

2.10 Shutter Valves

The Shutter Valve is a self-draining valve that allows for multi-directional flow of product.



Product leaflets

Shutter Valve2.10.564

Price lists

MH53, DH532.10.568

AH52, AH532.10.569

Handles for MH, DH and AH valves2.10.570

Actuator KH630, - 631, -632, -6332.10.571

MH, DH and AH - Options2.10.573

Shutter Valve for the Difficult Applications

Alfa Laval Shutter Valve

Concept

Koltek valve is a manually or pneumatically operated valve, designed for use in the food, chemical, pharmaceutical and other industries where valves of hygienic design are needed.

Working principle

A PTFE shutter is operated by means of a handle or an actuator. A spring system presses the shutter against the inside cylindrical surface of the valve body thus ensuring complete tightness.

The air actuated valve can be fitted with ThinkTop® or a laterally fitted indication unit for remote indication of the valve position. The manually operated valve can be fitted with laterally indication units (used for LKLA actuators). The actuator for the valve comes in two versions, single acting or double acting. The single acting actuator operates with one main piston whereas the double acting actuator operates with two main pistons.

Standard Design

The valve consist of a rigid body with an internal cylindrical bore and 3 ports for pipe connection. The two lids have guide rings or bearings for an internal shaft which supports and positions the shutter. The stainless steel handle or the actuator is fitted to turn the shaft.

The actuator consists of a system of cylinders and one or two main pistons interconnected with a toothed bar which interacts with a gear wheel on the valve shaft. The system is insensitive to pressure shocks in the valve.

TECHNICAL DATA

Temperature

Max. temperature: 110°C

Pressure

Max. pressure against shutter: 300 kPa (3 bar)

Max. pressure behind shutter: 1000 kPa (10 bar)

Air pressure for actuator: Max. 800 kPa (8 bar)
Min. 500 kPa (5 bar)

Air Connections

Compressed air:

R 1/8" (BSP), internal thread



PHYSICAL DATA

Materials

Product wetted steel parts: 1.4404 (316L.)

Product wetted seals: Shutter in PTFE
EPDM

Actuator seals: NBR

Actuator functions

Actuator type 630:

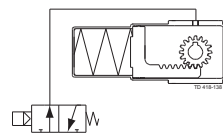
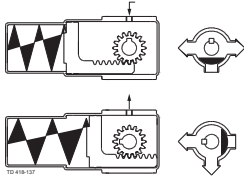
- for 25 mm to 76.1 mm valves only
- two positions
- spring/air
- turning angle 1x90°

Actuator type 632:

- two positions
- air/air
- turning angle 1x180°

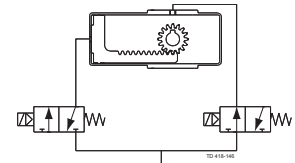
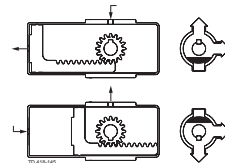
Sizes 12.7-51mm/DN25-50:

Pneumatic connections



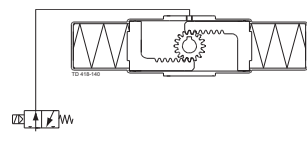
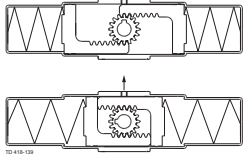
Sizes 12.7-76.1mm/DN25-65:

Pneumatic connections



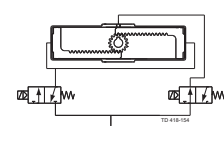
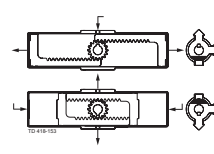
Sizes 63.5-76.1mm/DN65:

Double acting actuator



Sizes 101.6mm/DN80100:

Double acting actuator



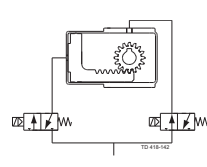
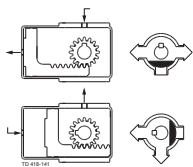
Actuator type 631:

- two positions
- air/air
- turning angle 1x90°

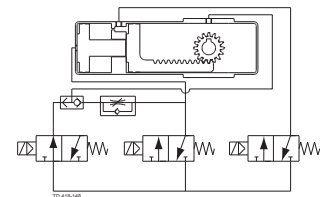
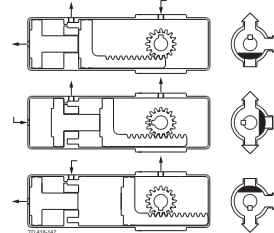
Actuator type 633:

- three positions
- air/air
- turning angles 2x90°

Sizes 12.7-76.1mm/DN25-65:

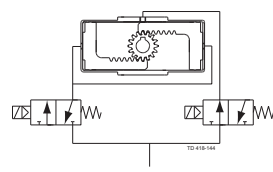
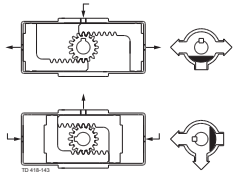


Sizes 12.7-76.1mm/DN25-65:



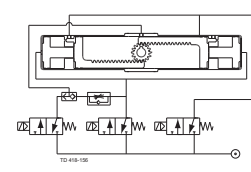
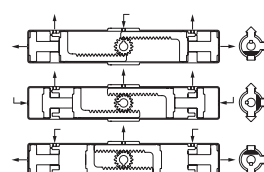
Sizes 101.6mm/DN80100:

Double acting actuator

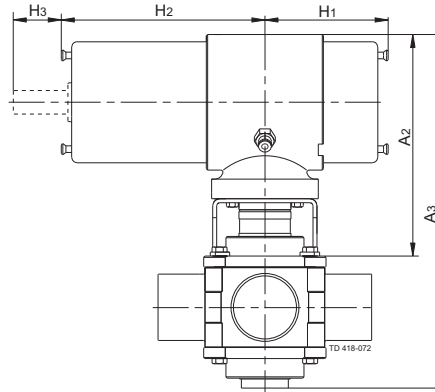
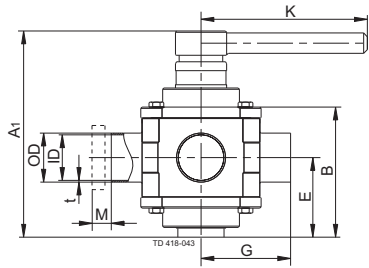


Sizes 101.6mm/DN80100:

Double acting actuator



Dimensions (mm)



a. MH53 with handle.

b. MH53 with actuator, type KH631.

Fig. 1. Dimensions.

valves:

Size	25	38	51	63.5	76.1	101.6	25	40	50	65	80	100
	mm	mm	mm	mm	mm	mm	DN	DN	DN	DN	DN	DN
A ₁	116	149	161	179	204	292	116	150	161	204	272	292
B	65	90	102	118	137	195	65	90	102	137	174	195
OD	25.4	38.1	50.8	63.5	76	101.6	29	41	53	70	85	104
ID	22.1	34.8	47.5	60.2	72	97.6	26	38	50	66	81	100
t	1.65	1.65	1.65	1.65	2	2	1.5	1.5	1.5	2	2	2
E	42	56	62	70	80	117	42	56	62	80	107	117
G	55	70	82	105	110	155	64.5	80	82.5	100.5	115.5	130.5
K	130	130	180	180	235	330	130	130	180	235	330	330
M/DIN male							22	22	23	25	25	30
M/SMS male	15	20	20	24	24	35						
Weight (kg)	1.8	3.3	4.8	6.9	10.5	25.0	1.8	3.3	4.8	10.5	22.0	25.0

Actuators

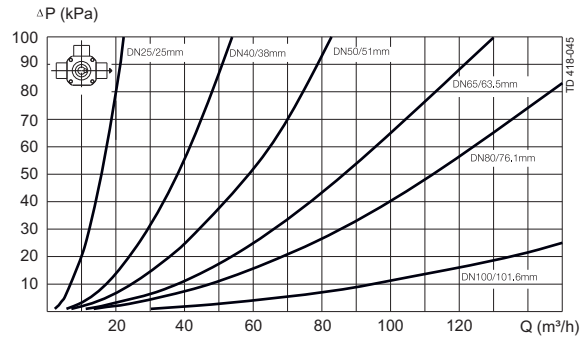
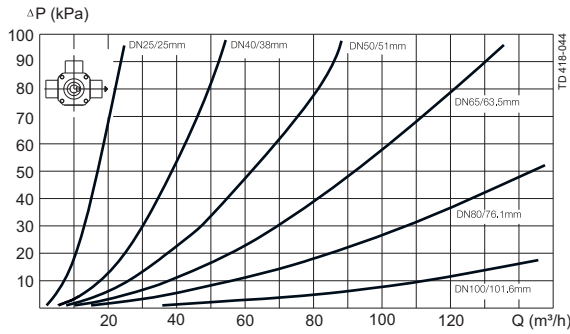
Size		25mm	38mm	51mm	63.5mm	76.1mm	89mm	101.6mm
		DN25	DN40	DN50		DN65	DN80	DN100
A ₂		170	170	170	172	178	194	194
A ₃		233	260	273	290	315	369	389
H ₁	KH630	57	57	57	285	285		
H ₁	KH631	57	57	57	57	57	119	119
H ₁	KH632	95	95	95	95	95	194	194
H ₁	KH633	95	95	95	95	95	281	281
H ₂	KH630	326	326	326	285	285		
H ₂	KH631	119	119	119	119	119	119	119
H ₂	KH632	157	157	157	157	157	194	194
H ₂	KH633	243	243	243	243	243	281	281
H ₃		43	43	43	43	43	43	43

Caution, opening/closing time:

Opening/closing time will be affected by the following:

- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

Pressure drop/capacity diagrams



Note!

For the diagram the following applies:

Medium: Water (20°C).

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in Anytime configurator.

Pressure drop can also be calculated with the following formula:

$$Q = K_v \times \sqrt{\Delta p}$$

Where

Q = Flow in m³/h.

K_v = m³/h at a pressure drop of 1 bar (see table above).

Δp = Pressure drop in bar over the valve.

How to calculate the pressure drop for an ISO 2.5" shut-off valve if

the flow is 40 m³/h

2.5" shut-off valve, where K_v = 111 (See table above).

$$Q = K_v \times \sqrt{\Delta p}$$

$$40 = 111 \times \sqrt{\Delta p}$$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

(This is approx. the same pressure drop by reading the y-axis above)

Options

- A. Male parts or clamp liners in accordance with required standard.
- B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
- C. Bottom lid for hot water or steam heating.
- D. Bottom fitted indication unit.
- E. Limit stop for MH 52/53.
- F. Pilot valve, type L or T (for actuator type 633). Type L is used when two ThinkTop units are used.
- G. Rebuilding to double acting valve for high viscosity product or quick operation.
- H. Product wetted seals of NBR or FPM..

Note!

For further details, see also instruction IM 70735.

Bottom fitted indication units*

(together with bracket for indication unit)

Actuator type	KH630	KH631	KH632	KH633
Indication unit				
LKLA (lateral indication unit)	1 pcs.	1 pcs.	2 pcs.**	2 pcs.**

*) Not possible in combination with heated lid.

**) Not suitable for micro switch.

Note! For all manually operated valves: Use LKLA indication units.

MH53, DH53

Shutter Valves

Product code: 5276

Material: 1.4404 (316L)
 Connection: ISO/DIN Welding ends
 Seals: EPDM
 Inside surface finish: Ra ≤ 0.8 μm
 Outside surface finish: Blasted
 Actuation: Manual

2.10

Item No.	PPL EUR	Item No.	PPL EUR	Valve size (mm)		Dimension (mm)				MH53 with 3 welding ends
				Inch tube	DIN tube	A ₁	E	G		
Inch tube		DIN tube						Inch tube	DIN tube	
MH53		DH53								
9612260113	1071	9612444703	1071	25	25	116.0	42.0	55.0	64.5	<p>TD 418-035</p>
9612260114	1147	9612444707	1147	38	40	149.0	56.0	70.0	80.0	
9612260115	1247	9612444711	1247	51	50	161.0	62.0	82.0	82.5	
9612260116	1592			63.5		179.0	70.0	105.0		
9612260117	1967	9612444715	1967	76.1	65	204.0	80.0	110.0	110.5	
		9612260168	3700		80	272.0	107.0		115.5	
9612260118	4549	9612444719	4549	101.6	100	292.0	117.0	155.0	130.5	

Options - please see later this chapter.

Product code: 5276

Material: 1.4404 (316L)
 Connection: ISO Clamp ferrules
 Seals: EPDM
 Inside surface finish: Ra ≤ 0.4 μm
 Outside surface finish: Ra ≤ 0.4 μm
 Surface finish: Electro polished
 Actuation: Manual

Item No.	PPL EUR	Valve size (mm)	Dimension (mm)			AH53 with 3 clamp ends
			A ₁	E	G Inch tube	
9612445017	1747	12.7			116.0	42.0
9612445023	1765	19.0	116.0	42.0	48.5	
9612260182	1900	25.0	116.0	42.0	58.0	
9612260186	2036	38.0	149.0	56.0	74.5	
9612260190	2222	51.0	161.0	62.0	87.0	

2.10

Options - please see later this chapter.

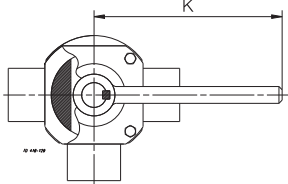
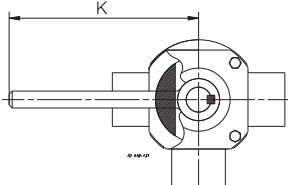
Handles for MH, DH and AH valves

Shutter Valves

Koltek valves
 Operating parts for MH, DH and AH valves
 Product code: 5277

Material: 1.4301 (304)

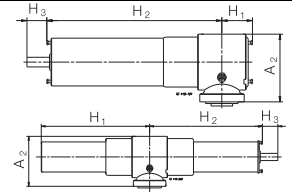
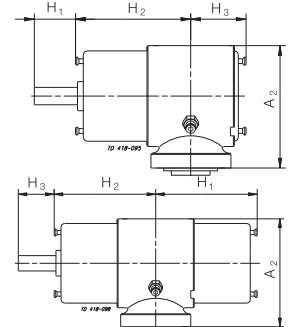
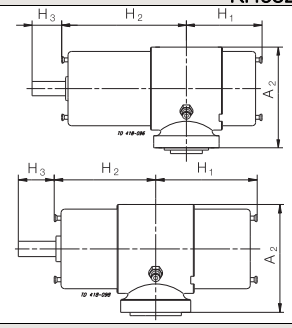
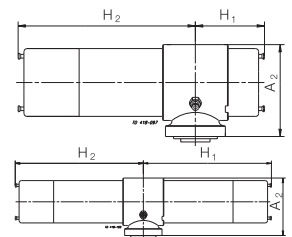
2.10

Item No.	PPL EUR	Valve size (mm)		Dimension (mm) K	For 3 ports, Inch valves 
		Inch tube	DIN tube		
9612436201	107	12.7-38		130	
9612436202	129	51-63.5		180	
9612436203	147	76.1		235	
9612449001	208	101.6		330	
For 3 ports, DIN valves					
9612436207	107		12.7-40	130	
9612436208	129		50	180	
9612436209	149		65	235	
9612449003	208		80100	330	

Options - please see later this chapter.

Actuators for MH, DH and AH valves
 Product code: 5275

Material: 1.4301 (304)
 Actuation: See below

Item No.	PPL EUR	Valve size (mm)		Description	Dimension (mm)				
		Inch tube	DIN tube		A ₂	H ₁	H ₂	H ₃	
				2 pos. 90°. Spring return					KH630
9612482102 9612494602	1822 2604	12.7-51 63.5-76.1	25-50 65	For indication For indication	129 129	57 285	326 285	43 43	
				2 pos. 90°. Air/Air					KH631
9612479203 9612480603	1375 2536	12.7-76.1 101.6	25-65 80100	For indication For indication	129 129	57 119	119 119	43 43	
				2 pos. 180°. Air/Air					KH632
9612479204 9612480604	1896 3604	12.7-76.1 101.6	25-65 80100	For indication For indication	129 129	95 194	157 194	43 43	
				3 pos. 90°.					KH633
9612495301	2418	12.7-76.1	25-65		129	95	243		

2.10

Bonnets - please see later this chapter. Options - please see later this chapter.

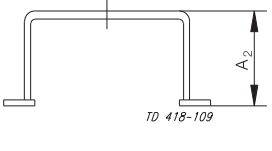
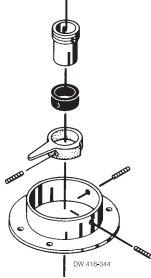
Actuator KH630, - 631, -632, -633

Shutter Valves

Bonnets and brackets for MH, DH and AH valves/actuators
 Product code: 5275, 5289

Material: 1.4301 (304)

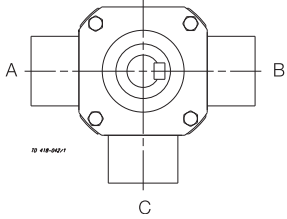
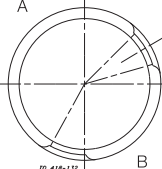
2.10

Item No.	PPL EUR	Valve size (mm)		Dimension (mm)		Bonnet
		Inch tube	DIN tube	A ₂		
Product code: 5275						
9612495901	138	12.7-25	25	44		
9612496001	138	38	40	44		
9612496101	138	51	50	44		
9612496201	138	63.5		46		
9612505101	138	76.1	65	52		
9612505201	215		80	68		
9612480801	215	101.6	100	68		
Product code: 5289						
Bracket for indication unit						
9612506201	75	12.7-25	25			
9612506202	70	38	40			
9612506203	70	51-76.1	50-65			
9612506204	132	89-101.6	80-100			

Options - please see later this chapter.

Shutter valves - options
 The Shutter valves not mentioned in the code number sheets, should be ordered as below:
 Product code: 5276

2.10

Item No.	PPL EUR	Valve size (mm)			
		Inch tube	DIN tube		
					Male parts
	80 100 105 171 192 334	25 38 51 63.5 76.1 101.6	25 40 50 65 80 100	Male part standards (included in the price) SMS, ISO/IDF, DS, BS, DIN, ISO clamp.	 <p>Please state which type of male part you want</p>
	0 100			Replacement to seals of Nitrile (NBR). Replacement to seals of Fluorinated rubber (FPM).	Seals
Product code: 5276					Convert to heated lid
	522 599 690 790 908 1055 1205	12.7-25 38 51 63.5 76.1 101.6	25 40 50 65 80 100	Convert to heated bottom lid.	
Product code: 5289					Heated lid
9612266101 9612266102 9612266103 9612266104 9612266105 9612266107 9612266106	532 612 706 810 933 1237 1237	12.7-25 38 51 63.5 76.1 101.6	25 40 50 65 80 100	Heated bottom lid for valves already in operation.	
					Limit stop for MH/DH 52/53
9612266201 9612266202 9612266204 9612266203	192 232 334 399	25 38 51-76.1 89101.6	25 40 50-65 80100	A = 180° turn B = 90° limited turn	
					Pilot valve
9611993181 9611993257	44 49	Pilot valve (L type) for type 633 actuator (when using two LKT-N top units). Pilot valve (T type) for type 633 actuator.			

* = On request

Note: Limit stop is only available for MH52 and MH53

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