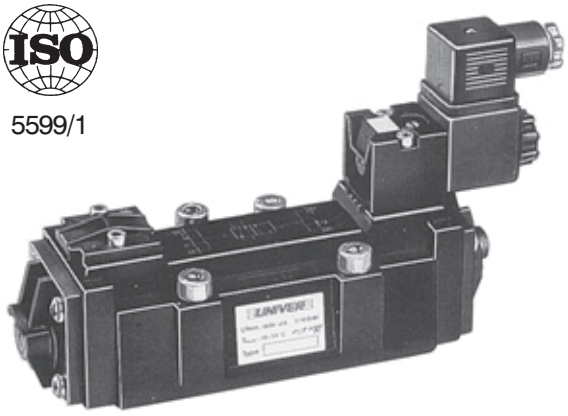
UNIVER, particularly sensible to market requirements, has introduced in its production program a new line of valves for ISO sub-bases. These valves are identical in dimensions and aspect but have two different internal switching systems which fulfil the widest range of needs in pneumatic energy control. 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.

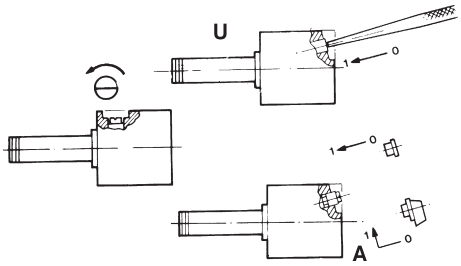
TECHNICAL CHARACTERISTICS

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 Nl/min by "962".

ISO 5599/1

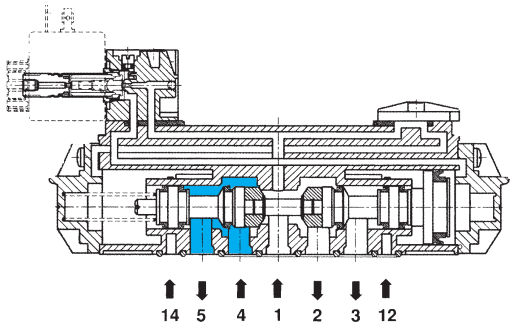




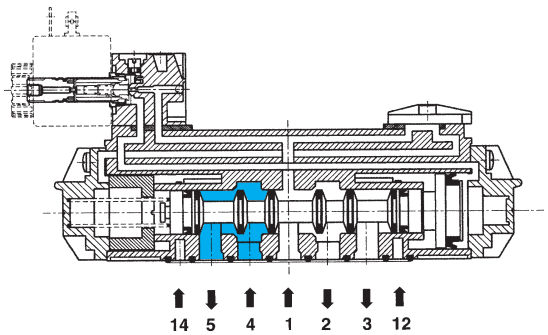
Manual intervention on the electric part

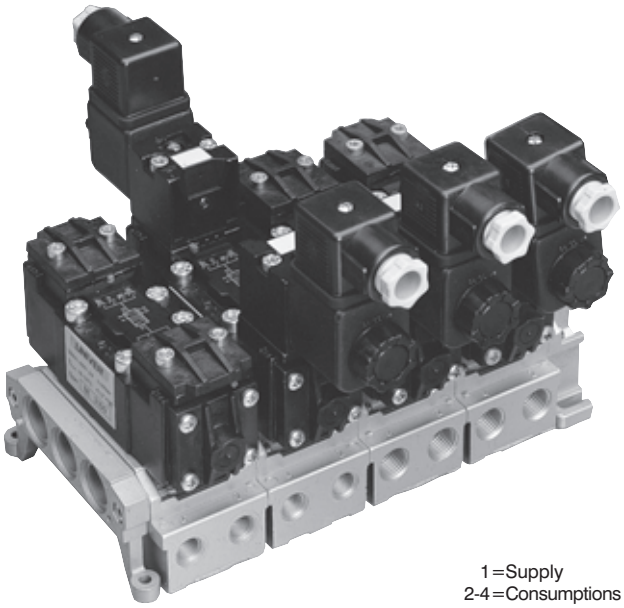
The manual control of electropilot is available in the two stable position type without protrusions and operated by screw-driver. In safety applications against accidental starting of machines (especially used in the car sector) the manual control is available with embedded button which can be activated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

Mixed system



Spool system

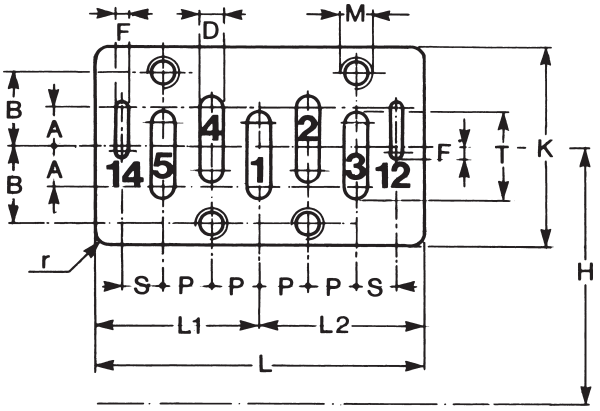




1=Supply
2-4=Consumptions
3-5=Exhausts
14=Control
12=Return

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.

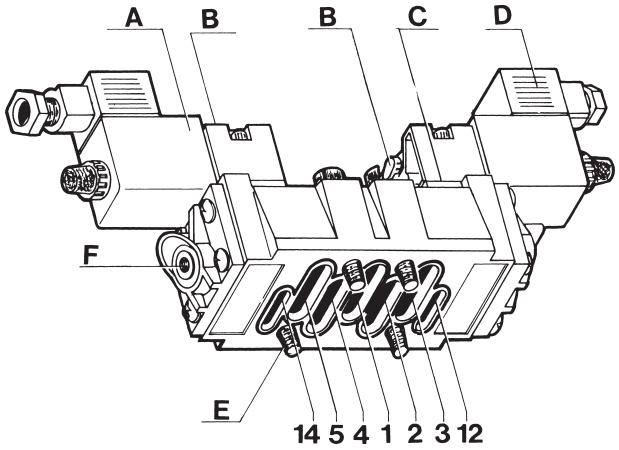


Size	A	B	D	F	M	T	S	P	H	r max	K min	L1 min	L2 min	L min
1	9	14	4,5	3	M5	16,5	8,5	9	43	2,5	38	32,5		65
2	10	19	7		M6	22	10	12	56	3	50	40,5		81
3	11,5	24	10	4	M8	29	13	16	71	4	64	53		106
4	14,5	29	13			36,5	15,5	20	82		74	77,5	64,5	142

ISO Standard 5599/1 fixes the dimensions of the bearing surface of the valve and provides accomodation 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**

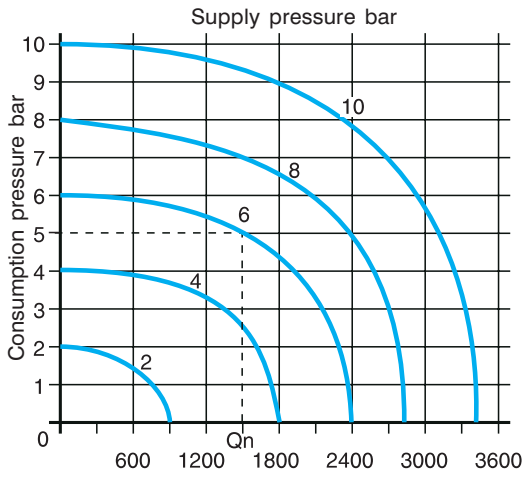
(e.g. single electrical impulse solenoid mounted side 14 single pneumatic impulse control at 14)



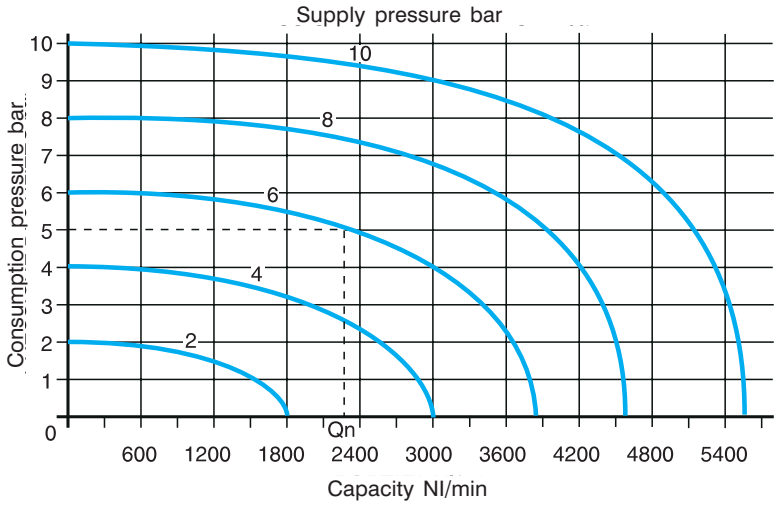
Here are some recommendations of the ISO 5599/1 standard:
- electropilot and coil (A) above the body of the valve, the axis is parallel to that of the valve, to facilitate the access to the manual override on the valve body (F)
- manual override on the electropilot (B)
- the bearing surface of the electropilot (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

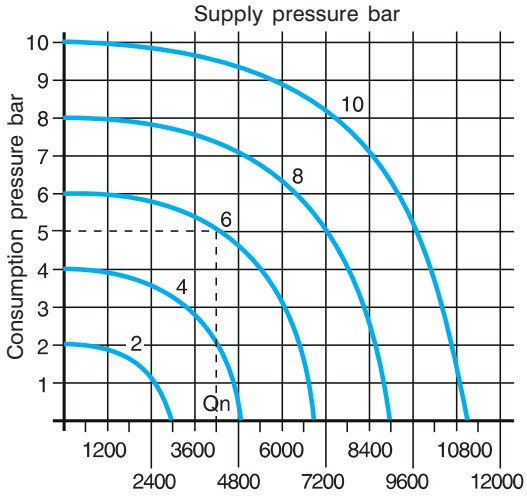
ISO 1



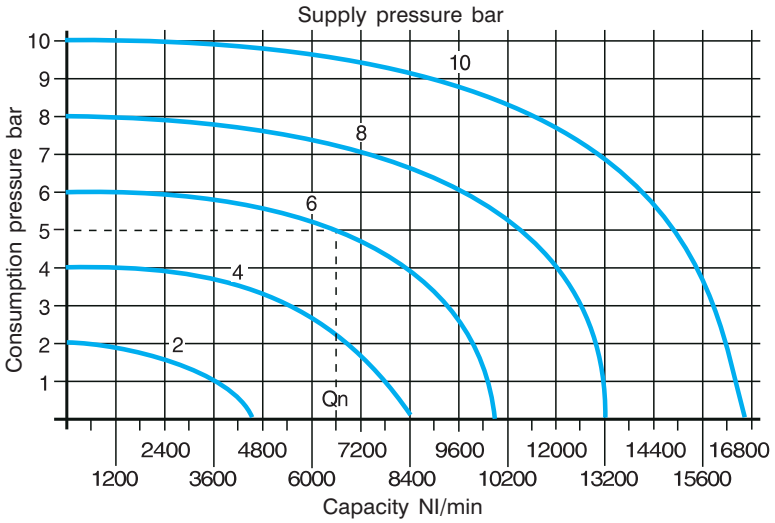
ISO 2



ISO 3

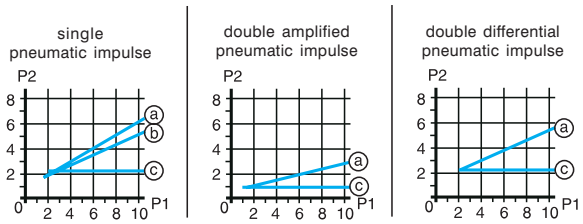


ISO 4

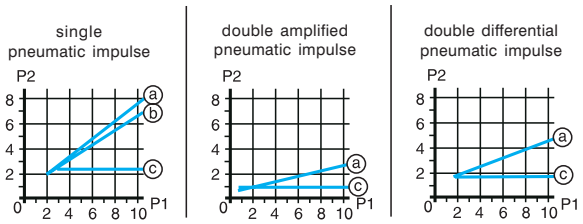


Pilot characteristics

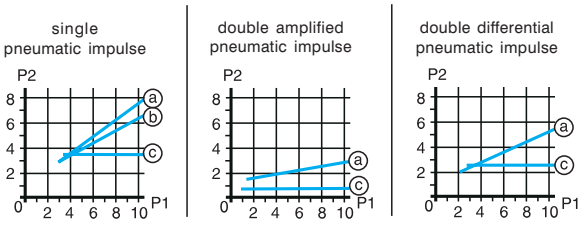
ISO 1



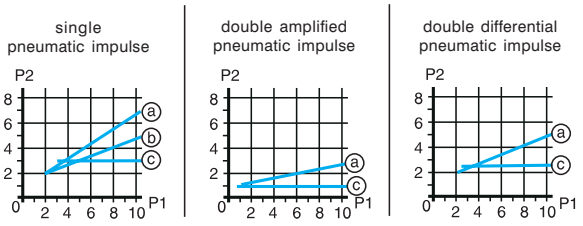
ISO 2



ISO 3



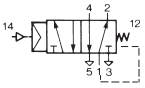
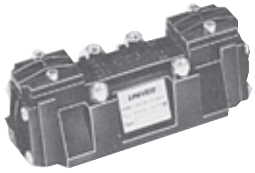
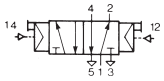
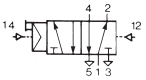
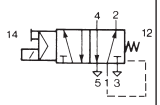
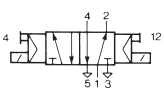
ISO 4



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

P1 = supply pressure
P2 = pilot pressure

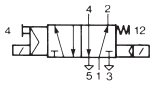
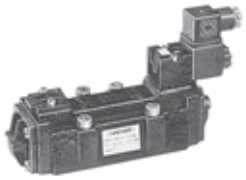
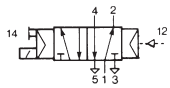
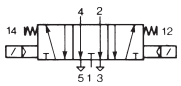
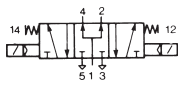
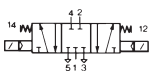
Valves

Type	Symbol	Control (14)	Return (12)	Ways	Ø mm	Pressure bar	Capacity Nl/min	Size system*		Time ms energ. (14)	Time ms de-energ. (12)	Mass kg	Part number
		Pneum.	Pneu-mech.	5/2	8	2÷10	1480	1	M	9	18	0,30	**BE-3100**
						1,8÷10			S	11	22	0,30	**BE-3800**
					10	2,3÷10	2300	2	M	11	14	0,40	**BE-4100**
						2÷10			S	13	19	0,40	**BE-4800**
					15	2,5÷10	4200	3	M	19	49	0,65	**BE-5100**
						2,2÷10			S	21	52	0,65	**BE-5800**
					19	3÷10	6600	4	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	1	M	5	5	0,30	**BE-3150**
						0,8÷10			S	6	6	0,30	**BE-3850**
					10	1÷10	2300	2	M	6	6	0,40	**BE-4150**
						1÷10			S	7	7	0,40	**BE-4850**
					15	1÷10	4200	3	M	10	10	0,65	**BE-5150**
						0,8÷10			S	12	12	0,65	**BE-5850**
					19	1,3÷10	6600	4	M	12	12	0,87	**BE-6150**
						1÷10			S	14	14	0,87	**BE-6850**
		Pneum.	Pneum. differen.	5/2	8	2÷10	1480	1	M	5	16	0,30	**BE-3170**
						1,5÷10			S	6	15	0,30	**BE-3870**
					10	1,8÷10	2300	2	M	6	13	0,40	**BE-4170**
						1,8÷10			S	7	14	0,40	**BE-4870**
					15	2,2÷10	4200	3	M	10	35	0,65	**BE-5170**
						1,5÷10			S	12	38	0,65	**BE-5870**
					19	2÷10	6600	4	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	1	M	20	32	0,45	**BE-3000 ♦**
						1,8÷10			S	21	35	0,45	**BE-3700 ♦**
					10	2,3÷10	2300	2	M	24	25	0,55	**BE-4000 ♦**
						1÷10			S	24	30	0,55	**BE-4700 ♦**
					15	2,5÷10	4200	3	M	32	71	0,90	**BE-5000 ♦**
						2,2÷10			S	33	74	0,90	**BE-5700 ♦**
					19	3÷10	6600	4	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	1	M	16	16	0,55	**BE-3020 ♦**
						0,8÷10			S	17	17	0,55	**BE-3720 ♦**
					10	1÷10	2300	2	M	17	17	0,80	**BE-4020 ♦**
						1÷10			S	18	18	0,80	**BE-4720 ♦**
					15	1÷10	4200	3	M	23	23	1,20	**BE-5020 ♦**
						0,8÷10			S	26	26	1,20	**BE-5720 ♦**
					19	1,3÷10	6600	4	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

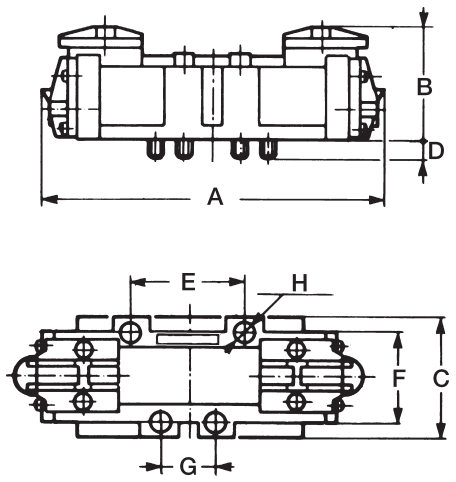
Type	Symbol	Control (14)	Return (12)	Ways	Ø mm	Pressure bar	Capacity Nl/min	Size system*	Time ms energ. (14)	Time ms de-energ. (12)	Mass kg	Part number
		Electr.	Electr. differ.	5/2	8	2÷10	1480	1 M	16	34	0,55	BE-3030
						1,8÷10		S	17	28	0,55	BE-3730
					10	1,8÷10	2300	2 M	17	29	0,80	BE-4030
						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

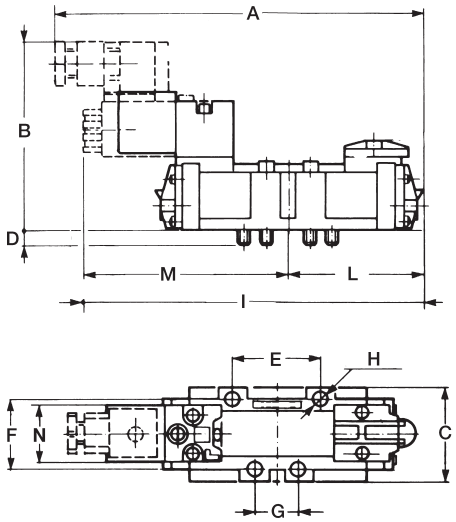
The part numbers of solenoid valves do not include coils

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



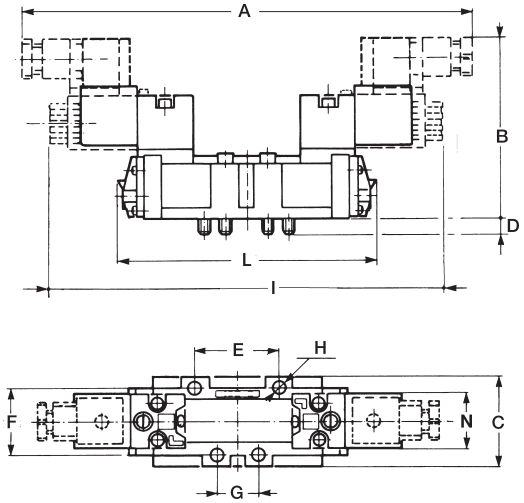
	ISO 1	ISO 2	ISO 3	ISO 4
A	128	145	191	222
B	47	47	63	63
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	30	38	48	58
G	18	24	32	40
H	M5 x 35	M6 x 35	M8 x 50	M8 x 50

Single electrical impulse



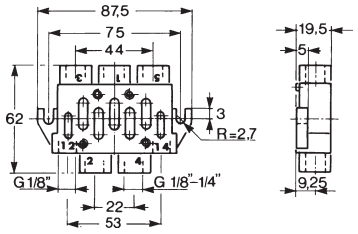
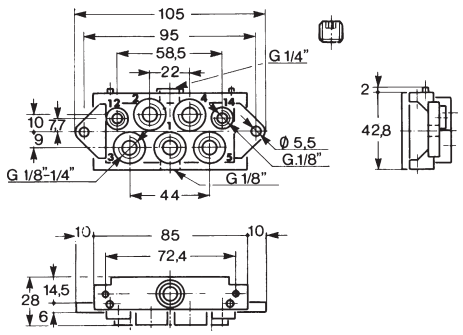
	ISO 1	ISO 2	ISO 3	ISO 4
A	169,5	195,5	219	253
B	105	105	118	118
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	30	38	48	58
G	18	24	32	40
H	M5 x 35	M6 x 35	M8 x 50	M8 x 50
I	159,5	176	208,5	235
L	64	72,5	95,5	111
M	95,5	103,5	113	124
N	30	30	30	30

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

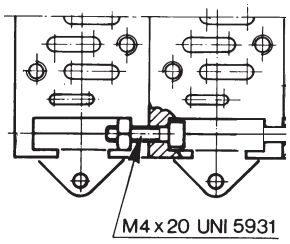


	ISO 1	ISO 2	ISO 3	ISO 4
A	211	226	247	268
B	105	105	118	118
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	30	38	48	58
G	18	24	32	40
H	M5 x 35	M6 x 35	M8 x 50	M8 x 50
I	191	207	226	248
L	128	145	191	222
N	30	30	30	30

NOTE: Dimensions with U3 coils

Type	Overall dimensions	Remarks	Connec-tions	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

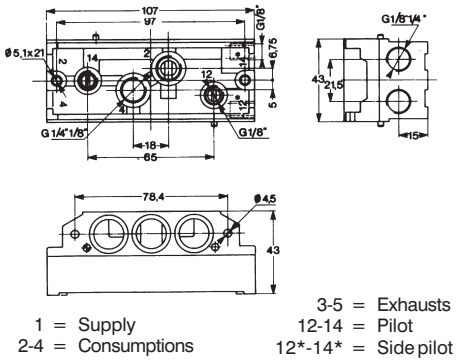
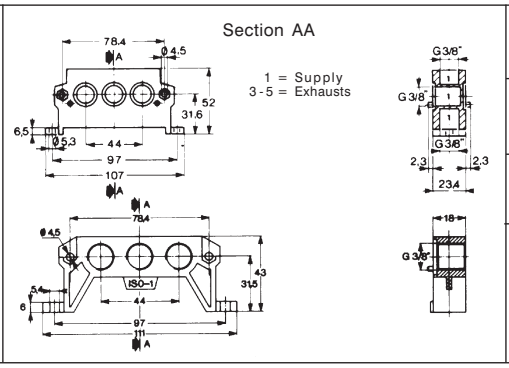
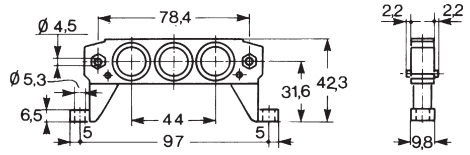


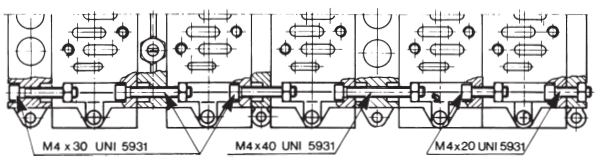
On request assembled and tested batteries are supplied according to drawings.

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 differentation, exhaust regulation) by adding or reducing the number of elements without restrictions.
- Easy technical intervention

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

Type	Overall dimensions	Remarks	Connec-tions	Material	Mass kg	Part number
Sub-base manifold universal system, dorsal and side connections, conveyed exhausts						
		dorsal and side connections dorsal pneum. impulses	G 1/8	aluminium	0,280	**BF-1071**
			G 1/4	aluminium	0,275	**BF-1072**
		dorsal and side connections side pneum. impulses	G 1/8	aluminium	0,300	**BF-1071S**
			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						
		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**
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

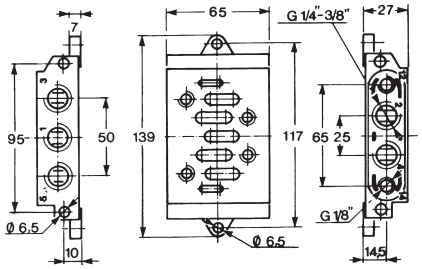
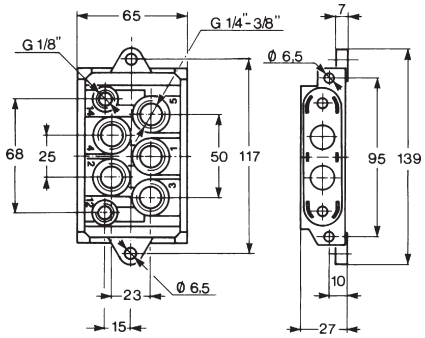
The series of ISO 1 sub-bases has been produced taking into consideration existing problems.

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

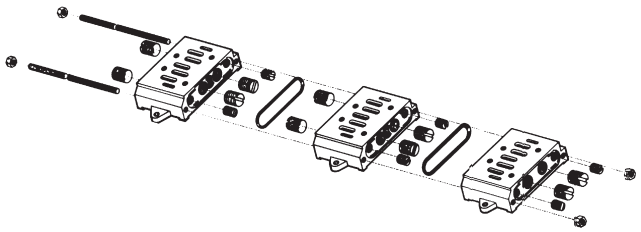
On request assembled and tested batteries are supplied according to drawings.

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

Valves

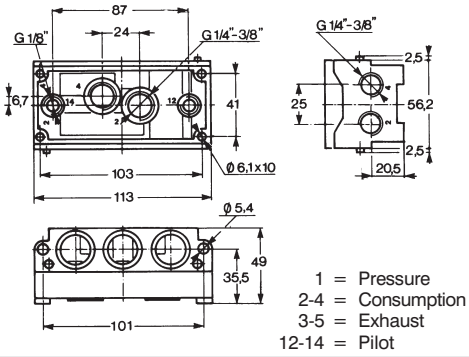
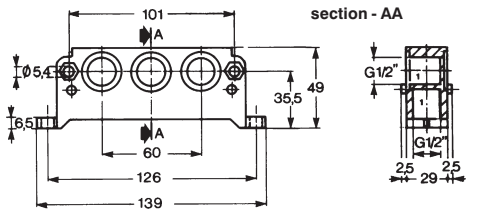
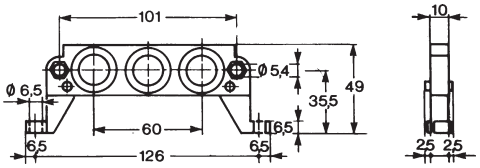
Type	Overall dimensions	Remarks	Connec-tions	Material	Mass kg	Part number
Single sub-base side connections						
	 1 = Pressure 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilot	connections in-line	G 1/4	zamak	0,640	**BF-1150**
			G 3/8	zamak	0,650	**BF-1151**
To be used when battery assembly is not possible						
Single sub-base dorsal connections						
	 1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilot	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						

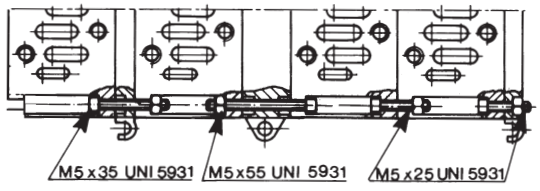
Sub-base battery with dorsal connections and exhaust regulator



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.

Closing plate for unused base **(BF-1175)** with screws and seals available

Type	Overall dimensions	Remarks	Connec-tions	Material	Mass kg	Part number
Sub-base manifold universal system dorsal and side connections conveyed exhaust						
		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						
		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.						



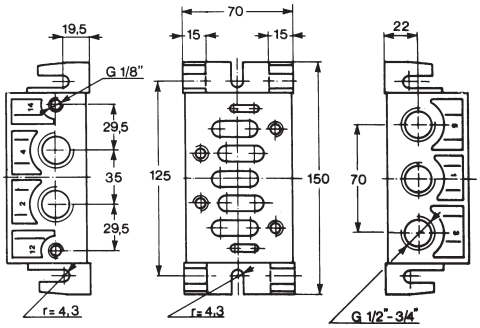
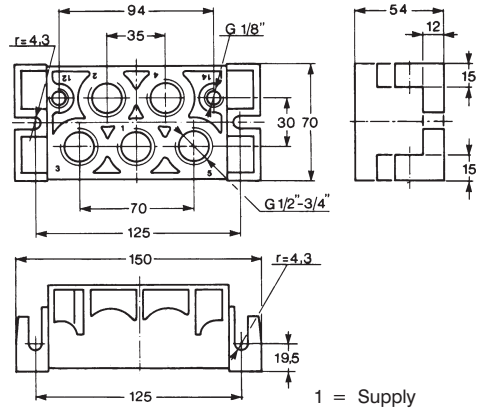
On request assembled and tested batteries are supplied according to drawings.

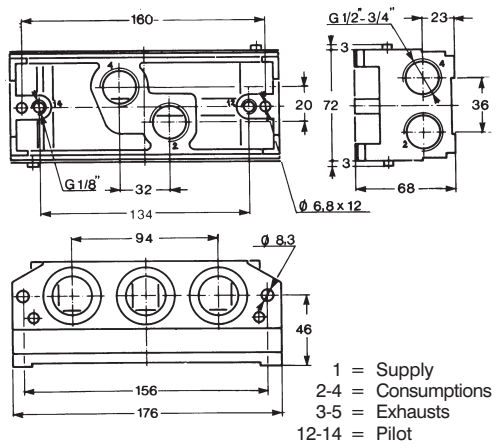
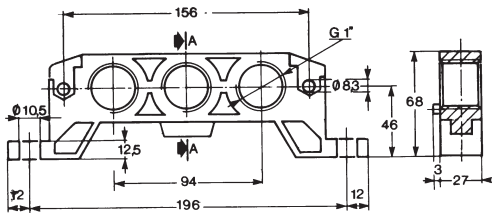
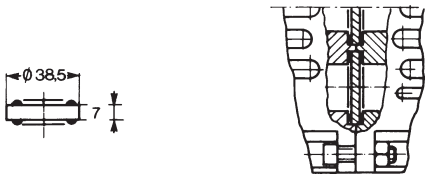
Advantages

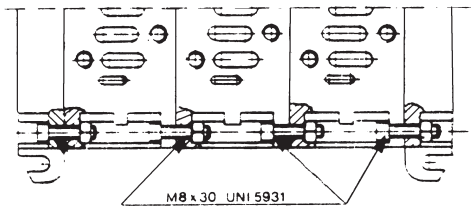
The series of ISO 2 sub-bases has been produced taking into consideration existing problems.

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

Closing plate for unused base **(BF-1175)** with screws and seals available

Type	Overall dimensions	Remarks	Connec-tions	Material	Mass kg	Part number
Single sub-base side connections						
	 1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilots	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						
	 1 = Supply 2-4 = Consumptions 3-5 = Exhausts 12-14 = Pilots	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						

Type	Overall dimensions	Remarks	Connec-tions	Material	Mass kg	Part number
Sub-base manifold universal system dorsal and side connections, conveyed exhausts						
		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						



Advantages

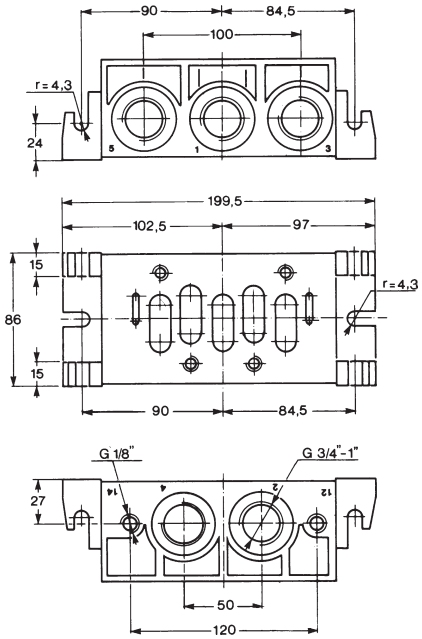
The series of ISO 3 sub-bases has been produced taking into consideration existing problems.

- Determination of the base number when using them.
- Quick assembly with special (incorporated) screw standard supplied.
- Determination of functions for each battery (pressure differentation, 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

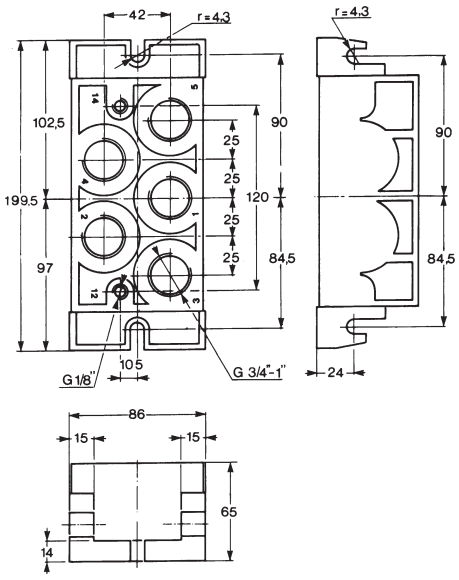
Single sub-base side connections



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

Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
		connections in-line	G 3/4	aluminium	1,280	**BF-4060**
			G 1	aluminium	1,280	**BF-4061**

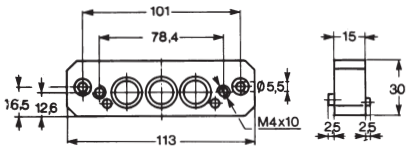
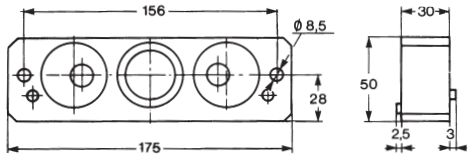
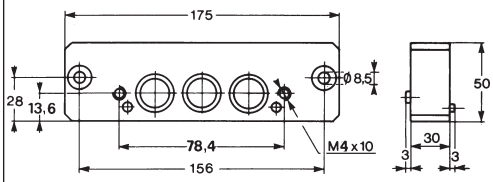
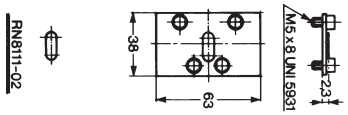
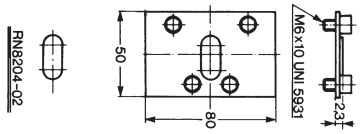
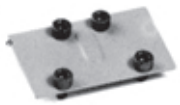
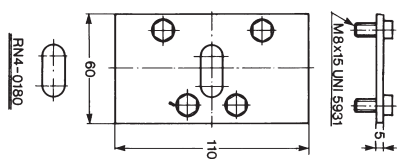
Single sub-base dorsal connections



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

Type	Overall dimensions	Remarks	Connections	Material	Mass kg	Part number
		dorsal connections	G 3/4	aluminium	1,240	**BF-4062**
			G 1	aluminium	1,240	**BF-4063**

Valves

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.					