



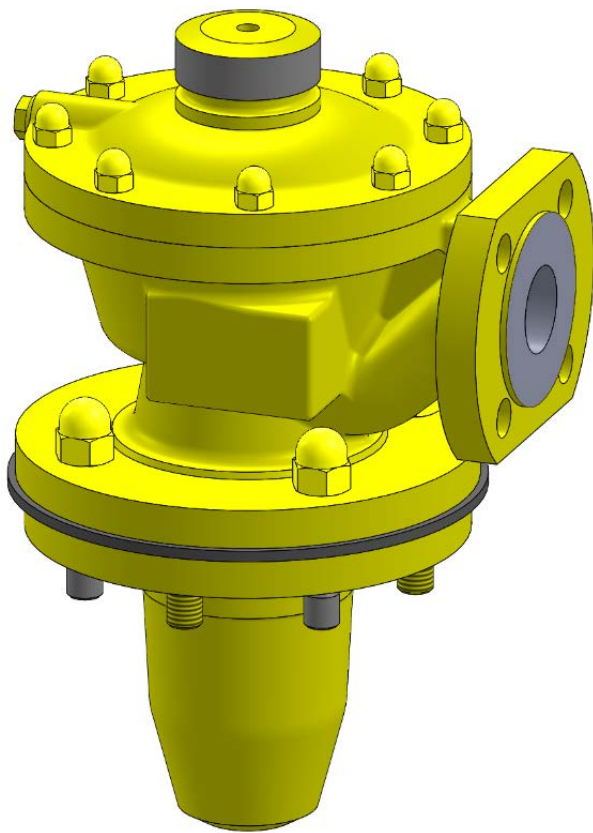
PHÖNIX

STRACK

DAUME
REGELARMATUREN



Solent & Pratt
Phönix Ltd



Transportation Valve

Type 309.50 & 51

PN 25 & Class 150

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Model 309.50 & 51

For top loading of ISO-container

Applications & Design Features

TPED 2010/35/EU



Applications

Model 309.50 & 51 is designed for the safe ISO-container transport of hazardous materials involving lethal, toxic, corrosive, or inflammable fluids.

The most common applications are

- Dry Chlorine (Cl₂) liquid or gas service temperature -40°C to 120°C / -40°F to 248°F
- Anhydrous Hydrofluoric acid (HF)
- Phosgene (COCl₂)
- Methyl Mercaptan (CH₄S)
- Vinyl Chloride (C₂H₃Cl)
- Ammonia (NH₃)
- Sulphur Dioxide (SO₂)
- Propane (C₃H₆)
- Butane (C₄H₁₀)
- fluids of similar nature.

Model 309.50 & 51 is a combination of a spring loaded ball check valve and a pneumatically operated bellows sealed angle valve. Both are mounted separately to the manway cover of the portable tank. The check valve is located directly underneath the angle valve and flush mounted with the top of the manway cover. This protects the integrity of the check valve and prevents product spill in the event that an accident (e.g. roll over) damages the above mounted angle valve. The torsion-proof multiple-wall hydroformed bellows reliable prevents stem leakage. Metal-to-metal or soft seating are available seating options for the angle valve.

Model 309.50 & 51 conforms with TPED 2010/35/EU, GEST 17/492, EN 14432 DIN 26028 and CEFIC UN 14 and has been approved by Euro Chlor for compliance with the requirements for the transport of liquid chlorine. In addition the valve is approved by several european railways for use within their respective territories.

Design features

Bellows

- exposed/flushed to product flow for self cleaning
- multiple walls and hydroformed bellows
- up to 20.000 bellows operations guaranteed

Bodies

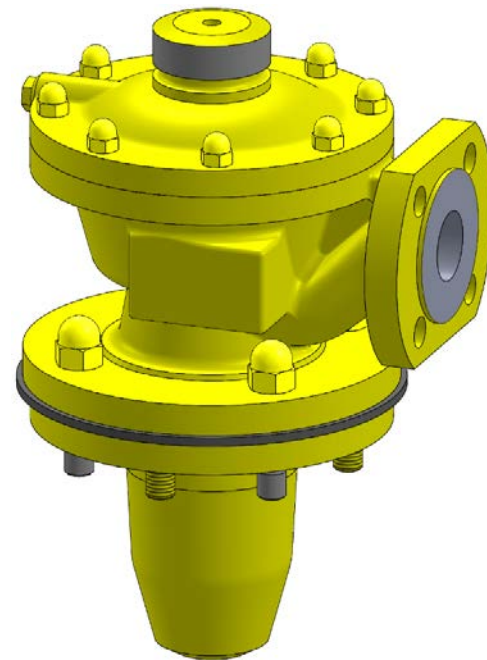
- bodies are one-piece forgings or castings with larger than required wall thickness and integral flanges
- no welds in pressure boundary

Seats

- angle valve disc either with soft seal or metal-to-metal seal
- knife edge seat for bubble-tight shutoff
- replaceable disc for inexpensive maintenance
- internal spring loaded Ball Check Valve with soft seal PTFE ball

Actuator

- internal Diaphragm Actuator
- fail position close
- with locking cap to prevent involuntarily opening during transport



= zero emissions, zero seat leakage, low maintenance

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Function

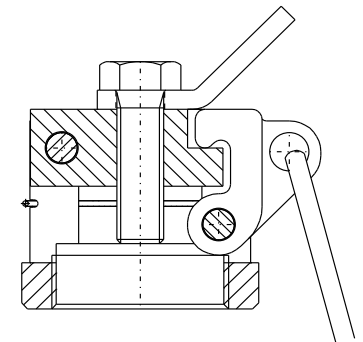
Model 309.50 & 51 is a combination of an air-to-open, fail-to-close Angle Globe Valve and an independently mounted Ball Check Valve. The Check Valve is flush-mounted with the top of the manway cover directly below the Angle Valve. Both valves are fail closed by spring load. During transport the Angle Valve Stem is additionally secured with a Transport Locking Cap to avoid an involuntary opening. For loading or unloading the actuator can be operated with dry clean air (80-100 psi / 5,5-7 barg) or nitrogen. The supply pressure forces the stem downwards, lifting the Angle Valve Disc from its seat and – with further downward movement - opens the Check Valve. On air failure the springs of the Angle Valve and the Check Valve reseal both valves independently and simultaneously into their seats.

If no air supply is available the valve can be operated with the Manual Override (see figure). the device is mounted onto the top of the valve, replacing the transport locking cap. It has a built-in trip device to operate as a quick-closing element for emergency operation. A strong release cord or wire rope must be connected to the spring lock of the trip device to enable remote operation. Once the trip device is released both valves are shut immediately.

Quick Closing & Manual Opening Device

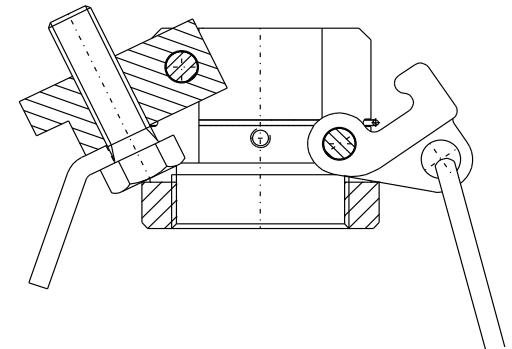
Applications as Emergency Closing Mechanism

- A ripcord shall be attached to the spring lock to enable a safe distance operation
- In case of an emergency pull the ripcord to unlock the safety device
- Valve closes in a fraction of a second by spring force



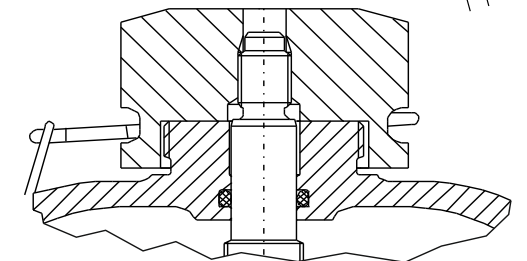
Applications as Manual Opening Mechanism

- For opening mechanism turn the hexagon bolt on top clockwise
- For closing mechanism turn the hexagon bolt on top anticlockwise



Transport Locking Device

- Prevents involuntarily opening during transport caused e.g. by shocks from the rails or similar
- To be screwed-on after each loading /unloading procedure and tightened by hand



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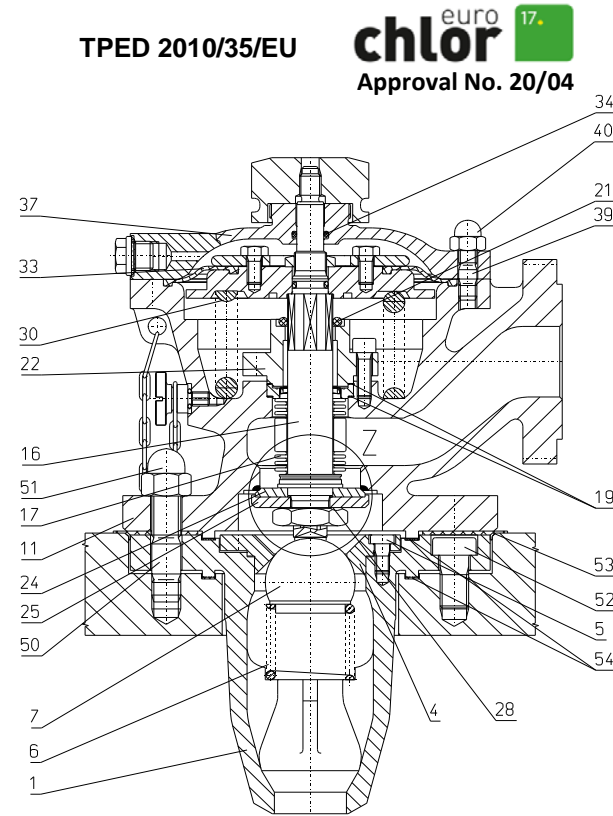
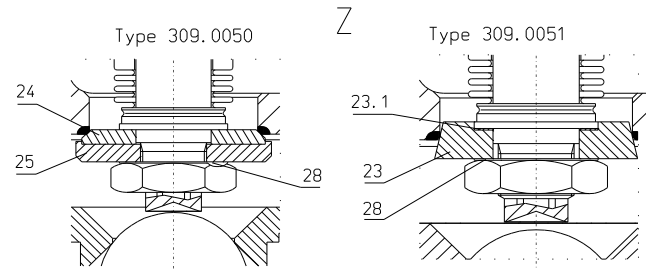
Standard Materials of Construction

Options

Other customer specific designs on request!
Other materials per customer requirements are available!

Notes

Phönix reserves the right to change product design and specification without notice!



Materials

Item	Part Name	low temp. Carbon steel -40°C up to 120°C	low temp. Carbon steel -40°F up to 248°F
1	Body / Ball Valve	1.6220	A 352 - LCC
4	Seat	1.4541 / 2.4360	AISI 321 / UNS N04400
5	Cylindric bolt	1.7225 / A4-70	42CrMo4 / A4-70
6	Spring	1.4310	A 313
7	Ball	PTFE	PTFE
11	Body / Angle Valve Seat overlay	1.6220 1.4316 / 2.4377	A 352 - LCC AWS 308LSi / Monel
16	Stem	1.4541 / 2.4360	AISI 321 / UNS N04400
17	Bellows	2.4819 / 2.4360	Hastelloy C-276 / UNS N04400
19	Gasket	Sil C 4400 / PTFE	Sil C 4400 / PTFE
22	Bellows support	2.0401	CuZn39PB3
21	O-Ring	Viton-FKM-FPM 85	Viton-FKM-FPM 85
23	Disc support (...0051)	2.4819	Hastelloy C276
23.1	Gasket (...0051)	Sil C 4400 / PTFE	Sil C 4400 / PTFE
24	Disc (...0050)	PTFE	PTFE
25	Disc support (...0050)	1.0715 / 1.4541	AISI 1213 / AISI 321
28	Washer	1.4541	AISI 321
30	Spring	1.1200, immersion-lacquered	Carbon steel, immersion-lacquered
33	Diaphragm	EPDM-fabric/ Viton-FKM-FPM 85	EPDM-fabric/ Viton-FKM-FPM 85
34	O-Ring	Neoprene	Neoprene
37	Bonnet	1.0566 / 1.0571	A 350 - LF2
39	Stud bolt	8.8	8.8
40	Cap nut	6	6
50	Stud bolt	1.7225 / A4-70	42CrMo4 / A4-70
51	Cap nut	6 / A4-70	6 / A4-70
52	Cylindric bolt	1.7225 / A4-70	42CrMo4 / A4-70
53	Gasket	Foam rubber	Foam rubber
54	Gasket	Sil C4400 / PTFE	Sil C 4400 / PTFE

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PN25 & Class 150 Size DN40 & NPS 1½

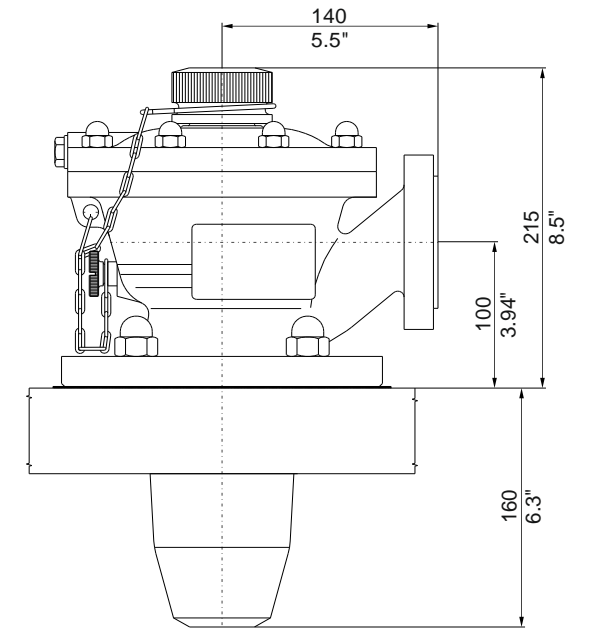


Testing / Marking

- test and design acc. to DIN EN 14432, GEST 17/492
- standard tests acc. to DIN EN 14432, GEST 17/492, DIN EN 12266
- marking acc. to TPED, DIN EN 14432, GEST 17/492

Preservation

- drying at a temperature of 120°C (248°F) for at least 3 hours
- stuffing of drying agents (silica gel) into the valve
- blanking of inlet and outlet orifice with suitable gaskets and bolted flanges to avoid entry of moisture into the valve
- disc secured in closed position
- unfinished surfaces protected against rust
- lubrication with chlorofluorinated grease



Technical data & weight & flow coefficient

Size	DN40 / NPS 1½
Rating	PN25 / Class 150
Flow rate	K _v = 23 m³/h / C _v = 27 US Gal/min with flow through both valves
Service temperature	-40°C to 120°C / -40°F to 248°F for standard material configuration
Weight	35 kg / 77 lbs

Standard connections

Ball Check Valve

To manway cover	Flange DN80 PN25/40, lower side tongue, upper side groove per DIN2512
To suction pipe	Butt welding end for pipe DN40 per DIN EN12627 or NPS 1½ per ASME B16.25

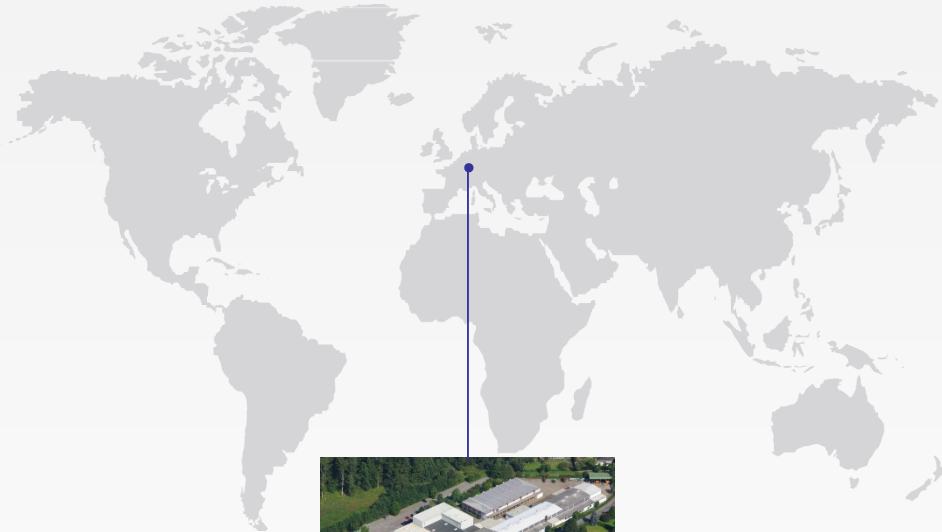
Angle Valve

To Check Valve	Flange DN80 PN25/40, tongue per DIN2512
To loading rack	Flange DN40 PN25 DIN2501 form D or NPS 1½ Class 150 ASME B16.5 RF

Pneum. actuator

To air supply	1 hole with G ¾ or NPT ¾
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