

**General**

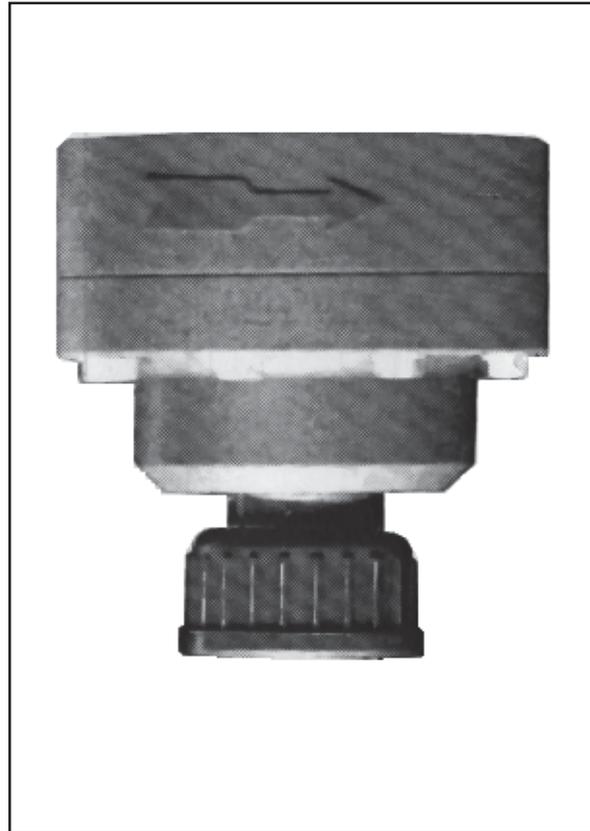
In chlorine gas metering systems with full vacuum, the vacuum is built up by injectors. It is produced by the stream of water in these aspirator pumps. If the water stream is disturbed or interrupted, the water pressure is also present at the intake port. For this reason, it is essential that the injectors be equipped with non-return valves at the intake port in order to prevent water entering the chlorine gas metering units, leading to corrosion and failure of the connected equipment.

**Function and mechanical design****a) Diaphragm valves up to 25 kg Cl<sub>2</sub>/h**

These non-return valves are designed as spring-loaded diaphragm valves which are supported by the water pressure. The tightness of the valve is enhanced as the water pressure increases. They are connected to the injector by a PVC screw connection and to the metering unit by either a clamped hose connection or a PVC screw connection.

The spring force results in a pressure drop of roughly 0.1 bar over the valve. This means that the injector intake pressure must be roughly 0.1 bar lower than that of the incoming gas. This pressure drop has been taken into account in the performance characteristics for the injectors.

A version with integrated backpressure controller to DIN 19606 is available for metering capacities up to max. 6 kg/h. The controller ensures a constant vacuum in the line to the metering unit in order to exclude the risk of metering errors due to fluctuations in intake pressure. The controlled vacuum is in the order of -0.3 bar.

**b) Disk valves up to 200 kg Cl<sub>2</sub>/h**

The disk valves are similarly spring-loaded. The locking force increases with the water pressure. These valves are supplied as flanged valves. They are connected to the metering unit via a PVC screw connection. Forcing pumps with a motor output of up to 30 kW or more are used for large injectors. Since the energy lost due to the pressure drop over the non-return valve plays a considerable part here, the pressure drop attributable to the locking spring has been minimized in these valves and is in the order of 0.05 bar.

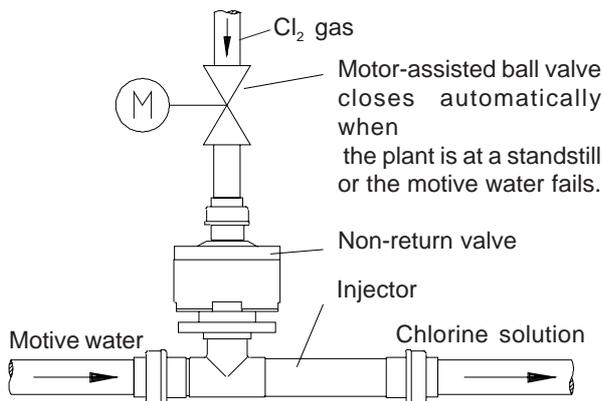
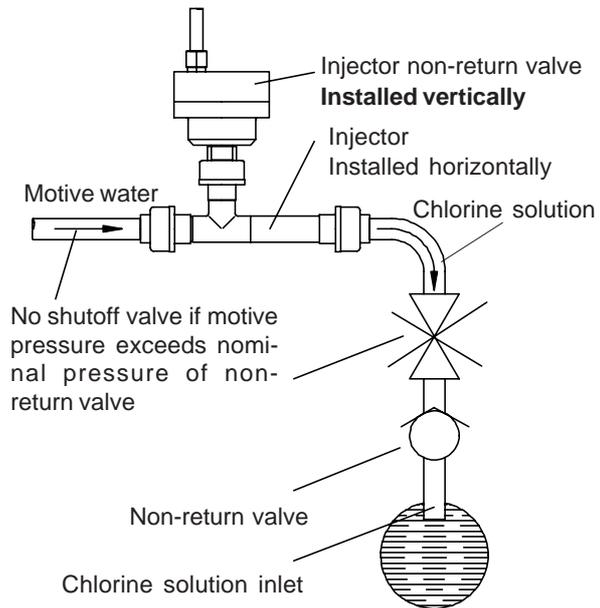
**Installation**

The non-return valves are installed in a vertical position on the horizontal injector.

**Special features associated with disk valves**

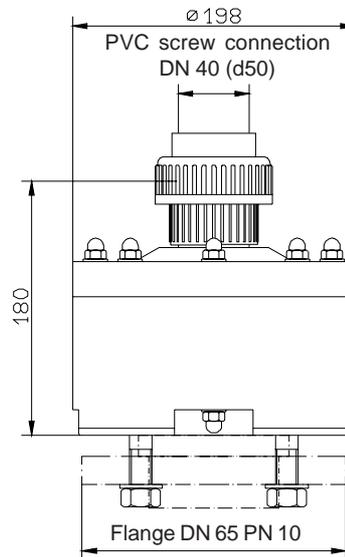
Disk valves are normally used in large plants, where the motive water often contains impurities obstructing the seat of the valve disk.

For this reason, an additional valve which closes automatically when the motive water stops should be installed in the vacuum line between injector non-return valve and metering unit. A motor-assisted ball valve could be used for this purpose. This valve prevents leakage water slowly advancing towards the chlorine equipment while the plant is at a standstill.



**Disk valve with flange connection**

For injectors type D, DH and for large injectors with a max. throughput of 200 kg/h  
Art. No. 23215810



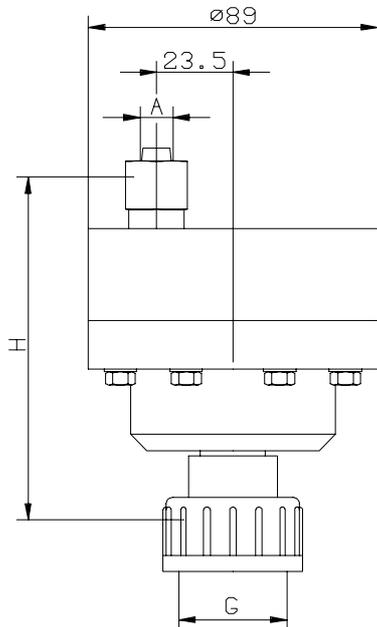
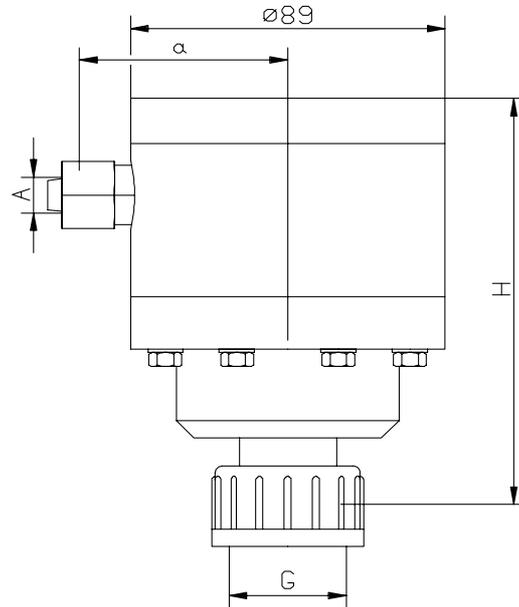
**High motive-water pressures**

A shutoff valve must not be installed in the chlorine solution line if the pressure of the motive water may exceed the nominal pressure of the injector non-return valve. The maximum delivery pressure of the forcing pump would be applied to the injector non-return valve and the diaphragm would rupture if such a valve were to close during operation of the forcing pump. In accordance with the delivery characteristic of the pump, this pressure may be several bar higher than the normal working pressure. For this reason, only a non-return valve may be installed at the inlet for the chlorine solution.

**Technical data**

*Disk valve*

Nominal pressure	:	PN 10
Max. temperature	:	35 °C
Opening pressure	:	approx. 0.05 bar
Materials	:	PVC, PE, Viton, Hastelloy

**Diaphragm valve without backpressure controller**

**Diaphragm valve with backpressure controller**

**Diaphragm-type non-return valves without backpressure controller**

Max. throughput kg/h	For injector types	G	A	H mm	Article No.
6	A,AH,B,BH;E	G1	PE hose 8/12	112	23222169
6	A,AH,B,BH;E	G1	PE hose 12/16	110	23233163
6	A,AH,B,BH;E	G1	PVC screw connection DN 15 (d20)	117	23232920
15	C,F	G2	PE hose 12/16	136	23222262
25	C,F	G2	PVC screw connection DN 15 (d20)	142	23232623

**Diaphragm-type non-return valves with backpressure controller**

Max. throughput kg/h	For injector types	G	A	a mm	Article No.
6	A,AH,B,BH;E	G1	PE hose 8/12	60	23232912
6	A,AH,B,BH;E	G1	PE hose 12/16	65	23233800

**Technical data**
*Diaphragm valves*

Nominal pressure : PN16  
 Max. temperature : 35 °C  
 Opening pressure : approx. 0.1 bar  
 Materials : PVC, PVDF, Viton, Hastelloy