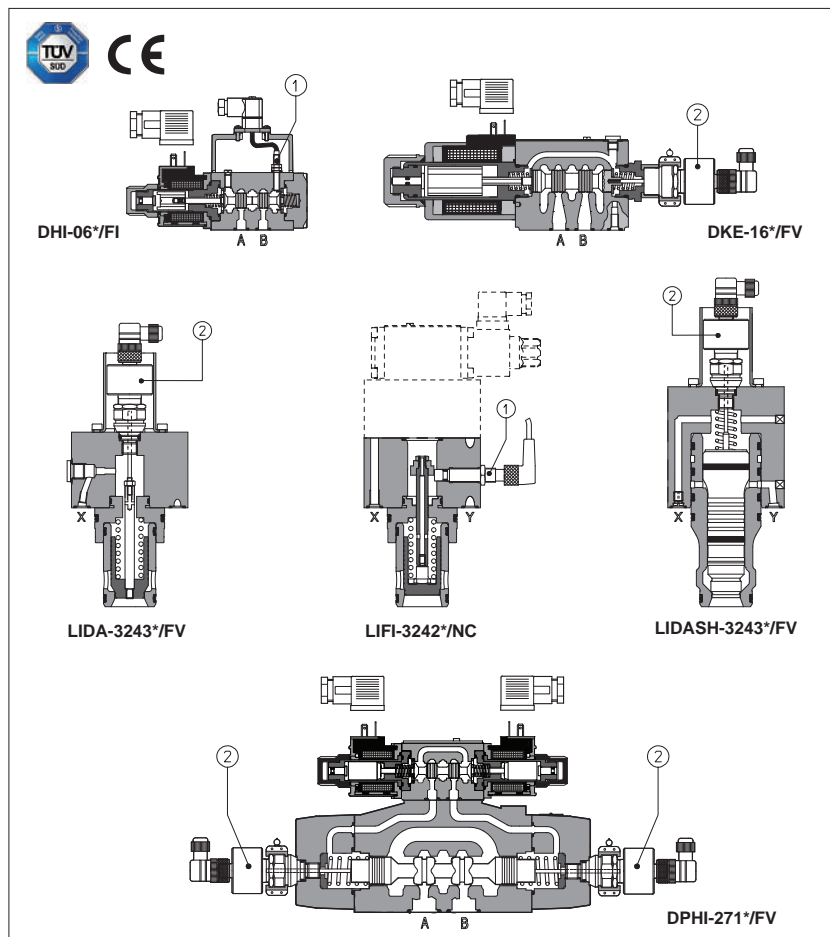


Safety valves

direct, pilot operated and cartridge execution
with inductive position or proximity switches
conforming to Machine Directive 2006/42/CE



Safety valves are designed to fulfil the safety criteria imposed to machine manufacturers by the European Machine Directive. They are **CE marked and certified by TÜV**, in accordance with the technical safety requirements provided in the **Machine Directive 2006/42/CE** but not included in the safety components of annex IV.

In addition to the normal hydraulic function they are equipped with inductive or proximity switches; with the on/off switch indicates the position of the spool/poppet of the valve. These valves are normally used to cut off the hydraulic power line in case of emergency condition, thus avoiding dangerous movements of the machines actuators. By checking the switch status, corresponding to "open" or "intercepted" hydraulic line, the machine controller can perform the safety function.

Two versions are available:

- **FI** inductive proximity switch ①;
 - **FV** inductive position switch (double contacts) ②;
- see section 14 for technical characteristics.

Safety valves are available in direct, piloted and cartridge executions, with same hydraulic and electric characteristics of standard products from which they are derived.

Typical application is on vertical and horizontal presses to shut off the fluid energy to one or more actuators as a consequence of the opening of the machine "gate" or as a consequence of an "emergency stop" command.

For details about the applicable EN standards, see www.atos.com, catalog on line, section P, table P004.

1 RANGE OF VALVE'S MODELS

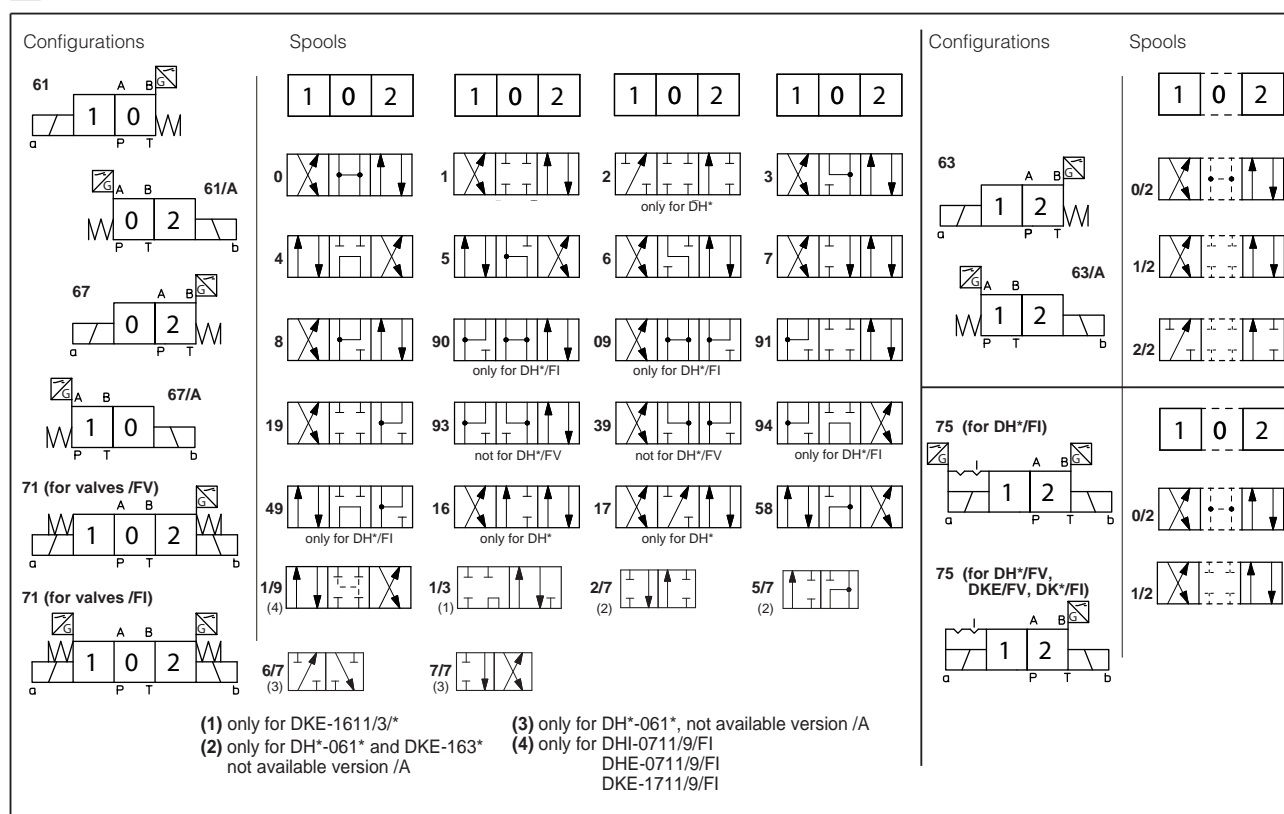
Valve code	Size	Description	DC solenoids		AC solenoids	
			Switch type			
			/FI	/FV	/FI	/FV
DHI-06	06	direct operated solenoid valves, on-off, single solenoid	●	●	●	●
DHI-07	06	direct operated solenoid valves, on-off, double solenoid	●		●	
DHE-06	06	direct operated solenoid valves, on-off, single solenoid	●	●	●	●
DHE-07	06	direct operated solenoid valves, on-off, double solenoid	●	●	●	
DKE-16	10	direct operated solenoid valves, on-off, single solenoid	●	●	●	●
DKE-17	10	direct operated solenoid valves, on-off, double solenoid	●	●	●	
DPH*	10; 16; 25	piloted operated solenoid valves, on-off, with DHE or DHI pilot		●		●
LIFI	16÷50	intermediate elements with cartridge, to be coupled with a specific cover	●		●	
LIDA(H)	16÷50	on-off cartridges		●		●
LIDAS(H)	16÷50	on-off active cartridges		●		●

2 MODEL CODE OF DIRECT OPERATED SAFETY SOLENOID VALVES

DHI	— 0	63	1/2	/A	/ FV	*	- X	24DC	**	/*
<p>Type of solenoid valve DHI, DHE = direct, size 06 (see tab. E010, E015) DKE = direct, size 10 (see tab E025)</p>										
<p>Size ISO 4401 0 = size 06 (DH*) 1 = size 10 (DK*)</p>										
<p>Valve configuration, see section 3 61 = single solenoid, central plus external position, spring centered 63 = single solenoid, 2 external positions, spring offset 67 = single solenoid, external plus central position, spring offset 71 = double solenoid, 3 positions, spring centered 75 = double solenoid, 2 external positions, with detent</p>										
<p>Spool type, see section 3</p>										
<p>Options (1), see section 4 Option WP not permitted for safety valves</p>										
<p>Seals material: omit for NBR (mineral oil & water glycol) PE = FPM</p>										
<p>Series number</p>										
<p>Voltage code, see section 15</p>										
<p>X = without connector, see section 15 for available connectors, to be ordered separately</p>										
<p>Electrical signal (only for FI version): /NC = electric contact is closed when the valve is de-energized /NO = electric contact is open when the valve is de-energized</p>										
<p>Type of switch: FI = inductive proximity switch FV = inductive position switch (double contact) note: see section 11 for valve model and switch type combination</p>										

(1) **DKE/F*** are always provided with **Y** drain port

3 CONFIGURATIONS and SPOOLS (representation according to ISO 1219-1)



4 NOTES

4.1 Option

A = Solenoid mounted at side of port B (only for single solenoid valves). In standard versions, solenoid is mounted at side of port A.

4.2 Special shaped spools for DHI and DHE

- spools type **0** and **3** are also available as **0/1** and **3/1** with restricted oil passages in central position, from user ports to tank.
- spools type **1**, **4**, **5** and **58** are also available as **1/1**, **4/8**, **5/1** and **58/1**. They are properly shaped to reduce water-hammer shocks during the switching.
- spools type **1**, **1/2**, **3**, **8** are available as **1P**, **1/2P**, **3P**, **8P** to limit valve internal leakages.
- Other types of spools can be supplied on request.

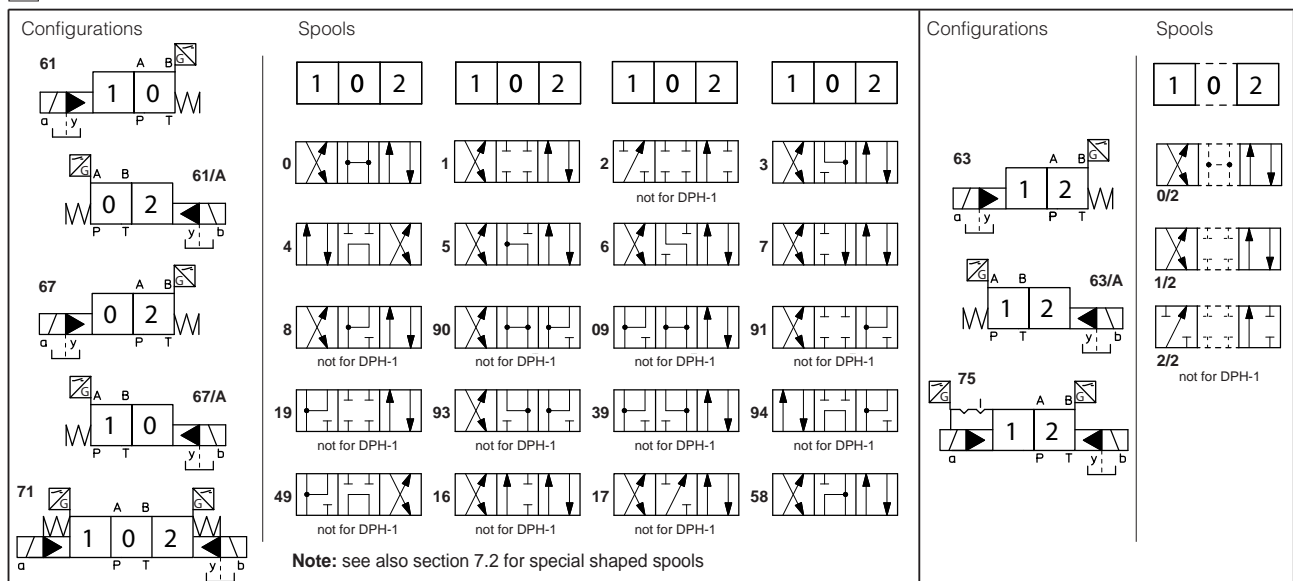
4.3 Special shaped spools for DKE

- spools type **0** and **3** are also available as **0/1** and **3/1** with restricted oil passages in central position, from user ports to tank.
- spools type **1** is also available as **1/1**, properly shaped to reduce the water-hammer shocks during the switching.
- spool type **1/9** has closed center in rest position but it avoids the pressurization of A and B ports due to the internal leakages.
- other types of spools can be supplied on request.

5 MODEL CODE of pilot operated safety solenoid valves

DPH Two stage directional control valve Solenoid pilot valve: I = DHI for AC and DC supply with cURus certified solenoids E = DHE for AC and DC supply, high performances with cURus certified solenoids Valve size: 1 = 10 2 = 16 4 = 25 Valve configuration, see section 6: 61 = single solenoid, center plus external position, spring centered 63 = single solenoid, 2 external positions, spring offset 67 = single solenoid, center plus external position, spring offset 71 = double solenoid, 3 positions, spring centered 75 = double solenoid, 2 external positions, with detent Spool type, see section 6	I - 2 71 1 /A - /FV X 24DC ** /* Seals material: omit for NBR (mineral oil & water glycol) PE = FPM Series number Voltage code, see section 15 X = without connector, see section 15 for available connectors, to be ordered separately type of switch FV = inductive position switch (double contact) Options, see section 7 option WP not permitted for safety valves	
---	---	--

6 CONFIGURATIONS and SPOOLS (representation according to ISO 1219-1)



7 NOTES

7.1 Options

- A** = Solenoid mounted at side of port A of main body (only for single solenoid valves).
 In standard version, solenoid is mounted at side of port B.
D = Internal drain (standard configuration is external drain)
E = External pilot pressure (standard configuration is internal pilot pressure).
R = Pilot pressure generator (4 bar on port P - not for DPH*-1)

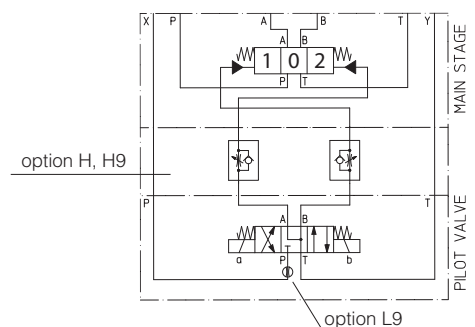
Devices for main spool switching control and to reduce the hydraulic shocks at the valve operation

- H** = Adjustable chokes (meter-out to the pilot chambers of the main valve).
H9 = Adjustable chokes (meter-in to the pilot chambers of the main valve).
L9 = (only for DP-2 and DP-4) plug with calibrated restrictor in P port of pilot valve
 Plug code: plug-12A ø1,2 mm for DP-2
 plug-15A ø1,5 mm for DP-4

7.2 Special shaped spools

- spools type **0** and **3** are also available as **0/1** and **3/1** with restricted oil passages in central position, from user ports to tank.
 - spools type **1, 4, 5, 58, 6** and **7** are also available as **1/1, 4/8, 5/1, 58/1, 6/1** and **7/1** that are properly shaped to reduce water-hammer shocks during the switching.

FUNCTIONAL SCHEME (config. 71) example of switching control options



Shaped spool availability	0/1	3/1	1/1	4/8	5/1	58/1	6/1	7/1
DPH*-1	•	•	•	•	•	•	•	•
DPH*-2, DPH*-4	•	•	•	•	•	•	•	•

8 SAFETY VALVES IN CARTRIDGE EXECUTION (MADE BY INTERMEDIATE ELEMENT AND COVER)

8.1 MODEL CODE FOR INTERMEDIATE ELEMENT INCLUSIVE OF THE CARTRIDGE

LIF	I - 25 42 1	/NC	**	/*
Intermediate element (with poppet position detector) including the cartridge				Seals material: omit for NBR (mineral oil & water glycol) PE = FPM
Type of switch: I = inductive proximity switch				Series number
Size (ISO 7368), the same of the cover - see section 24 16; 25; 32; 40; 50 Other dimensions available on request				/NC = closed contact with poppet in resting position
Type of poppet, see tab. H030 for Q/Δp diagrams 42 = With damping nose, area ratio 1:1,1 43 = With damping nose, area ratio 1:2 (for size 16 and 25) 1:1,6 (for size 32, 40 and 50)				Spring cracking pressure: 1 = 0,3 bar for poppet 42; 0,6 bar for poppet 43 2 = 1,5 bar for poppet 42 3 = 3 bar for all poppets 6 = 5,5 bar for all poppets

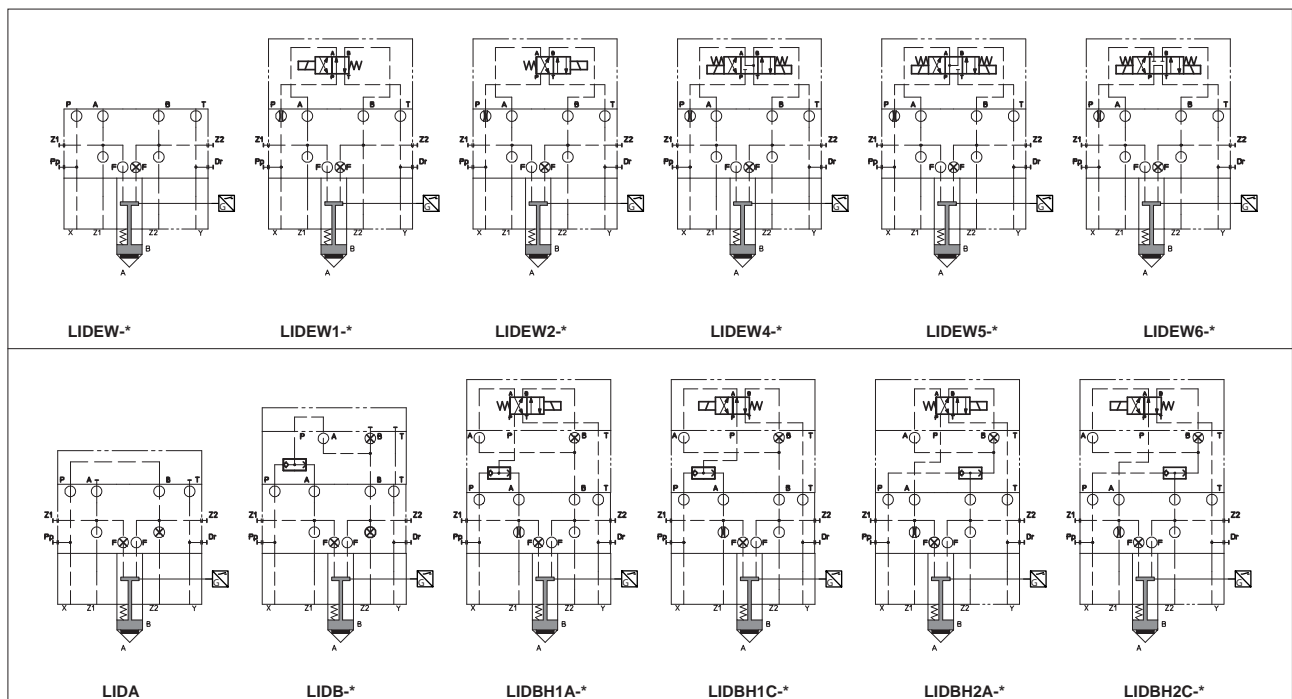
Note: in these safety valves the cartridge and the intermediate element with poppet position detector cannot be separated.

8.2 COVER MODEL CODE

LID	A - 2 / F E	-I X	24DC	**	/*	/*
Cover according to ISO 7368 to be coupled with LIFI safety valves						Special execution of the calibrated plugs in the pilot channels (see tables H030, H040)
Cover type, see section 7 for hydraulic configuration: A = direct pilot B = with shuttle valve for pilot selection; EW* = with solenoid valve for pilot selection BH** = as EW* but with shuttle valve for pilot selection;						Seals material: omit for NBR (mineral oil & water glycol) PE = FPM
Size 1 = 16; 2 = 25; 3 = 32; 4 = 40; 5 = 50; Other sizes available on request						Series number
F = prearranged for coupling with LIFI cover						Voltage code (only for LIDBH** and LIDEW*) see section 15
E = with external attachment X (1/4" GAS) and underneath port X plugged						Only for LIDBH** and LIDEW*: X = without connector, to be order separately see section 15
						Type of pilot solenoid valve (only for LIDBH** and LIDEW*): -I = DHI for AC and DC supply with cURus certified solenoids -E = DHE for AC and DC supply high performances, with cURus certified solenoids

According to the machinery safety requirements, in particular applications at least two safety valves (redundancy) will be provided (the first one leak free type). For valve type LIDB, LIDEW (in the configuration with external pilot line) Atos can supply leak free poppet type directional pilot valves type DLOH-3*. Consult our technical office for detailed information.

9 HYDRAULIC SYMBOLS (the following symbols shown the covers function coupled with safety valve type LIFI)



10 MODEL CODE OF SAFETY VALVES IN CARTRIDGE EXECUTION (INTEGRAL DESIGN COVER)

LIDA H - 25 43 3 / FV / I X 24DC ** /*

Safety cartridge valve according to ISO 7368

optional pilot valve:

- = omit if not required
H = with NG 6 pilot valve

Size: **16 25 32 40 50**

poppet type:

43 = with damping nose, area ratio 1:2 (size 16 and 25)
1:1,6 (size 32,40 and 50)

spring cracking pressure:

1 = 0,6 bar **3** = 3 bar **6** = 5,5 bar

Type of switch:

FV = inductive position switch (double contact)

Seals material:
omit for NBR (mineral oil & water glycol)
PE = FPM

Series number

Only for LIDAH

X = Voltage code see section 15

Only for LIDAH

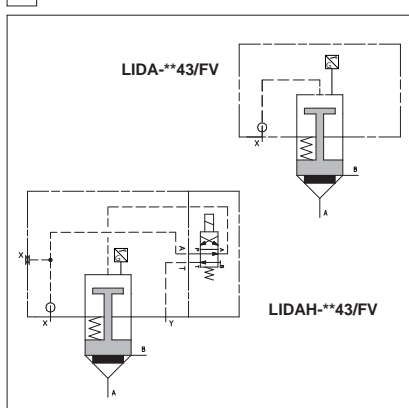
without solenoid connectors to be ordered separately (see tab. K500)

Pilot solenoid valve

-I = DHI for AC and DC supply, with **cURus** certified solenoids

-E = DHE for AC and DC supply, high performances, with **cURus** certified solenoids

11 HYDRAULIC SYMBOLS OF LIDA



12 MODEL CODE OF SAFETY VALVES IN CARTRIDGE EXECUTION (INTEGRAL DESIGN COVER)

LIDAS H - 40 43 3 / FV - I X 24DC ** /*

On-off active cartridges, according to ISO 7368

Pilot control

- = without pilot solenoid valve
H = with pilot solenoid valve

Size: **16 25 32 40 50**

Poppet type:

43 (with dumping nose)

3 = spring cracking pressure 3 bar

FV = inductive proximity switch (double contact)

Seals material:
omit for NBR (mineral oil & water glycol)
PE = FPM

series number

Only for LIDAS

Voltage code, see section 15

Only for LIDAS

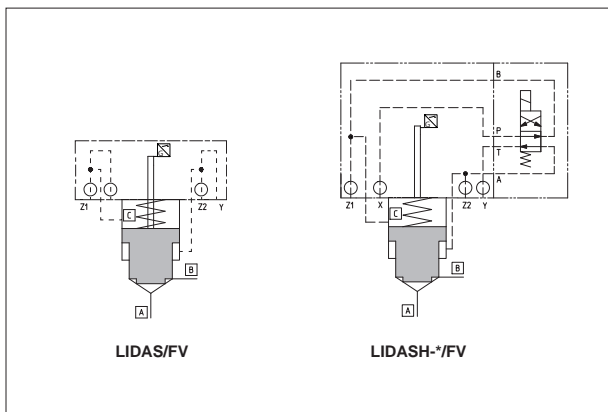
X = without connector, see section 15

Pilot valve only for LIDAS:

-I = DHI for AC and DC supply with **cURus** certified solenoids

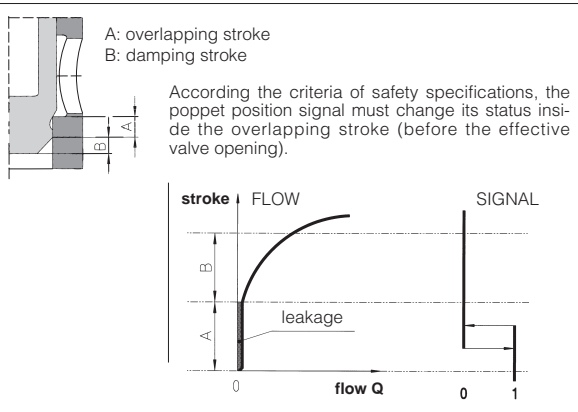
-E = DHE for AC and DC supply high performances, with **cURus** certified solenoids

13 HYDRAULIC SYMBOLS OF LIDAS



14 STATUS OF OUTPUT SIGNALS

for cartridge valves LIFI, LIDA*/FV and LIDAS*/FV



15 VOLTAGE CODE

Valve	External supply nominal voltage ± 10%	Voltage code	Type of connector	Power consumption
DHI DPHI	6 DC	6 DC	666 or 667	33 W
	9 DC	9 DC		
	12 DC	12 DC		
	14 DC	14 DC		
	18 DC	18 DC		
	24 DC	24 DC		
	28 DC	28 DC		
	48 DC	48 DC		
	110 DC	110 DC		
	125 DC	125 DC		
	220 DC	220 DC		
	24/50 AC	24/50/60 AC (1)		
	24/60 AC	24/60/60 AC (1)		
	48/50 AC	48/50/60 AC (1)		
	48/60 AC	48/60/60 AC (1)		
LIDAH-I LIDASH-I	110/50 AC	110/50/60 AC (1)	669	60 VA
	120/60 AC	120/60/60 AC (1)		
	230/50 AC	230/50/60 AC (1)		
	230/60 AC	230/60/60 AC (1)		
	110/50 AC	110RC	669	40 VA
	120/60 AC	120RC		35 VA
	230/50 AC	230RC		40 VA
	230/60 AC	230RC		35 VA

Valve	External supply nominal voltage ± 10%	Voltage code	Type of connector	Power consumption
DHE DPHE LIDAH-E LIDASH-E	12 DC	12 DC	666 or 667	30 W
	14 DC	14 DC		
	24 DC	24 DC		
	28 DC	28 DC		
	48 DC	48 DC		
	110 DC	110 DC		
	125 DC	125 DC		
	220 DC	220 DC		
	110/50 AC	110/50/60 AC		
	230/50 AC	230/50/60 AC		
	115/60 AC	115/60 AC		
	230/60 AC	230/60 AC		
	110/50 AC	110 RC		
	120/60 AC	120 RC		
DKE	12 DC	12 DC	666 or 667	36 W
	24 DC	24 DC		
	110 DC	110 DC		
	220 DC	220 DC		
	110/50/60 AC	110/50/60 AC		
	230/50/60 AC	230/50/60 AC		
	110/50/60 AC	110 DC		
	230/50/60 AC	220 DC		
	230/50/60 AC	220 DC		
	230/50/60 AC	220 DC		

16 MAIN CHARACTERISTICS

Installation position		Any position
Subplate surface finishing		Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)
Ambient temperature		from -20°C to +70°C
Fluid		Hydraulic oil as per DIN 51524 535; for other fluids see specific model code
Recommended viscosity		15 ÷ 100 mm²/s at 40°C (ISO VG 15 ÷ 100)
Fluid contamination class		ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 µm (β ₁₀ ≥ 75 recommended)
Fluid temperature		-20°C +60°C (standard seals) -20°C +80°C (/PE seals)
Flow direction		As shown in the symbols of tables 3
Operating pressure	DHI	P, A, B = 350 bar T = 100 bar (version /FI); 120 bar (version /FV)
	DHE	P, A, B = 350 bar T = 100 bar (version /FI); 210 bar (DC solenoid - version /FV); 160 bar (AC solenoid - version /FV)
	DKE	P, A, B = 350 bar T = (with Y port not connected to tank) 100 bar (version /FI); 210 bar (DC solenoid - version /FV); 120 bar (AC solenoid - version /FV) T = (with Y port drained to tank) 250 bar
	DPH*	P, A, B, X = 350 bar T = 250 bar for external drain (standard) T with internal drain (option /D) = 120 bar DPHI; 210 bar DPHE (DC); 160 bar DPHE (AC) Ports Y = 0 bar Minimum pilot pressure for correct operation is 8 bar
	LIFI LIDA/FV LIDAS(H)	A, B, X = 315 bar Y = see port T of selected pilot valve (DHI or DHE) A, B, X = 350 bar - Y = 2 bar (for LIDASH)
Maximum flow	DHI	60 l/min see technical table E010, section 8, operating limits
	DHE	80 l/min see technical table E015, section 9, operating limits
	DKE	150 l/min see technical table E025, section 9, operating limits
	DPH*	DPH*-1: 160 l/min ; DPH*-2: 300 l/min ; DPH*-4: 700 l/min ;
	LIFI (at ΔP = 6 bar)	poppet 42 size 16 = 150 l/min ; size 25 = 320 l/min ; size 32 = 600 l/min ; size 40 = 1250 l/min ; size 50 = 2000 l/min poppet 43 size 16 = 130 l/min ; size 25 = 300 l/min ; size 32 = 480 l/min ; size 40 = 940 l/min ; size 50 = 1500 l/min
	LIDA/FV (at ΔP = 6 bar)	poppet 43 size 16 = 130 l/min ; size 25 = 300 l/min ; size 32 = 480 l/min ; size 40 = 940 l/min ; size 50 = 1500 l/min
LIDAS(H) (at ΔP =5 bar)	poppet 43 size 16 = 220 l/min ; size 25 = 400 l/min ; size 32 = 600 l/min ; size 40 = 1300 l/min ; size 50 = 2000 l/min	

16.1 Coils characteristics

Insulation class	H (180°C) for all valves with DC coils and DHI, DPHE with AC coils F (155°C) for DHE, DKE, DPHE with AC coils Due to the occurring surface temperatures of the solenoid coils, the European standards EN ISO 13732-1 EN ISO 4413 must be taken into account
Connector protection degree	IP 65
Relative duty factor	100%
Supply voltage and frequency	See electric feature 11
Supply voltage tolerance	± 10%
Certification (only DHI, DKER, DPHE)	cURus North American standard

WARNING: the inobservance of following prescriptions invalidates the certification and may represent a risk for personnel injury
Safety valves must be installed and commissioned only by qualified personnel



Safety valves must not be disassembled
The inductive proximity switch or the position switch can be adjusted only by the manufacturer
Valve's components cannot be interchanged
The valves must operate without switching shocks and spool / poppet vibrations

17 STATUS OF OUTPUT SIGNAL FOR DIRECTIONAL VALVES

	Configuration 61			Configuration 63			Configuration 67			Configuration 71			Configuration 75			
ISO 4401 size 06 and 10																
HYDRAULIC CONFIGURATION	1	INT. POS.	0	1	INT. POS.	2	0	INT. POS.	2	1	INT. POS.	0	2	1	INT. POS.	2
SIGNAL S																
SIGNAL SA																
SIGNAL SB																

Diagrams show the behaviour of the output signal for inductive switches type **F/NO**. For inductive switches type **F/NC** the behaviour is opposite (high level signal instead of low level signal and viceversa)

(1) According the criteria of safety specifications, the spool position signal must change its status during the intermediate position between two hydraulic configurations.

Note: FV versions can be electrically wired by the customer as NO or NC and then the status of the output signal will be in accordance to the selected configuration

18 TECHNICAL CHARACTERISTICS OF INDUCTIVE PROXIMITY AND POSITION SWITCHES

Type of switch	inductive proximity /FI - DH* and DK*	position switch /FV	inductive proximity - only for LIFI
Supply voltage [V]	10÷30	20÷32	10÷30
Ripple max [%]	≤ 10	≤ 10	≤ 5
Max current [mA]	100	400	200
Power consumption [mA]	10	-	8
Voltage drop [V]	≤ 3	-	≤ 1,5
Max switching frequency [Hz]	1000	-	1000
Max peak pressure [bar]	20	400	350
Mechanical life	virtually infinite		
Switch logic	PNP		

19 CONNECTING SCHEMES OF INDUCTIVE PROXIMITY AND POSITION SWITCHES

DH*/FI single solenoid / double solenoid (dotted line)	/FV (all valves) single solenoid	/FV (all valves) double solenoid	DKE*/FI single solenoid	DKE*/FI double solenoid	LIFI
Connector type 345	Connector type ZBE-06	Connector type ZBE-06	Connector type 666	Connector type 664	Connector type BKS-B-20-4-03
1 = output signal S (sol.A for double solenoid) 2 = supply +24 Vdc 3 = not connected (output signal sol.B for double solenoid) 4 = GND	1 = supply +24 Vdc 2 = output signal NC 3 = GND 4 = output signal NO	1 = supply +24 Vdc 2 = output signal sol.B 3 = GND 4 = output signal sol.A	1 = output signal S 2 = supply +24 Vdc ⊕ = GND	1 = output signal sol.A 2 = supply +24 Vdc 3 = output signal sol.B ⊕ = GND	black = output signal brown = supply +24 Vdc blue = GND CABLE LENGTH = 3 m

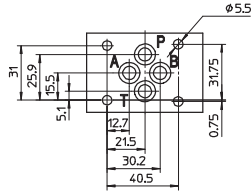
NOTE: the /FI switch an /FV position switch are not provided with a protective earth connection

20 CONNECTORS FOR INDUCTIVE PROXIMITY AND POSITION SWITCHES

The connector for proximity switch and mechanical microswitches are always supplied with the valves

VALVE TYPE	CONNECTOR TYPE	protection degree
DHI/FI, DHE/FI	345	IP65
DHI/FV, DHE/FV, DKE/FV	ZBE-06	IP65
DKE/FI	666 (single solenoid) - 664 (double solenoid)	IP65
DPH*/FV	ZBE-06	IP65
LIDA*/FV	ZBE-06	IP65
LIFI	BKS-B-20-4-03 Special connector with 3 mt molded cable (included)	IP67
LIDAS*/FV	ZBE-06	IP65

NOTE: valve type DKE*/FI double solenoid, configuration 75, use connector **666**


ISO 4401: 2005
Mounting surface: 4401-03-02-0-05

Fastening bolts:

4 socket head screws: M5x50 class 12.9 (DHI, DHU)
M5x30 class 12.9 (DHE, DHER)

Tightening torque = 8 Nm

Seals: 4 OR 108

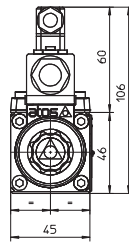
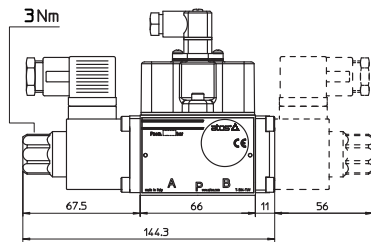
Ports P,A,B,T: $\varnothing = 7.5$ mm (max)

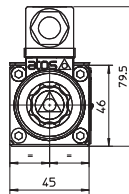
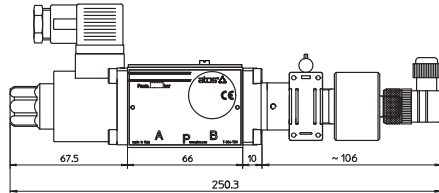
P = PRESSURE PORT

A, B = USE PORT

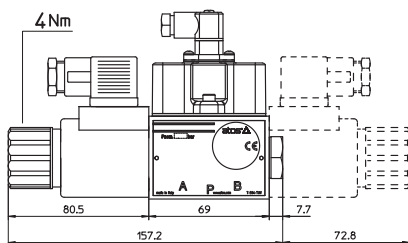
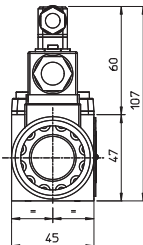
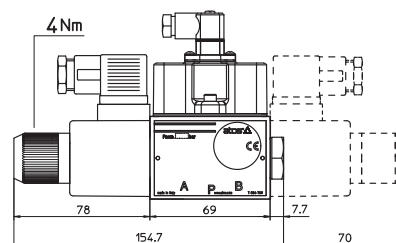
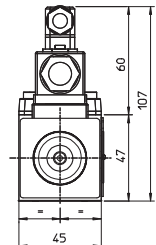
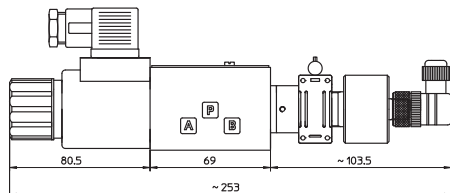
T = TANK PORT

For the max pressures on ports, see section 16

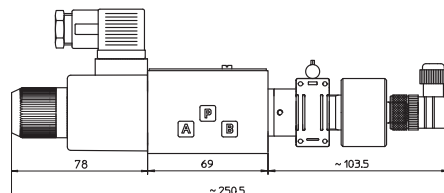
DHI-06*/FI (DC, AC)
DHI-07*/FI (DC, AC) dotted line

Mass:
kg 1,6 (one solenoid)
kg 1,9 (two solenoids)

DHI-06*/FV (DC, AC)


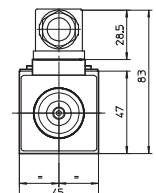
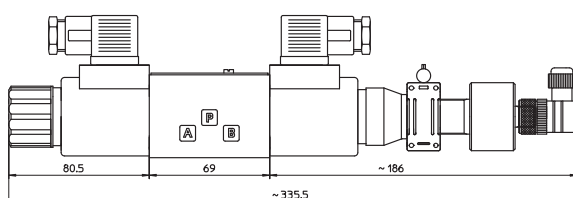
Mass: kg 1,7

DHE-06*/FI (DC)
DHE-07*/FI (DC) dotted line

Mass:
kg 1,85 (one solenoid)
kg 2,1 (two solenoids)

DHE-06*/FI (AC)
DHE-07*/FI (AC) dotted line

Mass:
kg 1,85 (one solenoid)
kg 2,1 (two solenoids)

DHE-06*/FV (DC)


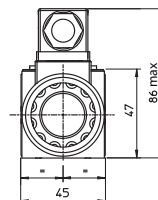
Mass: kg 1,95



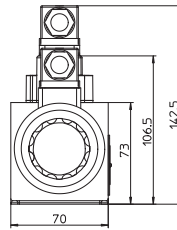
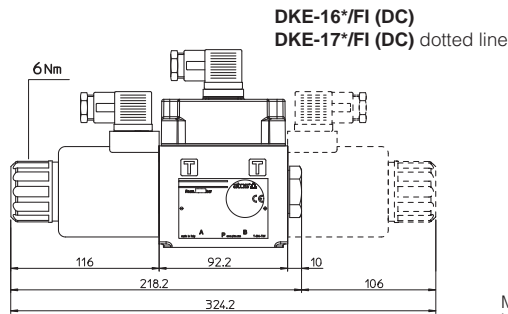
Mass: kg 1,8


DHE-07*/FV (DC)


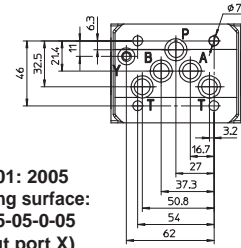
Mass: kg 2,2



22 DIMENSIONS of DKE SOLENOID SAFETY VALVES [mm]



Mass:
kg 4,4 (one solenoid)
kg 5,8 (two solenoids)

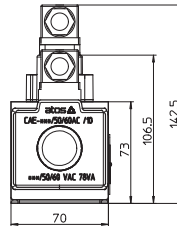
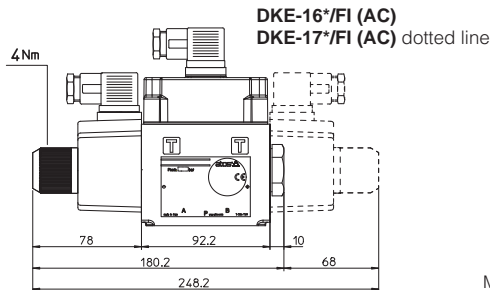


ISO 4401: 2005
Mounting surface:
4401-05-05-0-05
(without port X)

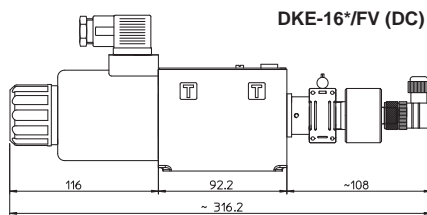
Fastening bolts:
4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Seals: 5 OR 2050. 1 OR 108
Ports P,A,B,T: $\varnothing = 11.5$ mm (max)
Ports Y: $\varnothing = 5$ mm

P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT
Y = DRAIN PORT

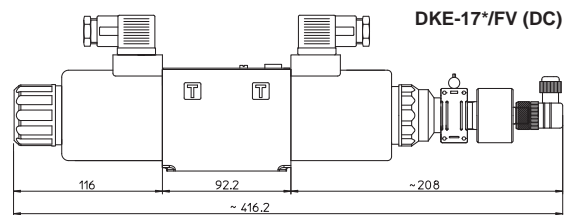
For the max pressures on ports,
see section 16



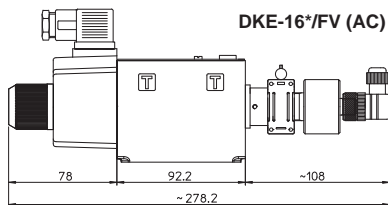
Mass:
kg 3,7 (one solenoid)
kg 4,4 (two solenoids)



Mass: kg 4,4



Mass: kg 5,9

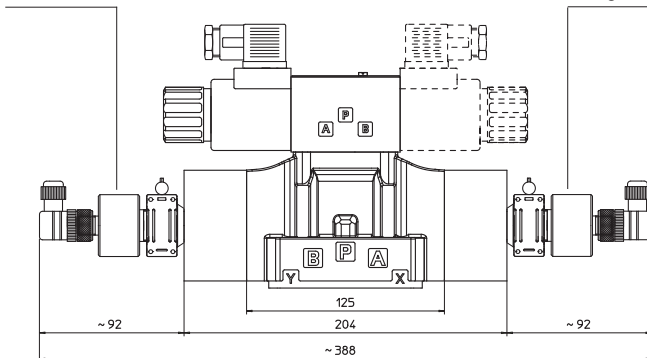


Mass: kg 3,8

23 DIMENSIONS of DPH* PILOT OPERATED SAFETY VALVES [mm]

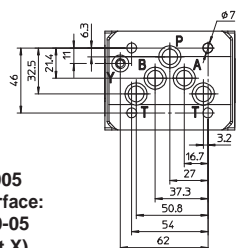
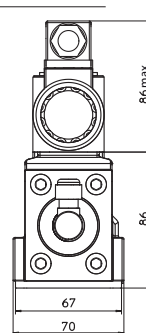
DPH*-1/FV

switch position for
configuration 61, 63/A, 67/A



Mass:
kg 7.1 (one solenoid)
kg 7,8 (two solenoids)

switch position for
configuration 61/A, 63, 67



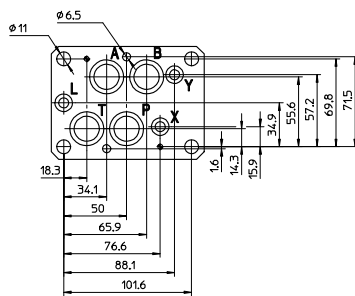
ISO 4401: 2005
Mounting surface:
4401-05-05-0-05
(without port X)

Fastening bolts:
4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Seals: 5 OR 2050. 1 OR 108
Ports P,A,B,T: $\varnothing = 11.5$ mm (max)
Ports Y: $\varnothing = 5$ mm

P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT
Y = DRAIN PORT

For the max pressures on ports, see section 16

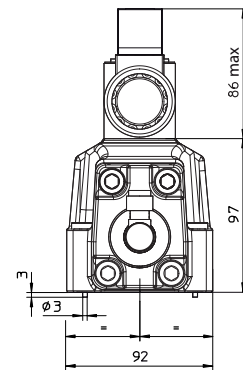
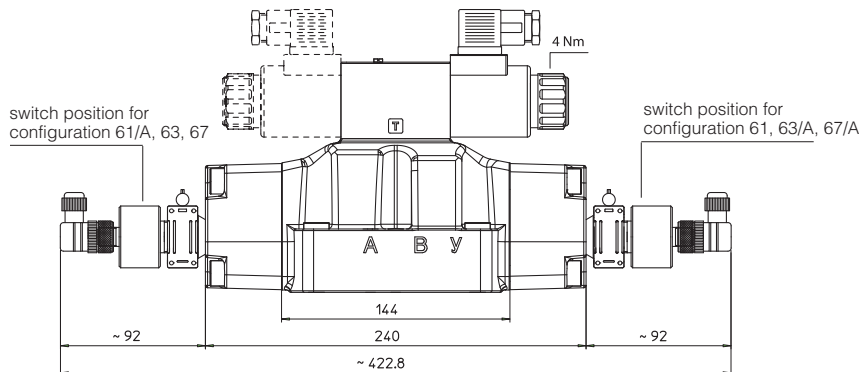
Note: for configurations 71 and 75 the switch position in on both sides of the valve



DPH*-2*/FV
ISO 4401: 2005
Mounting surface: 4401-07-07-0-05

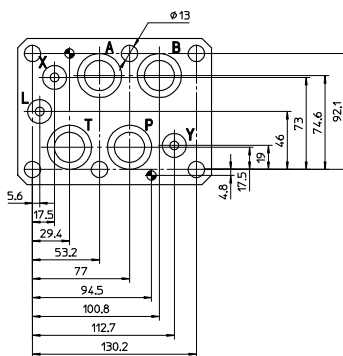
Fastening bolts:
 4 socket head screws M10x50 class 12.9
 Tightening torque = 70 Nm
 2 socket head screws M6x45 class 12.9
 Tightening torque = 15 Nm
 Diameter of ports A, B, P, T: $\varnothing = 20$ mm;
 Diameter of ports X, Y: $\varnothing = 7$ mm;
 Seals: 4 OR 130, 2 OR 2043

P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT
X = EXTERNAL OIL PILOT PORT
Y = DRAIN PORT
 For the max pressures on ports,
 see section 16



Mass:
 kg 9,6 (one solenoid)
 kg 10,5 (two solenoids)

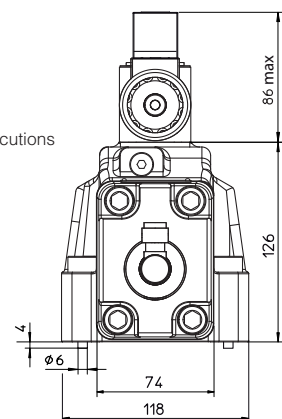
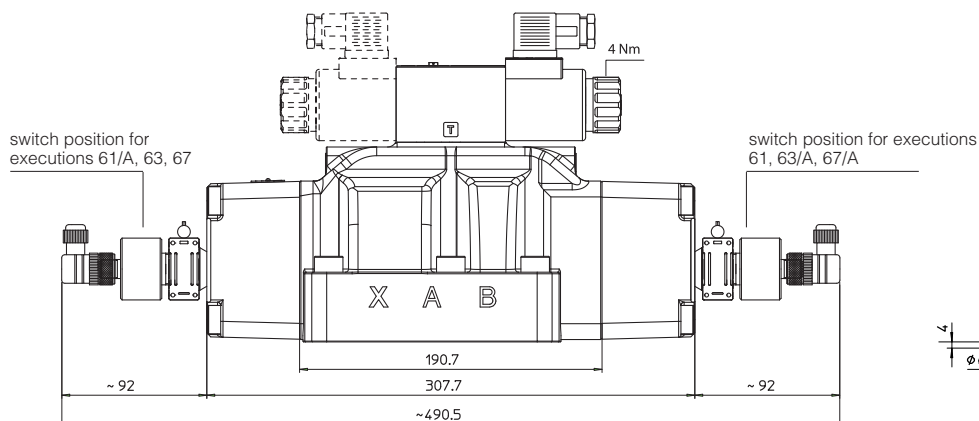
Note: for configurations 71 and 75 the switch position in on both sides of the valve



DPH*-4*/FV
ISO 4401: 2005
Mounting surface: 4401-08-08-0-05

Fastening bolts:
 6 socket head screws M12x60 class 12.9
 Tightening torque = 125 Nm
 Diameter of ports A, B, P, T: $\varnothing = 24$ mm;
 Diameter of ports X, Y: $\varnothing = 7$ mm;
 Seals: 4 OR 4112, 2 OR 3056

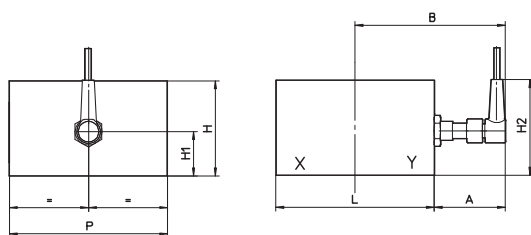
P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT
X = EXTERNAL OIL PILOT PORT
Y = DRAIN PORT
 For the max pressures on ports,
 see section 16



Mass:
 kg 17,7 (one solenoid)
 kg 18,6 (two solenoids)

Note: for configurations 71 and 75 the switch position in on both sides of the valve

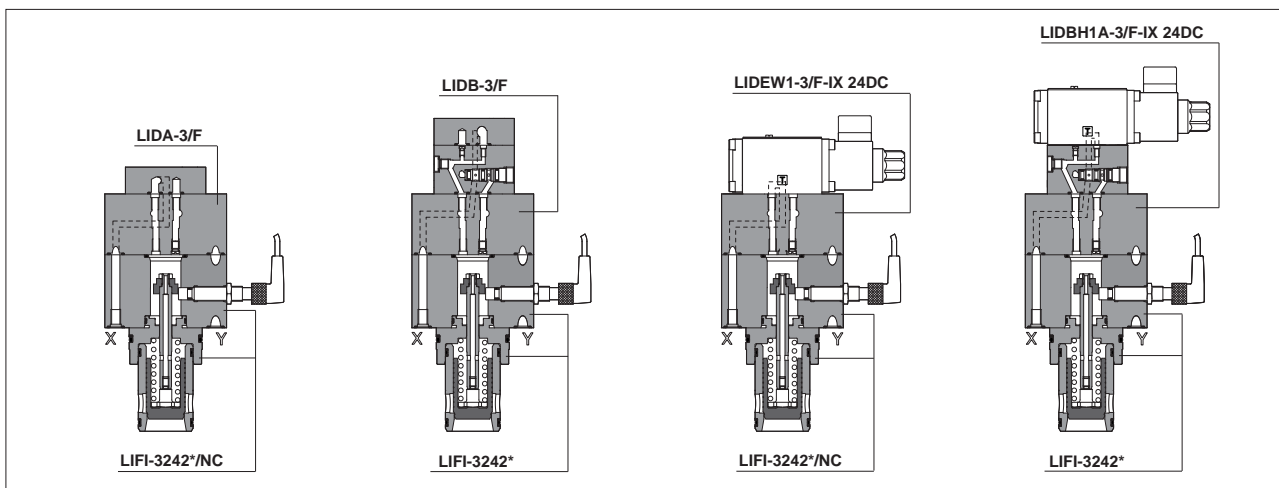
24 DIMENSIONS of LIFI SAFETY COVERS [mm]



	A	B	H	H1	H2	L	P
LIFI-16	54,5	94	50	25	56	72	65
LIFI-25	54,5	97	55	28	59	85	85
LIFI-32	47	97	60	28	59	100	100
LIFI-40	41	103,5	60	30	61	125	125
LIFI-50	44	114	70	30	61	140	140

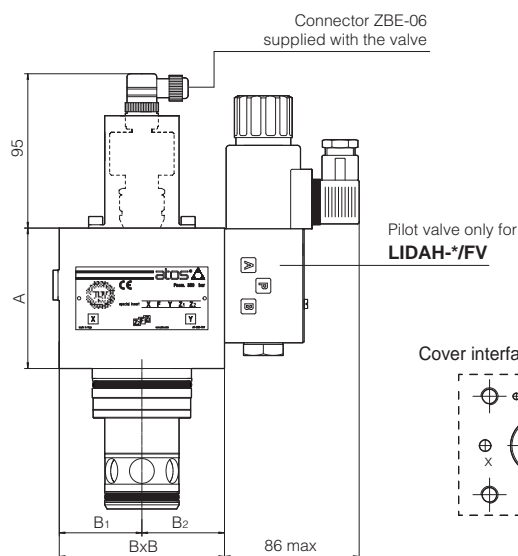
Note: for cover interface and cavity dimensions ISO 7368, see table P006

25 EXAMPLES OF LIFI COUPLED WITH OTHER COVERS (examples in size 32)

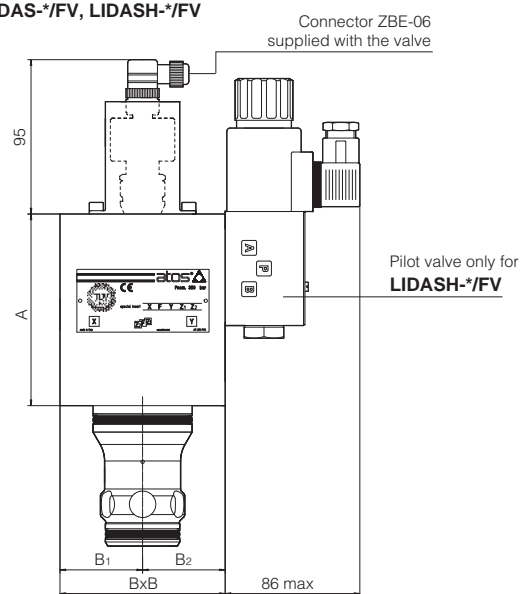


26 INSTALLATION DIMENSIONS of LIDA*/FV and LIDAS*/FV SAFETY CARTRIDGES [mm] (examples in size 32)

LIDA-*/FV, LIDAH-*/FV



LIDAS-*/FV, LIDASH-*/FV



Note: for cover interface and cavity dimensions ISO 7368, see table P006

Size	LIDA				LIDAH				LIDAS				LIDASH				Seal		Fastening bolts			Tightening torque (Nm)
	A	B	B ₁	B ₂	A	B	B ₁	B ₂	A	B	B ₁	B ₂	A	B	B ₁	B ₂	LIDA	OTHER	LIDA	LIDAH	LIDAS, LIDASH	
16	50	65x80	40,5	39,5	85	65x80	40,5	39,5	85	65	39,5	39,5	95	65x72	32,5	39,5	1 OR 108	2 OR 108	4 M8x50	4 M8x70	4 M8x80	35
25	50	85	42,5	42,5	85	85	42,5	42,5	98	85	42,5	42,5	115	85	42,5	42,5	1 OR 108	2 OR 108	4 M12x55	4 M12x80	4 M12x95	125
32	65	100	50	50	85	100	50	50	107	100	50	50	116	100	50	50	1 OR 2043	2 OR 2043	4 M16x70	4 M16x70	4 M16x105	300
40	65	125	62,5	62,5	85	125	62,5	62,5	110	125	62,5	62,5	125	125	62,5	62,5	1 OR 2050	2 OR 2050	4 M20x80	4 M20x80	4 M20x70	600
50	65	140	70	70	85	140	70	70	130	140	70	70	135	140	70	70	1 OR 2050	2 OR 2050	4 M20x80	4 M20x80	4 M20x80	600