



UNIVER, particularly sensible to market requirements, has introduced in its production program a new line of valves for ISO sub-bases. These valves are identical in dimensions and aspect but have two different internal switching systems which fulfil the widest range of needs in pneumatic energy control. These two systems maintain the basic characteristics of each UNIVER product (high capacity, short internal stroke, no lubrication) and, thanks to their complementarity in use, they can completely fulfil any customer's need. These valves can be used for millions of cycles in heavy duty environments while guaranteeing maximum safety and reliability.

TECHNICAL CHARACTERISTICS

Two different internal switching systems - mixed and spool
 Mounted on ISO sub-base, sizes 1/2/3/4
 Body made of acetalic resin inside and die-cast aluminium outside
 Ambient temperature: -10°C to +50°C
 Fluid temperature: +50°C max
 Fluids: air (industrial or dehumidified, mixed system; non-dehumidified spool system)
 Nitrile rubber or Vulkollan seals
 Indirect electropneumatic or pneumatic pilot
 Pneumatic/mechanical spring return
U3 series part number DC-... coil; **U1** coil on request part number DA-...
 (see section Accessories)

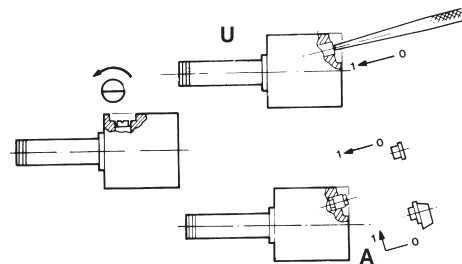
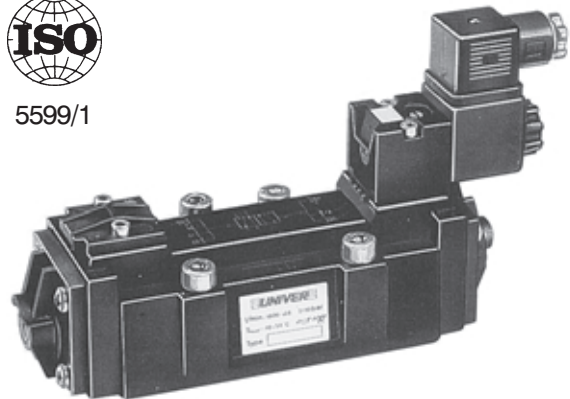
NOTE: an indicative estimate of the factor "CV" can be obtained by dividing the capacity values expressed in NI/min by "962".

Manual intervention on the electric part

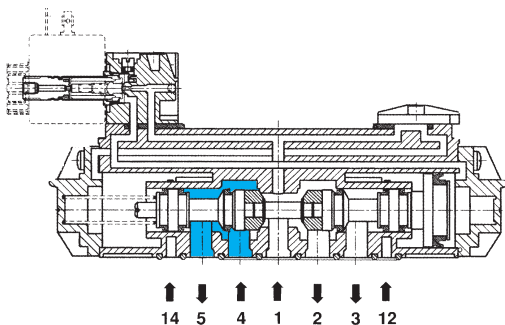
The manual control of electropilot is available in the two stable position type without protrusions and operated by screw-driver. In safety applications against accidental starting of machines (especially used in the car sector) the manual control is available with embedded button which can be activated only by means of a center punch. This electropilot will have a final U in the order part number.



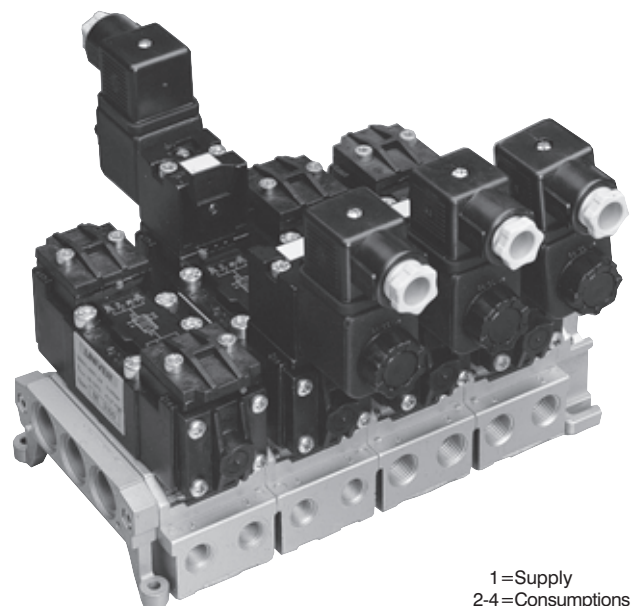
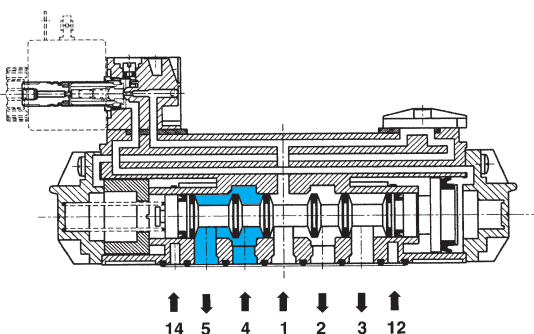
5599/1



Mixed system



Spool system

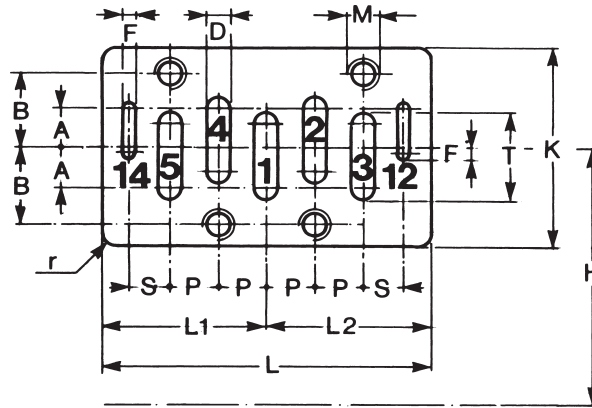


1=Supply
 2-4=Consumptions
 3-5=Exhausts
 14=Control
 12=Return



ISO 5599/1

The ISO standard for pneumatic valves is accepted by industry and by the majority of major pneumatic valve manufacturers throughout the world. The choice of valves according to ISO standard means to be at the technical forefront and to guarantee the user the interchangeability both of the valve body as well as the electromagnetic part.



Size	A	B	D	F	M	T	S	P	H	r max	K min	L1 min	L2 min	L min
1	9	14	4,5	3	M5	16,5	8,5	9	43	2,5	38	32,5		65
2	10	19	7		M6	22	10	12	56	3	50	40,5		81
3	11,5	24	10	4	M8	29	13	16	71	4	64	53		106
4	14,5	29	13			36,5	15,5	20	82		74	77,5	64,5	142

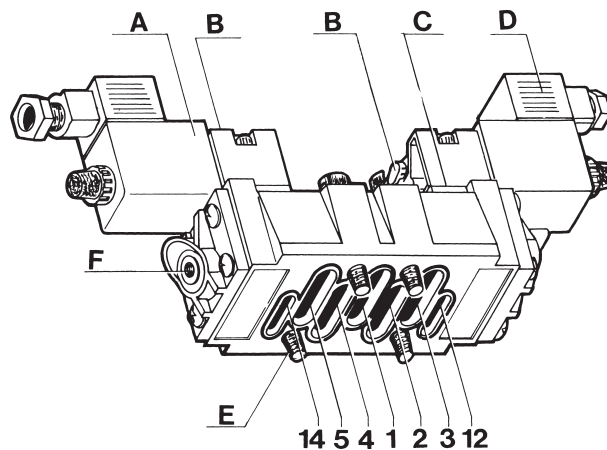
ISO Standard 5599/1 fixes the dimensions of the bearing surface of the valve and provides accommodation between two contiguous planes while guaranteeing, at the time of replacement, that any suitable valve can be inserted in the manifold assembly.

It also provides a clear numbering system for the ports.

Main connecting ports:

1 = SUPPLY 2-4 = CONSUMPTIONS 3-5 = EXHAUSTS
 14 = PREFERENTIAL CONTROL 12 = RETURN

(e.g. single electrical impulse solenoid mounted side 14 single pneumatic impulse control at 14)



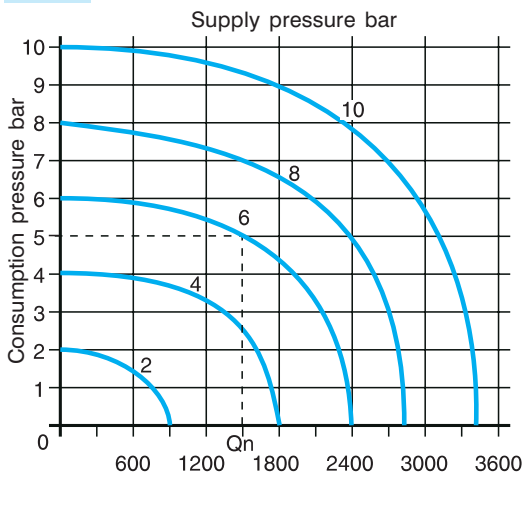
Here are some recommendations of the ISO 5599/1 standard:

- electropilot and coil (A) above the body of the valve, the axis is parallel to that of the valve, to facilitate the access to the manual override on the valve body (F)
- manual override on the electropilot (B)
- the bearing surface of the electropilot (C) complies with CNOMO Standard which has been in use on the European market for years. If a non-standardized coil fails, both the latter and the electropilot can be changed simply by working on the electric part.
- Unified electric connector (D)
- This system simplifies the replacement operation of an ISO valve. By removing the fixing screws (E), the valve can be replaced in a very short time without intervention on the pneumatic connections

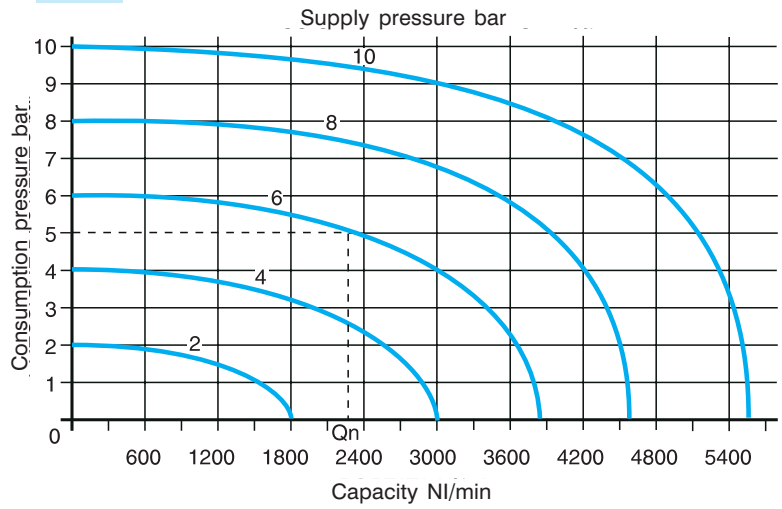


Capacity characteristics

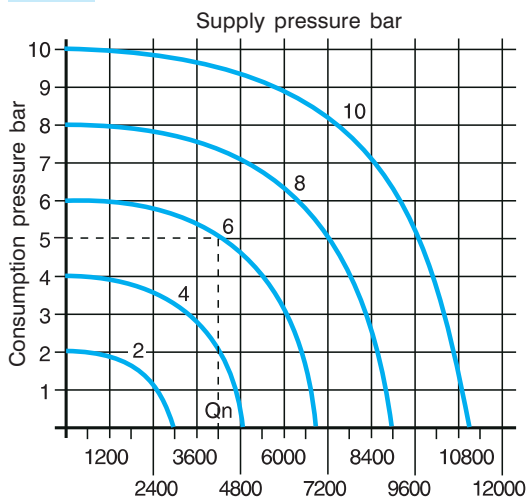
ISO 1



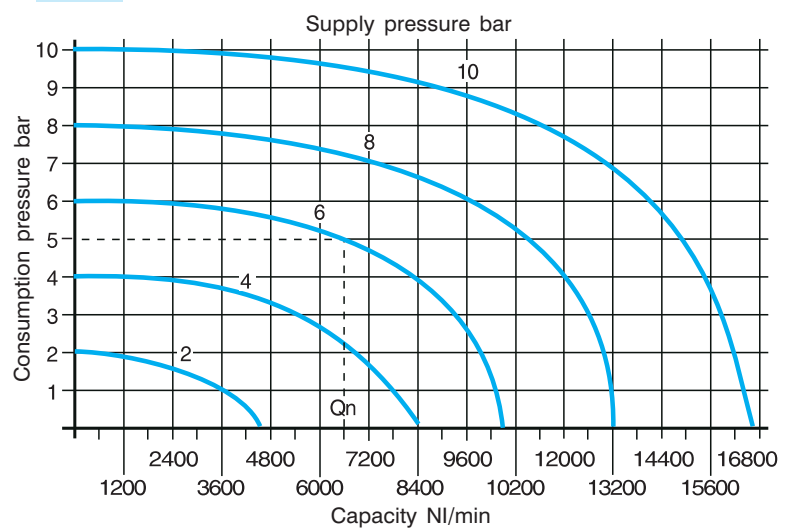
ISO 2



ISO 3

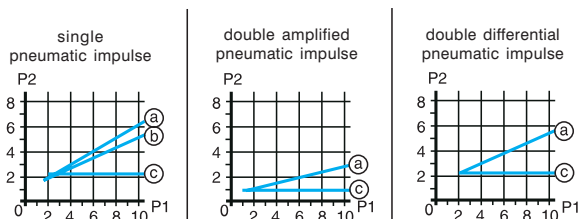


ISO 4

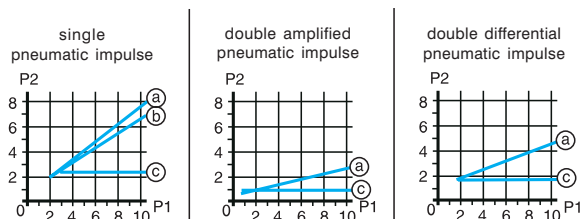


Pilot characteristics

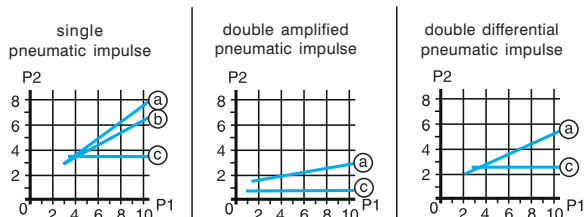
ISO 1



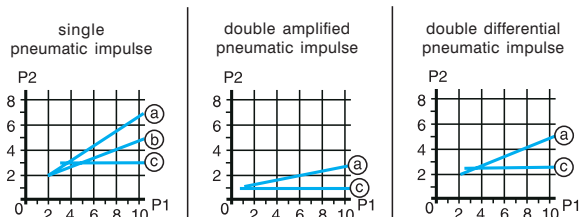
ISO 2



ISO 3



ISO 4



(a) = mixed
 (b) = spool pneumatic spring
 (c) = spool mechanical spring

P1=supply pressure
 P2=pilot pressure

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Type	Symbol	Control (14)	Return (12)	Ways	Ø mm	Pressure bar	Capacity NI/min	Size system*	Time ms energ. (14) de-energ. (12)	Mass kg	Part number	
		Pneum.	Pneu-mech.	5/2	8	2 ÷ 10	1480	M	9	18	0,30	BE-3100
						1,8 ÷ 10		S	11	22	0,30	BE-3800
					10	2,3 ÷ 10	2300	M	11	14	0,40	BE-4100
						2 ÷ 10		S	13	19	0,40	BE-4800
					15	2,5 ÷ 10	4200	M	19	49	0,65	BE-5100
						2,2 ÷ 10		S	21	52	0,65	BE-5800
19	3 ÷ 10	6600	M	23	46	0,87	BE-6100					
	2,8 ÷ 10		S	24	29	0,87	BE-6800					
		Pneum.	Pneum.	5/2	8	1 ÷ 10	1480	M	5	5	0,30	BE-3150
						0,8 ÷ 10		S	6	6	0,30	BE-3850
					10	1 ÷ 10	2300	M	6	6	0,40	BE-4150
						1 ÷ 10		S	7	7	0,40	BE-4850
					15	1 ÷ 10	4200	M	10	10	0,65	BE-5150
						0,8 ÷ 10		S	12	12	0,65	BE-5850
19	1,3 ÷ 10	6600	M	12	12	0,87	BE-6150					
	1 ÷ 10		S	14	14	0,87	BE-6850					
		Pneum.	Pneum. differ.	5/2	8	2 ÷ 10	1480	M	5	16	0,30	BE-3170
						1,5 ÷ 10		S	6	15	0,30	BE-3870
					10	1,8 ÷ 10	2300	M	6	13	0,40	BE-4170
						1,8 ÷ 10		S	7	14	0,40	BE-4870
					15	2,2 ÷ 10	4200	M	10	35	0,65	BE-5170
						1,5 ÷ 10		S	12	38	0,65	BE-5870
19	2 ÷ 10	6600	M	12	32	0,87	BE-6170					
	2,7 ÷ 10		S	14	31	0,87	BE-6870					
		Electr.	Pneu-mech.	5/2	8	2 ÷ 10	1480	M	20	32	0,45	BE-3000 ♦
						1,8 ÷ 10		S	21	35	0,45	BE-3700 ♦
					10	2,3 ÷ 10	2300	M	24	25	0,55	BE-4000 ♦
						1 ÷ 10		S	24	30	0,55	BE-4700 ♦
					15	2,5 ÷ 10	4200	M	32	71	0,90	BE-5000 ♦
						2,2 ÷ 10		S	33	74	0,90	BE-5700 ♦
19	3 ÷ 10	6600	M	38	62	1,12	BE-6000 ♦					
	2,8 ÷ 10		S	39	68	1,12	BE-6700 ♦					
		Electr.	Electr.	5/2	8	1 ÷ 10	1480	M	16	16	0,55	BE-3020 ♦
						0,8 ÷ 10		S	17	17	0,55	BE-3720 ♦
					10	1 ÷ 10	2300	M	17	17	0,80	BE-4020 ♦
						1 ÷ 10		S	18	18	0,80	BE-4720 ♦
					15	1 ÷ 10	4200	M	23	23	1,20	BE-5020 ♦
						0,8 ÷ 10		S	26	26	1,20	BE-5720 ♦
19	1,3 ÷ 10	6600	M	25	25	1,37	BE-6020 ♦					
	1 ÷ 10		S	27	27	1,37	BE-6720 ♦					

* System: M = Mixed S = Spool
 ♦ For embedded button manual control U option

The part numbers of solenoid valves do not include coils



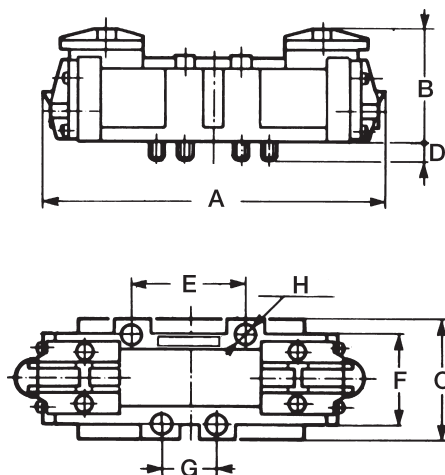
Type	Symbol	Control (14)	Return (12)	Ways	Ø mm	Pressure bar	Capacity NI/min	Size system*	Time ms		Mass kg	Part number	
									energ. (14)	de-energ. (12)			
		Electr.	Electr. differ.	5/2	8	2 ÷ 10	1480	1	M	16	34	0,55	BE-3030
						1,8 ÷ 10			S	17	28	0,55	BE-3730
					10	1,8 ÷ 10	2300	2	M	17	29	0,80	BE-4030
						1,8 ÷ 10			S	18	25	0,80	BE-4730
					15	2,2 ÷ 10	4200	3	M	23	54	1,20	BE-5030
						2,5 ÷ 10			S	26	46	1,20	BE-5730
19	2 ÷ 10	6600	4	M	25	45	1,37	BE-6030					
	2,7 ÷ 10			S	27	42	1,37	BE-6730					
		Electr.	Pneum.	5/2	8	1 ÷ 10	1480	1	M	16	6	0,45	BE-3060 ♦
						0,8 ÷ 10			S	17	8	0,45	BE-3760 ♦
					10	1 ÷ 10	2300	2	M	17	7	0,80	BE-4060 ♦
						1 ÷ 10			S	18	9	0,80	BE-4760 ♦
					15	1 ÷ 10	4200	3	M	23	15	1,30	BE-5060 ♦
						0,8 ÷ 10			S	26	17	1,30	BE-5760 ♦
19	1,3 ÷ 10	6600	4	M	25	16	1,37	BE-6060 ♦					
	1 ÷ 10			S	27	18	1,37	BE-6760 ♦					
		open centres	electrical control	5/3	8	2 ÷ 10	1480	1	M	50	26	0,55	BE-3200 ♦
						2,3 ÷ 10			S	17	25	0,55	BE-3900 ♦
					10	2,3 ÷ 10	2300	2	M	54	24	0,80	BE-4200 ♦
						2,5 ÷ 10			S	18	27	0,80	BE-4900 ♦
					15	2,5 ÷ 10	4200	3	M	108	36	1,20	BE-5200 ♦
						2,5 ÷ 10			S	26	50	1,20	BE-5900 ♦
19	3 ÷ 10	6600	4	M	115	115	1,37	BE-6200 ♦					
	2,5 ÷ 10			S	30	47	1,37	BE-6900 ♦					
		pressurized centres	electrical control	5/3	8	2 ÷ 10	1480	1	M	50	26	0,50	BE-3205 ♦
					10	2,3 ÷ 10	2300	2	M	54	24	0,80	BE-4205 ♦
					15	2,5 ÷ 10	4200	3	M	108	36	1,20	BE-5205 ♦
					19	3 ÷ 10	6600	4	M	115	115	1,37	BE-6205 ♦
		closed centres	electrical control	5/3	8	2,3 ÷ 10	1480	1	S	17	25	0,50	BE-3940 ♦
					10	2,5 ÷ 10	2300	2	S	18	27	0,80	BE-4940 ♦
					15	2,5 ÷ 10	4200	3	S	26	50	1,20	BE-5940 ♦
					19	2,5 ÷ 10	6600	4	S	30	47	1,37	BE-6940 ♦

* System: M = Mixed S = Spool
 ♦ For embedded button manual control U option

The part numbers of solenoid valves do not include coils

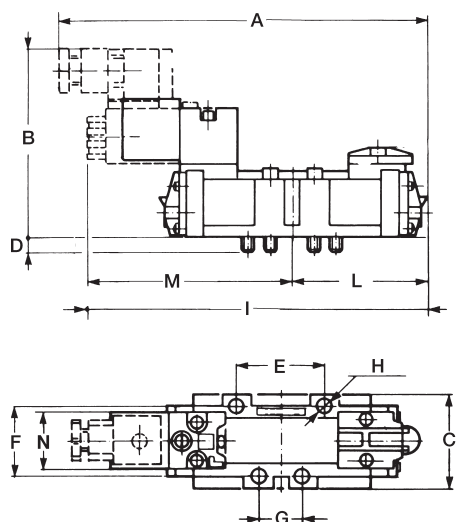


Single/double pneumatic impulse spool-mixed system
5/3 valves closed centres - open centres-pneumatic control spool system



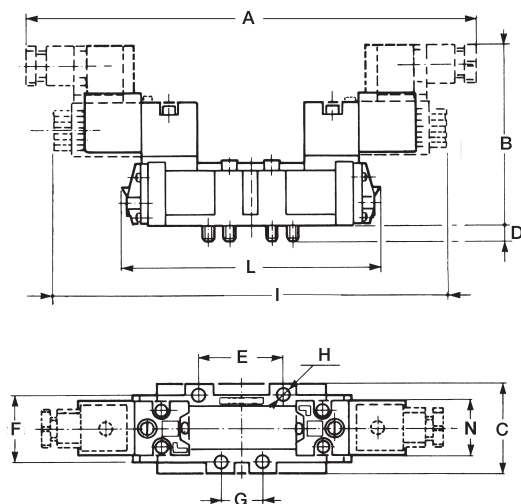
	ISO 1	ISO 2	ISO 3	ISO 4
A	128	145	191	222
B	47	47	63	63
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	30	38	48	58
G	18	24	32	40
H	M5 x 35	M6 x 35	M8 x 50	M8 x 50

Single electrical impulse



	ISO 1	ISO 2	ISO 3	ISO 4
A	169,5	195,5	219	253
B	105	105	118	118
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	30	38	48	58
G	18	24	32	40
H	M5 x 35	M6 x 35	M8 x 50	M8 x 50
I	159,5	176	208,5	235
L	64	72,5	95,5	111
M	95,5	103,5	113	124
N	30	30	30	30

Double electrical impulse spool-mixed system
5/3 solenoid valve open centres - closed centres-spool system
5/3 solenoid valve open centres - pressurized centres-mixed system



	ISO 1	ISO 2	ISO 3	ISO 4
A	211	226	247	268
B	105	105	118	118
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	30	38	48	58
G	18	24	32	40
H	M5 x 35	M6 x 35	M8 x 50	M8 x 50
I	191	207	226	248
L	128	145	191	222
N	30	30	30	30

NOTE: Dimensions with U3 coils

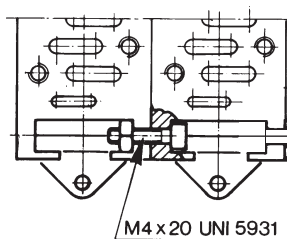


Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
Single sub-base - side connections						
		connections in line	G 1/8	zamak	0,250	BF-1060
			G 1/4	zamak	0,230	BF-1061

To be used when battery assembly is not possible

Single modular or manifold sub-base, dorsal connections, separate exhausts						
		dorsal connections	G 1/8	zamak	0,350	BF-1062
			G 1/4	zamak	0,330	BF-1063

Single assembly: close side ports(G 1/8 - G 1/4)
 Manifold assembly with common inlet: close dorsal connections n.1
 With incorporated screws and seal



Advantages

- The series of ISO 1 sub-bases has been produced taking into consideration existing problems.
- Determination of the base number when using them.
 - Quick assembly with special (incorporated) screw standard supplied.
 - Determination of functions for each battery (pressure differentiation, exhaust regulation) by adding or reducing the number of elements without restrictions.
 - Easy technical intervention

On request assembled and tested batteries are supplied according to drawings.

Closing plate for unused base (BF-1085) with screws and seals available



Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
Sub-base manifold universal system, dorsal and side connections, conveyed exhausts						
	<p>1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilot 12*-14* = Side pilot</p>	dorsal and side connections	G 1/8	aluminium	0,280	BF-1071
		dorsal pneum. impulses	G 1/4	aluminium	0,275	BF-1072
		dorsal and side connections	G 1/8	aluminium	0,300	BF-1071S
		side pneum. impulses	G 1/4	aluminium	0,295	BF-1072S

Dorsal and side connections possible. Close unused ports with caps. Screws (incorporated), seals and caps included.

Inlet plate universal system

	<p>1 = Supply 3-5 = Exhausts</p>	connections in-line	G 3/8	zamak	0,355	BF-1064
		on top	G 3/8	zamak	0,355	BF-1065
		dorsal	G 3/8	zamak	0,355	BF-1066
		connections only in-line	G 3/8	aluminium	0,120	BF-1068

When battery exceeds 4 units, the mounting of 2 plates is recommended. Mixed version available upon request. Screws (incorporated) and seals included.

Diaphragm universal system

		-	-	zamak	0,090	BF-1070
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The diaphragm is designed to obtain the speed regulation of the cylinder by centralizing all controls at the front. For its insertion in the manifold assembly avail yourself of the special diaphragm and in both elements break the central blind hole. Connections G 1/8 for silencers. Screws (incorporated) and seals standard supplied.

Advantages


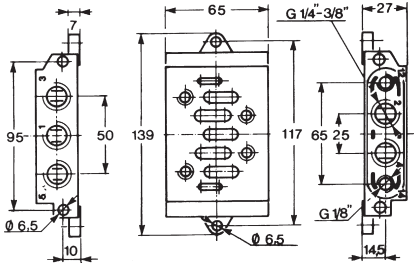

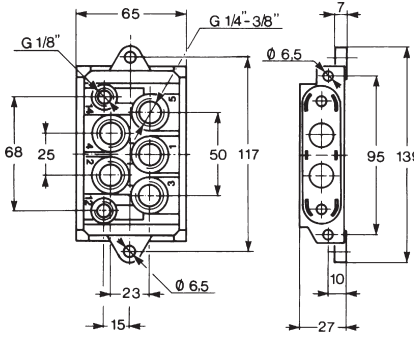
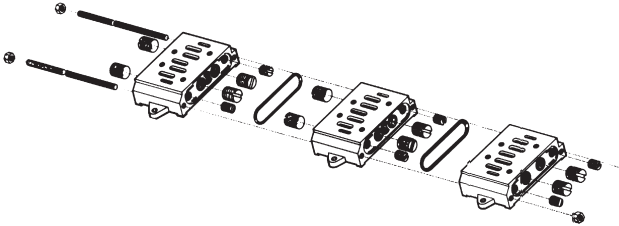
The series of ISO 1 sub-bases has been produced taking into consideration existing problems.

- Determination of the base number when using them.
- Quick assembly with special (incorporated) screw standard supplied.
- Determination of functions for each battery (pressure differentiation, exhaust regulation) by adding or reducing the number of elements without restrictions.
- Easy technical intervention


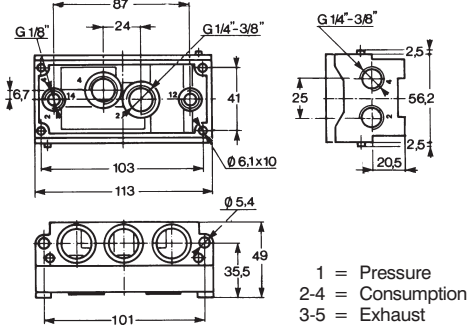
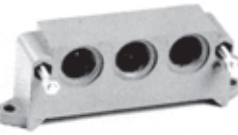
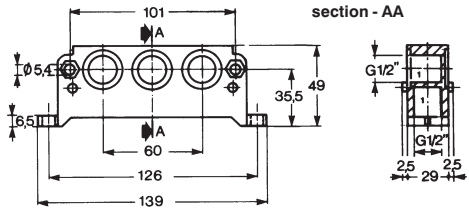

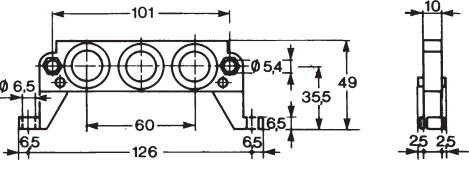
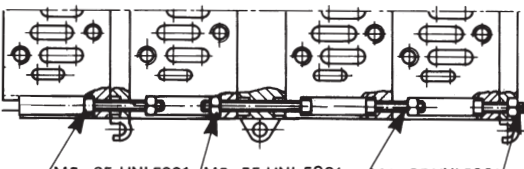
On request assembled and tested batteries are supplied according to drawings. Closing plate for unused base (BF-1085) with screws and seals available

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电话: 0592-6054592
传真: 0592-6054591
<http://www.housengj.com>


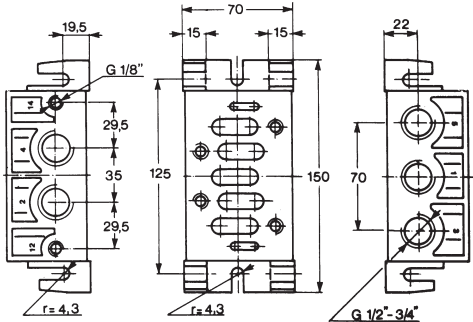


Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
Single sub-base side connections						
	 <p>1 = Pressure 3-5 = Exhausts</p> <p>2-4 = Consumptions 12-14 = Pilot</p>	connections in-line	G 1/4	zamak	0,640	BF-1150
			G 3/8	zamak	0,650	BF-1151
To be used when battery assembly is not possible						
Single sub-base dorsal connections						
	 <p>1 = Supply 3-5 = Exhausts</p> <p>2-4 = Consumptions 12-14 = Pilot</p>	dorsal connections	G 1/4	zamak	0,640	BF-1152
			G 3/8	zamak	0,650	BF-1153
To be used when battery assembly is not possible						
Sub-base battery with dorsal connections and exhaust regulator						
	<p>The single sub-base with dorsal connections allows battery assembly with insertion of an exhaust regulator. Generally, this sub-base version is delivered pre-assembled and pre-tested only upon specific request and following the customer drawing. This kind of battery has a conveyed entrance, dorsal connections and separate exhausts. Exhaust regulators, the assembly kit with tie-rods, seals and plugs must be ordered separately for battery assembly.</p>					
<p>Closing plate for unused base (BF-1175) with screws and seals available</p>						

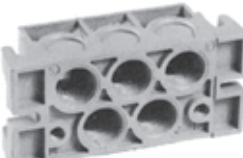
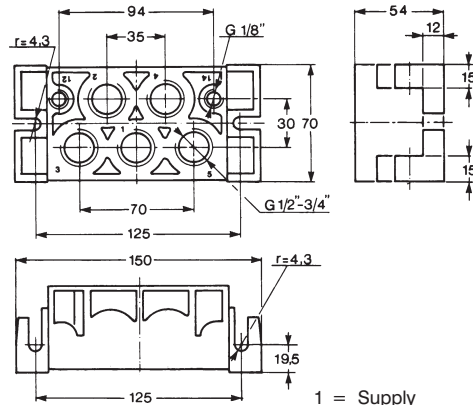


Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number	
Sub-base manifold universal system dorsal and side connections conveyed exhaust							
	 <p style="text-align: center;"> 1 = Pressure 2-4 = Consumption 3-5 = Exhaust 12-14 = Pilot </p>	dorsal and side connections	G 1/4	zamak	0,800	BF-1160	
			G 3/8	zamak	0,800	BF-1161	
Dorsal and side connections possible. Close unused ports with caps. Screws (incorporated), seals and caps included.							
Inlet plate universal system							
	 <p style="text-align: center;">section - AA</p>	connections in-line	G 1/2	zamak	0,460	BF-1154	
			dorsal	G 1/2	zamak	0,460	BF-1155
When battery exceeds 4 units, the mounting of 2 plates is recommended. Mixed version available on request. Screws (incorporated) and seals included.							
Diaphragm universal system							
		-	-	zamak	0,160	BF-1162	
The diaphragm is not only the end plate of the battery but it is also coupled with the exhaust regulator to separate two sub-bases and regulate the valves independently. In this case smash the central blind hole. The screw also allows two or more pressures. In this case smash the two side blind holes.							
<div style="display: flex; justify-content: space-between;"> <div data-bbox="129 1603 687 1794">  <p style="text-align: center;"> M5 x 35 UNI 5931 M5 x 55 UNI 5931 M5 x 25 UNI 5931 </p> </div> <div data-bbox="746 1518 1461 1805"> <p>Advantages</p> <p>The series of ISO 2 sub-bases has been produced taking into consideration existing problems.</p> <ul style="list-style-type: none"> - Determination of the base number when using them. - Quick assembly with special (incorporated) screw standard supplied. - Determination of functions for each battery (pressure differentiation, exhaust regulation) by adding or reducing the number of elements without restrictions. - Easy technical intervention </div> </div> <p data-bbox="137 1816 1334 1861"> On request assembled and tested batteries are supplied according to drawings. Closing plate for unused base (BF-1175) with screws and seals available </p>							




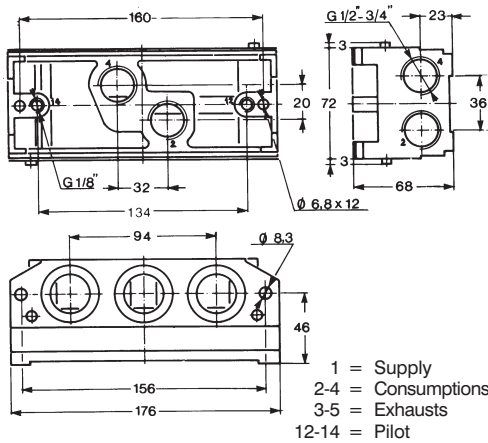

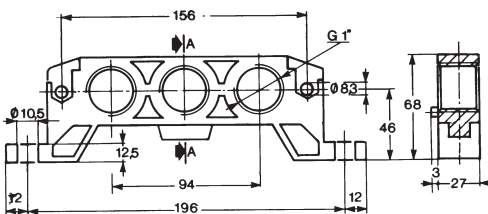

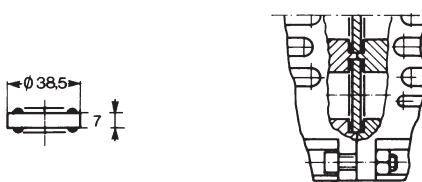
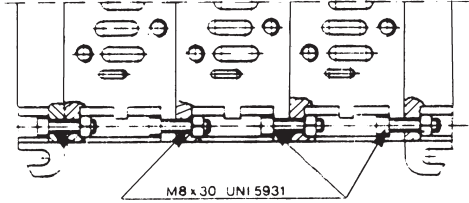
Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
Single sub-base side connections						
	 <p data-bbox="432 723 820 763">1 = Supply 3-5 = Exhausts 2-4 = Consumptions 12-14 = Pilots</p>	connections in-line	G 1/2	aluminium	0,740	BF-3060
			G 3/4	aluminium	0,740	BF-3061

To be used when battery assembly is not possible

Single sub-base dorsal connections						
	 <p data-bbox="667 1305 866 1391">1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilots</p>	dorsal connections	G 1/2	aluminium	0,720	BF-3062
			G 3/4	aluminium	0,720	BF-3063


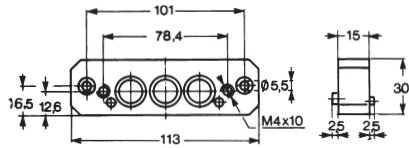

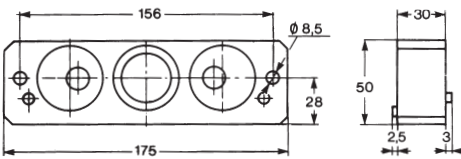

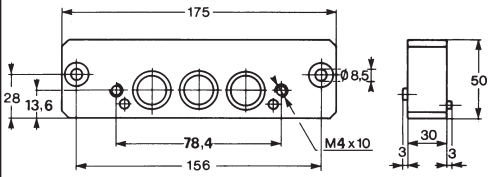

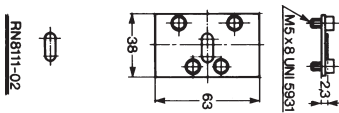

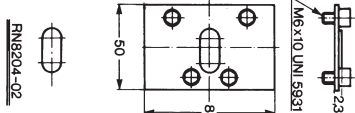

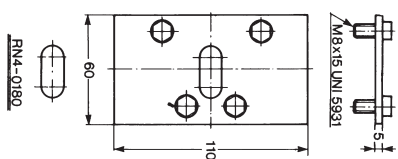
To be used when battery assembly is not possible

昊盛国际发展有限公司
 电话：0592-6054592
 传真：0592-6054591
<http://www.housengj.com>

Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
Sub-base manifold universal system dorsal and side connections, conveyed exhausts						
	 <p>1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilot</p>	dorsal and side connections	G 1/2	aluminium	1,100	BF-3071
			G 3/4	aluminium	1,100	BF-3072
Dorsal and side connections possible. Close unused ports with caps. Screws (incorporated), seals and caps included.						
Inlet plate universal system						
		connections in-line	G 1	aluminium	0,440	BF-3064
For each battery 2 inlet plates must be used. Each plate can be mounted on the left or on the right. Screws (incorporated) and seals included.						
Cap universal system						
		-	-	aluminium	0,020	BF-3082
To be used for two pressures						
 <p>M8 x 30 UNI 5931</p>		<p>Advantages The series of ISO 3 sub-bases has been produced taking into consideration existing problems.</p> <ul style="list-style-type: none"> - Determination of the base number when using them. - Quick assembly with special (incorporated) screw standard supplied. - Determination of functions for each battery (pressure differentiation, exhaust regulation) by adding or reducing the number of elements without restrictions. - Easy technical intervention 				
On request assembled and tested batteries are supplied according to drawings. Closing plate for unused base (BF-3175) with screws and seals available						

Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
Single sub-base side connections						
	<p>1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilots</p>	<p>connections in-line</p>	G 3/4	aluminium	1,280	BF-4060
			G 1	aluminium	1,280	BF-4061
Single sub-base dorsal connections						
	<p>1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilots</p>	<p>dorsal connections</p>	G 3/4	aluminium	1,240	BF-4062
			G 1	aluminium	1,240	BF-4063



Type	Overall dimensions	Remarks	Material	Mass kg	Part number
Connecting interface for universal sub-bases size 1 and 2					
		-	aluminium	0,110	BF-1190
It allows the use of size 1 and 2 valves in one battery with conveyed pressure and exhausts (on request: pressure and/or exhausts separated)					
Connecting interface for universal sub-bases size 2 and 3					
		-	aluminium	0,570	BF-3190
It allows the use of size 2 and 3 valves in one battery with conveyed pressure and exhausts (on request: pressure and/or exhausts separated)					
Connecting interface for universal sub-bases size 1 to 3					
		-	aluminium	0,570	BF-3191
It allows the use of size 1 to 3 valves in one battery with conveyed pressure and exhausts (on request: pressure and/or exhausts separated)					
Closing plate for sub-bases size 1-2-3					
		ISO 1 (for all sub-base models)	steel	0,030	BF-1085
		ISO 2 (for all sub-base models)	steel	0,050	BF-1175
		ISO 3 (for all sub-base models)	aluminium	0,080	BF-3175
It allows "at design stage" to fix the number of bases leaving some of them temporarily free for future new applications. Screws (incorporated) and seals included.					

Valves