Poppet valves - A series

Ports: 1/8" - 1/4" - 1/2" - 3/4" - 1"

A SERIES



- High flow rate valves
- Fast switching times
- Not effected by fluid impurities
- High mechanical strength
- Body and top cover in anodized aluminium or stainless steel AISI 316
- Available with ports Gas or NPT
- 2/2 NO/NC - 3/2 NO/NC - 5/2 pilot-spring
- Version for low temperature
- Version for high temperature
- Version for vacuum
- Possibillity of manifold mounting
- Available certificated ATEX 2014/34/EU
- Available certificated up to SIL 3

TECHNICAL FEATURES

Function	2/2 NO - 2/2 NC - 3/2 NO - 3/2 NC - 5/2 pilot-spring
Operation	Electropneumatic: with solenoid size 22 and 30 mm, internal or external servopiloting and return by mechanical spring Pneumatic: with external piloting (single or double) and return by mechanical spring.
Materials	Standard: Body and covers in aluminium alloy anodized, internal components in carbon steel - aluminium - brass Seals NBR/FKM/PUR Version X: Body and covers in stainless steel AISI 316, internal components in carbon steel - aluminium - brass Seals NBR/FKM/PUR Version XX: Body and covers in stainless steel AISI 316, internal components in stainless steel AISI 316 Seals NBR/FKM/PUR
Note about the materials	According to Directive REACH (1907/2006/CE and s.a.s.)
Ports	1/8", 1/4", 1/2", 3/4", 1"
Threads	BSPP (Gas parallel thread), NPT
Operating temperature range	Standard: 0°C ÷ +80°C (-20°C cwith dry air to avoid ice formation) High temperature (-VT): -10°C ÷ +150°C Low temperature (-BT): -50°C ÷ +110°C
Operating pressure range	Electropneumatic, internal servopiloting (/E): 1,5 ÷ 10 bar Electropneumatic, external servopiloting single or double piloting (/PS/E - /PS/D - DP/PS/E - DP/PS/D): 0 ÷ 10 bar Electropneumatic, external servopiloting double pilot for high pressure (DP-HP/PS/E - DP-HP/PS/D): 0 ÷ 16 bar Pneumatic, external piloting, single or double piloting (DP): 0 ÷ 10 bar Pneumatic, external double piloting for high pressure (DP-HP): 0 ÷ 16 bar

External pilot pressure

		1/8"		1/4"		1/2"		3/4"		1"	
Piloting		Single	Double	Single	Double	Single	Double	Single	Double	Single	Double
Inlet pressure	5 bar	2,2 bar	1,6 bar	2,3 bar	1,7 bar	2,4 bar	1,9 bar	2,5 bar	1,9 bar	2,5 bar	2,1 bar
	6 bar	2,4 bar	1,9 bar	2,6 bar	2,0 bar	2,8 bar	2,3 bar	2,9 bar	2,3 bar	2,9 bar	2,5 bar
	7 bar	2,7 bar	2,2 bar	2,9 bar	2,3 bar	3,1 bar	2,6 bar	3,2 bar	2,6 bar	3,3 bar	2,9 bar

See piloting diagrams (page 3.4.05.3)

Flow rate

		1/8"	1/4"	1/2"	3/4"	1"
Nominal orifice		6 mm	9 mm	12 mm	19 mm	23 mm
Inlet pressure	5 bar	650 Nl/min	1500 Nl/min	2800 Nl/min	6100 Nl/min	11000 Nl/min
(with ΔP 1 bar)	6 bar	700 Nl/min	1600 Nl/min	3000 Nl/min	6500 Nl/min	12000 Nl/min
	7 bar	800 Nl/min	1800 Nl/min	3400 Nl/min	7300 Nl/min	13500 Nl/min

See flow rate diagrams (page 3.4.05.3)

Shifting time

		1/8"		1/4"		1/2"		3/4"		1"	
According to ISO 12238:2001		ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	3/2 NC	5 ms	16 ms	6 ms	16 ms	7 ms	20 ms	16 ms	44 ms	12 ms	47 ms
	3/2 NA	7 ms	17 ms	6 ms	20 ms	11 ms	56 ms	20 ms	87 ms	17 ms	100 ms
	5/2	10 ms	45 ms	11 ms	53 ms	14 ms	72 ms	28 ms	135 ms	26 ms	215 ms

Fluid	Filtered air, without lubrication, according to ISO 8573-1:2010 [7:4:4]
Lubrication	Not required (if required on the pneumatic circuit, must be continus)

Standard sales conditions available on www.bonesipneumatik.it

ELECTRICAL FEATURES OF THE COILS

Coil type	Type "E" (22mm)		Type "D" (30mm)		Type "C" (30 mm) ATEX	
Operating voltage	12, 24 VDC	24, 48, 110, 220 VAC	12, 24 VDC	24, 48, 110, 220 VAC	24 VDC	24, 48, 110, 220 VAC
Power consumption (max.)	5,5 W	6,5 VA	10 W	13 VA	5,3 W	5,3 W (raddrizzata)
Voltage tolerance	± 10%		± 10%		± 10%	
Protection class	IP54 / IP65		IP54 / IP65		IP65	
Other features	See page 3.4.05.17		See page 3.4.05.17		See page 3.4.05.18	

ATEX CERTIFICATION

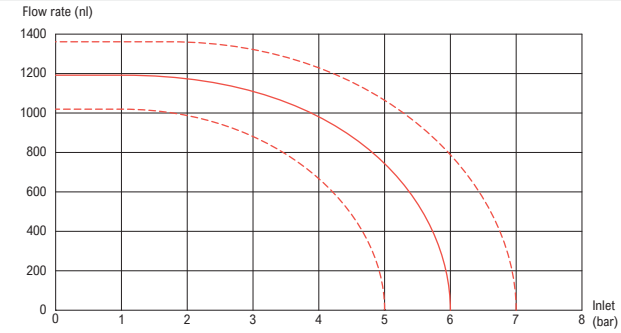
Valve marking (coil excluded)	CE Ⓔx II 2G Ex h IIC T6 Gb CE Ⓔx II 2D Ex h IIIC 85°C Db	(Zone 1 and Zone 2) (Zone 21 and Zone 22)
Operating pressure in ATEX environment	0,5 ÷ 10 bar	
Temperature in ATEX environment	-20°C ≤ Ta ≤ +60°C	
CE marking	According to Directive 2014/34/EU (see declaration of conformity)	

SIL CERTIFICATION (Pneumatic valve with external piloting)

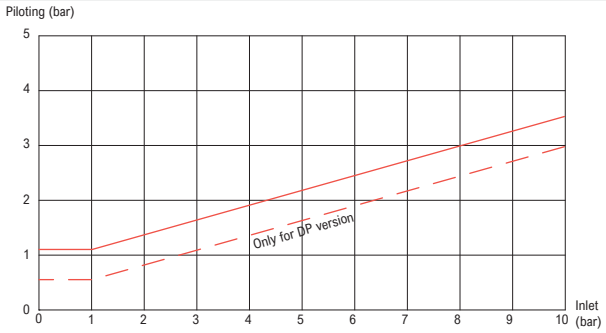
Type	Type A - Low demand mode
Systematic capability	Route 1H - 2H
Architectural constraincts	Up to SIL 2 for single channel configuration without external diagnostic tests (HFT 0) Up to SIL 3 for single channel configuration with external diagnostic tests (HFT 0) Up to SIL 3 redundant double channel configuration (HFT 1)
In accordance with	EN 61508:2010 part 1,2,3,4,5,6,7 - EN 61511 part 1,2,3

FLOW RATE AND PILOTING DIAGRAMS

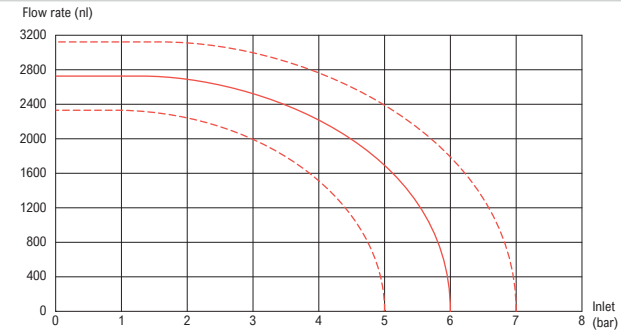
FLOW RATE DIAGRAM – VALVE 1/8"



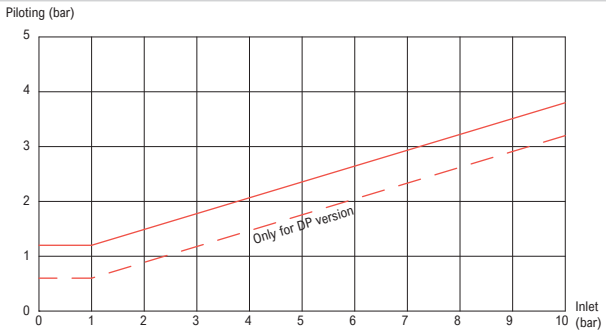
PILOTING DIAGRAM – VALVE 1/8"



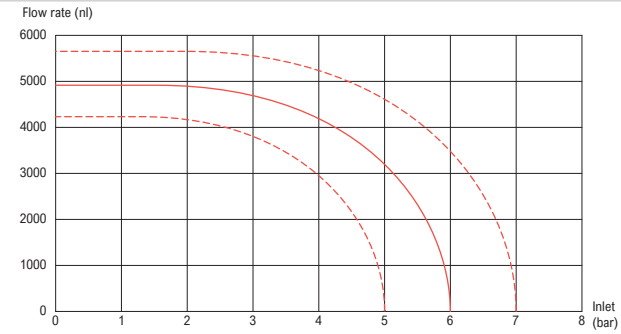
FLOW RATE DIAGRAM – VALVE 1/4"



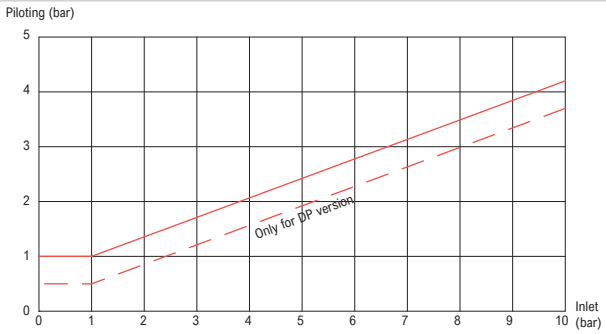
PILOTING DIAGRAM – VALVE 1/4"



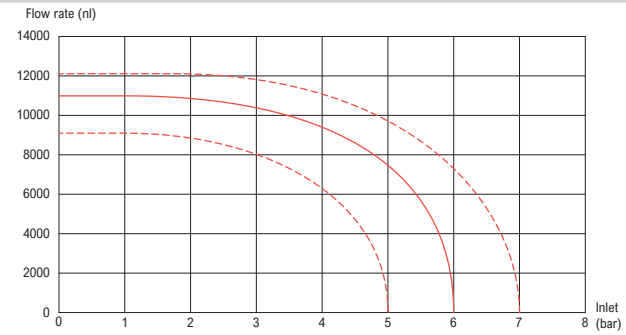
FLOW RATE DIAGRAM – VALVE 1/2"



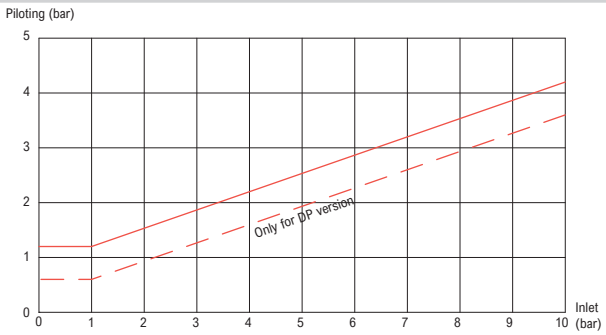
PILOTING DIAGRAM – VALVE 1/2"



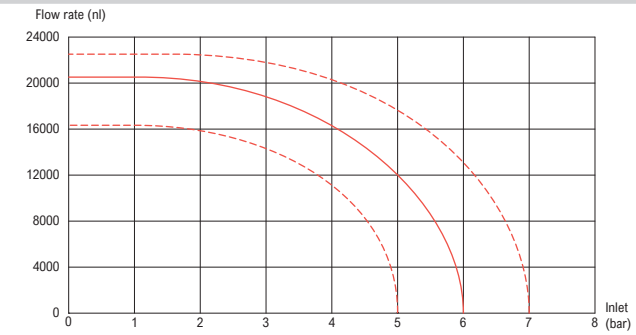
FLOW RATE DIAGRAM – VALVE 3/4"



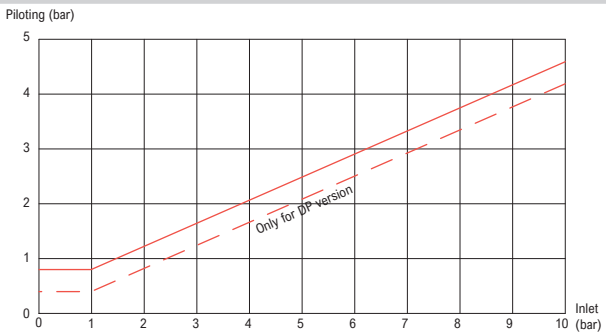
PILOTING DIAGRAM – VALVE 3/4"



FLOW RATE DIAGRAM – VALVE 1"



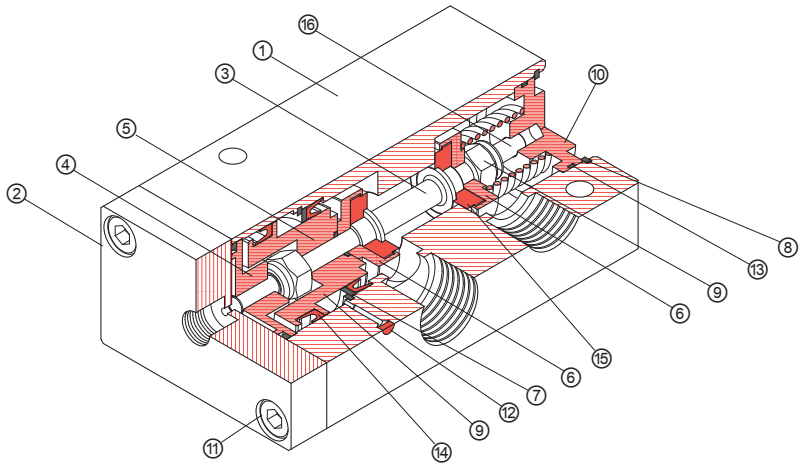
PILOTING DIAGRAM – VALVE 1"



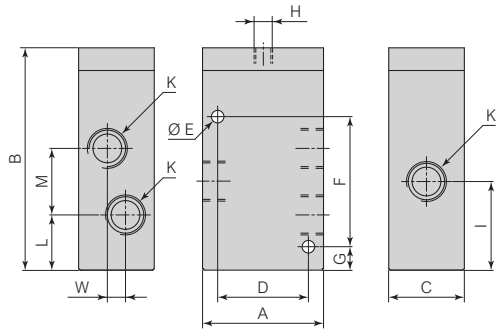
Standard sales conditions available on www.bonesipneumatik.it

MATERIALS AND DIMENSIONS - PNEUMATIC VALVES - STANDARD VERSION

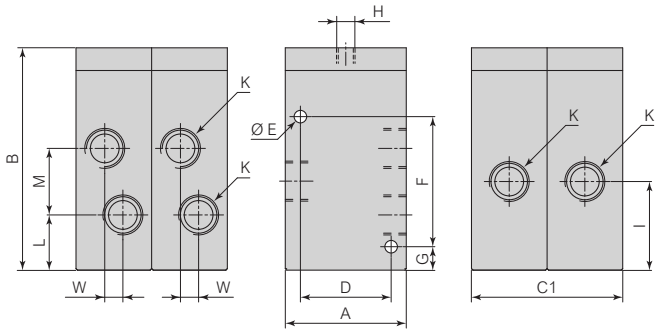
ITEM	DESCRIPTION	MATERIAL	ITEM	DESCRIPTION	MATERIAL
①	Body	Anodized profiled / extruded aluminium	⑨	Self-looking nut	Zinc plated steel
②	Top cover	Anodized profiled / extruded aluminium	⑩	End cover	Anodized aluminium
③	Poppet rod	Zinc plated steel	⑪	Screw	Zinc plated steel
④	Guide rod	Anodized aluminium	⑫	Silencer	Sintered bronze
⑤	Piston	Anodized aluminium	⑬	O-ring	NBR / FKM / PUR
⑥	Poppet holder	Zinc plated steel	⑭	Tightness seal	NBR / FKM / PUR
⑦	Anti-extrusion washer	Hostaform	⑮	Poppet seal	NBR / FKM / PUR
⑧	Seeger ring	C75 carbon steel	⑯	Spring	Stainless steel AISI 302 (X10CrNi18-09)



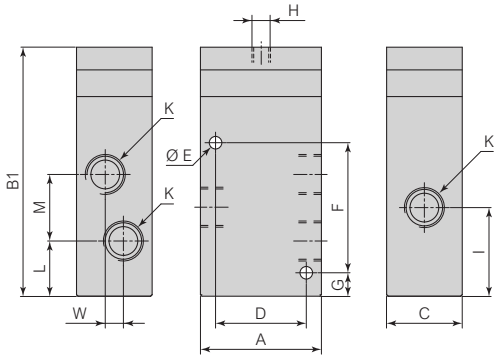
Single pilot - Version 2/2 and 3/2 NC or NA



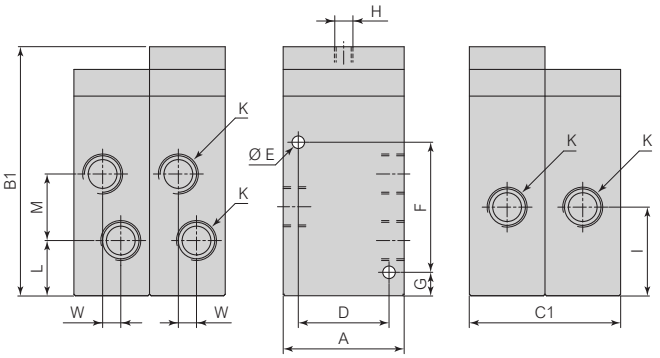
Single pilot - Version 5/2



Double pilot - Version 2/2 and 3/2 NC or NA



Double pilot - Version 5/2



K Gas - NPT	A $^{0}_{-0,2}$	B ± 0,3	B1 ± 0,3	C $^{0}_{-0,2}$	C1 $^{0}_{-0,5}$	D ± 0,3	Ø E	F ± 0,3	G ± 0,2	H Gas - NPT	I ± 0,2	L ± 0,2	M ± 0,3	W ± 0,3
1/8" Gas - NPT	40	70	91	20	40	29	4,25	33,5	11,5	1/8" Gas - 1/8" NPT	26	16	20	0
1/4" Gas - NPT	50	80,5	100	25	50	34	5,25	39	14,5	1/8" Gas - 1/8" NPT	29,5	17,5	24	0
1/2" Gas - NPT	70	99,5	125	35	70	50	6,25	54,5	15	1/8" Gas - 1/8" NPT	37	21	32	0
3/4" Gas - NPT	79	147	175	50	100	60	8,25	86	15,5	1/4" Gas - 1/4" NPT	58.5	36,5	44	12
1" Gas - NPT	100	166	194,5	60	120	82	10,5	85	33	1/8" Gas - 1/4" NPT	64,5	30	61	0

Standard sales conditions available on www.bonesipneumatik.it

ORDERING CODE - PNEUMATIC VALVES - STANDARD VERSION

Pilot operator	Function	Series	Size ports	Fluid	Mounting	Piloting operator	Materials	Seals	Thread ports	Certifications
S	1	A	2							

S = Pneumatic, external piloting

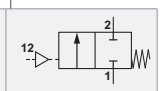
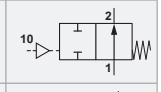
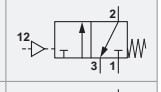
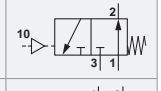
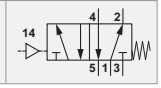
A = Poppet valve

8 = 1/8"
4 = 1/4"
2 = 1/2"
33 = 3/4"
1 = 1"

NULL = In line (1)
/B1 = On manifold

NULL = NBR
-VT = FKM
-BT = PUR

NULL = BSPP
-NPT = NPT (1)

H1 = 2/2 Pilot-spring Normally closed	
H3 = 2/2 Pilot-spring Normally open	
1 = 3/2 Pilot-spring Normally closed	
3 = 3/2 Pilot-spring Normally open	
13 = 5/2 Pilot-spring Monostable	

NULL = For compressed air
/V = For vacuum

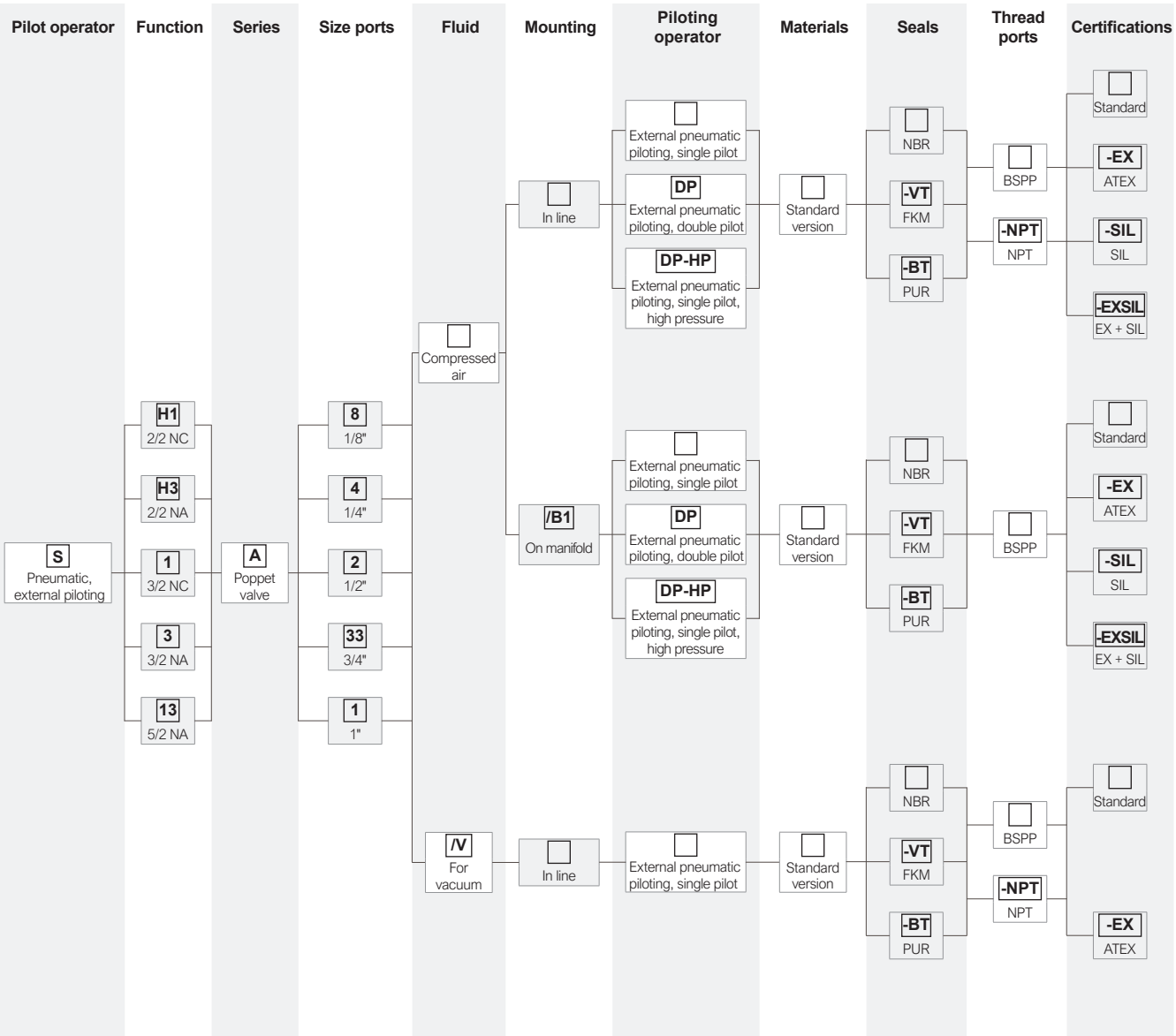
NULL = Body and covers in aluminium alloy anodized
Internal components in carbon steel - aluminium - brass

NULL = External pneumatic piloting, single pilot
DP = External pneumatic piloting, double pilot
DP-HP = External pneumatic piloting, double pilot, high pressure

NULL = Standard
-EX = For compressed air in potencially explosive environment (ATEX)
-SIL = Suitable for use in safety related system up to SIL3
-EXSIL = Both certifications: -EX and -SIL

(1) NPT thread available only for in-line mounting

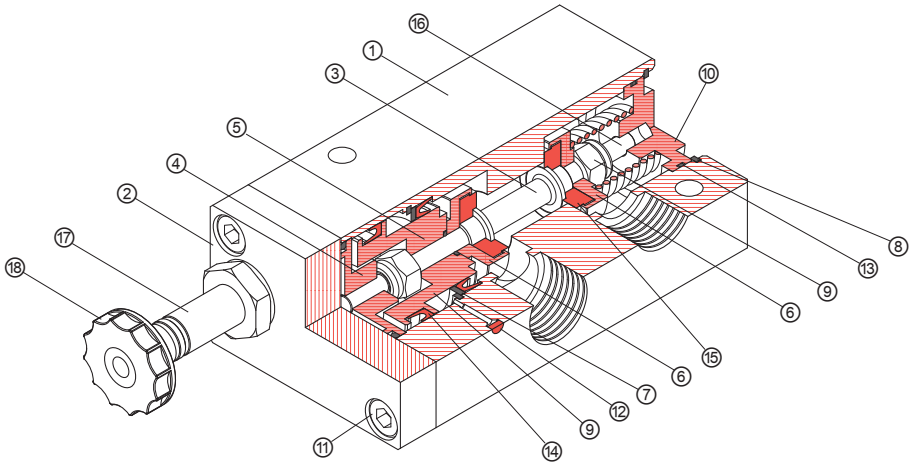
AVAILABLE CONFIGURATION



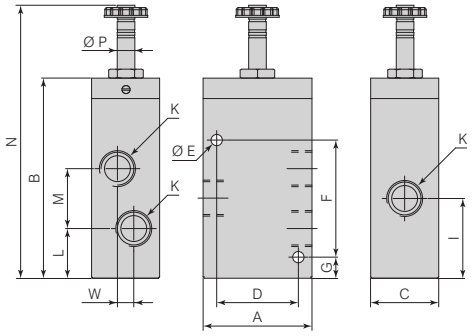
Standard sales conditions available on www.bonesipneumatik.it

MATERIALS AND DIMENSIONS - ELECTROPNEUMATIC VALVES - STANDARD VERSION

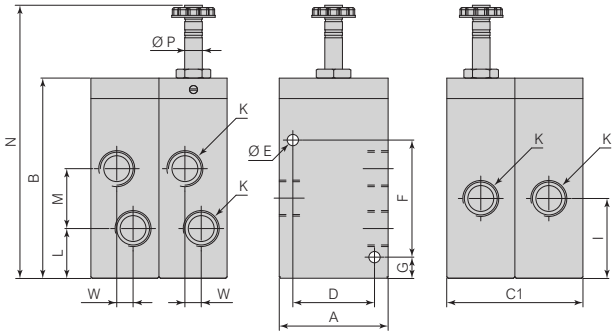
ITEM	DESCRIPTION	MATERIAL	ITEM	DESCRIPTION	MATERIAL
①	Body	Anodized profiled / extruded aluminium	⑩	End cover	Anodized aluminium
②	Top cover	Anodized profiled / extruded aluminium	⑪	Screw	Zinc plated steel
③	Poppet rod	Zinc plated steel	⑫	Silencer	Sintered bronze
④	Guide rod	Anodized aluminium	⑬	O-ring	NBR / FKM / PUR
⑤	Piston	Anodized aluminium	⑭	Tightness seal	NBR / FKM / PUR
⑥	Poppet holder	Zinc plated steel	⑮	Poppet seal	NBR / FKM / PUR
⑦	Anti-extrusion washer	Hostaform	⑯	Spring	Stainless steel AISI 302 (X10CrNi18-09)
⑧	Seeger ring	C75 carbon steel	⑰	Operator	Brass - Magnetic stainless steel
⑨	Self-looking nut	Zinc plated steel	⑱	Knurled nut	Plastic material / Aluminium



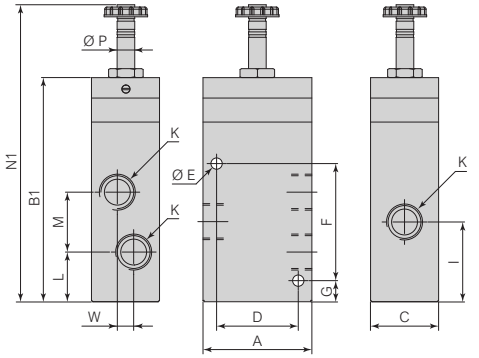
Single pilot - Version 2/2 and 3/2 NC or NA



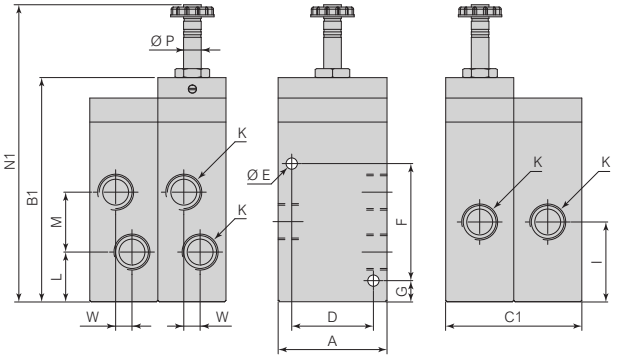
Single pilot - Version 5/2



Double pilot - Version 2/2 and 3/2 NC or NA



Double pilot - Version 5/2



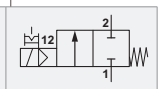
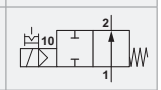
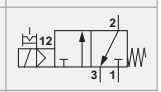
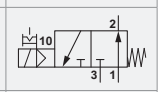
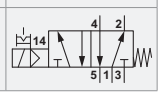
K Gas - NPT	A 0 - 0,2	B ± 0,3	B1 ± 0,3	C 0 - 0,2	C1 0 - 0,5	D ± 0,3	Ø E	F ± 0,3	G ± 0,2	I ± 0,2	L ± 0,2	M ± 0,3	N ± 0,3	N1 ± 0,3	Ø P	W ± 0,3
1/8" Gas - NPT	40	70	91	20	40	29	4,25	33,5	11,5	26	16	20	105	126	8(3)	0
1/4" Gas - NPT	50	80,5	100	25	50	34	5,25	39	14,5	29,5	17,5	24	115,5	135	8(3)	0
1/2" Gas - NPT	70	99,5	125	35	70	50	6,25	54,5	15	37	21	32	134,5 / 153,5(2)	160 / 179(2)	8(3) / 13(3)	0
3/4" Gas - NPT	79	147	175	50	100	60	8,25	86	15,5	58.5	36,5	44	201	229	13 3)	12
1" Gas - NPT	100	166	194,5	60	120	82	10,5	85	33	64,5	30	61	220	248,5	13 (3)	0

(2) Pilot operator type /D and /PS/D, Ø13 with coil type "D", available also for solenoid valve size 1/2"
(3) Ø9 for version -EX (ATEX)

ORDERING CODE - ELECTROPNEUMATIC VALVES - STANDARD VERSION

Pilot operator	Function	Series	Size ports	Fluid	Mounting	Piloting operator	Materials	Seals	Thread ports	Certifications
E	**1**	**A**	**2**	☐	☐	☐	☐	☐	☐	☐
E = Electropneumatic, internal / external piloting		**A** = Poppet valve	**8** = 1/8" **4** = 1/4" **2** = 1/2" **33** = 3/4" **1** = 1"	**NULL** = For compressed air **/V** = For vacuum	**NULL** = In line (1) **/B1** = On manifold		**NULL** = Body and covers in aluminium alloy anodized Internal components: carbon steel, aluminium, brass	**NULL** = NBR **-VT** = FKM **-BT** = PUR	**NULL** = BSPP **-NPT** = NPT (1)	**NULL** = Standard **-EX** = For compressed air in potencially explosive environment (ATEX)

Function

H1 = 2/2 Pilot-spring Normally closed	
H3 = 2/2 Pilot-spring Normally open	
1 = 3/2 Pilot-spring Normally closed	
3 = 3/2 Pilot-spring Normally open	
13 = 5/2 Pilot-spring Monostable	

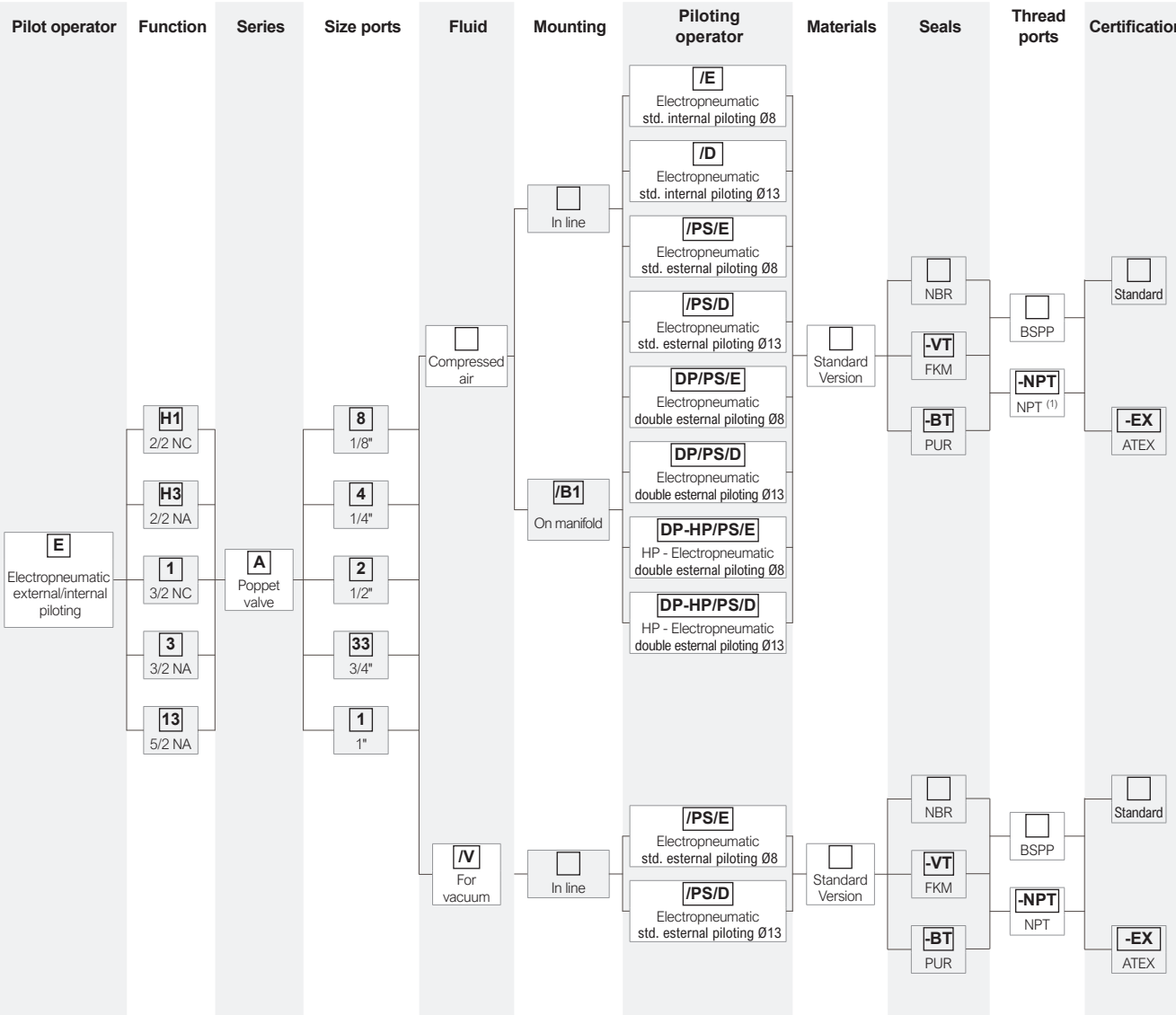
Piloting operator

Single pilot	**/E** = Electropneumatic internal piloting, Ø8 coil type "E" (22 mm for solenoid valves size 1/8" - 1/4" - 1/2") **/D** = Electropneumatic internal piloting, Ø13 coil type "D" (30 mm for solenoid valves size 1/2" (2) - 3/4" - 1") **/PS/E** = Electropneumatic external piloting , Ø8 coil type "E" (22 mm for solenoid valves size 1/8" - 1/4" - 1/2") **/PS/D** = Electropneumatic external piloting, Ø13 coil type "D" (30 mm for solenoid valves size 1/2" (2) - 3/4" - 1")
Double pilot	**DP/PS/E** = Electropneumatic esternal piloting, Ø8 coil type "E" (22 mm for solenoid valves size 1/8" - 1/4" - 1/2") **DP/PS/D** = Electropneumatic esternal piloting, Ø13 coil type "D" (30 mm for solenoid valves size 1/2" (2) - 3/4" - 1") **DP-HP/PS/E** = Electropneumatic external piloting , Ø8 coil type "E", high pressure (22 mm for solenoid valves size 1/8" - 1/4" - 1/2") **DP-HP/PS/D** = Electropneumatic external piloting, Ø13 coil type "D", high pressure (30 mm for solenoid valves size 1/2" (2) - 3/4" - 1")

(1) NPT thread available only for in-line mounting

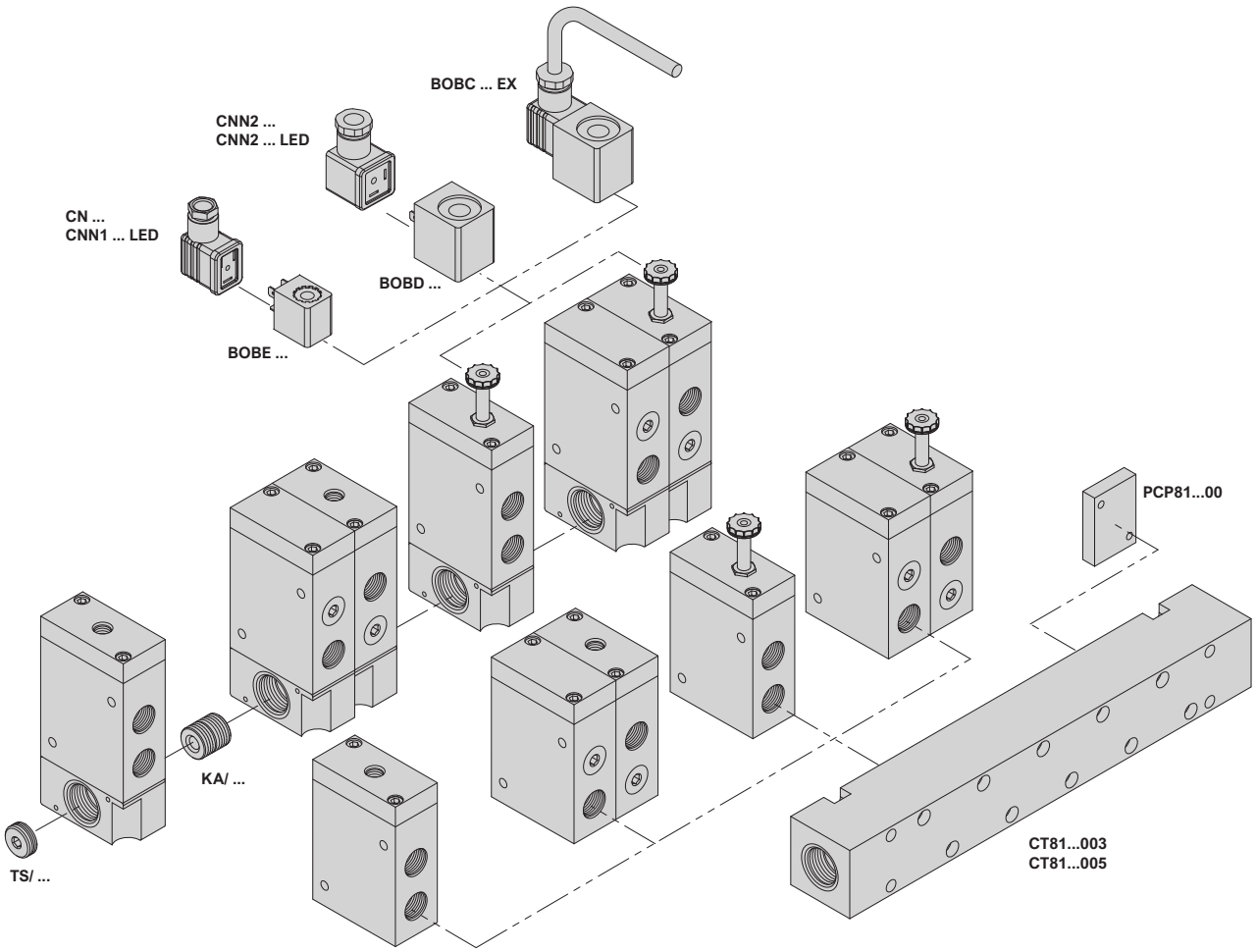
(2) Pilot operator type /D and /PS/D, Ø13 with coil type "D", available also for solenoid valve size 1/2"

AVAILABLE CONFIGURATION



Standard sales conditions available on www.bonesipneumatik.it

ACCESSORIES



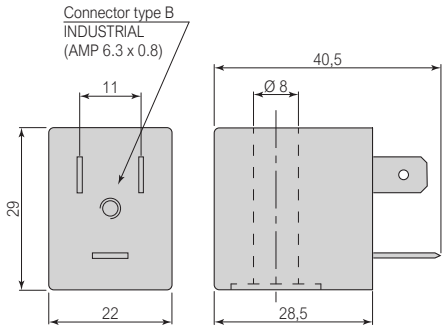
	BOBE ... Coils type "E" AC / DC	**BOBD ...** Coils type "D" AC / DC	**BOBC ... EX** Coils ATEX AC / DC	**CNN1 ...** Connectors for coils type "E"	**CNN1 ... LED** Connectors for coils type "E"	**CNN2 ...** Connectors for coils type "D"	**CNN2 ... LED** Connectors for coils type "D"
							
	Page 3.4.05.7	Page 3.4.05.7	Page 3.4.05.8	Page 3.4.05.9	Page 3.4.05.9	Page 3.4.05.9	Page 3.4.05.9
1/8"	✓	✗	✓	✗	✗	✗	✗
1/4"	✓	✗	✓	✗	✗	✗	✗
1/2"	✓	✓	✓	✓	✓	✓	✓
3/4"	✗	✓	✓	✓	✓	✓	✓
1"	✗	✓	✓	✓	✓	✓	✓
	Encapsulated NYLON + GLASS FIBER	Encapsulated PA 6.6 + GLASS FIBER	Encapsulated PA self-extinguish + GLASS FIBER	PA6 GF	PA6 GF - PA12	PA6 GF	PA6 GF - PA12

	TS/... Closing cap	**KA/...** Connection nipple	**CT81...003** In line connector 3 positions	**CT81...005** In line connector 5 positions	**PCP81...00** Closing plate
					
1/8"	TS/4	KA/8	✗	✗	✗
1/4"	TS/3	KA/4	✗	✗	✗
1/2"	TS/34	KA/2	✗	✗	✗
3/4"	✗	✗	CT8134003	CT8134005	PCP813400
1"	✗	✗	CT8101003	CT8101005	PCP810100
	Passivated brass	Passivated brass	Aluminium	Aluminium	Aluminium

Standard sales conditions available on www.bonesipneumatik.it

COILS type "E" (22 mm)

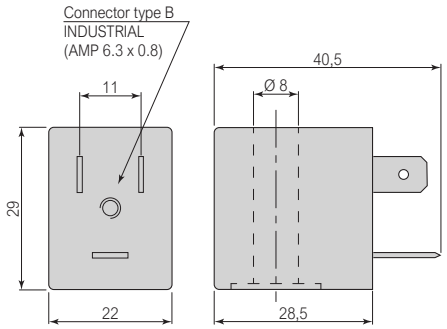
BOBE ...
Direct current coils



Technical features		
Code	BOBE012DC	BOBE024DC
Operating voltage	12 VDC	24 VDC
Power consumption (max.)	5,5 W	
Voltage tolerance	±10% (of the nominal voltage)	
Encapsulation class	155°C (F)	
Wire insulation class	200°C (H)	
Energising duration	100% (a 20°C)	
Electrical connection	INDUSTRIAL (AMP 6.3 x 0.8) type B	
Protection class	IP54 (with connector) IP65 (with connector and suitable seals)	
Material	Encapsulated NYLON + Glass fiber	

BOBE... / 1 piece each package

BOBE ...
Alternate current coils

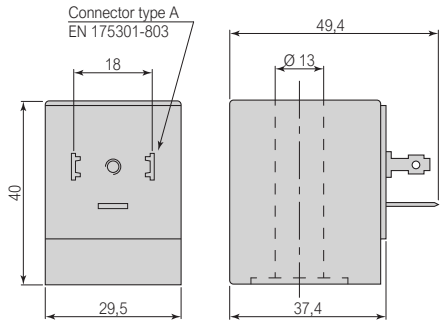


Technical features				
Code	BOBE024AC	BOBE048AC	BOBE110AC	BOBE220AC
Operating voltage	24 VAC	48 VAC	110 VAC	220 VAC
Power consumption (max.)	6,5 VA			
Voltage tolerance	±10% (of the nominal voltage)			
Encapsulation class	155°C (F)			
Wire insulation class	200°C (H)			
Energising duration	100% (a 20°C)			
Electrical connection	INDUSTRIAL (AMP 6.3 x 0.8) type B			
Protection class	IP54 (with connector) IP65 (with connector and suitable seals)			
Material	Encapsulated NYLON + Glass fiber			

BOBE... / 1 piece each package

COILS type "D" (30 mm)

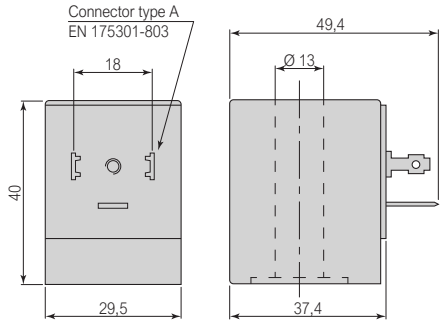
BOBD ...
Direct current coils



Technical features		
Code	BOBD012DC	BOBD024DC
Operating voltage	12 VDC	24 VDC
Power consumption (max.)	10 W	
Voltage tolerance	±10% (of the nominal voltage)	
Encapsulation class	155°C (F)	
Wire insulation class	200°C (H)	
Energising duration	100% (a 20°C)	
Electrical connection	EN175301-803 type A	
Protection class	IP54 (with connector) IP65 (with connector and suitable seals)	
Material	Encapsulated PA 6.6 + Glass fiber	

BOBD... / 1 piece each package

BOBD ...
Alternate current coils



Technical features				
Code	BOBD024AC	BOBD048AC	BOBD110AC	BOBD220AC
Operating voltage	24 VAC	48 VAC	110 VAC	220 VAC
Power consumption (max.)	13 VA			
Voltage tolerance	±10% (of the nominal voltage)			
Encapsulation class	155°C (F)			
Wire insulation class	200°C (H)			
Energising duration	100% (a 20°C)			
Electrical connection	EN175301-803 type A			
Protection class	IP54 (with connector) IP65 (with connector and suitable seals)			
Material	Encapsulated PA 6.6 + Glass fiber			

BOBD... / 1 piece each package

Standard sales conditions available on www.bonesipneumatik.it