

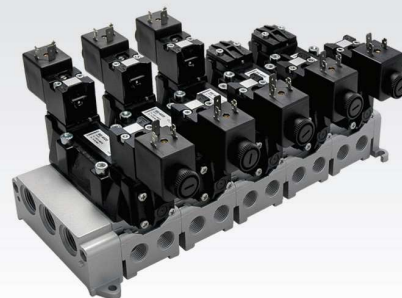
# BE/BE12

## ISO 5599/1 Valves

- Complying with ISO 5599/1 international standards
- Full range: 1 - 2 - 3 - 4 size
- Two different internal commutation systems: mixed and spool
- High capacity
- Short internal stroke
- No lubrication
- Electric connection M12 for Automotive sector (1 - 2 - 3 sizes)
- Modular and single bases
- Possibility of combination of different sub-base sizes with proper interfaces

Available ATEX version upon request

CE II 2Gc IIC T5 II 2Dc T100°C



### TECHNICAL CHARACTERISTICS

Ambient temperature	-10 ÷ +50 °C			
Fluid temperature	Max +50 °C			
Fluid	50 µm filtered air (mixed system) 50 µm filtered air, with or without lubrication (spool system)			
Commutation system	mixed system, spool system			
Ways/Positions	5/2, 5/3			
Pressure	10 bar Max			
Control	indirect electro-pneumatic, pneumatic			
Return	mechanical spring, pneumomechanical spring, pneumatic, electric			
Connections	ISO 5599/1 interface			
	size 1	size 2	size 3	size 4
Nominal Ø (mm)	8	10	15	19
Nominal flow rate (NI/min)	1480	2300	4200	6600

### CONSTRUCTIVE CHARACTERISTICS

Valve body	acetalic resin
Cover	aluminium
Seals	<b>mixed system:</b> nitrile rubber and polyurethane <b>spool system:</b> nitrile rubber
Sub-base	zamak - aluminium
Actuators	technopolymer
Spool	aluminium

### ELECTRIC CHARACTERISTICS

Electropilot	AA series
Coil	U3
Power consumption	2,5 W (DC) - 5 VA (AC)
Voltage	12 V DC - 24 V DC - 24 V AC - 110 V AC - 230 V AC
Connector	AM 5111
Manual override	impulse screw - 2 positions, button with tool (BE) recessed button - 1 position (BE12)



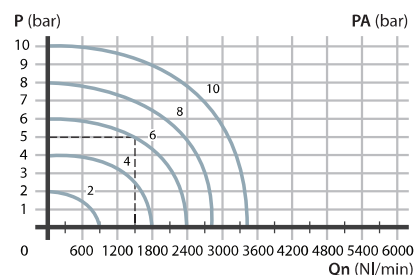
**MIXED**  
for heavy applications



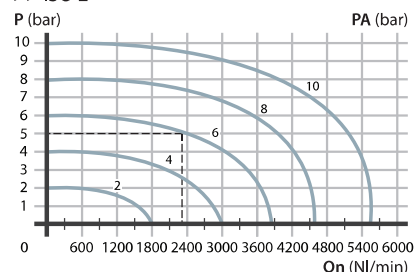
**SPOOL**  
for all applications

### Flow rate characteristics

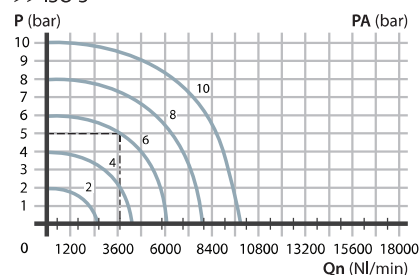
>> ISO 1



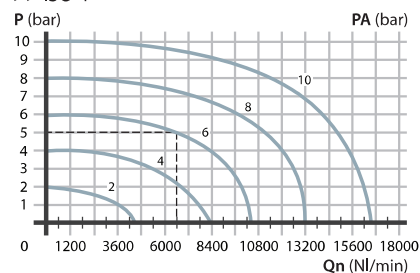
>> ISO 2



>> ISO 3



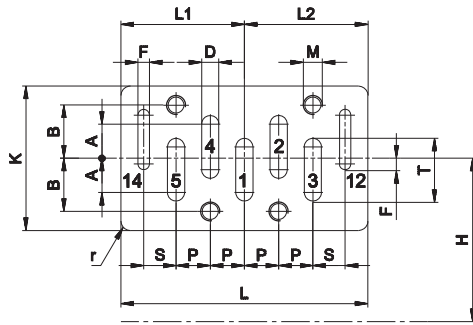
>> ISO 4



P = Working pressure  
PA = Supply pressure  
Qn = Nominal flow rate

### ISO 5599/1 Standard

The ISO standard for pneumatic valves is accepted by industry and by the majority of the main important pneumatic valve manufactures throughout the world. The choice of valves according to ISO standard guarantees to the user the interchangeability of both the valve body and the electromagnetic part.



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

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 port                      3 - 5 = Exhaust

2 - 4 = Use

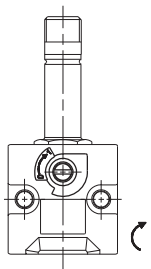
12 - 14 = Pilots

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

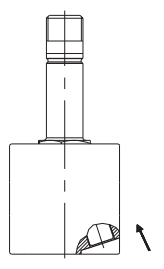
3

### Standard manual overrides

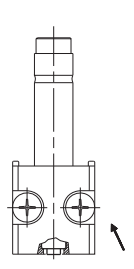
Functioning	Suitable for valve	Symbol/Part no.
1 = with 2 position screw	BE	⊖
2 = with button with tool	BE	→
3 = with recessed button, 1 position	BE12	→



1

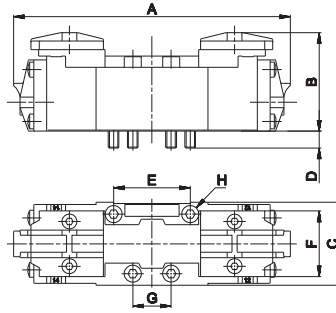


2



3

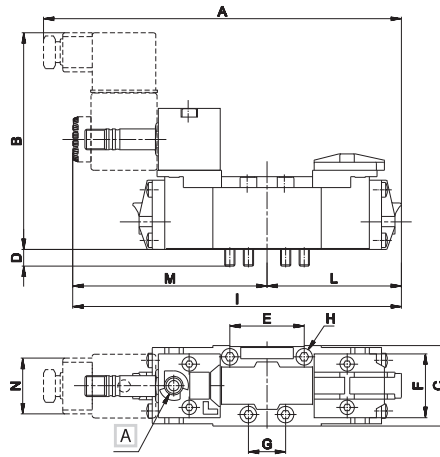
Single/double pneumatic impulse



	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	28	38	48	58
G	18	24	32	40
H	M5x38	M6x35	M8x50	M8x50

	Symbol	Control	Return	Size	Pressure	Response Time (ms)		Weight	Part no.
						En.	De-en.		
		14	12		bar				
<b>MIXED SYSTEM</b>									
5/2		pneumatic amplified	pneumomechanical spring	1	2÷10	9	18	0,30	<b>BE-3100</b>
				2	2,3÷10	11	14	0,40	<b>BE-4100</b>
				3	2,5÷10	19	49	0,65	<b>BE-5100</b>
				4	3÷10	23	46	0,87	<b>BE-6100</b>
5/2		pneumatic amplified	pneumatic amplified	1	1÷10	5	5	0,30	<b>BE-3150</b>
				2	1÷10	6	6	0,40	<b>BE-4150</b>
				3	1÷10	10	10	0,65	<b>BE-5150</b>
				4	1,3÷10	12	12	0,87	<b>BE-6150</b>
5/2		pneumatic amplified	pneumatic not amplified	1	2÷10	5	16	0,30	<b>BE-3170</b>
				2	2÷10	6	13	0,40	<b>BE-4170</b>
				3	2,2÷10	10	35	0,65	<b>BE-5170</b>
				4	2,2÷10	12	32	0,87	<b>BE-6170</b>
<b>SPOOL SYSTEM</b>									
5/2		pneumatic amplified	pneumomechanical spring	1	1,8÷10	11	22	0,30	<b>BE-3800</b>
				2	2÷10	13	19	0,40	<b>BE-4800</b>
				3	2,2÷10	21	52	0,65	<b>BE-5800</b>
				4	2,8÷10	24	29	0,87	<b>BE-6800</b>
5/2		pneumatic amplified	pneumatic amplified	1	0,8÷10	6	6	0,30	<b>BE-3850</b>
				2	1÷10	7	7	0,40	<b>BE-4850</b>
				3	1÷10	12	12	0,65	<b>BE-5850</b>
				4	1÷10	14	14	0,87	<b>BE-6850</b>
5/2		pneumatic amplified	pneumatic not amplified	1	1,5÷10	6	15	0,30	<b>BE-3870</b>
				2	1,8÷10	7	14	0,40	<b>BE-4870</b>
				3	2÷10	12	38	0,65	<b>BE-5870</b>
				4	2÷10	14	31	0,87	<b>BE-6870</b>

Single electric impulse



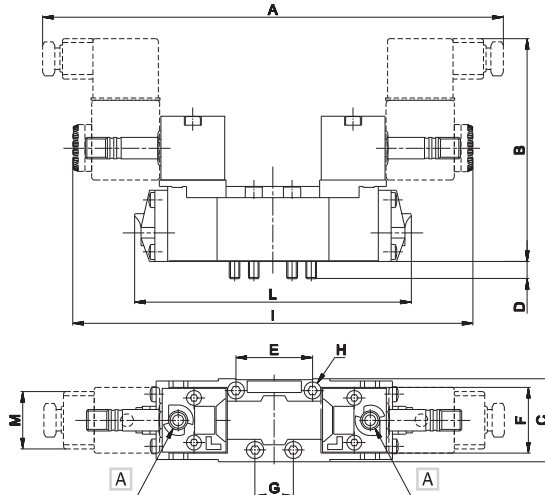
	ISO 1	ISO 2	ISO 3	ISO 4
A	169,5	195,5	219	253
B	105	105	118	118
C	39	52	64	74
D	5	5	10	10
E	36	48	64	80
F	28	38	48	58
G	18	24	32	40
H	M5x38	M6x35	M8x50	M8x50
I	159,5	176	208,5	235
L	64	72,5	95,5	111
M	95,5	103,5	113	124
N	30	30	30	30

A Manual override

	Symbol	Control	Return	Size	Pressure	Response Time (ms)		Weight	Part no.
						En.	De-en.		
		14	12		bar				
<b>MIXED SYSTEM</b>									
5/2		electric amplified	pneumomechanical spring	1	2÷10	20	32	0,37	<b>BE-3000</b>
				2	2,3÷10	24	25	0,47	<b>BE-4000</b>
				3	2,5÷10	32	71	0,82	<b>BE-5000</b>
				4	3÷10	38	62	1,04	<b>BE-6000</b>
5/2		electric amplified	pneumatic amplified	1	1÷10	16	6	0,37	<b>BE-3060</b>
				2	1÷10	17	7	0,47	<b>BE-4060</b>
				3	1÷10	23	15	0,82	<b>BE-5060</b>
				4	1,3÷10	25	16	1,04	<b>BE-6060</b>
<b>SPOOL SYSTEM</b>									
5/2		electric amplified	pneumomechanical spring	1	2÷10	21	35	0,37	<b>BE-3700</b>
				2	2,2÷10	24	30	0,47	<b>BE-4700</b>
				3	2,3÷10	33	74	0,82	<b>BE-5700</b>
				4	2,8÷10	39	68	1,04	<b>BE-6700</b>
5/2		electric amplified	pneumatic amplified	1	1÷10	17	8	0,37	<b>BE-3760</b>
				2	1÷10	18	9	0,47	<b>BE-4760</b>
				3	1÷10	26	17	0,82	<b>BE-5760</b>
				4	1,3÷10	27	18	1,04	<b>BE-6760</b>

For manual version with button, add "U" to the end of the part number  
Electrovalves are supplied without coil, connector and locking ring

Double electric impulse



	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	28	38	48	58
G	18	24	32	40
H	M5x38	M6x35	M8x50	M8x50
I	191	207	226	248
L	128	145	191	222
M	30	30	30	30

A Manual override

	Symbol	Control	Return	Size	Pressure		Response Time (ms)		Weight	Part no.
					bar		En.	De-en.		
<b>MIXED SYSTEM</b>										
5/2		electric amplified	electric amplified	1	1÷10	16	16	0,39	<b>BE-3020</b>	
				2	1÷10	17	17	0,64	<b>BE-4020</b>	
				3	1÷10	23	23	1,04	<b>BE-5020</b>	
				4	1,3÷10	25	25	1,21	<b>BE-6020</b>	
5/2		electric amplified	electric non amplified	1	2÷10	16	34	0,39	<b>BE-3030</b>	
				2	2÷10	17	29	0,64	<b>BE-4030</b>	
				3	2,2÷10	23	54	1,04	<b>BE-5030</b>	
				4	2,2÷10	25	45	1,21	<b>BE-6030</b>	
5/3 o.c.		electric amplified	electric amplified	1	3÷10	50	26	0,39	<b>BE-3200*</b>	
				2	3÷10	54	24	0,64	<b>BE-4200*</b>	
				3	3÷10	108	36	1,04	<b>BE-5200*</b>	
				4	3÷10	115	115	1,21	<b>BE-6200*</b>	
5/3 p.c.		electric amplified	electric amplified	1	2÷10	50	26	0,39	<b>BE-3205</b>	
				2	2,3÷10	54	24	0,64	<b>BE-4205</b>	
				3	2,5÷10	108	36	1,04	<b>BE-5205</b>	
				4	3÷10	115	115	1,21	<b>BE-6205</b>	
<b>SPOOL SYSTEM</b>										
5/2		electric amplified	electric amplified	1	1÷10	17	17	0,39	<b>BE-3720</b>	
				2	1÷10	18	18	0,64	<b>BE-4720</b>	
				3	1÷10	26	26	1,04	<b>BE-5720</b>	
				4	1÷10	27	27	1,21	<b>BE-6720</b>	
5/2		electric amplified	electric non amplified	1	1,8÷10	17	28	0,39	<b>BE-3730</b>	
				2	1,8÷10	18	25	0,64	<b>BE-4730</b>	
				3	2,5÷10	26	46	1,04	<b>BE-5730</b>	
				4	2,5÷10	27	42	1,21	<b>BE-6730</b>	
5/3 o.c.		electric amplified	electric amplified	1	2,3÷10	17	25	0,39	<b>BE-3900</b>	
				2	2,5÷10	18	27	0,64	<b>BE-4900</b>	
				3	2,5÷10	26	50	1,04	<b>BE-5900</b>	
				4	2,5÷10	30	47	1,21	<b>BE-6900</b>	
5/3 c.c.		electric amplified	electric amplified	1	2,3÷10	17	25	0,39	<b>BE-3940</b>	
				2	2,5÷10	18	27	0,64	<b>BE-4940</b>	
				3	2,5÷10	26	50	1,04	<b>BE-5940</b>	
				4	2,5÷10	30	47	1,21	<b>BE-6940</b>	

o.c. = open centres    c.c. = closed centres    p.c. = pressurized centres  
 For manual version with button, add "U" to the end of the part number  
 \* = For version with manual override contact our Sales Department

Electrovalves are supplied without coil, connector and locking ring

The use of pneumatic component in the automotive field, coupled with electric components, led to the development of a traditional ISO valve with electric connector M12 placed in central position, for both valves with single as well as double electric control.

### Single/double electric impulse

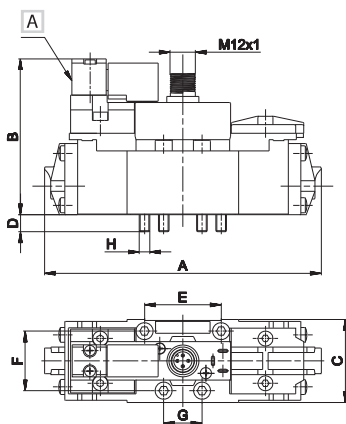


	Symbol	Control	Return	Size	Pressure bar	Response Time (ms)		Weight Kg	Part no.
						En.	De-en.		
		14	12						
<b>SINGLE IMPULSE - MIXED SYSTEM</b>									
5/2		electric amplified	pneumomechanical spring	1	2÷9	18	29	0,45	<b>BE12-3000</b>
				2	2,3÷9	23	24	0,55	<b>BE12-4000</b>
				3	2,5÷9	35	78	0,90	<b>BE12-5000</b>
<b>SINGLE IMPULSE - SPOOL SYSTEM</b>									
5/2		electric amplified	pneumomechanical spring	1	2÷9	19	32	0,45	<b>BE12-3700</b>
				2	2,2÷9	23	28	0,55	<b>BE12-4700</b>
				3	2,3÷9	36	82	0,90	<b>BE12-5700</b>
<b>DOUBLE IMPULSE - MIXED SYSTEM</b>									
5/2		electric amplified	electric amplified	1	1÷9	14	14	0,55	<b>BE12-3020</b>
				2	1÷9	16	16	0,80	<b>BE12-4020</b>
				3	1÷9	25	25	1,20	<b>BE12-5020</b>
5/3 p.c.		electric amplified	electric amplified	1	2÷9	45	23	0,55	<b>BE12-3205</b>
				2	2,3÷9	51	23	0,80	<b>BE12-4205</b>
				3	2,5÷9	119	40	1,20	<b>BE12-5205</b>
<b>DOUBLE IMPULSE - SPOOL SYSTEM</b>									
5/2		electric amplified	electric amplified	1	1÷9	15	15	0,55	<b>BE12-3720</b>
				2	1÷9	17	17	0,80	<b>BE12-4720</b>
				3	1÷9	29	29	1,20	<b>BE12-5720</b>
5/3 o.c.		electric amplified	electric amplified	1	2,3÷9	15	22	0,55	<b>BE12-3900</b>
				2	2,5÷9	17	26	0,80	<b>BE12-4900</b>
				3	2,5÷9	29	55	1,20	<b>BE12-5900</b>
5/3 c.c.		electric amplified	electric amplified	1	2,3÷9	15	22	0,55	<b>BE12-3940</b>
				2	2,5÷9	17	26	0,80	<b>BE12-4940</b>
				3	2,5÷9	29	55	1,20	<b>BE12-5940</b>

o.c. = open centres c.c. = closed centres p.c. = pressurized centres

Valves are supplied with 24 V DC coil

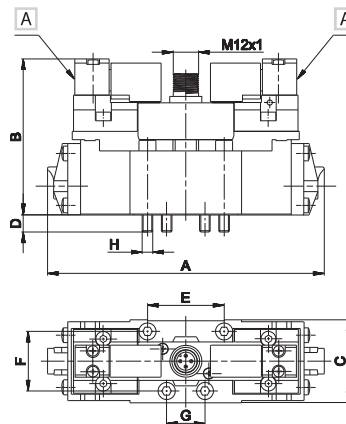
#### Single electric impulse



	ISO 1	ISO 2	ISO 3
A	128	145	191
B	73	73	90
C	39	52	64
D	5	5	10
E	36	48	64
F	28	38	48
G	18	24	32
H	M5x38	M6x35	M8x50

Manual override

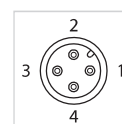
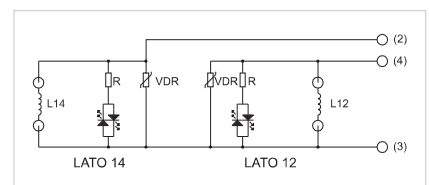
#### Double electric impulse



#### ELECTRIC CHARACTERISTICS

- Central electric connector M12x1
- IP 65 protection degree
- 24 V DC voltage
- 2,5 W nominal power
- DD-052\*\* series coil (without faston)
- ED 100%
- LED indicator

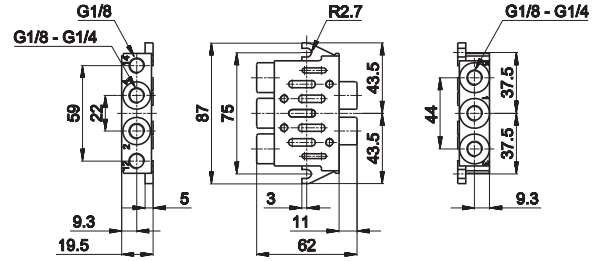
Available upon request other voltages  
max 48 V DC



### ISO 1 - Single sub-base, side connections



Notes	Connection	Material	Weight Kg	Part no.
in line connections	G1/8	zamak	0,25	<b>BF-1060</b>
in line connections	G1/4	zamak	0,25	<b>BF-1061</b>

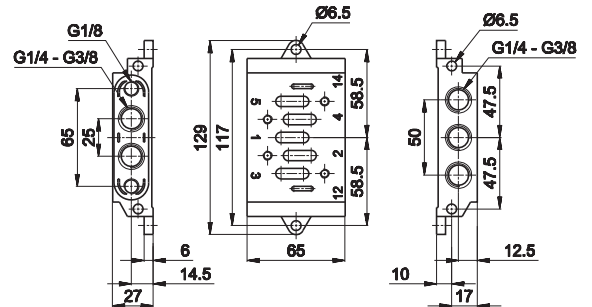


1 = Supply port  
2 - 4 = Use  
3 - 5 = Exhaust  
12 - 14 = Pilots

### ISO 2 - Single sub-base, side connections



Notes	Connection	Material	Weight Kg	Part no.
in line connections	G1/4	zamak	0,65	<b>BF-1150</b>
in line connections	G3/8	zamak	0,65	<b>BF-1151</b>



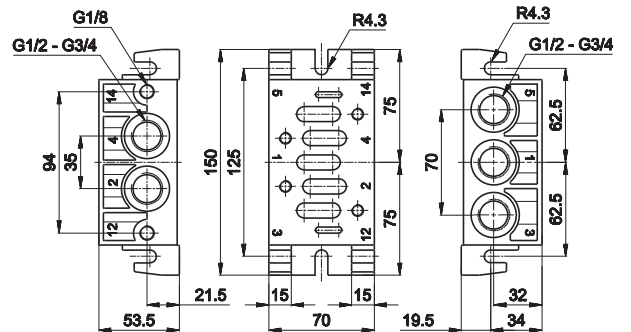
1 = Supply port  
2 - 4 = Use  
3 - 5 = Exhaust  
12 - 14 = Pilots

3

### ISO 3 - Single sub-base, side connections



Notes	Connection	Material	Weight Kg	Part no.
in line connections	G1/2	aluminium	0,74	<b>BF-3060</b>
in line connections	G3/4	aluminium	0,74	<b>BF-3061</b>

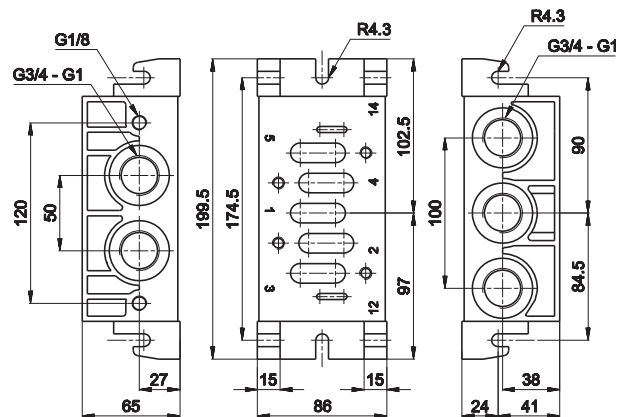


1 = Supply port  
2 - 4 = Use  
3 - 5 = Exhaust  
12 - 14 = Pilots

### ISO 4 - Single sub-base, side connections

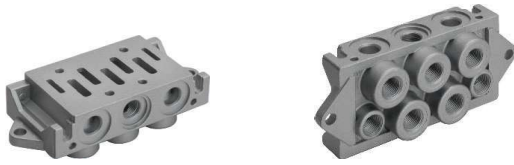


Notes	Connection	Material	Weight Kg	Part no.
in line connections	G3/4	aluminium	1,28	<b>BF-4060</b>
dorsal and side connections	G1	aluminium	1,28	<b>BF-4061</b>



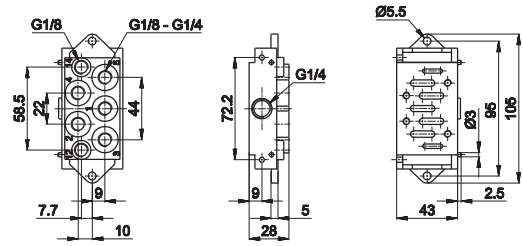
1 = Supply port  
2 - 4 = Use  
3 - 5 = Exhaust  
12 - 14 = Pilots

### ISO 1 - Single modular or Manifold sub-base, dorsal connections, separate exhausts



Notes	Connection	Material	Weight Kg	Part no.
dorsal connections	G1/8	zamak	0,35	<b>BF-1062</b>
dorsal connections	G1/4	zamak	0,33	<b>BF-1063</b>

Single assembly: close side ports (G1/8 - G1/4)  
 Manifold assembly with common inlet: close dorsal connections n.1  
 With incorporated screws and seal

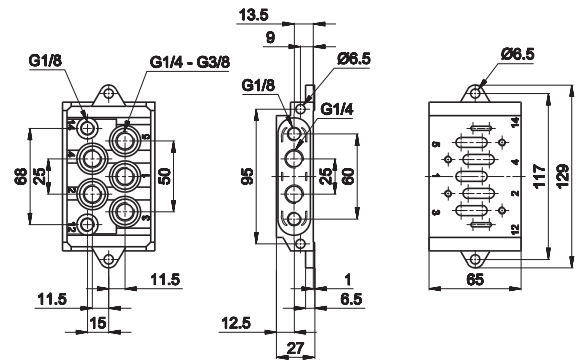


1 = Supply port      3 - 5 = Exhaust  
 2 - 4 = Use          12 - 14 = Pilots

### ISO 2 - Single sub-base, dorsal connections



Notes	Connection	Material	Weight Kg	Part no.
dorsal connections	G1/4	zamak	0,65	<b>BF-1152</b>
dorsal connections	G3/8	zamak	0,65	<b>BF-1153</b>

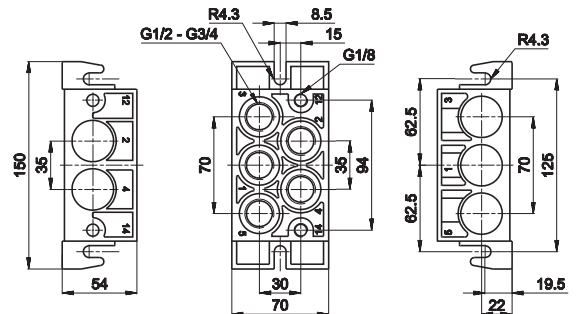


1 = Supply port      3 - 5 = Exhaust  
 2 - 4 = Use          12 - 14 = Pilots

### ISO 3 - Single sub-base, dorsal connections

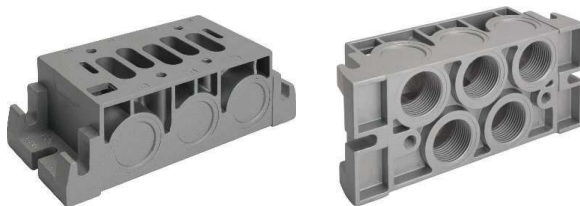


Notes	Connection	Material	Weight Kg	Part no.
dorsal connections	G3/4	aluminium	0,72	<b>BF-3063</b>

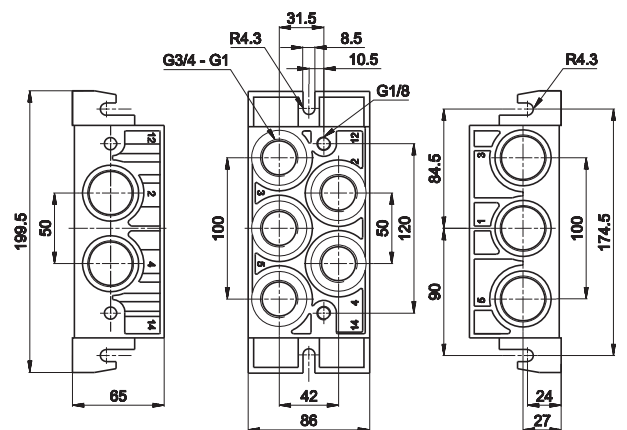


1 = Supply port      3 - 5 = Exhaust  
 2 - 4 = Use          12 - 14 = Pilots

### ISO 4 - Single sub-base, dorsal connections



Notes	Connection	Material	Weight Kg	Part no.
dorsal connections	G3/4	aluminium	1,24	<b>BF-4062</b>
dorsal connections	G1	aluminium	1,24	<b>BF-4063</b>



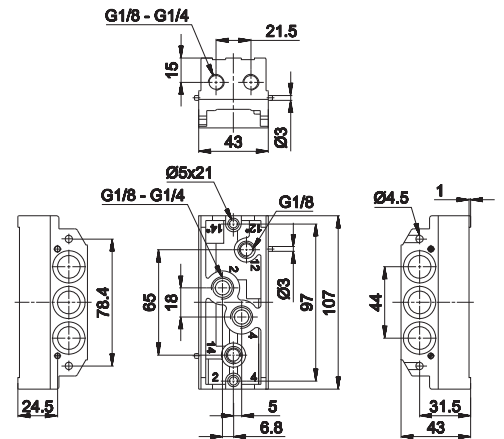
1 = Supply port      3 - 5 = Exhaust  
 2 - 4 = Use          12 - 14 = Pilots

### ISO 1 - Manifold universal system sub-base, dorsal and side connections, conveyed exhausts



Notes	Connection	Material	Weight	Part no.
			Kg	
dorsal and side connections	G1/8	aluminium	0,28	<b>BF-1071</b>
dorsal and side connections	G1/4	aluminium	0,28	<b>BF-1072</b>
side pneumatic impulses	G1/8	aluminium	0,30	<b>BF-1071S</b>
side pneumatic impulses	G1/4	aluminium	0,30	<b>BF-1072S</b>

Dorsal and side connections possible. Close unused ports with caps.  
With incorporated screws, seals and caps included



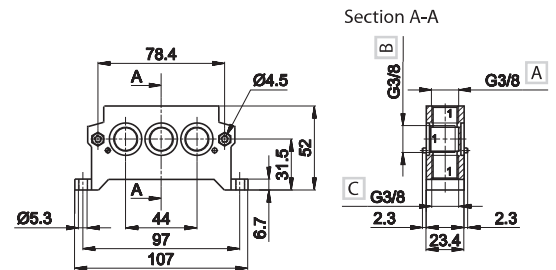
1 = Supply port  
2 - 4 = Use  
3 - 5 = Exhaust  
12 - 14 = Pilots  
12\* - 14\* = Side pilots

### ISO 1 - Manifold universal system inlet plate



- A On top connections
- B In line connections
- C Dorsal connetions

Notes	Connection	Material	Weight	Part no.
			Kg	
on top connections	G3/8	zamak	0,35	<b>BF-1065</b>
dorsal connections	G3/8	zamak	0,35	<b>BF-1066</b>



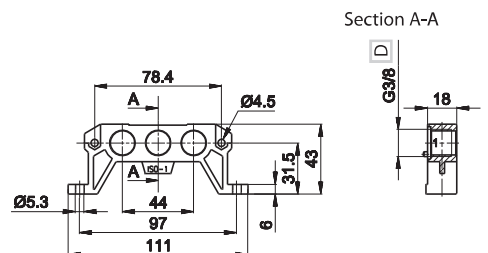
1 = Supply port  
3 - 5 = Exhaust



- D Only in line connections

Notes	Connection	Material	Weight	Part no.
			Kg	
only in line connections	G3/8	aluminium	0,12	<b>BF-1068</b>

When battery exceeds 4 units, the mounting of 2 plates is recommended  
Mixed version available upon request  
With incorporated screws and seal



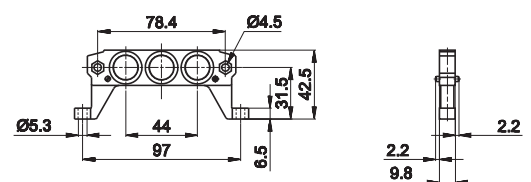
1 = Supply port  
3 - 5 = Exhaust

### ISO 1 - Manifold universal system diaphragm

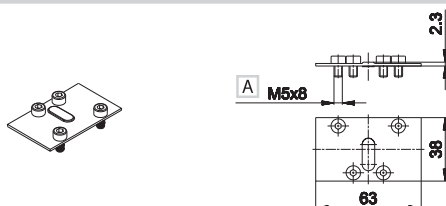


Notes	Connection	Material	Weight	Part no.
			Kg	
-	-	zamak	0,09	<b>BF-1070</b>

The diaphragm is not only the end plate of the manifold but it is also coupled with the exhaust regulator to separate two sub-bases and regulate the valves independently. In this case break the central blind hole.  
To get two or more pressures, break the two side blind holes.



#### BF-1085

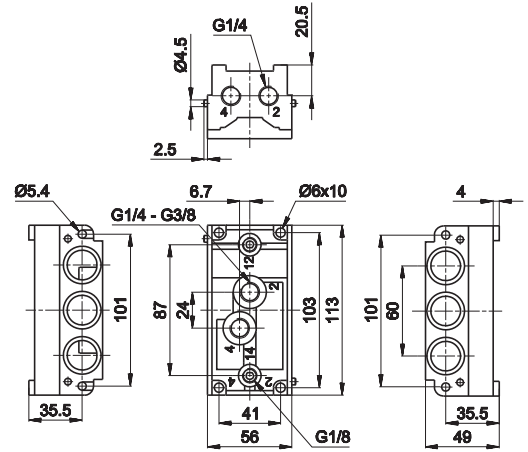


A ISO 4762

ISO 1 - Closing plate for sub-base 1  
material: steel  
weight: 0,03 Kg (for all sub-base versions)



**ISO 2 - Manifold universal system sub-base, dorsal and side connections, conveyed exhausts**



Notes	Connection	Material	Weight Kg	Part no.
dorsal and side connections	G1/4	zamak	0,80	<b>BF-1160</b>
dorsal and side connections	G3/8	zamak	0,80	<b>BF-1161</b>

Dorsal and side connections possible. Close unused ports with caps. With incorporated screw, seals and caps included

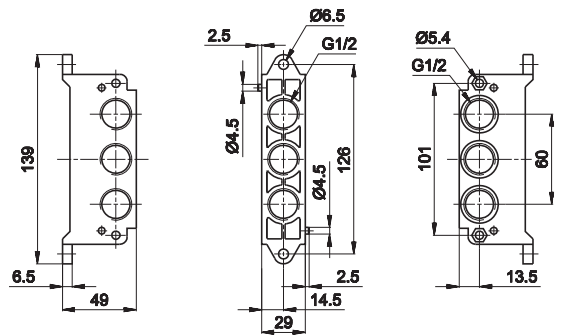
1 = Supply port      3 - 5 = Exhaust  
2 - 4 = Use          12 - 14 = Pilots

**ISO 2 - Manifold Universal system inlet plate**



Notes	Connection	Material	Weight Kg	Part no.
in line connections	G1/2	zamak	0,46	<b>BF-1154</b>
dorsal connections	G1/2	zamak	0,46	<b>BF-1155</b>

When battery exceeds 4 units, the mounting of 2 plates is recommended  
Mixed version available upon request  
With incorporated screw and seals

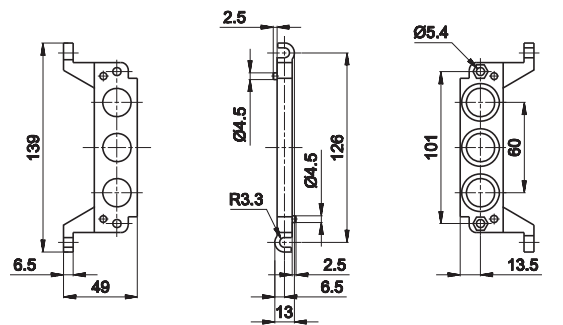


**ISO 2 - Manifold universal system diaphragm**

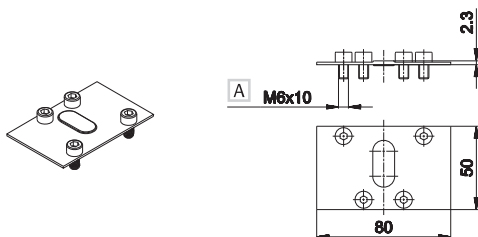


Notes	Connection	Weight Kg	Part no.	
-	-	zamak	0,16	<b>BF-1162</b>

The diaphragm is not only the end plate of the manifold but it is also coupled with the exhaust regulator to separate two sub-bases and regulate the valves independently. In this case break the central blind hole.  
To get two or more pressures, break the two side blind holes.



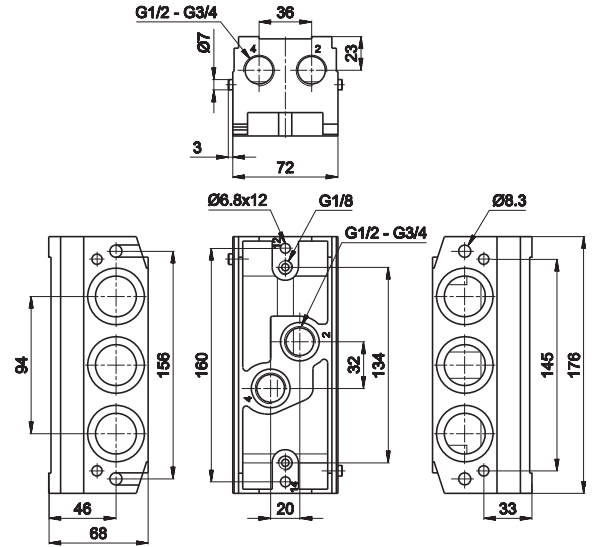
**BF-1175**



A ISO 4762

ISO 2 - Closing plate for sub-base 2  
material: steel  
weight: 0,05 Kg (for all sub-base versions)

ISO 3 - Manifold universal system sub-base, dorsal and side connections, conveyed exhausts

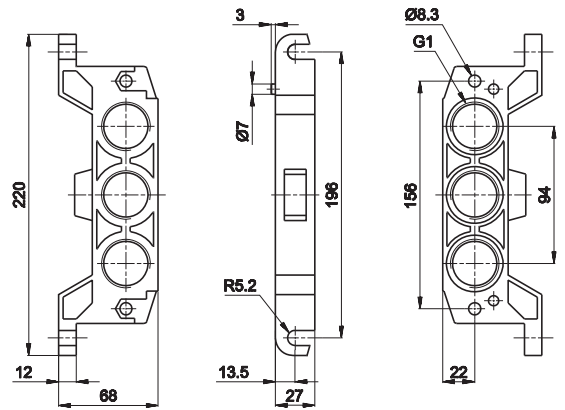


Notes	Connection	Material	Weight Kg	Part no.
dorsal and side connections	G1/2	aluminium	1,10	<b>BF-3071</b>
dorsal and side connections	G3/4	aluminium	1,10	<b>BF-3072</b>

Dorsal and side connections possible. Close unused ports with caps.  
With incorporated screws, seals and caps included

1 = Supply port      3 - 5 = Exhaust  
2 - 4 = Use          12 - 14 = Pilots

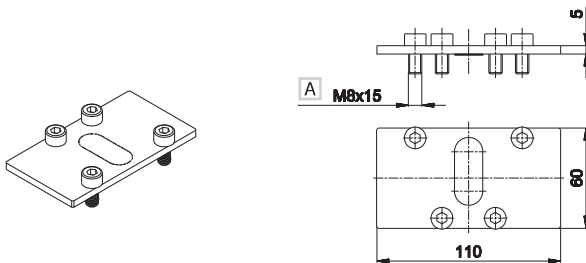
ISO 3 - Manifold Universal system inlet plate



Notes	Connection	Material	Weight Kg	Part no.
in line connections	G1	aluminium	0,44	<b>BF-3064</b>

When battery exceeds 4 units, the mounting of 2 plates is recommended  
Mixed version available upon request  
With incorporated screws and seals

BF-3175



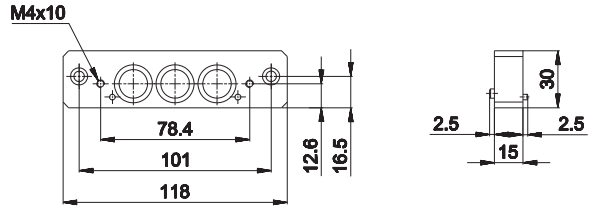
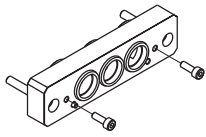
ISO 3 - Closing plate for sub-base 3  
material: steel  
weight: 0,08 Kg (for all sub-base versions)

BF-3082



ISO 3 - Universal system Cap  
material: steel  
weight: 0,20 Kg  
To be used to reach two pressures

**BF-1190**

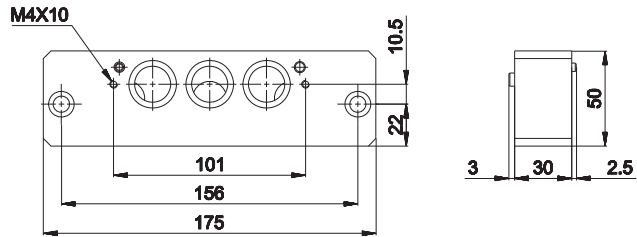
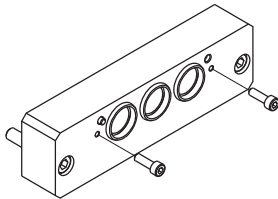


**Connecting interface for universal sub-bases size 1 and 2**

material: steel  
weight: 0,11 Kg

It allows the use of size 1 and 2 valves in one manifold with conveyed pressure and exhausts. (Upon request: pressure and/or exhausts separated)

**BF-3190**

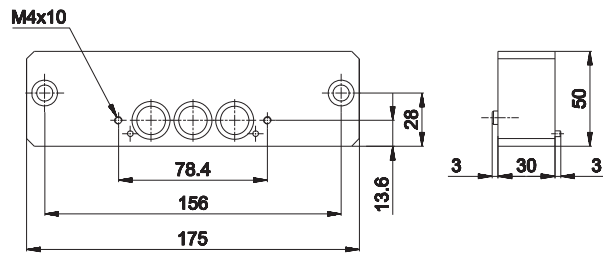
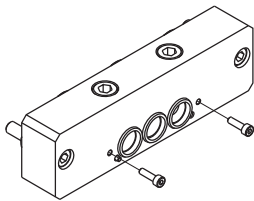


**Connecting interface for universal sub-bases size 2 and 3**

material: steel  
weight: 0,57 Kg

It allows the use of size 2 and 3 valves in one manifold with conveyed pressure and exhausts. (Upon request: pressure and/or exhausts separated)

**BF-3191**



**Connecting interface for universal sub-bases size 1 and 3**

material: steel  
weight: 0,57 Kg

It allows the use of size 1 and 3 valves in one manifold with conveyed pressure and exhausts. (Upon request: pressure and/or exhausts separated)