

Pressure retaining valve type V 86 and type V 186



Body material	PVC-U	PP	PVDF
Material of diaphragm	• EPDM ¹⁾	• PTFE with EPDM cushion	
Working temperatur	0 °C up to 60 °C	- 10 °C up to 80 °C	- 20 °C up to 100 °C
Nominal size / pressure class	Type V 186: DN 15 up to DN 50 / PN 10 (adjustment range: 0,5 – 9 bar) Type V 86: DN 65 up to DN 80 / PN 6 (adjustment range: 0,5 – 6 bar) Type V 86: DN 100 / PN 4 (adjustment range: 1 – 4 bar)		
Connection with pipe	<ul style="list-style-type: none"> • Cement- / Welding spigot • Flange connection acc. to DIN EN 1092-1 (replaces DIN 2501) - PN 10 (16)^{*)} • True union with cement- / welding socket (DN 10 – DN 50) • True union with spigot (DN 10 – DN 50) 		
Length	Company standard		

^{*)} also acc. to ANSI available

¹⁾ available for type V 86, DN 65 – DN 100

Example for an invitation to tender text:

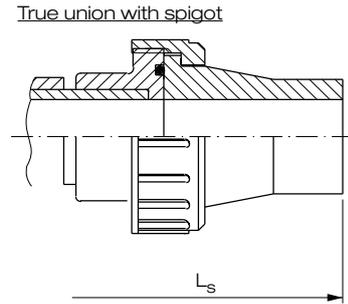
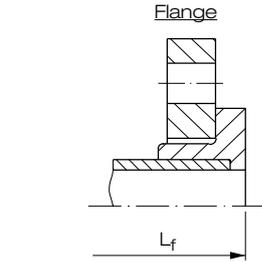
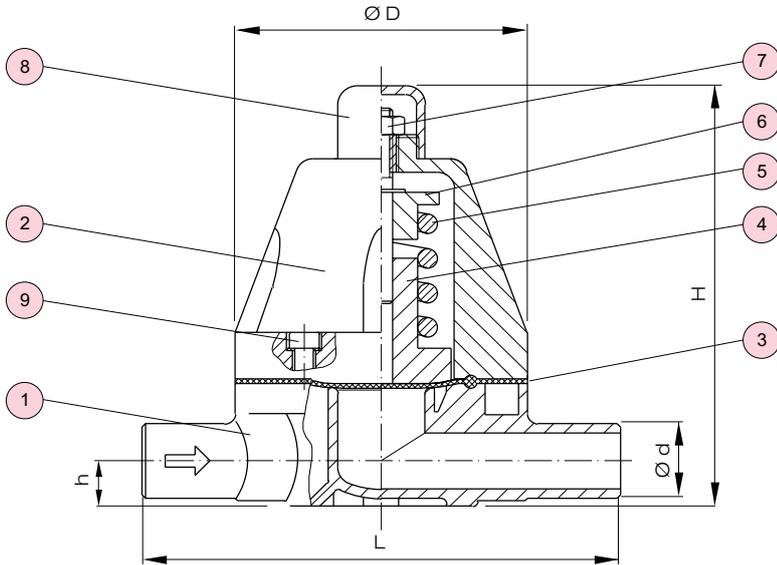
Pressure retaining valve type V 186, DN 50, PN 10, PVC-U / PTFE, unions with PE 100-spigot d 63 SDR 11, adjustment range 0,5 bar to 9 bar

Document: FRANK_DB_L7_Druckhalteventil Typ V 86 und Typ V 186_05-2021_EN

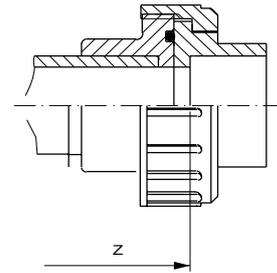
Pressure retaining valve type V 86 and type V 186

Cement- / welding spigot

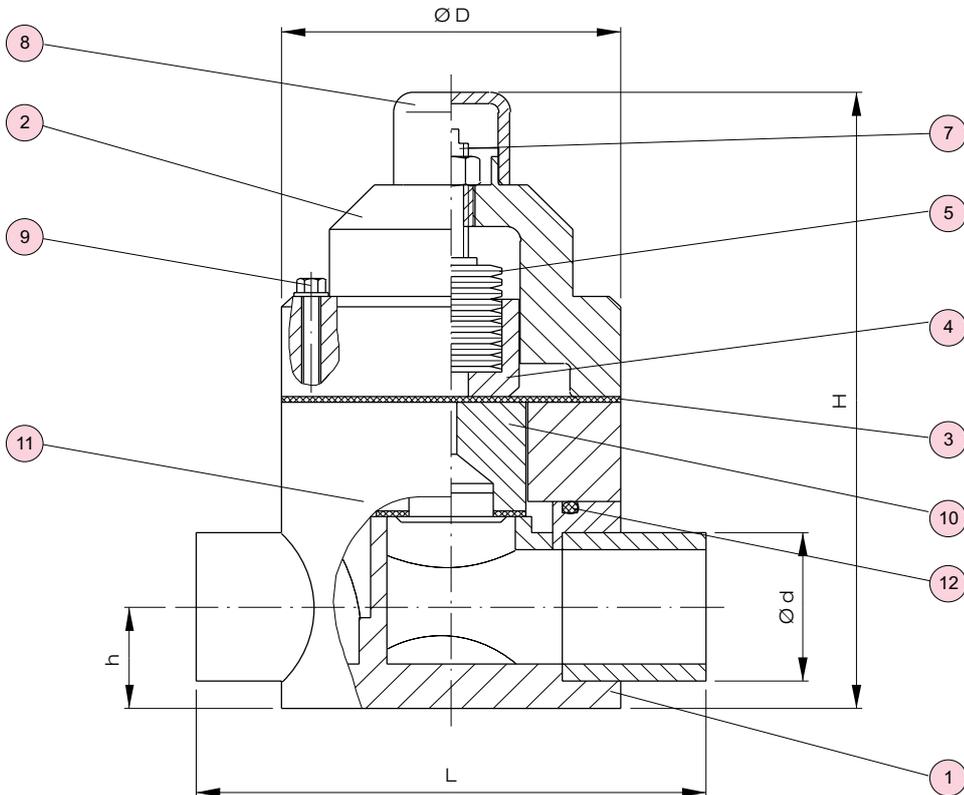
V 186 (DN 15 – DN 50)



True union with cement- / welding socket



V 86 (DN 65 – DN 100)



Pressure retaining valve type V 86 and type V 186

No.	Description	Number	Material
1	Base plate	1	PVC-U, PP, PVDF
2	Bonnet	1	PVC-U, PP, PVDF
3	Diaphragm ^{*)}	1	PTFE, EPDM ²⁾
4	Thrust piece	1	PP
5	Pressure spring ^{*)} , ¹⁾	1	Spring steel
6	Spring plate	1	Aluminum alloy

¹⁾ DN 65 – DN 100 disk springs

²⁾ only DN 65 – DN 100

³⁾ Standard for version with PTFE diaphragm

^{*)} Wearing parts / recommended spare parts

No.	Description	Number	Material
7	Adjustment screw / nut	1	A2 - 1.4301 (SUS 304)
8	Cap	1	PVC, PP
9	Screw set	1	A2 - 1.4301 (SUS 304)
10	Piston complete ^{*)}	1	PVC-U, PP, PVDF
11	Piston guide	1	PVC-U, PP, PVDF
12	O-ring ²⁾	1	EPDM, FKM ³⁾

Description

- Pressure retaining valve V 86 and V 186 generate a constant working pressure in front of the valve.
- When used in the bypass, they can be used as a pressure relief valve to reduce pressure peaks.

Functionality

By a preloaded spring with a compression piece the preformed diaphragm (V 186) or the piston (V 86) is pressed against the sealing seat of the valve. In the initial state the valve is closed, there is no through flow. Exceeds the system pressure acting on the diaphragm the value of the set spring force, the through flow becomes released depending on pressure.

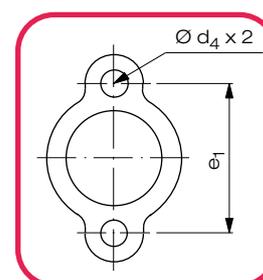
Special features

- Good control characteristic
- Installation independent of position

Type V 186 additionally:

- Low maintenance due to simple construction
- Entire actuator mechanism hermetically sealed from the medium by diaphragm
- Nearly dead space free body
- Integrated support for plate and rail mounting

Connection for attachment DN 15 – DN 50 (type V 186)



DN	d ₄	e ₁
15	8,8	30
20	8,8	30
25	8,8	48
32	8,8	48
40	8,8	50
50	8,8	50

Working pressure⁴⁾ p_B in bar

Body material	T _B [°C]	p _B [bar]		
		DN 10 – 50	DN 65 – 80	DN 100
PVC-U	0 up to 25	10	6	4
	40	6	6	4
	60	1	1	1
PP	-10 up to 30	10	6	4
	40	7	6	4
	60	4,3	3,5	2,4
PVDF	80	1,7	1,3	1
	-20 up to 40	10	6	4
	60	7,5	4,6	3
PVDF	80	5,3	3,3	2
	100	2	1	0,5

⁴⁾ Definition see chapter T2 / technical information

Dimensions and weights

Dimensions in mm											Weight in kg / pc.			
DN	d	D	h	H	PVC-U			PP / PVDF				PVC-U	PP	PVDF
					L ³⁾	z ⁴⁾	L _f ⁵⁾	L ⁶⁾	z ⁷⁾	L _f ⁵⁾	L _S ⁸⁾			
15	20	83	20	137	134	160	140	158	184	168	272	0,4	0,3	0,6
20	25	83	20	137	134	160	140	158	184	168	278	0,4	0,3	0,6
25	32	112	27	199	174	200	180	198	224	210	324	1,2	0,9	1,6
32	40	165	43	199	174	204	180	202	232	210	334	1,2	0,9	1,6
40	50	165	43	290	224	258	230	256	291	266	397	6,4	4,4	8,0
50	63	165	43	290	244	286	250	256	298	266	380	6,5	4,5	8,2
65	75	180	45	275	284	-	290	284	-	296	-	7,7	5,9	8,6
80	90	250	90	410	360	-	370	360	-	370	-	17,7	12,9	22,3
100	110	250	70	485	380	-	390	380	-	390	-	19,6	14,5	24,6

³⁾ Cement spigot

⁴⁾ Union with cement socket

⁵⁾ Flange

⁶⁾ Welding spigot (IR or butt)

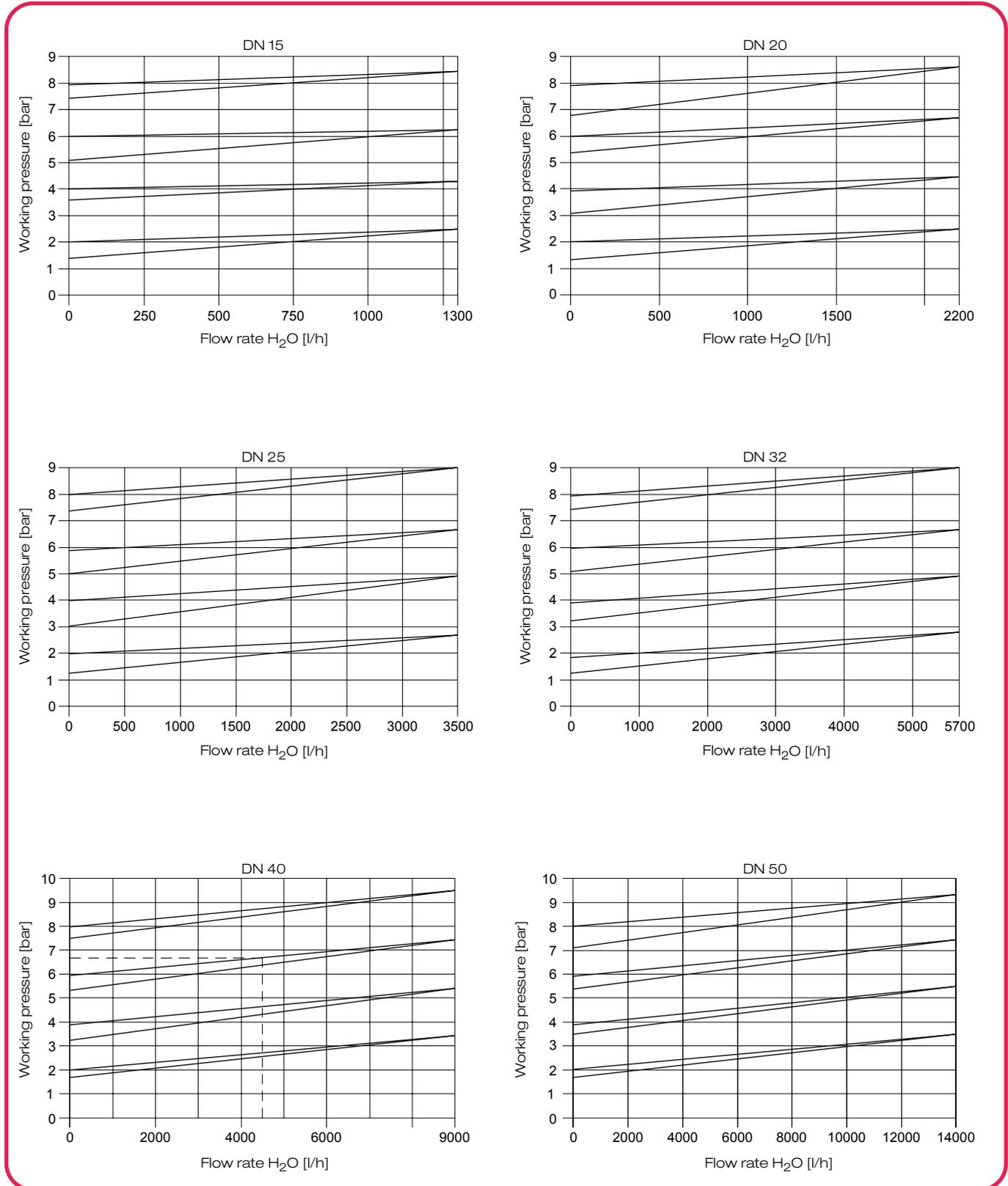
⁷⁾ True union with welding socket

⁸⁾ True union with welding spigot

Dimensions and weights for other connections see L7 – 44

Pressure retaining valve type V 86 and type V 186

Characteristic graphs



Example DN 40:

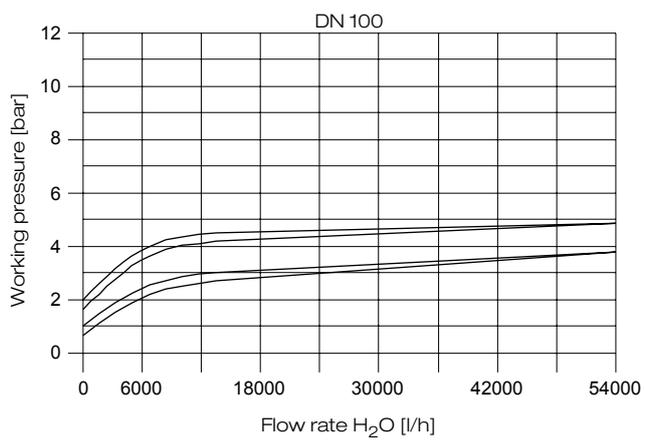
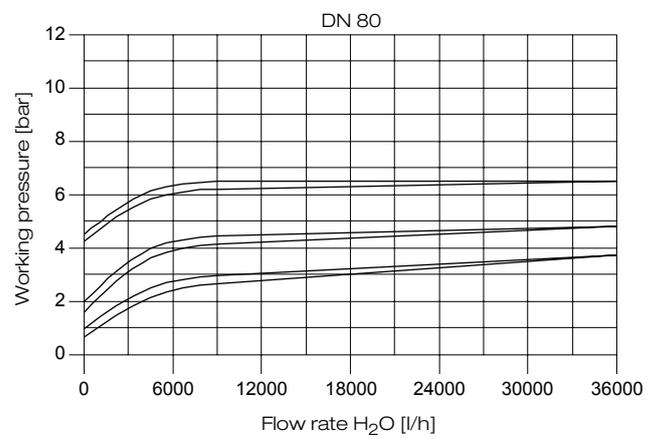
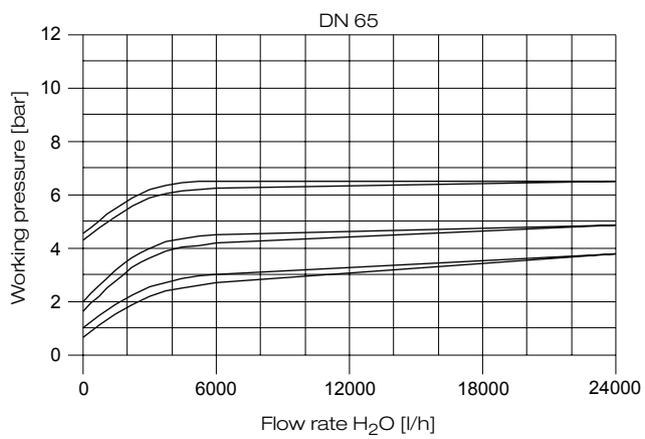
Flow: 4500 l/h

Working pressure: 6,7 bar

With the given parameters, the pressure retaining valve type V 186, DN 40 shows a pressure increase of 0,7 bar and a hysteresis of 0,3 bar.

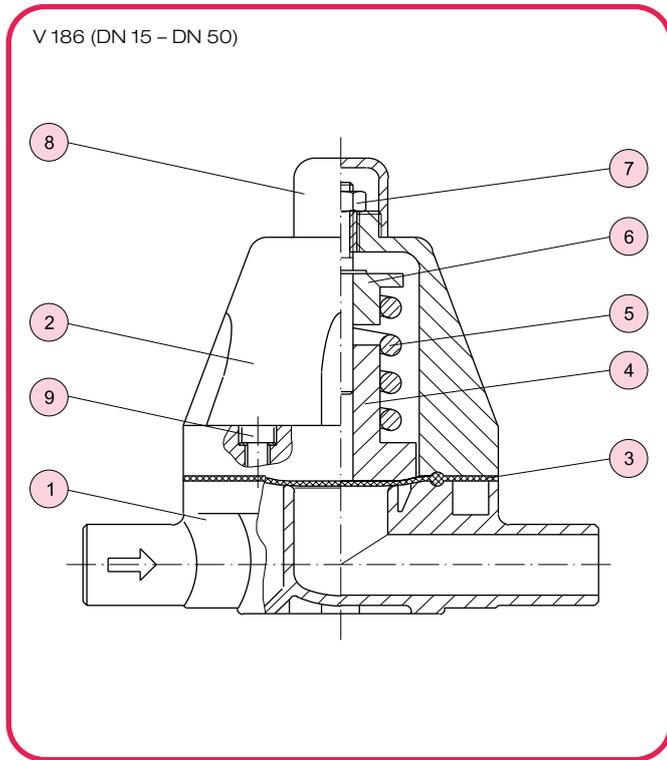
Pressure retaining valve type V 86 and type V 186

Characteristic graphs



Pressure retaining valve type V 86 and type V 186

Maintenance manual and mounting instructions



Tightening torque Md for body connection in Nm

DN	15/20	25/32	40	50	65	80	100
Md	9	12	20	20	29	29	29

Notes for correct installation

- Installation and operation should be performed by qualified personnel and in compliance with all safety regulations (eg UVV etc.) and common technical rules.
- The valve must be installed stress-free in the pipeline (plane parallelism, axial, length). If possible, use two detachable pipe connections (flange or screw connection).
- Flange connection:
Connecting bolts have to be tighten evenly crosswise (observe the tightening torques of the screws). For plastic flanges in general washers have to be provided for bolts and nuts.
- Cement / welding socket, cement / welding spigot:
For the gluing or welding connection the relevant guidelines (e.g. DVS) have to be noted.
- Before commissioning the bolt torques on the housing must be checked and retightened if necessary.

Disassembling the valve

Attention: Never dismantle the valve when the pipe is under pressure.

- Put the valve in an upright position, turn off cap 8.
- Release counter nut on adjusting screw 7 and turn the screw counterclockwise until the compression spring 5 is completely relieved.
- Loosen the connecting screw 9 on the housing and lift off the upper part of the valve.
- Remove: spring plate 6, pressure spring 5, thrust piece 4, diaphragm 3 and piston (type V 86; s.p. L7 - 14).

Assembling of the valve

- The valve assembly is to be performed in reverse order to the disassembly.
- Before the assembly all parts have to be checked for damages.
- All parts have to be clean.
- Screws 9 have to be mounted evenly and crosswise according to the torques (see above).
- After assembly carry out a pressure test acc. to DIN EN 12266-1.

Adjusting the working pressure

- Remove cap 8, loosen lock nut.
- **Increase working pressure:**
Turn adjusting screw 7 clockwise.
- **Decrease working pressure:**
Turn adjusting screw 7 counterclockwise.
- Lock adjusting screw 7 with lock nut and mount cap 8.

Maintenance

- The valves are nearly maintenance-free.
- For heavily soiled and particle-carrying media, depending on the degree of soiling, cleaning is recommended at appropriate intervals.
- For cleaning, disassemble the valve into individual parts (for instructions, see „Disassembling the valve“).
- Depending on the operating conditions and operating time, various components may show signs of wear.
- As spare parts we recommend: diaphragm 3, compression spring 5, adjusting screw 7 with nut.

Trouble shooting

Disorder	Cause	Elimination
Leakage on the adjusting screw	Diaphragm defective	Replace diaphragm
Leakage between upper and lower part	Housing screws loose	Retighten screws acc. table screw tightening torques
Valve does not close properly	Sealing seat is dirty or damaged	Clean sealing seat and check for damages