guidelines

- **Travel Stops**
- **Diaphragm Replacement**
- **Torquing Guideline**
- **Accessories**

Travel Stop Setting

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Travel Stops Prevent Over-closure



- **Remove the cap screw.**
- **Remove the handle, invert it and remount it on the spindle**
- **Turn the handle clockwise until the resistance of the diaphragm seating is felt. Turn the handle another 180 degrees.**
- **Tighten the travel stop clockwise until it is tight against the bonnet**
- **Re-assemble the handle and cap screw**

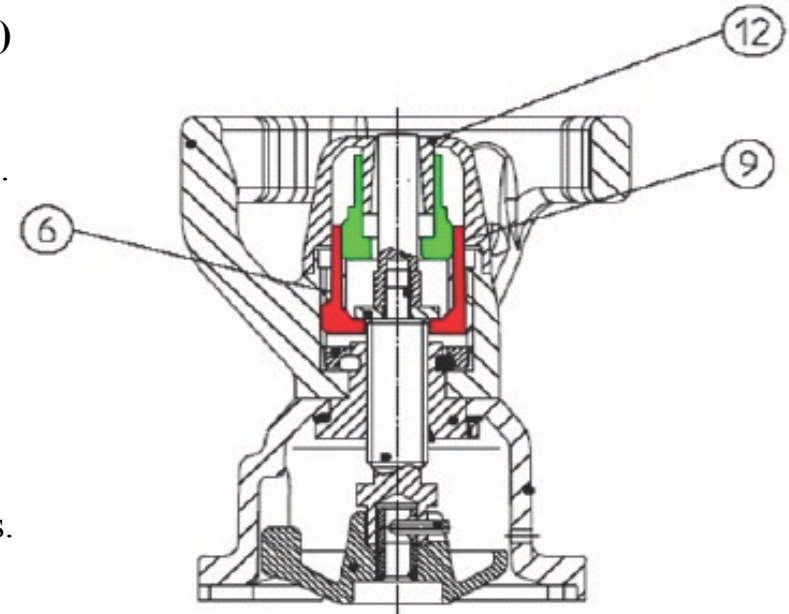
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653 / 654 Operating Instructions

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Setting stroke limiter (opening) and seal adjuster (closing)

1. Remove the cap (12) from the center of the handwheel. Turn the hand wheel away from its stop position so that it can be turned freely in both directions.
2. Turn the stroke limiter (9) counter-clockwise until its thread becomes visible.



Setting the seal adjuster (closed position)

3. Turn the seal adjuster (6) down clockwise until it stops.
4. Rotate the hand wheel clockwise until the desired CLOSED position is reached. Turn the seal adjuster (6) up counter clock-wise until it stops.

Setting the stroke limiter (open position)

5. Rotate the hand wheel counter-clockwise until the desired OPEN position is reached. Turn the stroke limiter (9) down clockwise until it stops.

NOTE: The seal adjuster must not turn during this procedure.

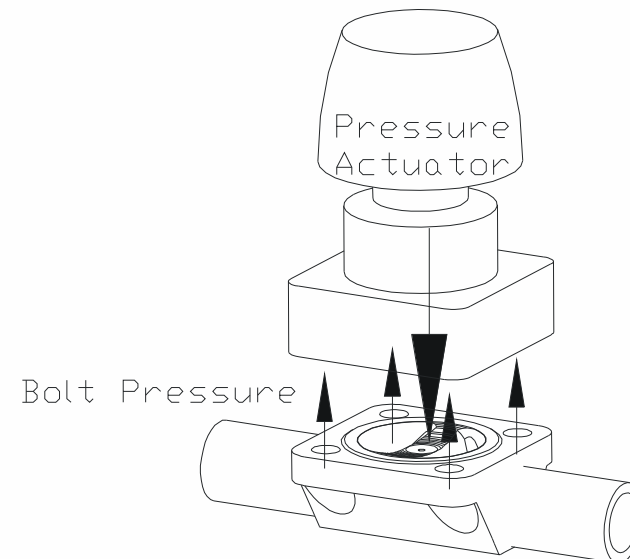
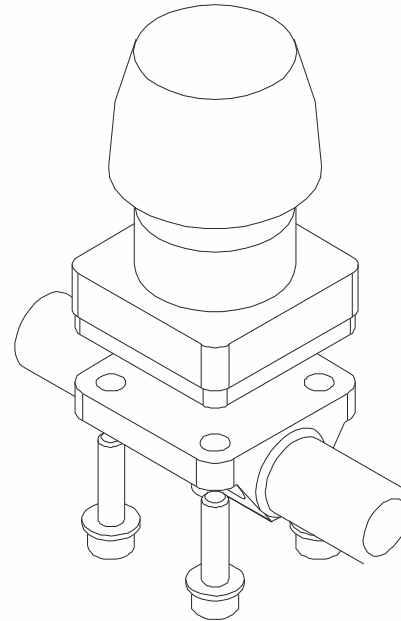
6. Align the cap and replace it.



Removing the Process Diaphragm

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- **Move the valve to the open position**
- **Remove the fasteners**
- **Move the valve to the closed position**
- **Unscrew the diaphragm counter-clockwise or for the button style push one side down with your index finger while lifting the other side with your thumb**

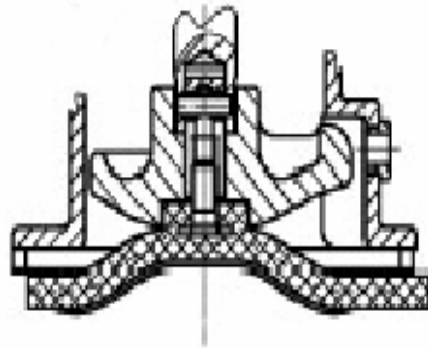


Installing the Diaphragm (Concave) **GEMÜ®**

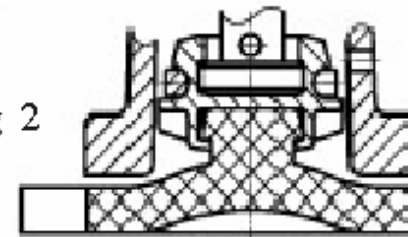
- **Type 1:** Screw the diaphragm clockwise into the compressor so that the cylindrical boss around the diaphragm stud fits into the recess of the compressor. When contact (resistance) is felt, turn the diaphragm back (counterclockwise) until the bolt holes in the diaphragm and bonnet flange are correctly aligned. **Do not continue to tighten.**

- **Type 2:** Place the button of the diaphragm at an angle so that part of the button fits in the recess of the compressor. Push firmly in the center of the diaphragm while turning it back and forth until the button seats in the compressor

Drawing 1



Drawing 2

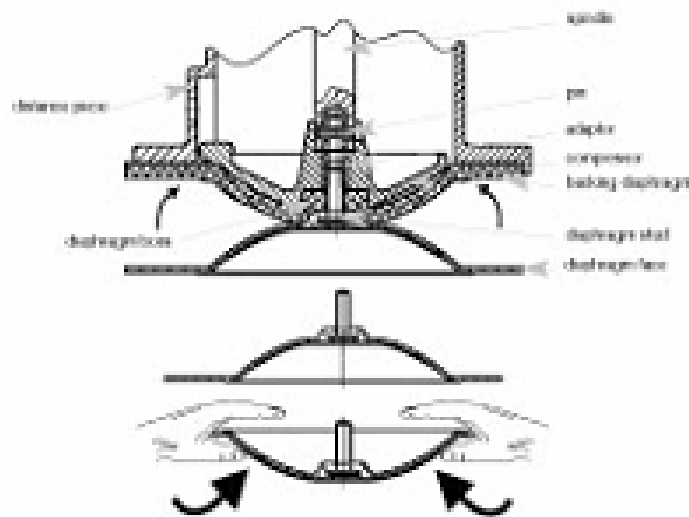


Installing the Diaphragm (Convex)

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Types 5E and 5S only

- Position rubber backing on compressor
- Invert the Teflon portion by pressing the center with your thumbs while holding the edges
- Screw the the Teflon face back, clockwise so that the cylindrical boss of the rubber backing fits completely in the recess of the compressor
- When contact (resistance) is felt turn the Teflon face counterclockwise until the bolt holes in the diaphragm and the bonnet flange are correctly aligned
- Press the edges of the diaphragm face so that it moves back to the close position

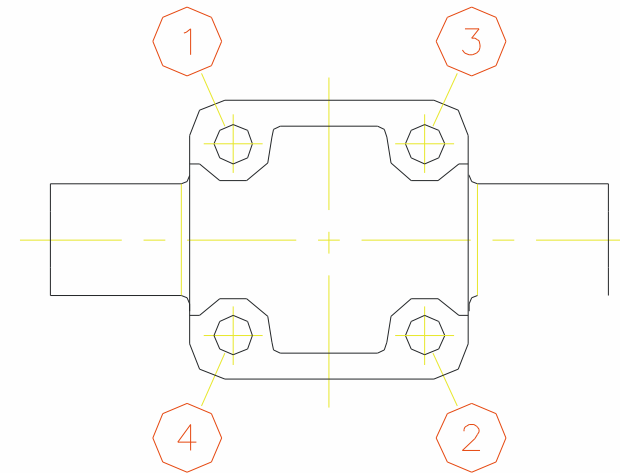
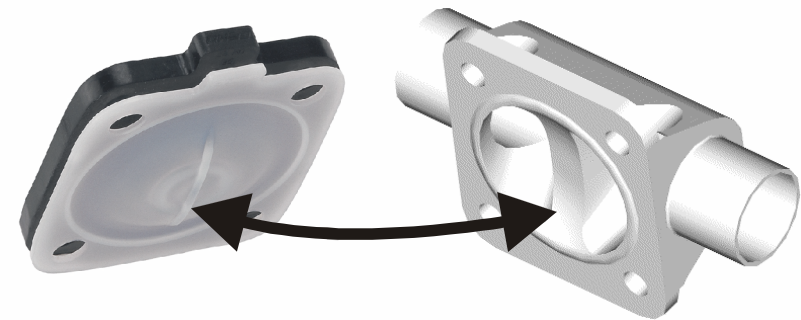


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Assembling Actuator to Body

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- **Align the diaphragm tab with the weir and install fasteners hand tight**
- **Bring the valve to the open position**
- **Close the valve**
- **Open manual and motorized valves 20%**
- **Cycle pneumatically actuated valves 3times prior to final tightening**
- **Tighten the bolts using a cross pattern**
- **Retighten after the system reaches operating temperature and pressure**



Torque Guidelines



Seat	Thread	Units	Standard values for sealing material			
			EPDM		PTFE	
			Min	Max	Min	Max
8 1/2" 22 x 22	4x M 4	[Nm] [lbf-in]	0.6 5.3	0.8 7.1	0.8 7.1	1.2 10.6
10 3/4" 44 x 39	4x M 5	[Nm] [lbf-in]	3 27	4 35	3.5 30	4.5 40
25 1" 54 x 46	4x M 8	[Nm] [lbf-in]	6.5 58	8 72	13 115	16 140
40 1 1/2" 70 x 65	4x M10	[Nm] [lbf-in]	12 107	14 125	24 215	28 250
50 2" 82 x 78	4x M12	[Nm] [lbf-in]	17 152	19 169	34 300	38 340
80 3" 127 x 114	4x M16	[Nm] [lbf-in]	50 445	60 534	100 890	120 1070
100 4" LK 194	8x M12	[Nm] [lbf-in]	40 356	50 445	80 700	100 890
125 5"	8x M16	[Nm] [lbf-in]	50.0 445	60 534	100 890	120 1070
150 6"	8x M16	[Nm] [lbf-in]	50 445	60 534	100 890	120 1070

Seat	Actuation Type
8	601, 602, 603, 605, 618, 640, 641, 650
10	612, 615, 618, 625, 640, 650, 653, 654
25-150	620, 640, 650, 653, 654, 671, 672, 673 675, 687, 688, 695, 698

The specified torques are standard values for A2 70 screws with light PTFE film.

After **repeated maintenance cycles**, the torques necessary for tightening may increase significantly.

As diaphragms may set in the course of time, the nuts and bolts on the body should be checked for tightness and re-tightened if necessary before commissioning the valve (and certainly after the **first sterilization cycle**).

The fasteners must be **tightened diagonally** and uniformly. Over-tightening of the screws will damage the diaphragm.

- **Bolt Characteristics:**
 - Property class of the bolt
 - Bolt surface treatment
 - Thread manufacturing (rolled or machine cut)
 - Lubricants / anti-seize agents

- **New or used (friction factors)**

- **Tightening procedure**

- **Diaphragm material properties**

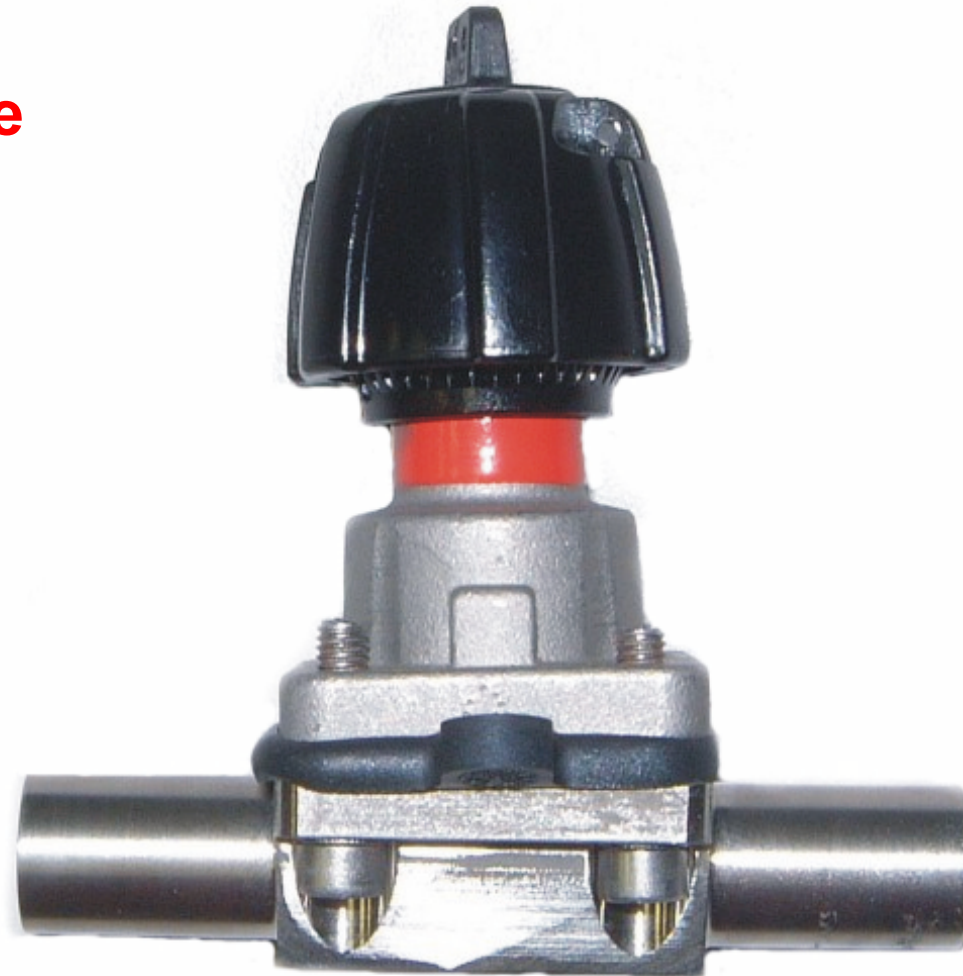
Suggested torque values are guidelines

**Diaphragm compression should be
15-20% of original thickness**

Diaphragm Compression

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Extreme



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Diaphragm Compression

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Excessive



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Optimum Compression

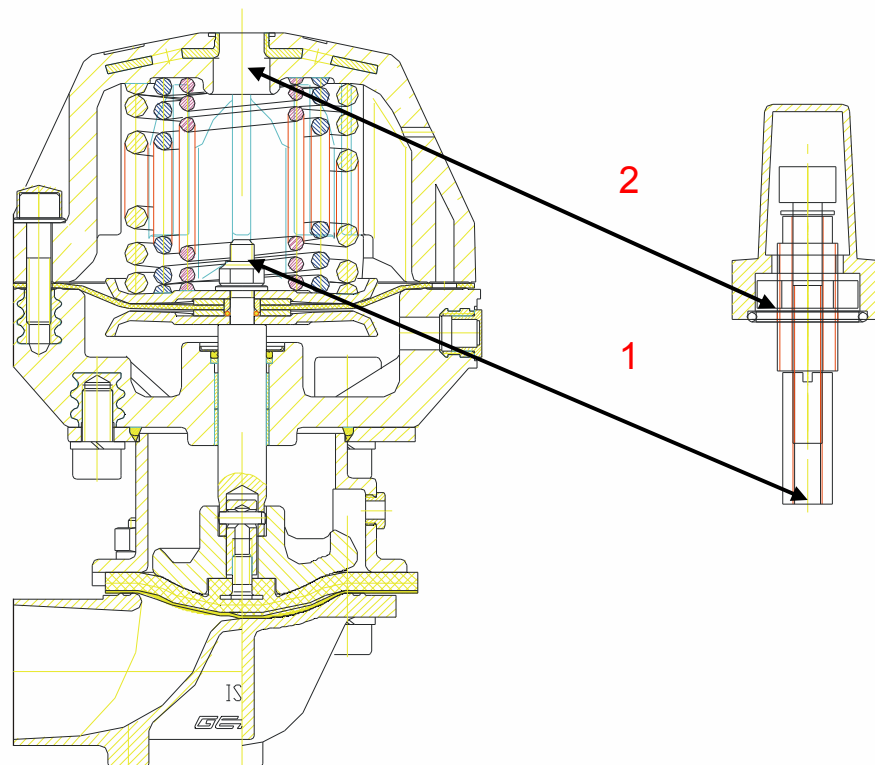
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Accessory Assembly

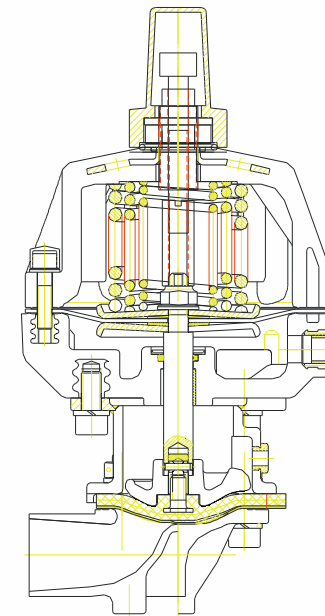
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- **Remove the actuator cap to provide access to the fastening threads**

- **The first (1) assembly point is between the indicator stem and the actuator spindle**

- **The second (2) assembly point is between the stroke limiter and the actuator housing**



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Optimum Compression

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